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Strategic Infrastructure Plan and Feasibility Study Water and Sewer Infrastructure Village of Green Island

Albany County, New York

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1.0 EXECUTIVE SUMMARY

C.T. Male Associates and our project team consisting of Storrs Associates and Adirondack Mountain Engineering were commissioned by the Village of Green Island to prepare a feasibility study related to strategic water and sanitary sewer infrastructure planning to support economic development initiatives within the northern portion of the Village. This study is partially funded through a grant by New York State Empire State Development (NYSESD).

The Village of Green Island desires to have a water and sewer infrastructure plan that assesses the current condition of the Village's existing infrastructure and provides for future infrastructure needs as the Village continues to grow and re-develop their industrial area located north of Tibbits Avenue. The Village has chosen to take a proactive approach to infrastructure planning, which considers future growth impacts to public water and sewer infrastructure, as opposed to reacting to that growth. Development in the northern industrial area is the focus of this study as these are the areas that will have the most potential for future growth and development. The study determined that the following infrastructure upgrades or extensions would be necessary to serve the build-out of select parcels identified as reasonable for development within the next 1-15 years.

- Address extensive water loss within the water distribution system. Consider replacement of old water meters and developing a water main replacement program.

- For the water system, the Village may desire to serve a portion or all of the area north of Tibbits Avenue from the Village water treatment plant, not the City of Cohoes. To facilitate this change in water source, the following considerations must be made:

    - Address extensive water loss within the water distribution system. The Village water treatment plant is limited in additional capacity, but addressing lost water through a water main replacement program will reduce the amount of lost water over time, and provide additional capacity at the water treatment plant.

  - Evaluation of the potential impact of lower pressures delivered to users north of Tibbits Avenue, including impact to any industrial processes and fire suppression system needs.

- Continue projects to eliminate combined sewer overflows (CSOs) within the Village and install separate sewer systems. This includes:

  - Separate Storm Sewer - Tibbits Avenue, Cohoes Avenue and Veterans Memorial Drive;

  - George Street CSO Project

2.0 BACKGROUND AND STUDY AREA

C. T. Male Associates and our teaming partners have prepared a feasibility study to determine infrastructure needs to provide drinking water and sanitary sewer service to undeveloped or under-developed commercial properties located in the Village of Green Island's industrial corridor, located north of Tibbits Avenue. Figure 1 shows parcels within the study area and their potential for development.

The study focuses on five (5) main topics to determine the ability of the Village's water and sewer infrastructure to serve development projects within the study area, including:

- Evaluation of existing drinking water and sewer infrastructure.
- Potential build-out of parcels within the study area.
- Water demand and sewer flow projections for future build-out.
- Capacity of existing water and sewer systems to accommodate future growth.
- Cost opinions for infrastructure project(s).

The Village has a strong history of industrial production, and many existing industrial and manufacturing facilities call the Village of Green Island their home. In total there are 22 parcels in the study area, which comprise approximately 200 acres. All 22 parcels are zoned for industrial use, which permits a wide range of manufacturing, industrial and office uses. The zoning also allows for multi-family residential development. The existing land use is primarily developed industrial and manufacturing facilities on 16 of the 22 parcels. The remainder of the parcels are vacant, with some of the vacant parcels

being located on lands with previous industrial uses. There are three (3) Brownfield/Superfund sites within the study area, which are taken into consideration when assessing the viability of development of the vacant parcels.

Village roadways, drinking water and sanitary sewer utilities service the parcels within the study area. Access to the properties within the study area is off Tibbits Avenue, Cohoes Avenue, Cannon Street and Veterans Memorial Drive. The study area is bounded by the south by Tibbits Avenue, the west by NYS Route 787, the north by the Mohawk River and the east by the Hudson River. The City of Cohoes is located to the north and northwest of the Village and the City of Troy is located across the Hudson River to the east.

3.0 ECONOMIC DEVELOPMENT ANALYSIS

Storrs Associates was retained as part of the team to prepare an economic development analysis of the study area and determine the viability of potential future development within the study area. Storrs' analysis included a market and demand assessment along with priority area build-out identification for the properties within the study area. A copy of the Storrs Associates report entitled *Village of Green Island Market and Opportunity Assessment,* dated February 5, 2024, is provided in Appendix A.

The Storrs Associates analysis indicates specific parcels that are more desirable for development and the potential types of uses that can be located on these parcels. The results of the economic development analysis were reviewed and the most reasonable build out options were finalized in table format on the last page of Appendix A. The most reasonable build out options are based upon parcel size, zoning, greenspace requirements, setbacks, parking requirements, and constrained lands. The build out options document a reasonable maximum square footage of development that could occur on these parcels. Note that the build out options contained in this report are for planning purposes only and can vary depending on the final uses desired by future property owners and developers.

The reasonable build out projections within the next 15 years is summarized in Table 1, on the next page:

Table 1- Summary of Build-out Analysis

Development Type or Group	Address	Parcel Acres	Current Industry	Type of Potential Development	Potential Additional SF	Potential Project Timeframe (Years)
Type 1 (Development Proposed or Underway)	147 Cannon Street	11.80	Vacant	Development Proposed	15,000	1
	Cannon Street	5.96	Vacant	Potential for Residential 150 units	400,000	1
Type 2 (Development from growing industries)	185 Cohoes Ave	3.00	Food Manufacturing	Business expansion, or add'l food storage/distribution	30,000	2-5
	80 Cohoes Ave	4.60	Food Manufacturing	Expansion - Food manufacturing industry growing in	15,000	2-5
	70 Cohoes Ave	6.18	Food, Other Manufacturing	Expansion or add'l business - food manufacturing industry growing	25,000	2-5
Type 3 (Development encourages commercial uses)	65 Cohoes Ave	1.70	Vacant	Commercial cluster	25,000	2-5
	85 Cohoes Ave	3.79	Building Supplies Manufacturing	Related commercial - showroom, sales office	10,000	2-5
	75 Cohoes Ave	3.79	Building Supplies Manufacturing	Related commercial - showroom, sales office	10,000	5-10
Type 4 (Existing development with room to expand)	30 Veteran Memorial Dr	16.18	Durable Goods Manufacturing	Potential for Sealy to reactivate existing capacity	75,000	5-10
	260 Cannon St	8.78	Consumer Goods Manufacturing	Manufacturing has room to grow. Potential for commercial or recreation if residential project created nearby.	100,000	10-15
Type 5 (Manufacturing Potential, Long Term)	195 Cohoes Ave	6.86	Building Supplies Manufacturing	Business expansion or complementary building supplies manufacturing	50,000	10-15
	100 Cohoes Ave - NW End	14.10	Durable Goods Manufacturing	Business expansion or subdivision for warehouse	100,000	10-15
	160 Cannon St	13.70	Vacant but improvements have been made to parcel	Desirable size parcel est. 10 acres even if Superfund site is isolated. Large manufacturing may be 300,000 SF with small variance	300,000	10-15
	NE Cor Cohoes and Tibbits	15.90	Vacant	Recommend looking into separating some of parcel adjoining 65 Cohoes Ave. The rest is unlikely to be developed inside 15 years.	200,000	10-15
	1 Tibbits Ave	6.44	Machining Metals Manufacturing	Highly visible gateway parcel - 50,000 SF new manufacturing	75,000	10-15
	1A Tibbits Ave	2.58	Vacant	Desirable size parcel - 50,000+ SF	50,000	10-15
	230-250 Cannon St	1.50	Vacant	Narrow strip, nothing across the street but waterfront may be used for recreation/amenities	20,000	>15

4.0 WATER SYSTEM

4.1 Water Source

The Village of Green Island operates a groundwater filtration plant, located at 14 Hudson Avenue, which serves approximately 1,200 service connections to a population of ±3,000 users, including parcels in the Town of Colonie in the Maplewood area. In 2022, the total water produced by the plant was ±205 million gallons and the daily average of water produced by the filtration plant was ±560,000 gallons per day (GPD). The highest single day production was ±753,000 gallons. The Village's water source is groundwater through an infiltration gallery located on Starbuck Island. Water flows through packed sand and gravel into a collection pipe and flows by gravity to a 35-foot deep well. The water is then pumped to the treatment facility, where it is filtered and chlorinated. The pH is adjusted and iron and manganese are removed with potassium permanganate. According to the treatment plant operator, the plant produces an average of 550,000 to 650,000 GPD and has produced up to 800,000 GPD for a short period of time. The treatment plant was designed to make 1,000,000 GPD when it was constructed but for operational reasons, a realistic maximum daily production limit for the plant is approximately 800,000 GPD.

In addition to the Village's water treatment plant, the Village water system has an interconnection with the City of Cohoes that is used to primarily serve the northern portion of the Village, specifically the parcels included in the study area north of Tibbits Avenue. The interconnection between the Village and City system is located at the City-Village line along Cohoes and Dyke Avenue via a 16-inch ductile iron pipe (DIP). According to the Village, approximately ±23.1 million gallons of water was purchased by the Village from the City in 2023, with the agreement for Cohoes to supply 2 million gallons per month in the Summer and 1.7 million gallons per month the remainder of the year. On Tibbits Avenue there are parallel water mains that are separated by closed valves, meaning that the two water sources do not mix during normal operational periods. City water supplies the northern portion of the Village, and the Village water supplies the remainder of the Village system.

There is also an additional redundant emergency connection with the City of Watervliet. This emergency connection was constructed in 2020 and is located at 27th

Street, in the southwest end of the water system. As reported by the Village, in 2023, this interconnection was activated for a short period of time, totaling 178,000 gallons.

4.2 Water Distribution System

For the Village side of the system, the filtration plant pumps into the distribution system and the hydraulic grade line of the system is set by the filtration plant pumps and the ground storage reservoir. The Village has a ground storage reservoir, located at 89 Elm Street in the Town of Colonie, which is 14 feet deep, 8 foot in diameter and holds approximately 480,000 gallons. The reservoir is only connected to the Village side of the water distribution system. The parcels north of Tibbits Avenue that are served by Cohoes float off the City's system.

The topography of the Village is generally flat with less than 20 feet of elevation different across the entire water system, with higher elevations to the west and lower elevations towards the east. The hydraulic grade line of the Village side of the system is approximately 148-153 feet depending on tank elevation. This corresponds to a pressure range of 48 to 60 psi across the system. The hydraulic grade line of the Cohoes side of the system has a higher hydraulic grade line around elevation 265 feet, corresponding to water system pressures ranging from 100 to 107 psi in the area north of Tibbits Avenue. Figure 4 provides a pressure contour map for the northern portion of the Village, including the study area, which presents the different hydraulic grade lines between the two sources of water (Village vs. Cohoes).

Most of the piping in the Village system is original, from the 1940s or 1950s and is cast iron pipe (CIP). The water mains north of Tibbits Avenue, however, are newer and are ductile iron pipe (DIP). The entire system has approximately 60,000 total linear feet of piping, generally broken down by the following sizes and materials:

- 4-inch CIP: 12,400 feet
- 6-inch CIP: 23,500 feet
- 8-inch CIP: 800 feet
- 10-inch CIP: 2,700 feet
- 10-inch DIP: 4,400 feet
- 12-inch CIP: 11,800 feet
- 16-inch CIP: 600 feet

- 16-inch DIP: 3,600 feet

A map of the Village's water distribution system is provided as Figure 2.

4.3 Evaluation of Existing Water System

The condition of the piping within the water distribution system is best represented by calibration of a water model based upon hydrant flow testing. The layout of the system is considered well looped with only a few dead-end water mains, which are in areas with dead end streets. The age and size of the piping on the Village side of the system is concerning with cast iron piping from the 1940's and 1950's being prevalent, along with the majority of the water mains are 4 to 6-inches. Current standards for water mains place a minimum water main size at 6 inches for modern fire flow requirements.

A hydraulic model of the water system was developed using the software, WaterCAD. The basis for the water model is the water system mapping and operational records provided by the Village, and was calibrated by field testing of the hydrants.

4.3.1 Hydrant Flow Testing

On August 23, 2023, C.T. Male Associates and Village of Green Island staff conducted 18 hydrant flow tests throughout the Village's system. The location and results of the hydrant flow tests are included in Appendix B. Twelve (12) tests were performed on the Village water side of the system (south of Tibbits Avenue) and six (6) were performed on the Cohoes fed side of the system (north of Tibbits Avenue, study area). For the 12 tests performed on the Village side of the system, the available hydrant flow generally ranged from 500-800 gpm, with the residual pressure dropping to a range of 14-51 psi. For the Cohoes fed side of the system, the hydrant flow generally ranged from 1,300-1,525 gpm with the residual pressure dropping to a range of 85-70 psi.

Industry standards state that a hydrant should be able to provide a minimum of 500 gallons per minute (gpm) with a residual system pressure of no less than 20 psi for residential areas, with a higher hydrant flow of >1,000 gpm at 20 psi for mixed use, multi-family or commercial/industrial uses. In some cases, designers of sprinkler systems will require a higher pressure than 20 psi for their site-specific needs. In those cases, the public water system is not required to provide a higher pressure for fire flow

needs and the design of the sprinkler system must incorporate pressure boosting into its design.

The hydrant flow test reports in Appendix B also provide for theoretical calculations of the available fire flow at 20 psi. The hydrant flow testing indicates that the availability to provide fire or hydrant flows within the study area (north of Tibbits Avenue) is considered very good. For the Village side of the system, the available hydrant flows were considered average to acceptable for a residential system, even given the age and smaller diameter of the majority of the water mains within the system. This is likely due to the system being well-looped and water flowing to a hydrant can take multiple paths throughout the system.

4.3.2 Water Meter Records

Water meter records for the 2022 billing year were provided by the Village for this study. The average daily metered water use for the year was 211,000 GPD, of which the 22 parcels within the study area accounted for 13,500 GPD. The water meter readings were compared with the metered output at the water treatment plant and the meter at the Village-Cohoes interconnect. For the Village side of the system, the water treatment plant output (per the operator) ranges from 550,000 to 650,000 GPD. During the summer months, the City provides 2 million gallons per month or 67,000 GPD to the study area. When comparing the billed water to the water sent to the distribution system, the amount of unbilled water within the Village side of the system is 60%, and the City side is 80%. The total unbilled water accounts for approximately 416,000 GPD. While in any water system there is always unmetered or "lost" water due to leaky pipes, hydrant use, water main breaks, and unmetered users, the amount of unbilled water is considered very high even when accounting for the age of the water mains.

Upon review of the water meter records, it was determined that the meter readings could be considered inaccurate in many cases, reading too low to be representative of the actual system demands. For the purpose of providing a water model reflective of the actual system uses, the water meter records were doubled in the WaterCAD model to reflect a more accurate representation of system demands when compared with the production of the water treatment plant.

Based upon our review of the water meter records, it is recommended that the Village remove select meters from the system and test them for accuracy. Meter manufacturers

recommend that meters be replaced on a 10-15 year cycle. Older meters generally read inaccurately in favor of the customer, such as low flows not being read by the meter. The Village should consider a meter replacement program as part of the effort to account for lost water. In addition to potentially faulty meters, there is likely a significant amount of lost water in the system due to the age and material of the older water mains within the distribution system. The water mains within the Village system are nearing or past their useful life and a water main replacement program should be considered by the Village.

4.3.3 Elm Street Water Storage Tank

The water storage tank on Elm Street holds 480,000 gallons of water. Per AWWA standards, the tank must be large enough to hold at least a day's worth of storage and/or enough to supply a two-hour fire flow for the largest customer. The necessity to hold at least a day's worth of storage would be during a time in which the plant capacity is reduced or limited in cases of a failure of equipment or a significant power outage. For the fire flow requirement, assuming the largest customer fire flow of 1,500 gpm, the fire flow volume would need to be 180,000 gallons. As noted in the above paragraphs, the Village's water plant supplies between 550,000 to 650,000 GPD to the system, but only 40% of that water is metered and there is potentially a significant amount of lost water in the system. The volume of the water storage tank would be considered less than the recommended tank volume for the current production of the water plant. If the tank needed to be replaced at any point in the future, consideration should be taken to installing a tank with a volume of at least 600,000 – 700,000 GPD, unless measures are taken to reduce the volume of lost water through a water main replacement program.

4.3.4 Water System Modeling

When developing the WaterCAD Model, water demand was allocated to junctions within the water model, based on peak quarter usage. Water meter records from the 2022 billing year, recorded on a quarterly basis, were used for base demand development of the water system model. Meter records for each user associated to a junction were totaled for a combined usage per quarter. Peak usage for each junction was utilized to determine the base demand inserted into the water model. Due to the perceived inaccuracy of the water meters in the distribution system, the calculated

water demand was further doubled to reflect a more accurate representation of system demands when compared with the production of the water treatment plant.

Hydrant flow testing and results, as discussed in Section 4.3.1, were further utilized to calibrate and verify existing conditions which were the basis for the WaterCAD model.

The results of the WaterCAD model for the water system under existing conditions indicate that the distribution system can provide acceptable demand, pressure and hydrant flows the study area, which is the focus of this report.

5.0 SANITARY SEWER SYSTEM

A map of the Village's sewer system is provided as Figure 3.

5.1 Existing System

The Village of Green Island owns and operates a combined sanitary and storm sewer collection system that discharges to the Albany County North Wastewater Treatment Plant located in Menands. Most of the collection system was constructed prior to 1975. The collection system flows by gravity from the western, higher elevation, areas of the Village, east towards mains running parallel to the Hudson River. 18-inch sewer mains running north-south along George Street are the primary collectors of the sewer system, routing the sewage to the 36-inch line on Center Street and then to the Center Street Pump Station. All sanitary wastewater and combined stormwater in the Village is conveyed to the Center Street Pump Station and transferred to Albany County's Hudson River Interceptor sewer at Albany Avenue and the Empire State Trail through an existing 20-inch force main. The Center Street Pump Station was constructed in 1975 and consists of a duplex pumping system with pumps rated at 1,500 gpm each.

The Village contracts with Albany County to provide treatment of wastewater from the Village. The contracted average monthly amount of wastewater treatment allocated to the Village is 5.92 MGD. For 2022 and 2023, the average amount of wastewater discharged to the County interceptor from the Village was 1.41 MGD, significantly less than the contracted amount.

Within the study area, the properties north of Tibbits Avenue are connected to the sewer system along Cannon Street, Cohoes Avenue and Veterans Memorial Drive.

Sanitary sewers along Cohoes Avenue and Veterans Memorial Highway are made up of 8-inch diameter vitrified clay pipe (VCP), which is also a combined sanitary and storm sewer collection system. Sanitary sewers along Cannon Street include 8-inch, 10-inch and 12-inch diameter VCP. Separate HDPE storm sewers were constructed on Cannon Street by the NYSDOT in 2004.

In the past decade, the Village has procured several studies and completed a sewer separation project, which are discussed below:

- ***Wastewater Collection System Asset Management Plan, prepared by CHA, dated December 1, 2017.*** This plan shows that the Village's wastewater collection system is comprised of approximately 49,000 linear feet of sewer pipe, along with 326 manhole and catch basin structures. Over 75% of the collection system consists of smaller diameter pipes of 12-inches or less. Approximately 65% of the collection system consists of vitrified clay pipes.

- ***Sewer Separation Engineering Report, Starbuck Island Mixed- Use Development, prepared by McFarland Johnson, Inc, dated August 1, 2019***. This report recommended the construction of new storm sewers along Hudson Avenue to offset increases in sanitary sewers for the Starbuck Island development project. The report concluded that the proposed storm sewer separation would result in a net decrease in wet weather flow to the combined sewer system by approximately 105,000 GPD to offset a proposed estimated 25,259 GPD increase in sanitary discharge from the proposed Starbuck Island Redevelopment Project.

- ***Hudson Avenue Storm Sewer Separation As-Builts, Starbuck Avenue Redevelopment, prepared by McFarland Johnson, Inc, dated January 2022***. The record plans show that 2,466 linear feet of 12-inch, 18-inch and 24-inch diameter storm sewer piping and 21 structures were constructed as part of the project.

- ***George Street Combined Sewer Overflow Study, Engineering Report, prepared by MJ Engineering, dated October 2022***. The report showed that during storm events, the George Street area contributes significant flows to the Village's CSO system thereby resulting in increased system overflows to the Hudson River. The Village also incurs additional expenses for the treatment of increased combined flows from storm events. Inspection work completed as part of this 2022 study showed minor deficiencies in the combined sewer piping, including cracks and

heavy root intrusion. The report recommends the replacement of 50 linear feet (LF) of existing cast iron sewer with new PVC sewer piping, installing approximately 5,400 LF of cured-in-place pipe (CIPP) liner, and the rehabilitation of twenty (20) sanitary manholes along George Street. This report also recommends removal of existing cross-connected storm sewer catch basins, connecting new and existing catch basins to new storm sewers, and installing new storm sewer mains along Market, Clinton, Swan, and Arch Streets. The new storm sewer mains would convey storm sewer flows to a new storm system on Hudson Avenue and to existing outfalls.

In May of 2024, staff from Adirondack Mountain Engineering performed a visual condition assessment of select sanitary sewer manholes within the collection system on May 2, 2024 and May 9, 2024. Any range in the depth of flow indicate differences in flow depth between these two dates. These inspections were performed during dry weather conditions. A copy of the inspection reports and map of the sanitary manholes are included in Appendix C and is summarized in Table 2.

Table 2- Summary of Manhole Inspections

MH ID	Manhole Location	Pipe Diameter	Depth of Flow (Inches)	Manhole Condition
CA-1	80 Cohoes Avenue	8″	4″	Good
CA-2	Cohoes at Veterans	8″	3″ to 4″	Good
CA-3	Veterans at Cannon	8″	2″ to 3″	Good
C-52	160 Cannon St	12″	2″	Good
C-50	Cannon at Tibbits	12″	3″	Fair
C-46	Cannon at Tibbits	12″	6″	Poor
C-41A	Cohoes at Tibbits	12″	No Flow	Fair
C-42	West at Tibbits	12″	1"	Poor
C-29	Bleeker at Paine	18″	2"	Good
C-19	George at Bleeker	18"	5"	Good
C-17	Bear School Yard	18"	3"	Good
D-14	Hudson at Swan	24"	1"	Poor
C-16	Arch at River	18"	3"	Fair
C-15	Center at River	20"	8"	Good
Swan CSO	CSO at River	20"	4" to 6"	Good

Manholes with a "fair" rating have some bricks or mortar that is coming loose with some evidence of stone and debris in the invert, possibly impeding flow. Manholes with a "poor" rating show evidence of more significant deterioration and are recommended to be replaced or rehabilitated. Some debris is considered a common occurrence in combined sewers, but the Village should inspect these manholes, and other manholes in their system, on a routine basis and flush or remove any accumulated debris.

5.2 Combined Sewer Overflows

The existing combined sewer collection system is equipped with three combined sewer overflows (CSOs), which are permitted to discharge untreated wastewater into the Hudson River during periods of high flow due to storm events. These include the Swan Street CSO, the Center Street CSO and the Hamilton Street CSO. The 2023 CSO Annual Report is included in Appendix D. The Village reported no CSO overflows in 2023, however they do pre-emptively enter an alert on NY Alert for every rain event if there is a potential for an overflow. The Village also reports that no CSO overflows have occurred in the past five years.

5.3 Existing Sewer Capacity

The capacity of the existing sanitary sewer system on Cannon Street and along Bleeker Street to the Center Street Pump Station was evaluated utilizing Manning's equation. The results of the capacity modeling are included in Appendix E. The modeling provides the theoretical full flow capacity of the sewer segments and compares that full flow capacity with the anticipated existing sewer demands from domestic uses, plus a conservative estimate of typical infiltration and inflow that would be found in sewer systems of that age and material. As with any combined sewer, there is a more significant amount of I&I since inflow is significant during a storm event. Information from the 2022 MJ Engineering report for George Street was utilized to obtain the inflow estimates for the 10-year storm event for the combined sewer within this study area.

The results of the sewer capacity modeling presented in Appendix E indicate that for the sewer segments analyzed, the full flow capacity is greater than the anticipated sewer demands.

For the Center Street Pump Station, the average amount of wastewater discharged to the County interceptor from the Village was 1.41 MGD (2022-2023). This correlates to an

average annual pumping rate at the Center Street Pumping Station of 980 gpm, with the peak monthly average pumping rates exceeding 1,000 gpm. Following the Recommended Standards for Wastwater Facilities (Ten State Standards), a peaking factor of 2.8 is assumed. The calculations presented in Appendix E indicate that the capacity of the Center Street Pumping station could be exceeded during peak flow periods. This supports the need to maintain the combined sewer overflows in place while the Village continues to facilitate sewer separation projects.

6.0 FUTURE WATER AND SANITARY SEWER NEEDS

The future water demand and sewer flows generated by the parcels identified in the build out analysis are summarized in Appendix F. For the basis of this study, the future water demand and sewer flows are assumed to be the same, as there are currently no significant water demands from study area customers for processes or irrigation that would otherwise not be sent to the sanitary sewer system. The water demand and flow projection were determined using the NYS Design Standards for Intermediate Sized Wastewater Treatment Systems (2014) by NYSDEC, and the NYS Building Code for occupancy limits. For the purpose of this study, the NYSDEC sewage generation rates were also utilized for determining expected water use. For industrial, warehouse or manufacturing uses, the total daily rates were assumed to occur over a 12-hour period. For commercial or retail uses, the total daily rates were assumed to occur over an 18-hour period.

As noted in Appendix F, the anticipated additional water and sewer demand within the study area, based upon the build out projections, is shown on Table 3.

Table 3- Summary of Water/Sewer Projections- Comparison to Existing

Timeframe (Years)	Additional Flow (Average GPD)	Projected Total Flows (Average GPD) Including Existing Development
Existing	n/a	67,000 GPD[1]
1 Years	27,000 GPD	94,000 GPD
2-5 Years	15,300 GPD	109,300 GPD
5-10 Years	2,800 GPD	112,100 GPD
10-15 Years	56,300 GPD	168,400 GPD

7.0 INFRASTRUCTURE UPGRADES

This section provides a description of recommended upgrades to the drinking water distribution and sewer collection systems needed to facilitate growth and development within the study area.

7.1 Water Distribution System

The preceding sections of this report indicate that overall, no specific deficiencies were identified in the Village's water distribution system, however there is an excessive amount of unbilled water within the system, likely related to old meters and aging water mains that should be replaced. This report recommends that the Village undertakes a system-wide water main replacement program. While a future water main replacement program is not the focus of this study, the water mains within the study area are reported to be ductile iron and are newer than the cast iron water mains that are installed within the remainder of the Village. It would be a priority to replace the cast iron water mains prior to replacement of the ductile iron water mains, therefore this study will not recommend that the water mains north of Tibbits Avenue be replaced in support of development within the study area.

2023 water meter records for the study area indicate that during the summer months 13,500 GPD were recorded by meters within the existing users north of Tibbits Avenue. Records from the City of Cohoes indicate that 67,000 GPD of water was sold to the Village of Green Island, which is the maximum permissible through the current

[1] Water demand of 67,000 GPD is based upon the volume of water the City of Cohoes sells to the Village. Individual water meters for each building within study area total 13,500 GPD. See findings in Section 4.3 related to unmetered water assumptions.

contract. This is a discrepancy of nearly 5x the metered flow. Given the fact that the water mains north of Tibbits Avenue are of a newer era, the Village should consider investigating the following possible sources of lost water.

- Inaccurate customer meter readings.
- Unmetered water to commercial customers, including fire lines.
- Investigate the possibility of water leakage in old, abandoned water mains and water services on parcels with abandoned industrial sites.
- Review of master meter records from the City of Cohoes. Confirm if the volume of water billed to the Village is consistent with an actual meter reading or is the maximum contracted amount, regardless of the volume of metered water.

7.1.1 Change Source of Water - North End of Village

No specific capital construction projects on the water system were identified by this study, rather the focus is on system-wide projects to mitigate the volume of lost water observed within the system. This report assumes that the Village will undertake lost water mitigation measures before they permit any significant increased water demand within their system.

The focus of Section 7.1.1 is to determine if portions of the study area (north of Tibbits Avenue) could be served directly from the Village system, independent from the City of Cohoes. The WaterCAD model was modified to evaluate a theoretical scenario where the Village would serve the entire area north of Tibbits Avenue under both current demand conditions and projected future conditions at full build out (after 15 years). As noted previously in Table 3, the maximum additional demand projected within this study area is approximately 100,000 GPD of demand after 15 years, totaling 168,400 GPD. This modeling assumes that any limitations at the Village water treatment plant are addressed to permit this additional demand, and lost water is addressed before considering switching water sources.

Based on the modeling, the Village's distribution system is capable of serving the entire study area under existing demand and at the projected full build out in 15 years. As noted above, consideration would need to be taken to address plant capacity and lost water.

If the Village were to serve the study area, the existing properties would see a reduction in pressure and fire flow availability since that portion of the system would be on a lower hydraulic grade line. The existing pressures north of Tibbits Avenue, when being served by Cohoes, range from ±95 psi to ±105 psi. If the Village were to serve the study area, and the maximum anticipated build out occurred, the pressures are anticipated to range from ±47 psi to ±57 psi. Figures 4 and 5 show the changes in water system pressure between the existing and theoretical conditions. This would result in a reduction of pressure at the user of approximately 48 psi, but is within an acceptable operating range for municipal water systems (40psi to 100 psi). At this time, it is unclear if any of the existing commercial or industrial users have become accustomed to or designed any of their processes, including fire suppression systems, for the currently provided higher pressures. Table 4 shows the projected pressure changes within the study area at each stage of development if the Village were to serve the study area.

Table 4: Pressure Changes Within Study Area by Development Phase

Junction	Existing Conditions Pressure (psi)	Pressures in Study Area When Served by the Village (psi)		
		Existing Demand	1-5 Year Demand	5-15 Year Demand
J-127	100.0	53.4	52.2	52.2
J-128	101.3	54.7	53.8	53.5
J-129	95.7	49.1	48.2	47.9
J-130	95.7	49.1	48.2	47.9
J-131	102.6	56.0	55.1	54.8
J-132	104.5	57.9	57.0	56.7
J-133	94.8	48.2	47.3	47.0

Nearly all of the modeled reduction in pressure is a result of the change in hydraulic grade line, not the additional demand. If the Village would like to consider changing the water source for the study area, it is suggested that the users be made aware of these potential pressure changes, as it may impact their manufacturing process or sprinkler operation. The users would need to consider any on-site mitigation measures, such as pressure boosters or on-site storage, if their facility would be impacted by the lower Village water system pressures.

The other parameter that is reviewed when looking at how a water distribution system operates is the available fire flow. For the purpose of this study, the available fire flow numbers provided are modeled at 20 psi, as this is the ISO standard. The available fire

flow within the northern portion of the system under existing conditions (served by Cohoes) is approximately 1,525 gpm at 20 psi, which is a high available fire flow. If the Village were to serve the study area and the maximum anticipated build out occurred, the available fire flow under this scenario would be reduced to a range of ±1,100 gpm to ±1,160 gpm at 20 psi. This available fire flow is still considered good and acceptable for the range of commercial and industrial uses in the study area. Table 5 shows the available fire flow at 20 psi under the modeled scenarios.

Table 5: Available Fire Flow at 20 psi Within Study Area by Development Phase

Junction	Existing Available Fire Flow (gpm)	Available Fire Flow in Study Area When Served by the Village (gpm)		
		Existing Demand	1-5 Year Demand	5-15 Year Demand
J-127	±1,525	1,120	1,038	1,008
J-128	±1,525	1,265	1,159	1,114
J-129	±1,525	1,240	1,136	1,093
J-130	±1,525	1,257	1,152	1,109
J-131	±1,525	1,306	1,194	1,147
J-132	±1,525	1,295	1,185	1,139
J-133	±1,525	1,237	1,134	1,091

Figure 6 shows the available fire flow at 20 psi within the study area under existing conditions and if the Village were to serve the study area with maximum build out.

As discussed in Section 4.1, the Village's water treatment plant produces an average of 550,000 to 650,000 GPD and has produced up to 800,000 GPD for a short period. The treatment plant was originally rated for 1,000,000 GPD when it was constructed, but for operational reasons, a realistic maximum daily production limit for the plant is around 800,000 GPD. If the Village serves the entire study area with maximum anticipated build out, it would be an increase of approximately 170,000 GPD. Without addressing the lost water situation within the Village, it is not likely that the plant, under existing operational conditions, could fully serve the entire Village and projected future development.

As also noted in Section 4.3.3, The existing water storage tank is slightly under sized from a volume perspective and does not provide a full day's storage. If additional users are added in the northern portion of the system, the tank size could become an issue. However, as noted throughout this report, addressing the lost water situation in the

system is strongly recommended before the Village can consider serving the entire Village and future development in the study area.

7.2 Sanitary Sewer System

Within the study area, approximately half of the sewer system has separated sanitary and storm sewers, specifically along Cannon Street. However, the sewers on Tibbits Avenue, Cohoes Avenue and Veterans Memorial Drive are combined sewers. Even though the sewer capacity analysis indicates that the sewers within the study area have capacity to receive additional flows from the projected future development, adding additional flow to a combined sewer without mitigation is not recommended. This report recommends that as development occurs within the study area on streets that have a combined sewer, sewer separation projects on these streets should occur. This sewer separation project would likely be similar to the project on Cannon Street, in which a new storm sewer is installed along the roadway with catch basins to receive runoff and cross connections between stormwater and sewer infrastructure would be removed. The project would also include providing separate storm and sanitary laterals for the properties to tie into. Depending on site conditions, a storm sewer separation project could also incorporate green infrastructure practices, such as drywells, infiltration practices, and porous pavement. The Village could also consider requiring properties that undergo future development to construct an on-site stormwater mitigation practice, at the cost of the property owner, to reduce stormwater runoff to pre-development conditions.

For the purposes of this study, the sewer separation project is recommended to occur within 5 to 15 years based upon the projected future build out conditions. This sewer separation project would involve separating approximately 3,000 feet of combined sewer. It is also recommended that the Village replace two (2) manholes on Tibbits Avenue, near Cannon Street that were determined to be in fair or poor condition as part of the project. These improvements are highlighted on Figure 7.

The 2022 George Street Engineering Report recommends a project to replace 50 LF of existing cast iron sewer with new PVC sewer piping, install approximately 5,400 LF of CIPP pipe liner, rehabilitation of twenty (20) sanitary manholes along George Street, remove existing cross-connected storm sewer catch basins, connect new and existing catch basins to new storm sewers, and install new storm sewer mains along Market,

Clinton, Swan, Arch Streets. This recommended project does not include a full separation of the sewers along George Street, but would line the sewer, which was determined to be in poor condition with evidence of infiltration. The report does not specifically quantify the anticipated amount of non-sanitary flows that could be removed from the system, however, it is likely, given the scope of the recommended project by MJ Engineering, that the amount of non-sanitary flows within this segment of combined sewer could meet or exceed the projected future sanitary flows from build out within the project area, an additional flow of 100,000 GPD (70 gpm). Even though this project is not located within the overall study area that this report encompasses, the continued progression of removal of non-sanitary flows to the CSO will allow for future development within the Village of Green Island to continue unencumbered by CSO regulations.

8.0 OPINION OF PROBABLE COST

An opinion of probable construction cost for the recommended sanitary sewer upgrades was prepared and is included in Appendix G. The cost for the George Street project was escalated from the MJ Engineering Report to 2024 construction dollars.

- Separate Storm Sewer- Tibbits Avenue, north in Study Area: $2.38 million
- George Street Project: $1.09 million
- Total: $3.47 million

8.1 Impact on Project Costs & Funding

The Village of Green Island's current water and sewer rates are included in Appendix H. As of the date of this report, there are no capital project construction bonds or BANS applied to tax bills for parcels within the Village.

An average residential property within the Village is estimated to use 200 gallons of water per day (73,000 gallons per year / 9,750 cubic feet per year).

- Sewer rate: $15.08 per 1,000 cubic feet = $147.03 per year.
- Water rate: Quarterly rate for a typical residential meter, which is 5/8",
    - First 1,000 cubic feet (or less) $70.25 minimum charge.
    - Next 24,000 cubic feet: $49.37 per 1,000 cubic feet.
    - Over 25,000 cubic feet: $36.53 per 1,000 cubic feet.
    - Average residential quarterly use: 2,450 cubic feet. Quarterly water rate = $191.20 per quarter = $764.83 per year.

As with prior CSO separation projects that the Village has undergone, the intent for the George Street Project is to apply for and obtain grant funding to cover the cost of this project. For the purposes of this report, it is assumed that the George Street project will be funded fully by grants and there will be no impact on Village sewer rates.

With regards to the recommended project to separate the sewers on Tibbits Avenue north, within the study area, it is possible that the Village could continue to obtain grants to facilitate future CSO separation projects. However, for the purpose of budgeting, a theoretical calculation was presented if the cost to separate the remaining combined sewers within the study area were borne on the 16 properties that are tributary to the existing combined sewers (i.e. the properties that have sewer connections on Cohoes Avenue and Veterans Memorial Drive). The total assessed value of the 16 properties within this area (2024 assessments) is $61,775,000. If the entire cost of the CSO separation project, $2.38 million, was bonded on the traditional municipal bond market at a rate of 4.5% for 30 years, the annual bond payment is estimated at $145,000. If this bond was applied to the 16 properties within the project area based upon assessed value, the tax rate would be $2.347/$1,000 of assessed value. The average assessment of the 16 properties within the project area is $3.86 million, therefore the average cost per parcel for the bond repayment would be $8,916 per year for the bond repayment. Note that this calculation is theoretical, and the Village could obtain grants or other sources of funding for this project or a portion of this project, which would make the cost for properties within the project area less.

9.0 CONCLUSION

This comprehensive drinking water and sewer study provides many findings regarding the condition of the Village's water distribution and sanitary sewer collection systems. The overall findings are that the water system can adequately serve the needs of any future growth within the study area, north of Tibbits Avenue, as long as the Village undertakes a program to address the significant amount of lost water in the system and undergoes studies of the water treatment plant to determine its capacity. No specific water system upgrades are recommended to support additional growth within the study area other than recommendation of a system-wide lost water mitigation program. The Village should prioritize the replacement of their aging infrastructure, including their cast iron water mains and their old or inaccurate meters. The Village should also take steps to identify other locations of lost water.

For the sanitary sewer system, even though the Village is a CSO community, the Village has not recorded an actual activation of the outfalls in the past 5 years. The Village has been working diligently over the past few decades to perform CSO separation projects and to study alternatives for future CSO reduction programs. As development progresses within the study area, it is recommended that the Village focus on separating the storm sewers within the study area on Tibbits Avenue, Cohoes Avenue and Veterans Memorial Drive.

FIGURES

Figure 1

Green Island Parcel Development Potential Map

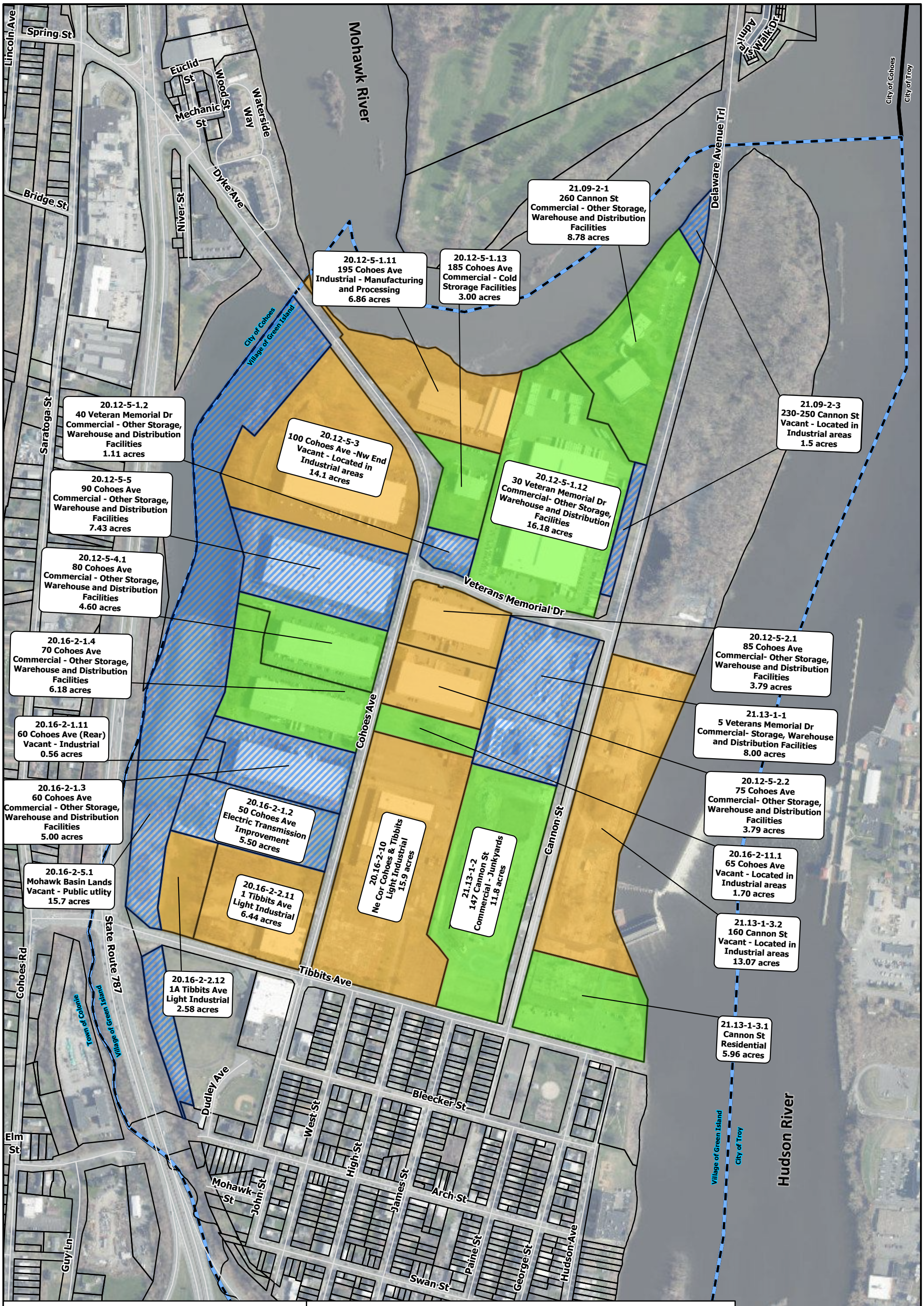

Figure 1: Green Island Parcel Development Potential Map

Village of Green Island — **Albany County, NY**

0 300 600 1,200 FT

1 in = 600 ft

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Legend

Potential Parcel Development Timeframe:
- < 5 Years
- 5 - 10 Years
- Parcel Not Likely To Be Developed
- Roads
- Albany County Parcels
- Village Boundary
- Town Boundary

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Project Number: 23.3427
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: November 8, 2023
File: GreenIsland_VillageMap.aprx
GIS: D Landreville

Figure 2

Village-Wide Water System Map

Mohawk River

City of Cohoes
Town of Colonie

City of Cohoes
Interconnect

City of Cohoes
Village of Green Island

City of Cohoes
City of Troy

Water Tank

Town of Colonie
Village of Green Island

Village of Green Island
City of Troy

Hudson River

Water Treatment
Plant

Town of Colonie
City of Watervliet

Emergency
Interconnect
- City of Watervliet

City of Watervliet
Village of Green Island

City of Watervliet
City of Troy

Legend

Water Features

- Hydrant

Water Mains

- 4" Watermain
- 6" Watermain
- 8" Watermain
- 10" Watermain
- 12" Watermain
- 16" Watermain
- Village Boundary
- Town Boundary
- Water Department Owned Properties

Figure 2: Green Island Village-Wide Water System Map

Village of Green Island — **Albany County, NY**

N
W E
S

0 200 400 800 1,200 FT

1 in = 500 ft

Project Number: 23.3427
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: September 19, 2023
File: GreenIsland_VillageMap.aprx
GIS: D Landreville

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

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Figure 3

Village-Wide Sanitary Sewer System Map

Figure 3: Green Island Village-Wide Sanitary Sewer Map

Village of Green Island — **Albany County, NY**

N / W / E / S

0 200 400 800 1,200 FT

1 in = 400 ft

Project Number: 23.3427
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: September 9, 2023
File: GreenIsland_VillageMap.aprx
GIS: D Landreville

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

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Legend

Sewer Features
- Regulator
- Pump Station
- Outfall
- Manhole
- Catch Basin to CSO

Pipe Diameter
- 8"
- 10"
- 12"
- 15 - 16"
- 18"
- 20" Forcemain
- 36"
- Combined Sewer
- Roads
- Village Boundary
- Town Boundary

Mohawk River
Hudson River
Swan St. Regulator
Swan St. CSO#3
Center St. Pump Station
Hamilton St. Regulator
Hamilton St. CSO #3
Center Island Pump Station
Saratoga St. Pump Station
CSO #4
Saratoga St. Regulator

Figure 4

Existing Water System- Pressure Map

Figure 4 :
Existing Water System Pressures Map

Village of Green Island — **Albany County, NY**

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N W E S

0 300 600 1,200 FT

1 in = 600 ft

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

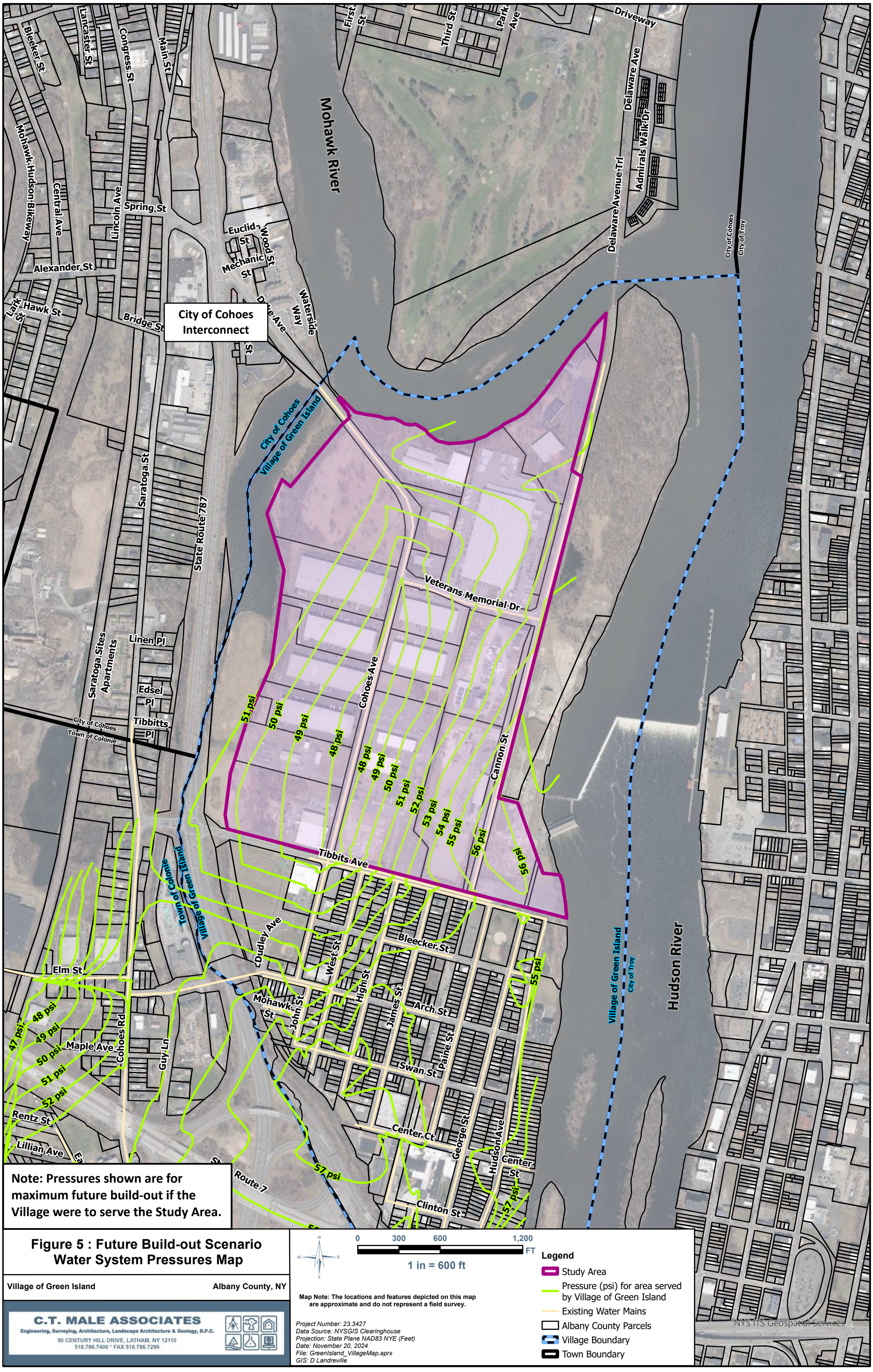
Project Number: 23.3427
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: November 20, 2024
File: GreenIsland_VillageMap.aprx
GIS: D Landreville

Legend

- Study Area LImit
- Study Area
- Pressure (psi) for area served by City of Cohoes
- Pressure (psi) for area served by Village
- Existing Water Mains
- Albany County Parcels
- Village Boundary
- Town Boundary

Figure 5

Future Build-Out Scenario: Water System Pressure Map



Note: Pressures shown are for maximum future build-out if the Village were to serve the Study Area.

Figure 5 : Future Build-out Scenario Water System Pressures Map

Village of Green Island — **Albany County, NY**

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0 300 600 1,200 FT

1 in = 600 ft

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Project Number: 23.3427
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: November 20, 2024
File: GreenIsland_VillageMap.aprx
GIS: D Landreville

Legend

- Study Area
- Pressure (psi) for area served by Village of Green Island
- Existing Water Mains
- Albany County Parcels
- Village Boundary
- Town Boundary

NYS ITS Geospatial Services

Figure 6

Future Build-Out Scenario: Available Fire Flow Map

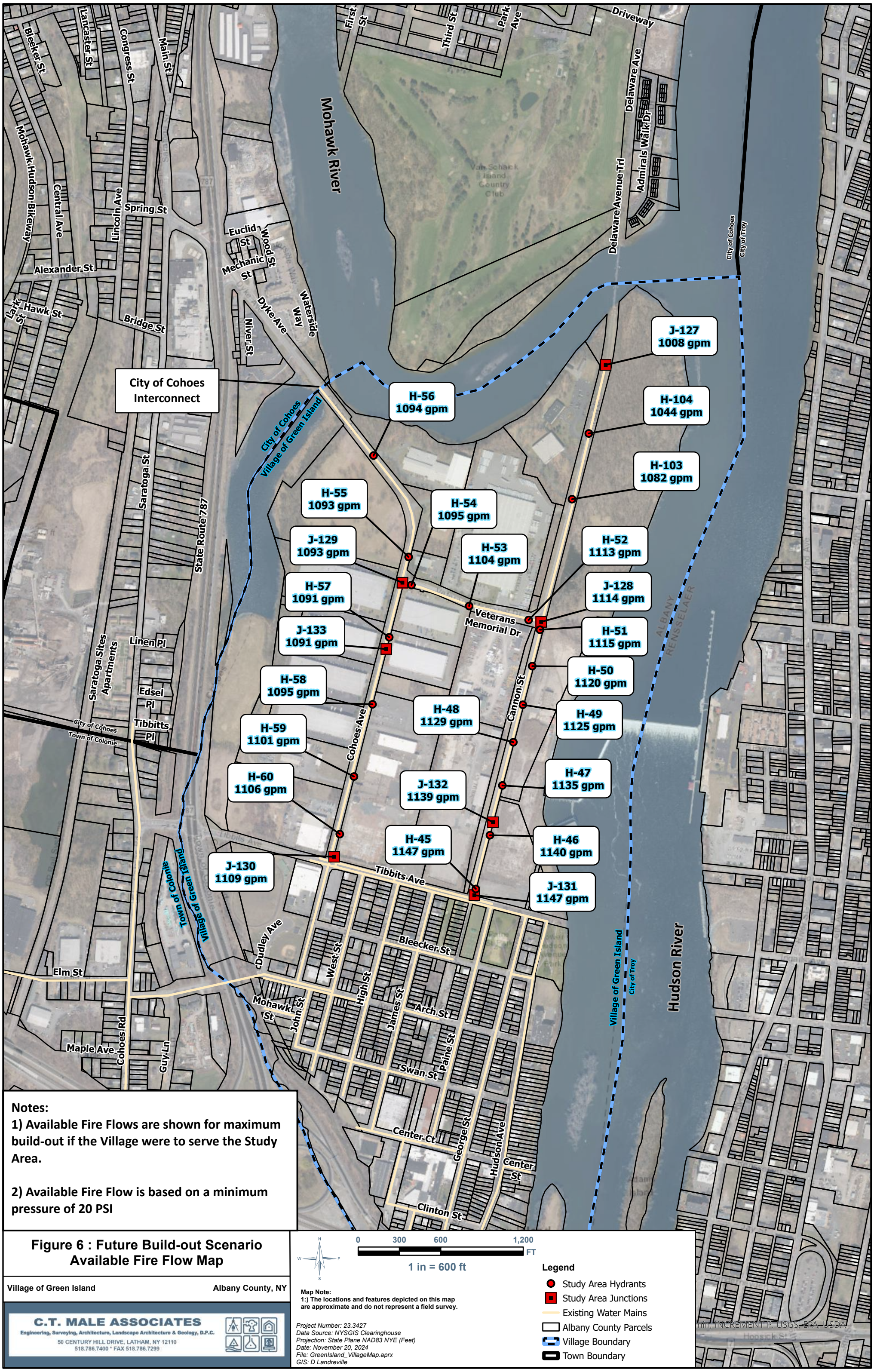

Figure 6 : Future Build-out Scenario Available Fire Flow Map

Village of Green Island — Albany County, NY

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Figure 7

Future Upgrades: Sanitary Sewer System Map

INSTALL SEPARATE STORM SEWER ALONG TIBBITS AVENUE, COHOES AVENUE AND VETERANS MEMORIAL DRIVE AS NEW DEVELOPMENT OCCURS YEARS 5-15.

REPLACE SANITARY MANHOLES IN POOR CONDITION

GEORGE STREET COMBINED SEWER PROJECT- RECOMMENDED IN 2022 MJ ENGINEERING REPORT

Swan St. Regulator

Swan St. CSO#3

Center St. Pump Station

Hamilton St. Regulator

Hamilton St. CSO #3

Center Island Pump Station

Saratoga St. Pump Station

CSO #4

Saratoga St. Regulator

Figure 7: Future Upgrades - Sanitary Sewer System Map

Village of Green Island — **Albany County, NY**

N W E S

0 150 300 600 900 FT

1 in = 400 ft

Project Number: 23.3427
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: September 9, 2023
File: GreenIsland_VillageMap.aprx
GIS: D Landreville

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Legend

Sewer Features
- Regulator
- Pump Station
- Outfall
- Manhole
- Catch Basin to CSO

Pipe Diameter
- 8"
- 10"
- 12"
- 15 - 16"
- 18"
- 20" Forcemain
- 36"
- Combined Sewer
- Future_Rec_Upgrades
- Roads
- Village Boundary
- Town Boundary

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APPENDICES

Appendix A

Village of Green Island Market and Opportunity Assessment

by Storrs Associates

FEBRUARY 5, 2024

Village of Green Island Market and Opportunity Assessment

PREPARED FOR C.T. MALE ASSOCIATES

Storrs ASSOCIATES

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Introduction and Purpose

Storrs Associates was engaged by C.T. Male Associates to conduct a market analysis of the Village of Green Island, and identify growth opportunities in the northern section of the community, as part of a Water and Sewer Infrastructure Study commissioned by the Village. The market analysis, together with data on sites suitable for development, is used to identify the development potential by industry, and opportunities for the study area, known as Island Park, as a whole.

Contents

GREEN ISLAND ASSETS AND OPPORTUNITIES

PRESERVE AND GROW BUSINESSES, INDUSTRIAL SITES, AND THE ISLAND PARK AREA

The chief opportunity for the Village of Green Island is to enable continued organic commercial and industrial growth in the Island Park area and raise the profile of the sites, the businesses, and plans for upgraded infrastructure in order to be recognized by both site selectors and the state as a desirable neighborhood for commerce and manufacturing. The Village may choose to create a formal designation, but a brief, cohesive plan for what should be accomplished, on what sites, and on what timeframe, is essential.

"More of the same" can be difficult for a community to hear from an economic development consultant, but the message is actually *preserve and grow*. Green Island has important work to do to modernize its existing assets both physically with infrastructure, and psychologically by showing residents the current and anticipated benefits of a commercial and industrial economy in their daily lives.

The Village Green Island, north of Tibbits Avenue, has businesses, entrepreneurs, jobs, un- and underutilized sites, and the central portion is identified as "Island Park." Since it is a longstanding industrial area, additional development in Island Park is less likely to attract strong opposition from resident groups, which have slowed or derailed developments elsewhere in the region. Preserving local capacity for manufacturing and industry is critical, and involves both "hard" assets such as land, buildings, and infrastructure, and, increasingly, "soft" assets such as community understanding that the sites are, in fact, intended for industrial use. Long periods of vacancy can mislead many into believing the parcels will continue as green space, rather than contributing jobs and economic growth, potentially leading not just to lengthy public discussions but at times to litigation, both of which are costly for both the municipality and the potential business. Island Park's location away from most residential areas is highly positive.

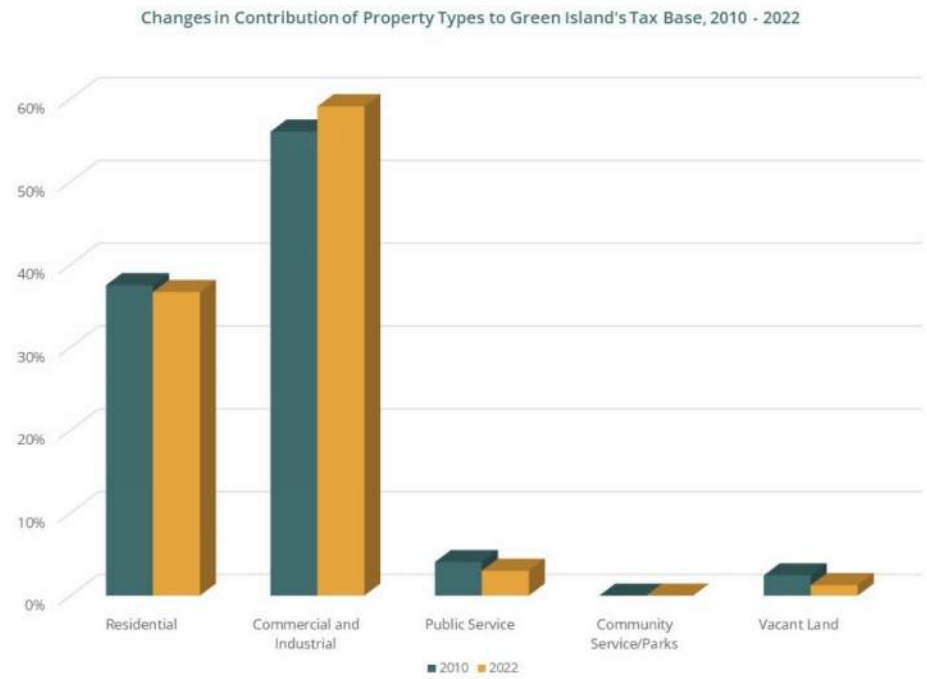
New York State recently awarded $90 million of FAST NY grants for six sites around the state[1], and while the communities and amounts differ, what they all have in common is paying infrastructure costs in existing or newly developing business and technology parks. Most of the sites, such as the Coeymans Industrial Park in Albany County, are formal parks with some tenants, but the site in the Town of Ripley in Chautauqua County, is a greenfield with no name, no infrastructure, and no businesses. Island Park already shares characteristics with these formal industrial or business parks.

[1] https://www.governor.ny.gov/news/governor-hochul-announces-nearly-90-million-awarded-across-state-through-fast-ny-program

Maintain and Expand the Commercial and Industrial Tax Base

Green Island's tax base is almost 60% commercial and industrial, and the contribution of these sectors has increased since 2010. This growth in value reduces the tax levy required from residents, a benefit unusual in the region and difficult to regain if the balance tips the other way.

Figure 1



Encourage New and Younger Residents to Work in Green Island Instead of Commuting

Green Island is currently a majority-renter community, and more than 90% of working residents commute. This can lead to a high level of resident turnover, with workers less attached to the Village community. More local jobs that require skills and pay well, and housing diversification that includes more renovations and new building for single-family, can keep residents as their households and careers grow.

SITE INVENTORY AND DEVELOPMENT TOOLS

BUILD-OUT POTENTIAL OF STUDY AREA BASED ON CURRENT MAJOR USES

While occupancy in the study area, known as Island Park, has been stable, with little turnover, nearly 2 million square feet (SF) of buildable space is not currently used, equal to nearly 60% of the total allowed by current zoning regulations.

This points toward significant opportunity for growth in jobs, wages, tax revenue, and contributions to Gross Regional Product (GRP)[2] from the site. The table below estimates 571 new jobs could be created if the Island Park area were fully built out: 341 on developed or partially developed parcels, and 230 through use of vacant sites.

Parcel Table 1, below, summarizes the square footage, showing first the buildable area allowed by zoning, then the SF currently used and not yet used. This includes SF on parcels that are currently occupied, but have room for expansion[3].

Job estimates and job density, measured as Average SF per Job, are shown. Average SF per Job is then used to estimate an additional 341 jobs that could be created on sites already in use, if the current user expanded or the parcel added a new business in the same industry.

The second part of the table divides vacant sites among the three most common uses: Warehouse, Manufacturing, and Cold Storage, and divides the Unused SF by the Average SF per Job to estimate another set of 230 potential jobs that could be created.

Parcel Table 1

Summary of Current and Potential Uses at Full Build Out

Current Use	User Types	Buildable SF	Total Used SF	Total Unused SF	Estimated Current Jobs	Average SF/Job	Additional Jobs**
Manufacturing	6	1,486,703	674,804	811,899	159	4,244	191
Warehouse	8	869,022	573,524	295,498	170	3,374	88
Cold Storage	1	65,340	12,000	53,340	14	857	62
Highway Garage	1	9,520	9,520	0	10	952	0
All Secondary Uses*	7	0	0	0	0	n/a	n/a
Vacant	8	926,086	150,000	776,086	0	n/a	n/a
Totals	31	3,356,670	1,419,848	1,936,822	353	n/a	341

Detail of Potential for Use of Vacant Parcels	Unused SF	Average SF/Job	Potential Jobs
55% of Vacant becomes Warehouse	*426,847*	*3,374*	*127*
42% of Vacant becomes Manufacturing	*325,956*	*4,244*	*77*
3% of Vacant becomes Cold Storage	*23,283*	*857*	*27*
Potential Totals for Vacant Parcels	*776,086*		*230*

*Seven parcels have more than one use, Primary and Secondary. Jobs and SF for Secondary Office, Showroom, and Utility uses are consolidated with Primary.

** Additional Jobs assume the parcel is fully built out under current zoning, and existing operator or a similar business operates in the new space.

[2] Gross Regional Product is the local equivalent of national Gross Domestic Product, or GDP, which is a commonly used measure of economic well being and productivity.

[3] The Village has agreed to subdivide parcels in the past as well.

Development Patterns and Potential Tools

A team from the Village, including representatives from the Mayor's Office and Treasurer's Office, Village of Green Island Industrial Development Agency, and Planning Board participated in an open discussion with C.T. Male and Storrs Associates in December. The goal was to talk about past development trends, current activity, and the Village's goals for new growth in Island Park and the surrounding areas in the Village's North End[4], which comprise the Study Area.

History and Assets of Island Park

When two regional development firms teamed up to work in Green Island, they named the industrial portions of the North End "Island Park." The name continues to be used to describe the area, even though a formal designation or operating body, such as at Malta's Luther Forest, has not been created.

Storrs Associates recommends that as the Village encourages continued organic business growth in Island Park, a formal organizational and planning structure be considered. This can boost marketing, and pre-planning can give the Village tools to direct industries to the most appropriate sites or, as needed, convey a clear message that the area is at its heart for industries and workers rather than residents[5]. Furthermore, as noted in the summary "Green Island Assets and Opportunities" discussion above, NYS grant providers look favorably on named, organized sites when awarding FAST NY money. Finally, creating Planned Development Districts now, and formalizing the park deliberately and over time, can work together.

The rest of this section describes how Storrs Associates sees the Island Park assets and opportunities coming together now, and for the future.

Island Park Presents Significant Opportunities for Industrial Development

- Island Park is comprised of the 24 parcels described above in *Parcel Table 1*, and is approximately 340 acres, about half of which can be used under current zoning regulations while allowing for setbacks and maximum land coverage.

[4] Area north of Tibbits Avenue is considered by the Village to be the "North End."

[5] Vista Technology Park in the Town of Bethlehem in the south of Albany County is governed by a formal Master Plan that encourages a specified mix of industrial uses with commercial (amenities such as restaurants and grocery) and residential. The plan limits commercial uses until industrial goals are fully met, preventing it from being converted into a shopping plaza. When industrial didn't materialize for many years, the town was under considerable pressure to accelerate commercial and expand residential development, and the Master Plan became an effective tool to retain the original vision. In 2023, a major investment in buildings and jobs from hydrogen fuel cell maker Plug Power justified the town's decisions.

- Eight of the 24 parcels are vacant, but development is already anticipated on some. 147 Cannon Street expected to be built out in 2024 by a private developer and with financial assistance through the Village of Green Island IDA, in time creating an estimated 40 construction jobs and 20 permanent positions. Another site, at 160 Cannon Street, is listed as vacant but features improvements.
- A plurality of businesses and jobs are categorized as Warehousing, but in fact are often a blended with on-site manufacturing as well. With industrial space shrinking in the region, offering space for a business to consolidate, or a microbusiness to scale up production and shipping, can be important;
- Of an estimated 3.4 million of buildable square footage, 1.4 million is used, and 1.9 million, 776,086 of which is in vacant parcels, may potentially be developed. Given the shrinking inventory of industrial parcels in Albany County and nearby regional hubs, Island Park's inventory of vacant and not fully built-out industrially-zoned sites is an important asset. As described elsewhere, C.T. Male has not found significant portions to be undevelopable because of environmental reasons such as wetlands.

Turnover in Island Park Benefits from Low Turnover which:

- Creates a sense of stability for industries sited there, since rapid turnover may be interpreted as negative sign;
- Is desirable from the point of view of a business serving Island Park's workforce, such as a diner, sandwich shop, or convenience store, because customers will be more predictable; and
- Allows the Village to focus more of its development resources on finding users for the vacant or underutilized sites, rather than having to play catch-up when businesses leave.

Planned Development District Uses in Island Park

Planned Development Districts, or PDDs, have been implemented in other parts of the Village to enable development that would be prohibited by zoning but nevertheless both appropriate and desirable. The Starbuck Island, River's Edge, and Cornerstone Senior Housing are examples of allowing dense residential in a commercial district. The *Demographics* section of this report describes the importance of maintaining a skilled workforce, which needs suitable housing. PDDs have other uses as well.

Village goals for Island Park which can be promoted by adding a PDD to one or a cluster of related sites or, if desired, the area as a whole:

- Welcome restaurant, casual and fast dining, small retail, and other workday amenities so that the Island Park workforce spends more wages and time in Green Island;

- Allow for clustering amenities together, especially where they're easily accessible by pedestrians, to create a lunch, breaktime, or after work experience;
- Setting guidelines for new development configurations that will preserve access to trails, waterfront, and Paine Street Park; and
- Consider residential in the northern part of the area where waterfront and green space adjoin, and are close to an existing hiking and biking trail.

Risk Sharing

Three parcels in Island Park have portions of their land designated as Superfund, or Brownfield, areas that must be mitigated before those portions can be redeveloped. Another vacant site on Cohoes Avenue, formerly owned by Honeywell and clearly visible at the entrance to Island Park, was vacated by and little is known about potential environmental damage caused by the less strict environmental regulations of the past.

Often, environmental remediation defaults to management by the municipality, which may have a strong interest in seeing a parcel redeveloped. Both the Federal Government and NYS have remediation grant programs to offset at least some of the costs, and NYS will at times provide a grant for technical and economic development professionals to assess site conditions and potential.

Even this type of assistance, however, requires considerable resources from the municipality, including staff time for project management and paperwork, communicating with the public and garnering support, and soliciting developer interest when the work is completed. Legal liability questions may arise as well[6]. Smaller communities can experience a heavier burden on their resources than larger ones.

Therefore, Storrs Associates recommends that the role for the Village is to continue as a partner with a private entity, cooperating as needed in its capacity as the municipality, and in economic development tasks such as engaging with workforce and training organizations.

Development Potential by Parcel

Storrs Associates assigned a Rating for Development Potential and a Timeframe for Project Start to each parcel, based on the development factors discussed in this section, commercial/industrial real estate trends, and industry trends in other parts of this report. Development Potential considers site factors and attractiveness without regard for industry trends; sites may have a high rating but a longer timeframe.

[6] This is a general note about potential risks only. Storrs Associates, LLC does not provide legal advice.

Parcel Table 2

Address	Parcel Acres	Usable Square Feet (SF) per Zoning	Unused SF but Allowed by Zoning	Percent Unused	Industry of Current Operator or Tenant	Rating for Potential Development 0-3 (No to High)	Development Potential	Planned Development District Needed	Potential Additional Square Feet	Infrastructure Should Support at Least this Type	Timeframe for Project Start, Years
Group 1: Development Proposed or Underway											
147 Cannon St	11.80	359,806	209,806	58%	Vacant	3	Development proposed	No	150,000	Manufacturing	1 - 2
Cannon Street	5.96	129,809	129,809	100%	Vacant	3	Potential for residential	Yes	400,000	Residential	1 - 2
Group 2: Industries Growing in Village and Region											
185 Cohoes Ave	3.00	65,340	53,340	82%	Food Manufacturing	3	Business expansion, or add'l food storage/distribution	No	30,000	Manufacturing	2 - 5
80 Cohoes Ave	4.60	100,188	20,188	20%	Food Manufacturing	3	Expansion - food manufacturing industry	No	15,000	Manufacturing	2 - 5
70 Cohoes Ave	6.18	134,600	46,600	35%	Food, Other Manufacturing	3	Expansion or add'l business - food manufacturing industry growing	No	25,000	Manufacturing	2 - 5
Group 3: Potential to Encourage Commercial Uses, Worker Amenities or Complementary Businesses such as Showrooms											
65 Cohoes Ave	1.70	37,026	37,026	100%	Vacant	3	Commercial cluster	Yes	25,000	Commercial	3 - 5
85 Cohoes Ave	3.79	82,546	18,546	22%	Building Supplies Manufacturing	2	Related commercial - showroom, sales office	Yes	10,000	Commercial	5 - 7
75 Cohoes Ave	3.79	82,546	18,546	22%	Building Supplies Manufacturing	2	Related commercial - showroom, sales office	Yes	10,000	Commercial	5 - 7
Group 4: Existing Consumer-Goods Based Manufacturing with Room to Expand											
30 Veteran Memorial D	16.18	352,400	100,728	29%	Durable Goods Manufacturing	2	Potential for Sealy to reactivate existing capacity	No	75,000	Manufacturing	3 - 5
260 Cannon St	8.78	191,228	133,740	70%	Consumer Goods Manufacturing	3	Manufacturing has room to grow. Potential for commercial or recreation if residential project created nearby.	Yes	100,000	Manufacturing	3 - 7
Group 5: Manufacturing Potential May be Delayed Because of Local Layoffs, National Manufacturing Slowdown											
195 Cohoes Ave	6.86	149,411	62,967	42%	Building Supplies Manufacturing	2	Business expansion or complementary building supplies manufacturing	No	50,000	Manufacturing	5 - 10
100 Cohoes Ave -Nw Et	14.10	307,098	187,098	61%	Durable Goods Manufacturing	2	Business expansion or subdivision for warehouse	No	100,000	Manufacturing	5 - 10
160 Cannon St	13.70	298,386	298,386	100%	Vacant but improvements have been made to parcel	3	Desirable size parcel est. 10 acres even if Superfund site is isolated. Large manufacturing may be 300,000 SF with small variance.	No	300,000	Manufacturing	5 - 10
Ne Cor Cohoes & Tibbit	15.90	346,302	231,902	67%	Vacant	1	Recommend looking into separating some of parcel adjoining 65 Cohoes Ave. The rest is unlikely to be developed inside 15 years.	If subdivided, yes	200,000	Manufacturing	10 - 15
1 Tibbits Ave	6.44	140,263	95,463	68%	Machining, Metals Manufacturing	2	Highly visible gateway parcel- 50,000 SF new manufacturing	No	75,000	Manufacturing	10 - 15
1A Tibbits Ave	2.58	56,192	56,192	100%	Vacant	3	Desirable size parcel - 50,000+ SF	No	50,000	Manufacturing	10 - 15
Group 6: Sites Not Likely to Develop											
90 Cohoes Ave	7.43	161,825	13,625	8%	Storage	0	None - State ownership and small size	No	0	0	0
Mohawk Basin Lands	15.70	0	n/a	n/a	Vacant	0	None	No	0	0	0
50 Cohoes Ave	5.50	9,520	n/a	n/a	Vacant	0	None	No	0	0	0
40 Veteran Memorial D	1.11	24,176	15,582	64%	Auto	0	None - mostly developed	No	0	0	0
60 Cohoes Ave	5.00	108,900	20,900	19%	Food Manufacturing, Other	0	Mostly developed, small expansion possible	No	10,000	Manufacturing	0
60 Cohoes Ave (Rear)	0.56	12,197	12,197	100%	Vacant	0	Utilities, access still needed and space is small	No	0	0	0
5 Veterans Memorial D	8.00	174,240	141,510	81%	Equipment Leasing	0	Occupant expanding in Bethlehem	No	100,000	Manufacturing	0
230-250 Cannon St	1.50	32,670	32,670	100%	Vacant	0	Narrow strip, nothing across the street but waterfront may be used for recreation/amenities	Yes	20,000	Commercial	0

Potential New Development	
1,280,000	Manufacturing
65,000	Commercial
400,000	Residential
1,745,000	Estimated Total

Factors in Site Promotion

This section of the *Market and Opportunity Assessment* lists both general Island Park and selected specific considerations likely to be part of a developer's, site selector's, or business's evaluation of a site.

Positive Site Factors

- Study Area and surrounding parcels north of Tibbits have long been zoned and welcoming to industry, so very little housing abuts the sites.
- Village perceptions that industry can be beneficial.
- Riverfront location with industrial parcel access can be used to create a longer term plan for outdoor and recreation opportunities for on-site workers.
- Riverfront location of Village overall is attracting higher quality multifamily housing and new residents who may be younger and with more formal education and training than average, creating the potential for a stable local workforce.

Prospective Priority Parcels

With 24 parcels, all of Island Park can be considered priorities for re/development, and potential users can choose among different locations and sizes. The Village indicates it currently receives approximately three inquiries each year, mostly for sites that can be developed for industrial use. Additional requests are for available space in existing buildings, but low turnover, while otherwise positive, limits the ability of the Village to meet these needs. The list below provides near-term goals to promote:

Green Island Industrial Development Agency-owned parcels – redevelopment frees up resources to continue its work

- 60 Cohoes Avenue Rear
- Parcel 21.13-1-3.1 on Cannon Street.

Gateway – Vacancies at the intersection of Cohoes Avenue and Tibbits Avenue contrast with the activity deeper into the park.

- The Village should consider creating signage at this intersection that can (1) present the area as Island Park, beginning the process of recognizing its importance, (2) identify existing tenants, (3) provide contact information such as a web address for visitors who may become tenants, and (4) make it easier for CDTA passengers to identify their destination.
- CDTA may be open to building a better bus stop as the area's workforce continues to grow. Pedestrian and bicycle safety could be improved with crosswalk signals and adjustments to the timing of the stoplights.

- The site at the northwestern corner is occupied, but the northeastern corner has been vacant since the departure of Honeywell, and may not be developed for 5-10 years. Honeywell maintains its own sign, which is positive, and landscape growth and maintenance can make the site appear less desolate.

Infill – Island Park becomes welcoming as a place of activity by reducing the broken-tooth effect of occupied – vacant – occupied site patterns. Infill also clusters workers together, which can make it easier to attract commercial amenities such as workday dining.

- Vacant sites are more likely to be located on the outskirts of the study area, especially those with brownfields on all or a portion of the site, and are likely to be developed over a 5-10 or 10-15 year timeframe. Where appropriate, encouraging growth closer to existing businesses increases the sense of vibrancy and with some smaller parcels and potentially fewer site constraints, may develop faster, within 2-5 years.
- 1A Tibbits Avenue, a 2.58 acre vacant industrial parcel with the zoning potential to support a warehouse or light industrial use up to 56,192 square feet, which is similar to Silhouette Optical at 260 Cannon and Long Island Pipe at 85 Cohoes Avenue. This parcel is very near CDTA bus stop.

Planned Development District as commercial interest grows

- 65 Cohoes Avenue, which abuts the vacant Honeywell parcel to the south, is a 1.7 acre parcel zoned industrial but its location within walking distance of several businesses makes it potentially attractive for commercial development, such as workday dining, convenience shopping, or a combination of clustered offerings through the use of a Planned Development District. A bicycle or pedestrian pathway could link it to Cannon Street to the east, and from there to a new waterfront access or down to an existing park. As an industrial parcel, zoning restricts site coverage to 50%, or 37,026 square feet (depending on site conditions) but commercial zoning would enable nearly 52,000 square feet with 70% coverage.
- Parcels with existing tenants, but substantial undeveloped space, can also be targets for infill, especially where buildings are already set back far enough that a new building could be located near the front, or street, while still complying with zoning. As discussed below in the *Market Analysis*, finance and real estate businesses make considerable contributions to the Village's economy, but Island Park is not zoned to accommodate them. Architecture and engineering, which also directly serve manufacturing and warehousing businesses, may find Island Park attractive.

Site Conditions that Affect Construction Costs and Approval Processes

- Environmental, Contamination, and Brownfield
    - Can an existing brownfield be cordoned off or access denied so that the remainder of the acreage is available for redevelopment?

- Is there a perception that the site cannot be remediated, which might cause opposition to activity on the site?
- Is the site a greenfield, partly a greenfield, or wrongly perceived as a *permanent greenfield*, which might draw resistance to development?

- Location and Topography
  - Is the site or undeveloped part of the site accessible by a roadway?
  - Would building driveways and parking on the site be unusually costly?
  - Does the site have topography or geology that would increase costs if developed?
  - Are non-NYS parties required to be involved, such as U.S. Army Corps of Engineers or U.S. EPA? Note that federal involvement can be required if federal grant money is awarded, regardless of actual site conditions.

Access for Workers, Suppliers, and Customers

- Daily Travel for On-Site Workers and Visiting Customers
  - How far is the entrance to the site from the CDTA bus stop at Cohoes and Tibbits? Most of the Study Area is considered to be within a 5 or 10 minute walk[7] but this will depend on safety, paving conditions, surface water collection after rain, and frequency of plowing or shoveling.
  - Are there existing sidewalks or bicycle-safe roads, and who maintains sidewalks?
  - Could the site be reasonably included in a long-term plan for vehicle/ transit/ bicycle/ walking access?
  - Is there an appetite for a central covered parking structure, for example on Cohoes Avenue? A portion of the site at 100 Cohoes Avenue may be a good location.
- Accessibility for Suppliers and Outgoing Goods
  - What is the carrying capacity of existing roadways and driveways?
  - Are there local sensitivities about truck traffic that are specific to that site, for example proximity to water or a business where noise or vibrations may be a problem?

[7] Esri/ARCGis walk time map estimates.

Surrounding Use Types and Potential Amenities

- Is site development infill, meaning a gap in an existing cluster of in-use buildings is being filled?
- Does the site, when setbacks, driveways, and other site plan requirements are considered, still allow a visible, easy to find entryway? This is most important if customers, even industrial customers, visit the site.
- If a long-term strategy such as an overlay district or master plan were to be considered, is the site suitable for commercial instead of industrial use? *65 Cohoes Avenue is identified above as a potential location for a commercial cluster but should be compared with other full or partial sites.*
    - Commercial cluster with food, gas, convenience shopping for workers and visitors.
    - Commercial or office for professional services used by Study Area industries.
    - Medical clinic, potentially, for quick response to industrial accidents; may allow easy health monitoring for workers or small pharmacy.
- What site or part of a parcel could be evaluated for a childcare facility, possibly combined with light recreation and outdoor use for on-site workers? This is one use where a true greenfield site would be a priority parcel. The intersection of Cannon Street and Veterans Memorial Drive appears accessible to most existing parcels, could connect to river access, and totals more than 40 acres so may potentially be divided. Proximity to a brownfield proximity may need addressing.

Negative Site Factors

- Perception of contamination, whether supported or not, can draw public resistance.
- Real contamination or potential contamination, which may require additional time and money for studies.
- Vacant and undeveloped buildings and parcels intermingled with active ones.
- Isolation from other activity in the Study Area, notably the former 75 Tibbits Avenue site, now vacant and subdivided into Cannon Street and 160 Cannon Street; this also has the brownfield in the former Ford Motor site (160 Cannon parcel).
- Areas without sidewalks or bicycle access.
- Distance from existing amenities below Tibbits Avenue and not in the Study Area.
- Density of desired amenities such as food, gas, retail in the area below Tibbits Avenue and closest to the employer locations.

Market Assessment

This analysis sets the Village of Green Island in the context of both Albany County and the greater Capital Region. The greater region is defined as the NYS Regional Economic Development Council (REDC) 8-county area because despite substantial differences among the counties and communities, the state's grant programs largely work by region and it is important for the Village to understand how it contributes to the economy as the state sees it, and therefore be able to make a strong case for awards. The Capital Region is defined as the following counties: Albany, Columbia, Greene, Rensselaer, Saratoga, Schenectady, Warren, and Washington.

The market assessment portion of the study evaluates residents and workers as assets for economic growth and commitment to the Village's community stability and quality of living. The population growth encouraged by new and diversified housing is mirrored in an increase in working age residents, and greater wealth increases among younger workers, all of which point toward the importance of keeping residents and inviting them to work in the Village at current and future businesses.

Also critical is retaining the younger working age demographic that is likely clustered in multifamily by ensuring a supply of desirable jobs and next-stage housing, including single-family homes that are often preferred by both families and senior managers and executives. Workers who commute outside their communities are more likely to move when their housing needs change because they have not necessarily made a strong local commitment.

Demographics and Household Economics

Population

The Capital Region, like much of the northeast, continues to lose population, but individual community experiences can be very different, especially if there are work opportunities and a good cost of living/quality of life balance. Overall population matters for consumer spending, housing, and municipal costs such as schools and public safety, but for this study the focus is on the current and future working age populations. The following three tables therefore summarize overall trends in residents, then working age residents, and finally, young persons aged 0 – 19 who will form the future workforce.

Trends and Observations from the Data:

- Green Island experienced major growth in total population as of 2023, in part because of the creation of new multifamily housing, which diversified and expanded the Village's housing supply. Looking forward, that trend is expected to diminish, absent significant new work or housing opportunities.
- The Village's working age population, on the other hand, has been growing faster, and while a percentage decline is anticipated by 2028, the number (25) is small. The

working age population is a major asset for the Village, and an important reason this market analysis recommends growing commercial and industrial capacity is to encourage residents to work in Green Island rather than commute elsewhere.

- The final table, "Future Working Population" shows a marked trend since 2010 for Green Island to have more young persons, or future workers, than Albany County or the region.

Table 1

Population Changes in Green Island and the Region

	REDC Area	Albany County	Village of Green Island
Population in 2010	1,079,207	304,204	2,620
New Residents, 2011-2023	28,005	10,834	315
Rate of Change, 2011-2023	*2.6%*	*3.6%*	*12.0%*
Population in 2023	1,107,212	315,038	2,935
Estimated Decline in Residents, 2024-2028	-1,894	-388	-17
Estimated Rate of Change, 2024-2028	*-0.2%*	*-0.1%*	*-0.6%*
Estimated Residents by 2028	1,105,318	314,650	2,918

Source: Esri. 2023 data is used because US Census 2020 data is incomplete.

Table 2

Working Age Population (20 - 64 years) Changes in Green Island and the Region

	REDC Area	Albany County	Village of Green Island
Working Age Population in 2010	658,454	189,082	1,694
Change in Working Age Residents, 2011-2023	-14,237	-2,843	86
Rate of Change, 2011-2023	*-2.2%*	*-1.5%*	*5.1%*
Working Age Population in 2023	644,217	186,239	1,780
Change in Working Age Residents, 2024-2028	-23,149	-5,694	-25
Estimated Rate of Change, 2024-2028	*-3.6%*	*-3.1%*	*-1.4%*
Estimated Working Age Population by 2028	621,068	180,545	1,755

Source: Esri. 2023 data is used because US Census 2020 data is incomplete.

Table 3

Future Working Population (0 - 19 years) Changes in Green Island and the Region

	REDC Area	Albany County	Village of Green Island
Future Working Population in 2010	262,824	72,808	539
Change in Future Workers, 2011-2023	-26,461	-5,868	21
Rate of Change, 2011-2023	*-10.1%*	*-8.1%*	*3.9%*
Future Working Population in 2023	236,363	66,940	560
Change in Future Workers, 2024-2028	-7,476	-2,436	-33
Estimated Rate of Change, 2024-2028	*-3.2%*	*-3.6%*	*-5.9%*
Estimated Future Workers by 2028	228,887	64,504	527

Source: Esri. 2023 data is used because US Census 2020 data is incomplete.

Income and Wealth

Trends and Observations from the Data:

- Based on household income, Green Island residents currently have lower incomes and net worth than regional averages. Home ownership is often a driver of net worth and Green Island's high renter population lower home values affect that. (*Table 4 and Table 8.)*
- Looking forward, that trend improves and Green Island households begin to close the income gap. Net worth data is not forecasted. (*Table 5.)*

Table 4

Income and Wealth Characteristics, Green Island and Regional Residents in 2023

	Capital Region REDC	Albany County	Village of Green Island
Median Household Income (MHI)	$78,318	$77,043	$66,331
Average Household Income (AHI)	$105,901	$107,505	$82,180
Households Earning $150,000 or More	19%	19%	10%
Households Earning $50,000 to $149,000	49%	49%	52%
Households Earning Less Than $50,000	32%	32%	38%
Median Net Worth	$185,426	$160,390	$67,710
Average Net Worth	$1,064,444	$1,113,479	$190,666

Source: Esri using data from American Community Survey

Table 5

Income and Wealth Characteristics, Green Island and Regional Residents in 2028, Estimated

	Capital Region REDC	Albany County	Village of Green Island
Median Household Income (MHI)	$84,736	$82,883	$73,642
Rate of Change 2024 - 2028	*8.2%*	*7.6%*	*11.0%*
Average Household Income (AHI)	$119,038	$121,081	$90,747
Rate of Change 2024 - 2028	*12.4%*	*12.6%*	*10.4%*
Households Earning $150,000 or More	22%	22%	11%
Rate of Change 2024 - 2028	*17.8%*	*17.8%*	*16.9%*
Households Earning $50,000 to $149,000	50%	49%	55%
Rate of Change 2024 - 2028	*0.9%*	*0.7%*	*4.8%*
Households Earning Less Than $50,000	28%	28%	34%
Rate of Change 2024 - 2028	*-12.0%*	*-11.6%*	*-10.9%*

Source: Esri using data from American Community Survey. Net worth estimates for 2028 are not available.

Household Spending Power

Trends and Observations from the Data:

The income gap between the Village, Albany County, and the region is not consistent across all age groups. Younger workers have the highest incomes and smallest gap. Sustaining the assets that keep them local can lift the Village's overall income and wealth profile.

Spending power is shown with a breakdown *by age group* of average income, net worth, and disposable income. The age breakdown is particularly important for retaining a skilled working age population by considering what they are likely to want, and to spend, locally.

- Green Island residents under 25 have the highest incomes in the region. This is one of the most striking facts discovered by this study. As the numbers are small this information is less likely to come from a data analysis than surveys and conversations the Village can conduct over time. However, ready accessibility to Troy, which has entrepreneurial and tech firms, including the nascent video gaming cluster, and Rensselaer Polytechnic Institute (RPI) may be a factor.
- Despite the income, net worth lags for younger households, which *may* be affected by student loan burdens as well as a high percentage of renters, since home equity can make major contributions to net worth.
- Spending power follows the same patterns, with the youngest households (under 25 and 25-44) showing a smaller gap with the county and region, compared with older households. This is another indicator that income and wealth skew younger in Green Island.

Table 6

Average Household Income Income (AHI) by Age Group, 2023

	REDC		Albany County		Green Island	
Head of Household	Households	AHI	Households	AHI	Households	AHI
Younger than 25	15,632	$48,981	7,176	$46,601	109	$80,473
25 - 44	133,168	$97,756	41,878	$94,556	251	$85,245
45 - 64	174,360	$114,171	47,777	$116,135	585	$60,162
65+	128,754	$78,487	33,913	$82,339	337	$59,078
Average Income	451,914		130,744		1,282	

Source: Esri, from the American Community Survey

Table 7

Average Net Worth (AHNW) by Age of Householder, 2023

	REDC		Albany County		Green Island	
Age Group	Households	AHNW	Households	AHNW	Households	AHNW
Younger than 25	3%	$38,134	5%	$29,012	5%	$13,056
25-34	13%	$103,659	15%	$91,147	16%	$41,733
35-44	15%	$745,500	15%	$763,192	16%	$133,305
45-54	17%	$1,198,439	16%	$1,310,180	18%	$176,739
55-64	20%	$1,576,040	19%	$1,795,031	15%	$274,345
65-74	18%	$1,387,652	17%	$1,480,326	15%	$254,302
75+	13%	$1,281,432	13%	$1,339,513	13%	$362,165
Average Net Worth	100%	$1,064,664	100%	$1,113,479	100%	$190,666

Source: Esri, from the American Community Survey

Table 8

Average Disposable Income (AHDI) by Age of Householder, 2023

	REDC		Albany County		Green Island	
Age Group	Households	AHDI	Households	AHDI	Households	AHDI
Younger than 25	3%	$43,378	5%	$41,190	5%	$47,306
25-34	13%	$70,433	15%	$68,466	16%	$61,531
35-44	15%	$88,062	15%	$87,065	16%	$74,272
45-54	17%	$97,205	16%	$98,275	18%	$74,276
55-64	20%	$86,823	19%	$89,935	15%	$70,572
65-74	18%	$70,083	17%	$72,136	15%	$52,810
75+	13%	$54,211	13%	$56,623	13%	$44,550
Average Disposable Income	100%	$77,780	100%	$78,108	100%	$62,904

Source: Esri, from the American Community Survey

HOUSING

HOUSING

TRENDS AND OBSERVATIONS FROM THE DATA:

- Home ownership in Green Island is rising faster than in the region with a 16% increase expected by 2028. Renters are still expected to comprise 59% of households.
- The Village is relatively low cost for both home ownership and renting (*Table 10, Table 11*.) In many other ways an advantage, lower prices and slower growth in home values can also slow net wealth buildup, and can be unappealing to households with rising incomes. An effectively diversified housing base will develop price points for all income levels, creating a continuum of value.
- Despite a majority-renter population, nearly half of Green Island's housing units are in two-unit buildings, compared with 11% for the region and 16% for the county. Exact numbers here are estimates, as the Census American Community Survey relies on samples not physical counts (Starbuck Island may not be counted properly), but the difference is significant.

  With relatively few single-family homes, but limited space for new houses, the Village is considering encouraging conversion of some units back to single-family. This would diversify the housing mix, although in the opposite direction from municipalities that are primarily single-family and need to diversify with denser options. The goal for both is a mix that appeals to a wider range of occupants.

  Two-family homes do remain a choice that appeals to households wanting to own, but without the resources for a single-family home. Occupying one unit and renting the other can balance the desire for owner occupation with a need for income and wealth-building.
- Housing in the Village is substantially older, with 57% built prior to 1940 compared with 29% and 28% in the region and county, respectively.
- Regionally, the supply of multifamily units is expected to continue to grow (*Table 14*) with vacancy continuing to decline and asking rent growth remaining stronger than average. Net absorption, which measures the market's ability to absorb, or occupy, both existing and new units. Positive absorption indicates that actual demand is strong enough to occupy the units, as the table indicates.

  Given the age of the housing, modern apartments in buildings with amenities appeal to different demographic groups from those seeking owner-occupied single-family or two-family homes, and can introduce new residents to the community.

Table 9

Trends in Ownership and Renting, 2010, 2023, and 2028 Estimate

	REDC		Albany County		Green Island	
Year	Owner	Renter	Owner	Renter	Owner	Renter
2010	66%	34%	57%	43%	35%	65%
2023	66%	34%	58%	42%	39%	61%
2028	66%	34%	59%	41%	41%	59%
Change by 2028	*1%*	*-2%*	*2%*	*-3%*	*16%*	*-9%*

Source: Esri, from the American Community Survey

Table 10

Value of Owner Occupied Households, Units by Number and Percent of Total

	REDC		Albany County		Green Island	
Up to $99,999	32,107	11%	5,363	7%	49	14%
$100,000-$249,999	142,127	48%	36,504	49%	287	81%
$250,000-$499,000	102,395	34%	28,644	38%	20	6%
$500,000 or Higher	20,197	7%	4,354	6%	0	0%
Total	296,826	100%	74,865	100%	356	100%
Median Value		*$223,964*		*$235,200*		*$134,300*

Source: Esri, from the American Community Survey

Table 11

Renter Occupied Units by Contract Rent, Units by Number and Percent of Total

Rent	REDC		Albany County		Green Island	
Less than $500	22,050	14%	6,826	12%	115	12%
$500-$749	24,869	16%	7,605	14%	349	38%
$749-$999	46,556	30%	16,629	30%	281	30%
$1,000-$1,499	42,828	28%	17,410	31%	115	12%
$1,500-$1,999	13,386	9%	5,429	10%	50	5%
$2,000-$2,499	3,398	2%	1,162	2%	16	2%
$2,500-$2,999	897	1%	376	1%	0	0%
$3,000 or Higher	1,104	1%	412	1%	0	0%
Total	155,088	100%	55,849	100%	926	100%
Median Rent		*$924*		*$963*		*$755*

Source: Esri, from the American Community Survey

Table 12

Housing Units by Structure, Units and Percent of Total

Units	REDC		Albany County		Green Island	
Single Unit	340,041	64%	79,687	55%	347	23%
2 Units	58,566	11%	23,431	16%	735	49%
3-4	38,472	7%	12,728	9%	214	14%
5-9	25,066	5%	8,854	6%	80	5%
10-19	16,757	3%	7,141	5%	58	4%
20-49	11,139	2%	3,665	3%	47	3%
50 or More	20,407	4%	8,042	6%	12	1%
Mobile/RV	19,782	4%	1,840	1%	0	0%
	530,230	100%	145,388	100%	1,493	100%

Source: Esri, from the American Community Survey

Table 13

Age of Housing Units, Units and Percent of Total

Decade Built	REDC		Albany County		Green Island	
2020 or Newer	441	0%	21	0%	9	1%
2010-2019	3,070	1%	6,795	5%	26	2%
2000-2009	45,602	9%	7,619	5%	150	10%
1990-1999	50,866	10%	11,504	8%	154	10%
1980-1989	58,933	12%	14,519	10%	89	6%
1970-1979	62,939	13%	20,045	14%	35	2%
1960-1969	51,649	10%	15,560	11%	8	1%
1950-1959	55,718	11%	18,850	13%	133	9%
1940-1949	28,542	6%	9,161	6%	41	3%
Prior to 1940	145,470	29%	41,314	28%	848	57%
	503,230	100%	145,388	100%	1,493	100%
Percent Built 2000+		10%		10%		12%

Source: Esri, from the American Community Survey

Table 14

Multifamily Housing

	2023	15-Year Average	2024 Forecast
Supply, Units	55,910	-	57,006
Deliveries, Units	773	735	699
Deliveries as a % of Year End Supply, Units	1.4%	-	1.2%
Net Absorption, Units	766	727	488
Net Absorption, % of Inventory	1.4%	-	0.9%
Vacancy Rate	4.6%	5.3%	3.5%
Asking Rent Growth	3.6%	2.1%	3.5%
Sales Volume (millions)	$141.20	$62.60	-
Units under Construction in 4th Quarter	1,696	-	-

Source: Costar. Study area is Counties of Albany, Renssalaer, Saratoga, and portions of Schenectady and Schoharie.

WORKFORCE, COMMUTING, AND EDUCATION

WORKFORCE PARTICIPATION AND RESIDENT EMPLOYMENT

TRENDS AND OBSERVATIONS FROM THE DATA:

- Many fewer Green Island residents are in the workforce than in the larger region, with 55.5% participating compared with 62.9% in the region (close to the current national average) and 64.4% in Albany County (above the national average.) This coupled with a much higher unemployment rate, indicating that of the 55.5% in the workforce, relatively more seek, but do not currently have, jobs. This should be a resource employers can activate. Also notable is what appears to be a much higher participation among persons under aged 25, who also experience double-digit unemployment. Men are much more likely to be in the workforce than women, by 78.2% to 35%, dramatically different from the comparison areas. (*Table 15.)*

  The workforce participation patterns should be discussed with current and potential employers, because while there are many workers regionally, Green Island residents can benefit most from truly local jobs.

- Green Island residents, whether they work in the Village or commute, are significantly less like to be in the professions ("White Collar"), and more likely to work *and have skills in* construction, manufacturing production, transportation, repair, and public safety.

Table 15

Labor Force Participation and Unemployment, 2023 Estimates

	REDC		Albany County		Green Island	
Age Group	Participation Rate	Unemployment Rate	Participation Rate	Unemployment Rate	Participation Rate	Unemployment Rate
All Aged 16+	62.9%	3.9%	64.4%	4.2%	55.5%	7.3%
Detail by Age						
16 - 24	59.4%	9.5%	58.5%	9.9%	75.9%	22.0%
25 - 54	85.2%	3.1%	87.6%	3.3%	74.0%	4.6%
55 - 64	67.2%	2.5%	69.3%	2.2%	36.2%	3.3%
65+	21.5%	3.3%	21.3%	4.3%	16.8%	0.0%
By Gender						
Male Aged 16+	66.6%	4.0%	68.3%	4.2%	78.2%	9.8%
Female Aged 16+	59.4%	3.7%	60.8%	4.2%	35.0%	2.4%

Source: Esri from the American Community Survey

Table 16

Resident Employment by Occupation, Locally Employed or Commuting, 2023 Estimates

	REDC		Albany County		Green Island	
	Employed	Percent	Employed	Percent	Employed	Percent
"White Collar"	384,418	68.4%	119,707	72.6%	664	51.6%
Management	67,212	12.0%	19,387	11.8%	159	12.4%
Business/Financial	37,241	6.6%	12,728	7.7%	66	5.1%
Computer/Mathematical	23,535	4.2%	9,445	5.7%	21	1.6%
Architecture/Engineering	18,667	3.3%	3,994	2.4%	40	3.1%
Life/Physical/Social Sciences	10,594	1.9%	4,432	2.7%	14	1.1%
Community/Social Service	13,515	2.4%	4,221	2.6%	54	4.2%
Legal	9,611	1.7%	4,385	2.7%	0	0.0%
Education/Training/Library	41,498	7.4%	12,169	7.4%	87	6.8%
Arts/Design/Entertainment	13,335	2.4%	3,622	2.2%	20	1.6%
Healthcare Practitioner	40,796	7.3%	12,741	7.7%	72	5.6%
Sales and Sales Related	43,809	7.8%	13,276	8.1%	44	3.4%
Office/Administrative Support	64,275	11.4%	19,307	11.7%	87	6.8%
"Blue Collar"	93,038	16.6%	20,137	12.2%	357	27.8%
Farming/Fishing/Forestry	1,872	0.3%	134	0.1%	0	0.0%
Construction/Extraction	21,872	3.9%	4,173	2.5%	47	3.7%
Installation/Maintenance/Repair	13,531	2.4%	2,923	1.8%	90	7.0%
Production	20,740	3.7%	4,418	2.7%	57	4.4%
Transportation/Material Moving	35,023	6.2%	8,489	5.2%	163	12.7%
"Services"	84,381	15.0%	24,982	15.2%	265	20.6%
Healthcare Support	17,618	3.1%	5,624	3.4%	40	3.1%
Protective Service	12,636	2.2%	3,695	2.2%	85	6.6%
Food Preparation/Serving	24,461	4.4%	7,114	4.3%	52	4.0%
Building Maintenance	16,060	2.9%	4,246	2.6%	65	5.1%
Personal Care/Service	13,606	2.4%	4,303	2.6%	23	1.8%
Totals	561,837	100%	164,826	100%	1,286	100%

Source: Esri from the American Community Survey

COMMUTING

TRENDS AND OBSERVATIONS FROM THE DATA:

- Green Island is about equally a commuter community, and one that imports its workers, a pattern almost entirely unchanged since 2012. (*Table 17*.)
- Most of the commuting patterns, including identification by age, earnings, and industry class, have been stable, except that workers in mid-career years (30-54) have become *less* likely to leave Green Island to work, and this group also has the highest combined labor force participation rate/employment rate in the Village. (*Table 18*.)

  For out-commuters, the higher the wages the more likely that villagers will work outside of Green Island. Services workers, which includes professions, are also more likely to be employed outside.
- In-commuters (*Table 19)* are increasingly likely to be aged 55 or older (experienced workers and management), earn in the highest category, and work in goods-producing industries rather than services. With its cluster of production-centered

businesses, Green Island should focus on shifting the commuter mix so local residents are working more in those businesses and at higher wage levels.

- *Table 18* shows an increase in "Trade, Transportation and Utilities" workers having jobs outside of Green Island. This is consistent with regional growth in that industry. *Table 19* shows that the percentage commuters filling Green Island jobs in those industries has declined. The data does clarify whether the number of local residents in local jobs is actually increasing, and given the importance of this sector the Village may choose to ask employers about the trend.
- A trend to reverse is seen in *Table 19*, which shows that 59.7% of "Goods Producing" Industry workers live outside of the Village. Recommendations to view Island Park as an industrial business community are in part intended to inspire more of these workers to become Green Island residents.

Table 17

Work Location Choices, Trend Since 2012

	2012	2017	2019	2020
Residents Leaving for Jobs	91.3%	91.9%	92.1%	92.6%
Workers Coming in for Jobs	93.5%	93.9%	93.4%	93.5%
Almost No Change over 8 Years				

Source: US Census, OnTheMap

Table 18

Residents Who Leave Green Island to Work, Trend Since 2012

	2012	2017	2019	2020
Total Residents with Jobs Outside Green Island	989	1,119	1,124	1,041
Out-Commuters by Age				
Younger than 29	24.0%	24.1%	24.8%	25.1%
Aged 30 to 54	58.7%	55.3%	56.6%	52.4%
Aged 55 or Older	17.3%	20.6%	18.6%	22.6%
By Earnings				
Earning $1,250 per month or less	18.0%	17.9%	16.5%	17.9%
Earning $1,251 to $3,333 per month	42.3%	35.8%	36.0%	33.7%
Earning More than $3,333 per month	39.7%	46.3%	47.5%	48.4%
By Industry				
In the "Goods ProducIng" Industry Class	12.5%	9.7%	8.3%	8.4%
In the "Trade, Transportation, and Utilities" Industry Class	15.5%	18.6%	17.4%	17.9%
In the "All Other Services" Industry Class	72.0%	71.7%	74.3%	73.8%

Source: US Census, OnTheMap

Table 19

Employees Who Come to Green Island to Work, Trend Since 2012

	2012	2017	2019	2020
Internal Jobs Filled by Outside Workers	1,361	1,516	1,357	1,201
In-Commuters by Age				
Younger than 29	15.7%	16.4%	16.4%	15.0%
Aged 30 to 54	65.0%	59.2%	58.4%	57.6%
Aged 55 or Older	19.4%	24.4%	25.3%	27.4%
By Earnings				
Earning $1,250 per month or less	9.0%	7.9%	6.9%	15.6%
Earning $1,251 to $3,333 per month	43.6%	32.9%	25.7%	27.4%
Earning More than $3,333 per month	47.5%	59.2%	67.4%	57.0%
By Industry				
In the "Goods Producing" Industry Class	58.0%	57.4%	51.9%	59.7%
In the "Trade, Transportation, and Utilities" Industry Class	24.4%	21.5%	24.9%	18.1%
In the "All Other Services" Industry Class	17.6%	21.1%	23.2%	22.2%

Source: US Census, OnTheMap

Education

Trends and Observations from the Data:

- Green Island residents overall have fewer education credentials than Albany County or the region, with nearly have ending formal education with a high school diploma or GED. (*Table 20*.)
- This is likely to change, as shown in *Figure 2*, where residents aged 35-44 are significantly more likely than any other cohort to have at least a bachelor's degree. The drop in credentials among residents aged 25-34 is unexpected and may indicate that while, as noted above, the youngest workers have high earnings, more of the educated young workers may be leaving the Village than staying.
- It is important to avoid overstating the importance of a bachelor's degree as an indicator of skills and employability. Community and development professionals are, finally, realizing that workers in technology, healthcare, construction, and other highly attractive industries need to demonstrate the skills to do their jobs, and a four-year college degree is not necessarily the best, or certainly the only, good preparation. This is another discussion to have with employers; what skills are they finding locally compared with what they seek for new hires and promotions.

Table 20

Educational Credentials of Residents Aged 25+ as of 2021, Percent of Population

Highest Level Achieved	REDC	Albany County	Green Island
Below High School	8%	7%	13%
High School Diploma or GED	26%	21%	46%
Some College	16%	16%	16%
Associates Degree	12%	12%	10%
Bachelor's Degree	20%	23%	9%
Master's Degree or Professional School	15%	19%	7%
Doctorate Degree	2%	3%	1%
	100%	100%	100%

Source: Esri from the American Community Survey

Figure 2

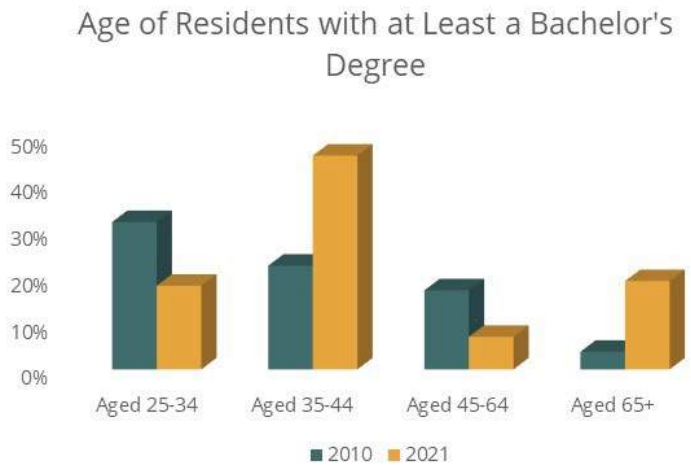


Table 21

Green Island Residents with a Bachelor's Degree or Higher

	2010	2021
Aged 25-34	32%	18%
Aged 35-44	22%	46%
Aged 45-64	17%	7%
Aged 65+	4%	19%
Less than a Bachelor's Degree	25%	10%

Source: Esri from the American Community Survey

Gross Regional Product and Industries

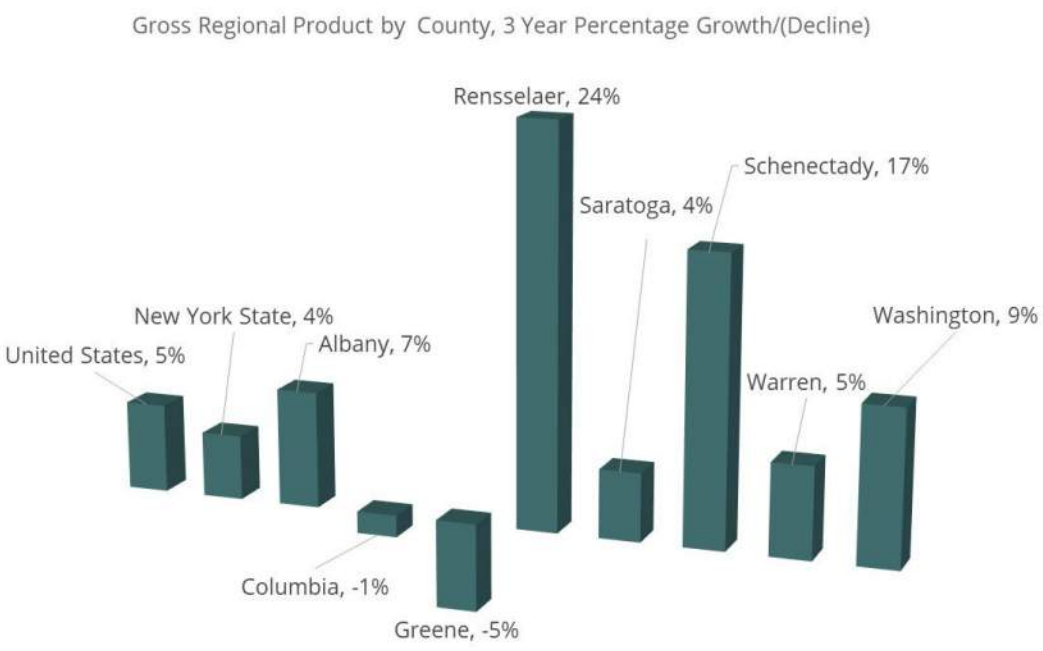
Gross Regional Product Three-year Overview

Trends and Observations from the Data:

Gross Regional Product is the local equivalent of national Gross Domestic Product, or GDP, which is a commonly used measure of economic well-being and productivity. GDP and GRP for the nation, the state, and the REDC counties is shown to provide context for the industry overview. The most recent data from the U.S. Bureau of Economic Analysis is for 2021. The period evaluated is from 2018, prior to the disruptions of the COVID-19 pandemic, through 2021, when the economy began to recover. Changes include both contraction during the pandemic and growth before and after that time.

- As of 2021, counties with relatively more industry, such as Rensselaer, Schenectady, and Washington grew most quickly, while Saratoga and Greene, with a large tourism component, were not fully recovered or growing; this is not to say that industry isn't critical to both, but some were more affected by the strain on tourism, recreation, and travel. Albany County, as the seat of state government, contracted less and has recovered better than the state or the nation.

Figure 3



Gross Regional Product by Industry

Manufacturing contributions to GRP are a major reason this analysis recommends preserving and growing that sector, including with adequate infrastructure and preservation of appropriately zoned sites.

This holds true even as the regional manufacturing economy enters a period of uncertainty that is likely to last through mid to late 2025, when the effects of the 2024 Federal elections will be clearer. Manufacturing recommendations in this report, therefore, anticipate time delays but recognize current strengths as a basis for planning for growth in Island Park. There are major three areas of concern for regional manufacturing:

1. The state's previous round of financial support for offshore wind equipment manufacturing and energy production proved insufficient for businesses to complete projects as inflation escalated costs by 50% or more. A major manufacturing facility at the Port of Albany has been delayed. NYSERDA allowed businesses to cancel and rebid, with proposals due January 25, 2024. NYSERDA has announced a February award announcement date, but such announcements have been delayed in the past by several months. The Capital Region has been preparing for supply chain opportunities, but further progress may be delayed.
2. Recent layoff announcements in the northern parts of the region, with the closure of Quad Graphics in Saratoga County and AngioDynamics in Warren County. In an economy where growth is anticipated, this can be seen by new players as freeing up skilled labor. New York, however, still struggles overall to retain and grow manufacturing jobs, and existing businesses are grappling with potential constrints to electric supply as coal- and natural-gas plant closures outpace renewable capacity. Potential headwinds from political uncertainty at the national level are likely to make this more difficult.
3. Federal "green" hydrogen production subsidies that had been anticipated for some time were announced this fall, and are stricter than expected, especially the requirement that facilities themselves use only new, local, renewable energy sources to qualify. As an example, existing hydropower from Green Island, while renewable and local, is not newly installed[8]. While the rules aren't finalized, regional manufacturer Plug Power (Albany County, Western NY) has expressed concerns about viability, and announced a hiring freeze that initially will focus on management rather than production. Adjustments to the proposed regulations may or may not be adopted.

[8] This example is intended only to illustrate that existing renewable electricity resources do not help a production facility qualify. It was not expected that the Green Island Power Authority would supply Plug Power's manufacturing;

To the extent that these proposed regulations represent a trend toward narrowing Federal support for manufacturing by imposing requirements that few can meet, other industries that rely heavily on subsidies may become more cautious. Since the "green" hydrogen seeks to regulate so closely the production of the *energy input* as well as the manufacturing output, manufacturers may have to limit further their criteria for site selection.

Trends and Observations from the Data:

- Green Island's GRP grew by 21% between 2018 and 2021, with food manufacturing, other manufacturing (a variety of industry), and wholesale each growing by at least 30%. As of 2021 there are four major contributors, in total exceeding 80%. "All Other Manufacturing", 25.8%, Wholesale, and Government, but also service-sector Finance and Real Estate. These are growth sectors throughout the region and present an opportunity for Green Island to capture more of these businesses. (*Table 22.)*
- Albany County experienced strong GRP growth between 2010–2018 and 2018-2021 in Construction, Manufacturing, and Wholesale, but unlike Green Island also had strong service-sector growth in Finance and Real Estate and Professional Services, the latter including legal and technical professions. Aside from Government, these two sectors made the largest contributions in 2021. *(Table 23.)*
- REDC GRP, because of the larger area, shows growth more evenly by sector in 2010-2018, but by 2021 Manufacturing (food and other) and Wholesale stand out more, along with Finance and Real Estate and Professional Services.(*Table 24.)*

Table 22

Green Island Gross Regional Product 2018 - 2021, Changes by Industry & Total Contribution for 2021

	2018-2021 Green Island	2021 GRP	% of All GRP
Farming, Forestry, Fishing	23%	$28,457	0.0%
Oil, Gas, Mining	-103%	15,729	0.0%
Electric, Gas, Water	-36%	475,164	0.1%
Construction, Maintenance, Repair	-19%	11,878,565	3.7%
Food Manufacturing	43%	8,530,431	2.7%
All Other Manufacturing	30%	82,733,439	25.8%
Wholesale	72%	65,943,588	20.6%
Retail	3%	4,187,817	1.3%
Transportation	-25%	2,885,945	0.9%
Communication Media and Systems	0%	0	0.0%
Finance and Real Estate	-3%	38,017,259	11.9%
Professional Services	-28%	13,695,989	4.3%
Education	0%	0	0.0%
Medical and Social Services	27%	4,671,473	1.5%
Hospitality, Restaurant, Recreation	-7%	1,942,013	0.6%
Personal and Household Services	-2%	10,605,219	3.3%
Federal, State, Local Government	26%	75,088,719	23.4%
Total Contribution	21%	$320,699,808	100%

Source: IMPLAN

Table 23

Albany County Gross Regional Product 2010 - 2021, Changes by Industry & Total Contribution for 2021

	2010-2018 Albany County	2018-2021 Albany County	2010-2021 Albany County	2021 GRP	% of All GRP
Farming, Forestry, Fishing	57.3%	38.4%	117.8%	$57,694,532	0.2%
Oil, Gas, Mining	-82.3%	514.3%	8.7%	91,993,730	0.2%
Electric, Gas, Water	82.6%	25.9%	130.0%	455,586,909	1.2%
Construction, Maintenance, Repair	22.5%	23.6%	51.4%	1,473,912,162	4.0%
Food Manufacturing	39.7%	46.1%	104.0%	256,662,314	0.7%
All Other Manufacturing	27.6%	23.2%	57.3%	1,366,177,293	3.7%
Wholesale	22.7%	6.7%	30.9%	1,353,099,993	3.7%
Retail	-0.1%	9.8%	9.7%	1,444,032,520	3.9%
Transportation	54.4%	-5.3%	46.3%	722,111,630	2.0%
Communication Media and Systems	60.1%	-17.9%	31.5%	1,403,345,925	3.8%
Finance and Real Estate	65.9%	26.7%	110.2%	9,735,733,265	26.4%
Professional Services	32.1%	11.7%	47.6%	4,623,501,345	12.5%
Education	41.5%	-1.0%	40.1%	606,329,423	1.6%
Medical and Social Services	40.0%	6.1%	48.6%	2,945,182,698	8.0%
Hospitality, Restaurant, Recreation	39.3%	-3.1%	35.0%	1,149,559,788	3.1%
Personal and Household Services	17.7%	8.5%	27.7%	1,017,581,101	2.8%
Federal, State, Local Government	9.8%	26.8%	39.2%	8,238,055,226	22.3%
Total Contribution	32.8%	16.2%	54.3%	$36,940,559,855	100%

Source: IMPLAN

Table 24

REDC Gross Regional Product 2010 - 2021, Changes by Industry & Total Contribution for 2021

	2010-2018 REDC	2018-2021 REDC	2010-2021 REDC	2021 GRP	% of All GRP
Farming, Forestry, Fishing	14.9%	34.4%	54.4%	$290,311,471	0.4%
Oil, Gas, Mining	-39.1%	127.0%	38.3%	244,096,102	0.3%
Electric, Gas, Water	47.6%	41.6%	109.0%	1,716,226,870	2.2%
Construction, Maintenance, Repair	27.0%	15.9%	47.2%	3,702,993,180	4.7%
Food Manufacturing	34.7%	47.3%	98.3%	735,307,257	0.9%
All Other Manufacturing	45.3%	18.2%	71.7%	6,614,408,817	8.3%
Wholesale	20.3%	15.1%	38.5%	3,740,919,626	4.7%
Retail	11.6%	14.2%	27.4%	4,160,262,521	5.2%
Transportation	39.2%	41.6%	97.1%	2,047,804,237	2.6%
Communication Media and Systems	18.7%	-8.5%	8.6%	2,418,171,255	3.0%
Finance and Real Estate	50.2%	18.0%	77.3%	18,161,444,188	22.9%
Professional Services	26.4%	8.0%	36.5%	9,137,281,175	11.5%
Education	26.9%	-5.5%	19.9%	1,057,106,911	1.3%
Medical and Social Services	34.1%	4.4%	40.0%	6,284,514,165	7.9%
Hospitality, Restaurant, Recreation	40.0%	-2.2%	37.0%	3,373,576,669	4.3%
Personal and Household Services	23.0%	9.2%	34.3%	2,154,168,038	2.7%
Federal, State, Local Government	12.3%	17.8%	32.3%	13,505,085,706	17.0%
Total Contribution	29.7%	13.9%	47.7%	$79,343,678,186	100%

Source: IMPLAN

Job Growth and Distribution by Industry

Not surprisingly, the industries that made the largest contribution to GRP also employ more of the local and regional workforce.

Trends and Observations from the Data:

- In Green Island, the greatest job growth has been in Food and All Other Manufacturing. Food includes the Ecovative spinoff, MyBacon, an example of multiplying entrepreneurship. Of 8,574 new jobs created in these two sectors in Albany County, 731, or 8.6%, are in Green Island. Many sectors, including Finance and Real Estate and Professional Services, shed jobs but are still major employment sectors, while Wholesale is steady. (*Table 25.)*
- In Albany County, growth in construction and manufacturing jobs recovered, but the percentage of jobs in 2021 was modest, and the county's largest sectors by jobs are Finance and Real Estate, Professional Services, and Medical and Social Services. (*Table 26.)*
- The REDC is similar to the County, although construction and hospitality are relatively stronger. *(Table 27.)*

Table 25

Green Island Employment 2018 - 2021, Changes by Industry & Total Contribution for 2021

	2018-2021 Green Island	2021 Jobs	% of All Jobs
Farming, Forestry, Fishing	12%	0	0.0%
Oil, Gas, Mining	-98%	0	0.0%
Electric, Gas, Water	-57%	1	0.0%
Construction, Maintenance, Repair	-38%	89	4.0%
Food Manufacturing	26%	85	3.8%
All Other Manufacturing	27%	646	28.7%
Wholesale	34%	273	12.1%
Retail	-9%	43	1.9%
Transportation	-7%	36	1.6%
Communication Media and Systems	0%	0	0.0%
Finance and Real Estate	-8%	255	11.3%
Professional Services	-36%	114	5.1%
Education	0%	0	0.0%
Medical and Social Services	11%	66	2.9%
Hospitality, Restaurant, Recreation	-28%	34	1.5%
Personal and Household Services	-7%	134	6.0%
Federal, State, Local Government	-8%	477	21.2%
Total Jobs		2,253	100%

Source: IMPLAN

Table 26

Albany County Employment 2010 - 2021, Changes by Industry & Total Contribution for 2021

	2010-2018 REDC	2018-2021 REDC	2010-2021 REDC	2021 Jobs	% of All Jobs
Farming, Forestry, Fishing	10.6%	-7.8%	19.2%	988	0.4%
Oil, Gas, Mining	778.4%	-57.0%	277.5%	455	0.2%
Electric, Gas, Water	58.0%	-22.2%	22.9%	595	0.2%
Construction, Maintenance, Repair	11.9%	-1.9%	9.7%	11,130	4.3%
Food Manufacturing	11.7%	1.9%	13.8%	1,812	0.7%
All Other Manufacturing	10.0%	-2.8%	7.0%	6,663	2.6%
Wholesale	-2.9%	-5.6%	-8.4%	6,368	2.4%
Retail	2.8%	-9.1%	-6.6%	20,032	7.7%
Transportation	-6.2%	21.1%	13.7%	9,725	3.7%
Communication Media and Systems	16.2%	-19.0%	-5.9%	4,582	1.8%
Finance and Real Estate	17.3%	-2.6%	14.2%	27,738	10.6%
Professional Services	13.1%	-0.1%	13.0%	41,825	16.0%
Education	25.2%	-9.7%	13.1%	8,555	3.3%
Medical and Social Services	12.5%	-4.4%	7.6%	34,799	13.3%
Hospitality, Restaurant, Recreation	19.9%	-17.4%	-1.0%	19,958	7.6%
Personal and Household Services	11.8%	-10.4%	0.1%	12,906	4.9%
Federal, State, Local Government	-5.2%	-5.4%	-10.3%	52,947	20.3%
Total Jobs				261,078	100%

Source: IMPLAN

Table 27

REDC Employment 2010 - 2021, Changes by Industry & Total Contribution for 2021

	2010-2018 REDC	2018-2021 REDC	2010-2021 REDC	2021 Jobs	% of All Jobs
Farming, Forestry, Fishing	-4.5%	3.0%	-1.7%	6,538	1.0%
Oil, Gas, Mining	26.9%	-24.6%	-4.3%	1,516	0.2%
Electric, Gas, Water	66.9%	-16.8%	38.9%	2,434	0.4%
Construction, Maintenance, Repair	9.5%	-3.8%	5.3%	35,797	5.6%
Food Manufacturing	15.0%	10.1%	26.5%	5,272	0.8%
All Other Manufacturing	18.6%	-5.4%	12.2%	30,755	4.8%
Wholesale	5.0%	-9.6%	-5.1%	16,283	2.6%
Retail	1.3%	-6.8%	-5.6%	57,927	9.1%
Transportation	10.7%	32.4%	46.5%	25,451	4.0%
Communication Media and Systems	-1.8%	-15.0%	-16.5%	9,002	1.4%
Finance and Real Estate	11.7%	-3.1%	8.2%	62,503	9.8%
Professional Services	7.8%	-2.4%	5.2%	91,017	14.3%
Education	18.1%	-12.6%	3.2%	17,983	2.8%
Medical and Social Services	11.2%	-8.1%	2.2%	80,678	12.7%
Hospitality, Restaurant, Recreation	21.8%	-16.1%	2.2%	60,226	9.5%
Personal and Household Services	13.3%	-9.5%	2.5%	34,088	5.3%
Federal, State, Local Government	-3.9%	-7.6%	-11.2%	99,762	15.7%
Total Jobs				637,232	100%

Source: IMPLAN

Commercial Real Estate

The CoStar real estate database and market and sector reports provide insight into real estate activity in the region, which is defined as the counties of Albany, Rensselaer, Saratoga, and parts of Schenectady and Schoharie. CoStar uses actual transaction data to measure averages and trends. The behavior of the real estate market is largely consistent with the other industry growth trends, with industrial, which includes manufacturing, logistics, and wholesale, the strongest commercial sector for 2023 and going into 2024.

Trends and Observations from the Data:

- Regionally, Industrial space performed better than Office and Retail in 2023 across three measures: lowest vacancy, highest rent growth, and highest net absorption[9]. In 2024, commercial sector performance generally is expected to be weaker than 2023, but largely above average, especially asking rent growth for Industrial properties. (*Table 28*, *Table 29, and Table 30*.)
- Industrial outperformed its own 15-year averages for vacancy and asking rent growth as well. While Office and Retail also outperformed their historical averages, Industrial performance was relatively stronger. (*Sector Trends*
- Table 31.)
- Industrial strength is consistent with the strong GRP growth in Albany County for construction, manufacturing, and logistics and warehousing, which are all Industrial sectors (*Table 23, above*) with a similar, if less pronounced, showing in the broader region (*Table 24, above*.)
- Manufacturing and wholesale are major contributors to Green Island GRP and employment (*Table 22 and Table 25, above*) especially at Island Park sites.
- Retail is the next-strongest sector, with vacancy slightly below average and growth in asking rent price. While not a target for significant direct jobs and investment in the study area, this still indicates that where the Village seeks to encourage amenities such as food and personal services for workers at its businesses, the retail sector's overall performance should be able to support new businesses with a clearly identified market. (*Table 33*.)
- Office is, and is expected to continue to be, the weakest commercial sector. The industrial zoning and uses of Green Island's study area and Island Park sites means developers are unlikely to propose large projects. However, demand for office space may occur organically as existing or new businesses need more space for management or support

[9] Net absorption measures the market's ability to use both new and existing space, meaning that new additions are not simply shifting occupancy from one site to another and increasing vacancy.

services. Gradual additions of amenities and other industrial park features may attract sales offices and showrooms. (*Table 32*.)

- Data from the Industrial subsectors – Specialized Industrial (essentially manufacturing), Logistics, and Flex – show that none is significantly weaker than the others. Logistics is expected to add 464,192 square feet in 2024 but negative net absorption suggests it may be at least temporarily overbuilt until 2025. Green Island should benefit from its existing good relationships with builders and developers, continuing to encourage projects that are likely to be occupied quickly, rather than wait for demand to appear. (*Table 34, Table 35, and Table 36*.)
- The last tables in this series provide sub-market data for Eastern Outer Albany County only, which includes the Village and runs north along the Hudson River to Cohoes, and west to include Latham and other parts of Colonie in the Route 7 area, but not Central Avenue. The performance table is likely to be less accurate than for the larger markets because there are fewer data points for transactions or sales. However, a list of recent projects is also included. A majority of recent and visible future activity is in Watervliet (330,000 SF) and Latham (256,000 SF) but 100 Cohoes Avenue in Green Island, at 120,000 SF, is among the three largest. (*Table 37, Table 38, and Table 39*.)

Rent Comparison by Sector

The following figures graphically show asking rents by sector as of the fourth quarter of 2023. All data is from Costar for the Albany County region.

Figure 6

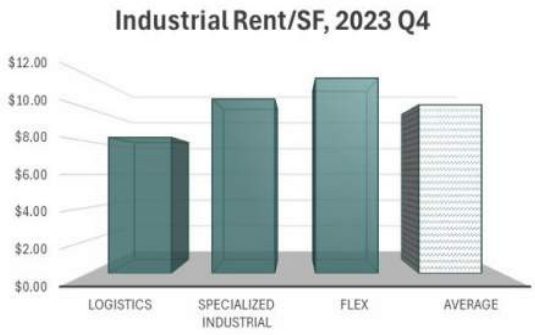


Figure 6

Figure 6

Market Performance by Sector

Demand Factor Trends

Table 28

Demand Factor 1 - Vacancy Rates

	2023 Actual	15 Year Average	2024 Forecast
Industrial	2.1%	5.0%	3.5%
Office	5.1%	5.8%	5.8%
Retail	3.2%	3.6%	3.2%

Source: Costar

Table 29

Demand Factor 2 - Asking Rent Growth

	2023 Actual	15 Year Average	2024 Forecast
Industrial	6.3%	3.0%	3.9%
Office	1.2%	0.6%	0.2%
Retail	3.0%	0.9%	2.0%

Source: Costar

Table 30

Demand Factor 3 - Net Absorption

	2023 Actual	15 Year Average	2024 Forecast
Industrial	1.5%	-	-0.9%
Office	-0.4%	-	-0.2%
Retail	0.4%	-	0.0%

Source: Costar

Sector Trends

Table 31

Industrial

	2023	15-Year Average	2024 Forecast
Supply, Square Feet	81,466,490	-	81,882,911
Deliveries, Square Feet	1,104,945	575,931	416,421
Deliveries as a % of Year End Supply, Square Feet	1.4%	-	0.5%
Net Absorption, Square Feet	1,261,267	656,821	(728,651)
Net Absorption, % of Inventory	1.5%	-	-0.9%
Vacancy Rate	2.1%	5.0%	3.5%
Asking Rent Growth	6.3%	3.0%	3.9%
Sales Volume (millions)	$62.10	$65.10	-
Square Feet under Construction in 4th Quarter	668,451	-	-

Source: Costar

Table 32

Office

	2023	15-Year Average	2024 Forecast
Supply, Square Feet	58,653,655	-	58,899,125
Deliveries, Square Feet	267,340	302,248	245,470
Deliveries as a % of Year End Supply, Square Feet	0.5%	-	0.4%
Net Absorption, Square Feet	(260,418)	283,265	(142,865)
Net Absorption, % of Inventory	-0.4%	-	-0.2%
Vacancy Rate	5.1%	5.8%	5.8%
Asking Rent Growth	1.2%	0.6%	0.2%
Sales Volume (millions)	$90.90	$87.00	-
Square Feet under Construction in 4th Quarter	288,130	-	-

Source: Costar

Table 33

Retail

	2023	15-Year Average	2024 Forecast
Supply, Square Feet	67,035,927	-	67,055,544
Deliveries, Square Feet	129,379	340,724	19,617
Deliveries as a % of Year End Supply, Square Feet	0.2%	-	0.0%
Net Absorption, Square Feet	241,004	308,254	16,098
Net Absorption, % of Inventory	0.4%	-	0.0%
Vacancy Rate	3.2%	3.6%	3.2%
Asking Rent Growth	3.0%	0.9%	2.0%
Sales Volume (millions)	$133.00	$123.40	-
Square Feet under Construction in 4th Quarter	58,052	-	-

Source: Costar

INDUSTRIAL SUBSECTORS

Table 34

Industrial Subsectors, 2024 Forecast

	Specialized Industrial	Logistics	Flex
Supply, Square Feet	19,288,781	55,571,680	7,022,450
Deliveries, Square Feet	(36,214)	464,192	(11,557)
Deliveries as a % of Year End Supply, Square Feet	-0.2%	0.8%	-0.2%
Net Absorption, Square Feet	(166,172)	(464,982)	(97,497)
Vacancy Rate	4.2%	3.2%	3.7%
Asking Rent Growth	4.0%	3.8%	3.9%

Source: Costar

Table 35

Specialized Industrial, Detail

	2023	2024 Forecast	2025 Forecast
Supply, Square Feet	19,324,995	19,288,781	19,247,295
Deliveries, Square Feet	85,000	(36,214)	(41,486)
Deliveries as a % of Year End Supply, Square Feet	0.4%	-0.2%	-0.2%
Net Absorption, Square Feet	44,657	(166,172)	(126,066)
Vacancy Rate	3.5%	4.2%	4.7%
Asking Rent Growth	3.6%	4.0%	4.8%
Sales Volume (millions)	$22.30	-	-

Source: Costar

Table 36

Logistics, Detail

Albany, Rensselaer, Schenectady, Saratoga	2023	2024 Forecast	2025 Forecast
Supply, Square Feet	55,107,488	55,571,680	55,595,728
Deliveries, Square Feet	1,019,945	464,192	24,048
Deliveries as a % of Year End Supply, Square Feet	1.9%	0.8%	0.0%
Net Absorption, Square Feet	1,149,233	(464,982)	38,896
Vacancy Rate	1.5%	3.2%	3.2%
Asking Rent Growth	8.1%	3.8%	4.8%
Sales Volume (millions)	$20.10	-	-

Source: Costar

Table 37

Flex, Detail

Albany, Rensselaer, Schenectady, Saratoga	2023	2024 Forecast	2025 Forecast
Supply, Square Feet	7,034,007	7,022,450	7,065,662
Deliveries, Square Feet	0	(11,557)	43,212
Deliveries as a % of Year End Supply, Square Feet	-	-0.2%	0.6%
Net Absorption, Square Feet	67,377	(97,497)	(7,755)
Vacancy Rate	2.5%	3.7%	4.4%
Asking Rent Growth	4.5%	3.9%	4.7%
Sales Volume (millions)	$9.20	-	-

Source: Costar

EASTERN OUTER ALBANY COUNTY SUBMARKET FOR INDUSTRIAL SECTOR

Table 38

Eastern Outer Albany County Submarket	Industrial		
	2023	5-Year Average	2024 Forecast
Supply, Square Feet	13,340,348	-	13,452,337
Deliveries, Square Feet	145,000	34,840	111,989
Deliveries as a % of Year End Supply, Square Feet	1.1%	-	0.8%
Net Absorption, Square Feet	257,505	32,968	(153,451)
Vacancy Rate	0.3%	3.1%	2.0%
Asking Rent Growth	6.2%	2.9%	4.1%
Sales Volume (millions)	$8.10	$10.70	-
Square Feet under Construction in 4th Quarter	242,500	-	-

Source: Costar

Table 39

Projects in Eastern Albany County Submarket

Recent Deliveries		Rating	Bldg SF	Stories	Start	Complete
100 Cohoes Ave	Green Island	★★★	120,000	1	Jul-22	Oct-23
855 1st St	Menands	★★★	15,000	1	Sep-21	May-23
859 First St	Watervliet	★★★	10,000	1	Sep-21	Mar-23
861 First St	Watervliet	★★★	20,000	1	Dec-21	Sep-22
Building 2, Lear Jet Lane	Latham	★★★	54,000	1	Sep-21	Apr-22
Under Construction						
37 Simmons Lane	Menands	★★★	80,500	1	Jun-22	Mar-24
Building 1, Lear Jet Lane	Latham	★★★	54,000	1	Aug-23	Apr-24
2 Lear Jet Lane	Latham	★★★	54,000	1	Jul-23	May-24
Building 3, Lear Jet Lane	Latham	★★★	54,000	1	Aug-23	Jul-24
Proposed						
2 Lincoln Ave	Watervliet	★★★	180,000	1	Jun-24	Jun-25
10 Pennsylvania Rd	Watervliet	★★★	120,000	1	Apr-24	Jan-25
317 Old Niskayuna Rd	Latham	★★★★	40,000	1	Sep-24	Sep-25

Source: Costar

Data Sources

CoStar is an industry leader in commercial real estate information, analytics, and news. It provides clients both data and research tools to understand transactions, trends, assets, and market players down to individual community levels. Data ranges from market overviews of rents, Market Capitalization, occupancy, and net income, to fine-grained data on individual buildings, including loan performance and tax assessments.

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Storrs
ASSOCIATES

Development Group	Potential Development Timeframe (Years)	Address	Parcel Acres	Unusable SF	Unused SF	Percent Used	Current Industry	Development Potential	Potential Additional SF	Infrastructure Should Support This Type	Water or Sewer Demand Methedology	Demand (gpd)	Average Demand (gpm) Manufacturing Shift Work Taken Into Consideration	Peak (gpm) Peaking Factor x2
Type 1 (Development Proposed or Underway)	1	147 Cannon Street	11.80	359,806	209,806	58%	Vacant	Development Proposed	15,000	Manufacturing	Light Industrial-Per NYS Occupancy Codes, 100 SF per Occupant. Per NYSDEC Factory/Distribution Warehouse produces 15 gpd per Employee/shift	2,250	3.13	6.25
	1	Cannon Street	5.96	129,809	129,809	100%	Vacant	Potential for Residential 150 units	150 Residential Units	Residential	110 gallons/day/bedroom. Assume mix of 1 and 2 bedroom units for total of 225 new bedrooms.	24,750	17.19	34.38
	Total Development Year 1											27,000	20.31	40.63
Type 2 (Development from growing industries)	2 to 5	185 Cohoes Ave	3.00	65,340	53,340	82%	Food Manufacturing	Business expansion, or add'l food storage/distribution	30,000	Manufacturing	Small Possible Area of Expansion. Additional Demand 25% of Current Demand	250	0.35	0.69
	2 to 5	80 Cohoes Ave	4.60	100,188	20,188	20%	Food Manufacturing	Expansion - Food manufacturing industry growing in	15,000	Manufacturing	Additional Demand 25% of Current Demand	500	0.69	1.39
	2 to 5	70 Cohoes Ave	6.18	134,600	46,600	35%	Food, Other Manufacturing	Expansion or add'l business - food manufacturing industry growing	25,000	Manufacturing	Double Current Maximum Demand	10,000	13.89	27.78
Type 3 (Development encourages commercial uses)	2 to 5	65 Cohoes Ave	1.70	37,026	37,026	100%	Vacant	Commercial cluster	25,000	Commercial	Retail-Per NYSDEC Shopping Center/Grocery Store/Department Store produces 0.1 gpd per SF plus 15 gdp per Employee/shift. Assume 500 SF per Employee	3,250	3.39	6.77
	2 to 5	85 Cohoes Ave	3.79	82,546	18,546	22%	Building Supplies Manufacturing	Related commercial - showroom, sales office	10,000	Commercial	Retail-Per NYSDEC Shopping Center/Grocery Store/Department Store produces 0.1 gpd per SF plus 15 gdp per Employee/shift. Assume 500 SF per Employee	1,300	1.35	2.71
	Total Development Years 2 to 5											15,300	19.67	39.34
	5 to 10	75 Cohoes Ave	3.79	82,546	18,546	22%	Building Supplies Manufacturing	Related commercial - showroom, sales office	10,000	Commercial	Retail-Per NYSDEC Shopping Center/Grocery Store/Department Store produces 0.1 gpd per SF plus 15 gdp per Employee/shift. Assume 500 SF per Employee	1,300	1.35	2.71
Type 4 (Existing development with room to expand)	5 to 10	30 Veteran Memorial Dr	16.18	352,400	100,728	29%	Durable Goods Manufacturing	Potential for Sealy to reactivate existing capacity	N/A	Manufacturing	Prior Water Use, Assume Sealy re-activates to capacity	1,500	2.08	4.17
	Total Development Years 5 to 10											2,800	3.44	6.88
	10 to 15	260 Cannon St	8.78	191,288	133,740	70%	Consumer Goods Manufacturing	Manufacturing has room to grow. Potential for commercial or recreation if residential project created nearby.	100,000	Manufacturing	Light Industrial-Per NYS Occupancy Codes, 100 SF per Occupant. Warehouse, 500 sf per Occupant. Assume half warehouse, half manufacturing. Per NYSDEC Factory/Distribution Warehouse produces 15 gpd per Employee/shift	9,000	12.50	25.00
Type 5 (Manufacturing Potential, Long Term)	10 to 15	195 Cohoes Ave	6.86	149,411	62,967	42%	Building Supplies Manufacturing	Business expansion or complementary building supplies manufacturing	50,000	Manufacturing	Light Industrial-Per NYS Occupancy Codes, 100 SF per Occupant. Warehouse, 500 sf per Occupant. Assume half warehouse, half manufacturing. Per NYSDEC Factory/Distribution Warehouse produces 15 gpd per Employee/shift	4,500	6.25	12.50
	10 to 15	100 Cohoes Ave - NW End	14.10	307,098	187,098	61%	Durable Goods Manufacturing	Business expansion or subdivision for warehouse	100,000	Manufacturing	Light Industrial-Per NYS Occupancy Codes, 100 SF per Occupant. Warehouse, 500 sf per Occupant. Assume half warehouse, half manufacturing. Per NYSDEC Factory/Distribution Warehouse produces 15 gpd per Employee/shift	9,000	12.50	25.00
	10 to 15	160 Cannon St	13.70	298,386	298,386	100%	Vacant but improvements have been made to parcel	Desirable size parcel est. 10 acres even if Superfund site is isolated. Large manufacturing may be possible.	200,000	Manufacturing	Light Industrial-Per NYS Occupancy Codes, 100 SF per Occupant. Warehouse, 500 sf per Occupant. Assume half warehouse, half manufacturing. Per NYSDEC Factory/Distribution Warehouse produces 15 gpd per Employee/shift	18,000	25.00	50.00

Type 5 (Manufacturing Potential, Long Term)	10 to 15	NE Cor Cohoes and Tibbits	15.90	346,302	231,902	67%	Vacant	Recommend looking into separating some of parcel adjoining 65 Cohoes Ave. The rest is unlikely to be developed inside 15 years.	200,000	Manufacturing	Light Industrial-Per NYS Occupancy Codes, 100 SF per Occupant. Warehouse, 500 sf per Occupant. Assume half warehouse, half manufacturing. Per NYSDEC Factory/Distribution Warehouse produces 15 gpd per Employee/shift	18,000	25.00	50.00
	10 to 15	1 Tibbits Ave	6.44	140,263	95,463	68%	Machining Metals Manufacturing	Highly visible gateway parcel - 50,000 SF new manufacturing	50,000	Manufacturing	Light Industrial-Per NYS Occupancy Codes, 100 SF per Occupant. Warehouse, 500 sf per Occupant. Assume half warehouse, half manufacturing. Per NYSDEC Factory/Distribution Warehouse produces 15 gpd per Employee/shift	4,500	6.25	12.50
	10 to 15	1A Tibbits Ave	2.58	56,192	56,192	100%	Vacant	Desirable size parcel - 50,000+ SF	50,000	Manufacturing	Light Industrial-Per NYS Occupancy Codes, 100 SF per Occupant. Warehouse, 500 sf per Occupant. Assume half warehouse, half manufacturing. Per NYSDEC Factory/Distribution Warehouse produces 15 gpd per Employee/shift	4,500	6.25	12.50
Total Development Years 10 to 15												67,500	93.75	187.50
Grand Total After Year 15												112,600	137	274

Appendix B

Hydrant Flow Test Results

C.T. MALE ASSOCIATES, P.C.
50 Century Hill Drive
Latham, New York 12110

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 9:10 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-1

STATIC (PSI): H_S 58

RESIDUAL (PSI): H_R 51

HR = Pstatic - 20 = 38 psi

HF = Pstatic - Presidual = 9 psi

FLOW HYDRANT LOCATION: FH-1

PITOT (PSI): _____

FLOW (GPM): 780
(QF)

$$Q \text{ AT } 20 \text{ PSI} = QF \frac{HR^{0.54}}{HF^{0.54}} = 780 \frac{38^{0.54}}{9^{0.54}} = 1698 \text{ GPM}$$

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 9:20 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-2

STATIC (PSI): H_S 55

RESIDUAL (PSI): H_R 19

HR = Pstatic - 20 = 35 psi

HF = Pstatic - Presidual = 36 psi

FLOW HYDRANT LOCATION: FH-2

PITOT (PSI): _____

FLOW (GPM): 510
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 510 \frac{35^{0.54}}{36^{0.54}} = 502$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 9:35 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-3

STATIC (PSI): H_S 55

RESIDUAL (PSI): H_R 14

HR = Pstatic - 20 = 35 psi

HF = Pstatic - Presidual = 41 psi

FLOW HYDRANT LOCATION: FH-3

PITOT (PSI): _____

FLOW (GPM): 580
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 580 \frac{35^{0.54}}{41^{0.54}} = 533$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 8:45 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-4

STATIC (PSI): H_S 48

RESIDUAL (PSI): H_R 19

HR = Pstatic - 20 = 28 psi

HF = Pstatic - Presidual = 29 psi

FLOW HYDRANT LOCATION: FH-4

PITOT (PSI): _____

FLOW (GPM): 800
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 800 \frac{28^{0.54}}{29^{0.54}} = 785$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 9:00 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-5

STATIC (PSI): H_S 55

RESIDUAL (PSI): H_R 28

HR = Pstatic - 20 = 35 psi

HF = Pstatic - Presidual = 27 psi

FLOW HYDRANT LOCATION: FH-5

PITOT (PSI): _____

FLOW (GPM): 750
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 750 \frac{35^{0.54}}{27^{0.54}} = 863$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 8:30 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-6

STATIC (PSI): H_S 50

RESIDUAL (PSI): H_R 25

HR = Pstatic - 20 = 30 psi

HF = Pstatic - Presidual = 25 psi

FLOW HYDRANT LOCATION: FH-6

PITOT (PSI): _____

FLOW (GPM): 700
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 700 \frac{30^{0.54}}{25^{0.54}} = 772$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 8:15 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-7

STATIC (PSI): H_S 53

RESIDUAL (PSI): H_R 34

HR = Pstatic - 20 = 33 psi

HF = Pstatic - Presidual = 19 psi

FLOW HYDRANT LOCATION: FH-7

PITOT (PSI): _____

FLOW (GPM): 700
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 700 \frac{33^{0.54}}{19^{0.54}} = 943$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 10:00 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-8

STATIC (PSI): H_S 57

RESIDUAL (PSI): H_R 27

HR = Pstatic - 20 = 37 psi

HF = Pstatic - Presidual = 30 psi

FLOW HYDRANT LOCATION: FH-8

PITOT (PSI): _____

FLOW (GPM): 640
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 640 \frac{37^{0.54}}{30^{0.54}} = 717$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 10:30 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-9

STATIC (PSI): H_S 54

RESIDUAL (PSI): H_R 31

HR = Pstatic - 20 = 34 psi

HF = Pstatic - Presidual = 23 psi

FLOW HYDRANT LOCATION: FH-9

PITOT (PSI): _____

FLOW (GPM): 750
(QF)

$$Q \text{ AT } 20 \text{ PSI} = QF \frac{HR^{0.54}}{HF^{0.54}} = 750 \frac{34^{0.54}}{23^{0.54}} = 926 \text{ GPM}$$

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 10:40 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-10

STATIC (PSI): H_S 100

RESIDUAL (PSI): H_R 83

HR = Pstatic - 20 = 80 psi

HF = Pstatic - Presidual = 17 psi

FLOW HYDRANT LOCATION: FH-10

PITOT (PSI): _____

FLOW (GPM): 1525
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 1525 \frac{80^{0.54}}{17^{0.54}} = 3520$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 10:55 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-11

STATIC (PSI): H_S 99

RESIDUAL (PSI): H_R 84

HR = Pstatic - 20 = 79 psi

HF = Pstatic - Presidual = 15 psi

FLOW HYDRANT LOCATION: FH-11

PITOT (PSI): _____

FLOW (GPM): 1525
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 1525 \frac{79^{0.54}}{15^{0.54}} = 3740$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 11:05

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-12

STATIC (PSI): H_S 100

RESIDUAL (PSI): H_R 85

HR = Pstatic - 20 = 80 psi

HF = Pstatic - Presidual = 15 psi

FLOW HYDRANT LOCATION: FH-12

PITOT (PSI): _____

FLOW (GPM): 1525
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 1525 \frac{85^{0.54}}{15^{0.54}} = 3891$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 11:20 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-13

STATIC (PSI): H_S 105

RESIDUAL (PSI): H_R 80

HR = Pstatic - 20 = 85 psi

HF = Pstatic - Presidual = 25 psi

FLOW HYDRANT LOCATION: FH-13

PITOT (PSI): _____

FLOW (GPM): 1400
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 1400 \frac{85^{0.54}}{25^{0.54}} = 2711$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 11:35 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-14

STATIC (PSI): H_S 107

RESIDUAL (PSI): H_R 85

HR = Pstatic - 20 = 87 psi

HF = Pstatic - Presidual = 22 psi

FLOW HYDRANT LOCATION: FH-14

PITOT (PSI): _____

FLOW (GPM): 1430
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 1430 \frac{87^{0.54}}{22^{0.54}} = 3004$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 11:45 a.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-15

STATIC (PSI): H_S 106

RESIDUAL (PSI): H_R 70

HR = Pstatic - 20 = 86 psi

HF = Pstatic - Presidual = 36 psi

FLOW HYDRANT LOCATION: FH-15

PITOT (PSI): _____

FLOW (GPM): 1325
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 1325 \frac{86^{0.54}}{36^{0.54}} = 2121$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 12:10 p.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-16

STATIC (PSI): H_S 56

RESIDUAL (PSI): H_R 36

HR = Pstatic - 20 = 36 psi

HF = Pstatic - Presidual = 20 psi

FLOW HYDRANT LOCATION: FH-16

PITOT (PSI): _____

FLOW (GPM): 620
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 620 \frac{36^{0.54}}{20^{0.54}} = 852$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 12:25 p.m.

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-17

STATIC (PSI): H_S 59

RESIDUAL (PSI): H_R 33

HR = Pstatic - 20 = 39 psi

HF = Pstatic - Presidual = 26 psi

FLOW HYDRANT LOCATION: FH-17

PITOT (PSI): _____

FLOW (GPM): 730
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 730 \frac{39^{0.54}}{26^{0.54}} = 909$ GPM

CTM PROJECT NO. 23.3427

HYDRANT FLOW TEST RESULTS

LOCATION: Village of Green Island

DATE: 08/23/2023

TIME: 12:45

BY: W. Gannon & A. Bailey

RESIDUAL HYDRANT LOCATION: RH-18

STATIC (PSI): H_S 57

RESIDUAL (PSI): H_R 25

HR = Pstatic - 20 = 37 psi

HF = Pstatic - Presidual = 32 psi

FLOW HYDRANT LOCATION: FH-18

PITOT (PSI): _____

FLOW (GPM): 640
(QF)

Q AT 20 PSI = $QF \frac{HR^{0.54}}{HF^{0.54}} = 640 \frac{37^{0.54}}{32^{0.54}} = 692$ GPM

Legend:
4" Pipe
6" Pipe
8" Pipe
10" Pipe
12" Pipe
16" Pipe
Hydrant
Flow Hyd.
Residual Hyd.
Tank
FH-1
RH-1
FH-2
RH-2
FH-3
RH-3
FH-4
RH-4
FH-5
RH-5
FH-6
RH-6
FH-7
RH-7
FH-8
RH-8
RH-9
FH-9
FH-10
FH-11
RH-11
RH-12
FH-12
FH-13
RH-13
FH-14
RH-14
FH-15
RH-15
RH-16
FH-16
RH-17
FH-17
RH-18
FH-18
Water Dept.
7th Ave
6th Ave
3rd Ave
Cohoes Blvd
Guy Ln
Tibbits Ave
Burke Ave
Lower Hudson Ave
Empire State Trl
Green Island
Starbuck Island
Hudson River
Adams Island
River St
Bond St
President St
Drown St
5th Ave
6th Ave
N 1st St
King St
1855 ft
Image Landsat / Copernicus
Google Earth
1985
42°44'42.48" N 73°41'37.36" W elev 22 ft eye alt 8063 ft

Hydrant Flow Tests Summary

Hydrant	Time	Static (psi)	Residual (psi)	Flow (gpm)	Pump On?	Served By	Theoretical Fire Flow (gpm)
1	910	58	51	780	Y	Village	1698
2	920	55	19	510	Y	Village	502
3	935	55	14	580	Y	Village	533
4	845	48	19	800	N	Village	785
5	900	55	28	750	N	Village	863
6	830	50	25	700	N	Village	772
7	815	53	34	700	N	Village	943
8	1000	57	27	640	Y	Village	717
9	1030	54	31	750	Y	Village	926
10	1040	100	83	1525	-	City	3520
11	1055	99	84	1525	-	City	3740
12	1105	100	85	1525	-	City	3891
13	1120	105	80	1400	-	City	2711
14	1135	107	85	1430	-	City	3004
15	1145	106	70	1325	-	City	2121
16	1210	56	36	620	Y	Village	852
17	1225	59	33	730	Y	Village	909
18	1245	57	25	640	Y	Village	692
Note: Park Sprinklers on the whole time							

Appendix C

Sanitary Sewer Manhole Inspection Records

Manhole Inspection Form

Customer: VILLAGE OF GREEN ISLAND

Date: 5-2-24

Location: 80 COHOES AVE

MH ID: 1 COHOES ST (CA-1)

Present Use: Storm (Sanitary) Other _____

Surface Cover: SOLID NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 25 3/4"

Cover Condition: Good (Fair) Poor

Riser Rings: Number 1 Alignment: + 1 PUMT RING

Casting Condition: (Good) Fair Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: (Good) Fair Poor

Step Condition: (Good) Fair Poor

Type: Re-rod Cast (Reinf. Plastic) Other _____

Apron Condition: Good Fair Poor

Drop Manhole: Yes (No)

Type: Outside Inside

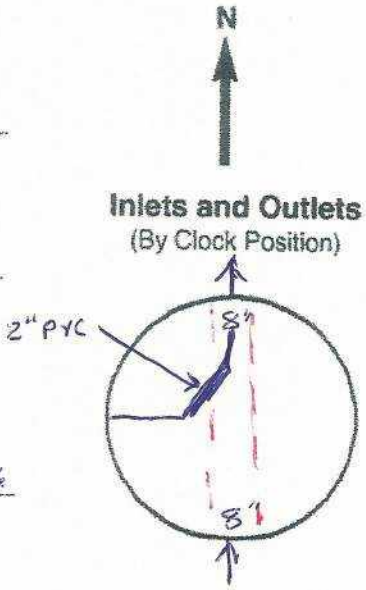
Infiltration: Yes (No)

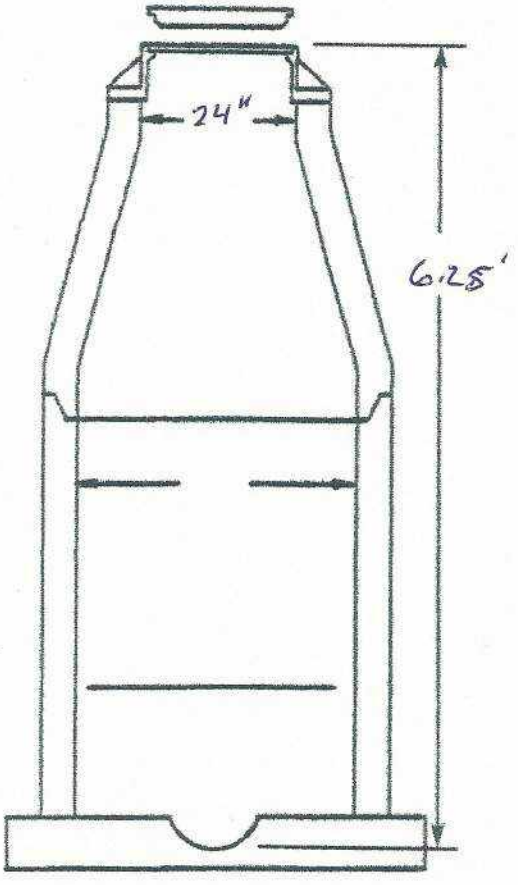
Where: Pipe Invert Casting Walls

Comments: CASTING NEEDS TO BE RE-MORTARED TO RISER.

IN GOOD SHAPE

5-2-24 1/2 PIPE 4" / 5/9/24 ~ 4" FLOW 8" PIPE





Manhole Inspection Form

Customer: VILLAGE OF GREENISLAND

Date: 5-2-24

Location: COLLOES AT VETERANS MEMORIAL DR

MH ID: 42 (CA-2)

Present Use: Storm (Sanitary) Other _____

Surface Cover: 26 3/4" C.I NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 26 3/4

Cover Condition: (Good) Fair Poor

Riser Rings: Number 1 Alignment: OFF - POOR

Casting Condition: (Good) Fair Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: Good (Fair) Poor

Step Condition: (Good) Fair Poor

Type: Re-rod Cast (Reinf. Plastic) Other _____

Apron Condition: (Good) Fair Poor

Drop Manhole: Yes (No)

Type: Outside Inside

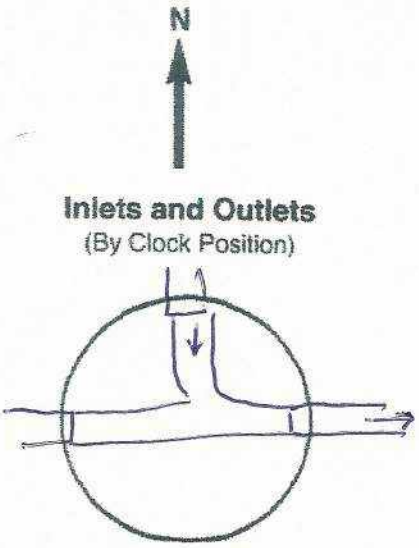
Infiltration: Yes (No)

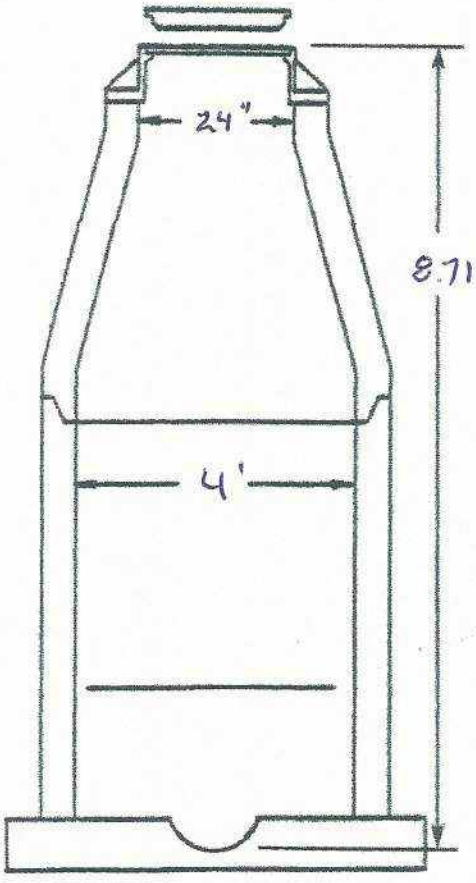
Where: Pipe Invert Casting Walls

Comments: DEBRIS IN INVERT

WATER IN PIPE 3"

5/9/24 - 8" PIPE 4" FLOW





Manhole Inspection Form

Customer: VILLAGE OF GREEN ISLAND

Date: 5-2-24

Location: CANNON ST @ VETERANS MEMORIAL DR

MH ID: # 3 (CA-3)

Present Use: Storm (Sanitary) Other _____

Surface Cover: C.I IN GRASS NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 25 5/8"

Cover Condition: (Good) Fair Poor

Riser Rings: Number 2 CONCRETE Alignment: OK

Casting Condition: (Good) Fair Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: (Good) Fair Poor

Step Condition: (Good) Fair Poor

Type: Re-rod Cast (Reinf. Plastic) Other _____

Apron Condition: Good (Fair) Poor DIRTY

Drop Manhole: Yes (No)

Type: Outside Inside

Infiltration: Yes (No)

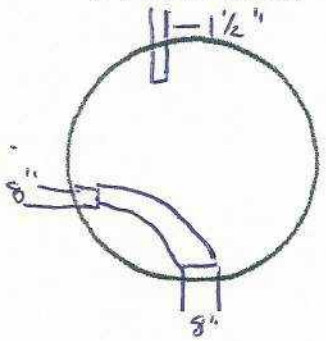
Where: Pipe Invert Casting Walls

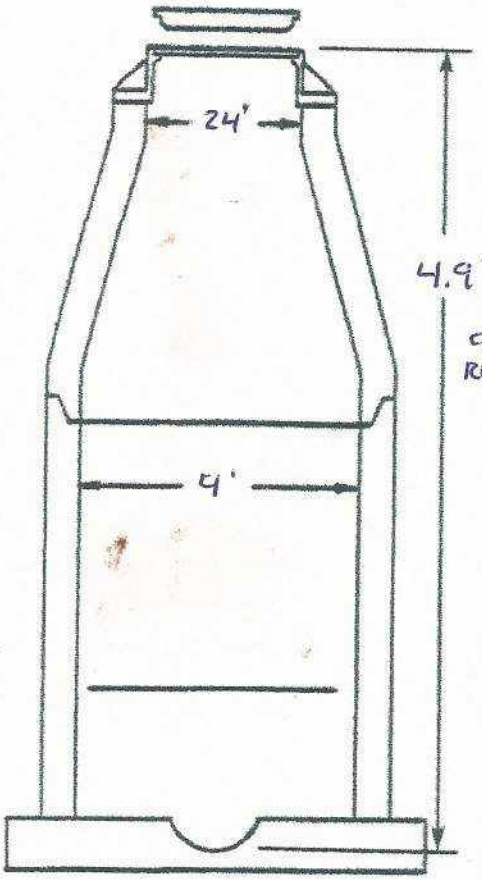
Comments: 2-8" FLOW

5/9/24 3" FLOW

N

Inlets and Outlets
(By Clock Position)





C-52

Manhole Inspection Form

Customer: VILLAGE OF GREEN ISLAND

Date: 5-2-24

Location: CANNON ST NEAR # 160

MH ID: 4 (C-52)

Present Use: Storm (Sanitary) Other _____

Surface Cover: C.I NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 25 3/4 IN GRASS

Cover Condition: (Good) Fair Poor

Riser Rings: Number 3- CONCRETE Alignment: GOOD

Casting Condition: (Good) Fair Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: (Good) Fair Poor

Step Condition: (Good) Fair Poor NONE

Type: Re-rod Cast Reinf. Plastic Other _____

Apron Condition: (Good) Fair Poor

Drop Manhole: Yes (No)

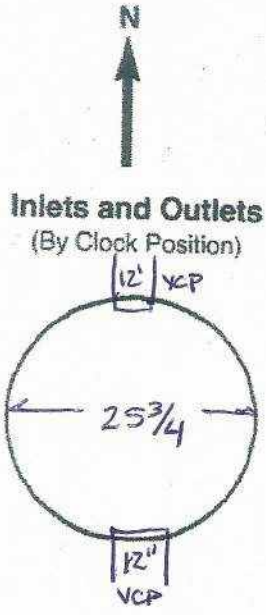
Type: Outside Inside

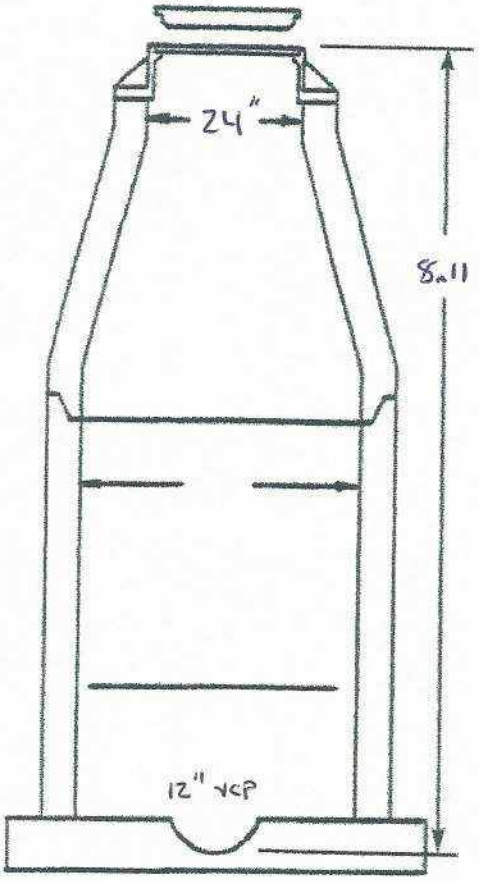
Infiltration: (Yes) No M.J. JOINT

Where: Pipe Invert Casting Walls

Comments: 2" FLOW

5/9/24 2" FLOW





C.50

Manhole Inspection Form

Customer: VILLAGE OF GREENISLAND

Date: 5/9/24

Location: CANNON ST.

MH ID: C50

Present Use: Storm (Sanitary) Other _____

Surface Cover: C.I.

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 25 3/4"

Cover Condition: (Good) Fair Poor

Riser Rings: Number 2 - 8" Alignment: OK

Casting Condition: (Good) Fair Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: Good (Fair) Poor

Step Condition: Good Fair Poor (NONE)

Type: Re-rod Cast Reinf. Plastic Other _____

Apron Condition: Good Fair Poor (SURCHARGED)

Drop Manhole: Yes (No)

Type: Outside Inside

Infiltration: Yes (No)

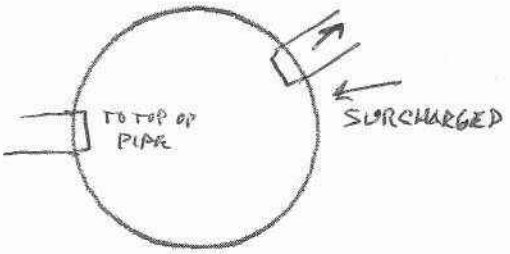
Where: Pipe Invert Casting Walls

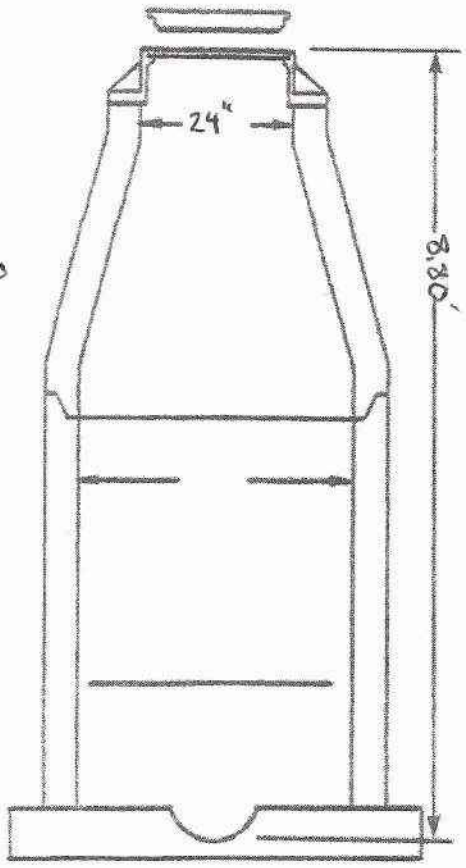
Comments: LOW FLOW 3" SOLIDS IN INVERT

NOT ACCESSIBLE ON 5/2/24

N

Inlets and Outlets
(By Clock Position)





C-46

Manhole Inspection Form

Customer: VILLAGE OF GREEN ISLAND

Date: 5-2-24

Location: PAINE & TIBBITS ST. (FOUND 1 M.H.)

MH ID: 5 (C-46)

Present Use: Storm (Sanitary) Other _____

Surface Cover: C.I. NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 24"

Cover Condition: Good Fair (Poor)

Riser Rings: Number 0 - BRICK STRUCTURE Alignment: _____

Casting Condition: Good Fair (Poor)

Manhole Type: Precast (Brick) Block Combination

Manhole Condition: Good Fair (Poor)

Step Condition: Good Fair (Poor)

Type: (Re-rod) Cast Reinf. Plastic Other _____

Apron Condition: Good Fair (Poor)

Drop Manhole: Yes (No)

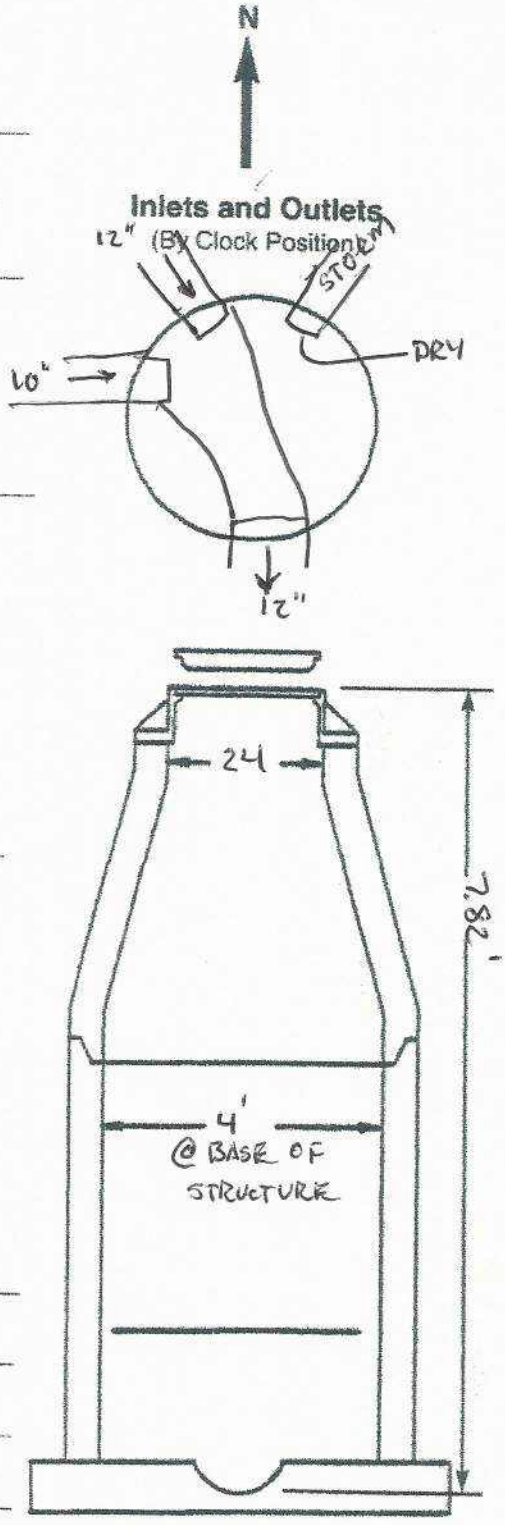
Type: Outside Inside

Infiltration: (Yes) No

Where: Pipe Invert Casting (Walls)

Comments: 6" FLOW @ OUTLET ON 5/9/24

NOT ACCESSIBLE ON 5/2



~~C-42~~
WEST ST @ TIBBITTS

Manhole Inspection Form

Customer: VILLAGE OF GREEN ISLAND

Date: 5-9-24

Location: COHOES + TIBBITTS ST - [redacted]

MH ID: #7 C-41A

Present Use: Storm (Sanitary) Other _____

Surface Cover: C.I. NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 2.15'

Cover Condition: (Good) Fair Poor

Riser Rings: Number 3 BRICKS Alignment: _____

Casting Condition: (Good) Fair Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: Good (Fair) Poor

Step Condition: Good (Fair) Poor

Type: Re-rod Cast Reinf. Plastic Other ALUM.

Apron Condition: Good (Fair) Poor

Drop Manhole: Yes (No)

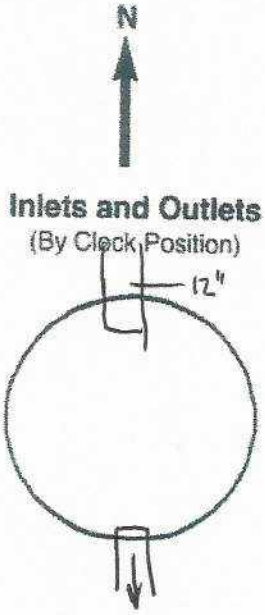
Type: Outside Inside

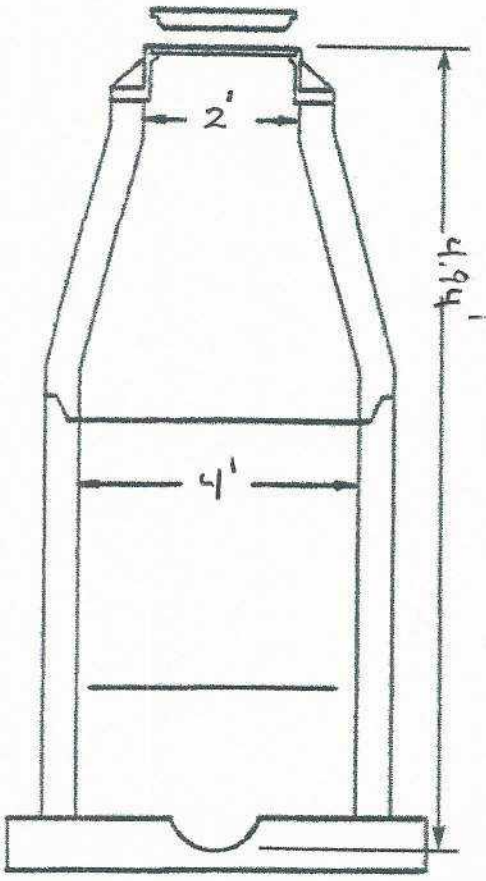
Infiltration: Yes (No)

Where: Pipe Invert Casting Walls

Comments: NO FLOW, SOME STONE + DEBRIS IN INVERT

NOT LOCATED ON 5/2/24





C-42

Manhole Inspection Form

Customer: VILLAGE OF GREENISLAND

Date: 5-2-24

Location: TIBBITS @ WEST SY (C-42)

MH ID: ~~13~~ C-42

Present Use: Storm (Sanitary) Other _____

Surface Cover: C.I. NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 25 3/4"

Cover Condition: (Good) Fair Poor

Riser Rings: Number NONE Alignment: OK

Casting Condition: (Good) Fair Poor

Manhole Type: Precast (Brick) Block Combination

Manhole Condition: Good Fair (Poor)

Step Condition: Good Fair (Poor)

Type: (Re-rod) Cast Reinf. Plastic Other _____

Apron Condition: Good Fair (Poor)

Drop Manhole: Yes (No)

Type: Outside Inside

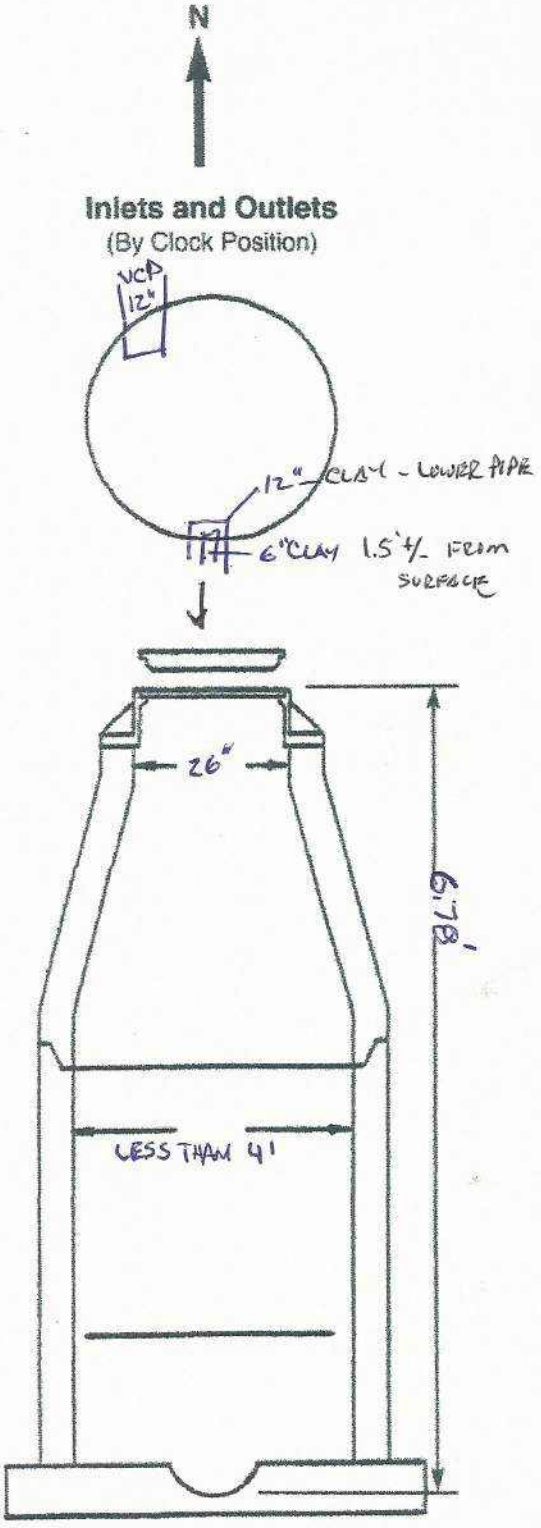
Infiltration: Yes (No)

Where: Pipe Invert Casting Walls

Comments: BRICK M.H POOR CONDITION

1" FLOW 6" INLET 21" LOWER THAN COVER

5/9/24 - 1" FLOW @ OUTLET



Manhole Inspection Form

Customer: VILLAGE OF GREEN ISLAND

Date: 5-9-24

Location: BLEECKER & PAINE ST

MH ID: C-29

Present Use: Storm (Sanitary) Other _____

Surface Cover: CT NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 2.15'

Cover Condition: Good (Fair) Poor

Riser Rings: Number 1-4" Alignment: GOOD

Casting Condition: Good (Fair) Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: (Good) Fair Poor

Step Condition: (Good) Fair Poor

Type: Re-rod Cast Reinf. Plastic Other ALUM.

Apron Condition: Good (Fair) Poor

Drop Manhole: Yes (No)

Type: Outside Inside

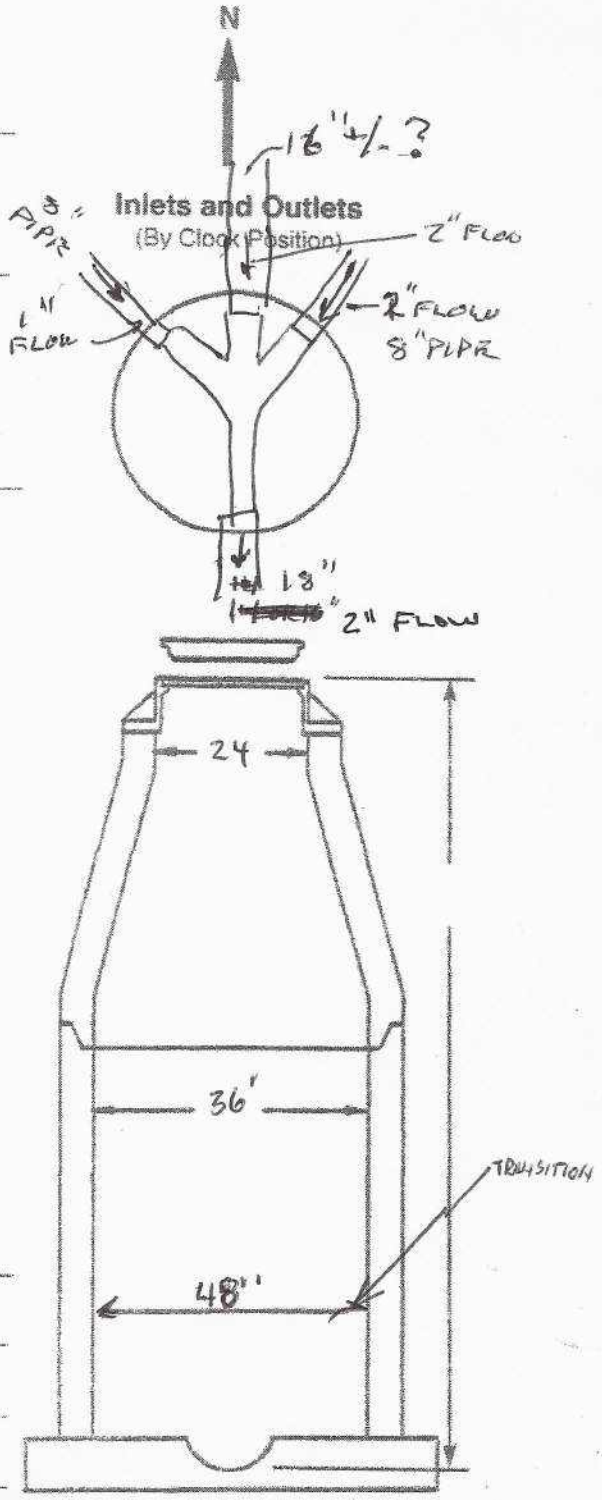
Infiltration: Yes (No)

Where: Pipe Invert Casting Walls

Comments:

SEE DIAGRAM ABOVE FOR FLOW

NOT INSPECTED ON 5/2



Manhole Inspection Form

Customer: VILLAGE OF GREEN ISLAND

Date: 5-9-24

Location: BLEECKER @ GEORGE

MH ID: C-19

Present Use: Storm (Sanitary) Other _____

Surface Cover: CT NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 2.15'

Cover Condition: (Good) Fair Poor

Riser Rings: Number 1-16" Alignment: OK

Casting Condition: (Good) Fair Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: (Good) Fair Poor

Step Condition: (Good) Fair Poor

Type: Re-rod Cast Reinf. Plastic Other ALUM.

Apron Condition: (Good) Fair Poor

Drop Manhole: Yes (No)

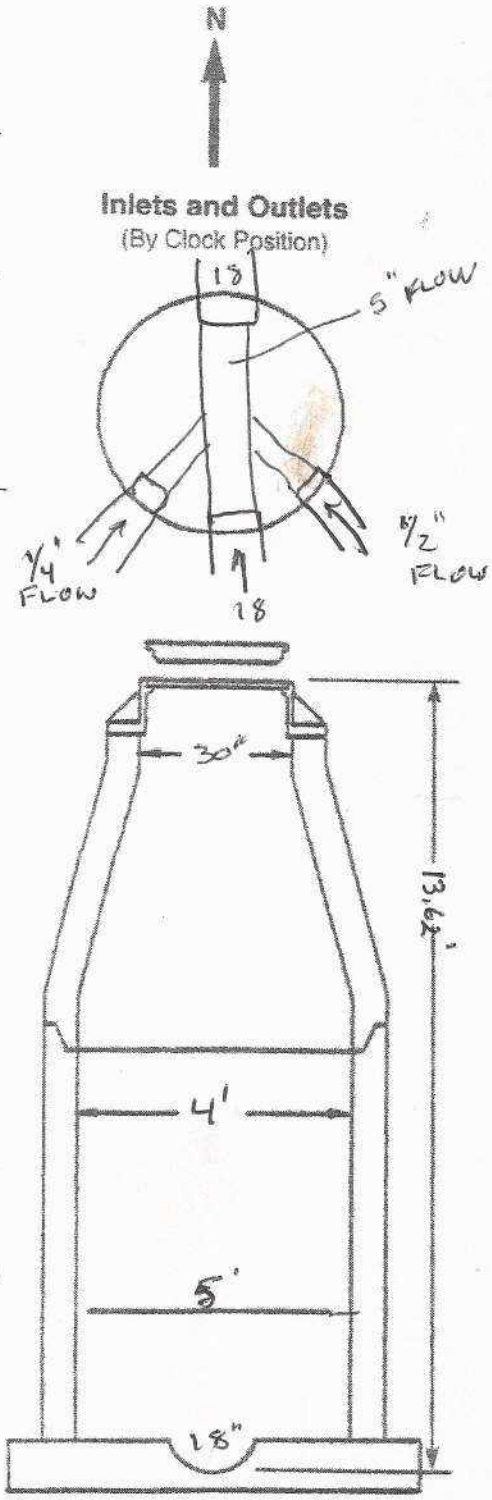
Type: Outside Inside

Infiltration: Yes (No)

Where: Pipe Invert Casting Walls

Comments: VERY LITTLE DEBRIS IN INVERT

NOT INSPECTED ON 5/2/24



C-18

Manhole Inspection Form

Customer: VILLAGE OF GREENISLAND

Date: 5-2-24

Location: BEAR SCHOOL YARD

MH ID: 10 C-18

Present Use: Storm (Sanitary) Other _____

Surface Cover: CT - NO VENT HOLES 1977

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 25 5/8

Cover Condition: Good (Fair) Poor

Riser Rings: Number FLAT TOP Alignment: OK

Casting Condition: (Good) Fair Poor

Manhole Type: (Precast) Brick Block Combination ~~Other~~

Manhole Condition: (Good) Fair Poor

Step Condition: (Good) Fair Poor

Type: Re-rod Cast Reinf. Plastic Other ALUM.

Apron Condition: (Good) Fair Poor

Drop Manhole: Yes (No)

Type: Outside Inside

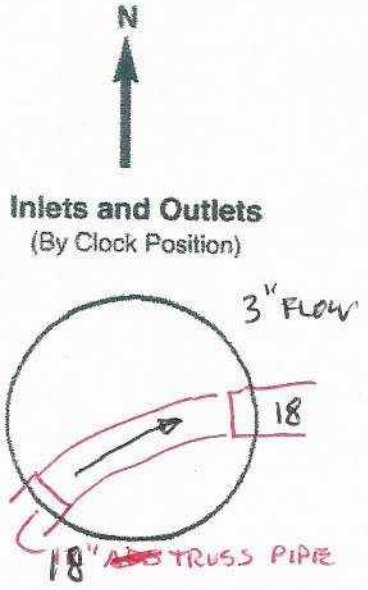
Infiltration: Yes No

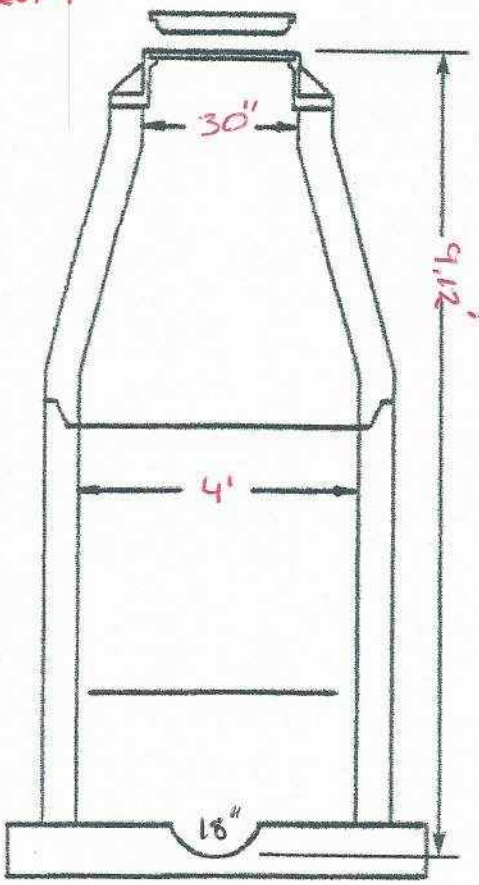
Where: Pipe Invert Casting Walls

Comments: ~~Item~~ 3" FLOW

5/9/24 3" FLOW

Inlets and Outlets
(By Clock Position)





D-14

Manhole Inspection Form

Customer: VILLAGE OF GREENISLAND

Date: 5-2-24

Location: SWAN + HUDSON

MH ID: ~~12~~ D14

Present Use: Storm (Sanitary) Other _____

Surface Cover: C.I 4 VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 23 5/8

Cover Condition: Good (Fair) Poor

Riser Rings: Number NONE Alignment: _____

Casting Condition: Good (Fair) Poor

Manhole Type: Precast (Brick) Block Combination

Manhole Condition: Good Fair (Poor)

Step Condition: Good Fair (Poor)

Type: (Re-rod) Cast Reinf. Plastic Other _____

Apron Condition: Good Fair (Poor)

Drop Manhole: (Yes) No

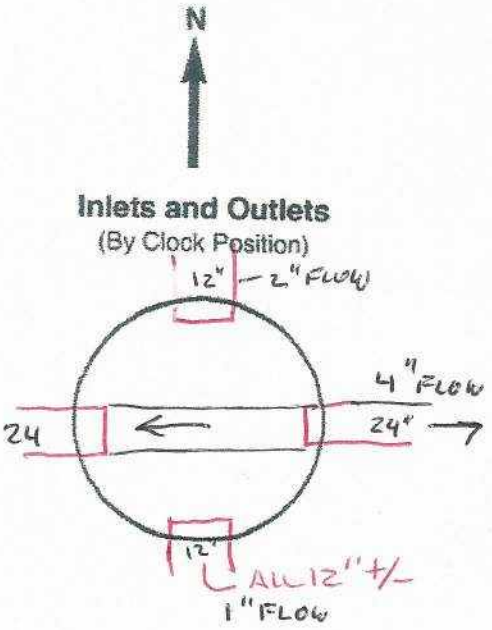
Type: Outside (Inside)

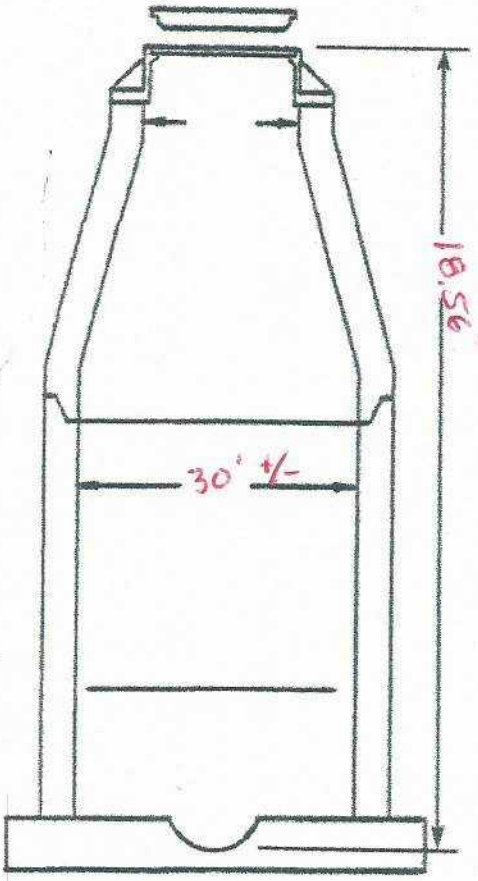
Infiltration: Yes No

Where: Pipe Invert Casting Walls

Comments: LOW FLOW

ON 5/9/24 - FLOW WAS 4" DEEP





C-16

Manhole Inspection Form

Customer: VILLAGE OF GREEN ISLAND

Date: 5-2-24

Location: SOUTHERLY MH IN SCHOOL DRIVEWAY

MH ID: 11 (C-16)

Present Use: Storm (Sanitary) Other _____

Surface Cover: C.I. 1977 NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 25 1/2"

Cover Condition: (Good) Fair Poor

Riser Rings: Number 1 - PRECAST CONCRETE Alignment: OK

Casting Condition: Good (Fair) Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: Good (Fair) Poor

Step Condition: Good (Fair) Poor

Type: Re-rod Cast Reinf. Plastic Other ALUM.

Apron Condition: Good Fair Poor

Drop Manhole: Yes (No)

Type: Outside Inside

Infiltration: Yes No

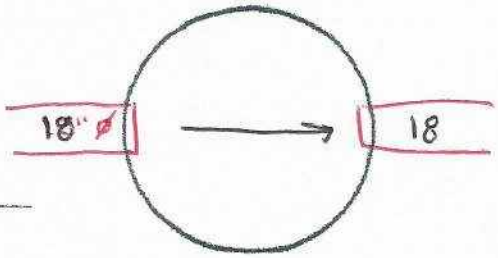
Where: Pipe Invert Casting Walls

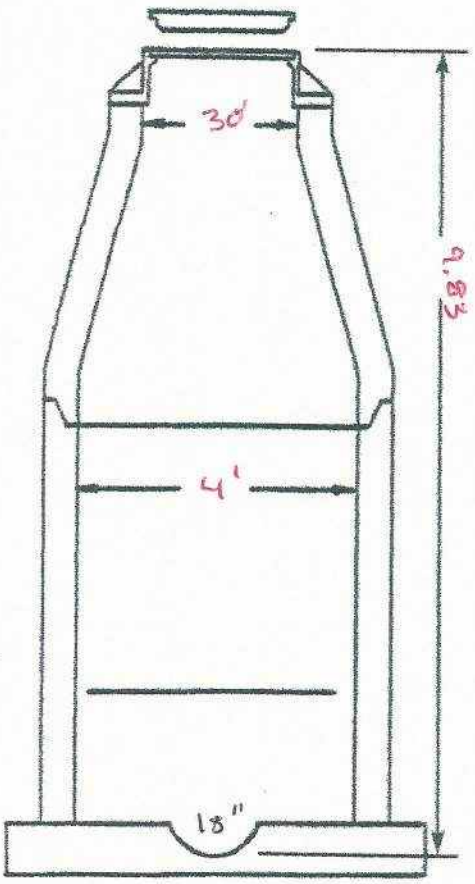
Comments: @ 3" OF FLOW @ INVERT ON 5/2/24

ON 5/9/24 → 3" FLOW (SAME)

N

Inlets and Outlets
(By Clock Position)





C-15

Manhole Inspection Form

Customer: VILLAGE OF GREEN ISLAND

Date: 5-2-24

Location: VAULT AT END OF CENTER ST

MH ID: ~~X~~ C15

Present Use: Storm (Sanitary) Other _____

Surface Cover: CI NO VENT HOLES

Grade to Manhole: Flush Below _____ Above _____

Cover Diameter: 32" NO VENT HOLES 1977

Cover Condition: (Good) Fair Poor

Riser Rings: Number FLAT TOP Alignment: GOOD

Casting Condition: (Good) Fair Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: (Good) Fair Poor

Step Condition: (Good) Fair Poor

Type: Re-rod Cast Reinf. Plastic Other ALUM

Apron Condition: (Good) Fair Poor

Drop Manhole: Yes (No)

Type: Outside Inside

Infiltration: Yes (No)

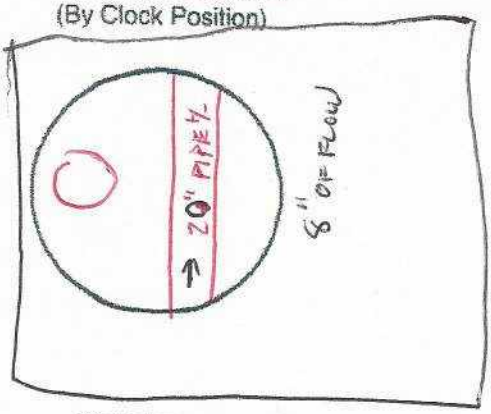
Where: Pipe Invert Casting Walls

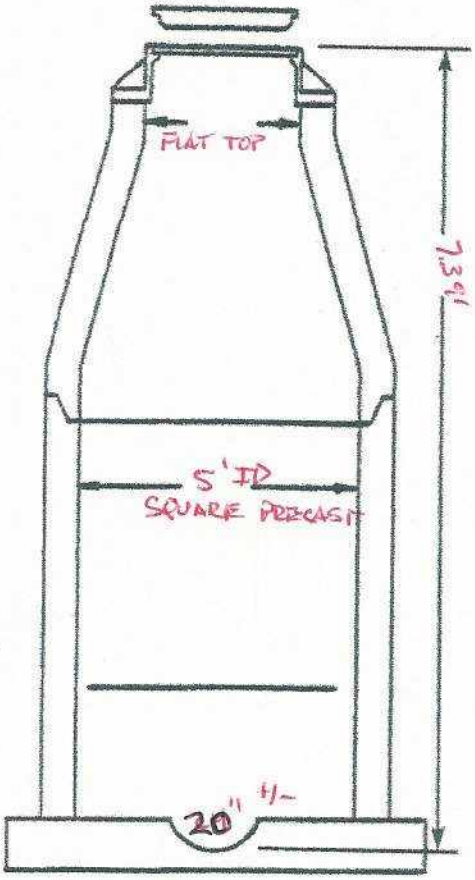
Comments: MARKS TO TOP OF RUNGS DUE TO ~~TO FLOW~~ SURCHARGING

ON 5/9/24 - 8" FLOW

N

Inlets and Outlets
(By Clock Position)





SWAN STREET CSO

Manhole Inspection Form

Customer: VILLAGE OF GREENISLAND

Date: 5-2-25

Location: SWAN ST. OUT FALL

MH ID: ~~B~~ SWAN ST OUTFALL

Present Use: Storm (Sanitary) Other _____

Surface Cover: CI NO VENT HOLES

Grade to Manhole: (Flush) Below _____ Above _____

Cover Diameter: 32"

Cover Condition: Good (Fair) Poor

Riser Rings: Number ALUM LADDER Alignment: IN PRECAST VAULT

Casting Condition: Good (Fair) Poor

Manhole Type: (Precast) Brick Block Combination

Manhole Condition: (Good) Fair Poor

Step Condition: (Good) Fair Poor

Type: Re-rod Cast Reinf. Plastic Other ALUM. LADDER

Apron Condition: (Good) Fair Poor

Drop Manhole: Yes (No)

Type: Outside Inside

Infiltration: Yes (No)

Where: Pipe Invert Casting Walls

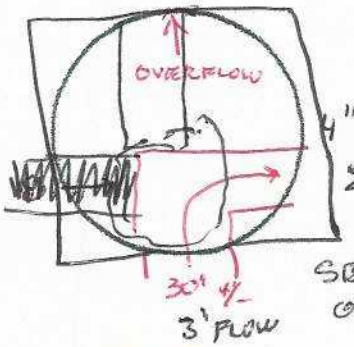
Comments: RECTANGULAR PRECAST STRUCTURE / OVER FLOW

FLOW NOT MEASURED ON 5/2/24

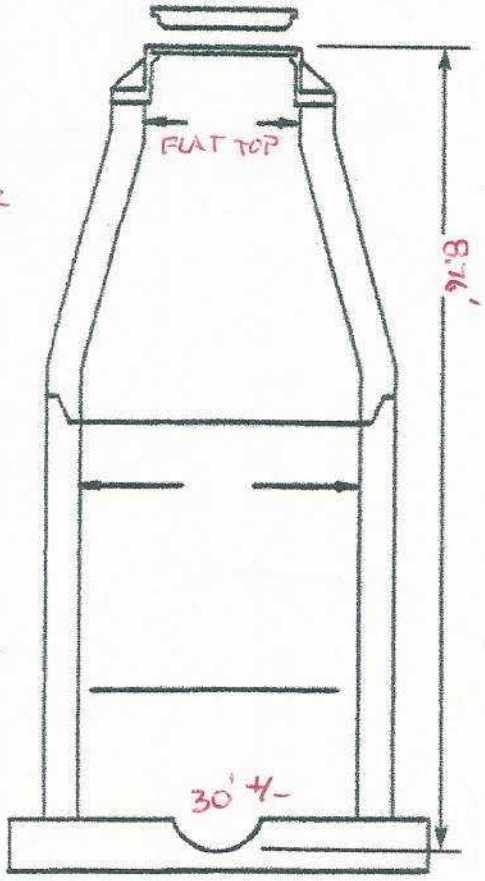
ON 5/9/24 4" FLOW AT OUTLET

N

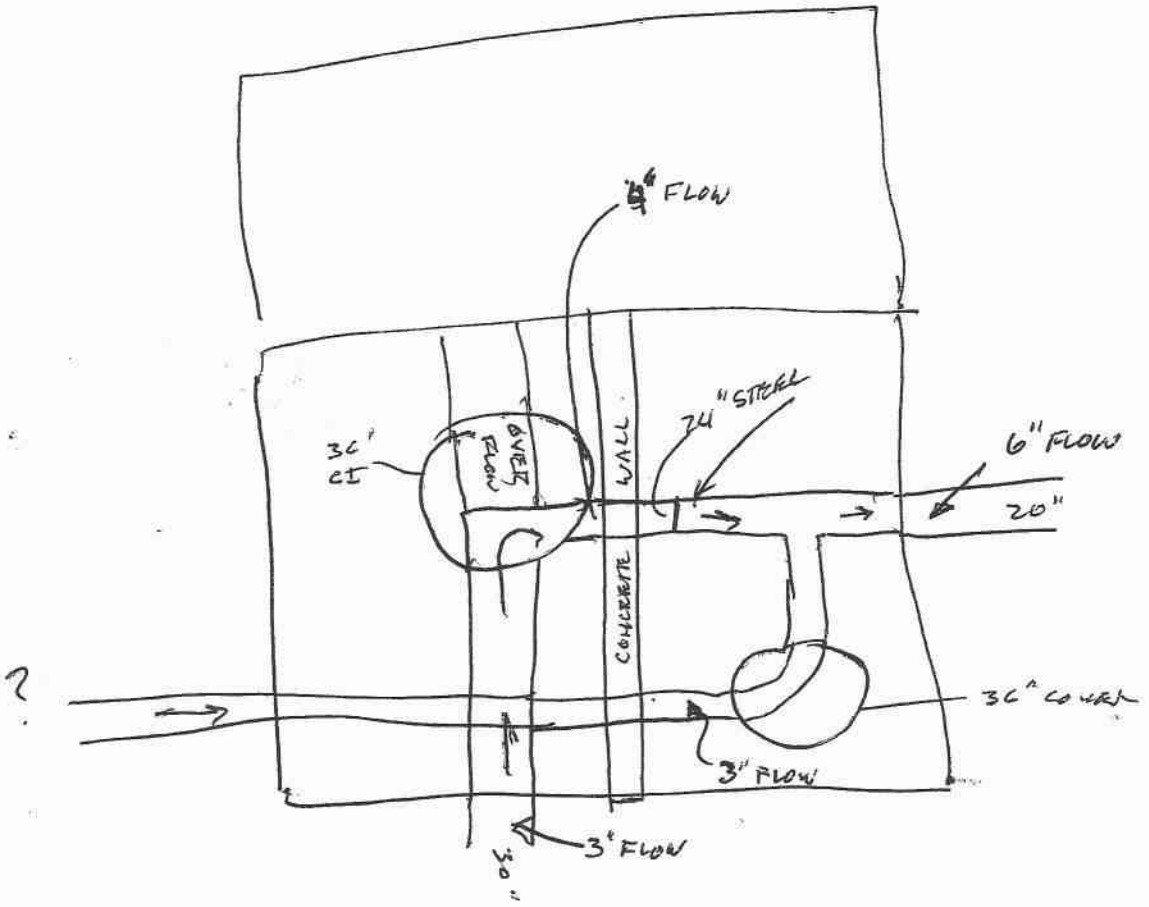
Inlets and Outlets
(By Clock Position)



SEE BACK OF PAGE



MH C50



+NOT SURE OF PIPELINE LOCATIONS + ORIENTATION

← N.

SEWER MANHOLES ID's- FOR INSPECTION

Village of Green Island — **Albany County, NY**

CA-1
CA-2
CA-3
C-41A
C-42
C-52
C-50
C-46
C-19
C-29
C-17
C-16
D-14
CSO
C-15
Swan St. Regulator
Swan St. CSO#3
Center St. Pump Station
Hamilton St. Regulator
Hamiltion St. CSO #3
Center Island Pump Station
Saratoga St. Pump Station
Saratoga St. Regulator CSO #4

Legend

Sewer Features
- Regulator
- Pump Station
- Outfall
- Manhole
- Catch Basin to CSO

Pipe Diameter
- 8"
- 10"
- 12"
- 15 - 16"
- 18"
- 20" Forcemain
- 36"

System Type
- Combined Sewer
- Roads
- Village Boundary

N W E S

0 150 300 600 900 FT

1 in = 300 ft

Project Number: 23.3427
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: September 9, 2023
File: GreenIsland_VillageMap.aprx
GIS: D Landreville

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299

Appendix D

2023 Combined Sewer Overflow (CSO) Annual Report

Table of Contents

Combined Sewer Overflow (CSO) Annual Report

version 1.10

(Submission #: HQ1-0VK3-9QQ8Z, version 1)

Details

Submitted	1/29/2024 (150 days ago) by Maggie A. Alix
Alternate Identifier	NY0033031
Submission ID	HQ1-0VK3-9QQ8Z
Status	Action Required

Form Input

Permit Information

SPDES Number
NY0033031

DEC Region
4

Permittee Name
Village of Green Island

Facility Name
Village of Green Island

Official Name
Maggie A. Alix

Official Title
Executive Assistant to the Mayor

Official's Phone Number
518-273-2201

Official's Email Address
maggie.alix@villageofgreenisland.com

CSO Program Manager Name
Maggie A. Alix

CSO Program Manager Title
Executive Assistant to the Mayor

CSO Program Manager Phone Number
518-273-2201

CSO Program Manager Email
maggie.alix@villageofgreenisland.com

Part I - CSO LTCP Information

GENERAL CSO PROGRAM INFORMATION

Use the following questions to provide current general information on the CSO Program

Number of CSO Outfalls in the permittee owned system
3

Number of CSO Events Occurring in Reporting Year
0

Total Volume of CSO Discharged in Reporting Year (MG)
0.00

Percentage of Collection System, owned by the permittee, that is combined (%)
30

Approximate length (mi) of combined sewers in permittee-owned system
3

Population served by the permittee-owned system
2,970

Number of Publicly-Owned Sewer Systems (POSS) to the permittee-owned system
0

Number of Publicly-Owned Sewer Systems (POSS) to the Combined Sewer System
0

Number of Significant Industrial Users (SIU) connected to the CSS
0

Number of other, non-POSS satellite system connections
0

Long Term Control Plan (LTCP) Information

Was an LTCP Required?
Yes

Year the LTCP was Submitted
2011

What is the LTCP Approval Status?
Approved

What was/is the LTCP selected approach and/or criterion?
Demonstrative

Is the LTCP Implementation completed?
No

Provide a brief list of all the recommendations and CSO controls to be implemented under the Long-Term Control Plan. Be sure to identify the year these items were completed and any remaining milestones dates not yet achieved.
The Albany Pool Communities Long Term Control Plan (LTCP) identifies projects and programs shared between the Village, it's five municipal partners and two participating county sewer districts. All of the Village's projects in the LTCP have been completed. In 2011, the Village completed the Albany Avenue Green Street Project. In 2017, the Swan St & Hamilton St Regulator Improvement Projects were complete along with the Asset Management Plan.
The LTCP, progress reports, water quality data, plans, the status of project milestones and much more about the program and its progress. can be found at http://www.albanypoolcso.org/

Post Construction Compliance Monitoring (PCCM)

What is the status of the PCCM Plan?
Approved

What is the status of the PCCM Sampling Program?
In Progress

Part II - CSO Outfall Information

CSO Outfall Information

Outfall Number	Latitude (Decimal)	Longitude (Decimal)	Receiving Water Name	Receiving Water Class	Number of Regulators Associated	Type of Regulator	Type of Treatment Provided	Number of Overflow Events - BASELINE	Number of Overflow Events - PREVIOUS YEAR	Number of Overflow Events - CURRENT YEAR	Annual CSO Volume (MG) - BASELINE	Annual CSO Volume (MG) - PREVIOUS YEAR	Annual CSO Volume (MG) - CURRENT YEAR	Measureme Method
02	424439	734429	Hudson River	C	0	Fixed Weir	None	41	0	0	4.6	0	0	Estimated
03	424421	734135	Hudson River	C	0	Fixed Weir	None	41	0	0	4.6	0	0	Estimated
04	424404	734146	Hudson River	C	0	Fixed Weir	None	41	0	0	4.6	0	0	Estimated

Closed CSO Outfall Information

Outfall Number	Latitude (Decimal)	Longitude (Decimal)	Receiving Water Name	Receiving Water Class	Approximate Year Outfall Closed	Cause / Reason for Closure
0	0	0	0	C	0	NONE PROVIDED

CSO Outfall Explanation
In 2023, The Village of Green Island submitted 26 NY Alerts. The Village enters an alert for every rain event if there is a potential for an overflow; however there were no actual CSO events due to a rain event.

No CSO outfalls were sealed/closed, removed, or separated during the reporting year.

Part III - Collection System Information

Baseline Information

If Baseline information is unknown, please use a best estimate, then characterize/describe in the narrative box below.

Baseline - Percentage (%) of combined sewers in the collection system owned by the permittee
100

Baseline - Approximate length (mi) of combined sewers owned by the permittee
3.5

Baseline - Number of CSO Outfalls owned by the permittee
3

Baseline - Number of CSO Events
41

Baseline - Annual CSO Volume discharged (MG)
4.6

Baseline - Population Served by the CSS
2,970

Baseline - Number of Satellite System Connections
0

Post-LTCP Implementation Information

If an LTCP has not yet been developed, or wasn't required, please input the current year information for each field.

Future - Percentage (%) of combined sewers in the collection system owned by the permittee
100

CORRECTION REQUEST *(CREATED)*
Please review and correct.

The Village states the current & future sewer system is 3 miles long and 100% combined. However, the baseline numbers indicate the combined sewer system was 100% combined at a length of 3.5 miles. Please review the current and future percent of combined sewer based on the past and current lengths of combined sewer (should be less than 100%).
Created on 6/5/2024 1:29 PM by **Wood Steven**

Future - Approximate length (mi) of combined sewers owned by the permittee
3

Future - Number of CSO Outfalls owned by the permittee
3

Future - Number of CSO Events
35

Future - Annual CSO Volume Discharged (MG)
4.2

Future - Population Served by the CSS
2,620

Future - Number of Satellite System Connections
0

Use the space below to provide any further relevant information on the collection system & to indicate if baseline information is unknown. This should include a description of any unique ownership, operation and maintenance agreements or further explanation and description of POSS/satellite system connections. For POTW's with POSS's, please indicate which municipality owns/operates which infrastructure (Pump Stations, trunk sewers, interceptors, regulators, outfall structures, etc.) as well as who is responsible for reporting CSO events from CSOs within the POSS and who is responsible for reporting SSOs within the POSS.
The Village of Green Island has completed all the recommended projects in the LTCP.

The Village of Green Island owns the infrastructure and is responsible for reporting potential CSO events.

In December 2019, the Village of Green Island was awarded a CFA grant to study, inspect, and evaluate the condition of the existing sanitary and storm sewer system. This study may be used to improve the CSO systems on George Street in the near future; further reducing discharge to the Hudson River. EFC accepted and signed off on the report in July, 2023.

The Village is currently studying the water/sewer infrastructure in the north end of the village from Tibbits Avenue north to the village line.

Part IV - CSO Control Implementation Information

Reporting Year Information

Provide a summary of any significant LTCP or PCCM projects completed within the reporting year and any milestones for the reporting year that were not achieved.
There were no new projects completed in the Village of Green Island for the reporting year.

The pool communities projects ca be found at https://www.albanypoolcso.org/

CORRECTION REQUEST *(CREATED)*
Please revise

The Albany Pool Order was modified in 2023 to allow the termination of the website.
Created on 6/5/2024 1:29 PM by **Wood Steven**

Upcoming Year Information

Summarize significant LTCP and PCCM projects planned and milestones due for the upcoming year.
There are no projects planned or milestones due for the Village of Green Island in the upcoming year. The Village has completed all the recommended projects in the LTCP.

Part V - CSO Best Management Practices (BMPs)

Which CSO BMPs does your SPDES permit require?
1- CSO Maintenance / Inspection
2- Maximize Use of the Collection System for Storage
6- Prohibition of Dry Weather Overflows
7- Control of Floatables and Settleable Solids
8- Combined Sewer System Replacement
9- Combined Sewer / Extension
10- Connection Prohibitions
11- Septage and Hauled Waste
12- Control of Runoff
13- Public Notification
14- Characterization and Monitoring

CORRECTION REQUEST *(CREATED)*
Please correct

The Village did not select all applicable BMPs, as listed in the SPDES permit. The Permit lists all 15 BMPs as applicable, except for 4, 5, and 14. Please revise by marking BMP 3 as applicable.
Created on 6/5/2024 1:29 PM by **Wood Steven**

BMP No. 1 CSO Maintenance Inspection

6 NYCRR 750-2.8(a)(2)
(EPA NMC No. 1: Proper Operation and Regular Maintenance)

Is there a written program for the maintenance and inspection of the CSS and CSOs?
Yes

What is the minimum frequency of dry-weather CSO inspections?
Monthly

Are inspections of CSOs/regulators conducted during or following wet weather events?
Yes

Do the inspection reports indicate visual inspection observations, observed or presumed flows, weather conditions, equipment condition, and any repair work recommended?
Yes

Are the inspection reports submitted to the DEC Regional Office?
No

Indicate which of the following additional components are included in the maintenance and inspection program:
Pump Stations
Sewer Pipes & Interceptors
Sewer Manholes & Catch Basins
CSO Outfalls
CSO Controls (e.g. regulators, screening/storage/treatment facilities)

Are there existing inter-municipal agreements which specify responsibilities for inspection, maintenance, and/or repair?
Yes

IMA Listing - Please indicate the community name and year of last IMA update.

Community Name	Year of most recent IMA Update
Albany Pool Communities	2015

Is the collection system mapped using GIS?
Yes, the entire system (including manholes & catch basins)

Is the collection system monitored using a SCADA system or other flow monitoring system?
No

In the upcoming year, is installation, upgrade, or expansion of monitoring with SCADA/Other system planned?
No

Does the municipality have an asset management program that includes the collection system?
Yes, in place

Have any work efforts or problems in the past year resulted in changes in overflows? If yes, describe below in the narrative box.
Yes

In the past year, was the inspection and maintenance program mostly:
Proactive (focusing on preventative maintenance to avoid problems)?

Use the space below to provide a narrative description of the following:

a) Lengths of sewer cleaned and inspected,
b) Number of manholes and catch basins cleaned and inspected,
c) Any repairs or replacements conducted in the CSS,

The Village's Department of Public Works and Water Department conduct routine inspections of manholes, catch basins, outfalls, and regulators. The Village does not own a vac truck but partners with the City of Cohoes for clean-outs. The Village can also call on Albany County Water Purification District (ACWPD) for assistance, but the ACWPD has had staffing issues and has been unable to assist.

Catch Basin cleanout/repair at the NE corner of Arch St and Paine St.
Manhole repair at Market St/Lower Paine St, all new infrastructure.
Debris cleared from the Hamilton Street outfall, new infrastructure will be installed.
All manholes and catch basins on West St and High St were inspected and cleaned.

CORRECTION REQUEST *(CREATED)*
Please elaborate.

What new infrastructure will be installed at the Hamilton St outfall? Is there a schedule developed yet for this work to be completed?
Created on 6/5/2024 1:30 PM by **Wood Steven**

Use the space below to describe any large equipment purchases made in the reporting year or planned for the upcoming year (e.g. vacuum trucks, pumps, etc.) , as well as, any work efforts or problems in the past year that resulted in changes to the collection system maintenance and inspection program, and any noticeable results of the system changes (e.g. fewer events, less CSO volume, a reduction in floatables or other pollutants discharges, visible improvement in water quality of receiving water).
The Village completed the work on replacing the main pump at Pump Station #1.

The Village intends to study the size and efficiency of the pumps at the Saratoga Pump station. This station has two smaller pumps that may need to be updated.

CORRECTION REQUEST *(CREATED)*
Please elaborate.

Is there a schedule developed yet for the Saratoga PS study work to be completed?
Created on 6/5/2024 1:30 PM by **Wood Steven**

BMP No. 2 Maximize Use of the Collection System for Storage

6 NYCRR 750-2.7(f), 750-2.8(a)(2), 750-2.8(a)(5)
(EPA NMC No. 2: Maximization of Storage in the Collection System)

In the past year, was the collection system able to convey the required minimum flows to the treatment plant during ALL wet-weather events?
Yes

Has the hydraulic capacity of the collection system been evaluated?
No

Have regulators and weirs ever been adjusted/modified to maximize storage?
Yes

In the past year, or the upcoming year, indicate if any of the following items have been changed or if changes are planned to improve use of the collection system for storage? If so, describe below in the narrative box.
Sewer Cleaning and Sediment Removal
Removal of Flow Obstructions

Use the space below to provide a narrative description of the changes to structures or procedures that will improve use of the collection system for storage (e.g. tide gate maintenance/repairs/replacement, regulator or weir adjustment, FOG program changes, removal of bottlenecks/flow obstructions, sewer cleaning and sediment removal, in-line storage, etc.).

Tide gates, FOG program, removal of small system bottlenecks, and in-line storage (inflatable dams/sluice gates) are not applicable to the Village.

Catch Basin cleanout/repair at the NE corner of Arch St and Paine St.
Manhole repair at Market St/Lower Paine St, all new infrastructure.
Debris cleared from the Hamilton Street outfall, new infrastructure will be installed.
All manholes and catch basins on West St and High St were inspected and cleaned.

BMP No. 3 Industrial Pretreatment

6 NYCRR 750-2.7(f) and 2.9(a)(4)
(EPA NMC No. 3 & 7: Review and Modification of Pretreatment Requirements & Pollution Prevention Programs to Reduce Contaminants in CSOs)

Is there an approved pretreatment or mini-pretreatment program or acceptance of flow from non-domestic sources?
No

BMP No. 6 Prohibition of Dry Weather Overflows

6 NYCRR 750-2.7 and 2.8(b)(2)
(EPA NMC No. 5: Elimination of CSOs During Dry Weather)

In the past year, were there any dry weather overflows?
Yes

Were all dry weather overflows reported via NY-Alert, in accordance with 6 NYCRR 750-2.7?
Yes

Did dry weather overflows lead to improvement of procedures or equipment?
Yes

Has the likelihood of future dry weather overflows been eliminated? If not, describe why below in the narrative box.
Yes

Use the space below to provide a narrative description of the both the causes of any dry weather events that occurred in the reporting year and resulting changes or improvements that were made to procedures or equipment (e.g. routine inspection schedule, OMIP, inter-municipal agreements, FOG program, removal of illicit connections, I/I Control program, leaky tidegates, adjustment and/or repair of regulators, upgraded auxiliary power, elimination of hydraulic bottlenecks, etc.).

On May 22, 2023, our Region 4 inspector reached out via phone to say that she received a complaint regarding a potential overflow at the Saratoga St outfall. She then forwarded a picture dated 05/18/2023 via email. We immediately went to the area that would discharge to that outfall, and checked all the catch basins but there were no signs of any substances.
We gave the inspector a 24/7 phone line where complaints could be filed so that complaints could be dealt with in a more timely manner.

BMP No. 7 Control of Floatables and Settleable Solids

6 NYCRR 750-2.8(a)(4)
(EPA NMC No. 6: Control of Solid and Floatable Materials in CSOs)

In the past year, did any outfalls discharge floating solids, oil and grease, or solids of sewage origin?
No

Indicate which of the following engineering controls or control measures, if any, have been implemented or will be implemented in the upcoming year?
Source controls (street cleaning, public education, household hazardous waste collection, solid waste collection, recycling, and/or composting of lawn/leaf/roadkill deer)
Catch basin hoods

Use the space below to provide a narrative description of any ongoing issues with control of floatables and settleable solids from CSO outfalls and any existing or planned engineering controls or control measure to be implemented.

The Village works with the ACWPD and surrounding communities to clean and maintain catch basins. The Village has board authorized inter-municipal agreements with Cohoes, Watervliet, and Troy; which allows the Village to share equipment and resources. Host Spring Clean Up every year. Streets are swept on a routine basis, especially in high debris areas. Public education is done through newsletters, website, and social media. Weekly garbage, recyclables, and lawn/leaf/xmas tree pick up.

BMP No. 8 Combined Sewer System Replacement

6 NYCRR 750-2.10(i)
(EPA NMC: None)

In the past year, were any combined sewers designed or constructed that were not approved by NYSDEC?
No

Are there any plans or current projects to separate combined sewers into sanitary & storm sewers?
No

Were any cross-connections eliminated in the past year or planned for the upcoming year?
No

In the past year, how many miles of combined sewer were separated?
0.00

In the upcoming year, how many miles of combined sewer are scheduled to be separated?
0.00

Use the space below to provide a narrative description of how this BMP was implemented during the reporting year.

There were no separation projects completed during the reporting year. To date there are no separation projects scheduled for the upcoming year.

BMP No. 9 Combined Sewer / Extension

6 NYCRR 750-2.10(i)
(EPA NMC: None)

In the past year, were any combined sewers extended?
No

Is any development planned upstream of a combined sewer in the near future?
No

If a plan contained a flow credit requiring removal of I/I, what was the requirement or ratio?
1:4

Use the space below to provide a narrative description of how this BMP was implemented during the reporting year.

The Village has received proposals for development upstream of a combined sewer but to date there are no projects with approval from the Village Board and/or any other regulatory agencies.

If the proposed projects are require the removal of I/I, the reduction will be at least equal to the estimated increased peak hourly dry-weather flow or four times the average daily dry-weather flow, whichever is greater.

BMP No. 10 Connection Prohibitions

6 NYCRR750-2.9(a)(5)
(EPA NMC: None)

Are new connections prohibited by NYSDEC?
No

In the upcoming year, is any work planned to either increase capacity or reduce hydraulic loading to the WWTP? If so, describe below in the narrative box.
No

BMP No. 11 Septage and Hauled Waste

6 NYCRR750-2.7(f) and 2.8(a)(1)
(EPA NMC: None)

Does the POTW accept septage or hauled waste?
No

BMP No. 12 Control of Runoff

6 NYCRR750- 2.1(e)
(EPA NMC: None)

Is sediment in runoff from construction zones entering catch basins in the combined sewer system?
No

Are impacts of run-off, from development and re-development in areas served by combined sewers, reduced by requiring compliance with the New York Standards for Erosion and Sediment Control and the quantity control requirements included in the New York State Stormwater Management Design Manual?
Yes

Is there adequate communication between the local municipal department that enforces local stormwater codes and ordinances and the collection system staff regarding stormwater runoff?
Yes

Do the municipalities within the combined sewer system have adequate storm water pollution prevention programs to reduce pollutants in stormwater?
Yes

Are any changes needed in the implementation of this BMP to reduce the number of CSO events, the volume discharged, or pollutants in the discharge? If yes, describe below in the narrative box.
No

Use the space below to provide a narrative description of how this BMP was implemented during the reporting year and any planned changes for the upcoming year.

The Village has several pollution prevention programs to reduce pollutants; which include but are not limited to: leaf collection, Christmas tree pick up, enforcement of litter laws, Spring Clean Up, Riverkeeper Sweep, and Hazardous Waste Collection days (as needed).

The Code Enforcement Office enforces local stormwater codes and ordinances, and are active participants in the Stormwater Coalition of Albany County.

BMP No. 13 Public Notification

6 NYCRR 750-1.12
(EPA NMC No. 8: Public Notification)

In accordance with the Discharge Notification Act Requirements of the SPDES permit, outfall identification signs must be installed and maintained at all permitted CSO outfalls. Are these signs installed and maintained at all permitted CSO outfalls?
Yes

Are all CSO events in accordance with the SPDES permit reported via NY-Alert?
Yes

In accordance with the Sewage Pollution Right to Know Law, as detailed in 6 NYCRR Part 750-2.7, all CSO discharge events must be reported via the NY-Alert electronic notification system.

CSO events not in accordance with the SPDES permit conditions should be reported as a bypass via NY-Alert. When these events occur, are they being reported via NY-Alert?
Yes

Beyond the use of NY-Alert, does the POTW maintain any other public notification systems (e.g. websites, social media, email systems, public media broadcasts) to alert potential users of receiving waters affected by CSOs?
Yes

CORRECTION REQUEST *(CREATED)*
Please clarify.

The Village indicated additional public notification systems are utilized beyond NY-Alert. Please revise this response or describe which systems are utilized now that the Albany Pool website has been terminated.
Created on 6/5/2024 1:31 PM by **Wood Steven**

For all CSOs to receiving waters that are Class B or higher, a written public notification program (PNP) is required to be developed, implemented, and publicly available to inform citizens of the location and occurrence of CSO events. Is there a written PNP?
Not Applicable (no Class B receiving waters)

For all CSO communities within the Great Lakes Basin, a written PNP is required. Is your community within the Great Lakes Basin?
No

Use the space below to provide a narrative description of how any updates to CSO outfall signs and PNPs, as well as a summary of any other public notification systems (beyond NY-Alert) used to alert the public of CSO events.

The Village participates in the NY Alert notification system to alert residents and DEC of any overflow or potential overflow in accordance with the mandate of NYS's Sewage Pollution Right to Know Act.

BMP No. 14 Characterization and Monitoring

(6 NYCRR 750-1.11(a), 2.5(a) and 2.7(g))
(EPA NMC No. 9: Monitoring to Characterize CSO Impacts and the Efficacy of CSO Controls)

Has the combined sewer system been modeled for use in determining or estimating the frequency of overflows and identifying CSO impacts?
Yes

Was baseline sampling conducted as part of LTCP development?
Yes

Was any Post Construction Compliance Monitoring (PCCM) sampling conducted in the reporting year or planned for the upcoming year?
No

In what years does the SPDES permit, Order on Consent, or other enforcement mechanism require PCCM sampling to be conducted?
2024

CSO discharge monitoring methods should be specified for each CSO outfall in Part II of this Annual Report. For all CSO outfalls that are not metered, explain how overflow volumes are

either modeled or estimated to collect sufficient data and document permit compliance and the success of CSO BMP implementation. In addition, please provide a brief summary of the findings from the most recently submitted PCCM Report (including compliance with the selected CSO Policy Approach criteria and attainment of water quality standards).

The Pool Communities intend to conduct PCCM sampling for the SPDES permit, and Order of Consent a year after the completion of the Beaver Creek Project in Albany, NY.

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF)

Upload Owner/Operator Certification Form

2023 Annual Report certification.pdf - 01/29/2024 02:00 PM
Comment
NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
1/29/2024 2:00 PM	2023 Annual Report certification.pdf	Attachment	Maggie Alix

Status History

	User	Processing Status
1/29/2024 10:13:02 AM	Maggie A. Alix	Draft
1/29/2024 4:35:18 PM	Maggie A. Alix	Submitted
1/29/2024 4:35:18 PM	Maggie A. Alix	Deemed Complete
6/5/2024 1:27:51 PM	Wood Steven	In Review
6/5/2024 1:32:38 PM	Wood Steven	Action Required

Processing Steps

Step Name	Assigned To/Completed By	Date Completed
Form Submitted	Maggie A. Alix	1/29/2024 4:35:18 PM

Appendix E

Sanitary Sewer Capacity Calculations

Village of Green Island
Cannon Street Sewers

Cannon Street- Separate Sewer Constructed in 2004

Segment		Inverts (ft)		Length (ft)	Slope (%)	Nominal Size (in)	Piping Material	"n" Coefficient	Diameter (ft)	Piping Age	Theoretical Capacity[1]			Existing Sanitary Demand[2]			Existing Velocity	I&I Demand (monthly Average March 2023)			Available Capacity			Sanitary Utilization	I&I Utilization
#	Description	Upstream	Downstream								GPM	GPH	GPD	ADF (gpm)	MDF (gpm)	PHF (GPM)	ft/s	GPM	GPH	GPD	GPM	GPH	GPD		
500	Manhole C57 to Manhole C56	22.38	22.04	162	0.21%	12	VCP	0.013	1.00	UNK	359	21,540	516,960	1.14	2.28	4.56	0.00	0	0	0	358	21,538	516,955	0.32%	0.32%
501	Manhole C56 to Manhole C55	22.04	21.66	165	0.23%	12	VCP	0.013	1.00	1972	767	46,041	1,104,987	1.14	2.28	4.56	0.00	0	0	0	766	46,039	1,104,982	0.15%	0.15%
502	Manhole C55 to Manhole C54	21.66	21.56	55	0.18%	12	VCP	0.013	1.00	1972	682	40,909	981,807	1.14	2.28	4.56	0.00	0	0	0	681	40,906	981,802	0.17%	0.17%
503	Manhole C54 to Manhole C53	21.56	21.34	238	0.09%	12	VCP	0.013	1.00	1972	486	29,169	700,052	1.14	2.28	4.56	0.00	0	0	0	485	29,167	700,047	0.23%	0.23%
504	Manhole C53 to Manhole C52	21.34	20.31	210	0.49%	12	VCP	0.013	1.00	1972	1,120	67,190	1,612,562	1.22	2.44	4.88	0.00	0	0	0	1,119	67,188	1,612,557	0.11%	0.11%
505	Manhole C52 to Manhole C51	20.13	19.44	207	0.33%	12	VCP	0.013	1.00	1972	923	55,391	1,329,373	1.22	2.44	4.88	0.00	0	0	0	922	55,388	1,329,368	0.13%	0.13%
506	Manhole C51 to Manhole C50	19.44	18.91	272	0.19%	12	DIP	0.013	1.00	1972	706	42,350	1,016,391	1.22	2.44	4.88	0.00	0	0	0	705	42,347	1,016,386	0.17%	0.17%
507	Manhole C50 to Manhole C49	18.90	18.46	150	0.29%	12	VCP	0.013	1.00	1972	866	51,961	1,247,062	1.22	2.44	4.88	0.00	0	0	0	865	51,958	1,247,057	0.14%	0.14%
508	Manhole C49 to Manhole C46	18.46	18.48	68	-0.03%	12	VCP	0.013	1.00	1972	866	51,961	1,247,062	1.22	2.44	4.88	0.00	0	0	0	865	51,958	1,247,057	0.14%	0.14%
509	Manhole C46 to Manhole C29	18.48	17.74	410	0.18%	12	VCP	0.013	1.00	1972	679	40,759	978,208	1.22	2.44	4.88	0.00	0	0	0	678	40,756	978,203	0.18%	0.18%
Section Analysis		22.38	17.74	1,775	0.26%																				
		Max	Min	Total	Average																				

Total 1756.8 gpd Average daily flow

Notes:
1) Based on Manning's Equation.
2) Sanitary Flows are estimated based on WaterCad Drinking Water Model

Village of Green Island
Dyke to Bleeker to Pump Station

Cohoes/Dyke to Bleeker to Pump Station- This Segment is a Combined Sewer

Figure B

Segment		Inverts (ft)		Length (ft)	Slope (%)	Nominal Size (in)	Piping Material	"n" Coefficient	Diameter (ft)	Piping Age	Theoretical Capacity[1]			Existing Sanitary Demand[2]			Existing Velocity	I&I Demand (monthly Average March 2023)			Available Capacity			Sanitary Utilization	I&I Utilization
#	Description	Upstream	Downstream								GPM	GPH	GPD	ADF (gpm)	MDF (gpm)	PHF (GPM)	ft/s	GPM	GPH	GPD	GPM	GPH	GPD		
500	Manhole C42 to Manhole C37	31.01	28.38	420	0.63%	10	VCP	0.013	0.83	UNK	778	46,687	1,120,497	19.40	39	78	0.08	63	3,750	90,000	638	42,899	1,030,419	2%	11%
501	Manhole C37 to Manhole C38	28.38	22.48	33	17.88%	12	VCP	0.013	1.00	UNK	6,761	405,663	9,735,906	20.64	41	83	0.06	125	7,500	180,000	6,553	398,121	9,555,824	0%	2%
502	Manhole C38 to Manhole C36	22.48	18.00	238	1.88%	12	VCP	0.013	1.00	UNK	2,194	131,628	3,159,060	26.12	52	104	0.07	188	11,250	270,000	1,902	120,325	2,888,956	1%	10%
503	Manhole C36 to Manhole C34	18.00	15.25	263	1.05%	12	VCP	0.013	1.00	UNK	1,635	98,104	2,354,484	35.50	71	142	0.10	250	15,000	360,000	1,243	83,033	1,994,342	2%	17%
504	Manhole C34 to Manhole C32	15.25	14.70	50	1.10%	12	VCP	0.013	1.00	UNK	1,677	100,622	2,414,925	35.50	71	142	0.10	313	18,750	450,000	1,223	81,801	1,964,783	2%	21%
505	Manhole C32 to Manhole C31	14.70	14.01	260	0.27%	18	VCP	0.013	1.50	UNK	2,429	145,717	3,497,212	36.84	74	147	0.05	375	22,500	540,000	1,906	123,143	2,957,064	2%	17%
506	Manhole C31 to Manhole C29	14.01	13.45	154	0.36%	18	DIP	0.013	1.50	UNK	2,843	170,571	4,093,716	38.06	76	152	0.05	438	26,250	630,000	2,253	144,245	3,463,564	1%	17%
507	Manhole C29 to Manhole C19	13.45	12.68	272	0.28%	18	VCP	0.013	1.50	UNK	2,508	150,499	3,611,977	51.52	103	206	0.06	500	30,000	720,000	1,802	120,396	2,891,771	2%	22%
508	Manhole C19 to Manhole C18	12.68	11.66	277	0.37%	18	VCP	0.013	1.50	UNK	2,861	171,646	4,119,497	69.60	139	278	0.09	563	33,750	810,000	2,020	137,757	3,309,219	2%	22%
509	Manhole C18 to Manhole C17	11.66	11.42	66	0.36%	18	VCP	0.013	1.50	UNK	2,843	170,571	4,093,716	69.92	140	280	0.09	625	37,500	900,000	1,938	132,932	3,193,436	2%	24%
510	Manhole C17 to Manhole C16	11.42	9.95	400	0.37%	18	VCP	0.013	1.50	UNK	2,858	171,475	4,115,406	69.92	140	280	0.09	688	41,250	990,000	1,891	130,085	3,125,127	2%	27%
511	Manhole C16 to Manhole Swann CSO	9.95	8.69	450	0.28%	18	VCP	0.013	1.50	UNK	2,495	149,676	3,592,221	146.02	292	584	0.18	750	45,000	1,080,000	1,161	104,384	2,511,637	6%	36%
512	Manhole Swann CSO to Manhole C15	8.69	7.22	400	0.37%	20	VCP	0.013	1.67	UNK	3,785	227,102	5,450,454	146.02	292	584	0.15	813	48,750	1,170,000	2,388	178,060	4,279,870	4%	25%
513	Manhole C15 to Center ST PS	7.22	7.00	100	0.22%	20	VCP	0.013	1.67	UNK	2,929	175,713	4,217,114	146.02	292	584	0.15	875	52,500	1,260,000	1,469	122,921	2,956,530	5%	35%
514																									
Section Analysis		31.01	7.00	2,963	0.81%																				
		Max	Min	Total	Average																				

Total 210,269 gpd Average daily flow

Albany Meter 1,470,000 gpd Average daily flow

Albany Meter based on March Flow

Rainfall for March 2023 was 4.12 inches

Average Rainfall for March is 3.21 inches

1,260,000 gpd Average daily flow

This is I&I demand to Pump Station Only. Does not include average flow to CSOs.

Notes:

1) Based on Manning's Equation.

Pump Station	Year Built	Pump Capacity (GPM)			Existing Demand					Available Capacity			Percent Utilization[2]
		#1 Active	#2 Active	Both Active	Avg GPD	Avg GPH	Avg GPM	Peak Factor	Peak GPM[1]	Peak GPD	Peak GPH	Peak GPM	
Center St		1,500	1,500	2,000	1,470,000	61,250	1,021	2.0	2042	-780,000	-32,500	-542	136%

Notes:

1) Peak GPM is based on actual measured maximum flow conditions.
2) Sanitary Only.
3) With I&I loads.

Appendix F

Anticipated Future Water and Sewer Demand

Anticipated Future Water and Sewer Demand

Development Group	Potential Development Timeframe (Years)	Address	Current Industry	Development Potential	Demand (gpd)	Average Demand (gpm)	Peak (gpm) Peaking Factor x2
Type 1 (Development Proposed or Underway)	1	147 Cannon Street	Vacant	Development Proposed	2,250	3.13	6.25
	1	Cannon Street	Vacant	Potential for Residential 150 units	24,750	17.19	34.38
	Total Development Year 1				27,000	20.31	40.63
Type 2 (Development from growing industries)	2 to 5	185 Cohoes Ave	Food Manufacturing	Business expansion, or add'l food storage/distribution	250	0.35	0.69
	2 to 5	80 Cohoes Ave	Food Manufacturing	Expansion - Food manufacturing industry growing in	500	0.69	1.39
	2 to 5	70 Cohoes Ave	Food, Other Manufacturing	Expansion or add'l business - food manufacturing industry growing	10,000	13.89	27.78
Type 3 (Development encourages commercial uses)	2 to 5	65 Cohoes Ave	Vacant	Commercial cluster	3,250	3.39	6.77
	2 to 5	85 Cohoes Ave	Building Supplies Manufacturing	Related commercial - showroom, sales office	1,300	1.35	2.71
	Total Development Years 2 to 5				15,300	19.67	39.34
	5 to 10	75 Cohoes Ave	Building Supplies Manufacturing	Related commercial - showroom, sales office	1,300	1.35	2.71
Type 4 (Existing development with room to expand)	5 to 10	30 Veteran Memorial Dr	Durable Goods Manufacturing	Potential for Sealy to reactivate existing capacity	1,500	2.08	4.17
	Total Development Years 5 to 10				2,800	3.44	6.88
	10 to 15	260 Cannon St	Consumer Goods Manufacturing	Manufacturing has room to grow. Potential for commercial or recreation if residential project created nearby.	9,000	12.50	25.00
Type 5 (Manufacturing Potential, Long Term)	10 to 15	195 Cohoes Ave	Building Supplies Manufacturing	Business expansion or complementary building supplies manufacturing	4,500	6.25	12.50
	10 to 15	100 Cohoes Ave - NW End	Durable Goods Manufacturing	Business expansion or subdivision for warehouse	9,000	12.50	25.00
	10 to 15	160 Cannon St	Vacant but improvements have been made to parcel	Desirable size parcel est. 10 acres even if Superfund site is isolated. Large manufacturing may be possible.	18,000	25.00	50.00
	10 to 15	NE Cor Cohoes and Tibbits	Vacant	Recommend looking into separating some of parcel adjoining 65 Cohoes Ave. The rest is unlikely to be developed inside 15 years.	18,000	25.00	50.00
	10 to 15	1 Tibbits Ave	Machining Metals Manufacturing	Highly visible gateway parcel - 50,000 SF new manufacturing	4,500	6.25	12.50
	10 to 15	1A Tibbits Ave	Vacant	Desirable size parcel - 50,000+ SF	4,500	6.25	12.50
Total Development Years 10 to 15					67,500	93.75	187.50
Grand Total After Year 15					112,600	137	274

Appendix G

Opinion of Probable Construction Cost

Green Island Water and Sewer Infrastructure Study

Opinion of Probable Construction Cost

Sanitary Sewer

Item	Quantity	Unit	Unit Price	Total Price	Notes
Separate Storm Sewer- Tibbits Avenue & North					
12" Storm Sewer	2100	LF	$ 85.00	$ 178,500.00	
24" Storm Sewer	1500	LF	$ 110.00	$ 165,000.00	
Drainage Manholes	8	EA	$ 7,500.00	$ 60,000.00	Estimated at junctions in storm sewer.
Catch Basins	32	EA	$ 5,000.00	$ 160,000.00	Estimated every 200 feet of roadway, both sides of road- area is flat.
Storm Sewer Laterals (12"), Disconnect Existing Storm from Sanitary	20	EA	$ 7,500.00	$ 150,000.00	One to each property/building- future build-out consideration
Road Subbase (12")	1600	CY	$ 25.00	$ 40,000.00	Assume half of roadway disturbed.
Asphalt Roadway Binder (3")	850	TON	$ 285.00	$ 242,250.00	Assume half of roadway disturbed.
Asphalt Roadway Top Course (1.5")	850	TON	$ 325.00	$ 276,250.00	Assume new top course entire road width roadway.
General Conditions, Test Pits, Traffic Control, etc.	1	LS	$ 190,800.00	$ 190,800.00	15% of Storm Sewer Installation
Subtotal				$ 1,462,800.00	
Contingency (25%)				$ 365,700.00	
Construction Total (2024 Dollars)				$ 1,828,500.00	
Engineering, Legal, Construction Administration (30%)				$ 548,550.00	
Total 2024 Construction Costs				$ 2,377,050.00	

George Street Combined Sewer Project- From MJ Engineering Report					
Estimate in 2021 Dollars				$ 857,700.00	
Escalate to 2024 Dollars				$ 1,090,000.00	Assume 10% 2021-2023, then 5% annually

Appendix H

Village of Green Island Water and Sewer Rates

WATER RATES

⅝" Meter	First 1,000 cu. ft. or less	$70.25 (minimum charge)
	Next 24,000 cu. ft.	49.34 per 1,000 cu. ft.
	Over 25,000 cu. ft.	36.53 per 1,000 cu. ft.
¾" Meter	First 1,250 cu. ft. or less	$87.98 (minimum charge)
	Next 23,750 cu. ft.	49.34 per 1,000 cu. ft.
	Over 25,000 cu. ft.	36.53 per 1,000 cu. ft.
1" Meter	First 2,250 cu. ft.	$158.18 (minimum charge)
	Next 22,750 cu. ft.	49.34 per 1,000 cu. ft.
	Over 25,000 cu. ft.	36.53 per 1,000 cu. ft.
1 ½" Meter	First 4,250 cu. ft.	$298.68 (minimum charge)
	Next 20,750 cu. ft.	49.34 per 1,000 cu. ft.
	Over 25,000 cu. ft.	36.53 per 1,000 cu. ft.
2" Meter	First 7,000 cu. ft.	$491.70 (minimum charge)
	Next 18,000 cu. ft.	49.34 per 1,000 cu. ft.
	Over 25,000 cu. ft.	36.53 per 1,000 cu. ft.
3" Meter	First 13,300 cu. ft.	$934.20 (minimum charge)
	Next 11,700 cu. ft.	49.34 per 1,000 cu. ft.
	Over 25,000 cu. ft.	36.53 per 1,000 cu. ft.
4" Meter	First 22,500 cu. ft.	$1,580.24 (minimum charge)
	Next 2,500 cu. ft.	49.34 per 1,000 cu. ft.
	Over 25,000 cu. ft.	36.53 per 1,000 cu. ft.

FIRE PROTECTION CHARGES

Sprinkler System with Meter	$ 70.25 per quarter
Sprinkler System without Meter	$128.87 per quarter
Private Fire Hydrant	$182.64per quarter
Public Fire Hydrant (Maplewood)	$227.76 per quarter

FROZEN METER CHARGES

5/8 " Meter	$121.70
¾" Meter	$179.13
1" Meter	$243.38
1 ½" Meter	$382.47
2" Meter	$521.55

SEWER RATES

Flat Rate	**$15.08 per 1,000 cu. ft. (minimum charge)**

LATE CHARGES

BILLING MONTH	**NO CHARGE**
FIRST MONTH OR FRACTION THEREOF AFTER DUE DATE	**5.0 %**
EACH ADDITIONAL MONTH OR FRACTION THEREOF	**½ of 1 %**

APPLIES TO EACH BILLING PERIOD

EFFECTIVE – November 1, 2018 Billing