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Engineering Report
EPG #105268

Village of Coxsackie
NY0033545

Collection System plan

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CONTENTS

MAPS

ATTACHMENTS

Executive Summary

The Village of Coxsackie was first developed in the early 1700s. The wastewater collection system is known to include areas of pipe that may be as much as 100 years old. The Village has been under a New York State Department of Conservation (NYS DEC) Order on Consent to eliminate sanitary sewer overflows since 2009. Reduction of infiltration and inflow (I&I) is important to eliminating overflows. The wastewater collection system and treatment plant are important to the overall community well-being and redevelopment potential. Under the Consent Order, new connections to sewer cannot be made without infiltration and inflow reduction in the collection system.

The wastewater treatment plant (WWTP) and a pump station as well as related collection system gravity pipe and force main were upgraded, and two overflow sites were removed, in 2019 and 2020. However, significant storm rain events can still cause the collection system to overflow.

This report has been prepared under an Engineering Planning Grant (2020) in order to evaluate the collection system and provide recommendations for future improvements with the purpose of reducing infiltration and inflow. Previous mapping of the collection system and condition information was relied upon to define evaluation work and updated using site inspections and video technology.

Smoke testing in 2021 by Delaware Engineering and the Village identified areas with catch basins connected to sanitary sewer, manholes in need of repair, residential roof drain or floor drain connections to the sewer line, and broken laterals.

Closed circuit television (CCTV) inspections carried out in 2022 under the EPG, as well as in 2010, 2020, and 2021, were analyzed for pipe conditions, manhole conditions and potential stormwater connections.

Priority areas for reduction of I&I that were identified are stormwater catch basins found to be connected to sanitary lines and leaking manholes that are frequently inundated in snow melt and rain events. Manholes in the collection system along Coxsackie Creek and its tributary were inspected and determined to be in need of improvement.

Recommendations from this evaluation of the collection system include acknowledgement that there are catch basins connected to sanitary sewer lines, especially in older areas of the Village of Coxsackie. Priority projects defined in this report essentially create an update to the 2016 SSO Abatement and Elimination Plan.

Recommendations also include future action to replace or line older sewer pipes to remove infiltration of storm water into pipe deficiencies, but also to prevent catastrophic failure of old clay pipes. Repairs after a failure usually result in higher costs than does the maintenance repairs to prevent failure.

Mapping of the stormwater system including catch basins, stormwater pipes and outfalls is also recommended. The stormwater system in the Village is very old in many areas and no maps exist to assist with maintenance and upgrades.

Recommendations also include correction of household non-wastewater connections to the collection system. The Village should continue to notify residents when issues with the service laterals are found.

The Department of Correction and Community Supervision (DOCCS) collection systems at both Greene and Coxsackie facilities are contributory to the Village sanitary collection system. There is presently an agreement between DOCCS and the Village to provide funding for the recent improvements to the sewer system from which the DOCCS facilities benefit; however, provisions governing matters such as the introduction of infiltration and inflow into the Village sewer system by the DOCCS facilities are not incorporated in the agreement. An agreement that defines the roles and responsibilities of both DOCCS and the Village is needed. This step will assist the Village in working with DOCCS to address sources of I&I that affect the Village POTW.

1.0 PROJECT BACKGROUND and HISTORY

1.1 Site Information

The Village of Coxsackie operates a wastewater treatment plant located on South River Street in the Village of Coxsackie, Greene County, NY. See Figure 1 for a location map. The Village wastewater treatment facility was constructed in 1971 and consisted of a contact stabilization activated sludge process incorporating influent screening, influent pumping, settling, sludge dewatering and disinfection. The 1971 system was permitted for 0.75 million gallons per day (MGD) on a 30-day average basis.

In 1996, the facility was upgraded to 1.25 MGD with an additional aeration basin, aeration system, secondary clarifier and disinfection chamber. Modifications were also made to the existing process tanks.

The WWTP was recently upgraded, and collection system improvements included work on the West Coxsackie Pump Station and extension of the force main, work on the Riverside Pump Station, as well as the sewer line and stormwater system at the WWTP, on South River Street and Reed Street to Lower Mansion Street. The upgrade improved hydraulics and treatment effectiveness, and increased the permitted SPDES flow limit to 1.5 MGD.

The treated effluent is discharged to the Hudson River under New York State Department of Environmental Conservation SPDES Permit Number NY-0033545. The existing facility is permitted to handle 1.5 MGD. The Village has been under a New York State Department of Conservation (NYS DEC) Order on Consent to eliminate sanitary sewer overflows since 2009. See Attachment A for a copy of the permit and consent order.

The West Coxsackie Pump Station receives wastewater from the western part of the Village of Coxsackie from gravity sewers located on Kings Road, Apple Blossom Lane, and Mansion Street. Raw sewage is also received from a portion of the Town of Coxsackie. Prior to the recent upgrade, the pump station pumped this flow through approximately 4,100 LF of 10” ductile iron force main to the gravity portion of the collection system near Spencer Boulevard. From this location it flowed via gravity to the WWTP. The pump station force main discharged to a 12” gravity sewer on Mansion Street which had a capacity of 700 gpm (slight surcharges likely occur with one pump in operation). As a result, during periods of heavy flow, the capacity of the pumping system exceeded the capacity of the downstream gravity sewer and caused overflows of sewage through the SSO (SSO # 002) located immediately upstream of the pump station.

To eliminate this issue the Village extended the force main from the West Coxsackie Pump Station and connected the force main to the existing gravity sewer at the intersection of Mansion Street and Washington Street. The piping downstream of this connection has sufficient capacity to accept and convey greater than 1,600 gallons per minute (gpm). The West Coxsackie Pump Station was gutted and rebuilt. With proper maintenance, the physical components West Coxsackie Pump Station have a useful life expectancy in excess of 30 years.

The Riverside Pump Station receives wastewater from a gravity sewer along Riverside Avenue and Noble Street to the west of the pump station. The pump station discharges this flow through approximately 1,150 LF of 6" cast iron force main towards the east and south where the flow discharges to an 8" gravity sewer. The Riverside Pump Station was constructed during the original collection system construction in 1971. The pumps were replaced as part of a small upgrade nearly 20 years ago and decreased performance of the pumps was likely the result of wear within the pumps. The pump station was rebuilt and new pumps installed during the wastewater treatment plant and collection system upgrade project, increasing efficiency and eliminating overflows.

The 18" gravity sewer on South River Street, Reed Street and portion of lower Mansion Street lacked capacity to convey the current wet weather flows (capacity was 3.0 mgd). This resulted in surcharges and overflows at the Reed Street SSO as well as manholes within the system. To address this, approximately 2,080 linear feet of this clay pipeline was replaced with 24" PVC gravity sewers, manholes were repaired or replaced and storm sewers upgraded. This upgrade increased the capacity of the sewer line to 6.0 mgd and eliminated the surcharges and overflows which occurred due to lack of capacity in this section.

Since these improvements were completed, along with those within the WWTP, the system has experienced fewer overflows, but has still experienced overflows in several larger storms. The intent of this report is to evaluate the collection system and present a plan for projects necessary to further reducing the inflow and infiltration to the system in rain events.

1.1.1 Location

The Village of Coxsackie is located in Greene County, New York, along the west shore of the Hudson River. The Village is approximately 2.6 square miles. See Figure 1, Location Map. The Hudson River (a Class A waterbody) is tidal at this location, and the river edge is low and marshy. State Route 385 runs through the village, and State Route 9W borders the village on the west. The Reed Street Historic District is a national historic district along the Hudson River. The district contains 30 contributing buildings, a collection of mid-19th century, two- and three-story commercial buildings. Recent renovations have taken place to re-enliven Reed Street and many are continuing.

1.1.2 Geologic Conditions

According to the NRCS WebSoil Survey map tool, the majority of the soils in the area of the village are calcareous clayey glaciomarine deposits, clayey silty glaciolacustrine deposits or loamy over clayey glaciolacustrine deposits. See Attachment B for soils map.

The soils of greatest extent, Shaker very fine sandy loam (Sh) and Kingsbury and Rhinebeck soils (KrA and KrB), are not considered hydric soils, but do exhibit shallow water tables of 0 to 18 inches. Generally, the village soils exhibit depths of over 80 inches to a restrictive layer, however soils such as the Shaker soils exhibit a shallower (18 to 40 inches) depth to the clayey contrasting textural stratification layer.

Topography in the Village is generally flat, with areas on the southeast and northeast of rolling to very rocky soils with 10 to 20 inches to lithic bedrock. There are steeper slopes in these areas. The eastern side of the Village borders the Hudson River, an area of very low topographic relief.

1.1.3 Environmental Resources

The Hudson River forms the eastern boundary of the Village of Coxsackie. The Hudson is a Class A waterbody here. The Hudson River (1301-0276) is tidal at this location, with average tide ranges of about three feet. The river and bordering marshes are freshwater as this area is north of the Hudson River salt front.

Coxsackie Creek (1301-0092) runs through the Village from the west to northeast and joins the Hudson River in the Town of New Baltimore, across the river from Stuyvesant, New York. An un-named minor tributary (1301-0223) to the Hudson River runs through the southeast portion of the Village directly to the Hudson River.

There are many wetland areas along the creeks and tributaries, some are mapped by NYSDEC and some are on the National Wetland Inventory. The wetlands of Coxsackie Creek are State Regulated Wetlands in the area of the West Coxsackie Pump Station.

The Village is in the vicinity of a Significant Winter Raptor Concentration area.

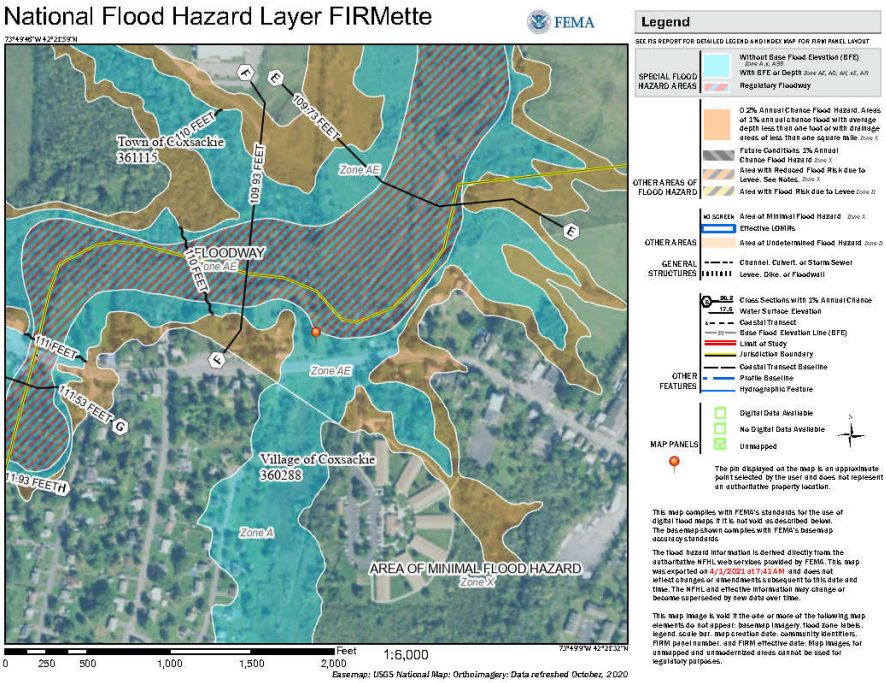
1.1.4 Floodplain Considerations

Flood Insurance Risk Maps (FIRMs) as provided by FEMA identify two main areas of flood risk in the Village of Coxsackie. These are; Coxsackie Creek and its tributary in the area to the north and west of the West Coxsackie Pump Station (36039C0277F, May 16, 2008) and along Route 9W to the south, and areas along the bank of the Hudson River, to the northeast of the eastern end of Mansion Street and east of South River Street (36039C0281F, May 16, 2008).

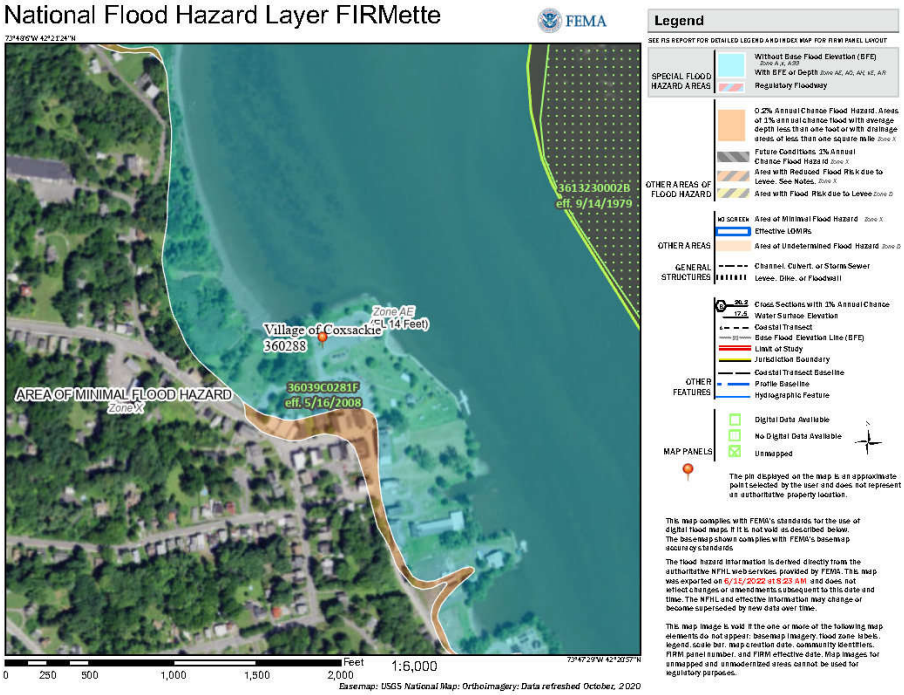
Sewer lines do run beneath roads and through undeveloped easements in these flood prone areas, as well as along South River Street and other areas along the Hudson River.

Current NYS DEC climate projections include rain events of increased intensity and sea level rise. Evaluation of the collection system will result in future projects to increase the resilience of the Village sewer system by decreasing inflow and infiltration in those areas most at risk of flood and sea level rise impacts.

FIRM Coxsackie Creek at West Coxsackie Pump Station



FIRM Village of Coxsackie at Hudson River



1.1.5 Environmental Justice Areas

Planning for repairs and/or replacement of problem areas of the wastewater collection system, and future maintenance needs, will benefit the Village as a whole. The majority of the Village (MHI $57,422) is connected to the sewer system. Of the total 967 residential accounts on the system, 904 are in the Village and 63 are users in the Town. Two large customers of the collection system are the Greene and Coxsackie Correctional Facilities, which are Environmental Justice communities. The wastewater collection systems and treatment plant capacity are important to the overall community sustainability and redevelopment potential. Under the current consent order, new connections to sewer cannot be made without prior reductions to infiltration and inflow to prevent overflows. See Attachment A for a copy of the Order on Consent.

Potential Environmental Justice Community Map

https://www.arcgis.com/home/webmap/viewer.html?
url=https://services6.arcgis.com/DZHaqZm9cxOD4CWM/ArcGIS/rest/services/Potential_Environmental_Justice_Area__PEJA__Communities/FeatureServer&source=sd

(as accessed 06/10/2022)

1.2 Ownership and Service Area

The Village of Coxsackie owns and operates the WWTP and collection system. The Village is approximately 2.6 square miles in size and the population of approximately 2,746 people is estimated to contribute less than 40% of the wastewater flow to the WWTP based on metered

water use data. Single family homes make up the majority of the users in the Village portion of the system.

1.2.1 Outside Users

The Village of Coxsackie wastewater treatment plant receives wastewater flows from portions of the Towns of Coxsackie and New Baltimore, as well as the NYSDOCCS Greene Correctional Facility (opened 1984) and Coxsackie Correctional Facility (opened 1935), and the new Greene County Jail.

An Intermunicipal Agreement is in place between the Village of Coxsackie and the Town of New Baltimore for Kalkberg Commerce Park on Route 9W to the north.

An Intermunicipal Agreement is in place between the Village of Coxsackie and the Town of Coxsackie for wastewater treatment for the commercial/industrial area along Route 9W, north and south of the intersection of Mansion, Rte 81 and 9W as well as areas to the south of the Village also characterized primarily as commercial/industrial in nature.

Based on metered water use data, it has been estimated that 40% of the total flow is from the Village of Coxsackie, Town of Coxsackie, and Town of New Baltimore. The Greene Correctional Facility and the Coxsackie Correctional Facility, combined, produce a flow equal to approximately 60% of the total.

There is presently an agreement between DOCCS and the Village to provide funding for the recent improvements to the sewer system from which the DOCCS facilities benefit; however, provisions governing matters such as the introduction of infiltration and inflow into the Village sewer system by the DOCCS facilities are not incorporated in the agreement. An agreement that defines the roles and responsibilities of both DOCCS and the Village is needed.

1.2.2 Industrial Discharges and Hauled Waste

According to the wastewater treatment plant operator, there are no industrial inputs to the WWTP that would require pretreatment under either NYS or Federal guidance. Ducommun Aerostructures discharges pH-adjusted wastewater as per Village of Coxsackie Local Law (Chapter 119-31, Enumeration of Prohibited Discharges). The only hauled waste received is sludge from the Village water treatment plant.

1.2.3 *Population Trends and Growth*

According to U.S. Census Data the population of the Village of Coxsackie has declined by approximately 6% in the last twenty years. The 2000 population was 2,895; in 2010, 2813; and in 2020, 2746.

The Village is currently involved in the planning process for a Local Waterfront Revitalization Plan, prioritizing the need for infill development of currently vacant commercial properties. The 2008 Town and Village Comprehensive Plan also emphasized the redevelopment and infill building in the Village core, which is dependent upon wastewater treatment capacity.

Recently, the Coxsackie State Boat Launch and Riverside Park, which serves as the central public square in the village, underwent renovation through the Hudson Eagles Recreation Area, to improve public access and resiliency. The project was completed and the new park opened in May 2022.

1.3 Existing Facilities and Present Condition

The Village of Coxsackie WWTP discharges to the Hudson River under SPDES permit NY0033545. The permit allows a discharge of a monthly average of 1.5 MGD, since completion of the WWTP upgrades in 2020. The WWTP was designed to handle a peak hourly flow of 6.0 MGD. See Attachment A for a copy of the permit.

Records of wastewater flows for the WWTP and WCPS were reviewed for 2022, some examples of dry weather and wet weather flows are included in Table 1.3. It should be noted that 2022 was a drier than average summer season. Wastewater daily flows in the driest month, July, ranged from 0.601 MGD to 1.177 MGD with an average of 0.700 MGD. Wastewater daily flows in the wettest month, April, ranged from 0.827 MGD to 3.980 MGD with an average of 1.471 MGD. Wastewater flows at the West Coxsackie Pump Station are highly influenced by the level of flow in Coxsackie Creek. If weather conditions are such that the Creek overflows its banks, leaking manholes allow the creek to enter flows at the WCPS, which may lead the operator to decide to by-pass flow at the WCPS to prevent sending high creek water flows to the WWTP.

Table 1.3: Low and High Month Flow Data for 2022

Month 2022	Location	Monthly Flow Avg (gpm)	Max Day Avg. Flow (gpm)	WWTP Effluent Max (gpm)	Total Max Day (MGD)	Rain (in)	Max Flow Day Precipitation
February	WWTP	727.5	1370.3	2248.3	1.971	0.1	2/18, 56F, 0.1" rain, 4" snow
	WCPS	180.4	408.7		0.590		
April	WWTP	1063.8	2914.9	3592.3	3.981	2.5	4/8, 50sF, 2.5" rain total, 0 snow
	WCPS	276.2	754.3		1.090		**(WCPS bypass, creek over banks)**
May	WWTP	596.2	756.7	1785.0	1.055	0.6	5/16, 60sF, 0.55" rain
	WCPS	143.4	238.7		0.330		
July	WWTP	504.7	832.6	3109.9	1.177	0.4	7/18, 60sF, 0.43" rain week
	WCPS	97.3	162.6		0.230		creek very low and narrow
October	WWTP	646.5	1345.6	2202.1	1.807	2.1	10/14, 50sF, 2.06" rain
	WCPS	144.8	372.6		0.490		
December	WWTP	942.0	2521.7	3911.0	3.621	2.6	12/23, 30sF, 2.57"rain, 5" snow
	WCPS	220.0	815.2		1.170		**(WCPS bypass, creek over banks)**
		461.9	1041.1	2808.1	1.46	average	

The Village is subject to an order on consent (R4-2008-1002-114M, modified in 2013), the Schedule of Compliance of which includes requirements to plan and take action to abate overflows. See Attachment A. The Order on Consent also includes a sewer connection moratorium with interim relief based on work done to reduce infiltration and inflow.

Several WWTP studies and plans were completed prior to this collection system evaluation. Previous work includes metered flow studies (2007, 2012), manhole inspections (2013 to 2015) and CCTV (2020, 2021, 2022 and older). The previous work was reviewed in order to plan evaluations to be completed under the Engineering Planning Grant. See Attachment C for a summary of past and present investigations and repairs.

The collection system sub-sections utilized in the 2007 Flow Meter study were used during this evaluation to break the Village collection system into sewer sheds as a tool to understanding the flow through the system. See Figure 3 for a map of meter areas. Flow monitoring work in 2007 and 2011 found that infiltration and inflow into the system greatly increased during storm events and periods where the ground water table is elevated with respect to the collection system. An average storm normalized I&I gallons per inch rain per foot of collection system was estimated to be approximately 4 gallons/inch rain/foot pipe. The Coxsackie Creek sewer line flow monitoring in 2011 and 2012 indicated an average storm related I&I rate of 47,497 gallons per day during 11 days of various rain events.

In 2010 CCTV inspection was conducted on Bailey St, Cato St and Raymond Street. Pipes were found to be of clay, with infiltration, cracks and bad joints. In 2012 ten manholes on Spencer, Cato and Bailey Streets suspected of infiltration were rehabilitated with resin liner.

In 2015 the following collection system improvements were conducted on Bailey, Cato and Raymond streets, based on the above investigations;

- Replacement of four residential laterals;
- Rehabilitation of nine manholes with resin-based liner; and,
- Rehabilitation of 2,645.37 linear feet of collection system piping with cured in place pipe.

The Asset Management Plan, 2016, included an inventory of accessible manholes in the collection system conducted by personnel from the Village of Coxsackie, Rural Water Association and Delaware Engineering. Accessible manhole locations were documented using a Trimble global positioning system. The location of manholes not accessible (covered by pavement, etc.) was estimated based on existing collection system mapping and knowledge of Village personnel.

As part of the mapping project, the condition of all accessible manholes, including observations of any evidence of I&I, and documentation of piping size, piping material, condition of piping and direction that piping enters the manhole were recorded. An estimate of location and quantity of collection system piping material in the collection system was developed based on the manhole inspection data, existing collection system maps and Village wastewater treatment plant knowledge.

Prior to the upgrade project, there were approximately 106,073 linear feet (20.1 miles) of sanitary sewer collection piping, including force mains, in the system consisting of clay, PVC, iron and cured in place (CIPP) lined pipe:

- Clay: 40,653 linear feet.
- PVC: 53,891
- Iron: 8,230
- CIPP Lined: 3,299.

The WWTP project included replacement of 2,080 LF of clay pipe at South Riverside, at the WWTP north through Reed Street, with 24" gravity PVC pipe and MH and CB/storm pipe repair and replacement. The West Coxsackie PS force main was extended with 2,300 feet of HDPE. Therefore, the current collection system is estimated to consist of:

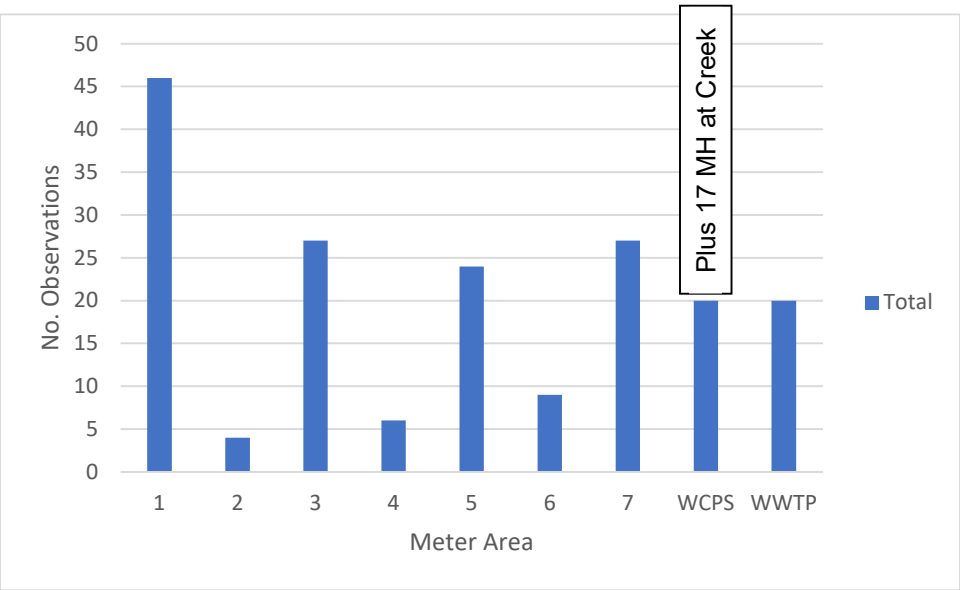
- Clay: 38,573 linear feet.
- PVC: 55,971
- Iron: 8,230
- CIPP Lined: 3,299
- HDPE 2,300

There are approximately 378 manholes in the collection system, of these, 121 were not accessible to the 2015 inventory and the condition could not be evaluated. Of the 257 manholes that were inspected 46 are brick, 20 have been recently lined, one is constructed of concrete block and the remaining 190 are concrete. Infiltration was observed in 69 of the 257 manholes that were inspected. Inaccessible manholes, most of which are in the older sections of the Village, are continually located as on-going work in the Village progresses, such as smoke testing, CCTV inspection and road maintenance.

Smoke testing in 2021 by Delaware Engineering and the Village identified areas with catch basins connected to sanitary sewer, manholes in need of repair, residential roof drain or floor drain connections to the sewer line, and broken laterals. The manholes along Coxsackie Creek also smoked excessively, indicating high infiltration potential. Several previously unlocated manholes were located. See Attachment D for the Smoke Test Report. Figures 5a and 5b map locations of smoke test findings together with CCTV inspection results.

The following information is a summary of collection system condition by meter area, representing sub-sewersheds. Table 1.3.1 presents a chart of the number of smoke testing observations, but does not include observations of connected manholes that smoked only at cover vents or building roof vents as these indication of connection to sanitary sewer are expected. Table 1.3.2 presents smoke test observations by type total as well as divided between those observed on collection system mains and laterals.

Table 1.3.1: Summary of Smoke Test 2021 Observations by Meter Area
(Excluding normal manholes and roof vents)



MH= manhole

Table 1.3.2: Smoke test observations by type
(Excluding normal manholes and roof vents)

Smoke type observations Total		Service Laterals	Collection Main
Catch Basins	31		31
Laterals/Ground	30	28	2
Roof Leads	14	14	
Floor drains or other	19	19	
Leaking Manholes	37		37

Meter Area Evaluation Summary

Meter Area 1, the collection system immediately west of the WWTP including streets Lafayette Avenue (southern end), Washington, Freleigh Place, Prospect, Elm, New and Reed Streets as well as lower Mansion Avenue. Smoke testing in this area showed catch basins connected to the sewer system, manholes in need of replacement/repair, indications of broken laterals or sewer lines, and some non-sewer building connections to the sewer collection system.

Meter Area 2, a smaller area of the collection system along Sunset Boulevard which receives the force main from the NYS Correction Facilities. Observations of smoke testing in this area were of roof vents (homes and the school building), normally expected manholes and one potential lateral break.

Meter Area 3, the area to the north of the WWTP, including Riverside Avenue, Lee Terrace, Wayne Drive and Noble Street, with the eastern portion of Van Dyck and the northern portion of Lafayette. Smoke testing in this area showed several catch basins are connected to the sewer system, a good number of manholes need replacement or repair, a few potential lateral line breaks, some roof leaders connected to sewer and one smoking water valve cap. Manholes in the Van Dyck Woods were also observed to smoke excessively.

The WWTP receives wastewater directly from the south and southwest, this area includes Church Street, Hollister, Ely and the eastern end of New Street as well as Molly White and Sutton. This is an older area of the collection system, with more clay pipes. Smoke testing found catch basins connected to the collection system, one manhole cover in need of repair/replacement, a potential broken lateral and one home with a non-sewer connection to the collection system.

Meter Area 4, flows toward WCPS, and collects from the area south of Mansion Street on both sides of the rail line, including Bailey, Raymond and Cato Streets and Spencer Boulevard. Smoke testing showed a few manholes that need repair/replacement, one potential broken lateral and one home non-sewer connection.

Meter Area 5, flows toward WCPS, from the area north of Mansion Street on both sides of the rail line, including Whitbeck, Lawrence, Mansion and the western end of Van Dyck Street. Smoke testing revealed a few catch basins connected to the collection system, a few manholes needing repair/replacement, two areas of broken laterals, and several homes with roof leads or basement drainage connected to the sewer collection system.

Meter Area 6, the area south of and flowing to the WCPS, including Luke, John and Matthew Streets. Smoke testing in this area found two catch basins connected to the collection system, one manhole badly in need of replacement, and two potentially broken home laterals.

Meter Area 7, the area southwest of and flowing to the WCPS, including Kings Road, Apple Blossom Lane and Howard Street. Smoke testing in this area found two manholes that should be repaired/replaced, some areas of potential broken laterals, and two homes with non-sewer connections to the collection system.

The West Coxsackie Pump Station receives flow from the north and west, including areas along the creek and commercial areas along Route 9W and Route 81. Previous flow monitoring showed the amount of flow in the collection system in this area to be highly reactive to rain events. Discussions in 2011 had indicated intent to move sewer line away from the creek as part of DOT work on 9W, but this did not happen. Smoke testing and further visual inspection in this area found that the manholes along the creek are badly in need of repair/replacement. Commercial buildings at the intersection of Route 9W and Route 81 filled with smoke indicating either dry water traps or floor drains connected to the collection system, including two car wash bays.

Sewer collection system evaluation by CCTV was carried out in 2020, 2021 and 2022. Findings are summarized in the investigation summary at Attachment C. In general, the older parts of the collection system that include clay pipe are seen to have more deficiencies. See Attachment E for the 2022 CCTV report carried out under this planning study. See Figures 5a and 5b for maps of CCTV findings and smoke test findings.

In March 2022, a temporary doppler flow meter, powered by a solar panel, was placed in an existing meter manhole on the 10" iron force main leaving the Greene Correctional and Coxsackie Correctional facilities on Plank Road. The force main feeds to gravity sewer on Sunset Boulevard. The flow meter was set to log flow data every minute. Data taken during rain events April 1 and April 8, 2022, indicated suspected inflow and infiltration in this part of the collection system (Figure 1.3a). Data from a rain and snow melt event December 23-24, 2022 (Figure 1.3b) also indicated I&I. It should be noted that while the amount of wastewater flow increase in the data is reflective of the amount of rain, the accuracy of the flow volume daily total is uncertain. The iron pipe at this location is older than 1970 and the interior likely contains tuberculation, as do other iron pipes in this line. Tuberculation of the interior of the pipe interferes with doppler readings, which utilizes a sound signal. This apparently causes the flow meter to measure daily totals as lower than the total daily flow expected according to water consumption at the facilities.

Figure 1.3a: Inches of rain per day vs. sewer flow (April 2022)

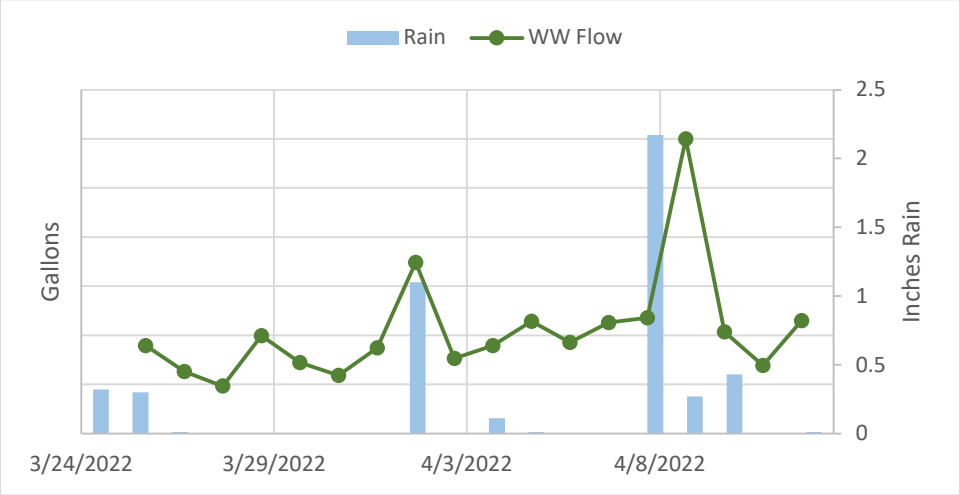
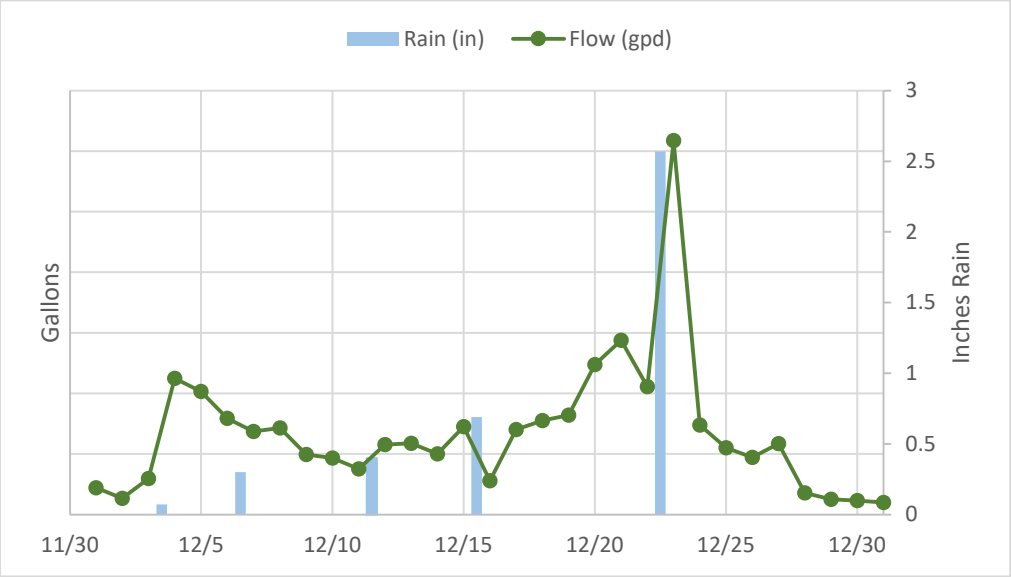


Figure 1.3b: Inches of rain per day vs sewer flow (December 2022)



Note: Temperatures to 50sF on 124, 12/7, 12/8, 12/23 and 12/4 melted snow

1.4 Definition of the Problem

The Village of Coxsackie was first developed in the early 1700s. The collection system is known to contain areas of clay pipe that may be as much as 100 years old. See Figure 4 for a map of the collection system material. Some of the piping and manholes are located in a flood hazard area. The WWTP is under Consent Order to eliminate sanitary sewer overflows. Collection system improvements related to the reduction of infiltration and inflow, such as repair/replacement of leaking manholes, are necessary. The WWTP and pump station were recently upgraded (2020), along with collection system capacity improvement at the WCPS force main and Reed Street which enabled removal of two overflow sites. However, the collection system continues to run over capacity in heavy rain events, as well as smaller rain events with accumulative antecedent rain. Overflows to Coxsackie Creek and the Hudson River occurred during the Christmas storm of 2020, the higher-than-normal rain fall of summer 2021, as well as greater than two-inch rain events in April 2022 and December 2022. The Christmas storm 2020 was a particularly strong flood event that affected the region; an estimated 2 to 6 inches of rain falling on 8 to 16 inches of snow caused widespread flooding in several counties. If weather conditions are such that Coxsackie Creek overflows its banks, flows at the WCPS may lead the operator to decide to by-pass flow at the WCPS to prevent overflows and potential damage downstream at the WWTP.

Table 1.4 lists overflows from 2021 as reported by the Village, and compared to rain measured by a rain gauge at the WWTP. Overflows are estimated by a storm event's excess flow over that flow expected in dry weather. It should be noted that 2021 total precipitation was higher than average

and flooding was more common. Table 1.3 lists the two bypass days in 2022, with information on WWTP and WCPS flows and weather for the month of those bypass events compared to months with no bypass or overflow.

This collection system evaluation and planning project was carried out with Engineering Planning Grant 2020 funds in order to determine specific improvements and priorities to reduce overflows further. Previous mapping and condition information from multiple projects carried out by the Village were utilized and expanded upon with smoke testing in 2021 and video inspections of sewer lines in 2022.

Table 1.4a WWTP Overflows of 2021 (high precipitation year)

Date	Location	Estimated gallons	WWTP rain gauge (inches)
7/8/2021	Main Plant	264,000	1.48
7/9/2021	Main Plant	100,000	1.29
	WCPS	9,000	
7/12/2021	Main Plant	72,000	1.13
	WCPS	216,000	
8/22/2021	Main Plant	912,000	0.55
	WCPS	180,000	
8/23/2021	WCPS	342,000	1.61
9/2/2021	Main Plant	52,500	1.85
	WCPS	108,000	
9/8/2021	Main Plant	360,000	2.53
	WCPS	288,000	
9/24/2021	Main Plant	94,500	1.57
10/16/2021	Main Plant	84,000	1.77
	WCPS	231,000	
11/12/2021	Main Plant	162,000	1.2
	WCPS	36,000	
4/8/2022	WCPS	516,000	2.17
12/24/2022	WCPS	1,240,800	2.57

Note: Rain data from the rain gauge at the Coxsackie WWTP read daily

1.5 Financial Status

The Village of Coxsackie sewer consumption rates consist of $4.33 per 1,000 gallons of water use for Village residents and $5.41 for Town of Coxsackie, Town of New Baltimore as well as the Correctional facilities. Water meters are read and water and sewer are billed quarterly. The Village also charges a tap fee.

2.0 ALTERNATIVE ANALYSIS

The purpose of the collection system evaluation is to present options for sustainable management and upgrade of the collection system, reducing I&I and preventing overflows. The collection system evaluation identified several areas of the Village in which there are apparent combined storm and sewer systems, manholes and residential connections contributing to inflow and infiltration, as well as aged clay pipes. Recommendations for improvements in these areas to reduce overflows are described below under Mitigation Action.

Several alternatives are considered in this section: No Action, Continue Action as an SSO, Action as a CSO. Mitigation Actions for I&I is included as a separate section as it pertains to both Action Alternatives.

2.1 No Action

The No Action Alternative is not a viable alternative as the problem of overflows will only get more difficult to handle as rain events increase in intensity with climate change. Aged clay pipes will continue to deteriorate with time and use. Available CCTV reports show areas of aged iron pipe in which capacity is diminished by tuberculation.

2.2 Continue Action as a Sanitary Sewer System

Under the current SPDES permit, the Village is operating as a sanitary sewer system. Bypass of the collection and treatment system without treatment is prohibited except when the bypass is necessary to prevent injury, loss of life or severe property damage, when there is no feasible alternative, and the Village must comply with overflow notice requirements. The moratorium on new sewer connections with interim relief based on work done to reduce infiltration and inflow would continue. Despite recent major improvements to the WWTP, pump stations, force mains and gravity sewer in specific areas, the Village experienced overflows in the Christmas storm of 2020 and heavy rain events in the summer of 2021. Continued operation as a sanitary sewer system with sanitary sewer overflows will mean continuing violations of the SPDES permit during storm events and a continued moratorium which impedes the Village's plans for redevelopment and growth. This alternative would include the actions described in Section 2.4 and 2.5.

2.3 Action as a Combined Sewer System

The collection system evaluation did identify several areas of the Village in which apparent combined storm and sewer systems exist.

Operation as a combined sewer system will require a new SPDES permit with a new Schedule of Compliance. Requirements related to combined sewer overflows (CSOs) will replace the current requirements for sanitary sewer overflows (SSOs). A Long-term Control Plan will be required to reduce overflows, however an overflow event from specified CSOs would not be considered violation of the permit. The LTCP would be comprised of actions to reduce overflows from the combined system. Major projects recommended as a result of this report essentially create the LTCP. This alternative would include the actions described in Section 2.4 and 2.5.

2.4 Mitigation Actions – Capital Plans

Data from previous evaluations, more recent CCTV reports and 2021 smoke testing were utilized in outlining project work priorities to reduce inflow and infiltration into the sewer collection system. Smoke test results identified catch basins that are connected to sanitary sewer lines in older parts of the Village, usually areas with clay sewer pipes. Removing inflow from catch basins is a priority. Manholes in the flood plain along Coxsackie Creek also need new watertight covers to prevent the inflow of stormwater and flood water. These areas were investigated by visual inspection only prior to finalizing project areas and scope of work for these recommendations. Therefore, each project's details (i.e., connection to sanitary) will be verified in actual project design, and the actual necessary scope of work will change accordingly. See project plan maps in Figures 6a and 6b. Additionally, evaluation identified leaking individual manholes throughout the collection system. See locations in Figure 7 for locations.

The recommended Phase 1 work necessary to removing I&I to the maximum extent practicable is described below. Work required at each location is expected to be adjusted as more investigation is completed during design work. Construction of each of these projects will likely affect traffic flow temporarily, as well as temporarily producing noise levels above the normal background during work hours.

2.4.1 South River Street

A catch basin on South River Street adjacent to the WWTP is connected to the sanitary sewer system. The catch basin will be disconnected from the sanitary sewer system and connected to the existing stormwater system that serves the WWTP.

Project cost estimate: $138,033

2.4.2 Church Street, Hollister Street and Ely Street

Both sanitary sewer and storm drainage in the areas of Church Street, Hollister Street, portions of Ely Street and portions of New Street is currently provided via a combined sanitary / stormwater

collection system. This combined sewer is a significant source of inflow into the system. This area will be mitigated by constructing a dedicated sanitary sewer collection system to serve these areas. The existing combined system will be improved to serve as a dedicated storm sewer system. The improved/converted stormwater system will be connected to the recently installed dedicated stormwater system on South River Street. The new sanitary sewer system will be connected to the recently installed sanitary sewer system on South River Street.

Project cost estimate: $1,162,432

2.4.3 New Street (West)

Catch basins on the upper, western area of New Street are connected to the sanitary sewer system. These catch basins will be disconnected from the sanitary sewer system and connected to the existing stormwater system.

Project cost estimate: $69,133

2.4.4 School Field to Washington Ave drain

Smoke testing and additional field inspections show that the area north of the school field behind 7 Washington Ave drains to both the sanitary sewer and the storm sewer system on Rte. 385. The connections appear to be underdrains with no defined catch basin. To address this inflow, a new drainage system will be installed which connects to the existing storm drainage structures. The connection to the sanitary sewer will be removed. This work will require easements and access to private property.

Project cost estimate: $118,492

2.4.5 Freleigh Place

Both sanitary sewer and storm drainage on a portion of Freleigh Place is currently provided via a combined sanitary / stormwater collection system. This combined sewer is a significant source of inflow into the system. This area will be mitigated by constructing a dedicated storm sewer system on Freleigh Place. All stormwater components will be redirected from the sanitary sewer to the new stormwater system, thereby creating separate dedicated sanitary and stormwater systems on Freleigh Place. The new storm sewer system will be connected to existing drainage features on the east end of Freleigh Place.

Project cost estimate: $163,343

2.4.6 Van Dyck Street and Lafayette Avenue

Both sanitary sewer and storm drainage on a portion of Van Dyck Street and Lafayette Avenue is currently provided via a combined sanitary/stormwater collection system. This area lacks an adequate stormwater system which would provide an acceptable discharge point for the existing catch basins. To address this, a new stormwater system will be installed in this area and all stormwater systems currently tied to the sanitary system will be connected to the new stormwater system. $615,227

A catch basin on Lafayette Avenue and Prospect Street is also connected to the sanitary sewer. This will be connected to the stormwater system in that area. $150,669

Project cost estimate: $765,896

2.4.7 Molly White Drive and Beechwood Drive

Catch basins at the intersection of Molly White Drive and Beechwood Drive are connected to the sanitary sewer system. These catch basins will be disconnected from the sanitary sewer system and connected to the existing stormwater system.

Project cost estimate: $36,134

2.4.8 Lawrence to Whitbeck Easement

The 10-inch gravity sewer within an easement between Lawrence Avenue and Whitbeck Street is in very poor condition. This pipeline, believed to have been constructed in 1922, has open holes extending to the surface. These holes serve to direct significant volumes of stormwater flow directly into the sanitary sewer system. This section of gravity sewer will be replaced with a larger diameter pipe. Currently the sewer pipe crosses beneath the elevated rail bed through a stormwater culvert. The project proposal would be to construct sanitary pipe in a bored casing to cross beneath the rail bed and then extend east and west to Lawrence and Whitbeck to replace the existing pipe. Project design will require coordination with the CSX Transportation railroad.

Project cost estimate: $530,439

2.4.9 Manholes along Coxsackie Creek and Tributary

A portion of the collection system upstream of the West Coxsackie Pump Station is within the flood zone of the Coxsackie Creek. The tops of these manholes are submerged any time the Coxsackie Creek floods. While the manholes themselves are in good condition, connection points between the manhole frames and the precast is cracked/broken allowing flood water to enter the system. This issue will be addressed by adding a 1' riser onto each manhole in the flood plain and installing frames that are bolted/gasketed to the manhole. The manhole covers will also be gasketed and bolted to prevent flood water from entering through the cover. The objective is not to elevate the manholes above flood levels of Coxsackie Creek but to make the manholes impervious to stormwater entry as is typical in flood prone areas.

Project cost estimate: $450,028

2.4.10 Riverside at Mansion

A catch basin on Riverside north of Mansion is connected to sanitary sewer. This catch basin will be disconnected from sanitary and tied to the existing stormwater system.

Project cost estimate: $58,754

2.4.11 Miscellaneous Repairs

Multiple manholes requiring replacement/correction work on the frame and covers have been identified throughout the system. Replacement and adjustments to these manholes will be undertaken. See Figure 7 for a map of these manholes.

Project cost estimate: $327,691

As many as four suspected lateral line breaks due to utility pole conflict were identified, which may require coordination with the utility to correct or bypass. See Figure 8 for locations.

Project cost estimate: $50,463

2.4.12 Prioritization

Elimination of stormwater driven overflows is required under the SPDES permit and Order on Consent. Catch basin connections to the sanitary collection system, stormwater contributions from manholes, and pipe replacement or repair are required in order to reduce I&I. The various project areas were prioritized by estimation of inflow potential in order create a project plan. Completion of all recommended capital projects will remove inflow and infiltration to the maximum extent practicable, and extend the service life of the collection system.

Contributions from each catch basin to the sanitary system were estimated using HydroCAD 10.10-7c. For each individual catch basin or set of co-located catch basins, the subcatchment area was mapped using topographic data in a GIS system. The area and slope and land covers were estimated from GIS and aerial photos (Google Maps and/or ESRI layers). The regional rainfall is described by the Type II storm and the average two-year 24-hour storm, 2.82 inches of rain, was used in HydroCAD to calculate runoff by the log/CN method. Each catch basin was assumed to be directly connected to sanitary, though in some locations, the connection status is not currently known. The resulting potential contribution of stormwater for each catch basin or set of catch basins was utilized in prioritizing projects. Figure 9a and 9b map the catch basin areas utilized in HydroCAD calculations.

Table 2.4: Prioritization of Project Areas by Potential Stormwater Contributions

No. of CB	Street or Area	Type II, 2.82" rain event contribution (gallons)	Sub-catchment area (acres)	HydroCAD runoff (acre feet)
	Lawrence/Whitbeck Easement Sanitary	Sanitary in bad condition		Not enough information to model
17 MH	Coxsackie Creek and Trib	132,947 (very conservative)	29.7	0.408
8	Church, Hollister, Ely, New (total)	234,938	7.36	0.721
4	Lafayette at Wayne	145,330	4.79	0.446
1	S Lafayette at Prospect	99,711	2.55	0.306
2	School Field	96,778	4.47	0.297
3	New St (west)	92,868	2.38	0.285
1	Molly White	72,991	2.06	0.224
1	South River	63,541	2.21	0.195
1	Riverside	45,945	1.89	0.141
2	Freleigh	42,034	1.25	0.129

MH = manholes

The same calculation was completed for the manholes along Coxsackie Creek and its tributary, using an assumed ½-inch x 8-inch gap under the manhole cover to allow storm water to enter each of 17 manholes in the FIRM flood hazard zone. This defect was observed in MH 11-20. While several other manhole covers exhibited splits, missing pieces or were mud covered, MH 11-20 was used as an assumed average defect. Storm water from rainfall only was used in the estimate, manholes were the secondary storm water path while the creek itself was the primary. Floodwater flowing from the creek itself, inundating manholes and contributing storm water to sanitary, was not included in the estimate. The estimated approximately 133,000 gallons stormwater contribution from a two-year 24-hour storm is therefore a very conservative estimate.

The estimated overflow volumes from a 2.53-inch storm, as in Table 1.4, was 648,000 gallons. The estimated excess storm water volume as modeled by HydroCAD and included in Table 2.4 as capital improvement projects is 894,136 gallons for the slightly larger 2.82" rain event. This estimated total does not include the entirety of potential stormwater entering leaking manholes along Coxsackie Creek due to rising of the creek itself.

Repair of all of the problem areas listed, therefore, is likely needed to stop all overflows in heavy rain events. The top five or six listed projects are needed, at a minimum, due to their stormwater contribution to the collection system, but also due to system age and deteriorated condition overall. These areas of the collection system will likely fail in the near future if not addressed. Repair of the manholes along Coxsackie Creek is likely the most cost-effective single project to prevent by-

pass at WCPS, as the estimates for potential I&I do not include the water in Coxsackie Creek when it overflows its banks (this creek is not gaged), only the modeled runoff for the rain event. Table 2.4.1 shows estimates of the project cost per 1000 gallons of I&I removal for the modeled storm.

Table 2.4.1: Specific Capital Projects Calculated Storm Event I&I Compared to Cost

No. of CB	**Street or Area**	**Type II, 2.82" rain event contribution (gallons)**	**Specific Project Cost**	**Cost per 1000 gallons***
	Lawrence/Whitbeck Easement Sanitary	Bad condition, lack info to model	$530,439	Not enough information
17 MH	Coxsackie Creek and Trib	132,947 (very conservative)	$450,028	$3,390
8	Church, Hollister, Ely, New (total)	234,938	$1,162,432	$4,950
4	Lafayette at Wayne	145,330	$765,896 Both Lafayette projects at once	$3,130
1	Lafayette at Prospect	99,711		
2	School Field	96,778	$118,492	$1,220
3	New St (west)	92,868	$69113	$740
1	Molly White	72,991	$36,134	$500
1	South River	63,541	$138,033	$2,170
1	Riverside	45,945	$58,754	$1,280
2	Freleigh	42,034	$163,343	$3,890

* Cost per 1000 gallons for one rain event calculated for comparison – how often this modeled 2-year rain event will actually happen is unknown, but is utilized as a fairly frequently expected event.

2.5 Mitigation Actions – Service Laterals and Coordination

Additional sources of I&I have been identified in the collection system, including laterals to the mains and the DOCCS facilities, as well as old clay and/or otherwise impacted pipe. Residential connections were not investigated further than smoke testing. Therefore, these identified locations will require additional investigation to determine disconnection details.

2.5.1 Coordination with DOCCS

The temporary solar powered flow meter has identified DOCCS as a source of I&I. See Figures 1.3a and 1.3b. A permanent meter was originally installed in this same location and powered from

the nearby utility pole; however, several years ago this installation was damaged by a vehicle and DOCCS wastewater contribution to the collection system has not since been directly monitored.

The DOCCS collection system serves both the Coxsackie Correction Facility and the Greene Correctional Facility. These are secured facilities and the Village has no ability to access, monitor or make any improvements required to reduce the I&I generated within the DOCCS facilities. The Village intends to work with DOCCS on an updated Sewer Use Agreement that defines the facility's responsibility as a user of the Village sewer system and resolves maintenance and monitoring issues. The Phase 1 work will include installing and maintaining a permanent meter to continuously monitor the flows from DOCCS.

2.5.2 Disconnection of Residential Non-Sewer Connections

The Village should notify residents of homes at which suspected non-sewer connections were identified during smoke testing of requirements to disconnect stormwater from sewer. The list of service lateral issues identified in smoke testing is included in the Smoke Test Report, see Attachment D. See Figure 8 for a map of lateral issues observed during smoke testing. Several suspected building connections to catch basins were also identified on Mansion Street. These residential projects require enforcement of the existing sewer use Village Code.

2.5.3 Future Needs – Sewer Rehabilitation and Stormwater Map

Once corrections are made to areas with direct stormwater inflow to the sanitary sewer collection, areas of old clay pipes should be prioritized for lining or replacement to prevent infiltration. CCTV reports indicate that many areas of older clay pipes, especially, are in poor condition. Maintenance actions to the collection system pipes to prevent sewer pipe breaks and infiltration are less costly than are repairs in the event of a sewer main break. See Figures 5a and 5b with CCTV results mapped by number of defects per 100 linear feet of pipe.

It is also recommended the Village map the stormwater system including outfalls. There are few areas of the Village for which stormwater maps currently exist. Mapping is important to maintenance and other work plans co-located with stormwater systems. Regular maintenance on stormwater structures will prevent flooding issues in the Village as well as reduce I&I.

2.6 Green Infrastructure

Projects recommended in this analysis are Village-wide where wastewater collection system infrastructure already exists. The Village has areas of denser development along State Route 385 and in the historic area on Reed Street and South River Streets and also more suburban areas.

Infiltration practices for stormwater management require a minimum field infiltration rate of 0.5 inches per hour, and hydrologic soil group D is considered unsuitable (NYS Stormwater Management Design Manual).

The majority of the soils in the village are calcareous clayey glaciomarine deposits, clayey silty glaciolacustrine deposits or loamy over clayey glaciolacustrine deposits. The soils of greatest extent, Shaker very fine sandy loam (Sh, 35%) and Kingsbury Rhinebeck soils (KrA, 23% and KrB, 9.7%), are not considered hydric soils, but do exhibit shallow water tables of 0 to 18 inches. These soils are somewhat poorly drained. Kingsbury soils are hydrologic soil group D, with the ability to transmit water (most limiting layer) 0.00 to 0.06 in/hr. Rhinebeck soils are hydrologic group C/D, 0.06 to 0.2 in/hr. Shaker soils are hydrologic group C/D, 0.06 to 0.20 in/hr.

Obstacles to the use of green infrastructure for future Village projects include soil types and land ownership. The NYS Department of Transportation ownership of state routes in and bordering the Village, as well as private ownership of land in denser areas of the Village, mean land availability for Village green infrastructure projects is lacking. Therefore, due to ownership and soil suitability issues, there is little opportunity for basic green infrastructure practices within the Village. Individual site projects on residential or commercial properties may benefit from the use of such green infrastructure as rain barrels and rain gardens.

2.7 Regional Consolidation Opportunities

Regional consolidation is not considered a viable option for the Village of Coxsackie. The Village is 2.6 square miles in area with substantial distance between it and the nearest population centers. The connection costs between centers would be very high for small populations to absorb, while environmental impacts of connecting sewer regionally would be very high.

2.8 Centralized vs. Decentralized

A decentralized wastewater system is not a viable alternative. The Village has had a centralized wastewater treatment system since the 1970s. Besides being relatively small, the Village area contains many wetlands and smaller tributaries to Coxsackie Creek and the Hudson River, with no real options for creating a decentralized wastewater system. Additionally, the soils are not suitable for on-site septic systems.

2.9 Storage Capacity

The potential for equalization of severe weather flows was considered, and found to not be a feasible alternative. Village-owned parcels were identified utilizing Real Property System data. There are 20 parcels currently owned by the Village, eight of which are listed as vacant land. Further information on these parcels, however, shows that five of those eight parcels are parks, cemetery, pumpstations or the WWTP parcels. There are three vacant properties that are green space, however, these are located “up slope” of collection system areas that receive stormwater and therefore would not be useful for flow equalization. The WWTP parcels total 1.9 acres and are completely built out with buildings, tanks and piping below driveways and parking areas.

The Riverside Avenue pumpstation parcels total 0.2 acres and also would not accommodate an equalization tank.

In addition to a lack of real estate to accommodate flow equalization, there are practical and cost considerations with respect to the implementation of large-scale flow equalization including determining location and size of such facilities, the requirement for aeration to maintain solids in suspension to prevent settling and septic conditions, the challenges of how to manage discontinuous flows, and requirements for sophisticated operations and controls of such facilities. On balance, the most durable and sustainable approach for the Village's collection system is to eliminate the combined sewers as a priority and continue to work to reduce I&I on an on-going basis.

3.0 SUMMARY and COMPARISON of ALTERNATIVES

Public infrastructure is an important factor for economic development in any community. Evaluation of the Village of Coxsackie collection system identified several areas that are contributing stormwater to the sanitary system. The Village is required under its SPDES permit to remove infiltration and inflow to the maximum extent practicable. A summary of alternatives identifying any major differences, pros and cons, and costs is shown below in Table 3.

Table 3.0 Alternative Analysis

Alternative	Capital Cost	Pros & Cons
No Action Alternative	$0	Pros: No technical requirements. No capital cost. Cons: Aging collection system infrastructure continues to deteriorate and overflows continue or increase with increasing storm intensities predicted. The SPDES requirement to abate overflows is not met.
Capital Plan	$6,072,810	Pros: Together, priority projects meet requirement to abate SSOs. Service life of collection system extended. Grant funding may be available to the Village. Cons: Increased user costs
Service Laterals and Coordination	$Not Estimated	Pros: Lateral repairs (responsibility of landowners), and coordination with DOCCS will reduce I&I. Cons: Enforcement of existing Sewer Use Code is needed. Potential for costs to the Village in the future if joint projects are identified with DOCCS.
Green Infrastructure	Not Feasible	Not technically feasible. Soils in Village do not meet infiltration requirements. Village-owned land not available.
Regional Consolidation	Not feasible	Not technical feasible. Connection costs and environmental impacts to nearest population center are too high.
Centralized vs. Decentralized	Not feasible	The Village has had a centralized system since the 1970s. Soils are not suitable for on-site septic.
Storage Capacity to mitigate storm water entry to sanitary	Not feasible	There are no Village owned properties that would accommodate an equalization tank, or the property is located “up slope” and would not be of use in storage capacity. Cost and effort better spent to prevent stormflow infiltration.

A life-cycle cost analysis for the technically feasible alternative was performed. The No Action Alternative was not considered in this analysis. Expected useful life of collection system improvements to reduce I&I and eliminate storm event overflows is at least 30 years. Two different scenarios were evaluated, one with capital improvements financed by market rate loans, the second with utilization of existing potential BIL funding. The current costs for wastewater treatment for single-family homes (SFH) is based upon water usage, therefore the analysis estimated the customer impact for the average SFH.

Table 3.1 Life Cycle Cost Analyses

Improvement Projects	Loan Market Rate Financed*	Grant and Hardship Loan+
Capital Cost	$6,072,810	$6,072,810
BIL Grant	$0	$3,036,405
Yearly Loan Payment	$370,870.48	$101,213.50
As Cost per 1,000 gallon	$1.72	$0.47
Annual cost increase to SFH	$103.91	$28.36

*Assuming 30-year loan at 4.5% interest
+ Assuming BIL Grant 50% project and hardship financing at 0% interest of remainder

4.0 RECOMMENDED ALTERNATIVE

4.1 Recommendation and Basis of Selection

The recommended alternative is continuing Action as a Sanitary Sewer System, carrying out the Capital Improvements Plan and the Service Laterals and Coordination. The evaluations carried out under the Engineering Planning Grant determined that there are areas of the Village in which the stormwater system is connected to the sanitary sewer system. Under the current Order on Consent, the Village has implemented an SSO Abatement and Elimination Plan, finalized in 2016. The recent WWTP upgrades and work pump stations and the collection system have reduced storm event overflows. The Abatement Plan update would be required, with this report serving as a basis for next plans.

In consideration of the Village's enduring commitment to addressing overflows in this aging sewer system, the moratorium on sewer connections incorporated in the Village's current Order on Consent should be eliminated and a modified Order on Consent executed that embodies the Action on a Sanitary Sewer System, Capital Improvements Plan and Service Laterals and Coordination with a schedule of compliance. The modified Order on Consent may incorporate reinstatement of the moratorium on sewer connections if the schedule of compliance is not achieved.

4.2 Cost Estimate

Estimates in Table 4.2 are based on average production, labor unit rates based on 2022 Greene County rates and materials based on 2023 pricing factored for 2024 bidding. Actual work at each location may need to be adjusted as more information is gained during the design process. Cost estimates are presented for recommended capital improvements as summarized in Section 2.4. Recommended actions presented in Section 2.5, Service Laterals and Coordination, are the responsibility of private landowners on private property or subject to agreements between the Village and DOCCS and therefore cannot be estimated at this time. Work locations are mapped in Figures 6a, 6b, 7 and 8.

4.3 Energy Efficiency Measures

The project work areas consist of gravity sewers; therefore, energy measures are not directly applicable. However, the collection system has to pump total flow at three locations: West Coxsackie Pump Station to WWTP main influent, Riverside Ave Pump Station to WWTP main influent, and the main influent into the WWTP. Therefore, projects reducing the inflow and infiltration of stormwater to the collection system will reduce work done by the pumps, reducing energy costs overall, and increasing efficiency.

Table 4.2 Cost Estimates by Project Components

Work Area Description	**Cost**
New Sanitary through ***Lawrence to Whitbeck*** easement	$530,439
Correction of manholes along ***Coxsackie Creek*** and tributary	$450,028
New sanitary at ***Church, Hollister, Ely and part of New Street***, convert existing sanitary to storm	$1,162,432
New Storm at ***Lafayette and Van Dyke***	$765,896
Tie catch basin on ***Lafayette at Prospect*** to existing storm	
Tie catch basins at ***New Street*** to existing storm	$69,133
Correct storm connection to sanitary on ***Molly White***	$36,134
Tie catch basin on ***South River*** to existing storm	$138,033
Tie catch basin on ***Riverside near Mansion*** to existing storm	$58,754
New storm system at ***Freleigh***	$163,343
Correct storm connection to sanitary at ***school field on Washington***	$118,492
Village-wide manhole corrections	$327,691
Apple Blossom, Elm and Washington; Repair laterals in conflict with utility poles	$50,463
Estimate Total Construction	**$3,870,838**
Construction Contingency (30%)	$1,161,251
Subtotal Construction Plus Contingency	**$5,032,089**
Engineering Planning	$120,000
Engineering Design	$380,000
Engineering Construction	$380,000
Engineering Fees	**$880,000**
Local Counsel	$10,000
Bond Counsel	$20,000
Fiscal Services	$20,000
Misc. Costs	$1,000
Subtotal Other Expenses	**$51,000**
Subtotal Project Costs	**$5,963,089**
Issuance Costs (1.84%)	$109,721
TOTAL PROJECT COST	**$6,072,810**

Bold – project area street names as in Table 2.4 and 2.4.1

4.4 Project Schedule

Action	Anticipated Timeframe
IUP Listing and PER to NYSDEC	June 17, 2022
SEQRA and SHPO Review	January – February 2023
Design & Permitting	October 2022 – June 2023
CWSRF Application	March 2023
WQIP Application	July 2023
Bidding	August - September 2023
WIIA Application	November 2023
Construction	October 2023 – December 2024

4.5 Next Steps

Table 4.5 Permitting and Approval

Entity	Action
Village of Coxsackie	SEQRA and SHPO Review
Village of Coxsackie	Work Easements and environmental permits
Village of Coxsackie	Bond Resolution
NYSEFC	CWSRF Approval
NYSDEC/EFC	Design Approval

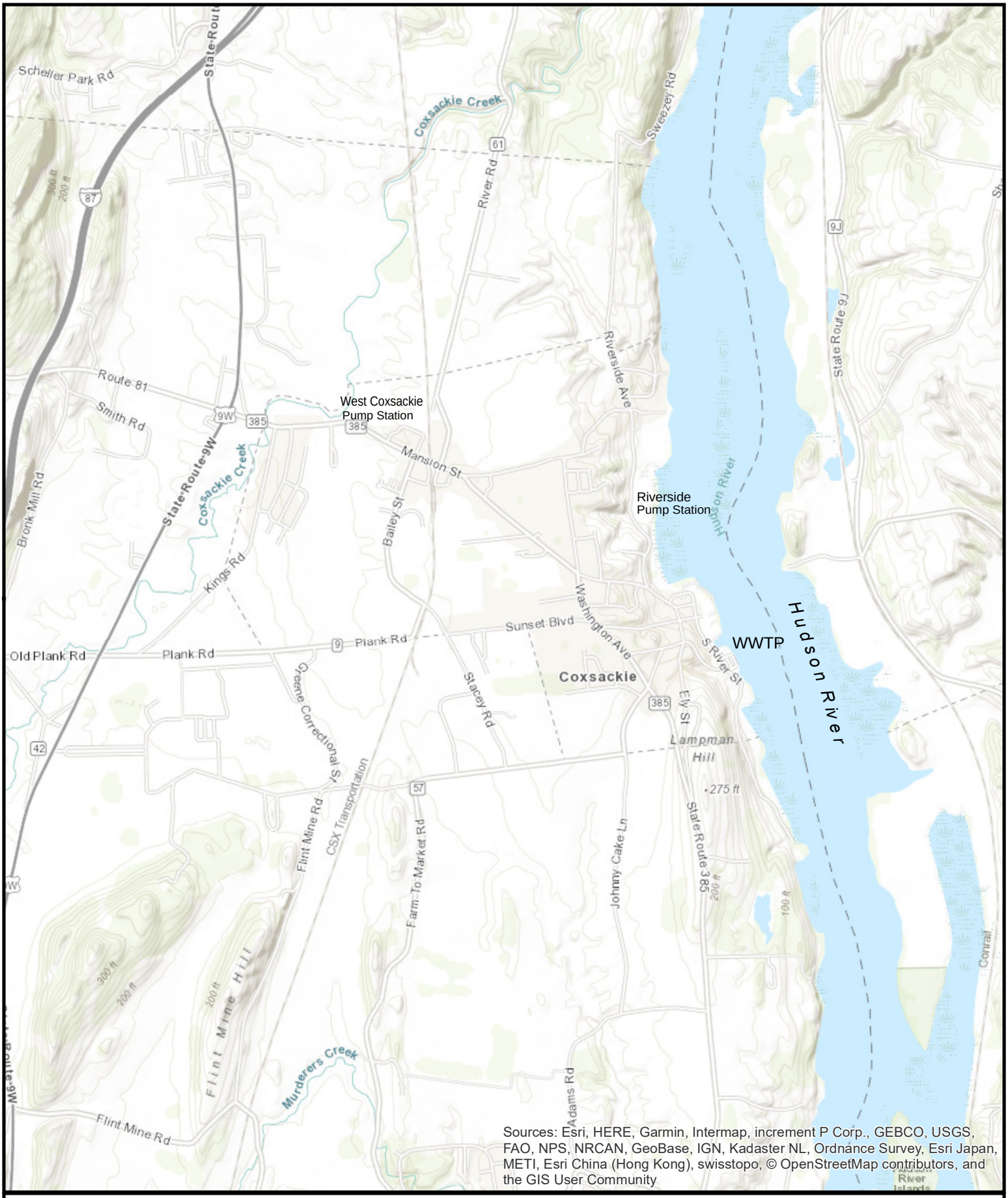
5.0 ENGINEERING REPORT CERTIFICATION

This Engineering Report has been prepared in compliance with the Engineering Report Outline for NYS Wastewater Infrastructure Projects, Effective October 1, 2021. An Engineering Report Certification is included in Appendix G.

6.0 SMART GROWTH ASSESSMENT FORM

A Smart Growth Assessment Form is included as Appendix H.

FIGURES



Village of Coxsackie

Greene County, New York

Figure 1: Location Map

N

0 0.15 0.3 0.6 0.9 1.2

Miles

Prepared by Delaware Engineering DPC, February, 2022

Village of Coxsackie

Greene County, New York

Collection System Evaluation

Age of Building Construction

Legend

Village Boundary

Parcel Data - Year Built

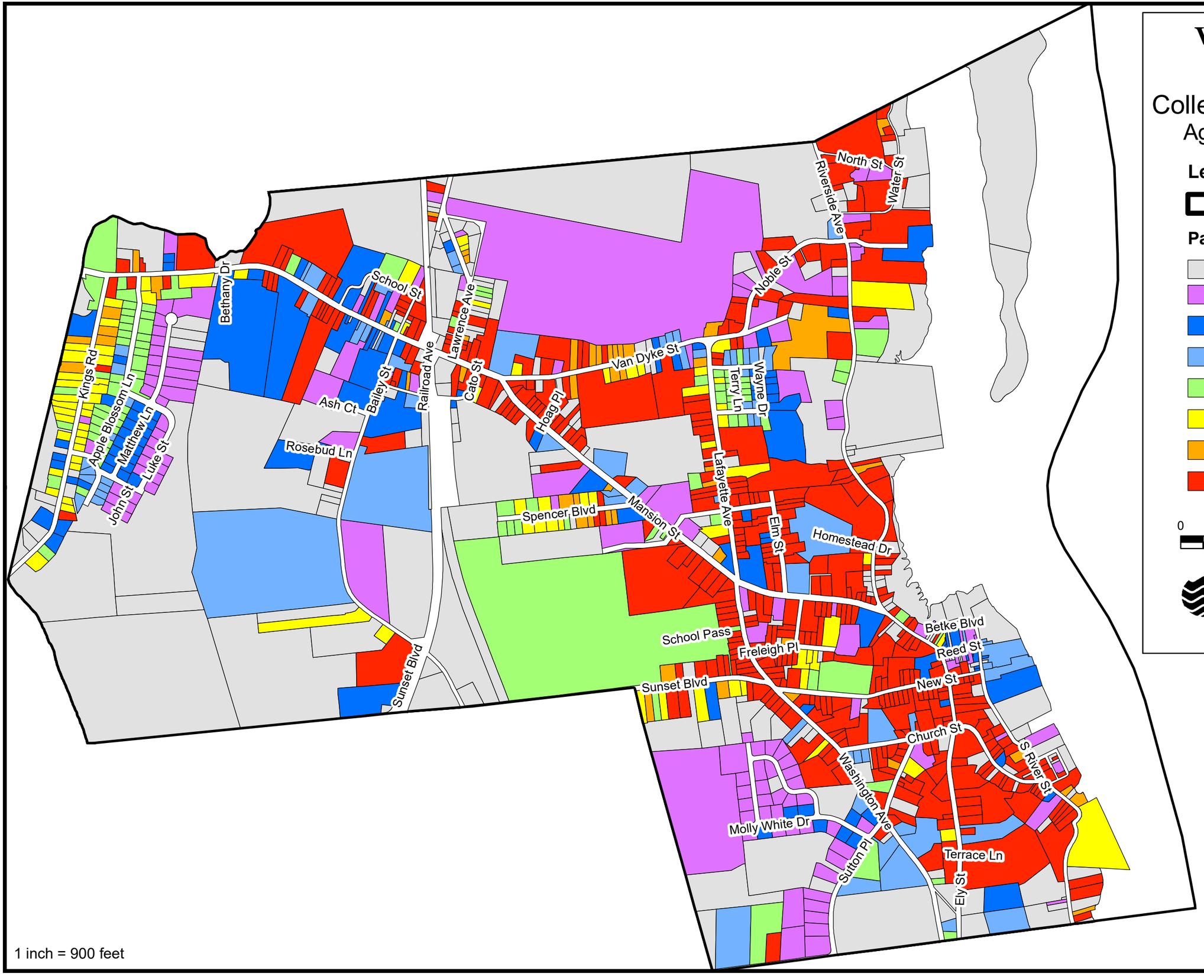
- Unknown
- 1990-Present
- 1980-1989
- 1970-1979
- 1960-1969
- 1950-1959
- 1940-1949
- Pre 1940

N

0 450 900 1,800 2,700

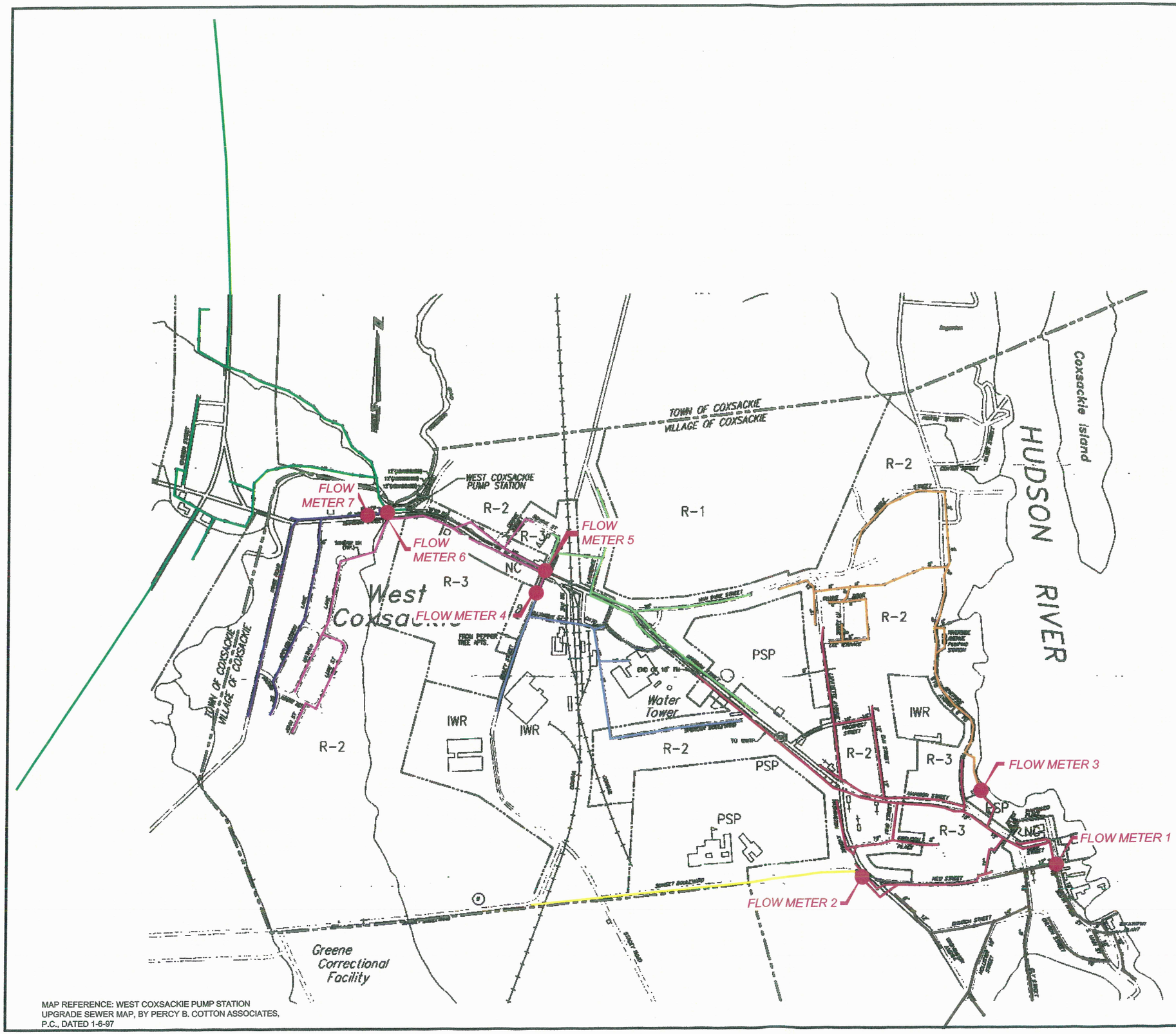
Feet

Prepared by: Delaware Engineering, DPC
Date: March 2022
Sources: NYS Civil Boundaries,
NYS Parcel Data 2020,
Town of Coxsackie Roads



1 inch = 900 feet

FIGURE 2



LEGEND

- WEST COXACKIE PUMP STATION
- FLOW METER 1
- FLOW METER 2
- FLOW METER 3
- FLOW METER 4
- FLOW METER 5
- FLOW METER 6
- FLOW METER 7
- TREATMENT PLANT FLOW METER
- FLOW METER 3 — FLOW METER LOCATIONS

MAP REFERENCE: WEST COXSACKIE PUMP STATION UPGRADE SEWER MAP, BY PERCY B. COTTON ASSOCIATES, P.C., DATED 1-6-97

FIGURE 3

H:\Projects\Coxsackie\cao\Ex_Sewer1.dwg 5/19/2008 7:27:36 AM EDT

DATE: MAR. 8, 2007
DRAWN BY: KJ
SCALE: NTS
REVIEWED BY: BZ
PROJECT NO.:
FILE:

DELAWARE ENGINEERING, P.C.
28 Aviation Avenue Extension - Albany, NY 12205
Phone: (518) 452-1200 - Fax: (518) 452-1335
ONEONTA:
8-12 Dietz Street, Suite 303 - Oneonta, NY 13820
Phone: (607) 432-8073 - Fax: (607) 432-0432

REVISIONS

NO.	DATE	DESCRIPTION
1	3-30-07	MOVED FLOWMETERS

VILLAGE OF COXSACKIE, NEW YORK

FLOW METER LOCATIONS

FIGURE: 02

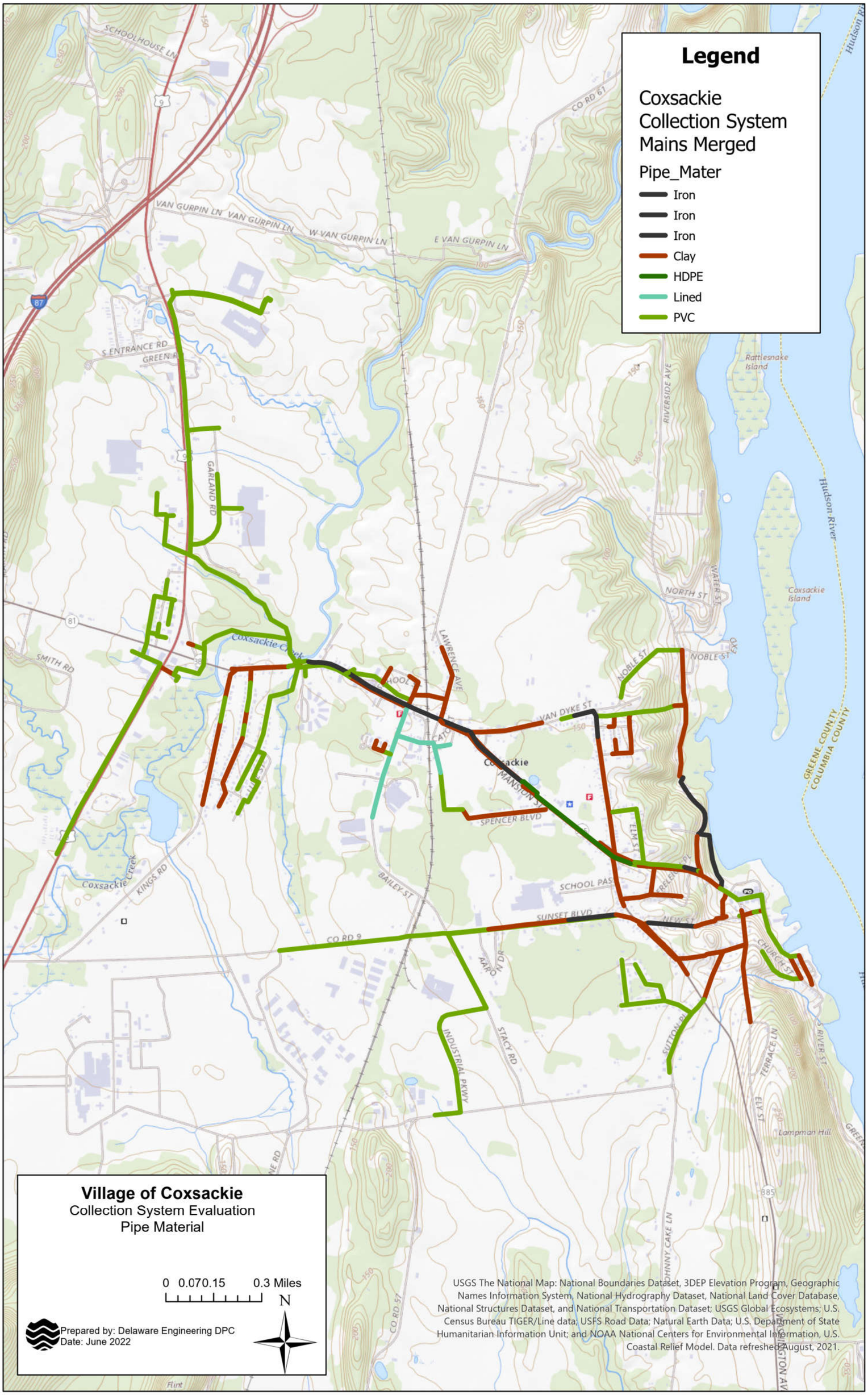

Legend
Coxsackie Collection System Mains Merged
Pipe_Mater
Iron
Iron
Iron
Clay
HDPE
Lined
PVC
Village of Coxsackie
Collection System Evaluation
Pipe Material
0 0.070.15 0.3 Miles
N
Prepared by: Delaware Engineering DPC
Date: June 2022
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.
SCHOOLHOUSE LN
VAN GURPIN LN
W VAN GURPIN LN
E VAN GURPIN LN
CO RD 61
S ENTRANCE RD
GARLAND RD
Rattlesnake Island
RIVERSIDE AVE
Hudson River
Coxsackie Island
NORTH ST
WATER ST
NOBLE ST
VAN DYKE ST
LAWRENCE AVE
MANSION ST
SPENCER BLVD
ELM ST
SCHOOL PAS
SUNSET BLVD
CHURCH ST
GREENE COUNTY
COLUMBIA COUNTY
Coxsackie Creek
SMITH RD
KINGS RD
BAILEY ST
CO RD 9
AARON DR
INDUSTRIAL PKWY
STACY RD
SUTTON PL
TERRACE LN
ELY ST
Lampman Hill
JOHNNY CAKE LN
CO RD 57
S RIVER ST

FIGURE 4

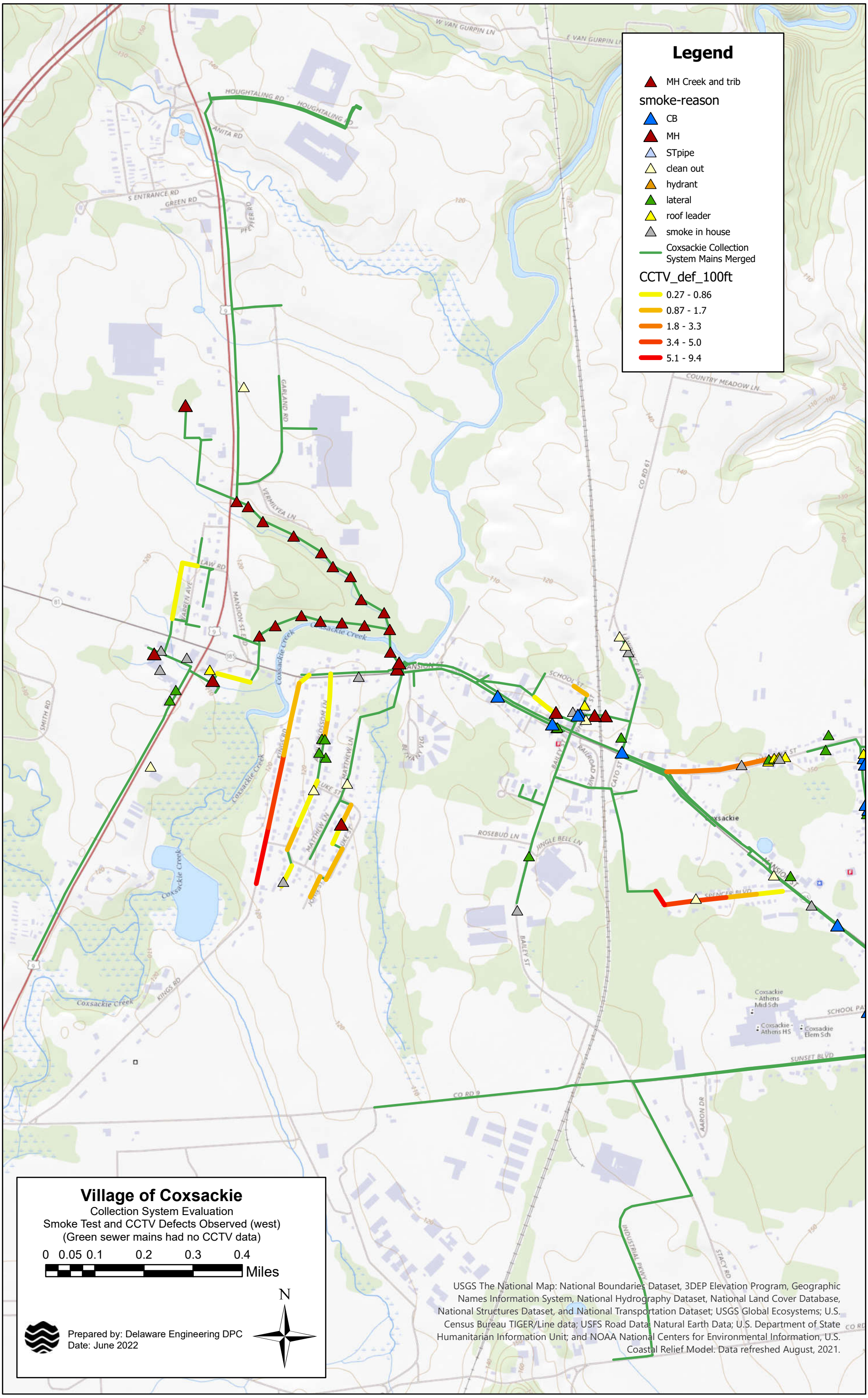

Legend
MH Creek and trib
smoke-reason
CB
MH
STpipe
clean out
hydrant
lateral
roof leader
smoke in house
Coxsackie Collection System Mains Merged
CCTV_def_100ft
0.27 - 0.86
0.87 - 1.7
1.8 - 3.3
3.4 - 5.0
5.1 - 9.4
Village of Coxsackie
Collection System Evaluation
Smoke Test and CCTV Defects Observed (west)
(Green sewer mains had no CCTV data)
0 0.05 0.1 0.2 0.3 0.4
Miles
N
Prepared by: Delaware Engineering DPC
Date: June 2022
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.

FIGURE 5A

Legend

- MH Creek and trib

smoke-reason

- CB
- MH
- STpipe
- clean out
- hydrant
- lateral
- roof leader
- smoke in house
- Coxsackie Collection System Mains Merged

CCTV_def_100ft

- 0.27 - 0.86
- 0.87 - 1.7
- 1.8 - 3.3
- 3.4 - 5.0
- 5.1 - 9.4

Village of Coxsackie

Collection System Evaluation
Smoke Test and CCTV Defects Observed (east)
(Green sewer mains had no CCTV data)

0 0.04 0.07 0.15 0.22 0.3 Miles

N

Prepared by: Delaware Engineering DPC
Date: June 2022

FIGURE 5B

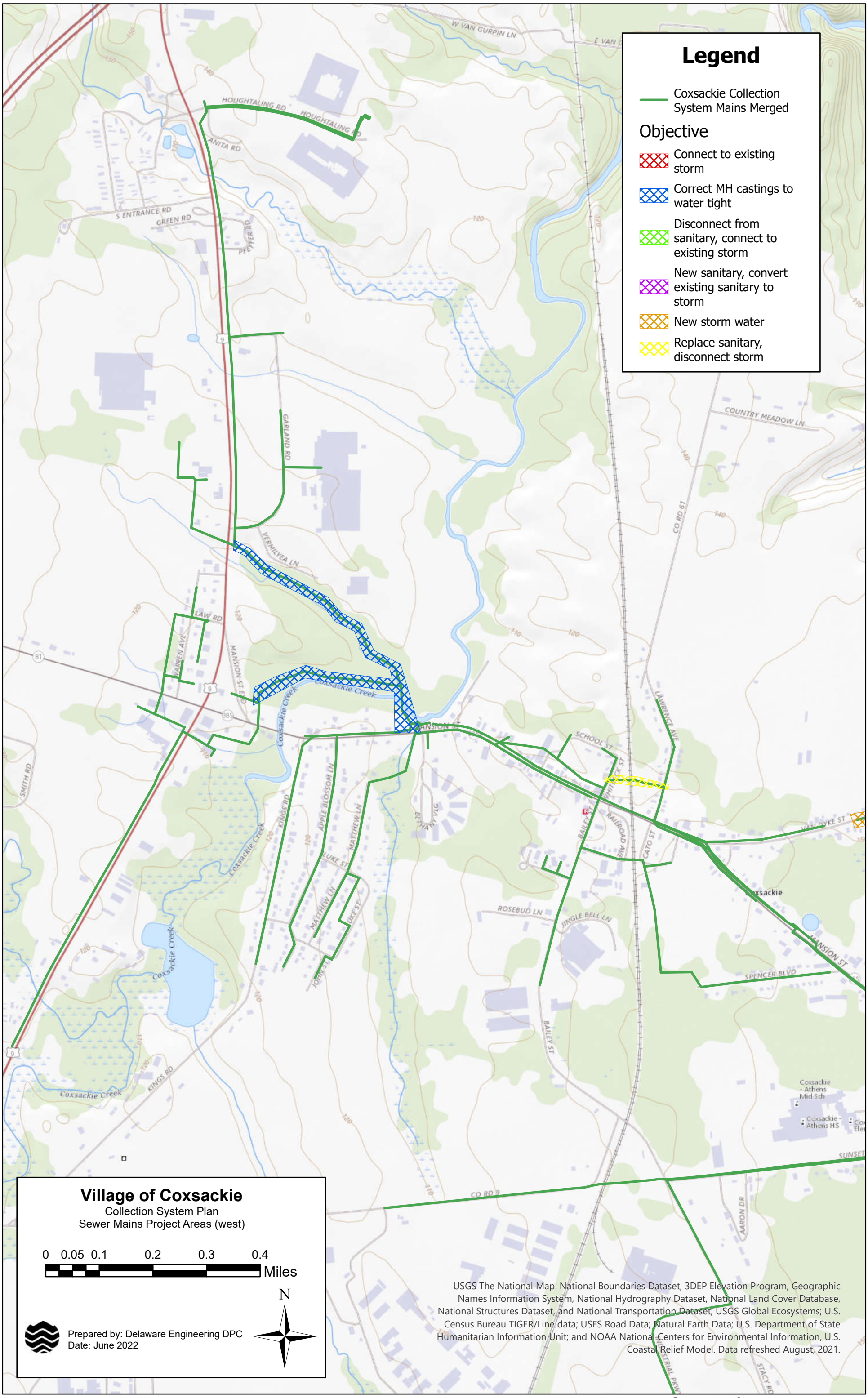

Legend
Coxsackie Collection System Mains Merged
Objective
Connect to existing storm
Correct MH castings to water tight
Disconnect from sanitary, connect to existing storm
New sanitary, convert existing sanitary to storm
New storm water
Replace sanitary, disconnect storm
Village of Coxsackie
Collection System Plan
Sewer Mains Project Areas (west)
0 0.05 0.1 0.2 0.3 0.4
Miles
N
Prepared by: Delaware Engineering DPC
Date: June 2022
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.
W VAN GURPIN LN
HOUGHTALING RD
ANITA RD
S ENTRANCE RD
GREEN RD
PFEIFER RD
GARLAND RD
VERMILYEA LN
LAW RD
WARREN AVE
MANSION ST RD
Coxsackie Creek
MANSION ST
SCHOOL ST
SMITH RD
KINGS RD
APPLE BLOSSOM LN
MATTHEW LN
LUKE ST
JOHN ST
BETHANY LN
WHITBECK ST
BAILEY ST
RAILROAD AVE
CATO ST
LAWRENCE AVE
VAN DYKE ST
COUNTRY MEADOW LN
CO RD 61
ROSEBUD LN
JINGLE BELL LN
SPENCER BLVD
AARON DR
CO RD 9
Coxsackie - Athens Mid Sch
Coxsackie - Athens HS

FIGURE 6A

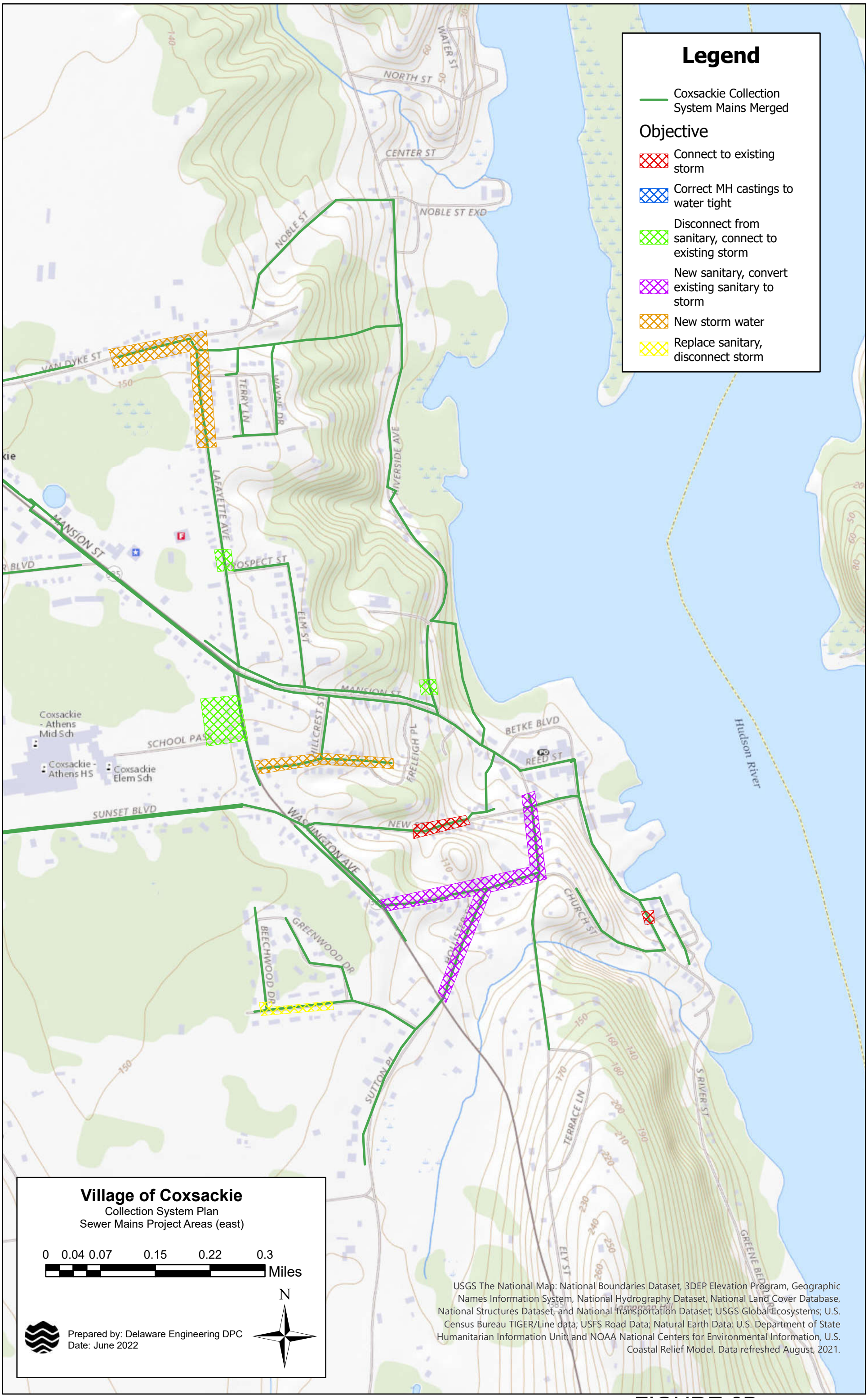

Legend
Coxsackie Collection System Mains Merged
Objective
Connect to existing storm
Correct MH castings to water tight
Disconnect from sanitary, connect to existing storm
New sanitary, convert existing sanitary to storm
New storm water
Replace sanitary, disconnect storm
NORTH ST
WATER ST
CENTER ST
NOBLE ST
NOBLE ST EXD
VAN DYKE ST
TERRY LN
WAYNE DR
RIVERSIDE AVE
MANSION ST
LAFAYETTE AVE
PROSPECT ST
ELM ST
HILLCREST ST
FRELEIGH PL
SCHOOL PASS
Coxsackie - Athens Mid Sch
Coxsackie - Athens HS
Coxsackie Elem Sch
SUNSET BLVD
WASHINGTON AVE
BETKE BLVD
REED ST
CHURCH ST
HOLLISTER PL
GREENWOOD DR
BEECHWOOD DR
SUTTON PL
TERRACE LN
ELY ST
S RIVER ST
GREENE BEDFORD RD
Hudson River
Village of Coxsackie
Collection System Plan
Sewer Mains Project Areas (east)
0 0.04 0.07 0.15 0.22 0.3
Miles
N
Prepared by: Delaware Engineering DPC
Date: June 2022
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.

FIGURE 6B

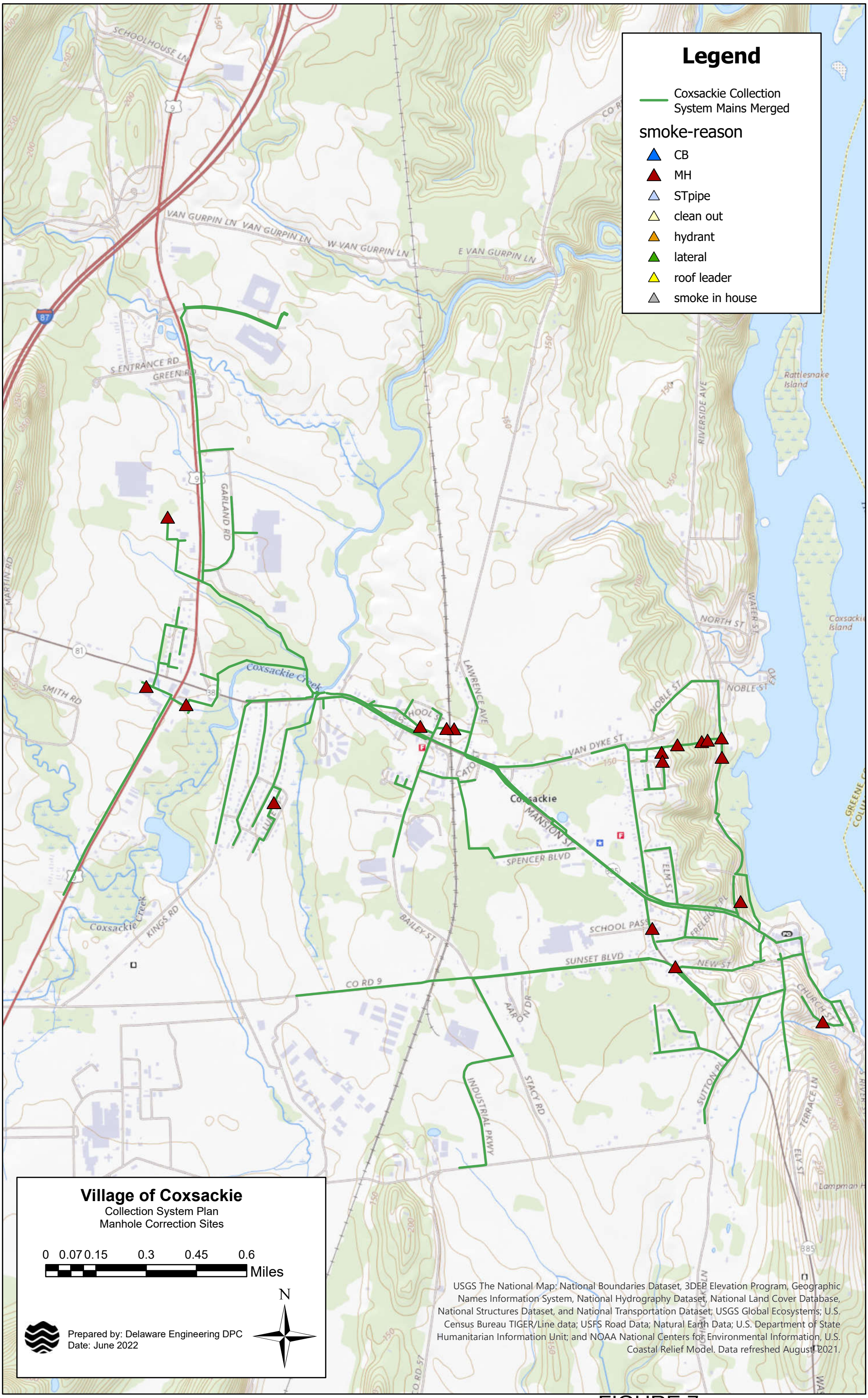

Legend
Coxsackie Collection System Mains Merged
smoke-reason
CB
MH
STpipe
clean out
hydrant
lateral
roof leader
smoke in house
Village of Coxsackie
Collection System Plan
Manhole Correction Sites
0 0.07 0.15 0.3 0.45 0.6
Miles
N
Prepared by: Delaware Engineering DPC
Date: June 2022
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August 2021.
SCHOOLHOUSE LN
VAN GURPIN LN
W VAN GURPIN LN
E VAN GURPIN LN
S ENTRANCE RD
GREEN RD
GARLAND RD
MARTIN RD
SMITH RD
Coxsackie Creek
KINGS RD
LAWRENCE AVE
VAN DYKE ST
CATO
Coxsackie
MANSION ST
SPENCER BLVD
BAILEY ST
SCHOOL PASS
SUNSET BLVD
CO RD 9
AARO DR
INDUSTRIAL PKWY
STACY RD
SUTTON PL
NORTH ST
WATER ST
NOBLE ST
ELM ST
NEW ST
CHURCH ST
TERRACE LN
ELY ST
RIVERSIDE AVE
Rattlesnake Island
Coxsackie Island
Lampman H
GREENE CO
COLUMBIA CO

FIGURE 7

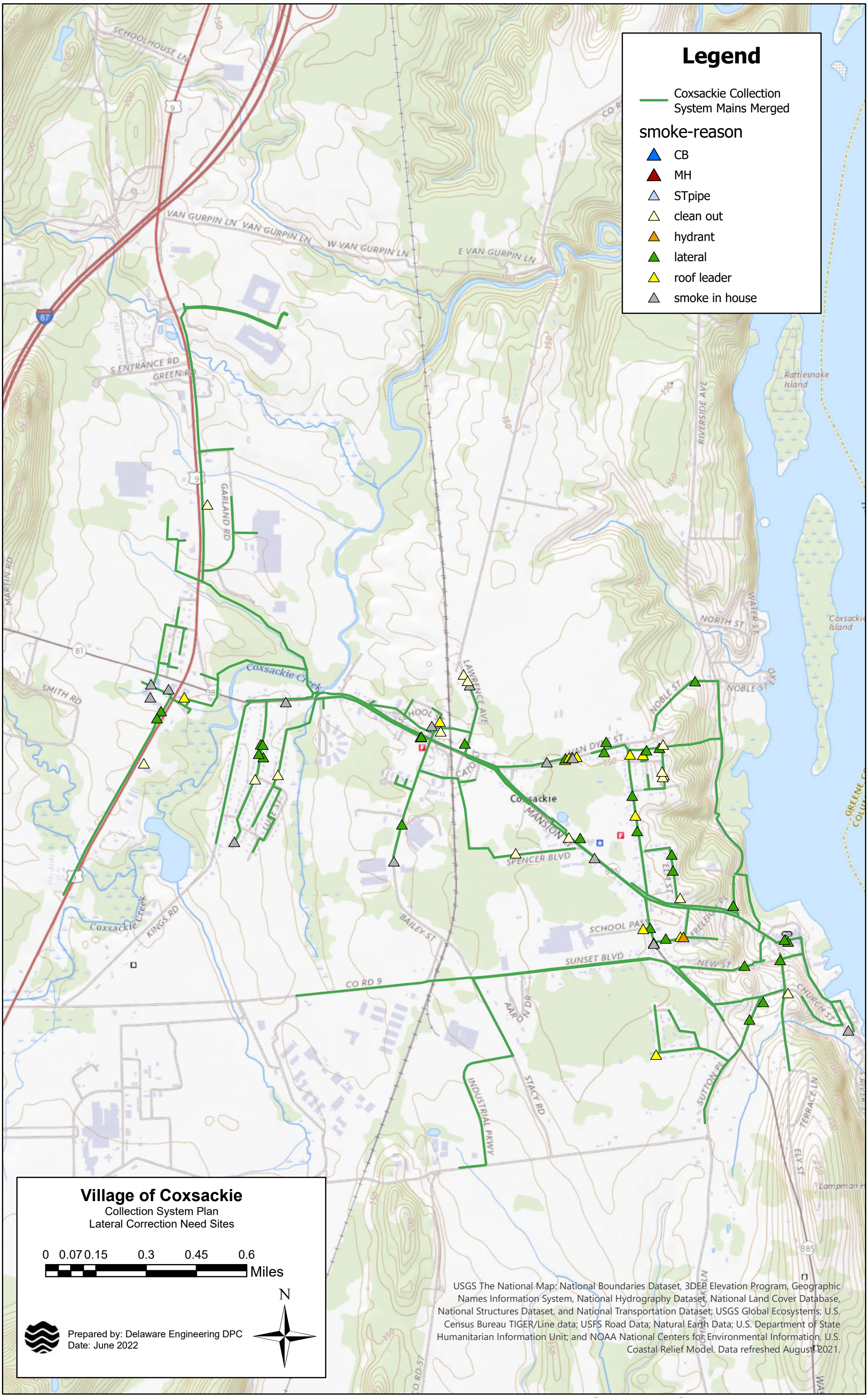
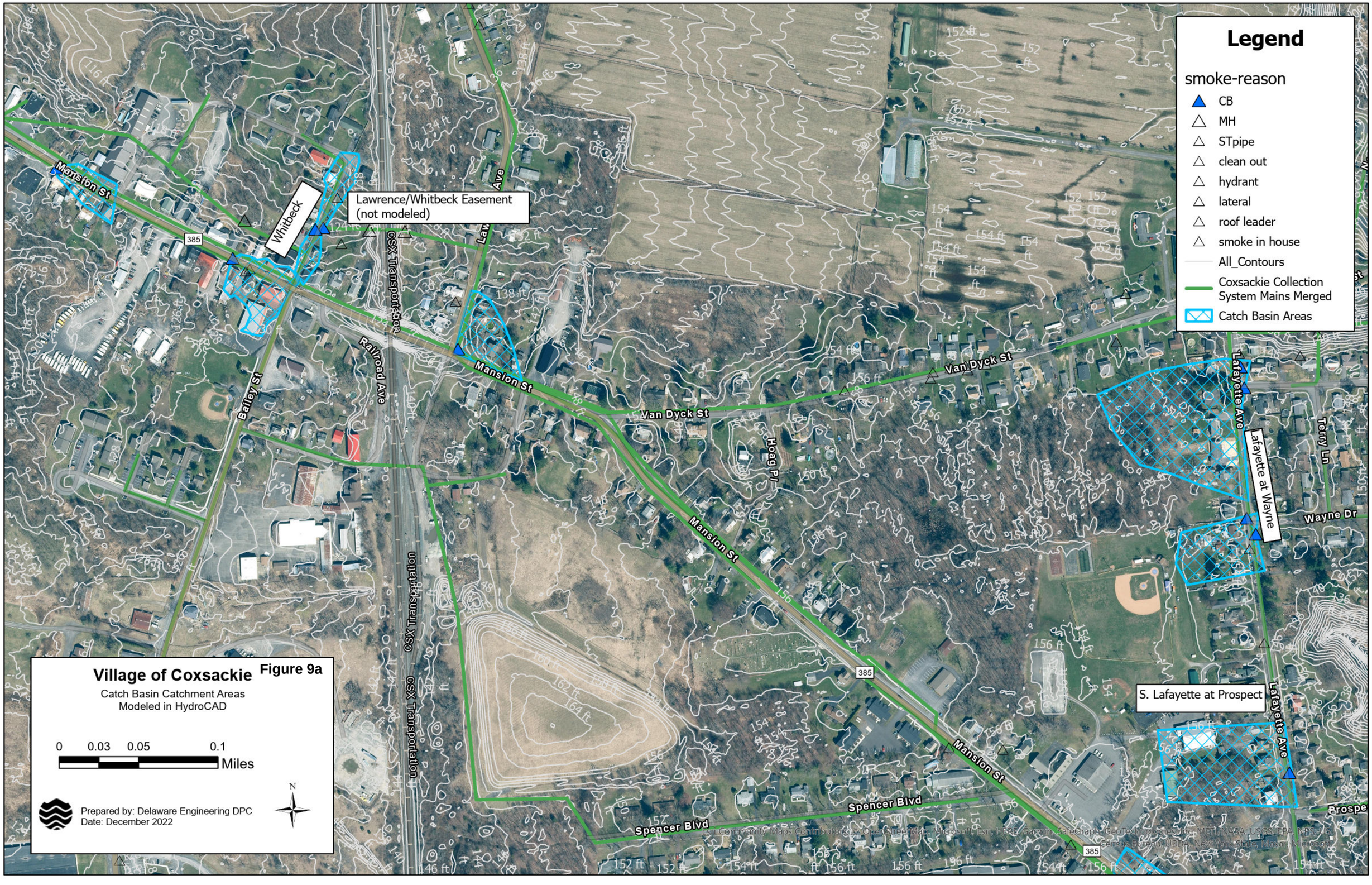
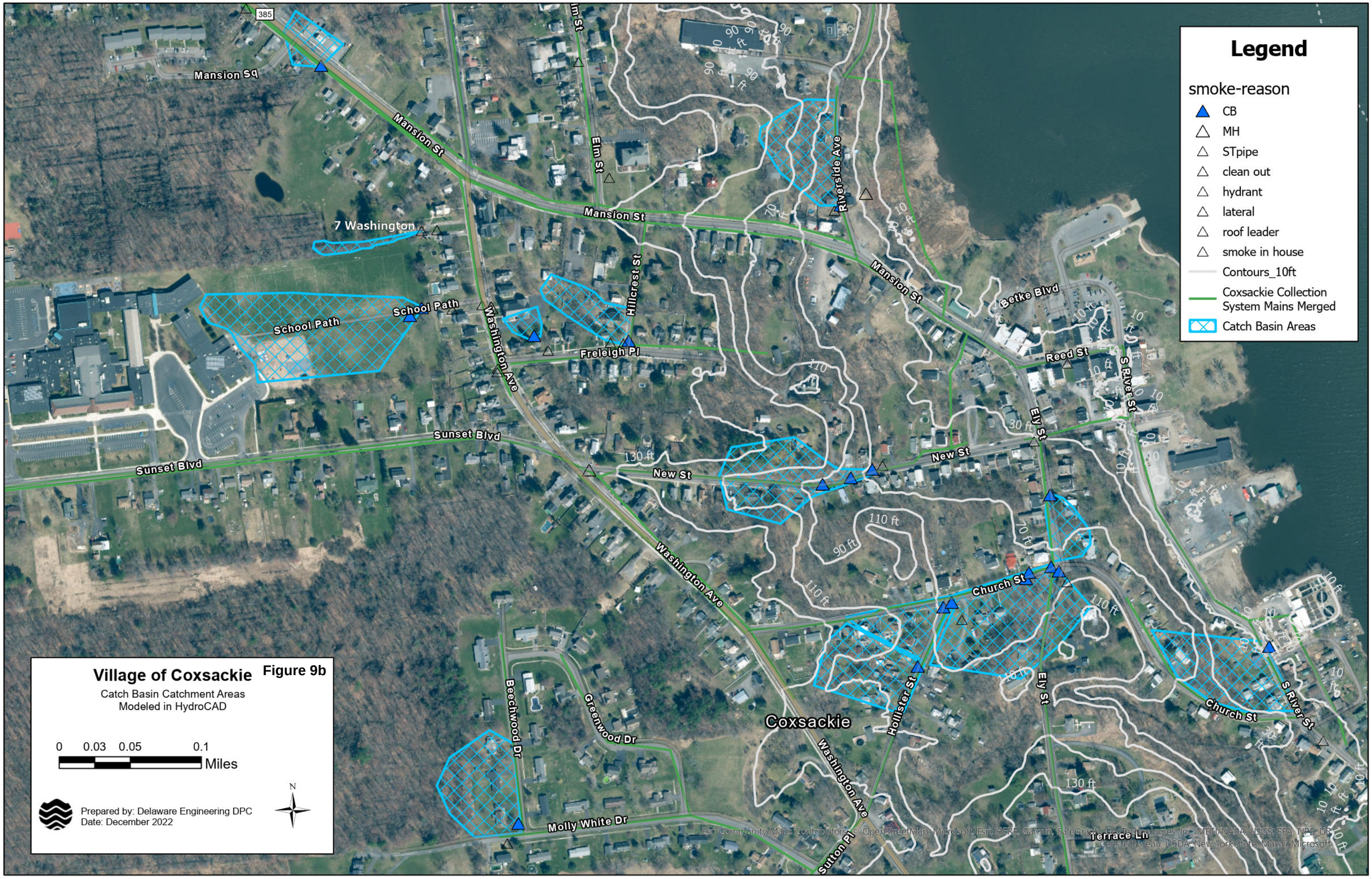

Legend
Coxsackie Collection System Mains Merged
smoke-reason
CB
MH
STpipe
clean out
hydrant
lateral
roof leader
smoke in house
Village of Coxsackie
Collection System Plan
Lateral Correction Need Sites
0 0.07 0.15 0.3 0.45 0.6
Miles
N
Prepared by: Delaware Engineering DPC
Date: June 2022
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August 2021.
SCHOOLHOUSE LN
VAN GURPIN LN
W VAN GURPIN LN
E VAN GURPIN LN
S ENTRANCE RD
GREEN RD
GARLAND RD
MARTIN RD
SMITH RD
KINGS RD
Coxsackie Creek
LAWRENCE AVE
MANSION ST
SPENCER BLVD
RIVERSIDE AVE
Rattlesnake Island
NORTH ST
NOBLE ST
SUNSET BLVD
CO RD 9
INDUSTRIAL PKWY
STACY RD
SUTTON PL
TERRACE LN
CHURCH ST
NEW ST
BAILEY ST
Coxsackie

FIGURE 8


Legend
smoke-reason
CB
MH
STpipe
clean out
hydrant
lateral
roof leader
smoke in house
All_Contours
Coxsackie Collection System Mains Merged
Catch Basin Areas
Lawrence/Whitbeck Easement (not modeled)
Whitbeck
Mansion St
385
Bailey St
Railroad Ave
CSX Transportation
Van Dyck St
Hoag Pl
Lafayette Ave
Lafayette at Wayne
Terry Ln
Wayne Dr
S. Lafayette at Prospect
Spencer Blvd
Village of Coxsackie
Figure 9a
Catch Basin Catchment Areas
Modeled in HydroCAD
0 0.03 0.05 0.1
Miles
N
Prepared by: Delaware Engineering DPC
Date: December 2022
Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, New York State, Maxar, Microsoft


Legend
smoke-reason
CB
MH
STpipe
clean out
hydrant
lateral
roof leader
smoke in house
Contours_10ft
Coxsackie Collection System Mains Merged
Catch Basin Areas
Village of Coxsackie
Figure 9b
Catch Basin Catchment Areas
Modeled in HydroCAD
0 0.03 0.05 0.1
Miles
N
Prepared by: Delaware Engineering DPC
Date: December 2022
Mansion Sq
385
Mansion St
Elm St
Riverside Ave
7 Washington
School Path
Hillcrest St
Washington Ave
Freleigh Pl
Betke Blvd
Reed St
S River St
Ely St
Sunset Blvd
New St
Church St
Hollister St
Beechwood Dr
Greenwood Dr
Molly White Dr
Sutton Pl
Terrace Ln
Coxsackie
130 ft
110 ft
90 ft
30 ft
10 ft
Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, New York State, Maxar, Microsoft

ATTACHMENTS

Attachment A: SPDES Permit and Consent Order

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

State Pollutant Discharge Elimination System (SPDES) DISCHARGE PERMIT

Industrial Code:	4952	SPDES Number:	NY0033545
Discharge Class (CL):	05	DEC Number:	4-1928-00007/00001
Toxic Class (TX):	N	Effective Date (EDP):	March 1, 2019
Major Drainage Basin:	13	Expiration Date (ExDP):	February 28, 2024
Sub Drainage Basin:	01	Modification Dates: (EDPM)	
Water Index Number:	H		
Compact Area:	-		

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. '1251 et.seq.) (hereinafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS						
Name:	**Village of Coxsackie**	Attention:	**Mayor Mark R. Evans**			
Street:	**119 Mansion Street**					
City:	**Coxsackie**	State:	**NY**	Zip Code:	**12051**	

is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS														
Name:	**Village of Coxsackie WWTP**													
Location (C,T,V):	**Coxsackie (V)**								County:	**Greene**				
Facility Address:	**88 South River Street**													
City:	**Coxsackie**				State:				**NY**	Zip Code:	**12051**			
From Outfall No.:	**001**	at Latitude:	**42**	°	**20**	′	**58**	″	& Longitude:	**-73**	°	**47**	′	**37**	″
into receiving waters known as:	**Hudson River**									Class:	**A**			

in accordance with: effluent limitations; monitoring and reporting requirements; other provisions and conditions set forth in this permit; and 6 NYCRR Part 750-1and 750-2.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS					
Mailing Name:	**Village of Coxsackie WWTP**				
Street:	**119 Mansion Street**				
City:	**Coxsackie**	State:	**NY**	Zip Code:	**12051**
Responsible Official or Agent:	David Varade, Chief Operator		Phone:	**518-731-2627**	

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal not less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

CO BWP - Permit Coordinator
RWE
RPA
USEPA Region 2
NYSEFC (Class 05 & 07 only)

Permit Administrator:	Nancy M. Baker		
Address:	625 Broadway Albany, NY 12233-1750		
Signature:	Nancy M Baker	Date:	2/20/19

PERMIT LIMITS, LEVELS AND MONITORING DEFINITIONS

OUTFALL	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
	This cell describes the type of wastewater authorized for discharge. Examples include process or sanitary wastewater, storm water, non-contact cooling water.	This cell lists classified waters of the state to which the listed outfall discharges.	The date this page starts in effect. (e.g. EDP or EDPM)	The date this page is no longer in effect. (e.g. ExDP)

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQ.	SAMPLE TYPE
e.g. pH, TRC, Temperature, D.O.	The minimum level that must be maintained at all instants in time.	The maximum level that may not be exceeded at any instant in time.	SU, °F, mg/L, etc.	See below	See below

PARAMETER	EFFLUENT LIMIT or CALCULATED LEVEL	COMPLIANCE LEVEL / MINIMUM LEVEL (ML)	ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE
	Limit types are defined below in Note 1. The effluent limit is developed based on the more stringent of technology-based limits, required under the Clean Water Act, or New York State water quality standards. The limit has been derived based on existing assumptions and rules. These assumptions include receiving water hardness, pH and temperature; rates of this and other discharges to the receiving stream; etc. If assumptions or rules change the limit may, after due process and modification of this permit, change.	For the purposes of compliance assessment, the permittee shall use the approved EPA analytical method with the lowest possible detection limit as promulgated under 40CFR Part 136 for the determination of the concentrations of parameters present in the sample unless otherwise specified. If a sample result is below the detection limit of the most sensitive method, compliance with the permit limit for that parameter was achieved. Monitoring results that are lower than this level must be reported, but shall not be used to determine compliance with the calculated limit. This Minimum Level (ML) can be neither lowered nor raised without a modification of this permit.	Action Levels are monitoring requirements, as defined below in Note 2, which trigger additional monitoring and permit review when exceeded.	This can include units of flow, pH, mass, temperature, or concentration. Examples include µg/L, lbs/d, etc.	Examples include Daily, 3/week, weekly, 2/month, monthly, quarterly, 2/yr and yearly. All monitoring periods (quarterly, semiannual, annual, etc.) are based upon the calendar year unless otherwise specified in this Permit.	Examples include grab, 24-hour composite and 3 grab samples collected over a 6 hour period.

Notes:

1. EFFLUENT LIMIT TYPES:
   a. DAILY DISCHARGE: The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for the purposes of sampling. For pollutants expressed in units of mass, the 'daily discharge' is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the 'daily discharge' is calculated as the average measurement of the pollutant over the day.
   b. DAILY MAX: The highest allowable daily discharge.
   c. DAILY MIN: The lowest allowable daily discharge.
   d. MONTHLY AVG: The highest allowable average of daily discharges over a calendar month, calculated as the sum of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
   e. 7 DAY ARITHMETIC MEAN (7-day average): The highest allowable average of daily discharges over a calendar week.
   f. 30 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar month, calculated as the antilog of: the sum of the log of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
   g. 7 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar week.
   h. 12 MONTH ROLLING AVERAGE: The current monthly value of a parameter, plus the sum of the monthly values over the previous 11 months for that parameter, divided by 12.
   i. RANGE: The minimum and maximum instantaneous measurements for the reporting period must remain between the two values shown.

2. ACTION LEVELS: Routine Action Level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If the additional monitoring requirement is triggered as noted below, the permittee shall undertake a short-term, high-intensity monitoring program for the parameter(s). Samples identical to those required for routine monitoring purposes shall be taken on each of at least three consecutive operating and discharging days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the additional monitoring requirement was triggered. Results may be appended to the DMR or transmitted under separate cover to the same address. If levels higher than the Action Levels are confirmed, the permit may be reopened by the Department for consideration of revised Action Levels or effluent limits. The permittee is not authorized to discharge any of the listed parameters at levels which may cause or contribute to a violation of water quality standards.

INTERIM PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	All Year	Hudson River	EDP	(1)

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
								Location		
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Inf.	Eff.	
Flow	Monthly Average	1.25	MGD			Continuous	Recorder		X	
Flow	Daily Maximum	Monitor	MGD			Continuous	Recorder		X	
BOD_5	Monthly Average	30	mg/L	313	lbs/d	2/Month	24-hr. Comp.	X	X	(2)
BOD_5	7-Day Average	45	mg/L	469	lbs/d	2/Month	24-hr. Comp.	X	X	
Solids, Suspended	Monthly Average	30	mg/L	313	lbs/d	2/Month	24-hr. Comp.	X	X	(2)
Solids, Suspended	7-Day Average	45	mg/L	469	lbs/d	2/Month	24-hr. Comp.	X	X	
Solids, Settleable	Daily Maximum	0.3	mL/L			Daily	Grab	X	X	
pH	Range	6.0 – 9.0	SU			Daily	Grab	X	X	
Temperature	Daily Maximum	Monitor	°F			Daily	Grab	X	X	
Effluent Disinfection required		[X] All Year		[ ] Seasonal from to						
Coliform, Fecal	30-Day Geometric Mean	200	No./ 100 mL			2/month	Grab		X	
Coliform, Fecal	7 Day Geometric Mean	400	No./ 100 mL			2/month	Grab		X	
Chlorine, Total Residual	Daily Maximum	2.0	mg/L			Daily	Grab		X	

Footnotes listed on Page 5 of permit.

FINAL PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	All Year	Hudson River	(3)	ExDP

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
								Location		
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Inf.	Eff.	
Flow	Monthly Average	1.5	MGD			Continuous	Recorder		X	
Flow	Daily Maximum	Monitor	MGD			Continuous	Recorder		X	
BOD_5	Monthly Average	30	mg/L	375	lbs/d	2/Month	24-hr. Comp.	X	X	(2)
BOD_5	7-Day Average	45	mg/L	563	lbs/d	2/Month	24-hr. Comp.	X	X	
Solids, Suspended	Monthly Average	30	mg/L	375	lbs/d	2/Month	24-hr. Comp.	X	X	(2)
Solids, Suspended	7-Day Average	45	mg/L	563	lbs/d	2/Month	24-hr. Comp.	X	X	
Solids, Settleable	Daily Maximum	0.3	mL/L			Daily	Grab	X	X	
pH	Range	6.0-9.0	SU			Daily	Grab	X	X	
Ammonia (as N)	Daily Maximum	Monitor	mg/L			2/Month	24-hr. Comp.		X	
TKN	Daily Maximum	Monitor	mg/L			2/Month	24-hr. Comp.		X	
Temperature	Daily Maximum	Monitor	°C			Daily	Grab	X	X	
Mercury	Daily Maximum	50	ng/L			Quarterly	Grab		X	(4)
Effluent Disinfection required		[X] All Year		[ ] Seasonal from _____ to _____						
Coliform, Fecal	30-Day Geometric Mean	200	No./ 100 mL			2/month	Grab		X	
Coliform, Fecal	7 Day Geometric Mean	400	No./ 100 mL			2/month	Grab		X	
Chlorine, Total Residual	Daily Maximum	50	µg/L			Daily	Grab		X	
Whole Effluent Toxicity (WET) Testing				Action Level	Units	Sample Frequency	Sample Type	Inf.	Eff.	FN
WET - Acute Invertebrate	See footnote			10	TUa	Quarterly	See footnote		X	(5)
WET - Acute Vertebrate	See footnote			10	TUa	Quarterly	See footnote		X	(5)
WET - Chronic Invertebrate	See footnote			3	TUc	Quarterly	See footnote		X	(5)
WET - Chronic Vertebrate	See footnote			3	TUc	Quarterly	See footnote		X	(5)

Footnotes listed on Page 5 of permit.

FOOTNOTES:

(1) These permit limits, levels, and monitoring requirements shall expire when the permittee completes construction in compliance with the Order on Consent (R4-2008-1002-114) and begins discharging through the new system.

(2) and effluent shall not exceed 15 % and 15 % of influent concentration values for BOD5 & TSS respectively.

(3) These permits limits, levels, and monitoring requirements shall commence when the permittee completes construction in compliance with the Order on Consent (R4-2008-1002-114) and begins discharging through the new system. Prior to commencing discharge from the new discharge system, the Department shall be notified of the completion in accordance with 6 NYCRR 750.2-10.

(4) EPA Method 1631 shall be used in the analysis.

(5) **Whole Effluent Toxicity (WET) Testing:**
Testing Requirements - WET testing shall consist of chronic only. Note that chronic testing will generate both acute and chronic data.

WET testing shall be performed in accordance with 40 CFR Part 136 and TOGS 1.3.2 unless prior written approval has been obtained from the Department. The test species shall be Ceriodaphnia dubia (water flea - invertebrate) and Pimephales promelas (fathead minnow - vertebrate). Receiving water collected upstream from the discharge should be used for dilution. All tests conducted should be static-renewal (three 24 hr. composite samples with two renewals for Chronic tests). The appropriate dilution series bracketing the IWC and including one exposure group of 100% effluent should be used to generate a definitive test endpoint, otherwise an immediate rerun of the test is required. WET testing shall be coordinated with the monitoring of chemical and physical parameters limited by this permit so that the resulting analyses are also representative of the sample used for WET testing. The ratio of critical receiving water flow to discharge flow (i.e. dilution ratio) is 10:1 for acute, and 10:1 for chronic. Discharges which are disinfected using chlorine should be dechlorinated prior to WET testing or samples shall be taken immediately prior to the chlorination system.

Monitoring Period - WET testing shall be performed at the specified sample frequency during calendar years ending in 3 & 8.

Reporting - Toxicity Units shall be calculated and reported on the DMR as follows: TUa = (100)/(48 hr. LC50) or (100)/(48 hr. EC50and TUc = (100)/(NOEC) where the 48 hr LC50 or 48 hr EC50 and NOEC are expressed in % effluent. This must be done for both species and using the Most Sensitive Endpoint (MSE) or the lowest NOEC and corresponding highest TUc. Report a TUa of 0.3 if there is no statistically significant toxicity in 100% effluent as compared to control.

The complete test report including all corresponding results, statistical analyses, reference toxicity data, daily average flow at the time of sampling and other appropriate supporting documentation, shall be submitted within 60 days following the end of each test period to the Toxicity Testing Unit, Bureau of Watershed Assessment and Management, 625 Broadway, Fourth Floor, Albany, NY 12233-3502. A summary page of the test results for the invertebrate and vertebrate species indicating TUa, 48-hr LC50 or 48-hr EC50 for Acute tests and/or TUc, NOEC, IC25, and most sensitive endpoints for Chronic tests, should also be included at the beginning of the test report.

WET Testing Action Level Exceedances - If an action level is exceeded then the Department may require the permittee to conduct additional WET testing including Acute and/or Chronic tests. Additionally, the permittee may be required to perform a Toxicity Reduction Evaluation (TRE) in accordance with Department guidance. If such additional testing or performance of a TRE is necessary, the permittee shall be notified in writing by the Regional Water Engineer. The written notification shall include the reason(s) why such testing or a TRE is required.

MERCURY MINIMIZATION PROGRAM – High Priority POTWs

1. **General** - The permittee shall develop, implement, and maintain a Mercury Minimization Program (MMP). The MMP is required because the permit limit exceeds the statewide water quality-based effluent limit (WQBEL) of 0.70 nanograms/Liter (ng/L) for Total Mercury. The goal of the MMP will be to reduce mercury effluent levels in pursuit of the WQBEL. Note – The mercury-related requirements in this permit conform to the mercury Multiple Discharge Variance specified in NYSDEC policy *DOW 1.3.10*.

2. **MMP Elements** - The MMP shall be documented in narrative form and shall include any necessary drawings or maps. Other related documents already prepared for the facility may be used as part of the MMP and may be incorporated by reference. As a minimum, the MMP shall include an on-going program consisting of: periodic monitoring designed to quantify and, over time, track the reduction of mercury; an acceptable control strategy for reducing mercury discharges via cost-effective measures, which may include more stringent control of tributary waste streams; and submission of periodic status reports.

A. Monitoring - The permittee shall conduct periodic monitoring designed to quantify and, over time, track the reduction of mercury. All permit-related wastewater and stormwater mercury compliance point (outfall) monitoring shall be performed using EPA Method 1631. Use of EPA Method 1669 during sample collection is recommended. Unless otherwise specified, all samples shall be grabs. Monitoring at influent and other locations tributary to compliance points may be performed using either EPA Methods 1631 or 245.7. Monitoring of raw materials, equipment, treatment residuals, and other non-wastewater/non-stormwater substances may be performed using other methods as appropriate. Monitoring shall be coordinated so that the results can be effectively compared between internal locations and final outfalls. Minimum required monitoring is as follows:

i. Sewage Treatment Plant Influent & Effluent, and Type II SSO Outfalls - Samples at each of these locations shall be collected in accordance with the minimum frequency specified on the mercury permit limits page.

ii. Key Locations in the Collection System and Potential Significant Mercury Sources - The minimum monitoring frequency at these locations shall be semi-annual. Monitoring of properly treated dental facility discharges is not required.

iii. Hauled Wastes - Hauled wastes which may contain significant mercury levels shall be periodically tested prior to acceptance to ensure compliance with pretreatment/Local limits requirements and/or determine mercury load.

iv. Additional monitoring shall be completed as may be required elsewhere in this permit or upon Department request.

B. Control Strategy - An acceptable control strategy is required for reducing mercury discharges via cost-effective measures, including but not limited to more stringent control of industrial users and hauled wastes. The control strategy will become enforceable under this permit and shall contain the following minimum elements:

i. Pretreatment/Local Limits - The permittee shall evaluate and revise current requirements in pursuit of the goal.

ii. Periodic Inspection - The permittee shall inspect users as necessary to support the MMP. Each dental facility shall be inspected at least once every five years to verify compliance with the wastewater treatment operation, maintenance, and notification elements of 6NYCRR Part 374.4. Other mercury sources shall also be inspected once every five years. Alternatively, the permittee may develop an outreach program which informs these users of their responsibilities once every five years and is supported by a subset of site inspections. Monitoring shall be performed as above.

iii. Systems with CSO & Type II SSO Outfalls - Priority shall be given to controlling mercury sources upstream of CSOs and Type II SSOs through mercury reduction activities and/or controlled-release discharge. Effective control is necessary to avoid the need for the Department to establish mercury permit limits at these outfalls.

iv. Equipment and Materials – Equipment and materials which may contain mercury shall be evaluated by the permittee and replaced with mercury-free alternatives where environmentally preferable.

v. Bulk Chemical Evaluation - For chemicals used at a rate which exceeds 1,000 gallons/year or 10,000 pounds/year, the permittee shall obtain a manufacturer's certificate of analysis and/or a notarized affidavit which describes the substances' mercury concentration and the detection limit achieved. The permittee shall only use bulk chemicals which contain <10 ppb mercury, if available.

C. Annual Status Report - An annual status report shall be submitted to the Regional Water Engineer and to the Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505, summarizing: (a) all MMP monitoring results for the previous year; (b) a list of known and potential mercury sources; (c) all action undertaken pursuant to the strategy during the previous year; (d) actions planned for the upcoming year; and, (e) progress toward the goal. The first annual status report is due one year after the permit is modified to include the MMP requirement and follow-up status reports are due annually thereafter. A file shall be maintained containing all MMP documentation, including the dental forms required by 6NYCRR Part 374.4, which shall be available for review by NYSDEC representatives. Copies shall be provided upon request.

3. **MMP Modification** - The MMP shall be modified whenever: (a)changes at the facility or within the collection system increase the potential for mercury discharges; (b) actual discharges exceed 50 ng/L; (c) a letter from the Department identifies inadequacies in the MMP; or, (d) pursuant to a permit modification.

DISCHARGE NOTIFICATION REQUIREMENTS

(a) Except as provided in (c) and (g) of these Discharge Notification Act requirements, the permittee shall install and maintain identification signs at all outfalls to surface waters listed in this permit. Such signs shall be installed before initiation of any discharge.

(b) Subsequent modifications to or renewal of this permit does not reset or revise the deadline set forth in (a) above, unless a new deadline is set explicitly by such permit modification or renewal.

(c) The Discharge Notification Requirements described herein do not apply to outfalls from which the discharge is composed exclusively of storm water, or discharges to ground water.

(d) The sign(s) shall be conspicuous, legible and in as close proximity to the point of discharge as is reasonably possible while ensuring the maximum visibility from the surface water and shore. The signs shall be installed in such a manner to pose minimal hazard to navigation, bathing or other water related activities. If the public has access to the water from the land in the vicinity of the outfall, an identical sign shall be posted to be visible from the direction approaching the surface water.

The signs shall have **minimum** dimensions of eighteen inches by twenty-four inches (18" x 24") and shall have white letters on a green background and contain the following information:

N.Y.S. PERMITTED DISCHARGE POINT

SPDES PERMIT No.: NY_____

OUTFALL No. :____

For information about this permitted discharge contact:

Permittee Name: _____

Permittee Contact: _____

Permittee Phone: ( ) - ### - ####

OR:

NYSDEC Division of Water Regional Office Address:

NYSDEC Division of Water Regional Phone: ( ) - ### -####

(e) For each discharge required to have a sign in accordance with a), the permittee shall, concurrent with the installation of the sign, provide a repository of copies of the Discharge Monitoring Reports (DMRs), as required by the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of this permit. This repository shall be open to the public, at a minimum, during normal daytime business hours. The repository may be at the business office repository of the permittee or at an off-premises location of its choice (such location shall be the village, town, city or county clerk's office, the local library or other location as approved by the Department). In accordance with the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of your permit, each DMR shall be maintained on record for a period of five years

(f) The permittee shall periodically inspect the outfall identification sign(s) in order to ensure they are maintained, are still visible, and contain information that is current and factually correct. Signs that are damaged or incorrect shall be replaced within 3 months of inspection.

DISCHARGE NOTIFICATION REQUIREMENTS (continued)

(g) All requirements of the Discharge Notification Act, including public repository requirements, are waived for any outfall meeting any of the following circumstances, provided Department notification is made in accordance with (h) below:

(i) such sign would be inconsistent with any other state or federal statute;

(ii) the Discharge Notification Requirements contained herein would require that such sign could only be located in an area that is damaged by ice or flooding due to a one-year storm or storms of less severity;

(iii) instances in which the outfall to the receiving water is located on private or government property which is restricted to the public through fencing, patrolling, or other control mechanisms. Property which is posted only, without additional control mechanisms, does not qualify for this provision;

(iv) instances where the outfall pipe or channel discharges to another outfall pipe or channel, before discharge to a receiving water; or

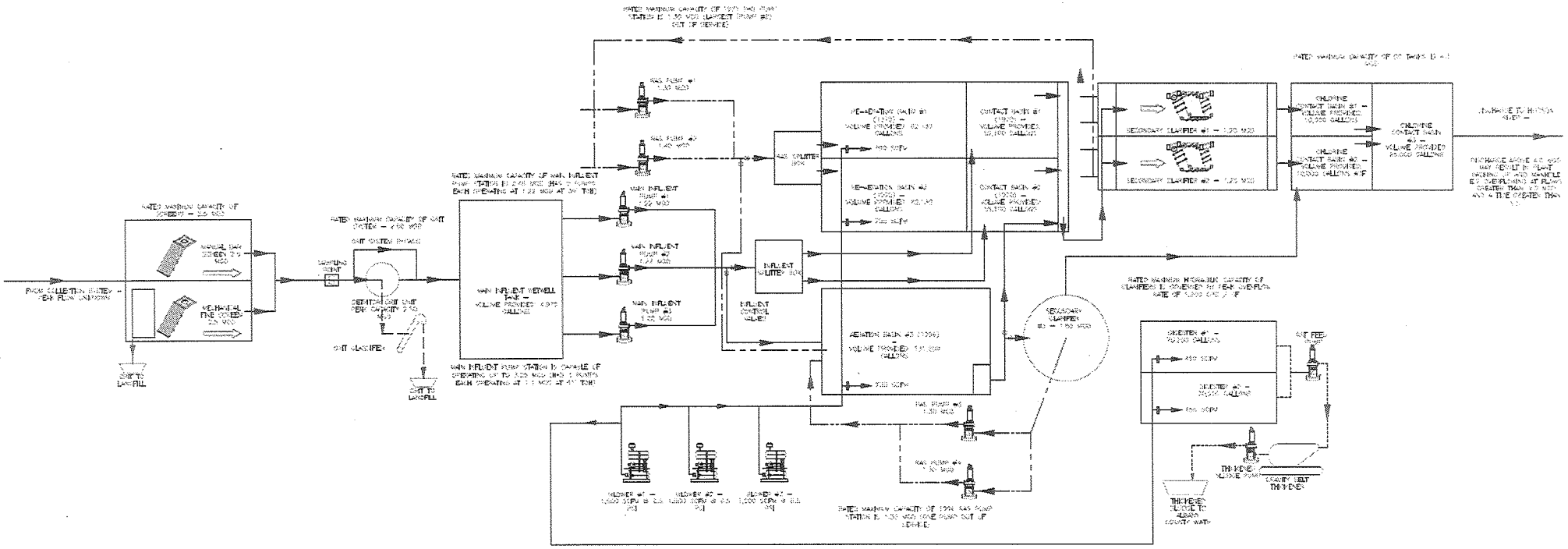
(v) instances in which the discharge from the outfall is located in the receiving water, two-hundred or more feet from the shoreline of the receiving water.

(h) If the permittee believes that any outfall which discharges wastewater from the permitted facility meets any of the waiver criteria listed in (g) above, notification (form enclosed) must be made to the Department's Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505, of such fact, and, provided there is no objection by the Department, a sign and DMR repository for the involved outfall(s) are not required. This notification must include the facility's name, address, telephone number, contact, permit number, outfall number(s), and reason why such outfall(s) is waived from the requirements of discharge notification. The Department may evaluate the applicability of a waiver at any time, and take appropriate measures to assure that the ECL and associated regulations are complied with.

MONITORING LOCATIONS

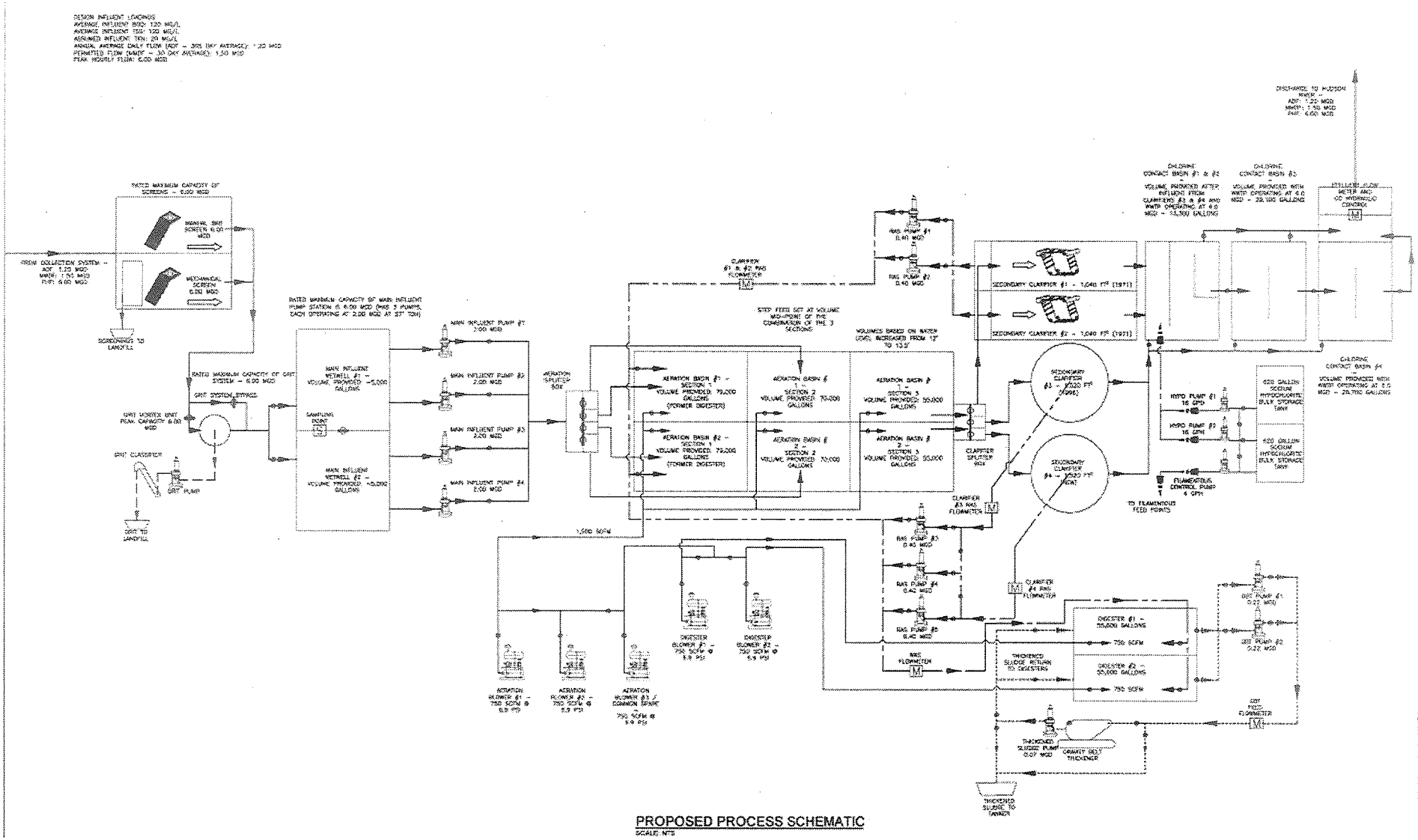
The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the locations(s) specified below:
Influent samples shall be collected at the aerated grit chamber. During the interim limits, effluent samples shall be collected at the discharge end of chlorine contact chamber.

Existing Process Schematic



After construction when the new limits are put into effect, samples shall be taken after disinfection and dechlorination (if applicable).

Proposed Process Schematic



GENERAL REQUIREMENTS

A. The regulations in 6 NYCRR Part 750 are hereby incorporated by reference and the conditions are enforceable requirements under this permit. The permittee shall comply with all requirements set forth in this permit and with all the applicable requirements of 6 NYCRR Part 750 incorporated into this permit by reference, including but not limited to the regulations in paragraphs B through I as follows:

B. General Conditions

1. Duty to comply	6NYCRR 750-2.1(e) & 2.4
2. Duty to reapply	6NYCRR 750-1.16(a)
3. Need to halt or reduce activity not a defense	6NYCRR 750-2.1(g)
4. Duty to mitigate	6NYCRR 750-2.7(f)
5. Permit actions	6NYCRR 750-1.1(c), 1.18, 1.20 & 2.1(h)
6. Property rights	6NYCRR 750-2.2(b)
7. Duty to provide information	6NYCRR 750-2.1(i)
8. Inspection and entry	6NYCRR 750-2.1(a) & 2.3

C. Operation and Maintenance

1. Proper Operation & Maintenance	6NYCRR 750-2.8
2. Bypass	6NYCRR 750-1.2(a)(17), 2.8(b) & 2.7
3. Upset	6NYCRR 750-1.2(a)(94) & 2.8(c)

D. Monitoring and Records

1. Monitoring and records	6NYCRR 750-2.5(a)(2), 2.5(a)(6), 2.5(c)(1), 2.5(c)(2), & 2.5(d)
2. Signatory requirements	6NYCRR 750-1.8 & 2.5(b)

E. Reporting Requirements

1. Reporting requirements for POTWs	6NYCRR 750-2.5, 2.7 & 1.17
2. Anticipated noncompliance	6NYCRR 750-2.7(a)
3. Transfers	6NYCRR 750-1.17
4. Monitoring reports	6NYCRR 750-2.5(e)
5. Compliance schedules	6NYCRR 750-1.14(d)
6. 24-hour reporting	6NYCRR 750-2.7(c) & (d)
7. Other noncompliance	6NYCRR 750-2.7(e)
8. Other information	6NYCRR 750-2.1(f)
9. Additional conditions applicable to a POTW	6NYCRR 750-2.9

F. Planned Changes

1. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

    a. The alteration or addition to the permitted facility may meet of the criteria for determining whether facility is a new source in 40 CFR §122.29(b); or
    b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, or to notification requirements under 40 CFR §122.42(a)(1); or
    c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

In addition to the Department, the permittee shall submit a copy of this notice to the United States Environmental Protection Agency at the following address: U.S. EPA Region 2, Clean Water Regulatory Branch, 290 Broadway, 24th Floor, New York, NY 10007-1866.

GENERAL REQUIREMENTS continued

G. Notification Requirement for POTWs

1. All POTWs shall provide adequate notice to the Department and the USEPA of the following:
   a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; or
   b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
   c. For the purposes of this paragraph, adequate notice shall include information on:
      i. the quality and quantity of effluent introduced into the POTW, and
      ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

POTWs shall submit a copy of this notice to the United States Environmental Protection Agency, at the following address: U.S. EPA Region 2, Clean Water Regulatory Branch, 290 Broadway, 24th Floor, New York, NY 10007-1866Sludge Management
The permittee shall comply with all applicable requirements of 6 NYCRR Part 360.

H. Sludge Management
The permittee shall comply with all applicable requirements of 6 NYCRR Part 360.

I. SPDES Permit Program Fee
The permittee shall pay to the Department an annual SPDES permit program fee within 30 days of the date of the first invoice, unless otherwise directed by the Department, and shall comply with all applicable requirements of ECL 72-0602 and 6 NYCRR Parts 480, 481 and 485. Note that if there is inconsistency between the fees specified in ECL 72-0602 and 6 NYCRR Part 485, the ECL 72-0602 fees govern.

J. Water Treatment Chemicals (WTCs)
New or increased use and discharge of a WTC requires prior Department review and authorization. At a minimum, the permittee must notify the Department in writing of its intent to change WTC use by submitting a completed *WTC Notification Form* for each proposed WTC. The Department will review that submittal and determine if a SPDES permit modification is necessary or whether WTC review and authorization may proceed outside of the formal permit administrative process. The majority of WTC authorizations do not require SPDES permit modification. In any event, use and discharge of a WTC shall not proceed without prior authorization from the Department. Examples of WTCs include biocides, coagulants, conditioners, corrosion inhibitors, defoamers, deposit control agents, flocculants, scale inhibitors, sequestrants, and settling aids.

1. WTC use shall not exceed the rate explicitly authorized by this permit or otherwise authorized in writing by the Department.
2. The permittee shall maintain a logbook of all WTC use, noting for each WTC the date, time, exact location, and amount of each dosage, and, the name of the individual applying or measuring the chemical. The logbook must also document that adequate process controls are in place to ensure that excessive levels of WTCs are not used.
3. The permittee shall submit a completed WTC Annual Report Form each year that they use and discharge WTCs. This form shall be attached to either the December DMR or the annual monitoring report required below.

The *WTC Notification Form and WTC Annual Report Form* are available from the Department's website at: http://www.dec.ny.gov/permits/93245.html

RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

A. A. The monitoring information required by this permit shall be retained for a period of at least five years from the date of the sampling for subsequent inspection by the Department or its designated agent.

B. The monitoring information required by this permit shall be summarized and reported by submitting:

Discharge Monitoring Reports (DMRs): Completed DMR forms shall be submitted for each 1 month reporting period in accordance with the DMR Manual available on Department's website.

DMRs must be submitted electronically using the electronic reporting tool (NetDMR) specified by NYSDEC. Instructions on the use of NetDMR are available in the DMR Manual. Attach the monthly "Wastewater Facility Operation Report" (form 92-15-7) and any required DMR attachments electronically to the DMR.

To submit via hard copy: Hard copy paper DMRs will only be accepted by the Department if a waiver from the electronic submittal requirements has been granted by DEC to the facility. Attach a hard copy of the monthly "Wastewater Facility Operation Report" (form 92-15-7) to the DMR. The Facility Operation report and DMRs shall be sent to:

Department of Environmental Conservation
Division of Water, Bureau of Water Compliance
625 Broadway, Albany, New York 12233-3506
Phone: (518) 402-8177

The first monitoring period begins on the effective date of this permit, and, unless otherwise required, the reports are due no later than the 28th day of the month following the end of each monitoring period.

C. Bypass and Sewage Pollutant Right to Know Reporting: In accordance with the Sewage Pollutant Right to Know Act (ECL § 17-0826-a), Publicly Owned Treatment Works (POTWs) are required to notify DEC and Department of Health within two hours of discovery of an untreated or partially treated sewage discharge and to notify the public and adjoining municipalities within four hours of discovery. Information regarding reporting and other requirements of this program may be found on the Department's website. In addition, POTWs are required to provide a five-day incident report and supplemental information to the DEC in accordance with Part 750-2.7(d) by utilizing the Department's Non-Compliance Report Form unless waived by DEC on a case-by-case basis.

D. Monitoring and analysis shall be conducted using sufficiently sensitive test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

E. More frequent monitoring of the discharge(s), monitoring point(s), or waters of the State than required by the permit, where analysis is performed by a certified laboratory or where such analysis is not required to be performed by a certified laboratory, shall be included in the calculations and recording of the data on the corresponding DMRs.

F. Calculations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

G. Unless otherwise specified, all information recorded on the DMRs shall be based upon measurements and sampling carried out during the most recently completed reporting period.

H. Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section 502 of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be directed to the New York State Department of Health, Environmental Laboratory Accreditation Program.

New York State Department of Environmental Conservation
Office of General Counsel, Region 4
1130 North Westcott Road, Schenectady, New York 12306-2014
Phone: (518) 357-2048 • **Fax:** (518) 357-2087
Website: www.dec.ny.gov

Joe Martens
Commissioner

CONFIRMATION BY EMAIL ORDER RECIEVED

June 17, 2013

Mr. Mark Evans, Mayor
Village of Coxsackie
119 Mansion St.
Coxsackie, NY 12051
Mayor@villageof coxsackie.com

Philip H. Dixon, Esq.
Whiteman Osterman & Hanna LLP
One Commerce Plaza
Albany, NY 12260
pdixon@woh.com

Re: Modification of Order on Consent
Coxsackie WWTP
SPDES No. NY 0033545
R4-2008-1002-144M

Dear Mayor Evans & Mr. Dixon:

Enclosed please find a copy of the fully executed Modificiation of Order on Consent referenced above.

Sincerely,

Richard Ostrov
Regional Attorney
Region 4

Enclosure

ec: A. Dzierwa

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of Violations
of the Environmental Conservation
Law (AECL@) Article 17 and
Title 6 of the Official Compilation
of Codes, Rules and Regulations of the
State of New York (6 NYCRR)

MODIFICATION OF ORDER ON CONSENT ("MODIFICATION")

- by -

File No. R4-2008-1002-144M

Village of Coxsackie
119 Mansion Street
Coxsackie, NY 12051

Respondent

WHEREAS:

1. The Department of Environmental Conservation (ADepartment@)is the State agency which has jurisdiction over the environmental law and policy of the State pursuant to, *inter alia*, '3-0301 of the Environmental Conservation Law. In particular, DEC is and has been responsible for the protection of the water resources of the State, pursuant to ECL Article 17 and the rules and regulations promulgated thereunder at Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR), Part 750, *et seq.*

2. Respondent, Village of Coxsackie, is a municipality of the State of New York that operates a waste water treatment plant (AWWTP@) located at 119 Mansion Street, Coxsackie, New York (Asite@) that discharges to Hudson River through outfall 001. The WWTP is regulated by State Pollutant Discharge Elimination System permit No. NY-0033545 (Apermit@).

3. The permit, based on information supplied by the Respondent identified four combined sewer outfalls ("CSOs"). Outfalls 001A, 004 and 008 discharge to the Hudson River and Outfall 002 to the Coxsackie Creek. A CSO results when a collection system, by design, conveys both sanitary waste and stormwater for discharge, via an overflow, to the waters of the state.

4. Respondent is also subject to Order on Consent R4-2008-1002-144 (July 31, 2009)

("Order").

5. The Order's Schedule of Compliance Paragraph 1 required the Respondent to submit a work plan by August 21, 2009 to the Department for review and approval that contained an expeditious schedule to investigate and address infiltration and inflow (I/I) from the collection system and formally define the collection system as separate (sanitary waste only) or combined (sanitary waste and stormwater).

6. For the period from July 2011 to the effective date of this Order, the average daily flow of waste water to the WWTP was approximately 750,00 gallons per day (gpd). During this period, 58% of the average daily flow to the WWTP came from two main users; the Greene Correctional Facility (176,821 gpd) and Coxsackie Correctional Facility (257,320 gpd).

7. The Respondent submitted a Sanitary Sewer Investigation Work Plan ("SSIP") to the Department in August 2009 and the Department approved the SSIP on December 3, 2009. The SSIP states that the four (4) overflow locations listed on the SPDES permit are not of the CSO type but rather sanitary sewer overflows (SSO).

8. Paragraph 1 of the Order's Schedule of Compliance makes the approved SSIP and its schedules and attachments enforceable under the Modification.

SSIP Requirements by Year

9. The Respondent committed in the SSIP during the 2010 calendar year to investigate the sewer lines on Kings, Apple Blossom, Spencer, Bailey, Raymond Roads and a section of State Highway 385 and complete manhole inspections of the entire system.

10. Respondent committed in the SSIP during the 2011 calendar year to implement repairs to the sewer lines investigated in 2010 and relocates the sewer line along Coxsackie Creek northwest of the West Coxsackie Pump Station.

Notice of Violation

11. On July 17, 2012, Respondent was sent a notice of violation ("NOV") by the Department for the violations of the Order addressed in this Modification.

Violations of the SSIP and the Order

12. Section 4.0 of the Department approved SSIP contains work to be completed by the Respondent for the investigation of the sewer system and the implementation of measures to reduce I/I.

13. Respondent has failed as of the effective date of this Modification to complete manhole inspections of its entire sewer system and has failed to implement the repairs to the sewer lines on Kings, Apple Blossom, Spencer, Bailey, Raymond Roads and a section of State Highway

385.

14. Respondent's failure to complete the work required by the SSIP for 2010 and 2011 as described in Paragraph 13 are continuing violations of the SSSIP and the Order.

SSOs

15. The SSIP states that: "The collection system incorporates four sanitary sewer overflow discharge locations, two of which are located at pump stations. The four sanitary sewer overflow locations are listed as CSOs on the facility SPDES permit although they are not combined stormwater and sanitary sewers."

16. The sewage discharged from the four (4) overflow locations is untreated. No formal flow measurement or estimate exists for any of the overflow locations.

17. ECL § 17-0807(4) prohibits the following: "any discharge not permitted by the provisions of this article, rules and regulations adopted or applicable pursuant hereto, the Act, or provisions of a permit issued hereunder.

18. ECL §17-0509 requires Respondent to provide effective secondary treatment as a minimum degree of treatment prior to the discharge of sanitary sewage into the surface waters of the state.

19. Respondent's discharge of untreated sewage from its four outfalls to surface waters of the state are violations of ECL §17-0509 and ECL ' 17-0807(4).

Effluent Limit Violations

20. The Permit sets, in part, effluent discharge limits for fecal coliform and flow.

21. The Permit requires the Respondent to submit to the Department discharge monitoring reports ("DMRs") on a monthly basis.

22. Respondent submitted sampling results in its DMRs that identified the following violations of the Permit and ECL § 17-0807(4).

Date	Parameter	Effluent Limit	Result
5/2011	Flow (30 day avg.)	1.25 mgd	1.319 mgd
11/2010	Fecal coliform, 7-day geometric mean	400 (No./100 ml)	>400
3/2011	Fecal coliform	400 (No./100 ml)	>400
6/2011	Fecal coliform	400 (No./100 ml)	>400

Civil Penalties

23. ECL ' 71-1929 provides that any person who violates any provision of Titles 1 through 11 inclusive and title 19 of Article 17 of the ECL or any rule or regulation, order or determination of the Commissioner promulgated thereunder shall be liable for a civil penalty up to thirty seven thousand five hundred dollars ($37,500). Injunctive relief is also available.

Waiver of Hearing

24. Respondent has affirmatively waived its right to a hearing as provided by law and has consented to the issuing of this Modification and has agreed to be bound by the provisions, terms and conditions of this Modification.

NOW, having considered this matter and being duly advised, **IT IS HEREBY ORDERED THAT:**

PENALTY

I. With respect to the aforesaid alleged violations, a civil penalty in the amount of TEN THOUSAND DOLLARS ($10,000) is hereby assessed against the Respondent. The civil penalty is suspended provided Respondent complies with this Modification. Payment of the suspended penalty shall be due to the Department within fifteen (15) calendar days of the receipt by the Respondent of a notice of violation from the Department which sets forth the violations of the Modification. This provision shall not limit the Department=s right to seek other remedies provided by law and the applicable regulations for violations of this Modification and ECL Article 17 and regulations, respectively.

SCHEDULE OF COMPLIANCE

II. Respondent shall comply with the Schedule of Compliance and any milestone date or requirement in the Schedule of Compliance or any milestone date or requirement in any Department approved submittal pursuant to the requirements of the Schedule of Compliance.

REPORTS

III. All reports required herein shall be made to the Region 4 office of DEC, 1130 North Westcott Road, Schenectady, NY 12306, Attn: Regional Water Engineer.

ACCESS

IV. Respondent shall allow duly authorized agents and employees of DEC access to any facility, site, or records owned, operated, controlled, or maintained by Respondent, without prior notice, at such times as may be desirable or necessary, and/or perform such tests as the Department may deem appropriate, to copy such records, or to perform any other lawful duty or responsibility.

INDEMNIFICATION

V. Respondent shall indemnify and hold harmless the Department, the State of New York, and their representatives and employees, for all claims, suits, actions, damages and costs of every name and description arising out of or resulting from the fulfillment or attempted fulfillment of this Modification by Respondent, its employees, servants, agents, successors or assigns.

SUCCESSORS AND ASSIGNS

VI. The provisions of this Modification shall be deemed to bind Respondent, its agents, employees, successors, and assigns, and all persons, firms, and corporations acting under or for Respondent.

EFFECTIVE DATE

VII. The effective date of this Modification shall be the date that the Commissioner or his designee signs it. The Department will provide Respondent (or the Respondent=s Counsel) with a fully executed copy of this Modification as soon as practicable after the Commissioner or his designee signs it.

MODIFICATION

VIII. This Modification is the entire agreement of the parties, and no provision of the agreement shall be deemed waived or otherwise modified except as is specifically set forth in a writing executed by the Commissioner or Regional Director of DEC and the Respondent indicating intent to modify this Modification. The terms, conditions and provisions of this Modification and its Schedule of Compliance supersedes the Order's terms, conditions and provisions and the Order's Schedule of Compliance unless expressly provided otherwise in this Modification.

OTHER RIGHTS

IX. Nothing contained in this Modification shall be construed as barring, diminishing, adjudicating or in any way affecting (1) any legal, administrative or equitable rights or claims, actions, suits, causes of action, or demands whatsoever that the Department may have against anyone other than Respondent; (2) any right of the Department to enforce administratively or at law or in equity, the terms, provisions and conditions of this Modification ; (3) any right of the Department to bring any future action, either administrative or judicial, for any other violations of the ECL, the rules and regulations promulgated there under, or conditions contained in orders or permits, if any, issued by the Department to Respondent; and (4) the summary abatement powers of the Department, either at common law or as granted pursuant to statute or regulation.

FULL SETTLEMENT

X. This Modification settles the civil and administrative violations identified herein.

SEMI-ANNUAL REPORTS

XI. By the 15th day of July and January of each calendar year, Respondent shall submit a report detailing its compliance with the Schedule of Compliance requirements including but not limited to a list of all actions taken and costs incurred.

TERMINATION OF MODIFICATION

XII. This Modification shall be deemed completely satisfied and shall terminate upon: (1) Respondent's payment of any due civil penalty owed; (2) Respondent's written certification, and DEC's written verification, of timely completion of all the requirements in the Schedule of Compliance; and (3) the completion of the modification process of the SPDES permit as required by this Schedule of Compliance.

DATED: June 14, 2013
Rotterdam, New York

Joseph Martens
Commissioner
New York State Department of
Environmental Conservation

BY: _____

Eugene J. Kelly
Regional Director
Region 4

CONSENT BY RESPONDENT

Village of Coxsackie

Respondent hereby consents to the issuing and entering of this Modification, waives its right to a hearing herein, and agrees to be bound by the provisions, terms and conditions contained herein.

BY: _____ TITLE: Mayor

DATE: June 11 , 2013

STATE OF NEW YORK)
)ss.:
COUNTY OF GREENE)

On the 11 day of June in the year 2013 before me, the undersigned, a Notary Public in and for the State, personally appeared, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public
Qualified in the County of: GREENE
My Commission Expires: 12/18/2014

VALERIE C. MURPHY
Notary Public, State of New York
Commission No. 01MU6158144
Qualified in Greene County
Commission Expires: 12/18/2014

SCHEDULE OF COMPLIANCE

Sanitary Sewer Overflow Abatement and Elimination Plan Development

1) By July 1, 2014, Respondent shall compile all existing sewer system investigation information and data necessary to develop and submit a Sanitary Sewer Overflows Abatement and Elimination Plan ("Plan") and any additional information required to comply with Paragraph 2. Any request for additional time to complete such work shall be submitted to the Department in writing prior to the compliance date for review and approval and it shall specifically list investigation tasks and the reasons for the delay(s). The final schedule and any approved extensions shall be enforceable under this Modification.

Implementation of Plan

2) The Plan shall be prepared by a Professional Engineer, licensed in and by the State of New York ("Professional Engineer") and include an expeditious schedule and end date of no later than December 31, 2022. The Plan must include actions to be taken by the Respondent to eliminate all SSOs and to achieve continuous compliance with the Permit and must include elements found in the Department's April 24, 2009 Guidelines for Sanitary Sewer Overflow Abatement Analysis. The Plan shall be a phased approach that includes, at a minimum, the following:

a) The completion of the following I/I reduction projects by December 31, 2012:
   (i) Repair of the West Coxsackie Pump Station Outfall; and
   (ii) Repair the ten manholes on Bailey, Cato, and Spencer Streets.

b) Remove the Bailey Street inflow source by no later than by June 1, 2013;

c) An analysis of the potential impact on compliance and SSO discharges of an expansion or upgrade of the WWTP;

d) An analysis of the potential impact on compliance and SSO discharges of the construction of equalization tank(s); and

e) An analysis of the potential impact on compliance and SSO discharges of the replacement and repair of portions of the collection system.

The approved Plan and its schedule shall become an enforceable part of this Modification upon Department approval.

Sewer Moratorium[1]

3) No new sewer connections, extensions, or increases in flow shall be made to Respondent's sanitary sewer collection system until satisfactory completion of the Schedule of Compliance except as follows:

A. Interim Relief Based on On-Going I/I Work: The Department's review and approval of a Professional Engineer's certification that the I/I reduction projects identified in paragraph 2(a) above have been completed will allow the Department to approve the following projects as requested by the Respondent provided it makes an appropriate sewer extension request and seeks approval from the Department for the extensions pursuant to 6 NYCRR Part 750-2.10/(i):

(i)McDonald's Restaurant on US Route 9W;
(ii)Aaron Flach Property Ten housing units on Route 385;
(iii)Greene County YMCA, State Route 81; and
(iv)Greene County IDA identified economic development projects up to 10,000 gpd in discharges.

B. Continued Relief Based on Future I/I Work: The Modification continues the moratorium established in the Order and no new sewer connections, extensions, or increases in flow may be considered unless Department approved based on I/I reduction work and other measures in the Plan that have been completed and certified. An application in writing by Respondent for such relief shall be made to the DEC Region 4 Regional Water Engineer. Approvals under this subparagraph shall be based on the Division of Water Guidelines for Sanitary Sewer Overflow (SSO) Abatement Analysis dated April 24, 2009. No applications will be considered and no approvals granted unless the Respondent is in compliance with this Modification including the Plan, Schedule of Compliance; and the Quarterly Report requirements.

C. Application : A moratorium relief application shall be only submitted by the Respondent and shall include at a minimum:

(i) A description of the quantity and type of wastewater to be introduced (estimates of new wastewater quantity shall be based on the expected hydraulic loading rates provided in the DEC Design Standards for Wastewater Treatment Works, 1988);

(ii) An assessment of the capacity of the existing system to accept the proposed additional flow without overloading the WWTP or collection system; and

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1 Paragraph 2 of the Order's Schedule of Compliance imposed a Sewer Moratorium on the Respondent. The Order's Sewer Moratorium requirements are superseded by the Modification's Schedule of Compliance Paragraph 3.

(iii) A certification by a professional engineer of actions taken under the Plan including I/I removal that supports the granting of relief from the moratorium. The Department will notify the Respondent whether the application has been approved or disapproved.

D. Public Health Relief from Moratorium With prior written approval of the Department, new sewer connections, extensions or increases in flow not covered by subparagraphs (A) and (B) above may be granted by the Department upon application by the Respondent to eliminate existing or potential near term public health nuisances or hazards. The New York State Department of Health or local health officer must certify the existence of the public health nuisance or hazard prior to the application being submitted to the Department.

Asset Management Plan

4. By July 1, 2014, Respondent shall develop and maintain an Asset Management Plan (AMP) for its wastewater collection and treatment system for the period until compliance is achieved under this Modification A copy of the AMP shall be provided to the Department upon request. The AMP shall include at a minimum the following items:

A. An inventory of assets (including both equipment and personnel);

B. An assessment of criticality and condition and lifespan of equipment under the full range of flows experienced in the collection system and the plant;

C. Ranking and prioritization of assets based on subparagraph B assessment; and

D. A capital improvement plan and schedule with full cost pricing covering the entire compliance period under this Modification.

The AMP shall be developed consistent with the U.S. EPA's April 2008 "Asset Management: A Best Practices Guide." The AMP shall reflect the activities identified in the Sanitary Sewer Overflow Abatement and Elimination Plan (the "Plan") that is prepared pursuant to Paragraph 1 of this Schedule of Compliance. Where the Plan proposes the replacement or significant capital upgrade of a major asset such as the wastewater treatment facility, the AMP need not include a detailed inventory or assessment of those components that will no longer be used after the upgrade/replacement. New or upgraded components will be included in the AMP once installed.

Private Property Inflow

5. If at any time, the Respondent discovers, through investigation, notification, or otherwise, that a privately owned portion of a customer service connection is a source of inflow to the collection system, the Respondent shall within 90 days of that discovery, notify the owner(s) of the connection that its connection is a source of inflow and the Respondent shall take action, consistent with the Respondent's legal authority to cause the removal of the inflow.

Permit Modification

6. Respondent agrees to a Department initiated modification of its SPDES permit to delete all references and requirements to and for CSOs and to insert all standard Department and U.S. EPA requirements for a publically owned treat plant with a separate sanitary sewer collection system including but not limited to standard language regarding the prohibition against sanitary sewer overflows.

Installation of Flow Meters

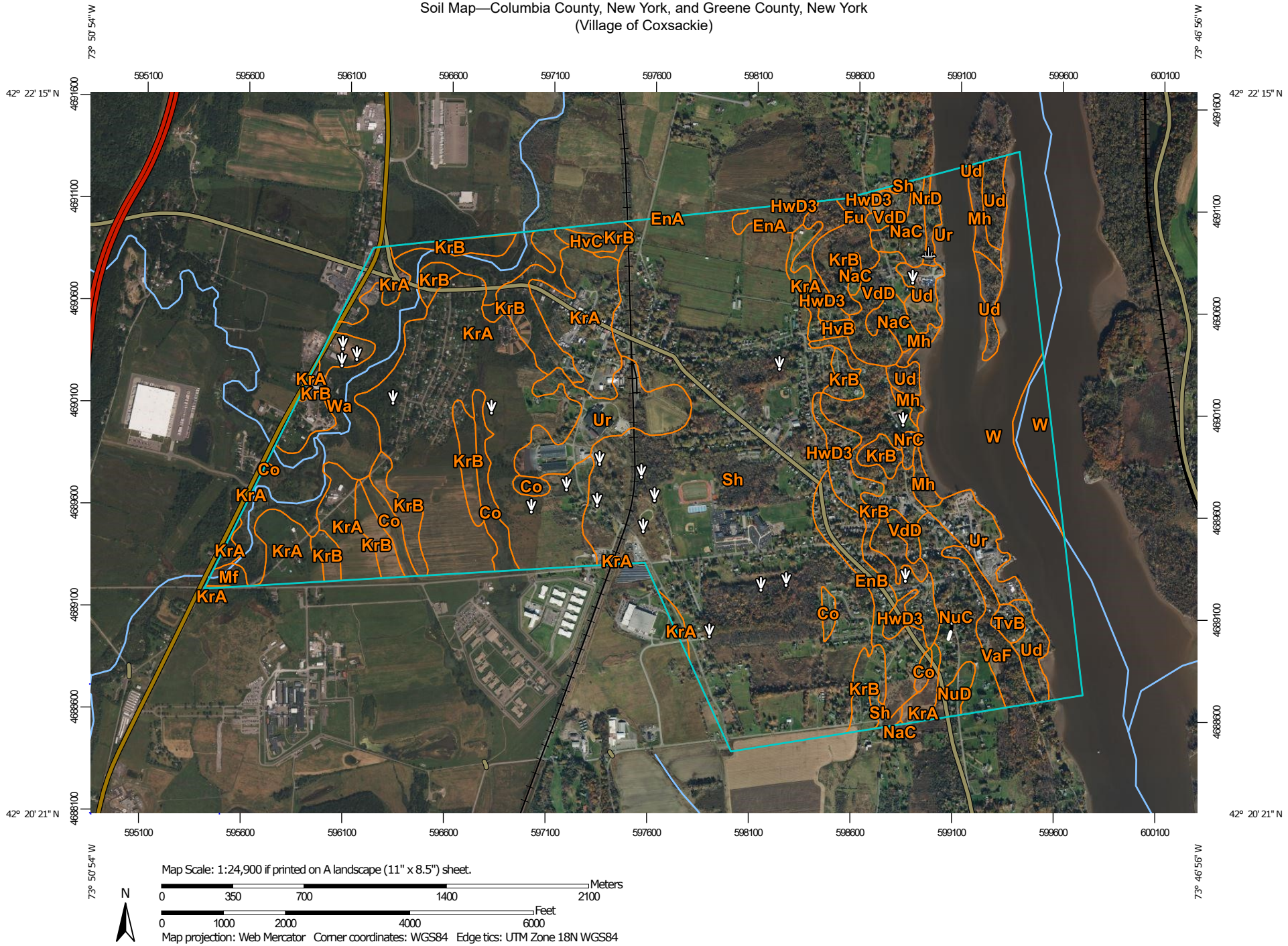
7. Within 60 days of the effective date of the Modification, Respondent shall install and maintain automatic flow meters (submersible level and velocity sensors equipped with a data logger) on West Coxsackie Pump Station, Reed Street and wastewater treatment plant overflow outfalls (SPDES permit Outfalls 1A, 2 and 8) and submit that information as required by its SPDES permit.

Interim I/I Removal Program

8. By December 1, 2013, Respondent shall submit an engineer's report to the Department that identifies interim I/I investigation and removal work to be conducted in calendar year 2014 including but not limited to manhole inspections and the elimination of the overflows at the Riverside Avenue Pump Station.

Attachment B: Soils Map

Soil Map—Columbia County, New York, and Greene County, New York
(Village of Coxsackie)



Map Scale: 1:24,900 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 350 700 1400 2100

Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,800 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Columbia County, New York
Survey Area Data: Version 17, Sep 1, 2021

Soil Survey Area: Greene County, New York
Survey Area Data: Version 20, Aug 29, 2021

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 15, 2021—Nov 8, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
W	Water	24.7	1.2%
Subtotals for Soil Survey Area		**24.7**	**1.2%**
Totals for Area of Interest		**1,981.2**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Co	Covington and Madalin soils	33.7	1.7%
EnA	Elmridge very fine sandy loam, 0 to 3 percent slopes	9.6	0.5%
EnB	Elmridge very fine sandy loam, 3 to 8 percent slopes	41.0	2.1%
Fu	Fluvaquents-Udifluvents complex, frequently flooded	2.5	0.1%
HvB	Hudson and Vergennes soils, 3 to 8 percent slopes	3.0	0.1%
HvC	Hudson and Vergennes soils, 8 to 15 percent slopes	5.2	0.3%
HwD3	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	73.9	3.7%
KrA	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	363.3	18.3%
KrB	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	196.5	9.9%
Mf	Medisaprists, inundated	4.3	0.2%
Mh	Medisaprists-Hydraquents, tidal marsh	18.2	0.9%
NaC	Nassau channery silt loam, rolling	26.1	1.3%
NrC	Nassau channery silt loam, rolling, very rocky	2.8	0.1%
NrD	Nassau channery silt loam, hilly, very rocky	1.0	0.1%
NuC	Nunda silt loam, 8 to 15 percent slopes	45.6	2.3%
NuD	Nunda silt loam, 15 to 25 percent slopes	7.6	0.4%
RhB	Riverhead loam, 3 to 8 percent slopes	0.4	0.0%
Sh	Shaker very fine sandy loam	584.0	29.5%
TvB	Tunkhannock gravelly loam, fan, 3 to 8 percent slopes	5.5	0.3%
Ud	Udipsamments, dredged	49.9	2.5%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ur	Udorthents, loamy	81.6	4.1%
VaF	Valois gravelly loam, 25 to 60 percent slopes	21.0	1.1%
VdD	Valois-Nassau complex, hilly	35.7	1.8%
W	Water	229.2	11.6%
Wa	Wayland soils complex, non-calcareous substratum, 0 to 3 percent slopes, frequently flooded	115.0	5.8%
Subtotals for Soil Survey Area		**1,956.4**	**98.7%**
Totals for Area of Interest		**1,981.2**	**100.0%**

Attachment C: Village of Coxsackie
Collection System Work History Summary

Area	Area Description	Detail Description	Investigation	Finding	Repaired
Meter 7	Kings Rd, Howard, Apple Blossom Lane	South of WCPS; 307 Mansion; 6,050 LF collection, mostly clay with PVC	2007 Flow	Significant I&I; 5.94 gal/inch rain/foot	
		Kings Rd, Apple Blossom Lane	2010 CCTV	pipe mostly clay w some PVC, infiltration, cracks, laterals protruding blocked camera	
		Kings Rd, Apple Blossom Lane	2016 Manhole inspections	Brick and concrete MH, clay and PVC pipe, signs of infiltration at most	
		King, Howard, Apple Blossom	2021 Smoke Test	Roof vents, clean outs, 1 house filled	
Meter 4	Bailey St, Raymond St, Cato St, Spencer Blvd	60' E of Fire Man Station, Bailey; 5,870 LF, PVC and Clay	2007 Flow	Significant I&I; 5.36 gal/inch rain/foot	2012 - rehab 10 MH Spencer, Cato, Bailey
		Bailey, Cato, Spencer	2010 CCTV	Clay pipes, cracks, infiltration (Spencer clay cracks and bad joints)	2015 - Rehab 9 MH Bailey Raymond, replace 4 laterals, rehab 2,645 LF pipe Bailey Raymond Cato
		Bailey, Raymond, Cato St, Spencer Blvd, Peppertree Apts	2016 Manhole inspections	Peppertree poor manhole condition with infiltration	
		Cato St Easement	2021 CCTV	Cato easement, lined; tap break ins, attached grease deposit (no pre-clean)	
		Bailey, Spencer, Cato Easement	2021 Smoke Test	Bailey; Town Hall drains, Store-it-all broken lateral in ditch	

Area	Area Description	Detail Description	Investigation	Finding	Repaired
Meter 5	Van Dyke, Lawrence, Whitbeck, Mansion	Whitbeck and Mansion St; 7 Whitbeck; 6,540 LF, Clay	2007 Flow	Significant I&I; 5.01 gal/inch rain/foot	
			2016 Manhole inspections	Concrete or brick MH; many with infiltration noted	
		Van Dyck St?, Lawrence, Mansion; Vitrified Clay pipe, 8" & 12"	2020 CCTV	MH numbers do not match, uncertain locations; Van Dyck = break ins iron pipe, areas of sag or fracture or break. Lawrence TBI and breaks, roots. Mansion roots, areas of breaks. Whitbeck easement roots, holes.	
		Whitbeck; Clay and PVC?, 10"?	2021 CCTV	Rural Water - Root intrusion and calcification	
		Lawrence, Van Dyck	2021 Smoke Test	MH at RR, CB at Mansion, broken lateral, smoke in residence, broken cleanout, CB Whitbeck	
Meter 6	Luke, John, Matthew, Connie, School and Mansion St	120' west of WCPS; Mansion St; 7,540 LF, receives from meter 4 & 5, some clay and PVC	2007 Flow	Meter 6 area only; Storm event I&I: 2.84 gal/inch/foot	
			2016 Manhole inspections	MH Concrete or Brick; some with infiltration especially on Mansion	
		Matthew, John, Luke St, PVC pipe; School St PVC	2021 CCTV	Rural Water - some cracks, roots, calcification	
		Matthew, John, Luke St	2021 Smoke Test	MH 01-80 poor condition	
		School St	2022 CCTV	ACP and VCP, a break, Tap Ins, some capped	

Area	Area Description	Detail Description	Investigation	Finding	Repaired
Meter 3	Riverside Ave, Lee Terrace, Wayne Dr, Noble St; some of VanDyck, Lafayette	Between Betke St and Riverside on easement: 8,700FL, mostly clay with iron and PVC	2007 Flow	Significant I&I; 3.09 gal/inch/foot	
			2016 Manhole inspections	almost half not observable; concrete MH, most good, some poor, little sign of infiltration at MH	
		Van Dyck St ?	2020 CCTV	MH numbers do not match, uncertain locations; break ins iron pipe, areas of sag or fracture or break	
		Riverside Ave, Noble St	2021 CCTV	Infiltration runners, tap break ins, comment Infiltration throughout	
		Van Dyck, Lafayette, Wayne, easement	2021 Smoke Test	Wayne, Lafayette catch basins; VanDyck water valve cap; variously roof leaders and laterals; MH VW2 easement leaks	
Meter 2	Sunset Blvd, gravity section	Sunset Blvd and Washington; 1 Sunset Blvd; 1,600 LF gravity, plus receives Greene Correctional forcemain, iron	2007 Flow	High I&I, estimated; could be as high as 37 gal/inch/foot	
		Sunset Blvd	2021 Smoke Test	School and home roof vents	

Area	Area Description	Detail Description	Investigation	Finding	Repaired
Meter 1	Lower Mansion St, Lafayette Ave, Washington, Freleigh Place, Prospect, Elm, New, Reed St	South River and New St; receives from meters 2-7; 16,000 LF, Clay with iron and PVC	2007 Flow	Meter 1 area I&I 4.39 gal/inch/foot	WCPS force main extended to Washington; gravity main along Reed and South River replaced
			WWTP Upgrade Project 2019		Reed St and South River St sewer replaced with 24" PVC to WWTP
		Lafayette, S River easement	2020 CCTV	Lawrence =Fractures, breaks, roots, pipe deformation. S River = roots, breaks, fractures, alignment change.	
		Prospect, Elm, Riverside, Freleigh, Washington, Hillcrest	2021 CCTV	Tap break in, cracks, roots, infiltration runners (especially Washington and Freleigh)	
		Washington, Freleigh, Mansion, Lafayette (S) and New (W)	2021 Smoke Test	Catch basins Mansion, Lafayette, Washington and old school field; damaged laterals,	
		Washington, New (W)	2022 CCTV	New- some CIP, camera could not pass tuberculation; Washington- breaks, fractures, deformations, Taps capped but leaking, water service intrusion	

Area	Area Description	Detail Description	Investigation	Finding	Repaired
WCPS	West of WCPS; Area adjacent to streams, along 9W	16,270 LF, PVC pipe with 4,500 LF along streams where manholes likely submerged in storm events and high groundwater, seal condition?	2007 Flow	High I&I, 3.15 gal/inch/foot	Intended DOT work to move to Mansion St in 2010 did not occur
			2011 - 2012 Flow	Avg gallons I&I per day 404,872; 3.63 gal/inch of rain/foot pipe	Intended DOT work to move to Mansion St in 2011 did not occur
		Southwestern Section; Meter area 4-7	2011 - 2012 Flow	Avg gallons I&I per day 1,608,967; 4.14 gal/inch of rain/foot pipe	see Meter 4
			2016 Manhole inspections	Approx. 1/3 not observable. Mostly concrete MH in Good condition; signs of infiltration in some	
		Warren Street	2021 CCTV	Rural Water - calcification and peeling	
		Rte 9W & Rte 81 area	2021 Smoke Test	Car wash two ports, damaged laterals, grease traps, YMCA fire alarm; manholes along creek leaking	

Area	Area Description	Detail Description	Investigation	Finding	Repaired
WWTP			2016 Manhole inspections		
		WWTP and collection system Upgrades 2019			Updated WWTP - new headwork, digesters and chlorine contact tank ; sewer main and storm S River and Reed St to Mansion
	Flow from south to WWTP	Molly White, Beechwood, Sutton, Church, New (E)	2021 Smoke Test	Catch basins, various roof leads and laterals	
		Hollister, East Church, Church St	2022 CCTV	Disjointed VCP, capped Factory Taps at CBs smoked, holes, fractures, TBI intrusions, broken MH-5, vertical deformation	

Attachment D: Smoke Test Report 2021

Village of Coxsackie

Greene County, New York

Wastewater Treatment Collection System

Smoke Test 2021 Report

Delaware Engineering, D.P.C.

28 Madison Avenue Extension

Albany, New York 12203

January 2022

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Table of Contents

FIGURES

ATTACHMENTS

1.0 Introduction

The Village of Coxsackie was first developed in the early 1700s. The collection system is known to include areas of pipe that may be as much as 100 years old. See Figure 1 for a collection system map and Figure 2 for current pipe materials. Some of this pipe is in a flood zone. The Village of Coxsackie wastewater treatment plant (WWTP) is under a Consent Order to eliminate sanitary sewer overflows (SSOs). The WWTP and a pump station have recently been upgraded, and two overflow sites removed. However, the collection system can still run over capacity in strong storm events with overflows to the Hudson River and Coxsackie Creek. Stronger recent storms and aging pipe necessitates evaluation of the collection system to identify areas that may contribute to SSOs.

The Village received funding through the 2020 Engineering Planning Grant program (EPG 105268). Receipt of this grant funding enables the evaluation of the collection system with the objective of preparing a Preliminary Engineering Report describing any findings and areas of work necessary to further reduce infiltration and inflow (I/I) and SSOs. The Village contracted Delaware Engineering, DPC, to carry out the collection system evaluation.

Smoke Testing is a key component in the collection system evaluation. Previous collection system investigations (including manhole inspections, flow monitoring and sewer pipe video) and repair work were summarized and priority areas for smoke testing selected. The results of smoke testing will be used, along with further video inspections as indicated, to determine future priority projects to reduce I/I.

1.1 General

The Village of Coxsackie operates a wastewater treatment plant located on South River Street in the Village of Coxsackie, Greene County, NY. See Figure 1 for the collection system map. Prior to the construction of the first Village wastewater treatment plant, much of the original sewer system carried combined storm water and wastewater to the river. In many areas these pipes were converted to a storm water system when the sewer collection system was constructed and sewer pipes installed. The Village wastewater treatment facility was constructed in 1971 and consisted of a contact stabilization activated sludge process incorporating influent screening, influent pumping, settling, sludge dewatering and disinfection.

The Village of Coxsackie wastewater treatment plant (WWTP) is permitted through the New York State Pollution Discharge Elimination System (SPDES) Permit # NY0033545. The WWTP currently receives wastewater flows from the Village of Coxsackie, Town of Coxsackie, Town of New Baltimore, Greene Correctional Facility, and Coxsackie Correctional Facility. Approximately 40% of this flow is from the Village of Coxsackie, Town of Coxsackie, and Town of New Baltimore. Single family homes make up the

majority of the connections in the system. The Greene Correctional Facility and the Coxsackie Correctional Facility, combined, produce a flow equal to approximately 60% of the total system. The Village is undergoing renovations of several buildings in the Reed Street Historic District, as well as the Coxsackie State Boat Launch and Riverside Park project.

1.2 Background and Need

The Village has been working to eliminate sanitary sewer overflows (SSOs) under Order on Consent R4-2008-1002-114M, modified in 2013. Projects have included a collection system flow study, video of sewer lines, lining of pipe, and inspection and replacement/rehabilitation of manholes in several areas, as well as major upgrades at the WWTP and pump stations.

In 2019 the WWTP itself was upgraded and collection system improvements included work on the West Coxsackie Pump Station and extension of its force main, work on the Riverside Pump Station, as well as the sewer line and stormwater system at the WWTP, on South River Street to Lower Mansion Street. However, the collection system continues to run over capacity in strong storm events (two inches of rain or more) and overflows to Coxsackie Creek and the Hudson River occurred during the Christmas storm of 2020, the higher-than-normal rain of summer 2021, as well as a greater than two-inch rain event in April 2022.

The Engineering Planning Grant (EPG) project is to evaluate the collection system to find areas of infiltration and inflow (I/I) and prepare a Preliminary Engineering Report prioritizing projects to reduce SSOs.

1.3 Scope of Study

A Superior High Output Smoke Blower for smoke candles was used in all Smoke Testing. The unit has a 3.5 HP Briggs&Stratton gasoline blower motor with an auxiliary output. Village wastewater treatment staff operated the blower and searched for smoke/leak observations. Delaware Engineering staff recorded smoke test observations in a Trimble Geo7x handheld GPS using a data dictionary that included geo-referencing of photographs at smoke observation locations. Paper field sheets were also utilized to keep additional information.

Smoke Blower set on opened manhole

1.4 Study Area

The existing Coxsackie wastewater collection system consists of gravity sewers, force mains and two pump stations; West Coxsackie (WCPS) and Riverside Avenue. The gravity sewer portion of the collection system contains varying size pipes from 8” to 18” with varying slopes.

Currently, wastewater from the Route 9W corridor flows from the south and north through a combination of service lateral pump stations and force mains as well as gravity sewers to the West Coxsackie Pump Station (WCPS). The West Coxsackie Pump Station also receives wastewater collected by gravity from Mansion Street beginning in the area of the Knights of Columbus to the east as well as sewage from the Kings Road and Apple Blossom Lane areas. Additional wastewater is received at the pump station from an industrial complex to the north. The WWTP receives flows from the above locations as well as the pump station located on Riverside Avenue and other gravity sewers south of the plant.

The map of previous flow studies, indicating collection system areas leading to specific manholes which were monitored for flow to estimate infiltration and inflow (2007) was used to delineate sewersheds for smoke testing. See Figure 1 Collection System Map and Meter Areas. The 2016 inventory of manholes maps showing pipe materials were also used for information, along with results of previous CCTV reports.

Priority areas for smoke testing were those with known surcharge and overflows, older clay pipes and/or regular inundation.

2.0 Field Results

2.1 Smoke Tests and General Observations

Smoke Testing was carried out in November and December of 2021 upon acquisition of the smoke blower. Green County dispatch was notified each day that smoke testing would occur and the community was notified via the Village notification system. The date, time,

street name and manhole identification number of the manhole in which the blower was set up were recorded for each test along with observations of smoke.

The most common observations during smoke testing were roof vents and manhole covers. In an effort to make the recording of meaningful observations more efficient, as testing progressed, roof vents and manhole covers were noted only when a deficiency was observed (smoking manhole at vent holes vs. smoking manhole edges or surrounding ground). Deficiencies noted included smoke at catch basins, damaged cleanouts or uncapped cleanouts, ground/damaged laterals, roof leaders and basements or other parts of a building filling with smoke.

Smoke testing observation data is presented, along with all photos, in the attachments. Data presentation is divided into collection system main and service laterals.

Table 2:1 Sum of Observations by Type (not including insignificant roof vent and manhole observations)

Type of Observation	Number
Catch Basins	28
Laterals/Ground	31
Roof Leads	12
Smoke building vent	9
Leaking MH	32

2.2 Results by Meter Area

Meter Area 1, the collection system immediately west of the WWTP including streets Lafayette Avenue, Washington, Freleigh Place, Prospect, Elm, New and Reed Streets as well as lower Mansion Avenue. Smoke testing in this area showed several catch basins are connected to the sewer system, manholes in need of replacement/repair, indications of broken laterals or sewer lines, and some apparently non-sewer building connections to the sewer collection system.

Meter Area 2, a smaller area of the collection system along Sunset Boulevard which receives the force main from the Coxsackie and Greene Correction Facilities. Observations of smoke testing in this area were of roof vents (homes and the school building), normally expected manholes and one potential lateral break.

Meter Area 3, the area to the north of the WWTP, including Riverside Avenue, Lee Terrace, Wayne Drive and Noble Street, with the eastern portion of Van Dyck and the northern portion of Lafayette. Smoke testing in this area showed several catch basins are

connected to the sewer system, a good number of manholes need replacement or repair, a few potential lateral line breaks, and some roof leaders connected to sewer.

The WWTP receives wastewater directly from the south and southwest, this area includes Church Street, Hollister, Ely and the eastern end of New as well as Molly White and Sutton. This is mostly an older area of the collection system, with clay pipes being common. Smoke testing found multiple catch basins connected to the collection system, one manhole cover in need of repair/replacement, a potential broken lateral and one home with a non-sewer connection to the collection system.

Meter Area 4, flows toward WCPS, the area south of Mansion Street on both sides of the rail line, including Bailey, Raymond and Cato Streets and Spencer Boulevard. Smoke testing showed a few manholes that need repair/replacement, one potential broken lateral and one home non-sewer connection.

Meter Area 5, flows toward WCPS, the area north of Mansion Street on both sides of the rail line, including Whitbeck, Lawrence, Mansion and the western end of Van Dyck Street. Smoke testing revealed a few catch basins connected to the collection system, a few manholes needing repair/replacement, two sites with suspected broken laterals, and several homes with basements or roof drainage apparently connected to the sewer collection system.

Meter Area 6, the area south of and flowing to the WCPS, including Luke, John and Matthew Streets. Smoke testing in this area found two catch basins connected to the collection system, one manhole badly in need of replacement, and two potentially broken home laterals.

Meter Area 7, the area southwest of and flowing to the WCPS, including Kings Road, Apple Blossom Lane and Howard Street. Smoke testing in this area found two manholes that could be repaired/replaced, some areas of potential broken laterals, and two homes with non-sewer connections to the collection system.

The West Coxsackie Pump Station receives flow from the north and west, including areas along the Coxsackie Creek and commercial areas along Route 9W and Route 81. Smoke testing in this area found that the manholes along the creek are badly in need of repair/replacement, and commercial buildings in Hope Plaza at the intersection of 9W and 81 filled with smoke indicating either dry water traps or floor drains connected to the collection system (including two car wash bays). Observations were not made inside of buildings to verify cause.

Table 2.2: Results Summary by Meter Area

Meter Area	CB	MHC	SC/Ground	SI	RWL
1	12	2	12	1	2
2			1		
3	2	7	4		2
4			1	1	
5	3	3	2	4	6
6	2	1	2		
7		2	2	2	
WCPS		multi	1	multi	1
WWTP	9	1	4		1

NOTE: “multi” indicates more incidences occurred than were recorded by GPS.

CB = Catch Basin smoking
MHC = manhole cover smoking excessively, around edges or ground adjacent
SC/Ground = smoke from ground indicating broken service connection
SI = smoke in building venting other than the roof vent
RWL= roof leader/gutter smoking

3.0 Deficiency Descriptions

Catch Basins

Catch basins on the storm water system that allowed smoke to pass during testing indicate that the sewer collection pipe has a connection to the storm system. This could be direct connection, overflow pipes, and/or breaks in both systems allowing exchange.

Clean Outs

Cleanouts with missing caps or other damage were found in low numbers in each area tested. Open cleanouts provide access for rain water to the sewer system.

Building Vents

Smoke from building basement vents indicates the basement sump or floor drains are connected to the sewer system.

Roof Leaders

Smoke from roof leaders on gutters indicates that this system is connected to the sewer system, instead of to stormwater.

Manholes

Excessive smoke from manholes or the ground nearby indicates leaking manholes that allow rain/stormwater into the sewer collection system during rain events

Smoke from the area surrounding a manhole indicates a broken sewer line and/or cracks in the manhole cover, casting or underground structure.

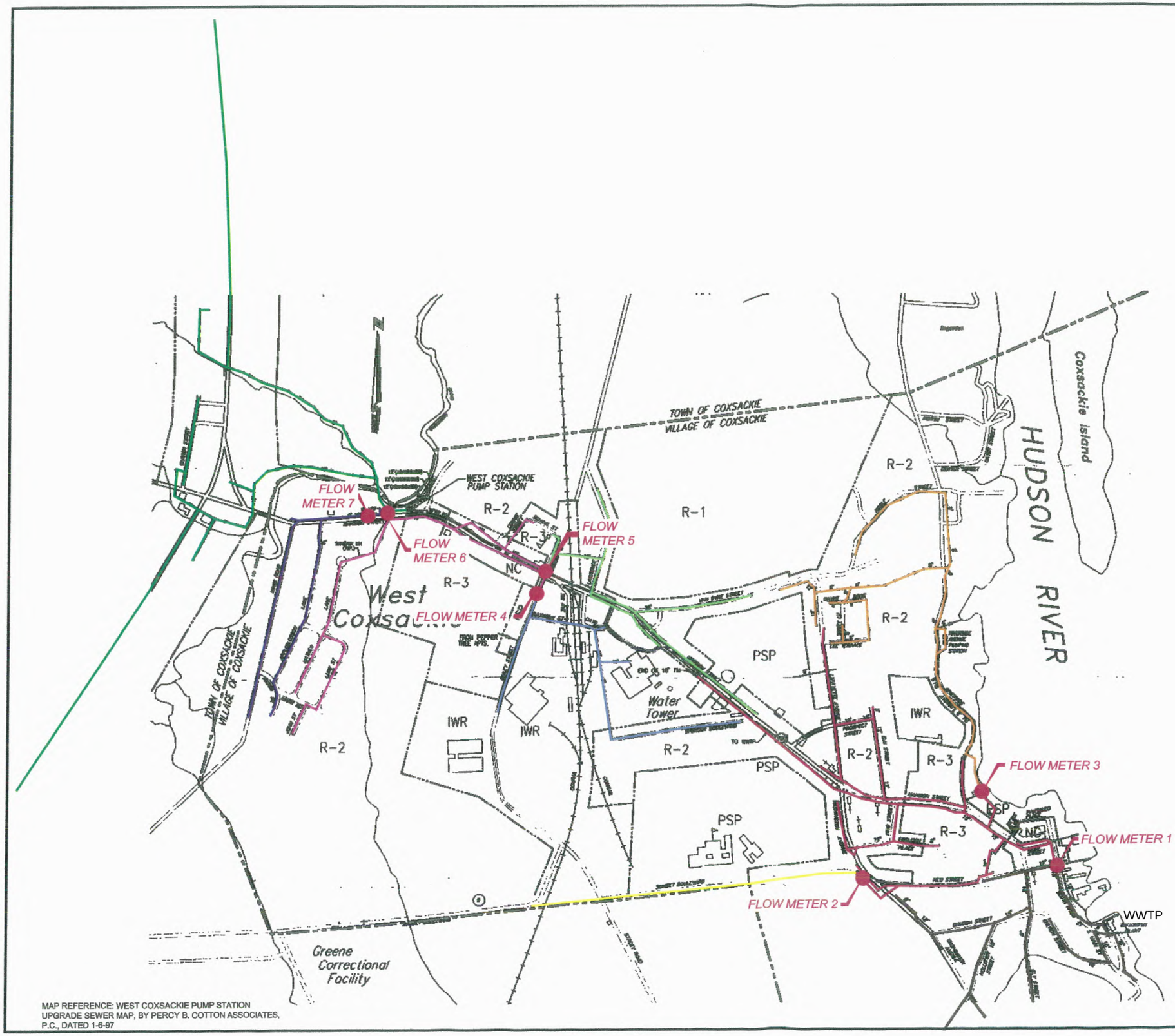
Ground/Sewer Connection Laterals

Smoke from the ground indicates a break in the sewer lateral connecting a building to the sewer collection system. Breaks allow water into the sewer collection system during rain events.

Roof Vents

Smoke from roof vents indicates that the house is connected to sewer. These vents allow air to leave the piping inside the house to allow the wastewater to drain to the sewer system. Houses have water traps in the wastewater piping (to prevent sewer system air from flowing back into the house) in different locations, so a house roof vent may or may not smoke during testing.

FIGURES



LEGEND

- WEST COXACKIE PUMP STATION
- FLOW METER 1
- FLOW METER 2
- FLOW METER 3
- FLOW METER 4
- FLOW METER 5
- FLOW METER 6
- FLOW METER 7
- TREATMENT PLANT FLOW METER
- FLOW METER 3 FLOW METER LOCATIONS

MAP REFERENCE: WEST COXSACKIE PUMP STATION UPGRADE SEWER MAP, BY PERCY B. COTTON ASSOCIATES, P.C., DATED 1-6-97

H:\Projects\Coxsackie\cao\Ex_Sewer1.dwg 5/19/2008 7:27:36 AM EDT

DATE: MAR. 8, 2007
DRAWN BY: KJ
SCALE: NTS
REVIEWED BY: BZ
PROJECT NO.:
FILE:

DELAWARE ENGINEERING, P.C.
ALBANY:
28 Aviation Avenue Extension - Albany, NY 12205
Phone: (518) 452-1200 - Fax: (518) 452-1335
ONEONTA:
8-12 Dietz Street, Suite 303 - Oneonta, NY 13820
Phone: (607) 432-8073 - Fax: (607) 432-0432

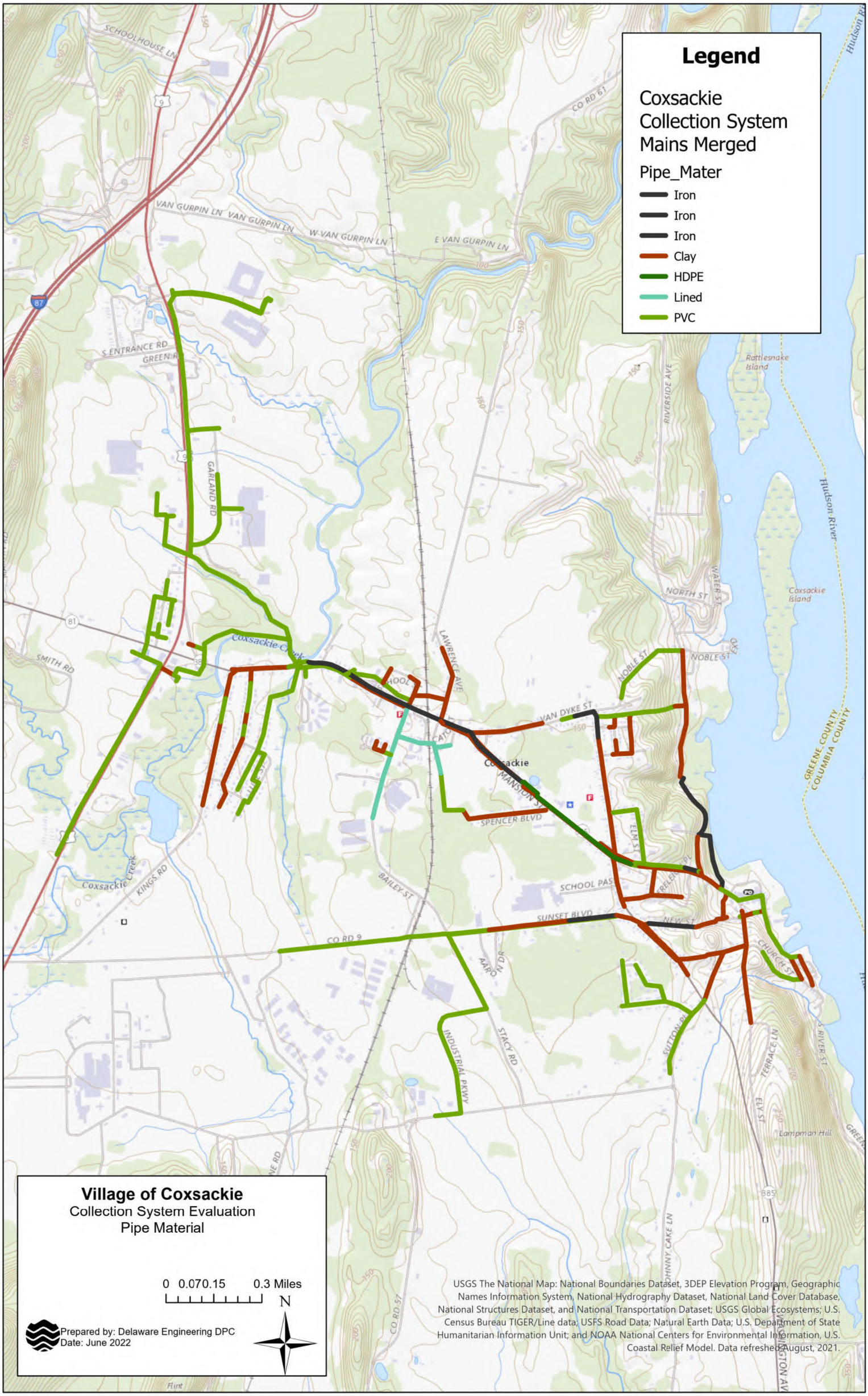
REVISIONS

NO.	DATE	DESCRIPTION
1	3-30-07	MOVED FLOWMETERS

VILLAGE OF COXSACKIE, NEW YORK

FLOW METER LOCATIONS

FIGURE: 02


Legend
Coxsackie Collection System Mains Merged
Pipe_Mater
Iron
Iron
Iron
Clay
HDPE
Lined
PVC
Village of Coxsackie
Collection System Evaluation
Pipe Material
0 0.070.15 0.3 Miles
N
Prepared by: Delaware Engineering DPC
Date: June 2022
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.
Coxsackie Creek
Hudson River
Rattlesnake Island
Coxsackie Island
Lampman Hill
SCHOOLHOUSE LN
VAN GURPIN LN
W VAN GURPIN LN
E VAN GURPIN LN
CO RD 61
S ENTRANCE RD
GARLAND RD
SMITH RD
KINGS RD
CO RD 9
RIVERSIDE AVE
NORTH ST
WATER ST
NOBLE ST
VAN DYKE ST
LAWRENCE AVE
MANSION ST
SPENCER BLVD
ELM ST
SCHOOL PAS
SUNSET BLVD
BAILEY ST
AARON DR
INDUSTRIAL PKWY
STACY RD
CHURCH ST
TERRACE LN
JOHNNY CAKE LN
GREENE COUNTY
COLUMBIA COUNTY

ATTACHMENTS

COLLECTION SYSTEM MAINS SMOKE TEST OBSERVATIONS

Meter Area	Street Address	Observed	Notes
1	Washington	CB	School Pass edge of walkway
1	School Field	CB	West of School Pass walkway
1	Hillcrest	CB	Near corner with Freleigh
1	22 Washington	CB	CB behind residential shed
1	104 Mansion	CB	Adjacent to; across from Sunoco Gas
1	59 New	CB	
1	60 New	CB	
1	64 New	CB	
1	31 Lafayette	CB	
1	Lafayette	CB	Corner with Wayne
1	64 Lafayette	CB	Adjacent to
1	Riverside Ave	CB	Adjacent to MH RA12, north of 65 Mansion
1	Hillcrest	Ground	Adjacent to hydrant at corner with Freleigh
1	Second Reformed	MHC	Manhole supposed to be disconnected
1	Riverside	MHC	Near shed at 7 Riverside (MH RA-23?)
2	New	Ground	Unknown – smoke at curb seams next to MH4
3	Lafayette	CB	In grass NE side of intersection with Wayne
3	Lafayette	CB	In street at intersection with Wayne
3	Van Dyck Woods	MHC	Leaking around edges/ground (riser) VW3
3	29 Wayne	MHC	WD10 in yard, smoke around edges
3	25 Wayne	MHC	WD4 in yard, smoke surround
3	110 Riverside	MHC	MH RA 4, across from 110, receives easement
3	Riverside	MHC	MH RA6, smoking around edges
3	VD Easement	MHC	VDW5, smoke around edges and ground
3	VD Easement	MHC	Across stream from VW6, leaking edges (no ID)
5	Lawrence	CB	Corner of Mansion
5	8 Whitbeck	CB	
5	8 Whitbeck	CB	Across street from #8
5	Lawrence RR	MHC	Badly leaking riser MH 02-20
5	Whitbeck RR	MHC	Badly leaking riser MH 02-10
5	223 Mansion	MHC	Back yard, MH 03-100
6	230 Mansion	CB	
6	266 Mansion	CB	
6	11 Matthew	MHC	Behind #11, smoke MH and ground
7	Mansion	MHC	West of WCPS, MH 10-20
7	Mansion	MHC	West of WCPS, MH 10-10
WCPS	Rte 9W	MHC	First Students, MH 12-98, riser, smoke
WCPS	Coxsackie Ck	MHC	7 MHC along creek
WCPS	Vermylea tributary	MHC	9 MHC along creek tributary
WWTP	28 Ely	CB	

Meter Area	Street Address	Observed	Notes
WWTP	2 Beechwood	CB	In grass at corner with Molly
WWTP	Hollister	CB	Corner with Church
WWTP	Church	CB	Corner with Hollister
WWTP	37 Church	CB	
WWTP	37 Church	CB	Across street
WWTP	Church	CB	Corner with Ely
WWTP	Ely	CB	Corner with Church
WWTP	91 South River	CB	
WWTP	12 East Church	MHC	Leaking around edges at sidewalk edge (MH3)

Manhole Conditions from 2016 Inspections

MH#	Meter Area	Street	Condition
RA 23?	1	Riverside	Unknown
VDW3	3	Van Dyck	Unknown, Van Dyck Woods Easement
VDW 5	3	Riverside	Unknown, Van Dyck Woods Easement
VDW ?	3	Riverside	Unknown, Van Dyck Woods Easement (no ID number)
WD10	3	Wayne	Unknown, Van Dyck Woods line, in backyard
WD4	3	Wayne	Concrete, Good Condition
RA 4	3	Riverside	Concrete, Good Condition (Receives VDW easement, rushing with clear water)
RA 6	3	Riverside	Concrete, Good Condition
02-20	5	Lawrence RR	Unknown
02-10	5	Whitbeck RR	Unknown
03-100	5	Mansion	Unknown
01-80	6	Matthew	Behind #11
10-20	7	Mansion	West of WCPS
10-10	7	Mansion	West of WCPS
12-98	WCPS	Rte 9W	Concrete, good condition, infiltration signs observed
All	WCPS	Coxsackie Ck	11-20 to 11-90, few assessed, concrete, good to poor condition, infiltration signs observed
All	WCPS	Vermylea trib	12-80 to 12-10, half assessed, concrete, good condition
MH 3	WWTP	Church East	Brick, good condition; smoke around edges/curb

PHOTOS in order of listing in table

School Pass edge of walkway

West of School Pass walkway at field

Hillcrest near corner with Freleigh

22 Washington CB behind residential shed

104 Mansion CB across from Sunoco Station

59 New Street CB

60 New Street CB

64 New Street CB

31 Lafayette CB

64 Lafayette CB

Lafayette SE corner with Wayne CB

CB Riverside Ave adjacent to MH RA 12

Hillcrest ground smoked next to hydrant

MH behind 7 Riverside (how connected?)

New Street curb next to MH4 smoked

CB; NE side Lafayette corner with Wayne

CB intersection Lafayette and Wayne

Van Dyck Woods easement MH VW3

WD10 at 29 Wayne, ground smoked

WD4 at 25 Wayne, ground surrounding smoked

Riverside MH RA-4, receives flow from Van Dyck Woods easement (inside photo after rain)

Riverside RA6, smoking around edges

Van Dyck Easement 5, edges and ground smoked

MH no ID located across stream from VDW 6

CB Lawrence at Mansion

CB in front of 8 Whitbeck

CB across from 8 Whitbeck

MH 02-20 Lawrence side of rail line

MH 02-10 Whitbeck side of rail line

MH 03-100 behind 223 Mansion

CB at 230 Mansion

CB at 266 Mansion

MH 01-80, Between Matthew and Luke

MH 10-20 west of WCPS, hole

MH 10-10 west of WCPS, bad condition

MH 12-98 at Rte 9W First Students

MH 11-60 Coxsackie Creek line

Coxsackie Creek MH 11-60

Vermylea Tributary 12-60

Coxsackie Creek MH 11-80 infiltration signs

Vermylea 12-90 signs of infiltration

CB at 28 Ely

CB at 2 Beechwood, corner at Molly White

CB Hollister near corner with Church

CB Church near corner with Hollister

CB at 37 Church

CB across from 37 Church

CB Church at corner with Ely

CB on Ely at corner with Church

CB at 91 South River Street

Church E MH3 smoking at edges

SERVICE LATERAL SMOKE TEST OBSERVATIONS

Meter Area	Street Address	Observation
1	12 Elm Street	Utility pole broke lateral?
1	27 Elm	Broken lateral? Smoke under porch
1	91 Mansion (corner Elm)	Clean out cap defective
1	8 Freleigh	Broken storm line? Smoke under shrubs
1	16 Freleigh	Roof lead
1	34 Lafayette or house behind	Broken lateral? Ground smoked
1	46 Lafayette	Roof lead
1	56 Lafayette	Broken lateral?
1	126? Mansion	Clean out cap defective
1	123 Mansion	Broken lateral and catch basin
1	116 Mansion	Dry u-drain, smoke in bathroom
1	56 New	Broken lateral?
1	32 Reed	Abandoned lateral? Vacant lot
1	35 Reed adjacent	Abandoned lateral? Vacant lot
1	Riverside (behind 65 Mansion)	Broken lateral in gravel parking area?
1	19 Washington	Utility pole broke lateral?
1	29 Washington	Utility pole broke lateral? Basement smoked
1	7 Washington	Unknown drainage from land behind house
3	Van Dyke Woods Easement	Smoke near VW2, broken lateral?
3	93 Lafayette	Roof lead
3	32 Van Dyck	Broken lateral? Smoke at valve in driveway
3	31 Van Dyck	Broken lateral? Small white PVC pipe, smoked
3	6 Van Dyck	Clean out defective between house and garage
3	16 Wayne	Clean out cap defective
3	21 Wayne	Roof lead or clean out
3	22 Wayne	Clean out cap defective
3	35 Wayne	Broken lateral? back fence area smoked
4	56 Bailey Street	Basement floor drain connected
4	40 Bailey Street	Broken lateral
4	33 Spencer	Clean out cap
5	4 Lawrence	Broken lateral? Ground smoked at wood pile
5	39 Lawrence	Smoke in house
5	41 Lawrence	Clean out cap defective, in road ditch
5	44 Lawrence	Clean out cap defective
5	46 Lawrence	Clean out cap defective
5	47 Van Dyck	Roof lead
5	48 Van Dyck	Roof lead
5	49 Van Dyck	Roof lead
5	50 Van Dyck	Smoke in house *
5	52 Van Dyck	Roof lead

Meter Area	Street Address	Observation
5	61 Van Dyck	Smoke in house
5	7 Whitbeck	Clean out cap defective
5	8 Whitbeck	Roof lead and basement sump connected
5	11 Whitbeck	Roof lead or broken lateral
6	226 Mansion	Broken lateral? Smoke ground side of house
6	228 Mansion	Broken lateral? Smoke beneath sidewalk
6	19 Matthew	Clean out cap defective
7	11 Apple Blossom	Broken lateral? Smoke at front porch
7	14 Apple Blossom	Broken lateral? Smoke under front steps
7	15 Apple Blossom	Broken lateral? Smoke at front steps
7	18 Apple Blossom	Broken lateral? Utility pole area smoked
7	23 Apple Blossom	Clean out cap missing
7	10 Howard	Smoke in house
7	314 Mansion	Basement vent smoke
WCPS	?11776 Rte 9W	Clean out cap missing (lot north of Dollar Gnl)
WCPS	Hope Plaza Car Wash	Drain at car wash bay smoked
WCPS	Hope Plaza Greater Things	Broken lateral? Deck area ground smoked
WCPS	Hope Plaza Tops	Smoke at set of storm and grease trap MH
WCPS	Hope Plaza Urgent Care	Smoke from white curved vent in ground
WCPS	Hope Plaza YMCA	Smoke in building (fire alarm went off)
WCPS	Hope Plaza Kelly Pharmacy	Smoke in bathrooms in this row of shops *
WCPS	Bank of Greene County 9W	Smoke from building vent?
WCPS	WC Plaza Hall of Ravens	Roof lead and building vent
WWTP	? Church (vacant parcel)	Abandoned lateral? *
WWTP	17 Ely	Broken lateral? Ground smoked
WWTP	40 Ely	Broken lateral or clean out cap defective
WWTP	19 Hollister	Broken lateral? Smoke from holes in lawn
WWTP	18 Molly White	Roof lead and broken lateral?
WWTP	107 South River	Basement vent smoked

*No photo – owner came out to inform testers after testing, or missing photo at GPS unit

PHOTOS in order of listing in table

12 Elm – pole at lateral

27 Elm – smoke under porch

91 Mansion – clean out cap defective

8 Freleigh – smoke at shrubs (lateral/storm?)

16 Freleigh – roof lead

34 Lafayette - lateral

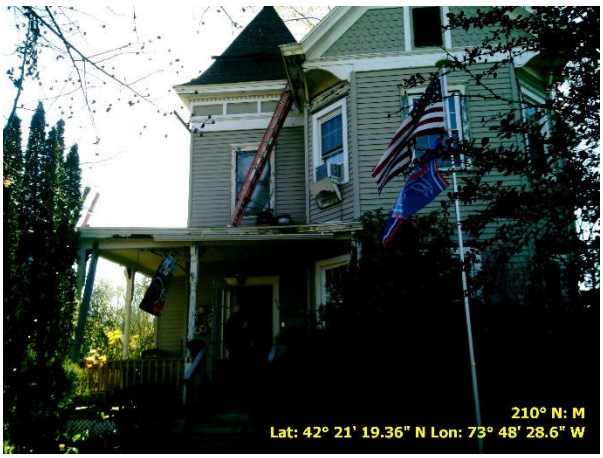
46 Lafayette – roof lead

56 Lafayette - lateral

126? Mansion – clean out cap defective

123 Mansion – lateral and catch basin

116 Mansion – smoke in house (bathroom)



56 New – ground smoke (lateral?)

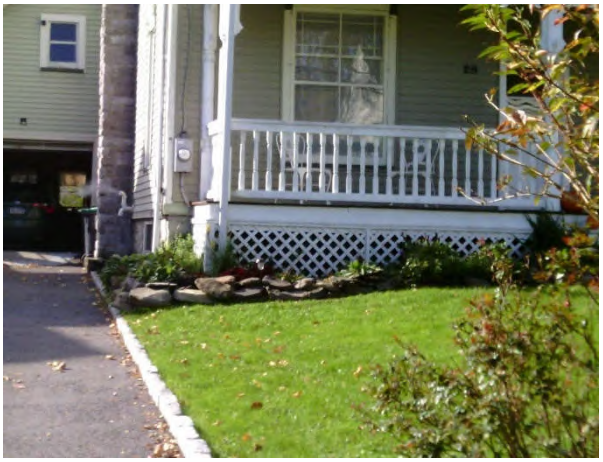
32 Reed – abandoned lateral? Vacant lot

35 Reed – abandoned lateral? Vacant

Riverside (behind 65 Mansion)-lateral

19 Washington – utility pole at lateral?

29 Washington – basement vent smoked



29 Washington – utility pole at lateral?

7 Washington – apparent drainage pipe, lawn and area next to drive smoked

Near VDW2 – broken lateral from Wayne?

93 Lafayette – smoke from roof drain

32 Van Dyck – driveway smoked, lateral?

31 Van Dyke – lateral? Lawn smoked

16 Wayne – clean out cap defective

21 Wayne – roof lead or clean out

22 Wayne – clean out cap defective

35 Wayne – back yard, lateral

56 Bailey – smoke in building, floor drains

40 Bailey – broken lateral in ditch

33 Spencer – clean out smoked

4 Lawrence – broken lateral?

39 Lawrence – smoke in house

41 Lawrence – clean out defective

44 & 46 Lawrence – clean outs defective

47 Van Dyck – roof lead

48 Van Dyck – roof lead

49 Van Dyck – roof lead

52 Van Dyck – roof lead

61 Van Dyck – smoke in house

7 Whitbeck – clean out defective

8 Whitbeck – Roof lead, basement sump

11 Whitbeck – lateral or clean out

226 Mansion - lateral

228 Mansion – lateral

19 Matthew – clean out defective

11 Apple Blossom – lateral, smoke at porch

14 Apple Blossom – lateral, smoke at porch

15 Apple Blossom – lateral, smoke at porch

18 Apple Blossom – lateral at utility

23 Apple Blossom – clean out cap missing

10 Howard – smoke in house

314 Mansion – basement vent smoked

11776? 9W – clean out cap missing

Hope Plaza - Car wash bay smoked

Greater Things – lateral, smoke at deck

Hope Plaza – Tops smoke at MH

Urgent Care building vents

Hope Plaza YMCA – smoke in building

Rte 9W Bank – clean out or vent?

WC Plaza Hall of Ravens – roof lead and vent

17 Ely – broken lateral? Ground smoked

40 Ely – broken cleanout or lateral

19 Hollister – lateral? Lawn smoked

18 Molly White – roof lead and/or lateral

107 South River – basement vent smoked

Attachment E: Report CCTV 2022

Village of Coxsackie

Sewer System Clean and CCTV Inspection

Sanitary Sewers

January 20th, 2022

Coxsackie, NY

Disc 1

Kenyon Pipeline Inspection

68 Park Road
Queensbury, NY 12804
518-832-4070 ph
518-348-3040 fx
www.kpisewer.com

Kenyon Pipeline Inspection LLC
68 Park Rd, Queensbury, NY 12804
Tel. 518-832-4070
Tony@kpisewer.com

Section Profile

Project
COXSACKIE - SANITARY SEWER CLEAN AND CCTV | **1/12/2022**

Nr.	Upstream MH	Downstream MH	Date	Street	Media Label	Material	Total Length	Length Surveyed
5	HOL ST MH-1	HOL ST MH-2	1/14/2022	HOLLISTER STREET		Vitrified Clay Pipe	168.41	168.41
6	HOL ST MH-2	HOL ST MH-3	1/14/2022	HOLLISTER STREET		Vitrified Clay Pipe	259.11	259.11
7	HOL ST MH-3	HOL ST MH-4	1/14/2022	HOLLISTER STREET		Vitrified Clay Pipe	327.10	**173.94**
7	HOL ST MH-3	HOL ST MH-4	1/14/2022	HOLLISTER STREET		Vitrified Clay Pipe	327.10	**153.21**
8	HOL ST MH-4	CHURCH MH-4	1/14/2022	HOLLISTER STREET		Vitrified Clay Pipe	101.57	101.57
9	CHURCH .E. MH-1	CHURCH .E. MH-2	1/20/2022	CHURCH STREET		Vitrified Clay Pipe	133.11	133.11
10	CHURCH .E. MH-2	CHURCH .E. MH-3	1/20/2022	CHURCH STREET		Vitrified Clay Pipe	145.83	145.83
11	CHURCH .E. MH-3	CHURCH .E. MH-4	1/20/2022	CHURCH STREET		Vitrified Clay Pipe	144.00	144.00
12	CHURCH .E. MH-4	S. RIVER MH-9	1/20/2022	CHURCH STREET		Vitrified Clay Pipe	218.00	218.00
13	WASHINGTON ABANDONED MH-1	WASHINGTON ABANDONED MH-2	1/20/2022	WASHINGTON STREET		Vitrified Clay Pipe	63.19	63.19
16	03-82	03-83	1/20/2022	SCHOOL STREET		Vitrified Clay Pipe	181.50	181.50
17	END OF PIPE	03-83	1/20/2022	SCHOOL STREET		Asbestos Cement	210.01	210.01
18	03-113	03-112	1/20/2022	SCHOOL STREET		Vitrified Clay Pipe	174.69	174.69

13 x Circular 8 = 2126.53 Total Length (2126.53 Length Surveyed)

Nr.	Upstream MH	Downstream MH	Date	Street	Media Label	Material	Total Length	Length Surveyed
1	CHURCH MH-1	CHURCH MH-2	1/13/2022	CHURCH STREET		Vitrified Clay Pipe	158.27	158.27
2	CHURCH MH-2	CHURCH MH-3	1/13/2022	CHURCH STREET		Vitrified Clay Pipe	134.47	134.47
3	CHURCH MH-3	CHURCH MH-4	1/13/2022	CHURCH STREET		Vitrified Clay Pipe	312.10	312.10
14	NEW ST MH-5	NEW ST MH-6	1/20/2022	NEW STREET		Vitrified Clay Pipe	61.91	61.91
14	NEW ST MH-5	NEW ST MH-6	1/20/2022	NEW STREET		Vitrified Clay Pipe	61.91	**1.00**
15	NEW ST MH-6	NEW ST MH-7	1/20/2022	NEW STREET		Cast Iron	6.76	6.76
20	WASHINGTON MH-1	WASHINGTON MH-2	1/19/2022	WASHINGTON STREET		Vitrified Clay Pipe	290.00	**187.01**
20	WASHINGTON MH-1	WASHINGTON MH-2	1/20/2022	WASHINGTON STREET		Vitrified Clay Pipe	290.00	**102.97**

8 x Circular 12 = 963.50 Total Length (963.48 Length Surveyed)

Nr.	Upstream MH	Downstream MH	Date	Street	Media Label	Material	Total Length	Length Surveyed
4	CHURCH MH-4	ELY ST MH-6	1/14/2022	CHURCH STREET		Vitrified Clay Pipe	397.60	**335.74**
4	CHURCH MH-4	ELY ST MH-6	1/14/2022	CHURCH STREET		Vitrified Clay Pipe	397.60	**61.91**
19	WASHINGTON MH-2	WASHINGTON MH-3	1/20/2022	WASHINGTON STREET		Vitrified Clay Pipe	243.90	**233.92**
19	WASHINGTON MH-2	WASHINGTON MH-3	1/20/2022	WASHINGTON STREET		Vitrified Clay Pipe	243.90	**10.00**

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Section Profile

Project	
COXSACKIE - SANITARY SEWER CLEAN AND CCTV	**1/12/2022**

4 x Circular 15 = 641.50 Total Length (641.50 Length Surveyed)

Total: 25 = 3731.53 Total Length (3731.50 Length Surveyed)

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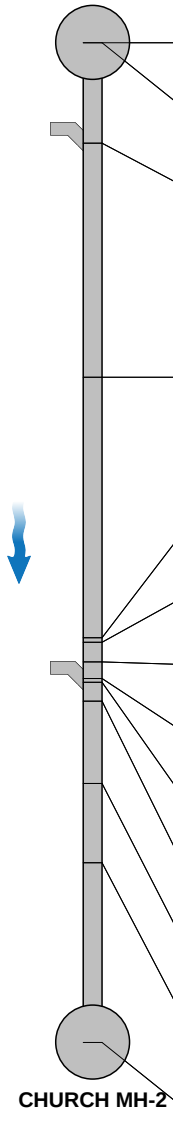
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/13/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**1**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**158.3 '**	**158.3 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**CHURCH MH-1**
Street:	**CHURCH STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**CHURCH MH-2**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**12 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:1195 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, CHURCH MH-1 / CHURCH MH-1	00:00:08		
0.00	MWL	Water Level, 0% of the vertical dimension	00:00:22		
15.92	TBI	Tap Break-In Intruding, at 1 o'clock , 4 inch dim, 3 inch intrusion	00:00:54		
52.99	DSC	Deposits Settled Compacted, 5% of cross sectional area, at 11 o'clock	00:01:36		
94.23	B	Broken, at 12 o'clock	00:03:05		
94.98	FL	Fracture Longitudinal, at 12 o'clock	00:03:14		
98.10	FM	Fracture Multiple, from 12 o'clock to 12 o'clock	00:03:26		
100.72	H	Hole, at 1 o'clock	00:03:53		
101.28	TBI	Tap Break-In Intruding, at 1 o'clock , 4 inch dim, 3 inch intrusion	00:04:03		
104.25	FM	Fracture Multiple, from 12 o'clock to 12 o'clock	00:04:38		
117.31	FM	Fracture Multiple, from 12 o'clock to 12 o'clock	00:04:56		
129.89	FM	Fracture Multiple, from 12 o'clock to 12 o'clock	00:06:21		
158.27	AMH	Manhole, CHURCH MH-2 / CHURCH MH-2	00:07:25		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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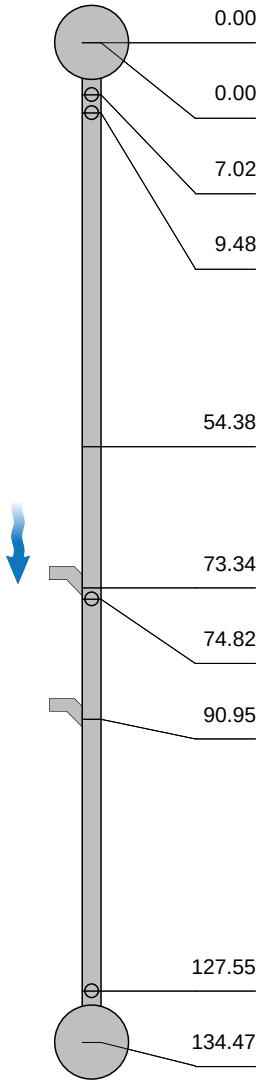
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/13/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**2**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**134.5 '**	**134.5 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**CHURCH MH-2**
Street:	**CHURCH STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**CHURCH MH-3**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**12 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:1015 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, CHURCH MH-2 / CHURCH MH-2	00:00:06		
0.00	MWL	Water Level, 5% of the vertical dimension	00:00:22		
7.02	TFC	Tap Factory Made Capped, at 12 o'clock , 6 inch dim	00:00:43		
9.48	TBA	Tap Break-In Active, at 12 o'clock , 4 inch dim	00:00:57		
54.38	CL	Crack Longitudinal, at 12 o'clock	00:02:05		
73.34	TBI	Tap Break-In Intruding, at 2 o'clock , 3 inch dim, 2 inch intrusion	00:02:40		
74.82	TFC	Tap Factory Made Capped, at 12 o'clock , 6 inch dim	00:02:59		
90.95	TBI	Tap Break-In Intruding, at 1 o'clock , 3 inch dim, 2 inch intrusion	00:03:29		
127.55	TFA	Tap Factory Made Active, at 12 o'clock , 4 inch dim	00:04:46		
134.47	AMH	Manhole, CHURCH MH-3 / CHURCH MH-3	00:05:14		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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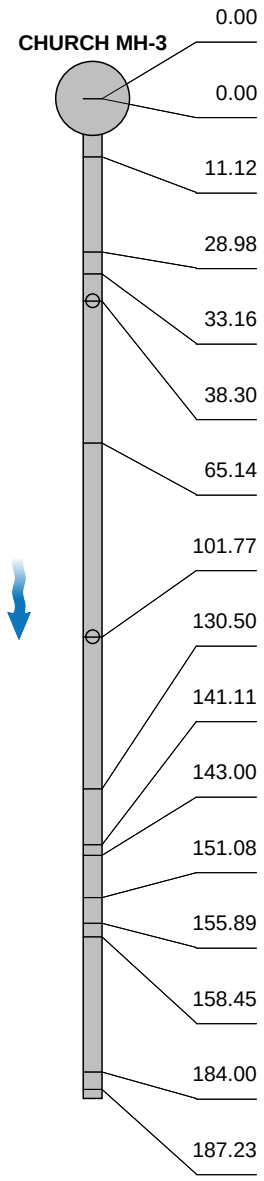
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/13/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**3**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**312.1 '**	**312.1 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**CHURCH MH-3**
Street:	**CHURCH STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**CHURCH MH-4**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:		Total gallons used:	**0.0**
Pipe size:	**12 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:1427 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, CHURCH MH-3 / CHURCH MH-3	00:00:07		
0.00	MWL	Water Level, 5% of the vertical dimension	00:00:14		
11.12	CM	Crack Multiple, from 12 o'clock to 12 o'clock	00:00:31		
28.98	DSC	Deposits Settled Compacted, 5% of cross sectional area, at 2 o'clock	00:01:04		
33.16	DSC	Deposits Settled Compacted, 5% of cross sectional area, at 3 o'clock	00:01:31		
38.30	TFC	Tap Factory Made Capped, at 12 o'clock , 4 inch dim	00:01:46		
65.14	RTJ	Roots Tap Joint, at 7 o'clock , 5% of cross sectional area	00:02:42		
101.77	TBI	Tap Break-In Intruding, at 12 o'clock , 3 inch dim, 3 inch intrusion	00:03:49		
130.50	FL	Fracture Longitudinal, at 11 o'clock	00:04:35		
141.11	FL	Fracture Longitudinal, at 12 o'clock	00:05:00		
143.00	FL	Fracture Longitudinal, at 12 o'clock	00:05:33		
151.08	DV	Deformed Vertical, 5% changed	00:05:58		
155.89	DV	Deformed Vertical, 10% changed	00:06:11		
158.45	FL	Fracture Longitudinal, at 6 o'clock	00:06:30		
184.00	B	Broken, from 3 o'clock to 9 o'clock	00:07:52		
187.23	MMC	Material Change, Polyvinyl chloride, PVC / PVC	00:08:30		

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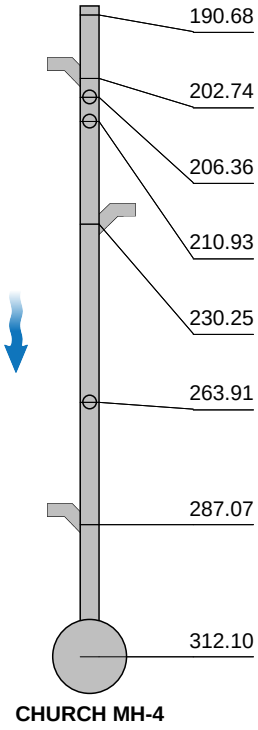
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/13/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**3**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**312.1 '**	**312.1 '**



1:1427 Distance	Code	Observation	Counter	Photo	Grade
190.68	MMC	Material Change, Vitrified clay pipe, VCP / VCP	00:09:37		
202.74	TFC	Tap Factory Made Capped, at 3 o'clock , 12 inch dim	00:11:23		
206.36	TFA	Tap Factory Made Active, at 12 o'clock , 4 inch dim	00:11:42		
210.93	TFA	Tap Factory Made Active, at 12 o'clock , 4 inch dim	00:12:04		
230.25	TBI	Tap Break-In Intruding, at 10 o'clock , 4 inch dim, 2 inch intrusion	00:13:47		
263.91	TFC	Tap Factory Made Capped, at 12 o'clock , 4 inch dim	00:16:14		
287.07	TFA	Tap Factory Made Active, at 3 o'clock , 12 inch dim	00:18:08		
312.10	AMH	Manhole, CHURCH MH-4 / CHURCH MH-4	00:21:45		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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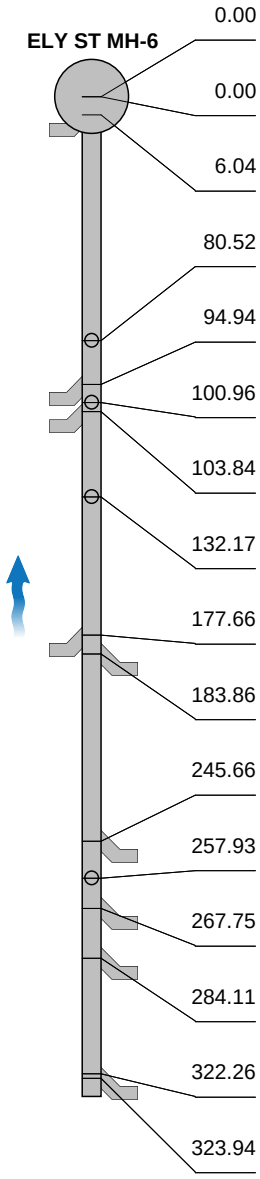
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/14/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**4**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**397.6 '**	**335.7 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**CHURCH MH-4**
Street:	**CHURCH STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**ELY ST MH-6**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**15 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		

Additional Info:



1:2490 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, ELY ST MH-6 / ELY ST MH-6	00:00:15		
0.00	MWL	Water Level, 5% of the vertical dimension	00:00:24		
6.04	TFC	Tap Factory Made Capped, at 3 o'clock , 10 inch dim	00:00:52		
80.52	TFC	Tap Factory Made Capped, at 12 o'clock , 4 inch dim	00:02:48		
94.94	TBA	Tap Break-In Active, at 2 o'clock , 4 inch dim	00:03:44		
100.96	TFA	Tap Factory Made Active, at 12 o'clock , 10 inch dim	00:04:13		
103.84	TFC	Tap Factory Made Capped, at 2 o'clock , 4 inch dim	00:05:04		
132.17	TFC	Tap Factory Made Capped, at 12 o'clock , 4 inch dim	00:06:21		
177.66	TBI	Tap Break-In Intruding, at 4 o'clock , 4 inch dim, 4 inch intrusion	00:10:48		
183.86	TBC	Tap Break-In Capped, at 8 o'clock , 4 inch dim	00:11:20		
245.66	TBI	Tap Break-In Intruding, at 9 o'clock , 4 inch dim, 3 inch intrusion	00:15:53		
257.93	TFC	Tap Factory Made Capped, at 12 o'clock , 4 inch dim	00:16:39		
267.75	TBI	Tap Break-In Intruding, at 8 o'clock , 4 inch dim, 3 inch intrusion	00:17:23		
284.11	TBI	Tap Break-In Intruding, at 9 o'clock , 4 inch dim, 3 inch intrusion	00:18:09		
322.26	FM	Fracture Multiple, from 12 o'clock to 12 o'clock	00:20:21		
323.94	TBI	Tap Break-In Intruding, at 9 o'clock , 6 inch dim, 3 inch intrusion	00:20:44		

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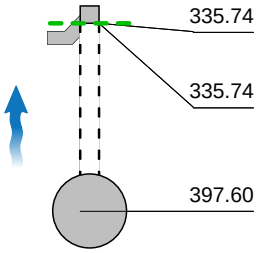
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/14/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**4**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**397.6 '**	**335.7 '**



Distance	Code	Observation	Counter	Photo	Grade
335.74	MSA	Survey Abandoned, CAN NOT GET PAST LATERAL / CAN NOT GET PAST LATERAL	00:22:37		
335.74	TBI	Tap Break-In Intruding, at 5 o'clock , 6 inch dim, 4 inch intrusion	00:21:35		
397.60		End of pipe			

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/14/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**4**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Heavy Cleaning	**Downstream**		**397.6 '**	**61.9 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**CHURCH MH-4**
Street:	**CHURCH STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**ELY ST MH-6**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**15 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					

1:3001	Distance	Code	Observation	Counter	Photo	Grade
CHURCH MH-4						
	0.00	AMH	Manhole, CHURCH MH-4 / CHURCH MH-4	00:00:07		
	0.00	MWL	Water Level, 5% of the vertical dimension	00:00:16		
	3.05	TFA	Tap Factory Made Active, at 9 o'clock , 6 inch dim	00:00:40		
	48.09	TFC	Tap Factory Made Capped, at 12 o'clock , 4 inch dim	00:01:35		
	50.46	TBA	Tap Break-In Active, at 2 o'clock , 4 inch dim	00:01:48		
	58.79	TBC	Tap Break-In Capped, at 12 o'clock , 4 inch dim	00:02:12		
	61.91	MSA	Survey Abandoned, CAN NOT GET PAST LATERAL / CAN NOT GET PAST LATERAL	00:02:25		
	397.60		End of pipe			
ELY ST MH-6						

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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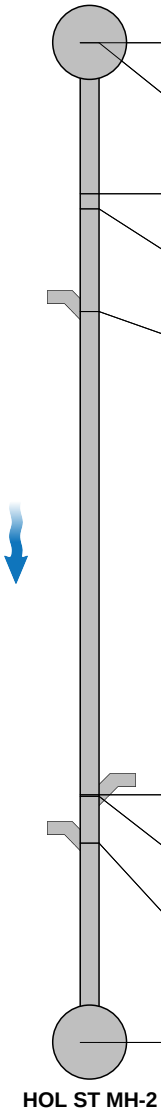
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/14/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**5**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**168.4 '**	**168.4 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**HOL ST MH-1**
Street:	**HOLLISTER STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**HOL ST MH-2**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:1272 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, HOL ST MH-1 / HOL ST MH-1	00:00:11		
0.00	MWL	Water Level, 5% of the vertical dimension	00:00:18		
25.51	DSC	Deposits Settled Compacted, 5% of cross sectional area, from 9 o'clock to 3 o'clock	00:01:16		
28.06	DSC	Deposits Settled Compacted, 5% of cross sectional area, from 12 o'clock to 3 o'clock	00:01:24		
45.29	TFA	Tap Factory Made Active, at 1 o'clock , 4 inch dim	00:02:11		
126.74	TFA	Tap Factory Made Active, at 10 o'clock , 4 inch dim	00:06:47		
127.06	HSV	Hole Soil Visible, at 11 o'clock	00:07:01		
134.84	TFC	Tap Factory Made Capped, at 3 o'clock , 6 inch dim	00:07:42		
168.41	AMH	Manhole, HOL ST MH-2 / HOL ST MH-2	00:09:36		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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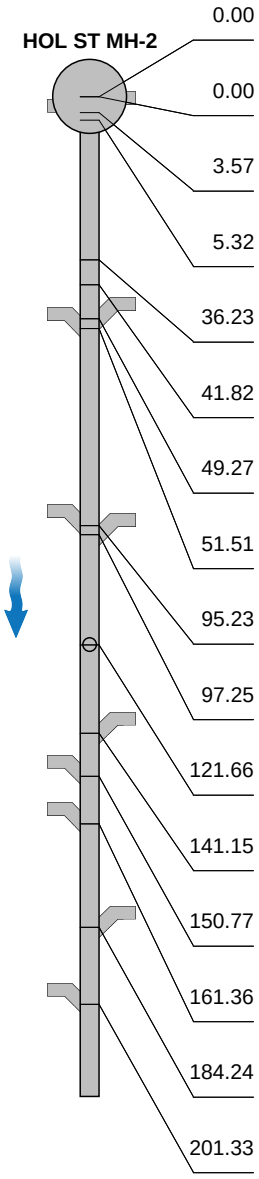
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/14/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**6**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**259.1 '**	**259.1 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**HOL ST MH-2**
Street:	**HOLLISTER STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**HOL ST MH-3**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		

Additional Info:



1:1674 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, HOL ST MH-2 / HOL ST MH-2	00:00:10		
0.00	MWL	Water Level, 5% of the vertical dimension	00:00:19		
3.57	TFC	Tap Factory Made Capped, at 9 o'clock , 6 inch dim	00:00:43		
5.32	TFC	Tap Factory Made Capped, at 3 o'clock , 6 inch dim	00:01:01		
36.23	DSC	Deposits Settled Compacted, 5% of cross sectional area, from 7 o'clock to 12 o'clock	00:01:56		
41.82	DSC	Deposits Settled Compacted, 5% of cross sectional area, from 12 o'clock to 4 o'clock	00:02:13		
49.27	TFC	Tap Factory Made Capped, at 9 o'clock , 6 inch dim	00:02:56		
51.51	TFC	Tap Factory Made Capped, at 3 o'clock , 6 inch dim	00:03:14		
95.23	TFC	Tap Factory Made Capped, at 3 o'clock , 6 inch dim	00:04:27		
97.25	TFC	Tap Factory Made Capped, at 9 o'clock , 6 inch dim	00:04:43		
121.66	TBA	Tap Break-In Active, at 12 o'clock , 4 inch dim	00:05:28		
141.15	TFC	Tap Factory Made Capped, at 9 o'clock , 6 inch dim	00:06:03		
150.77	TBA	Tap Break-In Active, at 1 o'clock , 4 inch dim	00:06:27		
161.36	TFC	Tap Factory Made Capped, at 3 o'clock , 6 inch dim	00:06:53		
184.24	TFC	Tap Factory Made Capped, at 9 o'clock , 6 inch dim	00:07:35		
201.33	TFA	Tap Factory Made Active, at 3 o'clock , 4 inch dim	00:08:09		

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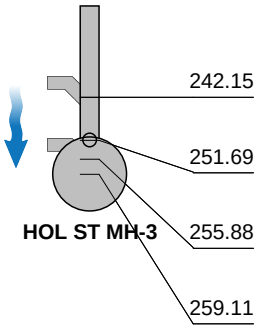
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/14/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**6**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**259.1 '**	**259.1 '**



1:1674 Distance	Code	Observation	Counter	Photo	Grade
242.15	TFA	Tap Factory Made Active, at 3 o'clock , 4 inch dim	00:09:18		
251.69	TBA	Tap Break-In Active, at 12 o'clock , 4 inch dim	00:09:49		
255.88	TFC	Tap Factory Made Capped, at 3 o'clock , 6 inch dim	00:10:14		
259.11	AMH	Manhole, HOL ST MH-3 / HOL ST MH-3	00:10:52		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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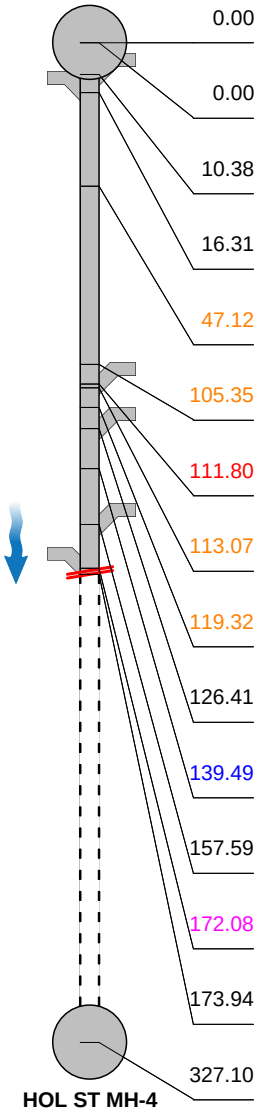
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/14/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**7**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**327.1 '**	**173.9 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**HOL ST MH-3**
Street:	**HOLLISTER STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**HOL ST MH-4**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:2469 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole / HOL ST MH-3	00:00:00		
0.00	MWL	Water Level, 5% of the vertical dimension	00:00:13		
10.38	TFA	Tap Factory Made Active, at 9 o'clock , 6 inch dim	00:00:34		
16.31	TFC	Tap Factory Made Capped, at 3 o'clock , 4 inch dim	00:00:54		
47.12	H	Hole, at 6 o'clock	00:01:50		S3
105.35	CM	Crack Multiple, from 9 o'clock to 3 o'clock	00:03:15		S3
111.80	TBI	Tap Break-In Intruding, at 10 o'clock , 4 inch dim, 3 inch intrusion	00:03:35		M5
113.07	FL	Fracture Longitudinal, at 12 o'clock	00:03:53		S3
119.32	CM	Crack Multiple, from 9 o'clock to 3 o'clock	00:04:06		S3
126.41	TFC	Tap Factory Made Capped, at 9 o'clock , 4 inch dim	00:04:30		
139.49	CL	Crack Longitudinal, at 11 o'clock	00:05:01		S2
157.59	TFA	Tap Factory Made Active, at 9 o'clock , 4 inch dim	00:05:48		
172.08	TBI	Tap Break-In Intruding, at 3 o'clock , 4 inch dim, 2 inch intrusion	00:06:25		M4
173.94	MSA	Survey Abandoned, CAN NOT GET PAST INTRUDING LATERAL / CAN NOT GET PAST INTRUDING LATERAL	00:07:53		
327.10		End of pipe			

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
3421	5141	5141	14.0	9.0	23.0	2.8	4.5	3.3

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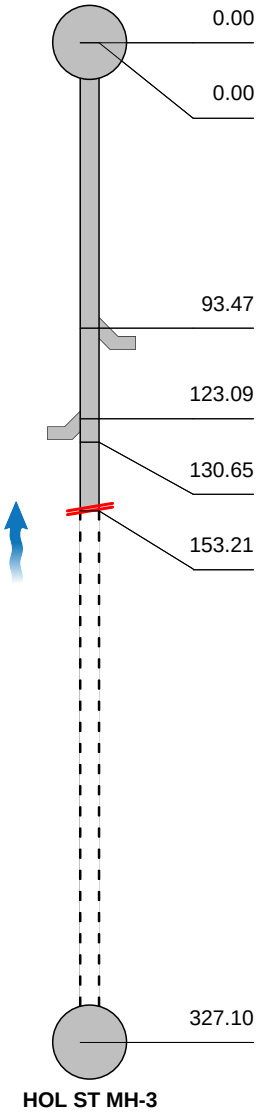
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/14/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**7**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**327.1 '**	**153.2 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**HOL ST MH-3**
Street:	**HOLLISTER STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**HOL ST MH-4**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:2469 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, HOL ST MH-4 / HOL ST MH-4	00:00:11		
0.00	MWL	Water Level, 5% of the vertical dimension	00:00:18		
93.47	TBA	Tap Break-In Active, at 10 o'clock , 2 inch dim	00:02:11		
123.09	TFA	Tap Factory Made Active, at 3 o'clock , 6 inch dim	00:03:08		
130.65	CM	Crack Multiple, from 9 o'clock to 3 o'clock	00:03:28		
153.21	MSA	Survey Abandoned, CAN NOT GET PAST LATERAL / CAN NOT GET PAST LATERAL	00:04:12		
327.10		End of pipe			

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/14/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**8**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**101.6 '**	**101.6 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**HOL ST MH-4**
Street:	**HOLLISTER STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**CHURCH MH-4**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					

1:767	Distance	Code	Observation	Counter	Photo	Grade
HOL ST MH-4						
	0.00	AMH	Manhole, HOL ST MH-4 / HOL ST MH-4	00:00:07		
	0.00	MWL	Water Level, 5% of the vertical dimension	00:00:15		
	25.20	FC	Fracture Circumferential, from 2 o'clock to 6 o'clock	00:01:08		
	36.74	CC	Crack Circumferential, from 3 o'clock to 6 o'clock	00:01:37		
	101.57	AMH	Manhole, CHURCH MH-4 / CHURCH MH-4	00:03:31		
CHURCH MH-4						

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**9**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**133.1 '**	**133.1 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**CHURCH .E. MH-1**
Street:	**CHURCH STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**CHURCH .E. MH-2**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					

1:1005	Distance	Code	Observation	Counter	Photo	Grade
CHURCH .E. MH-2						
	0.00	AMH	Manhole, CHURCH .E. MH-2 / CHURCH .E. MH-2	00:00:00		
	0.00	MWL	Water Level, 5% of the vertical dimension	00:00:15		
	62.05	TBA	Tap Break-In Active, at 3 o'clock , 4 inch dim	00:02:18		
	72.00	TFA	Tap Factory Made Active, at 12 o'clock , 4 inch dim	00:02:49		
	86.06	H	Hole, at 5 o'clock	00:03:25		
	87.49	TFA	Tap Factory Made Active, at 12 o'clock , 4 inch dim	00:03:51		
	104.39	H	Hole, from 11 o'clock to 1 o'clock	00:04:37		
	114.05	TBA	Tap Break-In Active, at 12 o'clock , 4 inch dim	00:05:00		
	133.11	AMH	Manhole, CHURCH .E. MH-1 / CHURCH .E. MH-1	00:05:39		
CHURCH .E. MH-1						

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**10**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**145.8 '**	**145.8 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**CHURCH .E. MH-2**
Street:	**CHURCH STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**CHURCH .E. MH-3**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					

1:1101	Distance	Code	Observation	Counter	Photo	Grade
CHURCH .E. MH-3						
	0.00	AMH	Manhole, CHURCH .E. MH-3 / CHURCH .E. MH-3	00:00:00		
	0.00	MWL	Water Level, 0% of the vertical dimension	00:00:12		
	18.66	TFC	Tap Factory Made Capped, at 9 o'clock , 6 inch dim	00:00:41		
	42.78	TBA	Tap Break-In Active, at 10 o'clock , 4 inch dim	00:01:14		
	113.73	TFC	Tap Factory Made Capped, at 9 o'clock , 4 inch dim	00:02:33		
	125.69	TBA	Tap Break-In Active, at 9 o'clock , 4 inch dim	00:02:54		
	145.83	AMH	Manhole, CHURCH .E. MH-2 / CHURCH .E. MH-2	00:03:40		
CHURCH .E. MH-2						

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**11**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**144.0 '**	**144.0 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**CHURCH .E. MH-3**
Street:	**CHURCH STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**CHURCH .E. MH-4**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					

1:1087	Distance	Code	Observation	Counter	Photo	Grade
CHURCH .E. MH-3						
	0.00	AMH	Manhole, CHURCH .E. MH-3 / CHURCH .E. MH-3	00:00:00		
	0.00	MWL	Water Level, 0% of the vertical dimension	00:00:16		
	7.22	TBI	Tap Break-In Intruding, at 2 o'clock , 4 inch dim, 2 inch intrusion	00:00:37		
	29.81	FC	Fracture Circumferential, from 3 o'clock to 6 o'clock	00:01:18		
	96.56	TBI	Tap Break-In Intruding, at 2 o'clock , 4 inch dim, 3 inch intrusion	00:03:05		
	135.65	TBC	Tap Break-In Capped, at 12 o'clock , 6 inch dim	00:04:27		
	136.15	FL	Fracture Longitudinal, at 12 o'clock	00:04:37		
	136.90	HSV	Hole Soil Visible, from 5 o'clock to 8 o'clock	00:05:07		
CHURCH .E. MH-4	144.00	AMH	Manhole, CHURCH .E. MH-4 / CHURCH .E. MH-4	00:05:22		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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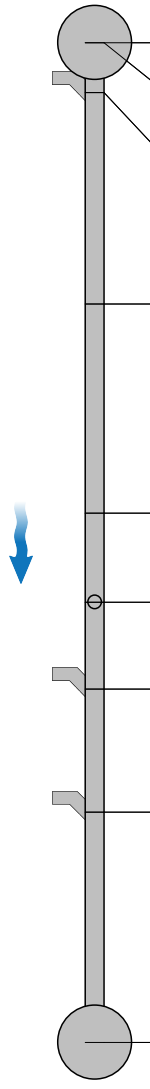
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**12**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**218.0 '**	**218.0 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**CHURCH .E. MH-4**
Street:	**CHURCH STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**S. RIVER MH-9**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:1646 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, CHURCH .E. MH-4 / CHURCH .E. MH-4	00:00:00		
0.00	MWL	Water Level, 5% of the vertical dimension	00:00:21		
10.88	TBA	Tap Break-In Active, at 3 o'clock , 4 inch dim	00:00:51		
57.00	CC	Crack Circumferential, from 11 o'clock to 6 o'clock	00:02:06		
102.61	CC	Crack Circumferential, from 9 o'clock to 12 o'clock	00:03:14		
121.99	TBA	Tap Break-In Active, at 12 o'clock , 6 inch dim	00:04:05		
141.01	TBA	Tap Break-In Active, at 2 o'clock , 4 inch dim	00:04:49		
167.83	TFA	Tap Factory Made Active, at 3 o'clock , 4 inch dim	00:05:43		
218.00	AMH	Manhole, S. RIVER MH-9 / S. RIVER MH-9	00:07:19		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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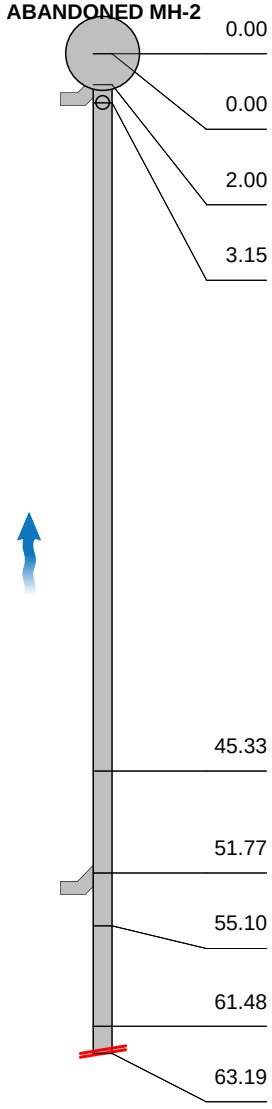
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**13**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Heavy Cleaning	**Upstream**		**63.2 '**	**63.2 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**WASHINGTON ABANDONED M**
Street:	**WASHINGTON STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway – urban**	Flow Control:	**Not Controlled**	Downstream MH:	**WASHINGTON ABANDONED M**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:477 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, WASHINGTON ABANDONED MH-2 / WASHINGTON ABANDONED MH-2	00:00:00		
0.00	MWL	Water Level, 0% of the vertical dimension	00:00:14		
2.00	TFC	Tap Factory Made Capped, at 3 o'clock , 4 inch dim	00:00:29		
3.15	TFC	Tap Factory Made Capped, at 12 o'clock , 6 inch dim	00:00:43		
45.33	B	Broken, from 9 o'clock to 3 o'clock	00:02:03		
51.77	TFA	Tap Factory Made Active, at 3 o'clock , 4 inch dim	00:02:49		
55.10	H	Hole, at 12 o'clock	00:03:04		
61.48	H	Hole, from 10 o'clock to 12 o'clock	00:03:37		
63.19	MSA	Survey Abandoned, CAN NOT GET PAST / CAN NOT GET PAST	00:04:32		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**14**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**61.9 '**	**61.9 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**NEW ST MH-5**
Street:	**NEW STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**NEW ST MH-6**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**12 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					

1:468	Distance	Code	Observation	Counter	Photo	Grade
NEW ST MH-5						
	0.00	AMH	Manhole, NEW ST MH-5 / NEW ST MH-5	00:00:00		
	0.00	MWL	Water Level, 25% of the vertical dimension	00:00:27		
	0.00	MMC	Material Change, Cast iron, CIP / CIP	00:00:34		
	61.91	MSA	Survey Abandoned, CAN NOT GET PAST / CAN NOT GET PAST	00:00:42		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

Kenyon Pipeline Inspection LLC
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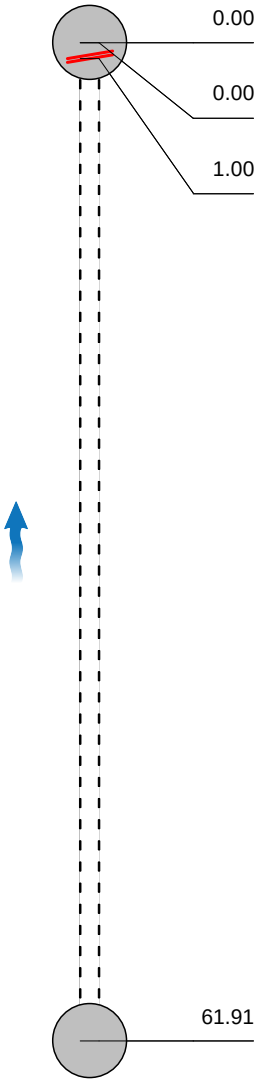
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**14**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**61.9 '**	**1.0 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**NEW ST MH-5**
Street:	**NEW STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**NEW ST MH-6**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**12 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:468 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole / NEW ST MH-6	00:00:00		
0.00	MWL	Water Level, 10% of the vertical dimension			
1.00	MSA	Survey Abandoned / UNABLE TO PASS DEPOSITS	00:00:50		
61.91		End of pipe			

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0000	0.0	0.0	0.0	0.0	0.0	0.0

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**15**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**6.8 '**	**6.8 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**NEW ST MH-6**
Street:	**NEW STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**NEW ST MH-7**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**12 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Cast Iron**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					

1:51	Distance	Code	Observation	Counter	Photo	Grade
NEW ST MH-6						
	0.00	AMH	Manhole, NEW ST MH-6 / NEW ST MH-6	00:00:06		
	0.00	MWL	Water Level, 20% of the vertical dimension	00:00:14		
	6.76	MSA	Survey Abandoned, CAN NOT GET PAST TUBERCULATION / CAN NOT GET PAST TUBERCULATION	00:01:04		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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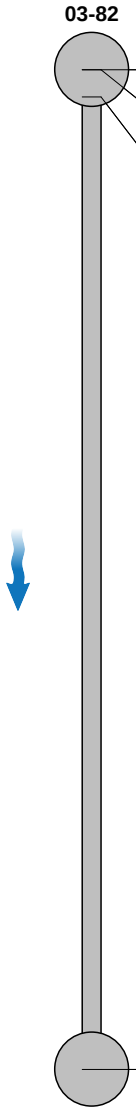
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**16**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**181.5 '**	**181.5 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**03-82**
Street:	**SCHOOL STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**03-83**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:1370	Distance	Code	Observation	Counter	Photo	Grade
	0.00	AMH	Manhole, 03-82 / 03-82	00:00:07		
	0.00	MWL	Water Level, 25% of the vertical dimension	00:00:16		
	5.00	MMC	Material Change, Asbestos cement, ACP / ACP	00:00:45		
	181.50	AMH	Manhole, 03-83 / 03-83	00:10:47		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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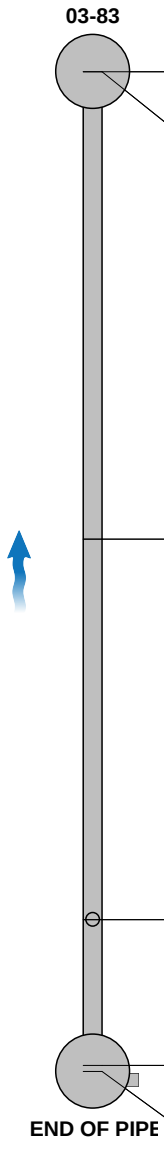
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**17**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**210.0 '**	**210.0 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**END OF PIPE**
Street:	**SCHOOL STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**03-83**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Asbestos Cement**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:1585	Distance	Code	Observation	Counter	Photo	Grade
	0.00	AMH	Manhole, 03-83 / 03-83	00:00:07		
	0.00	MWL	Water Level, 0% of the vertical dimension	00:00:21		
	98.18	DAE	Deposits Attached Encrustation, 5% of cross sectional area, at 3 o'clock	00:03:12		
	178.15	TBA	Tap Break-In Active, at 12 o'clock , 4 inch dim	00:04:46		
	208.61	TBA	Tap Break-In Active, at 10 o'clock , 4 inch dim	00:05:28		
	210.01	AEP	End of Pipe, END OF PIPE / END OF PIPE	00:05:45		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**18**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**174.7 '**	**174.7 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**03-113**
Street:	**SCHOOL STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway- suburban/rural**	Flow Control:	**Not Controlled**	Downstream MH:	**03-112**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**8 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					

1:1319	Distance	Code	Observation	Counter	Photo	Grade
03-113						
	0.00	AMH	Manhole, 03-113 / 03-113	00:00:09		
	0.00	MWL	Water Level, 0% of the vertical dimension	00:00:17		
	30.50	TBA	Tap Break-In Active, at 3 o'clock , 4 inch dim	00:01:48		
	53.50	B	Broken, from 3 o'clock to 9 o'clock	00:02:44		
	76.09	TBC	Tap Break-In Capped, at 12 o'clock , 4 inch dim	00:03:26		
	174.69	AMH	Manhole, 03-112 / 03-112	00:06:25		
03-112						

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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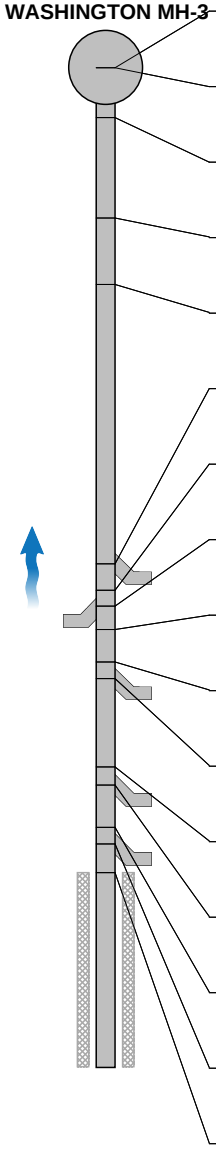
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**19**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**243.9 '**	**233.9 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**WASHINGTON MH-2**
Street:	**WASHINGTON STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway – urban**	Flow Control:	**Not Controlled**	Downstream MH:	**WASHINGTON MH-3**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**15 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



Distance		Code	Observation	Counter	Photo	Grade
0.00		AMH	Manhole, WASHINGTON MH-3 / WASHINGTON MH-3	00:00:00		
0.00		MWL	Water Level, 5% of the vertical dimension	00:00:21		
5.05		FL	Fracture Longitudinal, at 12 o'clock	00:00:34		
15.24		FL	Fracture Longitudinal, at 12 o'clock	00:01:07		
22.01		FH3	Fracture Longitudinal Hinge, 3, from 9 o'clock to 3 o'clock	00:01:20		
50.29		TBA	Tap Break-In Active, at 10 o'clock , 4 inch dim	00:02:46		
52.97		FM	Fracture Multiple, from 12 o'clock to 12 o'clock	00:03:09		
54.58		TBI	Tap Break-In Intruding, at 3 o'clock , 6 inch dim, 4 inch intrusion	00:03:40		
56.95		DV	Deformed Vertical, 5% changed	00:04:03		
60.26		HSV	Hole Soil Visible, from 7 o'clock to 12 o'clock	00:04:42		
61.95		TBA	Tap Break-In Active, at 10 o'clock , 4 inch dim	00:05:03		
70.90		FM	Fracture Multiple, from 12 o'clock to 12 o'clock	00:05:54		
72.69		TBA	Tap Break-In Active, at 10 o'clock , 4 inch dim	00:06:10		
77.02		B	Broken, from 6 o'clock to 12 o'clock	00:06:50		
78.68		TBA	Tap Break-In Active, at 10 o'clock , 4 inch dim	00:07:08		
81.56	S01	FL	Fracture Longitudinal, at 12 o'clock , Start	00:07:23		

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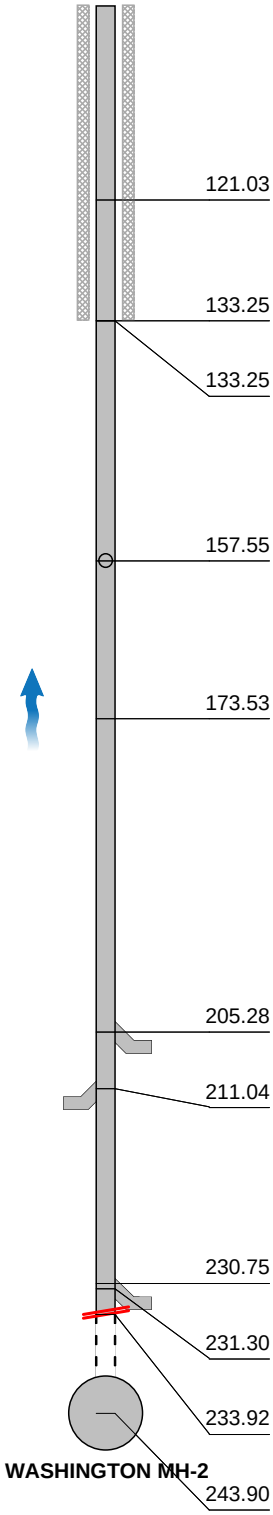
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**19**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**243.9 '**	**233.9 '**



1:765 Distance		Code	Observation	Counter	Photo	Grade
121.03		HSV	Hole Soil Visible, at 11 o'clock	00:08:39		
133.25	F01	FL	Fracture Longitudinal, at 12 o'clock , Finish	00:09:35		
133.25		FL	Fracture Longitudinal, at 12 o'clock	00:09:40		
157.55		TBI	Tap Break-In Intruding, at 12 o'clock , 6 inch dim, 6 inch intrusion	00:10:37		
173.53		CL	Crack Longitudinal, at 12 o'clock	00:11:20		
205.28		TBI	Tap Break-In Intruding, at 9 o'clock , 6 inch dim, 2 inch intrusion	00:12:30		
211.04		TBA	Tap Break-In Active, at 3 o'clock , 8 inch dim	00:13:10		
230.75		HSV	Hole Soil Visible, from 6 o'clock to 12 o'clock	00:14:46		
231.30		TBA	Tap Break-In Active, at 10 o'clock , 6 inch dim	00:15:12		
233.92		MSA	Survey Abandoned, CAN NOT GET PAST HOLE IN PIPE / CAN NOT GET PAST HOLE IN PIPE	00:16:00		
243.90			End of pipe			

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**19**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**243.9 '**	**10.0 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**WASHINGTON MH-2**
Street:	**WASHINGTON STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway – urban**	Flow Control:	**Not Controlled**	Downstream MH:	**WASHINGTON MH-3**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**15 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					

1:1841	Distance	Code	Observation	Counter	Photo	Grade
WASHINGTON MH-2						
	0.00	AMH	Manhole, WASHINGTON MH-2 / WASHINGTON MH-2	00:00:00		
	0.00	MWL	Water Level, 5% of the vertical dimension	00:00:37		
	10.00	OBI	Obstacles Intruding Thru Wall, 5% of cross sectional area, at 9 o'clock	00:01:36		
	10.00	MSA	Survey Abandoned, CAN NOT GET PAST WATER SERVICE / CAN NOT GET PAST WATER SERVICE	00:01:46		
	243.90		End of pipe			
WASHINGTON MH-3						

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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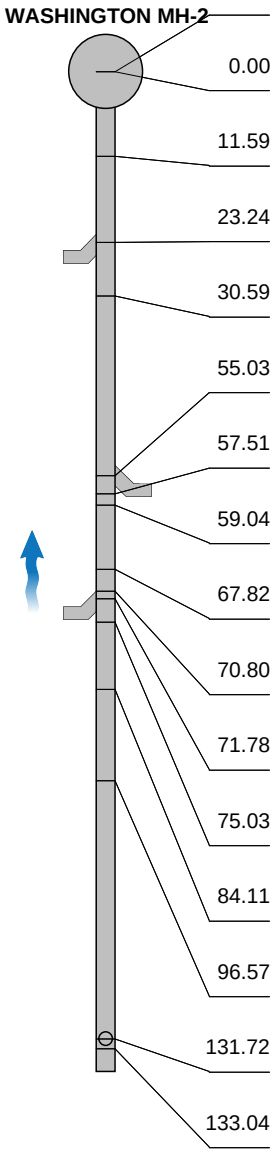
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/19/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**20**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**290.0 '**	**187.0 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**WASHINGTON MH-1**
Street:	**WASHINGTON STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway – urban**	Flow Control:	**Not Controlled**	Downstream MH:	**WASHINGTON MH-2**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**12 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:1028 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, WASHINGTON MH-2 / WASHINGTON MH-2	00:00:10		
0.00	MWL	Water Level, 5% of the vertical dimension	00:00:15		
11.59	CL	Crack Longitudinal, at 12 o'clock	00:00:36		
23.24	TBI	Tap Break-In Intruding, at 2 o'clock , 4 inch dim, 2 inch intrusion	00:01:19		
30.59	CL	Crack Longitudinal, at 12 o'clock	00:01:51		
55.03	TBA	Tap Break-In Active, at 10 o'clock , 4 inch dim	00:02:50		
57.51	DSC	Deposits Settled Compacted, 5% of cross sectional area, from 3 o'clock to 9 o'clock	00:03:27		
59.04	CM	Crack Multiple, from 9 o'clock to 3 o'clock	00:03:36		
67.82	MGO	General Observation, 15" VCP FROM START / 15" VCP FROM START	00:05:18		
70.80	MSC	Shape or Size Change, 12 inch dim	00:05:46		
71.78	TBI	Tap Break-In Intruding, at 2 o'clock , 4 inch dim, 4 inch intrusion	00:06:26		
75.03	FL	Fracture Longitudinal, at 12 o'clock	00:07:04		
84.11	FL	Fracture Longitudinal, at 12 o'clock	00:07:21		
96.57	RTJ	Roots Tap Joint, at 12 o'clock , 5% of cross sectional area	00:07:48		
131.72	TFA	Tap Factory Made Active, at 12 o'clock , 6 inch dim	00:09:36		
133.04	CL	Crack Longitudinal, at 12 o'clock	00:10:33		

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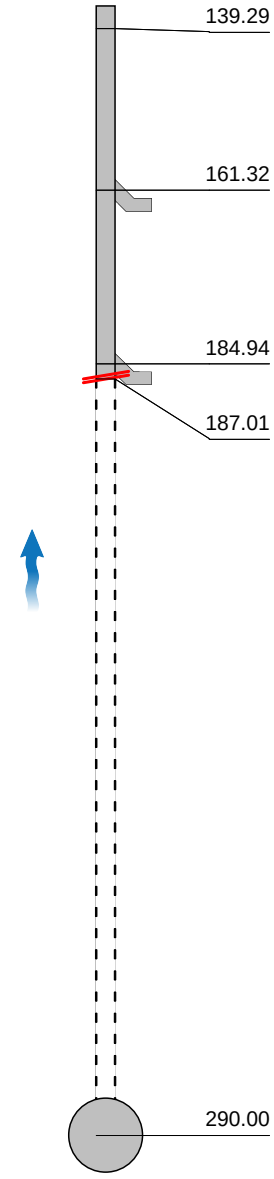
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/19/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**20**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Upstream**		**290.0 '**	**187.0 '**



1:1028 Distance	Code	Observation	Counter	Photo	Grade
139.29	FL	Fracture Longitudinal, at 12 o'clock	00:10:45		
161.32	TBA	Tap Break-In Active, at 11 o'clock , 4 inch dim	00:11:39		
184.94	TFA	Tap Factory Made Active, at 11 o'clock , 4 inch dim	00:12:30		
187.01	MSA	Survey Abandoned, CAN NOT GET PAST WATER SERVICE / CAN NOT GET PAST WATER SERVICE	00:13:08		
290.00		End of pipe			

WASHINGTON MH-1

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

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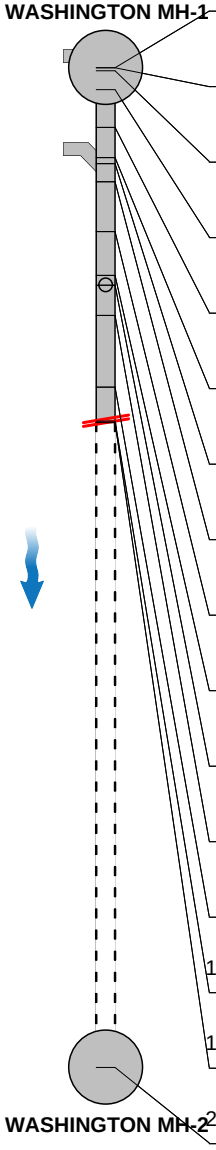
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
1/20/2022		**Dry**	**CHRIS OLIVER**	**U-0621-70402095**	**20**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Jetting	**Downstream**		**290.0 '**	**103.0 '**

City:	**COXSACKIE NY**	Drainage Area:		Upstream MH:	**WASHINGTON MH-1**
Street:	**WASHINGTON STREET**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:	**Main highway – urban**	Flow Control:	**Not Controlled**	Downstream MH:	**WASHINGTON MH-2**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Sanitary**	Total gallons used:	**0.0**
Pipe size:	**12 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Vitrified Clay Pipe**	Purpose:	**Maintenance Related**	Joints failed:	**0**
Lining Method:		Owner:	**COXSACKIE NY**		
Additional Info:					



1:2189 Distance	Code	Observation	Counter	Photo	Grade
0.00	AMH	Manhole, WASHINGTON MH-1 / WASHINGTON MH-1	00:00:00		
0.00	MWL	Water Level, 0% of the vertical dimension	00:00:19		
0.95	TFC	Tap Factory Made Capped, at 3 o'clock , 6 inch dim	00:00:31		
6.42	FL	Fracture Longitudinal, at 12 o'clock	00:00:51		
17.31	FL	Fracture Longitudinal, at 12 o'clock	00:01:26		
26.24	MMC	Material Change, Polyvinyl chloride, PVC / PVC	00:01:59		
27.81	TFA	Tap Factory Made Active, at 3 o'clock , 4 inch dim	00:02:20		
33.08	MMC	Material Change, Vitrified clay pipe, VCP / VCP	00:03:01		
47.58	DSC	Deposits Settled Compacted, 5% of cross sectional area, at 7 o'clock	00:03:41		
60.40	CM	Crack Multiple, from 9 o'clock to 3 o'clock	00:04:19		
63.15	TFC	Tap Factory Made Capped, at 12 o'clock , 6 inch dim	00:04:45		
71.96	CL	Crack Longitudinal, at 12 o'clock	00:05:11		
92.61	CL	Crack Longitudinal, at 12 o'clock	00:05:48		
102.62	OBI	Obstacles Intruding Thru Wall, 5% of cross sectional area, at 9 o'clock	00:06:46		
102.97	MSA	Survey Abandoned, CAN NOT GET PAST WATER SERVICE / CAN NOT GET PAST WATER SERVICE	00:06:54		
290.00		End of pipe			

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI

Attachment F: Projects per Meter Area by Street

Village of Coxsackie

Collection System Evaluation
Priorities Categorized by
Meter Area and Street

infil. = signs of infiltration noted
Colored highlights correspond to work areas on Figures 6a and 6b, red text to areas on Figure 7.
Bolded text indicates an upgrade priority

STREET	CATCH BASINS Connected (at least)	MANHOLES	SEWER PIPE	STORM SYSTEM	HOME Connections	SCOPE of WORK SEWER MAINS	SCOPE of WORK Service Laterals
Coxsackie Sewer Treatment Plant							
South River Street (S of WWTP)	**1 91 S River St**	**n=8: two obs. Brick, poor,infil.**	405 LF, Clay 8" No CCTV data	Not Mapped	Smoke from basement vent	Connect catch basins to existing storm pipe at WWTP	1 Home disconnect or repair drains
South Main Street	Not Smoke Tested	**n=3 1 obs. Brick, Poor, infil.**	397 LF, Clay 10" No CCTV data	Not Mapped	Not Smoke Tested	Future needs: Reline/Replace 3 MH & CCTV pipe	Unknown
Church Street (West)	**4 near Hollister and Ely**	**n=5 Brick, Poor, MH5 broken**	**1,156 LF, Clay 12 & 15" Poor to Bad Condition fractures, holes, intruding break-ins, deformation**	**some CB connections capped, but smoke; storm system not mapped**	**1 old lateral at vacant lot, SW corner with Hollister**	Install new sanitary, convert existing sanitary line to storm	Disconnect abandoned lateral
New Street (East)	0	n=3 two obs. Concrete good condition, Brick poor	235 LF, Clay 8" & 170 LF, PVC 8" No CCTV data	Not Mapped	1 damaged lateral	Future needs; Reline/Replace Brick MH	Repair/replace damaged service lateral
Ely Street	**2 at 28 Ely and corner with Church**	**n=7 2 obs. Brick, poor**	1,854 LF, 12"Clay No CCTV data	Not Mapped	1 damaged cleanout, 1 lateral	Install new sanitary, convert existing sanitary line to storm	Repair/replace damaged clean out and lateral
Church Street (East)	0	n=3 1 obs. Brick, good MH at 12 Church edges smoked	**849 LF, Clay 8" Poor to Bad condition, holes, fracture, TBI**	Not Mapped	No Smoke observations	Repari MH12 Future need: Reline/Replace 849 LF pipe	No need identified
Washington Ave (South)	Not Smoke Tested	n=4 one obs. Concrete, good condition	853 LF, Clay 15" No CCTV data	Not Mapped	Not Smoke Tested	Unknown	Unknown
Hollister Street	**2 at 15 and corner with Church**	**n=4 1 obs. brick, good**	**854 LF, Clay 10" Fair to Bad Condition; Fractures, cracks, holes, intruding break-ins**	**Not Mapped**	**1 roof lead 1 bad lateral**	Install new sanitary, convert existing sanitary line to storm	Disconnect home roof lead; repair lateral
Sutton Place	0	n=6 Concrete, good	1,375 LF, PVC 10" No CCTV data	mapping?	No Smoke observations	No Need Identified	Unknown
Molly White	1	n=7: 6 obs Concrete, fair	2,818 LF, PVC 10" No CCTV data	mapping?	1 home roof lead/broken lateral	Replace sanitary, disconnect storm from sanitary	Disconnect 1 home with roof leader and probable damaged lateral

STREET	CATCH BASINS Connected (at least)	MANHOLES	SEWER PIPE	STORM SYSTEM	HOME Connections	SCOPE of WORK SEWER MAINS	SCOPE of WORK Service Laterals
Flow Meter 1							
South River		WWTP to Reed St; Sewer and Storm pipe and manholes replaced 2019				No Need Identified	
Reed Street		Sewer and Storm pipe and manholes replaced 2019			2 probable old laterals at vacant lots	No Need Identified	Remove or cap 2 abandoned laterals
Lower Mansion Street		Sewer and Storm pipe and manholes replaced 2019; Reed to Betke				No Need Identified	Unknown
Mansion (W of Spencer to Betke)	1	n=25 17 obs. Concrete, Good to Poor; **Brick, Fair, infil.**	4560 LF 15" Clay, 870 LF 8" PVC, 240 LF 8" Iron No CCTV data	Mapped 1970, WWTP upgrade extend force main	1 damaged lateral, 1 clean out, smoke in 1 house	Future need: Reline/replace clay sewer and brick MH	Disconnect 1 home from sanitary & 1 from CB; repair 1 damaged lateral and 1 clean out
Riverside Ave (South)	**1 near MH12**	n=3 2 obs. Concrete, Poor to Good, Infil.	645 LF, Clay, 8" and 15" No CCTV data	**unknown - MH22(?) on easement smoked**	1 damaged lateral	Disconnect catch basin from sanitary, connect to existing storm	Repair 1 lateral
New Street (West)	**3 MH6 thru MH 9**	n=13 6 obs. Concrete, mostly Good, 1 Poor (MH3)	**1,350 LF 12" Clay & Iron Bad; CCTV couldn't pass iron pipe tuberculations, MH5-MH7**	Not Mapped	1 damaged lateral	Connect catch basins to existing storm	Repair 1 lateral
Elm Street	0	n=4 Concrete Fair to Good	1254 LF 8" PVC Fair Condition; infil at TBI No CCTV data	Not Mapped	2 damaged laterals, 1 clean out	No immediate need identified	Repair 2 building laterals, 1 clean out
Prospect Street	0	n=2 Concrete, Good	392 LF 8" PVC Fair Condition; 1 bad joint MH1 to MH2	Not Mapped	No Smoke observations	No immediate need identified; future repair area of pipe joint	No need identified
Hillcrest Street	**1 at corner with Freleigh**	None	458 LF Clay? No CCTV data	Not Mapped	No Smoke observations	Redirect stormwater to existing storm	Unknown
Freleigh Place	**1 Yard Drain**	**n=5 3 obs. Brick and Concrete, Good to Poor Condition**	**958 LF 15" Clay Poor to Bad Condition Hole, fracture, collapse, infil. Runners, joints off**	Not Mapped	**Roof leader, Fire Hydrant at corner**	New storm system, correct hydrant Future need: reline/replace sanitary	Re-direct yard drain stormwater; Disconnect 1 residential roof leader
Washington Ave (N)	**2 at School Field and yard drain to Washington**	**n=4 2 obs. Brick, Fair Condition, Infil.**	**710 LF 15" Clay Bad Condition; MH1 to MH3 Holes, fractures, cracks, breaks, deformation**	**Storm system not mapped; Some capped connections (CCTV) leaking (smoked)**	**Two locations utility pole installation damaged laterals, basement vent**	Discannect yard drain from sanitary and connect to existing storm	Repair 2 laterals at sidewalk damaged by utility poles
Lafayette Ave (South)	**3 Two at corner with Wayne Dr southern**	**n=7 6 obs. Brick, Fair to Poor condition**	1556 LF 12" Clay No CCTV data	Not Mapped	3 damaged laterals, 1 roof leader	Disconnect catch basin from sanitary and connect to existing storm Future need: repair/replace sewer	Disconnect home roof drain; repair 3 laterals

STREET	CATCH BASINS Connected (at least)	MANHOLES	SEWER PIPE	STORM SYSTEM	HOME Connections	SCOPE of WORK SEWER MAINS	SCOPE of WORK Service Laterals
Flow Meter 2	DOCCS flow meter March 2022						
Sunset Boulevard	2007 Study: daily variation masked ability to calculate I&I, **estimated High**.	n=8: 5 obs. Concrete, good	1,776 LF Clay 790 LF Iron No CCTV data	School project on north side of Sunset	only observations roof vents	No Need Identified; taking flow meter data 2022	No need identified
Flow Meter 3							
Easement Van Dyck Woods	N/A	**n=6 No obs. All leak at risers and surrounding ground to some extent**	1,141 LF 10" PVC & 186 LF 10" Clay No CCTV data	N/A	N/A	Reline/replace 6 MH castings Future need: evaluate sanitary pipe	N/A
Riverside Ave	0	**n=15 11 obs. Concrete, Good Condition; MH4, 5, 6 and 10 infil.**	**2,260 LF 8" Clay & 1,620 LF 8" Iron forcemain; Clay is Poor to Bad Condition Infil at seams, fractures, holes at TBI**	Not Mapped	only observations roof vents	Reline/replace 3 MH castings Future need; Reline/Replace 2,260 LF Clay pipe	No need identified
Wayne Drive	0	n=9 5 obs. Concrete, Fair to Good; WD 4&10 excess smoke	1,233 LF 8" Clay No CCTV data	Not Mapped	1 broken lateral behind home on Wayne, 2 damaged or uncapped cleanouts, 1 roof leader	Repair 2 MH castings (WD4 &10) Future need: evaluate clay pipe	Repair 1broken lateral in back yard at Wayne to easement line, 2 damaged or uncapped cleanouts, disconnect 1 roof leader
Terry Lane	0	n=1 Concrete Good Condition	224 LF 8" Clay No CCTV data	Not Mapped	No Smoke observations	No need identified	No need identified
Lafayette Ave (North)	2 near corner with Wayne Dr northern	n=2 No obs.	345 LF 8" Iron No CCTV data	Not Mapped	1 roof leader	New storm system Future need: CCTV sewer	Disconnect 1 home roof drain
Van Dyck Street (East)	0	n=3 all obs. Concrete, Poor to Good, infil.	50 LF 8" PVC & 140 LF 10" Iron No CCTV data	Not Mapped	1 Damaged lateral, 1 water valve cap smoked (damaged lateral?)	New storm system Future need: CCTV sewer	Repair 2 damaged laterals
Noble Street	0	n=3 2 obs. Concrete, Good to Poor Condition	1,189 LF 10" PVC CCTV Fair Condition	Not Mapped	1 damaged lateral	No immediate need identified	Repair 1 lateral

STREET	CATCH BASINS Connected (at least)	MANHOLES	SEWER PIPE	STORM SYSTEM	HOME Connections	SCOPE of WORK SEWER MAINS	SCOPE of WORK Service Laterals
Flow Meter 4							
Bailey Street	0	n=9 9 obs. Lined, Good	1,800 LF 8" Lined	Not Mapped	Store All lateral and Town Hall floor drains	No Need Identified	business damaged lateral and Town Hall floor drains repaired/disconnected
Peppertree Apartments	Not Smoke Tested	**n=4 4 obs. Concrete or Brick Poor to Bad, infil.**	146 LF PVC & 400 LF Clay No CCTV Data	Not Mapped	Not Smoke Tested	Future need: Reline/replace 4 MH, CCTV pipe	Unknown
Raymond Street	Not Smoke Tested	n=1 1 obs. Lined, Good	200 LF 8" Lined	Not Mapped	Not Smoke Tested	No Need Identified	Unknown
Railroad Easement	N/A	n=4 3 obs. Concrete or Lined, Good; MH03-180 sounds of rushing air or water	440 LF 8" Lined & 920 LF PVC	N/A	N/A	No Need Identified	N/A
Cato	0	n=4 4 obs. Lined, Good MH 03-160 edges smoked	441 LF 8" Lined	Not Mapped	None observed	No Need Identified	No need identified
Spencer Blvd	0	n=5 5 obs. Lined, Good	1,452 8" Clay fractures, bad joints, cracks, encrustation, roots, infil drippers	Not Mapped	1 Damaged clean out	Future need: Reline/replace 1,452 LF clay pipe	Repair 1 residential cleanout
Flow Meter 5							
Whitebeck	2	n= 5 4 obs. Concrete, Good: Smoke; MH 03-100 edges and ground	765 LF 8" Clay No CCTV Data	Not Mapped	1 home sump, 2 roof leaders, 1 damaged clean out	Repair MH 03-100	Disconnect home yard drain/sump/roof leader connections; repair damaged cleanout
School Street	Not Smoke Tested	n=1 1 obs. Concrete, Fair	**8" Clay 03-112 to 03-113 Poor Break, TBI infil., deformation**	Not Mapped	Not Smoke Tested	Reline/replace 170 LF Clay pipe	Unknown
Easement at RR	N/A	**n=2 no interior obs. Smoke test; Bad Condition**	560 LF 12" Clay No CCTV Data		N/A	Replace sanitary and manholes, disconnect storm from sanitary	N/A
Lawrence Street	0	n=5 4 obs. Brick or Concrete, Good to Poor, infil.	850 LF 8" Clay No CCTV Data	Not Mapped	Smoke in 1 house, 2 damaged clean outs and 1 lateral	Future need: CCTV clay pipe (enters CB at corner with Mansion)	Determine home connection and repair/disconnect; repair 2 cleanouts and 1 lateral
Van Dyck Street (West)	0	n=6 4 obs. Brick, Fair to Good, infil.	1,202 LF 10" Clay Fractures, holes, CCTV location uncertain	Not Mapped	Smoke in one home, 4 roof leaders, 2 damaged laterals	Future need: replace/reline sanitary sewer	Determine home connection and repair/disconnect; repair 2 lateral
Mansion Street	**1 Corner at Lawrence**	**n=11 7obs. 3 Concrete, Good; 4 Brick, Poor, infil.**	2555 LF 8, 10 or 12" Clay several lines; No CCTV data	Mapped 1970, WWTP upgrade extend force main	Not Smoke Tested	Future need: evaluate clay sewer	Unknown

STREET	CATCH BASINS Connected (at least)	MANHOLES	SEWER PIPE	STORM SYSTEM	HOME Connections	SCOPE of WORK SEWER MAINS	SCOPE of WORK Service Laterals
Flow Meter 6							
Matthew Lane	0	n=9 5 obs. Concrete, Good to Poor, 1 infil.	2,386 LF 8" or 10" PVC No CCTV data		1 damaged cleanout	Future need: repair MHs	Repair 1 cleanout
Luke Street	0	n=5 3 obs. Concrete, Good Smoke test; **MH 01-80 Bad**	1,083 LF 10" PVC Poor: 01-100 to 01-110 Cracks, Break, TBI		Only observation roof vents	Replace/reline MH 01-80	No need identified
Mark	0	n=2 2 obs. Concrete, Good, infil.	72 LF 10" PVC OK Condition		No smoke observations	No need identified	No need identified
John Street	0	n=1 found south end John during smoke test	**275 LF PVC Poor Condition bad joints**		No smoke observations	Future need: reline/replace 275 LF pipe	No need identified
Mansion Street	**2**	**n=10 9 obs. Concrete, Good: Brick, Poor, infil.**	1,005 LF Clay 10" & 900 LF 12" PVC No CCTV data		**2 damaged laterals**	Future need: reline/replace brick MH	Disconnect home from 2 CB, Repair 2 damaged laterals
School Street	Not Smoke Tested	**n=2 2 obs. Brick, Good; Block, Poor, infil**	**270 LF 8" Clay CCTV ACP; Poor Condition, break-ins, 1 break**		Not smoke tested	Future needs: Reline/replace 2 MH and 270 LF pipe	Unknown
School Street Easement	Not Smoke Tested	n=4 2 obs. Concrete, Good	635 LF 8" PVC Fair Condition; Break ins, roots		Not smoke tested	No immediate need identified	Unknown
Flow Meter 7							
Mansion Street	0	n=7 5 obs. Concrete, Good; **1 Brick, Poor; infil. MH 10-20 leaking riser and surround**	931 LF 8" Clay & 115 LF 10" PVC No CCTV data		1 home basement smoke	Reline/replace MH 10-20	Disconnect home drain
Kings Road	0	n=5 5 obs. Concrete, Good, **infil. Brick, Bad, infil.**	**1,725 8" Clay Poor to Bad holes, cracks, bad joints**		only observations roof vents	Future need: Reline/replace 5 MH and 1,725 LF pipe	No need identified
Appleblossom Lane	0	**n=9 9 obs. Concrete or Brick, Fair to Good, All infiltration**	**1,472 LF 8" Clay & 674 LF PVC Fair to Poor Condition; bad joints, cracks, bad pitch**		1 house filled with smoke, 3 damaged laterals	Future need: Reline/replace 9 MH and 1,742LF pipe	Determine home connection and repair/disconnect; repair 3 lateral
Howard Drive	0	0	245 LF 8" Clay No CCTV data		only observations roof vents	Future need: CCTV 245 LF Clay pipe	No need identified

STREET	CATCH BASINS Connected (at least)	MANHOLES	SEWER PIPE	STORM SYSTEM	HOME Connections	SCOPE of WORK SEWER MAINS	SCOPE of WORK Service Laterals
West Coxsackie Pump Station							
Warren Street Area	0	n=9 6 obs. Concrete, Good 2 infil.	8" PVC 2,161 LF CCTV calcification and peeling		only observations roof vents	No need identified; consider cleaning pipe	No need identified
Rte 9W to north	0	n=12 10 obs. Concrete, good 4 infil.	8" PVC 4,046 LF No CCTV data		1 missing cleanout cap	No need identified	1 cleanout cap
Houghtaling	Not Smoke Tested	n=10 7 obs. Concrete,6 good, 1 poor	8" PVC gravity 1766 LF 8" PVC forcemain 1510 LF No CCTV data		Not Smoke Tested	No immediate need identified	Unknown
Bank/First Student	0	n=7 5 obs. Concrete, fair, 3 infil. **one MH leak**	8" PVC 1,580 LF No CCTV data		No connection observations	Repair manhole	No need identified
Garland	Not Smoke Tested	n=8 7 obs. Concrete, 5 good, 2 poor	8" PVC 1,842 LF No CCTV data		Not Smoke Tested	No immediate need identified	Unknown
9W& 81 Plazas	0	n=12 12 obs. Concrete Good to Fair found 11-100, 11-110	8" Clay 281 LF 8 & 10" PVC 1,046 LF No CCTV data		**Business at Plazas and south, smoke inside, laterals, missing cleanout caps**	Repair manhole	Determine bldg connection and repair/disconnect; repair 2 lateral; car wash floor drain smoked
Mansion Street Extension	0	n=2 2 obs. Concrete, fair, infil.	8" PVC 204 LF 8" Clay 86 LF No CCTV data		N/A	Future need: repair/reline MH	N/A
Coxsackie Creek	N/A	**n=10 2 obs. Concrete, poor all infil. and surrounds smoked**	10" PVC 1571 LF No CCTV data	N/A	N/A	Correct manhole castings to make watertight	N/A
Vermylea Easement	N/A	n=8 4 obs. Concrete, good	8" PVC 2,238 LF No CCTV data	N/A	N/A	Correct manhole castings to make watertight	N/A
Rte 9W to south	Not Smoke Tested	n=9 Concrete good to poor	8" PVC forcemain, 1078 LF 8" PVC gravity, 2454 LF No CCTV data		Not Smoke Tested	Future need: evaluate sewer	unknown

infil. = signs of infiltration noted
Colored highlights correspond to work plan on Figures 6a and 6b, red text are areas mapped in Figure 7.
Bolded text indicates an upgrade priority

Attachment G: Engineering Report Certification

Engineering Report Certification

To Be Provided by the Professional Engineer Preparing the Report

During the preparation of this Engineering Report, I have studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which assistance is being sought from the New York State Clean Water State Revolving Fund. In my professional opinion, I have recommended for selection, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account the cost of constructing the project or activity, the cost of operating and maintaining the project or activity over the life of the project or activity, and the cost of replacing the project and activity.

Title of Engineering Report: Coxsackie Village Collection System Plan

Date of Report: June 2022

Professional Engineer's Name: Brock Juusola, PE

Signature:

Date: June 16, 2022

Signature:

Revision Date: January 16, 2023

Signature:

Revision Date: March 3, 2023

Attachment H: Smart Growth Assessment Form

NEW YORK STATE OF OPPORTUNITY. | Department of Health | Environmental Facilities Corporation

Smart Growth Assessment Form

This form should be completed by an authorized representative of the applicant, preferably the project engineer or other design professional.[1]

Section 1 – General Applicant and Project Information

Applicant: Village of Coxsackie Project No.: EPG 105268

Project Name: Coxsackie Collection System Plan

Is project construction complete? ☐ Yes, date: ☑ No

Please provide a brief project summary in plain language including the location of the area the project serves:

The Village of Coxsackie WWTP serves the Village, parts of the Towns of Coxsackie and New Baltimore, and the NYS Department of Corrections Coxsackie and Greene facilities. Despite undergoing major improvements, the WWTP system continues to experience overflows in heavy rain. The project evaluated the collection system and proposes improvements to reduce I&I.

Section 2 – Screening Questions

A. Prior Approvals

1. Has the project been previously approved for Environmental Facilities Corporation (EFC) financial assistance? ☐ Yes ☑ No
2. If yes to A(1), what is the project number(s) for the prior approval(s)? Project No.:
3. If yes to A(1), is the scope of the previously-approved project substantially the same as the current project? ☐ Yes ☐ No

If your responses to A(1) and A(3) are both yes, please proceed to Section 5, Signature.

B. New or Expanded Infrastructure

1. Does the project involve the construction or reconstruction of new or expanded infrastructure? ☑ Yes ☐ No

Examples of new or expanded infrastructure include, but are not limited to:

(i) The addition of new wastewater collection/new water mains or a new wastewater treatment system/water treatment plant where none existed previously;

(ii) An increase of the State Pollutant Discharge Elimination System (SPDES) permitted flow capacity for an existing wastewater treatment system; and OR

[1] If project construction is complete and the project was not previously financed through EFC, an authorized municipal representative may complete and sign this assessment.

(iii) An increase of the permitted water withdrawal or the permitted flow capacity for the water treatment system such that a Department of Environmental Conservation (DEC) water withdrawal permit will need to be obtained or modified, or result in the Department of Health (DOH) approving an increase in the capacity of the water treatment plant.

If your response to B(1) is no, please proceed to Section 5, Signature.

Section 3 –Smart Growth Criteria

Your project must be consistent will all relevant Smart Growth criteria. For each question below please provide a response and explanation.

1. Does the project use, maintain, or improve existing infrastructure?
   ☑ Yes ☐ No

   Explain your response: The project improves the existing collection system and stormwaer system to reduce infiltration and inflow.

2. Is the project located in a (1) municipal center, (2) area adjacent to a municipal center, or (3) area designated as a future municipal center, as such terms are defined herein (please select one response)?

   ☑ Yes, my project is located in a municipal center, which is an area of concentrated and mixed land uses that serves as a center for various activities, including but not limited to: central business districts, main streets, downtown areas, brownfield opportunity areas (see *www.dos.ny.gov* for more information), downtown areas of local waterfront revitalization program areas (see *www.dos.ny.gov* for more information), areas of transit-oriented development, environmental justice areas (see *www.dec.ny.gov/public/899.html* for more information), and hardship areas (projects that primarily serve census tracts or block numbering areas with a poverty rate of at least twenty percent according to the latest census data).

   ☐ Yes, my project is located in an area adjacent to a municipal center which has clearly defined borders, is designated for concentrated development in the future in a municipal or regional comprehensive plan, and exhibits strong land use, transportation, infrastructure, and economic connections to an existing municipal center.

   ☐ Yes, my project is located in an area designated as a future municipal center in a municipal or comprehensive plan and is appropriately zoned in a municipal zoning ordinance

   ☐ No, my project is not located in a (1) municipal center, (2) area adjacent to a municipal center, or (3) area designated as a future municipal center.

   Explain your response and reference any applicable plans:

   The Village of Coxsackie is a municipal center with existing and redeveloping downtown, along with surrounding residential areas.

3. Is the project located in a developed area or an area designated for concentrated infill development in a municipally-approved comprehensive land use plan, local waterfront revitalization plan, and/or brownfield opportunity area plan?

☑Yes ☐No

Explain your response and reference any applicable plans:

The 2008 Town and Village of Coxsackie Comprehensive Plan includes the goal of redevelopment in the downtown area of the Village.

4. Does the project protect, preserve, and enhance the State's resources, including surface and groundwater, agricultural land, forests, air quality, recreation and open space, scenic areas, and significant historic and archaeological resources?

☑Yes ☐No

Explain your response:

The project intends to protect water resources by reducing wastewater treatment overflows to the Hudson River and Coxsackie Creek. The Reed Street Historical District and River Park are located in close proximity to the WWTP.

5. Does the project foster mixed land uses and compact development, downtown revitalization, brownfield redevelopment, the enhancement of beauty in public spaces, the diversity and affordability of housing in proximity to places of employment, recreation and commercial development, and the integration of all income and age groups?

☑Yes ☐No

Explain your response:

The Village is under a DEC Order on Consent to reduce I&I. There is a moratorium on new connections without compensatory mitigation. The project will reduce I&I and allow redevelopment to connect to sewer.

6. Does the project provide mobility through transportation choices including improved public transportation and reduced automobile dependency?

☐Yes ☐No ☑N/A

Explain your response:

The project is a wastewater collection system project.

7. Does the project involve coordination between State and local government, intermunicipal planning, or regional planning?

☑Yes ☐No

Explain your response and reference any applicable plans:

The collection system serves the Village, two Towns and two DOCCS facilities.

8. Does the project involve community-based planning and collaboration?

   ☐Yes ☑No

   Explain your response and reference any applicable plans:

   Not directly. The project is a required improvement to the sewer system. However, some of the recommended projects involve stormwater management, an issue of high concern with many local residents.

9. Does the project support predictability in building and land use codes?

   ☐Yes ☐No ☑N/A

   Explain your response:

   The project is a wastewater collection system project

10. Does the project promote sustainability by adopting measures such as green infrastructure techniques, decentralized infrastructure techniques, or energy efficiency measures?

    ☐Yes ☑No

    Explain your response and reference any applicable plans:

    The Village system is already a centralized system. Local soils do not support on-site septic techniques or reasonably sized green infrastructure in the more densely developed areas.

11. Does the project mitigate future physical climate risk due to sea-level rise, storm surges, and/or flooding, based on available data predicting the likelihood of future extreme weather events, including hazard risk analysis data, if applicable?

    ☑Yes ☐No

    Explain your response and reference any applicable plans:

    Parts of the project involve the improvement of stormwater drainage, preventing flooding of roads and sanitary system overflows.

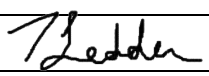
Section 4 – Miscellaneous

1. Is the project expressly required by a court or administrative consent order? ☑ Yes ☐ No

   If yes, and you have not previously provided the applicable order to EFC/DOH, please submit it with this form.

Section 5 – Signature

By signing below, you agree that you are authorized to act on behalf of the applicant and that the information contained in this Smart Growth Assessment is true, correct and complete to the best of your knowledge and belief.

Applicant: Village of Coxsackie	Phone Number: 518-731-2718
Name and Title of Signatory: Tracey Ledder, Senior Scientist, Delaware Engineering	
Signature: 	Date: 6/13/2022