Town of Hume

20 N. Genesee St.
Fillmore, NY 14735

PRELIMINARY ENGINEERING REPORT

for the

TOWN OF HUME
MUNICIPAL WASTEWATER TREATMENT IMPROVEMENTS

April 3, 2020

MRB Group Project No. 0809.19003.000

Prepared by:

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EXECUTIVE SUMMARY

Town of Hume (Town) owns and operates a graywater collection system and wastewater treatment plant (WWTP) located at 10935 Route 19A, north of the Hamlet of Fillmore; its entrance drive is across the road from 10932 Route 19A. In 2018, the Town received a letter of Significant Non-Conformance from the USEPA for exceeding its State Pollution Discharge Elimination System (SPDES) permit limits at the WWTP. In 2019, the Town received a Notice of Violation from the New York State Department of Environmental Conservation (DEC) for exceeding its SPDES permit limits. Also, in 2018 and 2019, the Town received notice from the DEC that it needed to prepare a Flow Management Plan (FMP) because the average flow from the WWTP exceeded 95% of the plant's design flow capacity for several quarters during the preceding three years. Most recently, the Town received notice in March 2019 from the DEC that, as a condition of renewal for its SPDES permit, disinfection will be required in 2024.

Recognizing the need to add disinfection to the WWTP, and the need to address the violations, the Town of Hume commissioned MRB Group to prepare this Preliminary Engineering Report (PER). The purpose of this PER is to evaluate the feasibility of adding disinfection, study the collection system and WWTP, and develop alternatives to address shortcomings in the facilities.

Identified shortcomings include:

- Additional land is needed at the WWTP to install a disinfection system;
- Existence of widespread inflow and infiltration (I/I) into the collection system that is not attributable to any one source;
- The design capacity of the Town's Route 19A sanitary pump station is less than the estimated peak hour flow from the system; and
- The capacities of individual treatment units at the WWTP are not sufficient for design flows to the station based on current system demands

In addition to reviewing disinfection alternatives, several alternatives were also reviewed for upgrades needed to bring the collection system and WWTP into compliance with current design standards. Based on this review, the recommended alternative for the Town of Hume to provide disinfection is to eliminate its WWTP and construct a regional pump station with forcemain that

discharges to the Town of Caneadea's WWTP. Disinfection would then be provided at the Town of Caneadea WWTP as part of its normal treatment process. It is also recommended that the Town install additional manholes in the graywater collection system. The manholes would facilitate sewer maintenance and allow video inspection of the sewers in order to better identify potential sources of I/I into the collection system.

The estimated probable project budget for the proposed improvements is approximately $3,553,000. In order to finance the improvements, Town of Hume is encouraged to apply for a Water Quality Improvement Project (WQIP) program grant and for a low to no interest loan from the New York State Environmental Facilities Corporation (EFC). Due to the median household income of the community, the Town may qualify for hardship financing at zero percent. Considering this, the potential operation and maintenance costs of the upgraded system, and the existing sewer budget, the estimated additional cost per typical single-family residence is between $733 to $995 depending on the source of funding (hardship or long-term subsidized loan respectively). These costs may be further reduced by grants. Each $1,000,000 in grant reduces the cost per user by approximately $134 to $204, again dependent on the funding source.

POSSIBLE CWSRF PROJECT PRIORITY SCORE

Applicant Name: Town of Hume

DEC Region: 9 County: Allegany Project Category: A

Project Description: Provide disinfection by replacing the Town of Hume wastewater treatment plant (WWTP) with a regional pump station designed to discharge to the Town of Caneadea wastewater treatment plant. Disinfection would then be provided by the Town of Caneadea WWTP. The project also includes adding manholes to the existing collection system in order to better identify potential sources of inflow and infiltration.

Total Project Cost: $3,553,000 Construction Start Date (Target): 2023

Comments: Project provides disinfection by consolidating treatment at the Town of Caneadea WWTP.

A. EXISTING SOURCE CRITERION

The Town of Hume received notice that it will need to add disinfection at its WWTP as a condition of its next SPDES permit renewal in 2024. The Town has also received notice of non-conformance from the USEPA and a notice of violation from the NYSDEC for exceeding its SPDES permit discharge limits. Additionally, DEC notified the Town that it must prepare a flow management plant since flow to the WWTP exceeds 95% of its design capacity. Due to the limited treatment capacity of units at the wastewater treatment plant, the plant exceeds its SPDES permit and is a significant source of pollution *(Points 25).*

B. WATER QUALITY IMPROVEMENT CRITERION

Drainage Basin Code:

Major Drainage Basin: 04 Sub Drainage Basin: 03

Water Index Number: Ont 117-116-1

Receiving Water Name: Unnamed Tributary to Genesee River

The receiving body of water is a Class D unnamed tributary to the Genesee River. The River is a Class C water body at the confluence with the unnamed tributary, but is a Class B water body in the next section below the tributary, eventually becoming a Class A water body at Mt. Morris

(CPF Points 4). Sections of the Genesee River below the tributary are stressed due to water level/flow, nutrients, and silt/sedimentation *(IF Points 2).* The proposed improvements will prevent additional BOD and TSS from being introduced into the water body, potentially reducing the impairment level by one level *(PIF Points 2, Total WQIC Points 16).*

C. CONSISTENCY WITH MANAGEMENT PLANT CRITERION

The project will address a secondary or priority water quality problem by reducing the amount of BOD and TSS that may be discharged to the Genesee River, which is consistent with the Great Lakes Program *(Points 10).*

D. INTERGOVERNMENTAL NEEDS CRITERION

Construction of a regional pump station that discharges to the Town of Caneadea wastewater plant that allows reasonable growth of the collection system within the Town, and to potentially expand its service area so densely populated areas can connect to the system, thereby eliminating the need for individual treatment systems in the service areas. The project will consolidate treatment at the Town of Caneadea Houghton Sewer District treatment plant and require an inter-municipal agreement for treatment of the Hume waste. Without the agreement, the Town of Hume cannot proceed with the project *(D1, Points 10).* Upgrades to the Town of Caneadea's wastewater treatment plant that brought it into compliance with current design standards were completed in 2015. The plant has sufficient capacity to treat flow from Town of Hume *(D. Points 5, Total 15).*

E. FINANCIAL NEED CRITERION

The Town of Hume MHI is well below the statewide MHI, so the project has a financial need *(Points 10).*

F. ECONOMIC NEED CRITERION

The project is not part of an Empire Zone or NYS Open Space Plan *(Points 0).*

Total Project Ranking System Score: 76

The project is not currently included in a project financing agreement.

Total IUP Listing Score: 76

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I. INTRODUCTION

The Town of Hume (Town) received notice in March 2019 from the New York State Department of Environmental Conservation (DEC) that, as a condition of renewal for its wastewater treatment plant (WWTP) State Pollution Discharge Elimination System (SPDES) permit, disinfection will be required in 2024. The notification encouraged the Town to apply for a Wastewater Infrastructure Engineering Planning Grant (EPG) to prepare this Preliminary Engineering Report and to apply for a Water Quality Improvement Project (WQIP) program grant to fund construction of the disinfection system.

In response, the Town Board applied for an EPG and commissioned MRB Group Engineering, Architecture & Surveying, D.P.C. ("MRB") to study the feasibility of adding disinfection to the WWTP and to review other alternative projects that address collection and treatment system concerns.

This Preliminary Engineering Report ("PER"), which describes proposed disinfection, and treatment and sanitary sewer system improvements, is intended to support the Town's WQIP funding application and has been prepared in accordance with the *Engineering Report Outline for New York State Wastewater Infrastructure Projects* (Effective date October 1, 2018).

II. PROJECT BACKGROUND AND HISTORY

A. SITE INFORMATION

1. Location

The WWTP is located on Route 19A, north of the Hamlet of Fillmore (Tax Parcel 16.00-1-31.5). The entrance drive is across the road from 10932 Route 19A. The WWTP service area is an existing sewer district within the Hamlet of Fillmore. Figure II.1 depicts the Hamlet of Fillmore and the relative location of the WWTP.

2. Geologic Conditions

Located within the project area are 24 different soil types (NRCS Soils Database) with hydraulic types being A (14), B (5), C (1), D (1), E (1), F (2). The depth to bedrock ranges from more than 80 inches to as low as 20 inches. Listed depths to water table range from 0 feet to 6 feet. Ten of the soils are listed as well-drained, five as somewhat poorly drained, five moderately well drained, and four as poorly or very poorly drained.

3. Environmental Resources

The project is set in a rural/residential area, mainly consisting of single family homes. A review of available mapping indicates that National Wetlands Inventory (NWI) classifies some areas around the Hamlet of Fillmore as wetlands. There is also a New York State Regulated Wetland Check Zone on a possible forcemain route to the Town of Caneadea (Caneadea).

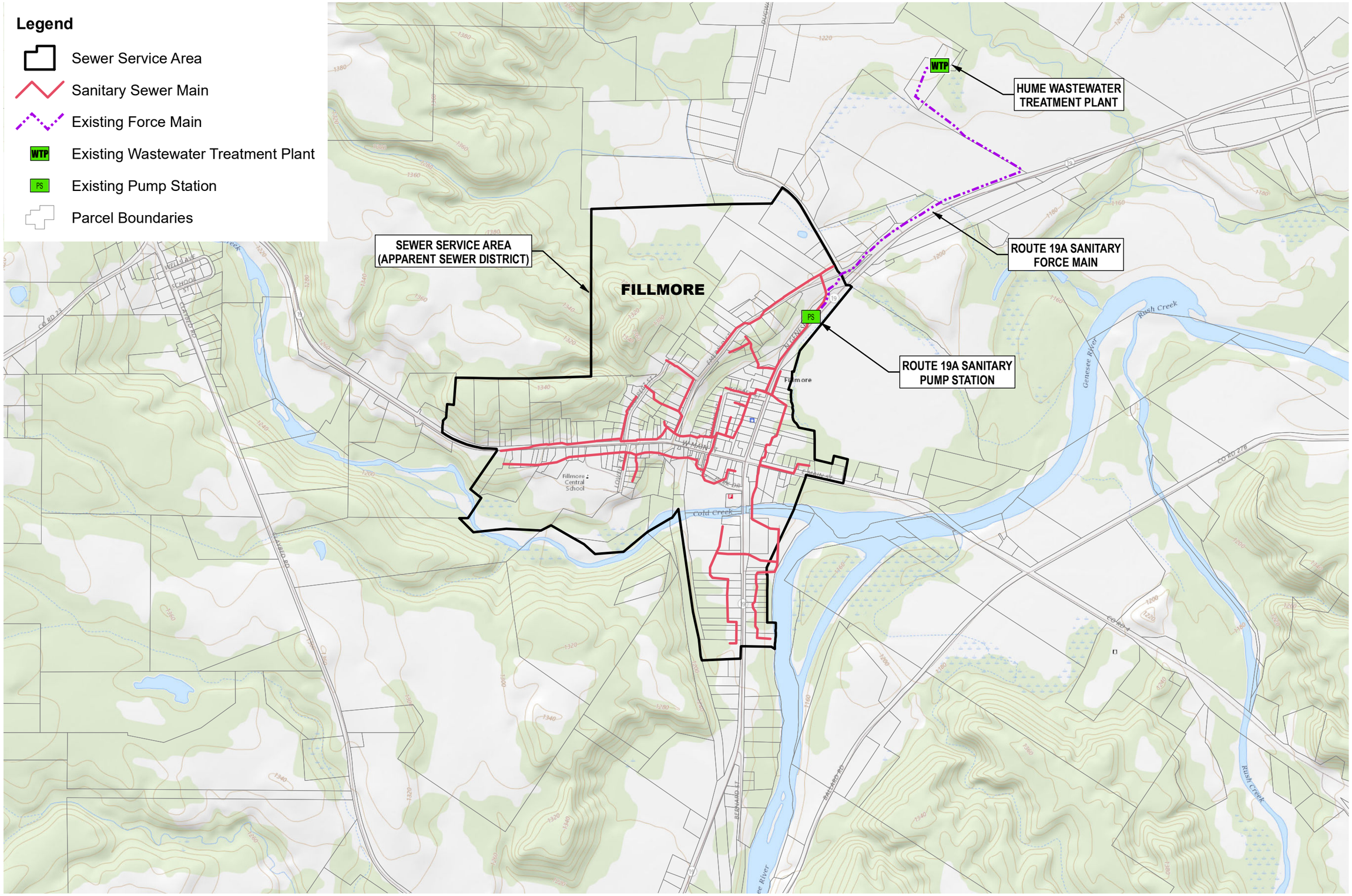
The majority of the project area, along Route 19, falls adjacent to Agricultural District 1 of Allegany County. A Notice of Intent will be filed with the New York State Department of Agriculture and Markets to demonstrate that the project will not have an unreasonably adverse effect on the continuing viability of farm enterprises within the district; or State environmental plans, policies and objectives, per Section 305(4).

Much of the Hamlet of Fillmore and the site of the treatment facility is classified as archaeologically sensitive areas. A subsequent Phase 1A cultural resource survey may be required to confirm no impacts.

The WWTP discharges to a Class D un-named tributary to the Genesee River. The Genesee River is a Class C water body at the confluence with the unnamed tributary, but is a Class B water body in the next section below the tributary, eventually becoming a Class A water body at Mt. Morris. Sections of the Genesee River below the tributary are stressed due to water level/flow, nutrients, and silt/sedimentation.

Legend

- Sewer Service Area
- Sanitary Sewer Main
- Existing Force Main
- WTP — Existing Wastewater Treatment Plant
- PS — Existing Pump Station
- Parcel Boundaries



TOWN OF HUME

ALLEGANY COUNTY, NEW YORK

LOCATION MAP

Drawn By:	Scale:	Date:
TJV	1" = 1,000' @11"x17"	SEPT 2019

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PROJECT NO.

0809.19003

FIGURE

II-1

FILE PATH LOCATION N:\0809.19003.000\dwg\GIS\Figure_II_1_11x17_L.mxd

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The project setting is typical of wastewater infrastructure projects funded in rural Allegany County in terms of the environmental resources present, and the associated permits that will be necessary from the NYSDEC and Army Corps of Engineers ("ACOE"). There do not appear to be any significant environmental or cultural resources that will be prohibitive to the development of the project. All appropriate environmental and cultural resources will be investigated and documented as part of the required State Environmental Quality Review ("SEQR"), including historic and archaeological sites and critical species and habitats.

4. Floodplain Considerations

The project area includes regions determined by the National Flood Insurance Program as Zone AE, X – Other Flood Areas, X – Other areas. (Community Panel Number: 361007 0026 B, October 2, 1997).

Zone AE is an area with base flood elevations determined. Portions of the project area within Zone AE include North Genesee Street (SR19A) between just south of Emerald Street to just south of Torpey Street, portions of Torey Street, and portions of the manufactured home community on South Genesee Street (SR19). An existing sanitary pump station located on North Genesee Street is potentially in Zone AE.

Zone X – Other Flood Area is an area of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. Portions of the project area in this zone include North Genesee Street south of Torpey Street, South Genesee Street to the south end of the sewer district, East Main Street to the east end of the sewer district, West Main Street (SR19) to Minard Street, Minard Street and portions of Torpey Street.

Zone X – Other Areas are areas determined to be outside 500-year floodplain. The balance of the project area, including SR19 from the south edge of the existing sewer district to the Town line is in Zone X – Other Areas.

B. OWNERSHIP AND SERVICE AREA

1. Outside Users

All users are within the existing sewer district. There are no immediately planned or expected changes to the user base in any of the alternatives.

2. Industrial Dischargers

None of the parcels in the service area are zoned for or are currently being utilized as industrial usage. Therefore, no industrial discharges are anticipated in the project area.

3. Population Trends and Growth

Cornell University's, Cornell Program for Applied Demographics, shows a steady decrease in population for Allegany County through year 2040. According to the Cornell program, the population of Allegany County is anticipated to decrease by 7.8% by year 2040. Even though Cornell predicts a steady decrease in County population, it is assumed for purposes of this PER, that the population will remain relatively flat due to the limited availability of developable parcels within the existing service area.

According to the 2015 5-year census update, the population of the Fillmore CDP is 596. A CDP is a "Census Designated Place," which is an area recognized by the local community that does not have a municipal boundary. The population of a CDP is arbitrarily defined by the requesting community and may be based on zip code. In the case of Fillmore, it is likely based on the former Village of Fillmore boundaries. The US Census reports that the population of the Fillmore CDP in 2010 was 603. However, not all of the parcels within the CDP are in the sewer district.

According to the Town of Hume Assessor, the existing sewer district includes 247 parcels; and according to the Town Clerk, the existing sewer district includes 205 accounts. Based on meter reading data for 2018, a typical single-family residential property utilized approximately 43,580 gallons of water per year. Table II.1 lists the number of parcels and sewer accounts by property type.

Table II.1: Existing Sewer District

Property Type	Parcels	Accounts	Annual Water Use	EDU
Residential				
Single Family Residential	149	144	6,275,615	144.1
Multi-Family Residential	17	17	966,424	22.2
Commercial				
Mobile Home Park(1)	1	1	586,725	13.5
Apartments	3	3	328,475	7.6
General Commercial	19	17	1,289,420	29.6
Community Services				
Fillmore Central School	2	2	777,524	17.9
Community Services	16	8	221,880	5.1
Public Service	9	2	44,220	1.1
Vacant	31	11	292,600	6.8
Total	**247**	**205**	**10,782,883**	247.9

(1) 10 Mobile Homes in 2016 NYS Imagery

Table II.2 lists the estimated population of the sewer district based on a flat population growth and US Census household size estimates of 2.56 for owner occupied housing units and 2.28 for tenant occupied rental units.

Table II.2: 2019 Sewer District Population Estimate

Property Type	Population
Residential	
Single Family Residential	369
Multi-Family Residential	51
Commercial	
Mobile Home Park	31
Apartments	18
Total	469

C. EXISTING FACILITIES AND PRESENT CONDITION

1. Overview

a. General

The Town of Hume's wastewater collection system is a graywater system with each sanitary service having an individual septic tank. The purpose of each septic tank is to provide primary treatment, i.e. primary settling and anaerobic digestion of accumulated

solids. The septic tanks discharge into approximately 3.4 miles of 4-inch sewers and 0.6 miles of 6-inch sewers. The sewer system drains to a central pump station that transports the primary treated wastewater to the WWTP.

Record drawings from 1986 show that the WWTP was originally built as an intermittent, open bed filter with a rated capacity of 35,000 GPD. According to the Town of Hume, the original plant was converted to a recirculating open bed filter system shortly after being first placed in operation. The WWTP now includes settling basins, a dosing tank, three open bed filters with fine gravel media, recirculation pump station, and effluent monitoring manhole. Typically, filter material is replaced every 5-6 years with the last replacement being in 2013. The current SPDES permit lists the capacity of the existing WWTP as 45,000 GPD.

In accordance with the Town of Hume sewer ordinance, the Town of Hume operates and maintains the graywater collection system, individual laterals from the collection system to each property's septic tank, each property's septic tank, and the WWTP.

b. Permit Conditions and Effluent Discharge Limits

The Town of Hume's existing WWTP currently operates under SPDES permit number NY0203858 regulated by the DEC. The most recent permit (dated 07/01/2018) was renewed by extension with an expiration date of 06/30/2023. The SPDES permit contains seasonal limits. Throughout the year, the plant needs to monitor Flow, Suspended Solids, Total Phosphorous, Ammonia, Settleable Solids, pH, Dissolved Oxygen and Temperature. From June 1 to October 1, the plant also needs to monitor TKN (as N), $CBOD_5$, and UOD. From November 1 to May 31 the plant needs to monitor BOD_5. Effluent limits and monitoring requirements are called out for in the SPDES permit (see Appendix A).

In February 2019, the Town received notification of a future SPDES permit modification that will require effluent disinfection (Appendix B). The notification also includes the following anticipated draft permit requirements:

- Disinfection required May 1- October 31 each year, beginning in 2024.
- Fecal coliform effluent limit of 200 (30-day geo mean) and 400 (7-day geo mean).
- If UV disinfection is selected, then chlorine monitoring will not be required. If chlorine disinfection is selected, then a total residual chlorine daily maximum effluent limit of 0.030mg/L (estimated) will be required. Effluent de-chlorination will likely be required to maintain adequate disinfection.
- Compliance schedule to submit final engineering documents in 2022 and begin operation in 2024.

The Town and DEC's regional engineer met at the WWTP in May 2019 to discuss the proposed permit modification and the condition of the existing WWTP. During the meeting, an overlap between quarterly monitoring report dates and season sampling requirements was discussed. It was agreed that the draft permit modification will be amended to change the reporting frequency from quarterly to monthly.

c. Compliance Issues

In May 2018 and in July 2019, the DEC notified the Town that it must prepare a Flow Management Plan (FMP) because the average flow to its WWTP exceeded 95% of the plant's design flow capacity for several quarters during the preceding three years (Appendix C). The requisite FMP was prepared and submitted to DEC in August 2018. As recommended in the FMP, the Town has also made efforts to identify and remediate sources of inflow and infiltration into the collection system, and to improve conditions at the WWTP.

The Town also received a letter of Significant Non-Compliance (SNC) from the EPA in December, 2018, and a notice of violation (NOV) from the DEC in February 2019; both for failing to meet effluent limits. Both notices required the Town to review its treatment system, provide reasons for the exceedances, and develop a plan to prevent future violations.

Appendix D contains a summary of the discharge monitoring report (DMR) results from 2015-2018. Calculated based on laboratory sample results, the summary data may be different than values reported in the DMRs. Review of the DMRs identified some math errors and sampling irregularities. While the SPDES permit contains seasonal sampling requirements, it appears that the samples were analyzed for the year based only on the November 1 to May 31 permit requirements.

Review of laboratory sample results from 2015 to 2018 found that no samples were analyzed for CBOD and that the Ultimate Oxygen Demand (UOD) reported in the DMRs were based on BOD. Since UOD is a function of CBOD, it is possible that the UOD results were overstated, potentially leading to the reported exceedances.

A summary of the exceedances noted during review of the DMRs can be found in Table II.3. Copies of the detailed facility and quarterly reports are on file with the DEC.

In conformance with the NOV, the Town sent a response to both EPA and DEC in April, 2019. As a result of the NOV and SNC, the Town has also required the WWTP operator to attend training and obtain a Grade 1 operator certificate.

Table II.3: Reported Treatment Plant Exceedances

Year	Parameter	No. of Exceedances
2018	Flow	4
	Ultimate Oxygen Demand	4
	BOD, 5-day, 20 ^{o}C	3
	BOD, 5-day, % Removal	1
2017	Flow	3
	Ultimate Oxygen Demand	4
	BOD, 5-day, 20 ^{o}C	1
	BOD, 5-day, % Removal	1
2016	Flow	1
	Ultimate Oxygen Demand	4
	BOD, 5-day, 20 ^{o}C	2
	BOD, 5-day, % Removal	2
2015	Flow	2
	TSS, Month Avg.	1
	Ultimate Oxygen Demand	4
2014	BOD, 5-day, 20 ^{o}C	2
	TSS, 7 Day Avg	1
	TSS, Month Avg	1
	BOD, 5-day, % Removal	1

d. Design Flows and Waste Loads

The *Recommended Standards for Wastewater Facilities* ("RSWF") suggests an average daily hydraulic load for new collection systems of 100 gallons per capita day. This load, in conjunction with recommended peaking factors, is intended to cover normal infiltration into a collection system. *Guides for the Design of Wastewater Treatment Works* ("TR16") recommends an average daily residential flow of 70 gallons per capita day plus an allowance of 250-500 gallons per day per inch diameter per mile of sewer for infiltration.

According to RSWF and TR16 (collectively the "*Standards"*), the anticipated Biochemical Oxygen Demand ("BOD") for domestic sewage is 0.22 pounds per capita day, the Total Suspended Solids ("TSS") demand for domestic sewage is 0.25 pounds per capita day. Table II.4 lists the estimated hydraulic and organic demands from the project area based on the population estimates in Table II.2.

Table II.4: Design Flows and Waste Loads

Loading	RSWF	RT16
Average Day (gpd)	46,900	37,175
Maximum Day (gpd)	93,800	107,180
Peak Hour (gpm)	130	147
BOD5 (lbs/day)	103	103
TSS (ls/day)	117	117

Design average day flow estimates listed in Table II.4 are based on estimated hydraulic and organic demands for the collection system based on population estimates identified in Table II.2. The table indicates that, based on current *Standards*, the existing WWTP may be undersized since it has a permitted capacity of 45,000 GPD.

e. Existing Flows and Waste Loads

Town of Hume measures the flow from the WWTP via a 30 degree V-Notch weir located downstream of the filters. Flows recorded on the daily operating reports from January 2015 through December 2018 are summarized in Table II.5.

Table II.5: Existing WWTP Flows (GPD)

Year	Avg. Monthly	Max Day
2015	43,750	85,000
2016	42,250	86,000
2017	50,750	121,000
2018	50,750	129,000
Overall	46,875	129,000

Peak instantaneous flows to the Route 19A pump station or from the WWTP are not recorded. Estimated Peak Hour flow to the pump station, based on the *Standards*, ranges from 141 gallons per minute (gpm) (RSWF) to 201 gpm (TR16).

Existing wastewater is graywater primarily comprised of domestic waste and limited commercial waste. A summary of the 2018 biochemical oxygen demand (BOD_5) concentrations, total suspended solids (TSS) concentrations, pH, total Kjeldahl nitrogen (TKN) and temperature in the influent wastewater is presented in Table II.6.

Table II.6: Existing Influent Loads

2018	Average	Minimum	Maximum
BOD (mg/L)	91.48	48.80	148.00
TSS (mg/L)	25.70	11.70	56.00
pH (S.U.)	6.93	6.70	7.10
TKN (mg/L)	42.66	30.20	58.90
Temp (°C)	12.62	7.30	18.50

The sample data represents wastewater that has received primary treatment via the individual septic tanks. In comparison to typical domestic wastewater, BOD_5 concentration is weak (typically < 110 mg/L), TSS concentrations are weak (typically <100 mg/L), and the average TKN concentration is considered medium to strong (typically 40 mg/L to 85 mg/L). The pH of the influent wastewater is generally neutral ranging between 6.7 and 7.1. Influent temperature fluctuates based on seasonal weather conditions.

f. Future Flows and Waste Loads

The existing sewer district includes approximately 31 vacant parcels and five (5) single family parcels that do not have a sewer account. It is possible that some of these parcels may be developed over the next 20 years resulting in added demand to the system.

Review of 2018 water meter billing data indicates that the average daily demand for customers that are also in the sewer district was approximately 29,540 GPD. As shown in Table II.5, the average daily flow to the WWTP in 2019 was approximately 50,750 GPD. The excess flow (21,210 GPD) is attributed to inflow and infiltration (I/I). Potentially, flow to the WWTP may decrease as the Town reviews and addresses sources of I/I in accordance with the FMP.

Residents in the Hamlets of Hume, Rossburg and Wiscoy within the Town of Hume have expressed an interest in public sewers. A Preliminary Engineering Report prepared in 2012 explored the possibility of providing sewers to these areas through district expansion. At the time, the Town concluded that the cost was not reasonable and chose not to move forward with expanding the sewer district.

Based on these three items, and as previously stated, for purposes of this evaluation it is anticipated that the sewer demand will remain relatively flat for the next several years since it is likely that any growth in the system will offset flow reduction afforded by addressing I/I in the collection system.

g. Existing Energy Consumption

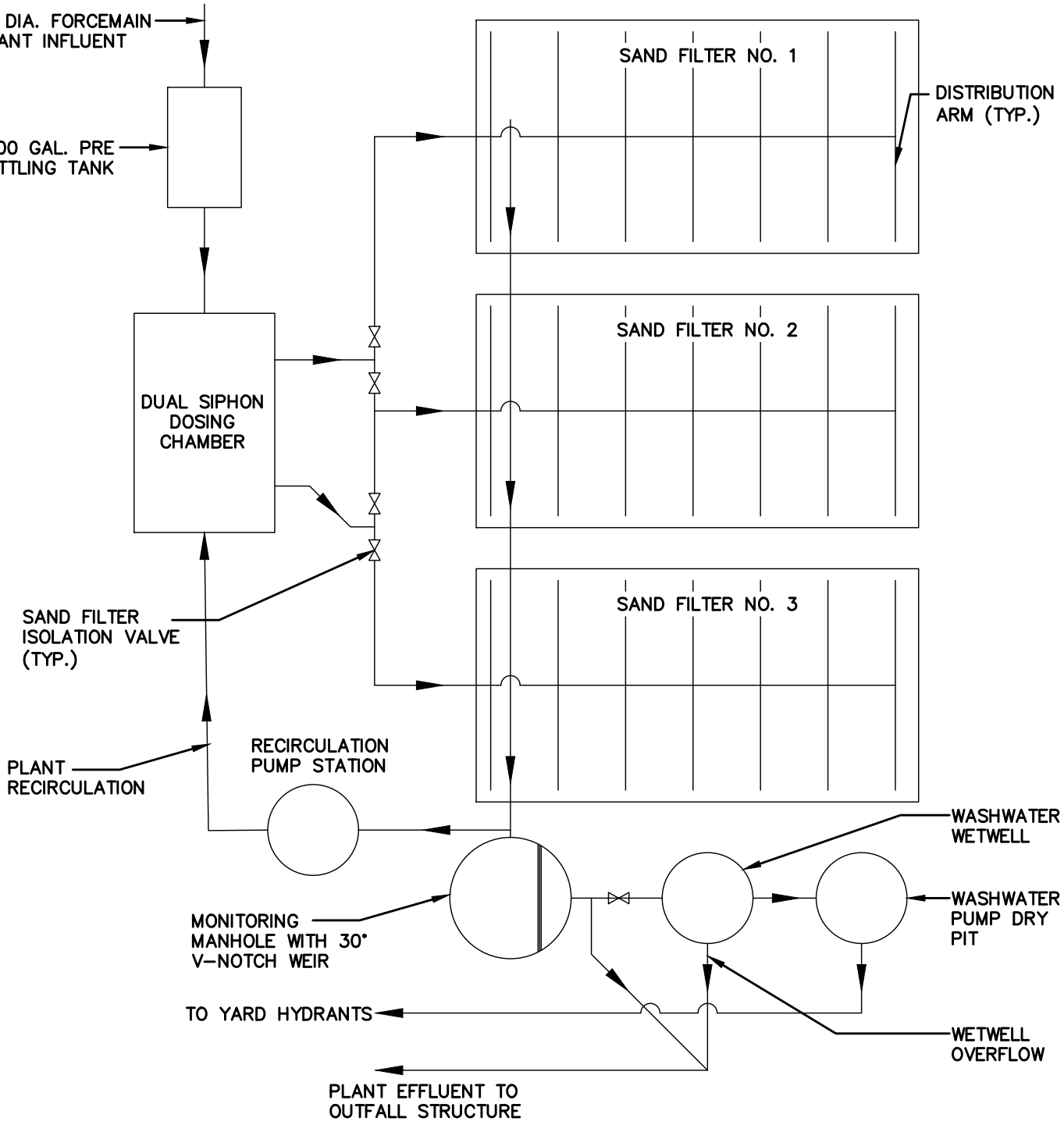
The primary energy usage for the wastewater system are the pumps at the Route 19A pump station, the recirculation pump at the WWTP, and incidental power usage at the WWTP for the plant office. The 2019 sewer budget by the Town includes $7,000 for utility costs.

h. Site Layout

The WWTP consists of three primary settling tanks, a dosing tank with dual automatic siphons, three (3) recirculating fine gravel filters, flow monitoring and recirculation manholes, and a six inch diameter treated effluent pipe. Refer to Figure II.2 for a flow schematic of the existing WWTP. Refer to Appendix E for a schematic of the existing collection system.

i. History of Damage Due to Storm or Flood Impacts

The WWTP has not suffered damage due to storm or floods. However, the Genesee River may have damaged portions of the collection system. A portion of the sewer system that services areas south of Cold Water Creek is close to the Genesee River, inside a mobile home park. The River has moved since the sewers were constructed and flooding damaged three or four mobile homes in the park. The affected mobile homes were removed.



TOWN OF HUME WWTP FLOW SCHEMATIC

Project Name: **TOWN OF HUME ALLEGANY COUNTY, NEW YORK**	Project No. 0809.19003.000

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Drawn By: DCA					Sheet No. II-2
Checked By: DCA					
Scale: N.T.S.					Drawing of Origin:
Date: JUN 2019	No.	Revisions	By	Date	
	Distribution:				

The Town of Hume suspects, but has not been able to confirm, that the associated septic tanks and laterals may have also been damaged, potentially allowing I/I into the collection system. In accordance with its FMP, the Town is currently investigating the site to verify how the laterals and septic tanks were abandoned.

2. Existing Collection System

The following summarizes the capacities of each unit process within the collection system in comparison with the *Standards*. Detailed calculations are included in Appendix F. Capacities of the individual units are based on available record drawings, manufacturer's literature, and application of the *Standards* as appropriate.

a. Septic Tanks

Primary treatment is provided by individual septic tanks located on each sewer service. According to the *Standards*, septic tanks shall be at least 1,000 gallons.

According to the Village of Fillmore WWTP Operation and Maintenance Manual (Fagan Engineers, 1987) ("O&M Manual"), each property in the sewer district was provided with a 1,000 gallon capacity septic tank at the time of construction of the system.

b. Collection Sewers

Effluent from the individual septic tanks discharges to 4-inch collection sewers. The section of 4-inch sewer, with the highest flow is located on West Main Street where it crosses to Minard Street. At this point the 4-inch sewer has a slope of 0.46%. Utilizing Manning's equation, the hydraulic capacity of the sewer is 90 gpm. This section of sewer receives flow from the Fillmore Central School from a pump station owned and operated by the school district. The discharge capacity of the school's pump station is unknown.

c. Interceptor Sewer

Flow from the collection sewers discharges to 6-inch interceptor sewers. Manning's Equation is utilized to calculate the hydraulic capacity of the interceptor immediately upstream of the pump station. This sewer is polyvinyl chloride (PVC) at a slope of 0.2%. According to Manning's Equation, the capacity of the interceptor sewer is 173 gpm. As previously discussed, the estimated peak hour flow from the collection system is between

141 and 201 gpm, which is potentially greater than the calculated capacity of the interceptor sewer at the pump station.

3. Existing Unit Processes – Route 19A Pump Station

The following summarizes the capacities of each unit process within the Route 19A pump station in comparison with the *Standards*. Detailed calculations are included in Appendix F. Capacities of the individual units are based on available record drawings, manufacturer's literature, and application of the *Standards* as appropriate.

Table II.7 lists the design flows utilized for evaluating Route 19A pump station. The following sections more fully describe the basis for the design flow rates.

Table II.7: Route 19A Design Influent Rates

Design Flow	Rate
Average Day (GPD)	50,750
Maximum Day (GPD)	129,000
Peak Hour (gpm)	145

i. Capacity

The Route 19A pump station includes two submersible pumps that operate on a lead / lag basis, valve vault, and overflow tank. The overflow tank connects to the wet well via two 6-inch pipes, the lower of which is installed with a flap valve that prevents the tank from filling during normal operation while allowing it to drain back to the wet well during peak demands. This tank provides storage during peak flow and if the pump station is off line due to pump or power failure. According to the O&M Manual for the pump station, each pump has a design capacity of 81 gpm at 88 feet of head.

The *Standards* state that for sanitary pump stations that multiple pumps shall be provided; when only two pumps are provided they shall be of equal capacity such that any one pump can provide the peak hour flow. Therefore, in accordance with the *Standards*, the peak hour capacity of the pump station is 81 gpm. However, since the station operates on a lead lag basis, the second pump can turn on at a high level. Based on the system curve for the station, it can supply 92 gpm at 98 ft of head with both pumps running.

Estimated peak hour flow from the collection system to the Route 19A pump station is approximately 141 gpm to 201 gpm, which is greater than the maximum capacity of the

pump station. The existing pump station does not meet the *Standards* since it cannot provide peak hour flow even with both pumps in operation.

Daily operating records for the WWTP show that the maximum daily flow to was 129,000 gallons. Based on a flow of 92 gpm with two pumps operating, the pump station must have operated for at least 1,402 minutes (0.97 days). The maximum water level visually observed in the pump station was reported as within 18-inch of the ground surface. Review of pump station cycles times based on the two potential peak hour flows indicates that at 145 gpm the pump station fills in 2.7 hours; at 201 gpm it fills in 1.3 hours. Since the Town has not reported sewer overflow incidents caused by excessive flow to the station, it is likely that the actual peak flow to the station is approximately 145 gpm. For these reasons, review of the system is based on a peak hour flow to the Route 19A pump station of 145 gpm.

The *Standards* recommend a 1.1 to 1 (1.1:1) safety factor for pump station design based on peak hour flow. Therefore, the needed design discharge flow rate for the Route 19A pump station is (145*1.1=) 160 gpm.

ii. Wet Well Volume

Record drawings for the pump station show a storage tank connected to the pump station wet well that provides emergency storage in the event of pump station failure. In the event of a failure, the combined emergency storage of the wet well and tank, above the lag pump on level, is approximately 7,750 gallons. Under average day demands, this volume fills in 233 minutes, under maximum day demands it fills in 94 minutes, and during peak hour demands it can fill in 58 minutes.

The *Standards* recommend 24-hours of emergency storage in the event that emergency power is not available at the station. The emergency storage volume can be reduced provided an emergency generator or portable emergency pump can be readily connected to the system.

The Route 19A pump station includes connections for a portable emergency generator and portable pump. However, these units are not readily available since the closest units available for rent are over 1.5 hours away and the response time for delivery is over 3-

hours. Town of Hume does not own a portable generator that can power the station or a portable pump that can bypass the station.

Because the Route 19A pump station cannot provide anticipated peak hour flows, and because it lacks storage time needed to connect an emergency bypass pump, the existing pump station does not meet current design *Standards*.

b. Forcemain

Current *Standards* recommend a minimum velocity for a sanitary forcemain of 3 ft/s in order to re-suspend solids deposited in a pipeline between pumping cycles.

The velocity through the existing 4-inch forcemain, based on the existing Route 19A pump station capacity of 81 gpm, is just above 2 feet per second (ft/s). This design velocity conformed to the design standards at the time of original construction.

Table II.7 lists the estimated inflow rate to the Route 19A pump station as 145 gpm. As previously discussed, the needed design flow from the Route 19A pump station including a 1.1 factor of safety is 160 gpm. At this flow rate, the velocity in the 4-inch forcemain is over 4.0 ft/s. However, this velocity results in an anticipated discharge head at the pump station of approximately 156 feet. Review of solids handling pump literature, and discussions with local manufacturer's representatives, could not identify a pump that operates under these conditions. Therefore, the 4-inch forcemain may actually be undersized for the needed peak design flow rate from the station.

4. Existing WWTP

The following summarizes the capacities of each unit process as the existing WWTP in comparison with the *Standards*. Detailed calculations are included in Appendix F. Capacities of the individual units are based on available record drawings, manufacturer's literature, and application of the *Standards* as appropriate.

Table II.8 lists the design flows utilized to evaluate the individual unit treatment processes within the WWTP. The following sections more fully describe the basis for the design flow rates.

Table II.8: WWTP Design Influent Rates

Design Flow	Existing	Needed
Average Day (GPD)	50,750	50,750
Maximum Day (GPD)	129,000	129,000
Peak Hour (gpm)	81	160

a. Pre-Settling Tanks

Located at the head of the WWTP plant are a set of three tanks, installed in series, utilized for pre-settling before the recirculation/dosing tank. These tanks provide additional sedimentation to capture solids that may have passed through the individual septic tanks in the collection system. The tank capacities are 2,000 gallon with a surface area of 42.6-square feet, 1,500 gallon with a surface area of 42.6-square feet, and 1,000 gallons with a surface area of 24.4-square feet. The *Standards* state that settling tanks shall have a surface loading rate of 600 GPD/sf for small facilities under average day demands. The loading rate allowed for peak hour demand is 3,000 GPD/sf. An in-line filter located in the first tank removes materials that may affect the performance of the automatic dosing siphons and the filter distribution piping.

For design of settling basins, the *Standards* recommend that design flow be based on either maximum day flow or peak hour flow with a factor of safety (1.5x and 1.1x respectively).

Table II.9: Pre-Settling Tank Design Rates

Design Flow	Existing	Needed
Maximum Day (GPD)	129,000	193,500
Peak Hour		
Single Pump (gpm)	81	160*
Peak Hour (gpm)	92	

Note: *Needed peak hour flow of 160 gpm includes a 1.1x applied to the estimated influent rate of 145 gpm to the Route 19A pump station.

Because the pre-settling tanks are installed in series, the existing loading rate in the first two tanks are as:

- Maximum Day: 3,030 GPD/sf
- Peak Hour, One Pump: 2,740 GPD/sf
- Peak Hour, Two Pumps: 3,110 GPD/sf.

The existing loading rates exceed the *Standards* loading rate of 600 GPD/sf for maximum day. The existing loading rates also exceed the *Standards* peak hour of 3,000 GPD/sf when two pumps are running.

As previously discussed, the Route 19A pump station is undersized based on an estimated peak hour inflow rate of 145 gpm. Accordingly, the pre-settling tanks are also under sized based on a needed pump rate of 160 gpm with a 1.1x factor of safety. Based on this, according to the *Standards*, the needed surface area for a design maximum day demand of 193,500 GPD is 323 sf, and the surface area needed for peak hour demand (160 gpm) is 77 square feet. Therefore, a larger pre-settling tank is needed for conformance with the *Standards*.

b. Dosing Tank

i. Automatic Dosing Siphon

The existing dosing tank located upstream of the sand filters contains two 6-inch diameter siphons which alternate after each dosing cycle. According to the O&M Manual, the siphons are Fluid Dynamics, Inc., 6-inch Model 6-56 with a maximum discharge of 850 gpm, average discharge of 600 gpm, and minimum discharge of 340 gpm at low water level. According to the Fluid Dynamics, Inc., drawdown depth of the 6-inch siphon is 56-inches. Based on this, and a surface area of the existing dosing tank of 144 square feet, the operating volume of the tank is approximately 5,030 gallons per dose.

According to the *Standards*, siphons must have a capacity that is 125% to 200% of the maximum inflow rate. Based on an average dosing rate of 600 gpm, the apparent design maximum influent for the existing dosing tank ranges from 300 gpm to 480 gpm. Maximum inflow includes influent to the plant plus recycled water from the filters.

Located downstream of the filters is a recirculation pump station with a 1.5 HP, Goulds WS1512D pump that has a design capacity of 130 gpm. The existing peak hour flow from the Route 19A pump is approximately 81 gpm with one pump; 92 gpm with two pumps. The combined peak flow to the dosing tank therefore ranges from 211 gpm to 222 gpm. The recirculating ratio ranges from 1.41:1 to 1.60:1.

The existing 6-inch dosing siphons have adequate capacity for the existing combined influent rate plus recycle rate. However, as will be discussed later, the existing recycle ratio does not meet design standards.

The needed flow to the WWTP is 160 gpm and the recommended recirculation ratio is from 3:1 to 5:1 resulting in a combined design flow rate to the dosing tank ranging from 640 gpm to 960 gpm. According to the *Standards* the needed capacity of the automatic siphons is 1,280 gpm to 1,920 gpm. These dosing rates can be provided by 8-inch and 10-inch siphons respectively.

Therefore, the existing 6-inch automatic siphons are undersized to provide the needed flow rate to the filters.

ii. Dosing Tank

USPEA's *Onsite Wastewater Treatment Systems Technology Fact Sheet 1 - Recirculating Sand/Media Filters* ("FS11") provides guidance for sizing dosing tanks for recirculating filters. FS11 calls for dosing tank storage based on the difference between the influent flow rate to the dosing tank and the dosing rate out of the tank and a recommended dosing frequency of at least 48 per day. Based on 48 doses per day, needed automatic siphon dosing capacities range from 1,280 gpm to 1,920 gpm per dose, and the dosing tank needs an operating volume of 10,800 gallons to 16,100 gallons, which is greater than the existing operating volume of 5,030 gallons. Therefore, the existing dosing tank appears under sized based on needed design maximum day flow and recommended recycle ratios.

c. Recirculating Filters

Table II.10 lists the design flows utilized to evaluate the WWTP filters. The following more fully describe the basis for the design flow rates.

Table II.10: Filter Design Rates

Design Flow (GPD)	Existing	Needed
Maximum Day	129,000	129,000
Minimum Daily Dose	303,840	516,000
Maximum Daily Dose	319,680	774,000

The WWTP currently has three recirculating filters with fine gravel media. Two filters operate at any given time while the third rests. The filters are 50 feet x 100 feet at the

surface, narrowing down towards the bottom. The operating surface area with two filters in service is therefore 10,000 square feet. Based on the operating surface area of the existing filters, and the daily dose volumes listed in Table II.10, the existing filter loading rate ranges from 30.4 GPD/sf to 32.0 GPD/sf.

According to FS11, when gravel is utilized as a media, the daily hydraulic loading rate should be 10 GPD/sf to 15 GPD/sf with a combined daily loading of 30 GPD/sf to 75 GPD/sf. (Combined daily loading rate = design hydraulic loading rate plus recirculation rate.) The existing filter is at the lower end of the recommended loading rate; however, it does not provide the needed recirculation ratio of 3:1 to 5:1. The current system only provides a recirculation ratio of approximately 1.4:1 to 1.6:1.

Because the Route 19A pump station is currently undersized, it does not provide the estimated peak hour demands, which caused the filter surface area to be less than that recommended by FS11. In order to treat a design flow of 129,000 GPD, the surface area should be between 10,300 sf and 17,200 sf depending on recycle ratio.

For these reasons, the existing filters are undersized based on the criteria established in FS11.

d. Recirculation Manhole

A recirculation manhole located after the filters includes the 1.5 HP pump utilized to return filtered effluent to the head of the plant. The pump has a design flow rate of 130 gpm and provides an existing recycle ratio of 1.4:1 to 1.6:1. This flow rate is less than required to provide a recycle ratio of 3:1 to 5:1 recommended by FS11.

e. Flow Monitoring Manhole

Filter effluent travels to a 6-foot inside diameter manhole containing a 30 degree V-Notch weir utilized to measure flow from the WWTP. The depth of flow passing through the weir corresponds to a specific flow rate.

According to Record Drawings for the WWTP (Fagan Engineers 10/26/87) the maximum measurable flow depth through the weir is 14 inches or 1.167 feet. Therefore, the peak

capacity of the weir is 442 gpm, which is greater than the needed design flow rate from the Route 19A pump station.

f. WWTP Outfall Pipe

Manning's Equation was utilized to calculate the hydraulic capacity of the existing 6-inch diameter WWTP outfall immediately downstream of the flow meter structure. The outfall pipe is PVC and at a minimum slope of 1.1 percent. The capacity of the outfall pipe is therefore 380 gpm, which is greater than the needed design flow rate from the Route 19A pump station.

g. Sludge Disposal and Handling

The Town of Hume contracts with a local septic hauler to pump the sludge generated in the pre-settling tank at the wastewater plant site, and the individual septic tanks in the collection system, on a regular basis. Each individual septic tank is cleaned once every three years. Collected sludge is hauled to the Town of Caneadea WWTP for processing.

h. Disinfection

The Town of Hume WWTP does not now include disinfection. Modification of the treatment plant is necessary to add disinfection.

E. DEFINITION OF THE PROBLEM

The Town received notice in March 2019 from the DEC that, as a condition of renewal of its WWTP SPDES permit, disinfection will be required in 2024. Adding disinfection to the WWTP requires modification of the treatment process.

In May 2018 and in July 2019, the DEC notified the Town that it must prepare a FMP because the average flow to its WWTP exceeded 95% of the plant's design flow for several quarters during the preceding three years.

The Town also received a letter of SNC from the EPA in December, 2018, and a NOV from the DEC in February 2019; both for failing to achieve effluent limits for UOD.

Review of options for adding disinfection also included a review of the collection system and WWTP in order to identify shortcomings of the overall treatment process. Identified shortcomings include the following:

1. Effluent Disinfection

   Currently the treatment plant does not include effluent disinfection. Adding disinfection to the WWTP requires modification of the treatment process.

2. Collection System

   The existing collection system allows a significant amount of I/I. Sources of I/I are not readily identifiable without modification to allow video inspection of sewers. Designed as a graywater system, the existing collection system consists of small diameter pipes and only nine manholes located on either side of State Highway crossings and at the Route 19A pump station. The rest of the system includes cleanouts located at changes in pipe direction and after the individual septic tanks. Additional manholes are needed to facilitate sewer cleaning and to better assess potential sources of I/I utilizing video inspections.

3. Pump Station

   The existing pump station is undersized; it does not have the capacity to convey estimated peak hour inflows. Also, the Town of Hume cannot provide emergency power or bypass pumping during a power or pump station failure. Based on this, the pump station upgrades are needed to assure continual reliability.

   Review of the pump station, flow from the WWTP, and water meter billing data for customers within the sewer district, determined that the station is impacted by I/I. As a result, the station is undersized to properly handle existing system demands.

   Associated with the pump station is its forcemain to the WWTP. Review of the forcemain and pumps needed to discharge peak hour design flow determined that the forcemain may be undersized. The head and flow characteristics of the needed pump indicate that a pump may not be available. Increasing the size of the forcemain reduces system head loss, and results in a design point achievable by a solids handling pump.

4. Treatment Capacity

The existing WWTP does not include disinfection. Testing of the wastewater determined that UV disinfection is not an option. Therefore, the plant needs to be upgraded to include a chlorine disinfection contact tank, and a de-chlorination basin to prevent the discharge of chlorinated water to the environment.

The existing WWTP was designed as a graywater system, which limits the strength of the future wastewater it can accommodate. Accordingly, future connections to the system also need to include individual septic tanks. It is worth noting that this requirement is already included in the Town of Hume Sewer Use Law.

Existing flow to the plant exceeds its permitted capacity of 45,000 GPD, which prevents any reasonable growth in the system.

Review of the individual treatment units determined that the WWTP does not meet current *Standards* for recirculating filters nor does it provide the needed treatment capacity for existing collection system design maximum day flow.

Review of the filters determined that they were originally designed as intermit sand filters with sand media. The filters were converted to recirculating gravel filters shortly after first being put into service. While the media now utilized in the filters conforms to FS11, the combination of larger media, low loading rate, and low recycle ratio limits the biological performance of the system. Based on a site visit performed as part of this evaluation, at which time a section of the filter was exposed for repairs, it appears that these factors effectively allow short-circuiting of the system as evidenced by a lack of biological growth on the media and greater than expected biological growth at the WWTP outfall structure.

Modification of the WWTP is necessary to bring it into conformance with the *Standards* and FS11 in order to provide proper treatment, and to provide adequate disinfection.

5. WWTP Site

The existing WWTP is located on the northern end of the property with very little space available between the facility and the northern property line.

In order to add disinfection, and additional treatment necessary to bring the plant into conformance with current *Standards*, the WWTP site will either need to be reconfigured or additional land will need to be purchased from the neighbor.

6. Effluent Limits

Since the WWTP currently discharges to an unnamed tributary to the Genesee River, more stringent effluent limits are imposed. Most notably, the current SPDES permit requires a seasonal nitrogen and ultimate oxygen demand monitoring. Town of Hume also received a letter from the DEC requiring the addition of disinfection by 2024 along with a fecal coliform effluent limit. While not contemplated as part of the proposed permit modification, discussions with the DEC could not rule out the possibility of a reduced phosphorus limit being added sometime in the future.

F. FINANCIAL STATUS

Town of Hume's annual sewer budget is funded by user fees. For the fiscal year 2019 to 2020, the sewer rate is $3.50/1,000 gallons based on water usage, plus a quarterly charge of $72.00. The sewer district currently does not have a capital debt account. The recently paid off debt on the existing sewer district was paid for on an ad valorem basis.

III. ALTERNATIVE ANALYSIS

A. GENERAL

Alternatives considered for the project can be broken down into three components; Disinfection, Collection, and Treatment. Alternatives considered for disinfection include ultraviolet light (UV) and chlorination followed by de-chlorination. Alternatives considered for collection include adding additional manhole to allow more detailed inspection and repair of the existing sewerage system, replacement of the collection system with conventional sewers, and replacement with a low pressure sewer system. Alternatives

considered for treatment include replacing the existing system with a properly sized system, replacing with a subgrade treatment system, replacing with a packaged biological treatment system, and abandonment and replacement with a regional pump station that discharges to the Town of Caneadea.

B. DISINFECTION

There are three alternatives for providing disinfection; chlorination/de-chlorination, UV, or a regional pump station.

1. Chlorine Disinfection

Chlorine disinfection requires a chlorine contact tank and chemical feed system. Dosage is based on chlorine demand of the wastewater, which can change based on treatment system performance. For this reason, de-chlorination is also required in order to assure that the effluent chlorine concentration is below permitted limits. Adding chlorine disinfection to the WWTP requires construction of a chlorine contact tank and a de-chlorination tank, a chemical feed system including a small building to house the system, and purchasing land. Typically liquid sodium hypochlorite is utilized for chlorination due to its ease of use. Chlorine gas is an option but is a more hazardous material that requires specialized training, and can change the license required by the WWTP Operator.

De-chlorination requires a separate, downstream contact tank utilizing Sodium Bisulfite.

The *Standards* require the minimum contact period for chlorine disinfection at peak flow rate to be 30 minutes (unless specific testing can demonstrate the ability to achieve the discharge limit at lower contact times). The required contact period for de-chlorination is a minimum of 2 minutes at average flow rate.

Based on this, the minimum volume needed for a chlorine contact tank is 4,800 gallons at a peak flow rate of 160 gpm, which is the design flow rate for the Route 19A pump station. A serpentine tank with baffles would be constructed which provides a width-to-depth ratio of 1:1 and minimum length to width ratio of 40:1; both channel width and water depth

would be 3 feet. Two (2) interstitial baffle walls would provide a plug flow pattern through the tank with an effective channel length of 100 feet.

A flow diversion structure would be constructed immediately upstream of the chlorine contact tank. This will allow construction of the chlorine contact tank to proceed without bypass pumping. It would include a slide gate to terminate flow through the chlorine contact tank during the 6 months each year when effluent disinfection is not required.

2. UV Disinfection

Two effluent samples recently collected from the WWTP determined that UV is not an option for disinfection for the existing WWTP (Appendix G). Review of the effluent sample results by Trojan Technologies, Inc. (a UV system manufacturer) determined that the influent fecal count exceeds the treatment capacity of a UV system even at maximum UV dose. Sample results also reported that at the time the sample was collected, that it contained solids (further indicating short-circuiting of the existing filters).

It is important to note that the sample was collected from the existing effluent and that the existing plant does not operate according to the *Standards.* It is possible that UV may be an option in the future, but that depends on the performance of an upgraded treatment system.

Should UV become an option due to upgrades at the WWTP, it would be installed in an open channel containing two banks of eight (8) low pressure, high intensity lamps. A single bank would be designed to meet the peak flow and the second designed to provide complete redundancy. An overhead canopy structure would protect the UV system and associated electrical equipment from direct sunlight and precipitation, and to assist in preventing potential algae growth in the channel. Additional sampling would be required to determine the proper UV dose. Adding UV to the WWTP would also require an upgraded electrical service to the WWTP and an emergency generator to assure continual operation of the system.

3. Regional Pump Station

The final option for providing disinfection is to replace the existing WWTP with a regional pump station that discharges to the Town of Caneadea WWTP. Disinfection would then

be provided by the Town of Caneadea WWTP under its own SPDES permit discharge limit requirements.

C. COLLECTION SYSTEM

Flow to the WWTP currently exceeds 95% of the plant design flow. Because of this the DEC required the Town to review its collection system, identify potential sources of I/I, and to prepare a FMP for correcting deficiencies identified in the system. Based on the review of the system it is apparent that there are large amounts of I/I and its source is more wide spread than can be attributed to a single significant source. Based on this there are three alternatives to upgrade the existing collection system. The first is continued use of the system and adding manholes to allow video inspection, the second is to replace the system with a conventional sewer system, and the third is to replace the system with a low-pressure sewer system.

1. Continued Use of System

In accordance with DEC requirements, the Town of Hume developed a FMP to address I/I within its collection system. The Town of Hume is implementing the FMP by actively reviewing the collection system to identify deficiencies such as open cleanouts, cracked septic tank covers, and cross-connected sump pumps. These items only address surface inflow. In order to identify sources of sub-surface infiltration, such as cracked or otherwise damaged pipe, the Town needs to add additional manholes to allow video inspection of the sewers. One possible approach is to eliminate system cleanouts by adding manholes at changes in pipe directions.

The FMP recommends inspection of individual septic tanks. Most septic tanks are over 25 years old and are likely reaching the end of their functional life. As part of the FMP, the Town plans to inspect each septic tank when it is cleaned to verify the condition of its covers and internal components, and the integrity of the tanks. It is likely that as part of its annual sewer-operating budget that a portion of the septic tanks may need replacing each year.

Continued use of the existing system also includes upgrades to the existing Route 19A pump station and its forcemain. Upgrades are needed to provide peak hour flow as recommended by the *Standards*, and to provide a design point that is achievable by a standard, solids handling wastewater pump. Additional improvements are also necessary to increase wet well capacity and provide ready back up power or bypass pumping capacity.

Continued use of the collection system is only an option as a graywater system, or if the WWTP is eliminated and the wastewater is pumped to the Town of Caneadea.

2. Replace With Conventional Sewer System

Another option to address I/I is to assume that the entire collection needs replacing. By doing so the Town can replace the existing small diameter sewers with larger sewers that allow solids. Under this option, the Town can consider eliminating the individual septic tanks. Eliminating the septic tanks gives the Town treatment options such as constructing a conventional biological WWTP, or sending full strength wastewater to the Town of Caneadea. Eliminating the septic tanks is not an option with the existing WWTP. This option presents a challenge in that the new sewers will need to be constructed while keeping the existing system in operation.

For these reasons, and the excessive cost of full sewer replacement, this alternative is not considered technically or financially practical.

3. Replace With Low-Pressure Sewer System

The final collection system option is to replace the existing gravity system with a low-pressure sewer system.

a. Low-Pressure Sewer System Background

Low-pressure sewer systems utilize small grinder pumps at each wastewater source, and small-diameter low-pressure sewers for transmission either to a lift station or directly to a wastewater treatment plant. Wastewater from individual services is collected in small grinder pump stations.

A grinder pump station consists of an integral wet well that is typically 4 to 6 feet deep and made of fiberglass, plastic or steel with a diameter of 24 to 30 inches. Grinder pumps range from 1 to 5 horsepower, depending upon the type of pump selected and the number of units served. The wet well collects domestic sewage and when it is filled to a preset level, a level switch turns the pump on; all solids in the waste stream are then ground to a slurry and pumped through small diameter pressure sewers.

The wetwell can be located in an easement on private property or in the road right-of-way and requires a power source. Wetwells typically have either a lightweight aluminum lid or cast-iron lid. An anti-flotation base may be required in certain conditions. Since these systems do not rely on gravity, sewers can be constructed with a minimum cover (30 to 36 inches) and follow the topography of the land.

Low-pressure sewer systems have been successfully used in the United States and around the world for decades. They are considered to be very reliable and cost-effective. However, the performance of the system is dependent upon proper maintenance of the system.

Advantages of the low-pressure systems over other sewage collection systems include:

- Low-pressure mains are normally smaller than other systems.
- Low-pressure mains are typically installed at shallow depths and do not require installation at grade or with special elevation profiles.
- Construction is easier at shallow depths and has far less impact on existing roadways and utility lines.
- Directional drilling can be used to provide significant cost savings and minimal disruption of traffic and other utilities.

Disadvantages of the low-pressure sewer system include:

- Grinder pump stations have initial capital costs that are normally assigned to property owners. Each pump requires a 240 volt, 30 amp (240/30A) circuit. Properties that do not have a circuit available, or do not have an electrical service that can handle the additional electric load, will need to be upgraded by the Owner, at their own expense.
- Grinder pump stations require regular maintenance to continue functioning properly.
- Given that grinder pump stations require electrical power to operate, the system does not function when there are power outages.
- Air-release valves are required at high points in the system and require regular maintenance to avoid air locks.
- Pumps typically have a design life of 5 to 10 years.
- There is a potential for odors from older sewage and air release valves.

- The existing system needs to stay in service until the low-pressure sewer system is complete.

Two pumping alternatives used in low-pressure systems (centrifugal and semi-positive displacement pumps) were investigated. Discussions with representatives who supply semi-positive displacement and centrifugal grinder pumps suggest that the infrastructure costs are similar.

b. Pump Ownership

Installation, ownership, and maintenance of the grinder pumps vary from community to community where low-pressure sewer systems are being utilized. Responsibility for the grinder pumps is normally assigned to either the homeowner or the municipality.

In some communities, everything associated with the use of the grinder pump is assigned to the homeowner including:

- Purchase of pump and control panel package
- Installation of pump and control panel
- Connection from pump to side sewer lateral/service box
- Wiring of pump to the pump control panel
- Electrical circuit from house to pump control panel
- Connection of gravity building sewer to pump
- Abandonment of existing septic system
- Landscaping restoration
- Electrical power costs associated with the pump
- Maintenance, repair and replacement of pumps
- Notifying the governmental entity responsible for the sewer system in the event of a grinder pump alarm or a non-functioning system.

In those communities assigning complete responsibility for grinder pumps to the homeowner, the municipality will:

- Provide sewer service laterals
- Assist with locating the service lateral and service box
- Coordinate easements
- Provide an acceptable on-site contractor list
- Inspect on-site work

Town of Hume already has an established sewer district, owns and maintains the existing septic tanks and associated lateral, and has permanent easements for maintenance of the tanks and laterals. Because of this, the recommended approach is for the Town to purchase,

install, maintain and repair grinder pumps, and pay for properly abandoning the existing septic tanks. The homeowner would need to provide electricity for the pump and pay for necessary electric service upgrades as needed for operation of the pumps.

Major obstacles that may prevent implementing this system include the need to keep the existing sewerage system in operation throughout construction, coordination with homeowners to provide the necessary power by the time the system goes live, and to convince the public that change is needed to the system.

D. TREATMENT

1. Utilize Existing System

Continued use of the existing treatment system was not considered a viable alternative due to the previously discussed limitations. The existing treatment system is undersized and is unable to accommodate reasonable growth in the service area, or potential expansion of the service area to include the Hamlets of Hume, Wiscoy, and Rossburge. However, based on previous studies, expansion into these areas requires significant funding assistance to make it affordable to the potential users.

2. Upgrade Existing System

Based on the limitations with the existing treatment system it is necessary to upgrade the WWTP to conform to current *Standards*, provide treatment capacity for existing demands, and to accommodate reasonable growth within the collection system. Necessary upgrades include a larger pre-sedimentation basin, a larger dosing tank, upgraded automatic siphons, increased filter area, upgraded recycle pump station, and adding disinfection including purchasing additional land to house the disinfection equipment for SPDES permit compliance in 2024.

Upgrading the WWTP also requires the continued use of the existing, graywater collection system since it provides primary treatment in the individual septic tanks. Recirculating sand filters are not compatible with full strength wastewater without some form of primary treatment.

3. Replace with Subsurface Treatment

A relatively new technology, submerged-attached growth reactor (SAGR) offered by Nexom as part of their OPTAER treatment system, is another option that offers a good complement to the Town of Hume's graywater system.

This system consists of a vertical flow and an aerated horizontal flow reactor that in some ways function similarly to the existing filter beds. Vertical flow reactor is fed by dosing pumps and recirculates part of the flow back to the head of the reactor. Effluent from the first reactor then flows into the aerated horizontal flow reactor where nitrification, and BOD and TSS polishing is achieved. Aeration in the horizontal flow reactor is achieved through coarse bubble diffusers, which are also designed for direct burial in the reactor. The reactors are ideally suited for cold-weather nitrification as all of the parts are submerged and insulated by a top layer of mulch, woodchips or equivalent.

Construction of such a system would have to be on a different area of the parcel, but is achievable with some changes to the site piping at the plant. This system would also incur an O&M cost higher than the existing plant with the addition of 3 blowers; 1 for the vertical SAGR and 2 for the horizontal.

As with recirculating filters, a SAGR system requires the continued use of the existing graywater collection system since it provides primary treatment in the individual septic tanks. A SAGR system is not compatible with full strength wastewater without some form of primary treatment. An upgraded electrical service will be needed in order to handle the aeration equipment.

The use of a SAGR system may also require upgraded pre-sediment tanks that replace the existing tanks depending on the final design needs of the system.

Adding disinfection including purchasing additional land to house the disinfection equipment is also required for SPDES permit compliance in 2024.

4. Replace with Biological Treatment Plant

Upgrading the WWTP provides the opportunity to change the treatment process to a conventional biological process. One option is to install a packaged WWTP that includes flow equalization, aeration, clarification, disinfection and sludge storage. An upgraded electrical service will be needed in order to handle the aeration equipment.

It is also possible that the NYSDEC will require a new treatment plant to include nutrient removal since sections of the Genesee River, downstream from the plant, are considered impaired waters.

While this option can be designed to work with a graywater system, it is better suited for a full strength wastewater either from a conventional collection system or from a low-pressure sewer system.

Adding disinfection including purchasing additional land to house the disinfection equipment is also required for SPDES permit compliance in 2024.

5. Regional Pump Station

Due to the costs associated with adding disinfection, upgrading the existing WWTP to meet current hydraulic loads and *Standards,* consideration was given to upgrading the existing pump station so it can discharge to the Town of Caneadea's wastewater treatment plant through a dedicated force main.

Connecting to the Town of Caneadea system offers the benefits of eliminating operation and maintenance costs associated with the existing Hume WWTP. In their place however, would be a sewer charge imposed by the Town of Caneadea.

Discussions with the Town of Caneadea indicate that they are willing to accept the graywater from Hume. The Town of Caneadea WWTP was designed with suffuucinet capacity and treatment process to accept flow from the Town of Hume based on the eventuality that Hume may need to connect to their system.

Pumping to Caneadea can utilize the existing sewer system or be integrated into a low pressure sewer system. However, a low pressure sewer system can also be designed to discharge to the Town of Caneadea without a central pump station.

The most feasible forcemain route would be south from the pump station along Route 19A to Route 19, then continuing south along Route 19 to a manhole upstream of the Caneadea WWTP. The actual placement of the forcemain would need to be reviewed in more detail as the west side currently includes a water main, and the Greenway Trail runs along portions of the east side. Refer to Figure V.1 for a schematic of the force main.

E. Opinion of Probable Costs

1. Capital Costs

Opinions of probable project costs for each component of the wastewater system were developed based on bid prices for similar projects, manufacturer's quotes and information from construction cost databases such as RSMeans. Potential costs also include 15% construction contingency and 33% soft costs for legal, administration and engineering combined. The following summarizes the probable cost of each component. Probable Capital Project Budget for each alternative project are the sum of the components needed to create a project. Table III.1 lists each components associated with each alternative and summarizes total project costs.

Debt service calculations considered EFC financing based on Hardship and Long-Term Subsidized rates. Currently the Hardship rate is 0% for 30 years. The Town may qualify for Hardship financing since, according to the US Census, 2017 ACS 5-Year Estimates Subject Table, the median household income (MHI) for the Fillmore CDP is $36,625 and 14.9% of all people live below the poverty level. Effective October 2019, the regionally adjusted MHI for Upstate New York is $62,765. Hardship eligibility criteria include an MHI less than $50,212, or an MHI between $50,212 and $62,765 and a poverty rate of greater than 11.3%. Also considered was Long-term Subsidized financing with an effective annual rate of 2.94% for 30 years.

a. Disinfection Components

i. Chlorination/De-chlorination System

The probable cost to add a chlorination/de-chlorination system to the existing WWTP is $1,243,000 (Appendix H-1).

ii. UV Disinfection

While not technically feasible or recommended at this time, the probable cost to add UV disinfection to the existing WWTP, should it become viable in the future, is $991,000 (Appendix H-2).

iii. Regional Pump Station

(See component costs under III.E.1.d. below.)

b. Collection System Components

i. Conventional Sewer System

The probable cost to replace the existing small diameter graywater sewer collection system with conventional sewers designed for solids handling with standard manholes for maintenance and inspection of the sewer line is approximately $4,919,000 (Appendix H-3).

ii. Add Manholes

The probable cost to add manholes to the existing graywater collection system in order to allow maintenance and inspection of the sewer system, and to facilitate identifying potential sources of I/I is approximately $676,000 (Appendix H-4).

iii. Upgrade Route 19A Pump Station

The probable cost to upgrade the existing Route 19A pump station, so it can discharge to the existing WWTP site, provide peak hour flow capacity, add emergency power, and to conform to the Standards is $835,000 (Appendix H-5).

iv. Upgrade Forcemain to Existing WWTP Site

The probable cost to upgrade the forcemain from the Route 19A pump station to the existing WWTP site in order to allow effective pumping is $552,000 (Appendix H-6).

c. Treatment Component

i. Upgrade Existing Filters

The probable project cost to upgrade the pre-settling tanks, dosing tank and automatic siphons, and the recirculating sand filter so the WWTP process can treat flow from the existing system and reasonable growth in accordance with the current design Standards is $3,214,000 (Appendix H-7).

ii. Sub-Grade Treatment System

The probable cost to replace the existing treatment system with a submerged-attached growth reactor sized to treat flow from the existing system and reasonable growth is approximately $3,118,000 (Appendix H-8).

iii. Replace with Packaged Treatment

The probable cost to replace the existing treatment system with a packaged treatment plant sized to treat flow from the existing system and reasonable growth is approximately $4,086,000 (Appendix H-9).

d. Pump to Town of Caneadea WWTP Components

i. Forcemain

The probable cost to add a forcemain for conveyance to the Town of Caneadea WWTP is $1,832,000 (Appendix H-10).

ii. Low-Pressure Sewer System

The probable cost for a low pressure sewer system that discharges to the Town of Caneadea WWTP is approximately $3,453,000 (Appendix H-11).

iii. Regional Pump Station

The probable costs to abandon the existing wastewater treatment plant and pump station, and to build a regional pump station that discharges to the Town of Caneadea WWTP is $1,045,000 (Appendix H-12).

Table III.1: Capital Cost Budgets

Project Component	Base Cost	Upgrade Existing	New Subsurface Treatment	New Packaged Treatment	Low Pressure Sewers to Caneadea	Regional Pump Station to Caneadea
Disinfection						
Chlorine Contact / De-Chlorination	$1,243,000	$1,243,000	$1,243,000	$1,243,000		
UV System	$991,000					
Collection System						
Replace with 8-inch Sewers	$4,919,000					
Add Manholes	$676,000	$676,000	$676,000	$676,000		$676,000
Upgrade Route 19A Pump Station	$835,000	$835,000	$835,000	$835,000		
Upgrade Force Main to WWTP	$552,000	$552,000	$552,000	$552,000		
Treatment System						
Upgrade Recirculating Filters	$3,214,000	$3,214,000				
SAGR System	$3,118,000		$3,118,000			
Packaged WWTP	$4,086,000			$4,086,000		
Pump to Town of Caneadea WWTP						
Forcemain	$1,832,000				$1,832,000	$ 1,832,000
Low Pressure Sewer System	$3,453,000				$3,453,000	
Regional Pump Station	$1,045,000					$ 1,045,000
Total Capital Project Budget		$6,520,000	$6,424,000	$7,392,000	$5,285,180	$ 3,553,000

Table III.2: Capital Debt Service per EDU

EFC Cost per EDU	Upgrade Existing	New Subsurface Treatment	New Packaged Treatment	Low Pressure Sewers to Caneadea	Regional Pump Station to Caneadea
Hardship (0% for 30-Years)					
Total Capital Project Budget	$6,520,000	$6,424,000	$7,392,000	$5,285,000	$3,553,000
Rate	0%	0%	0%	0%	0%
Term	30	30	30	30	30
Annual Debt Service	*$217,333*	*$214,133*	*$246,400*	*$176,173*	*$118,453*
Number of EDU	247.90	247.90	247.90	247.90	247.90
Debt Service per EDU	**$877**	**$864**	**$994**	**$711**	**$478**
Long-Term Subsidized (2.94% for 30-Years)					
Total Capital Project Budget	$6,520,000	$6,424,000	$7,392,000	$5,285,000	$3,553,600
Fees					
State Bond Issuance Charge	0.84%	0.84%	0.84%	0.84%	0.84%
Direct Expenses	1.00%	1.00%	1.00%	1.00%	1.00%
Total Fees (%)	1.84%	1.84%	1.84%	1.84%	1.84%
Total Fees (Value)	$119,968	$118,202	$136,013	$97,244	$65,375
Total Finance Amount	$6,639,968	$6,542,202	$7,528,013	$5,382,244	$3,618,375
Annual Charges					
Market Rate	4.25%	4.25%	4.25%	4.25%	4.25%
Subsidized Rate (33-1/3% subsidized)	2.83%	2.83%	2.83%	2.83%	2.83%
Annual Administrative Fee	0.11%	0.11%	0.11%	0.11%	0.11%
Total Rate	2.94%	2.94%	2.94%	2.94%	2.94%
Term	30	30	30	30	30
Annual Debt Service	*$3336,290*	*$3331,338*	*$381,266*	*$272,921*	*$183,288*
Number of EDU	247.90	247.90	247.90	247.90	247.90
Debt Service per EDU	**$1,357**	**$1,337**	**$1,538**	**$1,100**	**$739**

2. Alternative Capital Projects

Probable Capital Project Budget for each alternative project are the sum of the components needed to create a project. Table III.1 lists each components associated with each alternative and summarizes total project costs. Table III.2 lists the anticipated debt service for a typical residential user.

3. Operation and Maintenance

According to its 2019 sewer budget, the Town of Hume budgeted approximately $157,324 per year for operation and maintenance of the existing wastewater treatment plant and collection system. A summary of the 2019 sewer budget is presented in Table III.3 below; Appendix I includes a full copy of the 2019 Sewer Budget. The following discusses the probable O&M costs associated with each alternative.

Table III.3: Existing Sewer Budget

Appropriations	2019 Budget
General Government Support	$17,000
Transportation	$4,000
Home and Community Service	
Sewer Administration	$4,788
Sanitary Sewers	$14,600
Sewage Treatment and Disposal	$92,054
Employee Benefits	$24,882
Debt Service	$0
Total Appropriations	$157,324

a. Upgrade Existing

O&M associated with upgrading the existing WWTP is approximately $69,200. These costs include sodium hypochlorite and sodium bisulfate for the disinfection system; maintenance of the additional manholes in the collection system; power costs for upgraded pumps at the Route 19A pump station and recirculation system at the WWTP; and general equipment maintenance costs.

b. SAGR System

O&M associated with a new SAGR system is approximately $86,300. These costs include sodium hypochlorite and sodium bisulfate for the disinfection system; maintenance of the additional manholes in the collection system; power costs for upgraded pumps at the Route

19A pump station, recirculation pumps at the WWTP, and blowers at the WWTP; and general equipment maintenance costs.

c. Packaged Treatment Plant

O&M associated with a new packaged treatment plant is approximately $84,700. These costs include sodium hypochlorite and sodium bisulfate for the disinfection system; maintenance of the additional manholes in the collection system; power costs for upgraded pumps at the Route 19A pump station, and blowers at the WWTP; and general equipment maintenance costs. This alternative will likely require an additional licensed operator.

d. Low-Pressure Sewers

O&M associated with a low pressure sewer system is approximately $112,300. These costs include bioxide for odor control; maintenance of air/vacuum valves in the system needed to assure proper system operation; annual pump repair; treatment costs charged by the Town of Caneadea; and general equipment maintenance costs. Also included in the O&M cost is the power to operate the individual grinder pumps. This cost is actually a direct annual cost to the user and not the Town. Power costs are included here to facilitate comparison of alternatives. This alternative will likely require an additional operator due to the increased maintenance needed for the individual grinder pumps.

e. Regional Pump Station

O&M associated with a regional pump station is approximately $85,900. These costs include maintenance of air/vacuum valves in the system needed to assure proper system operation; annual pump repair; power cost associated with the pump station; treatment costs charged by the Town of Caneadea; and general equipment maintenance costs.

f. Town of Caneadea Treatment Charge

The Low-Pressure Sewer and Regional Pump Station alternatives include $75,900 in treatment costs charged by the Town of Caneadea. Town of Caneadea bills sewer usage on a "per unit" basis, based on a published rate schedule plus an additional amount based on the total assessed value of a parcel within the Houghton Sewer District (currently $2.77/$1,000 of total assessed value). Based on an annual sewer budget for 2017 of $395,740 and an average daily flow at its WWTP of 147,600 GPD, the effective cost of treatment is $7.35/1,000 gal. This cost includes administrative fees, employee salaries, debt service, collection system expenses and treatment and disposal costs. Treatment and

disposal costs included in the budget account for $214,000. Based on the same flow, the effective cost for treatment and disposal only is $3.97/1,000 gal, which is the estimated amount that will be charged to Hume.

4. Operation and Maintenance Cost Summary

Table III.4 summarizes the probable operation and maintenance costs for each project component and for each alternative.

Table III.4: Probable O&M Costs

Project Component	Base Cost	Upgrade Existing	New SAGR System	New Packaged Treatment	Low Pressure Sewers to Caneadea	Regional Pump Station to Caneadea
Disinfection						
Chlorine Contact / De-Chlorination	$13,400	$13,400	$13,400	$13,400		
UV System	$6,900					
Collection System						
Replace with 8-inch Sewers	$8,200					
Add Manholes	$4,600	$4,600	$4,600	$4,600		$4,600
Upgrade Route 19A Pump Station	$12,700	$12,700	$12,700	$12,700		
Upgrade Force Main to WWTP	$500	$500	$500	$500		
Treatment System						
Upgrade Existing Recirculating Filters	$37,600	$37,600				
SAGR System	$55,100		$55,100			
Packaged WWTP	$53,500			$53,500		
Pump to Town of Caneadea WWTP						
Forcemain	$500				$500	$500
Low Pressure Sewer System	$35,900				$35,900	
Regional Pump Station	$4,900					$4,900
Town of Caneadea Treatment Charge	$75,900				$75,900	$75,900
Total Operation & Maintenance Budget		$68,800	$86,300	$84,700	$112,300	$85,900

Table III.5 summarizes the probable Sewer Budget including projected Debt Service, O&M and modified employee benefits. The table also lists the anticipated cost per EDU.

Table III.5: Probable Sewer Budgets

Appropriations	2019 Budget	Update Existing	New SAGR System	New Packaged Treatment	Low Pressure Sewers to Caneadea	Regional Pump Station to Caneadea
General Government Support	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000
Transportation	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000
Home and Community Service						
Sewer Administration	$4,788	$4,788	$4,788	$4,788	$4,788	$4,788
Sanitary Sewers	$14,600	$20,300	$20,300	$20,300	$3,000	$12,500
Sewage Treatment and Disposal	$92,054	$132,554	$150,054	$148,454	$170,914	$157,454
Employee Benefits	$24,882	$24,882	$24,882	$49,764	$49,764	$24,882
Debt Service	$0					
EFC Hardship		$217,333	$214,133	$246,400	$176,167	$118,433
EFC Long-Term Subsidized		$336,290	$331,338	$381,266	$272,591	$183,257
Annual Sewer Budget	$157,324					
EFC Hardship		$420,857	$436,157	$490,706	$425,633	$339,057
EFC Long-Term Subsidized		$539,814	$552,362	$625,572	$522,056	$403,881
Number of EDU	247.90					
Typical Cost Per EDU	$635					
EFC Hardship		$1,698	$1,755	$1,979	$1,717	$1,368
EFC Long-Term Subsidized		$2,178	$2,228	$2,523	$2,106	$1,629
Increase per EDU						
EFC Hardship		**$1,063**	**$1,121**	**$1,345**	**$1,082**	**$733**
EFC Long-Term Subsidized		**$1,543**	**$1,594**	**$1,889**	**$1,471**	**$995**

Currently, the Town bills customers for sewer service on a quarterly basis. The quarterly sewer rate includes a base charge of $72.00 plus $3.50/1,000 gallons of water used. Based on a 2018 average annual water demand for a single-family residence of 43,500 gallons, the existing typical sewer use fee is $440. Comparing Table III.6 to Table III.5 indicates that the Town may need to adjust its sewer rates in order to finance the improvements.

Table III.6: Typical Single Family Sewer Charge

Sewer Use Charges	Cost
Sewer Use Charge	
Annual Water (2018) (gallons)	43,500
Rate / 1,000 gallons	$3.50
Annual Sewer Charge	$152.25
Quarterly Sewer Charges	
Quarterly Charge	$72.00
Annual Charge	$288.00
Total Sewer Use Charge	$440.25

5. Short Lived Assets

Improvements to the wastewater system should have a 30 year life expectancy. Short lived assets for each project component and Alternative are identified in the Appendices and summarized by alternative in Table III.7

Table III.7: Short Lived Assets

Project Component	Base Cost	Upgrade Existing	Subsurface Treatment	Packaged Treatment	Low Pressure Sewers	Regional Pump Station
Disinfection						
Chlorine Contact / De-Chlorination	$13,400	$13,400	$13,400	$13,400		
UV System	$13,500					
Collection System						
Replace with 8-inch Sewers	$500					
Add Manholes	$300	$300	$300	$300		$300
Upgrade Route 19A Pump Station	$36,700	$36,700	$36,700	$36,700		
Upgrade Force Main to WWTP	$2,200	$2,200	$2,200	$2,200		
Treatment System						
Upgrade Existing Recirculating Filters	$460,200	$460,200				
SAGR System	$31,500		$31,500			
Packaged WWTP	$24,700			$24,700		
Pump to Town of Caneadea WWTP						
Forcemain	$18,500				$18,500	$18,500
Low Pressure Sewer System	$20,000				$20,000	
Regional Pump Station	$29,300					$29,300
Total Short Lived Asset Budget		$512,200	$84,100	$77,300	$38,500	$48,100

F. NON-MONETARY FACTORS

The need to provide disinfection at the WWTP as a condition of SPDES permit renewal is regulatory driven. Until recently, the WWTP operated without violations for several years, consistently meeting its SPDES permit limits. More recently the WWTP has exceeded its SPDES permit for flow, UOD, and BOD. The steady increase in average daily flow from the WWTP due to I/I over the past five years resulted in the need for a FMP. The combination of these factors prompted this technical review of the collection system and WWTP with the results indicating that the existing facilities do not meet existing *Standards*. While the upgrades are necessary from a technical and regulatory perspective, they may not be perceived as necessary by the public.

Modification of the collection system either through replacement with conventional sewers or low-pressure sewers will likely encounter public opposition due to the amount of work that may be necessary on private property. The existing graywater system runs in easements, typically through back yards for individual properties. Access to the sewers is limited to the existing easements making construction difficult since the new lines need to be constructed without interruption of the existing services. Additional easements may be needed for replacement of the sewer system.

The SAGR system is a new technology that was developed in Canada for use in cold weather locations. Its use in New York is limited, the closest municipal system being in Ellicottville, New York. These two items might hinder avenues of information for the operator to address maintenance issues, and may prolong DEC review and acceptance of the technology.

IV. SUMMARY AND COMPARISON OF ALTERNATIVES

The following components are considered technically feasible:

- Add disinfection to the WWTP utilizing chlorination / de-chlorinatoin.
- Add additional manholes to the existing sewer system to allow better identification of deficiencies that can contribute I/I to the system.
- Upgrade the Route 19A pump station and forcemain to allow efficient conveyance to the WWTP based on current peak hour flow.
- Upgrade the existing WWTP to either a properly sized recirculating filter or to a SAGR system.

- Abandon the WWTP and upgrade the Route 19A sanitary pump station so it discharges to the Town of Caneadea WWTP.

Adding disinfection utilizing UV treatment to the WWTP is not technically feasible due to high initial coliform counts and the inability of the UV system to meet discharge limits based on bench test results.

While adding manholes to the collection system is technically feasible, doing so does not fully address I/I issues in the collection system. Adding manholes only provides a means to better identify potential source of I/I and for the Town to develop a corrective action plan.

Replacing the collection system with a traditional sewer system is not technically feasible due to cost and potential construction. Potential issues include working in existing back yard rights-of-way, and the need to keep the existing collection system in operation throughout construction. A traditional sewer system that eliminates the existing septic tanks is not compatible with the existing WWTP or a SAGR system. Eliminating existing septic tanks requires adding primary treatment at the WWTP.

Converting the treatment process to a package plant is not technically feasible due to capital cost and the need to add at least one additional licensed operator.

Converting the collection system to a low-pressure sewer system with individual grinder pumps designed to discharge to the Town of Caneadea WWTP is the only alternative that fully addresses system I/I by replacing the collection system with new low-pressure sewers. However it is not technically feasible due to the need for each user to provide a 240V/30A breaker, and to potentially upgrade their electrical service to accommodate the additional electrical load.

Table IV.1 includes a summary of the advantages and disadvantages of each technically feasible alternative.

Table IV.1: Summary Table

	Update Existing	Subsurface Treatment	Pump Station
Advantages	Familiar technology. Second lowest user cost. - Few changes to current site. - New collection system manholes provide means to assess I/I.	- Resistant to cold-weather. - Compatible w/ graywater system. - Similar system in Ellicottville, New York. - New collection system manholes provide means to assess I/I.	- Lowest user cost. - New collection system manholes provide means to assess I/I. - Compatible with full strength domestic waste. - Disinfection provided by Town of Caneadea. - May allow district expansion. - Results in shared municipal services for treatment.
Disadvantages	- Need to upgrade Route 19A pump station and forcemain to current peak flow. - Updated design addresses reasonable growth in the existing collection system but district expansion may require a larger facility. - Significant reductions in I/I may cause facility to be over sized. - Land needed for disinfection system.	- Need to upgrade Route 19A pump station and forcemain to current peak flow. - Updated design addresses reasonable growth in the existing collection system but district expansion may require a larger facility. - High user cost. - Increased electrical costs for blowers. - Relatively new technology in New York. - Land needed for disinfection system.	- Requires inter-municipal agreement. - Project has to cross state and county roads. - Construction along Route 19. - Potential construction along Greenway.
Non-Monetary Factors	- Public perception of need for project.	- Public perception of needed for project.	- Public perception of needed for project.
Modified Sewer Budget	$421,000 to $540,000	$435,000 to $552,000	$339,000 to $404,000
Annual Cost per EDU	$1,698 to $2,178	$1,755 to $2,228	$1,368 to $1,629
Increased Annual Cost per EDU	$1,063 to $1,543	$1,121 to $1,594	$733 to $995

V. RECOMMENDED ALTERNATIVE

A. GENERAL

The recommended alternative is to provide disinfection by eliminating the WWTP and constructing a regional pump station with forcemain that discharges to the Town of Caneadea's WWTP. Also recommended is to install additional manholes in the graywater collection system.

B. BASIS OF SELECTION

The recommended project is technically feasible with the lowest capital and operating costs. The project provides disinfection and treatment by utilizing available capacity at the Town of Caneadea wastewater treatment plant and provides a means to better address sources of I/I in the collection system.

Interconnecting the Town of Hume collection system to the Town of Caneadea WWTP requires upgrades to the existing Route 19A pump station to accommodate existing, estimated peak hour flows and reasonable growth within the collection system. Designed according to the *Standards,* the regional pump station will include:

1. Solids handling duplex station capable of pumping peak hour flow with one pump out of service;
2. Emergency generator with automatic transfer switch to assure continuous pump station operation;
3. Influent flow meter that measures the quantity and rate of flow to the pump station;
4. Variable frequency drives to match pump discharge to inflow rate, which can provide electrical cost savings and reduce the potential need for odor control;
5. 6-inch, forcemain that connects the pump station to the Town of Caneadea WWTP;
6. Flow monitoring manhole at the Town line to measure the total flow into the Town of Caneadea system; and
7. Control system for automatic operation of the station with built in alarm system and remote monitoring of station status.

Installing manholes in the graywater collection system facilitates maintenance of the collection system and allows video inspection of the sewer lines in order to better identify potential sources of I/I.

C. SCHEMATIC DESIGN

Figure V.1 shows the existing service area in the Town of Hume and the proposed route of an interconnecting force main to the Caneadea WWTP. Manholes added to the collection system will be appropriately located to allow maintenance and inspection of the sewer lines; generally at changes in pipe direction and replacing end of line cleanouts.

D. ENVIRONMENTAL IMPACTS

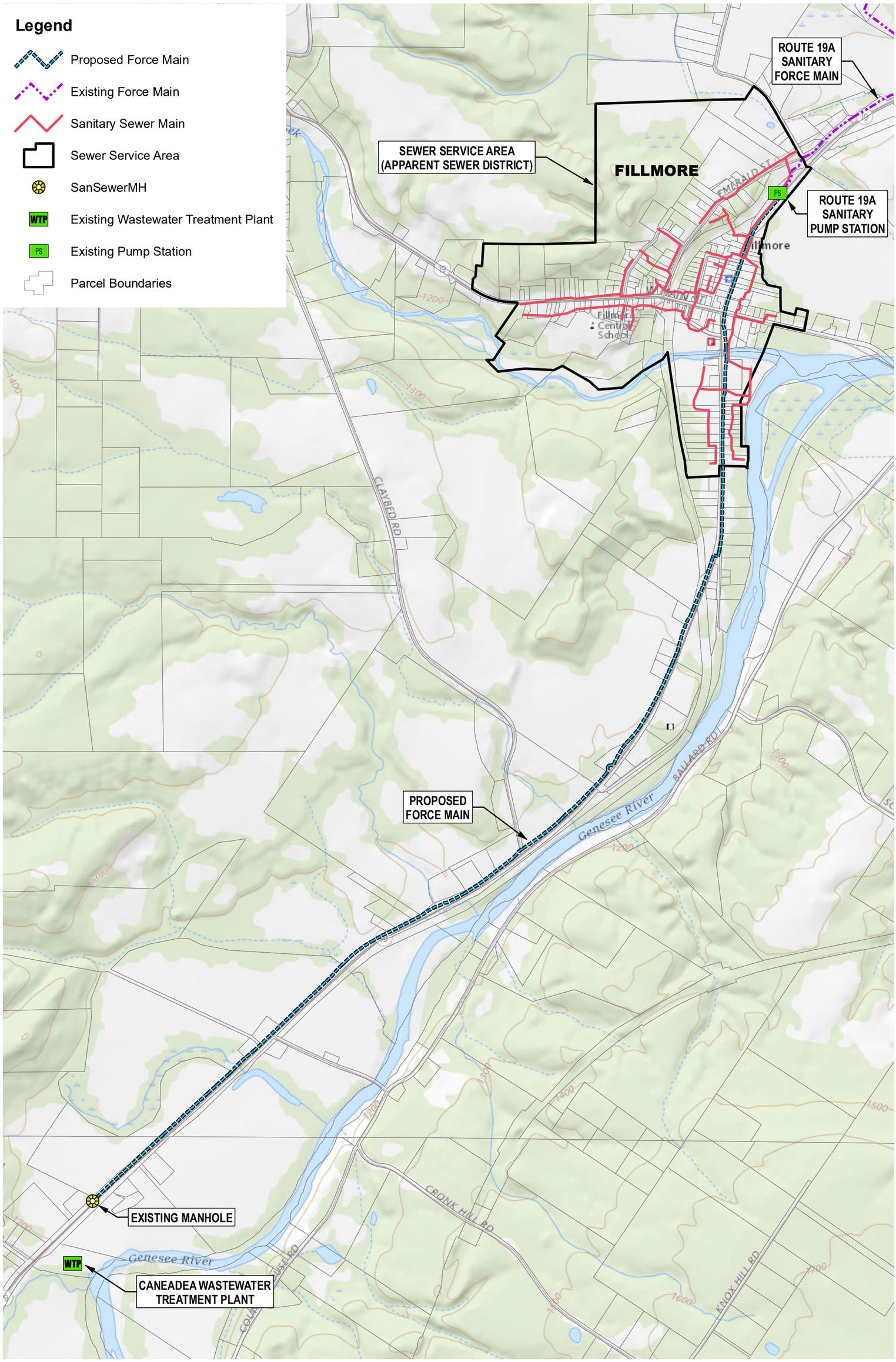
Upgrades to the existing Route 19A sanitary pump station will be constructed within the confines of the existing site and along Route 19A. Interconnecting sanitary sewers and forcemains will be constructed within existing rights-of-way and when necessary to facilitate construction, portions may be installed within easements. Manholes added to the existing collection system will be constructed within existing Town of Hume utility easements.

The New York State Office of Parks, Recreation and Historic Preservation (SHPO) will be consulted regarding the impact on cultural resources in the project areas. The Greenway is located along portions of the East side of Route 19. The intent will be to avoid the Greenway; however, since there is an existing water main on the west side of Route 19, it may be necessary to install portions along the Greenway. If necessary, directional drilling will be utilized to minimize the impact on the Greenway.

Portions of the project may be within designated flood hazard areas. Where appropriate, the project will include flood resiliency designed in accordance with NYSDEC standards.

As proposed, the system improvements will have minimal environmental impacts. An environmental review of the project will be completed under the State Environmental Quality Review (SEQR).

The project will also be subject to review by the Department of Agriculture and Markets since portions of the work are potentially within agricultural lands.



0809.19003	MRB | group Engineering, Architecture, Surveying, D.P.C. 145 Culver Road, Suite 160, Rochester, New York 14620 585-381-9250 FAX 585-381-1008 www.mrbgroup.com	Drawn By:	MRB	N W E S	TOWN OF HUME
FIGURE		Scale:	1" = 1,200' @11"x17"		ALLEGANY COUNTY, NEW YORK
IV-1		Date:	SEPT 2019		TRANSMISSION MAIN SCHEMATIC

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E. LAND REQUIREMENTS

Easements may be needed for construction of portions of the forcemain depending on its final location. The easements would be obtained from the landowners prior to construction.

F. SOIL AND GROUNDWATER CONDITIONS

A geotechnical investigation will be needed to determine the depth to bedrock along the proposed collection system and forcemain routes. This information would be used to help estimate final project costs.

G. CONSTRUCTION PROBLEMS

Based on information presently available, no significant construction problems are anticipated. In general, the project will be constructed in open areas at the existing pump station and along existing roads. Care will be taken during construction at various stream crossings to minimize impacts on the streams.

Care will be taken during construction to keep the existing pump station in operation while upgrades are being made to the station. Contractor activities will be coordinated to allow operation of the existing station throughout the project.

H. FUNDING

The probable total capital project budget for the project is $3,553,000. Table III.1 lists the probable, capital project cost for each component of the project, and Table III.2 lists the anticipated debt service for a typical residential user. Table III.2 identifies costs based on hardship Funding and Long-Term Subsidized funding through EFC.

Table III.5 provides an estimated Sewer Budget based on anticipated debt service and O&M costs. Table III.5 also includes the potential sewer budget cost per EDU and its associated increase over existing. As shown in the table, the probable cost increase may range from $733 per EDU to $995 per EDU depending on the funding received from EFC.

Should the project qualify for a WQIP disinfection grant of $1,000,000, or equivalent grant from some other source, the cost per EDU may be reduced by $134 under Hardship Funding, to $204 under Long-Term Subsidized funding.

I. PROJECT SCHEDULE

The proposed project schedule outlines efforts needed to comply with the NYSDEC's requirement to begin operation of a disinfection system in 2024. This schedule is also consistent with the compliance schedules included in the *Town of Hume Violation Response* letters sent to USEPA and NYSDEC in 2019, and in the *Town of Hume Flow Management Plan* submitted to NYSDEC in 2018. It is noted that this schedule is relevant given a favorable funding package as discussed in this PER.

Table V.1: Preliminary Schedule

Completion Date	Activity
April 2020	Submit Preliminary Engineering Report
April 2020	Submit Project for the listing on IUP for CWSRF Financing
July 2020	Negative Declaration of SEQR
August 2020	Submit WQIP Grant Application
September 2020	Submit WIIA Grant Application
February 2021	Submit Financing Application
February 2022	Submit Plans and Specifications for Agency Approval
May 2022	Award Bids
June 2022	Construction Start
December 2023	Construction Complete

J. CONTINUING EFFORTS & COMMUNITY ENGAGEMENT

As the project continues to evolve, ongoing efforts targeting available grant opportunities will be pursued. The following grant opportunities expected to be available and applicable to the proposed project are: 1) Water Infrastructure Improvement Act (WIIA), and 2) Water Quality Improvement Project (WQIP). It is anticipated that the proposed project will receive financing through the NYSEFC based on the MHI as well as the expected project score.

The proposed project will continue to be discussed with the Town board as project financing or grant opportunities arise and the project progresses. In addition, through-out the design phase, community involvement will be sought to protect the interests of all parties.

K. ENGINEERING REPORT CERTIFICATION

Included in Appendix J is the Engineering Report Certification for this PER.

L. SMART GROWTH ASSESSMENT

Included in Appendix Y is the Smart Growth Assessment Form for the proposed project.

VI. CONCLUSION

The Town of Hume has identified the need to add disinfection to its wastewater treatment plant, address I/I in the collection system, and to upgrade its existing wastewater treatment system to bring the facilities into conformance with regulatory requirements, current design *Standards*, and to allow reasonable growth within the collection system service area. This report reviewed alternatives to address these concerns and determined that the most cost effective approach is to replace the existing WWTP with a regional pump station that discharges to the Town of Caneadea WWTP, and to add manholes in the existing collection system to improve sewer maintenance and to allow better definition of sources of I/I. Under this approach, disinfection and treatment is provided by the Town of Caneadea WWTP.

The probable project cost is approximately $3,553,000. Based on a modified 2019 Sewer Budget that includes annual debt service, potential O&M cost of the proposed improvements, and offsets for elimination of the existing treatment plant, the probable cost per EDU is $1,368 to $1,629 depending on the level of EFC financing (Hardship vs Long-Term Subsidized). These costs represent an increase per EDU of $733 to $995 over existing.

The cost per EDU includes an estimated Town of Caneadea treatment cost of $3.97/1,000-gallons, which is the same cost charged to customers in the Houghton Sewer District and does not include debt service on the recently completed upgrades to its WWTP. Based on the 2018 average daily flow from the Town of Hume WWTP plant of 52,400 GPD, the estimated annual treatment cost is $75,900. This cost will likely decrease as sources of I/I are eliminated from the system as the Town implements its FMP.

The cost per EDU may also decrease depending on the level of grant assistance received by the Town. For each $1,000,000 of grant assistance received, the anticipated net cost per EDU decreases by approximately $134 to $204 depending on the level of financing received.

VII. REFERENCES

1. *Flood Insurance Study, Town of Hume, Allegany County.* (October 2, 1997), Federal Emergency Management Agency.
2. *Flood Insurance Study, Town of Caneadea, Allegany County.* (August 20, 1982), Federal Emergency Management Agency.
3. Metcalf and Eddy, Inc., *Wastewater Engineering: Treatment, Disposal, And Reuse*, (3rd Edition).
4. United States Geologic Survey, *Caneadea and Hume, NY Quadrangles.*
5. Wastewater Facility Operational Records for the Town of Hume's Wastewater Treatment Plant, SPDES Permit No. NY0203858
6. *Recommended Standards for Wastewater Facilities*, (2004), Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers.
7. *TR-16, Guides for the Design of Wastewater Treatment Works,* (2011 Ed.) New England Interstate Water Pollution Commission.
8. *Design Standards for Wastewater Treatment Works*, (1988), New York State Department of Environmental Conservation.
9. *New York State Design Standards for Intermediate Sized Wastewater Treatment Systems,* March 5, 2014) New York State Department of Environmental Conservation.
10. *Engineering Drawings for the Town of Hume's Wastewater Treatment Facility*, (circa 1987), Fagan Engineers.
11. *Town of Hume's Wastewater Treatment Facility Operation and Maintenance Manual*, (September 1987), Fagan Engineers.
12. United States Census Data (as noted).
13. *Town of Hume/Town of Caneadea Municipal Wastewater Treatment Systems Consolidation Study*, (July 2008), MRB Group Engineering, Architecture, Surveying, P.C.
14. *Preliminary Engineering Report for the Town of Hume Municipal Wastewater Treatment Improvements*, (March 2012), MRB Group Engineering, Architecture, Surveying, P.C.

APPENDIX A

SPDES DISCHARGE PERMIT

New York State Department of Environmental Conservation
Division of Environmental Permits
NYSDEC HEADQUARTERS
625 BROADWAY
ALBANY, NY 12233
(518) 402-9167

SPDES PERMIT RENEWAL

4/30/2018

TOWN OF HUME
20 N GENESEE ST
PO BOX 302
FILLMORE NY 14735-0302

Permittee Name: TOWN OF HUME
Facility Name: TOWN OF HUME STP
Ind. Code: 4952 County: ALLEGANY
DEC ID: 9-0258-00003/00002 SPDES No.: NY0203858
Permit Effective Date: 7/1/2018
Permit Expiration Date: 6/30/2023

Dear Permittee,

The State Pollutant Elimination System (SPDES) permit renewal for the facility referenced above is approved with the new effective and expiration dates. This letter together with the previous valid permit for this facility effective on 07/01/2013 and any subsequent modifications constitute authorization to discharge wastewater in accordance with all terms, conditions and limitations specified in the previously issued permit(s).

As a reminder, SPDES permits are renewed at a central location in Albany in order to make the process more efficient. All other concerns with your permit, including applications for permit modification or transfer to a new owner, a name change, and other questions, should be directed to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203-2915
(716) 851-7165

If you have already filed an application for modification of your permit, it will be processed separately by that office.

If you have questions concerning this permit renewal, please contact MICHAEL R SCHAEFER at (518) 402-9167.

Sincerely,

Kent P. Sanders
Deputy Permit Administrator

cc:
RPA
BWC
RWE
File
BWP
EPA

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT

Industrial Code:	4952	SPDES Number:	NY 0203858
Discharge Class (CL):	07	DEC Number:	9-0258-00003/00002
Toxic Class (TX):	N	Effective Date (EDP):	July 1, 2013
Major Drainage Basin:	04	Expiration Date (ExDP):	June 30, 2018
Sub Drainage Basin:	03	Modification Dates: (EDPM)	May 1, 2014
Water Index Number:	Ont. 117-116-1		
Compact Area:	IJC		

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:	Town of Hume	Attention:	Mr. Dennis Ricketts, Supervisor		
Street:	P.O. Box 302				
City:	Fillmore	State:	New York	Zip Code:	14735

is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name:	Town of Hume Wastewater Treatment Plant										
Location (T):	Hume						County:	Allegany			
Facility Address:	NYS Route 19A approximately 4,700 ft NE of intersection Rts 19 and 19A)										
City:	Fillmore					State:	New York	Zip Code:	14735		
From Outfall No.:	001	at Latitude:	42 °	28 '	32.51 "	& Longitude:	-78 °	5 '	46.191 "		
into receiving waters known as:	Unnamed Tributary of Genesee River							Class:	D		

and (list other Outfalls, Receiving Waters & Water Classifications)

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:	Town of Hume				
Street:	P.O. Box 302				
City:	Fillmore	State:	New York	Zip Code:	14735
Responsible Official or Agent:	Dennis Ricketts, Supervisor		Phone:	(585) 567-2666	

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
NYSEFC (Class 05 & 07 only)

Permit Administrator: Lisa M. Porter

Address: 270 Michigan Ave
Buffalo, NY 14203

Signature: Lisa M Porter Date: 4/8/14

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.	EDP	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/ 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 PQL 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. DAILY MIN.: The lowest allowable daily discharge.
   c. 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.
   d. 7 DAY ARITHMETIC MEAN (7 day average): The highest allowable average of daily discharges over a calendar week.
   e. 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.
   f. 7 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar week.
   g. 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.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	June 1 to October 31	Unnamed Trib. of Genesee River	May 1, 2014	June 30, 2018

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Location Inf.	Location Eff.	
Flow	Monthly Average			0.045	mgd	Continuous	Recorder		X	
Nitrogen, TKN (as N)	Daily Maximum	Monitor	mg/l	Monitor	lbs/d	Quarterly	Grab		X	
$CBOD_5$	Daily Maximum	Monitor	mg/l	Monitor	lbs/d	Quarterly	Grab		X	
UOD	Daily Maximum	75	mg/l	28.1	lbs/d	Quarterly	Calculated		X	(2)
Solids, Suspended	Monthly Average	30	mg/l	11.3	lbs/d	Quarterly	Grab	X	X	(1)
Solids, Suspended	7-Day Average	45	mg/l	16.9	lbs/d	Quarterly	Grab		X	
Total Phosphorus (as P)	Monthly Average	Monitor	mg/l	Monitor	lbs/d	Quarterly	Grab	X	X	
Ammonia (as NH_3)	Daily Maximum	Monitor	mg/l	Monitor	lbs/d	Quarterly	Grab	X	X	
Solids, Settleable	Daily Maximum	0.1	ml/l			Daily	Grab		X	
pH	Range	6.0 – 9.0	SU			Daily	Grab	X	X	
Dissolved Oxygen	Daily Minimum	5.0	mg/l			Daily	Grab		X	
Temperature	Daily Maximum	Monitor	Deg C			Daily	Grab	X	X	

FOOTNOTES:

(1) and effluent shall not exceed 15 % and 15 % of influent concentration values for BOD_5 & TSS respectively. The calculations in this footnote shall be based on influent concentration of 200 mg/l or the actual measured value, whichever is larger.

(2) Ultimate Oxygen Demand (UOD) shall be computed as follows: UOD = 1½ x $CBOD_5$ + 4½ x TKN (Total Kjeldahl Nitrogen)

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	November 1 to May 31	Unnamed Trib. of Genesee River	May 1, 2014	June 30, 2018

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Location Inf.	Location Eff.	
Flow	Monthly Average			0.045	mgd	Continuous	Recorder		X	
BOD_5	Monthly Average	30	mg/l	11.3	lbs/d	Quarterly	Grab	X	X	(1)
BOD_5	7-Day Average	45	mg/l	16.9	lbs/d	Quarterly	Grab		X	
Solids, Suspended	Monthly Average	30	mg/l	11.3	lbs/d	Quarterly	Grab	X	X	(1)
Solids, Suspended	7-Day Average	45	mg/l	16.9	lbs/d	Quarterly	Grab		X	
Total Phosphorus (as P)	Monthly Average	Monitor	mg/l	Monitor	lbs/d	Quarterly	Grab	X	X	
Ammonia (as NH_3)	Daily Maximum	Monitor	mg/l	Monitor	lbs/d	Quarterly	Grab	X	X	
Solids, Settleable	Daily Maximum	0.1	ml/l			Daily	Grab	X	X	
pH	Range	6.0 - 9.0	SU			Daily	Grab	X	X	
Dissolved Oxygen	Daily Minimum	5.0	mg/l			Daily	Grab		X	
Temperature	Daily Maximum	Monitor	Deg C			Daily	Grab	X	X	

FOOTNOTES:

(1) and effluent shall not exceed 15 % and 15 % of influent concentration values for BOD_5 & TSS respectively. The calculations in this footnote shall be based on influent concentration of 200 mg/l or the actual measured value, whichever is larger.

(2) Ultimate Oxygen Demand (UOD) shall be computed as follows: UOD = 1½ x $CBOD_5$ + 4½ x TKN (Total Kjeldahl Nitrogen).

Mercury Minimization Program for Low Priority POTWs

The permittee shall inspect each tributary dental facility at least once every five years to verify compliance with the wastewater treatment operation, maintenance, and notification elements of 6NYCRR Part 374.4. Inspection and/or outreach to other industrial/commercial sectors which may contribute mercury is also recommended. All new or increased tributary discharges, including hauled wastes, which are from sources that are industrial in nature must be evaluated for mercury content and if levels exceed 500 ng/L then authorization must be obtained from the Department prior to acceptance. Equipment and materials which may contain mercury shall also be evaluated by the permittee and replaced with mercury-free alternatives where environmentally preferable. A file shall be maintained containing the notices submitted by dental offices and all other pertinent information. This file shall be available for review by DEC representatives and copies shall be provided upon request. A permit modification may be necessary to include more stringent requirements for POTWs which do not maintain low mercury effluent levels. Note – the mercury-related requirements in this permit conform to the mercury Multiple Discharge Variance specified in NYSDEC policy *DOW 1.3.10*.

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;

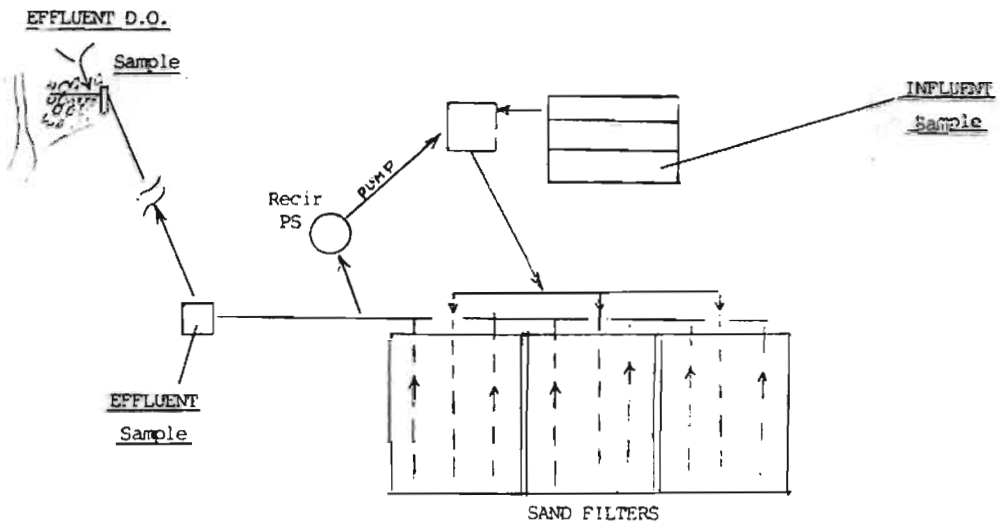
(iv) instances where the outfall pipe or channel discharges to another outfall pipe or channel, before discharge to a receiving water; or

(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, Central Office, 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 location(s) specified below:



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

C. Operation and Maintenance

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

D. Monitoring and Records

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

E. Reporting Requirements

1.	Reporting requirements	6NYCRR Part 750-2.5, 2.6, 2.7 & 1.17
2.	Anticipated noncompliance	6NYCRR Part 750-2.7(a)
3.	Transfers	6NYCRR Part 750-1.17
4.	Monitoring reports	6NYCRR Part 750-2.5(e)
5.	Compliance schedules	6NYCRR Part 750-1.14(d)
6.	24-hour reporting	6NYCRR Part 750-2.7(c) & (d)
7.	Other noncompliance	6NYCRR Part 750-2.7(e)
8.	Other information	6NYCRR Part 750-2.1(f)
9.	Additional conditions applicable to a POTW	6NYCRR Part 750-2.9
10.	Special reporting requirements for discharges that are not POTWs	6NYCRR Part 750-2.6

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 10007-1866.

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. The monitoring information required by this permit shall be summarized, signed and 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. **Also, monitoring information required by this permit shall be summarized and reported by submitting;**

[X] (if box is checked) completed and signed Discharge Monitoring Report (DMR) forms for each 3 month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

[ ] (if box is checked) an annual report to the Regional Water Engineer at the address specified below. The annual report is due by February 1 each year and must summarize information for January to December of the previous year in a format acceptable to the Department.

[X] (if box is checked) a monthly "Wastewater Facility Operation Report..." (form 92-15-7) to the:
[X] Regional Water Engineer and/or [ ] County Health Department or Environmental Control Agency specified below

Send the **original** (top sheet) of each DMR page to:
Department of Environmental Conservation
Division of Water, Bureau of Water Compliance
625 Broadway, Albany, New York 12233-3506
Phone: (518) 402-8177

Send the **first copy** (second sheet) of each DMR page to:
Department of Environmental Conservation
Regional Water Engineer, Region 9
270 Michigan Avenue, Buffalo, New York 14203-2915
Phone: (716) 851-7070

B. Monitoring and analysis shall be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

C. 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.

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

E. 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.

F. 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.

APPENDIX B

TOWN OF HUME SPDES PERMIT
NYSDEC REQUIREMENT FOR WWTP
EFFLUENT DISINFECTION

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Permits
625 Broadway, Albany, New York 12233-3505
P: (518) 402-8111 | F: (518) 402-9029
www.dec.ny.gov

February 28, 2019

Attn: Supervisor
Town of Hume
20 N Genesee Street
P.O. Box 302
Fillmore, NY 14735

Re: New Requirement to Disinfect Sewage Treatment Plant Effluent
SPDES Permit No. NY 020 3858

Dear Supervisor,

This letter is to inform you of an anticipated State Pollutant Discharge Elimination System (SPDES) permit modification to require the addition of disinfection treatment of your sewage treatment plant effluent. We are also providing information about the availability of DEC/EFC Wastewater Infrastructure Engineering Planning Grants (EPG) that may help you with funding the preparation of an engineering report and planning activities, and the availability of Water Quality Improvement Project (WQIP) program grants that may help you with funding the construction of the disinfection system.

To protect public health and the environment, State regulations require that sewage treatment plant discharges be disinfected. Our records indicate that your SPDES permit does not conform to this requirement; your permit does not currently require disinfection although your discharge impacts waters that could be used for swimming, fishing, and contact recreation. Consequently, the Department of Environmental Conservation (Department) plans to modify your SPDES permit to require disinfection treatment. Anticipated draft permit requirements include:

- Disinfection required May 1 – October 31 each year, beginning in 2024.
- Fecal coliform effluent limits of 200 (30-day geo mean) and 400 (7-day geo mean).
- If UV disinfection is selected, then chlorine monitoring will not be required. If chlorine disinfection is selected, then a total residual chlorine daily maximum effluent limit of 0.030 mg/l (estimated) will be required. Please note that in order to maintain adequate disinfection and achieve this chlorine level it is likely that effluent dechlorination will be necessary.
- A compliance schedule to submit final engineering documents in 2022 and begin operation in 2024.

If you have not completed an engineering report yet, we encourage you to apply for an EPG to assist you with planning for the addition of disinfection treatment. The 2019 Request for Applications will be announced in the Spring. Go to the EPG webpage for further information (http://www.dec.ny.gov/pubs/81196.html). The Department intends that permittees who have received this letter are eligible for EPG funding as long as the rest of the EPG eligibility criteria are met.

If you have completed an engineering report, we encourage you to apply for a WQIP program grant to assist you with implementation of the disinfection requirement. The 2019 Request for Applications will be announced in the Spring. Go to the WQIP webpage for further information (http://www.dec.ny.gov/pubs/4774.html). The Department intends that permittees who have received this letter are eligible for WQIP funding as long as the rest of the WQIP eligibility criteria are met.

If you would like to discuss the disinfection treatment requirement and the SPDES permit modification, please contact Alison Wasserbauer at (518) 402-8126. If you have questions concerning applying for the EPG and WQIP, please contact Leila Mitchell at (518) 402-8269.

Sincerely,

Shayne A. Mitchell, P.E.
Chief, Wastewater Permits – West Section

Cc: NYSDEC, Regional Water Engineer, R9
NYSDEC, Leila Mitchell
NYSDEC, Alison Wasserbauer
NYSEFC, Co-Funding Coordinator

SAVE

APPENDIX C

COMPLIANCE LETTERS

585-381-1008
Derek Anderson

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Water Compliance
625 Broadway, Albany, New York 12233-3506
P: (518) 402-8177 | F: (518) 402-8082
www.dec.ny.gov

May 15, 2018

HUME (T)
PO BOX 302, 20 N GENESEE ST
FILLMORE, NY 14735

Re: POTW Design, Planning and Flow Management Annual Certification additional requirements

Facility Name: **HUME (T) STP**
SPDES Permit # **NY0203858**

Dear Permittee:

Your recently submitted POTW Design, Planning and Flow Management Annual Certification Form indicates that additional requirements are required for your facility. Please refer to the checked item below that pertains to your facility's situation.

X Item 1.d: The annual average flow of the facility exceeded 95% of the design flow.
In accordance with 6 NYCRR Part 750-2.9(c)(1) you must prepare and submit a flow management no later than August 1, 2018.

___ Item 2.c: The **actual** influent loading for either BOD (or CBOD) or TSS, as determined from plant operational data as submitted on the DMRs **exceed** the monthly average **design** influent loading for any eight calendar months during 2017.
In accordance with 6 NYCRR Part 750-2.9(c) (2), you must prepare and submit a plan for future growth no later than August 1, 2018.

___ Item 3: The POTW discharge exceeded a SPDES permit effluent limit for BOD, CBOD, Ultimate Oxygen Demand (including 28-day BOD), or Total Suspended Solids for four or more months during two consecutive calendar quarters and a future growth plan is required pursuant to 6NYCRR Part 750-2.9(c)(2).
In accordance with 6 NYCRR 750-2.9(c)(3), you must implement the plan for future growth (required by Item 2.c) and impose a sewer connection moratorium immediately.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Water Compliance
625 Broadway, Albany, New York 12233-3506
P: (518) 402-8177 | F: (518) 402-8082
www.dec.ny.gov

The regulations for operating in accordance with a SPDES permit (6NYCRR Part 750-2) are located at the Department of Environmental Conservation's web site at:
http://www.dec.ny.gov/regs/2485.html

Please contact your Regional Water Manager with any questions about the regulations or these requirements at (716) 851-7070.

All required plans should be submitted to your Regional Water Manager at the following address:

Regional Water Engineer
NYSDEC – Buffalo Office
270 Michigan Ave
Buffalo, NY 14203-2999

Sincerely,

Jagabandhu Debnath
Assistant Engineer
Compliance Assurance Section
Division of Water

cc: Regional Water Manager, R-9

(c) POTW design, planning and flow management.

(1) Flow management plan.

(i) Within 120 days of when the permittee determines in accordance with paragraph (4) of this subdivision that the annual average flow value for a calendar year to a POTW has reached or exceeded 95 percent of that POTWs design flow, the permittee shall submit to the regional water engineer a flow management plan to identify and implement reductions in hydraulic loading to the POTW treatment plant or failing that, approvable engineering reports, plans and specifications and/or capital improvements as necessary to stabilize annual average flows below the POTW treatment plant design flow. This plan shall be certified by a professional engineer licensed to practice in the State of New York and endorsed by the chief fiscal officer of the municipality. The provisions of the plan may reflect new efforts or may refer to existing, ongoing efforts. The flow management plan shall, at a minimum, include provisions for:

(a) a statement to the effect that the permittee has the authority in all parts of the POTW service area to implement or cause to be implemented the provisions of this subdivision or, if the permittee does not have such authority, a proposed schedule, not to exceed three years, to obtain such authority or a statement from the permittee's designated legal representative that existing law precludes the permittee from obtaining such authority;

(b) an inventory of all known facilities/projects that have applied to connect to the sewer system and a determination if there is capacity for connection;

(c) a schedule of implementation for all flow reduction measures identified herein;

(d) a map delineating the service area as defined; and

(e) a description of information that will be reported during implementation of the plan to the regional water engineer and a schedule for such reporting.

(ii) The flow management plan required by subparagraph (i) of this paragraph shall also include provisions for implementation of any or all of the following that are necessary to stabilize influent flows below design flows:

(a) water conservation measures to reduce customer usage by measures including but not limited to customer metering, meter calibration, retrofitting existing plumbing fixtures with water conservation fixtures and revision of water rate structures;

(b) reduction of infiltration and inflow through continuous measures including but not limited to sewer system metering, evaluation and rehabilitation, removal of roof leaders and footing drains from separate sanitary sewers and installation of separate storm sewers;

(c) prevention of future sources of infiltration and inflow where feasible through measures including but not limited to implementation of standards for sewer installation and requirements to provide for adequate drainage from roof leaders and footing drains in new construction;

(d) measures to maximize sewer system and sewage treatment works capacity at a minimum cost;

(e) approvable engineering reports and/or plans and specifications to assure annual average flows do not exceed 95 percent of the POTW treatment plant design flow; and/or

(f) capital improvements necessary to assure annual average flows do not exceed 95 percent of the POTW treatment plant design flow.

(iii) Within 90 days of submittal to the regional water engineer of the plan required under subparagraphs (i) and (ii) of this paragraph, the permittee shall begin to implement the provisions of said program in accordance with the proposed schedule or cause the provisions of said program to be implemented by another party.

(iv) The regional water engineer may object to the plan, or implementation of the plan, submitted in accordance with subparagraphs (i) and (ii) of this paragraph if the plan does not provide for substantive and effective measures to reduce hydraulic loading to the POTW. Within 90 days of receipt of written notification from the regional water engineer documenting the aspects of the plan that must be revised, the permittee shall submit a revised plan that addresses the department's objection(s).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 19 2018

Dear Permittee:

Attached please find a formal notice from my office addressing concerns with the operation of your wastewater treatment system.

Please know that as part of our mission, we are compelled to provide this notice to move your community in a direction that ensures your system is operating in a manner consistent with state discharge limits to meet the goal of being protective of public health and the environment.

With that said, we are also asking you to help us understand why your system is not meeting the discharge standards, so we can better understand how EPA and our state partners can assist in helping you improve the situation.

Thank you for your kind attention to this matter. We look forward to your prompt response as outlined in the attached notice of significant non-compliance.

Sincerely,

Peter D. Lopez
Regional Administrator

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 2 8 2018

Ms. Darlene Mason, Supervisor
Town of Hume
20 N Genesee St, PO Box 302
Fillmore, NY 14735

Re: **Notice of Significant Non-Compliance**
Hume (T) STP
SPDES Tracking ID No. NY0203858

Dear Supervisor Mason:

Based on data reported to the United States Environmental Protection Agency (EPA) and reflected in the EPA's national data system, your facility is currently in **Significant Non-Compliance (SNC)** due to the following exceedance(s) of the effluent limit(s) in your New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) permit, NY0203858:

Violation Date(s)	Outfall(s)	Parameter(s)
6/2018	001-Q	Oxygen demand, ultimate
9/2018	001-Q	Oxygen demand, ultimate

This notice is strictly addressing SNC effluent violation reporting over the last two (2) quarters and may not include all schedule or other effluent violations.

As one of the Agency's Strategic Measures, EPA is currently working with all state programs, including NYSDEC, to reduce the number of facilities in SNC. Our first step in this process as it relates to your facility is to make sure you are aware of your violations and to ask for explanations of why the violations are occurring and what you are doing to correct the violations and return to compliance with your permit. For additional information on SNC, please see: https://www.epa.gov/enforcement/memorandum-revision-npdes-significant-noncompliance-snc-criteria-address-violations-non or https://echo.epa.gov/resources/general-info/echo-faq.

Therefore, please respond to EPA in writing within **thirty (30) days**, describing the cause(s) of the violations, as well as the actions you have taken or will take to address the violations. Under 6 NYCRR Part 750-2.7(e), you may have provided a Report of Noncompliance Event to NYSDEC, which you may use as a guide for your response with additional details or updates appended.

Please submit your response to EPA Region 2 (Doughlas McKenna, Chief, Water Compliance Branch, 290 Broadway, 20th Floor, New York, NY 10007-1866, or electronically to mckenna.douglas@epa.gov). Please also submit a copy of your response to the NYSDEC Regional Office (Jeffrey Konsella, Regional Water Engineer, NYSDEC Region 9, 270 Michigan Ave.,

Buffalo, NY 14203) and to the Bureau of Water Compliance, 625 Broadway, Albany, NY 12233-0001. If you believe the data was reported in error, please provide an appropriate amendment to your Discharge Monitoring Reporting (DMR).

Please also note that this is a separate initiative by EPA in working with state programs to address SNC. Your response to this notice does not relieve you of any requirements established by NYSDEC, your permit, or Part 750 regulations, and you must continue to comply with these requirements. If you have been working with NYSDEC to address these violations, please continue to do so, or you may wish to re-evaluate your previous response. NYSDEC may take separate compliance or enforcement action regarding these violations, or EPA may take further action in consultation with NYSDEC.

Should you have any questions concerning this letter, please contact your Regional NYDEC office, or feel free to contact Ms. Katherine Mann of my staff at (212) 637-4226 or mann.katherine@epa.gov. If you would like to review your facility's compliance history in EPA's data system you can enter and search with your permit number at: https://echo.epa.gov.

Sincerely,

Douglas McKenna, Chief
Water Compliance Branch

Enclosure

cc: Acting Director, Bureau of Water Compliance Programs, Division of Water, NYSDEC
Jeffrey Konsella, P.E., Regional Water Engineer, NYSDEC Region 9

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7070 | F: (716) 851-7009
www.dec.ny.gov

COPY

February 11, 2019

Ms. Darlene Mason
Supervisor
Town of Hume
P.O. Box 302
Fillmore, New York 14735

Dear Ms. Mason:

NOTICE OF VIOLATION
Hume Wastewater Treatment Plant
Hume (T), Allegany County
SPDES Permit No. NY0203858

PLEASE TAKE NOTICE THAT upon inspection by the New York State Department of Environmental Conservation (Department) staff, Hume Wastewater Treatment Plant (Facility) is in violation of Article 17 of the New York State Environmental Conservation Law (ECL) and the regulations promulgated under 6 NYCRR Part 750-2.5 (e) - State Pollutant Discharge Elimination System (SPDES) Permits.

THIS NOTICE OF VIOLATION (NOV) IS ISSUED as a result of the Facility's failure to meet permit limits for Ultimate Oxygen Demand (UOD). A review of the Facility's monthly Discharge Monitoring Reports (DMR) (quarterly and seasonal UOD sampling) submitted between March 2015 and September 2018, shows exceedances for UOD which result in the plant being in significant non-compliance with the SPDES permit.

Specifically, the following SPDES permit effluent limitations were exceeded:

Year	Parameter/Limit	Parameter/Limit
	UOD (lb/d); limit 28.1 (lb/d)	UOD (mg/l); limit 75 (mg/L)
Sep-15	202.8	202.8
Jun-16	84	84
Sep-16	270.15	270.15
Jun-17	80.9	80.9
Sep-17	205	205
Jun-18	81.74	188.5
Sep-18	68.67	183

PLEASE TAKE FURTHER NOTICE THAT the following corrective actions must be conducted and completed by April 5, 2019:

1. Submit an evaluation report prepared by a Professional Engineer (P.E.), licensed in New York State, to evaluate and identify the cause of the violations noted in this NOV, along with recommendations and a schedule to correct the violations.

2. Upon DEC approval, implement the corrections and complete the attached Certification of Compliance Form.

3. Submit documentation of completed staff training.

Any inquiries, submissions or requests relating to this NOV should be directed to Sevon Thompson of my staff at sevon.thompson@dec.ny.gov or (716) 851-7106.

Sincerely,

S Thompson for

Jeffrey Konsella, P.E.
Regional Water Engineer

ec: Sevon Thompson, Region 9, Division of Water
Maureen Brady, Esq., Regional Attorney
Jagabandhu Debnath, Albany BWC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Certification of Compliance

For DEC Use:

Facility Name: Town of Hume Wastewater Treatment Plant

SPDES ID: NY0203858

Regional Inspector: Sevon Thompson

Date: 2/8/2019

Complete and return this Certification of Compliance by: April 5, 2019

Send to Regional Water Engineer: Jeffrey Konsella - R9

Jeffrey Konsella
270 Michigan Ave
Buffalo, NY 14203

1. Facility has corrected the violations specified in the inspection report cited or attached Notice of Violation; or certifying that permit or order schedule items are completed.

2. I am authorized as the permit holder to file this certification on behalf of the facility.

3. Submission of this certification does not limit enforcement or re-inspection by the department.

Please Submit Items Checked		Description of Compliance/Corrective Actions	Received Date
Photos	☐		
Engineer's Certification	☒	1. Submit an evaluation report prepared by a Professional Engineer (P.E) licensed in New York State to evaluate and identify the cause of the violation noted and a copy of the staff training schedule or completion	
Letter Describing Corrections Made	☐		
As-Built Plans	☐		
Other	☐		

For Permittee Use:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Permittee (Per CFR 122.22)
(Print or Type)

Title

Signature

Date Signed

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Water Compliance
625 Broadway, Albany, New York 12233-3506
P: (518) 402-8177 | F: (518) 402-8082
www.dec.ny.gov

May 31, 2019

HUME (T)
PO BOX 302, 20 N GENESEE ST
FILLMORE, NY 14735

Re: POTW Design, Planning and Flow Management Annual Certification additional requirements

Facility Name: **HUME (T) STP**

SPDES Permit # **NY0203858**

2018 Engineer

Dear Permittee:

Your recently submitted POTW Design, Planning and Flow Management Annual Certification Form indicates that additional requirements are required for your facility. Please refer to the checked item below that pertains to your facility's situation.

X Item 1.d: The annual average flow of the facility exceeded 95% of the design flow.
In accordance with 6 NYCRR Part 750-2.9(c)(1) you must prepare and submit a flow management no later than August 1, 2019.

___ Item 2.c: The **actual** influent loading for either BOD (or CBOD) or TSS, as determined from plant operational data as submitted on the DMRs **exceed** the monthly average **design** influent loading for any eight calendar months during 2018.
In accordance with 6 NYCRR Part 750-2.9(c) (2), you must prepare and submit a plan for future growth no later than August 1, 2019.

___ Item 3: The POTW discharge exceeded a SPDES permit effluent limit for BOD, CBOD, Ultimate Oxygen Demand (including 28-day BOD), or Total Suspended Solids for four or more months during two consecutive calendar quarters and a future growth plan is required pursuant to 6NYCRR Part 750-2.9(c)(2).
In accordance with 6 NYCRR 750-2.9(c)(3), you must implement the plan for future growth (required by Item 2.c) and impose a sewer connection moratorium immediately.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Water Compliance
625 Broadway, Albany, New York 12233-3506
P: (518) 402-8177 | F: (518) 402-8082
www.dec.ny.gov

The regulations for operating in accordance with a SPDES permit (6NYCRR Part 750-2) are located at the Department of Environmental Conservation's web site at:
http://www.dec.ny.gov/regs/2485.html

Please contact your Regional Water Manager with any questions about the regulations or these requirements at (716) 851-7070.

All required plans should be submitted to your Regional Water Manager at the following address:

Regional Water Engineer
NYSDEC – Buffalo Office
270 Michigan Ave
Buffalo, NY 14203-2999

Sincerely,

Jagabandhu Debnath

Jagabandhu Debnath
Environmental Engineer 1
Compliance Assurance Section
Division of Water

cc: Regional Water Manager, R-9

APPENDIX D

TOWN OF HUME WWTP DMR SUMMARY

Discharge Monitoring Report (DMR) Data - Influent

Date	Flow	Nitrogen, TKN (as N)		$CBOD_5$		UOD		Solids, Suspended		Solids, Suspended		Total Phosphorus (as P)		Ammonia (as NH_3)		Solids, Settleable	pH		Dissolved Oxygen	Temperature	BOD_5		BOD_5	
	Monthly Average (mgd)	Daily Maximum (mg/l)	Daily Maximum (lbs/d)	Daily Maximum (mg/l)	Daily Maximum (lbs/d)	Daily Maximum (mg/l)	Daily Maximum (lbs/d)	Monthly Average (mg/l)	Monthly Average (lbs/d)	7-Day Average (mg/l)	7-Day Average (lbs/d)	Monthly Average (mg/l)	Monthly Average (lbs/d)	Daily Maximum (mg/l)	Daily Maximum (lbs/d)	Daily Maximum (ml/l)	Minimum (SU)	Maximum (SU)	Daily Minimum (mg/l)	Daily Maximum (Deg C)	Monthly Average (mg/l)	Monthly Average (lbs/d)	7-Day Average (mg/l)	7-Day Average (lbs/d)
1/1/2015 - 3/31/2015	0.048							71				N/A	N/A	N/A	N/A	0	6.9	7.2		7	53.6			
4/1/2015 - 6/30/2015	0.053							60				4.6		39.6		0	7	7.3		11.9				
7/1/2015 - 9/30/2015	0.036							62.8				6.2		40		0	6.8	7		18.3				
10/1/2015 - 12/31/2015	0.038							28.5				5.36		38.2		0	6.7	6.9		14	54.6			
1/1/2016 - 3/31/2016	0.046							26.5				4.5		52		0	7	7		9	50.96			
4/1/2016 - 6/30/2016	0.041							28.1				6.3		39.96		0	6.7	7.2		12.3				
7/1/2016 - 9/30/2016	0.04							7				6.8		56.6		0	6.8	7		19				
10/1/2016 - 12/31/2016	0.042							24				6.38		59.2		0	6.7	7		20	69			
1/1/2017 - 3/31/2017	0.058							15				3.73		33.46		0	6.79	7.1		7.4	67.7			
4/1/2017 - 6/30/2017	0.05							20.5				5.24		50.9		0	6.75	7		13.6				
7/1/2017 - 9/30/2017	0.043							21				6.37		36.23		0	6.4	7.1		18				
10/1/2017 - 12/31/2017	0.052							25.22				5.1		43.56		0	6.8	7		13.33	89			
1/1/2018 - 3/31/2018	0.058							N/A				3.73		33.46		0	6.79	7.1		7.4				
4/1/2018 - 6/30/2018	0.046							24.86				5.31		56.5		0	6.8	7		12				
7/1/2018 - 9/30/2018	0.047							40				5.87		45.6		0	6.7	6.9		20.1				
10/1/2018 - 12/31/2018	0.052							N/A				4.2		31.6		0	6.8	7		12.7	93			

Discharge Monitoring Report (DMR) Data - Effluent

Date	Flow	Nitrogen, TKN (as N)		$CBOD_5$ (Measured as BOD)		UOD (Measured as BOD)		Solids, Suspended		Solids, Suspended		% Removal	Total Phosphorus (as P)		Ammonia (as NH_3)		Solids, Settleable	pH		Dissolved Oxygen	Temperature	BOD_5		BOD_5		% Removal BOD_5
	Monthly Average (mgd)	Daily Maximum (mg/l)	Daily Maximum (lbs/d)	Daily Maximum (mg/l)	Daily Maximum (lbs/d)	Daily Maximum (mg/l)	Daily Maximum (lbs/d)	Monthly Average (mg/l)	Monthly Average (lbs/d)	7-Day Average (mg/l)	7-Day Average (lbs/d)	Monthly Average	Monthly Average (mg/l)	Monthly Average (lbs/d)	Daily Maximum (mg/l)	Daily Maximum (lbs/d)	Daily Maximum (ml/l)	Minimum (SU)	Maximum (SU)	Daily Minimum (mg/l)	Daily Maximum (Deg C)	Monthly Average (mg/l)	Monthly Average (lbs/d)	7-Day Average (mg/l)	7-Day Average (lbs/d)	Monthly Average
Limit	0.045	Monitor	Monitor	Monitor	Monitor	75	28.1	30	11.3	45	16.9	85	Monitor	Monitor	Monitor	Monitor	0.1	6	9	5	Monitor	30	11.3	45	16.9	85
1/1/2015 - 3/31/2015	0.048							7.8	7.8	7.8	7.8	94	6	6	32.8*	32.8*	0	7	7.3	11.7	7	20	8.2	20	8.2	
4/1/2015 - 6/30/2015	0.053	32	32	5.2	5.2	7.6	13.6	20.6	7.9	20.6	7.9	90	5		29	29	0	6.85	7.2	10.7	13	5.2	5.2			91
7/1/2015 - 9/30/2015	0.036	37.5	37.5	11	3.4	202.8	202.8	17	8.14	17	8.14	91.6	7.16	7.16	36	36	0	6.7	7	6.5	19					94.6
10/1/2015 - 12/31/2015	0.038							3.3	1.6	3.3	1.6	98	5.56		17.8	17.8	0	6.7	6.9	9.9	14	8.7	4.4	8.7	4.4	96
1/1/2016 - 3/31/2016	0.046							3.7	3.2	3.7	3.2	98	3.9	3.9	24.13	24.13	0	6.7	6.9	10.16	9	10.96	6.4	10.96	6.4	94.6
4/1/2016 - 6/30/2016	0.041	37.1	37.1			84	84	10.4	10.4	10.4	10.4	95	6.5	6.5	33.4	33.4	0	6.7	7.2	11.2	13.3	85	11.2			N/A
7/1/2016 - 9/30/2016	0.04	52.6	52.6			270.15	270.15	3.7	8.5	3.7	8.5	96	6.9	6.9	46.7	46.7	0	6.7	7.1	11	20	22.5	22.5			88.66
10/1/2016 - 12/31/2016	0.042							3.43	1.27	3.43	1.27	99	5.86	4.74	46.1	14.19	0	6.7	7.1	8.8	20	11	2.92	11	2.92	99
1/1/2017 - 3/31/2017	0.058							5.96	2.58	5.96	2.58	97	4.42	1.9	28.2	12	0	6.8	7.1	7.3	7.4	24.2	10.49	24.2	10.49	88
4/1/2017 - 6/30/2017	0.05	34	14.95	27.23	12.26	193.4	87	8.26	3.29	8.26	3.29	95	5.22	2.09	34	13.6	0	6.73	6.97	11.6	14.1					83
7/1/2017 - 9/30/2017	0.043	39.83	13.02	8.6	3.89	205	78.64	6.26	3.94	6.26	3.94	97	5.78	2.44	39.56	13.67	0	6.5	7	10.5	19					95.6
10/1/2017 - 12/31/2017	0.052							7.5	3.12	7.5	3.12	96.66	4.61	1.9	30.8	11	0	6.8	7	7.66	12.66	7.5	3.99	7.5	3.99	96
1/1/2018 - 3/31/2018	0.058							5.96	2.58	5.96	2.58	97	4.42	1.9	28.2	12	0	6.8	7.1	7.3	7.3	24.2	10.49	24.2	10.49	88
4/1/2018 - 6/30/2018	0.046	36.2	10.26	30	15	188.5	81.74	14.3	5.6	14.3	5.6	93.6	5.1	1.99	29.6	8.39	0	6.8	7.1	6	12.66					N/A
7/1/2018 - 9/30/2018	0.047	29	12	38.4	11.5	183	68.67	7.16	2.68	7.16	2.68	96.33	5.52	2.28	39.1	11.74	0	6.7	7	5.4	18.5					N/A
10/1/2018 - 12/31/2018	0.052							6.36	3.95	6.36	3.95	96.6	4.36	1.88	28.1	11.01	0	6.8	7.1	5.6	12	11.56	6.9	11.56	6.9	93

APPENDIX E

SEWER COLLECTION SYSTEM SCHEMATIC

MRB group
Engineering, Architecture & Surveying, D.P.C.
The Culver Road Armory, 145 Culver Road, Suite 160, Rochester, New York 14620
Phone: 585.381.9250
www.mrbgroup.com

Sheet No. APPENDIX E
of
Project No. 0809.19003

Project Title:
WWTP IMPROVEMENTS
TOWN OF HUME
ALLEGANY COUNTY NEW YORK

Drawing Title:
SEWER COLLECTION SYSTEM SCHEMATIC

Drawn By:	Checked By:	Scale:	Date:
BT	DCA	AS SHOWN	9/24/2019

No.	Revisions and Descriptions	By	Date

DRAWING ALTERATION
THE PUBLISHED IS AN EXCERPT FROM THE NEW YORK EDUCATION LAW ARTICLE 145 SECTION 7209 AND APPLIES TO THIS DRAWING

IT IS A VIOLATION OF THIS LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR TO ALTER IN ANY WAY AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR OR TO ALTER AN ITEM CHANGE THE LAND SIGNATURE AND THE DATE OF SUCH ALTERATION AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

GRAPHIC SCALE
1 inch = 150 ft.
(IN FEET)
0 75 150 300 450
150 75 0 150 300

SEWER MAIN
SEWER MAIN (BELOW WL)
CLEAN OUT
MANHOLE
LATERAL
SEPTIC TANK
PUMP STATION

FORCEMAIN TO WWTP

WEST MAIN STREET
MAIN STREET
TORREY STREET
GENESEE STREET
SOUTH GENESEE STREET
PROSPECT STREET
LOWELL STREET
CHURCH STREET
RAILROAD STREET
PUMP STATION

APPENDIX F

ESTIMATION OF INDIVIDUAL CAPACITIES OF UNIT TREATMENT PROCESSES

Completed By:	B. Tuncer	**Job No:**	2320.18
Checked By:	D. Anderson	**Page:**	1
Project Name:	T. Hume WWTP PER	**Date:**	10/2/19

MRB group
Engineering, Architecture, Surveying, P.C.

Subject: 4-inch Sewer. West main Street, before crossing road.

Manning's Equation

Input				
Mannings "n" Value	=	0.009		PVC Pipe
Diameter of Pipe	=	4.00	**in**	0.33 ft
Radius of Pipe	=	2	**in**	0.17 ft
Length of Pipe	=	84	**ft**	
Invert Elev. In	=	1169.63		
Invert Elev. Out	=	1170.01		
Slope of Pipe	=	0.0046	**ft/ft**	
Percent Full (1%-95%)	=	95.00%		
Liquid depth	=	0.317	**ft**	
Determine Liquid Area	=	0.086	**sf**	
Wetted Perimeter	=	0.897	**ft**	
Hydraulic Radius (A/P)	=	0.095	**ft**	
Flow in cfs	**=**	**0.20**	**cfs**	
Flow in gpm	=	**90**	**gpm**	
Flow in mgd	=	**0.129**	**mgd**	
Velocity in fps	**=**	**2.3**	**fps**	

Completed By:	B. Tuncer	**Job No:**	2320.18
Checked By:	D. Anderson	**Page:**	2
Project Name:	T. Hume WWTP PER	**Date:**	10/2/19

MRB group
Engineering, Architecture, Surveying, P.C.

Subject: 6-in Sewer. Inlet pipe to Route 19A pump station.

Manning's Equation

Input

Mannings "n" Value	=	0.009		PVC Pipe
Diameter of Pipe	=	6.00	**in**	0.50 ft
Radius of Pipe	=	3	**in**	0.25 ft
Length of Pipe	=	179	**ft**	
Invert Elev. In	=	1162.23		
Invert Elev. Out	=	1161.88		
Slope of Pipe	=	0.002	**ft/ft**	
Percent Full (1%-95%)	=	95.00%		
Liquid depth	=	0.475	**ft**	
Determine Liquid Area	=	0.193	**sf**	
Wetted Perimeter	=	1.345	**ft**	
Hydraulic Radius (A/P)	=	0.143	**ft**	
Flow in cfs	**=**	**0.39**	**cfs**	
Flow in gpm	=	**175**	**gpm**	
Flow in mgd	=	**0.252**	**mgd**	
Velocity in fps	**=**	**2.0**	**fps**	

Completed By:	B. Tuncer	**Job No:**	2320.18
Checked By:	D. Anderson	**Page:**	3
Project Name:	T. Hume WWTP PER	**Date:**	10/2/19

MRB group
Engineering, Architecture, Surveying, P.C.

Subject: 6-in plant effluen tline. Outfall Capacity

Manning's Equation

Input				
Mannings "n" Value	=	0.009		PVC Pipe
Diameter of Pipe	=	6.00	**in**	0.50 ft
Radius of Pipe	=	3	**in**	0.25 ft
Length of Pipe	=	2213	**ft**	
Invert Elev. In	=	1203.87		
Invert Elev. Out	=	1180.00		
Slope of Pipe	=	0.011	**ft/ft**	
Percent Full (1%-95%)	=	100.00%		
Liquid depth	=	0.500	**ft**	
Determine Liquid Area	=	0.196	**sf**	
Wetted Perimeter	=	1.571	**ft**	
Hydraulic Radius (A/P)	=	0.125	**ft**	
Flow in cfs	**=**	**0.84**	**cfs**	
Flow in gpm	=	**378**	**gpm**	
Flow in mgd	=	**0.544**	**mgd**	
Velocity in fps	**=**	**4.3**	**fps**	

Data: Enter data in shaded cells only

Pump Station Type: Submersible
Motor Type: Full Speed

Elevations

Pumps Off =	1158	ft
Suction Bell Inlet =	1156.25	ft
Discharge Elevation =	1222.93	ft
Max. Static Lift =	64.93	ft

Forcemain size (in):	4
Forcemain Length (ft):	5000
"c" factor used:	130

Flow Range

Design Flow = 160 gpm

2018 System Demands

Inflow	GPD	gpm	
Avergae Day	52,361.64	36.36	(from 2019 - Daily Flow.xlxs)
Maximum Day	129,000.00	89.58	(from 2019 - Daily Flow.xlxs)
Peak Hour		145.03	(from 2019 - 155 WWTP Load.xlxs, RSWF)

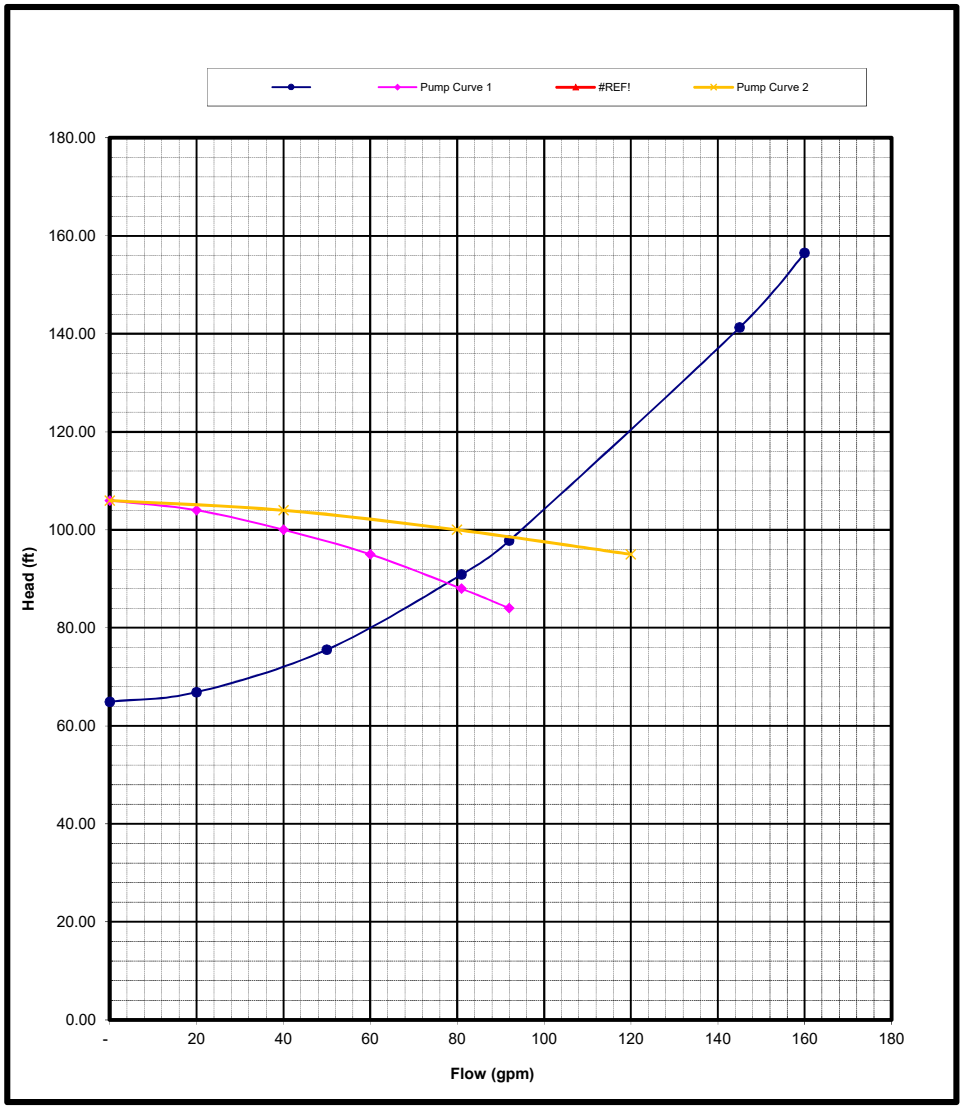
	Static Lift	*Suction*	*Discharge*	
Flow (gpm)	Pump Off	Suction Loss (ft)	Discharge Loss (ft)	**Total Head (ft)**
-	64.93	0.00	0.00	64.93
20	64.93	0.00	1.95	66.88
50	64.93	0.00	10.62	75.55
81	64.93	0.01	25.95	90.89
92	64.93	0.01	32.85	97.79
145	64.93	0.02	76.32	141.27
160	64.93	0.03	91.55	156.51

Existing - One Pump
Existing - Two Pumps
Needed

Pump Selection:	Existing
Make:	EMU
Model No.:	FA 82 - 430
Quantity	2
Pumps On	1159
Horsepower:	5.00
Hertz	60
Phase	3
Volt	230
RPM:	3420
Impeller Dia:	

Pumps	**Flow (gpm)**	**TDH (ft)**
Existing - One Pump	81.00	90.89
Existing - Two Pumps	92.00	97.79

Pump Curve 1		**Pump Curve 2**	
Flow	**Head**	**Flow**	**Head**
gpm	**ft**	**gpm**	**ft**
-	106	-	106
20	104	40	104
40	100	80	100
60	95	120	95
81	88		
92	84		



**All elevations are NAD 27 unless otherwise noted.

2018 System Demands

Inflow	**GPD**	**gpm**
Average Day	52,361.64	36.36
Maximum Day	129,000.00	89.58
Peak Hour		145.03

Design Flow

Single Pump	81	gpm
Two Pumps	92	gpm, from system curve

Operating Levels (From Record Drawings, 1987)

Top of Slab =	1,169.95	
Wet Well Full =	1,169.28	
Overlfow Full =	1,164.74	
Overflow =	1,164.25	
Drain Inlet =	1,160.95	from Valve Vault
High Alarm =	1,159.40	
Lag On =	1,160.00	
Lead On =	1,159.00	
Pumps Off =	1,158.00	
Tank Inlet =	1,157.61	from Overflow Tank
Suction =	1,156.25	

Wetwell

Diameter =	8.00	ft
Area =	50.27	sf
Unit Volume =	376.04	gal/ft
Lead Pump ON =	1,159.00	
Pump Off =	1,158.00	
Operating Depth =	1.00	
Lead Op. Vol =	376.04	gal
Lag Pump ON =	1,160.00	
Lead Pump ON =	1,159.00	
Operating Depth =	1.00	
Lag Op. Vol. =	376.04	gal

Emergency Storage Time - No Pumps

Wet Well

Wet Well Full =	1,169.28	ft
Lag Pump On =	1,160.00	ft
Emergency Vol =	3,490.87	gallons

Overflow Tank

Length =	13.33	ft (inside)
Width =	6.33	ft (inside)
Unit Volume =	631.73	gal/ft
Tank Full =	1,164.74	
Pumps Off =	1,158.00	Assumes previous overlfow to storage.
Emergency Vol =	4,257.85	gallons
Total Emg. Vol =	7,748.72	gallons

Condition	Flow	Minutes	Hours
Average Day	36.36	213.10	3.55
Maximum Day	89.58	86.50	1.44
Peak Hour	145.03	53.43	0.89

Peak Hour Pump Cycle - RSWF

Design Flow =	92	gpm (Two Pumps Running)
Peak Flow =	145.03	gpm
Net Outflow =	(53.03)	gpm
Operating Volume =	752.07	gallons
Emergency Vol =	7,748.72	gallons
Total Volume =	8,500.79	gallons
Time to Fill =	(160.31)	minutes (Maximum duration of peak inflow.)
	(2.67)	hours

Storage does not drain. Peak Inflow > Peak Outflow.

Time to Fill =	58.62	minutes - Failure
	0.98	hours - Failure

Peak Hour Pump Cycle - TR16

Design Flow =	92	gpm (Two Pumps Running)
Peak Flow =	201.00	gpm
Net Outflow =	(109.00)	gpm
Operating Volume =	752.07	gallons
Emergency Vol =	7,748.72	gallons
Total Volume =	8,500.79	gallons
Time to Fill =	(77.99)	minutes (Maximum duration of peak inflow.)
	(1.30)	hours

Storage does not drain. Peak Inflow > Peak Outflow.

Time to Fill =	42.29	minutes - Failure

Maximum Day Cycle

Maximum Day =	89.58	gpm
Design Flow =	92.00	gpm (Two Pumps Running)
Lag Pump ON =	1,160.00	ft
Pumps Off =	1,158.00	ft
Volume =	752.07	gallons
Net Outflow =	2.42	gpm
Time to Drain =	311.20	minutes
Time to Fill =	8.40	minutes
Time to Fill =	94.89	minurtes - Failure
	1.58	hours - Failure
Total Cycle =	319.60	minutes
	5.33	hours

Average Day Cycle

Average Day =	36.36	gpm
Design Flow =	92.00	gpm (One Pump Running)
Lead Pump ON =	1,159.00	ft
Pumps Off =	1,158.00	ft
Volume =	376.04	gallons
Net Outflow =	55.64	gpm
Time to Drain =	6.76	minutes
Time to Fill =	10.34	minutes
Time to Fill =	233.78	minurtes - Failure
	3.90	hours - Failure
Total Cycle =	17.10	minutes

RECIRCULATING SAND/MEDIA FILTERS

Referance:
USEPA Onsite Wastewater Treatment Systems Technology Fact Sheet 11 - Recirculating Sand/Media Filters

2018 WWTP Flow based on RSFW

System Peak Hour Ratio = 3.99
(See 2019 DMR-summary.xlxs)
(Flows, see: 2019 - Daily Flow.xlxs)

Year	Avg Day (GPD)	Max Day (GPD)	System Peak (gpm)
2015	43,436	81,000	120.35
2016	43,178	86,000	119.64
2017	49,687	121,000	137.67
2018	52,362	129,000	145.09
Overall	47,212	129,000	130.82

WWTP Peak Hour = 81 gpm - One Pump Running
WWTP Peak Hour = 92 gpm - Two Pumps Running
(See 2019 - Route 19A PS Existing.xlxs)
(See 219 - WWTP Load.xlxs)

2018	Average	Minimum	Maximum
BOD (mg/L)	91.48	48.80	148.00
TSS (mg/L)	25.70	11.70	56.00
pH (S.U.)	6.93	6.70	7.10
TKN (mg/L)	42.66	30.20	58.90
Temp (C)	12.62	7.30	18.50

Route 19A Pump Station and WWTP Design Flow

Route 19A Peak Hour Factor of Safety 1.1

Year	Avg Day (GPD)	Max Day (GPD)	System Peak (gpm)	Pump Flow (gpm)
2015	43,436	81,000	120.35	130
2016	43,178	86,000	119.64	130
2017	49,687	121,000	137.67	150
2018	52,362	129,000	145.09	160

PRE-TREATMENT SETTLING TANK

1. Primary settling provided by individual septic tanks.
2. Pre-treatment settling tank utilized to remove solids that may have bypassed / escaped the septic tanks.

EXISTING TANKS (Three spetic tanks in series.)

Existing Inflow Rates from Route 19A Pump Station		
Maximum Day	129,000	GPD
Peak Hour		
Single Pump	81	gpm
Two Pumps	92	gpm
2,000 Gallon Tank		
Length	9.83	ft
Width	4.33	ft
Area	42.61	sf
Nominal Depth	6.27	ft
Operating Depth	4.50	ft
Existing Loading Rate		
Maximum Day	3,027.4	GPD/sf
Peak Hour		
Single Pump	2,737.3	GPD/sf
Two Pumps	3,109.0	GPD/sf
1,500 Gallon Tank		
Length	9.83	ft
Width	4.33	ft
Area	42.61	sf
Nominal Depth	4.71	ft
Operating Depth	4.50	ft
Existing Loading Rate		
Maximum Day	3,027.4	GPD/sf
Peak Hour		
Single Pump	2,737.3	GPD/sf
Two Pumps	3,109.0	GPD/sf
1,000 Gallon Tank		
Length	7.33	ft
Width	3.33	ft
Area	24.44	sf
Nominal Depth	5.47	ft
Operating Depth	4.50	ft
Existing Loading Rate		
Maximum Day	5,277.3	GPD/sf
Peak Hour		
Single Pump	4,771.6	GPD/sf
Two Pumps	5,419.6	GPD/sf

NEEDED TANKS

Design Surface Overflow Rates

Design Flow	600.00	GPD/sf
Peak Hour	3,000.00	GPD/sf

Design Fow: Either Maximum Day flow with safety factor or Peak Hour.
Peak hour can include a safety factor for small plants.

Maximum Day Safety Factor	1.5
Peak Hour Safty Factor	1.1

Pre-Setting Tank Design Flow

Flow to Route 19A Pump Station

Maximum Day Flow	129,000	GPD
Peak Hour	145	gpm
	208,923	GPD

Maximum Day Safety Factor	1.50
Peak Hour Safty Factor	1.10

Max Day Design Flow	193,500	GPD
Peak Hour Design Flow	160	gpm
	230,400	GPD

Needed Overlfow Rate

Max Day Design Flow	600	GPD/sf
Need Surface Area	322.5	sf
Peak Hour Design Flow	3,000	GPD/sf
Needed Surface Area	76.8	sf
Needed surface area:	323	sf

FINDINGS

1. Existing tanks are undersized based on existing flow ***from*** Route 19A pump station.
2. Existing tanks are undersized based on existing flow ***to*** Route 19A pump station.

DOSING SYSTEM

EXISTING DOSING TANK

Length	12.00	ft
Width	12.00	ft
Unit Volume	144.00	sf
	1,077.26	gallons/ft
Depth	7.00	ft
Gross Volume	1,008.00	cf
	7,904	gallons
High Water Level	1,221.65	ft
Low Water Level	1,216.98	ft
Operating Depth	4.67	ft
Operting Volume	5,027	gallons
Overflow Level	1,221.82	ft
High Water Level	1,221.65	ft
Overflow Depth	0.17	ft
Overfow Storage	180	gallons

Outflow Rate

Disharge Rate of 6-in Dosing Siphon
(From Manufacturer: Fluid Dynamics, Inc., Model 6-56)

Head (ft)	Flow (gpm)
4.67	850.00
4.00	790.00
3.00	975.00
2.00	550.00
1.00	380.00
0.95	340.00

Average Dose Rate 600.00 gpm

Dosing device shall have 125% to 200% of maximum Inflow Rate
(*New York State Design Standards for Intermediate Sized Wastewater Treatment Work*s)

Inflow Rate

Route 18A Pump Statoin

Min flow to tank	81.0	gpm - One Pump Running
Max flow to tank	92.0	gpm - Two Pumps Running

Recirculation Pump (Based on Goulds WS1512D, From Town.)

Existing Pump Size	1.50	HP
Efficiency	77%	
BHP	1.16	
Estimated Flow Rate	130.00	gpm
High Water Dosing Tank	1,221.65	ft
Low Water Recirculation	1,202.00	ft - Estiamted from Effluent pit.
Static Lift	19.65	ft

h(f) = 0.002083 L (100/C)^1.85 * Q^1.85 / d^4.8655

Equiv. Pipe Length (L)	150.00	ft (Estiamted)
Pipe Size (d) (DR11 HDPE)	3.00	in
Pipe Friction Coeficient	130	
Pipe Frictoin Loss, h(f)	7.47	ft
Total Head	27.12	ft
Beak HP at Eff =	1.16	

Net Inflow

Minimum	211.00	gpm
Maximum	222.00	gpm
Minimum Needed Dosing Rate	278	gpm (at least)
Maximum Needed Dosing Rate	444	gpm (at least)

Recirculation Ratio

Retirculation Pump Rate : Route 19A Pump Rate

Minimum Recirculation Ratio	1.41	:1
Maximum Recirulation Ratio	1.60	:1

Time To Drain

Net Outflow

Minimum	378.00	gpm
Maximum	389.00	gpm

Time to Drain
(Operating Volume / Net Outflow Rate)

Minimum	12.92	minutes
Maximum	13.30	minutes

Total Volume Per Dose

(Time to Drain * Average Dose Rate)

Minimum Volume	7,754	gallons
Maximum Volume	7,980	gallons

Doses per Day

Net Inflow		
Minimum	303,840	GPD
Maximum	319,680	GPD
Minimum Doses per Day	39	ea
Maximum Doses per Day	40	ea
Recommneded Frequency >	48.0	

NEEDED DOSING TANK

Inflow Rate

Design Maximum Day Flow	129,000	GPD
Design Peak Hour Flow		
Existing Peak Flow to Route 19A	145.09	gpm
Safety Factor, USE	1.1	
Needed Design Peak Hour Flow, USE	160	gpm

Recirulation Rate

Minimum Ratio	3	:1
Maximum Ratio	5	:1

(USEPA *Onsite wastewater Treatment Systems Technology Fact Sheet 11, Recirculating Sand/Medi Filters*)

Minimum Recirculation Flow	480	gpm
Maximum Recirculation Flow	800	gpm

Net Inflow

(Route 19A + Recirculation)

Minimum Net Inflow	640	gpm
Maximum Net Inflow	960	gpm

Dosing Device, Automatic Siphon

(Use 200% of Net Inflow)

Minimum Dose Rate	1,280	gpm
Maximum Dose Rate	1,920	gpm

Daily Dosing Volume		
Design Maximum Day Flow	129,000	GPD
Recirulation Rate		
Minimum Ratio	3	:1
Maximum Ratio	5	:1
	516,000	GPD
Maximum Daily Dose Volume	774,000	GPD
Dosing Volume / Tank Operating Volume		
Dosing Time, T (USE)	8.40	minutes
Volume Per Dose (Vdos)		
Minimum	10,752	gallons
Maximum	16,128	gallons
Doses Per Day		
Design Flow, Max Day	129,000	GPD
Doses per day = [(recycle ratio + 1) * Design Max / Vdos		
Minimum Recycle Rato =	3	3 to 5 Recommended.
Minimum Daily Dose Volume =	516,000	GPD
Minimum Volume per Dose =	10,752	gallons
Minimum Doses per day =	48.0	
Recommneded Frequency >	48.0	
Maximum Recycle Rato =	5	3 to 5 Recommended.
Maximum Daily Dose Volume =	774,000	GPD
Maximum Volume per Dose =	16,128	gallons
Maximum Doses per day =	48.0	
Recommneded Frequency >	48.0	
Needed Recirculation Pump		
Estimated Flow Rate	800.00	gpm - Max
	1.78	cfs
High Water Dosing Tank	1,221.65	ft
Low Water Recirculation	1,202.00	ft - Estiamted from Effluent pit.
Static Lift	19.65	ft
h(f) = 0.002083 L (100/C)^1.85 * Q^1.85 / d^4.8655		
Equiv. Pipe Length (L)	150.00	ft (Estiamted)
Pipe Size (d) (DR11 HDPE)	6.00	in
Pipe Area	28.27	si
	0.20	sf
Pipe Velocity, fps	9.08	fps
Pipe Friction Coeficient	130	
Pipe Friction Loss, h(f)	7.39	ft
Total Head	27.04	ft
Efficiency	55%	
Beak HP at Eff =	9.93	

FINDINGS

1. Existing recycle ration less than required.
2. Deisgn flow to existing tank less than existing peak flow to Route 19A pump station.
3. Tanks are undersized based on existing peak flow to Route 19A pump station.
4. Existing automatic siphon undersized based on needed doing rate.
5. Existing dosing tank undersized based on design flow from Route 19A pump Station.

FINE GRAVEL, OPEN BED FILTERS

EXISTING FILTERS

Surface Area		
Length	100	ft
Width	50	ft
Surface Area	5,000	sf
Number of Filters	3	ea
Filters in Operation	2	ea
Total Operating Surface Area	10,000	sf
Volume Dosed per Day		
Minimum	303,840	GPD
Maximum	319,680	GPD
Existing Surface Loading Rate		
(Operating Area / Volume Per Dose)		
Minimum Surface Area	30.38	GPD/sf
Maximum Surface Area	31.97	GPD/sf

NEEDED FILTERS

Needed Filter Area		
Design Flow, Max Day	129,000	GPD
Minimum Recycle Ratio	3	:1
Daily Dose	516,000	GPD
Min. Combined Loading Rate	30	GPD/sf - Fine Gravel System
Maximum Surface Area	17,200	sf
Design Flow	129,000	GPD
Maximum Recycle Ratio	5	:1
Daily Dose	774,000	GPD
Max. Combined Loading Rate	75	GPD/sf - Fine Gravel System
Minimum Surface Area	10,320	sf

FINDINGS

1. Existing loading rate is less than recommended.
2. Existing operating surface area is undersized based on

APPENDIX G

UVT TEST RESULT

TROJANUV
WATER CONFIDENCE

CERTIFICATE OF ANALYSIS
Final Report

Project Name: Hume WWTP
Contact: Corey Potter
Address: New York

Trojan Sales: John Faber
Local Trojan Rep: Koester
Engineer: MRB

Sample #: 19-0218

Telephone: 585-813-4329
Email: n/a

Received Date/Time: June 5, 2019 at 1:00 pm
Analysis Date: June 5-6, 2019
Release Date: June 11, 2019

Treatment Process: Sand Filtration
Disinfection Limit: 200 FC/100 mL 30 day geomean

LAB SAMPLE NO.	SAMPLE IDENTIFICATION	SAMPLE DATE/TIME (M/D/Y)	RECEIVED TEMP. (°C)	FLOW RATE (MGD)	UVT (%/cm)	UVT FILTERED (%/cm)	TSS (PPM)
19-0218	Collimated Beam Sample*	**6/3/2019 11:30am	9.8	0.25	60	65	14.5

COLLIMATED BEAM RESULTS

Dose (mWs/cm2)	19-0218 **Fecal Coliforms/100mL
0	260 000
5	39000
10	1500
20	980
40	530
80	350

DESCRIPTION OF ANALYSES

UVT (UV Transmittance)
The percentage of germicidal UV light that is able to penetrate through 1cm of water sample at 254nm. The higher the UVT value measured the more effective a UV system will be. UVT can be reduced by iron, organic dyes, tannins, humic acids.

UVT Filtered
The percentage of germicidal UV light that is able to penetrate through a sample of water after it has passed through a 1.2µm Glass Fiber Filter.

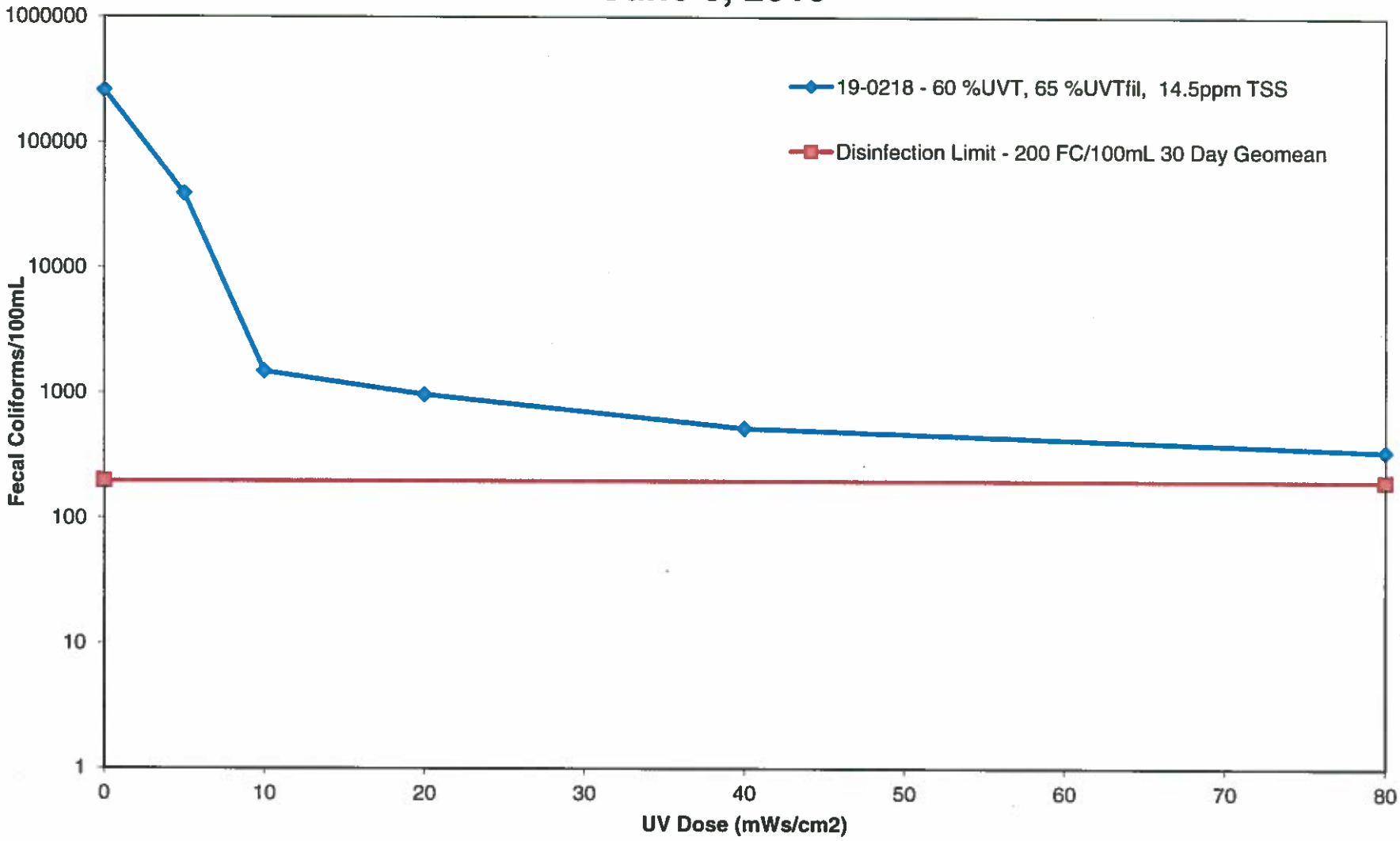
TSS (Total Suspended Solids in PPM – Parts-Per-Million or mg/L -- milligrams per Liter)
The weight measurement of all suspended matter larger than 1.2µm for a predetermined volume of water.

Collimated Beam
Determines the UV dose necessary to disinfect wastewater effluent to legislated permit levels or lower for specified target microorganisms.

Comments:
*Excess solids were present in the sample and may have affected results. *Samples were received past the recommended hold time of 48 hours. Fecal Coliform results may have been impacted.

Mari Burgess for
Certified by Brian Petri, Ph.D.
Validation & Research Services Manager

Hume, NY
June 6, 2019



TROJANUV
WATER CONFIDENCE

CERTIFICATE OF ANALYSIS
Final Report

Project Name:	**Hume WWTP**	**Trojan Sales:**	John Faber
Contact:	Corey Potter	**Local Trojan Rep:**	Koester
Address:	New York	**Engineer:**	MRB
		Sample #:	19-0280 – 19-0281
Telephone:	585-813-4329		
Email:	---		

Received Date/Time:	July 10, 2019 at 3:00 pm	**Weather:**	70°F
Analysis Date:	July 11, 2019	**Treatment Process:**	Sand Filtration
Release Date:	July 22, 2019	**Disinfection Limit:**	200 FC/100 mL 30 day geomean

LAB SAMPLE NO.	SAMPLE IDENTIFICATION	SAMPLE DATE/TIME (M/D/Y)	RECEIVED TEMP. (°C)	FLOW RATE (MGD)	UVT (%/cm)	UVT FILTERED (%/cm)	TSS (PPM)
19-0280	CB Sample	7/8/2019	23.5	0.025	65	65	10.3
19-0281	PSA Sample	7/8/2019	23.5	0.025	---	---	---

DESCRIPTION OF ANALYSES

UVT (UV Transmittance)
The percentage of germicidal UV light that is able to penetrate through 1cm of water sample at 254nm. The higher the UVT value measured the more effective a UV system will be. UVT can be reduced by iron, organic dyes, tannins, humic acids.

UVT Filtered
The percentage of germicidal UV light that is able to penetrate through a sample of water after it has passed through a 1.2µm Glass Fiber Filter.

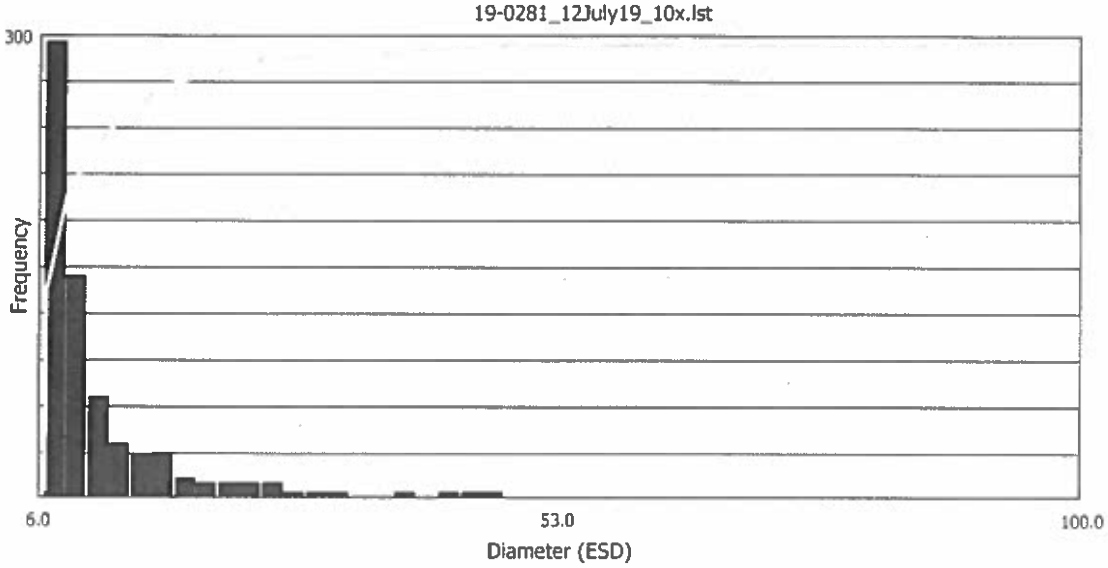
TSS (Total Suspended Solids in PPM – Parts-Per-Million or mg/L -- milligrams per Liter)
The weight measurement of all suspended matter larger than 1.2µm for a predetermined volume of water.

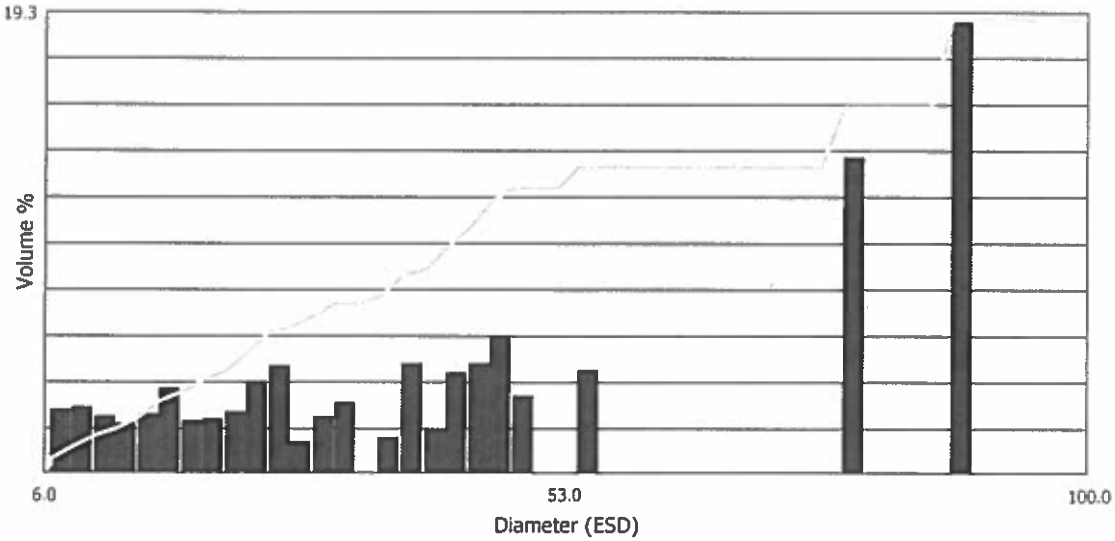
Collimated Beam
Determines the UV dose necessary to disinfect wastewater effluent to legislated permit levels or lower for specified target microorganisms.

Comments:

*Samples were received past the recommended hold time of 48 hours and arrived at an elevated temperature. Collimated Beam test was not performed as per instructions.

Mari Burgess for
Certified by Brian Petri, Ph.D.
Validation & Research Services Manager





Count	670 of 670
Particles / ml	6239

Summary Stats	Mean	Min	Max	StdDev
Diameter (ESD)	11.11	6.00	89.99	7.99
Length	14.51	6.44	139.13	11.27
Width	6.53	0.68	38.07	4.72

Filter	Count	Volume %
6-10um	445	5.37
10-20um	167	12.41
20-30um	37	14.37
30-40um	10	11.27
40-50um	8	19.57
50-60um	1	4.28
60-70um	0	0.00
70-80um	1	13.40
80-90um	0	0.00
90-100um	0	0.00

APPENDIX H

ALTERNATIVE COST SUMMARIES

2019 PROBABLE PROJECT COST				
Chlorination/Dechlorination System				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
DEMOLITION				
Demo existing effluent manhole	LS	$ 25,000	1	25,000
NEW CONTACT TANK				
Concrete	LS	$ 200,000	1	200,000
Inf. & Eff. Pipes	LS	$ 48,000	1	48,000
Flow Diversion w/ Slide Gate	LS	$ 45,000	1	45,000
Tank Drain Line	LS	$ 48,000	1	48,000
Weir Plate and Effluent Wall	LS	$ 15,000	1	15,000
SITEWORK				
Land Acquisition	LS	$ 20,000	1	20,000
Excavation and Backfill	LS	$ 49,600	1	49,600
Site Restoration	LS	$ 80,000	1	80,000
OTHER COMPONENTS				
Chemical Storage and Feed Eq.	LS	$ 68,000	1	68,000
Equipment and Chemicals Storage	LS	$ 100,000	1	100,000
Electrical (SCADA)	LS	$ 72,800	1	72,800
Mobilization	3%	$ 23,100	1	23,100
CONSTRUCTION CONTINGENCY	15%	$ 119,200	1	119,200
Construction Subtotal				**913,700**
Engineering	25%			228,400
Administration	6%			54,800
Legal	2%			18,300
Geotechnical	LS	$ 4,500	1	4,500
Special Inspections	LS	$ 3,500	1	23,100
TOTAL PROJECT COST				**1,242,800**

2019 PROBABLE O&M COST				
Chlorination/Dechlorination System O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Electrical Power Cost	LS	$ 250.00	1	$ 250
Sodium Hypochlorite	LS	$5,200.00	1	$ 5,200
Sodium Bisulfite	LS	$2,400.00	1	$ 2,400
Equipment Maintenance Labor	LS	$5,500.00	1	$ 5,500
TOTAL O&M COST				**$ 13,350**

2019 PROBABLE PROJECT COST				
UV System				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
DEMOLITION				
Demo existing effluent manhole	LS	$ 25,000	1	$ 25,000
NEW UV EQUIPMENT				
Concrete Slab	LS	$ 50,000	1	$ 50,000
Inf. & Eff. Pipes	LS	$ 50,400	1	$ 50,400
Flow Diversion w/ Slide Gate	LS	$ 45,000	1	$ 45,000
Channel Drain	LS	$ 48,000	1	$ 48,000
UV System	LS	$ 80,000	1	$ 80,000
Pole Barn Structure	LS	$ 62,500	1	$ 62,500
SITEWORK				
Land Acquisition	LS	$ 20,000	1	$ 20,000
Excavation and Backfill	LS	$ 49,600	1	$ 49,600
Site Restoration	LS	$ 80,000	1	$ 80,000
OTHER COMPONENTS				
Electrical (SCADA)	LS	$ 63,300	1	$ 63,300
Upgrae Electric Service	LS	$ 50,000	1	$ 50,000
Mobilization	3%	$ 18,700	1	$ 18,700
CONSTRUCTION CONTINGENCY	15%	$ 96,400	1	$ 96,400
Construction Subtotal				**$ 738,900**
Engineering	25%			$ 184,700
Administration	6%			$ 44,300
Legal	2%			$ 14,800
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 990,700**

2019 PROBABLE O&M COST				
UV System O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Electrical Power Cost	LS	$ 270	1	$ 270
Lamp Replacement	LS	$ 3,850	1	$ 3,850
Equipment Maintenance Cost	LS	$ 2,745	1	$ 2,745
TOTAL O&M COST				**$ 6,865**

PROJECT: SANITARY SEWER REPLACEMENT

DATE: 2-Oct-2019
0809.19003.000

OWNER: TOWN OF HUME
ENGINEER: MRB GROUP

BASE BID					
SPEC ITEM NO.	DESCRIPTION	QUANTITY/ UNIT		UNIT PRICE	TOTAL
200.08	8" SDR 35 PVC SANITARY SEWER PIPE	22,050	LF	$65.00	**$1,433,250.00**
210.4	4' I.D. SANITARY SEWER MANHOLE (0' TO 10')	101	EA	$5,000.00	**$505,000.00**
211.4	4' I.D. SANITARY SEWER MANHOLE (OVER 10')	8	EA	$8,000.00	**$64,000.00**
212.01	ABANDON EXISTING MANHOLE	9	EA	$1,000.00	**$9,000.00**
223	CONNECTION OF NEW SANITARY SEWER TO EXISTING MANHOLE	1	EA	$3,500.00	**$3,500.00**
230.04	4" SDR 21 PVC SANITARY LATERAL	10,560	LF	$25.00	**$264,000.00**
230.06	6" SDR 21 PVC SANITARY LATERAL	60	LF	$30.00	**$1,800.00**
231.04	4" SANITARY SEWER CLEANOUTS	211	EA	$225.00	**$47,475.00**
231.06	6" SANITARY SEWER CLEANOUTS	1	EA	$350.00	**$350.00**
331	EROSION CONTROL	1	LS	$15,000.00	**$15,000.00**
400.4	SUBBASE COURSE, TYPE 4	690	CY	$32.00	**$22,080.00**
416.18	18" PIPE CASING/BORING	100	LF	$500.00	**$50,000.00**
429	ROAD PAVEMENT REPLACEMENT	370	LF	$30.00	**$11,100.00**
431	COUNTY ROADWAY RECONSTRUCTION	60	LF	$35.00	**$2,100.00**
432	STATE ROADWAY RECONSTRUCTION	150	LF	$50.00	**$7,500.00**
476	CONCRETE SIDEWALK (4' WIDE)	2,350	LF	$30.00	**$70,500.00**
504	DRIVEWAY PAVEMENT (BITUMINOUS) REPLACEMENT	17,150	SF	$6.00	**$102,900.00**
505	DRIVEWAY PAVEMENT REPLACEMENT (STONE/GRAVEL)	18,150	SF	$3.50	**$63,525.00**
521	LAWN RESTORATION	26,280	LF	$4.00	**$105,120.00**
530	TREE REMOVAL	20	EA	$500.00	**$10,000.00**
532	CLEARING AND GRUBBING	0.5	AC	$8,000.00	**$4,000.00**

PROJECT: SANITARY SEWER REPLACEMENT

DATE: 2-Oct-2019
0809.19003.000

OWNER: TOWN OF HUME
ENGINEER: MRB GROUP

BASE BID

SPEC ITEM NO.	DESCRIPTION	QUANTITY/ UNIT		UNIT PRICE	TOTAL
004	PROJECT SURVEY AND STAKEOUT	1	LS	$40,000.00	**$40,000.00**
002	MAINTENANCE & PROTECTION OF TRAFFIC	1	LS	$40,000.00	**$40,000.00**
001	MOBILIZATION (3% SUB. MAX)	1	LS	$86,166.00	**$86,166.00**
	BASE BID TOTAL				**$2,958,366.00**
				CONTINGENCY (15%)	**$443,755.00**
	TOTAL CONSTRUCTION COST				**$3,402,121.00**
	ENGINEERING, LEGAL, ADMINISTRATION			**33%**	**$1,122,700.00**
					$4,524,821.00
				SAY	**$4,525,000**

2019 PROBABLE PROJECT COST				
Add Collection System Manholes				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
From: 2019 - Cost New Gravity Sanitary Sewers.xlxs				
TOTAL PROJECT COST				**$ 4,918,500**

2019 PROBABLE O&M COST				
Manhole O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Manhole Inspection & Repair Cost	EA	$ 75	109	$ 8,175
TOTAL O&M COST				**$ 8,175**

2019 PROBABLE PROJECT COST				
Add Collection System Manholes				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
SITEWORK				
Collection System Manholes	EA	$ 6,200	61	$ 378,200
Restoration	LS	$ 33,900	1	$ 33,900
OTHER ITEMS				
Mobilization	3%	$ 12,400	1	$ 12,400
Maintenance & Protection of Trafffic	3%	$ 12,400	1	$ 12,400
CONSTRUCTION CONTINGENCY	15%	$ 65,500	1	$ 65,500
Construction Subtotal				**$ 502,400**
Engineering	25%			$ 125,600
Administration	6%			$ 30,100
Legal	2%			$ 10,000
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 676,100**

2019 PROBABLE O&M COST				
Manhole O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Manhole Inspection & Repair Cost	EA	$ 75	61	$ 4,575
TOTAL O&M COST				**$ 4,575**

2019 PROBABLE PROJECT COST				
Upgrade Route 19A Pump Station				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
DEMOLITION				
Remove Existing Pumps	LS	$ 5,700	1	$ 5,700
Bypass Pumping	LS	$ 60,000	1	$ 60,000
SITEWORK				
Rehab Wetwell	LS	$ 27,300	1	$ 27,300
Pumps Controls and Valves	LS	$204,500	1	$ 204,500
Meter Pit and Equipment	LS	$ 27,300	1	$ 27,300
Standby Generator	LS	$139,000	1	$ 139,000
OTHER ITEMS				
Electric & Controls	LS	$ 46,500	1	$ 46,500
Mobilization	3%	$ 15,300	1	$ 15,300
Maintenance & Protection of Trafffic	3%	$ 15,300	1	$ 15,300
CONSTRUCTION CONTINGENCY	15%	$ 81,100	1	$ 81,100
Construction Subtotal				**$ 622,000**
Engineering	25%			$ 155,500
Administration	6%			$ 37,300
Legal	2%			$ 12,400
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 835,200**

2019 PROBABLE O&M COST				
Upgrade Route 19A Pump Station O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Electrical Power Cost	LS	$ 10,150	1	$ 10,150
Equipment Maintenance Cost	LS	$ 2,500	1	$ 2,500
TOTAL O&M COST				**$ 12,650**

2019 PROBABLE PROJECT COST				
Upgrade Force Main				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
SITEWORK				
6-inch Forcemain	LF	$ 48	5400	$ 259,200
Air/Vacuum Release Valves (assumed)	EA	$ 10,800	2	$ 21,600
Stream Crossing	LS	$ 20,600	1	$ 20,600
Restoration	LS	$ 33,900	1	$ 33,900
OTHER ITEMS				
Mobilization	3%	$ 10,100	1	$ 10,100
Maintenance & Protection of Trafffic	3%	$ 10,100	1	$ 10,100
CONSTRUCTION CONTINGENCY	15%	$ 53,300	1	$ 53,300
Construction Subtotal				**$ 408,800**
Engineering	25%			$ 102,200
Administration	6%			$ 24,500
Legal	2%			$ 8,200
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 551,700**

2019 PROBABLE O&M COST				
Upgrade Force Main O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Equipment Maintenance Cost	LS	$ 500	1	$ 500
TOTAL O&M COST				**$ 500**

PROBABLE PROJECT COST				
Upgrade Existing WWTP				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
DEMOLITION				
General Site & Process	LS	$ 13,700	1	$ 13,700
SITEWORK				
Excavation	CU. YD.	$ 43	2900	$ 124,700
Fill	LS	$ 27,300	1	$ 27,300
Effluent sewer	LF	$ 35	400	$ 14,000
Driveway	LS	$ 27,300	1	$ 27,300
Process piping & valving	LS	$ 135,600	1	$ 135,600
Gates	EA	$ 5,500	1	$ 5,500
Chainlink fence	LF	$ 100	1000	$ 100,000
Restoration (WWTP Site)	LS	$ 25,000	1	$ 25,000
Rehab / Upgrade Existing Tanks	CY	$ 700	200	$ 140,000
PROCESS COMPONENTS				
Filter Media	CY	$ 100	2900	$ 290,000
Filter Piping	LF	$ 35	19200	$ 672,000
25,000 gallon pre-settling tank.	LS	$ 67,200	1	$ 67,200
16,000 gallon Dosing Tank w/ Siphons	LS	$ 60,480	1	$ 60,480
Standby Generator	LS	$ 136,700	1	$ 136,700
Meter Pit and Equipment	LS	$ 27,300	1	$ 27,300
New Recirculation Manhole & Pumps	LS	$ 85,000	1	$ 85,000
Upgrade Electric Service	LS	$ 50,000	1	$ 50,000
OTHER ITEMS				
Electric & Controls	LS	$ 38,600	1	$ 38,600
Mobilization	3%	$ 61,200	1	$ 61,200
CONSTRUCTION CONTINGENCY	15%	$315,200	1	$ 315,200
Construction Subtotal				**$ 2,416,780**
Engineering	25%			$ 604,200
Administration	6%			$ 145,000
Legal	2%			$ 48,300
TOTAL PROJECT COST				**$ 3,214,280**

2019 PROBABLE O&M COST				
Upgrade Existing System O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Electrical Power Cost	LS	$ 30,100	1	$ 30,100
Equipment Maintenance Cost	HRS	$ 75	100	$ 7,500
TOTAL O&M COST				**$ 37,600**

2019 PROBABLE PROJECT COST				
Replace WWTP with SAGR				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
DEMOLITION				
Decommission existing WWTP	LS	$ 68,000	1	$ 68,000
General Site & Process	LS	$ 13,700	1	$ 13,700
SITEWORK				
Excavation	CU. YD.	$ 43	2680	$ 115,240
Fill	LS	$ 27,300	1	$ 27,300
Effluent sewer	LF	$ 35	400	$ 14,000
Driveway	LS	$ 27,300	1	$ 27,300
Process piping & valving	LS	$ 135,600	1	$ 135,600
Gates	EA	$ 5,500	1	$ 5,500
Chainlink fence	LF	$ 100	1000	$ 100,000
Restoration (WWTP Site)	LS	$ 25,000	1	$ 25,000
Rehab / Upgrade Existing Tanks	CY	$ 700	200	$ 140,000
PROCESS COMPONENTS				
25,000 gallon pre-settling tank.	LS	$ 67,200	1	$ 67,200
Standby Generator	LS	$ 143,000	1	$ 143,000
Uniform Graded Clean Rock	CU. YD.	$ 42	2290	$ 96,180
Insulating Wood Chips	CU. YD.	$ 24	390	$ 9,360
Non-Woven Geotextile	SQ. FT.	$ 3.0	31310	$ 93,930
Blowers	EA	$ 5,000.0	3	$ 15,000
Recirculation Manhole & Pumps	LS	$ 85,000	1	$ 85,000
HDPE Liner	SQ. FT.	$ 10	18000	$ 180,000
Wall, Framing & Sheathing	LF	$ 700	700	$ 490,000
Influent Flow Splitter Structure	LS	$ 7,500	1	$ 7,500
Piping form Splitter to SAGR	LS	$ 6,600	1	$ 6,600
Effluent Level Control MH	LS	$ 5,000	2	$ 10,000
Install Manufacturer Supplied Equip.	LS	$ 56,250	1	$ 56,250
Upgrade Electric Service	LS	$ 50,000	1	$ 50,000
Meter Pit and Equipment	LS	$ 27,300	1	$ 27,300
OTHER ITEMS				
Electric & Controls	LS	$ 75,000	1	$ 75,000
Mobilization	3%	$ 62,600	1	$ 62,600
CONSTRUCTION CONTINGENCY	15%	$ 322,000	1	$ 322,000
Construction Subtotal				**$ 2,468,560**
Engineering	18%			$ 444,300
Administration	6%			$ 148,100
Legal	2%			$ 49,400
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 3,118,360**

2019 PROBABLE O&M COST				
Low Pressure Sewer O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Electrical Power Cost	LS	$ 49,830	1	$ 49,830
Blower Repair	LS	$ 2,500	1	$ 2,500
Equipment Maintenance Cost	LS	$ 2,745	1	$ 2,745
TOTAL O&M COST				**$ 55,075**

2019 PROBABLE PROJECT COST				
Replace WWTP with Packaged Treatment				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
DEMOLITION				
Decommission existing WWTP	LS	$ 68,000	1	$ 68,000
General Site & Process	LS	$ 13,700	1	$ 13,700
SITEWORK				
Forcemain	LF	$ 60	5400	$ 324,000
Effluent sewer	LF	$ 35	400	$ 14,000
Driveway	LS	$ 27,300	1	$ 27,300
Restoration (forcemain installation)	LS	$ 13,700	1	$ 13,700
Gates	EA	$ 5,500	1	$ 5,500
Process piping & valving	LS	$135,600	1	$ 135,600
Chainlink fence	LF	$ 100	1000	$ 100,000
Fill	LS	$ 27,300	1	$ 27,300
Restoration (WWTP Site)	LS	$ 61,200	1	$ 61,200
Upgrade Electric Service	LS	$ 50,000	1	$ 50,000
Meter Pit and Equipment	LS	$ 27,300	1	$ 27,300
PROCESS COMPONENTS				
Packaged Treatment System	LS	$710,000	2	$ 1,420,000
Blowers	EA	$ 5,000.0	2	$ 10,000
Process Pumps	LS	$ 85,000	1	$ 85,000
Standby Generator	LS	$143,000	1	$ 143,000
Land Purchase	AC	$ 19,000	2	$ 38,000
OTHER ITEMS				
Electric & Controls	LS	$ 25,000	1	$ 25,000
Mobilization	3%	$ 77,700	1	$ 77,700
CONSTRUCTION CONTINGENCY	15%	$400,000	1	$ 400,000
Construction Subtotal				**$ 3,066,300**
Engineering	25%			$ 766,600
Administration	6%			$ 184,000
Legal	2%			$ 61,300
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 4,086,200**

2019 PROBABLE O&M COST				
Packaged Treatment O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Electrical Power Cost	LS	$ 48,299	1	$ 48,299
Blower Repair	LS	$ 2,500	1	$ 2,500
Equipment Maintenance Cost	LS	$ 2,745	1	$ 2,745
TOTAL O&M COST				**$ 53,544**

2019 PROBABLE PROJECT COST				
Upgrade Force Main				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
SITEWORK				
6-inch Forcemain	LF	$ 48	20000	$ 960,000
Air/Vacuum Release Valves (assumed)	EA	$ 10,800	5	$ 54,000
Meter Pit and Equipment	LS	$ 27,300	1	$ 27,300
Stream Crossing	LS	$ 50,000	1	$ 50,000
Restoration	LS	$ 33,900	1	$ 33,900
OTHER ITEMS				
Mobilization	3%	$ 33,800	1	$ 33,800
Maintenance & Protection of Trafffic	3%	$ 33,800	1	$ 33,800
CONSTRUCTION CONTINGENCY	15%	$ 178,900	1	$ 178,900
Construction Subtotal				**$ 1,371,700**
Engineering	25%			$ 342,900
Administration	6%			$ 82,300
Legal	2%			$ 27,400
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 1,832,300**

2019 PROBABLE O&M COST				
Upgrade Force Main O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Equipment Maintenance Cost	LS	$ 500	1	$ 500
TOTAL O&M COST				**$ 500**
Caneadea Sewer Charge	MG	$ 3.97	19.11	**$ 75,900**

2019 PROBABLE PROJECT COST				
Low Presure Sewer System				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
DEMOLITION				
Decommission existing WWTP	LS	$ 82,000	1	$ 82,000
Abandon Existing Pump Station	LS	$ 13,700	1	$ 13,700
LOW PRESSURE SEWERS				
2" LPS Dr-17 HDPE LP Force Main	LF	$13.00	5980	$ 77,740
3" LPS Dr-17 HDPE LP Force Main	LF	$15.00	5500	$ 82,500
4" LPS Dr-17 HDPE LP Force Main	LF	$18.00	5500	$ 99,000
6" LPS Dr-17 HDPE LP Force Main	LF	$24.00	3700	$ 88,800
Force Main Flushing Valve / Vault	EA	$2,500.00	10	$ 25,000
Corporation Stops	EA	$270.00	225	$ 60,750
Check Valves	EA	$250.00	225	$ 56,250
1.25" Forcemain Lateral	LF	$12.00	13720	$ 164,640
LP Air Release Valves / Vaults	EA	$5,000.00	24	$ 120,000
Simplex Individual Grinder Pump	EA	$5,000.00	225	$1,125,000
Odor Control (Bioxide)	LS	$85,000.00	1	$ 85,000
OTHER ITEMS				
Electric & Controls	LS	$ 46,500	1	$ 46,500
Mobilization	3%	$ 63,800	1	$ 63,800
Maintenance & Protection of Trafffic	3%	$ 63,800	1	$ 63,800
CONSTRUCTION CONTINGENCY	15%	$ 338,200	1	$ 338,200
Construction Subtotal				**$ 2,592,680**
Engineering	25%			$ 648,200
Administration	6%			$ 155,600
Legal	2%			$ 51,900
Geotechnical	LS	$ 4,500	1	$ 4,500
TOTAL PROJECT COST				**$ 3,452,880**

2019 PROBABLE O&M COST				
Packaged Treatment O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Electrical Power Cost	LS	$ 26,025	1	$ 26,025
Pump Repair	LS	$ 5,000	1	$ 5,000
Odor Control (Bioxide)	LS	$ 2,400	1	$ 2,400
Equipment Maintenance Cost	LS	$ 2,500	1	$ 2,500
TOTAL O&M COST				**$ 35,925**

2019 PROBABLE PROJECT COST				
Regional Pump Station				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
DEMOLITION				
Abandon existing pump station	LS	$ 13,700	1	$ 13,700
Decommission existing WWTP	LS	$ 82,000	1	$ 82,000
SITEWORK				
Wetwell	LS	$ 27,300	1	$ 27,300
Pumps Controls and Valves	LS	$ 273,400	1	$ 273,400
Meter Pit and Equipment	LS	$ 27,300	1	$ 27,300
Standby Generator	LS	$ 169,500	1	$ 169,500
OTHER ITEMS				
Electric & Controls	LS	$ 46,500	1	$ 46,500
Mobilization	3%	$ 19,200	1	$ 19,200
Maintenance & Protection of Trafffic	3%	$ 19,200	1	$ 19,200
CONSTRUCTION CONTINGENCY	15%	$ 101,700	1	$ 101,700
Construction Subtotal				**$ 779,800**
Engineering	25%			$ 195,000
Administration	6%			$ 46,800
Legal	2%			$ 15,600
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 1,045,200**

2019 PROBABLE O&M COST				
Regional Pump Station O&M Costs				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Electrical Power Cost	LS	$ 2,193	1	$ 2,193
Equipment Maintenance Cost	LS	$ 2,745	1	$ 2,745
TOTAL O&M COST				**$ 4,938**

APPENDIX I

2019 SEWER BUDGET

TOWN OF HUME
FISCAL BUDGET SEWER DISTRICT
FOR 2019

(ADOPTED OCTOBER 24, 2018)

Schedule 1-SS		Expenditures /Revenues 2017	Modified Budget 08/31/2018	Recommended Budget 2019	Adopted Budget 2019
APPROPRIATIONS					
GENERAL GOVERNMENT SUPPORT					
ENGINEER					
SS1440.4	ENGINEER	16,952.48	7,500.00	8,500.00	8,500.00
TOTAL ENGINEER		16,952.48	7,500.00	8,500.00	8,500.00
SPECIAL ITEMS					
SS1910.400	00.UNALLOCATED INSURANCE	2,613.77	3,500.00	3,500.00	3,500.00
SS1990.400	CONTINGENT ACCOUNT	0.00	5,000.00	5,000.00	5,000.00
TOTAL SPECIAL ITEMS		2,613.77	8,500.00	8,500.00	8,500.00
TOTAL GENERAL GOVERNMENT SUPPORT		19,566.25	16,000.00	17,000.00	17,000.00
TRANSPORTATION					
GARAGE					
SS5132.4	GARAGE	2,217.21	4,000.00	4,000.00	4,000.00
TOTAL GARAGE		2,217.21	4,000.00	4,000.00	4,000.00
TOTAL TRANSPORTATION		2,217.21	4,000.00	4,000.00	4,000.00
HOME AND COMMUNITY SERVICES					
SEWER ADMINISTRATION					
SS8110.1	PERSONAL SERVICES	3,394.56	3,714.18	3,788.00	3,788.00
[illegible]10.100	PERSONAL SERVICES	0.00	0.00	0.00	0.00
SS8110.400	CONTRACTUAL	249.74	1,000.00	1,000.00	1,000.00

TOWN OF HUME
FISCAL BUDGET SEWER DISTRICT
FOR 2019

(ADOPTED OCTOBER 24, 2018)

Schedule 1-SS		Expenditures /Revenues 2017	Modified Budget 08/31/2018	Recommended Budget 2019	Adopted Budget 2019
TOTAL SEWER ADMINISTRATION		3,644.30	4,714.18	4,788.00	4,788.00
SANITARY SEWERS					
SS8120.2	EQUIPMENT	0.00	1,000.00	2,000.00	2,000.00
SS8120.2E	EQUIPMENT RES.	0.00	0.00	0.00	0.00
SS8120.400	CONTRACTUAL	110.76	500.00	500.00	500.00
SS8120.422	PUMP STATION ELECTRIC	5,436.75	4,000.00	4,000.00	4,000.00
SS8120.460	PUMP STATION SUPPLIES	0.00	5,600.00	5,600.00	5,600.00
SS8120.470	PUMP REPAIR	0.00	2,000.00	2,500.00	2,500.00
TOTAL SANITARY SEWERS		5,547.51	13,100.00	14,600.00	14,600.00
SEWAGE TREATMENT & DISPOSAL					
SS8130.1	PERSONNEL	29,720.31	36,720.00	37,454.00	37,454.00
SS8130.14	PERSONAL S	5,186.44	8,160.00	8,160.00	8,160.00
SS8130.200	EQUIPMENT	0.00	7,500.00	7,500.00	7,500.00
SS8130.4	CONTRACTUA	2,106.32	3,500.00	3,500.00	3,500.00
SS8130.422	ELECTRICITY	1,068.20	3,000.00	3,000.00	3,000.00
SS8130.442	SLUDGE HAUL	24,830.00	22,000.00	22,440.00	22,440.00
SS8130.445	LAB TESTING	2,705.80	2,800.00	3,000.00	3,000.00
SS8130.460	SUPPLIES	7,237.13	7,000.00	7,000.00	7,000.00
TOTAL SEWAGE TREATMENT & DISPOSAL		72,854.20	90,680.00	92,054.00	92,054.

TOWN OF HUME
FISCAL BUDGET SEWER DISTRICT
FOR 2019

(ADOPTED OCTOBER 24, 2018)

Schedule 1-SS		Expenditures /Revenues 2017	Modified Budget 08/31/2018	Recommended Budget 2019	Adopted Budget 2019
REFUND OVERPAYMENT					
SS8131.4	REFUND OVERPAYMENT	0.00	0.00	0.00	0.00
TOTAL REFUND OVERPAYMENT		0.00	0.00	0.00	0.00
TOTAL HOME AND COMMUNITY SERVICES		82,046.01	108,494.18	111,442.00	111,442.00
EMPLOYEE BENEFITS					
EMPLOYEE BENEFITS					
SS9010.800	STATE RETIREMENT	3,311.04	8,544.00	8,500.00	8,500.00
SS9030.8	SOCIAL SECURITY	2,374.68	3,000.00	3,000.00	3,000.00
SS9035.8	MEDICARE	555.37	800.00	800.00	800.00
SS9055.800	DISABILITY INSURANCE	0.00	65.00	81.98	81.98
SS9060.800	HOSPITAL & MEDICAL INSURANCE	6,461.71	12,500.00	12,500.00	12,500.00
TOTAL EMPLOYEE BENEFITS		12,702.80	24,909.00	24,881.98	24,881.98
TOTAL EMPLOYEE BENEFITS		12,702.80	24,909.00	24,881.98	24,881.98
DEBT SERVICE					
SERIAL BONDS					
SS9710.600	PRINCIPAL	0.00	0.00	0.00	0.00
SS9710.700	INTEREST	0.00	0.00	0.00	0.00
TOTAL SERIAL BONDS		0.00	0.00	0.00	0.00
AL DEBT SERVICE		0.00	0.00	0.00	0.00

TOWN OF HUME
FISCAL BUDGET SEWER DISTRICT
FOR 2019

(ADOPTED OCTOBER 24, 2018)

Schedule 1-SS		Expenditures /Revenues 2017	Modified Budget 08/31/2018	Recommended Budget 2019	Adopted Budget 2019
INTERFUND TRANSFERS					
TRANSFERS TO OTHER FUNDS					
SS9901.0	TRANSFERS TO OTHER FUNDS	0.00	0.00	0.00	0.00
	TOTAL TRANSFERS TO OTHER FUNDS	0.00	0.00	0.00	0.00
TRANSFERS TO CAPITAL PROJECTS					
SS9950.900	TRANSFERS TO CAPITAL PROJECTS	0.00	0.00	0.00	0.00
	TOTAL TRANSFERS TO CAPITAL PROJECTS	0.00	0.00	0.00	0.00
	TOTAL INTERFUND TRANSFERS	0.00	0.00	0.00	0.00
	TOTAL APPROPRIATIONS	116,532.27	153,403.18	157,323.98	157,323.98

TOWN OF HUME
FISCAL BUDGET SEWER DISTRICT
FOR 2019

(ADOPTED OCTOBER 24, 2018)

Schedule 2-SS		Expenditures /Revenues 2017	Modified Budget 08/31/2018	Recommended Budget 2019	Adopted Budget 2019
ESTIMATED REVENUES					
	DEPARTMENTAL INCOME				
SS2120	SEWER RENTS	112,824.84	140,150.00	149,329.00	149,329.00
SS2128	INTEREST & PENALTIES ON SEWER	3,175.92	1,750.00	3,229.00	3,229.00
	TOTAL DEPARTMENTAL INCOME	116,000.76	141,900.00	152,558.00	152,558.00
	USE OF MONEY AND PROPERTY				
SS2401	INTEREST & EARNINGS	32.42	30.00	30.00	30.00
SS2401E	CAPITAL RESERVE EQUIPMENT INT.	0.00	0.00	0.00	0.00
SS2401R	INTEREST & EARNINGS - RESERVES	0.00	0.00	0.00	0.00
	TOTAL USE OF MONEY AND PROPERTY	32.42	30.00	30.00	30.00
SS2630	INSURANCE CLAIMS	0.00	0.00	0.00	0.00
SS2665	SALE OF SURPLUS EQUIPMENT	0.00	0.00	0.00	0.00
SS2701	REFUND	0.00	0.00	0.00	0.00
SS2770	OTHER UNCLASSIFIED REVENUES	0.00	0.00	0.00	0.00
SS3890	SHARE SERVICE GRANT	0.00	0.00	0.00	0.00
					152,588.00
TOTAL ESTIMATED REVENUES		116,033.18	141,930.00	152,588.00	152,588.00

APPROPRIATED FUND BALANCE	499.09	11,473.18	4,735.98	4,735.98
TOTAL REVENUES & OTHER SOURCES	116,532.27	153,403.18	157,323.98	157,323.98

APPENDIX J

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: Preliminary Engineering Report For The Town Of Hume Municipal Wastewater Treatment Improvements

Date of Report: September 2019

Professional Engineer's Name: Signature:

Date: 04/03/2020

APPENDIX K

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 the applicant's project engineer or other design professional.[1]

Applicant Information

Applicant: Town of Hume Project No.:

Project Name: Town of Hume Municipal Wastewater Treatment Improvements

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

Project Summary: (provide a short project summary in plain language including the location of the area the project serves)

Recently, the Town of Hume received notices of violation from the USEPA and NYSDEC for exceeding SPDES permit limits at its wastewater treatment plant, was required to prepare a flow management plant for its collection system because the flow from the WWTP exceeds 95% of its design capacity, and was notified that it will need to add disinfection to its WWTP in 2024 as part of its SPDES permit renewal. The proposed project includes the construction of a pump station and forcemain that conveys the Town of Hume's wastewater to the Town of Caneadea's WWTP for treatment and disinfection, and decommissioning the existing Town of Hume WWTP. The proposed project also include improvements to the Hume collection system to reduce Inflow and Infiltration (I&I) and will also include installing additional manholes in the graywater collection system in order to further identify I&I in the system.

Section 1 – Screening Questions

1. Prior Approvals

1A. Has the project been previously approved for EFC financial assistance? ☐ Yes ☑ No

1B. If so, what was the project number(s) for the prior approval(s)? Project No.:

Is the scope of the project substantially the same as that which was approved? ☐ Yes ☐ No

IF THE PROJECT WAS PREVIOUSLY APPROVED BY EFC'S BOARD AND THE SCOPE OF THE PROJECT HAS NOT MATERIALLY CHANGED, THE PROJECT IS NOT SUBJECT TO SMART GROWTH REVIEW. SKIP TO SIGNATURE BLOCK.

2. New or Expanded Infrastructure

2A. Does the project add new wastewater collection/new water mains or a new wastewater treatment system/water treatment plant? ☐ Yes ☑ No

Note: A new infrastructure project adds wastewater collection/water mains or a wastewater treatment/water treatment plant where none existed previously

2B. Will the project result in either: ☐ Yes ☑ No

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

OR

An increase such that a NYSDEC water withdrawal permit will need to be obtained or modified, or result in the NYSDOH approving an increase in the capacity of the water treatment plant?

Note: An expanded infrastructure project results in an increase of the SPDES permitted flow capacity for the wastewater treatment system, or an increase of the permitted water withdrawal or the permitted flow capacity for the water treatment system.

[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.

IF THE ANSWER IS "NO" TO BOTH "2A" and "2B" ON THE PREVIOUS PAGE, THE PROJECT IS NOT SUBJECT TO FURTHER SMART GROWTH REVIEW. SKIP TO SIGNATURE BLOCK.

3. Court or Administrative Consent Orders

3A. Is the project expressly required by a court or administrative consent order? ☐ Yes ☑ No

3B. If so, have you previously submitted the order to NYS EFC or DOH? If not, please attach. ☐ Yes ☐ No

Section 2 – Additional Information Needed for Relevant Smart Growth Criteria

EFC has determined that the following smart growth criteria are relevant for EFC-funded projects and that projects must meet each of these criteria to the extent practicable:

1. Uses or Improves Existing Infrastructure

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

Please describe:

Recently, the Town of Hume received notices of violation from the USEPA and NYSDEC for exceeding SPDES permit limits at its wastewater treatment plant, was required to prepare a flow management plant for its collection system because the flow from the WWTP exceeds 95% of its design capacity, and was notified that it will need to add disinfection to its WWTP in 2024 as part of its SPDES permit renewal. The proposed project includes the construction of a pump station and forcemain that conveys the Town of Hume's wastewater to the Town of Caneadea's WWTP for treatment and disinfection, and decommissioning the existing Town of Hume WWTP. The proposed project also include improvements to the Hume collection system to reduce Inflow and Infiltration (I&I) and will also include installing additional manholes in the graywater collection system in order to further identify I&I in the system.

2. Serves a Municipal Center

Projects must serve an area in either 2A, 2B or 2C to the extent practicable.

2A. Does the project serve an area **limited** to one or more of the following municipal centers?

i. A City or incorporated Village ☐Yes ☑No

ii. A central business district ☑Yes ☐No

iii. A main street ☑Yes ☐No

iv. A downtown area ☑Yes ☐No

v. A Brownfield Opportunity Area ☐Yes ☑No
(for more information, go to www.dos.ny.gov & search "Brownfield")

vi. A downtown area of a Local Waterfront Revitalization Program Area ☐Yes ☑No
(for more information, go to www.dos.ny.gov and search "Waterfront Revitalization")

vii. An area of transit-oriented development ☐Yes ☑No

viii. An Environmental Justice Area ☐Yes ☑No
(for more information, go to www.dec.ny.gov/public/899.html)

ix. A Hardship/Poverty Area ☐Yes ☑No
Note: Projects that primarily serve census tracts and block numbering areas with a poverty rate of at least twenty percent according to the latest census data

Please describe all selections:

2B. If the project serves an area located outside of a municipal center, does it serve an area located adjacent to a municipal center which has clearly defined borders, designated for concentrated development in a municipal or regional comprehensive plan and exhibit strong land use, transportation, infrastructure and economic connections to an existing municipal center? ☐Yes ☐No

Please describe:

NA

2C. If the project is not located in a municipal center as defined above, is the area designated by a comprehensive plan and identified in zoning ordinance as a future municipal center? ☐Yes ☐No

Please describe and reference applicable plans:

NA

3. Resiliency Criteria

3A. Was there consideration of future physical climate risk due to sea-level rise, storm surge, and/or flooding during the planning of this project? ☑Yes ☐No

Please describe:

Elevations of sanitary manholes and sewers compared to flood levels of the Genesee River.

Signature Block: By entering your name in the box 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: Town of Hume	Phone Number: 585-567-2666
Derek Anderson, PE	
(Name & Title of Project Engineer or Design Professional or Authorized Municipal Representative)	
Derek Anderson	4/3/2020
(Signature)	(Date)