Town of Hume

20 N. Genesee St.
Fillmore, NY 14735

ENGINEERING REPORT

for the

TOWN OF HUME
MUNICIPAL WASTEWATER DISINFECTION AND TREATMENT IMPROVEMENTS
(CWSRF PROJECT NO. C9-6627-01-00)

October 2021

MRB Group Project No. 0809.19003.000

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I. INTRODUCTION

Town of Hume (Town) owns and operates the Town of Hume Sewer District, which was created December 14, 1993 pursuant to Section 19-1914of the Village Law and Article 12 of the Town Law when the Village of Filmore dissolved by Special Village Election. The sewer district includes a graywater collection system and wastewater treatment plant (WWTP) located at 10935 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 the Town 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. In July 2020, the Town received a modified SPDES permit from the DEC that includes a condition requiring an operating disinfection system by May 2024.

Recognizing the need to add disinfection to the WWTP, and the need to address the violations, the Town of Hume prepared a Preliminary Engineering Report (PER) and listed the project for inclusion on the New York State Clean Water Intended Use Plan (IUP) (CWSRF PROJECT NO. C9-6627-01-00). The PER was also submitted to the DEC and received final DEC approval on September 9, 2021 (Appendix J).

Town of Hume received notice from the New York State Environmental Facilities Corporation (EFC) in March 2021, that it is eligible for Clean Water State Revolving Fund (CWSRF) interest-free financing for all or a portion of the project (CWSRF Project No. C9-6627-01-00) (Appendix K). The hardship determination was made by EFC based on the Town of Hume's Median Household Income (MHI) and population.

In order to finance the improvements, Town of Hume applied for a Water Quality Improvement Project (WQIP) program grant (results pending), and is applying for a Water Infrastructure Improvement Act (WIIA) grant, and an interest free loan from the New York State Environmental Facilities Corporation (EFC).

Based on the findings of the PER, and as presented in this document, the proposed project includes eliminating the WWTP, upgrading the Route 19A pump station, and constructing a regional pump station with force main that discharges to the Town of Caneadea's WWTP. Also included is installing additional manholes in the graywater collection system to facilitate identifying sources of I/I in the collection system.

Town of Hume intends to complete the proposed project as a 202-B improvement to the existing Town of Hume Sewer District. Accordingly, this document represents the required Map, Plan and Report for the 202-b improvements.

II. PROJECT BACKGROUND AND HISTORY

A. SITE INFORMATION

1. Location

Figure II.1 depicts the boundary of the Town of Hume Sewer District, the relative location of the existing WWTP, and the proposed force main route to the Town of Caneadea WWTP. A more detailed map of the project planning area, which identifies the sewer district boundary and benefited properties, is included in Appendix E. The sewer district boundary is based on the boundary as depicted on the Allegany County tax maps and parcels currently served by sewers.

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.

Legend

- WTP — Existing Wastewater Treatment Plant
- PS — Existing Pump Station
- Existing Force Main
- SanSewerMAIN
- Sewer Service Area

HUME WASTEWATER TREATMENT PLANT

SEWER SERVICE AREA (SEWER DISTRICT)

ROUTE 19 SANITARY FORCEMAIN

ROUTE 19 SANITARY PUMP STATION

Fillmore

Hume

Route 19

Route 19A

County Road 27B

County Road 4

Lower Rd

Main St

Town of Hume
Fillmore

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TOWN OF HUME

ALLEGANY COUNTY, NEW YORK

LOCATION MAP

N
W E
S

Drawn By:	TJV
Scale:	1" = 1,000'
Date:	DEC 2020

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Fig. II-1

PROJECT NO.

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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 the force main 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. Preliminary and Final Notices of Intent will need to 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 existing treatment facility is classified as archaeologically sensitive areas. A subsequent Phase 1A cultural resource survey may be required to confirm no impacts. Final coordination with SHIPO and New York State Agriculture and Markets will be completed during final design.

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.

The project setting is typical of wastewater infrastructure projects funded in rural Allegany County in terms of the environmental resources present, and associated DEC and Army Corps of Engineers ("ACOE") approvals. There do not appear to be any significant environmental or cultural resources that will prohibit project development. All appropriate environmental and cultural resources were investigated and documented as part of the required State Environmental Quality Review ("SEQR"), including historic and archaeological sites and critical species and habitats. The Town completed its environmental review and adopted a SEQR Resolution and Negative Declaration on July 22, 2020.

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.

2. Industrial Dischargers

Town of Hume does not have zoning. However, Minnow Trap Factory, Inc., located at 81 Genesee Street (Parcel 40.-1-25) is classified by the Town Assessor as Industrial (710). The main building on the parcel is outside the sewer district. A small building near the northern property line appears to be on parcel 40.-1-25 however, it is only accessible from 10596 NYS Route 19 to the north, which has a property class code of 421. This building has been served by sewer since the collection system was first constructed. Since the

building appears to be associated with the parcel to the north, the building is not considered an industrial use. None of the other parcels in the service area are classified as industrial or are currently have an 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 report, 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 Assessor, there are 244 parcels in the sewer district. According to the Town Clerk, the existing sewer district includes 205 sewer accounts. Of the sewer accounts, only 189 had had metered water sales. Table II.1 lists the number of parcels and sewer accounts by property type.

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.1: Existing Sewer District

Property Type	Parcels	Accounts	EDU
Residential			
Single Family Residential	153	144	150.0
Single-Family Residential	13	13	14.3
Three-Family Residential	4	4	9.2
Commercial			
Mobile Home Park	1	1	12.7
Apartments	3	3	7.2
General Commercial	20	17	35
Community Services			
Fillmore Central School	2	2	16.8
Community Services	9	8	6.2
Industrial(1)	1	0	0
Public Service	4	2	2.0
Vacant	34	5	13.7
Total	**244**	**205**	**267.1**

(1) See section II.B.2.

Table II.2: 2019 Sewer District Population Estimate

Property Type	Population
Residential	
Single Family Residential	384
Multi-Family Residential	54
Commercial	
Mobile Home Park	29
Apartments	17
Total	484

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 was modified effective August 1, 2020 and expires 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. Beginning May 1, 2024, the plant needs to monitor for Fecal Coliform and chlorine residual (if chlorine utilized for disinfection). 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.

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.

Table II.3: Reported Treatment Plant Exceedances

Year	Parameter	No. of Exceedances
2020	Flow	1
2019	Flow	1
2018	Flow	4
	Ultimate Oxygen Demand	4
	BOD, 5-day, 20 ºC	3
	BOD, 5-day, % Removal	1
2017	Flow	3
	Ultimate Oxygen Demand	4
	BOD, 5-day, 20 ºC	1
	BOD, 5-day, % Removal	1
2016	Flow	1
	Ultimate Oxygen Demand	4
	BOD, 5-day, 20 ºC	2
	BOD, 5-day, % Removal	2
2015	Flow	2
	TSS, Month Avg.	1
	Ultimate Oxygen Demand	4
2014	BOD, 5-day, 20 ºC	2
	TSS, 7 Day Avg	1
	TSS, Month Avg	1
	BOD, 5-day, % Removal	1

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 September 2020 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
2019	41,980	84,000
2020	38,390	66,000
Overall	44,645	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 2020 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

2020	Average	Minimum	Maximum
BOD (mg/L)	78.15	15.00	148.00
TSS (mg/L)	30.71	10.00	108.00
pH (S.U.)	6.95	6.30	8.20
TKN (mg/L)	47.87	18.60	94.00
Temp (°C)	13.74	7.00	20.10

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 9 single family, 3 commercial properties, and 23 vacant 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 water production data from May 2019 to April 2020 indicates that the average daily water demand for customers in the sewer district was approximately 30,374 GPD. The average daily flow from the WWTP was approximately 40,185 GPD. The excess flow (9,811 GPD) is attributed to inflow and infiltration (I/I); approximately 25% of the daily flow. Comparing monthly water demand to monthly WWTP flow for the same time period indicates that I/I may have accounted for 5% to 40% of the flow to the plant. Flow to the WWTP should decrease as the Town identifies and addresses sources of I/I within the collection system. Ideally reducing I/I to 15% of the existing water demand could result in average day wastewater flows of 34,900 GPD (maximum day 77,400 GPD, 98 gpm to 137 gpm peak hour).

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.

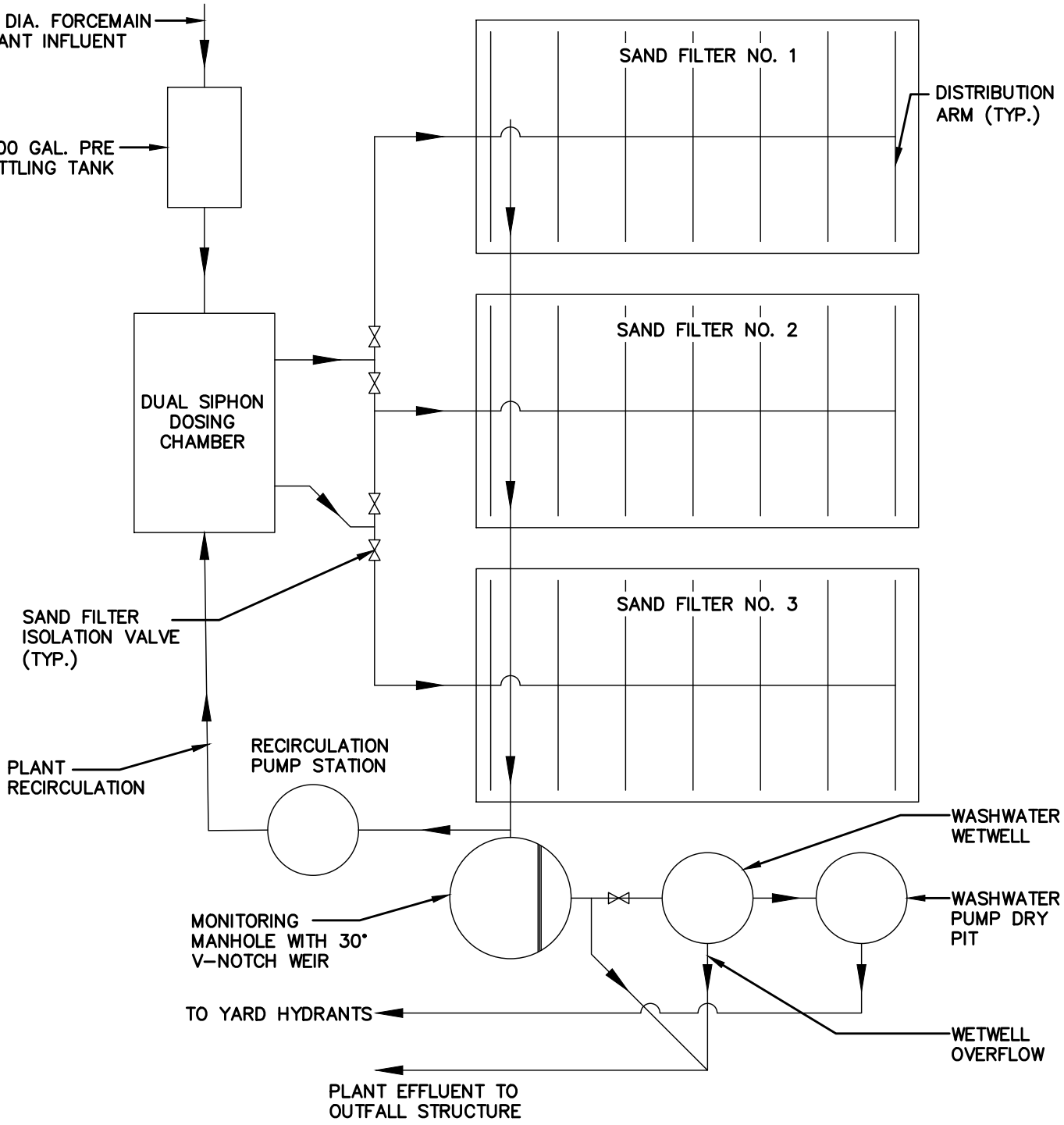
Based on these three items, and as previously stated, for purposes of this evaluation it is anticipated that the sewer demand will remain relatively flat for the next several years since it is likely that any growth in the system will offset flow reduction afforded by addressing I/I in the collection 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 2020 sewer budget for the Town includes $8,000 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.



TOWN OF HUME WWTP FLOW SCHEMATIC

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

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Date: JUN 2019	No.	Revisions	By	Date	
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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.

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. Force Main

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

The velocity through the existing 4-inch force main, 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 force main 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 force main 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 force main to the WWTP. Review of the force main and pumps needed to discharge peak hour design flow determined that the force main 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 force main 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. (Figure II.3)

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 does not have a debt service.

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. (Figure III.1).

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.

PROPERTY BOUNDARY

BDM VENTURE, LLC
& DONNA R. BOWER
16.-1-31.7

FENCE

GRAVEL DRIVE

OFFICE

rww

pw

FILTER #1

FILTER #2

FILTER #3

FENCE

FLOW MONITORING MANHOLE

WASHWATER WELL

WASHWATER PUMP PIT

rec

REC. PS

FLOW SPLITTER

BYPASS

CHEMICAL FEED BLDG

CHLORINE CONTACT & DE-CHLORINATION BASIN (CONCRETE TANK OPTION)

POTENTIAL UV SYSTEM IN 16X20 POLE BARN

FENCE

TOWN OF HUME
16.-1-31.5

PRE-SETTLING TANKS

DOSING TANK

PROPERTY BOUNDARY

16" 16"

EXT. OUTFALL

FM

JUNCTION BOX

CHLORINE CONTACT & DE-CHLORINATION PIPES (PIPE OPTION)

TOWN OF HUME
27.-1-13.2

THOMAS PARMENTER
27.-1-13.1

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

DRAWING ALTERATION
THE FOLLOWING 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 AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION AND A SPECIFIC DESCRIPTION OF THE ALTERATION".

N:\0809.20003\dwg\DCA-Site Schematic.dwg

No.	REVISIONS AND DESCRIPTIONS	BY	DATE

Project Title:
WASTEWATER TREATMENT PLANT
TOWN OF HUME
ALLEGANY COUNTY, NEW YORK

Drawing Title:
DISINFECTION SCHEMATIC

Drawn By: DAH
Checked By: DCA
Scale: 1" = 20'
Date: FEB 2021

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.
FIG. III.1
of

Project No.
0809.20003

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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 additional land, 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 force main. 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 sufficient 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 force main 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 force main 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 30% construction contingency[1] and 33% soft costs for legal, administration and engineering

[1] Per EFC webinar; September 22, 2021.

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 component associated with each alternative and summarizes total project costs.

Debt service calculations considered EFC financing based on Hardship, currently at 0% for 30 years. In March 2021, EFC notified the that it is eligible for interest free financing based on median household income (MHI) and population.

a. Disinfection Components

i. Chlorination/De-chlorination System

The probable cost to add a chlorination/de-chlorination system to the existing WWTP is $1,401,000 (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 $1,310,000 (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 $5,561,000 (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 $764,000 (Appendix H-4).

iii. Upgrade Route 19A Pump Station

The probable cost to upgrade the existing Route 19A pump station so it can provide existing peak hour flow capacity, add emergency power, and to conform to the Standards is $456,000 (Appendix H-5).

iv. Upgrade Force main to Existing WWTP Site

The probable cost to upgrade the force main from the Route 19A pump station to the existing WWTP site in order to allow effective pumping is $623,000 (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, including existing I&I, and reasonable growth in accordance with the current design Standards is $2,149,000 (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 $3,524,000 (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 $4,618,000 (Appendix H-9).

d. Pump to Town of Caneadea WWTP Components

i. Force main

The probable cost to add a force main for conveyance to the Town of Caneadea WWTP is $2,070,000 (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 $3,902,000 (Appendix H-11).

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	$1,401,000	$1,401,000	$1,401,000	$1,401,000		
UV System	$1,310,000					
Collection System						
Replace with 8-inch Sewers	$5,561,000					
Add Manholes	$764,000	$764,000	$764,000	$764,000		$764,000
Upgrade Route 19A Pump Station	$456,000	$456,000	$456,000	$456,000		
Upgrade Force Main to WWTP	$623,000	$623,000	$623,000	$623,000		
Treatment System						
Upgrade WWTP (Existing Flow)	$2,149,000	$2,149,000				
SAGR System	$3,524,000		$3,524,000			
Packaged WWTP	$4,618,000			$4,618,000		
Pump to Town of Caneadea WWTP						
Force Main	$2,070,000				$2,070,000	$2,070,000
Low Pressure Sewer System	$3,902,000				$3,902,000	
Regional Pump Station	$974,000					$974,000
Total Capital Project Budget		$5,393,000	$6,768,000	$7,862,000	$5,972,000	$ 4,264,000

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	$5,393,000	$6,768,000	$7,862,000	$5,972,000	$4,264,000
Rate	0%	0%	0%	0%	0%
Term	30	30	30	30	30
Annual Debt Service	*$179,76700*	*$225,600*	*$262,067*	*$199,067*	*$142,133*
Number of EDU	267.1	267.1	267.1	267.1	267.1
Debt Service per EDU	**$673.03**	**$844.63**	**$981.16**	**$745.29**	**$532.14**

iii. Regional Pump Station

The probable cost to abandon the existing wastewater treatment plant and build a regional pump station that discharges to the Town of Caneadea WWTP is $974,000 (Appendix H-12).

2. Alternative Capital Projects

Probable capital project budgets for each alternative project are the sum of the components needed to create a project. Table III.1 lists each component 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 2020 sewer budget, the Town of Hume budgeted approximately $168,370 per year for operation and maintenance of the existing wastewater treatment plant and collection system. A summary of the 2020 sewer budget is presented in Table III.3 below; Appendix I includes a full copy of the 2020 Sewer Budget. The following discusses the probable O&M costs associated with each alternative.

Table III.3: Existing Sewer Budget

Appropriations	2020 Budget
General Government Support	$17,280
Transportation	$4,000
Home and Community Service	
Sewer Administration	$5,364
Sanitary Sewers	$16,600
Sewage Treatment and Disposal	$99,751
Employee Benefits	$25,375
Debt Service	$0
Total Appropriations	$168,370

a. Upgrade Existing

O&M associated with upgrading the existing WWTP is approximately $83,200. 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 $79,200. 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, 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 $77,600. 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 $95,300. 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 $76,400. 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 $58,900 in treatment costs charged by the Town of Caneadea.

The Town of Hume and Town of Caneadea entered into an Agreement for the Town of Caneadea to treat wastewater from the Town of Hume at a Rate of $3.95/1,000 gallons. Based on an existing average daily flow of 40,850 gallons per day, the estimated annual treatment charge is $58,900.

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	$5,600	$5,600	$5,600	$5,600		$5,600
Upgrade Force Main to WWTP	$500	$500	$500	$500		
Treatment System						
Upgrade Existing Recirculating Filters	$59,100	$59,100				
SAGR System	$55,100		$55,100			
Packaged WWTP	$53,500			$53,500		
Pump to Town of Caneadea WWTP						
Force main	$500				$500	$500
Low Pressure Sewer System	$35,900				$35,900	
Regional Pump Station	$6,800					$6,800
Town of Caneadea Treatment Charge	$64,400				$64,400	$64,400
Total Operation & Maintenance Budget		$83,200	$79,200	$77,600	$100,800	$81,900

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

Table III.5: Probable Sewer Budgets – EFC Hardship Financing

Appropriations	2020 Budget	Update Existing	New SAGR System	New Packaged Treatment	Low Pressure Sewers to Caneadea	Regional Pump Station to Caneadea
General Government Support	$17,280	$17,280	$17,280	$17,280	$17,280	$17,280
Transportation	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000
Home and Community Service						
Sewer Administration	$5,364	$5,364	$5,364	$5,364	$5,364	$5,364
Sanitary Sewers	$16,600	$22,300	$22,300	$22,300	$48,000	$29,100
Sewage Treatment and Disposal	$99,751	$169,251	$168,251	$189,683	$79,283	$78,251
Additional Caneadea Treatment					$64,400	$64,400
Employee Benefits	$25,375	$25,375	$25,375	$50,750	$50,750	$25,375
Sub-total Fiscal Budget	$168,370	$243,570	$242,570	$289,376	$263,576	$218,270
Debt Service	$0	$179,767	$225,600	$262,067	$199,067	$142,133
Total Appropriations	$168,370	$423,337	$468,170	$551,443	$462,643	$360,403
Number of EDU	267.1	267.1	267.1	267.1	267.1	267.1
Typical Cost Per EDU	$630	$1,585	$1,753	$2,065	$1,753	$1,370
Increase per EDU	**$0**	**$955**	**$1,122**	**$1,434**	**$1,122**	**$740**

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.6.

Table III.6: 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	$23,205					
Collection System						
Replace with 8-inch Sewers	$500					
Add Manholes	$300	$300	$300	$300		$300
Upgrade Route 19A Pump Station	$29,200	$29,200	$29,200	$29,200		$29,200
Upgrade Force Main to WWTP	$2,200	$2,200	$2,200	$2,200		
Treatment System						
Upgrade Existing Recirculating Filters	$25,500	$25,500				
SAGR System	$31,500		$31,500			
Packaged WWTP	$24,700			$24,700		
Pump to Town of Caneadea WWTP						
Force main	$18,500				$18,500	$18,500
Low Pressure Sewer System	$20,000				$20,000	
Regional Pump Station	$36,000					$36,000
Total Short Lived Asset Budget		$70,600	$76,600	$69,800	$38,500	$84,000

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 force main 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, upgrade the Route 19A sanitary pump station so it discharges to a region pump station, and add a regional pump station that 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 force main 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 force main 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.

V. PROPOSED PROJECT

A. GENERAL

The project provides disinfection by eliminating the WWTP, upgrading the Route 19A pump station, and constructing a regional pump station with force main that discharges to the Town of Caneadea's WWTP. Also included is installing additional manholes in the graywater collection system to help identify sources of I/I.

B. BASIS OF SELECTION

The 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, and a new regional pump station designed to accommodate existing, estimated peak hour flows and reasonable growth within the collection system. Designed according to the *Standards,* the pump stations 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, force main 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. HOMES, POPULATION AND BUSINESSES SERVED

Table II.1 summarizes the number of parcels, sewer accounts, and equivalent dwelling units (EDU) for each parcel in the sewer district by real property classes code. Table II.2 summarizes the estimated population in the sewer district of approximately 484 people.

An EDU represents the typical water use by a single-family dwelling in the sewer district. Review of water metered sales data indicates that a typical single-family dwelling uses approximately 46,500 gallons per year. For purposes of estimating the typical user cost in the sewer district for the project, each single-family parcel with sewer access is assessed 1.0 EDU. EDUs for non-single-family parcels with water use were calculated based on water use divided 46,500, rounded up to 0.1 EDU with no parcel receiving less than 0.5 EDU. Developable parcels without an account, and with access to a sewer, were assessed 0.5 EDU. Undevelopable parcels, or parcels without access to sewers were assessed 0 EDU.

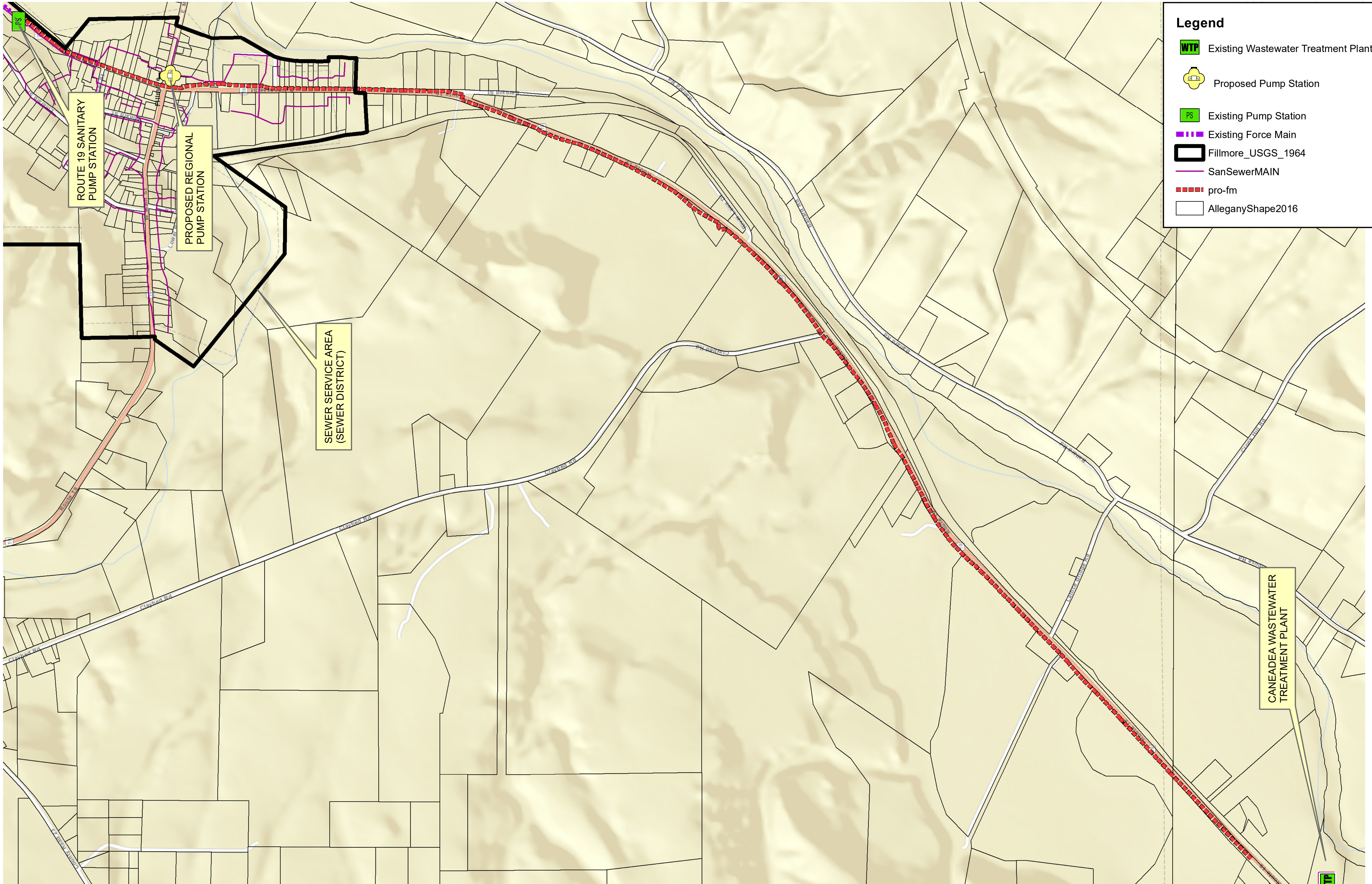
D. SCHEMATIC DESIGN

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 during final design to allow maintenance and inspection of the sewer lines; generally, at changes in pipe direction and replacing end of line cleanouts.

E. 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 force mains 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 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



TOWN OF HUME

ALLEGANY COUNTY, NEW YORK

PROPOSED SANITARY FORCEMAIN

Drawn By: TJV

Scale: 1" = 1,000'

Date: DEC 2020

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

Fig. V-2

PROJECT NO.

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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.

The SEQR environmental review did not identify design or construction constraints associated with archaeological sensitivity, endangered or threatened species, or rare plants or animals. Final coordination with The New York State Office of Parks, Recreation and Historic Preservation (SHPO) and New York State Agriculture and Markets will be completed during final design.

F. Land Requirements

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

G. Soil and Groundwater Conditions

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

H. 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.

I. PROJECT BUDGET

Table V.1: Opinion of Probable Project Cost

Project Budget	Cost
Construction	
Add Manholes to Collection System	$437,000
Upgrade Route 19A Pump Station	$259,000
Force Main to Town of Caneadea WWTP	$1,193,000
Regional Pump Station	$559,000
Sub-Total Construction	$2,447,900
Engineering Fees	
Design	$559,000
Construction	$268,600
Sub-total Engineering	$827,600
Other Expense	
Local Council	$51,000
Bond Council	$76,000
Financial Services	$102,000
Miscellaneous	$25,000
Sub-Total Services	$254,000
Contingencies	$734,000
Total	$4,264,000

J. FUNDING

The probable total capital project budget for the project is $4,264,000. 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 through EFC. The project will be foundered through CWSRF Hardship Financing. Should the project qualify for a WQIP disinfection grant, WIIA grant, or combination thereof, the cost per EDU may be reduced by $134 for each $1,000,000 if grant under Hardship Funding.

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 for the project. As shown in the table, the probable increase in cost for the project is $740 per EDU based on EFC's determination that the project is eligible for CWSF Hardship Financing.

Currently, the Town bills customers for sewer service on a quarterly basis. The quarterly sewer rate includes a base charge of $72.00 plus $3.74/1,000 gallons of water used. Based on an average annual water demand for a single-family residence of 46,500 gallons, the existing typical, annual sewer use fee is $461.91.

Table V.2: Typical Single-Family Sewer Charge

Sewer Use Charges	Cost
Sewer Use Charge	
Annual Water (2018) (gallons)	46,500
Rate / 1,000 gallons	$3.74
Annual Sewer Charge	$173.91
Quarterly Sewer Charges	
Quarterly Charge	$72.00
Annual Charge	$288.00
Total Sewer Use Charge	$461.91

In order to fully fund the sewer budget, the Town of Hume may need to appropriate additional revenue through tax levies or by adjusting the sewer rate.

K. 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, in the *Town of Hume Flow Management Plan* submitted to NYSDEC in 2018, and the most recent update to the Town's SPDES permit.

Table V.3: Preliminary Schedule

Completion Date	A/T[1]	Activity
April 21, 2020	A	Submitted Preliminary Engineering Report
April 24, 2020	A	Submitted Project for the listing on IUP for CWSRF Financing (Updated 5/24/2021)
July 22, 2020	A	Issued Negative Declaration of SEQR
June 2021	A	Submited WQIP Grant Application
November 2021	T	Submit WIIA Grant Application
February 2022	T	Submit Financing Application
May 2022	T	Submit Plans and Specifications for Agency Approval
April 2023	T	Award Bids
May 2023	T	Construction Start
May 2024	T	Construction Complete

(1) A= Actual, T = Tentative

L. CONTINUING EFFORTS & COMMUNITY ENGAGEMENT

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. A public hearing for the project will also be held.

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 $4,264,000. Based on a modified 2020 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 $1,370 based on EFC's determination that the project qualifies for interest-free, hardship financing. This unit cost represents a per EDU budget increase of $740.

The cost per EDU includes and agreed to Town of Caneadea treatment cost of $3.95/1,000-gallons. Based on an average annual flow from the Town of Hume WWTP plant of 16,295,000 gallons (44,645 GPD), the estimated annual treatment cost is $64,400. 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 based on interest-free hardship financing.

Respectfully submitted,

Derek C. Anderson

Derek C. Anderson, P.E.
MRB Group Engineering, Architecture & Surveying, D.P.C.

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.

6. SPDES Permit No. NY0203858 (July 6, 2020)

7. *Recommended Standards for Wastewater Facilities*, (2004), Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers.

8. *TR-16, Guides for the Design of Wastewater Treatment Works,* (2011 Ed.) New England Interstate Water Pollution Commission.

9. *Design Standards for Wastewater Treatment Works*, (1988), New York State Department of Environmental Conservation.

10. *New York State Design Standards for Intermediate Sized Wastewater Treatment Systems*, March 5, 2014) New York State Department of Environmental Conservation.

11. *Engineering Drawings for the Town of Hume's Wastewater Treatment Facility*, (circa 1987), Fagan Engineers.

12. *Town of Hume's Wastewater Treatment Facility Operation and Maintenance Manual*, (September 1987), Fagan Engineers.

13. United States Census Data (as noted).

14. *Town of Hume/Town of Caneadea Municipal Wastewater Treatment Systems Consolidation Study*, (July 2008), MRB Group Engineering, Architecture, Surveying, P.C.

15. *Preliminary Engineering Report for the Town of Hume Municipal Wastewater Treatment Improvements*, (March 2012), MRB Group Engineering, Architecture, Surveying, P.C.

16. *Preliminary Engineering Report for the Town of Hume Municipal Wastewater Disinfection and Treatment Improvements (CWSRF Project No. C9-6627-01-00)*, (April 3, 2020 (Rev. 12/2020)), MRB Group Engineering, Architecture, Surveying, D.P.C.

17. *Agreement Regarding Processing Wastewater from the Town of Hume Sewer District Between the Town of Caneadea and the Town of Hume,* (June 6, 2021).

18. *Certificate of Dissolution Election, State of New York, County of Allegany SS: Village of Fillmore,* (December 14, 1993).

APPENDIX A

SPDES DISCHARGE PERMIT

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits
625 Broadway, 4th Floor, Albany, New York 12233-1750
P: (518) 402-9167 | F: (518) 402-9168 | deppermitting@dec.ny.gov
www.dec.ny.gov

July 6, 2020

Town of Hume
Attn: Darlene Mason, Supervisor
PO Box 302
Fillmore, NY 14735

Re: Department Issued Modification – Disinfection Requirements
SPDES NY0203858 DEC ID 9-0258-00003/00002

Dear Permittee:

Enclosed is a final modified State Pollutant Discharge Elimination System (SPDES) permit for the above referenced facility that includes disinfection requirements in accordance with 6 NYCRR Part 703.4. This permit has been modified by the NYSDEC pursuant to 6 NYCRR Part 750-1.18.

Please be advised, the Uniform Procedures Regulations (6 NYCRR Part 621) provide that an applicant may request a public hearing if a permit contains conditions which are unacceptable to them. Any such request must be made in writing within 30 calendar days of the date of permit issuance and must be addressed to the Permit Administrator at the letterhead address. A copy should also be sent to the Chief Administrative Law Judge at NYSDEC, 625 Broadway, 1st Floor, Albany, NY 12233-1550.

Should you have questions on the administration of this modification, please feel free to contact me at the address or phone number listed above. Should you have technical questions on permit content, please contact Alison Wasserbauer at (518) 402-8126, or the Regional Water Engineer, Jeff Konsella, at (716) 851-7220.

Sincerely,

Teresa Diehsner
Environmental Program Specialist I
Division of Environmental Permits

Enclosures:
-SDPES Permit
-Fact Sheet

cc: D. Denk, RPA
J. Konsella, RWE
C. Jamison, CO BWP Permit Coordinator
A. Wasserbauer, Permit Writer
USEPA Region 2
NYSEFC
Alleghany County DOH
D. Anderson, MRB Group

SPDES Permit Fact Sheet
Town of Hume
Town of Hume WWTP
NY 020 3858

Department of
Environmental
Conservation

Contents

Summary of Permit Changes

A State Pollutant Discharge Elimination System (SPDES) Department-initiated permit modification has been drafted for the Town of Hume WWTP. The following is a summary of the changes. The details of these changes are specified below and in the permit:

- Updated the cover page format and information, including the outfall coordinates;
- Added seasonal disinfection of the sewage treatment plant effluent to meet the requirements of 6 NYCRR Part 703.4;
    - Fecal Coliform: Monthly average of 200 #/100 mL and a 7-day average of 400 #/100 mL.
    - Total Residual Chlorine: Daily maximum of 30 μg/L and monitoring requirements.
- Added a schedule of compliance that includes requirements for the permittee to install disinfection treatment units to comply with the new seasonal disinfection limits;
- Updated the Recording, Reporting and Additional Monitoring Requirements section with information on NetDMR;
- Increased the frequency of DMR submissions from every 3 (three) months to every month.

This factsheet summarizes the information used to determine the effluent limitations and other conditions contained in the permit. General background information about the regulatory bases for the effluent limitations and other conditions contained in this permit are in the Appendix linked throughout this factsheet.

Administrative History

7/1/1993 The last full technical review was performed and the SPDES permit became effective with a new five-year term and expiration date of 7/1/1998. This permit, along with all subsequent modifications, has formed the basis of this permit.

The permit was administratively renewed in 1998, 2003, 2008, 2013, and 2018. The current permit administrative renewal is effective until 6/30/2023.

11/26/2012 Permit was modified to include monitoring for Total Phosphorus to collect data for the Genesee River Basin Total Maximum Daily Load (TMDL) program.

5/1/2014 Permit was modified to update Outfall 001 coordinates and add a definitions page, year-round ammonia (as NH3) monitoring, add low priority mercury minimization program language, and add discharge notification requirements and general requirements language

2/28/2019 The Department mailed a letter to the Supervisor of the Town of Hume of its intent to modify the Town's SPDES permit to require disinfection of the wastewater treatment plant effluent prior to discharge.

Please see the Notice of Complete Application, published in the Environmental Notice Bulletin and newspapers, for information on the public notice process.

Facility Information

This is a publicly owned treatment works that receives flow from domestic users. Wastewater consists of treated sanitary. The sewage collection system consists of separate sewers. The treatment plant was constructed in 1987 to provide secondary treatment for a design flow of 0.045 MGD.

The current treatment plant consists of:

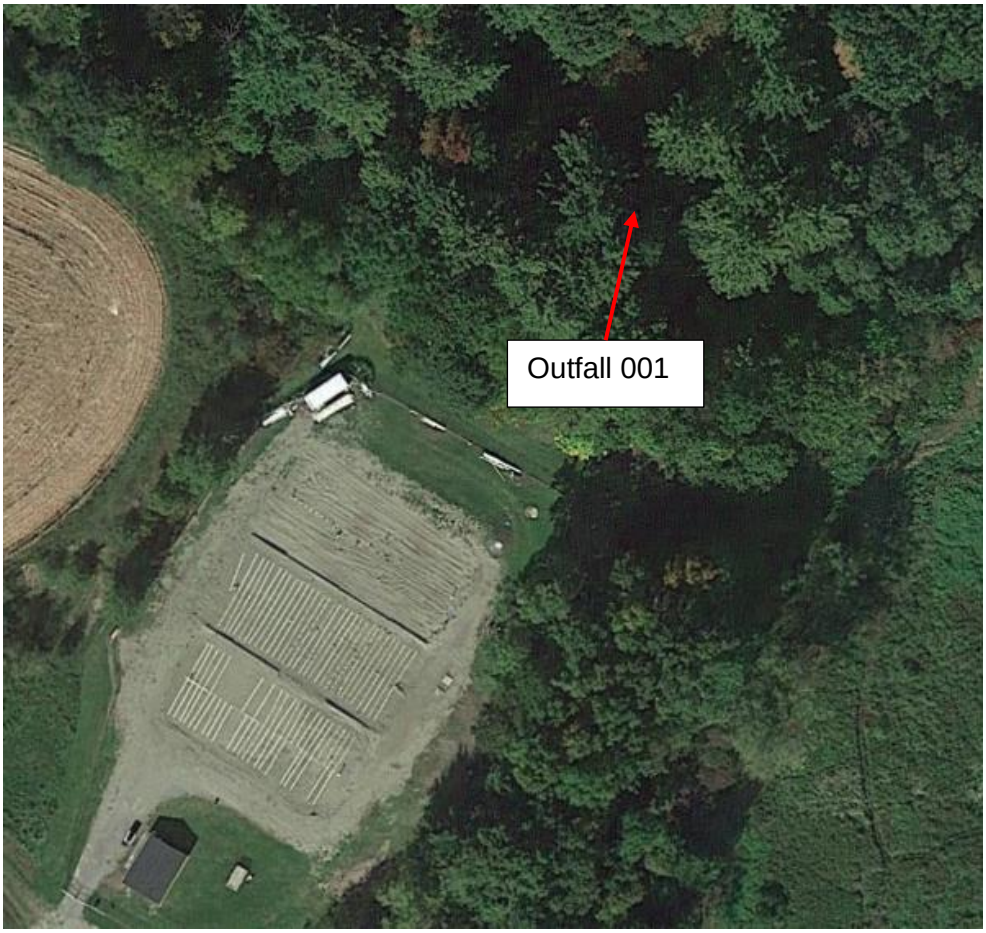
- Preliminary Treatment: Private STEP systems.
- Primary Treatment: Pre-settling tank, Dosing tank.
- Secondary Treatment: Intermittent sand filters.

Sludge is not needed to be disposed of in large quantities due to private STEP systems. The pre-settling tank is cleaned as needed to dispose of any accumulated solids.

The facility accepts wastewater from the following municipalities:

Municipality	POSS Registration # or SPDES #	Combined Sewer Overflow (CSO)?	Sanitary Sewer Overflow (SSO)?
Town of Hume	NY 020 3858	No	No

Site Overview



Receiving Water Information

The facility discharges via the following outfalls:

Outfall No.	SIC Code	Wastewater Type	Receiving Water
001	4952	Treated Sanitary	Tributary to Genesee River

The location of the outfall(s), and the name, classification, and index numbers of the receiving waters are indicated in the Outfall and Receiving Water Summary Table at the end of this fact sheet. Appendix Link

Impaired Waterbody Information

The Tributary to the Genesee River segment (PWL No. 0403-0029) is not listed on the 2016 New York State Section 303(d) List of Impaired/TMDL Waters, and therefore, there are no applicable wasteload allocations (WLAs) for this discharge.

Mixing Zone and Critical Receiving Water Data

The 7Q10 flow for the Tributary to the Genesee River of 0.019 MGD (0.03 CFS) was used to calculate the chronic A(C) dilution ratio. The 7Q10 flow was obtained from past water quality analysis calculations. The 30Q10 flow of 0.023 MGD (0.036 CFS) was estimated by applying a multiplier of 1.2 to the 7Q10 flow and used to calculate the Human, Aesthetic, Wildlife (HEW) dilution ratio. A 1Q10 flow of 0.0095 MGD (0.015 CFS) was estimated as half the 7Q10 and used to calculate the acute A(A) dilution ratio.

Outfall No.	Acute Dilution Ratio A(A)	Chronic Dilution Ratio A(C)	Human, Aesthetic, Wildlife Dilution Ratio (HEW)	Basis
001	1.2:1	1.4:1	1.5:1	TOGS 1.3.1

Critical receiving water data are listed in the Pollutant Summary Table at the end of this fact sheet. Appendix Link

Permit Requirements

The technology based effluent limitations (TBELs), water quality-based effluent limitations (WQBELs), existing effluent quality and a discussion of the selected effluent limitation for each pollutant present in the discharge are provided in the Pollutant Summary Table.

Whole Effluent Toxicity (WET) Testing

None of the seven criteria that are indicative of potential toxicity and listed in the Appendix to this factsheet, are applicable to this facility. Therefore, WET testing is not included in the permit.

Antidegradation

The permit contains effluent limitations which ensure that the designated best use of the receiving waters will be maintained. Please see the Environmental Notice Bulletin for information on the State Environmental Quality Review (SEQR)[1] determination. Appendix Link

[1] As prescribed by 6 NYCRR Part 617

Schedule(s) of Compliance

A Schedule of Compliance is being included in the permit[2] based on a reasonable finding of the following:

- Permittee cannot immediately comply with the WQBEL
- Water quality standards will be met by the end of the Compliance Schedule
- Compliance with the final WQBEL is required as soon as possible

Items in the Schedule of Compliance:

- Compliance period for attainment of final effluent limits for Fecal Coliform and Total Residual Chlorine. A major modification to the treatment facility, operations or measures is needed and will take a significant amount of time to properly plan, design, fund, and construct. This requirement is new.

[2] Pursuant to 6 NYCRR 750-1.14

Permittee: Town of Hume
Facility: Town of Hume WWTP
SPDES Number: NY 020 3858

Date: July 6, 2020
Permit Writer: Alison Wasserbauer
USEPA Non-Major/Class 07 Municipal

OUTFALL AND RECEIVING WATER SUMMARY TABLE

Outfall	Latitude	Longitude	Receiving Water Name	Water Class	Water Index No. / Priority Waterbody Listing (PWL) No.	Major / Sub Basin	Hardness (mg/l)	1Q10 (MGD)	7Q10 (MGD)	30Q10 (MGD)	Critical Effluent Flow (MGD)	Dilution Ratio		
												A(A)	A(C)	HEW
001	42° 28' 43" N	78° 06' 11" W	Tributary to Genesee River	D	ONT-117-116-1 PWL: 0403-0029	04 / 03	-[3]	0.0095	0.019	0.023	0.045	1.2:1	1.4:1	1.5:1

POLLUTANT SUMMARY TABLE

Outfall 001

Outfall #	001	**Description of Wastewater:** Sewage														
		Type of Treatment: Private STEP systems, pre-settling tank, dosing tank, intermittent sand filters														
Effluent Parameter	Units	Averaging Period	Existing Discharge Data			TBELs		Water Quality Data & WQBELs						ML	Basis for Permit Requirement
			Permit Limit	Existing Effluent Quality[4]	# of Data Points Detects / Non-Detects	Limit	Basis	Ambient Bkgd. Conc.	Projected Instream Conc.	WQ Std. or GV	WQ Type	Calc. WQBEL	Basis for WQBEL		
General Notes: This Department-initiated permit modification is only for the addition of seasonal effluent disinfection requirements. All other permit limits and conditions are not subject to this modification. Existing effluent flow data from March 1, 2015 to March 31, 2020 was obtained from Discharge Monitoring Reports provided by the permittee.																
Flow Rate	MGD	Monthly Avg	0.045	0.045 Actual Average	19 / 1	0.045	TOGS 1.3.3	Narrative: No alterations that will impair the waters for their best usages.					703.2	-	TBEL
	Consistent with TOGS 1.3.3, a monthly average flow limitation equal to the average daily design capacity of the treatment plant is specified.															
Coliform, Fecal	#/100 ml	30d Geo Mean	-	-	-	200	TOGS 1.3.3	-	Narrative: The monthly geometric mean, from a minimum of five examinations, shall not exceed 200.				703.4	-	TBEL
		7d Geo Mean	-	-	-	400	TOGS 1.3.3	-							
	Consistent with TOGS 1.3.3, effluent disinfection is required seasonally from May 1st - October 31st, due to the class of the receiving waterbody. Fecal coliform limits equal to the TBEL are specified.															
Total Residual Chlorine	mg/L	Daily Max	-	-	-	2.0	TOGS 1.3.3	-	-	0.019	A(A)	0.027	TOGS 1.1.1	0.03	ML
	Seasonal effluent disinfection is being added to the permit. The WQBEL was calculated by multiplying the WQS by the chronic dilution ratio. Due to the low dilution, the calculated WQBEL is less than the TBEL and the ML, and an effluent limitation equal to the ML is appropriate.															

[3] Hardness is not necessary to calculate fecal coliform or total residual chlorine limits.

[4] Existing Effluent Quality: Daily Max = 99% lognormal; Monthly Avg = 95% lognormal (for datasets with ≤ 3 nondetects);.Daily Max = 99% delta-lognormal; Monthly Avg = 95% delta-lognormal (for datasets with > 3 nondetects)

Appendix: Regulatory and Technical Basis of Permit Authorizations

The information presented in the Appendix is meant to supplement the factsheet for multiple types of permits and may not be applicable to this specific permit.

Regulatory References

The requirements included in SPDES permits are based on both federal and state laws, regulations, policies, and guidance.

- Clean Water Act (CWA) 33 section USC 1251 to 1387
- Environmental Conservation Law (ECL) Articles 17 and 70
- Federal Regulations
  - 40 CFR, Chapter I, subchapters D, N, and O
- State environmental regulations
  - 6 NYCRR Part 621
  - 6 NYCRR Part 750
  - 6 NYCRR Parts 700 - 704 – Best use and other requirements applicable to water classes
  - 6 NYCRR Parts 800 – 941 - Classification of individual surface waters
- NYSDEC water program policy, often referred to as Technical and Operational Guidance Series memos (TOGS)
- USEPA Office of Water Technical Support Document for Water Quality-based Toxics Control, March 1991, Appendix E

The following is a quick guide to the references used within the factsheet:

SPDES Permit Requirements	Regulatory Reference
Anti-backsliding	6 NYCRR 750-1.10(c)
Best Management Practices (BMPS) for CSOs	6 NYCRR 750-2.8(a)(2)
Environmental Benefits Permit Strategy (EBPS)	6 NYCRR 750-1.18, NYS ECL 17-0817(4), TOGS 1.2.2 (revised January 25,2012)
Exceptions for Type I SSO Outfalls (bypass)	6 NYCRR 750-2.8(b)(2), 40 CFR 122.41
Mercury Multiple Discharge Variance	Division of Water Program Policy 1.3.10 (TOGS 1.3.10)
Mixing Zone and Critical Water Information	TOGS 1.3.1 & Amendments
PCB Minimization Program	40 CFR Part 132 Appendix F Procedure 8, 6 NYCRR 750-1.13(a) and 750-1.14(f), and TOGS 1.2.1
Pollutant Minimization Program (PMP)	6 NYCRR 750-1.13(a), 750-1.14(f), TOGS 1.2.1
Schedules of Compliance	6 NYCRR 750-1.14
Sewage Pollution Right to Know (SPRTK)	NYS ECL 17-0826-a, 6 NYCRR 750-2.7
State Administrative Procedure Act (SAPA)	State Administrative Procedure Act Section 401(2), 6 NYCRR 621.11(l)
State Environmental Quality Review (SEQR)	6 NYCRR Part 617
USEPA Effluent Limitation Guidelines (ELGs)	40 CFR Parts 405-471
USEPA National CSO Policy	33 USC Section 1342(q)
Whole Effluent Toxicity (WET) Testing	TOGS 1.3.2
General Provisions of a SPDES Permit Department Request for Additional Information	NYCRR 750-2.1(i)

The provisions of the permit are based largely upon 40 CFR 122 subpart C and 6 NYCRR Part 750 and include monitoring, recording, reporting, and compliance requirements, as well as general conditions applicable to all SPDES permits.

Outfall and Receiving Water Information

Impaired Waters

The NYS 303(d) List of Impaired/TMDL Waters (http://www.dec.ny.gov/chemical/31290.html) identifies waters where specific designated uses are not fully supported and for which the state must consider the development of a TMDL or other strategy to reduce the input of the specific pollutant(s) that restrict waterbody uses, in order to restore and protect such uses. SPDES permits must include effluent limitations necessary to implement a

WLA of an EPA-approved TMDL (6 NYCRR 750-1.11(a)(5)(ii)), if applicable. In accordance with 6 NYCRR 750-1.13(a), permittees discharging to waters which are on the list but do not yet have a TMDL developed may be required to perform additional monitoring for the parameters causing the impairment. Accurate monitoring data is needed for the development of the TMDL, and to allow the Department to accurately determine the existing capabilities of the wastewater treatment plant to assure that wasteload allocations (WLAs) are allocated equitably.

Existing Effluent Quality

During development of the permit, a statistical evaluation of existing effluent quality is performed to calculate the 95th (monthly average) and 99th (daily maximum) percentiles of the existing effluent quality. That evaluation is completed in accordance with TOGS 1.2.1 and the USEPA Office of Water Technical Support Document for Water Quality-based Toxics Control, March 1991, Appendix E. When there are three or fewer non-detects, a lognormal distribution of the data is assumed, and lognormal calculations are used to determine the monthly average and daily maximum concentrations of the existing effluent. When there are greater than three non-detects, a delta-lognormal distribution is assumed, and delta-lognormal calculations are used to determine the monthly average and daily maximum pollutant concentrations. Statistical calculations are not performed for parameters where there are less than ten data points. If additional data is needed, a monitoring requirement may be specified either through routine monitoring or a short-term high intensity monitoring program. The Pollutant Summary Table identifies the number of sample data points available.

Permit Requirements

Basis for Effluent Limitations

Sections 101, 301, 304, 308, 401, 402, and 405 of the CWA and Titles 5, 7, and 8 of Article 17 ECL, as well as their implementing federal and state regulations, and related guidance, provide the basis for the effluent limitations and other conditions in the permit.

When conducting a full technical review of an existing permit, the previous permit limitations form the basis for the next permit. Existing effluent quality is evaluated against the existing permit limitations to determine if these should be continued, revised, or deleted. Generally, existing limitations are continued unless there are changed conditions at the facility, the facility demonstrates an ability to meet more stringent limitations, and/or in response to updated regulatory requirements. Pollutant monitoring data is also reviewed to determine the presence of additional contaminants that should be included in the permit based on a reasonable potential analysis to cause or contribute to a water quality standards violation.

Anti-backsliding

Anti-backsliding requirements are specified in the CWA sections 402(o) and 303(d)(4), ECL 17-0809, and regulations at 40 CFR 122.44(*l*) and 6 NYCRR 750-1.10(c) and (d). These requirements are summarized in TOGS 1.2.1. Generally, the relaxation of effluent limitations in permits is prohibited unless one of the specified exceptions applies, which will be cited on a case-by-case basis in this factsheet.

Antidegradation Policy

New York State implements the antidegradation portion of the CWA based upon two documents: (1) Organization and Delegation Memorandum #85-40, “Water Quality Antidegradation Policy” (September 9, 1985); and, (2) TOGS 1.3.9, “Implementation of the NYSDEC Antidegradation Policy – Great Lakes Basin (Supplement to Antidegradation Policy dated September 9, 1985) (undated).” The permit for the facility contains effluent limitations which ensure that the existing best usage of the receiving waters will be maintained. To further support the antidegradation policy, SPDES applications have been reviewed in accordance with the State Environmental Quality Review Act (SEQR) as prescribed by 6 NYCRR Part 617.

Effluent Limitations

In developing a permit, the Department determines the technology-based effluent limitations (TBELs) and then evaluates the water quality expected to result from technology controls to determine if any exceedances of water

quality criteria in the receiving water might result. If there is a reasonable potential for exceedances of water quality criteria to occur, water quality-based effluent limitations (WQBELs) are developed. A WQBEL is designed to ensure that the water quality standards of receiving waters are met. In general, the CWA requires that the effluent limitations for a particular pollutant are the more stringent of either the TBEL or WQBEL.

Technology-based Effluent Limitations (TBELs)

CWA sections 301(b)(1)(B) and 304(d)(1), 40 CFR 133.102, ECL section 17-0509, and 6 NYCRR 750-1.11 require technology-based controls, known as secondary treatment. These and other requirements are summarized in TOGS 1.3.3. Equivalent secondary treatment, as defined in 40 CFR 133.105, allow for effluent limitations of the more stringent of the consistently achievable concentrations or monthly/weekly averages of 45/65 mg/l, and the minimum monthly average of at least 65% removal. Consistently achievable concentrations are defined in 40 CFR 133.101(f) as the 95th percentile value for the 30-day (monthly) average effluent quality achieved by the facility in a period of two years. The achievable 7-day (weekly) average value is equal to 1.5 times the 30-day average value calculated above. Equivalent secondary treatment applies to those facilities where the principal treatment process is either a trickling filter or a waste stabilization pond; the treatment works provides significant biological treatment of municipal wastewater; and, the effluent concentrations consistently achievable through proper operation and maintenance of the facility cannot meet traditional secondary treatment requirements.

Other Technology Based Effluent Limitations:

There are no federal technology-based standards for toxic pollutants from POTWs. For each toxic parameter present in the discharge a Reasonable Potential Analysis is conducted. This may be a statistical analysis of existing data in accordance with TOGS 1.2.1, or an assessment of the technology employed at the facility and selection of the appropriate limitation from TOGS 1.2.1 Attachment C. Where the TBEL is more stringent than the WQBEL, the TBEL is applied as an action level in accordance with TOGS 1.3.3.

Water Quality-Based Effluent Limitations (WQBELs)

In addition to the TBELs, permits must include additional or more stringent effluent limitations and conditions, including those necessary to protect water quality. CWA sections 101 and 301(b)(1)(C), 40 CFR 122.44(d)(1), and 6 NYCRR Parts 700-704 and 750-1.11 require that permits include limitations for all pollutants or parameters which are or may be discharged at a level which may cause or contribute to an exceedance of any State water quality standard adopted pursuant to NYS ECL 17-0301. The limitations must be stringent enough to ensure that water quality standards are met and must be consistent with any applicable WLA which may be in effect through a TMDL for the receiving water. These and other requirements are summarized in TOGS 1.1.1, 1.3.1, 1.3.2, 1.3.5 and 1.3.6.

Mixing Zone Analyses

Mixing zone analyses are conducted in accordance with the following documents:
"EPA Technical Support Document for Water Quality-Based Toxics Control," (March 1991); EPA Region VIII's "Mixing Zones and Dilution Policy", (December 1994); NYSDEC TOGS 1.3.1, "Total Maximum Daily Loads and Water Quality-Based Effluent Limitations" (July 1996).

Critical Flows

In accordance with TOGS 1.2.1 and 1.3.1, water quality-based effluent limitations are developed using dilution ratios that relate the critical low flow condition of the receiving waterbody to the critical effluent flow. The critical low flow condition used in the dilution ratio will be different depending on whether the limitations are for aquatic or human health protection. For chronic aquatic protection, the critical low flow condition of the waterbody is typically represented by the 7Q10 flow and is calculated as the lowest average flow over a 7-day consecutive period within 10 years. For acute aquatic protection, the critical low flow condition is typically represented by the 1Q10 and is calculated as the lowest 1-day flow within 10 years. However, NYSDEC considers using 50% of the 7Q10 to be equivalent to the 1Q10 flow. For the protection of human health, the

critical low flow condition is typically represented by the 30Q10 flow and is calculated as the lowest average flow over a 30-day consecutive period within 10 years. However, NYSDEC considers using 1.2 x 7Q10 to be equivalent to the 30Q10. The 7Q10 or 30Q10 flow is used with the critical effluent flow to calculate the dilution ratio. The critical effluent flow can be the maximum daily flow reported on the permit application, the maximum of the monthly average flows from discharge monitoring reports for the past three years, or the facility design flow. When more than one applicable standard exists for aquatic or human health protection for a specific pollutant, a reasonable potential analysis is conducted for each applicable standard and corresponding critical flow to ensure effluent limitations are sufficiently stringent to ensure all applicable water quality standards are met as required by 40 CFR 122.44(d)(1)(i). For brevity, the pollutant summary table reports the results of the most conservative scenario.

Reasonable Potential Analysis (RPA)

The Reasonable Potential Analysis (RPA) is a statistical estimation process, outlined in the 1991 USEPA Technical Support Document for Water Quality-based Toxics Control (TSD), Appendix E. This process uses existing effluent quality data and statistical variation methodology to project the maximum amounts of pollutants that could be discharged by the facility. This projected instream concentration (PIC) is calculated using the appropriate ratio and compared to the water quality standard (WQS). When the RPA process determines the WQS may be exceeded, a WQBEL is required. The procedure for developing WQBELs includes the following steps:

1) identify the pollutants present in the discharge(s) based upon existing data, sampling data collected by the permittee as part of the permit application or a short-term high intensity monitoring program, or data gathered by the Department;

2) identify water quality criteria applicable to these pollutants;

3) determine if WQBELs are necessary (i.e. reasonable potential analysis (RPA)). The RPA will utilize the procedure outlined in Chapter 3.3.2 of EPA's Technical Support Document (TSD). As outlined in the TSD, for parameters with limited effluent data the RPA may include multipliers to account for effluent variability; and,

4) calculate WQBELs (if necessary). Factors considered in calculating WQBELs include available dilution of effluent in the receiving water, receiving water chemistry, and other pollutant sources.

The Department uses the following modeling tools to estimate the expected concentrations of the pollutant in the receiving water and develop WQBELs. These tools were developed in part using the methodology referenced above. If the estimated concentration of the pollutant in the receiving water is expected to exceed the ambient water quality standard or guidance value, then there is a reasonable potential that the discharge may cause or contribute to an exceedance of any State water quality standard adopted pursuant to NYS ECL 17-0301. If a TMDL is in place, the facility's WLA for that pollutant is applied as the WQBEL.

- RSAT: The River Based Effluent Limitation Screening Analysis Tool (RSAT) was developed by the Department for determining WQBELs for point sources discharging to freshwater streams. The model considers both non-conservative oxygen demanding pollutants and conservative toxic pollutants;
- PonSAT: The Ponded Waterbody Based Effluent Limitation Screening Analysis Tool (PonSAT) was developed by the Department for determining WQBELs for point sources discharging to freshwater ponded waterbodies. The model considers both non-conservative oxygen demanding pollutants and conservative toxic pollutants;
- CORMIX: Cornell University along with USEPA developed this hydrodynamic mixing zone model and decision support system for pollutant discharges into oceans, rivers, lakes, and estuaries based upon facility specific discharge and receiving water data. The model

considers both non-conservative oxygen demanding pollutants and conservative toxic pollutants.

Whole Effluent Toxicity (WET) Testing:

WET tests use small vertebrate and invertebrate species to measure the aggregate toxicity of an effluent. There are two different durations of toxicity tests: acute and chronic. Acute toxicity tests measure survival over a 96-hour test exposure period. Chronic toxicity tests measure reductions in survival, growth, and reproduction over a 7-day exposure. TOGS 1.3.1 includes guidance for determining when aquatic toxicity testing should be included in SPDES permits. The authority to require toxicity testing is in Part 702.16(b) of Chapter X, Title 6 of the New York State Codes, Rules, and Regulations. TOGS 1.3.2 describes the procedures which should be followed when determining whether to include toxicity testing in a SPDES permit and how to implement a toxicity testing program. Per TOGS 1.3.2, WET testing may be required when any one of the following seven criteria are applicable:

1. There is the presence of substances in the effluent for which ambient water quality criteria do not exist.
2. There are uncertainties in the development of TMDLs, WLAs, and WQBELs, caused by inadequate ambient and/or discharge data, high natural background concentrations of pollutants, available treatment technology, and other such factors.
3. There is the presence of substances for which WQBELs are below analytical detectability.
4. There is the possibility of complex synergistic or additive effects of chemicals, typically when the number of metals or organic compounds discharged by the permittee equals or exceeds five.
5. There are observed detrimental effects on the receiving water biota.
6. Previous WET testing indicated a problem.
7. POTWs which exceed a discharge of 1 MGD. Facilities of less than 1 MGD may be required to test, e.g., POTWs <1 MGD which are managing industrial pretreatment programs.

Minimum Level of Detection

Pursuant to 40 CFR 122.44(i)(1), SPDES permits must contain monitoring requirements using sufficiently sensitive test procedures approved under 40 CFR Part 136. A method is “sufficiently sensitive” when the method’s minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant parameter; or the lowest ML of the analytical methods approved under 40 CFR Part 136. The ML represents the lowest level that can be measured within specified limitations of precision and accuracy during routine laboratory operations on most effluent matrices. When establishing effluent limitations for a specific parameter (based on technology or water quality requirements), it is possible that the calculated limitation will fall below the ML established by the approved analytical method(s). In these instances, the calculated limitation is included in the permit with a compliance level set equal to the ML of the most sensitive method.

Monitoring Requirements

CWA section 308, 40 CFR 122.44(i), and 6 NYCRR 750-1.13 require that monitoring be included in permits to determine compliance with effluent limitations. Additional effluent monitoring may also be required to gather data to determine if effluent limitations may be required. For groundwater discharges, monitoring of downstream wells may be included to demonstrate compliance with ambient groundwater quality standards. Additional effluent monitoring may also be required to gather data to determine if effluent limitations may be required. The permittee is responsible for conducting the monitoring and reporting results on Discharge Monitoring Reports (DMRs). The permit contains the monitoring requirements for the facility. Monitoring frequency is based on the minimum sampling necessary to adequately monitor the facility’s performance and characterize the nature of the discharge of the monitored flow or pollutant. Variable effluent flows and pollutant levels may be required to be monitored at more frequent intervals than relatively constant effluent flow and pollutant levels (6 NYCRR 750-1.13). For industrial facilities, sampling frequency is based on guidance provided in TOGS 1.2.1. For municipal facilities, sampling frequency is based on guidance provided in TOGS 1.3.3.

Other Conditions

Schedules of Compliance

Schedules of compliance are included in accordance with 40 CFR Part 132 Attachment F, Procedure 9, 40 CFR 122.47 and 6 NYCRR 750-1.14. Schedules of compliance are intended to, in the shortest reasonable time, achieve compliance with applicable effluent standards and limitations, water quality standards, and other applicable requirements. Where the time for compliance is more than nine months, the schedule of compliance must include interim requirements and dates for their achievement. If the time necessary to complete the interim milestones is more than nine months, and not readily divisible into stages for completion, progress reports must be required.

State Pollutant Discharge Elimination System (SPDES) DISCHARGE PERMIT

SIC Code:	**4952**	NAICS Code:	**221320**	SPDES Number:	**NY 020 3858**
Discharge Class (CL):	**07**			DEC Number:	**9-0258-00003/00002**
Toxic Class (TX):	**N**			Effective Date (EDP):	**07/1/2018**
Major-Sub Drainage Basin:	**04 - 03**			Expiration Date (ExDP):	**06/30/2023**
Water Index Number:	**ONT-117-116-1**	Item No.:	**376.1**	Modification Dates (EDPM):	**08/01/2020**
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.)

PERMITTEE NAME AND ADDRESS					
Name:	**Town of Hume**	Attention:	**Darlene Mason, Supervisor**		
Street:	**P.O. Box 302**				
City:	**Fillmore**	State:	**NY**	Zip Code:	**14735**
Email:	**HumeSupervisor@gmail.com**	Phone:	**(585) 567-2666**		

is authorized to discharge from the facility described below:

FACILITY NAME, ADDRESS, AND PRIMARY OUTFALL																
Name:	**Town of Hume Wastewater Treatment Plant**															
Address / Location:	**NYS Route 19A / Hume (T)**											County:	**Allegany**			
City:	**Fillmore**						State:	**NY**				Zip Code:	**14735**			
Facility Location:		Latitude:	**42**	°	**28**	’	**40**	” N	& Longitude:	**78**	°	**06**	’	**14**	” W	
Primary Outfall No.:	**001**	Latitude:	**42**	°	**28**	’	**43**	” N	& Longitude:	**78**	°	**06**	’	**11**	” W	
Outfall Description:	**Treated Sanitary**		Receiving Water:	**Tributary to Genesee River**						Class:	**D**					

in accordance with: effluent limitations; monitoring and reporting requirements; other provisions and conditions set forth in this permit; and 6 NYCRR Part 750-1 and 750-2. The co-permittees subject to one or more conditions of this permit are listed on page 2.

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
CO BWC - SCIS
RWE
RPA
EPA Region II
NYSEFC

Chief Permit Administrator:	Scott E. Sheeley	
Address:	Division of Environmental Permits 625 Broadway, 4th Floor Albany, NY 12233-1750	
Signature:	Scott E. Sheeley	Date: July 6, 2020

DEFINITIONS FOR PERMIT LIMITS, LEVELS AND MONITORING TERMS

TERM	DEFINITION
7-Day Geo Mean	The highest allowable geometric mean of daily discharges over a calendar week.
7-Day Average	The average of all daily discharges for each 7-days in the monitoring period. The sample measurement is the highest of the 7-day averages calculated for the monitoring period.
12-Month Rolling Average (12 MRA)	The current monthly value of a parameter, plus the sum of the monthly values over the previous 11 months for that parameter, divided by 12.
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.
Action Level	Action level means a monitoring requirement characterized by a numerical value that, when exceeded, triggers additional permittee actions and department review to determine if numerical effluent limitations should be imposed.
Compliance Level / Minimum Level	A compliance level is an effluent limitation. A compliance level is given when the water quality evaluation specifies a Water Quality Based Effluent Limit (WQBEL) below the Minimum Level. The compliance level shall be set at the Minimum Level (ML) for the most sensitive analytical method as given in 40 CFR Part 136, or otherwise accepted by the Department.
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.
Daily Maximum	The highest allowable Daily Discharge.
Daily Minimum	The lowest allowable Daily Discharge.
Effective Date of Permit (EDP or EDPM)	The date this permit is in effect.
Effluent Limitations	Effluent limitation means any restriction on quantities, quality, rates and concentrations of chemical, physical, biological, and other constituents of effluents that are discharged into waters of the state.
Expiration Date of Permit (ExDP)	The date this permit is no longer in effect.
Instantaneous Maximum	The maximum level that may not be exceeded at any instant in time.
Instantaneous Minimum	The minimum level that must be maintained at all instants in time.
Monthly Average	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.
Outfall	The terminus of a sewer system, or the point of emergence of any waterborne sewage, industrial waste or other wastes or the effluent therefrom, into the waters of the State.
Range	The minimum and maximum instantaneous measurements for the reporting period must remain between the two values shown.
Receiving Water	The classified waters of the state to which the listed outfall discharges.
Sample Frequency / Sample Type / Units	See NYSDEC's "DMR Manual for Completing the Discharge Monitoring Report for the SPDES" for information on sample frequency, type and units.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL	LIMITATIONS APPLY	RECEIVING WATER	EFFECTIVE	EXPIRING
001	June 1 through October 31	Tributary to Genesee River	08/01/2020	6/30/2023

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

EFFLUENT DISINFECTION Required Seasonal from May 1st - October 31st		Limit	Units	Limit	Units	Sample Frequency	Sample Type	Inf.	Eff.	FN
Coliform, Fecal	30-Day Geometric Mean	200	No./ 100 mL			2/Year	Grab		X	3
Coliform, Fecal	7-Day Geometric Mean	400	No./ 100 mL			2/Year	Grab		X	3
Chlorine, Total Residual	Monthly Average	Monitor	µg/L	Monitor	lbs/d	1/Day	Grab		X	3,4
Chlorine, Total Residual	Daily Maximum	30	µg/L	Monitor	lbs/d	1/Day	Grab		X	3,4

FOOTNOTES:

1. 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 an 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 = (1.5 × $CBOD_5$) + (4.5 × TKN).

3. Limits and monitoring requirements are not in effect until May 1, 2024. See the schedule of compliance on page 7.

4. Total residual chlorine monitoring is only required if using chlorine for disinfection or other means.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL	LIMITATIONS APPLY	RECEIVING WATER	EFFECTIVE	EXPIRING
001	November 1 through May 31	Tributary to Genesee River	08/01/2020	6/30/2023

PARAMETER	EFFLUENT LIMITATION					MONITORING REQUIREMENTS				FN
								Location		
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Inf.	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	
Total Suspended Solids (TSS)	Monthly Average	30	mg/L	11.3	lbs/d	Quarterly	Grab	X	X	1
Total Suspended Solids (TSS)	7-Day Average	45	mg/L	16.9	lbs/d	Quarterly	Grab		X	
Settleable Solids	Daily Maximum	0.1	mL/L			Daily	Grab	X	X	
Ammonia (as NH_3)	Daily Maximum	Monitor	mg/L	Monitor	lbs/d	Quarterly	Grab	X	X	
Total Phosphorus (as P)	Monthly Average	Monitor	mg/L	Monitor	lbs/d	Quarterly	Grab	X	X	
Dissolved Oxygen	Daily Minimum	5.0	mg/L			Daily	Grab		X	
pH	Range	6.0 – 9.0	SU			Daily	Grab	X	X	
Temperature	Daily Maximum	Monitor	ºC			Daily	Grab	X	X	

EFFLUENT DISINFECTION Required Seasonal from May 1st - October 31st[4]		Limit	Units	Limit	Units	Sample Frequency	Sample Type	Inf.	Eff.	FN
Coliform, Fecal	30-Day Geometric Mean	200	No./ 100 mL			2/Year	Grab		X	2
Coliform, Fecal	7-Day Geometric Mean	400	No./ 100 mL			2/Year	Grab		X	2
Chlorine, Total Residual	Monthly Average	Monitor	µg/L	Monitor	lbs/d	1/Day	Grab		X	2,3
Chlorine, Total Residual	Daily Maximum	30	µg/L	Monitor	lbs/d	1/Day	Grab		X	2,3

FOOTNOTES:

1. 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 an influent concentration of 200 mg/L or the actual measured value, whichever is larger.

2. Limits and monitoring requirements are not in effect until May 1, 2024. See the schedule of compliance on page 7.

3. Total residual chlorine monitoring is only required if using chlorine for disinfection or other means.

4. During the limitation time period of November 1 through May 31, effluent disinfection sampling and monitoring is only required from May 1 through May 31.

MERCURY MINIMIZATION PROGRAM - 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 6 NYCRR Part 374.4. In lieu of an inspection, the permittee can accept a certification from the dental facility owner that the treatment system was properly installed and the facility complies with the wastewater treatment operation, maintenance, and notification elements of 6 NYCRR Part 374.4.

Prior to acceptance of new or increased tributary discharges that are industrial in nature, including hauled wastes, sample data shall be provided to the permittee for mercury content. Discharges which may exceed 500 ng/L, must receive approval from the Department prior to acceptance. A file shall be maintained containing inspection results, certifications, and other information submitted by dental offices and all other potential dischargers of mercury. This file shall be available for review by NYSDEC representatives and copies shall be provided upon request.

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) The permittee shall install and maintain identification signs at all outfalls to surface waters listed in this permit, unless the Permittee has obtained a waiver in accordance with the Discharge Notification Act (DNA). 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) Upon request, the permittee shall make available electronic or hard copies of the sampling data to the public. In accordance with the RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS page of your permit, each DMR shall be maintained (either electronically or as a hard copy) 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.

(g) If the permittee believes that any outfall which discharges wastewater from the permitted facility meets any of the DNA waiver criteria, notification must be made to the Department's Bureau of Water Permits. Provided there is no objection by the Department, a sign 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.

SCHEDULE OF COMPLIANCE

a) The permittee shall comply with the following schedule:

Outfall(s)	Compliance Action	Due Date
001	ENGINEERING REPORT The permittee shall submit an approvable engineering report that meets the requirements of the most recent version of the EFC/DEC Engineering Report Outline (https://www.dec.ny.gov/permits/6054.html). The report shall be prepared by a Professional Engineer licensed to practice engineering in New York State and detail the designs that will be used to comply with the final effluent limitations for Fecal Coliform and Total Residual Chlorine. Approvable is defined as that which can be approved by the Department with only minimal revision. Minimal revision shall mean revised and resubmitted to the Department within thirty days of notification by the Department of the revisions that are necessary. All approvable engineering submissions must include the seal and signature of the professional engineer.	May 1, 2021
	ENGINEERING PLANS / SPECIFICATIONS / SCHEDULE The permittee shall submit approvable Engineering Plans, Specifications, and Construction Schedule for the implementation of effluent disinfection.	May 1, 2022
	BEGIN CONSTRUCTION The permittee shall begin construction of the treatment facilities in accordance with the Department approved schedule.	May 1, 2023
	COMPLETE CONSTRUCTION & COMMENCE OPERATION The permittee shall complete construction and commence operation of the system and comply with the final effluent limitations for Fecal Coliform and Total Residual Chlorine.	May 1, 2024

The above compliance actions are one-time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT," the permittee is not required to repeat the submission(s) noted above. The above due dates are independent from the effective date of the permit stated in the "SPDES NOTICE/RENEWAL APPLICATION/PERMIT" letter.

INTERIM EFFLUENT LIMITS FOR PARAMETERS SUBJECT TO THIS SCHEDULE OF COMPLIANCE

Outfall	Parameter(s) Affected	Interim Effluent Limit			Limits Apply	Notes	Interim Limits Expire
		Type	Limit	Units			
001	Fecal Coliform	N/A	N/A	N/A	N/A	1	N/A
001	Total Residual Chlorine	N/A	N/A	N/A	N/A	1	N/A
Notes:	1. No Interim Effluent Limits. Final effluent limits and monitoring requirements are not in effect until May 1, 2024.						

b) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2. All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:

1. A short description of the non-compliance;
2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
3. Any details which tend to explain or mitigate an instance of non-compliance; and
4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.

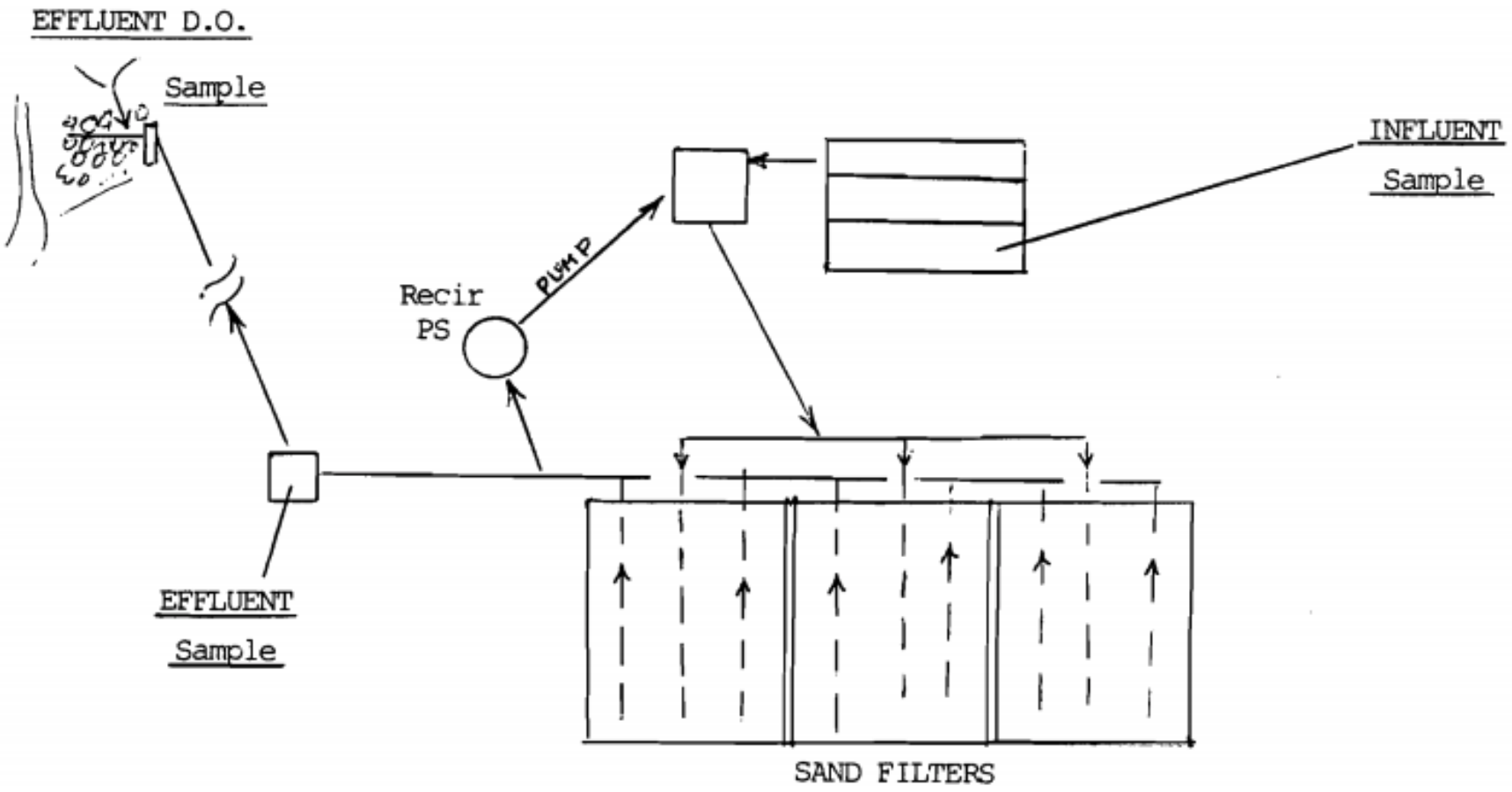
c) The permittee shall submit copies of any document required by the above schedule of compliance to the NYSDEC Regional Water Engineer and to the Bureau of Water Permits.

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the locations(s) specified below:

Influent: At the pre-settling tank

Effluent: After the sand filters



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

C. Operation and Maintenance

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

D. Monitoring and Records

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

E. Reporting Requirements

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

F. Planned Changes

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

    a. The alteration or addition to the permitted facility may meet any 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 either 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)

2. Notification Requirement for POTWs
   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

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

H. 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.

I. 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 submitted in electronic format and 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 retained for a period of at least five years from the date of the sampling for subsequent inspection by the Department or its designated agent.

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

DMRs must be submitted electronically using the electronic reporting tool (NetDMR) specified by NYSDEC. Instructions on the use of NetDMR can be found at https://www.dec.ny.gov/chemical/103774.html. **Hardcopy paper DMRs will only be received at the address listed below for the Bureau of Water Permits, if a waiver from the electronic submittal requirements has been granted by DEC to the facility.**

Attach the monthly "Wastewater Facility Operation Report" (form 92-15-7) and any required DMR attachments electronically to the DMR or with the hardcopy submittal.

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

C. The monitoring information required by this permit shall be summarized and reported to the RWE and Bureau of Water Permits at the following addresses:

Department of Environmental Conservation
Division of Water, Bureau of Water Permits
625 Broadway, Albany, New York 12233-3505 Phone: (518) 402-8111

Department of Environmental Conservation
Regional Water Engineer, Region 9
270 Michigan Ave., Buffalo, New York, 14203 Phone: (716) 851-7070

D. Annual SPDES Monitoring Reports: An annual report shall be submitted to the Department by February 1st each year. The report shall summarize information for January to December of the previous year and shall be submitted electronically, or in hardcopy format, utilizing the SPDES Annual Report Form available on the Department's website.

Hard copy submission of the Annual Report shall be submitted to the Regional Water Engineer at the address below:

Department of Environmental Conservation
Regional Water Engineer, Region 9
270 Michigan Ave., Buffalo, New York, 14203 Phone: (716) 851-7070

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

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

G. 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.

RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS -Continued

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

I. 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.

J. 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 DISTRICT MAP AND SEWER COLLECTION SYSTEM SCHEMATIC

Current_Ower	Printkey	Street	City_State	Zipcode	prop_class
Alcott, Eric C. & Deborah S.	27.17-1-24	58 Genesee	Fillmore, NY	14735	230
Allegany County Schools Federal Credit Union	27.13-2-50	52 Main	Fillmore, NY	14735	314
Allegany County Schools Federal Credit Union	27.13-2-51	52 West Main Street, PO Box	Fillmore, NY	14735	462
Armison, James F. & Linda K.	27.13-2-58	10906 State Route 19A	Fillmore, NY	14735	210
Arnold, Olive & Leora Jean	27.13-1-69	Box 214	Fillmore, NY	14735	210
Ashcraft, Robert	27.13-1-49	8178 Ballard Road	Fillmore, NY	14735	210
Austin, Robert Sr. & Nancy	27.13-2-18.1	11797 Lapp Road	Fillmore, NY	14735	270
Babbitt, Jeff & Angela	27.13-1-75	18 Lowell	Fillmore, NY	14735	210
Bailey, Joan J.	27.13-1-11	111 Main	Fillmore, NY	14735	210
Barbara George Trust	27.13-2-23	7780 Cadwell Road	Bliss, NY	14024	270
Baroni, Sherrie L.	27.13-1-86	120 West Main	Fillmore, NY	14735	210
Barry, Thomas & Patrick	27.13-2-48.2	10902 State Route 19	Hume, NY	14745	482
Barry, Thomas C.	27.13-2-46	PO Box 336	Fillmore, NY	14735	611
BDM Ventures, LLC	27.13-1-57	10301 Claybed	Fillmore, NY	14735	331
Beardsley, Darwin J. & Priscilla J.	27.13-1-29		Fillmore, NY	14735	210
Beardsley, Darwin J. & Priscilla J.	27.13-1-94		Fillmore, NY	14735	314
Beardsley, Timothy & Ruth	27.13-2-38.2	22 West Main	Fillmore, NY	14735	210
Beil, Carl Jr. & Donna L.	27.10-1-14.1	5471 Jackson Hill Road	Friendship, NY	14739	314
Beil, Carl Jr. & Donna L.	27.10-1-14.2	60 Emerald	Fillmore, NY	14735	314
Bennett, Travis Paul	27.13-2-63	PO Box 78	Fillmore, NY	14735	210
Bentley, Cynthia L.	27.13-1-64.2	80 West Main	Fillmore, NY	14735	210
Bentley, Dawn M	27.13-2-62	26 Genesee	Fillmore, NY	14735	210
Bentley, Jeffrey A.	27.13-2-47	61 W Main	Fillmore, NY	14735	210
Bentley, Richard & Vicki	27.13-1-9		Fillmore, NY	14735	210
Bentley, Richard A.	27.13-2-72	115 W Main	Fillmore, NY	14735	312
Bielewicz, Roy & Sandra	27.13-2-36	5276 Hall Road	Fillmore, NY	14735	482
Bower, Bryce R. & Shari M	27.13-1-43	10301 Claybed	Fillmore, NY	14735	220
Bower, Bryce R. & Shari M	27.13-1-55	10301 Claybed	Fillmore, NY	14735	220
Bower, Donna R	27.13-1-90	132 W Main	Fillmore, NY	14735	210
Bower, Edwin	27.13-1-6	121 W Main	Fillmore, NY	14735	210
Bower, Edwin L	27.13-2-55	121 Main	Fillmore, NY	14735	312
Bower, Edwin L	27.13-1-64.1	121 Main	Fillmore, NY	14735	314
Bower, Edwin L	27.17-1-2.1	121 Main	Fillmore, NY	14735	314
Bower, Edwin L.	27.13-1-73	121 Main	Fillmore, NY	14735	312
Bower, Martha A. & James T.	27.13-1-8	10347 Riverlawn Road	Fillmore, NY	14735	220
Breuer, William M. & Kathleen L.	27.13-1-19	16 Prospect	Fillmore, NY	14735	210
Brooks, Gerald D. & Marcie H.	27.13-2-68	19 Minard	Fillmore, NY	14735	210
Brown, Robert D. Jr. & Billie Jo	27.13-1-97	26 Emerald	Fillmore, NY	14735	210

Current_Ower	Printkey	Street	City_State	Zipcode	prop_class
Burns, Kathleen	27.13-2-25.2	30 East Main Street	Fillmore, NY	14735	210
Burrows, John & Linda	27.13-2-76	PO Box 46	Fillmore, NY	14735	210
Burrows, Leonard K	27.10-1-11	55 Emerald Street	Fillmore, NY	14735	312
Byer, Heather S	27.10-1-15	10926 State Route 19	Fillmore, NY	14735	210
Byer, Howard P	27.13-2-15	32 North Genesee	Fillmore, NY	14735	210
Byer, Howard P	27.13-2-41	11122 West River	Fillmore, NY	14735	482
Byer, Roberta J	27.13-2-44	13560 Genesee Street	Alden, NY	14004	210
Calkins, William S. III & Antje J.	27.10-1-1.2	2821 West Puccini Place	Tucson, AZ	85741	270
Carmer, Brandon	27.13-1-2	135 West Main Street	Fillmore, NY	14735	210
Case, Jonathan & Miriam B	27.13-2-79	PO Box	Fillmore, NY	14735	210
Citizens Communications	40.-1-22	3 High Ridge	Stamford, CT	6905	831
Closser, Kevin K	27.13-2-5	5911 W River	Portageville, NY	14536	210
Cockle, Jay & Joanne	27.10-1-13	11293 Flanagan Road	Fillmore, NY	14735	210
Cole, Melissa M.	27.13-1-16	12 Prospect	Fillmore, NY	14735	210
Colombo, Samuel & Betty	27.13-1-25	42 Prospect	Fillmore, NY	14735	210
Colombo, Samuel & Betty	27.13-1-26	44 Prospect Street	Fillmore, NY	14735	210
Community Bank, Nat'l Ass	27.13-2-40	5790 Widewaters	Dewitt, NY	13214	461
Cornerstone Homes, Inc.	27.13-2-12	7990 Higgins Creek Road	Fillmore, NY	14735	270
Dean, Marcus W. & Dixie L.	27.13-1-10	113 Main	Fillmore, NY	14735	210
DeRock, David L. & Gail	40.-1-24	PO Box 181	Belfast, NY	14711	421
Diocese of Buffalo	27.13-1-12		Fillmore, NY	14735	210
Dioguardi, Steven L. & Maureen R.	27.17-1-30	69 Genesee	Fillmore, NY	14735	210
Dreilling, Kelly M.	27.13-1-87	122 West Main	Fillmore, NY	14735	210
Dziuba, Kevin G. & Nancy A.	27.13-1-28	46 Emerald	Fillmore, NY	14735	210
Falcone, Paul R. & Sandra L.	27.13-2-4	8587 Co Rd 3	Freedom, NY	14065	210
Falcone, Paul R. & Sandra L.	27.13-2-6	8587 County Road 3	Freedom, NY	14065	220
Fancher, Lowell & Lois	27.13-1-48	93 West Main	Fillmore, NY	14735	210
Federal Home Loan Mortgage Corporation	27.13-2-78	10480 Route 19	Fillmore, NY	14735	210
Fegley, Donald H. & Betty C.	27.-1-7	6564 Emerald	Fillmore, NY	14735	210
Ferrin, David & Jean Marie	27.13-1-3	133 West Main	Fillmore, NY	14735	210
Fiegl, Gary C. & Linda L.	27.13-1-13	PO Box 183	Fillmore, NY	14735	210
Fillmore Central School	27.13-1-72		Fillmore, NY	14735	312
Fillmore Central School	27.13-1-74		Fillmore, NY	14735	314
Fillmore Central School	27.13-1-84.11	104 West Main, PO Box 177	Fillmore, NY	14735	314
Fillmore Central School	27.13-1-85	104 West Main, PO Box 177	Fillmore, NY	14735	314
Fillmore Central School	27.17-1-2.2	104 West Main	Fillmore, NY	14735	314
Fillmore Central School	27.17-1-2.3	104 West Main	Fillmore, NY	14735	314
Fillmore Central School	27.13-1-81.1		Fillmore, NY	14735	612

Current_Ower	Printkey	Street	City_State	Zipcode	prop_class
Fillmore Central School	27.17-1-7		Fillmore, NY	14735	612
Fillmore Little League	27.17-1-3		Fillmore, NY	14735	682
Fillmore Powerhouse Youth Center, Inc.	27.13-2-53	23 West Main Street	Fillmore, NY	14735	615
Fillmore Wesleyan Church	27.13-2-30.2	E Main	Fillmore, NY	14735	314
Fink, Jesse B. & Melissa E.	27.13-1-33	42 Emerald	Fillmore, NY	14735	210
Folts Family Trust	27.17-1-13	51 South Genesee	Fillmore, NY	14735	210
Folts Living Trust	27.17-1-10	51 South Genesee	Fillmore, NY	14735	210
Folts Living Trust	27.17-1-11	51 South Genesee	Fillmore, NY	14735	312
Friends in Christ United Methodist Church	27.13-2-60.1	10495 Route 19A	Fillmore, NY	14735	314
Frink, Patricia	27.13-2-3	10103 Ballard	Fillmore, NY	14735	210
Gayford, Gary V. & Mary	27.17-1-6	36 S Genesee	Fillmore, NY	14735	210
Genesee Valley Estates LLC	27.10-1-1.1	7759 Centerville Road	Fillmore, NY	14735	411
Gervase, Rhonda	27.13-2-61	11880 State Route 19A	Fillmore, NY	14735	220
Gervase, Roni	27.13-1-76	6283 Versailles Road	Lake View, NY	14085	210
Gillette, Ronald E. & Nancy L.	27.13-1-78	98 W Main	Fillmore, NY	14735	210
Gillette, Ronald E. & Nancy L.	27.13-1-77	Box 64	Fillmore, NY	14735	220
Gueli, Donna J.	27.13-2-77	PO Box 252	Fillmore, NY	14735	210
Hackett, Deborah L.	27.13-2-26.21	10452 Mink Hollow Road	Farmersville Station, NY	14060	220
Halbach, Jamie & Melissa M.	27.13-2-13	100 West Main Street	Fillmore, NY	14735	210
Hall, Dwayne M.	27.13-1-47	PO Box 7	Fillmore, NY	14735	210
Hanks, David W. & Debra A.	27.13-2-75	20 Minard	Fillmore, NY	14735	210
Hanson Farms LLC	27.13-2-29	10 West Main Street, PO Box	Fillmore, NY	14735	486
Harding, Michelle M.	27.13-1-71	21 Lowell Syreet	Fillmore, NY	14735	210
Hark, Vaughn	27.13-1-7	44 Emerald Street	Fillmore, NY	14735	210
Hark, Vaughn V	27.13-1-32	44 Emerald Street 16	Fillmore, NY	14735	210
Hennard, Donald M.	27.10-1-6	7921 Route 19	Belfast, NY	14711	443
Henwood, Daniel M	27.13-1-80		Fillmore, NY	14735	210
Herald Ford, Inc.	27.17-1-28	8 Main	Andover, NY	14806	452
Hersee, David N. Jr. & Rachel	27.13-1-50	81 West Main	Fillmore, NY	14735	210
Heslin, Charles E.	27.13-2-37	10674 Davis Road	Fillmore, NY	14735	425
Heslin, Charles E. & Rose	27.13-2-54	10674 Davis Road	Fillmore, NY	14735	220
Hinz, Rodney G	27.13-1-14	10611 County Road 23	Fillmore, NY	14735	314
Hinz, Sarah	27.13-2-18.2	10530 County Road 23	Fillmore, NY	14735	210
Hodnett, Brenda	27.13-2-1.2		Fillmore, NY	14735	270
Hodnett, Craig C.	27.13-1-40.1	27 Prospect	Fillmore, NY	14735	210
Hodnett, Gary L. & Patricia L.	27.10-1-12	19 Prospect	Fillmore, NY	14735	220
Hodnett, Gary Lynn & Patricia Lee	27.13-1-45	19 Prospect	Fillmore, NY	14735	210
Hotchkiss, Shawn W. & Karen R.	27.13-2-7	27 North Genesee	Fillmore, NY	14735	210

Current_Ower	Printkey	Street	City_State	Zipcode	prop_class
Howden, Jacyln L.	27.13-2-73	8114 Rt. 16	Franklinville, NY	14737	210
Howden, Wendell & Mabel	27.13-2-71	15 Minard Street	Fillmore, NY	14735	312
Jackson, Brynn E.	27.13-2-84	23 Genesee Street	Fillmore, NY	14735	210
Jeffords, James R. & Debra L.	27.13-2-9	80 Allen Street	North Tonawanda, NY	14120	210
Johnson, Jeffrey Tyler & Johnson, Jeffrey A.	27.13-2-14	11 North Genesee	Fillmore, NY	14735	312
Kauffman, Daniel & Claudia	27.13-2-28	16 East Main	Fillmore, NY	14735	210
Kauffman, Daniel & Claudia	27.13-2-30.1	16 East Main	Fillmore, NY	14735	314
Keller, Daniel C. Sr. & Misty L.	27.17-1-15	191 North Park Avenue	Buffalo, NY	14216	210
Kelley, William & Mary Kay	27.13-2-65	27 Minard	Fillmore, NY	14735	210
Lewandowski, Jennifer R.	27.13-1-82	110 West Main Street	Fillmore, NY	14735	210
Limburg, Kathleen R. Etal	27.17-1-21	Box 104	Fillmore, NY	14735	210
Lipscomb, Benjamin James Bruxvoort Etal	27.13-2-80	21 Torpey	Fillmore, NY	14735	210
MacQuarrie, Milissa	27.13-2-64	93 North Main	Castile, NY	14427	210
Marshall, Jerry Jr.	27.13-2-21	PO Box 25	Gainesville, NY	14066	270
Mason, Donald R. & Bettrice A.C.	27.13-1-79	2701 34th St. North, Lot 326	St. Petersburg, FL	33713	210
Mason, Donald R. & Bettrice A.C.	27.13-1-89	2701 34th Street, Lot 326	St. Petersburg, FL	33713	220
Mason, Donald R. & Conner-Mason, Bettrice Aline	27.17-1-20	2701 34th Street. Lot 326	St. Petersburg, FL	33713	210
Mason, Richard G. & Darlene M.	26.-1-15.2	10795 State Route 19	Fillmore, NY	14735	431
Mast, LaMar & John	27.13-1-67	10239 Schuknecht Road	Fillmore, NY	14735	210
Mast, Leon & Bridget	27.13-1-83	112 West Main	Fillmore, NY	14735	210
McKurth, Deborah M	27.13-2-70	15 Minard	Fillmore, NY	14735	210
Methodist Church	27.13-2-66.2	2701 34th Street, Lot 326	St. Petersburg, FL	33713	210
Methodist Church	27.13-2-66.1				620
Miller, Bruce & Alderman, Bonnie L.	27.13-1-96	10909 Dugway Road	Fillmore, NY	14735	220
Miller, Daniel	27.13-2-56	14 North Genesee	Fillmore, NY	14735	210
Miller, Joseph L. II & Jenkins, Joleen M.	40.-1-1.2				210
Milliman, Floyd A. & Lillian M.	27.10-1-10	55 Emerald	Fillmore, NY	14735	210
Mills, Lowell B Jr.	27.13-1-21	22 Prospect	Fillmore, NY	14735	210
Mills, Melissa J.	27.13-1-34	34 Emerald Street	Fillmore, NY	14735	210
Morgan, Richard & Myrna	27.13-2-2	39 Genesee	Fillmore, NY	14735	210
Morley, Stephen L. & Cathy	27.17-1-14	59 S Genesee, PO Box 242	Fillmore, NY	14735	210
Mullen, James L. & Darice D.	27.13-1-42		Fillmore, NY	14735	210
Mullen, James L. & Darice D.	27.13-1-40.2	Emerald	Fillmore, NY	14735	314
Myers, David J	27.13-2-57	16 North Genesee	Fillmore, NY	14735	210
Nafziger, Chris S. & Jaynie A.	26.-1-16	10734 State Route 19	Fillmore, NY	14735	210
Nichols, Timothy J	27.10-1-2	10889 Dugway	Fillmore, NY	14735	210
Nolan, William H. & Brenda L.	27.13-2-85	30 N Genesee	Fillmore, NY	14735	210
Oldenburg, Carl	27.13-2-25.1	Box 44	Fillmore, NY	14735	314

Current_Ower	Printkey	Street	City_State	Zipcode	prop_class
Oldenburg, Carl J. & Henry	27.13-2-26.1	Box 44	Fillmore, NY	14735	314
Oldenburg, Henry	27.13-2-26.3	Box 44	Fillmore, NY	14735	210
Pastorius, Daniel & Joey	27.13-1-35	8957 Upper Street	Rushford, NY	14777	210
Perkins, James C. & Mary Jane	27.13-1-88	124 West Main	Fillmore, NY	14735	210
Pettit, Paul R. & Patricia M.	27.13-1-39	29 Prospect	Fillmore, NY	14735	210
Potter, Chad	27.17-1-22	14 Torpey Street	Fillmore, NY	14735	210
Potter, Cory D	27.13-2-22	33 East Main	Fillmore, NY	14735	210
Potter, Courtney L. & Dana A.	27.10-1-8	61 Emerald	Fillmore, NY	14735	210
Potter, Dana A. Etal	27.13-1-24	28 Prospect	Fillmore, NY	14735	210
Preston, Robert S. & Helen	27.13-1-95	131 West Main Street	Fillmore, NY	14735	210
Pullen, David T	27.13-2-67		Fillmore, NY	14735	484
RCW Holdings, LLC	27.13-2-42	52 West Main Street	Fillmore, NY	14735	484
Reda, Ruth	27.13-2-83	15 Torpey	Fillmore, NY	14735	210
Rees, Randy	27.13-2-34	11246 Otis Smith	Fillmore, NY	14735	210
Rees, Randy	27.13-2-38.1	11246 Otis Smith	Fillmore, NY	14735	270
Rees, Randy	27.13-2-33	11246 Otis Smith	Fillmore, NY	14735	436
Rees, Randy E	27.13-1-5	11246 Otis Smith	Fillmore, NY	14735	411
Rennie, Steven B. & Rhonda K.	27.17-1-16	63 South Genesee Street	Fillmore, NY	14735	210
Richardson, Helen D	27.13-2-74.1	18 Minard Street, PO Box 104	Fillmore, NY	14735	210
Richardson, Helen D	27.13-2-74.2	20 Minard Street	Fillmore, NY	14735	314
Richardson, Michael J. & Judy L	27.13-1-70	19 Lowell	Fillmore, NY	14735	210
Roberts, Gregory P. & Nickole S.	27.10-1-19	68 Emerald	Fillmore, NY	14735	210
Roberts, James E. & Karis M.	27.13-1-27	38 Emerald	Fillmore, NY	14735	210
Roberts, Wayne R. Etal	27.10-1-17	67 Emerald	Fillmore, NY	14735	210
Rochester Gas & Electric	27.13-2-19	89 East	Rochester, NY	14649	871
Rochester Gas & Electric	27.13-2-87	89 East	Rochester, NY	14649	871
Rochester Gas & Electric	27.13-2-32	89 East	Rochester, NY	14649	872
Sardina, Christopher F. & Sarah L.	27.17-1-23	PO Box 323	Fillmore, NY	14735	210
Scroger, Thomas C.	27.13-2-45	9461 Fuller Road	Nunda, NY	14517	411
Slocum, Adam & Emma	27.13-2-81	10909 Dugway Road	Fillmore, NY	14735	210
Stenzel Properties, LLC	27.17-1-9	10480 Route 19	Fillmore, NY	14735	485
Stenzel, David W. & Jane E.	27.13-1-62	10480 Route 19	Fillmore, NY	14735	210
Stenzel, David W. & Jane E.	27.13-2-17	10480 Rt. 19	Fillmore, NY	14735	270
Stones, Timothy L. & Lori Jean	27.17-1-17	10927 County Road 15	Fillmore, NY	14735	210
Stull, Martin D. & Linda L.	27.13-1-61	74 West Main	Fillmore, NY	14735	210
Stull, Martin D. & Linda L.	27.13-1-59.2	74 West Main	Fillmore, NY	14735	314
Suleski, Edward E. & Tammy H.	27.13-1-22	24 Prospect	Fillmore, NY	14735	210
Sweet Water Media Group, LLC	27.13-2-48.1	PO Box 196	Fillmore, NY	14735	484

Current_Ower	Printkey	Street	City_State	Zipcode	prop_class
Sylor, Victor J. & Lisa	27.13-1-31	37 Emerald	Fillmore, NY	14735	210
Tavernier, Joan E.	27.13-2-26.22	24B East Main St.	Fillmore, NY	14735	210
Thayer, Jason M.	27.13-1-68	15 Lowell St., PO Box 62	Fillmore, NY	14735	210
Thayer, Jason M.	27.17-1-8.7	61 South Genesee Street	Fillmore, NY	14735	314
Thayer, Jason M.	27.17-1-8.1	6311 Dry Fork Lane	Raleigh, NC	27617	416
The Minnow Trap Factory, LLC	40.-1-25	81 Genesee Street	Fillmore, NY	14735	710
The Yanda Group, LLC	27.17-1-27	7990 Higgins Creek Road	Fillmore, NY	14735	230
Thomas, Beverly W.	27.10-1-3	72 Emerald	Fillmore, NY	14735	210
Thomas, Carol L	27.17-1-4	28 South Genesee	Fillmore, NY	14735	210
Thomas, Jason	27.13-2-86	32 North Genesee Street	Fillmore, NY	14735	210
Thomas, Jim E. & Kathleen C.	27.13-1-44	23 Prospect	Fillmore, NY	14735	210
Thomas, Steven & Martha	40.-1-1.4	44 Prospect St.	Fillmore, NY	14735	240
Thomas, Steven & Martha	40.-1-1.1				322
Thomas, Tara L. & Boyd, Jakob T.	27.13-2-11	54 South Genesee Street, Apt. C	Fillmore, NY	14735	210
Thompson, Thomas M. & Frances B.	27.10-1-7	65 Emerald	Fillmore, NY	14735	210
Tonaus, Larry	27.13-1-53	13801 Wireless Way	Oklahoma City, OK	73134	210
Tonaus, Larry	27.13-1-56	13801 Wireless Way	Oklahoma City, OK	73134	414
Tonaus, Larry	27.13-1-54		Fillmore, NY	14735	484
Tonaus, Larry J. & Penny L.	27.17-1-25	5292 Iroquois Ave., Apt. B	Ewa Beach, HI	96706	210
Totsline, Richard & Vickie	27.13-2-20	29 East Main	Fillmore, NY	14735	270
Town of Hume	27.13-1-93		Fillmore, NY	14735	314
Town of Hume	27.13-2-35	20 Genesee	Fillmore, NY	14735	651
Town Of Hume	27.13-2-59	N Genesee	Fillmore, NY	14735	652
Town of Hume	27.13-2-88	20 Genesee	Fillmore, NY	14735	652
United States Postal Service	27.13-2-43	6 Griffin Road North	Windsor, CT	60060	484
Voss, Noah	27.13-2-1.1	50 Emerald Street	Fillmore, NY	14735	210
Wagner, Christopher T. & Bonnie A.	27.13-1-51	16 Emerald	Fillmore, NY	14735	270
Wagoner, Terry	27.13-1-60	11137 Wayne Road	Fillmore, NY	14735	314
Wagoner, Terry	27.13-1-58	11137 Wayne Road	Fillmore, NY	14735	485
Washburn, Richard A. & Wendy	27.13-1-30	43 Emerald	Fillmore, NY	14735	210
Washburn, Richard A. Jr.	27.17-1-12	57 South Genesee	Fillmore, NY	14735	210
Weierheiser, Ronald J.	27.13-1-36	28 Emerald	Fillmore, NY	14735	210
Wenger, Bruce Edward	27.13-2-82	17 Torpey	Fillmore, NY	14735	210
Wesleyan Methodist Church	27.13-2-27				210
White, Brian	27.13-1-20	20 Prospect	Fillmore, NY	14735	210
White, Denise A. Etal	27.13-1-17	100 Creekside Lane	Arcade, NY	14009	210
White, Richard W. & Cynthia M.	27.13-1-41	343 Pinewood	Santee, SC	29142	210
White, Robert J. & Elizabeth A.	27.13-1-52	79 West Main	Fillmore, NY	14735	220

Current_Ower	Printkey	Street	City_State	Zipcode	prop_class
Wide Awake Club Library	27.13-2-60.2	46 West Main Street	Fillmore, NY	14735	611
Wilcox, Jeremy L. & Heavenly A.	27.10-1-20	58 Emerald	Fillmore, NY	14735	210
William Brooks Hose Company	27.13-2-16		Fillmore, NY	14735	662
Williams, L. Herbert	27.13-2-10		Fillmore, NY	14735	210
Winchip, Deborah L.	27.9-1-1.1	34 Prospect St.	Fillmore, NY	14735	210
Winchip, Frederick Jr. & Deborah	27.9-1-1.2	32 Prospect	Fillmore, NY	14735	240
Witkowski, Michael J	27.13-1-92	136 W Main	Fillmore, NY	14735	210
Wolfer, James D. & Jennifer S.	27.13-1-15	99 West Main	Fillmore, NY	14735	210
Wolfer, John C	27.13-1-46	15 Prospect	Fillmore, NY	14735	210
Wolfer, Richard J. & Marilyn S.	27.13-1-91	134 West Main	Fillmore, NY	14735	210
Wooster, Gregory D. & Anita L.	26.-1-27.6				312
Wozniak, Robert A. III	27.13-1-65	123 Parkwood Street	Williamsport, PA	17701	230
Yanda, Allen L. & Deborah O.	27.17-1-26	7990 Higgins Creek Road	Fillmore, NY	14735	230
Yanda, Charles L Jr.	27.13-1-66	Box 227	Fillmore, NY	14735	220
Young, David D. & Kathleen	27.10-1-9	59 Emerald	Fillmore, NY	14735	210
Young, Richard A. II & Sandie S.	27.13-2-69	17 Minard St., PO Box 346	Fillmore, NY	14735	210

Current_Ower	Printkey	Street	City_State	Zipcode	prop_class

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**	

**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

TROJAN UV
WATER CONFIDENCE

CERTIFICATE OF ANALYSIS
Final Report

Project Name:	**Hume WWTP**	**Trojan Sales:**	John Faber
Contact:	---	**Local Trojan Rep:**	Koester – Daniel Jean
Address:	Hume WWTP Rt 19A Hume, NY	**Engineer:**	MBB
		Sample #:	20-0365 – 20-0366
Telephone:	585-808-6112		
Email:	djean@koesterassociates.com		

Received Date/Time:	December 2, 2020 10:45 am	**Treatment Process:**	Sand Filtration
Analysis Date:	December 2-3, 2020	**Weather Conditions:**	Rain, 43°F
Release Date:	December 3, 2020	**Disinfection Limit:**	200 FC/100 mL

LAB SAMPLE NO.	SAMPLE IDENTIFICATION	SAMPLE DATE/ TIME (M/D/Y)	RECEIVED TEMP. (°C)	UVT (%/cm)	UVT FILTERED (%/cm)	TSS (PPM)
20-0365	Plant Effluent - Collimated Beam Sample	11/30/20 10:30	3.3	68	68	4.5
20-0366	Plant Effluent - Particle Size Analysis Sample	11/30/20 10:30	3.3	---	---	---

COLLIMATED BEAM RESULTS

Dose (mWs/cm2)	20-0365 FC/100mL
0	68000
5	2400
10	260
20	160
40	160
80	46

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.

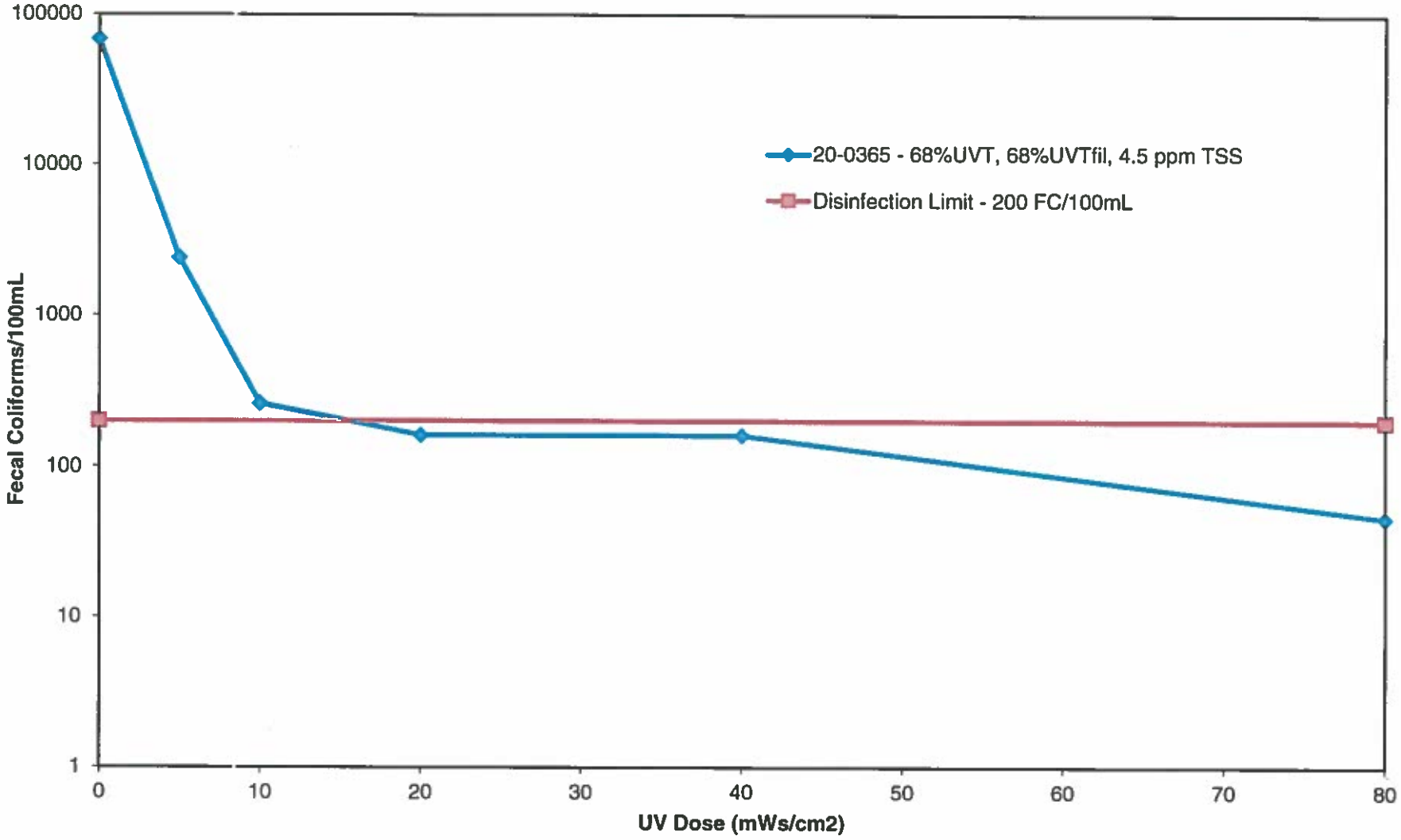
Collimated Beam
Determines the UV dose necessary to disinfect wastewater effluent to legislated permit levels or lower for specified target microorganisms.

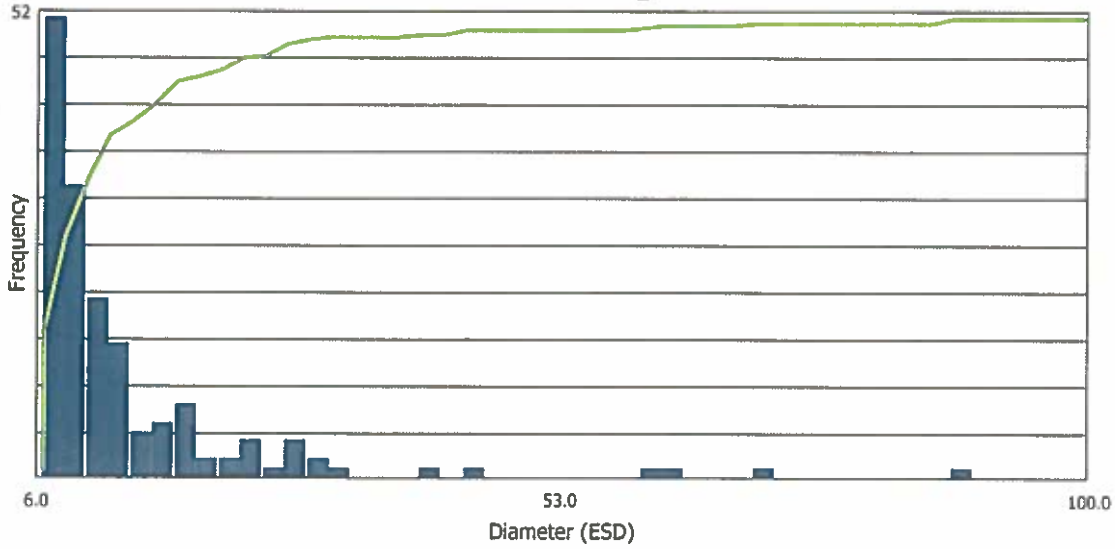
Comments:
Water sample has black specs/solids that settle easily.

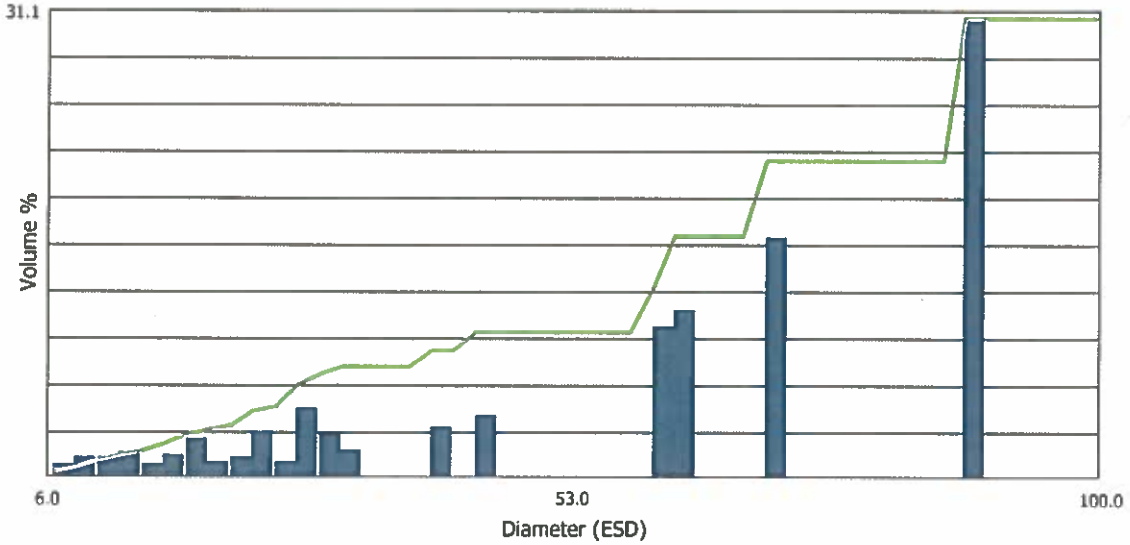
Mari Burgess for
Certified by Allan Archer
Leader - Core Applications Group

Hume WWTP, NY

December 3, 2020







Count	161 of 161
Particles / ml	1510

Summary Stats	Mean	Min	Max	StdDev
Diameter (ESD)	13.64	6.02	88.03	11.65
Length	17.55	6.68	104.84	14.79
Width	8.15	0.93	65.32	8.68

Filter	Count	Volume %
6-10um	85	1.92
10-20um	54	7.25
20-30um	13	10.38
30-40um	3	4.49
40-50um	2	7.41
50-60um	0	0.00
60-70um	2	21.34
70-80um	1	16.12
80-90um	1	31.08
90-100um	0	0.00

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.

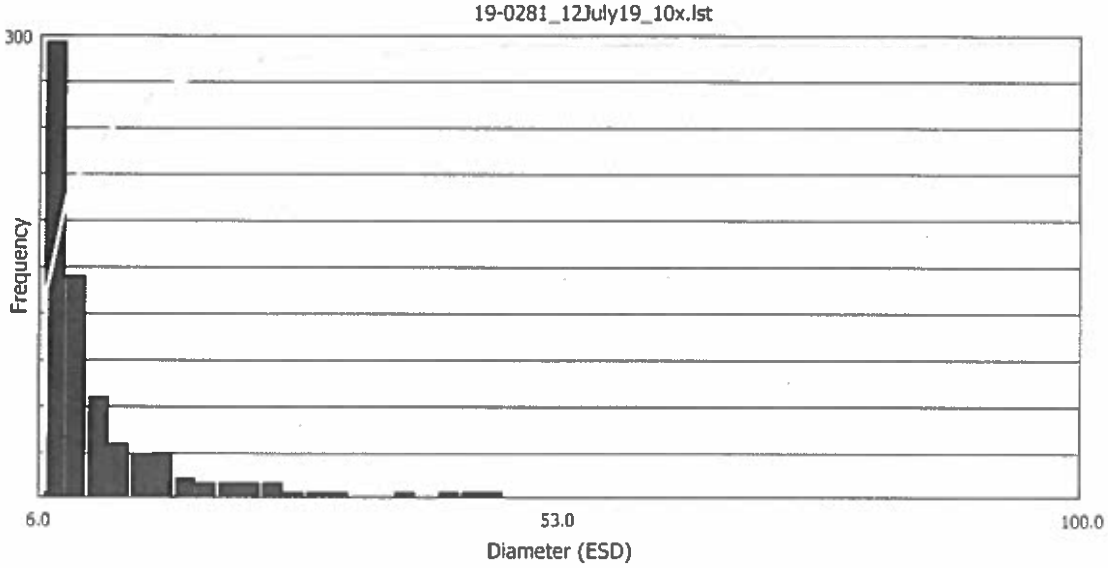
TSS (Total Suspended Solids in PPM – Parts-Per-Million or mg/L -- milligrams per Liter)
The weight measurement of all suspended matter larger than 1.2µm for a predetermined volume of water.

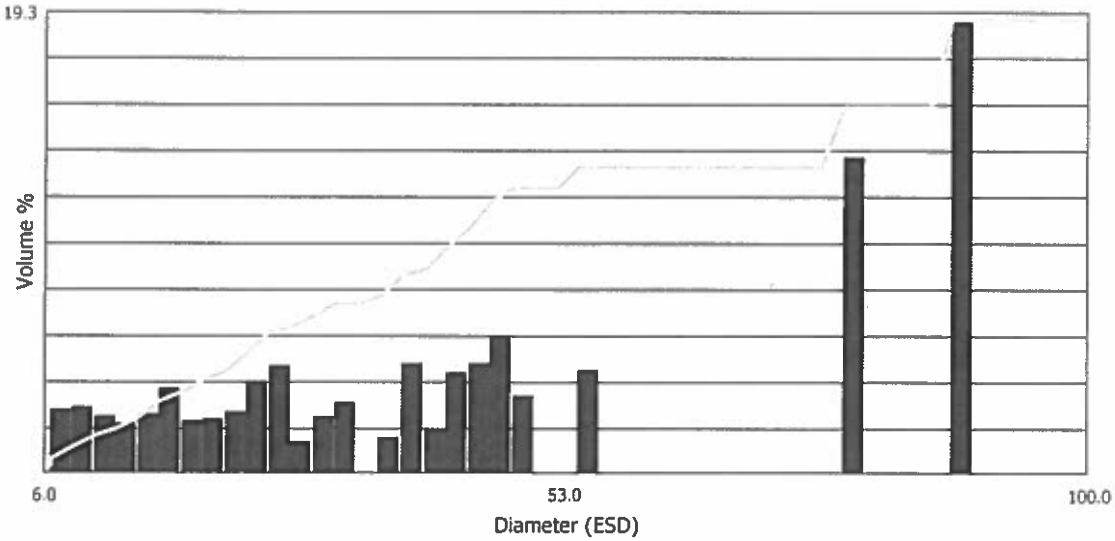
Collimated Beam
Determines the UV dose necessary to disinfect wastewater effluent to legislated permit levels or lower for specified target microorganisms.

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

UV DOSE RESPONSE: COLLIMATED BEAM IRRADIATION

Introduction

The sensitivity of specific microorganisms to UV can be measured by the UV dose response test. A bench-scale collimated beam apparatus is used to irradiate suspensions of microbes (Figure 1) and microbe inactivation is then measured as a function of the UV dose received by the sample. The dose is calculated using accurate measurements of the concentration of UV light **(intensity)** and exposure **time.**

UV Dose = Intensity x Time (IT)

In Units: mWattsec/cm^2 or mJoules/ cm^2

This test and calculation is similar to jar tests that are used to establish effective doses for chemical disinfectants.

Chemical dose = Concentration x time (Ct)

The UV light source may be a low-pressure or medium-pressure mercury arc lamp. The applied intensity is measured at the surface of the sample using a calibrated radiometer and then averaged to account for the sample depth and UV absorbance of the liquid (Morowitz, 1950). UV dose-response data are generated under highly controlled conditions of exposure time, mixing and UV intensity. Wastewater and many environmental samples contain solids that settle rapidly. Therefore, continuous mixing is necessary to prevent settling and to ensure even irradiation throughout the sample.

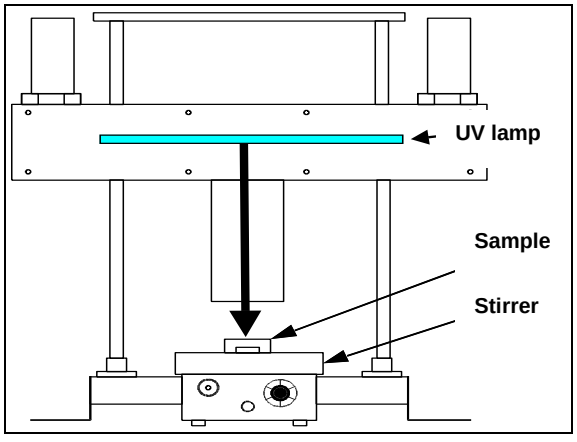


Figure 1: Collimated Beam Apparatus

Inactivation of a particular microbe is measured by enumeration before and after irradiation and the number of survivors are plotted against UV dose, producing a survival or dose response curve (Figure 2). This technique can be adapted to determine the UV sensitivity of specific microorganisms by selecting appropriate media and growth conditions such as temperature and incubation time. At the present time, dose response data are available for many bacteria, viruses and protozoa. The data summarised in Table 1 was derived from pure cultures of microbes prepared in high concentrations and suspended in water or buffer solutions.

The purpose of dose response tests on wastewater samples is to establish the necessary UV dose to achieve a target level of disinfection. Disinfection performance is measured by the inactivation of specific indicator organisms and the dose demand is expected to be higher than that required by a pure culture grown in the laboratory. The increased dose demand of the effluent results from the combined impact of factors including suspended solids, microbial age and the presence of chemicals that absorb UV.

Microbial Enumeration

The method selected for analysis of the surviving microbes (bacteria, viruses and protozoa) depends on a number of factors including the cultural requirements of the specific microbe and the method favoured for a particular application. Generally, membrane filtration or Most Probable Number (MPN) are the methods of choice for coliform enumeration. To measure virus inactivation, cell cultures that provide a suitable host are required and appropriate animal hosts are required to measure the loss of infectivity when protozoa are irradiated.

UV Dose Response Curve

Typically, microbial inactivation by UV irradiation follows first-order kinetics, exhibiting an initial steep slope due to rapid inactivation of free microbes by low UV doses (Figure 2). A deviation from the straight line is often observed when suspended solids or clumps of microbes are present. This plateau or tailing region is a result of non-uniform absorption of UV light by microbes in the particles. Filtration using an 8-micron filter removes the large particles and reduces or eliminates the plateau. The number of microbes associated with each particle, particle composition (presence of iron), number of particles and the particle size have a significant impact on the level of disinfection that can be economically achieved. Discharge permits for wastewater regulate suspended solids (TSS) levels. Figure 3 illustrates the impact of TSS on UV dose demand for the range of solids (10 to 30mg/L) required for secondary effluent discharge.

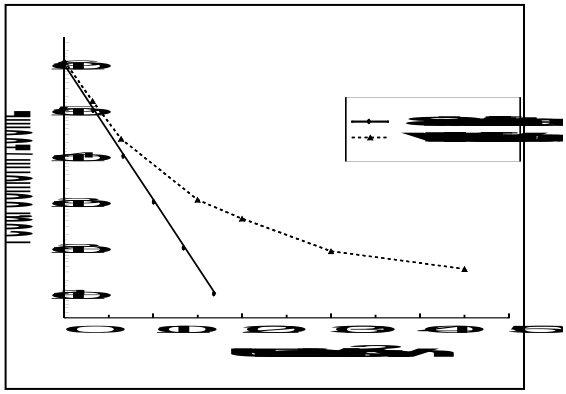


Figure 2: UV dose response curves for a filtered effluent that is sensitive to UV and an unfiltered sample with bacteria protected by particles.

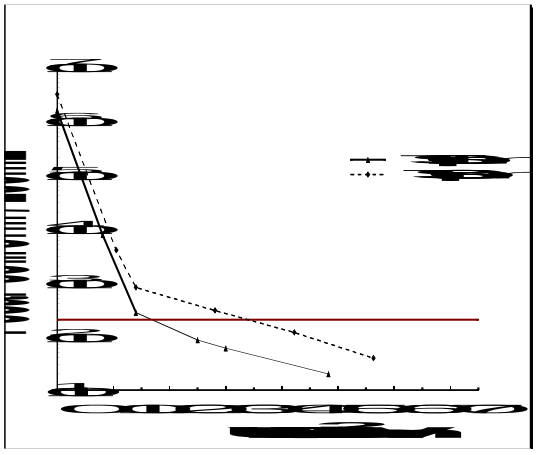


Figure 3. Increased suspended solids levels require a higher UV dose to meet a target disinfection level of <200 fecal coliform/100mL.

Applications: Collimated Beam Tests

1) To establish the relative sensitivity of specific microbes to UV irradiation.

Pure cultures grown under controlled conditions combined with a standard irradiation protocol are used to determine the precise UV dose for the inactivation of specific microbes, (pathogens and non-pathogens). Suspensions with high numbers of organisms can be prepared, thus providing a sufficient number of cells to demonstrate log inactivation over a large range of doses (Table 1).

Of primary interest is the relative sensitivity of indicators such as coliforms and the pathogens associated with waterborne diseases. UV dose information allows assessment of the validity of using the current coliform indicators as a measure of disinfection performance and water contamination.

Environmental samples are not a reliable source for sufficient numbers of pathogenic organisms of any one species. Low numbers of viruses or protozoa require filtration of large volumes of water or wastewater effluent to collect sufficient numbers for culture techniques. These concentration methods combined with low numbers, variable microbe age and the presence of extraneous debris are all factors that interfere with the UV sensitivity of isolated organisms. The UV dose response on such samples is therefore a combination of effluent quality, sample conditions and the sensitivity of the target organism. Therefore the dose demand will be higher than that of pure cultures and it may also be site specific.

Table 1. UV inactivation of pathogens associated with waterborne outbreaks.

Pathogen	Average UV Dose mJ/cm^2 Required to Inactivate			
	1log	2log	3log	4log
Cryptosporidium parvum	3.0	4.9	6.4	7.9
Giardia lamblia cysts	-	<5	<10	<10
Vibrio cholerae	0.8	1.4	2.2	2.9
Legionella pneumophila	3.1	5	6.9	9.4
Campylobacter jejeuni	1.6	3.4	4	4.6
Shigella dysenteriae	0.5	1.2	2.0	3.0
Escherichia coli O157:H7	1.5	2.8	4.1	5.6
Salmonella typhi	1.8-2.7	4.1-4.8	5.5-6.4	7.1-8.2
Shigella sonnei	3.2	4.9	6.5	8.2
Salmonella enteritidis	5	7	9	10
Hepatitis A virus	4.1-5.5	8.2-14	12-22	16-30
Poliovirus Type 1	4-6	8.7-14	14-23	21-30
Coxsackie B5 virus	6.9	14	22	30
Rotavirus SA11	7-9	15-19	23-26	31-36

2) The UV dose response data generated by the collimated beam is a valuable design tool used to select the UV dose required by a specific site.
Although most wastewater has a predictable UV dose response, variations in upstream processes can have a significant impact on the range of UV doses required to achieve a specific disinfection target. Fixed film processes such as trickling filters and Rotating Biological Contactors (RBC) may require a higher UV dose than suspended growth processes such as activated sludge. A period of diurnal testing for UV transmittance and TSS levels will establish the range of effluent quality and the frequency of variation. The diurnal data are then used to select the most appropriate time to take representative samples for dose response tests.

3) Diagnostic tool used to determine the cause of inadequate disinfection.
Poor disinfection may be caused by a number of factors including improper installation, short-circuiting, equipment faults, and poor effluent quality. Any changes in upstream process that alter the final effluent quality and result in lower UV transmittance, higher solids or increased iron levels will have an impact on the UV dose demand of the effluent. Dose response tests can determine whether the effluent quality has degraded and requires a higher UV dose to achieve target levels of disinfection.

4) Equipment validation for water and wastewater disinfection systems.
A bioassay measures the actual UV dose delivered by a reactor compared to the theoretical or calculated dose delivery (Qualls, 1983). A collimated beam irradiation produces a calibration curve for a test organism that is also used as a challenge organism to verify reactor dose delivery. Reactor performance is measured for a range of flow rates and water quality conditions. Depending on the desired range of test doses, *Bacillus subtilus* spores, a yeast-*Saccharomyces cerevisiae*, and the bacteriophage MS2 have been used as challenge organisms by various test laboratories. The challenge microbe must be nonpathogenic, economical to prepare in large volumes of high concentrations and must have an appropriate UV sensitivity. The microbe suspension is either added to a test tank or injected into the test water stream to provide a suitable concentration of organisms. Samples taken before the UV reactor are irradiated using a collimated

beam and a dose calibration curve is generated. Samples taken after the UV reactor are enumerated and the number of survivors are compared to the calibration curve to establish the actual UV dose delivered by the reactor (Figure 4). A comparison of the UV dose actually delivered by the reactor (Bioassay Equivalent Dose) and the theoretical dose will indicate whether there is a deviation in reactor performance and also the conditions that cause the deviation.

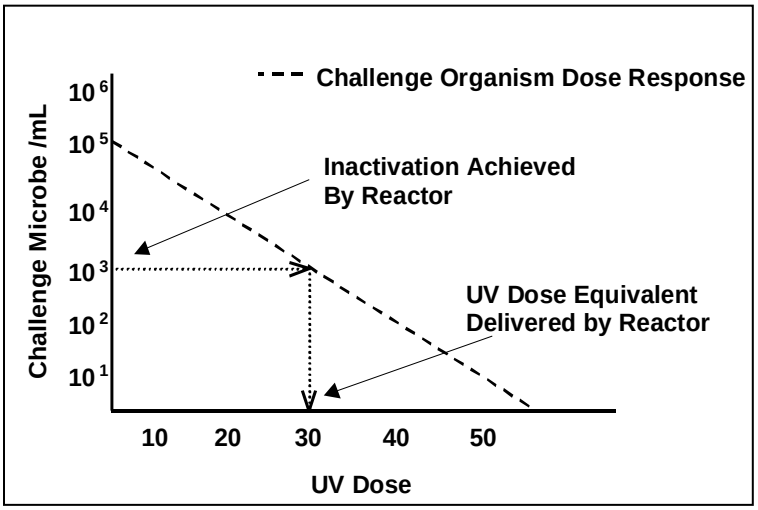


Figure 4: A bioassay dose equivalent is assigned to the UV reactor by comparing the inactivation achieved by the reactor to a calibration curve obtained by collimated beam irradiation of the challenge organism.

Advantages of Collimated beam studies

- Compared to full-scale pilot studies collimated beam studies are fast and economical.
- A wide range of effluent qualities can be tested and compared in a short time.
- A specific water quality can be simulated when it is unavailable from the plant.
- Requires small sample volumes (Table 2).
- Collimated beam studies and on-site pilots produce similar dose response curves.
- Provides a wider range of UV doses than most pilots are designed to deliver.

Disadvantages of Collimated beam studies

- Sample age combined with transport conditions may result in increased particle size due to the presence of coagulants such as iron, aluminium and polymers.
- Does not demonstrate or predict fouling rates.

Table 2. Recommended Procedure for Collimated Beam Test Samples

Sampling Location	Final effluent, before disinfection
Sample type	Grab sample
Container	Clean, plastic bottle, No added preservatives that might decrease UV transmittance or kill bacteria during shipment.
Volume	3 liters
Tests	UV Irradiation, TSS, UV%T, particle size distribution
Required Information	Indicator organism and disinfection limit, sample site Wastewater process, Process chemicals and site of addition
Shipping Conditions	Over night, on ice (not dry ice), to a prearranged laboratory

Summary

The UV dose response test is a valuable tool for the design and validation of UV disinfection systems. A standard protocol for irradiation of pure cultures generates dose response data that are used to establish the relative sensitivity of specific microbes. Of primary interest is the relative sensitivity of indicator such as coliforms and pathogens associated with waterborne diseases. UV dose information allows assessment of the validity of using the current coliform indicators as a measure of disinfection performance and also water contamination.

The dose response test is used to determine the UV dose demand of an effluent for design purposes and performance tests.

References

1. Morowitz, H.J. (1950), "Absorption Effects in Volume Irradiation of Microorganisms", *Science*, vol. 111, pp. 229-230.

2. Qualls, R.G. and J.D. Johnson (1983), "Bioassay and Dose Measurement in UV Disinfection", *Appl. and Env. Microbiol*., vol. 45, no. 3, pp. 872-877.

APPENDIX H

ALTERNATIVE COST SUMMARIES

Chlorine Disinfection

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	30%	$ 238,400	1	238,400
Construction Subtotal				**1,032,900**
Engineering	25%			258,200
Administration	6%			62,000
Legal	2%			20,700
Geotechnical	LS	$ 4,500	1	4,500
Special Inspections	LS	$ 3,500	1	23,100
TOTAL PROJECT COST				**1,401,400**

2019 PROBABLE O&M COST				
Chlorination/Dechlorination System				
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**

SHORT LIVED ASSETS								
Chlorination/Declorination System								
		1 to 5 Years		5 to 10 Years		10 to 15 Years		
Item Description	Base Cost	%	Cost	%	Cost	%	Cost	
Pumps Controls and Valves	$ 68,000	3%	$ 2,040	3%	$ 2,040	3%	$ 2,040	
Electric & Controls	$ 72,800		$ -	5%	$ 3,640	5%	$ 3,640	
Total Short Lived Assets	**$ 13,400.00**		$ 2,040		$ 5,680		$ 5,680	

UV Disinfection

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	$187,500	1	$ 187,500
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%	$ 21,900	1	$ 21,900
CONSTRUCTION CONTINGENCY	30%	$226,000	1	$ 226,000
Construction Subtotal				**$ 979,200**
Engineering	25%			$ 244,800
Administration	6%			$ 58,800
Legal	2%			$ 19,600
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 1,310,400**

2019 PROBABLE O&M COST				
UV System				
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**

SHORT LIVED ASSETS								
UV System								
			1 to 5 Years		5 to 10 Years		10 to 15 Years	
Item Description	Base Cost		%	Cost	%	Cost	%	Cost
UV Equipment	$	187,500	3%	$ 5,625	3%	$ 5,625	3%	$ 5,625
Electric & Controls	$	63,300		$ -	5%	$ 3,165	5%	$ 3,165
Total Short Lived Assets	**$**	**23,205**		$ 5,625		$ 8,790		$ 8,790

Replace Sewers with 8”

2019 PROBABLE PROJECT COST				
Add Collection System Manholes				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
See Attached				
TOTAL PROJECT COST				**$ 5,560,800**

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

SHORT LIVED ASSETS							
Add Collection System Manholes							
		1 to 5 Years		5 to 10 Years		10 to 15 Years	
Item Description	Base Cost	%	Cost	%	Cost	%	Cost
Manhole Cover Seals	$ 5,450	3%	$ 164	3%	$ 164	3%	$ 164
Total Short Lived Assets	**$ 491**		$ 164		$ 164		$ 164

PROJECT: SANITARY SEWER REPLACEMENT

DATE: 28-Sep-2021
0809.20003.000

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: 28-Sep-2021
0809.20003.000

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 (30%)	**$887,510.00**
	TOTAL CONSTRUCTION COST				**$3,845,876.00**
	ENGINEERING, LEGAL, ADMINISTRATION			**33%**	**$1,269,139.00**
					$5,115,015.00
				SAY	**$5,116,000**

Install Manholes

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	30%	$ 131,100	1	$ 131,100
Construction Subtotal				**$ 568,000**
Engineering	25%			$ 142,000
Administration	6%			$ 34,100
Legal	2%			$ 11,400
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 763,500**

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

SHORT LIVED ASSETS								
Add Collection System Manholes								
		1 to 5 Years		to 10 Yea		10 to 15 Years		
Item Description	Base Cost	%	Cost	%	Cost	%	Cost	
Manhole Cover Seals	$ 3,050	3%	$ 92	3%	$ 92	3%	$	92
Total Short Lived Assets	**$ 275**		$ 92		$ 92		$	92

Upgrade Route 19A Pump Station

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	$ 30,000	1	$ 30,000
SITEWORK				
Rehab Wetwell	LS	$ 15,000	1	$ 15,000
Pumps	LS	$ 36,000	1	$ 36,000
Slide Rails	LS	$ 5,588	1	$ 5,588
Piping	LS	$ 7,500	1	$ 7,500
Control Panel	LS	$ 7,500	1	$ 7,500
Meter Pit and Equipment	LS	$ 27,300	1	$ 27,300
Standby Generator	LS	$ 95,000	1	$ 95,000
OTHER ITEMS				
Electric & Controls	LS	$ 15,000	1	$ 15,000
Mobilization	3%	$ 7,300	1	$ 7,300
Maintenance & Protection of Trafffic	3%	$ 7,300	1	$ 7,300
CONSTRUCTION CONTINGENCY	30%	$ 77,800	1	$ 77,800
Construction Subtotal				**$ 336,988**
Engineering	25%			$ 84,200
Administration	6%			$ 20,200
Legal	2%			$ 6,700
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 456,088**

2019 PROBABLE O&M COST				
Upgrade Route 19A Pump Station				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Electrical Power Cost	LS	$ 3,050	1	$ 3,050
Equipment Maintenance Cost	LS	$ 2,500	1	$ 2,500
TOTAL O&M COST				**$ 5,550**

SHORT LIVED ASSETS								
Upgrade Route 19A Pump Station								
		1 to 5 Years		5 to 10 Years		10 to 15 Years		
Item Description	Base Cost	%	Cost	%	Cost	%	Cost	
Pumps Controls and Valves	$ 51,000	3%	$ 1,530	3%	$ 1,530	3%	$ 1,530	
Meter Pit and Equipment	$ 27,300		$ -		$ -	50%	$ 13,650	
Electric & controls	$ 110,000		$ -	5%	$ 5,500	5%	$ 5,500	
Total Short Lived Assets	**$ 29,240**		$ 1,530		$ 7,030		$ 20,680	

Upgrade Route 19A Force Main

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	30%	$106,700	1	$ 106,700
Construction Subtotal				**$ 462,200**
Engineering	25%			$ 115,600
Administration	6%			$ 27,700
Legal	2%			$ 9,200
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 622,700**

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

SHORT LIVED ASSETS								
Upgrade Force Main								
		1 to 5 Years		5 to 10 Years		10 to 15 Years		
Item Description	Base Cost	%	Cost	%	Cost	%	Cost	
Air Release Valves	$ 21,600		$ -	5%	$ 1,080	5%	$ 1,080	
Total Short Lived Assets	**$ 2,160**		$ -		$ 1,080		$ 1,080	

Upgrade Waste Water Treatment Plant

PROBABLE PROJECT COST				
Upgrade Existing WWTP to Standards				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
DEMOLITION				
General Site & Process	LS	$ 13,700	1	$ 13,700
SITEWORK				
Excavation	CU. YD.	$ 43	1430	$ 61,490
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	$ 96,000	1	$ 96,000
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	$ 90	1430	$ 128,700
Filter Piping	LF	$ 35	2816	$ 98,560
28,000 gallon pre-settling tank.	LS	$ 67,200	1	$ 67,200
18,000 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	$ 42,460	1	$ 42,460
Mobilization	3%	$ 36,200	1	$ 36,200
CONSTRUCTION CONTINGENCY	30%	$372,900	1	$ 372,900
Construction Subtotal				**$ 1,615,790**
Engineering	25%			$ 403,900
Administration	6%			$ 96,900
Legal	2%			$ 32,300
TOTAL PROJECT COST				**$ 2,148,890**

2020 PROBABLE O&M COST				
Upgrade Existing WWTP to Standards				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Annual Filter Media Replacement	LS	$ 21,450	1	$ 21,450
Electrical Power Cost	LS	$ 30,100	1	$ 30,100
Equipment Maintenance Cost	HRS	$ 75	100	$ 7,500
TOTAL O&M COST				**$ 59,050**

SHORT LIVED ASSETS								
Upgrade Existing WWTP to Standards								
		1 to 5 Years		5 to 10 Years		10 to 15 Years		
Item Description	Base Cost	%	Cost	%	Cost	%	Cost	
Pumps Controls and Valves	$ 85,000	3%	$ 2,550	3%	$ 2,550	3%	$ 2,550	
Meter Pit and Equipment	$ 27,300		$ -		$ -	50%	$ 13,650	
Electric & Controls	$ 42,460		$ -	5%	$ 2,123	5%	$ 2,123	
Total Short Lived Assets	**$ 25,546**		$ 2,550		$ 4,673		$ 18,323	

Subgrade Treatment System

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	30%	$ 644,000	1	$ 644,000
Construction Subtotal				**$ 2,790,560**
Engineering	18%			$ 502,300
Administration	6%			$ 167,400
Legal	2%			$ 55,800
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 3,524,060**

2019 PROBABLE O&M COST				
Replace WWTP with SAGR				
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 SHORT LIVED ASSETS							
Replace WWTP with SAGR							
		1 to 5 Years		5 to 10 Years		10 to 15 Years	
Item Description	Base Cost	%	Cost	%	Cost	%	Cost
Pumps Controls and Valves	$ 85,000	3%	$2,550	3%	$2,550	3%	$ 2,550
Meter Pit and Equipment	$ 27,300		$ -		$ -	50%	$13,650
Blowers	$ 15,000	3%	$ 450	3%	$ 450	3%	$ 450
SAGR Equipment	$ 56,250	1%	$ 563	5%	$2,813	10%	$ 5,625
Electric & controls	$ 75,000		$ -	5%	$3,750	5%	$ 3,750
Total Short Lived Assets	**$31,500.00**		$1,013		$7,013		$23,475

Package Treatment Plant

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	30%	$800,000	1	$ 800,000
Construction Subtotal				**$ 3,466,300**
Engineering	25%			$ 866,600
Administration	6%			$ 208,000
Legal	2%			$ 69,300
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 4,618,200**

2019 PROBABLE O&M COST				
Replace WWTP with Packaged Treatment				
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 SHORT LIVED ASSETS								
Replace WWTP with Packaged Treatment								
		1 to 5 Years		5 to 10 Years		10 to 15 Years		
Item Description	Base Cost	%	Cost	%	Cost	%	Cost	
Pumps Controls and Valves	$ 85,000	3%	$ 2,550	3%	$ 2,550	3%	$ 2,550	
Meter Pit and Equipment	$ 27,300		$ -		$ -	50%	$ 13,650	
Blowers	$ 10,000	3%	$ 300	3%	$ 300	3%	$ 300	
Electric & controls	$ 25,000		$ -	5%	$ 1,250	5%	$ 1,250	
Total Short Lived Assets	**$ 24,700**		$ 2,850		$ 4,100		$ 17,750	

Route 19 Force Main

2019 PROBABLE PROJECT COST				
Regional Route 19/19A Pump Station 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	30%	$ 357,800	1	$ 357,800
Construction Subtotal				**$ 1,550,600**
Engineering	25%			$ 387,700
Administration	6%			$ 93,000
Legal	2%			$ 31,000
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 2,070,300**

2019 PROBABLE O&M COST				
Regional Route 19A Pump Station Force Main				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Equipment Maintenance Cost	LS	$ 500	1	$ 500
TOTAL O&M COST				**$ 500**

SHORT LIVED ASSETS								
Regional Route 19/19A Pump Station Force Main								
		1 to 5 Years		**5 to 10 Years**		**10 to 15 Years**		
Item Description	**Base Cost**	**%**	**Cost**	**%**	**Cost**	**%**	**Cost**	
Meter Pit and Equipment	$ 27,300		$ -		$ -	50%	$	13,650
Air Release Valves	$ 54,000	3%	$ 1,620	3%	$ 1,620	3%	$	1,620
Total Short Lived Assets	**$ 18,510**		$ 1,620		$ 1,620		$	15,270

Low Pressure Sewers

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	30%	$ 676,300	1	$ 676,300
Construction Subtotal				**$ 2,930,780**
Engineering	25%			$ 732,700
Administration	6%			$ 175,800
Legal	2%			$ 58,600
Geotechnical	LS	$ 4,500	1	$ 4,500
TOTAL PROJECT COST				**$ 3,902,380**

2019 PROBABLE O&M COST				
Low Presure Sewer System				
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 SHORT LIVED ASSETS							
Low Presure Sewer System							
		1 to 5 Years		5 to 10 Years		10 to 15 Years	
Item Description	Base Cost	%	Cost	%	Cost	%	Cost
Pumps Controls and Valves	$ 1,125,000	3%	$ 2,550	3%	$ 2,550	3%	$ 2,550
Odor Control (Bioxide)	$ 85,000	3%	$ 2,550	3%	$ 2,550	3%	$ 2,550
Electric & controls	$ 46,500		$ -	5%	$ 2,325	5%	$ 2,325
Total Short Lived Assets	**$ 19,950**		$ 5,100		$ 7,425		$ 7,425

Route 19 Regional Pump Station

2019 PROBABLE PROJECT COST				
Regional Pump Station				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
DEMOLITION				
Decommission existing WWTP	LS	$ 82,000	1	$ 82,000
SITEWORK				
Wetwell	LS	$ 180,000	1	$ 180,000
Pumps	LS	$ 76,000	1	$ 76,000
Slide Rails	LS	$ 5,588	1	$ 5,588
Piping	LS	$ 7,500	1	$ 7,500
Control Panel	LS	$ 7,500	1	$ 7,500
Meter Pit and Equipment	LS	$ 27,300	1	$ 27,300
Standby Generator	LS	$ 95,000	1	$ 95,000
OTHER ITEMS				
Electric & Controls	LS	$ 46,500	1	$ 46,500
Mobilization	3%	$ 15,800	1	$ 15,800
Maintenance & Protection of Trafffic	3%	$ 15,800	1	$ 15,800
CONSTRUCTION CONTINGENCY	30%	$ 167,700	1	$ 167,700
Construction Subtotal				**$ 726,688**
Engineering	25%			$ 181,700
Administration	6%			$ 43,600
Legal	2%			$ 14,500
Geotechnical	LS	$ 4,500	1	$ 4,500
Special Inspections	LS	$ 3,500	1	$ 3,500
TOTAL PROJECT COST				**$ 974,488**

2019 PROBABLE O&M COST				
Regional Pump Station				
Item Description	**Units**	**Unit Price**	**Est. Quantity**	**Cost**
Electrical Power Cost	LS	$ 4,061	1	$ 4,061
Equipment Maintenance Cost	LS	$ 2,745	1	$ 2,745
TOTAL O&M COST				**$ 6,806**
Caneadea Sewer Charge	/1,000 gal	$ 3.95	16,295,425	**$ 64,400**

SHORT LIVED ASSETS								
Regional Pump Station								
		1 to 5 Years			**5 to 10 Years**		**10 to 15 Years**	
Item Description	**Base Cost**	**%**	**Cost**		**%**	**Cost**	**%**	**Cost**
Pumps, Controls and Valves	$ 91,000	3%	$ 2,730		3%	$ 2,730	3%	$ 2,730
Meter Pit and Equipment	$ 27,300		$ -			$ -	50%	$ 13,650
Electric & Controls	$ 141,500		$ -		5%	$ 7,075	5%	$ 7,075
Total Short Lived Assets	**$ 35,990**		$ 2,730			$ 9,805		$ 23,455

APPENDIX I

2020 SEWER BUDGET

TOWN BUDGET

FOR 2020

TOWN OF HUME

IN

ALLEGANY COUNTY

CERTIFICATION OF TOWN CLERK

I, Susan Bodnar, TOWN CLERK, CERTIFY THAT THE FOLLOWING IS A TRUE AND CORRECT COPY OF THE 2020 BUDGET OF THE TOWN OF HUME AS ADOPTED ON NOVEMBER 6, 2019.

Signed: Susan Bodnar

Dated: 11/7/19

TOWN OF HUME
FISCAL BUDGET SEWER DISTRICT
FOR 2020

(ADOPTED NOVEMBER 6, 2019)

Schedule 1-SS		Expenditures /Revenues 2018	Modified Budget 09/30/2019	Recommended Budget 2020	Adopted Budget 2020
TOTAL SEWER ADMINISTRATION		4,487.16	4,788.00	5,363.76	5,363.76
SANITARY SEWERS					
SS8120.2	EQUIPMENT	3,649.75	2,000.00	2,000.00	2,000.00
SS8120.2E	EQUIPMENT RES.	0.00	0.00	0.00	0.00
SS8120.400	CONTRACTUAL	24.00	500.00	500.00	500.00
SS8120.422	PUMP STATION ELECTRIC	2,793.97	4,000.00	5,000.00	5,000.00
SS8120.460	PUMP STATION SUPPLIES	4.54	5,600.00	5,600.00	5,600.00
SS8120.470	PUMP REPAIR	1,200.00	2,500.00	3,500.00	3,500.00
TOTAL SANITARY SEWERS		7,672.26	14,600.00	16,600.00	16,600.00
SEWAGE TREATMENT & DISPOSAL					
SS8130.1	PERSONNEL	32,051.04	37,454.00	26,031.25	26,031.25
SS8130.14	PERSONAL S	5,294.24	8,160.00	18,720.00	18,720.00
SS8130.200	EQUIPMENT	4,140.00	7,500.00	10,000.00	10,000.00
SS8130.4	CONTRACTUA	474.85	3,500.00	4,000.00	4,000.00
SS8130.422	ELECTRICITY	2,971.24	3,000.00	3,000.00	3,000.00
SS8130.442	SLUDGE HAUL	26,627.50	22,440.00	25,000.00	25,000.00
SS8130.445	LAB TESTING	133.50	3,000.00	4,000.00	4,000.00
SS8130.460	SUPPLIES	7,264.92	7,000.00	9,000.00	9,000.00
TOTAL SEWAGE TREATMENT & DISPOSAL		78,957.29	92,054.00	99,751.25	99,751.25

TOWN OF HUME
FISCAL BUDGET SEWER DISTRICT
FOR 2020

(ADOPTED NOVEMBER 6, 2019)

Schedule 1-SS		Expenditures /Revenues 2018	Modified Budget 09/30/2019	Recommended Budget 2020	Adopted Budget 2020
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		91,116.71	111,442.00	121,715.01	121,715.01
EMPLOYEE BENEFITS					
EMPLOYEE BENEFITS					
SS9010.800	STATE RETIREMENT	3,076.00	8,500.00	8,500.00	8,500.00
SS9030.8	SOCIAL SECURITY	2,545.68	3,000.00	3,000.00	3,000.00
SS9035.8	MEDICARE	595.38	800.00	800.00	800.00
SS9055.800	DISABILITY INSURANCE	0.00	81.98	82.00	82.00
SS9060.800	HOSPITAL & MEDICAL INSURANCE	0.00	12,500.00	12,993.00	12,993.00
TOTAL EMPLOYEE BENEFITS		6,217.06	24,881.98	25,375.00	25,375.00
TOTAL EMPLOYEE BENEFITS		6,217.06	24,881.98	25,375.00	25,375.00
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
TOTAL DEBT SERVICE		0.00	0.00	0.00	0.00

APPROPRIATED FUND BALANCE	-5,745.77	4,735.98	53,340.01	53,340.01
TOTAL REVENUES & OTHER SOURCES	108,143.96	157,323.98	168,370.01	168,370.01

APPENDIX J

NYSDEC PRELIMINARY ENGINEERING REPORT APPROVAL LETTER

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Water, Region 9
270 Michigan Ave., Buffalo, New York, 14203
Phone: (716) 851-7070
www.dec.ny.gov

September 9, 2021

Sent via email only
dmaemason@gmail.com

Darlene Mason
Supervisor, Town of Hume
P.O Box 302
Fillmore, NY 14735

Re: Town of Hume Wastewater Treatment Plant
SPDES No. NY0203858
Municipal Wastewater Treatment Improvement
Engineering Report Approval

DearDarlene Mason:

The New York State Department of Environmental Conservation (DEC) has reviewed the submission listed below, along with the permittee's responses to comments dated August 4, 2020 and May 6, 2021, for the referenced water pollution control project. The proposed project consists of the following major components:

- Upgrades to the existing Route 19A pump station, including duplex solids handling pumps, variable frequency drives, emergency generator, influent flow meter, and remote monitoring system;
- Installation of manholes in the collection system; and
- Installation of a 5400-foot 6-inch forcemain discharging to the Town of Caneadea WWTP.

The following submission has been reviewed and is hereby **approved**:

> Engineering Report entitled "Preliminary Engineering Report for the Town of Hume Municipal Wastewater Treatment Improvements," dated April 3, 2020, prepared by MRB Group and stamped and signed by NYS-licensed professional engineer Derek Anderson (License #: 069854)

This document was submitted in accordance with the Schedule of Compliance listed on page 7 of the SPDES permit. The schedule requires an engineering report to be submitted by May 1, 2021 detailing the design that will be used to comply with the final fecal coliform and total residual chlorine effluent limits.

Please submit electronic and paper copies of the final set of design documents, prepared and stamped by a NYS-licensed professional engineer, to this office by May 1, 2022.

The DEC does not assume responsibility for the design of the project. The NYS-licensed professional engineer who designed the system and has certified that the project meets all requirements is responsible for the design. Our review is a technical review of the processes involved in conveying and/or treating sewage rather than a complete detailed review of the design.

If you have any questions regarding this letter, please contact Sevon Thompson at (716) 851-7106 or sevon.thompson@dec.ny.gov

Sincerely,

Melanie Stein

Melanie Stein, P.E
NYSDEC Region 9, Division of Water

ec: NYSDEC Region 9, Division of Water – Sevon Thompson (sevon.thompson@dec.ny.gov)
MRB Group – Derek Anderson (danderson@mrbgroup.com)

APPENDIX K

EFC HARDSHIP DETERMINATION LETTER

NEW YORK STATE OF OPPORTUNITY. | Environmental Facilities Corporation

ANDREW M. CUOMO
Governor
JOSEPH J. RABITO
President and CEO

March 4, 2021

The Honorable Darlene Mason
Supervisor
Town of Hume
20 North Genesse Street
Fillmore, NY 14735

Re: Clean Water State Revolving Fund Project No. C9-6627-01-00
Town of Hume
Allegany County
Hardship Eligibility

Dear Supervisor Mason:

I am pleased to inform you that the Town of Hume is eligible for Clean Water State Revolving Fund (CWSRF) interest-free financing for all or a portion of the proposed Clean Water project referenced above. This hardship determination is based on your Median Household Income (MHI) and population, as detailed in the CWSRF Hardship Financing and Grant Eligibility Policy (Hardship Policy) effective October 1, 2020.

If you have not already done so, you must submit an acceptable CWSRF financing application by no later than March 1, 2022. The CWSRF finance application forms and guidance can be found at www.efc.ny.gov/CWApplication.

Hardship eligibility for the referenced project remains in effect through *September 30, 2022*, by which time a Project Finance Agreement for CWSRF financing must be executed with the New York State Environmental Facilities Corporation.

Pursuant to the Hardship Policy, municipalities are limited to $20 million in interest-free financing over a rolling five-year period for all CWSRF projects.

All projects funded through the CWSRF must meet certain programmatic requirements. These requirements include but are not limited to:

- Davis Bacon Federal Prevailing Wage schedules and language in the construction contract bid documents;
- American Iron and Steel provisions; and,
- Minority Women Business Enterprises/Equal Employment Opportunities/ Disadvantaged Business Enterprises for both construction contracts and professional service agreements as applicable.

More information on hardship eligibility and restrictions can be found in the Hardship Policy on EFC's website at www.efc.ny.gov/CWSRF.

This hardship eligibility letter is not a commitment by EFC to provide financial assistance. Such a commitment will be reflected in the Project Financing Agreement executed by both parties. EFC may deny or otherwise adjust the financial assistance for your project based upon our review of the complete CWSRF financing application. In addition, EFC may only provide financial assistance for your project after receiving formal approvals from its Board of Directors and the New York State Public Authorities Control Board.

Thank you for your interest in the CWSRF program. We look forward to working with you to ensure that your community has a safe, affordable, and sustainable wastewater system for generations to come. Should you have any questions, please contact Mr. Timothy P. Burns, P.E., at 518-402-7396 or timothy.burns@efc.ny.gov.

Sincerely,

Joseph J. Rabito
President and CEO

cc: NYSDEC Region 9 - Mr. Jeffrey Konsella, P.E. (email)
MRB Group – Mr. Derek C. Anderson, P.E. (email)
Mr. Kristopher LaPan, P.E. (email)
Mr. Jason Denno (email)

APPENDIX L

PROJECT COST ESTIMATE

Project Budget		Cost
Construction		
Add Manholes to Collection System	$	437,000
Upgrade Route 19A Pump Station	$	259,000
Forcemain to Town of Caneadea WWTP	$	1,193,000
Regional Pump Station	$	559,000
Sub-Total Construction	$	2,448,000
Engineering Fees		
Design	$	559,000
Construction	$	269,000
Sub-total Engineering	$	828,000
Other Expense		
Local Councel	$	51,000
Bond Council	$	76,000
Financial Services	$	102,000
Miscellaneous	$	25,000
Sub-Total Services	$	254,000
Contingencies (30%)	$	734,000
Total	$	4,264,000

Operation & Maintenance Budget		Cost
Add Manholes to Collection System	$	4,600
Upgrade Route 19A Pump Station	$	5,600
Forcemain to Town of Caneadea WWTP	$	500
Regional Pump Station	$	6,800
Town fo Caneadea Treatment Charge	$	64,400
Total O&M Cost	$	81,900