

January 15, 2019

George Borrello, County Executive  
Gerace Office Building  
3 North Erie Street  
Mayville, New York 14757

Re: Chautauqua County Sherman-Mina Regional WWTP Alternative Preliminary Engineering Report

Subj: Response to Various Report Comments

File: 2056.001.001

Dear Mr. Borrello:

Thank you to everyone who took the time to review and provide comments on the referenced draft engineering report. We have reviewed each comment received and have revised the Preliminary Engineering Report (PER) as appropriate. We offer the following responses to the various comments.

Comment: Referring to Table 2-1, the population of the Findley Lake Sewer District seems high. Does it include seasonal residents?

Response: Yes, the estimated 2,038 population estimate includes seasonal properties and is meant to demonstrate how many people would be serviced by the proposed public sewer system. The population listed in the report is calculated based on the number of equivalent, single-family home dwelling units in the service area multiplied by the estimated number of people per household taken from Census data (i.e., 755 EDUs x 2.7 people/single-family dwelling = 2,038 people).

Comment: Does the 7Q10 and 30Q10 analysis in Appendix D support the additional discharge to the creek? Does the creek have the assimilative capacity needed for the increased flow? Has DEC approved the concept of increasing discharge to French Creek and does the creek have enough assimilative capacity for the increased flow?

Response: Yes, DEC factored in the flow of the creek and dilution factors when providing the preliminary effluent permit limits which the upgraded treatment plant would be required to meet. Accordingly, the DEC has approved the concept of increasing discharge volume and loads to French Creek. Final DEC approval would come in the form of a modified SPDES permit following submission of a full application.

Comment: Will phosphorus permit limits be required?

Response: At this time, the DEC said they will not be required and they do not have any intention of adding limits in the future for this plant. Adding treatment for phosphorus limits could be relatively inexpensively achieved through metal salt addition at the secondary aeration tanks. If future, more stringent effluent phosphorous limits are a possibility, then we would suggest specifying an SBR panel that has spare I/O to accommodate additional equipment control logic that would be required for metal salt addition.

Comment: Would effluent filtration reduce phosphorus?

Response: Yes, effluent filtration (disc filters) will reduce phosphorous by removing excess TSS (biomass and precipitate). Adding a metal salt such as ferric chloride in the secondary aeration tanks would further enhance phosphorous reduction within the secondary clarifiers and disc filters to achieve tertiary treatment levels.

Comment: Effluent Disinfection – Chlorination Basin Sizes – 10 States Standards vs. TR-16

Response: DEC will generally require the more stringent standard be utilized when comparing 10 States Standards to TR-16, where the latter stipulates a 30-minute contact time versus 15-minutes. A typo was discovered when reviewing the size of the dechlorination basin. It has been corrected.

Comment: In reference to composting, land-spreading of municipal sewage sludge could create additional health-related concerns and should be carefully evaluated.

Response: Yes, we agree. Should the Village decide to compost their sludge so it can be beneficially used as a soil amendment, it would have to be treated to specific standards outlined in New York State's Part 360 Regulations.

Comment: I recommend installing a natural gas generator instead of diesel. Even if you need to run gas line it will save on O&M in the long run and helps the village meet its environmental friendly goals.

Response: This decision can be made with Village and County input during the design phase of the project. We added the words "or natural gas" to the report, noting that there may be some slight differences in generator size between the two (2) fuel sources to achieve the same kilowatt power rating.

Comment: In reference to an SBR treatment system, will this be able to handle high summer flows and low winter flows without upsetting treatment?

Response: Yes, the process will be able to handle high summer and low winter flows/loads, but may require seasonal operation adjustments to the PLC programming. Operators will typically fluctuate biomass concentration throughout the year to address seasonal loading characteristics. If seasonal loadings fluctuate too much, operators may shutdown one (1) SBR tank during low flow months.

Comment: In reference to section 4.3.5.1, some wording is missing?

Response: A typo was found in this paragraph and has been corrected.

Comment: In reference to an SBR treatment process vs. a Contact Stabilization/Single Stage Nitrification or Contact Stabilization/Extended Aeration treatment process, will odor become a problem for either or both alternatives? Which alternative would produce the least amount of odor?

Response: Odors at the WWTP are not expected to significantly increase compared to current conditions. Each of the treatment process alternatives we evaluated are a form of activate sludge treatment and would be expected to produce similar odors. Odors are a function of oxygen levels in the raw sewage which, if low enough to produce anaerobic conditions, may lead to hydrogen sulfide generation. This is not a large concern within the plant's secondary treatment processes; however, it is certainly a concern within the low-pressure collection system and 8-mile conveyance system from Findley Lake to the Sherman WWTP. We have included odor control stations within the collection/conveyance system to address odors before they reach the plant.

Comment: In reference to Section 6.2.3, include examples on how the costs for the treatment plant could be shared between Sherman and Mina.

Response: We have updated Section 6.2.3 to include a potential cost sharing scenario which, as discussed during our last meeting, appeared to be the most fair. It should be noted that the cost sharing method displayed has not been agreed upon and is shown for informational purposes only, and may serve as a starting point for future discussions. All parties must feel the decided cost sharing method is fair for the "regional" project to move forward.

Comment: In reference to Section 6.2.3, discuss how applying to EFC is the first step and needs to be done in 2019 to get listed on the 2020 IUP. After EFC ranking and district formation other funding applications would then be submitted.

Response: Wording has been added to Section 6.2.3 that discusses this.

Comment: In reference to Table 6-6, revise table with more realistic grant amounts as 50% may not be realistic. Include a table to show potential user cost scenarios.

Response: A table has been added to the report. We estimated grant funding in the amounts of 15%, 25%, and 35%. We assumed the project could be structured to obtain 0% "hardship" financing under all parts; however, this is unknown at this point. As previously recommended, due to the size of this project, further discussions with funding agencies should take place to truly determine the most realistic financing opportunities.

Comment: In reference to project schedule (Section 6.3), discuss the project schedule of Sherman's stand-alone project and how it effects this project. List recommend project milestone dates.

Response: We have updated this to the best of our ability. Please understand a project schedule, when relying on government funding, is always difficult to determine.

Comment: Discussion took place regarding operation and maintenance budgets of a low pressure grinder pump sewer.

Response: B&L understands the importance of properly budgeting for the operation and maintenance of a sewer system during the planning phase of the project. O&M costs never expire and typically will have greater impacts on user costs than debt service charges. Under-budgeting for O&M will result in unexpected and immediate sewer rate increase soon after a sewer system is placed into service. While over estimating an O&M budget during the planning phase may make the proposed project unaffordable.

To further explore this, B&L reached out to Scott Cummings (North Chautauqua Lake Sewer District Director) to discuss his thoughts and comments, as well as three (3) B&L clients that also own, operate and maintain lakeside low pressure collection systems to discuss O&M needs. Below is a summary of each:

North Chautauqua Lake Sewer District

- O&M costs that are listed (in the Mina Report) are very low.
- Approximately 170 grinder pump stations and 13 large pump stations, 40 years old.
- Average of 2.5 houses/grinder pump.
- Pump Manufacturer – Myers; tried E-One retrofits but had issues
- District controls all the electric power to the stations. Not controlling power will cause more maintenance issues.

- Pump life: 5 to 10 years and then need replacement or repair. Most of the maintenance will be float problems, plugged pumps and electrical problems. Repair or replace about 20% of the pumps every year. It takes one (1) person working in the collection system full time and another person 50% of their time just to maintain the system. Spend most of our time unjamming pumps and working on electrical issues.
- All pumps jam with the fiber towels, or “flushable wipes” used today.
- Reduced a lot of our maintenance time by replacing all of the piping and fittings within the grinder pump tanks. Removed all the galvanized/steel piping and only use brass or stainless. Replaced all the plastic fittings, they crack and break over time.
- District saves approximately \$18,000 per year for purchase of grinder pumps and main pump station parts. 12-15 pumps are replaced each year at \$300 to \$400/ pump (totals \$3,600 to \$6,000 per year).
- Summary: North Chautauqua Lake Sewer District has a 40 year old sewer system and most pumps are fed by multiple homes. The sewer district utilizes approximately 3,000 man-hours per year to service the low pressure system and spends close to \$6,000 per year on pump replacements. Using a labor rate of \$50/hour this equates to \$156,000 of O&M costs per year. Since each pump is shared by approximately 2.5 EDU's, these pumps are subject to much more wear and tear. Based on these figures,  $\$156,000/170 \text{ pumps}/2 \text{ homes per pump} = \$367$  per pump adjusted to one (1) home per pump for low pressure sewer O&M.

#### Cayuga-Aurelius Joint Sewer System

- Approximately 150 grinder pumps, 4 years old.
- Average of 1.1 houses/ grinder pump.
- Pump Manufacturer – E-One.
- Electric by Homeowner, no major issues with this approach. Only issues come when homeowners want to put on an addition or rebuild. Municipality makes homeowner pay for panel relocation.
- Current Pump Failure rate approximately 6%/year.
- Reported Issues –Stator replacement.
- Currently spend about 4 weeks in collection system (2 guys, 2 weeks each); operator feels this could triple in the future (12 total weeks - 2 guys, 6 weeks each).
- Summary: Cayuga-Aurelius staff currently utilize 1.33 man-hours/yr./per grinder pump on maintenance, but feel this could triple to 4 man-hours/yr./per grinder pump. Staff also think pump failure rate will double which will equate to approximately 18 failed pumps per year. Using a labor rate of \$50/hour and \$400 per pump replacement this equates to a total future O&M cost of approximately \$250/yr./per grinder pump.



#### Bridgeport Sewer System

- Approximately 500 grinder pumps, 5-to 6-years old.
- Average of 1 house/grinder pump.
- Pump Manufacturer – E-One.
- Electric by Homeowner, no major issues with this approach.
- Estimates \$75,000/yr. in Labor and \$25,000/yr. is sustainable for maintaining their system.
- Summary – Bridgeport estimates approximately \$200/yr./pump will cover pump maintenance and replacement.

#### Owasco Sewer Districts

- Approximately 240 grinder pumps.
- Average of 1 house/grinder pump.
- Pump Manufacturer – E-One 10+ years old (10% failure rate), Flygt Pumps 2 years old.
- Electric by Homeowner, no major issues with this approach.
- Tax grinder pump users \$150/year for maintenance and replacement and feels this is sufficient to cover labor, maintenance, and materials.
- Summary- Owasco budgets about \$150 /yr./pump for maintenance and replacement.

Based on the above it appears, O&M for various lakeside sewer districts range from approximately \$150 to \$370 per year per developed parcel. It is noted as low pressure sewer system age, O&M costs will increase. It is also believed that the reliability of grinder pump systems today are generally better than older systems as pump technology and materials of construction have improved.

In review of our original O&M budget included as Appendix O, we had estimated approximately \$261 per year per developed parcel for low pressure sewer maintenance. After discussion with various sewer systems, we feel we underestimated the required man-hours to maintain the low pressure system, but have overestimated the yearly reserves required for pump replacement. We have revised Appendix O accordingly and now estimate approximately \$270 per year per developed parcel for low pressure sewer maintenance.

Comment: Electric power – Who controls and who pays for it?

Response: Some comments have been made on the best way to power the grinder pumps and who controls the electric power. Generally speaking, grinder pumps are wired to a pump control panel and the pump control panel is wired to a breaker located in a larger breaker panel. Power can be shut off to the grinder pump by a disconnect switch located in the pump control panel or by turning off the breaker in the main breaker panel that powers the pump panel.

It was assumed that existing homeowner electric services and breaker panels will be used to power the pump control panel and the grinder pump. If an existing service is not adequate to power the pump, the service would be replaced and upgraded as part of the project. Under this scenario, the sewer district would be responsible for the pump panel and any wiring from the pump panel to the grinder pump. The resident would be responsible for any wiring that powers the pump panel.

It further assumed that each sewer parcel will have an individual grinder pump and individual pump control panel. Where feasible, two (2) grinder pumps will be combined in a single, baffled basin commonly called a duplex grinder pump. Duplex grinder pump will serve two (2) houses and each house will power an individual pump located in a joint baffled basin. The cost of electric to power a single grinder pump is typically estimated to be approximately \$20 to \$30 per year depending on usage. Under the scenario we presented, electric costs would be paid directly by the sewer user as it is connected to their existing electric service and powering their individual pump.

We believe this is the most cost effective way to construct a low pressure sewer system, and have planned, designed and implemented several systems configured as such, described above. We believe that based on the topography and layout of service area, it will be unlikely that a single grinder pump will be able to service more than two (2) homes. We have also found obtaining easements over shared grinder pumps, shared electric lines, neighboring property service piping, and shared low pressure sewer lines can be extremely difficult when compared to individual utilities. For these reasons, it is believed that most homes will require an individual pump.

Using this installation method, minimum electric billing charges that would be encountered if only one or two pumps are powered by a single electric service and meter with monthly minimum charges are avoided. If the intent is to run several grinder pumps off a centrally located electric service to avoid minimum service charges, installation costs would increase as much more electric wiring would be required. Additional electric wiring also creates additional operation and maintenance.

We understand it is believed that utilizing existing homeowner electric services will create an operation and maintenance nightmare, but based on our experiences, we do not feel that is the case for several reasons:

- Since each residence will have an individual grinder pump, if a homeowner were to shut off the power to the grinder pump, it would only negatively affect them. It is their responsibility to provide power to the pump control panel or they will have no sewer service. It essentially becomes another household appliance.
- It is okay if seasonal residents turn off the power to their property during the offseason. A vacant residence should not produce sewage or require the grinder pump to operate. If the grinder pump requires operation when the dwelling is vacant, it would likely be caused by inflow or infiltration of stormwater or groundwater.
- Based on our experiences, we have not had system operators complain of operational or maintenance issues caused by this installation method because they can shut off power to the pump from the exterior pump control panel.
- A homeowner should not have any reason to come in contact with the wiring from the grinder pump to the pump panel which is serviced by the sewer district. Wiring issues between the pump panel and the breaker panel are the homeowner responsibility.
- According to the operators we talked to, it is rare for a homeowner to unknowingly turn off the power to the grinder pump and it is a quick fix that generally is not repeated in the rare case it happens.

Comment: The Mina Town Board has not agreed to remove the Holiday Inn Express from the proposed district.

Response: The Holiday Inn Express was originally assessed in the 2017 Map, Plan, and Report as 38 EDUs and appears to be the only developed parcel north of the interstate being serviced by sewer. The 2017 Map, Plan, and Report had the location of the WWTP north of the interstate and therefore the hotel was easily serviced by sewer.

Based on the scope of this project, which includes sending sewage to the Village of Sherman, the Holiday Inn (only developed parcel north of the thruway) was eliminated for the following reasons:

- Eliminating the Holiday Inn would eliminate an expensive thruway crossing and pump station capable of servicing the Holiday Inn. The size of downstream infrastructure would be reduced as flows would decrease and further reduce costs.



- The Holiday Inn has a private WWTP that is subject to SPDES permit requirements. The Holiday Inn is not expected to contribute to the Findley Lake water quality benefits afforded by a public sewer, and therefore it is not critical the hotel is publically sewered as part of this project.
- Based on preliminary cost estimates, adding the Holiday Inn to the district has the ability to lower the cost of every EDU by approximately \$50 per year. However, the Holiday Inn would be expected to pay approximately \$50,000 per year in sewer charges. Should the Holiday Inn go out of business because of the high cost of sewer when they already have invested in a private WWTP, Mina residents would have to cover the lack of sewer revenue. This would increase the cost of an EDU by approximately \$70 per year (\$20 more per year than if the Holiday Inn was not included).

It is recommended that the Town of Mina and Holiday Inn representatives provide input to Chautauqua County (proposed district Owner) on a final proposed district boundary. The final district boundary, sizing of all infrastructure, and cost estimates could then be captured in the requisite Map, Plan, and Report needed for District formation. It is further recommended that the Town of Mina and Chautauqua County reach out to potential major users like the Holiday Inn and determine the financial feasibility of a proposed EDU assessment.

Comment: For ease of comparison, please assess the same EDUs as GPI did in their report.

Response: We reviewed the EDU assessment provided by GPI and do not feel we can simply match our assessment to theirs. The 2017 MPR assessment based user costs on 610 EDUs and appears to selectively choose to asses certain vacant parcels at 0.5 EDUs and others at 0 EDUs. This may present future legal issues when certain vacant property owners complain that they have to pay when vacant property owners do not.

As discussed at the last meeting, if EDUs are utilized as the method to share costs between the Village of Sherman, Town of Mina, and Town of Sherman, all three (3) municipalities need to evaluate EDUs in the same manner. The Village of Sherman cannot asses all vacant developable parcels at 0.5 EDUs, while the Town of Mina selectively chooses which parcels are assessed at 0.5 EDUs. It is recommended that an EDU assessment of all affected parcels be discussed in detail, and that an EDU schedule be developed based on property class and sewer use prior to finalizing the requisite Map, Plan, and Report.

For informational purposes, if we were to change the total EDUs from the original Mina District to 610 and subtract 38 for the Holiday Inn, we would be at 572 EDUs. There would be an additional approximate 34 EDUs in the Town of Mina along the Sherman



conveyance route for a total of 606 EDUs. The user costs for Mina residents shown below are based on only 606 Mina EDUs; however, until a proper EDU schedule is determined, we do not feel any EDU cost estimate will be completely accurate.

Financing	Town of Mina
0% 30 year loan, 35% grant	\$1,546
0% 30 year loan, 25% grant	\$1,684
0% 30 year loan, 15% grant	\$1,823

We trust that the above provides sufficient detail for your respective comments. Please feel free to call Ken Knutsen or me if you require additional information or clarification of our responses.

Sincerely,

BARTON & LOGUIDICE, D.P.C.

A handwritten signature in black ink, appearing to read 'Matt Zarbo', is written over a light blue horizontal line.

Matthew J. Zarbo, P.E.  
Project Engineer

ERR/tlh

Attachments: Revised Preliminary Engineering Report

cc: Collen Meeder, Mayor, Village of Sherman  
Rebecca Brumagin, Supervisor, Town of Mina  
William Boria, Sr., Water Resource Specialist, Chautauqua County Department of Health  
Paul Snyder, Engineer, Chautauqua County Departments of Public Facilities and Health  
Dave McCoy, Watershed Coordinator, Department of Planning and Economic Development  
Dave Himelein, County Legislator, Chautauqua County  
Pierre Chagnon, County Legislator, Chautauqua County  
Ed Mulkearn, Findley Lake Watershed Association  
Mark Stow, Chautauqua County Director of Environmental Health  
Don McCord, Chautauqua County Director of Planning & Community Development  
Allison Carrow, Chautauqua County Attorney  
Steve Abdella, Chautauqua County Attorney  
Scott Cummings, North Chautauqua Lake Sewer District Director