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ENGINEERING

February 16, 2021

Mr. Joe Lamont
Mt. Gretna Campmeeting Association
PO Box 428
3rd and Otterbein Streets
Mt. Gretna, PA 17064

RE: Water System Cost-Benefit Analysis
Project No. 20-315-01

Dear Joe:

Becker Engineering, LLC (Becker) has reviewed the feasibility (cost-benefit analysis) of Mt. Gretna Campmeeting Association (Association) utilizing the Mount Gretna Authority (Authority) water system interconnection on a permanent basis compared with other options. We have considered several options for the Association to consider.

Becker conducted a site visit to view and gain a general understanding of the Association's existing water facilities. Becker met with Association representatives to discuss the project and to gain an understanding of Association's long-term water supply, distribution and storage needs. We also reviewed the existing Pennsylvania Department of Environmental Protection (PADEP) water system permits.

The cost of maintaining the Association's water distribution system has not been addressed in this analysis for any of the options considered. The Authority has not determined whether they will accept dedication of the Association's water distribution system. When the Association met with members of the Authority to discuss the permanent interconnect, the Authority indicated that they would consider accepting dedication of the Association's water distribution system. It is our opinion that this is an important issue for the Association to get this issue resolved before finalizing any decision regarding the options in this analysis. If the Authority does not accept dedication of the distribution system, the cost of maintaining the system by the Association will be the same regardless of what option is chosen.

All costs in the analysis are estimated costs based on historical costs for other projects and consulting others for estimated costs. For example, we discussed the project with All America Services, Inc. (tank contractor) regarding new water storage tank and foundation costs and existing tank rehabilitation costs and recommendations with Douglas DeClerck (tank consultant). Detailed proposals/ quotes were not obtained. Estimated costs are based on best assumptions of project scopes for the various options at this time. Below is the information for the alternatives analyzed:

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Option No. 1: Rehabilitate water storage tank as quoted by Suez/Utility Service Co., Inc.

Suez/Utility Service Co., Inc. provided an inspection report and a quotation to repaint the water storage tank in 2019 and 2020 respectively. The quote is attached. We note that no inspection services are included during or after painting other than an outside visual inspection. The work by Suez/Utility Service Co., Inc. is warranted for one year, which is standard. The quote provided by Suez/Utility Services Co., Inc. is $128,508.39 (say $128,600). Note that Suez/Utility Service Co., Inc. included PADEP permitting in their quote. We estimate that this painting system will provide 7 to 10 years of service before needing painting is required.

The cost for water service to be provided during the tank rehabilitation is based on the cost that the Authority charged the Association for water during the period of April 15, 2016 to April 27, 2016 while the Association's water storage tank was not in use. The cost for that period of time is equivalent to $200/day. The Authority does not have a current rate for metered water usage. We have assumed that the current cost would be 10% higher than the 2016 rate and have used a daily cost for metered water of $210/day. We note that the permit for the current interconnect with the Authority's water system has not been located. It is assumed that the permit is an "Emergency Permit" per discussions with Dave Gettle of Kohl Bros., who has a thorough knowledge of both the Authority's and the Association's systems. The Authority/Association would need to verify with PADEP whether this permit would need to be updated as a permanent interconnect to use this interconnect for longer durations of time. The estimated time to paint the tank for Option No. 1 is approximately 7 weeks. This equates to a water supply cost of $10,290 during painting.

The costs associated with the operation of the Association's existing water system was investigated. The system is currently operated by Martin Water (operator of record for PADEP). Daily sampling for the system is performed by Doug Cheney Monday through Thursday and by a resident Friday through Sunday. We have discussed the operation of the system with Doug Cheney and he estimates that he charges the Association $6,370/year. Other operating costs are shown in the attached Current Annual Water System Operational Costs itemization provided by the Association. The annual cost for the year 2019 was approximately $13,000. Therefore, the current annual cost of operating the system is approximately $19,370.

The Association wanted to look at future operational costs assuming proper operation of the system by a single operator to comply with PADEP requirements. We have investigated the possibility of operating the Association's water system with a single PADEP certified operator. If the Association changes the current method of operation and has a single PADEP certified operator operate the system, we recommend installing automatic sampling equipment at the Well House so that daily visits are not required by the operator. A shut-off system would need to be provided for the caustic feed system in case the concentration of that chemical is too high (per PADEP). We estimate the cost to permit and install this system to be $28,000. We estimate the annual cost to operate the system with this upgrade by a single certified operator to be $18,000.

Annual ongoing maintenance costs to maintain the operation of the system is estimated to be $3,000/year.

Past inspections of the Association's water system by the PADEP have indicated that the PADEP may require an emergency generator for the system. We estimate this cost to be $60,000. We have not included this cost in the analysis since it is our opinion that a generator is not required for the Association's system since there are at least two days of storage in the tank along with the emergency interconnect with the Authority's system.

We recommend that all water storage tanks be inspected routinely to prevent major rehabilitation costs in the future. We recommend an inspection of the outside of the tank every 5 years (approximately $2,000) and also an inspection of the inside of the tank every 10 years (approximately $5,000). We have included these costs in the annual cost of maintaining the system by distributing these costs over their recommended time period which equates to $900/year.

Summary of estimated costs for Option No. 1:

Initial costs:

Tank painting:	$128,600
Authority water:	$10,290
Upgrade Well House:	$28,000
Total initial cost = $166,890	

Annual costs:

Operator:	$18,000
Annual Maintenance:	$3,000
Tank inspections:	$900
Total annual costs = $21,900	

Option No. 2: Rehabilitate water storage tank as proposed by Douglas DeClerck

Douglas DeClerck performed a review of the Suez assessment report and quote and provided additional recommendations for the tank rehabilitation method. His review memo is attached. If this option is chosen, we recommend that Douglas DeClerck inspect the outside of the tank and assist an engineer with developing bidding specifications for this project. This painting system would be more costly than Option no. 1, but would provide a longer life until additional painting is required. Additional work includes sandblasting the outside of the tank and installing a thicker, more effective paint coating on the interior of the tank. We note that we have added $10,000 to the costs indicated in this memo since repairing steel pitting of the interior of the tank may be required as discussed with Douglas DeClerck. The estimated cost for the painting work involved with this option is $276,000. The anticipated time to perform the painting work for this option is 9 weeks. We have used $15,000 as an estimated average cost for inspection services and $9,000 to develop specifications for bidding and PADEP permitting to perform the painting for this option. We estimate that this painting system will provide 20 to 30 years of service before additional painting is required.

Please reference Option No. 1 for discussions regarding the following items and their associated costs: Authority water supply during painting, upgrades to Well House, generator, operations, maintenance and routine inspections for the tank.

Summary of estimated costs for Option No. 2:

Initial costs:	
Tank painting:	$276,000
OSHA modifications:	$30,000
Specifications, permitting:	$9,000
Inspection during painting:	$15,000
Authority water:	$13,230
Upgrade Well House:	$28,000
Total initial cost = $371,230	
Annual costs:	
Operator:	$18,000
Annual Maintenance:	$3,000
Tank inspections:	$900
Total annual costs = $21,900	

Option No. 3: Construct a new tank and concrete foundation

We worked with All America Services to develop pricing to construct a new tank and concrete foundation. We reviewed the option of putting a new tank on the existing concrete foundation. This option is not considered viable since the existing concrete foundation would most likely not meet current code requirements which would be required to place a new tank on it.

The type of tank for this option is a standpipe. A standpipe tank is the same type of tank that is currently installed. A high concrete foundation would be required as is currently utilized so the water elevation in the tank would be high enough to provide the same system pressure as the current tank does. The estimated cost for the new tank and foundation is $510,000. This assumes the tank size would be the same as the existing tank. The duration of the project is estimated to be 6 to 8 months. We have assumed 7 months for estimating purposes for the Authority water supply during construction. We estimate that the painting system on the new tank will provide 20 to 30 years of service before additional painting is required. The estimated cost for this tank assumes that rock will not be encountered during excavation for the foundation. A geotechnical investigation would be required for the design of the tank foundation. We estimate this cost to be $7,000.

Preparation of specifications for the project, including PADEP permitting is estimated to be $17,000. Inspection of the work during construction is estimated to be $20,000.

The possibility of installing a spheroid tank was investigated but the additional cost for that type of tank would be approximately $100,000. A spheroid tank is a type of water tank that has a

large sphere at the top of it's post. This type of tank can be visualized as a golf ball sitting on a tee.

Please reference Option No. 1 for discussions regarding the following items and their associated costs: Authority water supply during painting, upgrades to Well House, generator, operations, maintenance and routine inspections for the tank.

Summary of estimated costs for Option No. 3:

Initial costs:

Tank construction:	$510,000
Geotechnical investigation:	$7,000
Specifications, permitting:	$17,000
Construction inspection:	$20,000
Authority water:	$44,100
Upgrade Well House:	$28,000

Total initial cost = $626,100

Annual costs:

Operator:	$18,000
Annual Maintenance:	$3,000
Tank inspections:	$900

Total annual costs = $21,900

Option No. 4: Connect to the Mt. Gretna Authority's (Authority's) water system permanently

We had various discussions with Bill Care of the Authority regarding this option, including attending a site visit to review the previously proposed water line route (see DEP Grant application attached) that would connect the well currently located on the Association's property to the Authority's water reservoir. We also received information from the Association after their meeting with Authority members in November, 2020.

This project would involve utilizing the existing interconnection with the Authority's system permanently. The Association's well pump would be upgraded and a new water line would be installed from the well to the Authority's water reservoir for the Authority to utilize this as an additional water supply source. Minor upgrades to the treatment system in the Well House are also anticipated. The well, Well House and water line to the Authority's reservoir would be dedicated to the Authority and the Authority would assume operation of those systems after construction. The Township received a grant for the Association to construct this option. The grant amount is $69,760. The project completion date to utilize this grant is December 31, 2021.

We recommend verifying that the Authority's water system can provide adequate pressure to the Association and that adequate fire flow will be available (gallons per minute) for this option. Bill Care indicated that they can have their engineer review this if the Association chooses to proceed with this option, prior to finalizing an agreement.

The work on the well and Well House for this project includes a larger well pump and possible changes to chemical feed equipment if required. Kohl Bros. provided an estimate dated April 18, 2018 to perform this work. The estimate is included in the PADEP grant application. We have attached the cost estimate as a separate PDF also. The total estimated cost in this estimate $74,250. We estimate the costs for that part of the project to be $96,000 including PADEP permitting costs. We have assumed that the water supply from the Authority will not need to be re-chlorinated to maintain the chlorine residual required by PADEP since the current interconnect does not include that treatment. We have assumed that the Authority will require easements for the Well House and the well. The cost to develop those easements is included in the above project cost.

The 4-inch water line (as indicated in the PADEP grant application) that would be installed for this option would be approximately 1,800 linear feet long. The most effective method of installing this water line would be by directional drilling so that limited excavation would be required. We have assumed that rock excavation will not be required. If rock is encountered, the cost for pipe installation will go up fairly substantially. We assumed that this project would not be bid so that specifications for bidding would not be required. We estimate the cost for this work to be $87,000 including PADEP and PennDOT permitting and preparing one easement. We assume that no survey will be required and that GIS drawings will be acceptable. We have assumed that this project would not be bid and that detailed project specifications would not be required. The project would require a PennDOT Highway Occupancy Permit at Pinch Road. Bill Care has indicated that the Authority may consider sharing the cost of the construction of the water line but that issue would need to be negotiated if this option is selected.

The current Authority flat fee per equivalent dwelling unit (EDU) is $546/EDU/year. The Authority also has an infrastructure fee to maintain the system which is $175/EDU/year. According to Bill Care (Authority) the infrastructure fee would not be applicable to the Association. If the Authority does accept dedication of the Association's water distribution system, there will be an infrastructure fee due to the Authority that will need to be determined during negotiations with the Authority. According to the Authority, a tapping fee would not be charged for the Association to connect to the Authority's system. The Association has 241 dwelling units plus a church. Bill Care indicated that the church would only require one EDU, so the total EDU's in the system is 242. Therefore, the annual fee for water provided by the Authority would be $132,132.

Summary of estimated costs for Option No. 4:

Initial costs:

Well House construction:	$96,000
Water line Construction:	$87,000
Less PADEP grant amount:	($69,760)

Total initial cost = $113,240

Annual costs:

Authority water cost:	$132,132

Total annual costs = $132,132

If you have any questions regarding this report or wish to discuss any item(s) contained herein, please do not hesitate to call me.

Sincerely,

Mark L. Homan, P.E.

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