Questions for GME from the 3-1-21 Richmond Water and Sewer Commission Meeting

1. In the Phase I cost chart there is a line for "Easement survey (allowance). What is included in this line item? Is this for survey work necessary to insure that the waterline stays within the granted easement from the Richmond Land Trust? Is there any money in this line for legal fees that may be necessary to change the easement to allow for expansion of the system beyond Reaps' property? Yes, Option A (School to Reap) crosses several properties and also runs adjacent to the I-89 interstate ROW. At this conceptual stage, GME anticipates that that there will be concerns from the property owners which will need to be addressed. Additional surveying, deed research, legal negotiations and other misc. related costs will likely be required. There may also be other easements within these properties that are identified as part of this process which require consideration as part of the design. The entirety of this scope of work cannot be codified at this time but we recognize that additional work likely will be necessary. This line item was intended as a place holder for these items.

2. In the Phase I cost chart there is a line for "Archeology". Has there been an archeology study with the previous PER and will there be an archeology study included in the current PER update? Or is this something that comes after the PER as we move toward final design? Are there considerations for wetlands in this process and do you know at this point if we will encounter wetlands in any of the Phases (perhaps around the Mobil Station)? Hartgen Archeological Associates, Inc. conducted a Phase I archeology study in 2015. The study assumed that Phase I Option A (School to Reap) was the preferred route for Phase I and that Route 2 was the preferred route for Phases II and III. The conclusion of the study reads *"Since the project is in the scoping phase, the exact location of the proposed lines is uncertain. The areas of archeological potential outlined above provide some guidance as to where project disturbance could intersect archaeological deposits. It is recommended that project disturbance stay as close to the edge of the roadways as possible, to minimize affecting areas of archeological potential. If areas of areological potential cannot be avoided, Phase 1B archeological reconnaissance survey is recommended."*

   In short, this means that if the proposed force main is kept directly adjacent to the current Route 2 roadway where soils are likely to have been highly disturbed in the past, they believe there is limited potential for archeological artifacts to be found and no reason for further study. Working outside of that area however likely means additional field studies will be required. We would caution that these are recommendations from a third-party consultant which will be subject to review and approval by the State Historic Preservation Office (SHPO) as part of the permitting process. SHPO has the final say in determining the scope of archeological work necessary to obtain permit approval. GME kept a place holder for archeology as it pertains to costs in both Phase I options which we feel is prudent until final design is complete and the SHPO review of the final project is complete.

3. What is involved in boring under the gas line? Are there special permits or rules/regulations that have to be followed? Does Vermont Gas have a preferential

right on location of our sewer line since their gas line is already in place? Has VGS been contacted about this potential project? GME did reach out to VGS. VGS's gas line is a reasonable distance off the pavement in most areas along Route 2 as indicated today by the visible yellow "buried gas line" markers. VGS appears to have kept their gas main a reasonable distance from the edge of pavement. GME believes that there is sufficient room between the existing edge of pavement and VGS gas main to install the low-pressure force main. VGS obviously has a right to occupy the ROW under agreement with VTrans. VGS does not have the sole right to occupy the ROW however. It is common for multiple utilities to occupy any state or local ROW. For safety and ease of maintenance reasons, VGS prefers a minimum of 3.0' of horizontal separation between utilities which we would also support. The Town will need to permit this work with VTrans once the engineering design is complete.

4. Are there any other utilities located in the area where the sewer line will be placed other than the gas main? Most utilities in this area are overhead. GME is not currently aware of other underground utilities other than drainage culverts and natural gas,. However, a portion of the next phase of work (Engineering Design) will be to contact each utility owner as well as adjacent private land-owners with a goal of surveying, locating and mapping all existing underground utilities to ensure the design avoids any utility conflicts. Are there any concerns with the Rt. 2 option going along the cemetery due to the steep slope/retaining wall that rises abruptly from the road? What about trees in this area? I have included a drawing from VTrans that shows a portion of the Cemetery is in the ROW. This area appears to be more of a slope than a retaining wall. In either case, using directional boring technology (as we would propose to do), GME does not anticipate significant construction conflicts at this time.

5. What, if any, conflicts may arise with the Catholic Church for use of the ROW next to/under the cemetery property? Do we have to get permission from the Catholic Church or is that not necessary because we will be in the State ROW? Are there any concerns about a legal challenge from the Church? We have these same questions for the section of line that will run along the Willis Sledding Hill property which is owned by the Richmond Land Trust. Phase I Option A (School to Reap Property) would not cross the cemetery property. Using Phase I Option B (Route 2), GME envisions the forcemain staying within the Route 2 ROW. Route 2 is a 4 rod ROW (66-feet) and should provide adequate space for the force main short of some conflict that is not envisioned at least at this point. The impact (if any) to each individual property owner along the route will not be known until the exact limits of ROW have been surveyed and the final location of the proposed forcemain is determined. This level of detail is outside the scope of a Preliminary Engineering Study and will be addressed as part of the design phase.

6. We may want to look at Phase II as extending from the Reaps to the Mobil Station. Can you provide a cost estimate for the section between the current end of Phase II up to and including the Mobil Station? Presumably once we have these numbers we

can add them to the Phase II to get the cost for a longer Phase II and subtract them from Phase III to get a shorter Phase III. The current phasing plan was proposed by the Town and was the base building block for the project. If the Town wishes to modify the currently proposed phasing plan, GME will need to re-evaluate the cost estimates for the impacted phases in their entirety. Note that the requirements of the funding source (or State program) may also have an impact on these cost estimates.

7. In the estimates for Phase II and III it appears that the cost estimate in 2021 dollars is $49 per linear foot. The cost estimate per linear foot in Phase I is $25. Should the cost per linear foot be the same for all three Phases and if so what is that cost? There is an economy of scale in Phase I. As with any project, the more you build the cheaper the unit costs as the fixed project costs become a smaller percentage of the total project cost. Phase II is relatively short and very close to mapped wetlands. Higher unit costs should be anticipated. Phase III has significantly more design and construction challenges due to mapped wetlands as well as the need to cross the federal interstate highway ROW in multiple locations (among others). Higher unit costs should be anticipated.

8. Are there any other unit price discrepancies between Phases II & III and Phase I that need to be noted or corrected? No. This is a conceptual study phase. The Opinion of Probable Costs are intended as relatively high level, order of magnitude numbers. These numbers will be refined for construction once the detailed design for each phase is complete.

9. What intricacies are involved with Phasing? In particular, I am curious on how you design pump stations that is can accommodate all phases without changes. With Phase 1 (Reaps development) being a possibility, and with the possibility of Phase II (Mobile station, and 6-10 customer) and Phase III (Riverview Mobil park at 30,000 gallons per day) being added later, and I am curious how this is done relative to Pump station design. If costs are needed to modify the pump station at Reaps in order to add Phase II and Phase III, what are they? These will be borne by the private landowners in the scenario we have planned for but would knowing this info help determine the size of the pumps that private owners would be required to install? The Town has directed GME to assume that any pump station(s) that tie into this forcemain will be designed, owned and operated by others. In general however, each pump station would be sized and designed to handle the flow from each phase as its added. The 3” forcemain was sized to handle the flow from all three proposed phases.