

Memorandum

To: Kathy Leary, City Administrator
City of Gustavus

From: John Barry, P.E., Technical Services Manager, Naval Engineering

Date: October 18, 2024

Subject: Response to HDR Proposed Gustavus Septage PER Alternatives Memo dated 9/6/24

Category 1: Septage Stabilization and Treatment Alternatives

Alternative 1A: Mechanical Dewatering – Requires a trained and maybe a licensed plant operator, and the plant will require maintenance. Disposal of leachate in a subsurface drainfield at the DRC is practical. Also it's worth looking for available mobile dewatering systems, such as a pump truck that can concentrate solids on board and return the water to the septic tank.

Alternative 1B: Passive Dewatering - More information about dewatering with geobags and a containerized dewatering system is needed to form a judgement about their practical application at the DRC. The containerized dewatering system will require maintenance.

Alternative 1C: Aerobic Digestion and Dewatering – Although the aerobic digestion treatment plant adds another treatment process to Alternatives 1A and 1B, the plant should be a small package plant similar to but somewhat larger than an on-lot residential secondary treatment system. A small aerated system would not be expensive or difficult to operate and maintain. This approach would accomplish significant dewatering and reduce the amount of residual material that had to be further dewatered and disposed of.

Alternative 1D: Dewatering and Composting – Composting may be a practical option but because the sludge has to be dewatered before composting with a mechanical, passive and possibly also an aerobic process it seems that it should be moved to Category 2 as a sludge disposal alternative. Evaluation of the composting option should take into account that there will be some hesitancy about using the compost product as a soil amendment or for other applications due to perceptions about PFAS and that it is a product of human waste.

Alternative 1E: Reed Bed Drying – A large, lined open lagoon and adding layers of sludge does not seem to be a good fit for the DRC or Gustavus in general.

Alternative 1F: No Action - Evaluated for comparison to the above four alternatives only. It is not a reasonable long term option.

Category 2: Sludge Disposal

Alternative 2A: Incineration – Although incineration would be a practical disposal method, it may not be popular in Gustavus due to the burning of diesel fuel in the process. Partnering with the NPS to incinerate sludge is worth pursuing but NPS may object to bringing waste material into the park for disposal. Administrative barriers should be expected.

Alternative 2B: Monofill – I don't have experience with monofill disposal for biosolids. My impression is that this option would take up a large section of the DRC permitted solid waste disposal area.

Alternative 2C: Ship to Juneau for Drying – Local disposal of sludge is preferred, but further study may show that shipping dewatered sludge to Juneau is a practical alternative. Details about the dumpster used for storing and shipping the sludge and the expected shipping frequency and method will have to be researched.

Alternative 2D: Land Application – This alternative was examined by the DRC committee in 2007 and was determined to be not feasible due to airport separation requirements and lack of suitable and available land. This alternative should be evaluated but is likely to come to the same conclusion as the DRC committee.

Alternative 2E: No Action – Same as Alternative F.

After reviewing the descriptions of the proposed treatment and disposal alternatives, the most promising combination and a good fit for Gustavus would aerobic digestion with leachate sent to a drainfield to reduce both water and solids volume, then further dewatering with leachate to the drainfield followed by composting with local disposal.