Water & Wastewater Services

Purpose

The purpose of this outline is to modify the information supplied in the Gibbs & Olson, G&O, "Septage Receiving Feasibility Study, 2017" to reduce, on a temporary basis, the capital costs and allow City of Tenino begin septage receiving and biosolids composting.

Background

The report supplied by G&O is an excellent report, however it requires a capital investment that is beyond City of Tenino's ability to fund.

Introduction

This outline will briefly discuss the septage receiving and composting process along with a list of major components and estimated costs. It is important to note that before any of this work can be done the City of Tenino must remove a large volume of the biosolids stored in its holding lagoon. It has supplied 10 years of biosolids storage and is currently full. It must be cleaned out for future use and for modifications if the City decides to move forward with the septage receiving and biosolids composting.

Outline of the Biosolids and Septage Receiving Process

1. Outside waste, biosolids and septage, will be trucked in to the wastewater plant and unloaded at the Northern end of the biosolid holding lagoon.
2. The trucks will connect, via a hose, to a bar screen trough where the driver will manually rake the bar screen to remove garbage and other materials not suitable for treatment. These materials will be loaded into a dumpster and hauled to a landfill.
3. The liquid will flow into an above ground storage tank for flow equalization and grit removal.
4. From the flow equalization tank, the liquid will flow either by gravity or by pump into the biosolids lagoon.
5. The biosolids lagoon may benefit greatly if converted to an aerated lagoon. Currently the 1.5 MG volume serves only to store waste activated sludge from the MBR process. A wastewater engineer should assess the cost-feasibility of converting to an aerated lagoon for the purposes of odor control, enhanced biosolids digestion, volatile solids reduction, and sludge conditioning for enhanced dewatering characteristics.
   -The Town of La Conner uses a similar septage receiving process. The Town charges $.10 per gallon and takes in 30,000 – 60,000 gallons per day with a daily revenue of $3,000 - $6,000 per day and is only open during normal plant hours five days per week.

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Outline of the Composting Process

1. After the lagoon begins to fill and at the Plant Operator's discretion the liquid would be pumped from the lagoon at approximately 1% solid to a polymer-based mechanical dewatering system – belt filter press, rotary press, centrifuge, screw press, or other. The biosolids would be dewatered to a concentration allowing it to be handled as a solid and then moved about the site by tractor. The liquid extracted during the dewatering process would be returned to the equalization basin and ultimately to the MBR process.
2. The 15%-20% solid cake will then be mixed with ground yard waste or mill shavings and be loaded into ecology bins and aerated for a 45 day composting process utilizing the Static Aerated Pile method. Once completed the compost will be piled for curing for a minimum of 45 additional days.
3. The Compost will then be tested to meet State and Local guidelines and then released as a Class A EQ-rated biosolids product for public use.
   -La Conner has an area outside of the plant where the public can hand load any volume that they want free of charge. La Conner also sells compost to residents and commercial customers who want large volumes at $10 per yard. After a decade of operation the outside waste composting fund is the highest grossing department in the Town with over a million dollars a year in revenue. The plant has reached a point where it comes very close to running out of finish compost.

Discussion of Site Layout

- All biosolids handling activities on this site will need to occur on a runoff-controlled surface. Current biosolids regulations, as well as the unique site restrictions of this facility, being set atop coarse soils and an unconfined aquifer, will necessitate that all dewatering equipment, all solids handling areas, and all composting areas be underlain by impervious concrete, asphalt, or membrane surfaces. All liquid and precipitation runoff will need to be directed ultimately back to the headworks of the facility.
- Both the EQ and the biosolids lagoons represent physical drowning hazards, and thus the public (including septage haulers) should not be allowed near or around them. The public should be limited to the area north of the biosolids lagoon.
- The dewatering system of choosing must be housed, if not indoors, at least under cover and weatherized appropriately.
- The ideal location for the dewatering system would be the area in between the biosolids lagoon and the MBR basins. This would also be the ideal area for Septage receiving as it would minimize installation costs for paving, piping, electrical, etc.

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- The ideal location for composting would be the area south of the biosolids lagoon. The impervious pad would be drained to the EQ basin, by gravity, at minimal cost. Transportation of dewatered solids from the dewatering area to the composting area would be by tractor.
- The composting method of choice – Static Aerated Pile – requires a mechanical air source beyond the capacity of the treatment plant's existing blowers. Additional blowers would need to be installed, ideally immediately adjacent to the composting pad.

Capital Investment Estimate

1. Bar Screen (Old La Conner)	$5,000
2. Holding/Equalization Tank (10K)	$7,000
3. 2-4 Aerators (Engineer Recommendation)	$30,000
4. Dewatering System (Possibly Used)	$500,000
5. Housing, Installation, Piping and runoff control for dewatering system	$250,000
6. Tractor (Possibly Used)	$100,000
7. Misc. Items (Hose, Pumps, Etc.)	$130,000
8. Pad and Cover for composting	$300,000
9. Air source (blowers) for composting process	$200,000
10. Contingencies - 20%	$305,000
Total Estimate	**$1,827,000**