

Council Presentation

Omemee Wastewater Treatment Upgrade

June 7th, 2022

Location:

Virtual Meeting

Time:

1pm

Background Information

The City of Kawartha Lakes owns the municipal wastewater system in the Town of Omemee. It was originally constructed as a dual lagoon/spray irrigation system in 1976.

In 2011, the City completed a Class Environmental Assessment (EA) based on a Growth Management Plan that forecasted substantial growth in the area. The City elected to upgrade the system using a large sub-surface disposal system (LSSDS) which was constructed in 2014. The original spray irrigation system was to be decommissioned. Unfortunately, the LSSDS does not provide adequate capacity. The system is currently operating as a combination of the new LSSDS and the original spray irrigation system.

Since that time, the growth forecast has been revised downward, due to the lack of treated water. Omemee will not require the wastewater treatment capacity that had originally been forecasted. The City and Greer Galloway are reviewing the current system to determine the best path forward.

These upgrades and recommendations will be carried out as a Schedule 'C' project under the terms of the Municipal Class Environmental Assessment (Class EA) process, which is approved under the Environmental Assessment Act.



Limitations of The Existing System

Slime and Suspended Solids – Currently suspended solid material makes its way from the lagoons to the LSSDS. This clogs pumps, valves, and the downstream LSSDS beds. This creates problems for the operational team, and limits the amount of flow that can be sent to the LSSDS.

Alternatives

Do Nothing

This alternative would have the lowest capital cost and would involve using the existing LSSDS to discharge all treated effluent. This option is not feasible due to low LSSDS capacity and maintenance issues.

Replace with Mechanical Plant or other Treatment Alternative

Several higher cost options were reviewed in the original EA and revision completed in 2011. This would option would have the highest capital cost and construction time. The costs of this option would be prohibitive, and a full replacement is unnecessary to achieve required capacity and address limitations.

Utilise Spray Irrigation and LSSDS Effluent Discharge

This option is less expensive than other treatment options. It involves running the LSSDS at reduced capacity and using the spray irrigation system to make up the required capacity. This is the preferred alternative as it addresses existing issues and provides sufficient capacity at the lowest capital cost.

Preferred Alternative

- The preferred alternative consists of several improvements throughout the wastewater treatment process that aim to alleviate limitations described and to maximise ongoing efficiency.
- To assist with the removal of suspended solids, the effluent is to undergo additional treatment before entering the LSSDS.
- Other system upgrades are also being implemented to improve the treatment process.

Preferred Alternative

Pre-Treatment of the Effluent

To assist with the removal of suspended solids, the effluent is to be treated using:

Travelling Screen

This screen intercepts weeds and debris before entering the wet well, reducing clogging in the well; followed by,

Dissolved Air Flotation

Highly effective in removing algae and other contaminants. Will clean effluent to be sent to a new wet well. This will protect pumps, valves, and LSSDS beds. Housed in a building expansion.

Preferred Alternative

Second Wet Well

To contain clean effluent for pumping to the LSSDS.

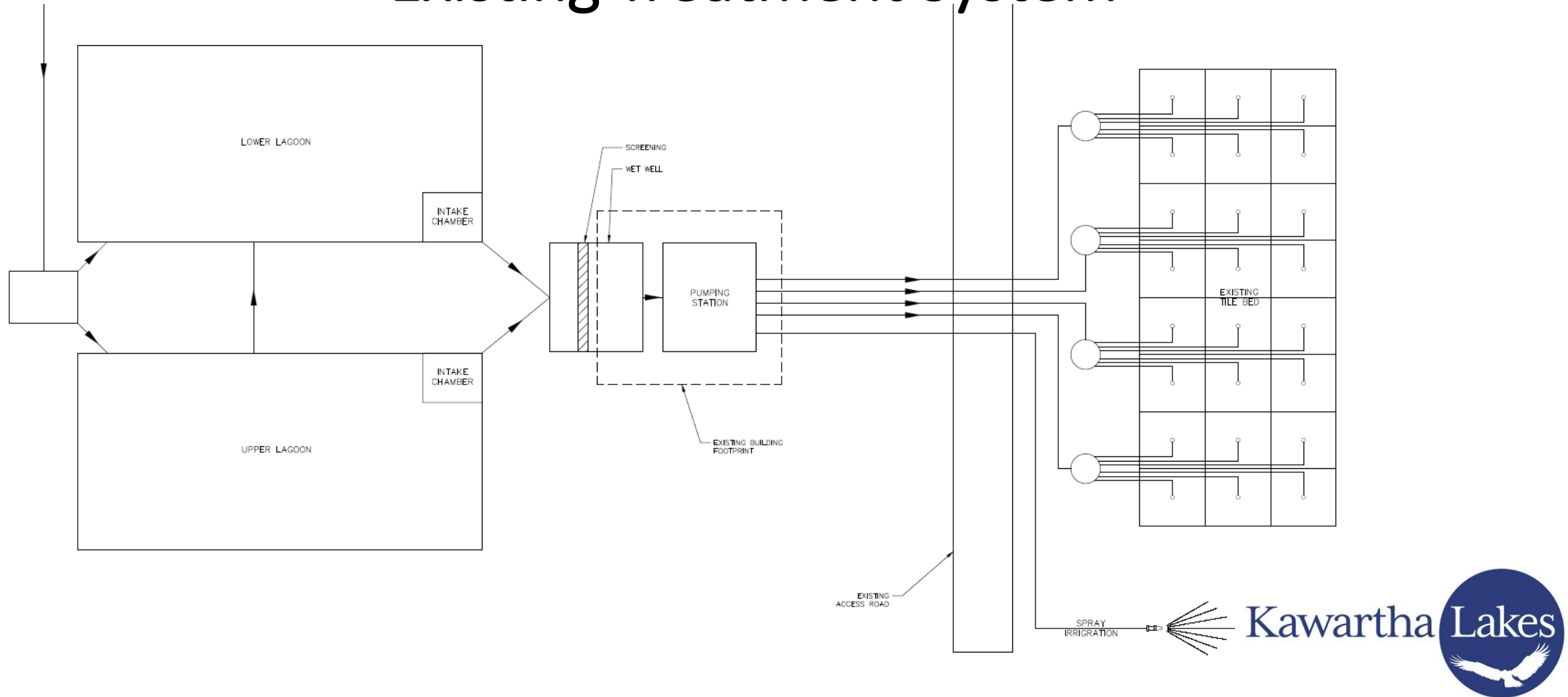
Hydraulic Load Control

Reduce the hydraulic load to tile bed in accordance with field conditions.

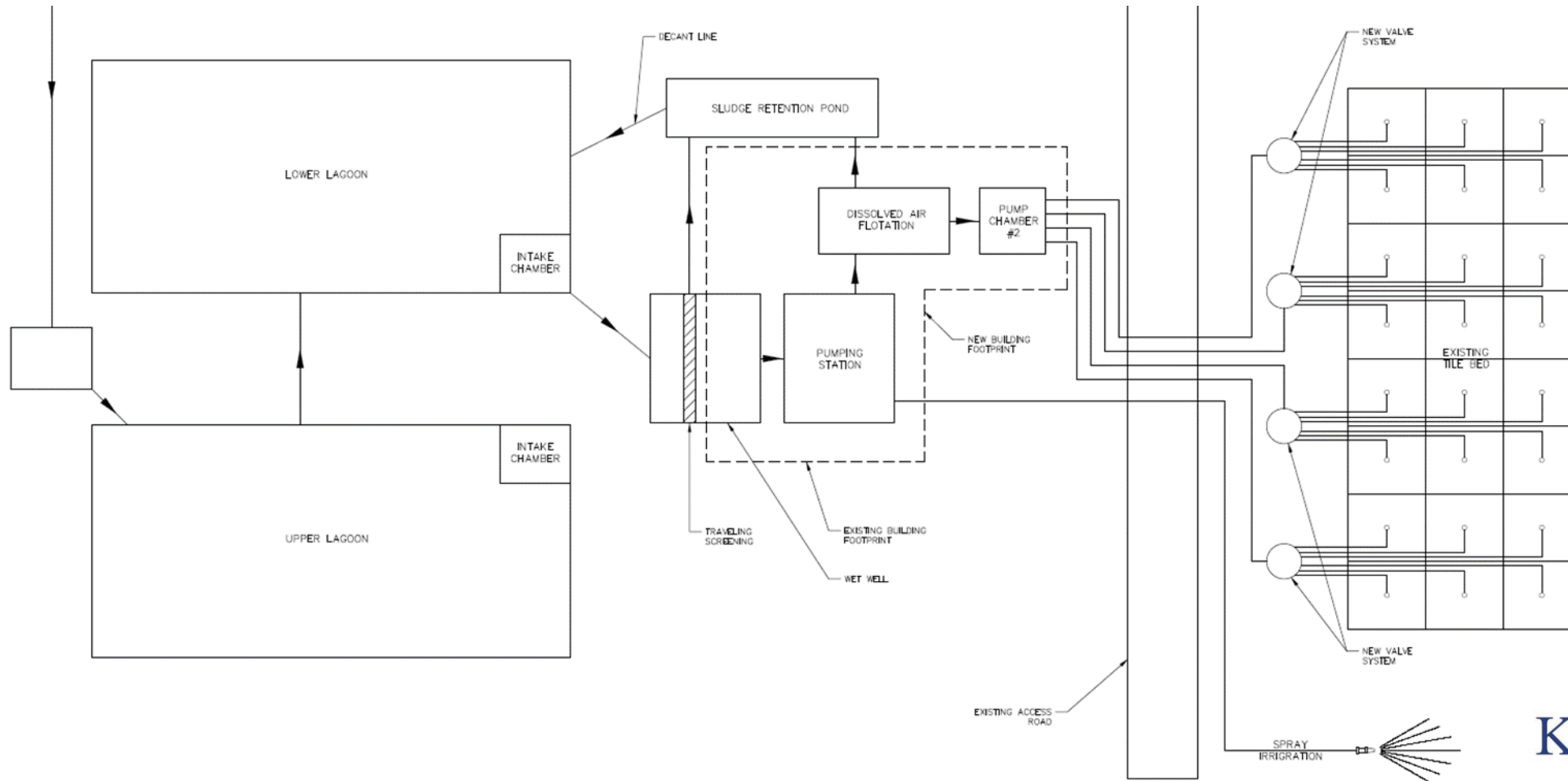
Utilise Existing Spray Irrigation

Continue to use the spray irrigation to supplement the LSSDS system's current limitations.

Existing Treatment System



Proposed Treatment System



Supporting Studies

- **LSSDS - Hydrogeological Study**

- Based on our analysis and the amount of effluent successfully infiltrated over the past five years we conclude that 350 m³/day is a reasonable and conservative estimate of the current capacity of the LSSDS. 350 m³/day is equal to a loading of approximately 17 L/m²/day or $k_v = 2 \times 10^{-5}$ cm/s, which is conservative for silty sand.

- **Spray Irrigation – Aerosolization and Capacity**

- Currently, the most northerly spray nozzle is approximately 118 meters from the existing the property boundary to the north. To comply with requirements the spray nozzle will be moved to an alternative location, at a minimum of 150 meters from the northern property boundary.
- The sustainable capacity of the irrigation system has been demonstrated to be 608 m³/day through historic data and operation.

Cost Estimates

Item	Cost
Pre-Treatment Travelling Screen	\$100,000
Sludge Storage Tank and Disposal Area	\$100,000
Dissolved Air Flotation Package Plant (DAF)	\$300,000
Concrete Block Building to House the Pre-treatment Equipment	\$300,000
Wet Well Expansion	\$100,000
Modifications and Additions to the Pumping Station	\$100,000
Effluent Distribution Valves and Piping	\$100,000
Total Equipment and Hard Costs	\$1,100,000
Allowance for Labor, Assembly and Commissioning	\$600,000
Engineering and CA at 10%	\$170,000
TOTAL PROJECT COST	\$1,800,000

Thank you