

SUB-APPENDIX D6-G

Ridge Landfill On-Site Leachate Infrastructure Memo

MEMO

TO: Fabiano Gondim, Golder Associates
FROM: Tihamer Csiba
cc: Bill Allison, Sue Reimer
DATE: July 9, 2019
SUBJECT: Ridge Landfill On-Site Leachate Infrastructure
OUR FILE: 15-2456

1. Existing Infrastructure

The leachate captured in the underdrain and perimeter leachate collection systems at the Ridge Landfill is conveyed to a leachate holding tank on-site by a series of leachate pumping stations. The tank is a 9.45 m (31 ft) diameter, 605 m³ (160,000 usg) glass fused steel tank. The tank was constructed in 1995, its original purpose was to contain leachate prior to transporting to an offsite treatment facility by tanker trucks in order to expedite filling of the trucks.

Subsequently, a leachate transfer pumping station was constructed in 2005 to pump the leachate to the Blenheim Wastewater Treatment Lagoons (BWTL) via the sanitary forcemain from Charring Cross to the BWTL. The pumping station connects to the 200 mm diameter forcemain from Charring Cross to BWTL on Erieau Road via a 100 mm diameter pipe. The pumping station is a Gorman Rupp simplex, above grade, pumping station with its own enclosure, piping and controls, as follows:

Model	T4A3-B
Duty point	23.3 L/s @ 26 m TDH
Motor	20 hp.

2. Capacity Review

2.1. Future Leachate Generation Rates

Due to operating conditions of the leachate collection pumps, there may be inaccuracies in the historical leachate generation data. The pumps are currently being replaced and as a result the 2018 leachate generation data (124,200 m³/year) can be considered reasonably representative of current conditions.

The future leachate quantity was estimated using the Hydraulic Evaluation of Landfill Performance (HELP) model and precipitation rates for the area. The year 2021 leachate generation estimate is assumed to be representative of current leachate generation rate as the full capacity of the leachate pumps will be restored. Table 1 is a summary of present and estimated future leachate generation.

Table 1. Summary of Leachate Generation

Year	m ³ /year	m ³ /day
2018	124,200	340
2021	195,900	537
2040 (maximum future volume)	335,550	919

2.2. Storage Tank

Although not required to maintain operation of the leachate conveyance system, in order to provide redundancy and allow for tank maintenance, it is suggested that a second leachate storage tank of approximately the same capacity be constructed by Waste Connections. The two tanks would provide approximately one day storage at the maximum leachate generation rate and would add operational flexibility for maintenance.

2.3. Leachate Transfer Pump

The hydraulic conditions of the forcemain were evaluated to establish the operating parameters of the Ridge Landfill PS. It was determined that the rated capacity of the PS 23.3 L/s (2,013 m³/d) is achieved when the leachate storage tank is near empty and the Charring Cross PS is not operating. There were no reported operating issues with the pumping stations connected to the forcemain.

It will require about 6.5 hours daily to transfer the estimated average leachate volume in 2021 and it will require about 11 hours daily to transfer the future maximum daily volume of leachate to the BWTL.

A Blenheim/Charring Cross Environmental Study completed in 1994 estimated the future average sewage generation from Charring Cross at 415 m³/day. However, the last five years of records show that the sewage generation did not exceed 200 m³/day on average. The Charring Cross

sanitary pumping station has a capacity of 30 L/s (2,592 m³/day). The time to transfer the daily sewage generation to the BWTL is about 4 hours for 415 m³/day and 2 hours for 200 m³/day.

The existing pump at the Ridge landfill has more than sufficient capacity to transfer the maximum projected leachate generated to BWTL in the available time window of 20 hours. Again, although not needed for operational purposes but in order to provide redundancy and operational flexibility it is suggested that Waste Connections install a second pump of the same capacity and to operate the pumps in duty-standby configuration.

3. Conclusions

There is sufficient capacity available in the leachate storage and pumping system at the Ridge Landfill to manage leachate during the expansion period (2021 to 2041). The capacity of the forcemain to the Blenheim Wastewater Treatment Lagoons is also sufficient to convey the anticipated flow of leachate. In order to provide redundant storage and pumping capacity for maintenance and operational purposes, it is suggested that Waste Connections install a second storage tank and pumping station of similar size and capacity at the landfill as the expansion is undertaken.