

NUYENS SANITARY SYSTEM 2022 ANNUAL REPORT

DISTRICT OF LAKE COUNTRY



LAKE COUNTRY

Life. The Okanagan Way.



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1.0 Introduction

The Nuyens Sanitary System is located at 14498 Carrs Landing Road in Lake Country BC, and services 28 lots. The Nuyens system is a pressurized system, where each lot has its own pump and septic tank and pumps to a common line that discharges to the Nuyens treatment plant. The treatment plant consists of a 750-gallon septic tank with effluent filters that then flows by gravity to a 10m³ dosing tank. The dosing tank is connected to two well style pumps that discharge the plant effluent to a disposal field. In January 2022, the Nuyens Sanitary System was classified as a Small Wastewater system by the EOCP as facility number 2613.

1.1 Authorized Discharge

Effluent from the Nuyens Treatment system is pumped to an adjacent disposal field. The field consists of two sub surface fields that alternate each pumping cycle. The flow rates are recorded daily, and the daily monthly averages are listed below.

Table 1: Nuyens Daily Flow

	Average Daily Flow (m ³ /day)	Maximum Daily Flow (m ³ /day)
January	7.9	16.67
February	7.5	14.33
March	5.0	6.71
April	5.3	8.91
May	6.0	9.13
June	6.2	11.57
July	9.3	11.45
August	8.5	11.67
September	6.0	9.93
October	5.5	9.37
November	4.5	5.26
December	4.8	7.20

The maximum daily flow rate is specified at 28.6 m³/day, at no time in 2022 has the daily flow exceeded the daily limit.

1.2 Characteristics of Discharge

Effluent quality of the Nuyens system must be equivalent to or better than (as per permit issued Nov 2022):

- Carbonaceous BOD (CBOD₅) – 130 mg/l
- Total Suspended Solids (TSS) – 130 mg/l

Samples taken in June 2022 resulted in a CBOD of 97.8 mg/l and a TSS of 24.0 mg/l

2 General Requirement

2.1 Maintenance of Works

The Nuyens system is monitored remotely via SCADA and has alarms for essential functions such as low flow and high-level alarms. The facility itself is inspected weekly in person and its routine maintenance is scheduled and recorded in the District CMMS (computer maintenance management system). Solids are removed annually via septic truck and frequency will be adjusted as required.

2.2 Emergency Procedures

Due to the simplicity of the system and the relatively low flows that exist, in the event of a mechanical failure, power supply disruption or other unforeseen event, the system can maintain functionality with a septic truck to haul wastewater from the facility. While there is no onsite generator present, there is a provision for a portable generator to be connected.

2.3 Process Modification

In 2021, the Nuyens system was assessed, and major components replaced to provide more reliable operation. This included remote access, 24/7 flow monitoring, odour control, effluent filters, additional storage capacity and pump upgrades. The assessment and design were completed by qualified professionals in conjunction with the Ministry, resulting in a new updated authorization permit being issued on December 5, 2022.

2.4 Groundwater monitoring

The District of Lake Country contracted Urban Systems to assess and develop a groundwater monitoring program, and this was submitted to the Ministry in May 2022. Monitoring wells were installed in January 2023.

Groundwater monitoring was not implemented in 2022, due to the timing of the amended permit being issued (December 2022). With the acknowledgment from ENV that the groundwater monitoring program was acceptable, the monitoring wells were installed in January 2023, and the first monitoring is scheduled for spring, 2023, in accordance with the scope outlined in Section 4.2 of the permit. The data for 2023 will be presented in the 2023 annual report, which is to be submitted before March 31st, 2024.

2.5 Annual Reporting

2.5.1 Exceedances

At no time in 2022 did the Nuyens system exceed the allowable flow specified in the permit (PE 10821). The BOD and TSS results are explained in section 2.1.

2.5.2 Annual flow analysis

Some abnormal flow spikes were seen in the winter months and were attributed to leaking fixtures. The annual flow at the Nuyens system is relatively consistent throughout the year with typical increases seen in the summer months due to seasonal use.

2.5.3 Annual flow graph

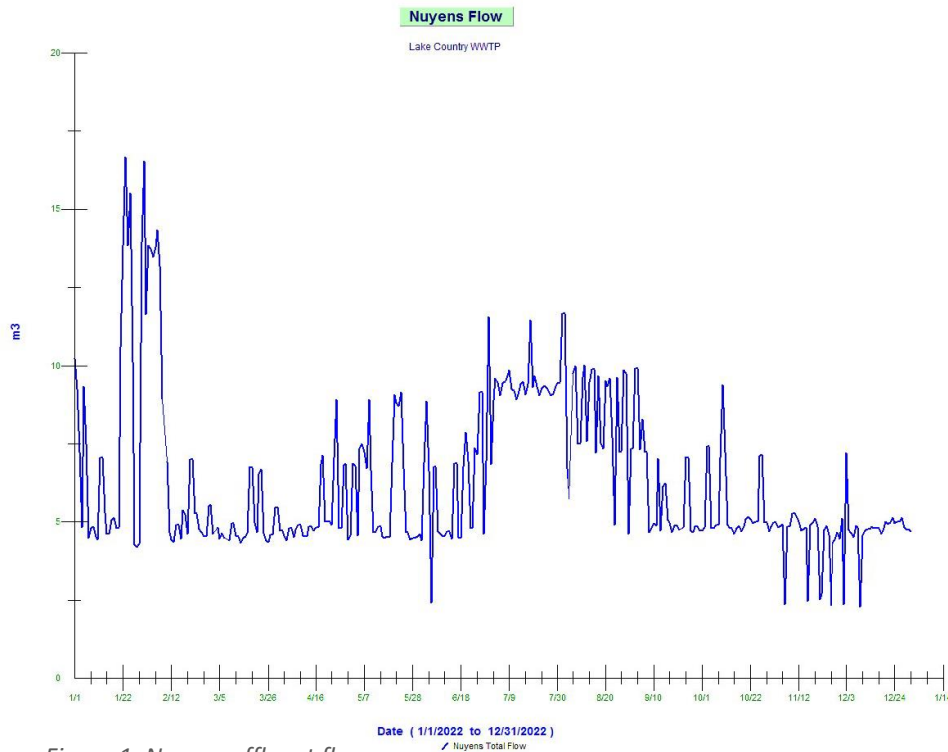


Figure 1: Nuyens effluent flow

2.5.4 Sludge management

Sludge was removed from the facility in October of 2022. Due to the nature of the system (private septic tanks pumping to the facility), solids accumulation at the facility has been minimal. Sludge volumes will continue to be monitored and frequencies will be increased if required.

2.5.5 Evaluation of performance

Operation of the system since completing upgrades (2021) continues to yield positive results. Operators are able to monitor flows with greater accuracy and effluent quality is easier to maintain with filters in place. The system has had no mechanical issues, and a chemical station has been set up to mitigate odours and reduce H₂S corrosion.

2.5.6 Site Map



Figure 2: Nuyen Sanitary System Site Map