PART D – EFFLUENT QUALITY STANDARDS

LTECF and Whitehorse Sewage Lagoon

23. All treated wastewater discharged from the Whitehorse Lagoon to the Yukon River, or the LTECF to the Yukon River or to the Pothole Lake shall meet the following effluent quality standards at WSL-1 and WH-9b, respectively.

Parameter	Maximum Concentration in a Grab Sample
pH	6.0 to 9.0
Total Suspended Solids	25 mg/L
$CBOD_5$[1]	25 mg/L
Un-ionized Ammonia - N	1.25 mg/L at 15°C ± 1°C
Total Oil and Grease	5 mg/L
Fecal Coliforms	2000 MPN / 100mL
Acute Lethality[2] – 96-h LC_{50}[2]	Non-toxic at 100% concentration

1. $CBOD^5$ Test Method – 5 day BOD test with nitrification inhibition.
2. Reference Method EPS 1/RM/13 of Biological Test Method: Reference for Determining Acute Lethality of Effluents to Rainbow Trout – Second Edition as amended from time to time.

Receiving Water Standards

24. The Licensee shall ensure that the receiving water standards specified below are met outside of the initial mixing zones. For fecal coliforms, the initial mixing zone is defined as a distance extending 750 metres downstream from the point of discharge from the LTECF to the Yukon River. For all other parameters, the initial mixing zone is defined as a distance extending 300 metres downstream from the point of discharge to the Yukon River.

Parameter	Receiving Water Standard
Fecal Coliforms	≤ 200 MPN / 100 mL
Dissolved Oxygen	≤ 10% decrease from a point upstream of the discharge, and in no case shall the concentration be < 4 mg/L
Oil and Grease	≤ 1.0 mg/L
Organisms	No undesirable change in productivity
Floating solids and scum	Negligible increase
Metals	Negligible increase

PART E – SLUDGE QUALITY STANDARDS

25. Dried sludge (biosolids) must be tested and may only be applied to land if it meets the standards listed in Column A. The soil, after application of dried sludge, must not exceed the standards listed in column B.

Parameter	Column A Class B Biosolid Standards	Column B CSR Soil Standards
Pathogen reduction	Yes	-
Vector attraction reduction	Yes	-
Fecal coliform (MPN/g dry weight)	< 2,000,000	-
Arsenic (µg/g dry weight)	75	20
Cadmium (µg/g dry weight)	20	2 when pH < 7.0 2.5 when pH 7.0 to < 7.5 25 when pH 7.5 to < 8.0 150 when pH ≥ 8.0
Chromium (µg/g dry weight)	1,060	60
Cobalt (µg/g dry weight)	150	300
Copper (µg/g dry weight)	2,200	90 when pH < 5.0 100 when pH 5.0 to < 5.5 200 when pH 5.5 to < 6.0 1,500 when pH 6.0 to < 6.5 30,000 when pH ≥ 6.5
Lead (µg/g dry weight)	500	150 when pH < 5.5 250 when pH 5.5 to < 6.0 2,000 when pH 6.0 to < 6.5 40,000 when pH ≥ 6.5
Mercury (µg/g dry weight)	15	150
Molybdenum (µg/g dry weight)	20	40
Nickel (µg/g dry weight)	180	500
Selenium (µg/g dry weight)	14	10
Zinc (µg/g dry weight)	1,850	150 when pH <5.0 200 when pH 5.0 to < 5.5 300 when pH 5.5 to < 6.0 1,000 when pH 6.0 to < 6.5 7,500 when pH 6.5 to < 7.0 15,000 when pH ≥ 7.0
Foreign Matter	≤ 1% and no sharp matter that can cause injury	-

26. A minimum of three dried sludge samples, each comprised of seven sub-samples shall be collected and analysed; the results of which shall be used in determining the fate of dried sludge.

27. Prior to the land application of dried sludge, the soil shall be sampled at a frequency of 1 sample per 100 cubic metres, with each sample comprised of five sub-samples.

PART F – MONITORING AND SURVEILLANCE

28. The Licensee shall collect geographic site coordinates for all monitoring stations listed in Schedule A Part 1, and submit all new and updated coordinates as part of the 2019 Annual Report.

Surface Water and Groundwater Monitoring

29. The Licensee shall comply with the monitoring program provided in Schedule A of this Licence.

30. Laboratory analyses shall be performed by a laboratory accredited under the *International Organization for Standardization ISO/IEC 17025: 2005* standard and the accreditation must include the actual tests being performed by the laboratory.

31. Prior to October 31, 2019, the Licensee shall install an additional groundwater monitoring well at the Crestview Lagoon in the general vicinity of MW1-08, to capture the potential deeper groundwater flow path. Well installation must be done by qualified personnel. Once the well has been installed the Licensee shall follow the monitoring and surveillance schedule as presented in Schedule A Part 2 Table 3.

32. Within six months of the installation or modification of a groundwater monitoring well, the Licensee shall submit a report to the Board containing the following:

    a) monitoring well description and names;
    b) geographic coordinates for the well location;
    c) a map identifying the locations; and
    d) a completed well drillers borehole log.

Sludge Monitoring

33. Sludge shall be monitored as required by Part E and Schedule A Part 2 Table 5 of this Licence.

34. The Licensee shall provide a summary of the operation of the sludge drying beds as part of the Annual Report. The summary shall include but not necessarily be limited to:

    a) Methods of data collection;
    b) Results and analysis of data collected by a qualified party at the time of sludge placement into the drying beds, and yearly monitoring;
    c) Details of sludge drying bed use, including but not limited to sludge transfer volumes, sludge levels, and drying rate; and
    d) Records of sludge volume removed from the sludge drying beds upon final characterization, and location of final placement.

Physical Inspections and Monitoring

35. An annual physical inspection of the wastewater facilities shall be carried out by a Professional Engineer licensed to practice in Yukon. A report on the inspection, prepared by the Professional Engineer, shall be submitted as part of the annual report described in clause 21 of this licence. The report shall document the inspection locations and methodologies, the results of the inspection, all problems identified, remedial measures recommended, and remedial measures implemented. The status of any remedial measures recommended in the previous year's inspection report shall be appended to the report together with an explanation regarding any recommendation not implemented.

36. Each year between September 15 and October 15, the banks of the Yukon River, along a stretch that may contain seeps which are potentially impacted by either the LTECF or the Crestview wastewater treatment facility shall be inspected by a Professional Engineer licensed to practice in Yukon, for evidence of seepage or instability relating to treated wastewater discharge to ground and/or the Pothole Lake. A report on the inspection and any recommended remedial measures shall be submitted to the Board by November 30 of each year.

PART G – PLANS AND STUDIES

37. Within 12 months of the effective date of this licence, the Licensee shall submit to the Board a Hydrogeological Assessment report for the LTECF containing the following:
    a) determination of the direction and rate of groundwater flow;
    b) identification of potential receiving environments;
    c) assessment of travel times for potential contaminant pathways; and
    d) recommendations for additional wells if they are found to be necessary to characterize the groundwater flow regime and/or to effectively monitor potential impacts to groundwater quality downgradient of the LTECF.

38. The Licensee shall develop a hydrocarbon characterization and monitoring plan for the LTECF. The plan shall be submitted to the Board by September 30, 2019. The plan shall include but not be limited to the following:
    a) methods to determine initial characterization of hydrocarbon levels throughout the LTECF and in down-gradient receptors;
    b) identification of monitoring locations, parameters and frequency of sample collection; and
    c) identification of factors that would trigger additional monitoring.

39. The Licensee shall update the findings of the 2009 EBA report *Hydrogeological Investigations at Crestview and Whitehorse Sewage Lagoons Whitehorse, Yukon* with the information generated by the drilling and monitoring of the new well required in clause 31 and the rehabilitation or replacement of the existing non-functional wells. The update shall be submitted to the Board no later than March 31, 2020.

40. The Licensee shall develop a Seepage Water Quality Monitoring Plan detailing an approach for the sampling of seeps identified as a result of the inspections required by clause 36. The plan shall be submitted to the Board by September 30, 2019. The plan should include but not be limited to the following:

    a) methodology and criteria for identifying seeps to be sampled;
    b) suite of parameters to be sampled; and
    c) methodology outlining the procedure to collect representative and reliable samples.

PART H – SITE DECOMMISSIONING AND RESTORATION

41. In the event of decommissioning of the undertaking, all structures and appurtenances authorized by this licence shall either be removed or left in stable condition which does not present a risk to people or the environment. Prior to the commencement of decommissioning work, the Licensee shall submit to the Board a final plan for the reclamation of the project site. The plan shall be designed to ensure long-term stability maintenance and/or replacement of any structures remaining after closure, minimize and/or mitigate environmental impacts, and provide for ongoing monitoring.

PART I – GENERAL CONDITIONS

42. The Licensee shall ensure a copy of this licence is maintained at all sites during operations at all times.

43. All construction or installation of works authorized by this licence shall occur on property that the Licensee has the right to enter upon and use for that purpose.

Other Laws

44. No condition of this licence limits the applicability of any statutory authority.

Non-Compliance

45. In the event the Licensee fails to comply with any provision or condition of this licence, the Board may, subject to the Act, cancel the licence.

Correspondence

46. Where any direction, notice, order or report under this licence is required to be in writing, it shall be given:

    a) to the Licensee, if delivered, emailed, or mailed by registered mail to the address identified on page 1 of this licence, and shall be deemed to have been given to the Licensee on the day it was delivered, or seven days after the day it was mailed, as the case may be; or

b) to the Board, if delivered, faxed, mailed by registered mail, or emailed to the following address:

Yukon Water Board
Suite 106, 419 Range Road
Whitehorse, YT Y1A 3V1

Fax: (867) 456-3890
Email: ywb@yukonwaterboard.ca

and shall be deemed to have been given to the Board on the day it was delivered, faxed, or emailed, or seven days after the day it was mailed, as the case may be.

c) The Board or the Licensee may, by notice in writing, change its address for delivery.

SCHEDULE A
PART 1 – LOCATIONS OF MONITORING STATIONS

		UTM Zone 8	
Station	**Description**	**Northing**	**Easting**
WSL-1	Discharge from Whitehorse Sewage Lagoon at exit location.		
WSL-NE	Whitehorse Sewage Lagoon Northeast Cell		
WSL-SE	Whitehorse Sewage Lagoon Southeast Cell		
WSL-SW	Whitehorse Sewage Lagoon Southwest Cell		
WSL-NW	Whitehorse Sewage Lagoon Northwest Cell		
WH 1	Raw water supply from Yukon River and Schwatka Lake at the Selkirk pumphouse.		
WH 2	Raw water supply from Selkirk Aquifer at the pumphouse.		
WH 3	Treated water supply at the Selkirk pumphouse.		
WH 4	Discharge from storm sewers at Strickland Street outfall.		
WH 5	Influent to Crestview sewage lagoon.		
WH 6a	Influent to Marwell lift station.		
WH 6b	Influent from upper Porter Creek.		
WH 6c	Combined Marwell and Porter Creek influent to LTECF.		
WH 7	Treated wastewater from primary cells of the LTECF.		
WH 8	Influent to long term storage impoundment at the LTECF.		
WH 9a	Water from the long term storage impoundment at the LTECF collected as depth-integrated composite samples at four stations in the impoundment.		
WH 9b	Treated wastewater from the discharge manhole at the LTECF.		
WH- 10b	Yukon River upstream of outfall from the LTECF (mid channel)	6739782	495215
WH 11	Yukon River approximately 300 metres downstream of outfall from the LTECF (mid channel).		
WH 12	Yukon River approximately 750 metres downstream of outfall from the LTECF (mid channel).		
WH-15	Sludge/biosolid in the Primary Cell near the point of outflow.		
WH-16	Sludge/biosolid in the sludge drying bed.		
GW-1	Monitoring well approximately 30 metres southeast of the primary anaerobic storage lagoons at the LTECF.		
GW-2	Monitoring well southwest of facultative lagoons at the LTECF.		
GW-3	Monitoring well southwest of long-term storage impoundment at the LTECF.		
GW-4	Monitoring well near northern margin of long-term storage impoundment at the LTECF.		
PHL	A site situated within the Pothole Lake at 682.49 m asl.	6740280	493693

		UTM Zone 8	
Station	**Description**	**Northing**	**Easting**
MW-1	Monitoring well located between Pothole Lake and Yukon River approximately 500m north-northwest from closest point to Yukon River at 682.49 m asl.	6739973.7	793734.5
MW-2	Monitoring well located between Pothole Lake and Yukon River approximately 300m north-northwest from closest point to Yukon River at 654.91 m asl.	6739973.7	493808.3
MW-4a	Monitoring well located between Pothole Lake and Yukon River approximately 30m due north from closest point to Yukon River at 634.75 m asl.	6739509.4	493870.7
MW-1-08s	Shallow monitoring well located at the south corner of the Crestview lagoon	6739565	491689
MW-TBD	Deep monitoring well located at the south corner of the Crestview lagoon		
MW-2-08s	Shallow monitoring well located at the southeast corner of the Crestview lagoon	6739661	491803
MW-2-08d	Deep monitoring well located at the southeast corner of the Crestview lagoon	6739661	491803
MW-3-08	Monitoring well located at the north end of the Crestview lagoon	6740319	491330
MW-4-08	Monitoring well located to the east of the Crestview lagoon	6740008	491594

SCHEDULE A
PART 2 – MONITORING SCHEDULE, SAMPLING LOCATIONS AND PARAMETERS

Table 1 of 5 – Surface Water Monitoring

Monitoring Location/Parameter	WH-1, WH-2, WH-3	WH-4	WH-5	WH-6a	WH-6b	WH-6c	WSL-1	WSL-NE, WSL-SE, WSL-SW, WSL-SE[1]
Water Level or Flow	D	-	-	D	D	D	DDD	2wPD
pH	-	B	Q(C)	-	-	Q(C)	1xDD	2wPD
Temperature (°C)	-	-	Q(C)	-	-	Q(C)	1xDD	2wPD
Un-ionized Ammonia –N (mg/L)	-	-	Q(C)	-	-	Q(C)	1xDD	2wPD
$CBOD_5$ (mg/L)	-	-	Q(C)	-	-	Q(C)	1xDD	2wPD
COD (mg/L)	-	MS	-	-	-	-	-	
Oil & Grease (mg/L)	-	BMS	Q(C)	-	-	Q(C)	1xDD	2wPD
Dissolved O_2 (mg/L)	-	-	-	-	-	-	1xDD	2wPD
Total Suspended Solids (mg/L)	-	-	Q(C)	-	-	Q(C)	1xDD	2wPD
Fecal Coliforms MPN/100 mL)	-	B	Q(C)	-	-	Q(C)	1xDD	2wPD
Total Coliforms (MPN/100 mL)	-	-	Q(C)	-	-	Q(C)	-	2wPD
Conductivity (µmhos/cm)	-	-	Q(C)	-	-	Q(C)	-	2wPD
Total Phosphate (mg/L as P)	-	-	Q(C)	-	-	Q(C)	-	2wPD
Chloride (mg/L)	-	B	-	-	-	-	-	-
Total Zinc (mg/L)	-	B	-	-	-	-	-	-
Total Copper (mg/L)	-	B	-	-	-	-	-	-
Total Cadmium (mg/L)	-	B	-	-	-	-	-	-
Total Lead (mg/L)	-	B	-	-	-	-	-	-
ICP Total Metals * (mg/L)	-	-	-	-	-	-	-	2wPD
ICP Dissolved Metals* (mg/L)	-	-	-	-	-	-	-	2wPD
Phenols (mg/L)	-	MS	-	-	-	-	-	-
LC_{50} Bioassay (100%)	-	-	-	-	-	-	1xDD	2wPD
Giardia	-	-	Q(C)	-	-	Q(C)	-	2wPD

[1] Samples from WSL-C1, WSL-C2, WSL-C3 and WSL-C4 shall be collected as depth-integrated composite samples.

SCHEDULE A
PART 2 – MONITORING SCHEDULE, SAMPLING LOCATIONS AND PARAMETERS

Table 2 of 5 – Surface Water Monitoring continued

Monitoring Location/Parameter	WH-7	WH-8	WH-9a	WH-9b	WH-10	WH-11	WH-12
Water Level or Flow	-	-	PD	DDD	-	-	-
pH	Q_1	Q_1	PD	BW or DD(3)	PDAD	PDAD	-
Temperature (°C)	Q_1	Q_1	PD	BW or DD(3)	PDAD	PDAD	-
Un-ionized Ammonia - N (mg/L)	Q_1	Q_1	PD	BW or DD(3)	PDAD	PDAD	-
$CBOD_5$ (mg/L)	Q_1	Q_1	PD	BW or DD(3)	-	-	-
Oil & Grease (mg/L)	-	-	PD	DD(3)	-	-	-
Dissolved O_2 (mg/L)	Q_1	Q_1	PD	DD(3)	PDAD	PDAD	-
Total Suspended Solids (mg/L)	Q_1	Q_1	PD	BW or DD(3)	-	-	-
Fecal Coliforms (MPN/100 mL)	Q_1	Q_1	PD	DD(3)	PDAD	PDAD	PDAD
Total Coliforms (MPN/100 mL)	-	-	PD	-	-	-	-
Conductivity (µmhos/cm)	-	-	PD	BW or DD(3)	PDAD	PDAD	-
Total Phosphate (mg/L as P)	Q_1	Q_1	PD	DD(3)	PDAD	PDAD	-
Chloride (mg/L)	-	-	-	DD(3)	-	-	-
Nitrate & Nitrite (mg/L)	-	-	-	DD(3)	-	-	-
ICP Total Metals*	-	-	PD	DD(3)	PDAD	PDAD	-
LC_{50} Bioassay (100%)	-	-	PD	DD(3)	-	-	-
Giardia	Q_1	Q_1	PD	DD(3)	-	-	-
Hydrocarbons**	-	-	-	DD(3)	-	-	-

Notes: * ICP Dissolved and Total Metals Analysis shall include Al, Sb, As, Ba, Be, Bi, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mn, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, S, Tl, Ti, V, Zn

** Hydrocarbon analysis shall include: VPHw, VHw6-10, LEPHw, EPHw10-19, MAHs (benzene, ethylbenzene, styrene, toluene), and PAHs (acenapthene, acridine, anthracene, benz[a]anthracene, benzo[a]pyrene, chrysene, fluoranthene, fluorine, naphthalene, phenanthrene, pyrene, and quinoline).

Table 3 of 5 – Groundwater Monitoring

Monitoring Location/Parameter	GW-1, GW-2, GW-3, GW-4	MW-1-08s MW-2-08s MW-2-08d MW-3-08 MW-4-08
Water Level	TA	TA
pH	TA	TA
Temperature (°C)	TA	TA
Ammonia (mg/L)	TA	TA
BOD (mg/L)	TA	TA
Dissolved O_2 (mg/L)	TA	TA
Fecal Coliforms (MPN/100 ml)	TA	TA
Conductivity (µmhos/cm)	TA	TA
Chloride (mg/L)	TA	TA
Nitrate & Nitrite (mg/L)	TA	TA

Table 4 of 5 – Pothole Lake Monitoring ("PHL")

	Pothole Lake prior to discharge	Pothole Lake during discharge	Pothole Lake Post Discharge	Groundwater Monitoring Wells
Monitoring Location/Parameter	**PHL**	**PHL**	**PHL**	**MW1, 2 & 4A**
Water Level or Flow	PD	D	Q_2	W/M4
Chloride (mg/L)	-	-	-	Q_1
Nitrate & Nitrite (mg/L)	-	-	-	Q_1

Table 5 of 5 – Sludge Monitoring

	Location/Sampling Frequency
Sludge	Sludge elevations shall be monitored annually in the primary treatment cells of the Crestview and Whitehorse wastewater treatment facilities and every five years in the primary treatment cells of the Livingston Trail Environmental Control Facility.
Dried Sludge	Dried sludge must be sampled and meet the standards in accordance with Part E of this Licence prior to land application.

SCHEDULE A
PART 3 - SAMPLING FREQUENCIES/NOTES

Key	Frequency
D	Daily
M	Monthly during discharge
Q_1	Quarterly
Q_2	Quarterly beginning within 2 weeks after end of discharge
Q(C)	Quarterly (24 hour Composite Sample)
B	During Break-up
2wPD	Two weeks prior to discharge
PD	Prior to Discharge
PDAD	Prior to, During and After Discharge
1xDD	Once During Discharge
DD(3)	Three Times During Discharge
BW or DD(3)	If discharge period > 30 days sample every 2 weeks but at least 7 days after any other sample. If discharge period < 30 days, sample 3 times during discharge.
DDD	Daily During Discharge
MS	Mid-season and September
BMS	During Break-up, Mid-season and September
TA	Three times per year
W/M4	Weekly during discharge and Monthly for a period of four months after the end of discharge

YUKON WATER BOARD

Pursuant to the *Waters Act* and *Regulation*, the Yukon Water Board hereby issues a water licence to:

LICENSEE:	Town of Watson Lake
CONTACT INFORMATION:	PO Box 590 Watson Lake, YT Y0A 1C0 Fax: 867-536-7552 E-mail: twl@northwestel.net
LICENCE NUMBER:	MN19-035
RENEWAL	This licence is a renewal of MN03-050
UNDERTAKING:	Municipal **LICENCE TYPE:** A
WATER MANAGEMENT AREA:	01 Liard
WATER SOURCE:	Groundwater
MAXIMUM QUANTITY:	1,590 cubic metres of water per day
LOCATION:	Watson Lake
MAP CO-ORDINATES:	Latitude: 60° 04' 03" N Longitude: 128° 41' 51" W
PURPOSE:	Obtain and distribute water; collect, convey, treat and discharge wastewater; collect and discharge stormwater; and control the water level in First Wye Lake.
EFFECTIVE DATE:	The effective date of this Licence shall be the date on which the signature of the Chairperson of the Yukon Water Board is affixed.
EXPIRY DATE:	The expiry date of this Licence shall be five years from the effective date.

This Licence is subject to the restrictions and conditions contained herein and to the restrictions and conditions contained in the *Waters Act* and *Regulation*.

Approved this 21 day of January, 2020.

Witness

Minister, ~~Executive~~ Council Office
Government of Yukon

Issued this 24th day of January, 2020.

Witness

Chairperson
Yukon ~~Water Board~~

PART A – DEFINITIONS

"Act" means *Waters Act* and any amendments thereto.

"Application" means Water Licence Application MN19-035 including any additional submissions and/or revisions submitted to the Yukon Water Board by the Licensee, up to the date of the Board's decision.

"Board" means the Yukon Water Board.

"Inspector" means any person designated as an Inspector under the Act.

"Monitoring Plan" means the *Monitoring Plan* submitted as part of the Application and included in Register MN19-035 as exhibit 1.4, and any subsequent revisions.

"Operational Plans" means the *Watson Lake Water Treatment Plant Standard Operating Procedures* and the *Town of Watson Lake's Wastewater Operational Plan* submitted as part of the Application and included in Register MN19-035 as exhibits 1.6.1 and 1.6.2, and any subsequent revisions.

"Regulation" means the *Waters Regulation* made under the Act.

"Sludge Management Plan" means the *Sludge Management Plan* that was submitted as part of the Application and included in Register MN19-035 as exhibit 1.7, and any subsequent revisions.

"Spill Contingency Plan" means the *Spill Prevention and Response Plan* that was submitted as part of the Application and included in Register MN19-035 as exhibit 1.5, and any subsequent revisions.

"Waste" means any substance as defined in the Act.

"Watercourse" means a natural watercourse, body of water or water supply, whether usually containing water or not, and includes groundwater, springs, swamps, and gulches.

PART B – DESCRIPTION OF WATER USE AND DEPOSIT OF WASTE

1. Subject to the terms of this Licence, the Licensee is hereby authorized to:
   a) obtain water, at a rate not exceeding 1,590 m^3/day from two groundwater wells;
   b) convey the water via a reservoir and distribution system;
   c) use the water for municipal purposes;
   d) collect and convey wastewater via a wastewater collection system;
   e) store and treat wastewater in a lagoon treatment facility;
   f) discharge treated wastewater containing Waste by infiltration from the lagoon facility;
   g) operate and maintain sludge drying beds;
   h) control the water level in First Wye Lake; and
   i) collect, convey and discharge stormwater to Wye Lake through existing stormwater outfalls;

as described in the Application and subject to the terms and conditions of this Licence.

PART C – OPERATING CONDITIONS

2. Except as authorized by this Licence, any deposit of Waste to a Watercourse is prohibited.

3. The Licensee must operate and maintain all water supply; wastewater collection and treatment; sludge management; and stormwater collection and conveyance systems in a manner that is consistent with generally accepted municipal practices for the types of systems being used.

4. Public access to the wastewater treatment facility must be restricted by perimeter fencing and a lockable gate. All fences must be posted with signs warning of human health hazards associated with the facility.

5. All works associated with the undertaking must be maintained in good repair.

6. Operations must be carried out in accordance with the Operational Plans. Where a discrepancy exists between the Operational Plans and this Licence, this Licence shall prevail.

7. The Licensee must keep the Operational Plans current and must submit any revisions to the plans to the Board within ten days of their revision.

8. All wastewater that is collected, with the exception of stormwater runoff, must be directed to the wastewater treatment facility.

9. The wastewater treatment facility must be operated in such a manner that wastewater flow is maintained from the four cell anaerobic lagoon to the Long-Term Storage Lagoon (LTSL) via an un-gated, passive overflow siphon.

Hydrogeological Assessment

10. The Licensee must retain a qualified professional to complete a hydrogeological assessment of the wastewater treatment facility site.

11. The hydrogeological assessment must be based on a minimum of one well up-gradient and two wells down-gradient of the facility. Wells must be installed and sampled in accordance with protocol No. 7 "Groundwater Monitoring Well Installation, Sampling, and Decommissioning" pursuant to the *Contaminated Sites Regulation*. Wells must be drilled to a depth that will allow for adequate characterization of the groundwater regime as determined by a qualified hydrogeologist.

12. Before April 30, 2020, the Licensee must submit to the Board a report on the hydrogeological assessment that includes:
    a) determination of the direction and rate of groundwater flow;
    b) identification of potential receiving environments; and
    c) assessment of travel times for potential contaminant pathways.

13. Upon completion of installation of the new groundwater monitoring wells, the Licensee must submit to the Board, an updated Monitoring Plan to include the addition of groundwater monitoring based on the results of the hydrogeological assessment. This plan should include evaluation of impacts to groundwater.

Sludge Management, Drying and Disposal

14. Sludge management must be done in accordance with the Sludge Management Plan. Where a discrepancy exists between the Sludge Management Plan and this Licence, this Licence shall prevail.

15. The Licensee must keep the Sludge Management Plan current and must submit any revisions to the plan to the Board within ten days of its revision.

16. When the capacity of the anaerobic lagoon is reached (maximum sludge depth of 0.5 m), the lagoon must be desludged and sludge deposited to the sludge drying beds for drying.

17. The Licensee must submit a report no later than 30 months after desludging that contains:
    a) a detailed description of the desludging activities that were carried out;
    b) the estimated volumes in each cell based on sludge elevations;
    c) an estimate of the hydraulic residence time in each cell and in the LTSL;
    d) graphs presenting pH, $CBOD_5$, TSS, un-ionized ammonia, total phosphorus and fecal coliforms in the influent (at WL-3) and in the effluent from anaerobic cells 3 and 4 (WL-3a) as it flows into the LTSL during one year prior to and after the desludging; and
    e) a discussion on the impact of desludging on the performance of the sewage treatment system.

18. The Licensee is authorized to use a polymer such as Flo Polymer CT 4300 to facilitate the dewatering of sludge. Alternative polymers may be utilized, provided they are of equal or less ecological toxicity as Flo Polymer CT 4300. The Licensee must submit Safety Data Sheets to the Board prior to the use of alternative types of polymers.

19. Drainage water collecting in the sump (WL-12) from drying sludge must be tested in accordance to Schedule A of this Licence. If the quality of the drain water exceeds the standards in Clause 32 a), the water must be directed back to the primary lagoon cells.

20. Dried sludge must be tested and disposed of in a manner that meets the requirements of applicable legislation including, but not limited to, the *Environment Act* and associated regulations.

Effluent Discharge

21. Effluent must only be discharged from the wastewater treatment facility through infiltration from the LTSL and effluent must not directly enter any surface Watercourse.

Stormwater System

22. Stormwater must only be discharged from the stormwater collection and conveyance system to First Wye Lake through the two existing outfalls.

Water Level Control System

23. The water level control system, consisting of an in-ground pipe, in place for the purpose of transferring overflow from First Wye Lake into Second Wye Lake, must be maintained to ensure it is functioning as per design.

Spills and Unauthorized Discharges

24. The Licensee must keep the Spill Contingency Plan current and must submit any revisions to the plan to the Board within ten days of its revision.

25. Where a spill or an unauthorized discharge occurs that is of a reportable quantity under the Yukon Spills Regulations, the Licensee must immediately contact the 24-hour Yukon Spill Report number, (867) 667-7244 and implement the Spill Contingency Plan. A detailed written report on any such event must be submitted to the Board no later than ten days after the occurrence. The report must include but not be limited to:

    a) date and time of occurrence;
    b) substance spilt or discharged;
    c) quantity of substance spilt or discharged;
    d) location of the spill including distance to nearest Watercourse; and
    e) remedial actions taken to contain or cease the spill, and clean-up the spill area.

26. The Licensee must maintain a log book of all spill or unauthorized discharge occurrences, including spills that are less than the reportable quantities under the *Yukon Spills Regulations*. The log book must be made available at the request of an Inspector. The log book must include at a minimum, the reportable items identified in clause 25.

27. The Licensee must include a summary of all spills or unauthorized discharges that occurred during the year reported, as part of the annual report.

28. All personnel must be trained in procedures to be followed and the equipment to be used in the containment of a spill.

29. The Spill Contingency Plan must be posted on site for the duration of the works.

Hazardous Materials Storage

30. A complete inventory of chemicals, fuels, oils, lubricants and other hazardous materials relating to the water uses authorized by this Licence must be maintained by the Licensee.

31. Hazardous material must be stored or transferred a minimum of 30 m from any surface Watercourse.

PART D – EFFLUENT QUALITY STANDARDS

Wastewater Lagoons

32. Treated wastewater contained in the LTSL must meet the following effluent quality standards measured from a composite sample collected as described below:

a)

Parameter		Maximum Concentration
$CBOD_5$		25 mg/L
Total Suspended Solids		60 mg/L
Volatile Organic Compounds (VOCs)	Benzene	4,000 µg/L
	Ethylbenzene	2,000 µg/L
	Styrene	720 µg/L
	Toluene	390 µg/L
Polycyclic Aromatic Hydrocarbons (PAHs)	Acridine	0.5 µg/L
	Anthracene	1.0 µg/L
	Benz[a]anthracene	1.0 µg/L
	Benzo[a]pyrene	0.1 µg/L
	Fluoranthene	2 µg/L
	Flourene	120 µg/L
	Napththalene	10 µg/L
	Phenanthrene	3 µg/L
	Pyrene	0.2 µg/L
	Quinoline	34 µg/L
Aggregate Hydrocarbons	Volatile Petroleum Hydrocarbons in water, VPH_w	1.5 mg/L
	Light Extractable Petroleum	0.5 mg/L

	Hydrocarbons in Water, $LEPH_w$	
pH		6-9 units
Fecal Coliforms		20,000 counts/ 100 mL
Un-Ionized Ammonia		1.25 mg/L*

* The concentration of un-ionized ammonia in effluent must be determined in accordance with the following formula:

$$\textbf{Total Ammonia} \times 1 \div (1 + 10^{9.56-pH})$$

Where:

Total Ammonia is the concentration of total ammonia – namely, un-ionized ammonia (NH_3) plus ionized ammonia (NH_{4+}) – expressed in mg/L as nitrogen (N); and
pH is the pH of the effluent adjusted to 15°C ± 1°C.

b) The composite sample must be collected by dividing the LTSL into three sections of approximately equal area. Samples must be collected at mid depth at the approximate center of each section and must be combined for testing.

PART E – MONITORING AND SURVEILLANCE

33. The Licensee must comply with the monitoring requirements in Schedule A.

34. Monitoring must be carried out in accordance with the Monitoring Plan. Where a discrepancy exists between the Monitoring Plan and this Licence, this Licence shall prevail.

35. The Licensee must keep the Monitoring Plan current and must submit any revisions to the plan to the Board within ten days of its revision.

Water Quality Monitoring

36. All data collection must be conducted in accordance with a nationally recognized sampling protocol (e.g. CCME Protocols Manual for Water Quality Sampling in Canada, 2011).

37. Laboratory analyses must be performed by a laboratory accredited under the International Organization for Standardization ISO/IEC 17025: 2005 standard and the accreditation must include the actual tests being performed by the laboratory.

Sludge Monitoring

38. Sludge monitoring must be done in accordance with the Sludge Management Plan.

Wastewater Volumes

39. The Licensee must monitor and record daily the number of eductor loads and volume of wastewater deposited into the septic receiving chamber.

40. Prior to December 31, 2020 the Licensee must install a metering device to record the flow of effluent from the anaerobic lagoons to the LTSL.

Stormwater Monitoring

41. Any hydrocarbon sheens or slicks, colour changes, and/or turbidity changes identified during the visual inspection monitoring required by this Licence must be investigated as to the source, and a report on the monitoring and investigation must be submitted to the Board within 15 days of the identification.

Physical Inspections and Monitoring

42. All water retaining structures and the sludge drying bed must be inspected by September 30 of each year by a Professional Engineer licensed to practice in Yukon. A report on the inspection, prepared by the Professional Engineer, must be submitted as part of the annual report described in clause 57 of this Licence. The report must document the inspection locations and methodologies, the results of the inspection, all problems identified, remedial measures recommended, and remedial measures implemented. The status of any remedial measures recommended in the previous year's inspection report must be appended to the report together with an explanation regarding any recommendation not implemented.

43. The Licensee must monitor and record observations pertaining to the sewage treatment facility and to the stability of the lagoon berms monthly, or during or after high water events. If monitoring indicates potential berm failure, corrective action must be taken immediately. The inspection findings must be submitted as part of the annual report described in clause 57 of this Licence.

PART F – SITE DECOMMISSIONING AND RESTORATION

44. The Licensee must submit a final decommissioning plan for any water and sewer related structures authorized by this Licence to the Board in the form of an application to amend licence MN19-035. This application must be submitted a minimum of 6 months prior to the decommissioning of any water and sewer related structures and must include:

    a) details of any residual activities required to be carried out prior to final decommissioning and removal of any structures on this site, associated timelines and supporting rationale;

    b) a schedule and cost for completion of decommissioning and reclamation activity; and

    c) details pertaining to the final remediation of the site.

    Details pertaining to the development of the plan must be provided to the Board as part of the annual report.

PART G – GENERAL CONDITIONS

45. The Licensee must ensure a copy of this Licence is maintained at the site during operations at all times.

46. Where there is a discrepancy between the Application and the conditions of this Licence, the conditions of this Licence shall prevail.

Other Laws

47. No condition of this Licence limits the applicability of any statutory authority.

48. All work authorized by this Licence must occur on property that the Licensee has the right to enter upon and use for that purpose.

Non-Compliance

49. In the event that the Licensee fails to comply with any condition of this Licence, the Board may, subject to the Act, cancel the licence.

Correspondence

50. Where any direction, notice, order or report under this Licence is required to be in writing, it must be given:

    a) to the Licensee by fax, e-mail or mailed by registered mail and must be deemed to have been given to the Licensee on the day it was delivered, faxed or e-mailed or 7 days after the day it was mailed as the case may be;

b) to the Board if delivered, faxed, e-mailed or mailed by registered mail to the following address:

Yukon Water Board
Suite 106, 419 Range Road
Whitehorse, YT Y1A 3V1

Fax: (867) 456-3890
E-mail: ywb@yukonwaterboard.ca

and must be deemed to have been given to the Board on the day it was delivered or faxed, or 7 days after the day it was mailed, as the case may be.

51. The Board or the Licensee may, by notice in writing, change its address for delivery.

Deliverables

52. The Licensee must provide to the Board one unbound, single-sided, paper copy of all deliverables required by this Licence. All deliverables, with the exception of design drawings must be reproducible by standard photocopier.

53. The Licensee must upload electronic copies of all reports required by this Licence to the Yukon Water Board's online licensing registry, Waterline. Electronic copies must be submitted in one of the following formats: MS Word, MS Excel, or Adobe .pdf.

54. Water quality results must be uploaded to Waterline in the format outlined in the most recent version of Yukon's "*Laboratory Data Submission Standards for Water Quality*". This guide is available on the Yukon Water Board website.

Monthly Reports

55. Unless otherwise specified in this Licence, the Licensee must forward to the Board a copy of all data collected as part of the monitoring requirements described in Schedule A of this Licence, no more than 30 days after the conclusion of the month in which that data was collected. The report must include but not necessarily be limited to the following information:

a) Certificate of Analysis from an accredited laboratory;
b) a comparison of analytical results to the effluent quality standards listed in Part D of this Licence; and
c) a discussion of any irregularities and any corrective action taken to address them.

56. Records must be maintained of all water use, including at a minimum but not necessarily limited to: the quantity of water obtained per day, measured in cubic metres, the date water was obtained and a description of the visible impacts that the withdrawal of water from the well has on the water level of the First Wye Lake. The Licensee must provide the records to the Board as part of a monthly report.

Annual Reports

57. The Licensee must submit annual reports to the Board for the period of January 1 to December 31 of each year. Annual reports are to be submitted to the Board on or before February 28 of the year following the year reported. The report must include the information required by the Regulation including:

a) a description of the water use operations carried out during the year reported;
b) the quantity of water withdrawn each day;
c) the quantity of waste discharged from the facility;
d) data collected as required by the monitoring and surveillance requirements in Part E and Schedule A of this Licence, and the analysis and interpretation of the collected data by an individual qualified to do so;
e) evaluation of impacts to groundwater;
f) details of the methods, procedures and standards used in the data collection and sampling testing;
g) a detailed record of the operations of the wastewater treatment facility including operational difficulties, and monthly inspection reports;
h) physical inspection reports including photographs, repairs or plans for modification as required by the physical monitoring program;
i) details of any maintenance, repairs, or improvements to all physical works, including details of how recommendations from inspection reports have been addressed;
j) summary of the review and revisions of the Spill Contingency Plan, Sludge Management Plan, Operational Plans and Monitoring Plan;
k) records of all spills and unauthorized discharges;
l) details of any work carried out or planned to be carried out under the Sludge Management Plan, Operational Plans and Monitoring Plan; and
m) the status of the decommissioning plan, including potential changes in the proposed decommissioning and reclamation approach.

SCHEDULE A – MONITORING AND SURVEILLANCE REQUIREMENTS

a) LOCATIONS OF MONITORING STATIONS

Station	Description	Sample Type	Latitude (N)	Longitude (W)
WL-1	Pumped water supply.	-	60° 04' 03"	128° 41' 54"
WL-3	Influent to anaerobic lagoon.	Grab	60° 02' 48"	128° 43' 08"
WL-3a	Anaerobic Cell 3 and Cell 4.	Composite		
WL-4a	Stormwater discharge outfall from 8th Street to First Wye Lake.	Grab	60° 03' 49"	128° 42' 18"
WL-4b	Stormwater discharge outfall from Adela Trail to First Wye Lake.	Grab	60° 03' 46"	128° 42' 14"
WL-5	Long-Term Storage Lagoon. (EQS compliance point)	Composite	60° 02' 33"	128° 42' 48"
WL-6a	Sewage inflow to anaerobic lagoons at 8th Street lift station.	-	60° 03' 56"	128° 42' 22"
WL-6b	Septic inflow to anaerobic lagoons at septic receiving station.	-	60° 03' 28"	128° 43' 11"
WL-7	Discharge from anaerobic lagoon to Long-Term Storage Lagoon.	-		
WL-8	Staff gauge in Long-Term Storage Lagoon.	-	60° 02' 35"	128° 43' 06"
WL-9	Sludge elevation in each of the anaerobic cells.	-	60° 02' 46"	128° 43' 06"
WL-12	Drainage water in collection sump within sludge drying area.	Grab		

b) SAMPLING FREQUENCIES AND PARAMETERS

Monitoring Location	WL-1	WL-3	WL-3a	WL-4a	WL-4b	WL-5	WL-6a	WL-6b	WL-7	WL-8	WL-9	WL-12
Flow (m^3/s)	D						D	D	D			
Water Level (m)										M		
Level Survey										A		
Sludge Surface Elevation (m)											A	
Field pH		3A	3A	M*	M*	3A						V
Field Temperature (°C)		3A	3A	M*	M*	3A						V
pH, at 15°C						3A						V
$CBOD_5$ (mg/L)		3A	3A	M*	M*	3A						V
TSS (mg/L)		3A	3A	M*	M*	3A						V
Total Phosphorus as P (mg/L)		3A	3A	M*	M*	3A						V
Fecal Coliforms (counts / 100 mL)		3A	3A	M*	M*	3A						V
Total Ammonia as N (mg/L)		3A	3A	M*	M*	3A						V
Nitrate and Nitrite as N (mg/L)		3A	3A	M*	M*	3A						V
Total ICP Metals [1]		3A	3A	M*	M*	3A						V
Hydrocarbons [2]		3A	3A	M*	M*	3A						V
Visual Inspection				M*	M*							

1. Metals analysis scan to include: Al, Sb, As, Ba, Be, Bi, B, Cd, Ca, Cr, Co, Cu, Fe, Li, Mg, Mo, Ni, P, K, Se, Si, Ag, Sr, Tl, Ti, V, Zn
2. Hydrocarbons analysis to include: Benzene, Ethylbenzene, Styrene, Toluene, Acridine, Anthracene, Benz[a]anthracene, Benzo[a]pyrene, Fluoranthene, Flourene, Napthalene, Penanthrene, Pyrene, Quinoline, Volatile Petroleum Hydrocarbons in water (VPH_w) and Light Extractable Petroleum Hydrocarbons in Water ($LEPH_w$) (Reported in µg/L or mg/L, as applicable)

c) SAMPLING FREQUENCIES AND PARAMETERS

Key	**Frequency**
A	Annually
3A	Three times annually on or about April 15, July 15 and October 15
M	Monthly
M*	Monthly from May to November, when there is 15 mm or more precipitation over 48 hours, and one sampling event during freshet
D	Daily
V	After loading of geotubes: First 30 days: Weekly sampling with samples collected at least 5 days apart Day 31 to 1 year: Monthly sampling >1 year: Quarterly

YUKON WATER BOARD

Pursuant to the *Waters Act* and *Regulation*, the Yukon Water Board hereby issues a water licence to:

LICENSEE:	Village of Teslin
CONTACT INFORMATION:	PO Box 130 Teslin, YT Y0A 1B0 Fax: 867-390-2104
LICENCE NUMBER:	MN19-064
RENEWAL	This Licence is a renewal of MN99-025
UNDERTAKING:	Municipal **LICENCE TYPE:** A
WATER MANAGEMENT AREA:	02 Yukon
WATER SOURCE:	Groundwater
MAXIMUM QUANTITY:	95 cubic metres of water per day
LOCATION:	Teslin
MAP CO-ORDINATES:	Latitude: 60° 10’ 05” N Longitude: 132° 40’ 45” W
PURPOSE:	Obtain, store and return a flow of water for a municipal undertaking and to operate a wastewater treatment facility.
EFFECTIVE DATE:	May 19, 2021
EXPIRY DATE:	May 18, 2046

This Licence is subject to the restrictions and conditions contained herein and to the restrictions and conditions contained in the *Waters Act* and *Regulations*.