Approved this 18 day of May, 2021.

Witness

Minister, Executive Council Office
Government of Yukon

Issued this 19th day of May, 2021.

Witness

Digitally Signed
Chairperson
Yukon Water Board

PART A – DEFINITIONS

"Act" means *Waters Act* SY 2003, c.19; amended by SY 2007, c.6.

"Application" means Water Licence Application MN19-064 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 and Adaptive Management Plan* submitted as part of the Application and included in Register MN19-064 as exhibit 1.11.1, and any subsequent revisions.

"Regulation" means the *Waters Regulation* O.I.C. 2003/58.

"Sludge Management Plan" means the *Sludge Management Plan* that was submitted as part of the Application and included in Register MN19-064 as Appendix A in exhibit 1.2, and any subsequent revisions.

"Spill Contingency Plan" means the *Village of Teslin Hazardous Materials Handling and Emergency Response Plan* that was submitted as part of the Application and included in Register MN19-064 as Appendix B in exhibit 1.2, and any subsequent revisions.

"Waste" has the same meaning as in the Act.

"Watercourse" has the same meaning as in the Regulation.

PART B – DESCRIPTION OF WATER USE AND DEPOSIT OF WASTE

1. The Licensee is hereby authorized to:

   a) obtain water from raw water supply well VOT TW10-2 and the raw water supply well known as the 1987 Groundwater Well for municipal purposes at a combined rate not exceeding 95 cubic metres per day;

   b) to collect and convey wastewater to, and store and treat wastewater at the existing Fox Creek Sewage Treatment Area (FCSTA); and

   c) to discharge treated effluent to the Fox Creek wetlands from June 1 to September 30 each year,

   as described in the Application and subject to the 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. All disturbed ground surfaces must be stabilized in such a manner so as to prevent erosion and surface runoff.

4. The Licensee must operate and maintain all water supply, water distribution, sewage collection and sewage treatment systems in a manner that is consistent with generally accepted municipal practices for the types of systems being used.

5. 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.

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

Groundwater Well Installation

7. Before December 31, 2022, the Licensee must install one groundwater monitoring well upgradient of all potential site impacts at the FCSTA.

8. Within six months of the installation or modification of a groundwater monitoring well, the Licensee must 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 borehole log.

9. If the recommendations of the report completed pursuant to Condition 40 include installation of additional groundwater monitoring well(s), the well(s) must be installed to satisfy the recommendations prior to December 31, 2025.

10. The Licensee must collect samples from groundwater monitoring wells installed pursuant to Conditions 7 and 9 at the frequency set out in Schedule A and must analyze these samples for the parameters listed in Schedule A.

Sludge Management, Drying and Disposal

11. 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.

12. 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.

13. The Licensee is authorized to use an additive such as ADB 200c Municipal Activated Sludge to provide bacterial treatment and reduce sludge depths in the primary cells. Alternative additives may be utilized, provided they are of equal or less ecological toxicity as ADB 200c Municipal Activated Sludge. The Licensee must submit Safety Data Sheets to the Board prior to the use of alternative additives.

14. When 50 per cent of the capacity of the primary treatment cells is occupied by sludge, the Licensee must mechanically remove the sludge from the cells.

15. 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

16. The Licensee is prohibited from directly discharging treated effluent into Fox Creek. The Licensee must monitor pumping rates to allow for retention time in the Fox Creek wetlands and ensure that no overland flow is observed between the Fox Creek wetlands and Fox Creek.

Spills and Unauthorized Discharges

17. 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.

18. 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 Condition 17.

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

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

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

Hazardous Materials Storage

22. 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.

23. Hazardous materials must be stored and/or transferred a minimum of 30 metres from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in waters.

PART D – EFFLUENT QUALITY STANDARDS

24. When discharging from the secondary cell to the Fox Creek wetlands, the Licensee must meet the following effluent quality standards measured from a sample collected at monitoring station T4:

Parameter	**Maximum Concentration in a Grab Sample**
$CBOD_5$	45 mg/L
Suspended Solids	60 mg/L
pH	6-9 units
Oil and Grease	5 mg/L
Fecal Coliforms	20,000 counts/ 100 mL
Un-Ionized Ammonia[1]	1.5 mg/L
Ammonia	20 mg/L

1. 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 (NH3) plus ionized ammonia (NH4+) – expressed in mg/L as nitrogen (N); and
pH is the pH of the effluent adjusted to $15^oC \pm 1^oC$.

25. If the analysis of a water quality sample collected at T4 in accordance with Condition 24 indicates an exceedance of the effluent quality standards set out in Condition 24, the Licensee must notify the Inspector and the Board in writing, within 24 hours of detecting the exceedance.

PART E – MONITORING AND SURVEILLANCE

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

27. 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.

Water Quality Monitoring

28. Prior to September 30, 2021 the Licensee must relocate or reconstruct monitoring station T5 to ensure that effluent quality can be evaluated immediately before it enters Fox Creek. If the station is relocated, it must be called T5r, as listed in the Schedule A.

29. 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).

30. 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.

31. Groundwater monitoring data must be compared to the Yukon *Contaminated Sites Regulation* schedule 3 standards, and this comparison must be reported as part of the annual report described in Condition 52.

Sludge Monitoring

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

Wastewater Volumes

33. The Licensee must monitor and record the number of eductor truck loads and volume of wastewater deposited into the FCSTA.

34. Prior to December 31, 2021 the Licensee must install a metering device to record the flow of influent to the FCSTA.

Physical Inspections and Monitoring

35. All water retaining structures 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 Condition 51 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.

36. The Licensee must monitor and record observations pertaining to the stability of the FCSTA lagoon berms monthly, and during and 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 Condition 52 of this Licence.

PART F – PLANS

37. The Licensee must keep the Monitoring Plan, Sludge Management Plan and Spill Contingency Plan current and must submit any revisions to the plan to the Board within ten days of its revision.

38. Prior to July 31, 2021 the Licensee must submit to the Board an updated Monitoring Plan and Sludge Management Plan that reflect the conditions of this Licence, and the Schedule A tables.

39. Prior to April 30, 2022 the Licensee must submit an updated Monitoring Plan to include explicit adaptive management indicators for which water quality can be compared against, reported, and further investigated if necessary.

40. Upon completion of the well installed pursuant to Condition 7 and prior to August 31, 2023, the Licensee must submit a report, completed by a professional hydrogeologist that includes an assessment of the rate and direction of groundwater flow, identifies any potential receptors, and calculates the anticipated travel time to such receptors. If the findings of this report also include recommendations to install addition groundwater monitoring well(s), the location of these well(s) must be identified in this report.

PART G – GENERAL CONDITIONS

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

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

Other Laws

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

44. 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

45. 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

46. 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.

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

Deliverables

48. 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.

49. The Licensee must upload electronic copies of all deliverables 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.

50. Water quantity/water level results must be submitted in MS Excel, and water quality results must be 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

51. 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.

Annual Reports

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

    a) a description of the water use operations carried out during the year reported;
    b) the quantity of water withdrawn each day;
    c) the hours of pumping for each day;
    d) data collected according to the requirements of Schedule A of this Licence;
    e) results of sludge monitoring as completed in accordance with the Sludge Monitoring Plan;
    f) details of the methods, procedures and standards used in the data collection and sample testing;
    g) an analysis and interpretation of the collected data by an individual qualified to do so;
    h) a comparison of the groundwater quality data against the Yukon *Contaminated Sites Regulation* schedule 3 standards;
    i) a detailed record of the operation of water supply and sewage treatment works, including operational difficulties, significant maintenance work, and modifications;
    j) wastewater influent to the FCSTA as required by conditions 33 and 34 of this Licence;
    k) monthly quantities of effluent discharged;
    l) any reclamation to the site;
    m) the inspection results, including photographs, repairs or plans for modification required by the physical monitoring program;
    n) a detailed record of any major maintenance work carried out or planned to be carried out that could have an impact on water;
    o) details of any monitoring or work carried out or planned to be carried out under the Sludge Management Plan; and

p) any other information or reports required by this Licence or the Regulations.

PART H – SITE DECOMMISSIONING AND RESTORATION

53. During the term of the licence, the Licensee must submit to the Board a plan for any well proposed to be decommissioned.

54. All disturbed ground surfaces must be regraded in a manner which is consistent with the topography of the site and which prevents erosion and surface runoff from carrying sediment into any Watercourse. Where soil conditions permit, disturbed areas must be re-vegetated with appropriate reclamation seeds and/or plant species that are native in Yukon.

55. All hazardous materials must be disposed of in accordance with the *Special Waste Regulations* of Yukon's *Environment Act*. The Licensee must include a description of the disposal as part of the annual report.

56. In the event of decommissioning of the undertaking, all structures and associated equipment or infrastructure authorized by this Licence must either be removed or left in stable condition which does not present a risk to people or the environment.

57. Prior to the commencement of decommissioning work, the Licensee must submit to the Board a final plan for the decommissioning and reclamation of all water and wastewater related structures authorized by this Licence. The plan must include:

    a) delineation of the water and wastewater system;

    b) a drainage plan to manage surface water associated with the decommissioned site;

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

    d) methods to ensure long-term stability of water and wastewater structures;

    e) a remediation plan for any contaminated areas of the site;

    f) on-going monitoring activities required to minimize or mitigate environmental impacts; and

    g) a schedule and cost for completion of decommissioning and reclamation activities.

SCHEDULE A – MONITORING AND SURVEILLANCE REQUIREMENTS

Table 1. Locations of Sampling Stations

Sampling Station	Description
T1	Raw water supply at 1987 Groundwater Well
T1a	Raw water supply at VOT TW10-2
T2	Treated Water Supply
T3	Raw sewage influent to sewage lagoon
T4	Effluent from secondary cell of sewage lagoon
T4a	Secondary cell of the sewage lagoon near the outlet
T5	Outlet from the Fox Creek Wetland Sewage Treatment Area to Fox Creek
T5r	Relocated location of T5 in 2021 (If required)
T6	Fox Creek 50 m downstream of the Fox Creek Wetland Sewage Treatment Area
T7	Fox Creek 50 m upstream of the Fox Creek Wetlands Sewage Treatment Area
T8	Groundwater monitoring well MW1 as identified in the report entitled Installation of Monitoring Wells for Wetland Treatment System, Klohn Leonoff, January 1991
T8a	Groundwater monitoring well MW2
T9	Up gradient groundwater monitoring well (to be installed)
T10	Additional groundwater monitoring well (if required)

Table 2. Monitoring Schedule - Groundwater

Stations T8, T8a, T9 and T10 must be sampled twice annually, in June and September, for the following parameters:			
Nitrate	Nitrite	ICP Dissolved Metals	water temperature (field)
Chloride	Potassium	Total ammonia	water level (field)
Sodium	Sulphate	pH (lab and field)	
Total Alkalinity	Total Hardness	specific conductivity (lab and field)	

Table 3. Monitoring Schedule - Surface Water

Stations T1, T1a, T2, T3, T4, T5, T6 and T7 must be sampled as specified:

Station	T1	T1a	T2	T3	T4	T4a	T5 or T5r	T6	T7
Analysis									
Total ICP Metals					DD	1P, JS	DD	DD	DD
Fecal Coliforms					DD	1P, JS	DD	DD	DD
Total Coliforms						1P, JS	DD	DD	DD
Dissolved Oxygen					DD	1P, JS	DD	DD	DD
Conductivity (field and lab)					DD	1P, JS	DD	DD	DD
Temperature (field)					DD	1P, JS	DD	DD	DD
$CBOD_5$					DD	1P, JS	DD	DD	DD
Suspended Solids					DD	1P, JS	DD	DD	DD
pH (field and lab)					DD	1P, JS	DD	DD	DD
Oil and Grease					DD	1P, JS	DD	DD	DD
Phosphorus					DD	1P, JS	DD	DD	DD
Ammonia					DD	1P, JS	DD	DD	DD
Bioassay							A		
Flow Rate	D	D	D	D	DDD			DD	DD
Water Level						1P, JS			

D – Daily
DDD – Daily during discharge
1P – Once prior to discharge
DD – At least once during discharge, with additional sample(s) collected every 28 days if the discharge period lasts longer than one month
A – Once per year during discharge
JS – Twice annually in June and September

YUKON WATER BOARD

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

LICENSEE:	City of Whitehorse
CONTACT INFORMATION:	2121 Second Avenue Whitehorse, YT Y1A 1C2
LICENCE NUMBER:	MN20-008
RENEWAL:	This Licence is a renewal of MN18-059
UNDERTAKING:	Municipal **LICENCE TYPE:** A
WATER MANAGEMENT AREA:	02 Yukon
WATER SOURCE:	Selkirk Aquifer and Schwatka Lake
MAXIMUM QUANTITY:	20,000 cubic metres of water per day
LOCATION:	Whitehorse
MAP CO-ORDINATES:	Latitude: Max.: 60° 48′ 02″ N Min.: 60° 47′ 02″ Longitude: Max.: 135° 08′ 08″ W Min.: 135° 05′ 00″
PURPOSE:	To obtain, store and distribute water; collect, convey, treat and discharge wastewater; and collect and discharge stormwater for municipal purposes.
EFFECTIVE DATE:	April 1, 2021
EXPIRY DATE:	March 31, 2031

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 31 day of March, 2021.

Witness

Minister, Executive Council Office
Government of Yukon

Issued this 1 day of April, 2021.

Digitally Signed
Witness

Digitally Signed
Chairperson
Yukon Water Board

PART A – DEFINITIONS

"Act" means *Waters Act* SY 2003, c.19; amended by SY 2007, c.6.

"Application" means Water Licence Application MN20-008 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.

"Construct" means to build new infrastructure such as drinking water wells or reservoirs, force and gravity mains, sewage treatment facilities, stormwater management structures or snow dumps.

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

"LTECF" means the Livingston Trail Environmental Control Facility.

"Natural Boundary" means the visible high water mark of any lake, river, stream or other body of water where the presence and action of water is so common and usual and so long continued as to mark upon the soil of the bed of the lake, river, stream or other body of water a character distinct from that of the banks thereof, both in respect to vegetation and in respect to the nature of the soil itself. In addition, the best estimates of the edge of dormant or old side channels and marsh areas are considered to be Natural Boundaries.

"Maintain" includes repairs, replacements, improvements to existing infrastructure such as drinking water wells or reservoirs, force and gravity mains, sewage treatment facilities, stormwater management structures or snow dumps that preserves the infrastructure in good condition.

"Operational Plans" includes the following plans that were submitted as part of the Application and included in water licence register MN20-008: *City of Whitehorse Operational Plan 2019-04* (Exhibit 1.8), *Hydrocarbons Sampling Plan* (Exhibit 1.12), and *Sludge Management Plan* (Exhibit 1.19.2) and the following plans which are required to be submitted as conditions of this Licence; Stormwater Management Plan, Adaptive Management Plan, Snow Dump Management Plan, Water Quality Characterization Study and Groundwater Protection Plan, and any subsequent revisions.

"Regulation" means the *Waters Regulation* O.I.C. 2003/58.

"Spill Contingency Plan" means the *City of Whitehorse Spill Contingency Plan* that was submitted as part of the Application and included in water licence register MN20-008 as Exhibit 1.8 and any subsequent revisions.

"Treated Wastewater" means water that meets the effluent quality standards in Part D of this Licence.

"Waste" has the same meaning as in the Act.

"Watercourse" has the same meaning as in the Regulation.

PART B – WATER USE AND DEPOSIT OF WASTE

1. The Licensee is hereby authorized to:

   a) obtain water from Schwatka Lake and from wells in the Selkirk aquifer to a maximum combined quantity of 20,000 cubic meters per day;

   b) use water for municipal purposes;

   c) operate and maintain reservoirs and a distribution system to store and convey water;

   d) collect and convey wastewater to, and store and treat wastewater at the Livingston Trail Environmental Control Facility (LTECF), Whitehorse Lagoon and Crestview Lagoons;

   e) divert wastewater into the Whitehorse Lagoon twice annually, with each diversion lasting no longer than 14 days;

   f) discharge Treated Wastewater to the Yukon River from the LTECF;

   g) discharge Treated Wastewater to the Pothole Lake from the LTECF;

   h) discharge Treated Wastewater to the Yukon River from the Whitehorse Lagoon;

   i) Subject to Condition 37, discharge wastewater to groundwater from the Crestview Lagoons;

   j) operate and maintain sludge drying beds;

   k) collect, convey and discharge stormwater to the Yukon River through stormwater outfalls;

   l) collect, convey, store and discharge stormwater to ground through surface stormwater infrastructure and low-lying areas; and

   m) discharge meltwater from collected snow to surface water and to ground at snow dumps;

   as described in the Application, and subject to the 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, water distribution, sewage collection, sewage treatment, sewage disposal and stormwater systems as described in the Application, in accordance with the conditions of this Licence, and in a manner which is consistent with standard municipal practices for the types of systems being used.

4. All equipment used for operation and maintenance must be maintained in good repair.

5. Operations must be carried out in accordance with the Operational Plans. Where a discrepancy exists between the Operational Plans and the conditions of this Licence, this Licence prevails.

6. The Licensee is authorized to replace components or portions of a system as required to maintain infrastructure.

7. The Licensee is not authorized to construct any new infrastructure.

8. The Licensee is not authorized to replace infrastructure that is in place under the Yukon River.

9. The Licensee is not authorized to undertake any activity that changes the function of existing infrastructure from the function for which it was originally designed.

10. The water level in the long term storage pond of the LTECF must be maintained at least one metre below the top of the berm.

Signage and Fencing

11. The Licensee must maintain in good condition, signage and fencing around the perimeters of the LTECF, Whitehorse Lagoon, Pothole Lake, Crestview Lagoons and along the banks of the Yukon River in the vicinities of the effluent outfalls. Signs will provide a warning to the public of the existence of a wastewater treatment facility, expected timing of effluent discharge, and the potential for diminished surface and groundwater quality.

Notification of Discharge

12. The Licensee must notify the Board by July 15 prior to commencing any effluent discharge from the LTECF to Pot Hole Lake or the Yukon River. The notice will include the results of the pre-discharge sampling required by this Licence, and will include confirmation that notice has been provided to an Inspector and the public.

13. The Licensee must notify the Board at least one week prior to commencing any effluent discharge from the Whitehorse Lagoon to the Yukon River. The notice will include the results of the pre-discharge sampling required by this Licence, and will include confirmation that notice has been provided to an Inspector and the public.

Effluent Discharge

14. The Licensee may discharge Treated Wastewater from the LTECF to Pothole Lake during the period of August 1 to December 15, or to the Yukon River during the period of September 1 to December 15.

15. During discharge to Pothole Lake, the water level in Pothole Lake must be maintained at least two meters below the natural lowest height of land surrounding the lake.

16. The Licensee may discharge Treated Wastewater to the Yukon River from the Whitehorse Sewage Lagoon twice per calendar year when such discharges are necessary for inspection, maintenance and/or repair of the lagoon.

Sludge Management

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

18. The Licensee must notify the Board and the Inspector in writing the dates of the commencement and completion of desludging.

19. The Licensee must submit a report no later than 30 months after completion of 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;

    d) graphs presenting pH and concentration of $CBOD_5$, TSS, total and un-ionized ammonia, total phosphorus and fecal coliforms in samples collected at WH 6c and WH 7, during one year prior to and one year after desludging; and

    e) a discussion on the impacts of desludging on the performance of the sewage treatment system.

Whitehorse Lagoon

20. Before December 31, 2021, the Licensee must complete an inspection, that includes a stress test, of the liner of the Whitehorse Lagoon and submit a report on the inspection results.

21. The Licensee must record the daily volume of wastewater diverted into the Whitehorse Lagoon and submit the information to the Board in the next monthly report.

Groundwater Well Installation

22. Before December 31, 2022, the Licensee must install additional groundwater monitoring wells at the LTECF, to fulfill the recommendations of the LTECF hydrogeological study, Exhibit 1.14.

23. Before December 31, 2022, the Licensee must install two groundwater monitoring wells at the Crestview Lagoons, as described in the recommendations of the hydrogeological assessment, Exhibit 1.15.

24. Before December 31, 2022, the Licensee must install three groundwater monitoring wells at the Whitehorse Lagoon, as described in the recommendations of the hydrogeological assessment, Exhibit 1.16.

25. Within six months of the installation or modification of a groundwater monitoring well, the Licensee must 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 borehole log.

26. The Licensee must collect samples from groundwater monitoring wells installed pursuant to Conditions 22, 23 and 24 at the frequency set out in Schedule A and must analyze these samples for the parameters listed in Schedule A.

Spills and Unauthorized Discharges

27. The Licensee must keep the Spill Contingency Plan current and must submit any revisions to the plan to the Board within ten days of the date the revisions were made.

28. 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 10 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 to clean-up the spill area.

29. 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 minimum, the items identified in Condition 28.

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

31. The Licensee must ensure that the Spill Contingency Plan is available for review by employees and by Inspectors upon request.

Hazardous Materials

32. An inventory with accompanying Safety Data Sheets for chemicals, fuels, oils, lubricants and other hazardous materials contained in the facilities relating to the water uses authorized by this Licence must be maintained by the Licensee.

Fuel Storage and Transfer

33. Stations and infrastructure located within 30 metres of the Natural Boundary of a Watercourse will store limited quantities of substances listed in the inventory described in Condition 32, as required for normal operation and maintenance, and these substances will be transferred or utilized only within a secondary containment system such as an impervious container or liner.

34. Other than in locations identified in Condition 33, fuel, lubricants, hydraulic fluids, coolants and similar substances must be stored and/or transferred a minimum of 30 metres from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in waters.

PART D – EFFLUENT QUALITY STANDARDS

LTECF and Whitehorse Sewage Lagoon

35. All effluent discharged from the Whitehorse Lagoon to the Yukon River, or the LTECF to the Yukon River or to Pothole Lake must 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[2]	1.25 mg/L at 15°C ± 1°C

Total Oil and Grease	5 mg/L
Fecal Coliforms	2,000 cfu / 100mL
Acute Lethality[3] – 96-h LC_{50}[3]	Non-toxic at 100% concentration

1. $CBOD^5$ Test Method – 5 day BOD test with nitrification inhibition.
2. The concentration of un-ionized ammonia in effluent must be determined in accordance with the following formula:

   Total Ammonia × 1 ÷ (1 + 109.56-pH)

   Where:

   Total Ammonia is the concentration of total ammonia – namely, un-ionized ammonia (NH3) plus ionized ammonia (NH4+) – expressed in mg/L as nitrogen (N); and
   pH is the pH of the effluent adjusted to 15oC ± 1oC.
3. 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.

36. If the analysis of a water quality sample collected at WSL-1 or WH9b in accordance with Condition 35 indicates an exceedance of the effluent quality standards set out in Condition 35, the Licensee must notify the Inspector and the Board in writing, within 24 hours of detecting the exceedance.

Crestview Lagoons

37. After January 1, 2026 wastewater contained in the secondary cell at the Crestview Lagoons must meet the following effluent quality standards measured from a sample collected at monitoring station WH5b:

Parameter	Maximum Concentration in a Grab Sample
pH	6.0 to 9.0
Total Suspended Solids	60 mg/L
$CBOD_5$[1]	25 mg/L
Un-ionized Ammonia – N[2]	1.25 mg/L at 15°C ± 1°C
Fecal Coliforms	20,000 cfu / 100mL

1. $CBOD^5$ Test Method – 5 day BOD test with nitrification inhibition.
2. The concentration of un-ionized ammonia in effluent must be determined in accordance with the following formula:

   Total Ammonia × 1 ÷ (1 + 109.56-pH)

   Where:

   Total Ammonia is the concentration of total ammonia – namely, un-ionized ammonia (NH3) plus ionized ammonia (NH4+) – expressed in mg/L as nitrogen (N); and
   pH is the pH of the effluent adjusted to 15oC ± 1oC.

38. If the analysis of a water quality sample collected at WH5b in accordance with Condition 37 indicates an exceedance of the effluent quality standards set out in Condition 37, the Licensee must notify the Inspector and the Board in writing, within 24 hours of detecting the exceedance.

PART F – MONITORING AND SURVEILLANCE

39. Monitoring must be carried out in accordance with the Operational Plans, and must comply with the requirements in Schedule A. Where a discrepancy exists between the Operational Plans and the conditions of this Licence, this Licence prevails.

40. 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.

41. The Licensee must 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 annual report as described in Condition 75.

Stormwater Sampling

42. Prior to December 31, 2022, the Licensee must install a stormwater sampling location at the Marwell, Spook Creek and Selkirk Street Outfalls.

Wastewater Elevation in Lagoons

43. Prior to September 30, 2021, the Licensee must establish a procedure for measuring the wastewater elevation in the Whitehorse Lagoon and in the second secondary cell of the Crestview Lagoons.

44. Once a procedure is established under Condition 43, the Licensee must monitor the wastewater elevations at the frequency identified in Schedule A.

Influent to Wastewater Treatment Facilities

45. Within one year of the effective date of this Licence, the Licensee must initiate daily monitoring and recording of the volume of wastewater deposited into the LTECF, Crestview Lagoons and the Whitehorse Lagoon, and must submit this data as part of the annual report.

Seep Monitoring

46. The annual seep sampling event must be conducted in May when the Yukon River level is low following melting of the seasonal ground frost. If at this time seeps are not observed or access presents safety issues, additional attempt(s) must be made throughout the summer to ensure that a seep sample is collected.

47. Prior to December 31, 2023 the Licensee must complete a river bank inspection of the Yukon River downgradient of the Crestview Lagoons to identify any seeps.

48. If seeps are encountered downgradient of the Crestview Lagoons, they must be sampled according to the requirements in Schedule A.

Sludge Monitoring

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

50. Sludge must be monitored as required by Part F and Schedule A, Part 2, Table 3 of this Licence.

51. The Licensee must provide a summary of the operation of the sludge drying beds as part of the annual report. The summary must 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 disposal.

Physical Inspections and Monitoring

52. An annual physical inspection of the wastewater facilities must be carried out 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 Condition 75 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.

53. Subject to Condition 52, each year 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 must 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 must be submitted to the Board by November 30 of each year.

PART G – PLANS AND STUDIES

54. The Licensee must keep the Operational Plans current and must submit any revisions to the plans to the Board within ten days if its revision.

55. Prior to June 30, 2021 the Licensee must submit to the Board an updated *Hydrocarbons Sampling Plan* (Exhibit 1.12) that reflects the sampling requirements in Schedule A of this Licence.

56. Prior to June 30, 2021 the Licensee must submit to the Board an updated Sludge Management Plan that reflects the operational changes required by this Licence.

57. Prior to December 31, 2025, the Licensee must submit to the Board an updated Stormwater Management Plan that reflects the sampling requirements in Schedule A of this Licence and the operational changes required by this Licence.

58. Prior to December 31, 2023, the Licensee must submit to the Board a Groundwater Protection Plan that incorporates all groundwater monitoring wells required by this Licence.

59. Prior to December 31, 2023 the Licensee must submit a Snow Dump Management Plan that includes, at a minimum:

    a) assessment of the snow dump sites and the snow dump management, including;
        i. snow dump locations;
        ii. drainage catchment area of the snow dumps;
        iii. existing infrastructure at the snow dumps;
        iv. description of the operations of the snow dumps including volume of snow deposited and time of melt or sublimation;
        v. potential future expansion of the snow dumps
        vi. location of nearest surface watercourse;
        vii. potential impacts to water quality and quantity of watercourses;
        viii. monitoring to be undertaken at snow dumps;
    b) identification and implementation of mitigative measures to reduce the impact of snow dumps on surface and groundwater;
    c) on-going monitoring; and
    d) a list of thresholds that will trigger action responses.

60. Prior to December 31, 2028, the Licensee must submit the results of a water quality characterization study. The water quality characterization study must provide data which can be used to develop seasonal water quality objectives at WH 12 for the contaminants of potential concern listed in Condition 61.

Adaptive Management Plan

61. Using data that is currently available, the Licensee must develop preliminary seasonal water quality objectives at WH 11 for the following contaminants of potential concern:

a) un-ionized ammonia;

b) nitrate and nitrite;

c) total phosphate;

d) carbonaceous biochemical oxygen demand;

e) total suspended solids;

f) fecal coliforms;

g) total selenium; and

h) total manganese.

62. Prior to June 30, 2021 the Licensee must submit an updated Adaptive Management Plan (AMP) which establishes water quality or quantity objectives and summarizes the applicable monitoring requirements, how continued evaluation of results will occur, the reporting requirements and all available actions which can be utilized if objectives are not met. The AMP must comprehensively address all licensed activities which includes:

a) water withdrawal;

b) LTECF operations;

c) WQO for the Yukon River related to LTECF discharge;

d) Crestview Lagoons operations;

e) Whitehorse Lagoon operations;

f) hydrocarbons in wastewater and stormwater;

g) water quality in Yukon River bank seeps;

h) stormwater, including Whistlebend management;

i) snow dump management; and

j) groundwater protection.

63. When a plan required by this Licence is updated, and this update results in an inconsistency with the AMP, the AMP must be updated and submitted in the same year that the plan was updated.

PART I – GENERAL CONDITIONS

64. The Licensee must ensure that the licence is available for review by employees and by Inspectors upon request.

65. Where there is a discrepancy between the Application and the conditions of this Licence, this Licence prevails.

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

Other Laws

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

Non-Compliance

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

Correspondence

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

a) to the Licensee, if delivered, e-mailed, 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 e-mailed, 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 e-mailed 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 e-mailed, or seven days after the day it was mailed, as the case may be.

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

Deliverables

71. 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.

72. The Licensee must upload electronic copies of all deliverables 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.

73. Water quantity/water level results must be submitted in MS Excel, and water quality results must be 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

74. Unless otherwise specified in this Licence, the Licensee must forward to the Board a copy of all data collected as part of the monitoring programs as described in Schedule A of this Licence, no more than 60 days after the date that data was collected.

Annual Reports

75. The Licensee must submit annual reports to the Board for the period of January 1 to December 31 of each year. Annual reports must be submitted to the Board on or before April 1 of the year following the year reported. The report must include:

a) a description of the water use operations carried out during the year;

b) the quantity of water used each day;

c) the volume of wastewater deposited into the LTECF, Crestview Lagoons and the Whitehorse Lagoon as required by Condition 45 of this Licence;

d) the total number of days of wastewater discharge to the Yukon River or Pot Hole Lake from the LTECF and the total volume of wastewater discharged;

e) the total number of days of wastewater discharge to the Yukon River from the Whitehorse Lagoon and the total volume of wastewater discharged;

f) summaries of all data generated as required by the monitoring and surveillance requirements of this licence, and an analysis and interpretation of the data by an individual qualified to do so;

g) new and updated geographic site coordinates for monitoring stations as required by Condition 41 of this Licence;

h) details of the methods, procedures and standards used in the data collection and sampling testing;

i) a detailed record of the operations of the wastewater treatment facilities including operational difficulties and monthly inspection reports;

j) updated groundwater equipotential maps for the LTECF, Crestview Lagoons and Whitehorse Lagoon;

k) physical inspection reports including photographs, repairs or plans for modification as required by Condition 52 of this Licence;

l) details of any maintenance, repairs, or improvements to all physical works, including details of how recommendations from inspections reports have been addressed;

m) summary of the review and revisions of the Spill Contingency Plan;

n) records of all spills/unauthorized discharges as required by Condition 30 of this Licence;

o) records of all enforcement actions taken under the *Storm and Sewer Bylaw*, as related to unauthorized discharge of Waste to water;

p) details of any work carried out or planned to be carried out under the Operational Plans;

q) a record of maintenance activities for the year reported;

r) a summary of expected maintenance activities for the next year;

s) details of sludge management as required by Condition 51; and

t) any decommissioning undertaken in the previous year or planned to be undertaken in the coming year.

PART H – SITE DECOMMISSIONING AND RESTORATION

76. In the event of decommissioning of part or the whole of the undertaking, all structures and associated equipment or infrastructure authorized by this licence must either be removed or left in stable condition which does not present a risk to people or the environment.

77. Prior to the commencement of decommissioning work, the Licensee must submit to the Board a final plan for the decommissioning and reclamation of all water and wastewater related structures authorized by this Licence. The plan must include:

a) delineation of the water and wastewater system;

b) a drainage plan to manage surface water associated with the decommissioned site;

c) details of any residual activities required to be carried out prior to final decommissioning and removal of any structures, associated timelines and supporting rationale.

d) methods to ensure long-term stability of water and wastewater structures;

e) a remediation plan for any contaminated areas of the site;

f) on-going monitoring activities required to minimize or mitigate environmental impacts; and

g) a schedule and cost for completion of decommissioning and reclamation activities.

SCHEDULE A
PART 1 – LOCATIONS OF MONITORING STATIONS

Station	Description	Location (UTM Zone 8)	
		Easting	Northing
WSL-1	Discharge from Whitehorse lagoon at exit location	496614.68	6736989.73
WSL-NE	Whitehorse Lagoon Northeast Cell (depth-integrated composite sample)	496685.99	6736850.12
WSL-SE	Whitehorse Lagoon Southeast Cell (depth-integrated composite sample)	496690.47	6736717.66
WSL-SW	Whitehorse Lagoon Southwest Cell (depth-integrated composite sample)	496563.47	6736723.54
WSL-NW	Whitehorse Lagoon Northwest Cell (depth-integrated composite sample)	496559.04	6736845.81
WH 1	Raw water supply from Schwatka Lake at the Selkirk Pumphouse	497841.93	6730052.43
WH 2	Raw water supply from Selkirk Aquifer at the pumphouse	497841.93	6730052.43
WH 3	Treated water supply at the Selkirk pumphouse	497841.93	6730052.43
WH 4	Discharge from storm sewers at Strickland Street outfall	497198.64	6732009.73
WH 4a	Discharge from storm sewers at Ogilvie Street outfall		
WH 4b	Discharge from storm sewers at Spook Creek outfall		
WH 4c	Discharge from storm sewers at Marwell outfall		
WH 4d	Discharge from storm sewers at Selkirk Street outfall		
WH 4e	Whistlebend stormwater bioswale		
WH 4f	Whistlebend stormwater Pond 1		
WH 4g	Whistlebend stormwater Pond 2		
WH 5	Influent to Crestview sewage lagoon	491675.91	6739574.32
WH 5a	Treated wastewater at the end of the first secondary cell of the Crestview Lagoons collected as depth-integrated composite samples at four locations within the impoundment		
WH 6a	Outflow at the Marwell lift station	496256.46	6734378.04
WH 6b	Influent from upper Porter Creek	492591.05	6738362.53
WH 6c	Combined Marwell and Porter Creek influent to LTECF	494971.65	6740916.65
WH 7	Treated wastewater from primary cells of the LTECF	494879.5	6741250.96
WH 8	Influent to long term storage pond at the LTECF	494438.21	6741182.58
WH 9a	Water from the long term storage pond at the LTECF collected as depth-integrated composite samples at four locations within the impoundment	The LTS pond is bounded by the following coordinates:	
		493446.31	6742710.84
		492992.82	6742471.63
		493673.87	6741169.06
		494383.04	6741238.79
WH 9b	Treated wastewater from the discharge manhole at the LTECF	493900.44	6740898.63

Station	Description	Location (UTM Zone 8)	
		Easting	Northing
WH- 10b	Yukon River upstream of outfall from the LTECF (mid channel)		
WH 11	Yukon River approximately 300 metres downstream of outfall from LTECF (mid channel)	493671	6739347
WH 12	Yukon River approximately 750 metres downstream of outfall from the LTECF (mid channel)	493236	6739256
WH-15	Sludge/biosolid in the Primary Cell near the point of outflow	494835.54	6741201.65
		494925.62	6741219.45
PHL	A station location within the Pothole Lake forming part of the LTECF facility, at 682.49 m asl	493693	6740280
WH 17	Seep #4 – small gravel area downgradient of LTECF		
WH 18	Seep #5A – upper bench zone downgradient of LTECF		
WH 19	Seep #5B – large gravel bench area downgradient of LTECF		
WH 20	Seep #6A – in gravel area may be connected to #5B downgradient of LTECF		
WH 21	Seep #6B – in silt area downgradient of LTECF		
WH 22	Seep #7 – in silt area downgradient of LTECF		
WH 23	Seep #8 – in silt area downgradient of LTECF		
WH 24	If encountered, seep along the Yukon River bank downgradient of the Crestview Lagoons		
GW-1	Monitoring well approximately 30 metres southeast of the primary anaerobic storage lagoons at the LTECF	495064.02	6740876.25
GW-2	Monitoring well southwest of facultative lagoons at the LTECF	494406.98	6740633.37
GW-3	Monitoring well southwest of long term storage pond at the LTECF	493211.9	6741338.2
GW-4	Monitoring well near northern margin of long term storage pond at the LTECF	492877	6743069
MW-1	Monitoring well located between Pothole Lake and the Yukon River approximately 500 metres north-northwest from closest point to Yukon River at 682.49 m asl	493734.5	6739973.7
MW-2	Monitoring well located between Pothole Lake and the Yukon River approximately 300 metres north-northwest from nearest point to Yukon River at 654.91 m asl	493808.3	6739973.7
MW-4a	Monitoring well located between Pothole Lake and the Yukon River approximately 30 metres due north from closest point to Yukon River at 634.75 m asl	493870.7	6739509.4
XX-MW-03	Additional well to be added at the LTECF		
XX-MW-04	Additional well to be added at the LTECF		
XX-MW-05	Additional well to be added at the LTECF		

Station	Description	Location (UTM Zone 8)	
		Easting	Northing
XX-MW-06	Additional well to be added at the LTECF		
XX-MW-01	Additional well to be added at the LTECF, if required		
XX-MW-02	Additional well to be added at the LTECF, if required		
MW-1-08s	Shallow monitoring well located at the south corner of the Crestview lagoons	491689	6739565
MW2-19	Monitoring well located approximately 75 m south of MW-1-08		
MW-2-08s	Shallow monitoring well located at the southeast corner of the Crestview Lagoons	491803	6739661
MW-2-08d	Deep monitoring well located at the southeast corner of the Crestview Lagoons	491803	6739661
MW1-19	Monitoring well located next to MW2-08		
MW-3-08	Monitoring well located at the north end of the Crestview Lagoons	491330	6740319
MW-4-08	Monitoring well located to the east of the Crestview Lagoons	491594	6740008
MW-11	Additional well to be added at the Crestview Lagoons		
MW-12	Additional well to be added at the Crestview Lagoons		
MW-13	Additional well to be added at the Whitehorse Lagoon		
MW-14	Additional well to be added at the Whitehorse Lagoon		
MW-15	Additional well to be added at the Whitehorse Lagoon		

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

Table 1 – Surface Water Monitoring

Parameter	WSL-NE WSL-SE WSL-SW WSL-NW	WSL-1	WH-1 WH-2 WH-3	WH-4 WH-4a WH-4b WH-4c WH-4d	WH-4e WH-4f WH-4g
Water Level	2wPD				JAO
Flow		DDD	D		
pH (field and laboratory)	2wPD	DD(1)		BMS	JAO
Temperature (^oC)	2wPD	DD(1)		BMS	JAO
Dissolved O_2 (mg/L)	2wPD	DD(1)		BMS	JAO
Specific Conductance (µS/cm)	2wPD	DD(1)		BMS	JAO
Total Suspended Solids (mg/L)	2wPD	DD(1)		BMS	JAO
Fecal Coliforms (cfu/100 mL)	2wPD	DD(1)		BMS	JAO
Total Coliforms (cfu/100 mL)	2wPD	DD(1)			
Chloride (mg/L)	2wPD	DD(1)		BMS	JAO
Total Phosphate (mg/L as P)	2wPD	DD(1)			
Nitrate & Nitrite (mg/L)	2wPD	DD(1)			JAO
Total Ammonia (mg/L)	2wPD	DD(1)			JAO
Un-ionized Ammonia - N (mg/L)	2wPD	DD(1)			JAO
Total Alkalinity, as $CaCO_3$					JAO
$CBOD_5$ (mg/L)	2wPD	DD(1)			JAO
COD (mg/L)				BMS	
ICP Total Metals[1] (mg/L)	2wPD	DD(1)		BMS	JAO
ICP Dissolved Metals[2] (mg/L)	2wPD	DD(1)		BMS	JAO
Oil & Grease (mg/L)	2wPD	DD(1)		BMS	JAO
Petroleum Hydrocarbons[3]	2wPD	DD(1)		BMS	JAO
Phenols (mg/L)				BMS	
Chlorophyll A (µg/L)					JAO
LC_{50} Bioassay (100%)	2wPD	DD(1)			
Giardia	2wPD	DD(1)			

Table 1 – Surface Water Monitoring continued

Parameter	WH-5	WH-5a	WH-6a WH-6b	WH-6c	WH-7 WH-8
Water Level		JAO			
Flow	D		D	D	
pH (field and laboratory)	Q_{24C}	A		Q_{24C}	Q_1
Temperature (^oC)	Q_{24C}	A		Q_{24C}	Q_1
Dissolved O_2 (mg/L)		A		Q_{24C}	Q_1
Specific Conductance (µS/cm)	Q_{24C}	A		Q_{24C}	
Total Suspended Solids (mg/L)	Q_{24C}	A		Q_{24C}	Q_1
Fecal Coliforms (cfu/100 mL)	Q_{24C}	A		Q_{24C}	Q_1
Total Coliforms (cfu/100 mL)	Q_{24C}			Q_{24C}	
Chloride (mg/L)	Q_{24C}	A		Q_{24C}	
Total Phosphate (mg/L as P)	Q_{24C}	A		Q_{24C}	Q_1
Nitrate & Nitrite (mg/L)	Q_{24C}	A		Q_{24C}	
Total Ammonia (mg/L)	Q_{24C}	A		Q_{24C}	Q_1
Un-ionized Ammonia - N (mg/L)	Q_{24C}	A		Q_{24C}	Q_1
Total Alkalinity, as $CaCO_3$					
$CBOD_5$ (mg/L)	Q_{24C}	A		Q_{24C}	Q_1
COD (mg/L)					
ICP Total Metals[1] (mg/L)		A		Q_{24C}	
ICP Dissolved Metals[2] (mg/L)		A		Q_{24C}	
Oil & Grease (mg/L)	Q_{24C}	A		Q_{24C}	
Petroleum Hydrocarbons[3]	Q_{24C}	A		Q_{24C}	
Phenols (mg/L)					
Chlorophyll A (µg/L)					
LC_{50} Bioassay (100%)					
Giardia	Q_{24C}	A		Q_{24C}	Q_1

Table 1 – Surface Water Monitoring continued

Parameter	WH-9a	WH-9b	WH-10 WH-11 WH-12	PHL
Water Level	PD			PD, DDD and Q_2
Flow		DDD		
pH (field and laboratory)	PD	BW or DD(3)	PDAD	
Temperature (^oC)	PD	BW or DD(3)	PDAD	
Dissolved O_2 (mg/L)	PD	DD(3)	PDAD	
Specific Conductance (µS/cm)	PD	BW or DD(3)	PDAD	
Total Suspended Solids (mg/L)	PD	BW or DD(3)	PDAD	
Fecal Coliforms (cfu/100 mL)	PD	DD(3)	PDAD	
Total Coliforms (cfu/100 mL)	PD	DD(3)		
Chloride (mg/L)	PD	DD(3)		
Total Phosphate (mg/L as P)	PD	DD(3)	PDAD	
Nitrate & Nitrite (mg/L)		DD(3)	PDAD	
Total Ammonia (mg/L)	A	BW or DD(3)	PDAD	
Un-ionized Ammonia - N (mg/L)	PD	BW or DD(3)	PDAD	
Total Alkalinity, as $CaCO_3$				
$CBOD_5$ (mg/L)	PD	BW or DD(3)	PDAD	
COD (mg/L)				
ICP Total Metals[1] (mg/L)	PD	DD(3)	PDAD	
ICP Dissolved Metals[2] (mg/L)	PD	DD(3)		
Oil & Grease (mg/L)	PD	DD(3)		
Petroleum Hydrocarbons[3]	PD	DD(3)	PDAD	
Phenols (mg/L)				
Chlorophyll A (µg/L)				
LC_{50} Bioassay (100%)	PD	DD(3)		
Giardia	PD	DD(3)		

Table 2 – Groundwater Monitoring

Parameter	WH-16 WH-17 WH-18 WH-19 WH-20 WH-21 WH-22	WH-23	GW-1 GW-2 GW-3 GW-4	MW-1 MW-2 MW-4A	MW-5 MW-6 MW-7 MW-8 MW-9 MW-10	MW-1-08s MW2-19 MW-2-08s MW-2-08d MW1-19 MW-3-08 MW-4-08 MW-11 MW-12	MW-13 MW-14 MW-15
Water Level			A(3)	PDAD	A(3)	A(3)	A(3)
Flow	A	A					
pH (field and laboratory)	A	A	A(3)		A(3)	A(3)	A(3)
Temperature (°C)	A	A	A(3)		A(3)	A(3)	A(3)
Dissolved O_2 (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
Specific Conductance (µS/cm)			A(3)		A(3)	A(3)	A(3)
Total Suspended Solids (mg/L)							
Fecal Coliforms (cfu/100 mL)	A	A	A(3)		A(3)	A(3)	A(3)
Total Coliforms (cfu/100 mL)							
Chloride (mg/L)	A	A	A(3)	PDAD	A(3)	A(3)	A(3)
Total Phosphate (mg/L as P)	A	A					
Nitrate & Nitrite (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
Total Ammonia (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
Un-ionized Ammonia - N (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
Total Alkalinity, as $CaCO_3$							
$CBOD_5$ (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
COD (mg/L)							
ICP Total Metals[1] (mg/L)							
ICP Dissolved Metals[2] (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
Oil & Grease (mg/L)							
Petroleum Hydrocarbons[3]			A(3)		A(3)	A(3)	A(3)
Phenols (mg/L)							
Chlorophyll A (µg/L)							
LC_{50} Bioassay (100%)							
Giardia							

Notes: 1) ICP Dissolved and Total Metals Analysis must 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

2) Hydrocarbon analysis must 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 – Sludge Monitoring

	Location and Sampling Frequency
Sludge at WH-15	Sludge elevations must 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 LTECF.

SCHEDULE A
PART 3 – SAMPLING FREQUENCIES

Key	Frequency
D	Daily
Q_1	Quarterly
Q_2	Quarterly beginning within 2 weeks after end of discharge
Q_{24C}	Quarterly (24 hour Composite Sample)
2wPD	Two weeks prior to discharge
PD	Prior to discharge
PDAD	Prior to, during and after discharge
DD(1)	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
BMS	During break-up when outfalls are discharging; and mid-season and September, after a period where at least 15 mm of rain falls within 48 hours.
JAO	Three times per year, in June, August and October
A	Once per year
A(3)	Three times per year

YUKON WATER BOARD

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

LICENSEE:	City of Whitehorse
CONTACT INFORMATION:	2121 Second Avenue Whitehorse, YT Y1A 1C2
LICENCE NUMBER:	MN20-008
AMENDMENT:	Amendment 1 of MN20-008
UNDERTAKING:	Municipal **LICENCE TYPE:** A
WATER MANAGEMENT AREA:	02 Yukon
WATER SOURCE:	Selkirk Aquifer and Schwatka Lake
MAXIMUM QUANTITY:	20,000 cubic metres of water per day
LOCATION:	Whitehorse
MAP CO-ORDINATES:	Latitude: Max.: 60° 48’ 02” N Min.: 60° 47’ 02” Longitude: Max.: 135° 08’ 08” W Min.: 135° 05’ 00”
PURPOSE:	To obtain, store and distribute water; collect, convey, treat and discharge wastewater; and collect and discharge stormwater for municipal purposes.
ORIGINAL EFFECTIVE DATE:	April 1, 2021
AMENDMENT EFFECTIVE DATE:	December 21, 2021
EXPIRY DATE:	March 31, 2031

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 21st day of December 2021.

Witness

Minister, Executive Council Office
Government of Yukon

Issued this 21st day of December, 2021.

Digitally Signed
Witness

Digitally Signed
Chairperson
Yukon Water Board

PART A – DEFINITIONS

"Act" means *Waters Act* SY 2003, c.19; amended by SY 2007, c.6.

"Application" means water licence Application MN20-008 and Amendment Application MN20-008-1 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.

"Construct" means to build new infrastructure such as drinking water wells or reservoirs, force and gravity mains, sewage treatment facilities, stormwater management structures or snow dumps.

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

"LTECF" means the Livingston Trail Environmental Control Facility.

"Natural Boundary" means the visible high water mark of any lake, river, stream or other body of water where the presence and action of water is so common and usual and so long continued as to mark upon the soil of the bed of the lake, river, stream or other body of water a character distinct from that of the banks thereof, both in respect to vegetation and in respect to the nature of the soil itself. In addition, the best estimates of the edge of dormant or old side channels and marsh areas are considered to be Natural Boundaries.

"Maintain" includes repairs, replacements, improvements to existing infrastructure such as drinking water wells or reservoirs, force and gravity mains, sewage treatment facilities, stormwater management structures or snow dumps that preserves the infrastructure in good condition.

"Minor Modification" means a change to the final detailed design that does not affect its functionality and ability to meet the design criteria or environmental performance requirements and does not affect any other design or performance criteria.

"Non-Acid Generating and Non-Metal Leaching" means rock with a paste pH ≥ 5.0, a Neutralizing Potential: Acid Generation Potential Ratio (NPR) ≥ 3:1 and a sulphur content of < 0.3%.

"Operational Plans" includes the following plans that were submitted as part of the Application and included in water licence register MN20-008: *City of Whitehorse Operational Plan 2019-04* (Exhibit 1.8), *Hydrocarbons Sampling Plan* (Exhibit 1.12), and *Sludge Management Plan* (Exhibit 1.19.2) and the following plans which are required to be submitted as conditions of this Licence; Stormwater Management Plan, Adaptive Management Plan, Snow Dump Management Plan, Water Quality Characterization Study and Groundwater Protection Plan, and any subsequent revisions.

"Regulation" means the *Waters Regulation* O.I.C. 2003/58.

"Spill Contingency Plan" means the *City of Whitehorse Spill Contingency Plan* that was submitted as part of the Application and included in water licence register MN20-008 as Exhibit 1.8 and water licence register MN20-008-1 as Exhibit 1.3, and any subsequent revisions.

"Treated Wastewater" means water that meets the effluent quality standards in Part D of this Licence.

"Waste" has the same meaning as in the Act.

"Watercourse" has the same meaning as in the Regulation.

PART B – WATER USE AND DEPOSIT OF WASTE

1. The Licensee is hereby authorized to:
   a) obtain water from Schwatka Lake and from wells in the Selkirk aquifer to a maximum combined quantity of 20,000 cubic meters per day;
   b) use water for municipal purposes;
   c) operate and maintain reservoirs and a distribution system to store and convey water;
   d) collect and convey wastewater to, and store and treat wastewater at the Livingston Trail Environmental Control Facility (LTECF), Whitehorse Lagoon and Crestview Lagoons;
   e) divert wastewater into the Whitehorse Lagoon twice annually, with each diversion lasting no longer than 14 days;
   f) discharge Treated Wastewater to the Yukon River from the LTECF;
   g) discharge Treated Wastewater to the Pothole Lake from the LTECF;
   h) discharge Treated Wastewater to the Yukon River from the Whitehorse Lagoon;
   i) Subject to Condition 37, discharge wastewater to groundwater from the Crestview Lagoons;
   j) operate and maintain sludge drying beds;
   k) collect, convey and discharge stormwater to the Yukon River through stormwater outfalls;
   l) collect, convey, store and discharge stormwater to ground through surface stormwater infrastructure and low-lying areas;
   m) discharge meltwater from collected snow to surface water and to ground at snow dumps;

n) construct the Selkirk Street North outfall and associated infrastructure, including earthworks and erosion protection, at the Yukon River; and

o) deposit waste in the form of sediment from the construction of the Selkirk Street North outfall, associated infrastructure, and earthworks and erosion protection, at the Yukon River;

as described in the Application, and subject to the 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, water distribution, sewage collection, sewage treatment, sewage disposal and stormwater systems as described in the Application, in accordance with the conditions of this Licence, and in a manner which is consistent with standard municipal practices for the types of systems being used.

4. All equipment used for operation and maintenance must be maintained in good repair.

5. Operations must be carried out in accordance with the Operational Plans. Where a discrepancy exists between the Operational Plans and the conditions of this Licence, this Licence prevails.

6. The Licensee is authorized to replace components or portions of a system as required to maintain infrastructure.

7. With the exception of sub-condition 1.n), the Licensee is not authorized to construct any new infrastructure.

8. The Licensee is not authorized to replace infrastructure that is in place under the Yukon River.

9. The Licensee is not authorized to undertake any activity that changes the function of existing infrastructure from the function for which it was originally designed.

10. The water level in the long term storage pond of the LTECF must be maintained at least one metre below the top of the berm.

Signage and Fencing

11. The Licensee must maintain in good condition, signage and fencing around the perimeters of the LTECF, Whitehorse Lagoon, Pothole Lake, Crestview Lagoons and along the banks of the Yukon River in the vicinities of the effluent outfalls. Signs will provide a warning to the public

of the existence of a wastewater treatment facility, expected timing of effluent discharge, and the potential for diminished surface and groundwater quality.

Notification of Discharge

12. The Licensee must notify the Board by July 15 prior to commencing any effluent discharge from the LTECF to Pot Hole Lake or the Yukon River. The notice will include the results of the pre-discharge sampling required by this Licence, and will include confirmation that notice has been provided to an Inspector and the public.

13. The Licensee must notify the Board at least one week prior to commencing any effluent discharge from the Whitehorse Lagoon to the Yukon River. The notice will include the results of the pre-discharge sampling required by this Licence, and will include confirmation that notice has been provided to an Inspector and the public.

Effluent Discharge

14. The Licensee may discharge Treated Wastewater from the LTECF to Pothole Lake during the period of August 1 to December 15, or to the Yukon River during the period of September 1 to December 15.

15. During discharge to Pothole Lake, the water level in Pothole Lake must be maintained at least two meters below the natural lowest height of land surrounding the lake.

16. The Licensee may discharge Treated Wastewater to the Yukon River from the Whitehorse Sewage Lagoon twice per calendar year when such discharges are necessary for inspection, maintenance and/or repair of the lagoon.

Sludge Management

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

18. The Licensee must notify the Board and the Inspector in writing the dates of the commencement and completion of desludging.

19. The Licensee must submit a report no later than 30 months after completion of 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;

d) graphs presenting pH and concentration of $CBOD_5$, TSS, total and un-ionized ammonia, total phosphorus and fecal coliforms in samples collected at WH 6c and WH 7, during one year prior to and one year after desludging; and

e) a discussion on the impacts of desludging on the performance of the sewage treatment system.

Whitehorse Lagoon

20. Before December 31, 2021, the Licensee must complete an inspection, that includes a stress test, of the liner of the Whitehorse Lagoon and submit a report on the inspection results.

21. The Licensee must record the daily volume of wastewater diverted into the Whitehorse Lagoon and submit the information to the Board in the next monthly report.

Groundwater Well Installation

22. Before December 31, 2022, the Licensee must install additional groundwater monitoring wells at the LTECF, to fulfill the recommendations of the LTECF hydrogeological study, Exhibit 1.14 of Register MN20-008.

23. Before December 31, 2022, the Licensee must install two groundwater monitoring wells at the Crestview Lagoons, as described in the recommendations of the hydrogeological assessment, Exhibit 1.15 of Register MN20-008.

24. Before December 31, 2022, the Licensee must install three groundwater monitoring wells at the Whitehorse Lagoon, as described in the recommendations of the hydrogeological assessment, Exhibit 1.16 of Register MN20-008.

25. Within six months of the installation or modification of a groundwater monitoring well, the Licensee must 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 borehole log.

26. The Licensee must collect samples from groundwater monitoring wells installed pursuant to Conditions 22, 23 and 24 at the frequency set out in Schedule A and must analyze these samples for the parameters listed in Schedule A.

Spills and Unauthorized Discharges

27. The Licensee must keep the Spill Contingency Plan current and must submit any revisions to the plan to the Board within ten days of the date the revisions were made.

28. 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 10 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 to clean-up the spill area.

29. 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 minimum, the items identified in Condition 28.

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

31. The Licensee must ensure that the Spill Contingency Plan is available for review by employees and by Inspectors upon request.

Hazardous Materials

32. An inventory with accompanying Safety Data Sheets for chemicals, fuels, oils, lubricants and other hazardous materials contained in the facilities relating to the water uses authorized by this Licence must be maintained by the Licensee.

Fuel Storage and Transfer

33. Stations and infrastructure located within 30 metres of the Natural Boundary of a Watercourse will store limited quantities of substances listed in the inventory described in Condition 32, as required for normal operation and maintenance, and these substances will be transferred or utilized only within a secondary containment system such as an impervious container or liner.

34. Other than in locations identified in Condition 33, fuel, lubricants, hydraulic fluids, coolants and similar substances must be stored and/or transferred a minimum of 30 metres from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in waters.

PART D – EFFLUENT QUALITY STANDARDS

LTECF and Whitehorse Sewage Lagoon

35. All effluent discharged from the Whitehorse Lagoon to the Yukon River, or the LTECF to the Yukon River or to Pothole Lake must 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[2]	1.25 mg/L at 15°C ± 1°C
Total Oil and Grease	5 mg/L
Fecal Coliforms	2,000 cfu / 100mL
Acute Lethality[3] – 96-h LC_{50}[3]	Non-toxic at 100% concentration

1. $CBOD^5$ Test Method – 5 day BOD test with nitrification inhibition.
2. 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 (NH3) plus ionized ammonia (NH4+) – expressed in mg/L as nitrogen (N); and
   pH is the pH of the effluent adjusted to 15°C ± 1°C.
3. 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.

36. If the analysis of a water quality sample collected at WSL-1 or WH9b indicates an exceedance of the effluent quality standards set out in Condition 35, the Licensee must notify the Inspector and the Board in writing, within 24 hours of detecting the exceedance.

Crestview Lagoons

37. After January 1, 2026 wastewater contained in the secondary cell at the Crestview Lagoons must meet the following effluent quality standards measured from a sample collected at monitoring station WH5b:

Parameter	Maximum Concentration in a Grab Sample
pH	6.0 to 9.0
Total Suspended Solids	60 mg/L
$CBOD_5$[1]	25 mg/L
Un-ionized Ammonia – N[2]	1.25 mg/L at 15°C ± 1°C
Fecal Coliforms	20,000 cfu / 100mL

1. $CBOD^5$ Test Method – 5 day BOD test with nitrification inhibition.
2. The concentration of un-ionized ammonia in effluent must be determined in accordance with the following formula:

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

Where:

Total Ammonia is the concentration of total ammonia – namely, un-ionized ammonia (NH3) plus ionized ammonia (NH4+) – expressed in mg/L as nitrogen (N); and
pH is the pH of the effluent adjusted to 15°C ± 1°C.

38. If the analysis of a water quality sample collected at WH5b indicates an exceedance of the effluent quality standards set out in Condition 37, the Licensee must notify the Inspector and the Board in writing, within 24 hours of detecting the exceedance.

PART E – MONITORING AND SURVEILLANCE

39. Monitoring must be carried out in accordance with the Operational Plans, and must comply with the requirements in Schedule A. Where a discrepancy exists between the Operational Plans and the conditions of this Licence, this Licence prevails.

40. 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.

41. The Licensee must 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 annual report as described in Condition 74.

Stormwater Sampling

42. Prior to December 31, 2022, the Licensee must install a stormwater sampling location at the Marwell, Spook Creek, Selkirk Street South and Selkirk Street North outfalls.

Wastewater Elevation in Lagoons

43. Prior to September 30, 2021, the Licensee must establish a procedure for measuring the wastewater elevation in the Whitehorse Lagoon and in the second secondary cell of the Crestview Lagoons.

44. Once a procedure is established under Condition 43, the Licensee must monitor the wastewater elevations at the frequency identified in Schedule A.

Influent to Wastewater Treatment Facilities

45. Within one year of the effective date of this Licence, the Licensee must initiate daily monitoring and recording of the volume of wastewater deposited into the LTECF, Crestview Lagoons and the Whitehorse Lagoon, and must submit this data as part of the annual report.

Seep Monitoring

46. The annual seep sampling event must be conducted in May when the Yukon River level is low following melting of the seasonal ground frost. If at this time seeps are not observed or access presents safety issues, additional attempt(s) must be made throughout the summer to ensure that a seep sample is collected.

47. Prior to December 31, 2023 the Licensee must complete a river bank inspection of the Yukon River downgradient of the Crestview Lagoons to identify any seeps.

48. If seeps are encountered downgradient of the Crestview Lagoons, they must be sampled according to the requirements in Schedule A.

Sludge Monitoring

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

50. Sludge must be monitored as required by Part E and Schedule A, Part 2, Table 3 of this Licence.

51. The Licensee must provide a summary of the operation of the sludge drying beds as part of the annual report. The summary must 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 disposal.

Physical Inspections and Monitoring

52. An annual physical inspection of the wastewater facilities must be carried out 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 Condition 74 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.

53. Subject to Condition 52, each year 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 must 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 must be submitted to the Board by November 30 of each year.

PART F – PLANS AND STUDIES

54. The Licensee must keep the Operational Plans current and must submit any revisions to the plans to the Board within ten days if its revision.

55. Prior to December 31, 2025, the Licensee must submit to the Board an updated Stormwater Management Plan that reflects the sampling requirements in Schedule A of this Licence and the operational changes required by this Licence.

56. Prior to December 31, 2023, the Licensee must submit to the Board a Groundwater Protection Plan that incorporates all groundwater monitoring wells required by this Licence.

57. Prior to December 31, 2023 the Licensee must submit a Snow Dump Management Plan that includes, at a minimum:

a) assessment of the snow dump sites and the snow dump management, including;

i. snow dump locations;

ii. drainage catchment area of the snow dumps;

iii. existing infrastructure at the snow dumps;

iv. description of the operations of the snow dumps including volume of snow deposited and time of melt or sublimation;

v. potential future expansion of the snow dumps

vi. location of nearest surface watercourse;

vii. potential impacts to water quality and quantity of watercourses;

viii. monitoring to be undertaken at snow dumps;

b) identification and implementation of mitigative measures to reduce the impact of snow dumps on surface and groundwater;

c) on-going monitoring; and

d) a list of thresholds that will trigger action responses.

58. Prior to December 31, 2028, the Licensee must submit the results of a water quality characterization study. The water quality characterization study must provide data which can be used to develop seasonal water quality objectives at WH 12 for the contaminants of potential concern listed in Condition 59.

Adaptive Management Plan

59. Using data that is currently available, the Licensee must develop preliminary seasonal water quality objectives at WH 11 for the following contaminants of potential concern:

a) un-ionized ammonia;

b) nitrate and nitrite;

c) total phosphate;

d) carbonaceous biochemical oxygen demand;

e) total suspended solids;

f) fecal coliforms;

g) total selenium; and

h) total manganese.

60. Updates to the Adaptive Management Plan (AMP) must include:
    a) water quality objectives as described in Condition 59;
    b) a summary of applicable monitoring requirements;
    c) a description of how established water quality objectives are evaluated; and
    d) details on trigger levels and actions taken if trigger levels are approached or exceeded.

61. The AMP updates detailed in Condition 60 must include specific triggers and actions for the following:
    a) water withdrawal;
    b) LTECF operations;
    c) WQO for the Yukon River related to LTECF discharge;
    d) Crestview Lagoons operations;
    e) Whitehorse Lagoon operations;
    f) hydrocarbons in wastewater and stormwater;
    g) water quality in Yukon River bank seeps;
    h) stormwater, including Whistlebend management;
    i) snow dump management; and
    j) groundwater protection.

62. When a plan required by this Licence is updated, and this update results in an inconsistency with the AMP, the AMP must be updated and submitted in the same year that the plan was updated.

PART G – GENERAL CONDITIONS

63. The Licensee must ensure that the licence is available for review by employees and by Inspectors upon request.

64. Where there is a discrepancy between the Application and the conditions of this Licence, this Licence prevails.

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

Other Laws

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

Non-Compliance

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

Correspondence

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

a) to the Licensee, if delivered, e-mailed, 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 e-mailed, 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 e-mailed 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 e-mailed, or seven days after the day it was mailed, as the case may be.

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

Deliverables

70. 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.

71. The Licensee must upload electronic copies of all deliverables 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.

72. Water quantity/water level results must be submitted in MS Excel, and water quality results must be 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

73. Unless otherwise specified in this Licence, the Licensee must forward to the Board a copy of all data collected as part of the monitoring programs as described in Schedule A of this Licence, no more than 60 days after the date that data was collected.

Annual Reports

74. The Licensee must submit annual reports to the Board for the period of January 1 to December 31 of each year. Annual reports must be submitted to the Board on or before April 1 of the year following the year reported. The report must include:

a) a description of the water use operations carried out during the year;

b) the quantity of water used each day;

c) the volume of wastewater deposited into the LTECF, Crestview Lagoons and the Whitehorse Lagoon as required by Condition 45 of this Licence;

d) the total number of days of wastewater discharge to the Yukon River or Pot Hole Lake from the LTECF and the total volume of wastewater discharged;

e) the total number of days of wastewater discharge to the Yukon River from the Whitehorse Lagoon and the total volume of wastewater discharged;

f) summaries of all data generated as required by the monitoring and surveillance requirements of this licence, and an analysis and interpretation of the data by an individual qualified to do so;

g) new and updated geographic site coordinates for monitoring stations as required by Condition 41 of this Licence;

h) details of the methods, procedures and standards used in the data collection and sampling testing;

i) a detailed record of the operations of the wastewater treatment facilities including operational difficulties and monthly inspection reports;

j) updated groundwater equipotential maps for the LTECF, Crestview Lagoons and Whitehorse Lagoon;

k) physical inspection reports including photographs, repairs or plans for modification as required by Condition 52 of this Licence;

l) details of any maintenance, repairs, or improvements to all physical works, including details of how recommendations from inspections reports have been addressed;

m) summary of the review and revisions of the Spill Contingency Plan;

n) records of all spills/unauthorized discharges as required by Condition 30 of this Licence;

o) records of all enforcement actions taken under the *Storm and Sewer Bylaw*, as related to unauthorized discharge of Waste to water;

p) details of any work carried out or planned to be carried out under the Operational Plans;

q) a record of maintenance activities for the year reported;

r) a summary of expected maintenance activities for the next year;

s) details of sludge management as required by Condition 51; and

t) any decommissioning undertaken in the previous year or planned to be undertaken in the coming year.

PART H – SITE DECOMMISSIONING AND RESTORATION

75. In the event of decommissioning of part or the whole of the undertaking, all structures and associated equipment or infrastructure authorized by this licence must either be removed or left in stable condition which does not present a risk to people or the environment.

76. Prior to the commencement of decommissioning work, the Licensee must submit to the Board a final plan for the decommissioning and reclamation of all water and wastewater related structures authorized by this Licence. The plan must include:

a) delineation of the water and wastewater system;

b) a drainage plan to manage surface water associated with the decommissioned site;

c) details of any residual activities required to be carried out prior to final decommissioning and removal of any structures, associated timelines and supporting rationale.

d) methods to ensure long-term stability of water and wastewater structures;

e) a remediation plan for any contaminated areas of the site;

f) on-going monitoring activities required to minimize or mitigate environmental impacts; and

g) a schedule and cost for completion of decommissioning and reclamation activities.

PART I – SELKIRK STREET NORTH OUTFALL

Design Drawings

77. Ten days prior to the commencement of construction, the Licensee must submit to the Board final detailed design construction drawings for the Selkirk Street North outfall and associated infrastructure at the Yukon River. The final detailed design drawings must be consistent with the drawings in Exhibits 1.6 and 1.10 of Register MN20-008-1 and sealed by a professional

engineer licensed to practice in Yukon. Subject to Condition 79, all construction must be carried out in accordance with the final detailed design drawings.

78. Within 60 days of completion of construction of the Selkirk Street North outfall, the Licensee must submit to the Board, as-built design drawings sealed by a professional engineer licensed to practice in the Yukon.

79. Where site conditions require Minor Modifications to the final detailed design drawings submitted to the Board, the Licensee must submit to the Board with the as-built drawings:

    a) written details of the Minor Modifications made to the specifications and quality assurance/quality control procedures previously submitted to the Board; and

    b) an explanation, signed by a professional engineer licensed to practice in Yukon, for the change including an assessment of the potential impact on the performance of the modification; and

    c) written evidence that there has not been any fundamental changes to the original design criteria as presented in the Application.

Notification

80. Notification, including the name and phone number of the field supervisor, must be provided to the Board, in writing, 10 days prior to commencing construction activities for the construction of the Selkirk Street North outfall and associated erosion protection.

Construction

81. The Licensee must not cut any stream bank or remove any material from below the ordinary high water mark of any water body, except as described in the Application.

82. Sediment and erosion control measures must be implemented prior to and maintained during the operation.

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

84. Construction and/or maintenance equipment must be mechanically sound and free of leaks.

85. The Licensee must ensure equipment maintenance and servicing is conducted in areas described in the Application.

86. Granular bedding and backfill material used by the Licensee must consist of non-frozen material.

87. Excavated material must be deposited to a waste disposal area a minimum of 10 horizontal metres beyond the Natural Boundary of the Yukon River.

88. Unless removed from the site, all material excavated from the Watercourse must be deposited in the waste disposal area in such a manner as to remain in a stable condition.

89. To minimize impacts on surface drainage, the Licensee must prepare all sites in such a manner as to prevent rutting of the ground surface.

90. All disturbed ground surfaces must be stabilized in such a manner so as to prevent erosion and surface runoff.

Rip-rap

91. Rip-rap must be hard, dense, angular, Non-Acid Generating and Non-Metal Leaching quarry stone or boulders, free of seams, cracks, structural defects and contaminants, freeze-thaw resistant, non-slaking and free of fine-grained materials including silt and sand. Rip-rap gradation must conform to the specifications provided in the Application in Exhibit 1.11 of Register MN20-008-1.

Geotextile

92. Specifications of the geotextile material must comply with those described in the Application in Exhibit 1.11 of Register MN20-008-1.

Reporting

93. The Licensee must submit to the Board, the details of the construction of the Selkirk Street North outfall and associated infrastructure in the next annual report following the completion of construction.

Site Restoration

94. All disturbed ground surfaces must be regraded in a manner which is consistent with the topography of the site and which prevents erosion and surface runoff from carrying sediment into any Watercourse. Where soil conditions permit, disturbed areas must be re-vegetated with appropriate reclamation seeds and/or plant species that are native in Yukon.

95. Upon completion of the project activities, the Licensee must remove all construction materials, equipment, temporary structures and debris from the project area.

96. The Licensee must remove all hazardous materials from the project area and dispose of them in accordance with the provisions of the *Special Waste Regulations* of the *Environment Act*. The Licensee must include in the annual report, details on the removal and disposal of these materials.

SCHEDULE A
PART 1 – LOCATIONS OF MONITORING STATIONS

Station	Description	Location (UTM Zone 8)	
		Easting	Northing
WSL-1	Discharge from Whitehorse lagoon at exit location	496614.68	6736989.73
WSL-NE	Whitehorse Lagoon Northeast Cell (depth-integrated composite sample)	496685.99	6736850.12
WSL-SE	Whitehorse Lagoon Southeast Cell (depth-integrated composite sample)	496690.47	6736717.66
WSL-SW	Whitehorse Lagoon Southwest Cell (depth-integrated composite sample)	496563.47	6736723.54
WSL-NW	Whitehorse Lagoon Northwest Cell (depth-integrated composite sample)	496559.04	6736845.81
WH 1	Raw water supply from Schwatka Lake at the Selkirk Pumphouse	497841.93	6730052.43
WH 2	Raw water supply from Selkirk Aquifer at the pumphouse	497841.93	6730052.43
WH 3	Treated water supply at the Selkirk pumphouse	497841.93	6730052.43
WH 4	Discharge from storm sewers at Strickland Street outfall	497198.64	6732009.73
WH 4a	Discharge from storm sewers at Ogilvie Street outfall		
WH 4b	Discharge from storm sewers at Spook Creek outfall		
WH 4c	Discharge from storm sewers at Marwell outfall		
WH 4d	Discharge from storm sewers at Selkirk Street South outfall		
WH 4e	Whistlebend stormwater bioswale		
WH 4f	Whistlebend stormwater Pond 1		
WH 4g	Whistlebend stormwater Pond 2		
WH-4h	Discharge from storm sewers at Selkirk Street North outfall		
WH 5	Influent to Crestview sewage lagoon	491675.91	6739574.32
WH 5a	Treated wastewater at the end of the first secondary cell of the Crestview Lagoons collected as depth-integrated composite samples at four locations within the impoundment		
WH 6a	Outflow at the Marwell lift station	496256.46	6734378.04
WH 6b	Influent from upper Porter Creek	492591.05	6738362.53
WH 6c	Combined Marwell and Porter Creek influent to LTECF	494971.65	6740916.65
WH 7	Treated wastewater from primary cells of the LTECF	494879.5	6741250.96
WH 8	Influent to long term storage pond at the LTECF	494438.21	6741182.58
WH 9a	Water from the long term storage pond at the LTECF collected as depth-integrated composite samples at four locations within the impoundment	The LTS pond is bounded by the following coordinates:	
		493446.31	6742710.84
		492992.82	6742471.63
		493673.87	6741169.06
		494383.04	6741238.79
WH 9b	Treated wastewater from the discharge manhole at the LTECF	493900.44	6740898.63

Station	Description	Location (UTM Zone 8)	
		Easting	Northing
WH- 10b	Yukon River upstream of outfall from the LTECF (mid channel)		
WH 11	Yukon River approximately 300 metres downstream of outfall from LTECF (mid channel)	493671	6739347
WH 12	Yukon River approximately 750 metres downstream of outfall from the LTECF (mid channel)	493236	6739256
WH-15	Sludge/biosolid in the Primary Cell near the point of outflow	494835.54	6741201.65
		494925.62	6741219.45
PHL	A station location within the Pothole Lake forming part of the LTECF facility, at 682.49 m asl	493693	6740280
WH 17	Seep #4 – small gravel area downgradient of LTECF		
WH 18	Seep #5A – upper bench zone downgradient of LTECF		
WH 19	Seep #5B – large gravel bench area downgradient of LTECF		
WH 20	Seep #6A – in gravel area may be connected to #5B downgradient of LTECF		
WH 21	Seep #6B – in silt area downgradient of LTECF		
WH 22	Seep #7 – in silt area downgradient of LTECF		
WH 23	Seep #8 – in silt area downgradient of LTECF		
WH 24	If encountered, seep along the Yukon River bank downgradient of the Crestview Lagoons		
GW-1	Monitoring well approximately 30 metres southeast of the primary anaerobic storage lagoons at the LTECF	495064.02	6740876.25
GW-2	Monitoring well southwest of facultative lagoons at the LTECF	494406.98	6740633.37
GW-3	Monitoring well southwest of long term storage pond at the LTECF	493211.9	6741338.2
GW-4	Monitoring well near northern margin of long term storage pond at the LTECF	492877	6743069
MW-1	Monitoring well located between Pothole Lake and the Yukon River approximately 500 metres north-northwest from closest point to Yukon River at 682.49 m asl	493734.5	6739973.7
MW-2	Monitoring well located between Pothole Lake and the Yukon River approximately 300 metres north-northwest from nearest point to Yukon River at 654.91 m asl	493808.3	6739973.7
MW-4a	Monitoring well located between Pothole Lake and the Yukon River approximately 30 metres due north from closest point to Yukon River at 634.75 m asl	493870.7	6739509.4
XX-MW-03	Additional well to be added at the LTECF		
XX-MW-04	Additional well to be added at the LTECF		
XX-MW-05	Additional well to be added at the LTECF		

Station	Description	Location (UTM Zone 8)	
		Easting	Northing
XX-MW-06	Additional well to be added at the LTECF		
XX-MW-01	Additional well to be added at the LTECF, if required		
XX-MW-02	Additional well to be added at the LTECF, if required		
MW-1-08s	Shallow monitoring well located at the south corner of the Crestview lagoons	491689	6739565
MW2-19	Monitoring well located approximately 75 m south of MW-1-08		
MW-2-08s	Shallow monitoring well located at the southeast corner of the Crestview Lagoons	491803	6739661
MW-2-08d	Deep monitoring well located at the southeast corner of the Crestview Lagoons	491803	6739661
MW1-19	Monitoring well located next to MW2-08		
MW-3-08	Monitoring well located at the north end of the Crestview Lagoons	491330	6740319
MW-4-08	Monitoring well located to the east of the Crestview Lagoons	491594	6740008
MW-11	Additional well to be added at the Crestview Lagoons		
MW-12	Additional well to be added at the Crestview Lagoons		
MW-13	Additional well to be added at the Whitehorse Lagoon		
MW-14	Additional well to be added at the Whitehorse Lagoon		
MW-15	Additional well to be added at the Whitehorse Lagoon		

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

Table 1 – Surface Water Monitoring

Parameter	WSL-NE WSL-SE WSL-SW WSL-NW	WSL-1	WH-1 WH-2 WH-3	WH-4 WH-4a WH-4b WH-4c WH-4d WH-4h	WH-4e WH-4f WH-4g
Water Level	2wPD				JAO
Flow		DDD	D		
pH (field and laboratory)	2wPD	DD(1)		BMS	JAO
Temperature (^oC)	2wPD	DD(1)		BMS	JAO
Dissolved O_2 (mg/L)	2wPD	DD(1)		BMS	JAO
Specific Conductance (µS/cm)	2wPD	DD(1)		BMS	JAO
Total Suspended Solids (mg/L)	2wPD	DD(1)		BMS	JAO
Fecal Coliforms (cfu/100 mL)	2wPD	DD(1)		BMS	JAO
Total Coliforms (cfu/100 mL)	2wPD	DD(1)			
Chloride (mg/L)	2wPD	DD(1)		BMS	JAO
Total Phosphate (mg/L as P)	2wPD	DD(1)			
Nitrate & Nitrite (mg/L)	2wPD	DD(1)			JAO
Total Ammonia (mg/L)	2wPD	DD(1)			JAO
Un-ionized Ammonia - N (mg/L)	2wPD	DD(1)			JAO
Total Alkalinity, as $CaCO_3$					JAO
$CBOD_5$ (mg/L)	2wPD	DD(1)			JAO
COD (mg/L)				BMS	
ICP Total Metals[1] (mg/L)	2wPD	DD(1)		BMS	JAO
ICP Dissolved Metals[2] (mg/L)	2wPD	DD(1)		BMS	JAO
Oil & Grease (mg/L)	2wPD	DD(1)		BMS	JAO
Petroleum Hydrocarbons[3]	2wPD	DD(1)		BMS	JAO
Phenols (mg/L)				BMS	
Chlorophyll A (µg/L)					JAO
LC_{50} Bioassay (100%)	2wPD	DD(1)			
Giardia	2wPD	DD(1)			

Table 1 – Surface Water Monitoring continued

Parameter	WH-5	WH-5a	WH-6a WH-6b	WH-6c	WH-7 WH-8
Water Level		JAO			
Flow	D		D	D	
pH (field and laboratory)	Q_{24C}	A		Q_{24C}	Q_1
Temperature (^oC)	Q_{24C}	A		Q_{24C}	Q_1
Dissolved O_2 (mg/L)		A		Q_{24C}	Q_1
Specific Conductance (µS/cm)	Q_{24C}	A		Q_{24C}	
Total Suspended Solids (mg/L)	Q_{24C}	A		Q_{24C}	Q_1
Fecal Coliforms (cfu/100 mL)	Q_{24C}	A		Q_{24C}	Q_1
Total Coliforms (cfu/100 mL)	Q_{24C}			Q_{24C}	
Chloride (mg/L)	Q_{24C}	A		Q_{24C}	
Total Phosphate (mg/L as P)	Q_{24C}	A		Q_{24C}	Q_1
Nitrate & Nitrite (mg/L)	Q_{24C}	A		Q_{24C}	
Total Ammonia (mg/L)	Q_{24C}	A		Q_{24C}	Q_1
Un-ionized Ammonia - N (mg/L)	Q_{24C}	A		Q_{24C}	Q_1
Total Alkalinity, as $CaCO_3$					
$CBOD_5$ (mg/L)	Q_{24C}	A		Q_{24C}	Q_1
COD (mg/L)					
ICP Total Metals[1] (mg/L)		A		Q_{24C}	
ICP Dissolved Metals[2] (mg/L)		A		Q_{24C}	
Oil & Grease (mg/L)	Q_{24C}	A		Q_{24C}	
Petroleum Hydrocarbons[3]	Q_{24C}	A		Q_{24C}	
Phenols (mg/L)					
Chlorophyll A (µg/L)					
LC_{50} Bioassay (100%)					
Giardia	Q_{24C}	A		Q_{24C}	Q_1

Table 1 – Surface Water Monitoring continued

Parameter	WH-9a	WH-9b	WH-10 WH-11 WH-12	PHL
Water Level	PD			PD, DDD and Q_2
Flow		DDD		
pH (field and laboratory)	PD	BW or DD(3)	PDAD	
Temperature (^oC)	PD	BW or DD(3)	PDAD	
Dissolved O_2 (mg/L)	PD	DD(3)	PDAD	
Specific Conductance (µS/cm)	PD	BW or DD(3)	PDAD	
Total Suspended Solids (mg/L)	PD	BW or DD(3)	PDAD	
Fecal Coliforms (cfu/100 mL)	PD	DD(3)	PDAD	
Total Coliforms (cfu/100 mL)	PD	DD(3)		
Chloride (mg/L)	PD	DD(3)		
Total Phosphate (mg/L as P)	PD	DD(3)	PDAD	
Nitrate & Nitrite (mg/L)		DD(3)	PDAD	
Total Ammonia (mg/L)	A	BW or DD(3)	PDAD	
Un-ionized Ammonia - N (mg/L)	PD	BW or DD(3)	PDAD	
Total Alkalinity, as $CaCO_3$				
$CBOD_5$ (mg/L)	PD	BW or DD(3)	PDAD	
COD (mg/L)				
ICP Total Metals[1] (mg/L)	PD	DD(3)	PDAD	
ICP Dissolved Metals[2] (mg/L)	PD	DD(3)		
Oil & Grease (mg/L)	PD	DD(3)		
Petroleum Hydrocarbons[3]	PD	DD(3)	PDAD	
Phenols (mg/L)				
Chlorophyll A (µg/L)				
LC_{50} Bioassay (100%)	PD	DD(3)		
Giardia	PD	DD(3)		

Table 2 – Groundwater Monitoring

Parameter	WH-16 WH-17 WH-18 WH-19 WH-20 WH-21 WH-22	WH-23	GW-1 GW-2 GW-3 GW-4	MW-1 MW-2 MW-4A	MW-5 MW-6 MW-7 MW-8 MW-9 MW-10	MW-1-08s MW2-19 MW-2-08s MW-2-08d MW1-19 MW-3-08 MW-4-08 MW-11 MW-12	MW-13 MW-14 MW-15
Water Level			A(3)	PDAD	A(3)	A(3)	A(3)
Flow	A	A					
pH (field and laboratory)	A	A	A(3)		A(3)	A(3)	A(3)
Temperature (°C)	A	A	A(3)		A(3)	A(3)	A(3)
Dissolved O_2 (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
Specific Conductance (µS/cm)			A(3)		A(3)	A(3)	A(3)
Total Suspended Solids (mg/L)							
Fecal Coliforms (cfu/100 mL)	A	A	A(3)		A(3)	A(3)	A(3)
Total Coliforms (cfu/100 mL)							
Chloride (mg/L)	A	A	A(3)	PDAD	A(3)	A(3)	A(3)
Total Phosphate (mg/L as P)	A	A					
Nitrate & Nitrite (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
Total Ammonia (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
Un-ionized Ammonia - N (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
Total Alkalinity, as $CaCO_3$							
$CBOD_5$ (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
COD (mg/L)							
ICP Total Metals[1] (mg/L)							
ICP Dissolved Metals[2] (mg/L)	A	A	A(3)		A(3)	A(3)	A(3)
Oil & Grease (mg/L)							
Petroleum Hydrocarbons[3]			A(3)		A(3)	A(3)	A(3)
Phenols (mg/L)							
Chlorophyll A (µg/L)							
LC_{50} Bioassay (100%)							
Giardia							

Notes: 1) ICP Dissolved and Total Metals Analysis must 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

2) Hydrocarbon analysis must 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 – Sludge Monitoring

	Location and Sampling Frequency
Sludge at WH-15	Sludge elevations must 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 LTECF.

SCHEDULE A
PART 3 – SAMPLING FREQUENCIES

Key	Frequency
D	Daily
Q_1	Quarterly
Q_2	Quarterly beginning within 2 weeks after end of discharge
Q_{24C}	Quarterly (24 hour Composite Sample)
2wPD	Two weeks prior to discharge
PD	Prior to discharge
PDAD	Prior to, during and after discharge
DD(1)	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
BMS	During break-up when outfalls are discharging; and mid-season and September, after a period where at least 15 mm of rain falls within 48 hours.
JAO	Three times per year, in June, August and October
A	Once per year
A(3)	Three times per year

YUKON WATER BOARD

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

LICENSEE:	Resort Development Group (Yukon) Inc.
CONTACT INFORMATION:	Box 20423 Whitehorse, YT Y1A 7A2 E-mail: umbrich@gmail.com
LICENCE NUMBER:	MN20-045
UNDERTAKING:	Municipal **LICENCE TYPE:** B
WATER MANAGEMENT AREA:	02 Yukon
LOCATION:	Takhini Hot Springs, Whitehorse, Yukon
MAP CO-ORDINATES:	Latitude: 60° 52' 41" N Longitude: 135° 21' 30" W
PURPOSE:	To deposit a Waste associated with the operation of a black water septic system for the purpose of wastewater treatment.
EFFECTIVE DATE:	March 25, 2021
EXPIRY DATE:	March 24, 2046

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

Dated this __25__ day of March, 2021

Approved by:

Digitally signed
Witness

Digitally signed
Chairperson
Yukon Water Board