# Small Systems WSER Training

# Agenda

1 ■ Introduction

2 ■ Small Wastewater Systems

3 ■ Monitoring Effluent Volumes

4 ■ Effluent Sampling

5 ■ Key Design Considerations

6 ■ Summary

# Introduction

## Part 1

# Introduction

- Purpose of Training
- Roles of ECCC / WRMD / MI

# Purpose of Training

01

Support small wastewater systems in NL with Transitional Authorization (TA) (or applying for TA)

02

Provide practical guidance to collect data required for WSER reporting

03

Present the typical pathway from

TA

⬇

Upgraded WWTP

⬇

Full WSER compliance

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# Roles of ECCC / WRMD / MI

Environment and Climate Change Canada
Environnement et Changement climatique Canada

Newfoundland Labrador

| ECCC (Environment and Climate Change Canada) | WRMD (Provincial Water Resources Management Division) | MI (Municipal Infrastructure / Municipal Affairs) |
|---|---|---|
| • Enforces Wastewater Systems Effluent Regulations (WSER)<br>• Receives monitoring reports (ERRIS)<br>• Conducts compliance inspections | • Issues provincial approvals<br>• Reviews design and operational changes<br>• Oversees environmental protection at provincial level | • Funding and infrastructure oversight<br>• Capital project support<br>• Asset management guidance |

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# Small Wastewater Systems

## Part 2

# Small Wastewater Systems

- Types of Small Wastewater Systems
- Mechanical Plants
- Lagoons
- Monitoring Requirements
- Sampling & Reporting
- ERRIS

# Types of Small Wastewater Systems

Systems with average daily effluent volume ≤ 2,500 $m^3$/day

**Mechanical Plants**

**Continuous Lagoons**

**Outfalls**
**(No Treatment)**

**Intermittent Lagoons**

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# Small Wastewater Systems: Mechanical Plants


**Mechanical Plants**
A continuously discharging system with treatment

**Outfalls**
A continuously discharging system that does not have any treatment

# Small Wastewater Systems: Lagoons


**Continuous Lagoons**
A large pond (or ponds) with a storage capacity of at least 5 days


**Intermittent Lagoons**
A lagoon designed to hold the wastewater for at least 90 days

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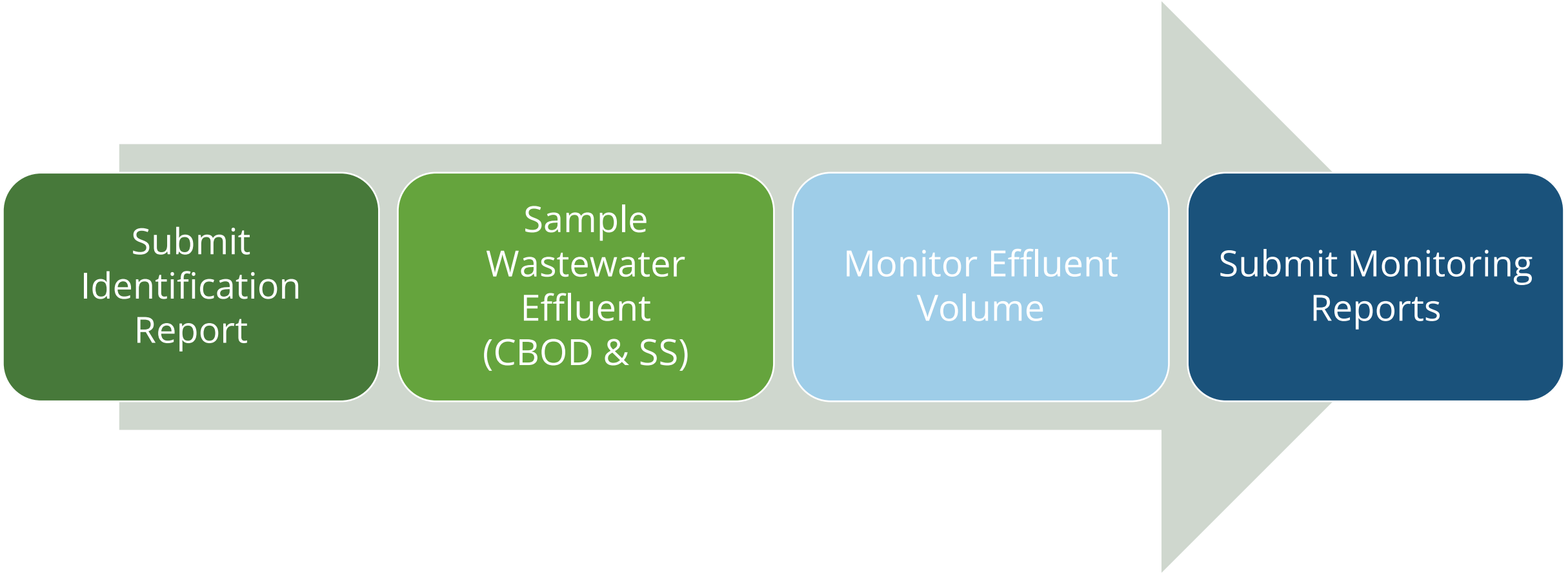
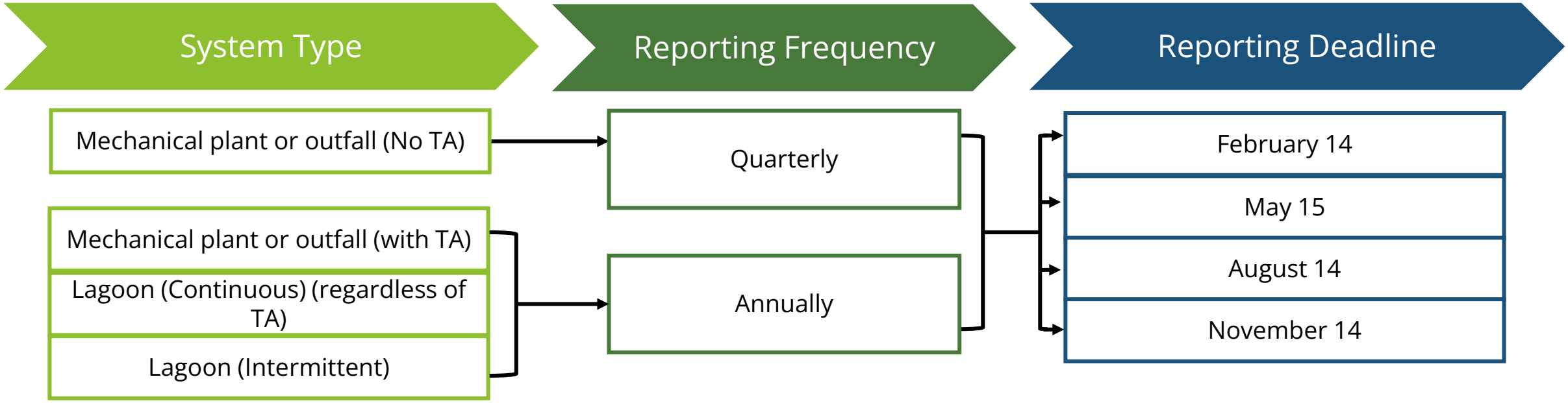
# Small Wastewater Systems: Monitoring Requirements



# Sampling & Reporting – Small Systems

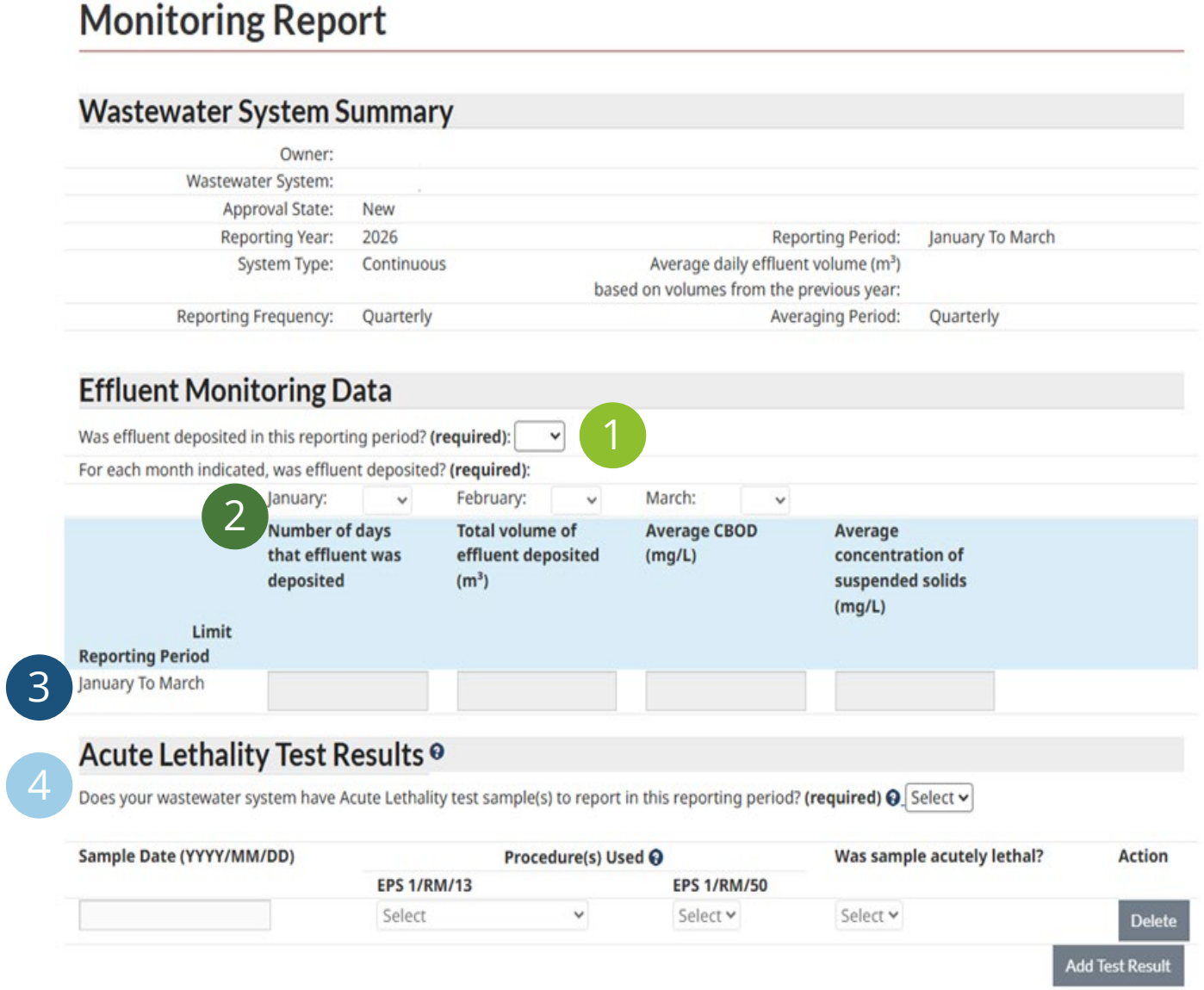
Sampling and reporting frequency depends on:

- System type
- Whether the system has a TA
- Volume of effluent deposited (size of system)



# Entering Data into ERRIS – Quarterly Reporting

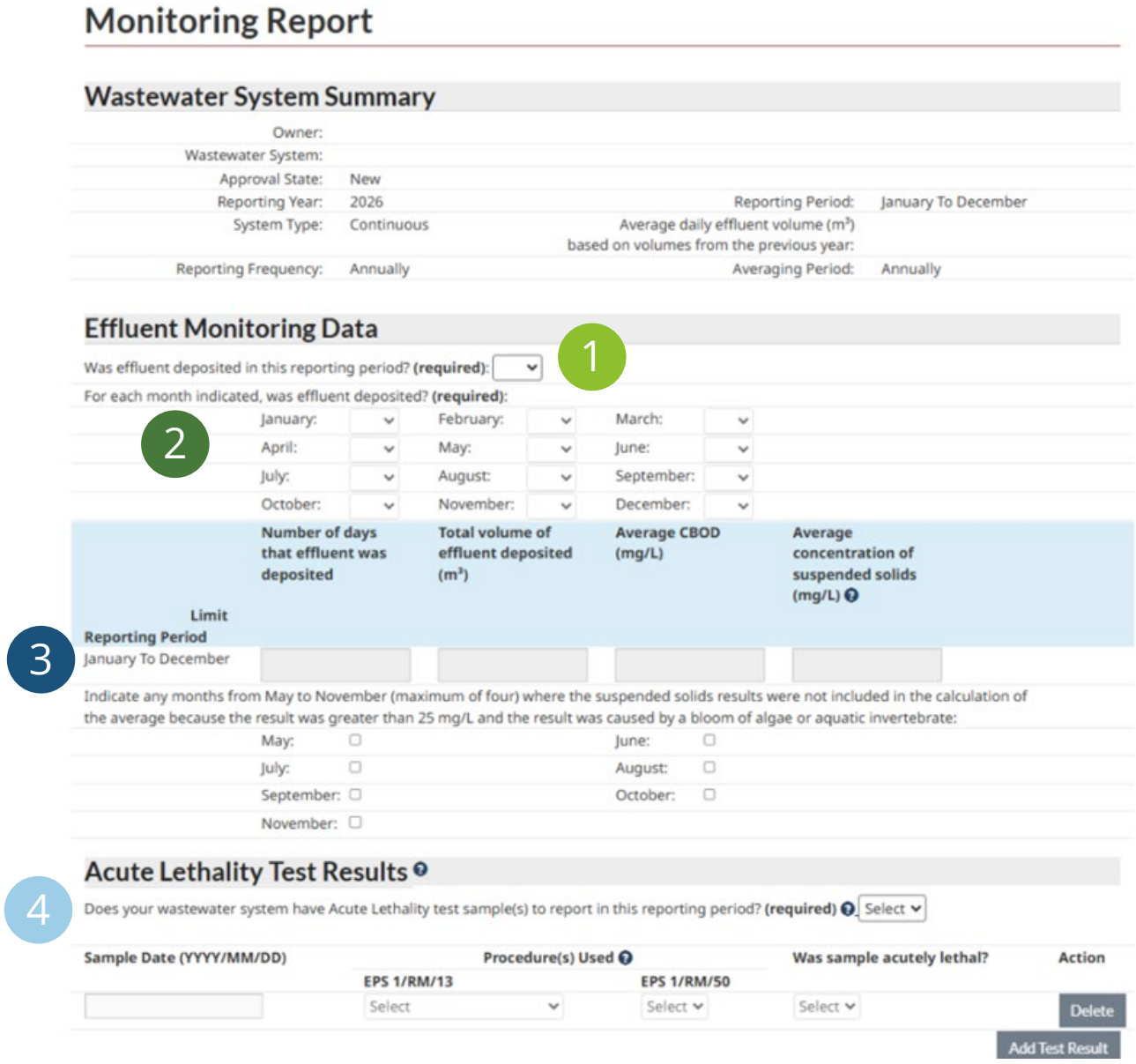
1. Select Yes
2. Choose the month(s) when discharge occurred using the drop-down menu
3. Enter:
   - Number of discharge days
   - Total volume discharged
   - Average CBOD (mg/L)
   - Average SS (mg/L)
4. If Acute Lethality test was completed, select YES and enter results




Note : Data must be reported for each reporting period

# Entering Data into ERRIS – Annual Reporting

1. Select Yes
2. Choose the month(s) when discharge occurred using the drop-down menu
3. Enter:
   - Number of discharge days
   - Total volume discharged
   - Average CBOD (mg/L)
   - Average SS (mg/L)
4. If Acute Lethality test was completed, select YES and enter results



# Monitoring Effluent Volumes

## Part 3

# Monitoring Effluent Volumes

- WSER Flow Monitoring Requirements
- Understanding Your System
- Flow Meter Considerations
- Monitoring & Estimation Methods
- Historical Wastewater & Population
- Pump Station Run Time
- Estimation Methods - Demo

# WSER Flow Monitoring Requirements

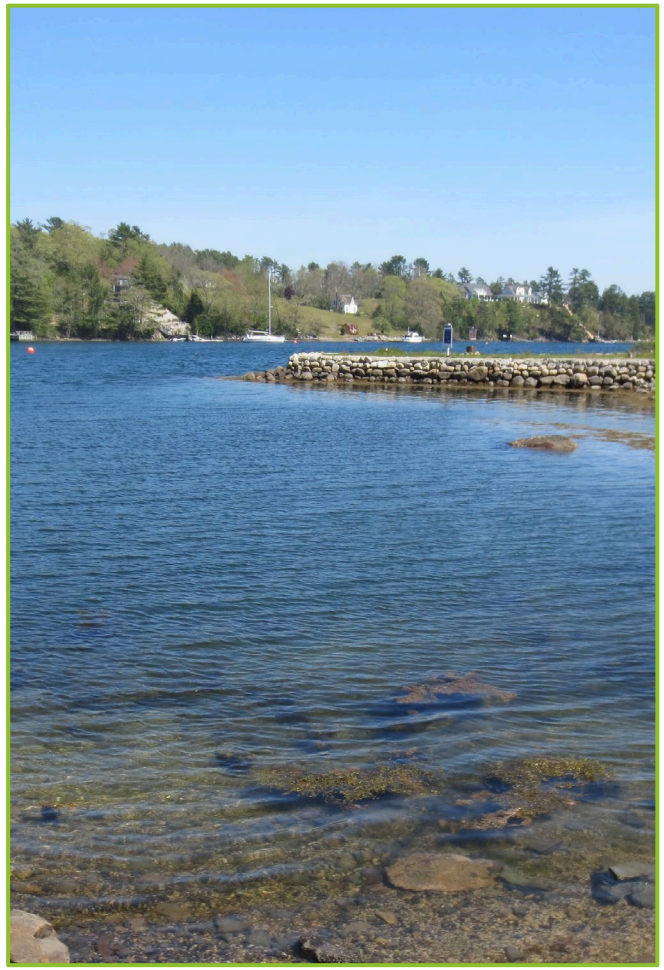
| System Type | Flow Monitoring | Reporting |
|---|---|---|
| Mechanical plant or outfall (no TA) | Flow meter | Quarterly |
| Mechanical plant or outfall (with TA) | Flow meter or method of estimation | Annually |
| Lagoon (Continuous) (no TA) | Flow meter | Annually |
| Lagoon (Continuous) (with TA) | Flow meter or method of estimation | Annually |
| Lagoon (Intermittent) | Flow meter or method of estimation | Annually |


Wabush, NL


Shubenacadie, NS


Deer Lake, NL

# Flow Monitoring - Understanding Your System



## Questions to consider:

- What type of wastewater system – mechanical plant, outfall, lagoon?
- How many outfalls?
- Does the system have a flow meter?
- Has there been historical flow data collected?

# Flow Meter Considerations

- Preferred method for flow monitoring
- Need for flow meter and data for feasibility study or design of upgrades

# Flow Meter Considerations

## Common issues with flow meter:

- Unsure how to access data
- Flow meter maintenance
- Subscription fees for web services
- Reporting flow data

# Monitoring & Estimation Methods

- Preferred method for flow monitoring is with a flow meter
- Small systems with a TA have option to estimate flow as part of WSER
- Acceptable estimation methods include:
  - Historical Wastewater Flow & Population Data
  - Pump Station Run Time Method
  - Other methods
- Spreadsheet tool for estimating

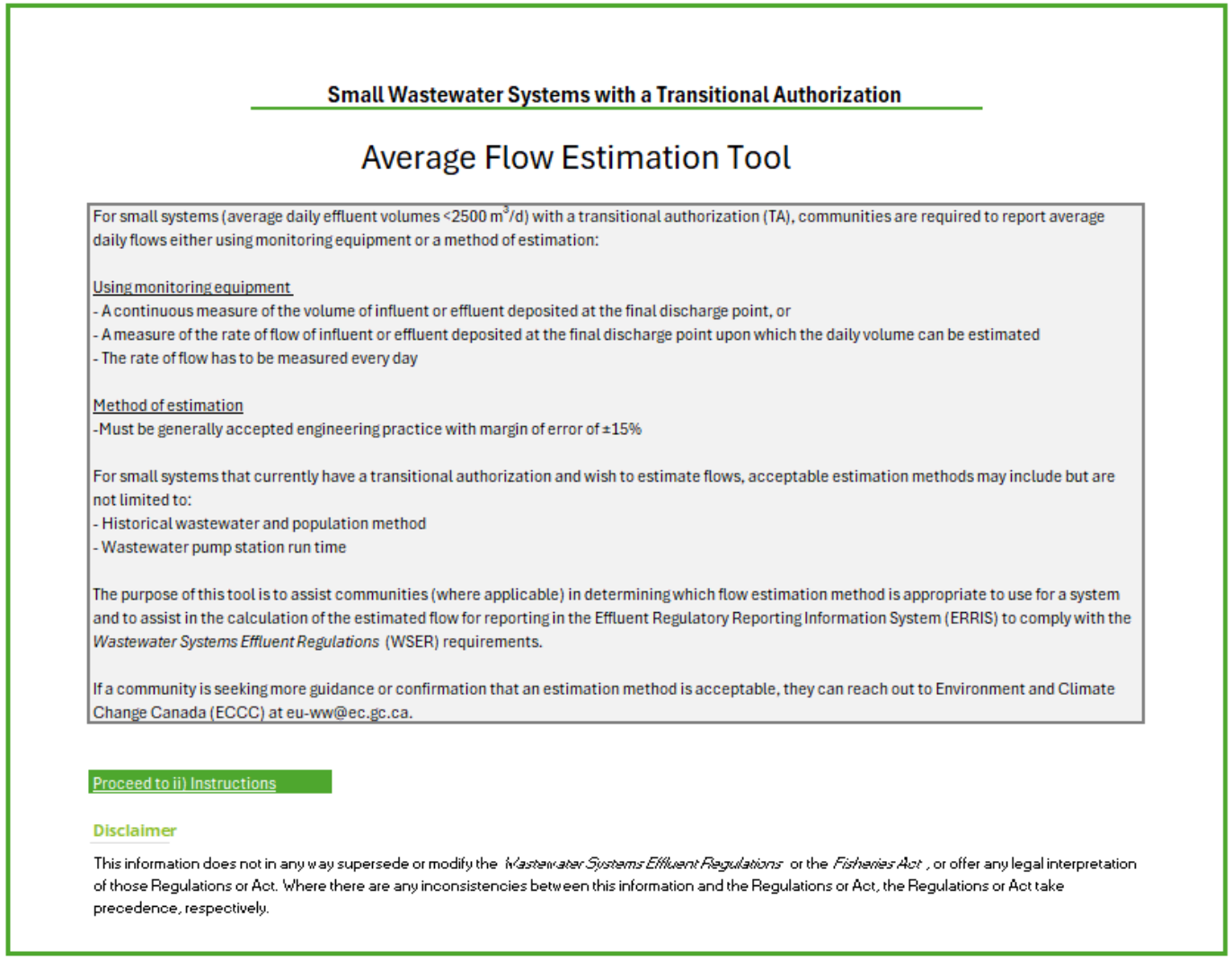
# Estimation Methods - Historical Wastewater & Population Data

| What you Need | Method | When to Use | When Not to Use |
|---|---|---|---|
| Historical wastewater data for the system | The historical wastewater data is used to see how much wastewater is produced per person | You have historical wastewater data that was measured with a flow meter | Community population varies throughout the year due to tourism or seasonal workers |
| **AND** | | **AND** | **OR** |
| System population data (Census or tax-based) | The amount of wastewater per person is then multiplied by the current population | Town population stays relatively constant throughout the year | The system has a large industrial user that was added to the system since the historical flow data was collected. |

# Estimation Methods – Pump Station Run Time

| What you Need | Method | When to Use | When Not to Use |
|---|---|---|---|
| Wastewater pump station that captures >85% of flow to outfall | The average daily flow is estimated using the pump rate of the pumps and the amount of time the pumps run each day | Collection system has pump station near the outfall that takes >85% of flow | Pump station collects flow for <85% of flow for outfall |
| **AND** | | **AND** | **OR** |
| Daily pump run time for pump station | If the pump rate is not known, it can be estimated with a pump draw down test | You can measure pump run times | Pump run times are not available |
| | | **AND** | **OR** |
| | | You can determine pump flow rate for pump station | Pump flow rate cannot be determined |

# Estimation Methods – Demo



**Small Wastewater Systems with a Transitional Authorization**

## Average Flow Estimation Tool

For small systems (average daily effluent volumes <2500 $m^3$/d) with a transitional authorization (TA), communities are required to report average daily flows either using monitoring equipment or a method of estimation:

Using monitoring equipment
- A continuous measure of the volume of influent or effluent deposited at the final discharge point, or
- A measure of the rate of flow of influent or effluent deposited at the final discharge point upon which the daily volume can be estimated
- The rate of flow has to be measured every day

Method of estimation
-Must be generally accepted engineering practice with margin of error of ±15%

For small systems that currently have a transitional authorization and wish to estimate flows, acceptable estimation methods may include but are not limited to:
- Historical wastewater and population method
- Wastewater pump station run time

The purpose of this tool is to assist communities (where applicable) in determining which flow estimation method is appropriate to use for a system and to assist in the calculation of the estimated flow for reporting in the Effluent Regulatory Reporting Information System (ERRIS) to comply with the *Wastewater Systems Effluent Regulations* (WSER) requirements.

If a community is seeking more guidance or confirmation that an estimation method is acceptable, they can reach out to Environment and Climate Change Canada (ECCC) at eu-ww@ec.gc.ca.

Proceed to ii) Instructions

**Disclaimer**

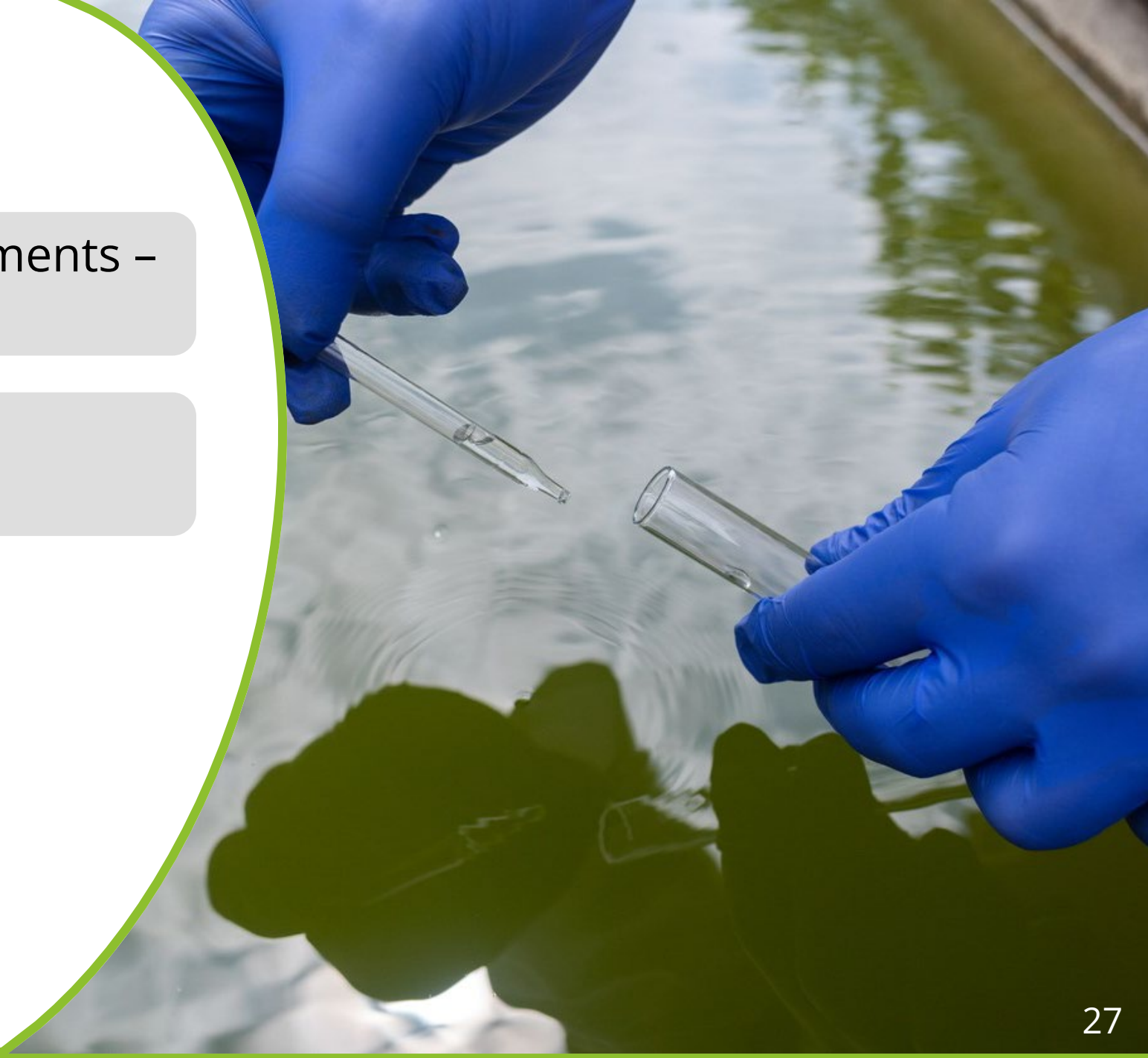
This information does not in any way supersede or modify the *Wastewater Systems Effluent Regulations* or the *Fisheries Act*, or offer any legal interpretation of those Regulations or Act. Where there are any inconsistencies between this information and the Regulations or Act, the Regulations or Act take precedence, respectively.

# Effluent Sampling

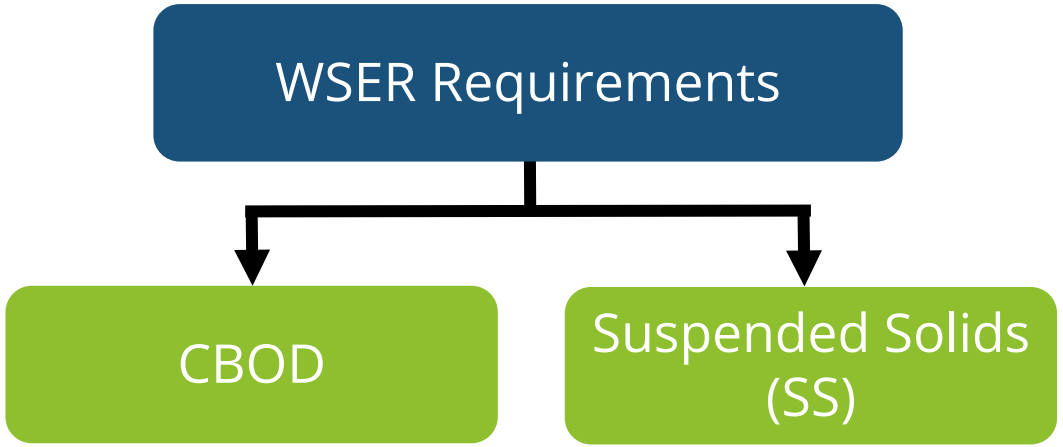
## Part 4

# Effluent Sampling

- WSER Sampling Requirements – Small Systems
- Steps for Sampling



# WSER Sampling Requirements – Small Systems




| Plant Type | Sampling Schedule | Reporting Schedule |
|---|---|---|
| Mechanical Plant or Outfall (no TA) | Monthly, at least 10 days between samples | Quarterly |
| Mechanical Plant or Outfall (with TA) | Quarterly, at least 60 days between samples | Annually |
| Lagoon (Continuous) | Quarterly, at least 60 days between samples | Annually |
| Lagoon (Intermittent) | Once at discharge if it lasts less than 30 days, or every two weeks if more than 30 days | Annually |

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# Steps for Sampling

1. Before Sampling – Contact Accredited Laboratory
2. Safe Access to Sampling Location
3. Collect the Sample
4. Chain of Custody & Shipping
5. Review Lab Certificate
6. Entering Data into ERRIS

Step 1

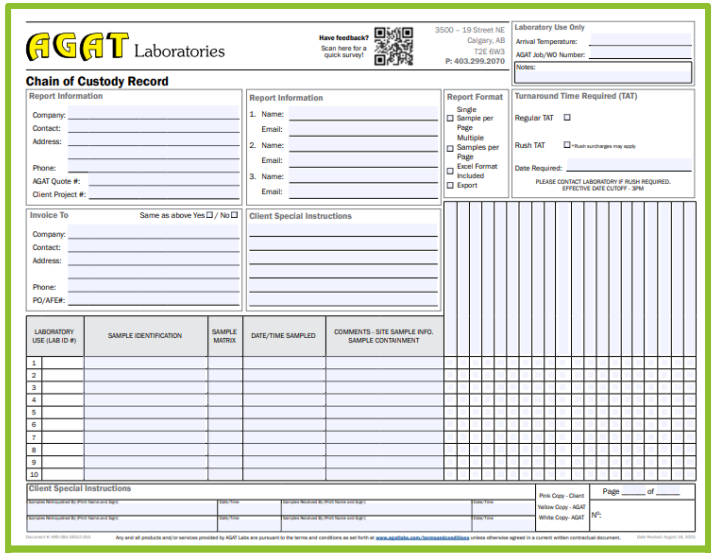
# Before Sampling - Contact Accredited Laboratory

## Request:

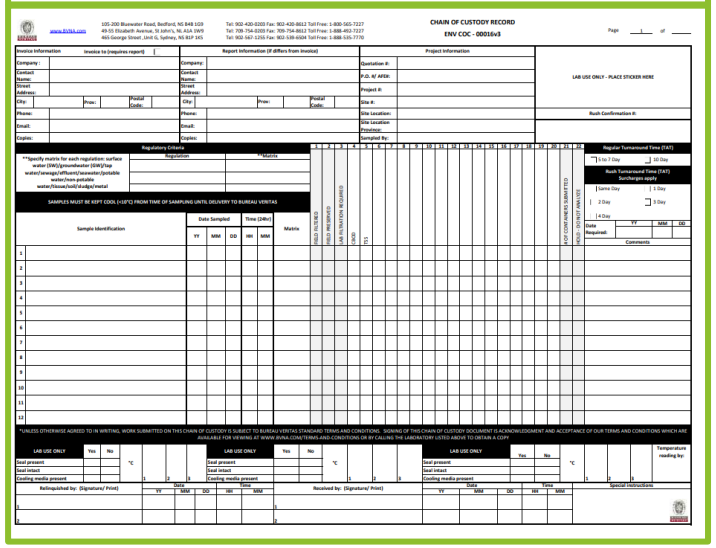
- CBOD bottles
- SS bottles
- Chain of Custody (COC) form
- Cooler / ice packs (if needed)

## In Newfoundland & Labrador:

- AGAT Laboratories
- Bureau Veritas
- Other accredited


AGAT Laboratories

Chain of Custody Record


CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

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Step 2

# Safe Access to Sampling Location

- Assess your safety situation.
- Wear PPE.
- Control traffic.
- Use proper lifting tool.
- Do NOT enter the manhole. Use sampling stick.
- Ensure stable footing.
- Avoid moving equipment.

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Step 3

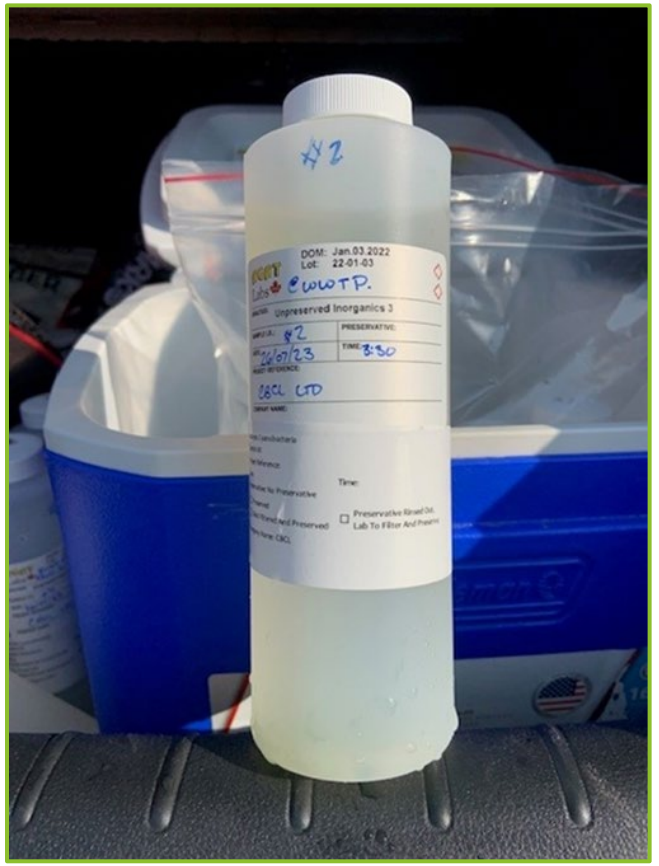
# Collect the Sample

## Sample free-flowing wastewater:

- Avoid sludge and debris
- Fill bottle to marked line

## Label immediately:

- Location
- Date
- Time
- Sampler name

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Step 4

# Chain of Custody & Shipping


- Complete COC form
- Keep samples refrigerated (do not freeze)
- Ensure samples reach lab within hold time (typically within 48 hours)
- Seal COC in zip bag
- Pack bottles securely
- Ship via courier

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# AGAT Laboratories

Have feedback? Scan here for a quick survey!

3500 – 19 Street NE
Calgary, AB
T2E 6W3
P: 403.299.2070

**Laboratory Use Only**
Arrival Temperature: _____
AGAT Job/WO Number: _____
Notes:

## Chain of Custody Record

**Report Information**
Company: Demo Comunity
Contact: Name Lastname
Address: 234 Demo Street
Town of Demo, NL. A0A 1X8
Phone: 709-856-xxxx
AGAT Quote #: 12345
Client Project #: 260120.00

**Report Information**
1. Name: Name Lastname
Email: Lastname@democommunity.ca
2. Name:
Email:
3. Name:
Email:

**Report Format**
☐ Single Sample per Page
☑ Multiple Samples per Page
☑ Excel Format Included
☐ Export

**Turnaround Time Required (TAT)**
Regular TAT ☑
Rush TAT ☐ *Rush surcharges may apply
Date Required: _____
PLEASE CONTACT LABORATORY IF RUSH REQUIRED.
EFFECTIVE DATE CUTOFF - 3PM

**Invoice To** Same as above Yes ☑ / No ☐
Company:
Contact:
Address:
Phone:
PO/AFE#:

**Client Special Instructions**

| LABORATORY USE (LAB ID #) | SAMPLE IDENTIFICATION | SAMPLE MATRIX | DATE/TIME SAMPLED | COMMENTS - SITE SAMPLE INFO. SAMPLE CONTAINMENT | CBOD | TSS | Other: |
|---|---|---|---|---|---|---|---|
| 1 | Outfall #1 | Water | Feb 28 / 10:15 AM | | ☑ | ☑ | |
| 2 | Outfall #2 | Water | Feb 28 / 11:30 AM | | ☑ | ☑ | |
| 3 | Outfall #3 | Water | Feb 28 / 12:05 PM | | ☑ | ☑ | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

**Client Special Instructions**

| Samples Relinquished By (Print Name and Sign): | Date/Time | Samples Received By (Print Name and Sign): | Date/Time |
|---|---|---|---|
| Name Lastname | Feb 28 1 PM | | |
| Samples Relinquished By (Print Name and Sign): | Date/Time | Samples Received By (Print Name and Sign): | Date/Time |
| | | | |

Pink Copy - Client
Yellow Copy - AGAT
White Copy- AGAT

Page 1 of 1
N°:



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Step 5

# Review Lab Certificate

When results are received, check:

- CBOD (mg/L)
- SS (mg/L)
- Sample Date
- Reporting Period

→

- Average the CBOD results
- Average the SS results
- Do NOT average detection limits (RDL)

AGAT Laboratories

11 Morris Drive, Unit 122
Dartmouth, Nova Scotia
CANADA B3B 1M2
TEL (902)468-8718
FAX (902)468-8924
http://www.agatlabs.com

# Certificate of Analysis

**AGAT WORK ORDER:**
**PROJECT:**

**CLIENT NAME** Demo Community
**SAMPLING SITE:** Outfall

**ATTENTION TO:** Town Clerk
**SAMPLED BY:** Town Operator

## TSS, cBOD, pH

**DATE RECEIVED: 2026-02-06** **DATE REPORTED: 2026-02-12**

| | | | | SAMPLE DESCRIPTION: | |
|---|---|---|---|---|---|
| | | | | SAMPLE TYPE: | Water |
| | | | | DATE SAMPLED: | 2026-02-06 12:15 |
| **Parameter** | **Unit** | **G / S** | **RDL** | **7467943** | |
| Biochemical Oxygen Demand, Carbonaceous | mg/L | | 2 | 45 | |
| Total Suspended Solids | mg/L | | 5 | 50 | |
| pH | | | | 7.46 | |

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard
**7467943** pH has been analyzed past the recommended holding time of 15 minutes from sampling. Field measurement recommended for most accurate result
Analysis performed at AGAT Halifax (unless marked by *)

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Step 6

# Entering Data into ERRIS

For each reporting period, enter:

- Average CBOD
- Average SS
- Effluent volume
- Number of discharge days

**NOTE:**

- Ensure correct units (mg/L, $m^3$).
- Confirm reporting period matches lab results.

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# Key Design Considerations

## Part 5

# Key Design Considerations

- Getting Started
- Securing Funding for Feasibility Study
- Hire Consultant for Feasibility Study
- Complete Feasibility Study
- Apply for Capital Funding
- Design & Construct WWTP
- Operating a WWTP

# Key Design Considerations

- Construction of a wastewater treatment plant is a very large capital project.
- Proper planning now helps for successful project in the future.

# Getting Started

## Have a TA?

- Complete WSER monitoring
- 2030 or 2040 timeline for system upgrades

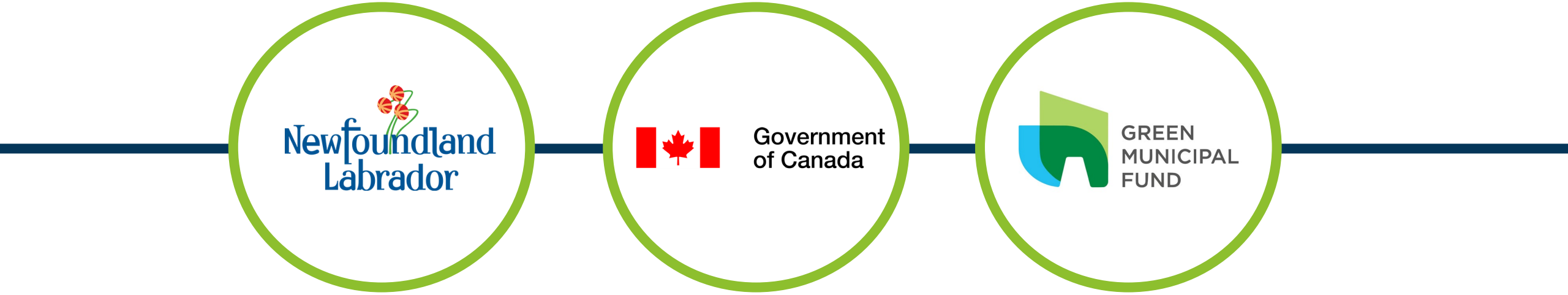
## No TA?

- Contact ECCC to determine community eligibility
- Apply for TA

# Securing Funding for Feasibility Study

Cost of a feasibility study may exceed available budget of community

## Funding programs to consider:




Municipal Capital Works
(NL Provincial Funding)

Build Communities Strong Fund
(Federal Funding)

Green Municipal Fund
(FCM)

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# Hire Consultant for Feasibility Study


If community receives provincial funding, MI will aid in the hiring process.

# Complete Feasibility Study

## Present

- Current system condition
- Historical Flows
- Historical Effluent Quality
- Inflow and infiltration

## Future

- Projected populations, flow and wastewater quality (25 years)
- Consider consolidation of outfalls
- Analysis of wastewater treatment options
- Feasibility design of option
- Capital and Operating Costs
- Additional Work – flow monitoring

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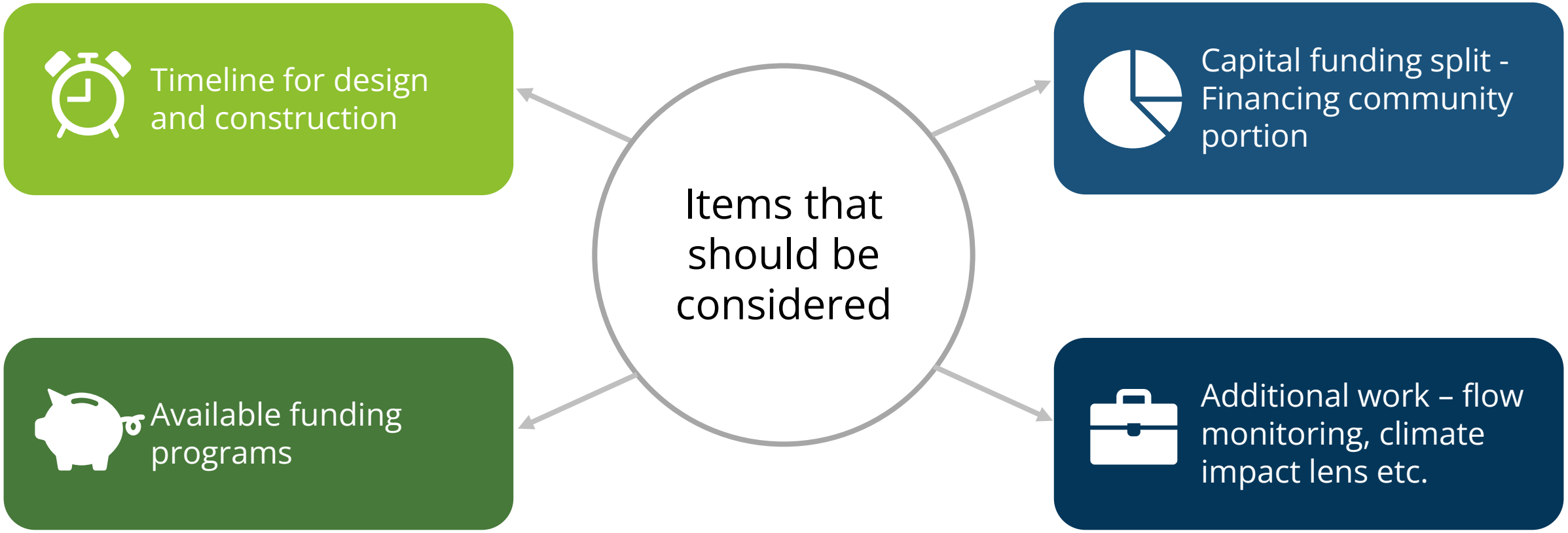
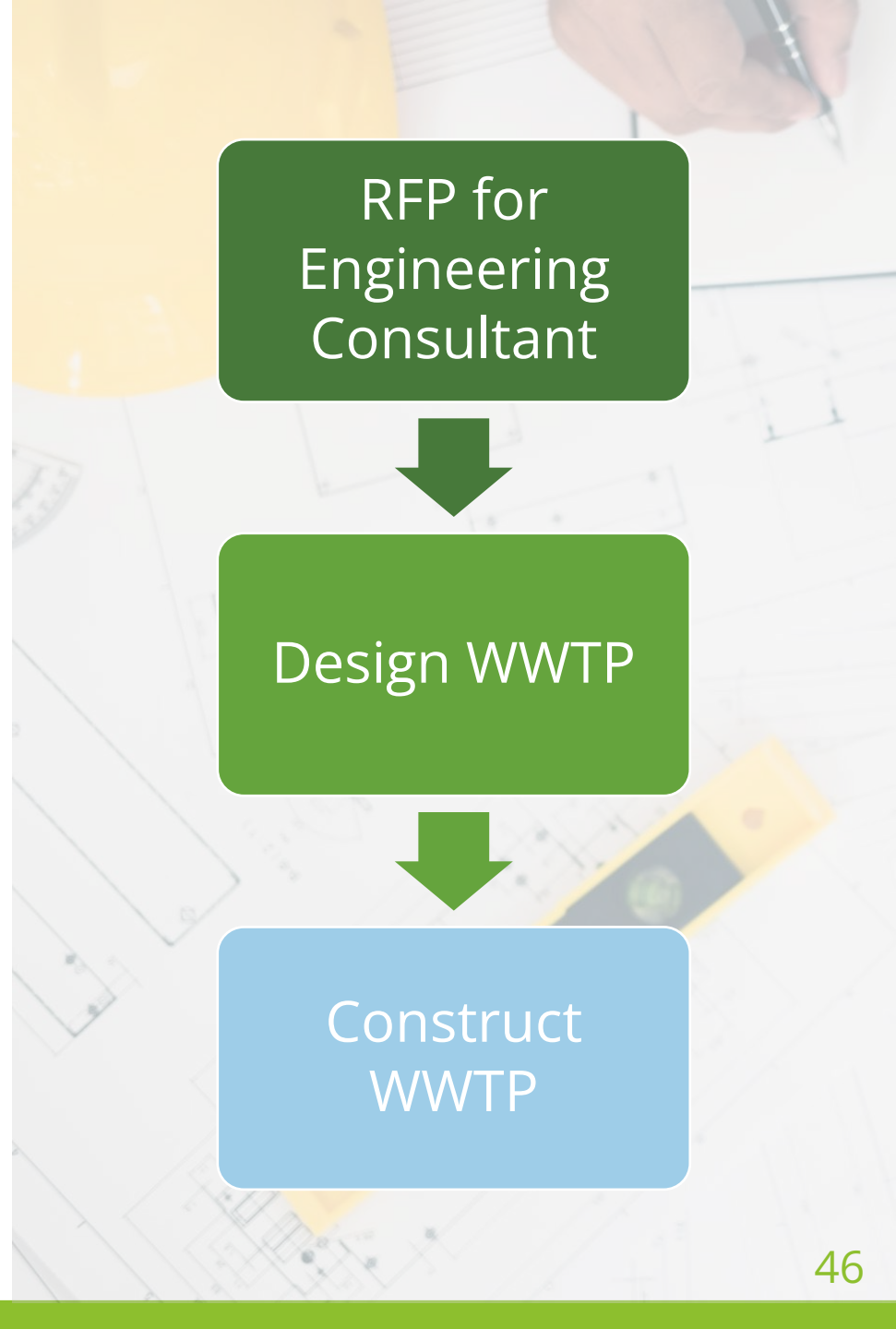
# Apply for Capital Funding

Can take several years to apply and receive capital funding for WWTP



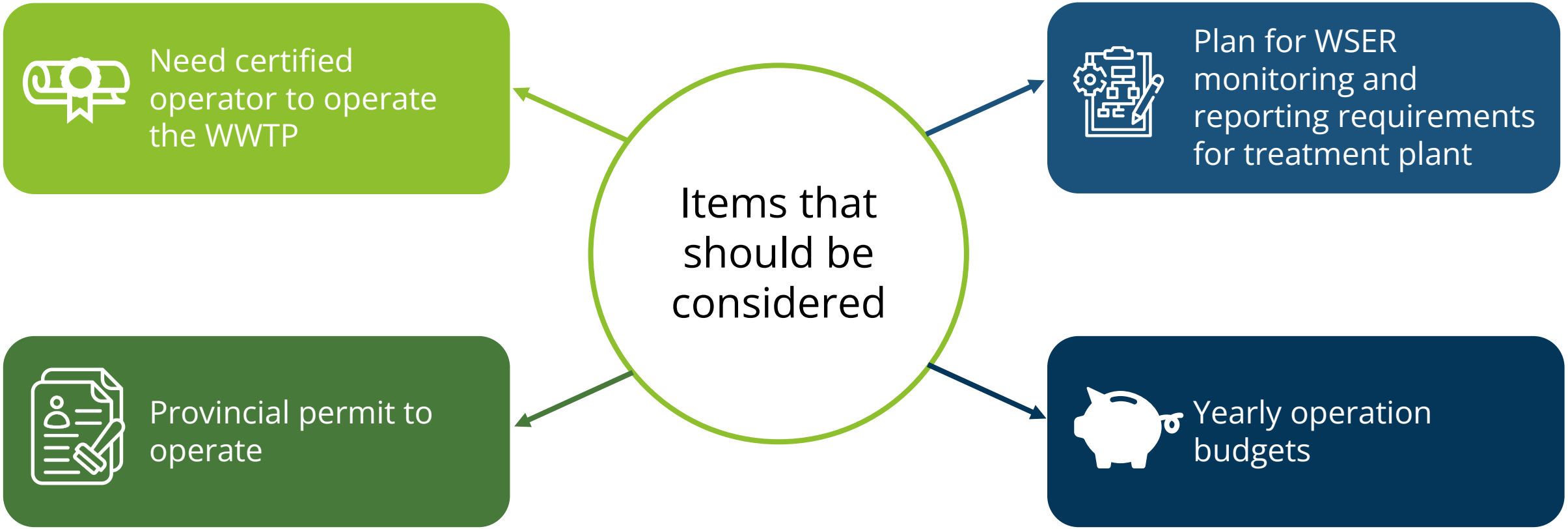
# Design & Construct WWTP

- 2-3 year period
- MI provides support throughout
- Regular meetings with design and construction teams
- Request updated cost estimates throughout



# Operating a WWTP

Can take several years to apply and receive capital funding for WWTP



# Summary

## Part 6

# Summary

- Key Takeaways
- Resources
- Questions / Closing

# Key Takeaways

Data collection and reporting steps can be carried out by your community.

A Transitional Authorization will give extra time to complete upgrades.

Wastewater treatment plant upgrades need a solid plan.

# Resources

See the spreadsheet tool and the technical fact sheets on each topic for more details.

Contact ECCC to apply for a Transitional Authorization.

Contact MI to apply funding for a Feasibility Study.

Contact WRMD with questions about NL wastewater regulations.

# Questions / Closing