

Wastewater System Assessment Treatment Option Review

Wabaseemoong Independent Nations



Process

- Consult with the First Nation to help identify the First Nation's goals, vision and priorities
- Inspect existing wastewater treatment plant
- Review Community's Year 20 project population and wastewater loads
- Review any existing community development plans
- Review treatment solution options



Process (Continued)

- Review local land use, topography and any environmental considerations
- Create a draft report to present to the First Nation for review and comments
- Present treatment options to the Community
- Revise and finalize the report based on comments received from the Community



Current Lift Station Upgrades

- Upgrades to the sewage pumping stations are currently underway
- Contractors will be working in the community throughout the fall and early winter
- Upgrades are expected to be completed by June 2023



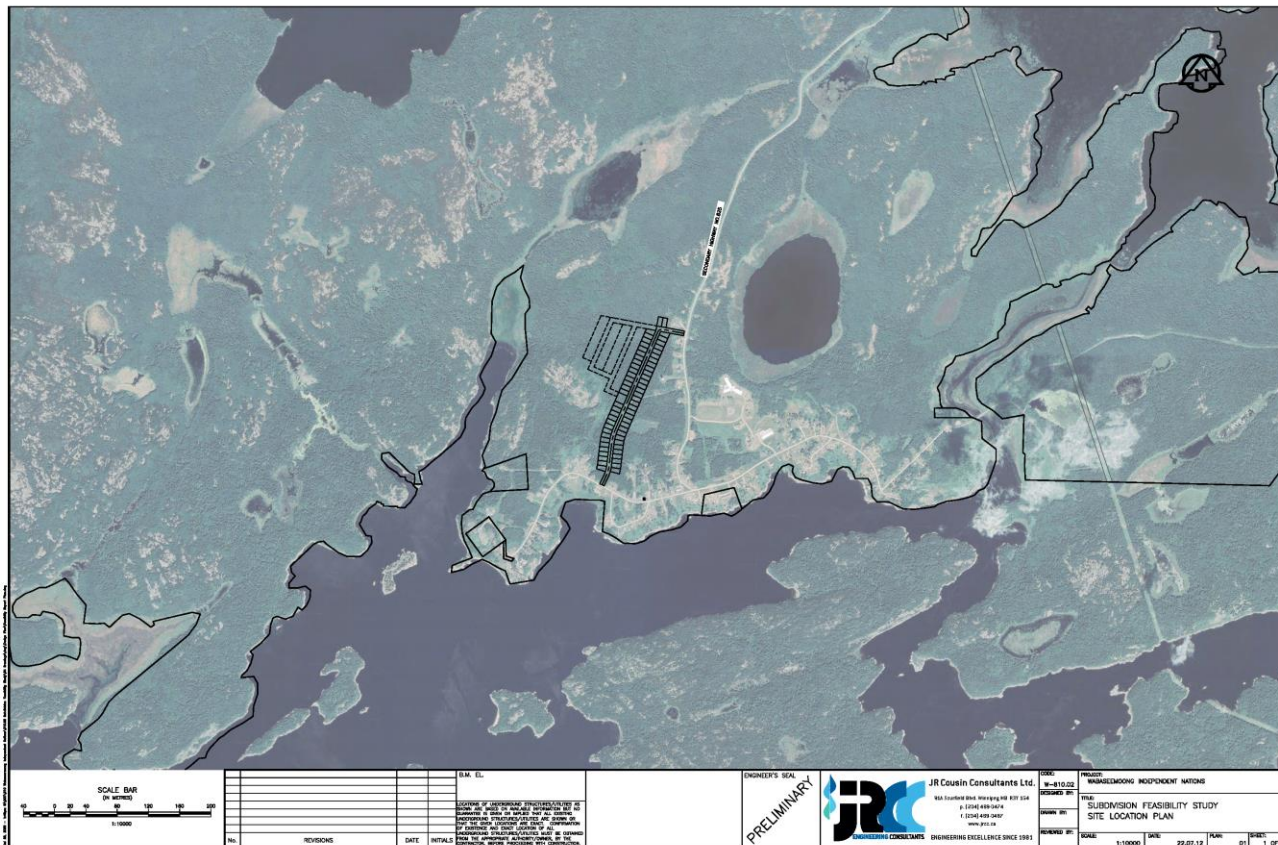
Population Projection

- Historical population data from 1990 to 2021 was reviewed
- Current population in WIN is 1,098
- Future growth, based on past population growth was estimated at 1.12% per year
- The projected on-Reserve population in 2044 (Year 20) is 1,419 people.



Future Community Development

- Future residential growth in the community is expected to be to the west of the main road to the community.



Existing Wastewater Treatment

- Existing plant has two rotating biological contactors (RBC) and indoor and outdoor clarifiers for settling solids in wastewater
- Several components are not in good condition and require repairs or replacement
- Currently meets applicable effluent guidelines and has capacity for future population growth

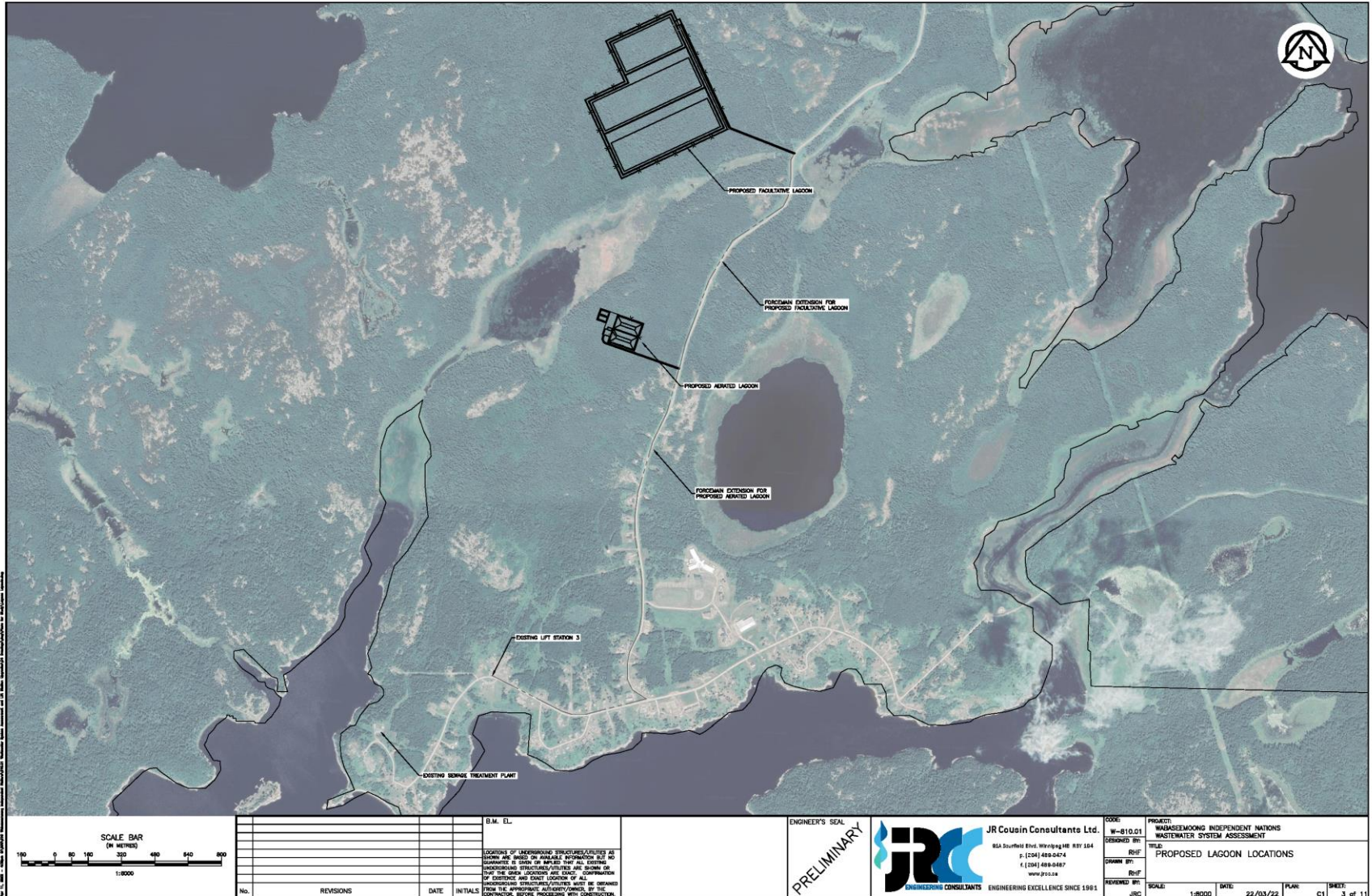


Future Treatment Options

- Facultative Lagoon
- Aerated Lagoon
- New Mechanical Treatment Plant
- Upgrade Existing Mechanical Treatment Plant



Future Treatment Options



No.	REVISIONS	DATE	INITIALS

B.M. E.L.

LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION AND NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES ARE ACCURATE. THE USER LOCATIONS ARE STRICTLY FOR INFORMATION PURPOSES AND EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE DETERMINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.

ENGINEER'S SEAL

PRELIMINARY

JR Cousin Consultants Ltd.
 85A Southside Blvd. Winnipeg MB R3Y 1G4
 P. (204) 488-6474
 F. (204) 488-6487
 www.jrc.ca

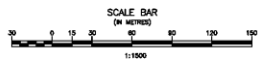
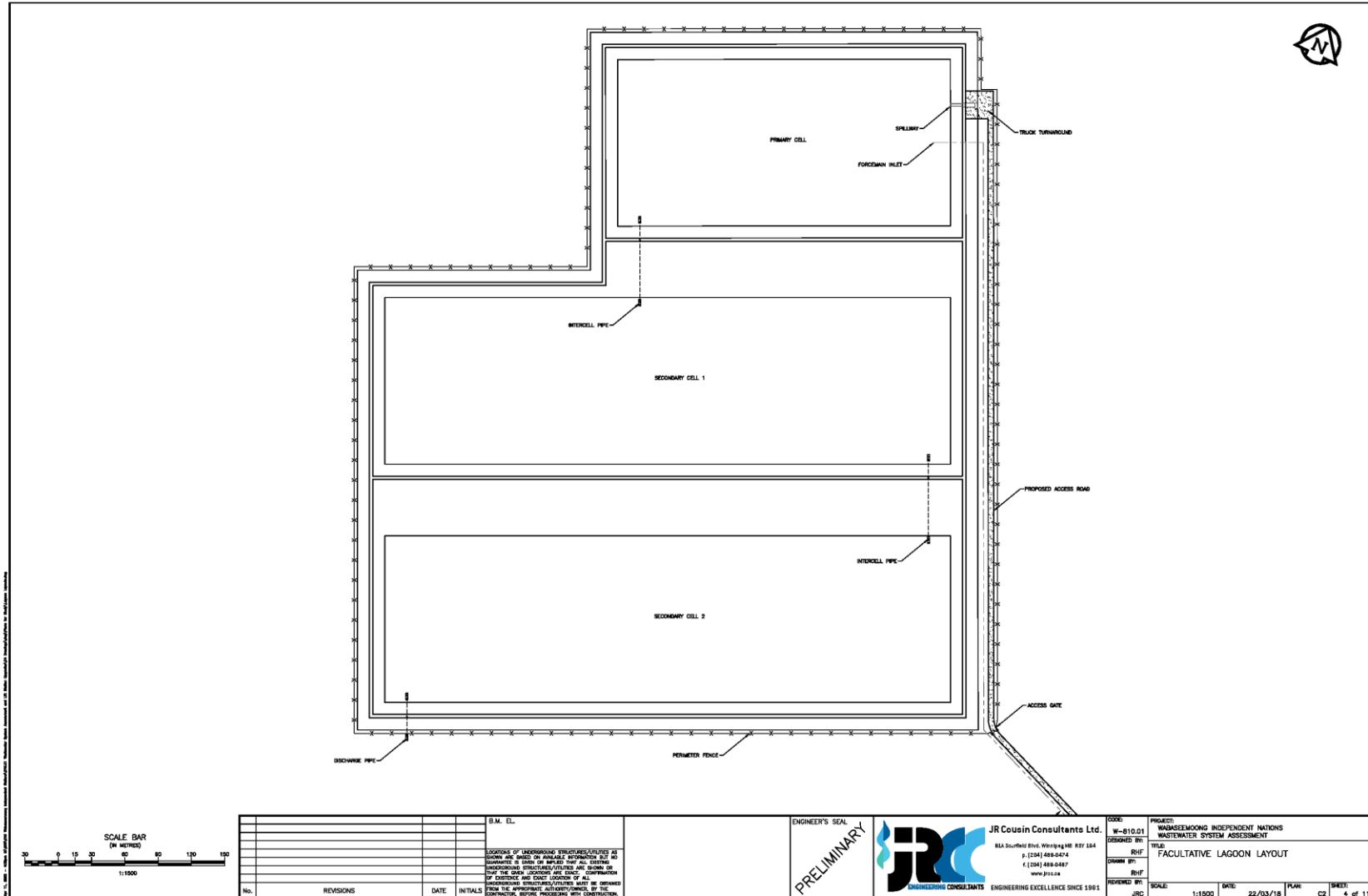
ENGINEERING EXCELLENCE SINCE 1991

DATE	W-810.01	PROJECT	WABASEMOONG INDEPENDENT NATIONS WASTEWATER SYSTEM ASSESSMENT
DESIGNED BY	RSF	TITLE	PROPOSED LAGOON LOCATIONS
DRAWN BY	RSF	SCALE	1:8000
REVIEWED BY	JRC	DATE	22/03/22
JRC		PLAN	C1
		SHEET	3 of 11

Facultative Lagoon



Facultative Lagoon



No.	REVISIONS	DATE	INITIALS	B.M. EL.

LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION AND NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE SEWER LAGOONS ARE EXACT. COOPERATION BY DISTRICT AND LOCAL AGENCIES OF ALL JURISDICTIONS INVOLVED/INTERESTED MUST BE OBTAINED FROM THE APPROPRIATE AGENCIES/OWNERS BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.

ENGINEER'S SEAL
PRELIMINARY



JR Cousin Consultants Ltd.
85A Southmead Road, Wokingham RG40 3BY 264
t: (204) 488-0474
f: (204) 488-0467
www.jrc.ca

DATE: 18-10-21	PROJECT: WAKASEEMOONG INDEPENDENT NATIONS WASTEWATER SYSTEM ASSESSMENT
DESIGNED BY: RHF	TITLE: FACULTATIVE LAGOON LAYOUT
DRAWN BY: RHF	REVIEWED BY: JRC
SCALE: 1:1000	DATE: 22/03/18
PLANT: CZ	SHEET: 4 of 11

Facultative Lagoon

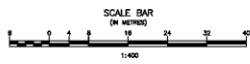
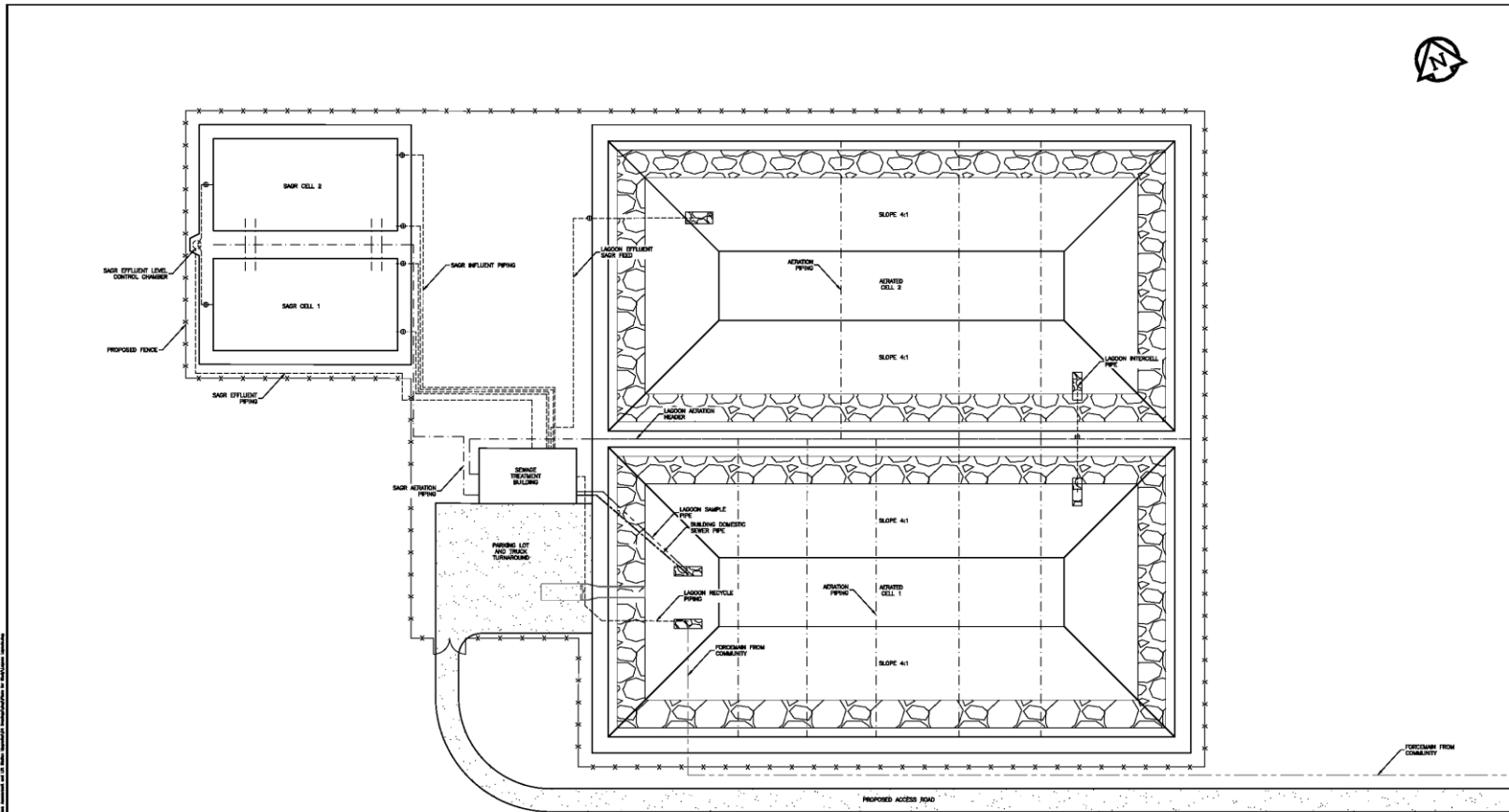
- System would have a multi-cell lagoon located at the north of the community
- Near an existing pumping station a chemical dosing building would be built to aid in phosphorus reduction
- Advantages
 - Less daily involvement for operator, only need to check on chemical dosing building
 - Low annual operation and maintenance costs
 - Low risk to environment in case of power failure
- Disadvantages
 - Very large footprint, uses up a lot of land
 - Would require additional piping to the new site
 - Would require a chemical dosing building in the community
 - Attract waterfowl to the area
 - Should not be close to an airfield



Aerated Lagoon



Aerated Lagoon



No.	REVISIONS	DATE	INITIALS	B.M. EL.

LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS MADE OR IMPLIED FOR ALL LOCATIONS. VERIFY THE EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND UTILITIES BEFORE THE COMMENCEMENT OF CONSTRUCTION. VERIFY THE EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND UTILITIES BEFORE THE COMMENCEMENT OF CONSTRUCTION.

ENGINEER'S SEAL
PRELIMINARY



JR Cousin Consultants Ltd.
814 Southfield Blvd. Winnipeg, MB R2T 2S4
P: (204) 489-0474
F: (204) 489-0487
www.jrc.ca

DATE	W-810.01	PROJECT	WAKASEMOONG INDEPENDENT NATIONS WASTEWATER SYSTEM ASSESSMENT
DESIGNED BY	RHF	TITLE	AERATED LAGOON LAYOUT WITH SAGR AND FILTER BUILDING
DRAWN BY	RHF	SCALE	1:400
REVISED BY	JRC	DATE	22/03/22
		PLATE	C3
		SHEET	5 of 11

Aerated Lagoon

- System would have two aerated cells, two submerged attached growth reactor (SAGR) cells, and a building with filters, pumps, and chemical dosing equipment
- Advantages
 - Lower operational complexity and operating costs compared to a mechanical plant
 - Smaller footprint than facultative lagoon
 - Less odor than a facultative lagoon
 - Low risk to environment in case of power failure
- Disadvantages
 - Requires larger footprint than a mechanical plant
 - Slightly higher operational complexity and higher operations and maintenance costs compared to a facultative lagoon



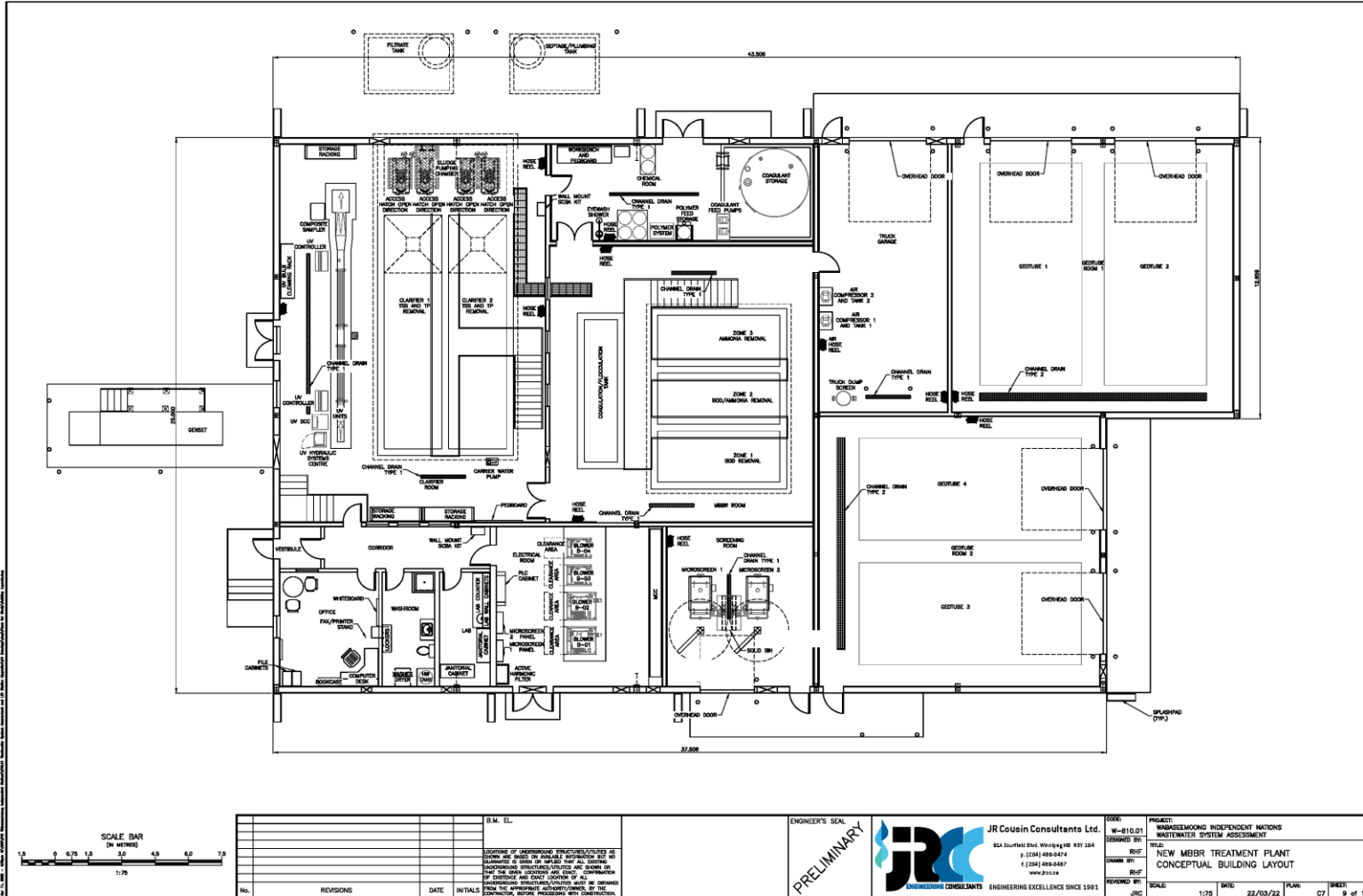
New Mechanical Treatment Plant

BioPorts Media: **600-14**
MEDIA DESIGN



Image source: Nexom

New Mechanical Treatment Plant



New Mechanical Treatment Plant

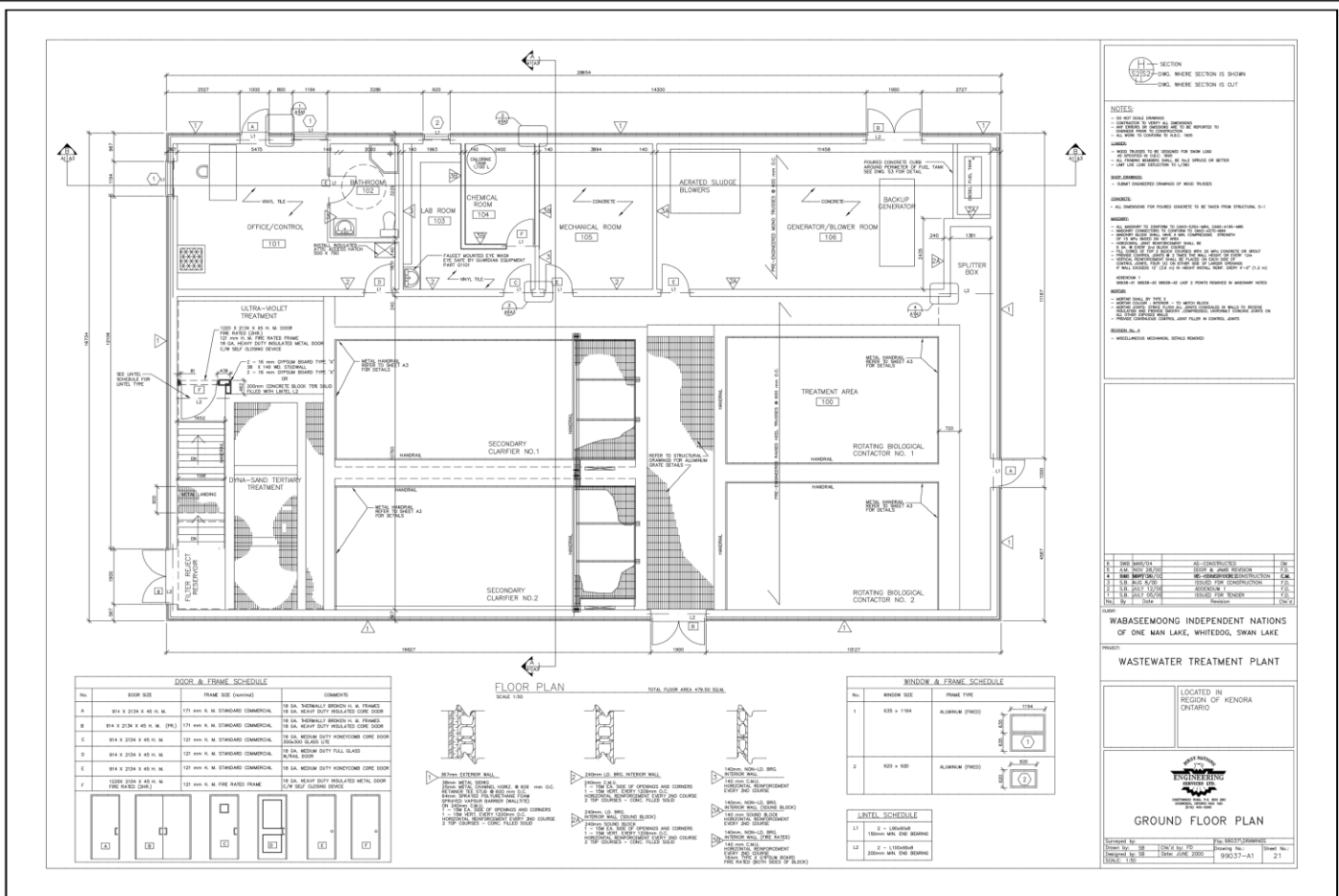
- Proposed plant would have moving bed biofilm reactors (MBBR) and indoor clarifiers and sludge storage
- Advantages
 - Small footprint
 - Could be built adjacent to the site of the existing plant
- Disadvantages
 - Higher annual operating costs than a facultative or aerated lagoon
 - Requires additional chemical dosing and more equipment maintenance
 - In case of equipment failure, potential for partially treated sewage to be released to the environment



Upgrade Existing Mechanical Plant



Upgrade Existing Mechanical Plant



WABASEMOONG INDEPENDENT NATIONS OF ONE MAN LAKE, WHITEDOG, SWAN LAKE

PROJECT:
 WASTEWATER TREATMENT PLANT

LOCATION:
 REGION OF KENORA
 ONTARIO

GROUND FLOOR PLAN

Scale: 1:50
 Date: 22/03/22
 Drawing No.: 21

ENGINEERING
 JR Cousin Consultants Ltd.
 854 Southside Blvd. Winnipeg MB R2T 6S4
 P. (204) 488-0474
 F. (204) 488-0487
 www.jrc.ca

PROJECT:
 WABASEMOONG INDEPENDENT NATIONS
 WASTEWATER SYSTEM ASSESSMENT

TITLE:
 EXISTING RBC TREATMENT PLANT
 BUILDING FLOOR PLAN

SCALE: NTS
DATE: 22/03/22
PLAN: CB
SHEET: 11 of 11

ENGINEER'S SEAL

PRELIMINARY

JR Cousin Consultants Ltd.
 854 Southside Blvd. Winnipeg MB R2T 6S4
 P. (204) 488-0474
 F. (204) 488-0487
 www.jrc.ca

Upgrade Existing Mechanical Plant

- Existing plant has two rotating biological contactors, indoor and outdoor clarifiers, and filters
- Advantages
 - Re-uses the existing building
 - Operators have experience with the treatment system
- Disadvantages
 - Higher annual operating costs than a facultative, aerated lagoon, or a new mechanical plant
 - Requires significant daily operator involvement for running the facility as it is a complex treatment process
 - Requires additional chemical dosing and more equipment maintenance
 - In case of equipment failure, potential for partially treated sewage to be released to the environment



Questions?

