

MVLWB / GNWT

Operation and Maintenance Plan

Templates for Municipal Water Licences: Water Treatment Plant

November 10, 2015



Operation & Maintenance Plan Template – Water Treatment Plant (WTP)

If you have any questions about this document, please contact your regional Manager of Community Infrastructure Planning.

1. Site Description

Where is the Water Treatment Plant (WTP) located?

Community:	Sambaa K'e
Latitude:	60°26'06.98" N
Longitude:	121°15'20.12" W

Which coordinate system was used for these coordinates?

- Decimal Degrees
- Degrees, Decimal Minutes
- Universal Transverse Mercator (UTM)

Location Map Attached

Map to include drawing scale, north arrow, and site access/roads.

Date of Commissioning of WTP: yyyy/mm/dd (if date is unknown, estimate year)

2. WTP Staff

Provide the name, contact information, and role for each staff member.

Name	Phone	Email
Terry Crother	(867) 206-2031	
Role/Responsibilities		
Primary plant operator: monitoring plant & reservoir, sampling (chlorine/bacteriological), maintenance		

Name	Phone	Email
Sheyenne Jumbo	(867) 206-2935	
Role/Responsibilities		
Trainee plant operator		

Name	Phone	Email
Jessica Jumbo	(867) 206-2800	environment@sambaakefn.com
Role/Responsibilities		
Trainee plant operator, SKFN Environmental Coordinator		

3. Security and Control

How is public access to the facility controlled? (Check any that apply.)

No control

Chain-link fence around reservoir

Locked man-door

Other:

Is the following signage posted at the WTP? (Check any that apply.)

Name of facility

Notification of restriction of public access

Warning signage regarding chemicals used in the treatment process

4. Facility Design

Facility design shall be provided in the form of a piping and instrumentation diagram (P&ID) and general arrangement views of the equipment and facility prepared by a Professional Engineer or Geoscientist registered with NAPEG, who has expertise in the subject area. Attach one of the following drawing options with the documents you are submitting. As-built drawings are preferred, if available. All drawings are required to have scales and north arrows (for plan views).

Indicate what type of drawings are attached:

As-built drawings Design drawings Other:

5. Raw Water Sources

Name of **primary** raw water source (if applicable). Note that if you have a second water source, there will be a place to add this information on the next page. For now, enter the information for the source that is used most often.

Trout Lake

Type of raw water source (check any that apply):

Lake

River

Groundwater

Other:

Average annual quantity of water drawn from the source:

15,680 m³/year

Is a Source Water Protection Plan (SWPP) in place for the **primary** raw water source?

Yes No

If **yes**, provide the following information for the plan:

Prepared by (name of company or person that wrote the plan):

Ecology North/Sambaa K'e First Nation

Title of document:

Community of Sambaa K'e Source Water Protection Plan

Completion date: 2015/03/31 yyyy/mm/dd

Location of document (where is the plan kept, or where can a copy be obtained?):

Sambaa K'e Band Office (Environmental Coordinator (867) 206-2800)

If **no**, what is being done to protect the **primary** raw water source?

Identify the type of raw water storage (check any that apply):

None

Reservoir

Storage Tank

Other:

Raw water storage capacity: 11,200 m³

Name of **secondary or alternate** raw water source (if applicable). This could include a source used seasonally, during maintenance, when there are problems with the primary source, or any other backup raw water source. If only one water source is used, skip the rest of this page.

Type of raw water source (check any that apply):

Lake River Groundwater Other:

Average annual quantity of water drawn from the source:

 m³/year

Is a Source Water Protection Plan (SWPP) in place for the **secondary** raw water source? (Skip this question if no secondary source is used.)

Yes No

If **yes**, provide the following information for the plan:

Prepared by (name of company or person that wrote the plan):

Title of document:

Completion date: yyyy/mm/dd

Location of document (where is the plan kept, or where can a copy be obtained?):

If **no**, what is being done to protect the **secondary** raw water source?

Explain the reasons or situations where the secondary raw water source is used, including the time of year for seasonal sources (skip this question if no secondary source is used):

6. Water Treatment Process

Indicate any **pre-treatment** processes that are used at the WTP. (Check any that apply.)

- Screen
 pH adjustment
 Gravity settling
 Other:

Indicate any treatment technologies that are used at the WTP. (Check any that apply.)

- Coagulation and Flocculation

(A chemical is added to the water to make particles of dirt stick together and sink.)

List chemical(s) added:

Clarification (methods to help particles settle out after they are stuck together)

- Gravity
 Inclined plate
 Settling tubes
 Dissolved air floatation (DAF)
- Other:

Filtration (filters use various methods to trap particles and remove them from the water)

- Slow sand
 Rapid rate gravity
 Rapid rate pressure
 Bag/cartridge
- Other:

Membrane Filtration (a material with tiny holes is used to strain particles from the water)

- Microfiltration
 Ultrafiltration
 Nanofiltration
 Reverse osmosis
- Membrane of unknown type
- Other:

Additional Treatment Processes

- Activated carbon
 Ion exchange (softening or targeted removal)
- Other:

Iron and/or Manganese Removal

- Greensand
 Oxidation/filtration
- Other:

Indicate what types of disinfection are done at the facility. (Check any that apply.)

Chlorination

Solid Liquid Gas

Ozonation

Ultraviolet Radiation (UV)

Other:

Water Demand, Production and Distribution:

Total annual water usage:

m³/year

Identify the water distribution methods used (check any that apply):

Piped (underground or utilidor) Trucked Other:

Identify the type of treated water storage (check any that apply):

None Reservoir Storage Tank Other:

Treated water storage capacity:

m³

7. WTP Waste Production

Skip this section if the WTP does not produce sludge.

Is sludge composition data available? (Lab report, engineering study, etc. showing what substances are in the sludge.)

Yes No

If yes, please attach the data to this document when submitting.

Sludge composition data attached

Estimate monthly quantity of sludge disposal: m³/month

How is the sludge disposed of?

- Discharged to sewage system or lagoon
- Direct discharge to waterbody (lake, river, etc)
- Discharged onto land
- Mechanical dewatering
- Evaporative sludge drying (sludge is spread out to air dry before disposal)
- Other:

Skip this section if the WTP does not produce wastewater from backwashing, regeneration (e.g. for softeners), or a reject water stream from membrane filtration.

Estimate monthly quantity of filter backwash, regeneration and/or membrane reject wastewater disposal:

m³/month

How is the backwash/regeneration/membrane reject water disposed of?

- Discharged to sewage system or lagoon
- Direct discharge to waterbody (lake, river, etc)
- Exfiltration
- Discharged onto land
- Other:
- Combination (describe):

Wastewater from membrane backwash (20.3m³/month) is discharged to surface. Wastewater from other treatment processes is stored in waste tank and then trucked to sewage lagoon.

Indicate if any of the following waste streams are produced at the plant. Provide the annual quantity and the disposal method for each. (Check any that apply.)

Skip this section if no waste is generated at the WTP.

Check the items that apply:	Method of Disposal	Quantity per year	Units
<input type="checkbox"/> Spent cartridges or other disposable filters	(choose or type)	<input style="width: 50px; height: 20px;" type="text"/>	(choose or type)

<input type="checkbox"/> Spent media and/or resin	(choose or type)	<input type="text"/>	(choose or type)
<input type="checkbox"/> Expired reagents such as DPD	(choose or type)	<input type="text"/>	(choose or type)
<input type="checkbox"/> Expired calibration standards	(choose or type)	<input type="text"/>	(choose or type)
<input type="checkbox"/> Chemical waste (specify): <input type="text"/> <input type="text"/> <input type="text"/>	(choose or type)	<input type="text"/>	(choose or type)
<input type="checkbox"/> Other*: <input type="text"/>	(choose or type)	<input type="text"/>	(choose or type)

*Do not include regular municipal waste (garbage, such as paper towels and packaging) or wastewater from a sink or washroom that is discharged to the municipal system (trucked or piped).

8. WTP O&M and Record-Keeping

Does the WTP have an existing O&M Plan or Manual?
 Yes No

If yes, please provide the following information for the plan:

Prepared by (name of company or person that wrote the plan):

Title of document:

Completion date: yyyy/mm/dd

Location of document (where is the plan kept, or where can a copy be obtained?):

The following are record keeping requirements related to O&M of the WTP and should be filed as an annual report with the MVLWB no later than the date stipulated in the water license for the previous year. The annual report should include the following items:

- Monthly and annual quantities of fresh water obtained from all sources, reported in cubic metres.

How and where is this recorded?

Data recorded by plant operator

Where are these records kept?

In SKFN Band Office - Environmental Coordinator

- A summary of modifications and/or major maintenance work carried out on the WTP, including all associated structures. Check your water licence for specific requirements regarding modifications.

How and where is this recorded?

Data recorded by plant operator

Where are these records kept?

In SKFN Band Office - Environmental Coordinator

- A list of spills and unauthorized discharges.

How and where is this recorded?

Data recorded by plant operator

Where are these records kept?

In SKFN Band Office - Environmental Coordinator

- A summary of any studies requested by the MVLWB that relate to water treatment waste disposal or water use and a brief description of any future studies planned.

How and where is this recorded?

Data recorded by Environmental Coordinator

Where are these records kept?

In SKFN Band Office - Environmental Coordinator

Are records of repairs kept?

Yes No

Are records of upgrades kept?

Yes No

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