



## Five Communities Water Tales – Answer Key

Name: \_\_\_\_\_

1. What was/is the drinking water problem in Yellow Quill First Nation? Describe the problem completely. (10 marks)

Terrible smell of hydrogen sulphide in the water treatment plant, the Programmable Logic Controller (PLC) had not worked properly in years and the water treatment plant operator had to short-circuit it to backwash and run the filter. The raw water looked really bad and reeked of rotten eggs and algae. Yellow Quill's distributed water sometimes contained more than 40,000 particles per millilitre (the particles are dead algae, bacteria, protozoa, and viruses). Yellow Quill got its water from Pipestone Creek, a small watercourse that only flowed for a week or two in the spring, and an upstream community discharged its sewage lagoons into this creek at the same time Yellow Quill filled its water reservoir. Yellow Quill was using conventional coagulation, upflow clarification, and downflow granular filtration processes to treat its horrific raw water. There was a foot of black ooze covering the bottom of the reservoirs.

2. Has the drinking water problem in Yellow Quill First Nation been resolved? If yes, how was it resolved? If no, how do you think it could be resolved? (9 marks)

Yes, it was resolved. Four elderly community members filed a class action lawsuit against the federal government and their problem was discussed in the House of Commons and covered by national media. Two federal government staff members listened to Yellow Quill's problem and took decisive action to do something about it. With the involvement of Yellow Quill councillors, the community, the environmental health officer, a senior engineer, and a scientist, solutions to Yellow Quill's water woes were examined. A 22-month pilot and research project was started. This led to the development of the IBROM treatment process, which produces water that meets all global guidelines, regulations, and standards. The water also tastes and smells great!

3. What was/is the drinking water problem in Saddle Lake Cree Nation? Describe the problem completely. (8 marks)

It has a high-risk surface water supply. The lake is a terminal lake (has no outflow) and, through evaporation, high levels of dissolved organic compounds (DOC) are generated. There is higher plant growth and massive blue-green algal blooms. Large quantities of harsh chemicals were required to treat the water in the water treatment plant that was built in 1982. The distribution system was poorly built. After treatment, the aluminum levels in the tap water were still 10 times higher than the limit in the Guidelines for Canadian Drinking Water Quality. When water that has a high level of DOC is chlorinated

harmful by-products called Trihalomethanes (THMs), which are carcinogenic (cancer causing) may be produced.

4. Has the drinking water problem in Saddle Lake Cree Nation been resolved? If yes, how was it resolved? If no, how do you think it could be resolved? (4 marks)

Yes, biological treatment followed by Reverse Osmosis (RO) membranes was piloted. Also, before chlorination, the water ran through a mineral bed of calcium and magnesium. Ceramic filtration material is used to carry out particle removal and bioavailable DOC removal. This is the first surface water biological treatment system in the world.

5. What was/is the drinking water problem in Neskantaga? Describe the problem completely. (4 marks)

Neskantaga's water is not safe to drink and it also likely causes problems with people's skin. In 1995, Neskantaga's water treatment plant (which was only a couple of years old at the time) broke down, never to run again. This means the water could be contaminated with any number of bacteria, viruses, or parasites that pose threats to human health.

6. Has the drinking water problem in Neskantaga been resolved? If yes, how was it resolved? If no, how do you think it could be resolved? (3 marks)

No, it is Canada's longest-running boil water advisory. The government needs to spend the approximately \$8.8 million that they have promised to spend, to upgrade, renovate, and improve the water plant in Neskantaga First Nation (perhaps by installing an IBROM system).

7. What was/is the drinking water problem in Grassy Narrows? Describe the problem completely. (12 marks)

From 1962 to 1970, former owners of the Reed paper mill upstream in Dryden dumped 9000 kg of mercury waste into the river, which poisoned the lake and its wildlife. Reports have found that the mercury levels are still rising in some nearby lakes. There are four boil water advisories at Grassy Narrows. Three are due to unacceptable uranium levels in the well water. The fourth was put into effect because of contaminants (including disinfectant by-products) in the primary water supply. The surface water treatment plant was installed in 1993, and reports indicate the design is critically flawed, and it doesn't screen out many harmful protozoa. Also, the highly turbid water is not in contact with treatment chemicals long enough for disinfection to occur, which produces by-products which may be harmful for consumption. The

chemicals identified in the water supply can potentially disrupt hormonal patterns, liver and kidney functioning and neurological activity, and are not safe to consume even in small quantities. These chemicals can't be removed through boiling.

8. Has the drinking water problem in Grassy Narrows been resolved? If yes, how was it resolved? If no, how do you think it could be resolved? (8 marks)

No, the problem has not been resolved. The pollution in the river needs to be cleaned up. Pre-cleanup engineering and sediment sampling work still needs to be done. Uranium contamination in the well water can be mitigated by installing point-of-entry anion exchange devices on well-reliant homes. The resource requirements, operator training, the capacity of the reserve to operate and service its water supply, the effects of off-reserve activity on Grassy Narrows's source water all need to be considered. The surface water treatment system needs to be upgraded, serviced, operated, and maintained. Collaboration is needed to reduce the amount of pollution entering the water supply.

9. What was/is the drinking water problem in Shoal Lake 40? (4 marks)

In 1919, the residents of Shoal Lake 40 were moved to a peninsula and then the peninsula was cut off. They do not have a water treatment plant, largely because of the costs involved of getting equipment there because Shoal Lake 40 doesn't have all-season road access.

10. Has the drinking water problem in Shoal Lake 40 been resolved? If yes, how was it resolved? If no, how do you think it could be resolved? (3 marks)

No, they need their Freedom Road so that getting the equipment there will be less expensive and they can build a water treatment plant.

11. Of the drinking water problems in the communities which have not been resolved, which do you think will be the most difficult to resolve? Why? (3 marks)

Answers will vary, the three which have not been resolved are Neskantaga, Shoal Lake 40, and Grassy Narrows.

Total: \_\_\_\_/68