

Understanding Kamsack's Water

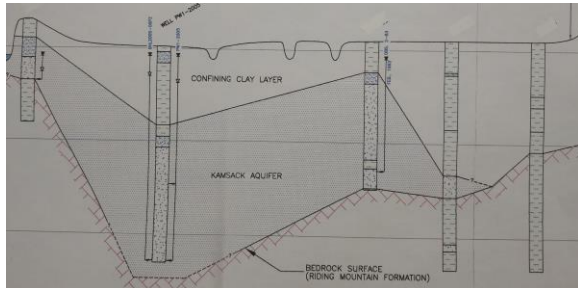
Where does my water come from?

How do I know that my water is safe to drink?

If these questions ever crossed your mind, take a moment to learn about Kamsack's water collection, treatment, distribution, disposal and maintenance systems.

The Wellsite

Kamsack's water is taken from 2 wells, located south east of Kamsack. The town is licensed by the Water Security Agency to draw over 117 million gallons of water from the wellsite every year. Each well is 24 meters deep and collects water from an underground aquifer. Water collection rotates between each well.



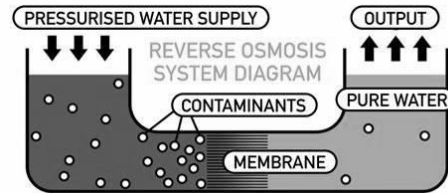
A Map of Kamsack's Aquifer and Wells

Approximately 3.5 kilometers of high-density plastic pipe transfers the raw water from the wellsite to the water treatment plant at a rate of 7 gallons per second. On a typical day, Kamsack draws over 317,000 gallons from the wellsite and the water pumps run for approximately 10 to 12 hours.

Pre-Treatment & Treatment

Once the raw water reaches the water treatment plant, it is injected with sulphuric acid to lower the pH level as well as an antiscalant to prevent damage to and scaling on the reverse osmosis (RO) membranes.

Once these chemicals are injected, booster pumps create a pressurised water supply that is pushed through the RO membranes as illustrated in the following picture.



There are two separate RO lines, which run everyday, and each line has 63 membranes.



Reverse Osmosis Filters and Lines

The filtered, and now potable, water is then pumped through aerators and into a transfer tank. The transfer tank functions as temporary storage and holds 203 cubic meters of water.

Transfer Tank

Once the now potable water reaches the transfer tank, town staff add Sodium Hydroxide, a caustic chemical used to adjust the pH level again, and Sodium Hypochlorite, or chlorine, to ensure that the collected water has been completely disinfected.

Then, the water is pumped through pH contactors, which are filled with Calcium and Magnesium. These pH contactors further regulate the pH level of the water and add needed minerals.

At this point, the potable water is pumped into holding tanks, which can store 807 cubic meters of water.

Distribution

The water is pumped out of the holding tanks and through 27 kilometers of water mains, which are made of AC pipe and PVC pipe, to distribute water to the entire community.

Water is also delivered to surrounding rural areas through the Assiniboine Rural Pipeline. After travelling through our water mains, any remaining potable water is pumped into Kamsack's Water Tower; which has a capacity of 1,500 cubic meters.



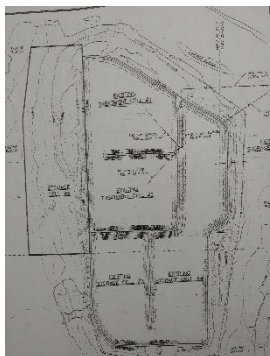
Distribution Pumps

In addition, water is pumped to 112 fire hydrants in town. Pumps at the water treatment plant and the water tower keep the entire distribution system pressurized, which allows these fire hydrants to operate properly.

Waste Water

Once the water is used and flows down the drain, it enters Kamsack's sewer system. The sewer system is made out of 22.8 kilometers of clay tile pipe; the majority of which was installed in the 1950s. The waste water is gravity fed to the sewage lift station, which is located near the water treatment plant.

Once the waste water arrives at the sewage lift station, it is pumped through approximately 2.2 kilometers of high-pressure pipe and into the lagoon site, which is pictured below.



The lagoon has 6 different cells to manage waste water and sewage, with a capacity of 159,800 cubic meters. Once the first cell reaches its capacity, the waste water travels through an overflow pipe and into the next cell. This process repeats until the waste water is distributed throughout the lagoon.

Town staff also add an acti-zyme treatment to the waste water, which is an environmentally safe chemical that breaks down organic matter in the waste water to liquify any solid waste as well as remove any harmful materials still present in the waste water.

The waste water is then held in the Lagoon for 180 days in order to allow any remaining solid waste to either break down or settle at the bottom. The collected waste water is then discharged into the Assiniboine River twice a year; in the spring and again in the fall. This discharge is regulated by Environment Canada and must meet clearly established environmental standards.

Maintenance

Kamsack understands the importance of a high-quality, sustainable and reliable potable water utility. As such, your municipality is working tirelessly to ensure the responsible management of this vital service and to extend the lifecycle of necessary resources and equipment.

To begin, the entire water utility, and its systems, are overseen electronically in order to control and monitor this complex system effectively.

In addition, every year town staff complete maintenance requirements and repairs to maintain our high-quality water systems. These efforts include:

- Flushing water mains every year to clean every pipe and ensure water distribution operates correctly

- Rebuilding older manholes, that were originally constructed with bricks, to prevent a collapse and maintain infrastructure
- Flushing sewer lines with high pressure water to ensure the sewer lines remain clean and clear of any blockages
- Cleaning the sewage lift station and inspecting water pumps to maintain these necessary pieces of equipment
- Cleaning water holding reservoirs to ensure a high-quality, potable water utility
- Cleaning the piping that transfers water from the wellsite to the water treatment plant to ensure collected raw water can be treated effectively and correctly
- Cleaning the RO membranes to maintain water filtration and extend the lifecycle of this needed equipment, and
- Inspecting fire hydrants for proper installation and operation to maintain emergency services

We also want to take a moment to remind our residents that you play a direct role in maintaining our water utility as well, especially the sewer lines. Water, waste and toilet paper are the only items you can flush down your drain. Other objects, such as garbage, wipes and grease, cannot be flushed as these items clog our lines and pollute the Assiniboine River.

The next time you turn on your tap, remember that your municipality is always working hard to provide and maintain a continuous, high-quality potable water utility for our entire community and the surrounding rural areas; from collection and treatment to distribution and maintenance. And, you play a direct role in maintaining the operations and quality of these systems.

Through proper oversight and planning, the Garden of Saskatchewan Continues to Grow.