

# Is our water on borrowed time?

## Be... Without Water: the Penobsquis Story

In May 1998, brine water began draining into a back-filled mine section of Potash Corp's Penobsquis mine. Mine officials believed that the inflowing water came from a 20-year-old abandoned and improperly sealed test hole and began looking into ways of stopping the flow.

Around that same time, the first water wells and springs were compromised in Penobsquis. These losses followed seismic testing done by Corridor Resources in 1999, and some community members wondered if the two events were connected. Of the four or five wells lost at this time, most people were able to re-drill, and one business put in a cistern and collected rainwater.

In 2000 and 2001, Potash Corp partnered with Corridor Resources to finance the drilling of two wells to explore for gas, as well as drill a disposal well for the water flowing into their mine. These two wells now provide natural gas to the Penobsquis Potash Corp mine and today, PotashCorp has 50% interest in about half of Corridor's wells.

In 2004, Corridor drilled more gas wells and another round of exploratory shot-hole seismic testing coincided with the loss of water at several homes. Many residents felt the blasts: their homes shook; dishes, pictures and ductwork rattled. Several homeowners found either no water or muddy water the next time they went to their taps. In some cases, the water returned, only to go dry months later. At the same time the water inflow problem in the potash mine increased.

Since 2004, five to six rounds of seismic testing have taken place in Penobsquis for exploration work for potash, oil and gas. Hydraulic fracturing (fracking) has been used to stimulate gas wells adjacent to the potash mine workings. The blasts from seismic testing opened up holes the size of Volkswagens in nearby fields.



Subsequent research showed that the cap rock over the original potash mine workings was more brittle than expected and had cracked – most likely due to the combination of industrial activities taking place, including the depletion of the water (causing areas beneath the ground to compress), the continuing mining subsidence and, to a lesser degree, seismic activity and hydraulic fracturing. This crack has allowed the aquifer to empty into the mine. Studies suggest this aquifer, less than 150m from the surface, drains faster than it recharges.

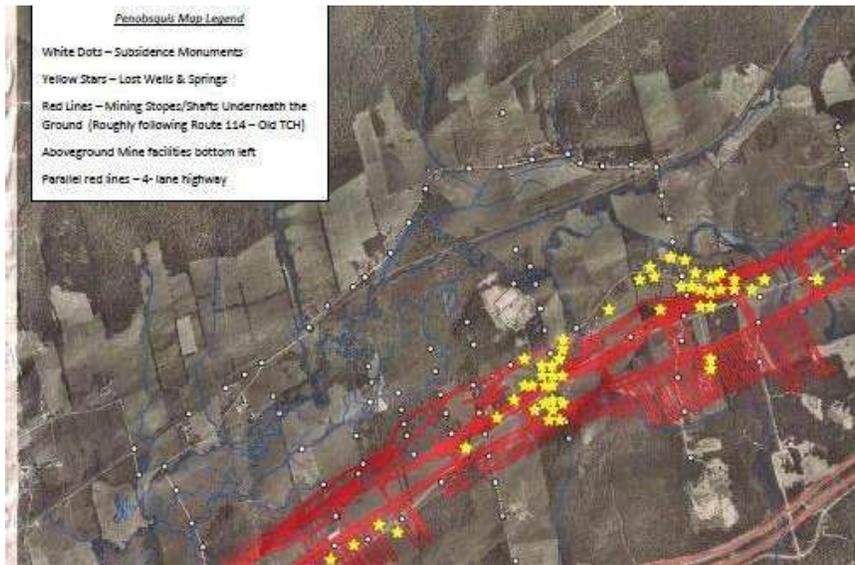
The depletion of the aquifer has caused additional 'subsidence' or ground settling and horizontal displacement beyond that expected from the mining process itself. Although Potash Corp describes 'expected' or 'normal' mining subsidence as part of their operations, in this case, they estimate the ground will continue to subside for another 100 years.

Originally, all the mine water was hauled away by about 300 tractor trailer loads every day to be dumped into the Bay of Fundy. In 2010, even with a pipeline pumping 11 million litres of brine water daily to the bay, an additional 100 truckloads leave the plant for the port of Saint John daily.

More than 60 water wells and springs (identified with yellow stars in the diagram) have been lost since industrialization of Penobscis began, and all are almost directly over the mine workings (identified by red). It seems reasonable to assume that the water flowing into the mine at rates exceeding 1,800 US Gallons per minute is connected to the water loss and subsidence.

For 5 years, at taxpayers' expense, residents received weekly water rations (15 gallons per adult) trucked to basement holding tanks and Potash Corp provided bottled water. Now, residents pay for water from a new system, installed in 2009, which cost New Brunswick taxpayers \$10M. (PotashCorp paid for approx 10%). About 50% of the water supplies commercial clients, mostly PotashCorp. The other 50% supplies residential homes. Residents paid more per unit volume of water than industry.

Sixteen homeowners took complaints of lost wells and the resulting hardships, and mining and subsidence issues to the New Brunswick Mining Commission. Years after filing this complaint, the complainants "resolved" the issue with PotashCorp, which took after more than 20 days of the hearing during a two-year period.



Those involved contributed literally thousands of hours and personal finances to the preparation and accumulation of information for this hearing. As a result of their efforts, PotashCorp stated it would pay for the water bills for all other residents in the community if their wells went dry, as long as they owned their homes. This resolution finally came in 2012 - more than seven years after the beginning of the problems.

The homes and property now being affected by subsidence (ground settling) are the same homes that originally lost their well water. Property owners have sinkholes, shifting walls and roofs, concrete cracks in basements, septic fields that no longer drain and other issues.

Then there are the 'incidents': a grassfire started by flaring, a middle of the night explosion in 2005, a tractor hit a pipeline in 2008, and several well sites have had contaminations. At least one of these that Corridor claims is not the result of an accident or spill.

But it is well pad F-67 that causes the greatest concern. In August 2006, a crack in equipment released 3000 litres of frack fluid, sand and radioactive tracer beads unto the pad. This well pad is situated in a subsidence zone beside a CN railway track in poor repair...the same section of track upon which several train cars had previously derailed.

Corridor Resources originally had plans to enlarge this pad, drill a new well and repair a leaking well in 2014, but early in the year, amended their plans to re-frack four other wells on different well pads. All of these well pads are located on the Kennebecasis floodplain. Residents are unsure whether the leaking well will be repaired.