Frequently Asked Questions from the Community Meeting on March 30, 2023

Why are we having another community meeting and why hasn't the Rose Prairie Water Station opened yet?

During the commissioning of the Rose Prairie Water Station in 2019, Sulfides were found in the water. Sulfides react with the chlorine creating an unstable level of cloudiness within the treated water. A Granular Activated Carbon (GAC) filtration system was then piloted to remove the sulfides prior to chlorination. This process allows the turbidity to be lowered to a stable level. The success of the GAC filtration pilot allowed the PRRD to obtain an operating permit from Northern Health in February 2021. However, one day prior to opening the station, explosive gases, including methane and hydrogen sulfide, were detected in the treated water tank and the well casing.

On March 11, 2021 the Regional Board authorized the closure of the Rose Prairie Potable Water Bulk Fill Station and ceased all operations. Within the same meeting, the Regional Board authorized a feasibility study within the Rose Prairie region of Area B to identify potential treatable water sources to establish a potable water bulk fill station.

The PRRD started exploring solutions and alternative water sources after the last Rose Prairie virtual community meeting in March 2021 and subsequent public engagement survey. The survey assessed support from residents for continuing to use the existing water station if the gas situation was resolved. There was also a level of support for investigating a new water station location. The PPRD has investigated both options of additional treatment for Rose Prairie and locating a new water station location. This meeting is being held to share new information and possible solutions.

What new information has the PRRD found since the last community meeting?

In 2021, the PRRD acquired the consulting firm Tetra Tech to complete a two part feasibility study based on the feedback from the community meeting and public engagement survey:
Identify possible alternative water sources for the Rose Prairie bulk fill station equipment in four focus areas
Investigate treatment options for the deactivated Rose Prairie well.

As part of the alternative source evaluation, Tetra Tech identified three existing water sources that may have a viable pumping rate and sufficient land space for necessary buildings and ponds. Three potential sources were identified, including the North Peace Fall Fair Grounds which is owned by the PRRD. This site was recommended by Tetra Tech based on lower operating costs compared to sites on private property. Further investigation is still required to confirm the groundwater supply potential and water treatability of these sites.

Tetra Tech also explored treatment options for the dissolved and undissolved gasses in the deactivated Rose Prairie well. Tetra Tech identified two treatment options and ultimately recommended packed tower aeration treatment that includes:

Addition of a packed tower aeration/oxidation system and a Granular Activated Carbon (GAC) filtration unit upstream of the existing filtration to remove dissolved and undissolved gases from water.

- Equipping the well casing and vent lines with exhaust fans to exhaust gasses from the well casing.
- Expanding the treated water storage tank to ensure enough retention time for chlorination.
- Modification of existing piping to release gasses outside of the building.

On March 10, 2022 the Tetra Tech feasibility information was provided to the Regional Board who then resolved that a meeting be held with Rose Prairie Residents to discuss the future of the Rose Prairie water station.

When could a decision be made?

The different options presented to the PRRD have different timelines and costs. Depending on what option is chosen by the Regional Board, a more detailed schedule will be available to the public with anticipated timelines for the chosen option(s).

What are the estimated costs for treatment and upgrades at the current water station?

The rough construction estimate for the required treatment components and upgrades for the Rose Prairie well is $1,350,000.

Costs associated with the pursuing an alternative source have not been investigated at this time.

How did the gases get in the water?

Sulfides are common in groundwater as a consequence of sulfur-reducing bacteria and do not pose a health risk. The sulphides create an aesthetic result which in this case is a foul smell in water. Testing for Sulphides is not part of routine tests, which is why it was not discovered until commissioning.

Methane is known to occur in the ground due to natural conditions. At the time the gases were detected, the atmospheric pressure had dropped, causing an opportunity for gas to escape through water wells. With the combination of the GAC filtration, there is also an opportunity for the stripped methane and hydrogen sulfides to accumulate inside the piping due to poor ventilation.

Methane gas alone is not toxic and does not cause health problems in drinking water. It can react with chlorine causing high turbidity and by-products such as chloroform which is harmful. In addition, methane is a flammable gas, and regulated by WorkSafe BC.

What is turbidity?

Turbidity is a water quality term that refers to the relative clarity of water. Turbidity occurs when fine suspended particles of clay, silt, living and non-living matter, plankton, and other microscopic

organisms are picked up by water as it passes through a watershed. Turbidity levels are typically much higher in water from surface water sources such as streams, rivers, and lakes than from groundwater sources. Some surface water sources exhibit high turbidity levels during periods of high rainfall or snow melt (e.g. spring runoff).

Is turbidity a health concern?

Turbidity is not so much a health concern as an indicator of health risk. Science has proven that as turbidity increases, the risk for gastrointestinal illness also increases—particularly for at-risk populations such as newborns, the elderly, and people with weakened immune systems.

What caused the turbidity?

Treatments to lower the Sulphides have caused them to become solid, which makes the water appear cloudy (turbidity).

What is being done to treat the water?

Currently, the rented trailer containing the Granular Activated Carbon (GAC) filtration system during the pilot has been removed from site. In order to properly treat the existing water, a full scale GAC filtration system will need to be added as well as an aeration system to prevent any further gas from entering the treatment system.

What is packed tower aeration?

In Packed Tower Aeration treatment, water is sprayed inside a tower against a current of air. Air is injected from the bottom of the tower to remove dissolved gases (methane and hydrogen sulfide) from the water. The removed gases are vented outside by an exhaust fan. The effectiveness of dissolved gas removal is more than 95%.