

CITY OF PENTICTON

PFAS Testing Plan

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Subject: Summary of PFAS Sampling Results to Date

1.0 INTRODUCTION

The City of Penticton (City) proactively monitors water, wastewater, and solids produced during wastewater treatment (biosolids) for contaminants which may pose risk to human health or the environment. In 2023, the City began an initiative to monitor a group of contaminants called Per- and Polyfluoroalkyl Substances (PFAS). These synthetic chemicals have special properties which make them very useful in consumer products, manufacturing, and fighting fuel fires. Unfortunately, these same properties also cause many PFAS to be persistent in the environment (e.g., they do not fully biodegrade). The combination of their widespread use and their environmental persistence has resulted in PFAS being universally present across the globe in water and wastewater. A few specific PFAS such as perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic (PFOS) have many studies linking them to human health effects.

Early testing results demonstrate that the City's drinking water is safe and there is no known environmental impact from PFAS in the City's wastewater or biosolids. However, continued monitoring is required to ensure that this remains true. This memorandum provides a brief overview of PFAS and a summary of the testing results to date.

2.0 PFAS BACKGROUND

2.1 What Are PFAS?

You may have seen the term "PFAS" in the news over the last several years. They are commonly referred to as "forever chemicals" in the news or media because of their non-biodegradability. The scientific term PFAS describes a large group of thousands of chemicals which have special chemical bonds between carbon and fluorine – this is where the "fluoro" comes from in "Per- and Poly**fluoro**alkyl Substances." Within this group there are many subgroups which have varying properties which affect how hazardous they are to humans and the environment.

In general, PFAS are used as surfactants or as components in surface coatings. They are stain, heat, oil, and water resistant which makes them incredibly useful in many products and manufacturing processes. For example, PFAS have been used in waterproof fabrics, carpets, furniture, cleaning products, electronics, food packaging, cosmetics, specialized firefighting foams, and, notoriously, in non-stick pots and pans. It is the residue from these products and pollution from manufacturing processes which causes environmental contamination. A small group of some of the most well studied PFAS have been banned for import and manufacture in Canada but many more are still used.



Figure 1 Common Historical Uses for PFAS in Consumer Products

2.2 How Might PFAS Affect Me?

Some PFAS have been linked to health problems, specifically increased risk of developing some cancers, increased cholesterol levels, reduced immune system function, and low birth weight. That said, our overall understanding of the health impacts of PFAS is unclear because there are many less-studied or unstudied compounds.

2.3 What is Being Done About PFAS in Drinking Water?

Drinking water is one of many PFAS exposure pathways, but controlling PFAS concentrations in drinking water can have a direct impact on public health. The province of British Columbia currently recommends following Health Canada guidelines, which include limits for PFOA and PFOS specifically. However, these guidelines are outdated and are set to be replaced by a new PFAS objective, which recommends limiting PFAS as a class of compounds to a much lower value than previous guidelines. This objective is 30 nanograms per litre (ng/L, sometimes called parts per trillion). This approach precautionarily assumes that many PFAS are equally as toxic as PFOA and PFOS, even though evidence suggests certain “short-chain” PFAS such as perfluorobutane sulfonic acid (PFBS) are less toxic. The United States Environmental Protection Agency (USEPA) has taken a different approach from Health Canada and has instead implemented limits for specific PFAS. These limit PFOA and PFOS to 4 ng/L and three other substances to 10 ng/L in US drinking water.

The City of Penticton takes protecting drinking water and the environment very seriously. The City operates sophisticated drinking water and wastewater treatment systems which remove regulated contaminants, consistently meeting and exceeding treatment standards and guidelines. Monitoring PFAS concentrations in water and wastewater is a proactive step beyond what is required to meet current regulations and guidelines in British Columbia.

3.0 PFAS SAMPLING IN PENTICTON

To date, the City has sampled the water supply (i.e., Okanagan Lake and Penticton Creek), treated drinking water, raw and treated wastewater, the Okanagan Channel, and wastewater biosolids. Additional samples will be taken throughout 2025 and in future years from these locations and others to evaluate the risk of PFAS in the City.

The initial results show that the City’s drinking water is safe and the risk from PFAS is low (Figure 2). Since 2023, the drinking water was sampled three times and each time the total PFAS concentrations were well below the Health Canada objective value and were below guidelines made by other agencies, such as the US Environmental Protection Agency. Very low concentrations were also detected in Okanagan Lake and Penticton Creek, similar to those detected in the treated drinking water. PFAS concentrations in the City’s drinking water were also well below the limits imposed by the USEPA south of the border (Figure 3).

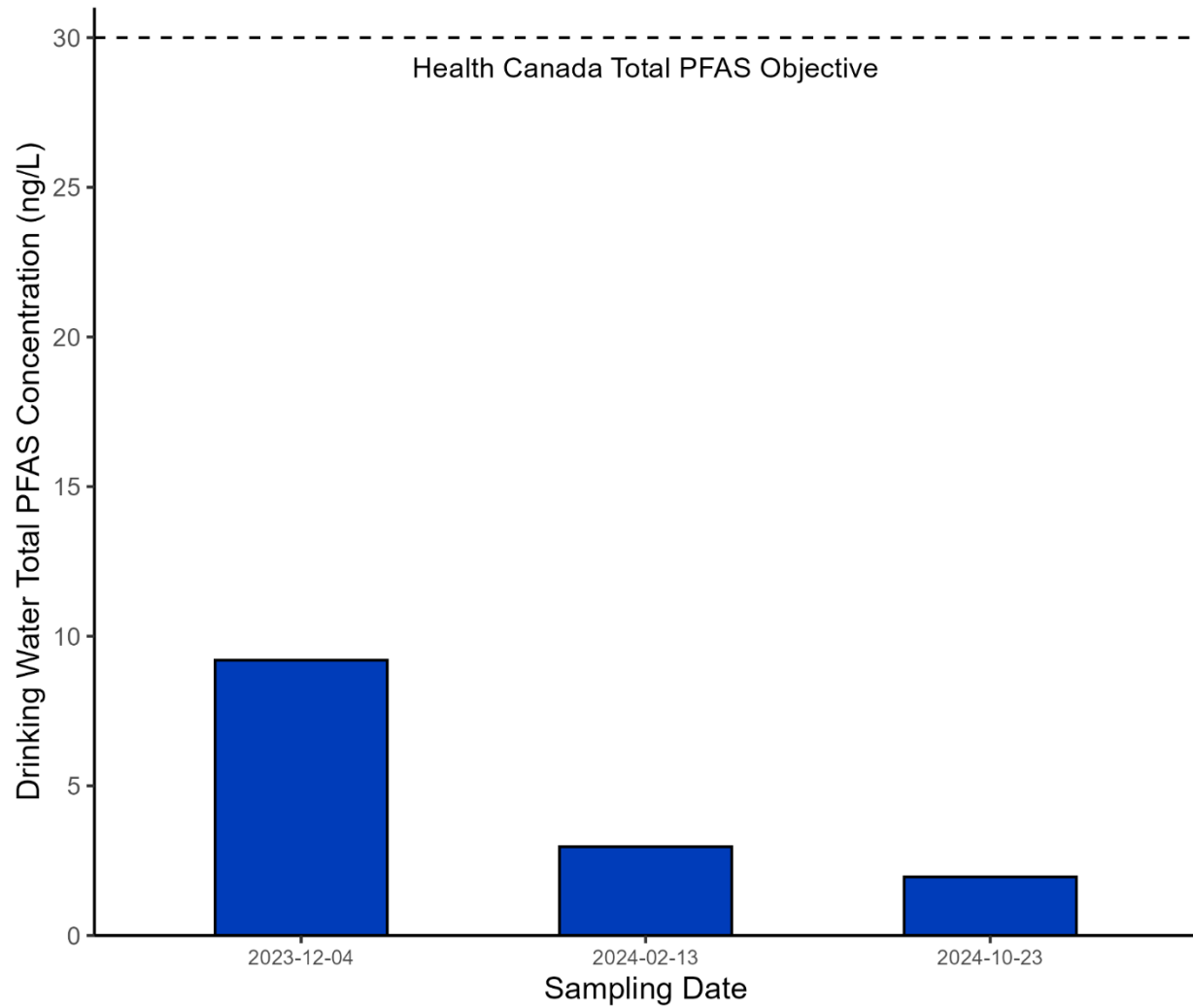


Figure 2 Total PFAS Concentrations Measured in the City's Drinking Water Compared to the Health Canada PFAS Objective

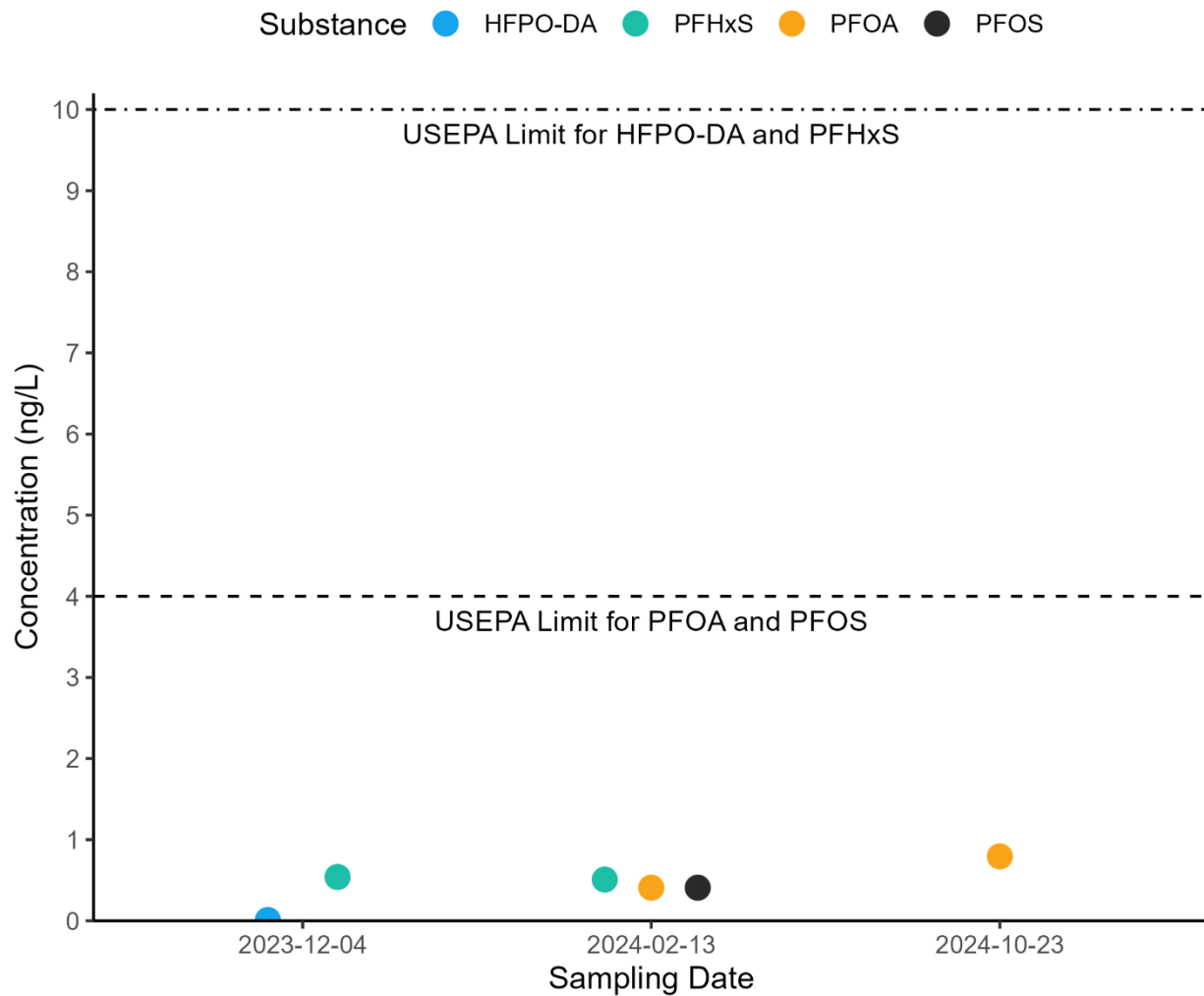


Figure 3 City Drinking Water Compared to the USEPA PFAS Limits

The initial samples also indicate that only low levels of PFAS are present in the City's wastewater. There currently are no regulations or guidelines for PFAS in wastewater in Canada, however, the concentrations in the City's wastewater are actually below the Health Canada drinking water objective of 30 ng/L. Samples taken from the Okanagan Channel showed that the PFAS concentration only increased by 1 to 2 ng/L after treated wastewater is discharged to the Channel. Accordingly, the data indicates that PFAS in the City's wastewater is having little impact on the environment and on downstream communities.

Samples taken from the Campell Mountain Landfill's composting facility had low PFAS concentrations as well. This compost product is used for landscaping and has limited potential for impacting human health. PFOS concentrations in this compost were below 3 micrograms per kilogram ($\mu\text{g/kg}$), far below the Canadian Food Inspection Agency's interim limit for PFOS in fertilizers of 50 $\mu\text{g/kg}$, demonstrating that it is safe for use based on current guidelines.

4.0 SUMMARY

The City of Penticton has begun monitoring PFAS concentrations in drinking water, wastewater, and the environment. These substances are known human health hazards and are universally present in the environment. Fortunately, initial sampling demonstrates that the City's drinking water is safe from PFAS contamination and the City's wastewater has little impact on PFAS concentrations in the environment. The City will continue to monitor PFAS concentrations as part of an ongoing effort to protect public health and the environment.