

Memorandum

To: Genelle Improvement District **From:** Scott Wallace
Attn: Kim Swetlishoff
Date: December 4, 2018 **File No:** 1589-011

RE: Upper Zone Pressures and PRV Station Assessment

TRUE is aware that the Genelle Improvement District (GID) has received complaints regarding variable water pressure in the upper zone, primarily focused on the 400 and 500 blocks of 12th, 13th, and 14th Avenues. Typical service pressures in that area (as recorded at fire hydrants) range from 55psi to 70psi; these are in line with community servicing standards.

TRUE has reviewed water composite drawings and completed a site visit with Genelle's water operator (Wendy Settle) on December 3, 2018. Our comments and conclusions are as follows:

Upper Zone Pressure Variability

Generally, changes in service pressure in Genelle's upper zone could be attributed to larger volumes of water moving through the upper zone when either of the following occurs:

1. Well pumps turn on to fill the reservoir; and/or,
2. Pressure reducing valves (PRV's) open to supply water to the lower zones.

#1 is expected to result in minimal pressure changes (less than 10psi) due to the adequate watermain sizes and looped nature of the upper zone system. This has been confirmed by GID staff by witnessing measured pressures at the well head when pumps are on or off.

#2 could be dependent on the configuration and operation of the pressure reducing control valves. TRUE reviewed the GID's two PRV stations, and both stations appear to be functioning normally without any unusual flow surging. Further comment specific to the PRVs is in the next section.

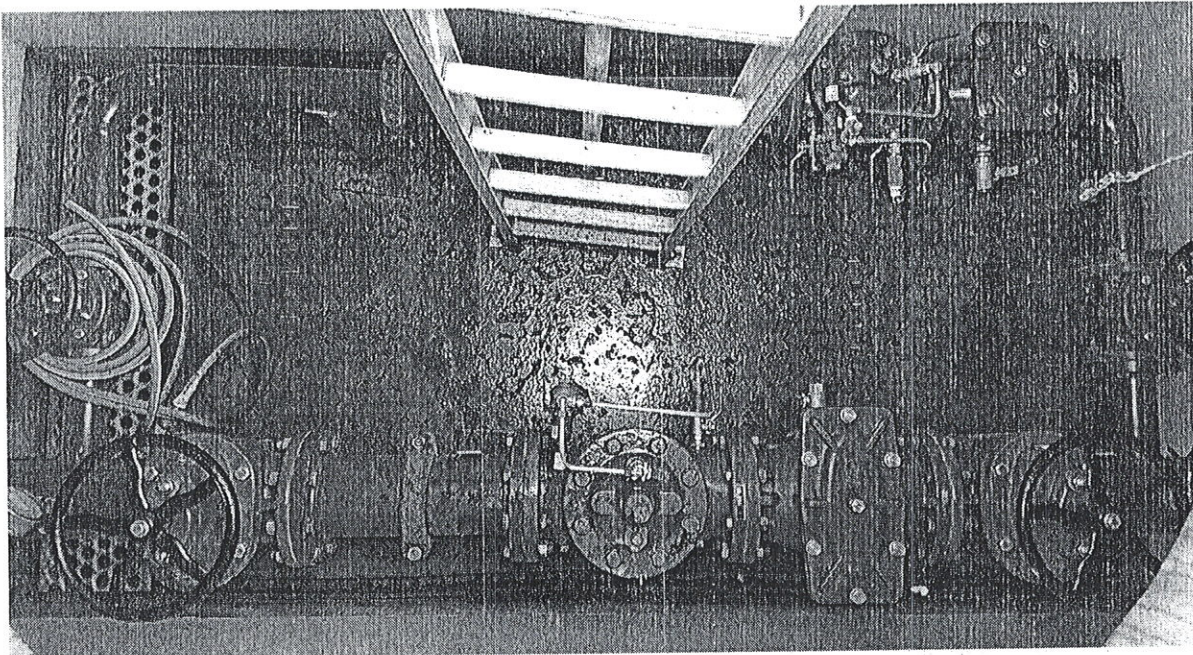
In summary, there does not appear to be any system related issues which would cause pressure variability to individual services.

Given that the residential properties in this area are relatively large, there is potential that some water services are undersized and incapable of delivering adequate flows/pressures to homes. A review of individual services could reveal whether service sizes are detrimentally impacting pressures at each home.

PRV Station Assessments

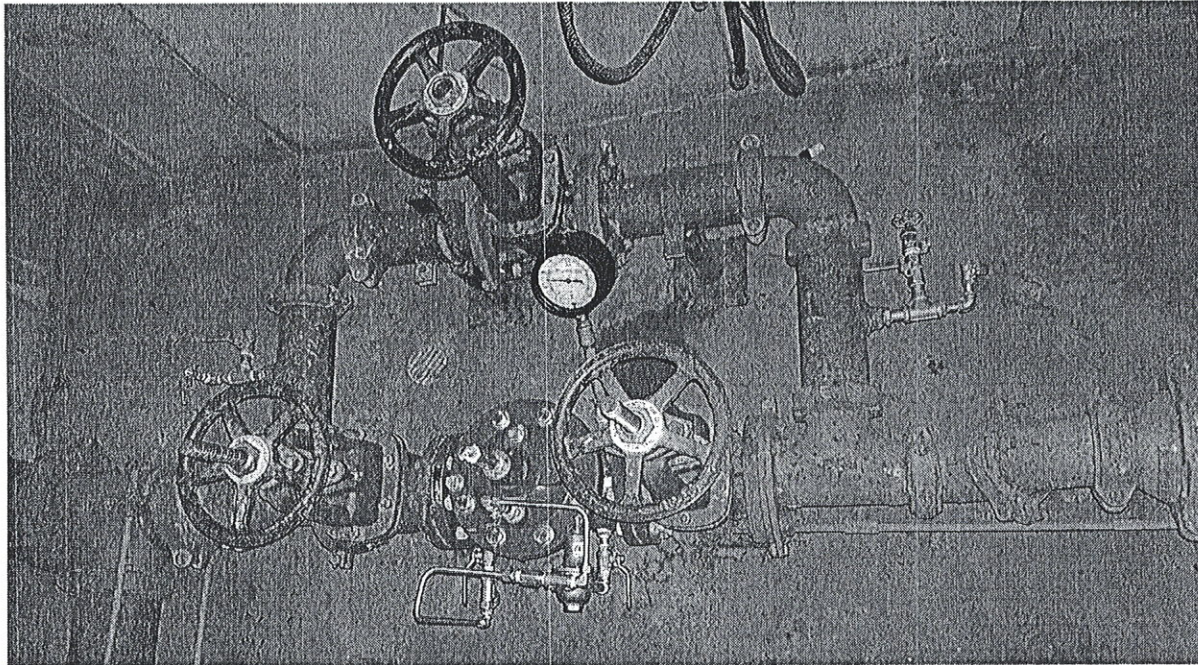
Comments regarding the GID's two PRV stations are given below.

12th Avenue PRV station (located in the road boulevard near civic 329):



- This is a relatively modern PRV station constructed within the past 15 years, and includes two pressure reducing valves: a 75mm dia. pressure control valve which regulates daily pressures, and a larger 150mm dia. pressure control valve which would open during extreme events such as fireflows. Specific operational data for this PRV station was not reviewed; however, the visual inspection indicated that the 75mm dia. control valve was functioning normally.
- A drain grate is apparent on the chamber floor. It is unclear whether the moisture present on the floor is a result of inadequate ventilation, or non-functional drainage. To preserve and extend the service life of this infrastructure, ventilation and possibly drainage should be improved. Ventilation can be improved through installation of steel gooseneck vent pipes connected at low and high elevations within the chamber. Such vent pipes would be blocked during the coldest months of the year to prevent components freezing in the chamber.
- The PRV station possesses adequate isolation valves for minor service operations, however, as a confined space it does not contain adequate valving outside of the station to allow a full station shut-down for major component replacements. Consideration should be given to installation of station shut down gate valves on watermains outside of the PRV station.

Well #1 PRV station (located within the Well #1 pumphouse):



- The PRV piping configuration only includes a single 100mm dia pressure control valve, and a 100mm dia. bypass gate valve which is normally closed. The piping and fittings in this station are aging, but the pressure control valve was recently replaced in 2017. Ideally, this station would be improved and configured similar to the 12th Avenue PRV station, with two pressure reducing control valves (smaller valve for regular daily flows, and larger valve for fireflows). The existing 100mm dia control valve has a suggested minimum flow rate of 3.2 L/s (50 USgpm), which could be too large for low flows occurring during periods of low water use. This could lead to operational issues or premature wear on the diaphragm assembly. Installation of a 50mm dia valve may be more suitable for the 'daily' flows, and the 100mm dia valve would function during fireflows. A two-valve system would also provide a level of redundancy if one valve needs to be taken offline for repairs.
- A floor drain is apparent on the chamber floor. Ventilation could be improved, but appears to be functional and occurs passively from the main floor of the pumphouse through the chamber access openings.
- Similar to the 12th Avenue PRV station, this PRV station possesses adequate isolation valves for minor service operations, however, as a confined space it does not contain adequate valving outside of the station to allow a full station shut-down for major component replacements. Consideration should be given to installation of station shut down gate valves on watermains outside of the pumphouse.

Closure

We hope the GID will find this information helpful. If you have any questions, please contact the undersigned.

Yours truly,

TRUE Consulting

A handwritten signature in black ink, appearing to read 'S Wallace', written in a cursive style.

Scott Wallace, P.Eng.

SW/slf