

Greater Vernon Water (GVW) Check List – Testing Requirements for New Mains

GENERAL INFORMATION:

The project Engineer on record is responsible to ensure the following items are completed and the appropriate sections of the **Flushing/Testing/Disinfection Report form** are filled out and signed off by the Engineer on Record. Disinfection is required at all curb stops and hydrants.

Flushing of the main line:

- Done in accordance of MMCD, AWWA Standard C600, C605, C651 and GVW Standards ⇐ REVISED
- Municipal operators were given 2 working days notice
- Mains and Services were backfilled
- Mains and Services were isolated from the existing system
- Minimum flush velocity of **0.9** m/s was achieved for flushing ⇐ REVISED
- Continue flushing at least until flow from most distant point has reached discharge point and until water discharged is clean and clear.
- Flush water was de-chlorinated before it was released into the environment

Pressure/Leakage testing:

- Done in accordance with MMCD, AWWA C605 or C600 Standards, and GVW Standards
- Municipal operators were given 2 working days notice
- Mains and Services had sufficient backfill to prevent pipe movement
- Preliminary Flushing was completed
- Mains and Services were isolated from the existing system
- Testing was not performed against an **existing** valve in the water distribution system ⇐ REVISED
- Test section was filled with water and air was expelled from the piping. The test section remained filled for at least 24 hours prior to testing
- Testing pressure was not less than 1.25 times the stated working pressure measured at the highest elevation and not less than 1.5 times the stated working pressure at the lowest elevation of the test section
- Testing time was a minimum of 2 hours
- Allowable Leakage as per standard leakage formulas:

Ductile Iron

$$L = \frac{SDP^{0.5}}{794,797} = L / \text{hr}$$

PVC

$$L = \frac{SDP^{0.5}}{715,317} = L / \text{hr}$$

HDPE

According to AWWA
C906

⇐ REVISED

- Water main Leakage Test Form was completed and signed off and sealed by Engineer on Record

Disinfection

- Done in accordance of MMCD, AWWA C651 Standards, and GVW Standards
- Chlorination was applied by the continuous feed method
- The chlorine solution was injected at a measured rate such as to fill the main with a minimum 50 mg/L available chlorine solution
- All appurtenances were operated to disinfect them
- The Chlorine was in the mains for 24 hours with a residual greater than 25 mg/L and not more than 150 mg/L at the end of that period
- Final Flush of the mains was completed to purge all disinfecting solution
- Discharge of water released into a water course, storm drain, or body of water was treated to reduce the concentration of Total Residual Chlorine (TRC) below the levels established by the BC Ambient Water Quality Criteria for Chlorine. At no time was water released into the environment with a TRC concentration greater than 0.1 mg/L
- The chlorine concentration leaving the main was not higher than that generally occurring in the distribution system or that is acceptable for domestic use > 0.20 mg/L or < 2.20 mg/L

Bacterial Testing

- Done in accordance of MMCD, AWWA C651 Standards, and GVW Standards
- Municipal operators were given 2 working days notice to ensure witness was available
- Municipal operators were on-site to witness sample collection at zero and 16 hour ⇐ REVISED
- Collected samples at zero and 16 hours from new main, witness placed tamper seal on samples and the contractor submitted samples to Caro for bacteriology sampling (Total Coliform and E.coli) and results were logged ⇐ REVISED
- The sample bottles and requisition forms for each bacterial sample were provided by the testing laboratory and the seals were provided by the Municipal Waterworks Crew. (The developer/contractor is responsible to ensure the samples are properly preserved and taken to the lab for analysis within 24 hours.)

Tie-In

- After successful testing, notify the Municipal Engineer to obtain an approval for tie-in.
- The Engineer on Record submits to the Municipal Engineer (and cc to City Operations) a signed and sealed Flushing/Testing/Disinfection Report form accompanied by the Lab Report.
- Flushing the system including the services, valves and hydrants was completed.
- Turn-on procedure incorporated a high velocity flush with prevention measures to ensure flush water did not enter GVW system or private water systems (2 m/s preferred).

Notes:

1. If the newly constructed mains are not tied to the system within 10 days, re-chlorination and testing will need to be repeated at the contractor's cost. ⇐ REVISED
2. Any variance from these conditions must be approved in writing by GVW.