ENGINEERING SERVICES

Specification Amendment #1 / City of Red Deer Contract Specifications- 2023 Edition

Revised Standards for Flushing and Disinfection (Section 3.13 of Contract Specification 33 11 16)

Background:
The City of Red Deer is adopting changes to Flushing and Disinfection processes. These changes will better align the City of Red Deer Contract Specifications with the practices developed by the American Water Works Association ANSI/AWWA C651-14 and Government requirements. These changes will also allow the use of accredited laboratories rather than requiring the use of Government Laboratories in Calgary or Edmonton, which may assist in streamlining schedules for the contractors.

Revised Standards for Flushing and Disinfection:
Revisions have been made throughout Section 33 11 16, Item 3.13 (Flushing and Disinfection) of the City of Red Deer 2023 Contract Specifications to reflect the new practice developed by the American Water Works Association ANSI/AWWA C651-14.

Implementation:
These revised standards are to be implemented immediately. Projects currently underway should follow these revised standards where this is feasible and reasonable in the judgement of the Engineer.

Date of Issue: 30 July 2024. **Effective date**: 30, July 2024

Contact: Ward Yurystowski, City of Red Deer Engineering Services

3.13 FLUSHING AND DISINFECTING

.1 A drawing detailing the proposed flushing sequence, valves required, and water collection points is to be approved and signed by the Engineer and the Water Superintendent before commencement of the installation of any water main. This drawing shall be provided to The City of Red Deer Utilities Department prior to the flushing.

.2 Prior to any flushing operations, a Hydrant Permit must be obtained from the Utilities Department through the Water Distribution Section. The Water Distribution Section can be reached at 403.342.8750 or by email at water@reddeer.ca. Once received, flush and disinfect all water mains, stubs longer than 12.2 m and services greater than 38 mm in diameter to AWWA C651-14. The point of application shall be at or near the beginning of the pipe extension and the discharge shall be at or near the end of the line being treated. Hydrants shall not be used for point of application of sodium hypochlorite or liquid chlorine.

.3 Flushing, disinfecting, and sampling operations shall be witnessed and approved by the Engineer. Notify the Engineer at least 48 hours before the proposed date when disinfection will commence. Upon approval of disinfection by the Engineer, flushing may proceed. Notify the Utilities Department at 403.342.8750 at least 48 hours prior to proposed date when flushing with distribution system water is scheduled to commence. Flushing may be limited to off-peak hours.

.4 Provide connections and pumps as required.

.5 De-chlorination of the chlorinated water will be required to meet the regulatory requirements of The City of Red Deer and/or Environmental protection. It is to be performed by following AWWA standard C655-18. Results must be confirmed and recorded by Engineer or Contractor.

.6 All highly chlorinated water (over 4mg/L) needs to be de-chlorinated and discharged into the sanitary sewer. Low chlorinated water (under 4mg/L) is to be de-chlorinated and directed to the storm sewer and continue until all air, pipe lubricant or other materials that may have entered the main during construction have been expelled. Proper sediment control needs to be in place. In the occurrence where storm sewer isn't feasible, contact the Utilities Department at 403.342.8750 for options.

.7 After final flushing, with a chlorine residual between 1.5mg/L and 2.2mg/L and a turbidity of less than 2.0 NTU the Engineer or Contractor will follow "AWWA Standard C651-14 disinfecting water mains" for sampling procedure. (Note a stagnation time of minimum 16 hours)

.8 Bacteriological samples are to be collected by the Engineer or Contractor in approved sample bottles obtained from the laboratory in which the samples will be analyzed at. The sample bottles are sterilized and contain a de-chlorination reagent. Never rinse sample bottle before testing. The locations where each sample is taken, the chlorine residual and turbidity levels must be clearly identified on the sample form. All samples must be tested for Total Coliforms and E. coli with an ABSENT result by an accredited laboratory that meets the requirements

of ISO/IEC 17025 and complies with Standard Methods for the Examination of Water and Wastewater.

.9 If the samples are from new subdivision development, a drawing showing the main tested, the location of each sample drawn on that main, the chlorine residual and turbidity levels at time of sample and the corresponding identification number from the sample form. This drawing and test results are to be provided to the Engineering Services Development Coordinator before the infrastructure will be commissioned.

.10 If the samples are from replacement of main due to maintenance, new service connection(s), private systems (e.g. mall complex), etc. a drawing showing the pipe(s) tested, the location of each sample drawn, the chlorine residual and turbidity levels at the time of sample and the corresponding identification number from the sample form is to be provided electronically to Utilities Department - Water Utility water@reddeer.ca before the infrastructure will be commissioned.

.11 Once satisfactory bacteriological test results have been confirmed and water quality is found to be free of pipe lubricant, have a chlorine residual between 1.5mg/L and 2.2 mg/L chlorine and turbidity of less than 2.0 NTU. Out of service disks will be removed from all fire hydrants in the approved zone and the Emergency Services Department will be notified.

.12 If the initial disinfection fails to produce satisfactory bacteriological samples, the mains may be re-flushed and resampled. If check samples fail again to produce satisfactory bacteriological results, then the water main shall be re-chlorinated and flushed until satisfactory results are obtained.

.13 All satisfactory bacteriological test results must be current within 2 weeks of the inspection for Construction Completion Certificate.

.14 Water mains to be flushed again after streets are constructed and before issuance of building permits.