SECTION 221118 – POTABLE WATER SYSTEM DISINFECTION

PART 1 - GENERAL

1.1. Any deviance from the following requirements must be approved during design by WVU Facilities Management.

1.2. New and renovated plumbing work shall adhere to the current International Plumbing Code requirements for Disinfection of Potable Water Systems or the American Water Works Association Standards C651-2005 Disinfection of Potable Water Systems or C652 Disinfection of Water Storage Facilities as applicable.

1.3. Potable water piping, fittings, and devices' water contact surfaces shall be protected from contamination during transportation, storage and the installation process. Plumbing materials contaminated with mud, dirt, or other visible contaminates shall not be used unless they are fully de-contaminated prior to installation.

1.4. Faucets, urinals, and toilets utilizing electronic actuating shall be operational prior to conducting the flushing and disinfection processes. If the design and function of electronic actuating devices interferes with or prohibits adequate flushing, by–pass devices or valves shall be installed for flushing and disinfecting of the potable water system.

A. The entire facility's potable water system shall be substantially complete prior to conducting flushing and disinfecting procedures.

B. Water coolers and fountains shall NOT be connected to the potable water system prior to conducting flushing and disinfection of the potable water system. The water supply for water coolers and fountains shall be disinfected and flushed prior to connecting water coolers and fountains.

1.5. The WVU Facilities Project Manager and WVU Environmental Health and Safety (EHS) shall be notified in advance of the schedule for potable water system disinfection.

PART 2 - PRODUCTS

2.1. Chlorine test strips may be used for determining disinfectant levels from 50 ppm to 200 ppm in the potable water system.

A. An FAS-DPD free chlorine test kit must be used for determining free chlorine levels below 50 ppm.

B. The disinfectant solution pH shall be determined by use of a calibrated pH meter, pH test strips, or a phenol red pH test kit.

2.2. Liquid bleach (sodium hypochlorite) shall be used for making chlorine disinfection solutions. Use of other chlorine sources must receive prior approval from WVU EHS.

PART 3 - EXECUTION

3.1. Prior to disinfecting the potable water plumbing system all piping shall be flushed with clean potable water with sufficient velocity to flush all visible debris and discolored water from the plumbing system.

3.2. Hot water supply piping loops and recirculation systems that have pumps, heat exchangers, or other chemically sensitive mechanical components shall not be disinfected by use of elevated chemical disinfectants.

A. Hot water supply loops and recirculation systems shall be disinfected by recirculating 140 degree F. or higher hot water for 24 hours. Upon completion of recirculating hot water for 24 hours, hot water shall be allowed to flow from all hot water fixtures for a minimum of five (5) minutes. If due to design this is not feasible the hot water supply loops shall be disinfected by use of chlorine as noted in paragraph 3.3.

3.3. The potable water system shall be disinfected by introducing a chlorine solution that results in an initial free chlorine residual of between 50 ppm and 200 ppm, a pH of between 7.2 and 8.5 standard pH units, and total alkalinity of 80 to 140 ppm throughout the plumbing system, (excluding components noted in paragraph 1.5). Free chlorine residual shall be tested throughout the facility at available faucets, hose bibs and other water taps. After adequate free chlorine residual has been verified to be within 50 ppm and 200 ppm throughout the potable water system, the system shall be valved off and unused for between 24 and 48 hours.

A. Free chlorine residual shall be tested after 24 hours from a minimum of 25% of fixtures on each floor of the facility being disinfected. If final disinfectant residual tests at less than 10 ppm, repeat steps in paragraph 3.3.

B. Once the final disinfectant residual is tested at 10 ppm or greater from tested fixtures, flush the disinfectant from the system with clean potable water until the residual is equal to that of the incoming water, which is approximately 1.0 ppm free chlorine.

C. NOTE: All water with elevated chlorine shall be discharged to the sanitary sewer. Discharge of potable water with elevated chlorine shall NOT be disposed of by way of the stormwater system.

D. After the system is flushed, two bacteriological (2) samples shall be collected from each floor of the facility from the potable water system. Water samples shall be analyzed by a laboratory certified by the WV Department of Health and Human Resources for potable water bacteriological analysis. A copy of the laboratory sample results shall be provided to WVU Environmental Health and Safety.

E. Upon receipt of satisfactory laboratory test results the potable water system can be put into service.

END OF SECTION 221118