SCHOOL DRINKING WATER PROGRAM

RESTORING AND MAINTAINING WATER QUALITY CHECKLIST

EGLE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

HEALTHY WATER HEALTHY KIDS

This checklist provides a summary of steps to restore and maintain water quality in school and child care buildings after periods of low or no water use.

Buildings that have been closed or partially used for weeks or months result in reduced water usage leading to stagnant water inside the building's plumbing. Stagnant water can contribute to lead and microbial exposure risks. Therefore, it is important to flush building plumbing systems to restore water quality before staff and students return and as a continual maintenance program to keep the water moving to all outlets during partial occupancy. Flushing is replacing old water with fresh water in a two-step method and is relatively easy to do. Detailed flushing information can be found in the links below or at the Michigan Department of Environment, Great Lakes, and Energy (EGLE's) School Drinking Water Program web site, Michigan.gov/SchoolWater.

Prepare for Flushing

To restore water quality and prepare for the return of staff and students, perform the following:

☐ Contact your water utility about local water quality and to coordinate maintenance activities.

  ✓ For school campuses with multiple buildings and hydrants, your water utility may first need to flush the buried pipe and hydrants outside the buildings before school staff proceed with building flushing.

☐ Follow appropriate regulations and policies for worker safety and health.

☐ Conduct a plumbing assessment to determine the flow of water through the building from the water main to each point of use. Information on conducting a plumbing assessment can be found under Step 2 of EGLE's "10 Basic Steps to School Water Testing."

☐ Determine flushing zones. Refer to EGLE's guidance document, "How to Determine Flushing Zones for the High Velocity Flushing Method."

  ✓ To calculate volume based on as-built plans, watch the video from Purdue University, "Key Calculations and Information Needed for Creating a Flushing Plan"

☐ Communicate the status of the water system and flushing program to staff and families.

☐ Engage people to assist with flushing.

☐ Inspect the plumbing to ensure it is functioning properly and is in good condition.

☐ Make sure all drains are properly functioning and drain traps filled.

☐ Remove faucet aerators where possible.

☐ Remove point-of-use filters.

Flushing – High Velocity Zone Method

Remedial – Extended Low or No Usage

- ☐ Review EGLE's Guidance for Flushing School Plumbing (High Velocity Method)
- ☐ Bring fresh water into the building by flushing the service line where it enters the building[1].
- ☐ Flush softener(s) and hot water tank(s) per manufacturers recommendations.
- ☐ Flush the cold water plumbing by zone with fresh water (flush all water outlets including toilets and hand sinks in each zone).
- ☐ Run all water-using appliances (e.g., dishwashers, refrigerator water dispensers, ice makers).
- ☐ Flush hot water plumbing. Determine if additional disinfection or heat treatment is necessary.
- ☐ Once flushing is completed, replace all filters at filter stations, faucet mount or under sink filters, any pitcher style filters, and appliances in the school regardless of installation date. Clean and replace aerators and screens.
- ☐ Maintain all non-drinking water systems according to manufacturer's specifications (e.g., sprinkler systems, eye-wash stations, water features, cooling towers).

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[1] Three ways to determine fresh water from the water supplier is entering the building include:

1. Measure the disinfectant residual while flushing to match that expected from the supplier.
2. Measure the water temperature while flushing to math that which is expected for the supplier or when it no longer changes.
3. Calculate the flushing time needed to replace the volume of water stored in the service line and consider flushing several times this amount to ensure complete replacement of water in the pipes.

NOTE: Volume of a pipe in gallons may be calculated using the following formula:

$V = 0.25 \times \pi \times d^2 \times h \times 7.48$

Where:

V = volume in gallons,
π = 3.14,
d = inside diameter of pipe in feet (inches to feet conversion = inches/12), and
h = length of pipe (in feet).

Measure the flow rate achieved during flushing. Flow rate can be determined with a stopwatch by timing how long it takes to fill a container (in minutes) of a known volume (in gallons). Flow rate (in gallons/minute) is the volume (gallons) divided by the time (minutes). Theoretical time to remove the volume of water in the service line (in minutes) equals volume of service line (in gallons) divided by the flow rate of lushing (gallons/minute).

Flushing – Fresh Tap Method

Partial or Short Periods of No Building Use

- ☐ Review EGLE's Guidance for Flushing School Plumbing (Fresh Tap Method)
- ☐ Begin flushing the cold water plumbing at the outlet closest to the water service line (point of entry).
- ☐ Continue flushing each outlet (used for consumption) one at a time through the building to the location point farthest from the point of entry for 30 seconds to a minute.
- ☐ Flush weekly until the full return of staff and students.

Other Actions to Consider

- ☐ Sample and test outlets dedicated for drinking or cooking purposes prior to resumed use (microbial contaminants, lead, copper, chlorine residual, disinfection by-products.
- ☐ Never use hot tap water for drinking or cooking.
- ☐ Install signs for water outlets thast are not intended for consumption (Hand Wash Only, Lab Use Only, etc.)

Plan for Next Time

Develop a drinking water quality management plan for ongoing water quality maintenance at your school building.

Information contained in this document, along with additional information about developing a flushing plan, considerations for testing, and specific devices, may be found in the American Water Works Association's "Responding to Water Stagnation in Buildings with Reduced or No Water Use."