



Considerations when Evaluating a Building Wastewater System for Wastewater Surveillance

1. **Equipment needed:** When scheduling an inspection of a building as part of your evaluation, determine who will be responsible for bringing equipment to complete the inspection safely.
 - a. **Crowbar or manhole cover hook** to remove the manhole cover.
 - b. **Safety cones** to mark the manhole and avoid accidental falls. If the manhole is in the street, work with a city or municipal utility to coordinate access to address liability and traffic control concerns.
 - c. **Flashlight** for visually inspecting manhole.
 - d. **Work gloves** for lifting the manhole cover.
 - e. **Latex gloves** for handling samples.
 - f. **Eye protection.**
 - g. **Protective clothing** (bibs, disposable coveralls, or tyvek suits).
 - h. **N95 or KN95 mask.**
 - i. **Aerial photo of building.**
 - j. **Notepad and pen.**
 - k. **Ice packs** for portable autosampler.
 - l. **Autosampler or grab sample equipment.**
 - m. **Sampling supplies** (sample tubes, ethanol wipes, cooler, ice packs, etc.)
2. **As-built review:** Request to see an as-built drawing of the building from the facility manager. As-built drawings will contain a scaled drawing of the building, including all major utilities, sewer lines, manhole access points, and sewer cleanouts. They are crucial for determining where to sample. Obtaining an electronic drawing prior to the visit is preferred, but a scanned copy or picture of the drawing when on-site will suffice. Review the as-built prior to the visit or before starting the onsite inspection.
3. **Identifying sampling location:** Depending on the population you wish to capture in building-level wastewater surveillance, you may need to consider which sewer lines serve that population. For example, if your building-level surveillance program focuses on elementary level students, but a school accommodates grade levels outside of K-5, you must identify which part of the building elementary students occupy and if there is an isolated sewer line and manhole to retrieve a sample. If there isn't an isolated location to sample for the elementary grade levels, you may need to sample from an upstream location (i.e. a sewer clean out) or sewage lift location.
4. **Physical inspection of manhole:** Once you identify the best location to sample, you should physically inspect the manhole to determine which type of sampling options are available (i.e. composite, grab, or passive sampling). Take pictures and make notes about thickness of the manhole cover, which lines enter the access point, and how the probe will need to be positioned or where the sample collected (i.e. upstream to capture only elementary school grade levels or a specific wing of a hospital). Measure the



diameter of the narrowest part of the manhole to determine if it can accommodate an autosampler.

5. **Collecting sewage system information:** Several factors may determine which type of sample can be collected, when samples should be collected, and how degradation may impact samples.
 - a. Collect information about the age of the system.
 - b. Make note of any sewer features that may complicate sampling. These may include a sewage lift to pump effluent up gradient or the building sewer line tying directly into the sewer line without a manhole access point.
 - c. Make note of any sewer cleanout points that could act as an alternative sampling point via an autosampler.
 - d. If available, collect information on flow rates.
 - e. Take pictures of the manhole in relation to the building and take coordinates, if possible.
 - f. Note any gray water that may be discharged into the sewer line you are collecting from including laundry, kitchens, etc.
 - g. Record information and take pictures of safety data sheets or ingredients of any chemicals that may be discharged into the sewer system. These may include disinfectants, sanitizers, detergents, or other chemicals that may degrade the sample.
 - h. Collect information about snowfall and winter temperatures. Coordinate with the facility manager to make sure manhole access can be maintained throughout the winter months to maintain a regular sampling schedule.

6. **Collecting information about school population:** This information will help make decisions about sampling, including:
 - a. Which populations occupy the building? If specific populations of interest are housed in the same building (i.e. different grade levels), make note about which facilities are used by each population.
 - b. How many people are contributing to the effluent being sampled, including residents, students, staff, etc.?
 - c. What are the typical hours of operation?
 - d. For buildings that are not occupied 24 hours a day, are there any uses of the building outside of normal operating hours? For example, are there any before or after school programs that will utilize the facilities discharging to the sewer line where samples will be collected?
 - e. What are the busiest times of the day in the building you plan on sampling from?
 - i. Make note of busy transition periods (lunch, recess, opening, or closing hours) that may interfere with the location from which you are sampling. For safety reasons, samples should not be collected when building occupants are present.
 - ii. Collect aggregate samples at the end of the day, so the sample is representative of the population throughout business hours.



1. For building-level surveillance in a facility with limited business hours, collect samples at the end of the day.
 2. For congregate living settings (i.e. jails, shelters, dorms), collect 24-hour composite samples at a consistent time for representative samples.
- f. What time do building occupants most often use the bathroom?
- i. This will help to determine periods of high flow. Collect grab samples during peak flow, so samples are representative of the contributing population.
 - ii. Program autosamplers to collect samples over periods of high flow, so samples are representative of the contributing population.
7. **Roles, responsibilities, training:** During the site inspection, discuss the roles and responsibilities of public health and facility personnel.
- a. Who will be responsible for accessing the manhole and collecting the sample?
 - i. Environmental health staff, communicable disease staff, wastewater utility personnel, or the facility manager?
 - b. If an autosampler is used, who will be responsible for installing and maintaining the device?
 - i. Environmental health staff, communicable disease staff, wastewater utility personnel, or the facility manager?
 - c. Who will be responsible for communication of data and public health response?
 - i. State or local public health personnel, setting specific administrators (school, jail, shelter), or both?
 - d. What type of training will be needed?
 - i. Grab sampling, autosampler use, accessing manholes, safe handling of samples, etc.
8. **Public health response:** Public health should discuss what public health response the facility will implement if an increase in viral concentration is detected in wastewater.
- a. Notification
 - b. Education
 - c. Connection to resources
 - i. Testing
 - ii. Vaccination information
 - iii. PPE
 - d. Implementation of mitigation measures
 - i. Following isolation and quarantine guidance
 - ii. Symptom monitoring
 - iii. Improving ventilation
 - iv. Maximizing outdoor activities
 - v. Enhanced cleaning and disinfection
 - vi. Cohorting classrooms/wings/etc
 - vii. Masking after illness and exposure



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