

NAME OF PROCEDURE: *Strong Waste Sampling*

1. Introduction

1.1. Purpose/Scope

- 1.1.1. To show how to collect strong waste samples. Strong waste sampling involves collection wastewater from permitted, non-permitted industries, and customers that have potential to release Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) into the wastewater.

1.2. Definitions and Acronyms

- 1.2.1. **Monitoring Manhole** – means a manhole with an opening at least 24 inches in diameter that is installed on the discharge line from a user in order to facilitate collection of wastewater from only that user.
- 1.2.2. **Wet Well/Monitoring Vault** – A chamber which is used for collecting wastewater from only that user, and to which the suction pipe of a pump is attached prior to the discharge line.
- 1.2.3. **Biochemical Oxygen Demand (BOD₅)** – The biochemical oxygen demand, generally referred to as BOD₅, is a measure of the oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures for five days at 20 degrees Celsius. It is simply an indicator of the organic strength of wastewater. As the strength of wastewater increases greater amounts of energy are required to clean the wastewater. As the strength increases so do the costs to treat it. BOD₅ is expressed in terms of weight and concentration (milligrams per liter).
- 1.2.4. **Soluble biochemical oxygen demand (SBOD₅)** – The result measured by the BOD₅ test procedure specified in 40 CFR 136 after the sample is filtered (vacuum of 25 mmHg) through a 0.45 µm pore size filter.
- 1.2.5. **Total Suspended Solids (SS)** – All solids that either float on the surface or are in suspension in water, sewage, wastewater or other liquids and which are removable by laboratory filtering. SS is expressed in terms of weight and concentration (milligrams per liter).

1.3. Safety & PPE Considerations.

- 1.3.1. Safety glasses
- 1.3.2. Reflective vest
- 1.3.3. (Latex or non-latex) gloves
- 1.3.4. Traffic control equipment, if necessary

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1.4. Gather Necessary Equipment

- 1.4.1. Programmable Composite Sampler (includes wire harness, battery, tubing with probe)
- 1.4.2. 18 ft. Telescopic stick with hook attachment
- 1.4.3. 15 ft. Rope with hook attachment.
- 1.4.4. Clean sandbag, if necessary (with rope and hook attached)
- 1.4.5. Plastic sand-filled container, if necessary (with rope and hook attached)
- 1.4.6. 55 Gallon drum with lid, barricade and locks, if necessary (used for above ground monitoring)
- 1.4.7. PVC piping and elbow attachment, if necessary
- 1.4.8. Pre-cleaned one gallon plastic jar
- 1.4.9. WRF Chain of Custody (C-O-C) form
- 1.4.10. Cooler of ice

1.5. Composite Sampler Preparation.

- 1.5.1. Put ice around one pre-cleaned gallon plastic jar in bottom section of sampler. Remove sample jar lid and place on truck.
- 1.5.2. Place sampler mid-section onto bottom section. Place battery on sampler and review pre-programmed parameters for location. Default sampling method is 24-hour composite sample consisting of minimum of one sample per hour. Preferred setting is 4 samples per hour. Place top on sampler, latch side clips and lock down top using handle.

1.6. Monitoring Location

- 1.6.1. Open manhole. If necessary due to low flow, create pool in waste stream deep enough to submerge sample probe using a sandbag/sand-filled container. Sandbag/sand-filled container can be maneuvered using the telescopic stick with hook attachment.
- 1.6.2. Turn on sampler and start program after arrival at designated Monitoring Manhole/Vault. Replace top and lock in place. Using the rope with the hook attachment, lower the sampler into the Monitoring Manhole/Vault and place the probe in waste stream. Sampler can either be hung from the ladder using a wire harness or sat flat on the floor of the manhole. Close manhole.
 - 1.6.2.1. If waste stream has high flow or enters the manhole via a raised pipe in the side wall, use PVC with curved elbow attachment to hold sample probe in place.
 - 1.6.2.2. If site must be monitored via Above Ground Monitoring, sampler is placed into a 55 gallon drum. The sample tubing is placed through the bottom hole in the drum and then either through the pick-hole in the manhole cover, or down the cleanout. Barricade is placed around the drum and the lid is locked in place.
- 1.6.3. Next day return to sample site. Open manhole. Retrieve sampler from manhole. Open sampler and place lid on plastic jar container. Disinfect all equipment and place in vehicle.
- 1.6.4. Place fresh ice around sample for transport to the laboratory.

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1.6.5. Add detailed notes, comments and additional information into the Field Notebook and on your Chain of Custody (C-O-C).

1.6.6. Take sample and Chain of Custody (C-O-C) to Lab for login.

1.7. Laboratory Analysis

1.7.1. Sample must be analyzed for BOD₅ and TSS.

1.7.2. Sample may also be analyzed for SBOD₅.