

## WEAT Workshop Synopsis and Agenda

### Introduction to Sampling and Monitoring for Wastewater Operators

#### Target Audience:

Wastewater Treatment Plant Operators, Laboratory Personnel, and Pretreatment Personnel.

#### Overall Learning Objectives:

To provide attendees with need-to-know information on the rules and regulations that include requirements for sampling and monitoring of wastewater discharges and wastewater sludge that are designed to protect receiving waters, the land, and the public health, safety, and welfare; parameters that need to be analyzed to determine compliance with rules and regulations; documentation of sampling and monitoring activities to help ensure accurate and defensible results are obtained; considerations to help ensure safe sampling and monitoring practices; and the importance of and resources for information management. Various exercises and demonstrations are included to facilitate learning.

7:30 – 8:00 am	<b>Registration and Continental Breakfast</b>
8:00 – 8:15 am	<b>Introduction and Workshop Overview</b>
8:15 – 8:45 am	<b>Why Do We Sample?</b> <u>Section Teaching Objective:</u> The objective of this section is to present an overview of why sampling and testing are conducted. An introduction to the applicable rules and regulations that specify sampling and testing requirements will be presented. In addition, how operators and engineers use monitoring data to make decisions regarding process control and design of new or improved treatment facilities will be discussed.  The topics presented in this section are as follows: <ul style="list-style-type: none"><li>• Regulatory Requirements<ul style="list-style-type: none"><li>○ Texas Pollutant Discharge Elimination System (TPDES) Permit</li><li>○ Texas Land Application Permit (TLAP)</li><li>○ Sludge Disposal Authorization</li><li>○ Reclaimed Water Reuse</li></ul></li><li>• Pretreatment Program<ul style="list-style-type: none"><li>○ Monitoring of industrial users</li><li>○ Monitoring of wastewater treatment plant (WWTP) influent, effluent, and sludge for technically based local limits development and reassessment</li></ul></li><li>• Process Control</li><li>• Engineering Purposes</li></ul>
8:45 – 9:15 am	<b>What Parameters are Analyzed?</b> <u>Section Teaching Objective:</u> The objective of this section is to provide a general overview of the parameters/pollutants that are typically sampled and analyzed in the wastewater industry. The typical definition of terms related to sampling and testing as well as the different groups of parameters and types of matrices (potable water, non-potable, sludge/solids, and air) will be discussed.  The topics presented in this section are as follows: <ul style="list-style-type: none"><li>• Wastewater<ul style="list-style-type: none"><li>○ Conventional pollutants</li><li>○ Biomonitoring</li><li>○ Bacteria</li><li>○ Surface water quality standards (30 TAC Chapter 307)</li><li>○ EPA Priority Pollutants</li></ul></li></ul>



	<ul style="list-style-type: none"> <li>• Sludge/Biosolids – land application, compost, surface disposal, incineration, and toxic characteristic leaching procedure</li> <li>• Soils</li> </ul> <p><i>Exercise: TPDES permit review.</i> The exercise involves reading through a TPDES permit. The objective of the exercise will be for the audience to see the different sections of a TPDES permit that specify sampling and testing requirements. Questions will be presented to the audience. The audience will be asked to identify the parameters of interest, types of samples required, and the frequencies for which sampling and testing must be conducted for effluent quality compliance, sludge disposal practices, biomonitoring testing, and pretreatment program implementation.</p>
9:15 – 10:00 am	<p><b>Sample Monitoring Considerations – Part 1</b></p> <p><u>Section Teaching Objectives:</u></p> <p>The objectives of Part 1 of this section are to teach the audience common types of sampling techniques and the rationale for the technique that should be implemented. The low-level mercury sampling technique and the techniques and devices for determining flow measure will be discussed and demonstrated.</p> <p>An exercise on how to calculate sample volumes needed for composite samples will be conducted and a demonstration of how to properly set-up and calibrate typical automatic sampling equipment and flow measurement devices will be presented.</p> <p>The topics presented in Part 1 are as follows:</p> <ul style="list-style-type: none"> <li>• General Good Sampling Procedures <ul style="list-style-type: none"> <li>○ Grab samples</li> <li>○ Composite samples <ul style="list-style-type: none"> <li>▪ Flow proportional <ul style="list-style-type: none"> <li>▪ Flow-weighted</li> <li>▪ Time-weighted</li> </ul> </li> <li>▪ Equal aliquots</li> </ul> </li> <li>○ Containers, preservation, and holding times</li> <li>○ “Clean sampling” techniques for low-level detection levels (e.g., Mercury)</li> <li>○ Types of flow measurement and devices</li> </ul> </li> </ul> <p><i>Exercise: Composite sample volume calculation for flow- and time-weighted composite samples.</i> The exercise involves presenting the equations for calculating the amount of each discrete sample taken over an established sampling period that should be combined to create a flow-weighted or time-weighted composite sample. The audience will be provided flows and final composite volume and allowed time to determine the proper samples sizes for each discrete sample to create a composite sample.</p> <p><i>Demonstration: Sampling and flow monitoring equipment calibration.</i> The demonstration will involve hands-on practice for setting up and calibrating sampling equipment and flow measuring devices. Procedures to maintain the equipment will also be demonstrated.</p>
10:00 – 10:15 am	<b>Break &amp; Refreshments</b>
10:15 – 12:00 pm	<p><b>Sample Monitoring Considerations – Part 2</b></p> <p><u>Section Teaching Objectives:</u></p> <p>The objectives of Part 2 of this section is to make the audience aware of the factors/conditions that need to be considered when collecting samples or taking field measurements and to make the audience aware that it is important to collect representative samples. Establishing and following standard operating procedures, that describe proper sampling and handling techniques, identifies</p>



	<p>sampling locations and frequencies, and the steps for taking field measurements will assist the sampler to accomplish these goals. The topics presented in this Part 2 are as follows:</p> <ul style="list-style-type: none"> <li>• Purpose of SOPs and why important</li> <li>• Representative samples, location, and frequency <ul style="list-style-type: none"> <li>○ Permit requirements</li> <li>○ GIS, mapping systems, and pictures and descriptions of locations</li> <li>○ Site-specific situations and considerations (continuous vs intermittent flows, batch discharges, etc.).</li> <li>○ Abnormal WWTP conditions</li> <li>○ Wastewater collection system</li> </ul> </li> <li>• Field measurements <ul style="list-style-type: none"> <li>○ pH</li> <li>○ Dissolved oxygen</li> <li>○ Temperature</li> <li>○ Chlorine residual</li> <li>○ Ammonia</li> <li>○ Instantaneous flow measurement</li> </ul> </li> </ul>
12:00 – 1:00 pm	<b>Lunch (provided)</b>
1:00 – 2:00 pm	<p><b>Laboratory Data Review</b></p> <p><u>Section Teaching Objectives:</u></p> <p>The objective of this section is to inform the audience that for compliance reporting purposes regulations specify certain analytical methods to be used, quality control measures and data quality objectives to be achieved, and that analyses are to be performed by accredited laboratories. Operators are responsible for reviewing laboratory reports to verify the requirements are met prior to reporting data to the regulators. Therefore, presented in this section will be procedures for reviewing data. Resources will be given that can help the operator verify proper methods were used and that quality control measures and data objectives were met.</p> <p>The topics that will be discussed in the session are as follows:</p> <ul style="list-style-type: none"> <li>• Analytical methods and laboratory selection</li> <li>• 40 CFR Part 136</li> <li>• Minimum analytical levels (MALs) and minimum detection levels (MDLs)</li> <li>• 30 TAC Part 312 and 40 CFR Part 503</li> <li>• TCEQ accredited laboratories (30 TAC Chapter 25)</li> <li>• Sampling and laboratory quality control (QC) considerations</li> <li>• Laboratory analytical results reporting and interpretation</li> </ul> <p><i>Exercises: 1) Identifying approved methods in 40 CFR Part 136, minimum analytical levels, and TCEQ accredited laboratories; and 2) Laboratory report review.</i> The exercises for this section will involve the operators reviewing regulatory documents to identify approved methods for certain parameters and a laboratory report to verify quality control measures were implemented and achieved the data quality objectives of the regulatory requirements.</p>
2:00 – 2:45 pm	<p><b>Sample Collection and Handling Documentation</b></p> <p><u>Section Teaching Objective:</u></p> <p>The objective of this section is to inform the operators that documentation of sample collection and handling practices is essential to demonstrate data quality. The types of documentation and information that are needed to help ensure the analytical results are legally defensible will be discussed.</p>



	<p>The topics presented in this section are as follows:</p> <ul style="list-style-type: none"> <li>• Chain-of-Custody (COC) form procedures</li> <li>• Field notes</li> <li>• Sample labeling</li> <li>• Sample storage and shipping</li> </ul> <p><i>Exercise: Filling out a COC</i></p> <p>The exercise will involve operators completing a COC using information provided by the instructor.</p>
2:45 – 3:00 pm	<b>Break</b>
3:00 – 3:45 pm	<p><b>Safety</b></p> <p><u>Section Teaching Objective:</u></p> <p>The objective of this section is to discuss some of the safety issues that must be considered during sampling/monitoring in the field.</p> <p>The topics presented in this section are as follows:</p> <ul style="list-style-type: none"> <li>• Personal protection equipment</li> <li>• Confined space</li> <li>• Lighting</li> <li>• Traffic control</li> <li>• Other considerations</li> </ul> <p><i>Exercise: Traffic control</i></p> <p>This exercise will involve attendees diagramming needed traffic control precautions based on an instructor given scenario.</p>
3:45 - 4:00 pm	<p><b>Information Management and Resources</b></p> <p><u>Section Teaching Objective:</u></p> <p>The objectives of this section is to reemphasize the audience the importance of reading and utilizing the TPDES permit as a resource, as well as to introduce the audience to resources available for basic and fundamental information related to sampling and testing. Methods for obtaining information from reputable and authoritative sources such as the TCEQ and EPA will be discussed.</p> <p>Handouts will be provide. A demonstration for accessing information related to sampling and monitoring will be conducted.</p> <p>The topics presented in this section are as follows:</p> <ul style="list-style-type: none"> <li>• Importance of Information Management</li> <li>• Internet tools/Website</li> <li>• Guidance manuals</li> </ul>
4:00 - 5:00 pm	<p><b>Summary, Questions &amp; Answers (Q&amp;A), and Workshop Evaluation</b></p> <ul style="list-style-type: none"> <li>• Summary</li> <li>• Q&amp;A</li> <li>• Workshop evaluation</li> </ul> <p>Adjourn</p>

