

Plant

Provide a detailed discussion of the various operational control method(s) used for the individual treatment processes throughout your facility. In addition, each individual treatment process has associated parameters and/or analyses that need to be monitored for control purposes and to determine process performance. Discuss in detail how each separate treatment unit is operated and controlled. Use the following examples to help structure your response:

Example 1:

Control parameters and/or analyses for a primary clarifier could include (but not be limited to) the hydraulic loading rate, solids loading rate, detention time, weir overflow rate, sludge blanket depth, method of blanket measurement, sludge removal rate, method of sludge removal, sludge concentration, sludge volatile content, % removal of carbonaceous biochemical oxygen demand (CBOD), total suspended solids (TSS), operational problems, etc.

Discuss the current operating conditions relative to how the clarifier was designed to operate. For example, if a primary clarifier was designed to handle a certain organic loading rate (lbs CBOD and/or TSS per day), flow rate (gph), hydraulic detention time or surface overflow rate, identify what percent of that design rate is currently being utilized? This type of information will assist you during operational troubleshooting and/or planning for future infrastructure expansion.

Example 2:

The activated sludge process could include (but not be limited to) items such as the current operating mode, detention time, organic loading rate, hydraulic loading rate, microbial activity, influent CBOD, influent suspended solids, mixed liquor suspended solids (MLSS), mixed liquor volatile suspended solids (MLVSS), sludge volume index (SVI), mean cell residence time (MCRT), F/M ratio, D.O., pH, alkalinity, filamentous bacteria, phosphorus removal, nitrification/de-nitrification, oxygen reduction potential (ORP), oxygen uptake rate, operational problems, etc. An explanation on how the process is controlled should be added. For instance, how are the return activated sludge

(RAS) and waste activated sludge (WAS) rates determined and how do you determine when and by how much they should be adjusted.

The current operational information should then be compared to the design criteria for the activated sludge system to determine if it is operating within design parameters.

This type of discussion and analysis should be applied to each treatment process within your treatment facility.