

DRAFT

Definition of Odor Elimination – May 2007
Mason Farm Wastewater Treatment Plant (WWTP)

We are proposing a set of standards and measures pursuant to the commitment OWASA made during the Town of Chapel Hill's Special Use Permitting process for the upgrade and expansion of the Mason Farm Wastewater Treatment Plant (WWTP):

Operating Measures and Performance Standards Provide Two Benefits:

- 1) Give WWTP staff a set of alerts to monitor normal operating parameters, identify out of standard conditions in real time and enable corrective action to eliminate off-site odor.
- 2) Determine whether the physical changes made to the plant structures and processes given increased and projected increases in volume are adequate to eliminate off-site odor or whether additional potential improvements should be made.

Based on odor measurements made during the summer of 2006 and software modeling of expected odor following current plant expansion and improvements the following additional odor elimination measure have been found to be necessary. These improvements have been included in the draft Capital Improvements Plan which the OWASA Board expects to consider at their June 14, 2007 Board meeting:

- Covering 8 (of 16) aeration basins in FY 2009
- Covering the 3 primary clarifiers in FY 2010/2011

Odor monitoring and measuring proposed in this standard would continue for at least three years beyond the completion of these projects.

Impact Performance Standard:

The goal of odor elimination is fully embraced by OWASA. Ultimately the measure of success of odor elimination is the absence of odor from the experience of OWASA neighbors.

OWASA's goal is zero off-site odor so that the quality of life for those living in close proximity to the WWTP is not adversely impacted.

Like OWASA's goal of zero wastewater spills/overflows, there may be occasions when, despite OWASA's best efforts to prevent or minimize the duration and intensity of any odor releases, there may be occasional odor releases during scheduled (preventive maintenance) and unscheduled (failure of equipment) maintenance events at the WWTP.

The Performance Standard proposed by OWASA for verified odor events experienced by WWTP neighbors is three (3) or less per year.

OWASA continues to encourage the WWTP neighbors to immediately contact OWASA by telephone at 537-4376 to report that an objectionable odor has been detected at their home and/or in the vicinity of the WWTP. One or more odor reports timely received during a 24 hour period from WWTP neighbor(s) shall be considered as a single odor event. OWASA will also track the number of odor reports in intervals of four and eight hours. Each odor event shall be considered to be “verified” unless OWASA determines conclusively that an alternative source other than the WWTP created the odor.

OWASA will undertake operating, engineering, structural and funding measures necessary to minimize the frequency, duration and intensity of odor releases associated with instances of scheduled and unscheduled maintenance events. OWASA will provide WWTP neighbors timely notice in advance of scheduled events and as soon as possible for unscheduled off-site odor events.

Monitoring Standards for Odor Elimination

1) The “rotten egg” smell associated with hydrogen sulfide is generally accepted as the primary cause of WWTP odors. Hydrogen sulfide is relatively easy to measure and an industry accepted compound for monitoring odor.

OWASA will continuously measure hydrogen sulfide at or near the WWTP property boundary at a minimum of four locations. OWASA staff has consulted with the hydrogen sulfide monitor manufacturer regarding the optimum placement of these monitors. These monitors are solar powered and will transmit the hydrogen sulfide measurements to the WWTP’s process monitoring system which will alarm the on duty operator of any high readings. This hydrogen sulfide monitoring system is projected to be fully operational by May 31, 2007.

Standard: hydrogen sulfide measured at or near the WWTP property boundary shall be 0.0 parts per million.

2) Compounds other than hydrogen sulfide can produce odor at the WWTP, but are more difficult to measure. To determine the overall odor level, an air sample is collected in a bag and sent to a specialized laboratory which performs sensory analysis (nose testing) using a dilution apparatus known as a dynamic olfactometer. The dynamic olfactometer delivers odorous air in a range of dilutions to trained panelists who then determine the Dilution-to-Threshold ratio (D/T). The D/T is a measure of the number of dilutions needed to make the odorous ambient air non-detectable.

Standard: D/T measured at or near the WWTP property boundary shall be 5 or less

OWASA has purchased a portable olfactometer (Nasal Ranger) which is expected to be delivered by early June 2007. OWASA staff will evaluate the effectiveness of this device as a possible improvement over the current “sniff tests” which are routinely conducted by WWTP

staff. The Nasal Ranger will also be evaluated in an attempt to quantify (measure D/T) at the WWTP boundary and/or at the site of reported odor. The OWASA staff expects to complete its initial evaluation of the Nasal Ranger by October 26, 2007 and will share this information with the WWTP neighbors.