

Technical Subcommittee Recommendations – Topics 10, 11, 25, & 27
Performance Standards and Monitoring Frequency/Methods
LOSS RAC Meeting – December 2, 2008

1. Basic principles for performance standards
 - a. Soil provides part of the treatment.
 - b. Vertical separation (at least 2-3 feet), pressure distribution, and time-dosing provide a safety factor or a “reliability” feature over other methods of discharge, at least for pathogen removal. Regardless of treatment provided, there will always be 2-3 feet of soil to provide further treatment/polishing.
 - c. Since a LOSS uses a subsurface soil discharge method, effluent must stay below the surface of the soil, i.e. it cannot become a surface discharge.
 - d. Performance standards and effluent sampling will form primary basis for assuring public health and environmental protection. Receiving water (ground and/or surface) monitoring will be required in some cases – this will be covered under a different issue (issue # 26 – to be discussed at next technical subcommittee meeting).
 - e. Performance standards and monitoring should be kept simple. LOSS owner financial impact and agency resources must be considered.
 - f. Relate requirements to LOSS size.
 - g. Set the bar (minimums) in the rule - give authority to DOH to be more stringent when appropriate.
 - h. Be flexible
 - i. If lower risk (good performance based on sample results, simple or very known/proven technology, non-sensitive site, consistent quantity and/or quality of wastewater, lower flows) – can allow reductions in sampling frequency
 - ii. If higher risk (poor performance/sample results, unknown technology, complex technology, technology with limited track record, sensitive site or site with concerning features, variable quantity and/or quality, higher flows) – require more frequent sampling
 - i. Consider what’s necessary to demonstrate compliance/protection vs. process control
 - i. Compliance/protection – primary reason for performance standards (BOD, TSS, TN, TP, FC)
 - ii. Process control – want field measurements/observations to measure process environment/efficiency, but not related to performance standards (flow, pH, DO, temperature, turbidity, chlorine residual, different N species, etc.). O&M manual will be expected to include required monitoring for some of these. The LOSS rule will require monitoring of parameters such as actual flow so comparison to design flow can be made and reported to DOH.
 - j. Points of compliance/monitoring: The primary point of compliance is at the “**end of the pipe**” **just prior to discharge into the drainfield/soil dispersal component**. Other points of compliance may be added during discussion of receiving water sampling.
 - k. Communicate with and consider advanced treatment system proprietor’s recommendations for their product. Manufacturer may require more stringent performance standards and/or sampling regime.

2. Parameters to be monitored:
 - a. Core parameters for performance standards:
 - i. BOD₅
 - ii. TSS
 - b. Apply as needed:
 - i. Fecal coliform (when less than three feet of vertical separation, where soils are Type 1, or other biologically sensitive sites)
 - ii. O&G
 - iii. TN
 - iv. TP
 - v. pH
 - vi. DO
 - vii. Temperature
 - viii. Turbidity
 - ix. Chlorine residual, if chlorine used - require dechlorination because going into soil, but make sure there is sufficient contact time before dechlorinating.
 - c. Some parameters will be used for diagnostic purposes, to trouble-shoot problems.
 - i. Species of nitrogen
 - ii. Alkalinity
 - iii. O&G
 - iv. pH, DO, temperature

3. Performance standards and parameters for each to be included in the rule:
 - a. Those containing core values and fecal coliform, where needed:
 - i. **ES1:** Residential septic tank effluent – BOD₅, TSS, O&G
 - ii. **ES2:** Similar to current Treatment Standard 2 (Treatment Level B for small systems) - BOD₅, TSS, FC
 - iii. **ES3:** Similar to current Treatment Standard 1 (Treatment Level A for small systems) - BOD₅, TSS, FC
 - iv. Recognized a higher level of treatment may periodically be needed or required (e.g. failing or old existing LOSS with reduced vertical/horizontal separation).
Don't specify another standard, but allow DOH to use more stringent standard when needed, e.g. a reclaimed water standard.
 - b. "Add-on" standards – May be added to one of the effluent standards when required by DOH due to the site conditions or wastewater source:
 1. **O&G** - for certain commercial sources, such as restaurants, some grocery stores, tanning salons, beauty shops, spas
 2. **TP** – no number specified, depends on site conditions. Required only when development is within 500 feet of body of fresh water that has an established TMDL for phosphorus
 3. **TN**
 - a. For all new LOSS, the specific value for TN will be established by hydrogeologic study/nitrogen balance

- b. Have two TN standards included for existing systems or where the site conditions for a new LOSS doesn't require something different.

- 4. Values for the wastewater quality parameters – **all values are annual averages** (single sample maximum value and/or quarterly averages may be included in guidance, based on statistical work done in Florida) that must be met prior to discharge to the soil:

Effluent Standard	Effluent BOD ₅ & TSS Conc. (mg/l)	Effluent O&G (mg/L)	TN Conc. (mg/l)	TP Conc. (mg/l)	Fecal Coliform (Count/100 ml)
ES 1-Residential Septic Tank Effluent	≤200 BOD ≤100 TSS	≤ 30	--	--	--
ES 2	≤ 30	--	--	--	≤ 1000
ES 3	≤ 10	--	--	--	≤ 200
ES O&G	--	≤ 30	--	--	--
ES-N1	--	--	≤ 20	--	--
ES -N2	--	--	≤ 10	--	--
ES -P	--	--	--	Site Specific	--

- 5. Sampling frequency for all parameters in each performance standard:
 - a. Minimum of **quarterly for LOSS with daily flows of 3,500 gpd – 14,500 gpd**
 - b. **Monthly** or more frequent for LOSS with daily flows >14,500 gpd
- 6. Sampling methodology: **grab sample**
- 7. Sample collection time: **At times that are truly representative of wastewater generation and system use**
- 8. Sampling person: **designated LOSS operator** (*part of topic #24*)
- 9. Required lab to run sample analysis: **Ecology accredited laboratory** (on Ecology's web site)
- 10. Influent sampling: don't require. May be part of diagnostic sampling to determine contributing causes of a failure/problem. DOH may suggest to applicant the value of influent sampling and protection it may provide to expensive treatment processes. Design engineer may include this in O&M manual.

11. What should happen if the result of a sample is bad or the annual average is not in compliance?
To be discussed further.

12. Application of performance standards (minimums):

- a. Soil types 2-5, vertical separations ≥ 3 feet: **ES1**
- b. Soil types 2-5, vertical separation of 2-3 feet: **ES2** (initial recommendation – Treatment Level C) (*Topic #7*)
- c. Soil type 1, vertical separations ≥ 3 feet: **ES2** (initial recommendation – TL B)
- d. Soil type 1, vertical separation of 2-3 feet: **ES3** (initial recommendation – None) (*Topic #7*)
- e. Increased loading rates due to higher quality effluent? **Next higher level of treatment than would normally be required. If ES3 is already required, then a higher level of treatment would be required, maybe a reclaimed water standard** [Initial recommendation – TL D (25 CBOD/30 TSS) but no fecal coliform numbers]
- f. For repairs or existing LOSS that cannot meet soil depth and/or horizontal separation requirements for new construction: **Don't develop something like a Table IX in the small OSS rule. Leave determination up to DOH after assessing site characteristics. DOH may require a higher level of treatment, such as a reclaimed water standard.** (*Finishes Topic #21 – Failures/Repairs*)
- g. Where soil is primarily just for disposal and hydrogeologic/mounding analysis concluded liquid will remain below the surface of the soil – **no decision, but general agreement that this should be considered, especially if effluent quality similar to current Class A reclaimed water is being produced.**

13. Anything else?