

<b>Issue Paper for Technical Subcommittee Meeting</b>		<i>Number of Members Present:</i> _____	
<b>Engineering / Design Topics</b>		<b>Topic Number: 14B</b>	
		50% +1= _____	Two Thirds = _____
<b>Topic Statement</b>	Establish requirements for septic tanks that should be stated in the LOSS rule.		
<b>Problem Statement</b>	Sewage tanks are an integral part of all small OSS and LOSS. The tank may be a septic tank, a pump chamber, a tank that is part of a proprietary treatment process or other treatment component, a grease trap, or other type of tank. A State Board of Health rule is being developed for sewage tanks. This rule will focus on the design and construction of tanks, but may include other requirements too. <b><i>We must develop requirements for pump chambers and grease traps (and any other type of tank) to be included in the LOSS rule.</i></b>		
<b>Background</b>	<p><b><u>Pump Chambers</u></b></p> <ul style="list-style-type: none"> <li>• All LOSS must use pressure distribution to distribute effluent uniformly throughout the drainfield and certain treatment processes. The small OSS rule requires pressure distribution with time dosing for OSS between 1,000 and 3,500 gpd. To be consistent, LOSS should also require time dosing.</li> <li>• Requirements pertaining to the same subject in different rules should be consistent. If different rules are inconsistent, a justifiable rationale for the inconsistencies should exist.</li> <li>• An integral component in a pressure distribution system is a tank in which the pump and controls are placed. Pump chambers must contain sufficient volume to account for: 1) dead space (volume to keep pump submerged, to store solids, etc.), 2) the working volume (volume pumped out by pump during each pump-on cycle), and 3) an emergency volume (in case power is lost or the pump malfunctions).</li> <li>• The small system rule doesn't contain requirements for pump chambers. The pressure distribution guidance document produced by DOH with recommendations from the TRC suggests the following minimum interior volumes (see reference section):             <ul style="list-style-type: none"> <li>○ Volume for dead space</li> <li>○ A working volume of 1-day's flow</li> <li>○ An emergency volume of 75% 1-day's flow</li> </ul> </li> <li>• Based on a recommendation from the initial LOSS rule advisory committee, the LOSS foundation document recommends "a required internal volume sufficient to provide 150% of the daily design flow volume above the pump's intake level."</li> <li>• If a LOSS has an emergency generator readily available and contains duplex pumps, the provision of emergency volume becomes less important.</li> </ul> <p><b><u>Grease Traps</u></b></p> <ul style="list-style-type: none"> <li>• Grease traps are used on LOSS where significant volumes of greases and oils are anticipated (e.g. restaurants, some grocery stores). A grease trap intends to be sized and designed to cool down oils and greases and retain them in the grease trap to remove them from the wastewater stream before grease trap effluent mingles with the balance of wastewater from other sources in the facility/structure.</li> <li>• The current LOSS rule doesn't have any requirements for grease traps. Discussion by the initial LOSS rule advisory committee and DOH staff resulted in the LOSS foundation document suggesting a minimum required liquid volume of two <i>times</i> the daily design flow with a minimum of 1,000 gallons.</li> </ul>		

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Reference / Research	<p><b><u>WAC 246-272B-11501(2)(d)</u></b></p> <ul style="list-style-type: none"> <li>• Pump chambers must:             <ul style="list-style-type: none"> <li>○ Have clean-out and inspection accesses at or above finished grade; and</li> <li>○ Be designed with protection against floatation, ground water intrusion, and surface water inflow in high ground water areas.</li> </ul> </li> </ul> <p><b><u>Pressure Distribution Recommended Standard and Guidance</u></b></p> <p>2.4.1. Pump Chamber Requirements - All pump chambers must be structurally sound and conform to Washington State On-Site Sewage System Regulations (WAC 246-272A) and with the Washington State Recommended Standards and Guidance for On-site Sewage System Tanks. Until sewage tank rules are available, all pump chambers must also:</p> <p style="margin-left: 40px;">2.4.1.1. be water tight to a level above any possible seasonal ground water. Leak testing may be required.</p> <p style="margin-left: 40px;">2.4.1.2. all pump chambers must be equipped with a twenty-four (24) inch minimum diameter, water tight riser with a secured lid that extends to the ground surface. Lids must be equipped with an airtight gasket to eliminate nuisance odors and be secured from accidental or intention removal by unauthorized persons, especially children.</p> <p style="margin-left: 40px;">2.4.1.3. the internal volume of the pump chamber must be sufficient to provide the <b>daily design flow volume</b>, dead space below the pump inlet for sludge accumulation, and sufficient depth to provide full time pump submergence, when required. An additional <b>emergency storage volume</b> of at least 75% of the daily design flow is also required (may include volume to flood capacity in both the pump tank and the septic tank).</p>											
	Questions	<p><b><u>Pump Chamber</u></b></p> <p>1. As noted, pressure distribution with time dosing is required in the small OSS rule for OSS with design flows greater than 1,000 gpd. Should pressure distribution with time dosing also be required for all LOSS drainfields?</p> <p style="margin-left: 40px;">a. If <b>YES</b>, go to question #2.</p> <p style="margin-left: 40px;">b. If <b>NO</b>, what method of distribution should be required for LOSS drainfields? (What is the justifiable rationale for the change from the small OSS rule?)</p> <p><b>TRS Recommendation: YES</b></p> <table border="1" style="margin-left: 40px;"> <tr> <th colspan="3">Committee Vote</th> </tr> <tr> <th>GRN</th> <th>YEL</th> <th>RED</th> </tr> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> </tr> </table>			Committee Vote			GRN	YEL	RED		
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2. What minimum volume for a pump chamber should be specified in the LOSS rule:
- 1.75 *times* daily design flow *plus* dead space per pressure distribution RS&G?  
YES \_\_\_\_\_ NO \_\_\_\_\_
  - 1.5 *times* daily design flow above the pump's intake elevation per LOSS foundation document? YES \_\_\_\_\_ NO \_\_\_\_\_
  - Some other specified minimum? YES \_\_\_\_\_ NO \_\_\_\_\_ If YES, what should it be?

**TRS Recommendation: If greater than 14,500 gpd, 12 hours of reserve capacity is required. If 3500 – 14,500, 24 hours of reserve capacity is required.**

Committee Vote		
GRN	YEL	RED

- Volume in a pump chamber consists of dead space (including pump submergence volume) plus dose volume (“working volume”) plus surge volume, where appropriate, plus emergency reserve.
- Do not require emergency power consideration in the pump chamber (covered elsewhere).
- Use the table in the RS&G for drip minimum chamber size, since this is residential strength waste or cleaner at this point.
- Surge capacity could be covered elsewhere in the treatment train.
- **Check Ecology reliability standards for large LOSS.**

3. Should the LOSS rule contain detail on minimum access openings or develop a recommendation to for DOH to take to the sewage tank rule advisory panel? YES \_\_\_\_\_ NO \_\_\_\_\_ If YES, what should be included or taken to the sewage tank rule committee?

**TRS Recommendation to Tank Rule Technical Advisory Panel: YES. Apply to all tanks in the LOSS process. For 3 feet of cover or less: 24-inch minimum for the riser opening (at grade) and 20-inch minimum at the tank. For more than 3 feet of cover: 30-inch minimum at the riser.**

Committee Vote		
GRN	YEL	RED

- Spacing should be considered. Then sizing is not so critical.
- 24” and 30” products are commonly available.

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4. Are there other pump chamber or other tank details that apply primarily to LOSS that should be in the LOSS rule or taken in the form of a recommendation to the sewage tank rule advisory panel? **YES** \_\_\_\_\_ **NO** \_\_\_\_\_ If **YES**, what should be included or taken to the sewage tank rule committee?

a. What should the access spacing be?

**TRS Recommendation: There should be access openings every 8 feet of compartment length.**

Committee Vote		
GRN	YEL	RED

- Need a spacing requirement to ensure ability to clean and inspect the tank.

b. What should the water tightness requirement be, if any?

**TRS Recommendation: YES, below ground tanks must be field-tested for water tightness – 2 inches of water into the riser, to ensure riser-tank connection is water-tight; or use vacuum test.**

Committee Vote		
GRN	YEL	RED

- Access plug over compartment wall can't be sealed to make sure water stays in the tank. Tank will fail the water test.

c. Who may/must certify the test results?

**TRS Recommendation: The design engineer must certify the water tightness test.**

Committee Vote		
GRN	YEL	RED

d. Are duplex pumps required?

**TRS Recommendation: YES. Required for redundancy.**

Committee Vote		
GRN	YEL	RED

e. Other recommendations?

f.

**TRS Recommendation: There should be an intent statement re: tanks: "Each tank should be large enough for adequate treatment and have adequate features (size, access) for future operations and maintenance (such as cleaning)."**

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GRN	YEL	RED

**TRS Recommendation: Having back-up power should not reduce emergency reserve volume.**

Committee Vote		
GRN	YEL	RED

- There are other kinds of emergencies beyond power outages that require reserve volume.

**Grease Traps**

1. What minimum volume for a grease trap should be specified in the LOSS rule:
  - a. 2 *times* daily design flow with a minimum of 1,000 gallons per the LOSS foundation document? **YES** \_\_\_\_\_ **NO** \_\_\_\_\_
  - b. Some other specified minimum? **YES** \_\_\_\_\_ **NO** \_\_\_\_\_ If **YES**, what should it be?

**TRS Recommendation: The grease trap must be sized for 3 times the flow routed through the grease trap. The minimum size of a grease trap should be 1000 gallons, regardless of size of LOSS.**

Committee Vote		
GRN	YEL	RED

- This is consistent with tank sizing (addressed earlier).
  - Engineer to calculate the flow to the grease trap.
  - Grease trap doesn't necessarily need an effluent screen, except if directly in front of the pump chamber.
2. Are there other grease trap details that apply primarily to LOSS that should be in the LOSS rule or taken in the form of a recommendation to the sewage tank rule advisory panel? **YES** - \_\_\_\_\_ **NO** \_\_\_\_\_ If **YES**, what should be included or taken to the sewage tank rule committee?

**TRS Recommendation: NO.**

Committee Vote		
GRN	YEL	RED