

 THURSTON COUNTY <i>Washington</i> Est. 1852 Public Health & Social Services POLICY	Policy Title USE OF SAND-LINED TRENCH /BEDS – TECHNICAL GUIDELINES	
	Number ONST.20.GUI.822	Effective Date 12/24/2009
	Latest Approval Date 12/24/2009	Approved By Art Starry
	Next Review Date 06/21/2029	
POLICY INTENT		
Purpose	This guidance is to be used in conjunction with Application of Recommended Standards and Guidance for Sand-Lined Trench Systems March 14 Version Policy.	
Scope	☒ Internal Only ☐ Direct Impact to Citizens	
Are Office/Department Documents on this subject permitted?	☒ Yes, the policy clarifies regulations used only by the Environmental Health Division (Article IV and WAC 246-272A).	☐ No
POLICY STATEMENT		
<u>1. Approvable applications for importing ASTM C33 sand to use in sand-lined trenches:</u> 1a. When the bottom of the gravel-filled trench/bed will be located in soils coarser than ASTM C33 sands. 1b. When soils within the usual depths for installing an on-site sewage system (top two to three feet) are undesirable or unacceptable, but an unsaturated, acceptable horizon/strata is located at greater depths. <u>2. When the bottom of the gravel-filled trench/bed will be located in soils coarser than ASTM C33 sands and sand is proposed to provide adequate microbiological treatment prior to discharge into the coarser soils, the following is necessary:</u> 2a. At least two feet of ASTM C33 sand is below the gravel surrounding the distribution pipe (See item #5) and twelve inches above any saturated zone. 2b. At least six inches of sand is placed between the sidewall of the gravel portion of the trench and the coarser soils to the bottom of the distribution pipe. 2c. If a deep trench system is proposed that goes through a restrictive layer or into soils with an unknown seasonal water table a wet season study is required. 2d. Justification: This will help assure predictable levels of microbiological treatment and will help assure there is no short-circuiting of septic tank effluent. <u>3. When using a sand-lined trench to get below an unacceptable soil stratum to an acceptable layer:</u> 3a. The soil profile must be evaluated through a wet season using both: 3a1. Open test holes to observe magnitude of saturation in the upper horizons, and 3a2. Properly constructed monitoring ports to determine if proposed receiving layer is acceptable. 3b. Minimum depth of unsaturated acceptable material below the unacceptable material: 18 inches		

3c. The sand lining must extend at least 6 inches into the unsaturated acceptable material below the unacceptable material.

3d. Design loading rate: Based on the texture of the original, unsaturated, acceptable soil at the sand/original soil interface.

3e. **Justification:**

3e1. If the sands become saturated with other subsurface water, the microbiological treatment efficiencies of the sand will be adversely affected.

3e2. This will assure a minimum, acceptable level of microbiological treatment.

3e3. This will assure some minimum expectation that disposal will occur, and that there will be no wicking of ground water into the sand-lined trenches.

3e4. This will assure that the percolating effluent will get into the acceptable, unsaturated soils.

4. Minimum depth of sand below the bottom of the gravel in the trench/bed:

4a. 12 inches

4b. Except when used in materials coarser than ASTM C33 sands, the depth of sand must be sufficient to assure a downward flow for the effluent through a total of 36 inches of imported sand and acceptable, unsaturated original soil.

4c. **Justification:** Problems occur more readily with more stratification or layering of soil textures, structures, or bulk densities. Sufficient depth is desired to assure an unsaturated flow can occur in the sand before any distinct layers can cause some saturation. The technical advisory group for the Washington State Department of Health has concluded in the past that 12 inches is an appropriate depth (the reason for the minimum of 12 inches of sand below the gravel bed in a mound system).

5. Maximum depth to the sand-gravel interface (bottom of the gravel in the trench/bed and the top of the sand) from final grade:

5a. 36 inches

5b. In the McAllister GSA, 30 inches

5c. **Justification:** The majority of microbiological removal will occur in the first few inches below the bottom of the gravel. In a deep trench situation where the trench is backfilled with ASTM C33 sand, the effective surface area and, consequently, the level at which the majority of the microbiological removal begins, is at the gravel-sand interface. Additionally, microbiological treatment is much more efficient and predictable in an aerobic environment. The typical aerobic environment within soil is the top three to five feet. Thus, it is desired that septic tank effluent experience unsaturated flow for some distance in this aerobic zone. The gravel-sand interface should be as high in the soil profile as is practical.

6. Maximum depth to the bottom of the sand in the sand-lined trench:

6a. 10 feet

6b. **Justification:** Specified in WAC 246-272A and Article IV, Section 11.5.5.8.

7. Method of distribution:

7a. Pressure distribution only

7b. **Justification:** Without pressure (uniform/equal) distribution over the entire effective surface area (gravel-sand interface), the level of microbiological treatment is not predictable. With pressure distribution, a known, acceptable level of treatment can be predicted.

8. Dosing frequency:

8a. Minimum of four times/day

8b. **Justification:** The gravel-sand infiltrative surface is of primary importance from a microbiological removal standpoint. It is important to keep this interface and the underlying sand unsaturated. In order to help maintain unsaturated flows throughout the imported sand depths, it is necessary to restrict the volume of the dose. Dosing less than four times per day, greater volumes of septic tank effluent will be passing through the sand, increasing the moisture content and adversely affecting the predictability of acceptable levels of treatment.

DEFINITIONS AND ACRONYMS

GSA	Geologically Sensitive Area
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RELEVANT LAWS AND OTHER SUPPORTING INFORMATION

County Code State Law State Rule Other Sources	Article IV Section 11.5.5.8 WAC 246-272A-0234
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Superseded Documents	GUI EH-WWS-002
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Supporting Documents	N/A
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Related Documents	Application of Recommended Standards and Guidance For Sand Lined Trench Systems – JULY 2014 VERSION - ONST.20.POL.822 Wet Season Study - ONST.20.POL.840
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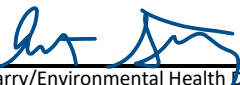
Communication and Implementation Strategy	The Policy Administrator will: • coordinate the review of the Office/Department Documents to ensure consistency • Send signed updated policy to OSS Professionals and Staff through Constant Contact e-mail. • Post signed updated policy to Division's OSS Professionals Webpage
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POLICY ADMINISTRATION

Policy Owner	Steve Petersen/Program Manager, Environmental Health Division
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Contact Person (if different from above)	
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Roles and Responsibilities	Laura Blakely	Policy Administrator
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REVISION HISTORY		
Effective Date	Approved By	Modifications
06/21/2023	 Art Starry/Environmental Health Director	• Policy Updated • Changed wet season water check to wet season study in 2C. • Deleted original wording in 3b and relabeled items 3b-3e as requirements have changed. • Deleted original 3f5. • Changed technical review committee to technical advisory group in 4C to match current terms. • Updated code reference in 6B
Xx/xx/xxxx	_____ Name/Title	
Xx/xx/xxxx	_____ Name/Title	
Reviewers of the Current Revision	Brad Sangston/Environmental Health Specialist II _____ Name/Title	_____ Name/Title
	Steve Davies/Environmental Health Specialist II _____ Name/Title	_____ Name/Title
	Steve Petersen/Program Manager, Environmental Health _____ Name/Title	_____ Name/Title

FURTHER INFORMATION	
This section is not published on the final PDF document. It is for website purposes only	
Keywords for search engine	Sand lined trench, technical guide, ASTM C33, soil