

On-Site Rule Revision Issue: OSS SETBACKS TO STORMWATER TREATMENT SYSTEMS (WAC 246-272A-0210 Location)

Problem statement

Maintain an adequate horizontal setback from an On-site Sewage System (OSS) to a Stormwater Treatment System (STRES), both surface and subsurface.

The Department of Ecology has jurisdiction over stormwater issues with implementation of the two stormwater management manuals, one for Eastern Washington and one for Western Washington. The major intersection between these stormwater manuals and WAC 246-272A stems from language in the stormwater manuals relating to STRES necessary to manage stormwater on single-family residential (SFR) building lots.

Designs and installations for SFR comprise the vast majority of OSS in our state. Many existing SFR building lots of record had no stormwater review considerations at the time of their creation. OSS application/design reviews on older building lots now comprise a larger percentage of LHJ considerations, drawing more attention to the need for adequate horizontal setbacks. Competition for the same space between siting of OSS and siting of STRES exists on these older building lots. This is typically more of a concern in Western Washington.

Options

- a. Make no changes, or
- b. include changes as shown below in section 6.

PROs/CONs

| PROs (option b) | CONs (option a) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">• Provides more definition, clarity, and direction throughout the state.• Provides consistency with the other DOH wastewater WAC (LOSS)• Provides consistency with other state agency guidance (ECY stormwater manual) | <ul style="list-style-type: none">• More potential for differences in how each LHJ administers the setbacks to stormwater• Questions about stormwater setbacks still remain especially for small, older SFR lots |

Recommendations & Optional Rule Language to Consider

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**Table IV
Minimum Horizontal Separations**

| Items Requiring Setback | From edge of soil dispersal component and reserve area | From sewage tank and distribution box | From building sewer, and nonperforated distribution pipe |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------|----------------------------------------------------------|
| Well or suction line | 100 ft. | 50 ft. | 50 ft. |
| Public drinking water well | 100 ft. | 100 ft. | 100 ft. |
| Public drinking water spring measured from the ordinary high-water mark | 200 ft. | 200 ft. | 100 ft. |
| Spring or surface water used as drinking water source measured from the ordinary high-water mark ¹ | 100 ft. | 50 ft. | 50 ft. |
| Pressurized water supply line | 10 ft. | 10 ft. | 10 ft. |
| Decommissioned well (decommissioned in accordance with chapter 173-160 WAC) | 10 ft. | N/A | N/A |
| Surface water measured from the ordinary high-water mark | 100 ft. | 50 ft. | 10 ft. |
| Building foundation/in-ground swimming pool | 10 ft. | 5 ft. | 2 ft. |
| Property or easement line | 5 ft. | 5 ft. | N/A |
| Interceptor/curtain drains/foundation drains/drainage ditches | | | |
| Down-gradient ² : | 30 ft. | 5 ft. | N/A |
| Up-gradient ² : | 10 ft. | N/A | N/A |
| Other site features that may allow effluent to surface | | | |
| Down-gradient ² : | 30 ft. | 5 ft. | N/A |
| Up-gradient ² : | 10 ft. | N/A | N/A |
| Down-gradient cuts or banks with at least 5 ft. of original, undisturbed soil above a restrictive layer due to a structural or textural change | 25 ft. | N/A | N/A |
| Down-gradient cuts or banks with less than 5 ft. of original, undisturbed soil above a restrictive layer due to a structural or textural change | 50 ft. | N/A | N/A |
| Other adjacent soil dispersal components/subsurface storm water infiltration systems | 10 ft. | N/A | N/A |

¹If surface water is used as a public drinking water supply, the designer shall locate the OSS outside of the required source water protection area.

²The item is down-gradient when liquid will flow toward it upon encountering a water table or a restrictive layer. The item is up-gradient when liquid will flow away from it upon encountering a water table or restrictive layer.

(Excerpt of) **Table IV**
Minimum Horizontal Separations

| Items Requiring Setback | From edge of soil dispersal component and reserve area | From sewage tank and distribution box | From building sewer, and nonperforated distribution pipe |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------|----------------------------------------------------------|
| Property or easement line | 5 ft. | 5ft | NA |
| Lined stormwater detention pond located: <ul style="list-style-type: none"> Down-gradient²: Up-gradient²: | 30 ft. 10 ft. | N/A N/A | N/A N/A |
| Unlined stormwater infiltration pond (up or down-gradient) | 100 ft. | 50 ft. | 10 ft. |
| Irrigation canal or irrigation pond (up or down gradient) | 100 ft. | 50 ft. | 10 ft. |
| Interceptors/curtain drains/foundation drains/drainage ditches located: <ul style="list-style-type: none"> Down-gradient²: Up-gradient²: | 30 ft. 10 ft. | 5 ft. N/A | N/A N/A |
| Subsurface stormwater infiltration or dispersion component located: <ul style="list-style-type: none"> Down-gradient²: Up-gradient²: | 10 ft. (30 ft per LOSS rule) 30 ft. (100 ft. per SWM) | 10 ft. 10 ft. | N/A N/A |
| Other site features that may allow effluent to surface | | | |
| Down-gradient ² : | 30 ft. | 5 ft. | N/A |
| Up-gradient ² : | 10 ft. | N/A | N/A |
| Down-gradient cuts or banks with at least 5 ft. of original, undisturbed soil above a restrictive layer due to a structural or textural change | 25 ft. | N/A | N/A |
| Down-gradient cuts or banks with less than 5 ft. of original, undisturbed soil above a restrictive layer due to a structural or textural change | 50 ft. | N/A | N/A |
| Other adjacent soil dispersal components/ subsurface storm water infiltration systems | 10 ft. | N/A | N/A |

² The item is down-gradient when liquid will flow toward it upon encountering a water table or a restrictive layer. The item is up-gradient when liquid will flow away from it upon encountering a water table or restrictive layer.

Blue = Additions Red = Deletions

Supporting information

- LOSS Rule - WAC 246-272B-06050 Horizontal Setbacks

(Portion of existing) **Table 3: Minimum Horizontal Setbacks**

| Items requiring setback | From edge of drainfield and reserve area | From sewage tank and distribution box | From building sewer, and nonperforated distribution pipe |
|---------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------|-----------------------------------------------------------------|
| Lined stormwater pond located: | | | |
| Down-gradient from LOSS component: | 75 ft. | 10 ft. | 10 ft. |
| • Up-gradient from LOSS component: | 30 ft. | 10 ft. | 10 ft. |
| Unlined stormwater pond (up or down-gradient from the LOSS component) | 100 ft. | 50 ft. | 10 ft. |
| Interceptor, curtain drains, foundation drains, lined drainage ditches located: | | | |
| • Down-gradient from LOSS component | 30 ft. | 5 ft. | N/A |
| • Up-gradient from LOSS component | 10 ft. | N/A | N/A |
| Other site features that may allow effluent to surface located: | | | |
| • Down-gradient from LOSS component | 30 ft. | 5 ft. | N/A |
| • Up-gradient from LOSS component | 10 ft. | N/A | N/A |
| Down-gradient subsurface stormwater infiltration or dispersion component | 30 ft. | N/A | N/A |
| Up-gradient subsurface stormwater infiltration or dispersion component | 100 ft. | N/A | N/A |

- Link to Stormwater Management Manual for Western Washington. See Page 766

<https://fortress.wa.gov/ecy/madcap/wq/2014SWMMWWinteractive/2014SWMMWW.htm>

Supporting Research/Evidence

Applicable portions of existing:

WAC 246-272A-0210 Location

(1) Persons shall design and install OSS to meet the minimum horizontal separations shown in Table IV, Minimum Horizontal Separations:

(Portion of existing) **Table IV**
Minimum Horizontal Separations

| Items Requiring Setback | From edge of soil dispersal component and reserve area | From sewage tank and distribution box | From building sewer, and nonperforated distribution pipe |
|-------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------|----------------------------------------------------------|
| Surface water measured from the ordinary high-water mark | 100 ft. | 50 ft. | 10 ft. |
| Interceptor/curtain drains/foundation drains/drainage ditches | | | |
| Down-gradient ² : | 30 ft. | 5 ft. | N/A |
| Up-gradient ² : | 10 ft. | N/A | N/A |
| Other site features that may allow effluent to surface | | | |
| Down-gradient ² : | 30 ft. | 5 ft. | N/A |
| Up-gradient ² : | 10 ft. | N/A | N/A |
| Other adjacent soil dispersal components/subsurface stormwater infiltration systems | 10 ft. | N/A | N/A |

² The item is down-gradient when liquid will flow toward it upon encountering a water table or a restrictive layer. The item is up-gradient when liquid will flow away from it upon encountering a water table or restrictive layer.

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(2) If any condition indicates a greater potential for contamination or pollution, the local health officer may increase the minimum horizontal separations. Examples of such conditions include excessively permeable soils, unconfined aquifers, shallow or saturated soils, dug wells, and improperly abandoned wells.

(5) Persons shall design and/or install a soil dispersal component only if:

(b) The area is not subject to:

(iv) Other activities adversely affecting the soil or the performance of the OSS.

(e) Surface drainage is directed away from the site.

ORRC

Technical Subcommittee Meeting #2, 8/16/18 - Final to ORRC, Meeting #2, 9/13/18

The following is part of a DOH-attended discussion held recently in King County relating to overlap between some common SFR stormwater Best Management Practices (BMPs) and facilities (King County stormwater manual), and corresponding/related OSS set back table items. (The lead Ecology stormwater engineer explained that King County's manual is almost exactly like the Ecology version. Just a different numbering system):

existing WAC language existing stormwater manual language
discussion points of great interest

I'd like to start the conversation by clarifying where you would go into Table 13.28-2 for each of the BMPs and facilities in our Surface Water Design Manual (SWDM), particularly for the "Surface water," "Seasonal water," "interceptor/curtain drains/footing drains" and "Infiltration/and Dispersion Trenches". I'd also like to discuss subsurface mounding relative to upgradient/downgradient requirements.

Our manual contains the following BMPs and facilities:

Detention and Water Quality Facilities: (more likely in subdivision applications)

- Detention ponds, vaults and tanks
- Wetponds and wetvaults (standing pools for water quality)
- Infiltration ponds, vaults and tanks
- Infiltration galleries (multiple rows of subsurface chambers in an infiltration field)
- Sand filters (for water quality)
- Bioswales (flow-based swales for water quality, no standing pool)
- Filter Strips

Low Impact Development (LID) BMPs: (more likely in SFR applications)

- Dispersion with downstream flowpaths on the ground surface (sheet flow, splash blocks, dispersion trenches)
- Infiltration (bioretention aka raingardens, infiltration trenches, dry wells, planter boxes)
- Permeable pavement (asphalt, concrete, pavers, etc. with infiltration into the pavement subgrade)

Water quality requires liners on wetponds and bioswales in outwash soils. No liner is typically required in till soils subject to a very low volume loss rate (1'/wk in a given pond). Sand filters are usually designed in a concrete structure but could occur in native soils.

LID BMPs are required in both till and outwash soils. While till may serve in lieu of a liner for water quality requirements, it is acknowledged as infiltrative for BMPs in till soil.

The SWDM has requirements surrounding subsurface mounding experienced and influenced by infiltrative facilities and BMPs. A groundwater mound will disperse radially in low-gradient subsurface conditions, making everything downgradient – until the radial flow encounters an adjacent mound flowing toward it. An example of a conflict we perceive in the table is for infiltration trenches. In a low gradient subsurface condition, the trench would be expected to mound radially as it infiltrates, a condition that is not captured in the table unless it is interpreted as upgradient. Reality is that the

subsurface flow direction would require analysis to really determine the gradient, but that level of analysis is not typically required unless conditions e.g., steep slope concerns are on the list. Additionally, the table entry is for *Infiltration and Dispersion Trenches*. We would view the two BMPs as fundamentally different in that infiltration produces a *subsurface radial mound* and dispersion relies on a *downstream flowpath on the surface*, so lumping the two together becomes confusing and excludes the mounding impact unless it's assumed mounds are always upgradient from their surroundings.

BMPs e.g. raingardens (bioretention) have been interpreted as *Surface water, Seasonal water* and *Infiltration Trenches* (some raingardens have a gravel trench below for additional storage, further confusing the matter). Anything with a standing pool in the design would benefit from specific guidance for selecting the appropriate setback, if that's possible. *Surface water* has a specific definition in the SWDM; the *DOH code makes reference to Ordinary High Water Mark (OHWM)* within its surface water discussion, a concept not applicable to stormwater facilities. Yet, it would be logical to *consider a detention pond as surface water*. *Seasonal water* has no definition in the SWDM and is thus subjected to interpretation, particularly for LID BMPs. A given BMP would be taxed most at the same seasonal period as a septic field would be taxed by its surrounding environment, so I think *Seasonal* could use some particular clarification, possibly getting more restrictively applied. There is a misconception that LID handles the light-lifting in the stormwater runoff regime, but in reality, an efficient LID BMP per the SWDM infiltrates about 90% of the total annual runoff it receives and may only go into overflow during the winter, thus handling most of the runoff throughout the year. *For additional confusion, if LID BMPs address Seasonal water, would not the detention and infiltration facilities (all facilities and BMPs in the SWDM, for that matter) also be addressing Seasonal water by definition?* Not that I think so, but I make a point.

The table entry for *"Interceptor/curtain drains/footing drains"* is not an area the SWDM usually regulates, but the issue frequently shows up on permitted sites, particularly in shallow groundwater situations, so I think some discussion would be beneficial there.