State of Oregon
DEQ Department of Environmental Quality

Nutrient and Nitrate Loading and Treatment

To: Onsite Program Rulemaking Advisory Committee, RAC

From: DEQ Onsite Program

Date: Dec. 30, 2024

Summary of Existing Rule

Nutrient loading, primarily in the form of nitrate-nitrogen, is not directly addressed in Oregon Administrative Rules (OARs) for onsite septic systems. When nutrient or nitrate pollution is of concern, agents currently reference OAR 340-071-0130(1), which states:

> An agent may not authorize installing or using a system that is likely to pollute public waters or create a public health hazard. If, in the judgment of the agent, the minimum standards in this division will not adequately protect public waters or public health on a particular site, the agent must require a system to meet requirements that are protective. This may include but is not limited to increasing setbacks, increasing drainfield sizing, or using an alternative system. The agent must provide the applicant with a written statement of the specific reasons why more stringent requirements are necessary.

Nitrate treatment, or removal, is not specifically addressed in OARs. Instead, it is included under the umbrella of Total Nitrogen, TN. TN treatment is addressed under Alternative Treatment Technologies (ATT) rules, specifically treatment standard 2, which establishes the minimum performance requirements for a range of wastewater quality parameters, including Total Nitrogen:

“Treatment standard 2” means a 30-day average of less than 20 mg/L of BOD5 and 20 mg/L of TSS, a 30-day geometric mean of less than 400 fecal coliform per 100 milliliters, and a 30-day average of 30 mg/L of TN. A 30-day average of less than 17 mg/L of CBOD5 is acceptable in lieu of the BOD5 value.

Description of the Issues

Nitrate pollution is a major human health and ecological concern. In high enough concentrations, nitrate in drinking water can cause a variety of issues, including methemoglobinemia (blue baby syndrome), cancer, birth defects, and endocrine disruption, as well as fuel algal blooms and ecological dead zones in surface waters.

Nutrient or nitrate loading from onsite wastewater (septic) systems, which is the amount of nutrients or nitrate that enters an aquifer, depends on a number of factors such as soil texture and the size and number of homes and businesses in a region. The more densely developed a region is, the more potential that nutrients or nitrate will enter the aquifer. There are areas throughout the state that are especially sensitive to nitrate pollution from septic systems. These include coastal lakes like Devils Lake, areas of groundwater concern like Southern Deschutes County, and Groundwater Management Areas (GWMA) like the Lower Umatilla Basin (LUBGWMA).

Current rules do not specifically address nutrient or nitrate loading as a consideration when deciding whether a site is suitable for an onsite septic system, which is problematic for pollutants like nitrate that can cause such significant health and ecological concerns. Additionally, OARs currently do not include explicit

provisions requiring nitrogen-reducing onsite septic systems beyond the wastewater quality standards met by treatment standard 2, despite the existence of better performing technologies for the treatment and reduction of total nitrogen beyond this standard. In areas sensitive to nitrate pollution, the addition of specific rule language allowing onsite program agents to require additional design and treatment provisions will aid in preventing ecological impacts and impending public health hazards, or to help reduce existing ones.

Revised Sections

Changes are proposed to section OAR 340-071-0220, Standard Subsurface Systems and OAR 340-071-0345, Alternative Treatment Technologies (ATTs).

Implications of Rule Changes

- Specific regulatory provisions would enable agents to explicitly consider nitrate-nitrogen and other nutrient loading when evaluating sites and issuing permits instead of relying solely on 340-071-0130(1), which broadly requires an agent to not authorize the use of an onsite septic system that may be a public health hazard or pollute public waters.
- The proposed rule changes include provisions that will allow agents to require ATTs capable of providing additional treatment of nitrate-nitrogen in areas sensitive to nitrate pollution, thus helping protect people and the environment most at risk of experiencing the impacts of nitrate pollution.
- The scope of these rule changes does not include addressing the long-term need of creating an additional treatment standard for ATTs that can achieve high reductions in total nitrogen for sensitive environments. Developing and implementing rules with an additional treatment standard would be the preferred method of addressing nitrate and other nutrient pollution, but DEQ is unable to undertake such a rulemaking at this time.

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Proposed Rule Changes Pertaining to Nitrate Loading and Treatment

Key to Identifying Changed Text:

~~**Deleted Text**~~
New/inserted text
~~Text deleted from one location~~ - and moved to another location

340-071-0220

Standard Subsurface Systems

(1) Criteria For standard subsurface systems. Each site must meet all of the conditions in this section to be approved for a standard subsurface system. . .

(k) In the judgement of the agent, based on the best available science, the nutrient load from the system would not significantly degrade or pollute public waters, or create a public health hazard.

340-071-0345

Alternative Treatment Technologies (ATTs). . .

(8) Siting and absorption area construction criteria.

a. ATTs approved for treatment standard 1 may be sited and sized as follows:

i. In areas with a temporary water table, as specifications for sand filters in areas with temporary groundwater in OAR 340-071-0290 require.

ii. In areas with permanent groundwater, where 4 feet of separation can be maintained between the bottom of the trench and groundwater and the other criteria in OAR 340-071-0290 can be met.

iii. On sites meeting criteria for standard onsite systems in OAR 340-071-0220 or for pressurized systems in OAR 340-071-0275.

b. ATTs used in conjunction with approved disinfection and approved nitrogen reduction processes and approved for treatment standard 2 may be sited and sized as follows.

i. On sites meeting the criteria for treatment standard 1 in subsection (a) of this section.

ii. In areas with a permanent water table, as specifications for sand filters in areas with a permanent water table in OAR 340-071-0290 require.

iii. Any type of absorption area permitted for a sand filter system, including the gravel- less absorption method, may be permitted for an ATT system.

c. In known areas of sensitivity to nitrate-nitrogen pollution, including but not limited to coastal lakes, areas of groundwater concern, and Groundwater Management Areas, the agent may limit the use of DEQ-approved ATT models over other models that have proven to provide additional nitrogen reduction beyond the minimum standards provided under treatment standards 1 and 2, and NSF/ANSI 245 standards.

d. In the judgement of the agent, based on the best available science, the nutrient load from the system would not significantly degrade or pollute public waters, or create a public health hazard.