WASHINGTON STATE DEPARTMENT OF HEALTH

Significant Legislative Rule Analysis

WAC 246-272A
a Rule Concerning
On-Site Sewage
Systems

Washington State Department of HEALTH

September 2023

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Acronym List

CBOD5	carbonaceous biochemical oxygen demand (5 day)
DNR	Department of Natural Resources
EHD	Environmental Health Directors
EPA	Environmental Protection Agency
LHJ	Local Health Jurisdiction
LHO	Local Health Officer
LMP	Local Management Plan
NSF	NSF International
ORRC	Onsite Rule Review Committee
OSS	Onsite Sewage System
PTI	Property Transfer Inspection
TSS	Total Suspended Solids

SECTION 1

A brief description of the proposed rule including the current situation/rule, followed by the history of the issue and why the proposed rule is needed.

Chapter 246-272A WAC, On-Site Sewage Systems, regulates the location, design, installation, operation, maintenance, and monitoring of on-site sewage systems (OSS). There are approximately 950,000 OSS in Washington that produce around 340,000,000 gallons of wastewater per day. This rule protects public health by minimizing both the potential for exposure to sewage from on-site sewage systems, and the adverse effects of discharges from on-site sewage systems on ground and surface waters.[1]

Local health officers (LHOs) have three options to enforce chapter 246-272A WAC. They can: adopt their own local code; adopted this rule by reference; or defer to chapter 246-272A WAC.

The State Board of Health (board) is authorized under RCW 43.20.050 to adopt rules for the design, construction, installation, operation, and maintenance of those on-site sewage systems with design flows of less than three thousand five hundred gallons per day. The Washington State Department of Health (department) implements these rules. The department is required to review chapter 246-272A WAC every four years to evaluate the effectiveness of the rules and determine areas where revisions may be necessary. The department is also required to provide results of the review along with recommendations to the board and local health officers. This requirement was adopted in 2005 and the department completed its first evaluation in 2009 and a subsequent evaluation in 2013. Both evaluations concluded with the finding that no revisions were necessary.[2]

In 2017, the department conducted an evaluation of the existing OSS rule, including gathering feedback on the rules from local health partners and interested parties. In December 2017, the department published the following report on the findings: 2017 Evaluation of the Effectiveness of Chapter 246-272A WAC, On-Site Sewage Systems.[3] The report identified seven key issues and several minor issues that should be considered for possible revision in rulemaking. The seven key issues were: Definitions, Local management plans, Property transfer inspections, Application of treatment levels, Ultraviolet light disinfection effectiveness and approval, Horizontal setbacks (system location) and Statewide service provider licensing. The department briefed the board in January 2018 and the Board directed staff to file a CR-101, Preproposal Statement of Inquiry. Staff filed the CR-101 as WSR 18-06-082 on March 6, 2018.[4]

The Washington state legislature passed Senate Bill 5503 in the 2019 legislative session, and it was codified as RCW 43.20.065.[5] The bill addressed repair and replacement of failed systems and system inspections. The law has been addressed in the rulemaking.

To assist and inform the rule revision process, and to ensure that chapter 246-272A WAC consistently promotes safe and effective operation of OSS, the board requested input and

[1] Internal Document "2018 Socioeconomic Impact Survey of Hammersley Inlet Shellfish Growers." Available Upon Request.
[2] https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs/337-152a.pdf?uid=635807f46e5ae
[3] 2017 Evaluation of the Effectiveness of Chapter 246-272A WAC, On-site Sewage Systems
[4] https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs/337-152a.pdf?uid=635807f46e5ae
[5] RCW 43.20.065: On-site sewage system failures and inspections—Rule making.

review from a statewide representation of diverse interested parties. The department formed the On-Site Rule Revision Committee (ORRC) in June 2018 to serve as this group and foster communication and cooperation between interested parties. The ORRCs role was informal and advisory to the department in this rulemaking. The ORRC proposed, made recommendations, and gave input to the rule. ORRC members include representatives from industry, regulators, consumers, and academia. Two subcommittees were formed to advise on policy and technical issues. The department drafted issue papers on several key topics for both subcommittees. These subcommittees worked on topics, held votes on topics. and ultimately made recommendations to the entire ORRC. The ORRC used majority voting when considering amendments that were forwarded to the department. There were proposals with unanimous support and others with simple majority.

The ORRC met nine times between June 2018 and February 2020 as a full committee and the department convened many associated subcommittee meetings that reported out to the full ORRC. The department shared a draft with interested parties for informal review and comment. In addition, the department conducted three in-person and one web-based public workshop concluding in October 2019. Based on comments received, the department made several changes to the draft rules. The department worked with environmental health directors from different areas of the state on the ORRC and separately to help fine tune the draft rules. See Section 6 for a discussion of changes made to the proposed rule language throughout the process.

SECTION 2

Significant Analysis Requirement

As defined in RCW 34.05.328, portions of the proposed rule make changes to chapter 246-272A WAC and requires a significant analysis. The department evaluated the proposed rules to determine rule sections that are considered "significant" or exempt under RCW 34.05.328(5)(b) and (c). Based on the evaluation, sections of the proposed OSS rules are significant legislative rules, subject to the requirements of RCW 34.05.328(5) and analyzed in the Section-by-Section Cost/Benefit Analysis in Section 5. Some sections of the proposed rule are considered exempt because they do not meet the definition of a significant rule, or they meet one of the exemption criteria in RCW 34.05.328(5) (b) and (c).

SA Table 1 identifies rule sections that have been determined exempt from significant analysis based on the exemptions provided in RCW 34.05.328(5) (b) and (c).

SA Table 1. Summary of Sections not requiring Significant Analysis

WAC Section and Title	Description of Proposed Changes	Rationale for Exemption Determination
WAC 246-272A-0001 Purpose, objectives, and authority	Changed onsite sewage system to OSS acronym.	Clarifies language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv).
WAC 246-272A-0005 Administration	Corrected list of applicable statutes.	Clarifies language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv).
WAC 246-272A-0007 Applicability (Previously WAC 246-272A-0020)	Created new section to move Applicability section nearer the beginning of the chapter for ease of use. Clarified language describing that chapter applies to treatment, siting, design, installation, and operation and maintenance of OSS. Updated language for clarity.	Moved this section from WAC 246-272A-0020 to WAC 246-272A-0007. Clarifies language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv). Removed redundant language.
WAC 246-272A-0010 Definitions	Changed several definitions for clarity and consistency throughout rule. Changes to definitions include adding new definitions where necessary, deleting definitions that are not used anymore, and modifying definitions.	Clarifies language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv). Changes to definitions are identified and analyzed in context as part of the section –by-section analysis.

WAC Section and Title	Description of Proposed Changes	Rationale for Exemption Determination
WAC 246-272A-0013 Local Rules	Created a new section by taking a portion of WAC 246-272A-0015 and moving it to WAC 246-272A-0013. Moved Local Regulation to its own section, separate from local management plans (LMPs). Renamed to Local Rules. Updated language for clarity.	Restructured the section to improve comprehension, corrected typographical errors and clarified language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv).
WAC 246-272A-0170 Product development permits	Updated language for clarity.	Clarifies language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv).
WAC 246-272A-0240 Holding tank sewage systems	Updated language for clarity. Makes correct cross references to other rule requirements.	Clarifies language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv).
WAC 246-272A-0265 Record drawings	Made grammatical and format changes. Updated language for clarity.	Clarifies language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv).
WAC 246-272A-0310 Septage management.	Reformatted section for clarity and consistency.	Clarifies language of the rule without changing its effect RCW 34.05.328 (5)(b)(iv).
WAC 246-272A-0420 Waivers	Added requirement that department publish an annual report summarizing waivers issued over the previous year. Updated language for clarity and consistency with remainder of rule.	The proposed rule regarding the department's publication of an annual report is exempt under RCW 34.05.328(5)(b)(ii), relates only to internal governmental operations that are not subject to violation by a nongovernment party. The other amendments clarify language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv).
WAC 246-272A-0425 Required review of rules	Made grammatical changes and updated language for clarity.	Clarifies language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv).

WAC Section and Title	Description of Proposed Changes	Rationale for Exemption Determination
WAC 246-272A-0430 Enforcement	Made grammatical changes and updated language for clarity.	Clarifies language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv).
WAC 246-272A-0440 Notice of decision—Adjudicative proceeding	Made grammatical changes and updated language for clarity.	Clarifies language of the rule without changing its effect - RCW 34.05.328 (5)(b)(iv).

Repealed Sections-

The proposal repeals the following five rule sections: **WAC 246-272A-0020; WAC 246-272A-0125; WAC 246-272A-0135; WAC 246-272A-0150; WAC 246-272A-0175.** With the exception of WAC 246-272A-0020, as the content of this rule was moved to WAC 246-272A-0007, these sections are no longer needed and are repealed. These sections were initially added as a phased approach during the transition period for manufacturers to implement new rules.

SECTION 3

Goals and objectives of the statute that the rule implements.

There are three authorizing statutes that relate to these rules: RCW 43.20.050 powers and duties of the state board of health[6], chapter 70A.110 RCW, on-site sewage disposal systems—marine recovery areas[7], and chapter 70A.105 RCW, on-site sewage disposal systems. Combined, these statutes establish the policy for regulating OSS in Washington State. Below are limited excerpts from these statutes.

RCW 43.20.050 Powers and duties of state board of health—Rulemaking—Delegation of authority—Enforcement of rules.[8]

(1) The state board of health shall provide a forum for the development of public health policy in Washington state. It is authorized to recommend to the secretary means for obtaining appropriate citizen and professional involvement in all public health policy formulation and other matters related to the powers and duties of the department. It is further empowered to hold hearings and explore ways to improve the health status of the citizenry.

In fulfilling its responsibilities under this subsection, the state board may create ad hoc committees or other such committees of limited duration as necessary.

(3) The state board shall adopt rules for the design, construction, installation, operation, and maintenance of those on-site sewage systems with design flows of less than three thousand five hundred gallons per day.

Chapter 70A.110 RCW

Requires all Puget Sound LHOs to develop an LMP by 2007. The intent of this statute is to authorize enhanced LHO OSS programs within Marine Recovery Areas (areas designated as needing enhanced protections) around the Puget Sound so that all OSS are identified, included in a sharable electronic data system, monitored for proper functioning, and repaired when there is a failure.

RCW 70A.110.010 Findings—Purpose.[9]

The legislature finds that:

(1) Hood Canal and other marine waters in Puget Sound are at risk of severe loss of marine life from low-dissolved oxygen. The increased input of human-influenced nutrients, especially nitrogen, is a factor causing this low-dissolved oxygen condition in some of Puget Sound's waters, in addition to such natural factors as poor overall water circulation and stratification that discourages mixing of surface-to-deeper waters;

(2) A significant portion of the state's residents live in homes served by on-site sewage disposal systems, and many new residences will be served by these systems;

[6] RCW 43.20.050: Powers and duties of state board of health—Rulemaking—Delegation of authority—Enforcement of rules. (wa.gov)
[7] Chapter 70.118A RCW Dispositions: ON-SITE SEWAGE DISPOSAL SYSTEMS—MARINE RECOVERY AREAS
[8] RCW 43.20.050: Powers and duties of state board of health—Rulemaking—Delegation of authority—Enforcement of rules. (wa.gov)
[9] RCW 70A.110.010: Findings—Purpose. (wa.gov)

(3) Properly functioning on-site sewage disposal systems largely protect water quality. However, improperly functioning on-site sewage disposal systems in marine recovery areas may contaminate surface water, causing public health problems;
(4) Local programs designed to identify, and correct failing on-site sewage disposal systems have proven effective in reducing and eliminating public health hazards, improving water quality, and reopening previously closed shellfish areas; and
(5) State water quality monitoring data and analysis can help to focus these enhanced local programs on specific geographic areas that are sources of pollutants degrading Puget Sound waters.

Therefore, it is the purpose of this chapter to authorize enhanced local programs in marine recovery areas to inventory existing on-site sewage disposal systems, to identify the location of all on-site sewage disposal systems in marine recovery areas, to require inspection of on-site sewage disposal systems and repairs to failing systems, to develop electronic data systems capable of sharing information regarding on-site sewage disposal systems, and to monitor these programs to ensure that they are working to protect public health and Puget Sound water quality.

RCW 70A.105.100 Alternative systems—State guidelines and standards.[10]

In order to assure that technical guidelines and standards keep pace with advancing technologies, the department of health in collaboration with local health departments and other interested parties, must review and update as appropriate, the state guidelines and standards for alternative on-site sewage disposal every three years. The first review and update must be completed by January 1, 1999.

The objectives of the proposed OSS rules are to protect public health by minimizing both the potential for exposure to sewage from on-site sewage systems, and the adverse effects of discharges from on-site sewage systems on ground and surface waters.

The proposed rules meet these general goals and specific objectives by revising the current OSS rules to update the standards for the design, construction, installation, operation, maintenance, and monitoring of OSS to ensure properly functioning OSS in Washington state.

[10] RCW 70A.105.100z: Alternative systems—State guidelines and standards. (wa.gov)

SECTION 4

Explanation of why the rule is needed to achieve the goals and objectives of the statute, including alternatives to rulemaking and consequences of not adopting the proposed rule.

The proposed rules will achieve the authorizing statute's goals and objectives because the rules provide a science-based set of standards that included consultation with a diverse set of interested parties. When adopted into the rule these standards will assist LHOs when establishing their own local OSS programs for the design, construction, installation, operation, and maintenance of on-site sewage systems with design flows of less than three thousand five hundred gallons per day.

There are no feasible alternatives to rulemaking because RCW 43.20.050(3) requires the board to adopt rules that protect public health related to OSS. The board last updated chapter 246-272A WAC in 2005. The proposed OSS rules include many clarifications and updates that will improve understanding by LHO's and citizens across the state and safe, consistent, implementation of the rules.

SECTION 5

Analysis of the probable costs and benefits (both qualitative and quantitative) of the proposed rule being implemented, including the determination that the probable benefits are greater than the probable costs.

Cost Survey

To help better understand the costs of each section of the rule, the department developed a cost survey and reached out to interested parties for usability testing to ensure the cost survey's effectiveness (e.g., question format and wording, content, etc.). The department then sent the cost survey to interested parties based on the anticipated cost impact from the draft rule. As part of that process the department completed a comprehensive effort to reach the local government environmental health directors and wastewater program staff. The department also contacted industry member associations that represent them. The department made an exhaustive effort, described in more detail below, to reach those involved with the rule. SA Table 2 shows the numbers of professionals the department attempted to reach and the number that responded to the survey.

SA Table 2. Target audience, number sent survey, and number of respondents.

Interested Parties	# Sent survey	# Sent reminder	# Of respondents	% Of respondents*
Local Health Jurisdictions	34	34	20	59%
Manufacturers**	86	86	11	13%
Professional Engineers***	22,294 (ALL)	22,260	136	NA****
Designers	381	433	47	11%
Installers	1,278	1,299	60	6%
Maintenance Service Providers			19	

* % of respondents is calculated using # of respondents divided by # sent reminder.

** The National Onsite Wastewater Recycling Association (NOWRA) also circulated the survey to 24 corporate members. The department assumes that this list overlapped with the 86 manufacturers that the survey was circulated to via GovDelivery, therefore the 24 were not added into the table.

*** GovDelivery's existing list for Professional Engineers includes all Licensed Professional Engineers. Therefore, the department utilized the list but added screening questions to the beginning of the survey to ask if they worked on OSS. Of the 22,294 who were sent the survey, which had 912 Professional Engineers who answered that they complete designs for new and repaired OSS in Washington State. Of the 912 respondents 777 (85%) responded no and were thanked for their time and the survey was ended, 135 (15%) responded yes and continued onto consent and to the survey. One additional Professional Engineer entered the survey through the industry survey and

therefore brought the number of respondents to 136. Of the 135 respondents in the Professional Engineer survey, 106 consented to the voluntary survey, 54 proceeded to contact information, and 45 proceeded to answer the first cost question.

******** For Professional Engineers NA was listed instead of a calculation because the department not targeting the full number of Professional Engineers on the GovDelivery list, only those that work on OSS in Washington State.

It is of note that not all respondents provided answers to all the survey questions, the detailed analysis in the section below provides the number of respondents for each question by listing the "N" number of observations.

Each target audience listed above in SA Table 2 had a unique set of questions. The following details the timeline and process followed for reaching each target audience:

- **Local Health Jurisdictions (LHJs)**
    - The department held a survey kickoff meeting on September 1, 2022, to walk the LHJ's Environmental Health Directors (EHDs) and/or their designee through the survey instructions, methodology, and specific questions. Following the meeting, LHJs were sent the survey via e-mail. Reminders to fill out the survey were sent on September 13 & 23, 2022. While the survey was open the department held another meeting to answer questions on September 12, 2022. The survey was closed on September 23, 2022.
- **Manufacturers, Professional Engineers, Designers, Installers, and Maintenance Service Providers**
    - GovDelivery was utilized to send out the survey. To supplement the GovDelivery lists, the department asked LHJ EHDs to provide contacts for Maintenance Service Providers in their jurisdictions. The surveys matched to each respective profession were circulated via GovDelivery on November 4, 2022. The GovDelivery notice also included a PDF of survey instructions and instructional video about how to complete the survey. Reminders to fill out the survey were sent to each GovDelivery list on November 10 & 17, 2022. The survey was closed on Friday November 18, 2022.

Survey Methodology

The cost survey separated costs by frequency type; once/one-time cost, annual costs or repeats on a specified number of years (e.g., 2 or 3 years) and unit costs. Once/One-time costs are costs that only occur once. Annual recurrent costs are costs that occur one time per year or repeats every 2, 3, 5, or 10 years. Unit costs are costs that occur multiple times and are associated with a multiplier (e.g., number of reports written, number of samples tested).
Respondents were asked to respond to time and cost questions by providing an exact answer or a best estimate. In the case that respondents were not able to provide an educated response, they were advised to leave the question blank. In the case that respondents knew that the question would not have a cost impact, they were advised to respond with a 0, rather than leaving the question blank.
To determine the cost of compliance, the department defined no cost, new cost, and additional cost. These costs were defined using the illustrative examples below.

- **No cost ($0):** The draft rule requires you to fill out a report. You currently complete this report, and it meets the draft rule requirements. You would respond that your cost to comply with the draft rule is $0.
- **New cost:** The proposed rule requires you to fill out a report. You do not currently complete any reports that meet the draft rule requirements. You would respond by providing cost estimates for the time and labor cost it would take to complete the report.
- **Additional cost to an existing requirement:** Additional costs refer to the new costs that would be incurred by changes to the rule. Do not include costs that you already incur. The draft rule requires you fill out a report. You currently complete this report, but the draft rule requirements add a new component to the report that you do not currently complete. You would respond by only providing the cost estimate for the time and labor cost it would take to add the new component to your existing report, not the cost of completing the entire report.

Survey respondents were advised to use weighted labor cost per hour when including labor by more than one staff member. The following example was provided to survey respondents to understand how to input the response:

Example:

- Staff A, 4 hours @ $25 per hour (Total labor cost = 4 hours * $25 = $100)
- Staff B, 2 hours @ $40 per hour (Total labor cost = 2 hours * $40 = $80)
- Weighted average calculation:

$$\frac{\$100 + \$80}{4\ hours + 2\ hours} = \frac{\$180}{6\ hours} = \$30\ weighted\ cost\ per\ hour$$

The survey defines labor as the amount of effort needed to complete the task to comply with the rule. If you were, for example, estimating the time to set up a policy and procedure, think about all the things you would need to accomplish that task from start to finish to comply with the proposed rule language (e.g., write, edit, review, meet, train, etc.). The labor needed to comply with the rule will differ depending on the rule language and what the question is. The department added example prompts for suggestions about what those might be in some places in the survey. The department depended on respondent expertise to best judge what should be included.

Costs were cleaned and analyzed using Microsoft Excel. In some cases, the department removed responses it deemed as an outlier using 2.4 standard deviations above the mean as the trigger.[11]

Note the department asked engineers and designers to identity the cost of the same activity or task. They both are authorized to design OSS so in these cases the owner would only be hiring one or the other not both.

[11] Selected outlier responses more than 2.4 standard deviations from the mean were removed (Reference: Aquinis et.al, Best-Practice Recommendations for Defining, Identifying and Handling Outliers; Organizational Research Methods, pg. 270-301, 2013.

Sectional analysis

WAC 246-272A-0015 Local management plans

Description*:* This section identifies the local management plan (LMP) requirements for the Puget Sound LHOs and non-Puget Sound LHOs.

The proposed amendments add new requirements for LMPs and require the department and the LHO to routinely review and revise the LMP.

Specifically, the proposed amendments add five new requirements for LMPs:

1. LMP to assess phosphorus in areas where phosphorous has been identified as a contaminant of concern. Mitigating phosphorous can be a challenge but there are some options an LHO can use to mitigate its impact in the environment, including but not limited to, increasing minimum lot size to decrease density of OSS, increasing setbacks to surface water, and educating OSS owners to reduce the use of products that contain phosphorous.
2. Assess areas where sea level rise may impact adequate horizontal separations to surface water. Sea level rise could lead to pathogens and nutrients entering marine waters if septic tanks or OSS drainfields are inundated by marine water. There are multiple ways to address sea level rise, including but not limited to increasing the horizontal setbacks from the edge of system components to marine water to avoid marine flooding of OSS drainfields or requiring a higher level of treatment.
3. LHOs to provide a summary of program expenditures by activity, source of funds, and a strategy to fill any funding gaps to the department. This builds upon the current requirement for the LMP to describe the capacity of the LHO to adequately fund the plan, including the ability to find failing and unknown systems.
4. LHO to review and update, if necessary, the LMP every five years. If the LMP is updated, LHO must provide an opportunity for public input on the LMP.
5. LHO to report the following information annually to the department:
    1. Number of OSS;
    2. Number of unknown OSS identified;
    3. Number of failures found;
    4. Number of failures repaired; and
    5. Status of compliance with inspections required by WAC 246-272A-0270.

The proposed amendments also require:

- The department to review the LMP and determine if it needs revision within 2 years of the effective date of the rule.
- The department to review the LMP every five years following the initial review.
- The LHO to revise their existing LMP if the department determines it necessary.
- The department to update guidance and provide technical assistance for assisting LHOs with completing their LMP.

The proposed amendments on the topics above were based on the recommendations by the ORRC.

Cost: The department surveyed the twelve (12) LHOs that border Puget Sound to determine the estimated cost of implementing this section of the rule. SA Table 3 shows the results of the survey from 10 respondents that provided estimated costs.

SA Table 3. Estimated cost to implement LMPs for LHOs Puget Sound counties

Description	Cost Frequency	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
Cost of labor to update the existing and add new elements* to the LMP	One-time cost	8	2,400 – 96,000	20,835	37,228	36,739
Cost to revise the 10 existing LMP elements	One-time cost	9	2,400 – 384,000	8,400	57,114	123,610
Cost to collect and address public input to the LMP	Recurrent-Repeats every 5 years	10	440 – 240,000	6,826	33,179	73,399
Cost to the LHJ to review and update the LMP, if necessary (including cost to collect and address public input)	Recurrent-Repeats every 5 years	10	600 – 240,000	6,826	29,340	74,124
Cost to report all OSS data** to the department, at least annually (9 of 10 respondents reported that they already report all OSS data to the department)	Recurrent-Annual	1	304	N/A	N/A	N/A

***New elements: an assessment of phosphorus, an assessment of sea level rise, a summary of program expenditures by activity, source of funds, and a strategy to fill any funding gaps to the department.

**OSS data is the 1) number of OSS, 2) number of unknown OSS identified, 3) number of failures found, 4) number of failures repaired, and 5) status of compliance with inspections required by WAC 246-272A-0270.

Benefit: The benefit of the proposed amendments in this section is to ensure LMPs remain protective of public health by identifying the specific items that Puget Sound LHOs must address in their LMP and the process for LHOs and the department to follow for review and updates to the LMPs. Chapter 70A.110 RCW required all Puget Sound LHOs to develop an LMP by 2007. The intent of this statute is to authorize enhanced LHO OSS programs within Marine Recovery Areas (areas designated as needing enhanced protections) around the Puget Sound so that all OSS are identified, included in a sharable electronic data system, monitored for proper functioning, and repaired when there is a failure. Chapter 246-272A WAC requires the Puget

Sound counties to develop an LMP that covers their entire jurisdiction, with special emphasis on the marine recovery areas. The department reviews the LMPs to ensure they include and address all critical components.

The implementation of the Puget Sound LMPs has been accomplished through contracts with the LHOs and have proven to be successful at achieving the intent of the original statute. Most counties bordering Puget Sound have developed robust inventories of OSS in their jurisdiction and now accurately track inspection, failure, and repair rates. This has established an important and unprecedented baseline of data, which is now used to inform the public health system and other decision-makers, including partner agencies and tribal partners. The revisions will ensure that the LMPs:

- Consider phosphorus in areas where it has been identified as a contaminant of concern;
- Consider sea level rise;
- Consider the funding needed to implement the LMP, are updated when regularly and, are more transparent. Collectively, these plans will result in implementation of OSS programs which will protect public health and water quality;
- Continue to collect the appropriate data to continue the established metrics.

Together these changes will strengthen the individual LMPs and the protection of public health and the environment.

WAC 246-272A-0025 Connection to public sewer system

Description: This section establishes conditions when OSS must connect to a public sewer. If a local health officer determines an OSS has failed, the local health officer has the option to 1) Require hook-up to a public sewer system if one is within two hundred feet; or 2) Permit the repair or replacement of a conforming OSS only if a conforming OSS can be designed and installed.

This section also requires owners that have completed a Table IX repair in accordance with WAC 246-272A-0280 to abandon their OSS and connect to a public sewer system when 1) Connection is deemed necessary to protect public health by the local health officer; 2) An adequate public sewer system becomes available within two hundred feet of the existing building drain of the structures; and 3) The sewer utility allows the sewer connection. This section also authorizes the local boards of health to require a new development to connect to a public sewer system to protect public health if available.

Lastly, this section authorizes the local boards of health to require new development or a development with a failing system to connect to a public sewer system if it is required by the comprehensive land use plan or development regulations.

The proposed amendments to this section changes how to determine if a failed OSS is within the 200-foot threshold. In some cases, specifying the approach to determine the 200-foot distance may result in a cost savings. Some jurisdictions interpreted the 200 feet as the property line which triggered the possibility to connect to sewer, thereby causing the OSS

owner to pay for connections when the distance is greater than 200 feet (i.e., up to 200 feet plus distance from property line to building drain).

Cost: The department does not anticipate any compliance costs associated with this proposed section.

Benefit: This section establishes when a homeowner must connect to a public sewer system. The expected outcome is that this section applies to fewer properties than the current rule by clarifying the 200-foot distance from sewer to building drain, as opposed to the property line. This changes the number of cases where a failed OSS will be required to connect to a sewer (fewer OSS are within 200 feet from the building sewer rather than 200 feet from property line to sewer).

The clarified approach to determine the 200-foot distance threshold may result in cost savings if a local health department currently applied 200-foot distance cutoff to the property line, and not the building sewer. The major benefit is that the LHJs will have a consistent framework on how to process properties governed under this section.

WAC 246-272A-0100 Sewage technologies

Description: The current rule section establishes that the department must describe a sewage technology in the rule, be registered for use as described by the rule, or have standards for use as described or referenced in the rule.

The proposed amendment adds a provision that the department may remove, restrict, or suspend a product's approval for failure to meet the requirements of approval.

Cost: The department does not anticipate an additional cost for the added provision as it only applies if the manufacturer fails to meet the requirements of the approval. The department does not collect cost estimates for non-compliance events so the frequency of occurrence to date is unavailable.

Benefit: The benefit of the department having the clear authority to remove, restrict, or suspend a product's approval provides the department a method to ensure that products that are not protective of public health are removed from the approved list. This protects public health by ensuring that all products that are approved for use in Washington are safe and protective of public health.

WAC 246-272A-0110 Proprietary treatment products— Eligibility for registration

Description: This section establishes the process for manufacturers to have their products tested to the appropriate standard and obtain approval. Registration is required before LHOs can permit product use.

The proposed amendments in this section remove the requirement for disinfection from existing treatment component sequence classifications A, B, and C and:

- Adds new separate disinfection levels (DL) DL1, DL2, and DL3 (which is analyzed in section 246-272A-0130 below).

- Adds two new NSF International (NSF)/ANSI standards tests (NSF 385 and NSF 245) that manufacturers have the option to use to have their products approved for bacteriological or nitrogen reduction.
- Removes outdated EPA testing for Category 2 (commercial / high strength waste) and adds current testing option from EPA.
- Incorporates Proprietary Treatment Products Emergency Rule WAC 246-272A-0110 [12] by allowing manufacturers to submit a written request to substitute components in case of supply chain disruptions.

Cost: The department does not anticipate any additional compliance costs associated with the proposed rule section. The rule amendment adds new options for tests that manufacturers can use to have their products registered but does not remove existing requirements.

The NSF Standard 245 test, which is estimated by NSF to be up to $20,000, reduces the nitrogen testing frequency to 6 months, to match the NSF standard 40 duration. The NSF Standard 385 test, which is estimated to be up to $41,000 depending on the technology, allows for a separate add-on disinfection unit to have standalone testing. The new testing protocol costs less than the entire sequence train (NSF 40 and NSF 245 or NSF 385) which costs approximately $137,000 for Standard 40 + NSF Standard 245, OR $158,000 Standard 40 + Standard 385. [13] SA Table 4 and SA Table 5 walks through the NSF and ANSI existing testing protocols.

SA Table 4. The National Sanitation Foundation and The American National Standards Institute's Category 1 Existing testing protocol (per product)

NSF* & ANSI* Standard	Test frequency	Test parameters	Lowest estimated cost	Estimated cost for compliance (per product)
Category 1 Existing testing protocol (per product)				
Standard 40 for Residential Wastewater Treatment Systems	6 months	Influent Samples: TSS & BOD - 5 x per week, Alkalinity - 1 x per week, AND Effluent Samples: TSS & CBOD - 5 x per week	$117,000	Option 1. Just NSF 40 to be registered at Treatment Level E, D **$117,000**
				Option 2. **Treatment Level A, B, or C with NSF 385 (+$41,000) **$158,000**
				Option 3. ***NSF 245 for Treatment Level N (+$20,000) **$178,000**

[12] Proprietary Treatment Products Emergency Rule | Washington State Department of Health
[13] Staff discussion with NSF employee. Costs presented are estimates.

Standard 41: Non-Liquid Saturated Treatment Systems	Minimum 6 months	Minimum 6 month-controlled lab test, AND Minimum field testing of at least three in-use systems	$57,000	**$57,000**

* NSF = NSF International, ANSI =American National Standards Institute
** For Treatment Level A, B, or C systems, bacteriological testing is required in addition to Standard 40.
*** Adding Nitrogen treatment to a Treatment Level A, B, or C system also currently requires NSF 245 testing.

SA Table 5. The National Sanitation Foundation and The American National Standards Institute's Category 1 - Proposed standalone testing protocols (per product)

NSF* & ANSI* Standard	Test frequency	Test parameters	Lowest estimated cost	Estimated cost for compliance (per product)
Category 1 - Proposed standalone testing protocols (per product)				
Standard 40 for Residential Wastewater Treatment Systems	6 months	Influent Samples: TSS & BOD - 5 x per week, Alkalinity - 1 x per week, AND Effluent Samples: TSS & CBOD - 5 x per week	$117,000	$117,000
Standard 41: Non-Liquid Saturated Treatment Systems	Minimum 6 months	Minimum 6 month-controlled lab test, AND Minimum field testing of at least three in-use systems	$57,000	$57,000
Standard 245 for Nitrogen Reduction	6 months	Influent Samples: NSF/ANSI 40 testing plus Alkalinity, Ammonia, TKN, & NO2/NO3 - 3 x per week, AND Effluent Samples: NSF/ANSI 40 testing plus Alkalinity, Ammonia, TKN, & NO2/NO3 - 3 x per week	$20,000	$20,000

Standard 385 for Disinfection Mechanics	Technology dependent test length, minimum 6 months	Influent and Effluent Fecal Coliform (or E.coli for DL1) 1x day for 6 months	$41,000	$41,000

* NSF = National Sanitation Foundation, ANSI =American National Standards Institute

Benefit: The benefits of the proposed amendments are that manufacturers will have more options when designing, manufacturing, and registering proprietary treatment products while maintaining protections for public health.

Specifically, by creating separate disinfection levels and adding additional testing options for product approval and verification the amendments provide:

- More flexibility for manufacturers to register different products without having to conduct extra, unnecessary testing;
- A framework to use E. Coli testing as an option for Disinfection Level 1 systems (discussed in more detail in the section WAC 246-272A-0130);
- An updated test option for Category 2 treatment systems, which will allow new products to be testing and registered, adding additional options for commercial onsite sewage systems or those with sources of high waste strength (i.e., gas stations, restaurants, grocery stores).

It is the department's understanding that Washington State is the first in the nation to allow this option of allowing the manufacturers to pick and choose which NSF test is best for their products.

WAC 246-272A-0120 Proprietary treatment product registration—Process and requirements

Description: This section establishes the required content and submittal process for manufacturers to use to register their products. It is typical for the department to review and approve one or two products annually per manufacturer, but this could change based on technology and innovation. The proposed amendments to this section that have been identified for potential cost impacts include:

- Clarifying the name and other identifying information from applicants;
- Adding a new field verification component to the renewal process. The field verification process consists of completing and submitting a field verification report that demonstrates the product effectiveness for bacteria removal through analysis of field-collected samples for either E. coli or fecal coliform;
- Changing from requiring an affidavit stating what changes have been made to a product at the time of product registration renewal to requiring this statement in the form of an attestation. The department currently requires manufacturers to mail a notarized signed affidavit describing any changes that have been made to the product to the department. This is done to verify if retesting is needed;

- Requiring manufactures to provide a statement that all required dated manuals are current or submit the updated and dated new manuals;
- Requiring the department to provide a compliance plan to manufacturers (to correct deficiencies) within ninety days of product registration application based on departmental concerns of public health risk related to the product;
- Manufacturers must post materials on their website, previously they had to have the materials accessible.

Cost: The department received survey responses from nine manufacturers. The department considers the first and third bullets above as minor administrative functions and did not survey on these changes. The department also does not collect cost estimates for non-compliance events so did not complete a survey on the cost of the compliance plan because this only applies if a manufacturer is having problems. SA Table 6 shows the estimated costs for maintenance service providers of taking a pair of samples for E. coli or fecal coliform.

Only one of six manufacturers indicated they would hire a third-party contractor to take the required 25 sample sets during a routine maintenance visit due to logistical restrictions. Additionally, 6 out of 11 manufacturers indicated that they already maintain a company website so the cost to post the materials was included in their costs to maintain an up-to-date website. Six manufacturers provided cost estimates to post the materials. The table does not include the cost of 25 pairs of samples. The department contacted and received cost information for 50 samples. The department was given a cost of $28 - $65 per sample[14] depending on the test technique; for a total cost for 50 samples ranging between $2,000 and 3,250. [15] SA Table 6 presents the costs to manufactures to adhere to propriety treatment product registration, process, and requirements for proposed field verification.

SA Table 6. Estimated cost to adhere to the Field Verification component of the proprietary treatment product registration, process, and requirements*

Description	Cost Frequency	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
Manufacturers						

[14] Range: $28 per sample (Lewis County) to $65 per sample. AmTest Laboratories quoted $40/sample.
[15] $28 X 50 samples = $1,400, $65 X 50 samples= $3,250.

Cost to collect a pair (one influent AND one effluent) of samples, during a routine maintenance service visit NOT including travel	Unit	5	4.28 - 47.50	24	23.66	16.65
Cost to collect a pair (one influent AND one effluent) of samples, during a non-routine maintenance service visit (including travel)	Unit	5	For one pair 50 – 292 For 25 pairs 1,250 - 7,300	65	147.10	122.81
Cost to take the pair of influent and effluent samples to the lab	Unit	5	68.50 – 190	120	126.90	50.82

Cost to complete a product field verification process report (not including sampling costs)	Unit	6	144 - 48,000	3188	10,353	18,682
Cost to hire a service provider or a third-party sampler to collect 25 pairs of samples	Unit	6	5,225 100,000	20,000	34,038	35,936
Cost to post required materials on website	One-time	6	20 – 450	65	141	170

*In the past two years the department has received applications for four treatment productions and one distribution product, which helps to estimate the total cost.

Benefit: The proposed amendments will protect public health by clarifying and modernizing the requirements for manufacturers to follow for proprietary treatment product registration and adding a field verification requirement. Specifically:

- The requirement to clarify the name and other identifying information from product registration applicants will provide the department important information in case manufacturers need to be contacted or legal action needs to be taken. The department currently requires this information in the application process. This amendment would update the rule language to the current process, creating more transparency and clarity around the registration process.
- The requirement for manufacturers to complete a field verification process for proprietary treatment products will verify that the treatment levels assigned to OSS proprietary treatment products are being met under actual use conditions. These products are currently tested only at testing facilities with no field testing required. This amendment will protect public health and the quality of Washington's groundwaters and surface waters.
- Changing from requiring an affidavit stating what changes have been made to a product at the time of product registration renewal to requiring this statement in the form of an attestation will allow the department to simplify and digitize the product registration renewal process. The department plans to allow manufacturers to submit their renewals via email or an internet-based interface using an attestation to no longer require notarized signatures stating if the product has been changed.
- The requirement for manufacturers to provide a statement that all their dated manuals are current and provide any updated versions of the manuals to the department allows users of these products, industry professionals, the department, and all other interested parties to have the most current and relevant information on operation and maintenance of their products. This will facilitate the most efficient and safe operation and maintenance of these products possible.
- The requirement for the department to provide the manufacturer a compliance plan (to correct deficiencies) within 90 days of product registration based on departmental concerns of public health risk related to the product provides the department a method to allow manufacturers a method to demonstrate they have addressed any issues that potentially interfere with operation and/or maintenance of their products.
- The requirement for manufacturers to post current materials on their website ensures that proprietary treatment technologies used in OSS provide current information to the citizens of Washington state.

The department anticipates that costs associated with testing, field verification, and registration of these products will be reasonable compared to their overall cost.

WAC 246-272A-0130 Bacteriological reduction

Description: This section establishes the requirements for registering bacteriological reduction processes. The proposed amendments to this section:

- Create three new disinfection levels (Disinfection Level 1 or "DL1", Disinfection Level 2 or "DL2", and Disinfection Level 3 or "DL3") that manufactures can use to get their products registered as a standalone treatment component and as part of a treatment component sequence registered for the appropriate treatment level. The treatment levels are currently designated A, B, and C, and include disinfection carbonaceous biochemical oxygen demand (CBOD5) and total suspended solids (TSS).
- Add an option to test for E. coli to register treatment devices as meeting DL1. The proposed amendments do not remove or change fecal coliform as an option for registering treatment devices as meeting DL1, DL2, or DL3.

Cost: The department does not anticipate any additional costs imposed by the amendments to this section of the rule. For products registered for DL1, the new E. coli test is optional, and the cost is comparable to the fecal coliform option. A manufacturer can still elect to certify their equipment using the fecal coliform option in accordance with WAC 246-272A-0130.

Benefit: NSF 385 allows separate testing of add-on disinfection units. Previously the entire treatment component sequence had to be tested. This allows different disinfection units to be attached to any treatment component sequence (i.e., not required to use any particular company's product). This flexibility helps manufacturers, OSS designers, and OSS owners.

WAC 246-272A-0145 Proprietary distribution product registration -Process and requirements.
Description: This section describes the process and requirements to register proprietary distribution products.

The proposed amendment adds that the department must provide a compliance plan to manufacturers (to correct deficiencies) within ninety days of product registration application based on departmental concerns of public health risk related to the product.

Cost: The department does not anticipate an additional cost for the added provision as it only applies if the manufacturer fails to meet the requirements. The department does not collect cost estimates for non-compliance events so the frequency of occurrence to date is unavailable. The department acknowledges that there will be additional costs of staff time should the manufacturer need to provide a compliance plan to manufacturers.

Benefit: The proposed requirement for the department to provide the manufacturer a compliance plan (to correct deficiencies) within 90 days of product registration based on departmental concerns of public health risk related to the product provides the department a method to allow manufacturers a method to demonstrate they have addressed any issues that potentially interfere with operation and/or maintenance of their products. This provides the department a method to ensure that products that are not protective of public health are removed from the approved list. This protects public health by ensuring that all products that are approved for use in Washington are safe and protective of public health.

WAC 246-272A-0200 Permit requirements

Description: This section specifies the permit application content when a person proposes the installation, repair, modification, connection to, or expansion of an OSS. The proposed amendments clarify that permits are not needed for minor repairs (types of projects are identified in the definition of minor repairs in WAC 246-272-0010). Three additional project types were added to the definition. They include control panels, any portions of tight line in the OSS, and effluent filters. OSS owners can make minor repairs without having to get a permit from the LHO. The amendments also add five items to the OSS site plan requirements that the Washington State Department of Natural Resources (DNR) currently outline within the DNR rule WAC 332-130-145 Topographic elements on maps—Requirements. [16] DNR requested that the department include these items to the required topographical map elements in the rule revision and exempted under RCW 34.05.328(5)(b)(iii).[17]

(1) The following elements must be included on every map that includes topographic elements:
- (a) Vertical datum used (such as "assumed," "NAVD 88," "NSRS," "unknown");
- (b) North arrow;
- (c) Map scale and graphic scale bar;
- (d) Legend of symbols used;
- (e) Licensee name and contact information;
- (f) Seal and signature of licensee.

The proposed change adds a requirement for site maps to include 1) horizontal separations as noted in Table IV, 2) an elevation benchmark, and 3) relative elevations of system components.

The section also identifies the things an applicant must demonstrate to the LHO when the OSS adds restrictive covenant as a method to allow access for construction, operation, monitoring, maintenance, and repair of the OSS. The current rule only allows a recorded easement to allow access. LJHs charge the same amount for recording ($203.50 for first page and $1 for each additional page). The authority to charge fees is in RCW 36.18.010.

Cost: Costs associated with these newly added components are assumed to be included in DNR rules. SA Table 7 shows the anticipated one-time cost for designers and engineers to add the specified items to their designs.

The results of our survey found that 34 of 40 Designer respondents already include these new components in their site plans. Therefore, they would not have additional costs to comply with the rule.

The department received survey responses from 10 designers and 10 engineers about adding new elements to designs. SA Table 7 and SA Table 8 present estimated costs to the proposed changes in rule.

SA Table 7. Estimated cost to Designers to adhere to permit requirements

[16] WAC 332-130-145:

[17] 34.05.328(5)(b)(iii) Rules adopting or incorporating by reference without material change federal statutes or regulations, Washington state statutes, rules of other Washington state agencies, shoreline master programs other than those programs governing shorelines of statewide significance, or, as referenced by Washington state law, national consensus codes that generally establish industry standards, if the material adopted or incorporated regulates the same subject matter and conduct as the adopting or incorporating rule.

Description (responses)	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
One-time cost to add horizontal separations as noted in Table IV into design process	4	6.25-900	250	352	385
Unit cost to put the horizontal separations as noted in Table IV into one OSS design **Low-end range****	4	6.25-500	175	164	122
Unit cost to put the horizontal separations as noted in Table IV into one OSS design **High-end range****	4	12.50-500	225	241	209
One-time cost to add elevation benchmark as noted in Table IV into design process*	10	6.25-1,200	150	306	409
Unit cost to add elevation benchmarks on one site map* **Low-end range****	9	6.25-512	31	151	181
Unit cost to add elevation benchmarks on one site map* **High-end range****	8	12.50-1,316	50	284	452
One-time cost to add relative elevations of system components as noted in Table IV into design process*	7	6.25-900	81	223	316
Unit cost to add relative elevations of system components on one site map* **Low-end range****	7	6.25-512	150	170	188
Unit cost to add relative elevations of system components on one site map* **High-end range****	6	12.50 - 368	170	368	503

*These are items covered under WAC 332-130-145 (1)

**Respondents were asked to provide a range of costs (rows are denoted in grey) and the department analyzed the low end and high end of the range to better understand the potential minimum cost and maximum cost of compliance.

SA Table 8. Estimated cost to Engineers to adhere to permit requirements.

Description (responses)	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
One-time cost to add horizontal separations as noted in Table IV into design process	8	180 - 22,500	11,050	10,765	7,531
Unit cost to put the horizontal separations as noted in Table IV into one OSS design **Low-end range****	7	0 – 6000	520	1,207	2,129
Unit cost to put the horizontal separations as noted in Table IV into one OSS design **High-end range****	7	300 - 72,000	900	11,121	26,850
One-time cost to add elevation benchmark as noted in Table IV into design process	10	150 - 8,000	800	1,620	2,348
Unit cost to add elevation benchmarks on one site map **Low-end range****	9	37.50 - 3,250	390	731	1,014
Unit cost to add elevation benchmarks on one site map **High-end range****	9	300 - 5,200	700	1,351	1,531
One-time cost to add relative elevations of system components as noted in Table IV into design process*	6	200 - 8,000	795	1,932	3,019
Unit cost to add relative elevations of system components on one site map* **Low-end range****	6	150 - 8,000	570	1,982	3,065
Unit cost to add relative elevations of system components on one site map* **High-end range****	6	300 - 8,000	1,200	2,250	2,937

*These are items covered under WAC 332-130-145 (1)

**Respondents were asked to provide a range of costs (rows are denoted in grey) and the department analyzed the low end and high end of the range to better understand the potential minimum cost and maximum cost of compliance.

Benefit: The benefit of the proposed amendments is that it clarifies that a permit is not required for minor repairs and adds three new project types to minor repairs. This will save OSS owners from having to obtain a permit for these projects, saving permit costs and facilitating a quicker repair.

Adding the DNR map items to OSS site plans consistently will help all that use them including OSS owners, staff from both agencies, and LHO staff during the design and review process.

Adding a requirement for site maps to include 1) horizontal separations as noted in Table IV, 2) an elevation benchmark, and 3) relative elevations of system components is that it provides crucial information that designers need when designing OSS, installers need when installing OSS, and LHOs need when reviewing permits.

The benefit of adding an option to record a restrictive covenant that allows owners access for construction, operation, monitoring, maintenance, and repair for OSS or OSS components on neighboring properties is that it gives OSS owners more flexibility than allowing only easements for this purpose (as the current rule does). The owner of land cannot grant an easement to themselves. This prevents or complicates owners from purchasing neighboring properties for their OSS or OSS components. An owner may, however, create a restrictive covenant on a neighboring property that they own for their OSS.

WAC 246-272A-0210 Location

Description: This section establishes minimum horizontal separations (distance) in Table IV of this section for septic tanks, drainfield and building sewers to various water sources to prevent pollution. The proposed amendments in this section add the following new types of sources to protect:

1) non-public in-ground water containment vessels,
2) closed geothermal loop or pressurized non-potable water line,
3) lined stormwater detention pond;
4) unlined stormwater infiltration pond;
5) subsurface stormwater infiltration or dispersion component

The amendments also clarify the descriptions of some of the components on the list.

The required setback (distance from OSS components) is based on the level of risk. The greater the risk, the greater the required setbacks (e.g., 100 feet setback from an unlined stormwater infiltration pond as compared to 30 feet setback from a lined stormwater detention pond).

Cost: The department received survey responses from 4 designers and 8 engineers on the cost of adding any or all the new source types to site maps. SA Table 9 presents the estimated costs.

SA Table 9. Estimated cost to include any of all source types to a site map

Description*	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)

Designer					
One-time cost to incorporate the items that you currently do not include from current Table IV into the design process	4	6.25 - 900	250	352	385
One-time cost to incorporate the items that you currently do not include from current Table IV into one OSS design **Low-end range****	4	6.25 - 500,241	175	164	122
One-time cost to incorporate the items that you currently do not include from current Table IV into one OSS design **High-end range****	4	12.50 - 500	225	241	209
Engineer					
One-time cost to incorporate the items that you currently do not include from current Table IV into the design process	8	180 - 22,500	11,050	10,766	7.531
One-time cost to incorporate the items that you currently do not include from current Table IV into one OSS design **Low-end range****	7	0 - 6,000	520	1,207	2,129
One-time cost to incorporate the items that you currently do not include from current Table IV into one OSS design **High-end range****	7	300 - 72,000	900	11,121	26,850

*This includes adding any or all of the following components to a site map if they exist on the site: 1) non-public in-ground water containment vessels, 2) closed geothermal loop or pressurized non-potable water line, 3) lined stormwater detention pond; 4) unlined stormwater infiltration pond; or 5) Subsurface stormwater infiltration or dispersion component.

**Respondents were asked to provide a range of costs (rows are denoted in grey) and the department analyzed the low end of the range and the high end of the range to better understand the potential minimum cost and maximum cost to compliance.

The setbacks will impact some developments (individual lots and subdivisions). By requiring additional setbacks, this may restrict how these lots can be laid out (require house placement in different area or potentially the size/footprint of the house). Conceivably, this could prevent the development of a lot if the extent of threats to water sources, with their associated setbacks, resulted in no viable building site unless the applicant requested and received a

waiver. This impact is difficult to predict because it depends on the existence of the newly proposed components on the protected sources list.

Benefit: The proposed amendments will protect public health, groundwater, and surface water resources in the state (including drinking water sources). They will also protect OSS owners' and their neighbors' property. Specifically:

- Adding water containment vessels as a new item requiring setback from OSS components will protect private drinking water supplies that depend on water containment vessels for their water supply. There is currently no setback requirement to water containment vessels.
- Adding closed geothermal loop and pressurized non-potable water line as items requiring setback from OSS components will protect these piping systems (and related facilities) and OSS from encroachment between the two. Any of these systems can be damaged when the other is installed or repaired too close to the other. OSS can be damaged by leaks and failures of geothermal loop systems and other non-potable water lines if they are too close. Any damage to any of these systems is likely to be costly to repair. There is currently no setback requirement to closed geothermal loops and pressurized non-potable water lines.
- Adding stormwater facilities as new items requiring setback from OSS components will protect both the OSS and stormwater facilities from being hydrologically overloaded by the other. An OSS that is hydrologically overloaded is not able to appropriately treat sewage and is likely to fail. The current setback to stormwater facilities is too small and allows OSS and stormwater facilities to be installed where they could impact each other.

Each of these proposed new setbacks add protective buffers around OSS facilities. This protects public health, water quality, and the owner's property by ensuring the OSS functions as well as possible with as few potential impacts as possible.

The ORRC supported these changes because there has been an increase in conflicts between these components and OSS components. The department anticipates that the potential for these conflicts will increase in the future as building density increases. The proposed amendments take a precautionary approach to prevent these conflicts before they impact public health.

WAC 246-272A-0220 Soil and site evaluation

Description: This section identifies minimum soil and site evaluation criteria for developing a site. Only professional engineers, designers, or LHOs are authorized to perform soil and site evaluations. The proposed amendments add the option for local health officer to require an additional evaluation if the site is altered after its original evaluation.

Cost: The owner would have to pay the cost of the additional evaluation only if their site was altered, something the owner is responsible for making sure does not happen (in current rule). Some jurisdictions conduct the evaluations and others use professional engineers or designers.

These are not considered compliance costs with the new rule because they would not be needed unless a site was altered.

Benefit: The proposed amendments protect public health, water quality, and the property owner. OSS depend on undisturbed soil structure to treat sewage. OSS drainfields (and other subsurface soil absorption systems) are known to fail prematurely (if not immediately) when installed in disturbed soil. In current rule, if the LHO has been informed or otherwise finds out the site has been altered following the original site evaluation, not allowing it to treat sewage as originally designed, the LHO's responsibility is to require a redesign of the OSS and educate the owner on the requirement to install drainfields (and other subsurface soil absorption systems) in undisturbed soil. The current rule language is not as clear as it should be on the requirement to maintain the site in an undisturbed state. For example, it is common for owners and builders to disturb the site and report that they did not know that they shouldn't have. This amendment clarifies to owners and builders that the rule allows the LHO to require an additional evaluation if the site is altered.

WAC 246-272A-0230 Design requirements—General

Description: This section identifies design requirements for OSS. The proposed amendments:

- Clarify an OSS for a single-family residence cannot be designed by a resident owner if the residence is within 200 feet of a marine shoreline.[18] The current language does not allow OSS that are "adjacent" to a marine shoreline to be designed by a resident owner. This change adjusts the requirement to match the definition of "Shorelands" in chapter 90.58 RCW *Shoreline Management Act of 1971.* This definition is well established and is applied in related rules. Provides LHOs more flexibility regarding design standards for single-family residences with additional dwellings served by the same OSS. The current rules require OSS to have a minimum of 240 gallons per day design flow for an OSS for a single-family residence. This is the design flow for a 2-bedroom residence (i.e., 120 gallons per day per bedroom). The rule's intent (behind this currently existing requirement) is to disallow OSS designed for a 1-bedroom home since these OSS are known to have a very high rate of premature failure. Some LHOs allow an OSS to serve an additional 1-bedroom single-family residence dwelling unit if the OSS is designed to treat the sewage as calculated by considering all of the bedrooms as part of the same residence. Other LHOs have required that all residences connected to the OSS are calculated at minimum as 240 gallons per day (2-bedrooms) regardless of if they are actually a 1-bedroom residence. The amendments clarify OSS must have a minimum design flow of 240 gallons per day for one single family residence and that LHJs can allow an OSS to serve additional single-family residences and additional dwelling units with a minimum design capacity of 120 gallons per day for each additional bedroom. LHJs that allow multiple additional dwellings served by a single OSS must require a management arrangement that identifies the OSS owner's responsibilities to operate

[18] **RCW 90.58.030** (2)(d) "Shorelands" or "shoreland areas" means those lands extending landward for two hundred feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward two hundred feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter; the same to be designated as to location by the department of ecology.

and maintain the OSS. The management arrangement must include legal documentation (e.g., a recorded easement or restrictive covenant) allowing access for construction, operation, monitoring, maintenance, and repair of the OSS.

- Change Table VI Treatment Component Performance Levels and Method of Distribution to specify DL1, DL2 and DL3 depending on soil type and depth. This change is needed because changes in WAC 246-272A-0110 Table III removed the disinfection component of treatment levels, A, B and C.
- Add a requirement for sites with soil types 2-6 with soil depths of 24" to 36" to include timed dosing, which was previously only required for sites with shallower soil depths.
- Reduces required treatment levels and disinfection levels from Treatment Level B & DL2 to treatment Level C & DL3 for soil types 2-6 for sites with soil depths that range from 18" or greater to less than 24." A literature review revealed that soil should be given more credit for treatment. [19]

Cost: The department considers the amendments that clarify OSS must have a minimum design flow of 240 gallons for one single family residences. LHJs can allow an OSS to serve additional single-family residences and additional dwelling units with a minimum design capacity of 120 gallons for each additional bedroom. This as an example of a change that will have a small negligible administrative cost to locals to change forms and documents to reflect the new minimum capacity. Regarding the change to the definition from adjacent to 200 feet, the department interprets this more of a limitation of use rather than a direct cost to the property owner.

The department received responses from 24 professional engineers, 29 designers, and 22 installers on the reduced cost to change Treatment Level B (TLB) and Disinfection Level 2 (DL2) to Treatment Level C (TLC) and Disinfection Level 3 (DL3) as described in WAC 246-272A-0110 Table III, and the additional cost to add timed dosing to an OSS. SA Table 10 and SA Table 11 present the estimated costs. LHJs charge the same amount for recording documents ($103.50 for first page and $1 for each additional page). The authority to charge fees is in RCW 36.18.010. [20]

SA Table 10. Estimated cost to adhere to design requirements, addition of timed dosing

Description	Type of Professional	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
Average assumed unit cost to add timed dosing to	Engineer	24	0 - 3,600	195	657	952
	Designer	29	0 – 960	500	129	239

[19] Studies including Effect of soil depth and texture on fecal bacteria removal from septic effluents, A. D. Karathanasis, T. G. Mueller, B. Boone and Y. L. Thompson J (Water Health, 2006 Sep;4(3):395-404)
[20] RCW 36.18.010: Auditor's fees. (wa.gov)

an OSS design (including time and materials)	Installer	22	175 - 17,600	1,875	3,908	4,452

SA Table 11. Estimated cost to require one management arrangement for multiple additional dwellings served by a single OSS

Description (responses)	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
Cost to require one management arrangement (recorded in contract) for multiple additional dwellings served by a single OSS	16	9 – 2,400	170	516	772

Replacing the phrase "not adjacent to" with "not within 200 feet would apply on a case-by-case basis where some LHOs may have interpreted this to be greater than 200 feet and others less than 200 feet.

Benefit: The proposed amendments will protect public health and surface water resources. They will also allow LHOs more flexibility and options when permitting multiple residential dwellings connected to a single OSS and reduce treatment requirements for certain soil types/depths. Specifically:

- Clarifying that the area where a resident owner of a single-family residence can be allowed to design their own OSS by changing the excluded area from "adjacent to" to "within 200 feet" adds needed specificity to the requirement. The proposed amendments benefit owners and LHOs by making the rule specific and easier to follow and enforce. Changing the term "adjacent to" to "within 200 feet" provides less need for interpretation and results in consistent application of standards. By matching the definition to that of "Shorelands" in chapter 90.58 RCW *Shoreline Management Act of 1971,* the requirement is connected to an appropriate conceptual and legal framework of shoreline management.
- Providing the LHO clear options and requirements for permitting multiple residences connected to a single OSS will allow owners to propose connecting accessory dwelling units and other residences to an OSS with the least requirements possible. The proposed amendments clarify that while residential OSS must be sized to treat sewage from no less than two bedrooms, additional residences connected to the OSS can be counted as the number of bedrooms they have (even if that is one). Setting clear requirements for OSS serving three or more dwellings to have a management agreement that identifies the OSS owner's responsibilities to operate and maintain the OSS protects all users of the OSS, and public health generally, by ensuring that it is always clear whose responsibility it is to operate and maintain the OSS.

Changed Table VI Treatment Component Performance Levels and Method of Distribution to correspond with beneficial changes proposed in WAC 246-272A-0110, Table III.

- Adding a requirement for sites with soil types 2-6 with soil depths of 24" to 36" to include timed dosing (which was previously only required for sites with shallower soil depths) will protect public health and the owner. All OSS can benefit from timed dosing as the naturally occurring microorganisms in the system prefer a more regular delivery of organic material, which they use for food. In addition, time dosing allows the soil treatment system to rest and re-aerate between doses that are uniformly applied.[21] This results in more efficient treatment and may extend the usable life of the OSS.
- Reducing the required treatment levels and disinfection levels from Treatment Level B & DL2 to treatment Level C & DL3 for soil types 2-6 for sites with soil depths that range from 18" or greater to less than 24" is expected to result in a cost savings as described in SA Table 12. The department asked industry professionals to provide costs for both current rules and the proposed rules. Overall, the respondents indicated modest cost savings when changing from current to proposed rules. The department received survey responses from 23 engineers, 22 designers, and 11 installers and the estimated cost savings are in SA Table 12.

SA Table 12. Cost comparison (potential cost savings) between existing and proposed rules (changing the required treatment level from B&DL2 to C&DL3

Description	N	Range of Cost ($)	Median Cost ($)	Mean Cost ($)	Standard Deviation ($)
Engineer					
Existing rules	23	30 - 16,500	1,200	2,493	3,792
Proposed rules	23	30 - 15,000	1,200	2,413	3,551
Cost difference (potential savings)			**0**	**79**	
Designer					
Existing rules	22	0 - 50,000	470	3,478	10,715
Proposed rules	22	0 - 50,000	425	3,406	10,743
Cost difference (potential savings)			**45**	**72**	
Installer					
Existing rules	10	1,950 -15,400	13,100	11,240	4,408
Proposed rules	9	575 - 14,000	12,250	8,683	2,076
Cost difference (potential savings)			**850**	**2,557**	

* Average one-time initial cost to design a system with vertical separations 18-24", soil type 2, with Treatment Level C (TL-C) & DL3.
**The reported range of costs (minimum and maximum) were identical for both current and proposed rules.

[21] Benefits of Time Dosing and Flow Equalization, Sara Heger, Ph. D (Onsite Installer Magazine, December 06, 2018).

WAC 246-272A-0232 Design Requirements-Septic tank sizing

Description: This section identifies the design requirements for septic tanks, such as compartment configuration and minimum gallonage. The amendments remove an obsolete 900-gallon tank, which was previously allowed for a 3-bedroom design. The new minimum size for a tank for 4 or less bedrooms structures increase to 1,000-gallons.

Cost: The department surveyed LHJs and 14 of 19 responded that they already require one-thousand-gallon tanks.

The department surveyed tank manufacturers to determine how removing 900-gallon tanks would impact their business. Four tank manufacturers responded to the department's cost survey. Responses were as followed:

- One manufacturer responded that they currently sell 900-gallon tanks and indicated that they would still be able to sell their tanks for other purposes.
- No (0) tank manufacturers indicated they would incur costs due to the proposed rule.

In the survey no negative input on sizing was received.

Benefit: The benefit of the proposed amendments is that the industry will all use a consistent minimum sized tank for all homes with 4 or fewer bedrooms. Standardization and consistency of tank sizes is expected to moderate price increases in septic tanks and OSS design and installation. The septic tank provides the primary treatment for OSS, and in many cases the only treatment other than the soil. The septic tank stores and digests settled and floating organic solids in sludge and scum layers. Up to a 40% reduction of these layers can occur in the septic tank. A larger tank may allow less frequent pumping as result of more storage and therefore more settling and digestion. Therefore, for 2- or 3-bedroom homes, using a larger tank is overall beneficial and is expected to result in long-term cost savings for owners. Additionally, the 900-gallon tank is no longer commonly used in the industry.[22]

The department surveyed selected states in the region for their septic tank size requirements. Alaska, Montana, and Oregon all require 1,000-gallon tanks for up to 4 bedrooms. Idaho allows a 900-gallon tank for 1-2 bedrooms.

NEW SECTION

WAC 246-272A-0233 Design Requirements-Pump chambers

Description: This is a new section that establishes 1,000 gallons as the minimum size of pump chambers. There is no minimum size of pump chambers in current rules. Design requirements proposed in rule are currently included in the Pressure Distribution RS&G that were based on estimated waste generation, full time pump submergence, safety for sludge accumulation below pump inlet, and ensuring emergency storage volume comprises at least 75% of the design flow. When these factors are taken into consideration, it becomes evident that 1,000

[22] Septic Tank Size Requirements Septic tank size calculations, size tables & codes (inspectapedia.com)

gallons is the minimum volume needed for a residential structure[23]. Eight out of 19 (42 %) of LHJs already require 1000 gallons minimum pump chamber size and no negative input on sizing was received.

Cost: The department surveyed the two manufacturers that sell tanks smaller than 1,000 gallons. One indicated they would not be able to sell their inventory but did not provide an estimated cost of inventory that they would be unable to sell.

The department assumes that manufacturers will have time to manage their inventory when the new tank sizes take effect.

Benefit: The benefit of the proposed amendments is that standardized pump chamber tanks will make manufacturing, designing, installing, and regulating pump chamber tanks for OSS more efficient by reducing variables in the respective processes. A pump tank functions much like a septic tank, adding additional treatment capacity. A larger pump tank may allow less frequent servicing as result of more storage and therefore more settling and digestion.

WAC 246-272A-0234 Design requirements—Soil dispersal components

Description: This section identifies the design requirements for soil dispersal component. This includes factors such as soil type, type of distribution (gravity, pressure, timed dosing), and drainfield siting. The proposed amendments add an option to use the new column B in Table VIII- Maximum Hydraulic Loading Rate. Column B requires a higher treatment level but also increases the gallon/square foot/day hydraulic loading of the soil. This allows the OSS to provide greater treatment and have a smaller drainfield. If this option is used, owners may not use any other reductions such as use of gravel less products. There are no amendments to the existing column A in the table, which is still an option for OSS to build their systems using these standards. The amendments allow LHOs to require reserve areas based on column A, or column B if a column B drainfield was initially approved. If they design using Column B in Table VIII the rule maintains that no further reduction using another disbursal component size reduction is allowed.

Cost: This new column B gives septic designers the option to increase the treatment level to increase the loading rate of a drainfield. This increase in treatment level and loading rate allows a smaller drainfield to be used. Greater treatment levels (going from treatment level E to C & DL3) results in reduced strength of the effluent (CBOD5, TSS, and Fecal coliforms) being introduced to the environment. There are different ways to improve treatment, including increasing the amount of sand in the drainfield (increase depth of sand from 1ft to 2ft) or adding an aerobic treatment unit or packed bed filter into the treatment train). These systems must also meet the DL3 treatment standard to qualify for the increase in discharge capacity per square foot. The designer chooses the type of treatment based on several factors which includes poorer soil types or site conditions (e.g., too steep of a drainfield). These potential

[23] 3-bedroom OSS minimum design = 360 gallons per day. Per the Pressure Distribution RS&G, section 2.4, a pump chamber must have capacity for: daily design flow + 75% of design flow for reserve capacity + 18 inch depth to ensure the pump is submerged. Equals 360 gal/day + 270 gal + (18inches x 20 gal/in) = 990 gallon.

costs for septic designers that choose this option are analyzed in Section 5, WAC 246-272A-0280 Repair of failures, below.

Benefit: The proposed amendments add optional treatment options, which if selected, will reduce the strength of effluent. This reduces the potential impact to the soil in the drainfield. This allows owners to have smaller drainfields. This makes smaller size lots more buildable.

WAC 246-272A-0238 Design requirements—Facilitate operation, monitoring and maintenance

Description: This section includes the design requirement for facility operation, monitoring and maintenance. The proposed amendments to the section include:

- Requiring an observation port in each drainfield lateral. Historically, designers added one or more ports to an entire design, but not necessarily for each drainfield lateral (the number of lateral lines vary greatly, with an assumed average of 3 lines per OSS but could vary between 2 and 12).
- Requiring treatment units to have a freefall sampling port to collect samples. This is already required in the current Proprietary Onsite Wastewater Treatment Products Recommended Standards and Guidance Document[24] and allows sampling the proprietary product to determine its treatment efficiency.

Cost: The department received survey responses from 24 professional engineers, 29 designers, and 15 installers of the cost to add one observation port to a lateral line. Although this is a new requirement it was previously included in the department's RS&Gs. The department received survey responses from 5 professional engineers, 16 designers, and 7 installers of the cost to add a freefall sampling port to a new OSS design/instillation. SA Table 13 presents the unit costs of each.

SA Table 13. Estimated cost to adding observations port and freefall sampling port.

Description	Type of Professional	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
Unit cost to add one observation port for each lateral line	Engineer	24	0 - 3,600	195	657	952
	Designer	29	0 - 960	30	129	239
	Installer	15	22.50 - 250	80	95	63
Unit cost to add a freefall sampling port to a new OSS design/installation*	Engineer	5	37.50 - 200	125	115	66
	Designer	16	1 - 300	25	53	61
	Installer	7	100 - 575	300	326	148

*Initial yes/no question removed respondents from answering subsequent cost questions which means no cost because they comply with the proposed rule.

[24] Proprietary On-site Wastewater Treatment Products RS&G

Benefit: The proposed amendments will protect public health and the owner's property. Specifically:

- Requiring an observation port in each drainfield lateral will facilitate operation and maintenance inspections. When a drainfield stops (or slows) accepting effluent, is flooded, or is otherwise suspected of being impacted or damaged, observation ports allow inspection of the infiltrative surface of the drainfield (where the soil begins to treat the effluent). The only other way to inspect the drainfield is to dig beside or into it. This procedure is expensive, risks damaging the drainfield components, and disturbs the soil immediately next to the drainfield, which compromises the treatment capacity of this area of soil. This proposed amendment will allow more affordable, less intrusive, and safer inspection of the drainfield. This will allow more thorough routine inspections as well as speed and lower costs of inspections related to failures.
- Requiring treatment units to have a freefall sampling port to collect samples allows sampling the proprietary disinfection product to determine their treatment efficiency. Otherwise, this testing is usually impossible.

WAC 246-272A-0250 Installation

Description: This section establishes that only OSS installers may install OSS, except when the resident owner is allowed to install their own OSS. The section establishes how, when, and where OSS may be installed by a resident owner. The proposed amendments require that the primary and reserve drainfields must be at least 200 feet from a marine shoreline, at least 100 feet from surface water, and not meet the criteria of a Table IX repair if installed by a resident owner. The current language disallows installations by resident owners that are "adjacent" to a marine shoreline. This amendment parallels the restriction in WAC 246-272A-0230 for owners to design an OSS within 200 feet from a marine shoreline. The LHO may require a setback that exceeds 200 feet.

Cost: There are no anticipated compliance costs associated with the amendments but puts restrictions on the location to protect the environment and public health. Replacing the arbitrary language with a discreet distance will likely be a cost savings for designers, and installers.

Benefit: The proposed amendments make implementing this section more manageable. Changing the area excluded from owner installation from "adjacent to" to "within 200 feet" of marine water adds needed specificity to the requirement. The proposed amendments benefit owners and LHOs by making the rule specific and easier to follow and enforce. Changing the term "adjacent to" to "within 200 feet" provides less need for interpretation and results in consistent application of standards. A distinct distance will improve the ability of the LHO to implement the program. Replacing "adjacent" with an exact distance will help prospective owners, designers and installers implement the rule to protect marine environments.

WAC 246-272A-0260 Inspection

Description: This section establishes OSS inspection procedures and requirements. The proposed amendments:

- Define minimum comprehensive inspection requirements as including, at a minimum inspection and evaluation of:
    a) The status of all sewage tanks including baffles, effluent filters, tank contents such as water level, scum, sludge, and solids, and water tightness, and general structural conditions;
        - The status of all lids, accesses, and risers;
        - The OSS and reserve area for any indicators of OSS failure or conditions that may impact system function, operation or repair; and
        - Any other components such as distribution boxes;
    b) A review of the record drawing and related documents, if they exist, including previous reports to confirm the system is operating as designed; and
    c) An evaluation of any proprietary products following the procedures of the accepted operations and maintenance manual associated with those products.
- Add a requirement that OSS owners must provide evidence of their OSS property transfer inspection on a form approved by the LHO.
- Grant LHOs the authority to require an additional inspection report, or additional information, for an inspection required under WAC 246-272A-0270(1).

Cost: The costs of the proposed amendments are nominal.

A standardized inspection procedure may cost more than an OSS evaluation, as the current rule requires. However, many service professionals currently conduct evaluations that meet the requirements of the proposed amendments and are unlikely to increase their prices for service based on the new requirements. Service professionals that conduct evaluations that do not meet the requirements of the proposed amendments may be more affordable than those that conduct evaluations that do meet those requirements and they may need to increase their prices. This increase is expected to be marginal, since the requirements of the standardized inspection are not overly difficult or costly to learn or implement.

The requirement that OSS owners provide evidence of their property transfer inspection on a form approved by the LHO is expected to be a nominal cost.

Granting LHOs authority to require additional reports or information may cost more but is indeterminate since it is unknown what additional reports or information may be required by the LHO. Ten (10) LHJs noted no additional cost because the practice of performing an evaluation necessitates a thorough inspection and was already implemented by local codes.

Benefit: The proposed amendments will protect public health and the owner's property by ensuring that inspections are conducted according to minimum standards and that LHOs have relevant information on the status of property transfer inspections of OSS. Specifically by:

- Defining minimum comprehensive inspection requirements, the amendments will ensure that owners can have confidence that an inspection of their OSS is conducted to a minimum standard and provides the necessary information in a standardized, easy to understand format. This will improve the quality of inspections in general, which will in

turn help ensure that OSS are operating more safely and efficiently, and that OSS malfunctions and failures are detected earlier, minimizing the threat to public health and the cost to the owner. Often, a minor malfunction will evolve into a major failure if left unaddressed.

- Requiring that OSS owners provide evidence of their property transfer inspection to the LHO the amendments will help LHOs collect and track OSS inspection status, which is critical, requisite, information in modern OSS management. This information can be used to generate statistics and maps that can direct educational, enforcement, and funding campaigns.
- Allowing LHOs to require additional reports and information, the amendments provide LHOs the latitude to implement the program to meet the local needs. There may be related issues or programs that are important locally and need to be tracked along with property transfer inspection reports.

WAC 246-272A-0270 Operation, monitoring, and maintenance—Owner responsibilities

Description: This section describes what owners must do for operating, monitoring, maintaining, and inspecting their OSS to minimize the risk of failure and threat to public health. This section requires owners to notify LHO if their OSS fails, work with local health officers for technical assistance, obtain approval for repairs, secure permits, and establish routine inspection requirements (on one- or three-year intervals depending on type of OSS).

The proposed amendments to this section:

- Require owners to submit the results of inspections using an LHO-approved form to the LHJ.
- Require owners to obtain an inspection by a third-party inspector approved by the LHO at time of property transfer if the OSS is not in compliance with routine inspection requirements and was inspected by a third-party inspector authorized by the LHO.
- Allows the LHO to:
  - Waive the requirement for an inspection at the time of property transfer if the LHJ has evidence that the OSS is in compliance with the routine inspection requirements in WAC 246-272A-0270(1)(e) and was inspected by a third-party inspector authorized by the LHO;
  - Verify the results of the property inspection for compliance with WAC 246-272A-0260;
  - Add additional inspections and other requirements not listed in WAC 246-272A-0260; and
  - Require a compliance schedule for repair of a failure discovered during the property transfer inspection.[25]

[25] Current rule provides this authority to the LHO through the following rules/RCW: [Current] WAC 246-272A-0015(15) Nothing in this chapter shall prohibit the adoption and enforcement of more stringent regulations by local health departments. [Current] WAC 246-272A-0200(8) The local health officer may stipulate additional requirements for a particular permit if necessary for public health protection. RCW 70.05 grants the LHO the authority to… "Take such action as is necessary to maintain health and sanitation supervision over the territory within his or her jurisdiction."

Cost: The proposed amendments could result in potential costs to owners under the following conditions.

- If the LHJ does not have evidence that the OSS is in compliance with the routine inspection requirement, the property owner will need to hire a service provider authorized by the LHO to conduct a property transfer inspection at time of property transfer. The LHO has the option to waive the property transfer inspection if the property is in compliance with routine inspection requirements and was inspected by a third-party inspector.[26]
- Hiring a service provider authorized by the LHO to conduct routine or property transfer inspections. Previously, the rule only required an "evaluation" of OSS. The definition of an evaluation was left up to the owner's discretion. The amendment would require the owner to follow the inspection criteria for routine or property transfer inspections.[27]

If the property owner is in compliance with routine inspection requirements,[28] and the inspection was completed by a third-party inspector, there will likely be no additional costs. if the property needs an inspection realtors will be impacted by the proposed changes. This will add another facet to the work associated with selling a home. Specifically, they will have to determine if the property has a current inspection and if not, arrange to get one completed. This could add several hours of additional time to a transaction. The department assumes that LHJs will waive the third-party property transfer inspection.

The department received responses from 10 LHJs on the cost of an inspection and submittal of a copy of the report to the department. SA Table 14 shows the actual and estimated costs for LHJ to create a program to implement property transfer inspection (PTI) program.

SA Table 14. Estimated costs for Property Transfer Inspections (PTIs)

Description	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
Local Health Jurisdictions					
One-time cost estimate for LHJ to create a program to implement property transfer inspection (PTI) program (with an existing program)	6	300 - 120,000	11,105	30,193	41,161

[26] This requirement is found in WAC 246-272A-0270(1)(e). This has been a requirement since 7/1/2007 when the current version of the rule went into effect. WAC 246-272A-0270:
[27] WAC 246-272A-0260(5)
[28] WAC 246-272A-0270(1)(e)

One-time cost estimate for LHJ to create a program to implement property transfer inspection (PTI) program (without an existing program)	9	700 - 1,786,600	65,605	398,757	665,410

Installers

Unit-cost for installer to conduct PTI requirements and send form to LHJ **Low-end range****	10	0-700	235	277	198
Unit-cost for installer to conduct PTI requirements and send form to LHJ **High-end range****	10	0-700	350	337	213
Unit-cost for installers, to conduct PTI requirements and send form to LHJ **Average**	10	0-700	275	288	199

Maintenance Service Providers

Unit-cost service maintenance providers to conduct PTI and send form to LHJ **Low-end range***	9	100-700	250	308	182
Unit-cost service maintenance providers to conduct PTI and send form to LHJ **High-end range***	9	100-700	400	374	187
Unit-cost service maintenance providers to conduct PTI and send form to LHJ **Average**	9	100-700	300	320	183

**Respondents were asked to provide a range of costs (rows are denoted in grey) and the department analyzed the low end of the range and the high end of the range to better understand the potential minimum cost and maximum cost to compliance.

The multiplier to the unit cost is unknown as the PTI is a new requirement and it is unknown how many PTI's will be conducted, processed, and filed. Therefore, the total cost is unknown. SA Table 15 provides the estimates costs.

SA Table 15. Estimated costs for Maintenance Service Provider (MSP) inspection and inspection report.

Description (responses)	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
Unit-cost to for MSP to complete an inspection **Low-end range***	9	100 - 700	250	307	183
Unit-cost to for MSP to complete an inspection **High-end range***	9	100 - 700	400	374	188
Unit-cost to for MSP to complete an inspection **Average**	9	100 - 700	300	320	182
Unit-cost for an MSP to submit an inspection report to the LHJ	10	0.50 - 428	41	122	156

*Respondents were asked to provide a range of costs (rows are denoted in grey) and the department analyzed the low end of the range and the high end of the range to better understand the potential minimum cost and maximum cost to compliance.

Benefit: Establishing a property transfer inspection program represents an opportunity to check on the viability and operation of OSS before the transaction is complete. This keeps all parties informed and creates opportunity to address any OSS issues that ultimately protects the environment and people that use these systems. The provision establishing the notification requirement will help OSS owners and service providers understand their role in the inspection process.

The benefit of requiring an inspection of OSS by a third-party inspector at the time of property transfer is that, prior to the property transfer, the property seller, the potential property buyer, and the LHO will know that OSS has recently been inspected and will have access to information on the condition of the system. Because the LHO is expected to waive this requirement for OSS that are in compliance with routine inspections of OSS as required in WAC 246-272A-0270(1)(e), this may also increase compliance rates with this preexisting requirement.[29] This will create an easy process for home sellers to follow in order to establish compliance with local inspection requirements for home sales before they are ready to sell. It may also encourage owners to maintain compliance with routine inspection requirements throughout their ownership, so their home is a more competitive option on the real estate market.

As a result of the inspection, owners will be able to fix an OSS that poses a potential health risk before the sale. Buyers will be less likely to unknowingly purchase a property with a failed, malfunctioning, or unmaintained OSS. LHO's will gain critical information about failing and malfunctioning OSS and will ensure that these issues are corrected, and public health is

[29] This requirement is found in WAC 246-272A-0270(1)(e) This has been a requirement since 7/1/2007 when the current version of the rule went into effect. WAC 246-272A-0270

protected. The LHO may allow the OSS to be repaired on a compliance schedule, which may allow an owner to knowingly purchase a property with a failing OSS with the understanding they have to repair it by a certain date. This facilitates real estate transfers and protects buyers and public health by making the condition of the OSS known to all parties while negotiations can still occur.

Performing an inspection as described in WAC 246-272A-0260 will lead to more consistent/uniform approach to ensuring OSS performance/maintenance. This will benefit owners and the public because a minimum standard of performance will be expected when the services of a professional septic inspector are contracted. This will benefit local health departments for the same reason. It will also benefit OSS inspectors and the industry more broadly by leveling the playing field to a minimum standard. This prevents the undercutting of competent inspections that meet the industry standard with substandard inspections of questionable value.

WAC 246-272A-0278 Remediation

Description: This is a new section that provides LHOs the option to establish a remediation policy, governing how and when remediation projects would be allowed. It also establishes specific exclusions for remediation.

Remediation is an attempt to restore a drainfield that has failed to functional, non-failure, status. There are an assortment of nonproprietary and proprietary biological, physical, and chemical technologies or processes to remediate and restore the flow of effluent into the soil below the infiltrative surface. The term remediation, and the related technologies and processes, are not mentioned in the current version of the rule. The department does not maintain a list of approved remediation products available for use. The department has issued an interim standards document on Remediation, which provides limited specific guidance to LHOs. This has led to vastly disparate approaches between LHOs, with some allowing remediation without a permit, some requiring a permit, and others disallowing it entirely. This has created uncertainty among owners and service providers. Service providers provided comment that many in the industry are frustrated with the regulatory uncertainty around remediation and requested that amendments are added to the rule to add clarity and direction to LHOs, owners, and service providers.

The proposed amendments:

- Allow the LHO to develop a policy reviewing and approving remediation.
- Establish the following exclusions for remediation activities:
    - Damaging the OSS;
    - Resulting in insufficient soil for treatment in the drainfield;
    - Disturbing the soil when there is not enough soil to meet standards in WAC 246-272A-0230.

Remediation is not always successful. When it is successful, the OSS is returned to a functioning state. It is unknown if a remediated OSS can be expected to fail prematurely or continue to function to its original design lifetime. When remediation is not successful, the OSS will still

need to be repaired or replaced. In this case, a repair or replacement of the OSS will be necessary.

Cost: Nine LHJs indicated that they allow homeowners to conduct remediation projects on failing or failed OSS. Seven LHJs indicated that they do not allow remediation projects. Two LHJs did not know if they allowed remediation projects. Of the nine LHJs that currently allow remediation projects only three have a policy in place. Of the remaining six, three LHJs that currently allow these projects provided a cost estimate to amend or adopt a new remediation project policy in accordance with the draft rule and are shown in SA Table 16.

SA Table 16. Estimated cost of Remediation Policy

Description	N	Range ($)
Cost of Remediation Policy	3	404 - 1,275 - 8,253

Benefit: The benefit of the proposed amendments is that they add a lower cost option to repairs and replacement for owners of a failed OSS. The cost to remediate a drainfield, if successful, is significantly less than the cost to replace or repair the system. The long-term benefits of remediation are unknown because it is unknown if successful remediation is a short-term or long-term solution.

In counties where LHOs choose to establish a policy allowing remediation, OSS owners will have the option to try remediation instead of a repair. Remediation is not always successful. If it is successful, the OSS will not need to be repaired or replaced until it fails again. If it is not successful, the OSS will still need to be repaired or replaced.

WAC 246-272A-0280 Repair of failures

Description: This section establishes requirements and options for owners when their OSS fails and procedures that LHOs are required to follow following an OSS failure. The proposed amendments to this section are:

- LHOs required to report OSS failures to the department if they are within 200 feet of a shellfish growing area.
- LHO required to evaluate all unpermitted sewage discharges to determine if they pose a public health threat. If determined to be a public health threat the LHO shall require a compliance schedule. Owners may face costs, penalties, or both, associated with compliance schedule deficiencies.
- Designer must minimize the impact of phosphorus discharge in the OSS design when the LHO has identified it as a contaminant of concern in that area in the Local Management Plan.
- Changes to Table X in the proposed rule Treatment Component Performance Levels for Repair of OSS Not Meeting Vertical and Horizontal Separations
    - Incorporated changes to treatment levels resulting from proposed amendments in WAC 246-272A-0110 (DL1, DL2, DL3).

- Increased the minimum horizontal separation required between the soil dispersal unit (e.g., drainfield) and a well, spring, or surface water by 5 feet from 25 feet to 30 feet for repairs. Increased treatment and disinfection levels for specific soil types and vertical separations – a total of 6 situations (See SA Table 17).

- Allow an OSS repair using the least expensive alternative that meets standards and is likely to provide comparable or better long-term sewage treatment and effluent dispersal outcomes.[30]
- Allow an OSS repair using Table X in the proposed rule only if installation of a conforming OSS or component/connection to either an approved LOSS or a public sewer is not possible when no reasonable alternatives exist.
- Change in requirement to abandon property if no repair of failed OSS is possible to cease using the OSS and generating sewage. This allows the owner access and use of their property.

Exempted from the SA: Requirement for LHO to not impose or allow the imposition of more stringent performance requirements of equivalent OSS on private entities than public entities under 34.05.328(5)(b)(v).[31]

Cost: The department conducted a survey and received responses from 11 LHOs, 3 installers, 21 designers, and 19 engineers on the costs imposed by the amendments to this section. SA Table 17 presents the estimated costs.

SA Table 17. Estimated costs associated with WAC 246-272A-0280 Repair of failures reported in the department cost survey

Description	Industry	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
Local Heath Jurisdiction						
Cost to report a failure to the department for an OSS located within 200 feet of a shellfish growing area by phone or email	LHJ	11	12.50-150	43	53	42
Cost per site to determine if an unpermitted sewage discharge poses a public health threat including travel	LHJ	4	158-216	184	185	25

[30] This provision is taken directly from RCW. In addition, the department reasonably assumes that local health jurisdictions are already following these directives.

[31] RCW 34.05.328: Significant legislative rules, other selected rules. (wa.gov) 34.05.328(5)(b)(v) (v) Rules the content of which is explicitly and specifically dictated by statute, including any rules of the department of revenue adopted under the authority of RCW 82.32.762(3)

Cost for a local health officer to create a compliance schedule.	LHJ	2	175-250	NA	NA	NA
Does your LHJ have certain areas in your jurisdiction where phosphorous is a contaminant of concern (or similar designation)?	Yes (4) No (20)					
Does your LHJ require designers to minimize the impact of phosphorus discharge in the OSS design when the LHO has identified as a contaminant of concern in that area in the Local Management Plan	Yes (2) No (2)					

Designer / Engineer / Installer

Unit cost to minimize the impact of phosphorus discharge in the OSS design when the LHO has identified as a contaminant of concern in the area and the LMP	**Designer**	15	40 – 4,800	100	539	1,204
Cost to change from Treatment Level B to Treatment Level A & DL1 with <12" vertical separation, 50' to 100' horizontal separation, and soil types 3-6.	**Engineer**	18	0 – 2,500	365	652	772
	Designer	21	0 – 4,800	50	619	1,255
	Installer	3		0, 0, 16,000		
Cost to change from Treatment Level C to Treatment Level B & DL2 with 18" to 24" vertical separation, 50' to 100' horizontal separation, and soil types 3-6.	**Engineer**	19	0 – 2,500	300	550	741
	Designer	21	0 – 7,200	32.50	674	1,691
	Installer	3		0, 5,259, 17,000		
Cost to change from Treatment Level C to	**Engineer**	19	0 – 2,500	300	550	741

Treatment Level B & DL2 with 24" to 36" vertical separation, 30' to 50' horizontal separation, and soil type 2.	**Designer**	21	0 – 4,800	32.50	562	1,251
	Installer	3		0, 4,209, 14,000		
Cost to change from Treatment Level C to Treatment Level B & DL2 with 24" to 36" vertical separation, 30' to 50' horizontal separation, and soil types 3-6.	**Engineer**	8	50 – 1,200	210	394	414
	Designer	21	0 – 4,800	32.50	562	1,251
	Installer	2		0, 18,000		
Cost to change from Treatment Level C to Treatment Level B & DL2 with 24" to 36" vertical separation, 50' to 100' horizontal separation, and soil type 2.	**Engineer**	2		300, 1,200		
	Designer	21	0 – 4,800	32.50	562	1,251
	Installer	2		0, 14,000		
Cost to change from Treatment Level E to Treatment Level C & DL3 with <36" vertical separation, 50' to 100' horizontal separation, and soil types 3-6. *	**Engineer**	2		0, 1,200		
	Designer	21	0 – 4,320	100	565	1,163
	Installer	1		0		

Benefit: The proposed rule provides better protection of public health and the waters of the State of Washington. Specifically:

- The requirement for the LHO to report any OSS failures that are within 200 feet of shellfish growing areas will protect public health by ensuring that shellfish are not harvested from that area until it has been verified to be safe.
- The requirement for the LHO to evaluate unpermitted sewage discharges[32] to determine if they are a public health threat and require a compliance schedule (for correction) if they are determined to be a threat will protect public health by ensuring that unpermitted OSS and other unpermitted discharges of sewage are investigated, evaluated, and corrected if public health is threatened by the discharge.
- The requirement for the designer to minimize the impact of phosphorus when the repair is located in an area where phosphorus has been identified as a contaminant of concern in the LHJ's local management plan will protect public health and Washington's

[32] "Unpermitted sewage discharge" means the discharge of sewage or treated effluent from an unknown OSS.

surface waters. Phosphorus contributes to harmful algal blooms (HABs), eutrophication, and degradation of the environmental quality of surface waters. Areas where phosphorus has been established as a contaminant of concern are susceptible to phosphorous contamination or are already impacted by phosphorous contamination. These areas require protection to ensure they are not significantly impacted by phosphorous contamination. Once an area or surface water body is impacted by phosphorous contamination it is very difficult, costly, and time-intensive to remediate the area or water body to pre-contamination quality. Prevention of phosphorus contamination is much less expensive and facilitates maintenance of environmental quality.

- The proposed changes to Table X in WAC 246-272A-280 are based on a review of the available literature on pathogen deactivation from horizontal migration through the soil. This review revealed no literature or other data sources regarding deactivation of pathogens by horizontal migration through the soil for any distances less than 30 feet. There was, therefore, no known scientific justification for allowing installation of a drainfield less than 30 feet from a well, spring, or surface water. A number of other setback distances were also found to not be supported by current scientific literature[33]. The minimum setback was changed to 30 feet and any other setbacks that were not support by literature were changed to agree with the scientific literature.
- The change to allow an OSS to be repaired using the least expensive alternative that is likely to provide comparable or better long-term sewage treatment and effluent dispersal outcomes, creates equity between conventional OSS, consisting solely of a septic tank and gravity drainfield, and all other OSS. This allowance is required for conventional OSS by statute. A repair that meets the requirements of the rule and is likely to provide comparable or better long-term sewage treatment and effluent dispersal outcomes protects public health by ensuring that repaired OSS treats sewage to safe levels.
- The change to clarify that OSS can only be repaired to the standards in the proposed Table X in WAC 246-272A-0280, if installation of a conforming OSS or a connection to an approved LOSS or a public sewer is not possible, protects public health by ensuring that LHOs do not permit new construction or OSS repairs under the proposed Table X standards that could be installed to meet conforming system requirements. Table X standards are not as protective of public health as new construction, or conforming OSS, standards and have been meant to be applied only as an exception when an OSS fails; and only when installation of a conforming OSS is not possible for its repair and no LOSS or public sewer is available to connect to. There is uncertainty among some LHOs that the current rule language is clear on this intent. This change clarifies the ORRC's and the Department's original intent.
- The change in requirement for the owner to abandon their property if no repair of a failed OSS is possible to instead cease using the OSS and generating sewage, which allows the owner access and use of their property.

[33] On-Site Rule Revision Issue –Proprietary Product Field Testing Table VI and Table IX (wa.gov)

WAC 246-272A-0282 Minor repair of malfunctions

Description: The new section establishes a framework for projects defined as minor repairs that bring an OSS back to a functioning state. Clarifies that owners are allowed to make repairs of certain OSS components (identified in the definition) without having to obtain a permit from an LHO, which although many LHOs do not typically issue permits for these types of projects they have the authority to do so in the permitting section of the rule. The new section also adds additional projects/components defined as minor repairs not needing permits.

Cost: Ten of 19 LHJs indicated they require owners to submit information about any minor repairs they complete. There are potential compliance costs imposed by the amendments as the department is authorizing LHO's to mandate that the OSS owner submit any information but is only providing it as an option for LHOs. Costs are presented in SA Table 18.

SA Table 18. Cost to Local Health Jurisdictions for minor repairs

Description	Yes	No	Don't know
LHJs already require OSS owners to obtain a permit or submit information about any minor repairs they complete.	10	8	0
*Of the LHJs that answered **no**, you DO NOT already require OSS owners to obtain a permit or submit information about any minor repairs they complete...* LHJs who intend to require OSS owners to obtain a permit or submit information about any minor repairs, they complete.	10	8	0
*Of the LHJs that answered **yes**, they intend to require OSS owners to obtain a permit or submit information about any minor repairs they complete...* Cost to OSS owners (from LHJs) to obtain a permit or submit information about any minor repairs they complete.	No cost responses		

Benefit: Allowing minor repair projects without having to get a permit will likely cause cost savings for OSS owners and make LHJs more efficient in their operations (reducing the number of project reviews would likely reduce review time).

WAC 246-272A-0290 Expansions

Description: This section establishes requirements for OSS owners that want to expand their existing OSS. Proposed amendments to this section change when added requirements apply to an expansion of an OSS near marine shorelines. The existing language uses the word "adjacent to" to describe when these requirements apply. The proposed amendment changes "adjacent to" to "within 200 feet" of a marine area."[34]

Cost: The department does not anticipate any additional cost of compliance associated with the proposed amendments.

[34] This change matches a change describing when owners can design their own OSS in WAC 246-272A-0230.

Benefit: The proposed amendments benefit owners and LHOs by making the rule specific and easier to follow and enforce. Changing the term "adjacent to" to "within 200 feet" provides less need for interpretation and results in consistent application of standards.

WAC 246-272A-0300 Abandonment

Description: This section amends requirements governing how OSS owners may abandon a sewage tank, seepage pit, cesspool, or other sewage containers. Owners have the option to remove tank/container or remove lid and fill the tank or container with sand or soil. The amendments add a requirement to grade the site to the surroundings, for both options.

Cost: Seven installers responded (7/7) to the department's cost survey and indicated that that they already grade a site after removing a tank and no cost estimates provided. Therefore, the department does not anticipate any additional cost to comply with the proposed rules.

Benefit: An ungraded site creates a safety hazard. The benefit of the proposed amendments is that a properly graded site will protect the health and safety of people residing at or visiting the site by preventing falls and injuries.

WAC 246-272A-0320 Developments, subdivisions, and minimum land area requirements

Description: This section establishes minimum land area requirements when proposing land developments or subdivisions. The proposed amendments:

1. Increase minimum lot size.
2. Reduce the maximum unit volume of sewage per day per acre from 3.5 to 3.35 for non-residential uses on lots served by public water supplies.
3. Establish minimum useable land area as a new requirement.
4. Update requirements for sub-sized lots.
5. Update miscellaneous provisions.

The analysis of this section is divided into five parts to match the proposed amendments.

Part 1. Increasing minimum lot size.

Description of Part 1: The amendments revise Table XI in the proposed rule to increase minimum lot sizes (ranges from 500-1,000 sq ft) based on soil type for each single-family residence or unit volume of sewage.

There is a need to require a minimum land area for OSS to ensure their safe long-term operation and treatment. Minimum lot size requirements have been included in Washington's OSS rule since the first comprehensive statewide rule took effect in 1974. Originally, the primary purpose of the requirement was to ensure that there was enough land on the approved lot for all components of the OSS, including the reserve drainfield, to be installed without encroaching on horizontal setbacks to the home, property lines, and other site features.

Over time the scientific understanding of OSS wastewater treatment and the fate and transport of OSS contaminants developed, and a scientific and regulatory consensus emerged around two important points directly related to minimum lot sizes:

1. Historically, treatment requirements had been too lenient and treatment components had been too small to treat sewage effectively and reliably, particularly in certain soil types. Several studies and experiments expanded the understanding of how wastewater is treated in the soil, and in particular, how far pathogenic microbes and viruses can travel through soils. Well-draining sandy soils (e.g., Type 1 Soils) were found to allow pathogens to travel long distances while poor-draining clayey soils (e.g., Type 6 Soils) were found to treat pathogens well but require much larger drainfields to sustain long term treatment.
2. Nitrogen and phosphorus (together referred to as "nutrients" due to their role in plant growth) from OSS are dangerous contaminants in well water at higher concentrations and are detrimental to aquatic environments. It had long been understood that nutrients are not completely treated by OSS. However, the amount of nutrients released into the environment had historically been considered inconsequential because the health effects were not well understood and because free nutrients in terrestrial environments were thought to be used quickly by plants with little to no negative impacts.

Numerous recent studies and experiments, along with several well-documented cases of contamination of drinking water wells and surface waters have informed a consensus that inadequately functioning OSS can directly affect both human health and the environment.[35] Many cases of contamination were a result of premature OSS failures, while others were a result of OSS operating at a capacity that was too high for the treatment systems and receiving soils to treat. Others were a result of multiple OSS being installed too densely.[36] These failures and exceeded treatment capacities have been directly responsible for creating human health hazards. One known consequence of OSS failure is methemoglobinemia, commonly referred to as "blue baby syndrome." This illness, which affects infants fed formula made with nitrogen-contaminated well water, has been linked to contamination from OSS.[37] Another known consequence of higher nutrient levels entering surface waters from various sources including OSS, are harmful algal blooms (HABs).[38]

To address these issues, three changes were made in subsequent rule revisions:

1. Treatment component requirements were increased to better match the scientific consensus. This led to generally larger and more sophisticated treatment components being installed.
2. Minimum lot size requirements were increased to accommodate larger OSS treatment components and to mitigate nutrients from OSS by providing enough soil to assimilate and dilute nutrients to safe levels before they reach groundwater or surface water. Notably, there was not agreement on the minimum land required to ensure that nutrients would always be safely mitigated. This is partially because the fate and

[35] Onsite Wastewater Treatment and Disposal Systems | US EPA, A Brief History of on-Site Wastewater Management | NC State Extension (ncsu.edu)
[36] Document Display | NEPIS | US EPA Onsite Wastewater Treatment Systems Manual. Revised 2002.
[37] PEHSU Nitrates Factsheet- Provider July 2014.doc (washington.edu)
[38] Harmful Algal Blooms | US EPA

transport of nutrients is variable from site to site and is dependent on many specifics of OSS installation and use, land use, and hydrogeologic variables that are not collected as part of a standard OSS design. Hydrogeologists and other experts expressed concern that high-capacity OSS or densely installed OSS may cause significant nutrient contamination of groundwater resources under certain conditions. Environmental advocates expressed concern that HABs were a serious threat to aquatic environments, fisheries, and shellfish resources and that OSS should be installed so that their potential contributions are minimized. Development and property rights advocates expressed concerns over the impact to development costs. Through multiple rule revisions the determination of the appropriate minimum lot size requirements has been a compromise between the right to use land to its fullest development potential and a conservative estimate of the safety factors needed to protect groundwater and surface water resources.

3. A requirement to account for the quantity of sewage per acre (known as unit volume of sewage) in non-residential/commercial applications was added to the rule to ensure that nutrients were appropriately accounted for in non-residential and commercial applications.

The current version of the rule has been in effect since 2007, following the most recent rule revision in 2005. During that revision, the interested parties proposed to increase the minimum lot size to 21,780 sq ft for all soil types to protect water resources from nutrient contamination. This proposal was not approved by the Washington State Board of Health (board) due to concerns that the requirement would add an unneeded expense and could create unbuildable lots.[39] The rule requires a minimum acreage that is based on soil type and varies from 12,500 sq ft to 21,780.

Again, during the review of the rule in 2017, minimum lot size requirements were identified as an issue that needed to be considered for revision due to continued land development in Washington state. Since 2005, many areas in Washington have experienced significant growth of high-density communities served by OSS. Changes to land use on residential lots have also increased pressures on OSS treatment. While suburban lot sizes have gotten smaller,[40] the average size of single-family homes has generally increased.[41,42,43,44,45] Higher density development is required under many zoning and development regulations since it results in lower environmental impacts per person and affords an economy of scale for public services.

While beneficial in many ways, less land area per residential lot and higher rates of impervious surface coverage results in less available soil that can provide treatment of OSS effluent. This

[39] On-Site Rule Revision Issue: Minimum Land Area - WAC 246-272A-0320
[40] Lot Size Index by US States (angi.com), How American Homes Vary By the Year They Were Built (census.gov)
[41] [STUDY] Supersized: Americans Are Living in Bigger Houses With Fewer People | The Zebra
[42] What Is The Average Square Footage Of A House? | Rocket Mortgage
[43] Size of new single-family homes in the U.S. | Statista
[44] National housing and impervious surface scenarios for integrated climate impact assessments | NLCD 2016 Percent Developed Imperviousness (CONUS) | Multi-Resolution Land Characteristics (MRL
[45] NLCD 2016 Percent Developed Imperviousness (CONUS) | Multi-Resolution Land Characteristics (MRLC) Consortium PNAS

increases the potential that nutrients from OSS will not be adequately assimilated and diluted before they are transported into groundwater or surface water.

Climate change is expected to increase these pressures.[46] Summertime temperatures and the frequency of heavy precipitation events in Washington are both predicted to increase in the future. HABs form more readily at higher temperatures. And heavy rain events can rapidly flush nutrients through the soil and into groundwater and surface water.

While the understanding of the impacts of nutrients has developed significantly, there is still significant uncertainty that the rule's minimum land requirements are protective of groundwater and surface water resources. The members of the ORRC considered several alternatives to address nutrient contamination.

Some members of the committee expressed concern that future development of the smallest lots allowed to be served by OSS is likely to cause nutrient contamination of water resources. Others asserted that no serious issues in Washington have been directly correlated to development that adheres to the standard minimum lot sizing (non-subsidized lots).

Cost/impact of Part 1: The ORRC agreed by consensus to recommend a modest increase in the minimum lot sizing of all soil types to add protections to counter growing threats to water resources.

The proposed increase ranges from 500 square feet to 1,000 square feet, depending on soil type.

The following table was developed to help explain the impact of the proposed lot size increases on potential subdivisions. It was developed by calculating the minimum acres needed to create subdivisions of between 1 – 10 lots under both the current and proposed minimum lot sizes by using the formula below. This allows us to show the acres needed for subdivisions under the current rule and compare that to the acres needed for the same subdivision under the proposed minimum lot size requirements.

The formula used to calculate the acres needed is:

$$\frac{(Number\ of\ Lots) \times\ (Lot\ Size)}{43{,}560\ ft}$$

While the formula has not changed, the proposed change in lot size leads to a difference in the acres needed for subdivisions.

There are no proposed changes to Soil Type 1.

SA Table 19. Impact of proposed changes on lot sizes

Table comparing minimum size of subdividable lot needed by lots in subdivision with public water and soil type 2

[46] On-Site Rule Revision Issue: Minimum Land Area - WAC 246-272A-0320

	Lots in subdivision	1	2	3	4	5	6	7	8	9	10
Current Acres Required	Minimum size of subdividable lot at current minimum lot size 12,500 sq ft (in acres)	0.29	0.57	0.86	1.15	1.43	1.72	2.01	2.30	2.58	2.87
Proposed Acres Required	Minimum size of subdividable lot at proposed 13,000 sq ft (in acres)	0.30	0.60	0.90	1.19	1.49	1.79	2.09	2.39	2.69	2.98

Table comparing minimum size of subdividable lot needed by lots in subdivision with public water and soil type 3

	Lots in subdivision	1	2	3	4	5	6	7	8	9	10
Current Acres Required	Minimum size of subdividable lot at proposed 15,000 sq ft (in acres)	0.34	0.69	1.03	1.38	1.72	2.07	2.41	2.75	3.10	3.44
Proposed Acres Required	Minimum size of subdividable lot at proposed 16,000 sq ft (in acres)	0.37	0.73	1.10	1.47	1.84	2.20	2.57	2.94	3.31	3.67

Table comparing minimum size of subdividable lot needed by lots in subdivision with public water and soil type 4

Current Acres Required	Lots in subdivision	1	2	3	4	5	6	7	8	9	10
	Minimum size of subdividable lot at proposed 18,000 sq ft (in acres)	0.41	0.83	1.24	1.65	2.07	2.48	2.89	3.31	3.72	4.13
Proposed Acres Required	Minimum size of subdividable lot at proposed 19,000 sq ft (in acres)	0.44	0.87	1.31	1.74	2.18	2.62	3.05	3.49	3.93	4.36

Table comparing minimum size of subdividable lot needed by lots in subdivision with public water and soil type 5

Lots in subdivision	1	2	3	4	5	6	7	8	9	10
Minimum size of subdividable lot at proposed 20,000 sq ft (in acres)	0.46	0.92	1.38	1.84	2.30	2.75	3.21	3.67	4.13	4.59
Minimum size of subdividable lot at proposed 21,000 sq ft (in acres)	0.48	0.96	1.45	1.93	2.41	2.89	3.37	3.86	4.34	4.82

Table comparing minimum size of subdividable lot needed by lots in subdivision with public water and soil type 6

Lots in subdivision	1	2	3	4	5	6	7	8	9	10

Current Acres Required	Minimum size of subdividable lot at proposed 22,000 sq ft (in acres)	0.51	1.01	1.52	2.02	2.53	3.03	3.54	4.04	4.55	5.05	
Proposed Acres Required	Minimum size of subdividable lot at proposed 23,000 sq ft (in acres)	0.53	1.06	1.58	2.11	2.64	3.17	3.70	4.22	4.75	5.28	

The tables show the modest impact of the proposed increase of minimum lot size to lots that can be subdivided. For example, for soil type 2, the change will require a landowner to have .30 of an acre to create a lot compared to the .29 acre (1/100 of an acre impact) and for a 10-lot subdivision the minimum size of a subdividable lot would be 11/100 of an acre larger.

Benefit of Part 1: The benefit of the proposed amendments is that they will protect public health and water resources. Specifically, by requiring larger minimum land areas for OSS, the amendments will ensure that there is more land to treat and dilute nutrients, which will help to prevent groundwater contamination by nutrients. Because these groundwater resources are drinking water sources, this will help prevent potential cases of methemoglobinemia, an acute and sometimes fatal illness affecting infants fed formula made with nitrogen-contaminated well water.[47] Studies have also shown a correlation between long-term ingestion of elevated nitrate and increased incidence of certain cancers, and increased birth defects.[48] Uncertainty exists in nitrate risk assessment, and the connections between the level of nitrate in drinking water, volume ingested, duration of exposure, and possible chronic risks are not fully understood.[49,50] Once groundwater has been contaminated with nutrients it is very difficult and expensive to treat to be safe to drink.[51]

Preventing nutrient contamination of surface waters protects important ecological resources such as aquatic environments, fisheries, shellfish resources, and recreational beaches. Eutrophication of surface waters is directly related to nutrient contamination[52] and Harmful Algal Blooms (HABs), which are dangerous to public health and can be deadly to wildlife and

[47] Potential Well Water Contaminants and Their Impacts | US EPA
[48]
[49] Drinking Water Contaminant – Nitrate – Drinking Water and Human Health (extension.org)
[50] Drinking Water: Nitrate-Nitrogen (unl.edu)
[51] Nitrogen contamination and bioremediation in groundwater and the environment: A review - ScienceDirect
[52] Analysis of eutrophication potential of municipal wastewater - PubMed (nih.gov)

pets and devastating to ecosystems, are fed by nutrient contamination, including from OSS.[53] Furthermore, remediation and rehabilitation of nutrient-contaminated surface waters is also very difficult and costly.[54]

Increased land area also improves the options for the owner if the OSS fails and major components need to be replaced. Even small increases in available land area can allow much more affordable repair options.

As the tables above show, the impacts of this change on development potential are minimal and in general do not result in a reduction of the number of possible lots for subdivisions under ten acres. The proposed increases in minimum land area will help protect important water resources from nutrient contamination from OSS.

Part 2 Reduced the maximum unit volume of sewage per day per acre from 3.5 to 3.35 for non-residential uses on lots served by public water supplies.

Description of part 2: The proposed amendment reduces the maximum unit volume of sewage per day per acre from 3.5 to 3.35 for non-residential uses on lots served by public water supplies. This results in a reduction of the maximum quantity of sewage that can be generated by non-residential uses on lots served by public water supplies from 1,575 gallons per day per acre to 1,508 gallons per day per acre. This is a reduction of 67 gallons per day per acre (a decrease of about 4%). This is described in detail below.

As defined in the rule, "Unit volume of sewage" means:

a) Flow from a single-family residence;
b) Flow from a mobile home site in a mobile home park; or
c) Four hundred fifty gallons of sewage per day where the proposed development is not single-family residences or a mobile home park.

Under (c) of this definition, a unit volume of sewage is 450 gallons for non-residential uses. In the rule, the maximum unit volume of sewage describes the amount of sewage that can be generated per acre for non-residential uses on lots served by public water supplies and is calculated by dividing an acre by the smallest lot size for lots served by public water supplies. The smallest lot size was increased from 12,500 sq. ft. to 13,000 sq. ft., as described in part 1 of this section. The change of the maximum unit volume of sewage per day per acre from 3.5 to 3.35 for non-residential uses on lots served by public water supplies is therefore a consequence of changing the minimum lot size from 12,500 to 13,000.

Cost/Impact of Part 2:

To understand the costs, SA Table 20 and SA Table 21 outline the maximum unit volume of sewage per acre under the current and proposed rule.

SA Table 20. Calculation of maximum unit volume of sewage per acre under current rule

Current Rule

[53] https://www.cdc.gov/habs/index.htmlAnalysis of eutrophication potential of municipal wastewater - PubMed (nih.gov)
[54] https://www.epa.gov/nutrient-policy-data/research-and-reports-nutrient-pollution

Known Variables	Minimum Lot Size = **12,500** sq ft. 1 acre = 43,560 sq ft Unit Volume of Sewage = 450 Gallons of Sewage per Day
Maximum unit volumes of sewage per acre for non-residential uses on lots served by public water supplies	1 acre / Minimum Lot Size = Unit Volumes of Sewage per Acre 43,560 sq ft / 12,500 sq ft = 3.48 ≈ **3.5** Unit Volumes of Sewage per Acre
Unit volumes of sewage converted into gallons per acre	Unit Volumes of Sewage per Acre x Gallons of Sewage per Unit Volume of Sewage 3.5 Unit Volumes of Sewage per Acre x 450 gallons per day = **1,575** Gallons of Sewage per Day per Acre

SA Table 21. Calculation of maximum unit volume of sewage per acre under proposed rule

Proposed Rule	
Known Variables	Minimum Lot Size = **13,000** sq ft. 1 acre = 43,560 sq ft Unit Volume of Sewage = 450 Gallons of Sewage per Day
Maximum unit volumes of sewage per acre for non-residential uses on lots served by public water supplies	1 acre / Minimum Lot Size = Unit Volumes of Sewage per Acre 43,560 sq ft / 13,000 sq ft = 3.35 Unit Volumes of Sewage per Acre
Unit volumes of sewage converted into gallons per acre	Unit Volumes of Sewage per Acre x Gallons of Sewage per Unit Volume of Sewage 3.35 Unit Volumes of Sewage per Acre x 450 gallons per day = **1,508** Gallons of Sewage per Day per Acre

Benefit of Part 2: The benefit of the proposed amendment is the same as Part 1 above.

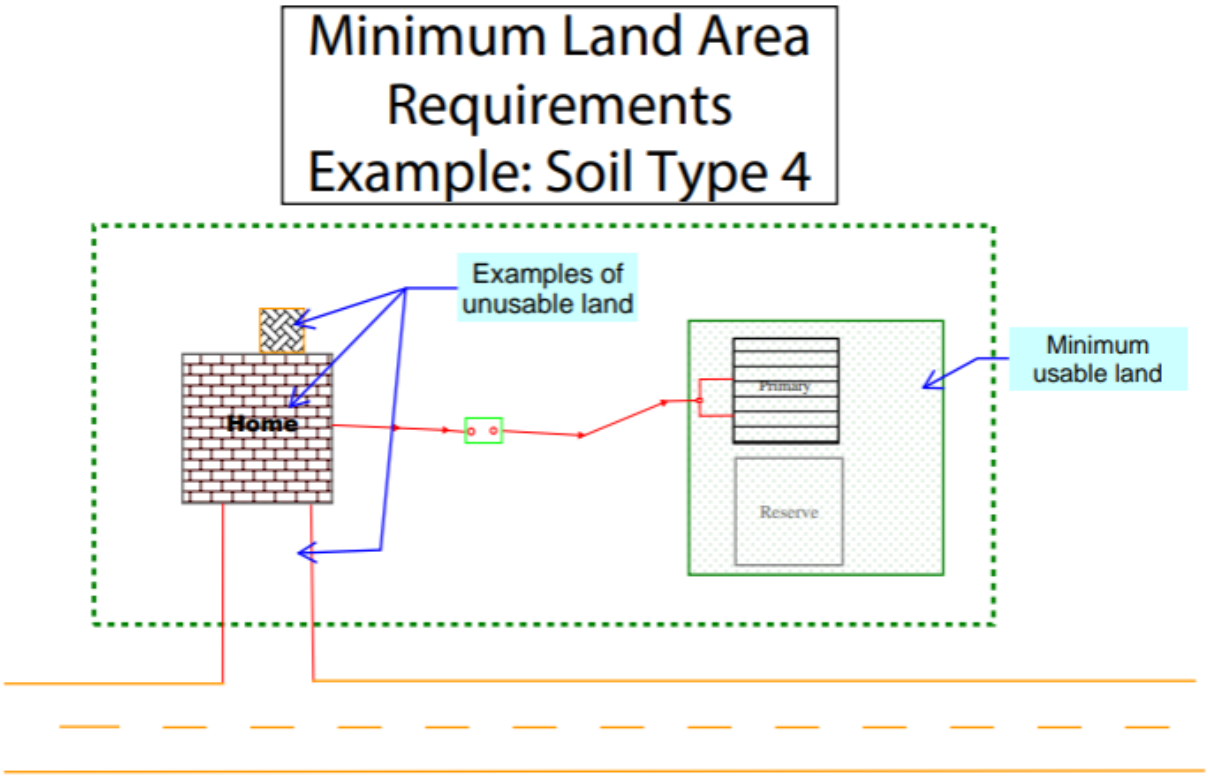
Part 3 Establish minimum usable land area as a new requirement.
Description of Part 3: The amendments revise Table XI in the proposed rule to include a requirement for new lots to include a minimum usable land area, which is defined as:

> *"Minimum usable land area" means the minimum land area within the minimum lot size required per development using an OSS, which is based on soil type and type of water*

supply. Minimum usable land area is free of all physical restrictions and meet minimum vertical and horizontal separations.

The minimum lot size requirement requires each lot to be at least a certain size but does not require newly created lots to include a specific amount of land that is usable for an OSS. This can lead to new lots that are potentially undevelopable with OSS due to significant portions of the lot being under water, too steep, rocky, paved, impacted by easements, or otherwise unbuildable. SA Figure 1 demonstrates the impact of the minimum usable land area requirement.

SA Figure 1. Minium Land Area Requirements Example: Soil Type 4



Cost/Impact of Part 3: The impact of the proposed amendment to the owner is a restriction on subdividing land proposed to be served by OSS into lots that do not have enough usable land to meet the minimum usable land area requirement. SA Table 22 details the impacts of the proposed amendment on Local Health Jurisdictions and designers.

SA Table 22. Costs to Local Health Jurisdictions and Designers associated with proposed minimum usable land

Description	The department asked Local Health Jurisdictions… Do you already use the draft definition of minimum usable land* as a requirement? *Answers are in the data row below.*				
Findings from cost survey	Yes		No		Don't know
	13		5		0
Description	Because you answered no, you DO NOT already use the draft definition of minimum useable land as a requirement…What is the cost of developing a policy/process that ensures that developments meet the minimum useable land areas? The findings are presented in the data row below.				
Findings from cost survey	**N**	**Range ($)**	**Median ($)**	**Mean ($)**	**Standard Deviation ($)**
	5	0 – 66,022	880	14,418	25,848
Description	The department asked Designers, what is the cost to incorporate the proposed minimum usable land requirement for one OSS design? *The findings are presented in the data row below.*				
Findings from cost survey	**N**	**Range ($)**	**Median ($)**	**Mean ($)**	**Standard Deviation ($)**
Low end range*	22	0-16,000	88	759	1731
High end range*	22	0-16,000	250	1,700	3,955

*Respondents were asked to provide a range of costs (rows are denoted in grey) and the department analyzed the low end of the range and the high end of the range to better understand the potential minimum cost and maximum cost of compliance.

The cost to designers to incorporate the proposed minimum useable land requirement into an OSS design will likely be passed onto the consumer and will not be a cost to businesses.

Benefit of Part 3: The benefit of the proposed amendment is that it will protect public health, the environment, and the property owner. Specifically, the amendment, by requiring a minimum usable land area, will ensure that newly approved lots have suitable land to accommodate the installation and eventual repair of an OSS.

Part 4 Updating requirements for sub-sized lots.
Description of Part 4: The proposed amendments update the requirements for sub-sized lots. Specifically, the amendments:

- Remove reference to the rule's current methodology for permitting OSS on sub-sized lots. This methodology is known as Method II

- Add Table XII to the rule language to determine lot sizes for lots which do not meet Table XI lot size requirements. These are known as sub-sized lots.
- Change the requirements for sub-sized lots of record (existing lots)

The proposed amendments:
Remove reference to Method II, the rule's current methodology for permitting OSS on sub-sized lots. The current rule contains an allowance to use an alternative methodology, known as Method II, to determine minimum lot sizes for lots with OSS that are smaller than the typical minimum lot sizes. The rule requires that the project is justified through a written analysis of:

(A) Soil type and depth;
(B) Area drainage, and/or lot drainage;
(C) Public health impact on ground and surface water quality;
(D) Setbacks from property lines, water supplies, etc.;
(E) Source of domestic water;
(F) Topography, geology, and ground cover;
(G) Climatic conditions;
(H) Availability of public sewers;
(I) Activity or land use, present, and anticipated;
(J) Growth patterns;
(K) Reserve areas for additional subsurface treatment and dispersal;
(L) Anticipated sewage volume;
(M) Compliance with current planning and zoning requirements;
(N) Types of proposed systems or designs, including the use of systems designed for removal of nitrogen;
(Q) Any other information required by the local health officer.
(O) Existing encumbrances, such as those listed in WAC 246-272A-0200 (1)(c)(v) and 246-272A-0220 (2)(a)(vii); and
(P) Estimated nitrogen loading from OSS effluent to existing ground and surface water;

This method was intended to serve development needs in planned unit developments, often within the boundaries of an urban growth area[55].

The current rule also required the department to develop a guidance document to guide local permitting of lots approved under Method II by July 1, 2008. This guidance was meant to direct LHOs on how to account for the items on the list above, which represent the variability and macroscale impacts of OSS installation, land use, and hydrogeology that are not generally considered during routine OSS design.

The department did not develop the Method II guidance by the deadline set in the rule. Nonetheless, several LHJs began permitting subdivisions and OSS as Method II developments. Some LHJs developed local requirements to address nutrients and other concerns associated

[55] Chapter 36.70A RCW: GROWTH MANAGEMENT—PLANNING BY SELECTED COUNTIES AND CITIES (wa.gov)

with sub-sized lots. Others permit sub-sized lots based solely on the rule's requirement for written justification.

Method II developments generally result in significantly smaller lots than lots determined by Table XI in the proposed rule. Many Method II developments are high-density suburban neighborhoods that have significant potential to impact groundwater and surface water resources, particularly by nutrient contamination. The rule's current requirements, absent the required Method II guidance, are insufficient to protect groundwater and surface water resources from nutrient contamination.

As noted above, the current rule allows use of Method II to determine minimum lot sizes for lots smaller than the requirements in Table XI in the proposed rule. These lots are known as sub-sized lots.

Under the proposed amendments, the owner has the option to use Table XII in the proposed rule to determine minimum lot size for sub-sized lots. Table XII establishes a maximum amount of nitrogen (measured as Total Nitrogen) allowable from OSS per square foot of land, dependent on soil type. A lot must be at least large enough to accept the nitrogen from the OSS that will be installed on it. In other words, Table XII minimum lot sizes are determined based on nitrogen output from the OSS and the corresponding soil type. These sizes are based on the lot sizes in Table XI of the proposed rule, but can be reduced by installing additional treatment, as described below.

OSS are assumed to emit a certain amount of nitrogen, based on scientific literature[56]. This amount of nitrogen is expected for any OSS that does not include nitrogen treatment. However, lot sizes are allowed to be reduced if an approved nitrogen treatment device is added to the OSS. Nitrogen treatment devices are expected to treat 50% of the nitrogen in OSS effluent, so lots sizes are allowed to be reduced by up to 50% of Table XI sizes, if the OSS includes nitrogen treatment.

The amendments are based on the premise that lots sized in compliance with Table XI adequately protect groundwater and surface water resources. This allows OSS to be installed on lots that do not meet Table XI's requirements (sub-sized lots) while ensuring that groundwater and surface water are protected commensurate as it would be if the same OSS were installed on a lot that meets Table XI's requirements. Developers may choose to pay more for OSS which treat nitrogen in exchange for using less land area and get more lots from a subdivision.

A direct comparison between Table XII minimum lot sizes in the proposed rule and Method II minimum lot sizes in the current rule is not possible because Method II does not have an actual minimum lot size. Because Method II is generally used within urban growth areas to meet minimum development density requirements, the department analyzed the maximum densities allowed by Table XII. Notably, the maximum densities allowed via Table XII allows subdivisions and final lot sizes to meet most zoning requirements in urban growth areas. See tables below.

[56] US EPA, Onsite Wastewater Treatment Systems Manual, Feb 2002

The department analyzed the maximum number of lots that a single acre, by each soil type, can be subdivided into using Table XII of the proposed amendments, assuming 50% denitrification via installation of a nitrogen treatment device and a public water supply (SA Table 23). The goal is a minimum of 5 lots per acre. All soil types can accommodate 5 lots per acre, if some or all lots are limited to 2 bedrooms.

SA Table 23. Table XII (in the rule) Maximum Subdivision of Lots Per Acre by Soil Type

Soil Type 1

Soil Type 1	
Acres	1
Maximum number of lots	5
Lot Sizes	8,712 sq ft
Bedrooms per lot	2
Denitrification factor	0.5

Or

Soil Type 1	
Acres	1
Maximum number of lots	3
Lot Sizes	14,520 sq *ft*
Bedrooms per lot	3
Denitrification factor	0.5

Soil Type 2

Soil Type 2	
Acres	1
Maximum number of lots	6
Lot Sizes	7,260 sq ft
Bedrooms per lot	3
Denitrification factor	0.5

Soil Type 3

Soil Type 3	
Acres	1
Maximum number of lots	5
Lot Sizes	8,712 sq ft

Bedrooms per lot	3
Denitrification factor	0.5

Soil Type 4

Soil Type 4	
Acres	1
Maximum number of lots	5
Lot Sizes	8,712 sq ft
Bedrooms per lot	2
Denitrification factor	0.5

Or

Soil Type 4	
Acres	1
Maximum number of lots	5
Lot Sizes	8,712 sq *ft*
Bedrooms per lot	Three 3-bedroom lots and Two 2-bedroom lots
Denitrification factor	0.5

Or

Soil Type 4	
Acres	1
Maximum number of lots	4
Lot Sizes	10,890 sq *ft*
Bedrooms per lot	3
Denitrification factor	0.5

Soil Type 5

Soil Type 5	
Acres	1
Maximum number of lots	5
Lot Sizes	8,712 sq ft
Bedrooms per lot	2
Denitrification factor	0.5

Or

Soil Type 5	
Acres	1
Maximum number of lots	5
Lot Sizes	8,712 sq *ft*
Bedrooms per lot	Two 3-bedroom lots and Three 2-bedroom lots
Denitrification factor	0.5

Soil Type 5	
Acres	1
Maximum number of lots	4
Lot Sizes	10,890 sq *ft*
Bedrooms per lot	3
Denitrification factor	0.5

Soil Type 6

Soil Type 6	
Acres	1
Maximum number of lots	5
Lot Sizes	8,712 sq ft
Bedrooms per lot	2
Denitrification factor	0.5

Or

Soil Type 6	
Acres	1
Maximum number of lots	3
Lot Sizes	14,520 sq *ft*
Bedrooms per lot	Two 3-bedroom lots and Three 2-bedroom lots
Denitrification factor	0.5

Change the requirements for sub-sized lots of record (existing lots)

The current rule allows development on lots of record (lots which predate the rule's requirements) that do not meet minimum lot size requirements if the proposed OSS will meet all requirements of the current rule other than minimum lot size. LHJs have issued waivers to allow OSS installation on these lots when the rule's requirements cannot be met. In November 2008, the Supreme Court of Washington ruled in Griffin v Thurston that permit applications to install an OSS on a lot that does not meet the minimum lot size requirements of the rule may not be granted waivers from the rule's requirements.[57] Specifically, the court ruled that an OSS permit application can meet all requirements under WAC 246-272A-0320(5)(e)(iii) if the application qualifies for alternative methods or standards that are embedded in the applicable rule but, cannot rely on the general waiver provision found in WAC 246-272A-0420. This ruling has prevented installation of OSS on many preexisting sub-sized lots because the OSS would require a waiver from one or more of the rule's requirements.

Waivers are required to be consistent with the standards and intent of the rule and are expected to be protective of public health. There are no waivers for deviation from minimum lot size because there are no mitigating measures that can be taken. Therefore, sub-sized lots with an OSS permitted using a waiver are a concern due to their potential impact (particularly due to nutrients) to nearby groundwater and surface waters.

During the review of the rule in 2017, interested parties rated updating the lot sizing method for sub-sized lots as a high priority. During rule revision, several interested parties expressed concern that continued development of sub-sized lots served by OSS without adequately considering nutrients is very likely to result in preventable nutrient contamination of groundwater and surface water resources. LHJs expressed that there is often local pressure to allow development at the highest densities permitted by rule. Interested parties agreed the rule should clearly explain the requirements for development of sub-sized lots served by OSS, that the requirements should protect groundwater and surface water resources, while also being as permissive of sub-sized lots as safely possible.

Cost/Impact of Part 4: The department asked LHJs in the cost survey if they allow developments (the division of lots) smaller than the minimum land requirements (using the current rule's Method II) and responses are presented in SA Table 24.

SA Table 24. Local Health Jurisdictions that currently allow developments on smaller than the minimum land requirements (using the current rule's Method II)

Description	Yes	No	Don't know
LHJ currently allows developments (the division of lots) smaller than the minimum land requirements in Table XI (using current rule Method II) *	8	9	1

***** This does not apply to development of existing legal lots. DRAFT rule Table XI.

[57] Griffin v. Thurston County :: 2008 :: Washington Supreme Court Decisions :: Washington Case Law :: Washington Law :: US Law :: Justia

In jurisdictions where the LHJ allows the development of lots using Method II, the proposed amendments will prevent future land subdivisions using Method II. Future subdivisions will be required to meet the requirements of either Table XI or Table XII as outlined in the proposed rule.

The department asked OSS designers to estimate the additional cost to add nitrogen treatment to an OSS to allow it to meet the nitrogen treatment requirements in Table XII of the proposed rule. Results are presented in SA Table 25.

SA Table 25. Designers estimated cost to design and add a device for nitrogen treatment

Description	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
Incremental/additional cost for an OSS for a Design with treatment level N **Low-end range***	23	0 – 2,400	150	288	489
Incremental/additional cost for an OSS for a Design with treatment level N **High-end range***	23	0 - 4,800	400	614	949
Incremental/additional cost for a device for an OSS with treatment level N **Low-end range***	22	0 - 80,000	200	3,029	12,733
Incremental/additional cost for a device for an OSS with treatment level N **High-end range***	22	0 - 80,000	550	4,276	16,941
Design + Device Low-end range**		**0 - 82,400**	**350**	**3,317**	
Design + Device High-end range**		**0 - 84,800**	**950**	**4,890**	

*Respondents were asked to provide a range of costs (rows are denoted in grey) and the department analyzed the low end and high end of the range to better understand the potential minimum cost and maximum cost of compliance.

**Design + Device Low-end and High-end ranges are the addition of the lowest range and highest range survey responses from the first four data rows (denoted in grey). These were summed because you would need both the design and the device for a total cost to add nitrogen treatment.

In the cost survey the department asked manufacturers if they currently offer a device that is registered to meet treatment level N; 2 manufacturers answered yes, 2 answered no. One manufacturer indicated that they do plan in the future to add treatment level N to their product and estimated the cost of the unit between $5,000 and $8,000.

Benefit of Part 4: The benefit of the proposed amendments is that they will protect public health, water quality, and the owner's property. They will provide a much safer, more responsible path for developing new sub-sized lots. They will also allow for installing OSS on sub-sized lots of record that require a waiver, which is currently not permitted. Specifically,

- Changing the method of permitting sub-sized lots from relying on a written justification of a list of important variables (Method II) to establishing a maximum amount of nitrogen that can be allowed per land area (Table XII) in the proposed rule, while also considering those important variables, will ensure that water resources are protected from nitrogen contamination. The amendments allow OSS to be installed on lots that do not meet Table XI's requirements (sub-sized lots) while ensuring that groundwater and surface is protected commensurate as it would be if that OSS were installed on a lot that meets Table XI's requirements (was not sub-sized). Using this methodology, new developments can be designed with lots as small as half the size of Table XI's minimum lot sizes by installing nitrogen treatment technology that takes the place of the land area that is otherwise used to treat and dilute nitrogen. Developers may choose to pay more for OSS which treat nitrogen in order to use less land area and get more lots from a subdivision. The rule's current requirements, absent the required guidance on how to implement Method II, result in inconsistent interpretation and implementation of the rule and are insufficient to protect groundwater and surface water resources from nutrient contamination. The proposed amendment allows continued development of new sub-sized lots while requiring the development to protect water resources from nitrogen contamination.

- The addition of Table XII to the proposed rule also allows sub-sized lots of record, which are currently not eligible for an OSS permit due to the Griffin v Thurston Supreme Court decision, to potentially be eligible for an OSS permit. This is because Table XII is an alternative method of determining the minimum lot size which is *embedded in the rule*. In the Griffin v Thurston case, the Washington Supreme Court ruled that waivers cannot be granted for OSS permits where the lot does not meet a minimum lot size determination methodology *embedded in the rule*.

  The Table XII lot sizing will not allow every lot of record to be permittable for an OSS (because some are too small or have issues for which there is no suitable waiver) but it will allow many hundreds or thousands to be permittable with an OSS that currently are not.

Part 5 Update miscellaneous provisions
Description: The following proposed amendments update miscellaneous provisions. Specifically, the amendments:

- Remove the allowance to include road areas "up to the centerline of the road" for determining lot size in subdivisions that do not meet the minimum land area requirements in Table X of the proposed rule. Road areas require compacted soil, and are often paved, and do not provide adequate treatment of OSS effluent, including nutrients. Management and treatment of nutrients is critical to determination of lot sizes and treatment requirements for sub-sized lots.
- Allow recording a restrictive covenant to allow water protection zones for individual wells on new subdivisions to cross lot lines.

Cost/Impact of Part 5: New sub-sized lots (created through subdivisions) will be required to meet the requirements of Table XI without including areas that are roads or are planned to be roads. The department interprets this more of a limitation of use rather than a direct cost to the property owner. The cost of this revision is indeterminate and will likely be nominal.

The LHJs were asked if they currently include up to the centerline of the road for subdivisions that do not meet the minimum land area requirements in SA Table 26.

SA Table 26. Local Health Jurisdictions that currently include up to the centerline of the road for subdivisions that do not meet the minimum land requirements in rule

Description	N	Yes	No	Don't know
LHJ currently includes up to the centerline of the road for subdivisions that do not meet the minimum land area requirements in Table X	18	4	12	2

***** This does not apply to development of existing legal lots. Refer to rule, DRAFT rule Table XI.

Benefit of Part 5: The benefit of the proposed amendments is that they will protect public health and water quality and allow owners to record a restrictive covenant to protect water protection zones that cross lot lines. Specifically:

- Precluding road areas from being included in lot size determinations to meet minimum lot size requirements protects public health and the environment because paved and compacted road areas are unsuitable for OSS effluent treatment; and
- Allowing the owner to record a restrictive covenant to allow water protection zones for individual wells on new subdivisions to cross lot lines will allow the owner of multiple lots to ensure that drinking water protection zones that cross lot lines can be protected with a restrictive covenant.

WAC 246-272A-0340 Approval of installers, pumpers, and maintenance service providers

Description: This section requires installers and pumpers to get approved by the LHO before they could provide services. The existing rule gives LHOs the option to approve maintenance service providers. The proposed amendments change the term "certified" to "approved" in the section title and requires LHOs to approve maintenance service providers before they can offer services. This change is needed to complete property transfer inspections. The amendments

add an option for LHOs to approve OSS installers, pumpers, and maintenance service providers through reciprocity by other LHO approvals. The amendments also allow LHOs to establish an OSS owner inspection certification program where they get trained to be able to inspect their own OSS.

Cost: The department received responses from 11 LHJs on the cost to establish a maintenance service and OSS owner inspection program. SA Table 27 shows the estimated costs. The department assumes that over time the LHJs will establish a fee for service that the maintenance service providers will eventually pay.

SA Table 27. Estimated cost to Local Health Jurisdictions to establish an Owner Inspection Program

Description	N	Range ($)	Median ($)	Mean ($)	Standard Deviation ($)
Local Health Jurisdiction					
One-time cost to establish an existing maintenance service provider approval program	11	300 - 1,500,000	18,000	182,560	44,126
Annual cost to offer an existing maintenance service provider approval program	11	250 - 207,667	12,000	36,656	61,125
One-time cost to establish an OSS owner inspection program	3	21,460 48,717 53,200	NA	NA	NA
Annual cost to offer an OSS owner inspection program	2	40,050 99,900	NA	NA	NA

Benefit: Once approved, the maintenance service providers may, if allowed by LHO, also perform the property transfer inspections providing a broader more competitive base of potential approved inspection providers. The amendments will increase competition, increase public confidence in the program as it is implemented, and improve efficiency and level of standard for professions that work on OSS.

WAC 246-272A-0400 Technical advisory group (TAG)

Description: This section directs how the department will maintain and use a technical advisory group (TAG). The amendments change the title from "committee" to "group" and add a 3-year term length for serving on the TAG (previously the term length was not identified). The amendments add two new specific member categories to the TAG, (maintenance service providers and certified professional soil scientists) that were already attending and participating in the group and remove an allowance that the department have a representative to the TAG. The amendments also strike language allowing the department to convene the TAG, since this is implied in the section's language directing the department to maintain the TAG.

Cost: The department does not anticipate any additional compliance costs associated with the proposed amendments.

Benefit: The proposed amendments formalize participating members of the TAG. The three-year term clarifies the duration of time commitment when joining the TAG.

WAC 246-272A-0410 Policy advisory group

Description: This section directs how the department will maintain and use a policy advisory group (PAG). The amendments change the title from "committee" to "group" and adds a 3-year term length for serving on the PAG (previously the term length was not identified). The amendments strike language allowing the department to convene the PAG, since this is implied in the section's language directing the department to maintain the PAG. The amendments also remove an allowance that the department have a representative to the PAG.

Cost: The department does not anticipate any additional compliance costs associated with the proposed amendments.

Benefit: The proposed amendments add a three-year term which clarifies the duration of time commitment when joining the PAG.

Determination

Probable Benefits greater than Probable Costs

The rulemaking intends to improve public health protection, streamline regulations, provide clarity, and improve consistency between state and local regulations. As described in this analysis, there are selected sections that could result in increased costs for select OSS owners (e.g., property transfer inspection), LHOs (e.g., establishing local management plan), designers (e.g., add new components to site maps) and installers (e.g., add observation port in each lateral) although the department assumes these costs to designers and installers will ultimately be paid by clients (OSS owners). The proposed rule enhances public health protection by preventing untreated sewage from entering the environment and by enhancing the focus of local OSS programs on proactively preventing issues with OSS rather than responding to issues. Although parties may incur certain costs, the benefit of improving the effectiveness, operation, and performance of OSS, which protect and improve public health, outweigh these costs.

Based on this analysis, the department concludes that the total probable benefits of the proposed rule exceed the total probable costs.

SECTION 6

List of alternative versions of the rule that were considered including the reason why the proposed rule is the least burdensome alternative for those that are required to comply and that will achieve the goals and objectives of the proposed rule.

The list below represents draft revisions the department considered but ultimately elected to propose less burdensome alternative language after determining the change would still achieve the general goals and specific objective of the authorizing statute:

- [WAC 246-272A-0015] The ORRC proposed that non-Puget Sound LHJs develop LMPs with similar requirements to the Puget Sound LHJs. Environmental Health Directors expressed concern that the non-Puget Sound LHJs did not have adequate resources to develop LMPs at that scale. Many non-Puget Sound LHJs have not satisfied existing rule requirements to develop LMPs with a more limited scope. In response, the department revised the proposed rule to leave the LMP requirements for non-Puget Sound LHJs largely unchanged. The department will invest resources in training LHJ staff in LMP development, including help securing funding for this work.
- [WAC 246-272A-0025] The proposed amendments clarify how the distance to sewer is measured in cases where a failed OSS must be connected to sewer, protecting owners from paying high sewer connection costs due to a requirement to connect from long distances.

  The current rule language requires that the owner connect their property to sewer in the case of a failed OSS, if a conforming OSS cannot be installed, and the distance "between the residence or other facility and an adequate public sewer is two hundred feet or less as measured along the usual or most feasible route of access". Several LHJ's have required sewer connection in cases where the sewer line was within 200 feet of the property line but was much further to the actual point of connection.
  This has created a costly and disproportionate effect of this provision of the rule. LHJ's, in collaboration with other local regulators, determine if owners should be required to connect to sewer based on the distance from the edge of their property to the sewer line. The owners are, however, required to pay the actual per foot connection costs, which are often based on distances much greater than 200 feet. Moreover, many sewer districts require the property owner to pay for the sewer line to be installed across the frontage of their property, to extend the sewer line to the next property. The cost associated with this depends on the distance of frontage.

  When the ORRC considered revisions to this section there was extensive discussion among the committee members about the proper balance between equity of application of the rule and the effort to connect permitted OSS, pre-permit OSS (installed prior to 1974), and unpermitted OSS to sewers. Some committee members supported retaining the current wording of the rule so that sewer districts can require sewer connection in more cases. Most committee members opted to propose a less burdensome revision to the rule. The proposed amendments revise the method of

measurement to determine if the property is subject to the sewer connection requirement to begin approximately where the building drain exits the building (where the building drain and the sewer line connect) instead of the edge of the property. This will reduce the disproportionate burden on owners and limit the requirement to properties that are more adjacent to sewer lines.

- [WAC 246-272A-0120] The ORRC proposed that the department develop a requirement that proprietary treatment products are field verified as a part of the product registration process. Currently, proprietary treatment products are tested at testing facilities to determine what level of treatment they provide. Few have undergone field testing to determine their efficacy under actual use conditions. This has been identified as a concern during the last two rule revisions.

  The department collaborated with a committee of product manufacturers and LHJ staff to develop this requirement. The department initially proposed to this committee that all newly installed proprietary treatment products would be tested during their first two years of service. This would have entailed collecting effluent samples during the service visits (about 4) that normally happen during the first two years and having those analyzed for a limited number of regulatory analytes.

  There was robust debate among the committee members on the benefits versus the costs of the proposal. Several counterproposals were provided. Some manufacturers argued that field verification had limited merit. Others argued that field verification was needed. And others argued that operational analytes should also be collected.

  The committee worked to balance cost and burden to manufactures against the benefit of the potential information gained on the actual operational performance of proprietary treatment products. The final proposed requirement requires all existing and new proprietary treatment products to undergo field verification that includes sampling twenty-five separate installations and having the samples analyzed for E. coli or fecal coliform, to determine the bacterial reduction treatment provided by the proprietary treatment product. This is a much more limited requirement and will be less costly and burdensome to manufacturers.

- [WAC 246-272-0270] The ORRC proposed that all OSS must be inspected at the time of property transfer. LHJ representatives expressed concern to the department that this requirement would be difficult to implement, particularly for smaller LHJs with less resources. They also argued that it would be easier to implement and fairer to owners if this requirement could be waived for OSS that are in compliance with routine inspection requirements found in WAC 246-272A-0270. The department agreed and made two revisions to proposed rule. The first requires property transfer inspections beginning two years after the effective date of the majority of the rule. This will allow the LHJs time to build the systems and policies needed to implement the property transfer inspection requirement locally. The second revision is to allow LHOs to waive the property transfer inspection requirement in cases where the OSS is in compliance with routine inspection requirements found in WAC 246-272A-0270. This will allow owners who have appropriately maintained inspection requirements of their OSS to forego the

property transfer inspection and instead rely on the results of their most recent inspection to demonstrate that the OSS is functioning safely and in compliance with the rule's requirements.

- [WAC 246-272-0278] The ORRC proposed that the LHO be required to develop a Remediation Policy, which would describe which, if any, OSS remediation process would be permitted and what the requirements associated with this process would be. LHJ representatives informed the department that this requirement would create unnecessary costs for LHJs, taking resources away from important activities. They argued that developing a policy is costly and time-intensive and that it is not necessary if remediation processes will not be allowed. The department agreed and revised the proposed language to allow, but not require, the LHO to develop a Remediation Policy. This allows the LHO the latitude to develop a Remediation Policy if they determine it is needed, but not if it is not. This potentially limits the cost of this section of the rule.

SECTION 7

Determination that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

The proposed rule does not require those to whom it applies to take an action that violates requirements of federal or state law.

SECTION 8

Determination that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law.

The proposed rule does not impose more stringent performance requirements on private entities than on public entities. The proposed changes in this rule apply equally to all OSS, whether they are publicly or privately owned.

SECTION 9

Determination if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by an explicit state statute or by substantial evidence that the difference is necessary.

The proposed rule does not differ from any applicable federal regulation or statute.

SECTION 10

Demonstration that the rule has been coordinated, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

The department coordinated with the Department of Ecology water quality program regarding hydrogeology. The department has coordinated with U.S Environmental Protection Agency (EPA), the ORRC, and the department's Technical Advisory Group. The proposed rule changes have been coordinated to the maximum extent practical with other federal and state laws applicable to the same subject matter: