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## OREGONIANS FOR FOOD & SHELTER

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A non-profit coalition to promote the efficient production of quality food and fiber while protecting human health, personal property and the environment, through the integrated, responsible use of pest management products, soil nutrients and biotechnology.

August 26, 2025

Dear Board of Agriculture Members,

Thank you for the opportunity to provide input on our concerns about the draft LUBGWMA rules. OFS is a non-profit coalition of over 700 operations and organizations from agriculture, forestry, and other industries that rely on pesticides, fertilizers, and biotechnology to produce food and fiber. Our membership includes Oregon's top commodity groups and timber-related trade organizations, as well as many national trade organizations. One of our primary organizational goals is to advocate for science-based pesticide, fertilizer, and biotechnology regulation.

Serving on the Rulemaking Advisory Committee (RAC) for the Lower Umatilla Basin Groundwater Management Area has given me the opportunity to engage directly in the development of these draft rules. I greatly appreciate the effort that has gone into this process to date, and the receptiveness of the ODA staff to suggestions, concerns, and revisions. At the same time, my experience serving on the RAC has highlighted several provisions that raise significant concerns. These concerns are not about the goal of the rulemaking, which is important and widely supported, but about whether the approach and metrics chosen will be effective, scientifically sound, and practical for producers to implement. Unless addressed, these issues could undermine both the credibility of the program and its ability to deliver meaningful improvements to water quality.

### Primary Concerns<sup>1</sup>

#### Evaluation of Annual Nitrogen Plans (ANP) – Section 603-XX-XX12

This section of the draft rules proposes methods for evaluating whether a producer has “followed” their Annual Nitrogen Plan, but these methods are overly simplistic and do not reflect agronomic realities:

<sup>1</sup>These concerns are based on the draft rules as of 8/8/2025, which is the most recent draft available at the time that these written comments are submitted on 8/26/2025.



- **Partial Nitrogen Balance:** This method, which subtracts nitrogen removed in the crop from total nitrogen applied, sets a goal of zero or near zero nitrate remaining (a 100% nitrogen use efficiency). This approach ignores nitrogen that is present in roots, vines, leaves, woody plant material, etc., as well as the delayed availability of nutrients from compost and other organic sources. In practice, this balance is never zero, and treating it as the standard risks unfairly classifying well-managed operations as non-compliant.
- **Post-Harvest Soil Nitrate Testing:** This approach penalizes certain crops, such as potatoes and onions, where nitrogen is naturally released as vines break down after harvest<sup>2</sup>. The presence of nitrate is not a sign of mismanagement, yet under the proposed framework it would be treated as non-compliant.
- **Yield Targets:** Using yield as a compliance measure reduces complex nutrient dynamics to a single outcome. Yields are influenced by factors outside of grower control, including weather, pests, and disease, and tying compliance to yield creates unreasonable expectations.

Collectively, these methods do not provide a fair or scientifically reliable basis for determining compliance. They risk penalizing responsible practices and eroding producer confidence in the program.

Alternative approaches that have been adopted by other states include the A/R ratio (California) and the Vulnerability Matrix (VMX) score (Colorado). The A/R ratio compares the amount of nitrogen applied to a field (A) with the amount of nitrogen removed in the harvested crop (R), and is a measure of nitrogen use efficiency<sup>3</sup>. Crop specific A/R ranges are used to ensure that appropriate fertilizer rates are being used. The VMX score was developed to provide a tool for landowners to determine the potential risk of groundwater contamination by nitrate that result from field-specific conditions, and provide best management practices (BMPs) to decrease that risk<sup>4</sup>. The VMX has been adopted by the Colorado NRCS as part of their nutrient management planning criteria<sup>5</sup>.

### **Program Evaluation and Metrics of Success – Sections 603-XX-XX15 and 603-XX-XX16**

Equally concerning is the reliance on residual deep soil nitrate levels as a measure of regulatory success. This approach presents several scientific problems:

<sup>2</sup>Horneck (2013). Potatoes in Rotation When Nitrogen is Under Permit [Abstract]. ASA, CSSA and SSSA International Annual Meetings, Tampa, FL. <https://scisoc.confex.com/scisoc/2013am/meetingapp.cgi/Paper/79515>

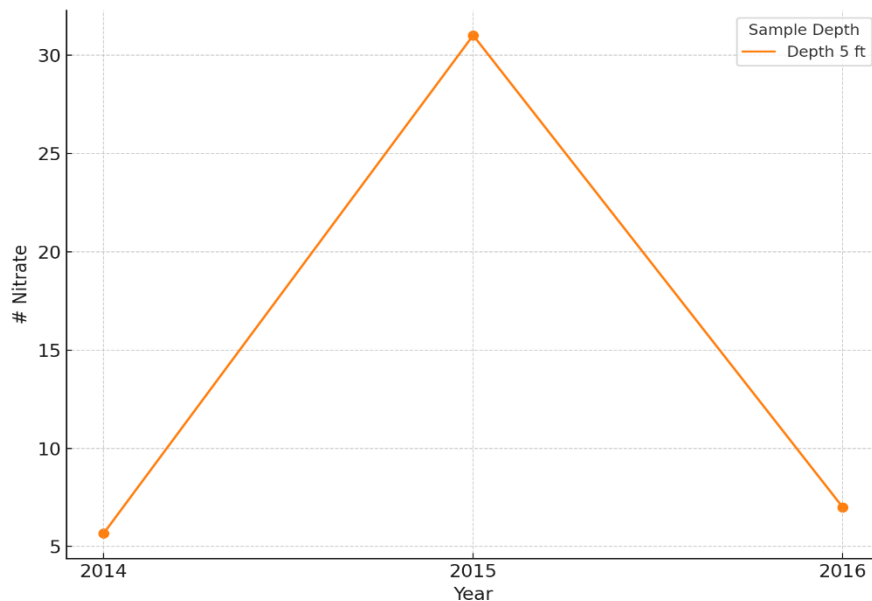
<sup>3</sup>Formation Environmental (2024). Crop-Specific Multi-Year Acceptable Ranges of Applied Nitrogen Relative to Nitrogen Removed.

<sup>4</sup>Cepelch et al (2004). Vulnerability Assessments of Colorado Ground Water to Nitrate Contamination. Water, Air, and Soil Pollution. 159:373-394.

<sup>5</sup>USDA NRCS (2012). Colorado Nitrogen Leaching Index Risk Assessment, Version 3. State of Colorado Agronomy Technical Note No. 97 (Revised).



- **Seasonal Comparisons:** The rules call for comparing spring pre-plant samples to fall post-harvest samples, but these inherently differ due to soil temperature and leaching from winter rains. A deep soil nitrate sampling pilot study conducted in the Yakima Valley GWMA in 2014-2015 found that there were significant differences in the average soil nitrate levels across the GWMA region fields that were sampled in fall versus the following spring.<sup>6</sup>
- **High Variability:** Residual nitrate levels fluctuate widely within fields, by the crop that is being produced, and whether the field is single cropped or double cropped during that growing season<sup>6</sup>. They are also strongly influenced by conditions producers cannot control, such as drought, heavy rainfall, or crop failure. An ODA funded study in the LUBGWMA from 2014 to 2016 demonstrates the variability within a single field rotated between grain, onions and carrots. This field was managed with high level irrigation and fertilizer BMPs.<sup>7</sup>



- **Lack of Precedent:** No other state nitrate management program uses residual soil nitrate as a regulatory metric. In fact, California's expert panel of agronomists, soil scientists, and hydrogeologists explicitly recommended against it in their Irrigated Lands Program. As they stated in their final report, "The Panel does not include residual nitrogen in its reporting recommendations because it is difficult to quantify and is subject to potentially large short-term fluctuations."<sup>8</sup>

<sup>6</sup>Mendoza (2017). Lower Yakima Valley Deep Soil Sampling Summary Analysis. In Lower Yakima Valley Groundwater Management Program Volume II Appendices, published June 2019.

<sup>7</sup>GSI Water Solutions Inc (2017). Lower Umatilla Basin (LUB) Soil Moisture Monitoring Project. Prepared for the ODA Fertilizer Research Program.

<sup>8</sup>ITRC (2014). Conclusions of the Agricultural Expert Panel: Recommendations to the State Water Resources Control Board pertaining to the Irrigated Lands Regulatory Program.



- **Expert Opposition:** Oregon State University extension publications recommend post-harvest soil nitrate tests as valuable grower tool for improving their management practices, but explicitly warn against using post-harvest soil nitrate tests as a regulatory tool: “Note that the postharvest test is not intended to predict groundwater nitrate concentrations. Recent studies by Washington Department of Ecology have demonstrated that the postharvest soil nitrate test is only a rough indicator of the risk of nitrate leaching.”<sup>9</sup> The OSU LUBGWMA working group recommends focusing on application and removal of nitrogen using an A/R approach, similar to California (see above)<sup>10</sup>. Taken together, soil nitrate tests can be a valuable grower tool, but is not appropriate as a regulatory metric.

Anchoring the program’s success to residual soil nitrate trends risks setting benchmarks that cannot be met, regardless of grower effort, and undermines confidence in the rule’s effectiveness.

Other states have implemented regulatory programs on irrigated agriculture, and while soil testing is routinely included as a component of these programs, it is not used to evaluate program success. The states and programs listed below use the following metrics and/or benchmarks:

State	Name of Regulation	Metrics tracked for programmatic success
California	Irrigated Lands Regulatory Program	A/R ratios; percent of growers meeting A/R ratio targets
Florida	Florida Watershed Restoration Act - Basin Management Action Plans	Basin-wide reduction of applied nitrogen
Minnesota	Groundwater Protection Rule	Percent of grower compliance with BMPs; evaluation and refinement of BMPs
Nebraska	Nitrogen Reduction Incentive Act	Reduction of applied nitrogen fertilizer rates
Nebraska	Nebraska Ground Water Management and Protection Act	Number of irrigation acres in each management phase; management phase defined by groundwater nitrate concentration
North Carolina	Neuse Agricultural Rule	Basin-wide percent reduction of nitrogen loss
Wisconsin	Kewaunee County Land & Water Resource Management Plan	Number acres utilizing BMPs; percent of growers verifying nutrient management plans



## Secondary Concerns

In addition to these primary issues, there are several other components that deserve careful attention:

- **Applicability:** ODA has not provided an estimate of how many operations exceed 1,000 irrigated acres or how many acres would fall under the rule's stricter requirements. Without this information, it is difficult to understand the scale of the program. Discussions about extending the rules to smaller operations only heighten this uncertainty.
- **Practicality:** Required timelines for soil sampling and fertilizer application are misaligned with typical crop production in the LUB. The rules list restrictions on when fertilizer can be applied to fields; for larger operations, meeting these requirements could require significant investment in new equipment and labor capacity. Additionally, post-harvest soil sampling timelines are out of sync with when widely-grown crops within the LUB are typically harvested.
- **Costs:** Added costs include laboratory fees, increased recordkeeping, purchasing soil-sampling equipment, and potentially hiring agronomy experts or purchasing new machinery. To meet the current timelines listed in the rules, operations may need to invest in new equipment to comply; these costs can easily run upwards of \$1M.
- **Laboratory Capacity:** Even if producers can absorb the cost, local laboratories may not have the throughput needed to handle the volume of required samples on the schedule outlined in the rules. If labs cannot deliver timely results, compliance becomes unattainable through no fault of producers.
- **Confidentiality:** In a region that is prone to litigation over nitrate issues, maintaining anonymity over post-harvest soil nitrate results is an important consideration for encouraging compliance. Other states have mitigated confidentiality concerns by utilizing a 3<sup>rd</sup> party to compile and aggregate data that is ultimately submitted to the state.
- **Roll-out period:** The rules currently will apply to the whole LUB as early as the 2026 growing season. A roll-out period over several years will allow for education of producers on the new rules, as well as an opportunity to correct inadvertent problems created by the rules before they impact the entirety of the LUB.

<sup>9</sup>Sullivan et al (2021). Postharvest Soil Nitrate Testing for Manured Grass and Silage Corn (West of the Cascades). Oregon State Extension Publication EM-8832.

<sup>10</sup>OSU LUBGWMA Working Group (2025). Comments submitted to Oregon Department of Agriculture.

<https://www.oregon.gov/oda/agriculture/Documents/Rulemaking/20250814%20OSU%20LUBGWMA%20Working%20Group%20Letter.pdf>



The goals of the LUBGWMA rulemaking are important and broadly shared, but the draft rules as written present serious challenges. The evaluation of Annual Nitrogen Plans and the reliance on residual soil nitrate as a success metric are especially problematic, risking both fairness and credibility. Additional concerns about scope, practicality, cost, and laboratory capacity add to the difficulty of implementing the rules as currently drafted. Instead, a regulatory framework that reflects both sound science and on-the-ground realities will be far more effective in achieving the shared goal of protecting groundwater quality while sustaining Oregon's agricultural economy.

Thank you for the opportunity to comment,

A handwritten signature in black ink, appearing to read "Dani Lightle".

**Dani Lightle, PhD**

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