



Jacque Klug  
Nutrient Management Coordinator, King County

# Nutrient Management Update

MWPAAC E&P Subcommittee

March 7, 2024



# PRESENTATION OUTLINE

## 1. Puget Sound Nutrient General Permit Compliance

- Optimization and 2023 Performance
- Nutrient Reduction Evaluation

## 2. Policy and Legal Update



# PUGET SOUND NUTRIENT GENERAL PERMIT (2022-2026)

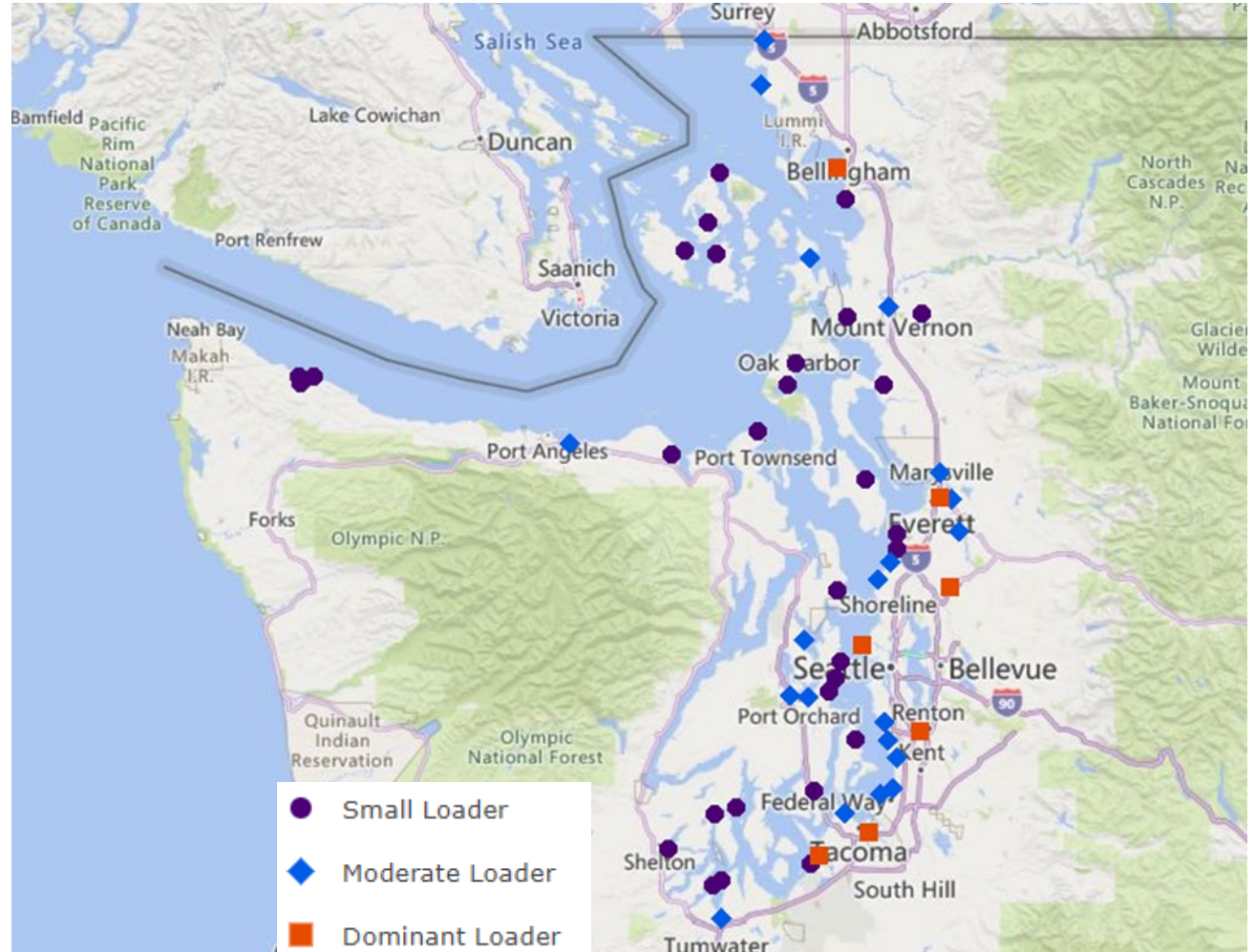
Key permit features:

- **Action Levels** - Hold nitrogen (total inorganic nitrogen or TIN) loadings steady
- **Optimization** – minor changes to plant operations to reduce nitrogen
- **Monitoring & Reporting** – monitor & report nitrogen in influent and effluent
- **Nutrient Reduction Evaluation** - Planning to meet future nitrogen limits

Large utilities can operate under a “bubbled” discharge.

West Point, Brightwater, South Plant operate under a bubbled action level.

Vashon operates under a separate small discharge action level.

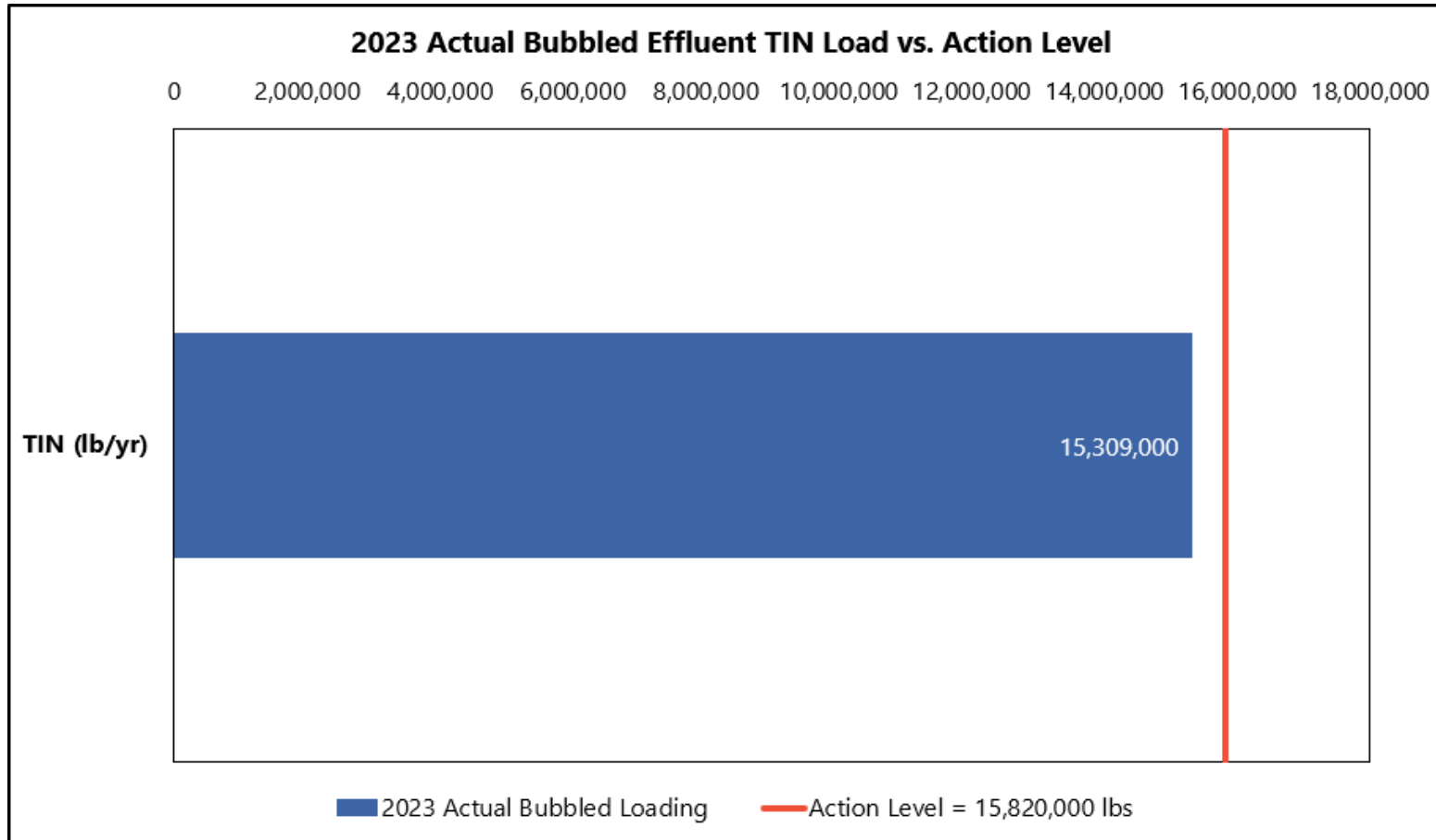


# Puget Sound Nutrient General Permit

## 2023 Performance



# 2023 Action Level Performance



2023 Cumulative Nitrogen Removal Performance Compared to Action Level

# 2023 Optimization Strategies

- **South Plant:** Operating South Plant in full-plant Ludzack-Ettinger mode to partially nitrify and denitrify wastewater during dry-season (generally April-October).
- **Brightwater:** Implement the Brightwater Aeration Basin Optimization project (including trial testing of low-dissolved oxygen control).
- **West Point:** Sustaining current operations, monitoring, and asset and reliability capital project implementation.
- **System-wide:** WTD continued to serve existing reclaimed water customer connections at Brightwater and South Plant and add new users where feasible.



# NUTRIENT REDUCTION EVALUATION

- Required by the PSNGP
- Must be submitted to Ecology by December 31, 2025
- Requires study of implementing nutrient removal at two levels:
  - 3 mg/l TIN, seasonally (April – October)
  - AKART = the greatest nitrogen removal that is reasonably feasible on an annual basis (AKART)

PSNGP mandates that the study include:

- Wastewater characterization and treatment technology review
- Consideration of alternative effluent management
- Economic evaluation and environmental justice review
- Implementation timeline

Issuance Date: December 1, 2021  
Effective Date: January 1, 2022  
Expiration Date: December 31, 2026

## PUGET SOUND NUTRIENT GENERAL PERMIT

A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
AND STATE WASTE DISCHARGE GENERAL PERMIT

State of Washington  
Department of Ecology  
Olympia, Washington

In compliance with the provisions of  
The State of Washington Water Pollution Control Law  
Chapter 90.48 Revised Code of Washington  
and  
The Federal Water Pollution Control Act  
(The Clean Water Act)  
Title 33 United States Code, Section 1251 et seq.

Until this permit expires, is modified or revoked, Permittees that have properly obtained coverage under this general permit are authorized to discharge nutrients in accordance with the conditions, which follow.



  
Vincent McGowan, P.E.  
Water Quality Program Manager  
Washington State Department of Ecology

# NRE ALTERNATIVES

## AKART annual alternative

This alternative is likely a combination of **technologies** capable of achieving the greatest TIN reduction that is **reasonably feasible** on an annual basis

Also includes treatment technology analysis with technical criteria

“The term “**reasonable**”, in the context of AKART **directly relates to affordability** of an engineered treatment solution.”

AKART is an **engineering and economic decision-making process** that must be conducted on a case-by-case basis for the determination to be made

## 3 mg/L seasonal alternative

One or a **combination of these items** to achieve 3 mg/L or equivalent load reduction from April to October

- Includes site-specific mainstream treatment plant upgrades
- Applicability of side-stream treatment
- Alternative effluent management (e.g. recycled water)
- Satellite treatment (likely with recycled water)
- Other nutrient reduction opportunities (e.g. source control)



# LEGAL AND REGULATORY UPDATE

- *Tacoma v Ecology* case was accepted by the Washington Supreme Court in early 2024. Earliest timeline for a decision would be end of 2024.
- PSNGP Appeal at the Pollution Control Hearings Board is in a partial stay, case is awaiting decision *Tacoma v Ecology* to proceed.
- Federal litigation regarding a Puget Sound dissolved oxygen TMDL is still anticipated.
- Ecology is in the process of updating its water quality standards including natural conditions provisions for Marine Dissolved Oxygen.
  - Draft rule text is anticipated Spring - Summer 2024.
  - Requires EPA approval, which could take several years.

# POLICY UPDATE

- King County is participating in an Association of Washington Cities led effort to secure funding for an independent science review of marine dissolved oxygen.
- Funding is requested for the 2024 state supplemental budget (session to end March 7, 2024).



# Questions?

## Jacque Klug

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**King County**

Department of Natural Resources and Parks  
**Wastewater Treatment Division**

