

Summary of Observed Approaches

Nutrient-Related 303(d) Listings and TMDLs

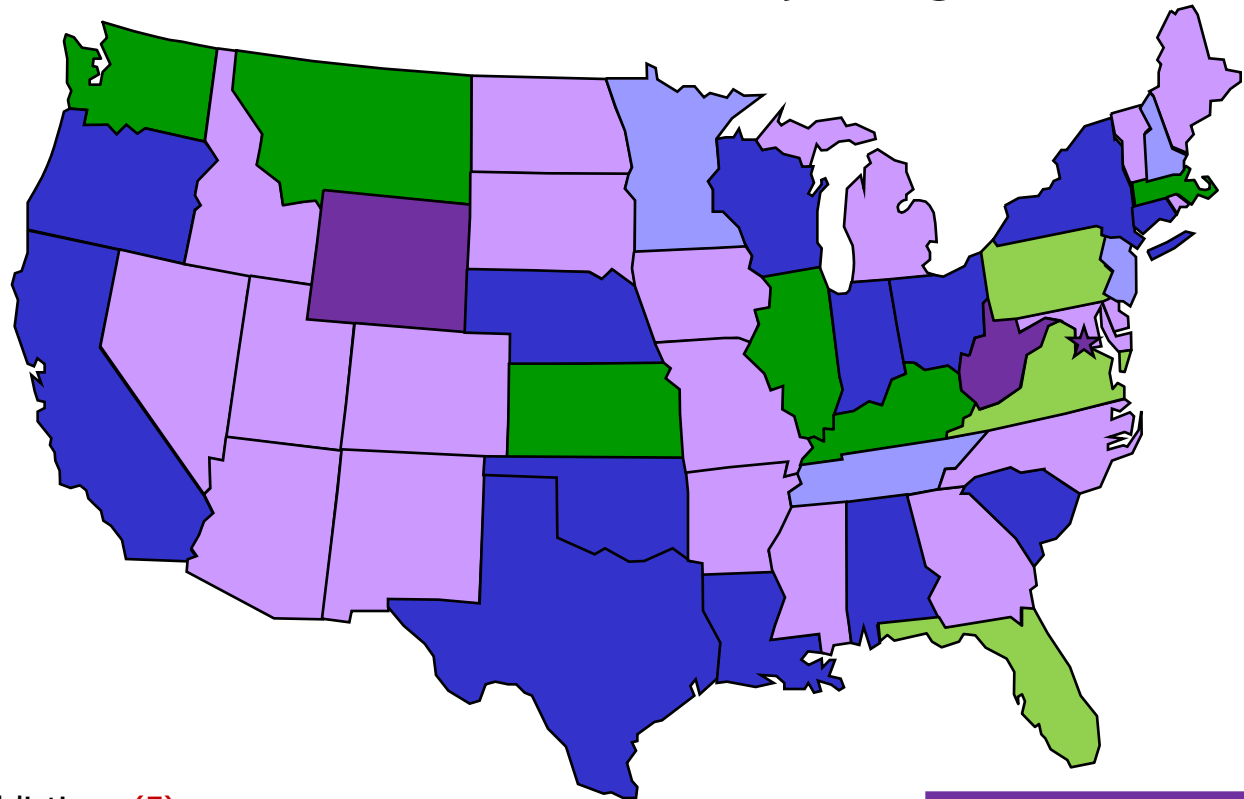
- Listing for nutrient and nutrient-related impairments based on:
 - Numeric criteria for causal parameter (e.g., nitrogen or phosphorus)
 - Numeric criteria for response indicator (e.g., dissolved oxygen, chlorophyll a, turbidity)
 - Narrative criteria using translation (e.g., no imbalance of indigenous population, no nuisance algae)
- TMDLs controlling nitrogen and/or phosphorus:
 - Nitrogen or phosphorus water quality concentration as the basis (e.g., nitrogen or phosphorus numeric criteria concentrations)
 - Modeled nitrogen or phosphorus loads without nitrogen or phosphorus water quality concentration (e.g., model nitrogen loads from chlorophyll a water quality target)

Regulations and Guidance on Nutrients TMDLs

- 130.7(c)(1) – States establish TMDLs at levels necessary to attain and maintain the applicable ***narrative*** and numerical WQS
- 130.7(c)(1)(ii) - TMDLs may be established using a pollutant-by-pollutant or biomonitoring approach; in many cases both techniques may be needed. Site-specific information should be used wherever possible
- EPA's *Protocol for Developing Nutrient TMDLs (1999)* provides recommendations for selecting water quality indicators and target values:
 - If available, the numeric standard should be used as the TMDL indicator and target value
 - If numeric criteria are not available, or if supplemental indicators are needed, the TMDL developer should base selection on both scientific or technical considerations and practicality and cost considerations; the selection must necessarily consider site-specific factors
 - The target value for the chosen indicator can be based on: comparison to similar but unimpaired waters; user surveys; empirical data summarized in classification systems; literature values; or best professional judgment

Number of CWA Section 303(d) Listed Nutrient-related Waterbody-pollutant Combinations by Region & State

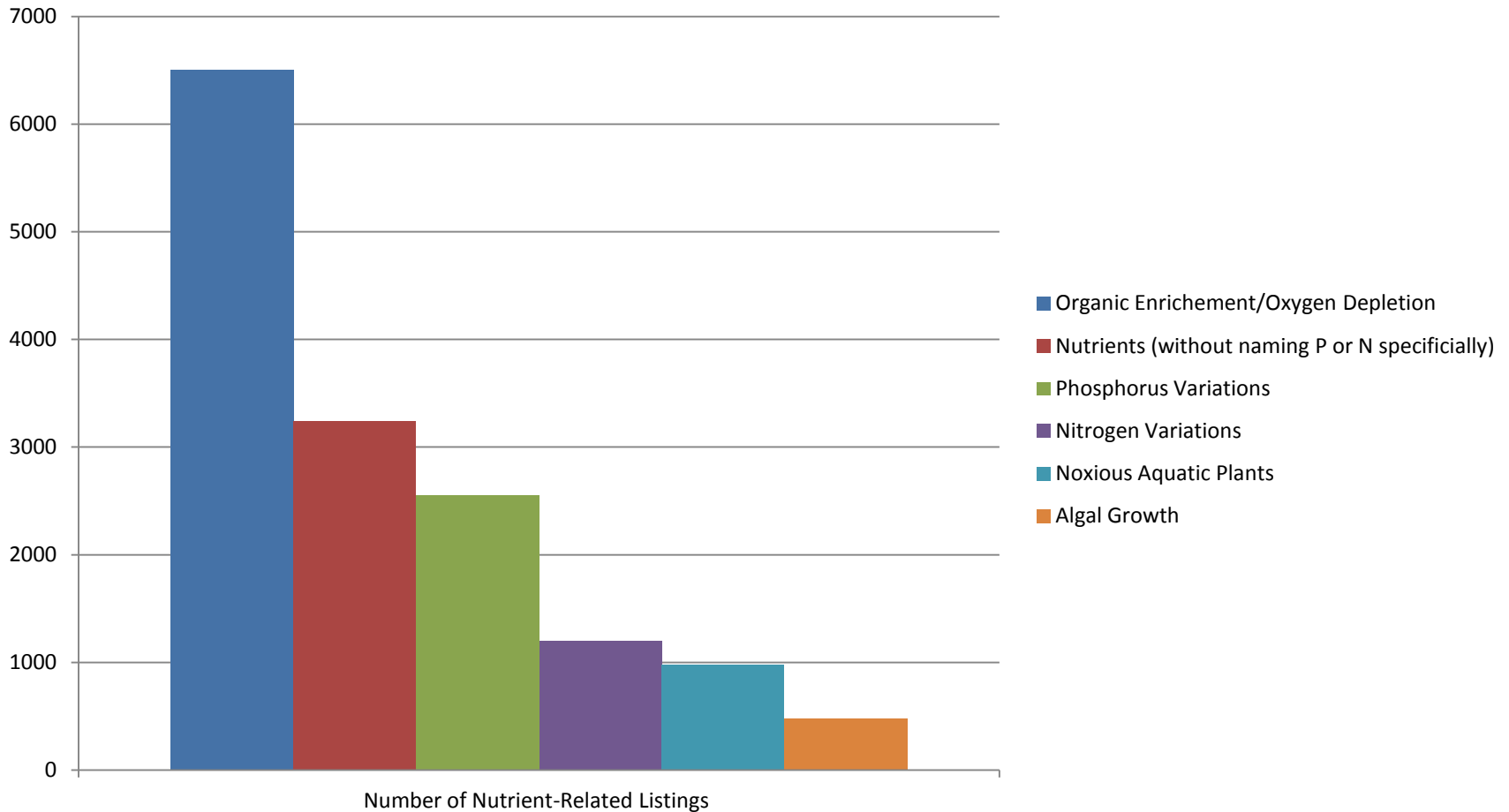
- R1: 1,309 (9%)
- R2: 687 (4%)
- R3: 3,895 (25%)
- R4: 2,564 (17%)
- R5: 2,213 (14%)
- R6: 720 (5%)
- R7: 1,278 (8%)
- R8: 740 (5%)
- R9: 895 (6%)
- R10: 1,004 (7%)



- 0 to 10 nutrient-related listings (5)
- 10 to 100 nutrient-related listings (23)
- 101 to 300 nutrient-related listings (14)
- 301 to 500 nutrient-related listings (5)
- 501 to 1,000 nutrient-related listings (6)
- 1,000 to 2,000 nutrient-related listings (3)

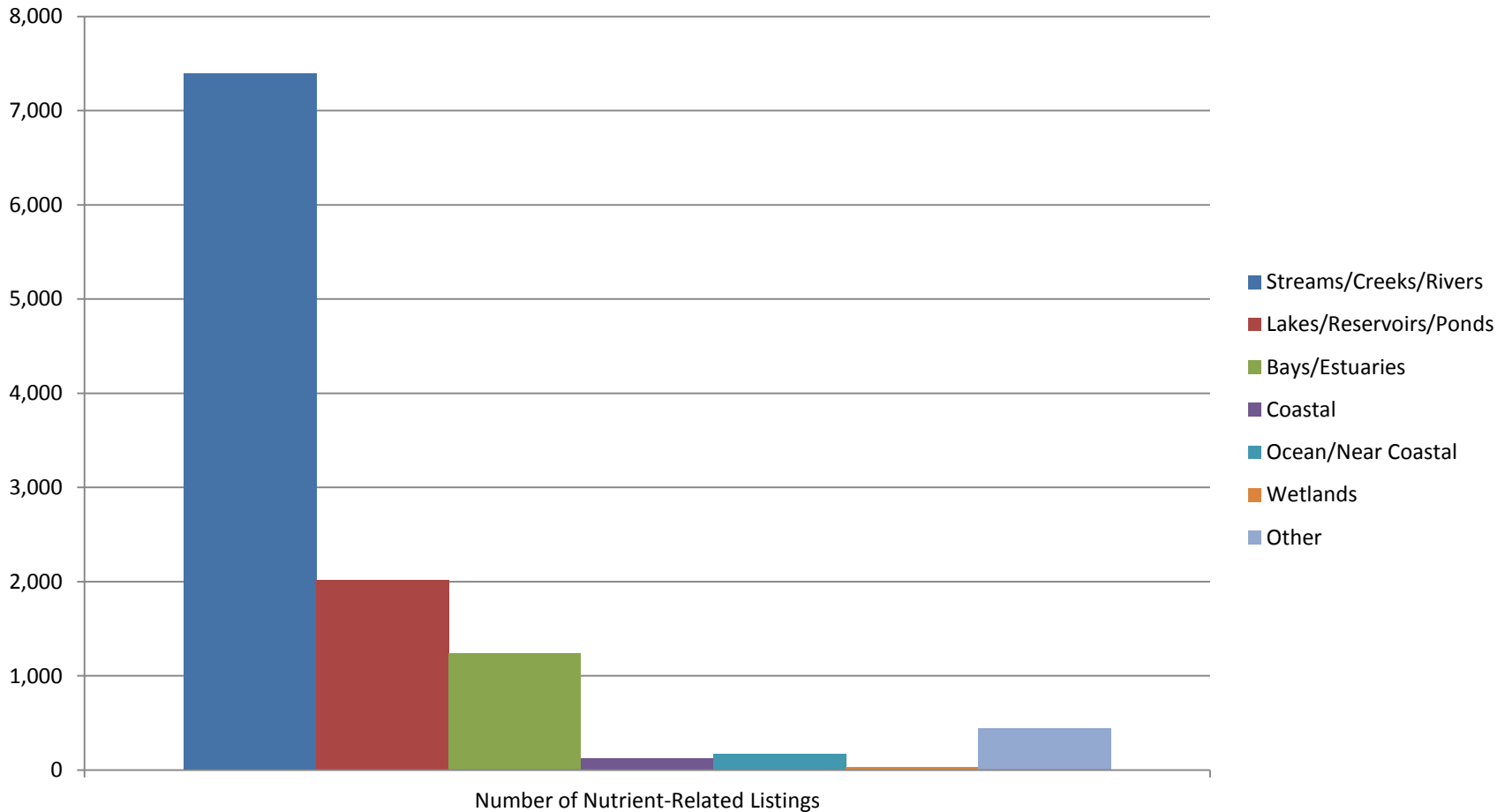
Alaska
Hawaii
CNMI
Guam
American Samoa
Virgin Islands
Puerto Rico

Nutrient-Related Listings by Pollutant Type



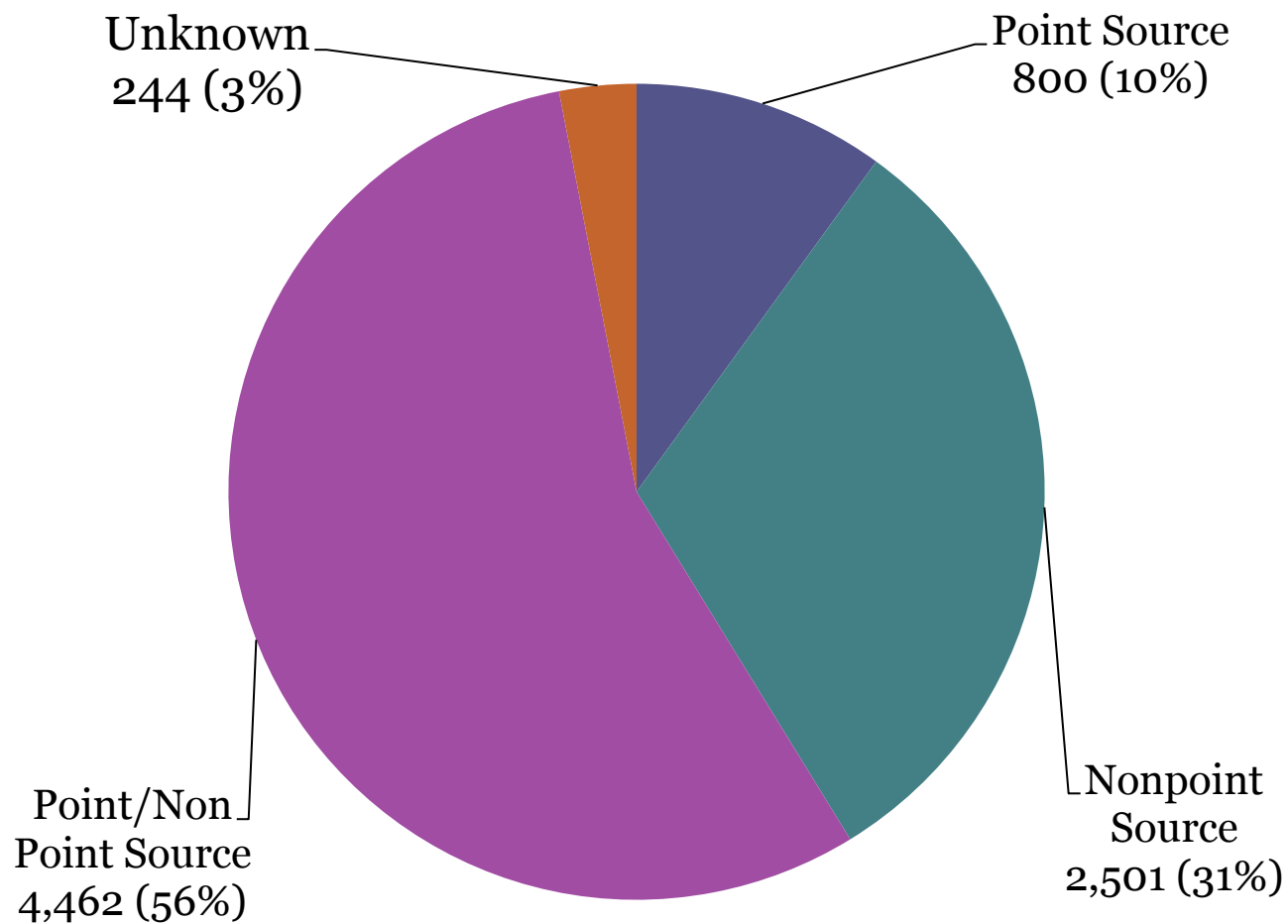
Based on CWA Section 303(d) data available in ATTAINS as of March 29, 2011

Nutrient-Related Listings by Waterbody Type



Based on CWA Section 303(d) data available in ATTAINS as of March 29, 2011

Source Categories of Nutrient-related TMDLs



Nutrient Related TMDLs

Draft

Using EPA Approved
Numeric WQC

Not Using Numeric WQC (N/P or Response)

N/P Criteria

Response Criteria
(DO, Chlor a, bio, etc..)
•DO most common

Model load
directly
for Response
Indicator

Develop a Concentration
Target (P/N)

From EPA
Recommended Criteria
for N/P

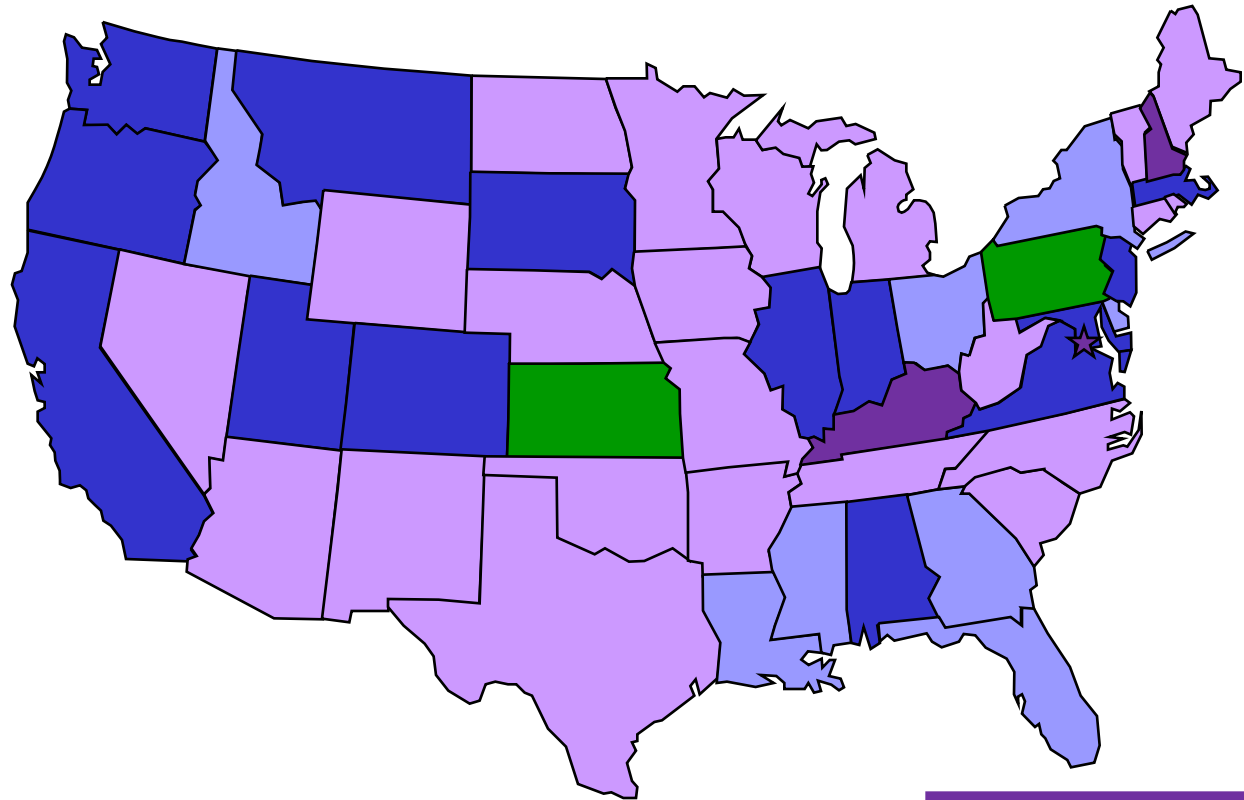
From State
Guidance on N/P

From Stressor/Response
Correlation

From Reference
Waterbody
Condition

Modeled from State
Guidance for
response indicator

Number of CWA Nutrient-related TMDLs by State

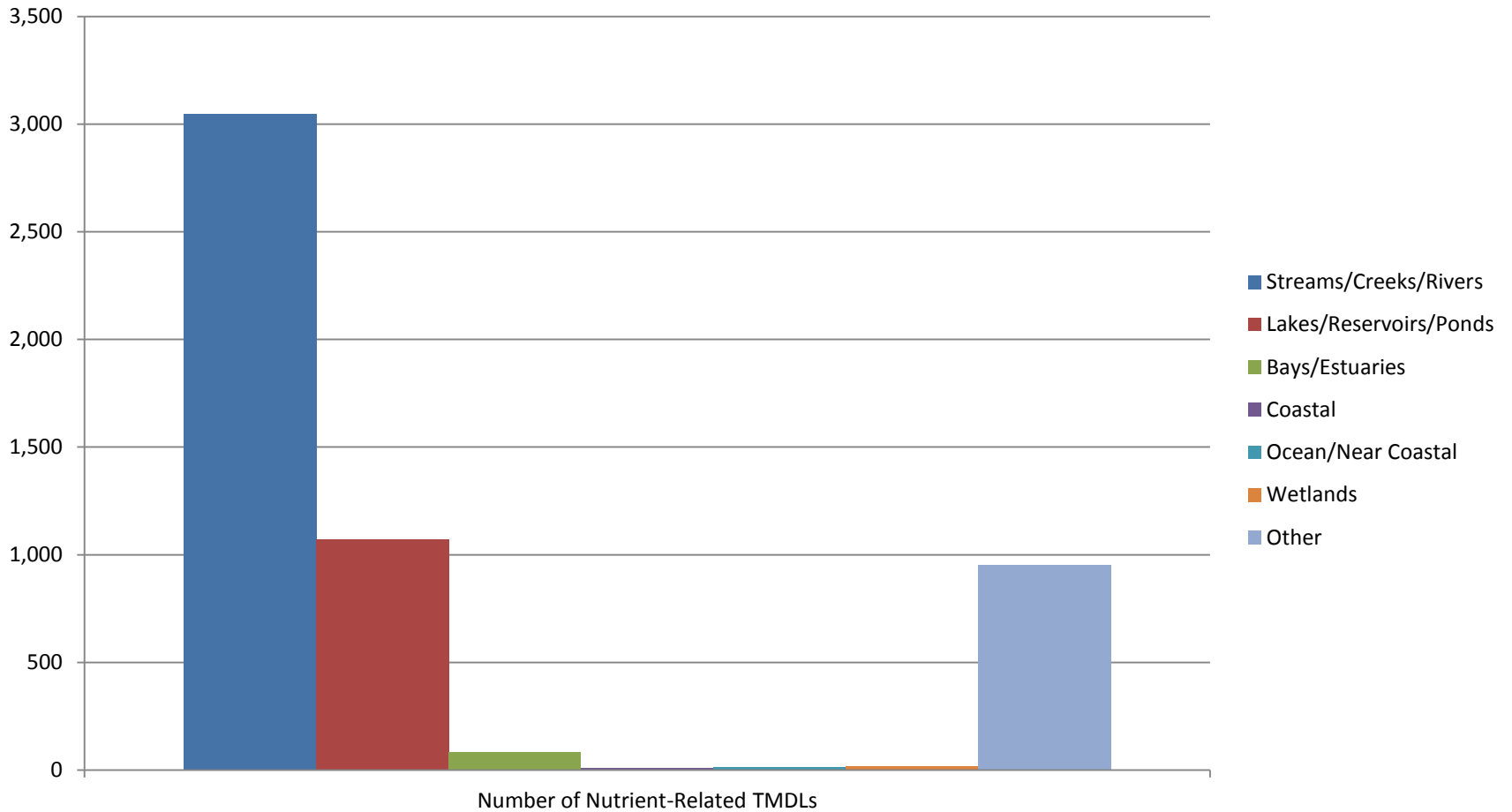


- R1: 282 (4%)
- R2: 505 (6%)
- R3: 1,704 (21%)
- R4: 1,674 (21%)
- R5: 782 (10%)
- R6: 437 (5%)
- R7: 753 (9%)
- R8: 791 (10%)
- R9: 314 (4%)
- R10: 767 (10%)

- 0 to 10 nutrient-related TMDLs (8)
- 10 to 100 nutrient-related TMDLs (24)
- 101 to 300 nutrient-related TMDLs (14)
- 301 to 500 nutrient-related TMDLs (8)
- 501 to 1,000 nutrient-related TMDLs (2)

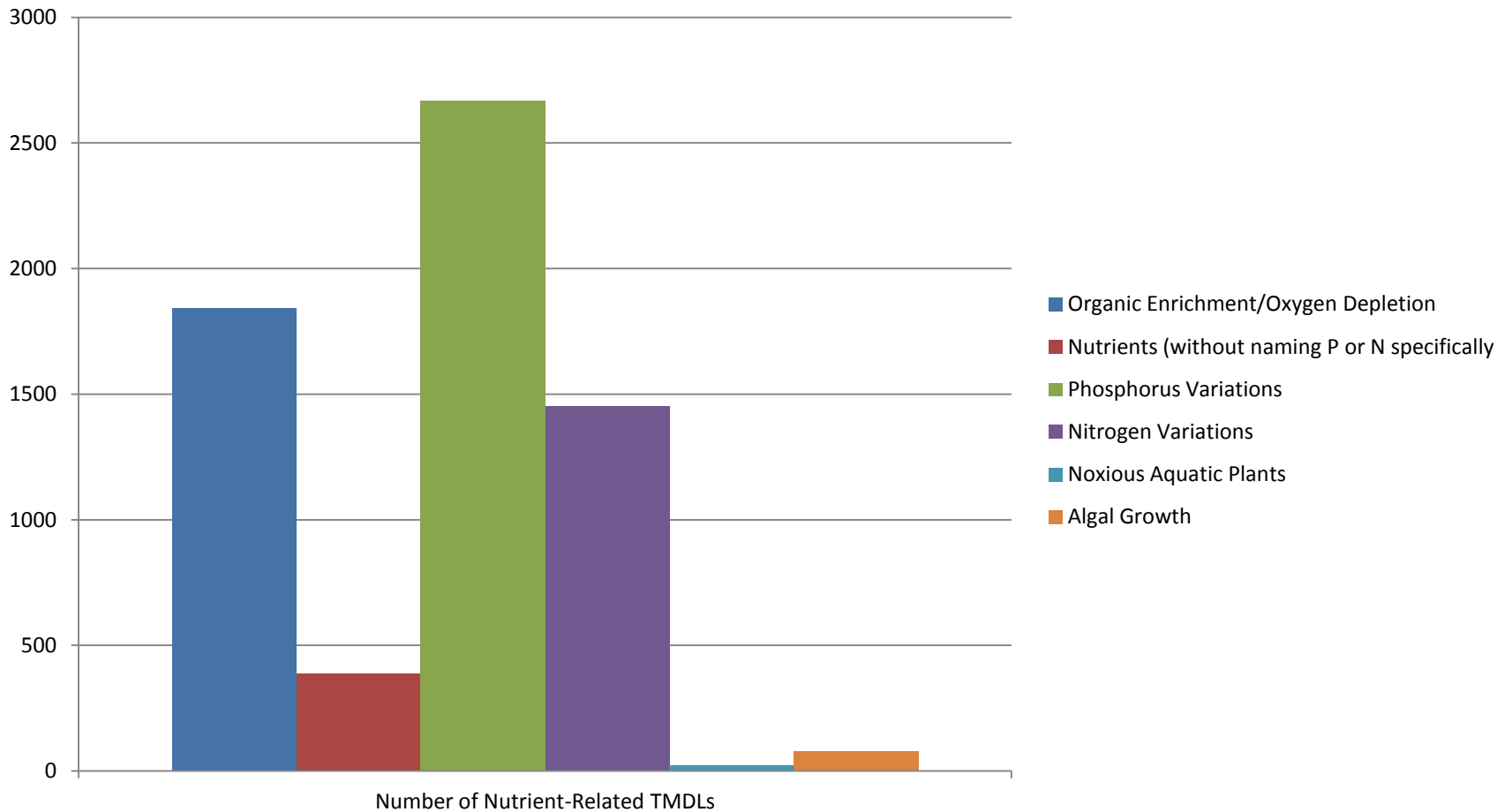
Alaska
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Puerto Rico

Nutrient-Related TMDLs by Waterbody Type



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Nutrient-Related TMDLs by Pollutant Type



Based on CWA Section 303(d) data available in ATTAINS as of July, 2011