# Colorado Nutrient Management Control

# Pathway to Permitting

ACWA Meeting: May 1-3, 2023

# Overview

I. Nutrients Overview and Background

II. 10 Year Water Quality Roadmap - Phased Approach

III. Regulation No. 85

IV. Voluntary Incentive Program

V. Permitting Activity to Date

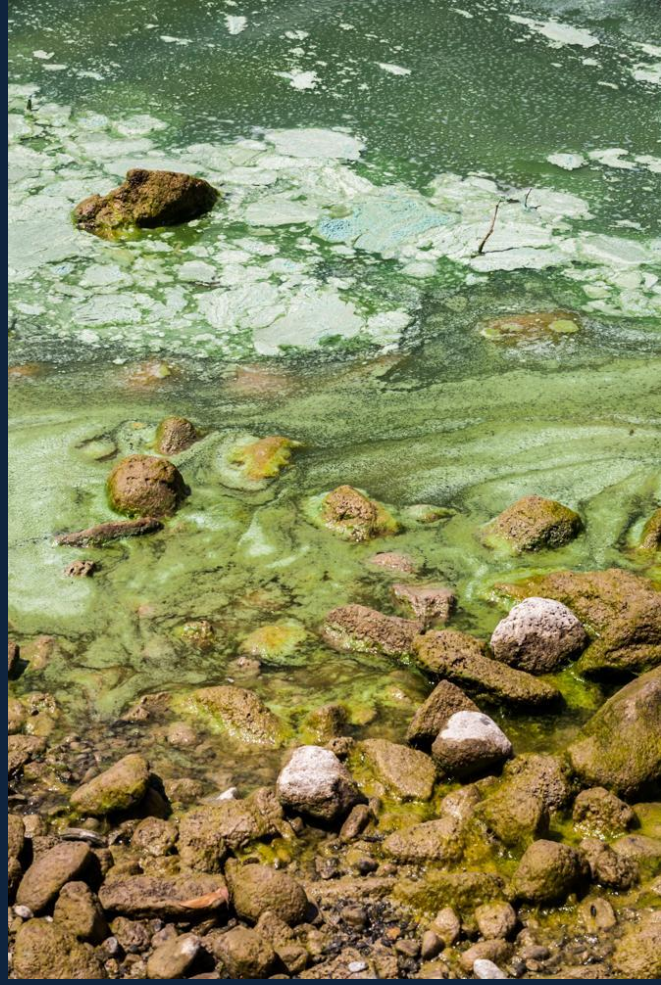
# Regulating Nutrients

- Clean Water Act requires states and tribes to adopt standards to protect public health or welfare, and enhance the quality of water
  - Standards must be sufficient to protect the designated uses
- Colorado's Reg. 31 establishes a system for classifying state waters to protect beneficial uses
  - Adopt use classifications that identify uses to be protected
  - Adopt numerical standards for specific pollutants to protect those uses
    - Standards adopted in Reg. 31 must be generally protective of the use for which the standard is developed for all applicable waters in Colorado.
  - WQCC can also adopt site-specific standards where appropriate

Lake Nighthorse

# History of Nutrients
## Colorado's Progress

- Incremental progress over several decades
- EPA direction and support to adopt nutrient criteria
- Colorado's multi-faceted approach includes:
  - phased implementation of independently applicable use based standards for total nitrogen (TN), total phosphorus (TP), and chlorophyll *a* (Chla);
  - control regulations, tech-based limits, and incentives for nutrient reductions; and
  - dual control of nitrogen and phosphorus.



Fruitgrowers Reservoir

# History of Nutrients
## 2012 Rulemaking Hearing

- Revised Reg. 31 *(Basic Standards and Methodologies)* to address nutrients
  - Numeric table value standards (TVS) for TN, TP, and Chla
  - Phased implementation
    - 2013-2017 Regs 32-38: adopted TP and Chla above qualified dischargers (QDs) (lakes and streams) and DUWS subclassification
- Control Reg. 85 *(Nutrients Management)*
  - Numeric tech-based limits for certain facilities
  - Voluntary nonpoint source actions
  - Monitoring requirements

Lake Platoro

# History of Nutrients
## 2016 EPA Action Letter to WQCC

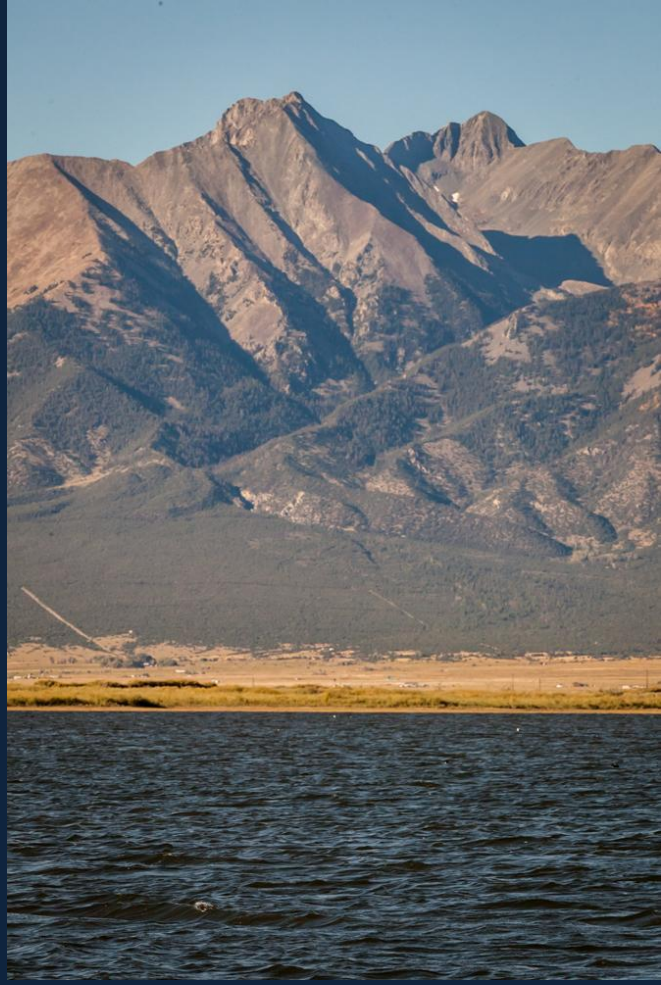
"Approved with Recommendations"

- EPA recommended revisiting the classification analysis for lakes and reservoirs to account for the variability between lakes (e.g., Cold and Warm lakes),
- evaluating confounding factors in the stressor-response relationship between nutrients and chlorophyll a, and
- evaluating whether the standards are protective of lakes and reservoirs with a high chlorophyll a yield per unit of nutrient.

EPA has not approved all application of standards in basin regulations since 2016

Stagecoach Reservoir Sept 15, 2016

# History of Nutrients
## 2017 Rulemaking Hearing



Commission 2017 direction and outcomes:

- Chla
  - Adopt statewide in 2022: Lakes, reservoirs, rivers, streams with Aquatic Life, Recreation, DUWS
    - *Commission's phased implementation strategy for Chla will be complete if the division's proposal is adopted*
- TN and TP TVS for lakes and reservoirs
  - Revise in 2022
  - Adopt on lakes with DUWS and Swim Beaches in 2022
- 17-1
  - Voluntary Incentive Program created

# Where We Are Today

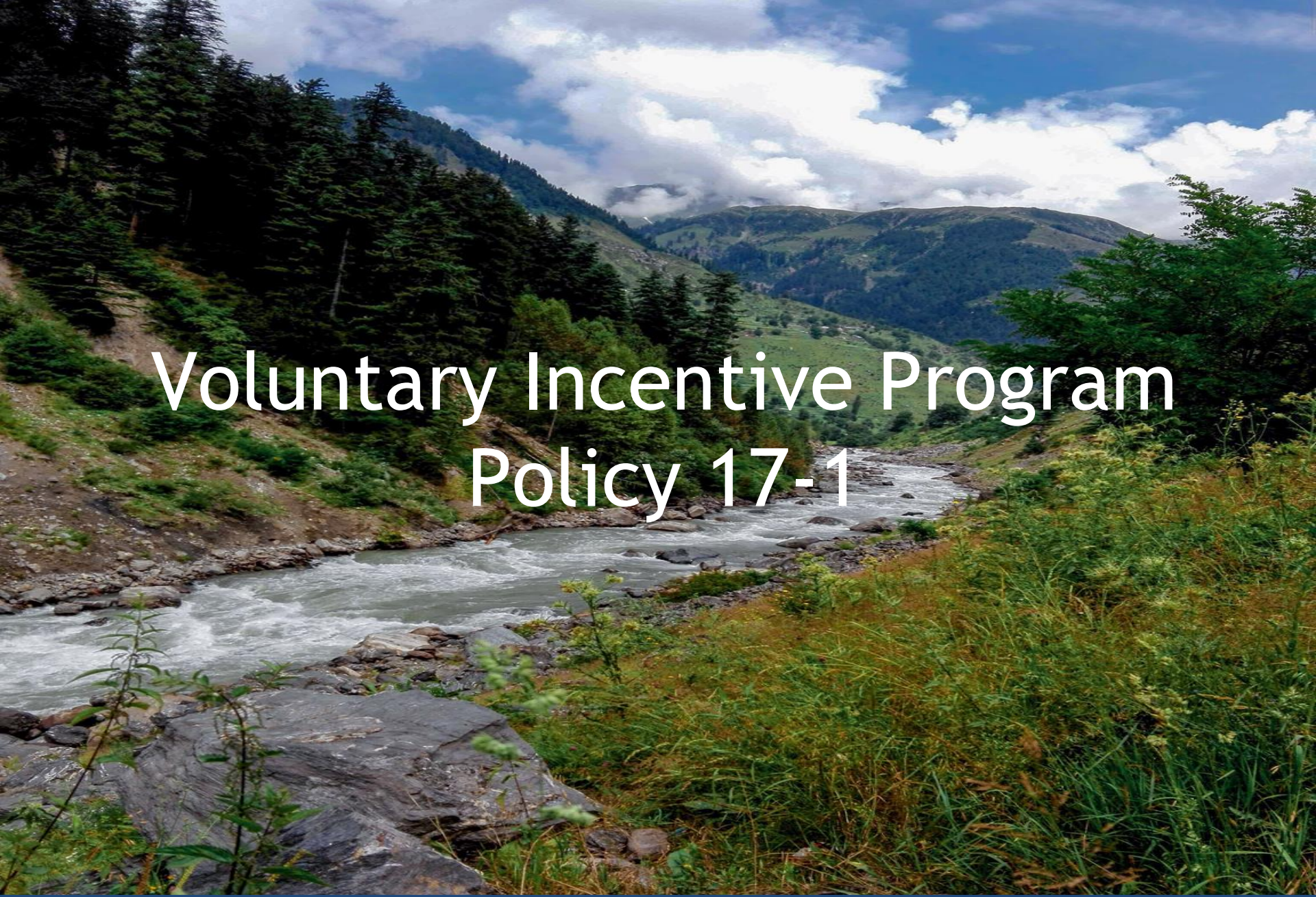
- Reg 31.17, Reg. 85, Policy 17-1
- Basin Regs before April RMH:
  - TP and Chla above QDs (lakes and streams)
  - Direct Use Water Supply (DUWS) use subclassification
- 2023 RMH - progress for lakes
  - Reg 31 TVS
  - Basin Regs
    - Added TN  above QDs (lakes)
    - Chl a - statewide

# Regulation 85

# Regulation 85 - Nutrient Control Regulation

Technology based regulation

- Tech based effluent limits
- Voluntary nonpoint source controls
- Voluntary Incentive Program (VIP)
- Monitoring requirements

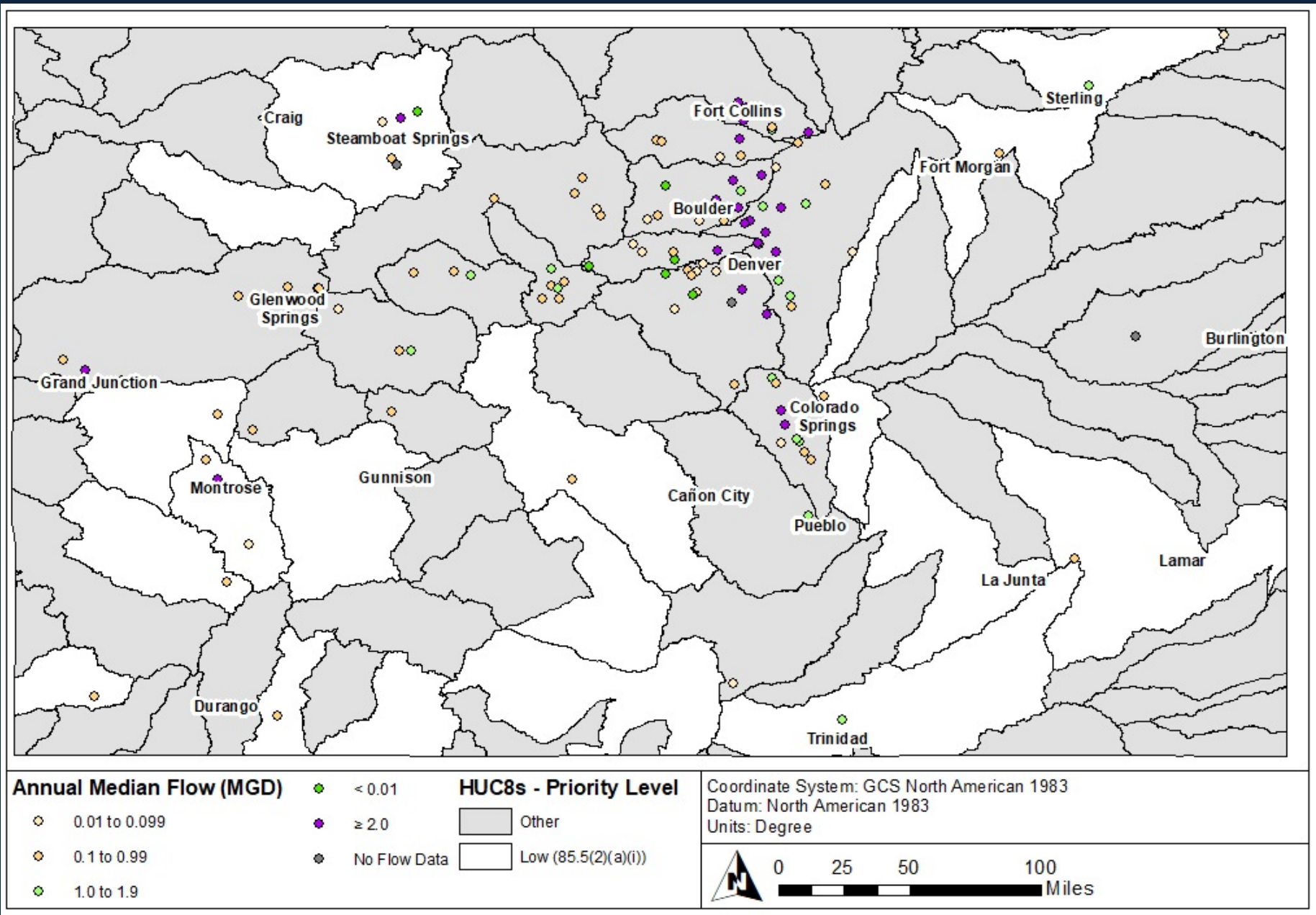

Voluntary Incentive Program
Policy 17-1

# Voluntary Incentive Program

- Created in 2017
- Commission established the VIP for "early nutrient reductions" Reg. 85.16.
- Objective: Progress toward reducing TP/TIN in state waters
- Annual data submittal to track progress

# VIP Timeline

- 2018: 1st year facilities could earn credits
- December 31, 2019: Deadline to apply
- Ongoing Outreach: 2020-today - Presented at roadmap / forum meetings / WQCC
- 2020 Hearing: Is the approach working?
  - Initial Data Analysis
  - No critical comments
- 2023 AAH - changes intended to clarify implementation of policy


Craig
Steamboat Springs
Fort Collins
Sterling
Fort Morgan
Boulder
Denver
Glenwood Springs
Burlington
Grand Junction
Colorado Springs
Gunnison
Montrose
Canon City
Pueblo
Lamar
La Junta
Durango
Trinidad
Annual Median Flow (MGD)
0.01 to 0.099
0.1 to 0.99
1.0 to 1.9
< 0.01
≥ 2.0
No Flow Data
HUC8s - Priority Level
Other
Low (85.5(2)(a)(i))
Coordinate System: GCS North American 1983
Datum: North American 1983
Units: Degree
N
0
25
50
100
Miles

# Policy 17-1, VIP Successes

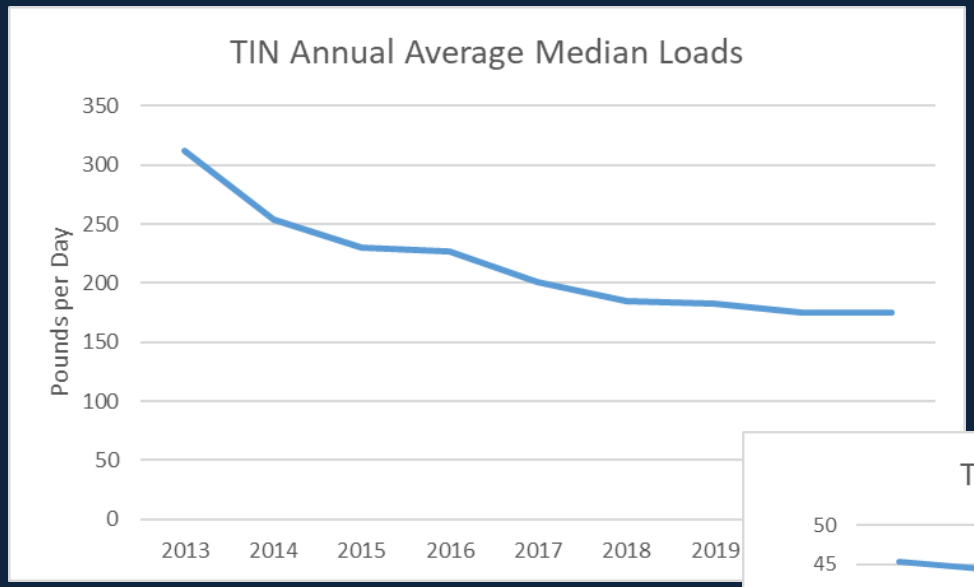
- Over 125 facilities signed up
- Many facilities are making voluntary reductions since baseline timeframe of 2018 (preliminary)
  - Optimization Driven Improvements: over 30 facilities
  - At least 30 facilities (25%) have made TIN improvements
  - At least 20 facilities (15%) have made TP improvements
- Loading Reductions reported in 2020
  - TP ~ 1708 lbs/day
  - TIN ~ 7901 lbs/day

# 2023 Data Analysis Update

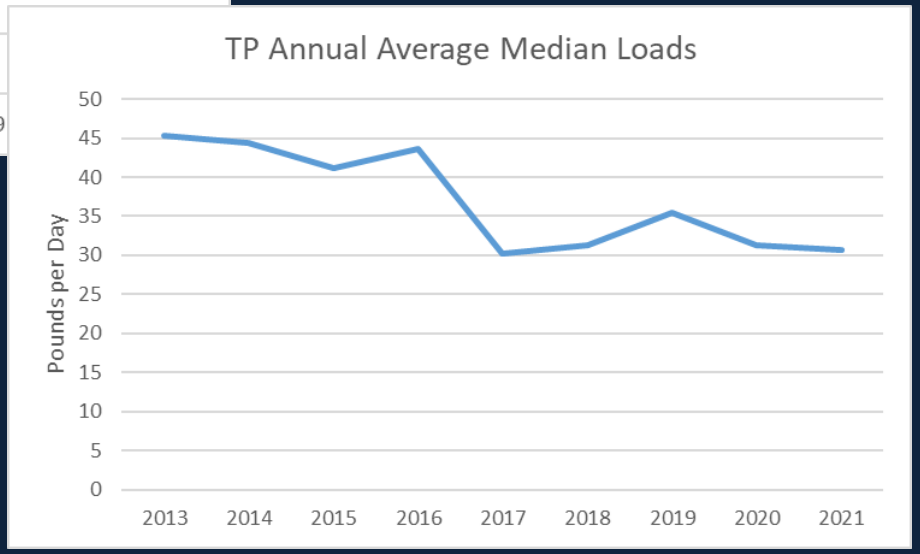
- We looked at an additional 3 years of data
  - TP 1609 lbs/day
  - TIN 9823 lbs/day

- Facilities of all sizes showing reductions although larger facilities showing more consistent reductions.
- Data continues to support progress and effectiveness of program

# 2023 Data Analysis Update




TIN fell by 7.8% from 2019 to 2021




TP fell by 16.3% from 2019 to 2021

# Additional Benefits of Early Nutrients Reductions

- Early adoption of biological nutrient removal (BNR) and enhanced (eBNR) treatment systems:
  - provides needed testing and optimization of these practices for Colorado-specific conditions
  - provides data and information for future compliance evaluations
- Participation is statewide and for a wide range of facility sizes, providing diverse experience and information
- Provides information on treatment, costs, and operations
- Provides operator experience and information for alternatives
- Encourages early investment

# Drivers for Nutrient Limits in Colorado Discharge Permits

- Existing Regulation 31 and basin regulations (32-38)
  - TP above qualified dischargers
  - 0.25-0.17 mg/L varies cold/warm and lakes/streams
- Control regulations (71-74)
  - TP (varies)
- Regulation 85
  - TP and TIN
  - Varies new versus existing

# Example Control Regulations

- Reg #71 - Dillon reservoir
  - Point source wasteload allocation for TP of 1,701 lbs/year
  - Effluent concentration of 0.5 mg/L TP as daily max
  - New 0.2 mg/L TP as 30-day average
- Reg #72 - Cherry Creek reservoir

| PARAMETER | LIMIT (mg/L) | AVERAGING PERIOD | SOURCE |
|---|---|---|---|
| Total phosphorus | 0.2 | 30 - 90 days | Discharge from drinking water treatment facility |
| | 0.05 | 30 - 90 days | Industrial process wastewater, return flow from land application |

- Reg #73 - Chatfield reservoir
  - Point source wasteload allocation for TP of 7,533 lbs/year
  - Effluent concentration of 1.0 mg/L TP as 30-day average

# Regulation 85 - TP/TIN

- Focus on domestic wastewater treatment works (DWWTW)
  - New facilities
  - Existing with >2 MGD
- Delayed till 2028 if existing and already subject to control regulation, in low priority watershed, or have flow ≤2 MGD
- Excluded (unless request) for ≤1 MGD and owned by disadvantaged community

# Regulation 85 - Tech Limits

- New facility

| PARAMETER | LIMIT (mg/L) | |
|---|---|---|
| | Annual median | 95th Percentile |
| Total phosphorus | 0.7 | 1.75 |
| Total inorganic nitrogen | 7 | 14 |

- Existing facility

| PARAMETER | LIMIT (mg/L) | |
|---|---|---|
| | Annual median | 95th Percentile |
| Total phosphorus | 1.0 | 2.5 |
| Total inorganic nitrogen | 15 | 22 |

# Nutrient Permitting Successes

How many permits have TP and TN/TIN?

- Large, > 2 MGD
  - 32 have Reg 85 limits, 7 more with dilution
  - About a dozen need permit renewal to add Reg 85
  - 14 delayed since in low priority watersheds
- Small, ≤ 2 MGD
  - 50 with TP equal or more stringent than Reg 85
  - 118 with TIN equal or more stringent than Reg 85
  - 6 have Reg 85 limits (3 are new facilities)

# Nutrient Permitting Challenges

- With lakes/reservoir delay, now all standards below DWWTWs take effect in 2028
- Standards not applied till permits renewed
- 400 DWWTW to surface water
- 70% of domestic permits/certifications backlogged
- VIP credits (early benefit, delay in full implementation)

# Nutrient Permitting Challenges

- Discharger-specific variances, site-specific standards, temporary standard modifications
  - Permit modifications
  - Delays to permit renewals
- Water quality assessment - joint modeling of permits (complex in most populated basins)
- Downstream segment protection
- Mixing zones
- Compliance schedules
- Significant comments, escalation/appeal risk


Questions and Discussion?

# WQCD Contacts

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