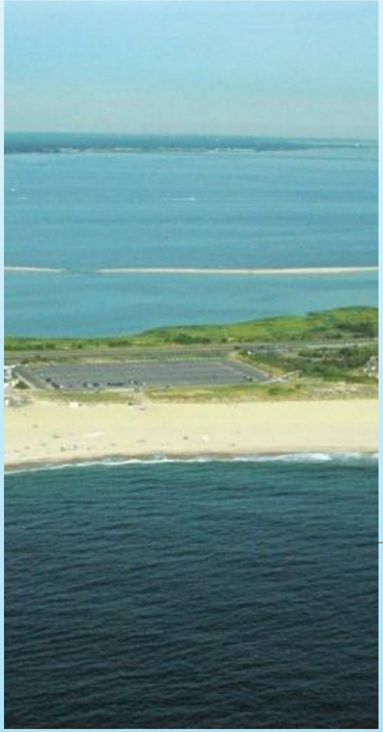


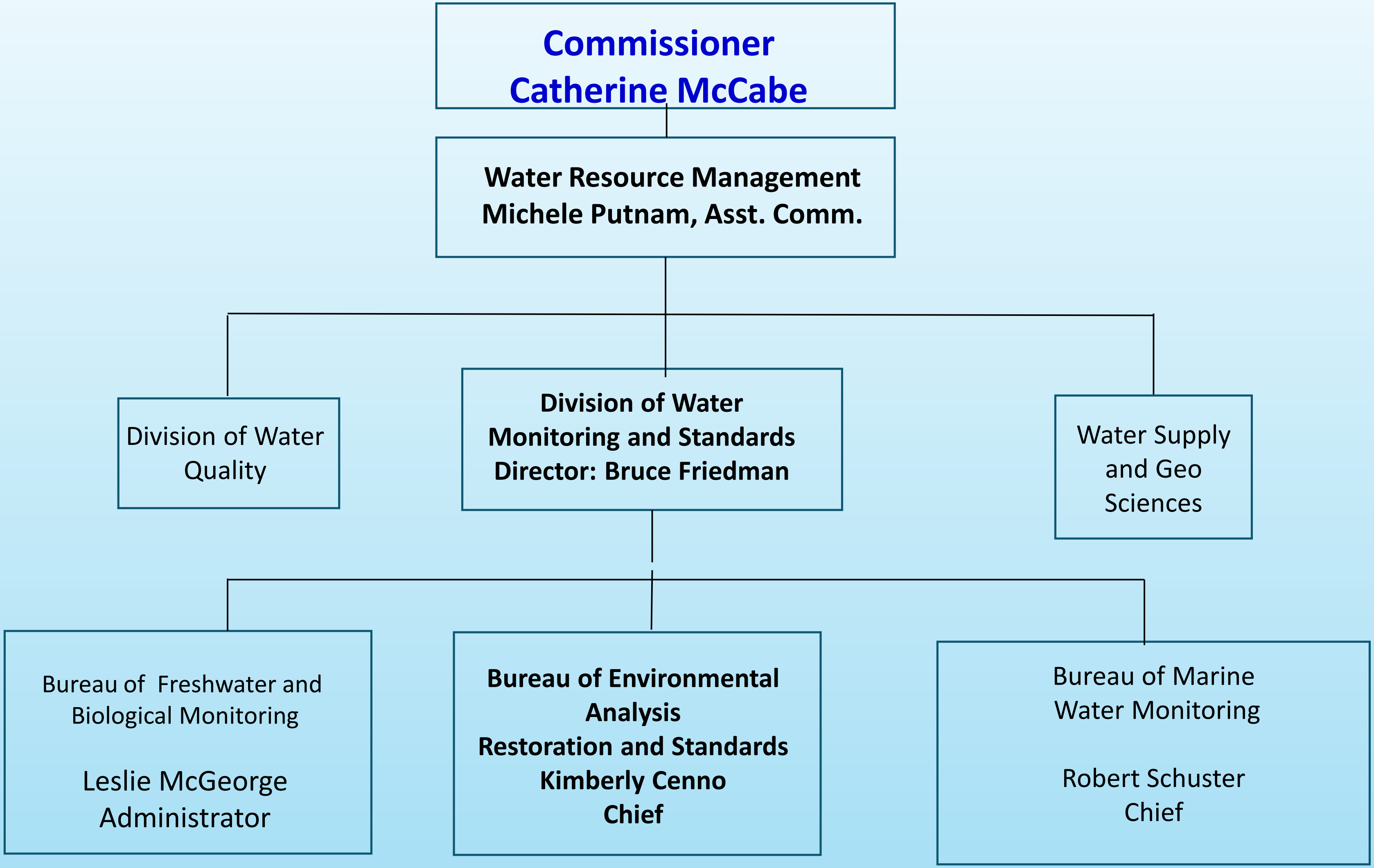
# Surface Water Quality Standards Variance Workgroup Meeting # 2

September 19, 2019

Department Of Environmental Protection

Division Of Water Monitoring And Standards

Bureau Of Environmental Analysis, Restoration and Standards


Commissioner
Catherine McCabe
Water Resource Management
Michele Putnam, Asst. Comm.
Division of Water Quality
Division of Water Monitoring and Standards
Director: Bruce Friedman
Water Supply and Geo Sciences
Bureau of Freshwater and Biological Monitoring
Leslie McGeorge
Administrator
Bureau of Environmental Analysis
Restoration and Standards
Kimberly Cenno
Chief
Bureau of Marine Water Monitoring
Robert Schuster
Chief

# Agenda

- Why arsenic variance?
- SWQS Variance Recap
- Overview / Status
- Inform, discuss and get feedback
- Next steps

# ARSENIC – WHY DO WE NEED VARIANCE?

Human Health Criterion = 0.017 µg/L (based on fish and drinking water consumption) in Fresh waters and 0.061 µg/L in Saline waters

- No approved technology for measuring to **(RQL ~ 2.0 µg/L)**, or treat to the criteria
- Drinking water MCL = 5 µg/L based on 3 µg/L (treatment and economics factored in)

Natural background levels higher than criteria

- e.g. 0.24 - 0.61 µg/L in Outer Coastal Plains based on geologic conditions
- Still lower than the TBELs in most places

All freshwaters are designated for water supply use (drinking water)

- Criterion applicable to all freshwaters regardless of existing use

Impaired 303(d) listed waters must meet criterion end-of-pipe

# Why existing rules/policies cannot address Arsenic?

- NJ statutes and Clean Water Act does not allow economic/technology limitations for Human Health criteria development
- Modify WQBELs and not SWQS
- Short time frame (3 years)
- No relief when natural background concentrations, detection levels or technology based effluent limits > human health criteria

# Solutions – Finally ??!!

EPA's Updated WQS Rules in 2015

SWQS Variance for Arsenic and other pollutants

Implementation issues when attainment is economically or technologically not feasible

Legacy pollutants (e.g. PCBs), mercury, nutrients, dissolved oxygen

Stayed/Adjudicated permits

- Arsenic

# Basis:
# 2015 EPA Water Quality Standards Revisions

## Revised 40 C.F.R. 131

- Administrative Determination
- Designated Uses
- Triennial Reviews
- Antidegradation
- WQS Variance
- Compliance Schedules

*https://www.epa.gov/wqs-tech/final-rulemaking-update-national-water-quality-standards-regulation*

# Water Quality Standards Variance (WQSV)

*https://www.epa.gov/wqs-tech/final-rulemaking-update-national-water-quality-standards-regulation*

## Definition:

A time-limited designated use and criterion for a specific pollutant(s) that reflect the highest attainable condition (HAC) during the term of the WQS variance, when current standards cannot be met due to one of six factors.

# Factors [40 C.F.R. § 131.10(g)]

1. Naturally occurring pollutant concentrations
2. Natural low/ephemeral/intermittent flow
3. Human caused conditions
4. Hydrologic modifications (Dams/diversions)
5. Natural features of water body (pools, riffles)
6. Substantial economic and social impacts

# Water Quality Standards Variance (WQSV)
# (40 C.F.R. § 131.14)
# Effective October 20, 2015

- Applicable for NPDES implementation – **Underlying use/criterion remains**
- Applies to identified
  - Parameter/pollutant
  - Water body / waterbody segment(s)
  - Permittee(s)
  - Term / Duration
- Assumption – Underlying designated use / criteria achieved at the end of term

# Terminologies and Abbreviations specific to WQSV

Term - Duration

Factors

MDV – Multiple Discharge(s) Specific WQSV

DSV – Single Discharge Specific WQSV

Water body variance – WQSV applicable to water body or waterbody segment(s)

HAC – Highest Attainable Conditions

PMP – Pollutant Minimization Program

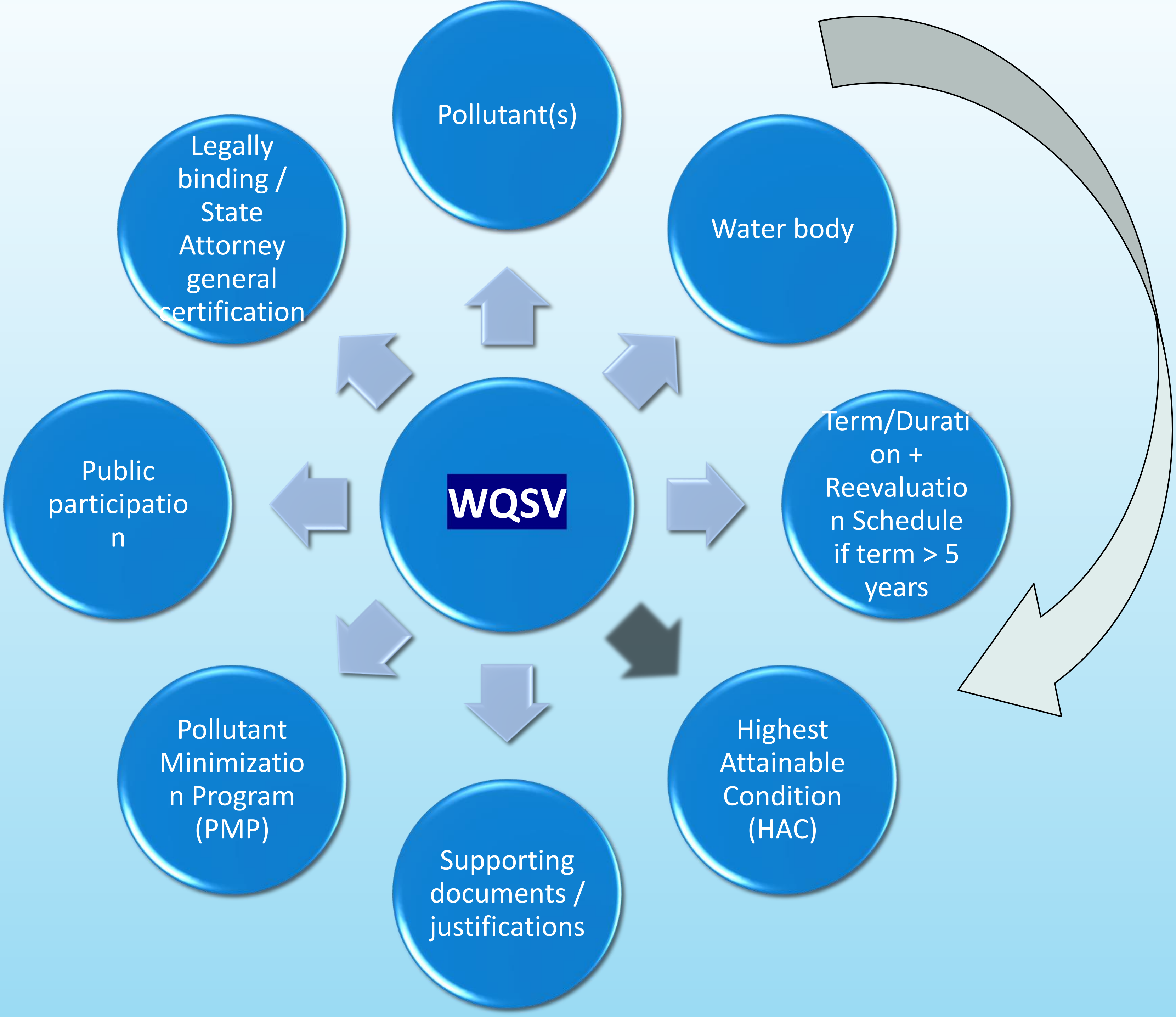
# 2015 EPA Variance Requirements
# Highest Attainable Condition (HAC)

Highest Attainable Condition (HAC)

- Highest attainable interim criterion
- Interim effluent condition reflecting **greatest achievable pollutant reduction**
- Interim **criterion** or effluent condition reflecting **greatest pollutant reduction achievable with control technologies at the time of adoption**

# Existing NJ Procedures

| | |
|---|---|
| N.J.A.C. 7:9B-1.8 | • Procedures for modifying water quality-based effluent limitation for individual dischargers to Category One waters |
| N.J.A.C. 7:9B-1.9 | • Procedures for modifying water quality-based effluent limitation for individual dischargers to Category Two waters |
| N.J.A.C. 7:9B-1.10 | • Procedures for reclassifying specific segments for less restrictive uses |



WQSV
Pollutant(s)
Water body
Term/Duration + Reevaluation Schedule if term > 5 years
Highest Attainable Condition (HAC)
Supporting documents / justifications
Pollutant Minimization Program (PMP)
Public participation
Legally binding / State Attorney general certification

# WQS Variance for Arsenic

## NJ SWQS Revision

- Update definitions
- New section to Include WQSV - applicability and requirements

## Arsenic Variance

- Multi-discharge(s) specific variance (MDV)
- Single discharge specific variance (DSV)

# Factors [40 C.F.R. § 131.10(g)]

1. Naturally occurring pollutant concentrations
2. Natural low/ephemeral/intermittent flow
3. Human caused conditions
4. Hydrologic modifications (Dams/diversions)
5. Natural features of water body (pools, riffles)
6. Substantial economic and social impacts

# How can the variance justification factor of "cannot be remedied" be used?

States may use to demonstrate the need for a variance is "[h]uman caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place" throughout the term of the variance.

Two key points to keep in mind about the phrase "cannot be remedied" are (1) it is about the waterbody not the discharger and thus some examination of all pollutant sources is expected, and (2) remedies other than treatment technology, such as means of minimizing the pollutant from entering the effluent or relocating the discharge, should be considered.

# How can the variance justification factor of "cannot be remedied" be used?

As a threshold matter, a state needs to identify with some specificity the "human caused conditions or sources of pollution [that] prevent the attainment of the use." A state could do this by evaluating information on loadings from different source categories (including point, nonpoint, and legacy sources) and examining potential remedies and their feasibility (which may include cost and technical feasibility considerations).

Because a variance may provide time to identify, implement, and evaluate feasible pollutant reduction actions, allowance for study of specific source identification and associated pollutant reduction activities may be included in the variance.

# How can the variance justification factor of "cannot be remedied" be used?

For example, if there are reasons to believe that arsenic levels that equal or exceed effluent levels upstream of discharge are the result of historical and/or ongoing activities that could not be remedied during the term of the variance, then including plans to identify possible pollutant reduction actions (such as preventing seepage of ground water or cleaning up spills in the watershed) could help justify the variance in accordance with the federal regulation.

# Where are the variances working?

- **Several states in the upper Midwest** (e.g., WI, MI) have successfully used discharger variances for **mercury** to achieve effluent quality approaching the underlying criteria using source reduction measures administered through mercury minimization plans in lieu of expensive end-of-pipe treatment.

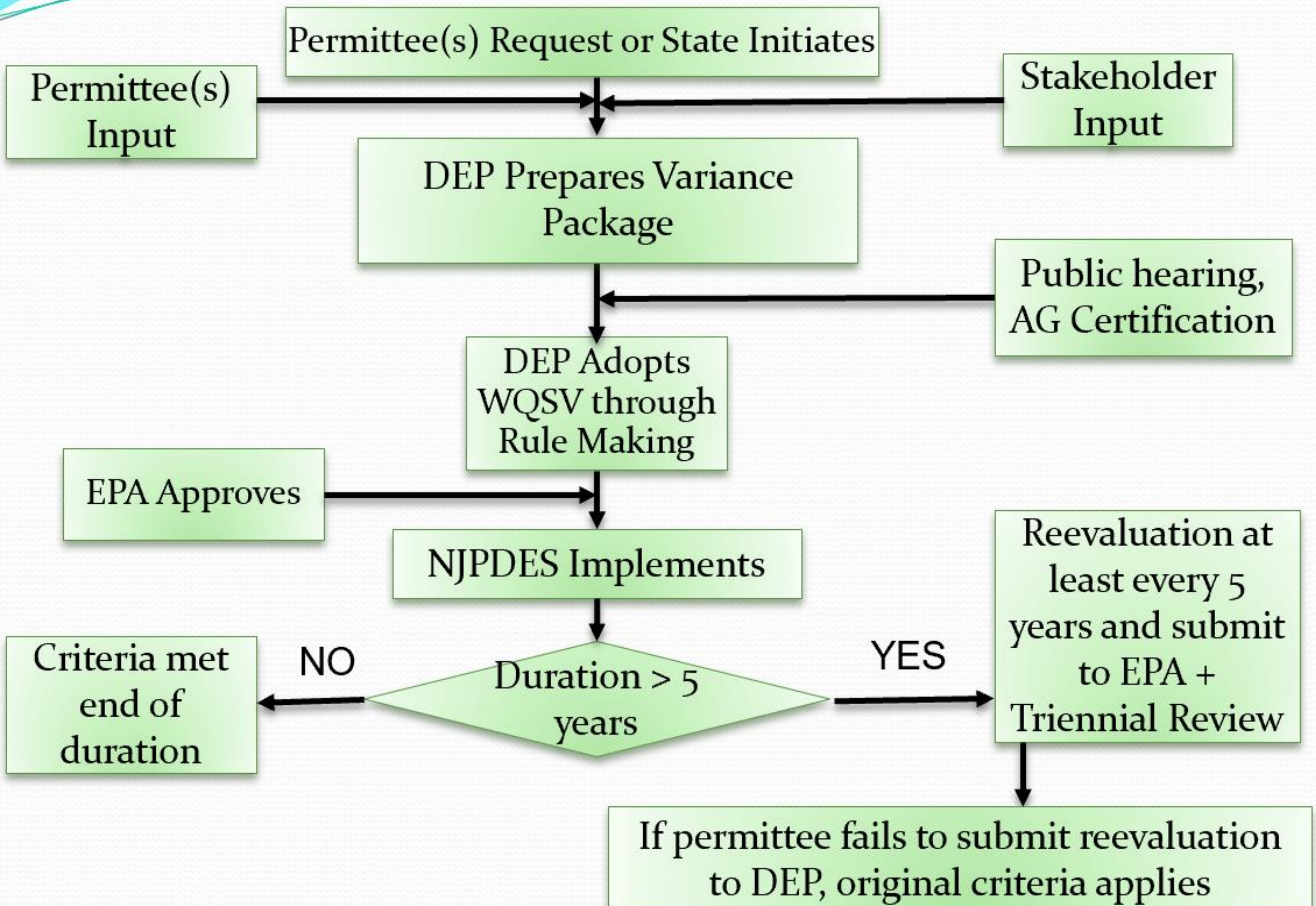
- **Wisconsin** has established a statewide variance mechanism that individual dischargers may qualify to use for **phosphorus** that allows dischargers to pay into a fund to effect nonpoint source controls that are anticipated to exceed the reductions from much more expensive point source controls.

# Where are the variances working?

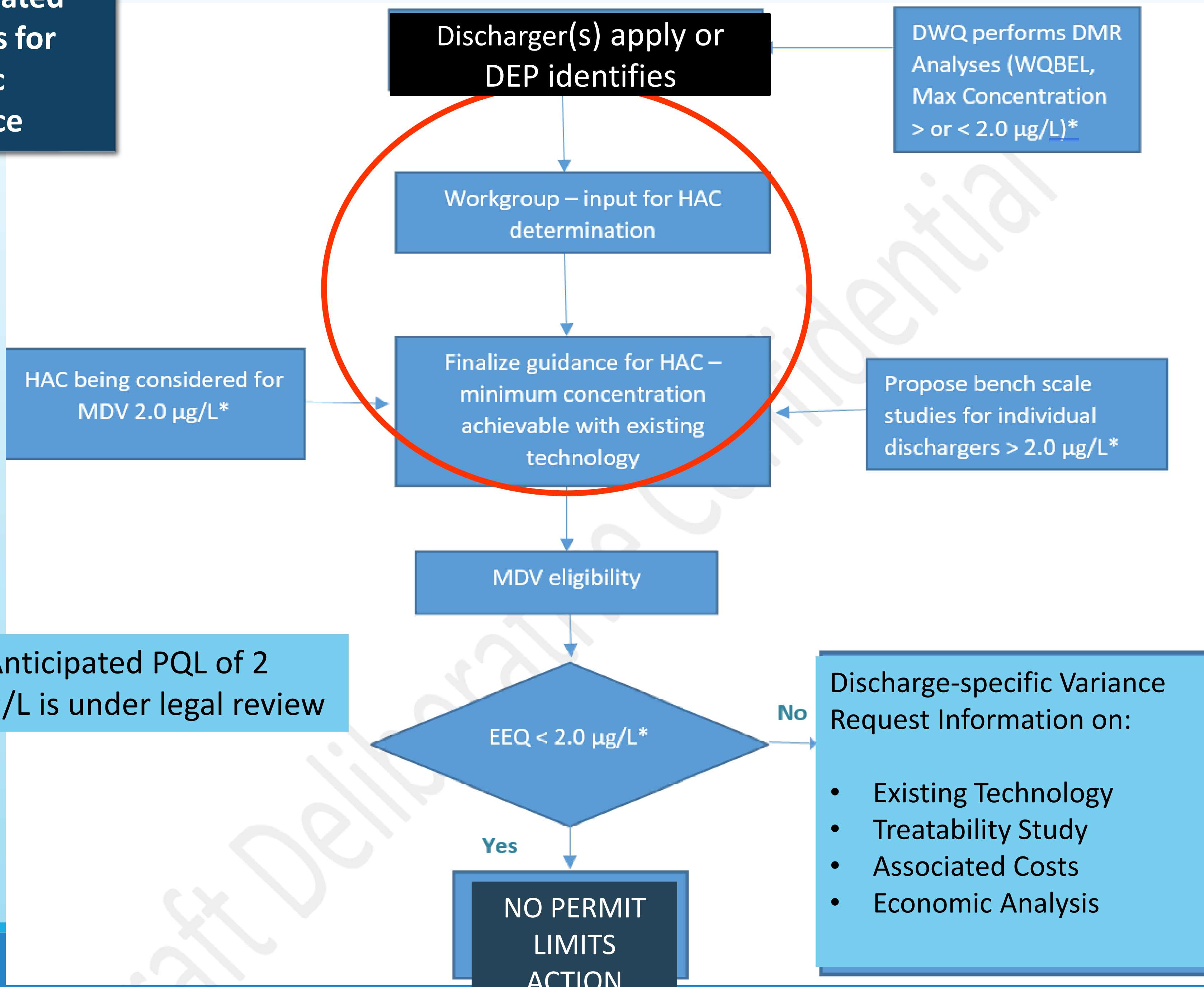
- **A community in Wisconsin** has renewed variances for mercury and chlorides on the basis that source reduction measures and discharger-sponsored community outreach and education achieves equivalent or better reductions (and potentially on a larger scale) than end-of-pipe treatment at the municipality that may have high energy demands and other waste disposal consequences.

- **Kansas** has adopted a variance mechanism for **ammonia** for small communities across the state. The variance requires the lagoons to maintain ammonia levels in effluent characteristic of well-functioning lagoon systems, while also implementing pollutant minimization plans that include examining innovative technology solutions in the future and committing to implement feasible options, in lieu of a full upgrade to mechanical plants which would cause substantial and widespread economic impacts on the small communities.

# Variance Process



# Anticipated Process for Arsenic Variance




- - Anticipated PQL of 2 µg/L is under legal review

# Wastewater Arsenic Treatability Study
# Prof. Meng

Stevens Institute of Technology, NJ

# Discussion and Questions

# Term

2-3 Permit Cycles (10-15 years)

- Justification:
  - No existing economically feasible technology
    - Reverse Osmosis may cause more environmental issues,
    - Treatability study conclusions
    - No demonstrated technology
  - Reevaluation every 5 years
  - Continued efforts for incremental improvement

# Data Requirements

- Number of samples
- Frequency
  - Monthly, Seasonal, Annual?
- Duration
  - Minimum of two years?
  - Diverse conditions
  - High/average/low flows
  - Spatial Extents (Mixing Zone, how far upstream for background conditions)?
- Ambient Data
- Groundwater/soil?
- Economic Data
  - Upgrade Costs
  - Affordability – when and how
- Natural versus Anthropogenic determination
- System characterization – how much more?

# Next Steps