Ground Water Quality Standards (N.J.A.C. 7:9C) Stakeholder Meeting

May 28, 2019

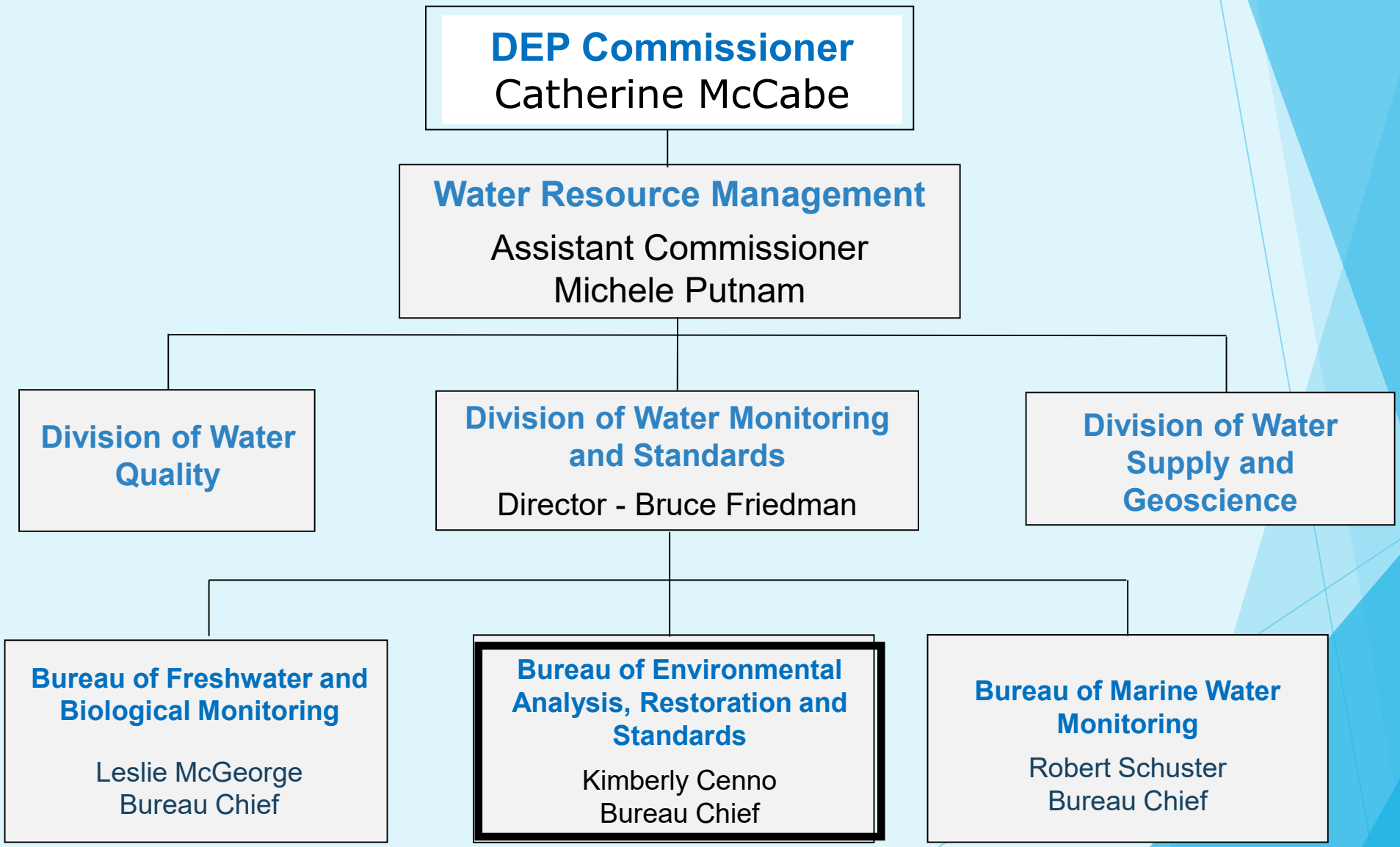
Division of Water Monitoring and Standards

Bureau of Environmental Analysis, Restoration and Standards

Agenda

- Introduction and Expectations
- GWQS Overview and Stakeholder Process
- Potential Rule Amendments
  - Re-evaluation of current criteria and PQLs
  - Updated default values
  - Revised rounding provisions
- Summary of Results
- Next Steps/Discussion

Who We Are


DEP Commissioner
Catherine McCabe
Water Resource Management
Assistant Commissioner
Michele Putnam
Division of Water Quality
Division of Water Monitoring and Standards
Director - Bruce Friedman
Division of Water Supply and Geoscience
Bureau of Freshwater and Biological Monitoring
Leslie McGeorge
Bureau Chief
Bureau of Environmental Analysis, Restoration and Standards
Kimberly Cenno
Bureau Chief
Bureau of Marine Water Monitoring
Robert Schuster
Bureau Chief

BEARS


Enviromental Stewardship
AmeriCorps NJ Watershed Ambassadors Program
Community Water Monitoring
Watershed Education and Urban Fishing
Analysis
Water Quality Assessment
TMDLs Development
Watershed Based and Protection Plans
Beach Monitoring
Restoration
Nonpoint Source (NPS) Pollution Management Program
Water Quality Restoration Grants for NPS Pollution
Clean Shores
Standards
Surface Water Quality Standards
Ground Water Quality Standards
Water Quality Management Planning
Water Quality Management Planning Program
Section 604(b) Pass-Through Grants

Expectations for Today

PURPOSE: To discuss potential rule amendments to the GWQS, N.J.A.C. 7:9C, including:

- Potential updates to existing specific ground water quality criteria, PQLs and standards for constituents in Class II ground water (Appendix Table 1)
- Potential amendments to the default values for body weight and drinking water consumption rate at N.J.A.C. 7:9C-1.7(c)4i and ii.
- Potential amendments to the rounding provisions at N.J.A.C. 7:9C-1.7(c)4iii and -1.9(c)3i.

GWQS Overview

Use	Criteria

• Class I: Ground Water of Special Ecological Significance
  • Class I-PL (Pinelands Protection Area):
  • Class I-A and Class I-PL (Pinelands Preservation Area):
	• "Background water quality"
	• "Natural quality"

Class II: Ground Water for Potable Water Supply	• **Specific** • Interim Specific • Interim Generic
Class III: Ground Water for Uses Other Than Potable Water Supply	Site-specific (implementing program)

Key Terms and Definitions

- Ground Water Quality Standard for Class II Ground Water = "Constituent Standard"
- **Constituent Standard = higher of the ground water quality criterion and the PQL**
- Ground water quality criterion = designated levels or concentrations of constituents that, when exceeded, will prohibit or significantly impair a designated use of water
- Practical Quantitation Level (PQL) = lowest concentration reliably achieved during routine laboratory operations

Criteria, PQLs and Constituent Standards

Ground Water Quality Standards N.J.A.C. 7:9C: Appendix Table 1

Specific Ground Water Quality Criteria - Class IIA and Practical Quantitation Levels

Constituent	CASRN	Ground Water Quality Criterion	Practical Quantitation Level (PQL)*	Higher of PQL and Ground Water Quality Criterion (ug/L)*
Acenaphthene	83-32-9	400	10	400
Acetone	67-64-1	6,000	10	6,000
Acetophenone	98-86-2	700		700
Acrolein	107-02-8	4		5
Acrylamide	79-06-1	0.008		0.2
Acrylonitrile	107-13-1	0.06		2
Adipates (Di(2-ethylhexyl)adipate) (DEHA)	103-23-1	30	3	30
Alachlor	15972-60-8	0.4	0.1	0.4
Aldicarb sulfone	1646-88-4	7	0.3	7
Aldrin	309-00-2	0.002	0.04	0.04
Aluminum	7429-90-5	200	30	200
Ammonia (Total)	7664-41-7	3,000	200	3,000
Aniline	62-53-3	6	2	6
Anthracene	120-12-7	2,000	10	2,000
Antimony (Total)	7440-36-0	6	3	6
Arsenic (Total)	7440-38-2	0.02	3	3

Constituent standard

GWQS Implementation

- Ground Water Quality Standards are implemented primarily through the Site Remediation Program and the New Jersey Pollutant Discharge Elimination System (NJPDES) discharge to ground water permit (DGW) program.
  - GWQS = Minimum remediation standard for sites with contaminated ground water

Deriving Ground Water Quality Criteria

- For constituents with a promulgated Maximum Contaminant Level (MCL), the criterion = health-based level for the MCL (HMCL).
- For constituents without a promulgated MCL, the rules establish default formulas and factors for deriving human health-based criteria.
- These default formulas and factors quantify risk from exposure via the ingestion pathway.
- Alternative factors and/or modified equations may be used when necessary to ensure the criteria reflect the best available science.

Deriving Ground Water Quality Criteria

Carcinogens

$$\text{Criterion } (\mu g/L) = \frac{\text{Upper Bound Lifetime Excess Cancer Risk} \times \text{Average Adult Weight} \times \text{Conversion Factor}}{\text{Carcinogenic Slope Factor} \times \text{Assumed Daily Water Consumption}}$$

Where the default values are:

Average Adult Weight	= 70 kg
Assumed Daily Water Consumption	= two liters per day
Upper Bound Lifetime Excess Cancer Risk	= 1×10^{-6}
Conversion Factor	= 1,000 μg/mg
Carcinogenic Slope Factor	= value from the United States Environmental Protection Agency (USEPA) Integrated Risk Information System (IRIS) data base, http://www.epa.gov/iris/, incorporated herein by reference, as $(mg/kg/day)^{-1}$

Deriving Ground Water Quality Criteria

Non-Carcinogens

$$\text{Criterion } (\mu g/L) = \frac{\text{Reference Dose} \times \text{Average Adult Weight} \times \text{Conversion Factor} \times \text{Relative Source Contribution}}{\text{Assumed Daily Water Consumption} \times \text{Uncertainty Factor}}$$

Where the default values are:

Average Adult Weight	= 70 kg
Relative Source Contribution	= 20 Percent
Assumed Daily Water Consumption	= two liters per day
Conversion Factor	= 1,000 μg/mg
Reference Dose	= value from the USEPA IRIS data base, http://www.epa.gov/iris/, incorporated herein by reference, as (mg/kg/day)
Uncertainty Factor	= 10 for carcinogens for which no carcinogenic slope factor is applicable; 1 for non-carcinogens

Deriving PQLs

- Practical quantitation level
  - Lowest concentration reliably achieved during routine laboratory operations
    - Method Detection Limit (MDL) data from the New Jersey Department of Health laboratory; or
    - Laboratory performance data that has been evaluated by NJDEP.

Rule Stakeholder Process

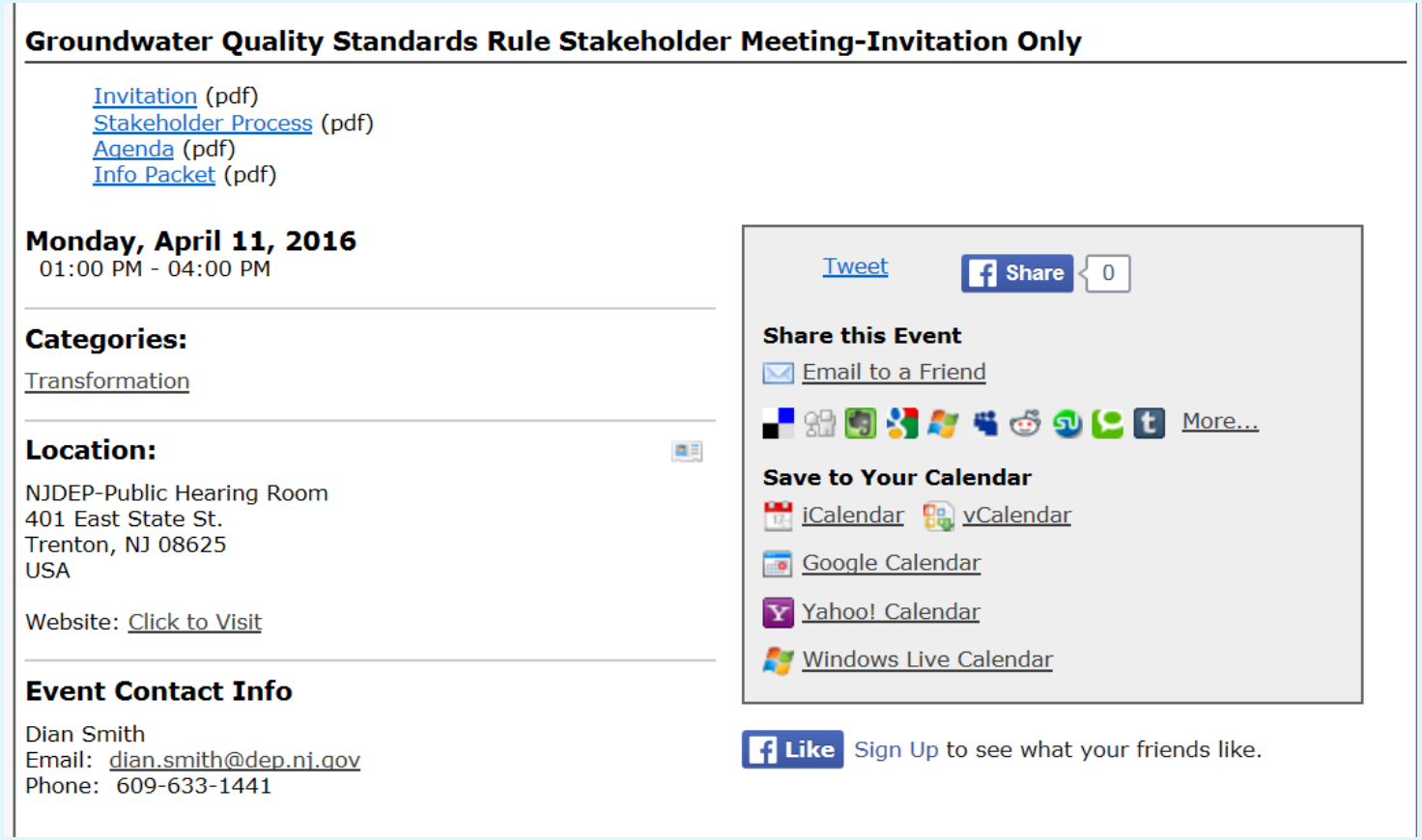
- 2016: Initiated stakeholder process for comprehensive rule changes
  - Re-evaluate all numeric criteria and PQLs
  - Re-evaluate classifications and designated uses; digitize maps
  - Streamline rules and their implementation
- 2017: Convened stakeholder work group meetings:
  - Primarily focused on updates to criteria and PQLs
    - Discussed preliminary results of re-evaluation
- 2018: Adopted amendments that updated and/or replaced interim specific standards with specific standards for PFNA + 22 other constituents; subsequent NOAC update to PFNA

Stakeholder Process, cont'd

- 2019:Stakeholder meeting and proposed amendments on new ground water quality standards for PFOA and PFOS for joint rule proposal
- May 2019: Reconvened stakeholders to discuss next phase of rulemaking:
  - Results of completed re-evaluation of criteria, PQLs and standards.
  - Other potential amendments to update default values and change rounding provisions.

Stakeholder Information

- http://www.nj.gov/dep/workgroups/gwqs



Groundwater Quality Standards Rule Stakeholder Meeting-Invitation Only

Invitation (pdf)
Stakeholder Process (pdf)
Agenda (pdf)
Info Packet (pdf)

Monday, April 11, 2016
01:00 PM - 04:00 PM

Categories:
Transformation

Location:
NJDEP-Public Hearing Room
401 East State St.
Trenton, NJ 08625
USA

Website: Click to Visit

Event Contact Info
Dian Smith
Email: dian.smith@dep.nj.gov
Phone: 609-633-1441

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Basis for Updates

- The Department is committed to updating standards based on the best available science
- Criteria updates were based on new information from:
  - IRIS
  - EPA Office of Water
  - EPA Provisional Peer-Reviewed Toxicity Values (PPRTV)
  - Agency for Toxic Substances and Disease Registry (ATSDR)
  - Cal EPA

Changes to Default Values

- 2015 – EPA updated its national recommended water quality criteria for human health to reflect the latest scientific information.
  - Updated average adult weight: 70 kg → 80 kg
  - Updated average water consumption: 2 L/day → 2.4 L/day
  - DEP plans to amend these values, which are used in deriving health-based criteria according to formulas in the rule at N.J.A.C. 7:9C-1.7(c)4i and ii, to be consistent with EPA's recommendations.

Changes to Rounding

- Rounding to one significant figure is inconsistent with other standards program's rounding and protocols.
- Potential Amendments to N.J.A.C. 7:9C-1.7(c)4iii and -1.9(c)3i to change rounding of criteria and PQLs from one significant figure to two.
- Would only be applied to new or updated criteria and PQLs.

Summary of Results

Updates	# of Constituents
Updates to criteria or PQLs identified	58
• Change in standard	46
• More stringent	37
• Less stringent	9
• Order of magnitude change (more stringent)	5

Order of Magnitude Changes

- Constituent standards changing by an order of magnitude or more would trigger provisions of the Brownfield and Contaminated Site Remediation Act (N.J.S.A. 58:10B) that may require additional remediation:
  - 1,1-Biphenyl
  - Cobalt
  - 1,2-Diphenylhydrazine
  - Heptachlor epoxide
  - Vinyl chloride

Constituents with MCLs

- Criteria updates were identified for constituents that would be different than the health-based level of the current MCLs; however, this conflicts with N.J.A.C 7:9C-1.7(c)3i.
  - Criterion is the health-based level of a NJ-promulgated MCL. If no MCL, criterion derived using formulas in the rules.
- The Department is considering the following strategies:
  1. Amend N.J.A.C 7:9C-1.7(c)3i to allow criteria to be based on either the HMCL or derived from best available science under 1.7(c)4;
  2. Pursue change to the HMCL through DWQI or other process; or
  3. Joint amendments to N.J.A.C. 7:10 establishing the updated HMCL/MCL and/or allowing such updates through Notice of Administrative Change, similar to existing provisions at N.J.A.C. 7:9C-1.7(c)5.

Constituents with MCLs

- Atrazine
- gamma-BHC (gamma-HCH/Lindane)
- Cadmium
- 1,3-Dichlorobenzene (meta)
- 1,4-Dichlorobenzene (para)
- 1,1-Dichloroethane (1,1-DCA)
- 1,1-Dichloroethylene (1,1-DCE)
- cis-1,2-Dichloroethylene
- Methylene chloride
- 1,1,2,2-Tetrachloroethane
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane (TCA)
- 1,1,2-Trichloroethane

Next Steps

- Department rule priority: Target date for complete rule proposal: December 31, 2019
  - Continue refining the re-evaluation/potential updates based stakeholder feedback
    - Feedback should be submitted by June 14, 2019 to Rachel.White@dep.nj.gov
  - Complete technical re-evaluation and select strategy for addressing criteria updates ≠ HMCLs

Contact Information

NJDEP Division of Water Monitoring and Standards

Bureau of Environmental Analysis, Restoration and Standards (BEARS)

PO Box 420 (Mail Code 401-04I)
401 East State Street
Trenton, New Jersey 08625-0420

609-633-1441

http://www.state.nj.us/dep/wms/bears/index.html

QUESTIONS?

Thank you for participating!