NEW YORK STATE

Department of Environmental Conservation

Technology-Based Effluent Limits for PFAS

Discussion

Wednesday, April 8, 2026


The Regs

Legal Authority

Clean Water Act (CWA) Section 402(a)(1) – see also 33 U.S. Code § 1342(a)(1)

> "… the Administrator may … issue a permit for the discharge of any pollutant… upon condition that such discharge will meet either (A) all applicable requirements under sections 301, 302, 306, 307, 308, and 403 of this Act, or (B) … such conditions as the Administrator determines are necessary to carry out the provisions of this Act."

40 CFR 122.44(a)(1)

> "… each NPDES permit shall include conditions meeting the following requirements when applicable. Technology-based effluent limitations and standards based on: effluent limitations and standards promulgated under section 301 of the CWA… on case-by-case effluent limitations determined under section 402(a)(1) of CWA, or a combination of all three…"

New York State Environmental Conservation Law (ECL) Article 17 Water Pollution Control

Title 6 New York Codes, Rules and Regulations (6 NYCRR)
Article 3. State Pollutant Discharge Elimination System (SPDES)
Part 750 SPDES Permits

Regulatory References

40 CFR § 125.3 Technology-based treatment requirements in permits

(c) Methods of imposing technology-based treatment requirements in permits

(2) On a case-by-case basis under section 402(a)(1) of the Act, to the extent that EPA promulgated effluent limitations are inapplicable. The permit writer shall apply the appropriate factors listed in § 125.3(d) and shall consider:

(i) The appropriate technology for the category or class of point sources of which the applicant is a member, based upon all available information; and

(ii) Any unique factors relating to the applicant.

(d) In setting case-by-case limitations pursuant to § 125.3(c), the permit writer must consider the following factors:

(1) BPT – Best practicable control technology currently available

(2) BCT – Best conventional pollutant control technology

(3) BAT – Best available technology economically achievable

NEXT SLIDE

Regulatory References – 40 CFR § 125.3(d) Factors for Consideration

(1) For BPT requirements	(2) For BCT requirements	(3) For BAT requirements
(ii) The age of equipment and facilities involved	(iii) The age of equipment and facilities involved	(i) The age of equipment and facilities involved
(iii) The process employed	(iv) The process employed	(ii) The process employed
(iv) The engineering aspects of the application of various types of control techniques	(v) The engineering aspects of the application of various types of control techniques	(iii) The engineering aspects of the application of various types of control techniques
(v) Process changes	(vi) Process changes	(iv) Process changes
(vi) Non-water quality environmental impact (including energy requirements)	(vii) Non-water quality environmental impact (including energy requirements)	(vi) Non-water quality environmental impact (including energy requirements)

Regulatory References – 40 CFR § 125.3(d) Factors for Consideration

(1) For BPT requirements	(2) For BCT requirements	(3) For BAT requirements
(i) The total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application	(i) The reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived	(v) The cost of achieving such effluent reduction
	(ii) The comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources	


The Math

Statistical Methodology

U.S. Environmental Protection Agency (EPA) Technical Support Document for Water Quality-Based Toxics Control (March 1991) – "the TSD"

Chapter 3. Effluent Characterization

3.3 Determining the Need for Permit Limits with Effluent Monitoring Data

Chapter 5. Permit Requirements

5.2 Basic Principles of Effluent Variability

5.5 Special Considerations in Use of Statistical Permit Limit Derivation Techniques

Appendix E:
Lognormal Distribution and Permit Limit Derivations

Lognormal Distributions – A Refresher

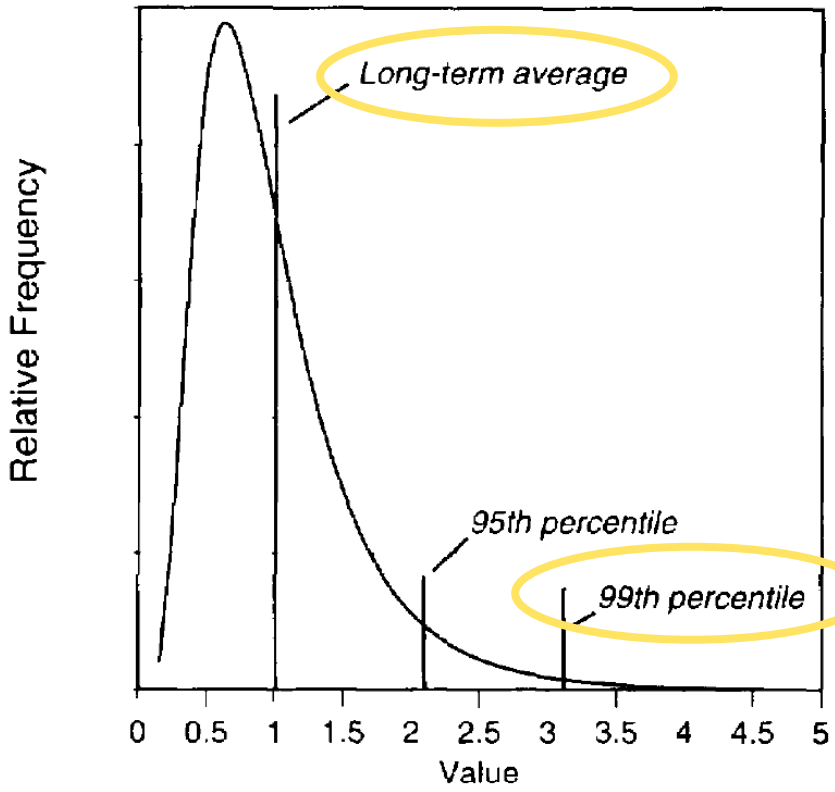
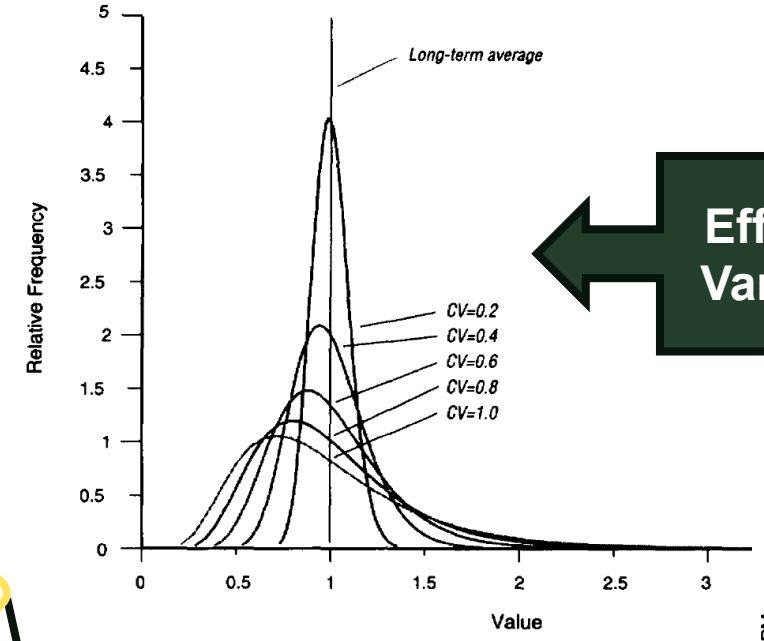


Figure 3-1a. Frequency Distribution of Values for a Lognormal Distribution with a Mean of 1.0 and a Coefficient of Variation of 0.6



Long-Term Average (LTA)
99th Percentile

Effects of Variability

Goodness-of-Fit Tests

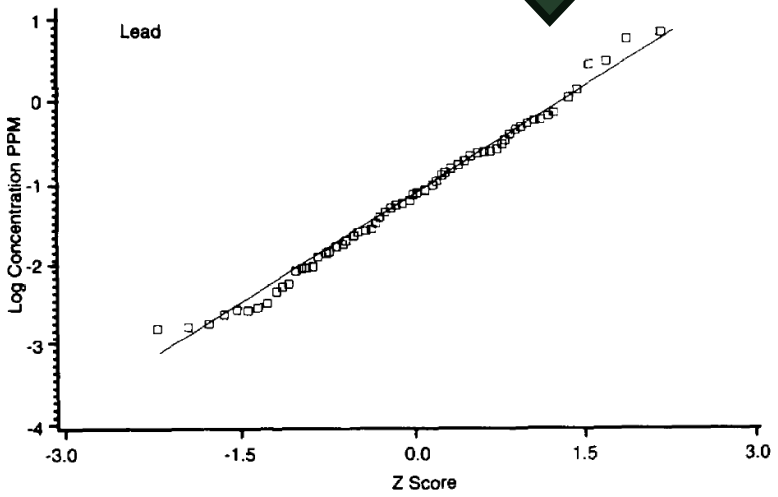


Figure E-5. Example of a Log-Probability Plot with a Normal Distribution

Calculating a TBEL – Step by Step

1. Calculate **system-specific long-term averages (LTAs)** and **variability factors (VFs)** for each of the systems that had the model technology

$$VF_{99} = \frac{99^{th}\ percentile}{LTA} \qquad VF_{95} = \frac{95^{th}\ percentile}{LTA}$$

2. Determine the **median LTA** of the system-specific LTAs
3. Determine the **mean VF** of the system-specific VFs
4. Calculate the daily max limitation as the product of the **median LTA** and the **mean VF**

$$Daily\ Max\ TBEL = (Median\ LTA) \times (Mean\ VF)$$

Reference: *EPA Development Document for Final Effluent Guidelines and Standards for the Construction & Development Category*, November 2009


The Data

Which Industry? What Parameter?

SIC Codes considered for potential PFOA/PFOS in wastewater stream:

Carpet/Rug Manufacturing (SIC code 2273)

Carpet and Upholstery Cleaning (SIC code 7217)

Textile Goods (SIC code 2299)

Paper Mills (SIC code 2621)

Airports (SIC code 4581)

Landfills (SIC code 4953)

Petroleum Bulk Storage (SIC code 5171)

Reference: NYS DEC list of SIC codes potentially associated with Emerging Contaminants (accessed 4/3/2026)

BPT, BCT, or BAT?

BPT

Best practicable control technology currently available

CWA 304(b)(1)

"…based on the average of the best performance of facilities within the industry of various ages, sizes, processes or other common characteristics."

BCT

Best conventional pollutant control technology

CWA 304(b)(4)

"…addresses conventional pollutants from existing industrial point sources. …consideration of a two part 'cost-reasonableness' test."

BAT

Best available technology economically achievable

CWA 304(b)(2)

"…represents the best available economically achievable performance of plants in the industrial subcategory or category."

The Model Technology

40 CFR 125.3(c)(2)(i) – “The appropriate technology for the category or class of point sources of which the applicant is a member, based upon all available information”

PFAS liquid treatment technologies:

Removal

- Granular Activated Carbon (GAC)
- Ion Exchange Resin (IX)
- Foam Fractionation (FF)
- Nanofiltration (NF)
- Reverse Osmosis (RO)

Destruction

- Chemical oxidation
- Chemical reduction
- Electrochemical Treatment
- Plasma
- Thermal technologies
- Hydrothermal Alkaline Treatment (HALT)

Reference: ITRC (Interstate Technology & Regulatory Council). 2026. PFAS Technical and Regulatory Guidance Document and Fact Sheets, PFAS-1. Washington, D.C.: Interstate Technology & Regulatory Council, PFAS Team. https://pfas-1.itrcweb.org/.

Selection of Sites

Reasons to include an effluent data set in the statistical analysis:

- Properly designed and operated system
- Recent (last 5 years? last 10 years?)
- Rich (# of data points)
- Representative (spread over time and conditions to capture process variability)
- Qualified

Reasons to exclude an effluent data set from the statistical analysis:

- Operating outside design parameters
- Too old
- Not enough data
- Non-representative
- No quality assurance/control


The Check

Does your calculated daily max TBEL represent what most of the industry can achieve most of the time?

- How many sites would have exceeded the calculated TBEL?
  - How many exceedances would those sites have had?
    - What percentage of samples are those exceedances?
      - Are exceedances spread across dischargers, or concentrated at specific sites?
- How many facilities would have to apply operational changes to meet the TBEL?
  - How many facilities would have to construct additional treatment units to meet the TBEL?
    - How many facilities would have to perform a full upgrade to meet the TBEL?

Back to the Factors (for Consideration)

Regulatory References – 40 CFR § 125.3(d) Factors for Consideration

(1) For BPT requirements	(2) For BCT requirements	(3) For BAT requirements
(ii) The age of equipment and facilities involved	(iii) The age of equipment and facilities involved	(i) The age of equipment and facilities involved
(iii) The process employed	(iv) The process employed	(ii) The process employed
(iv) The engineering aspects of the application of various types of control techniques	(v) The engineering aspects of the application of various types of control techniques	(iii) The engineering aspects of the application of various types of control techniques
(v) Process changes	(vi) Process changes	(iv) Process changes
(vi) Non-water quality environmental impact (including energy requirements)	(vii) Non-water quality environmental impact (including energy requirements)	(vi) Non-water quality environmental impact (including energy requirements)

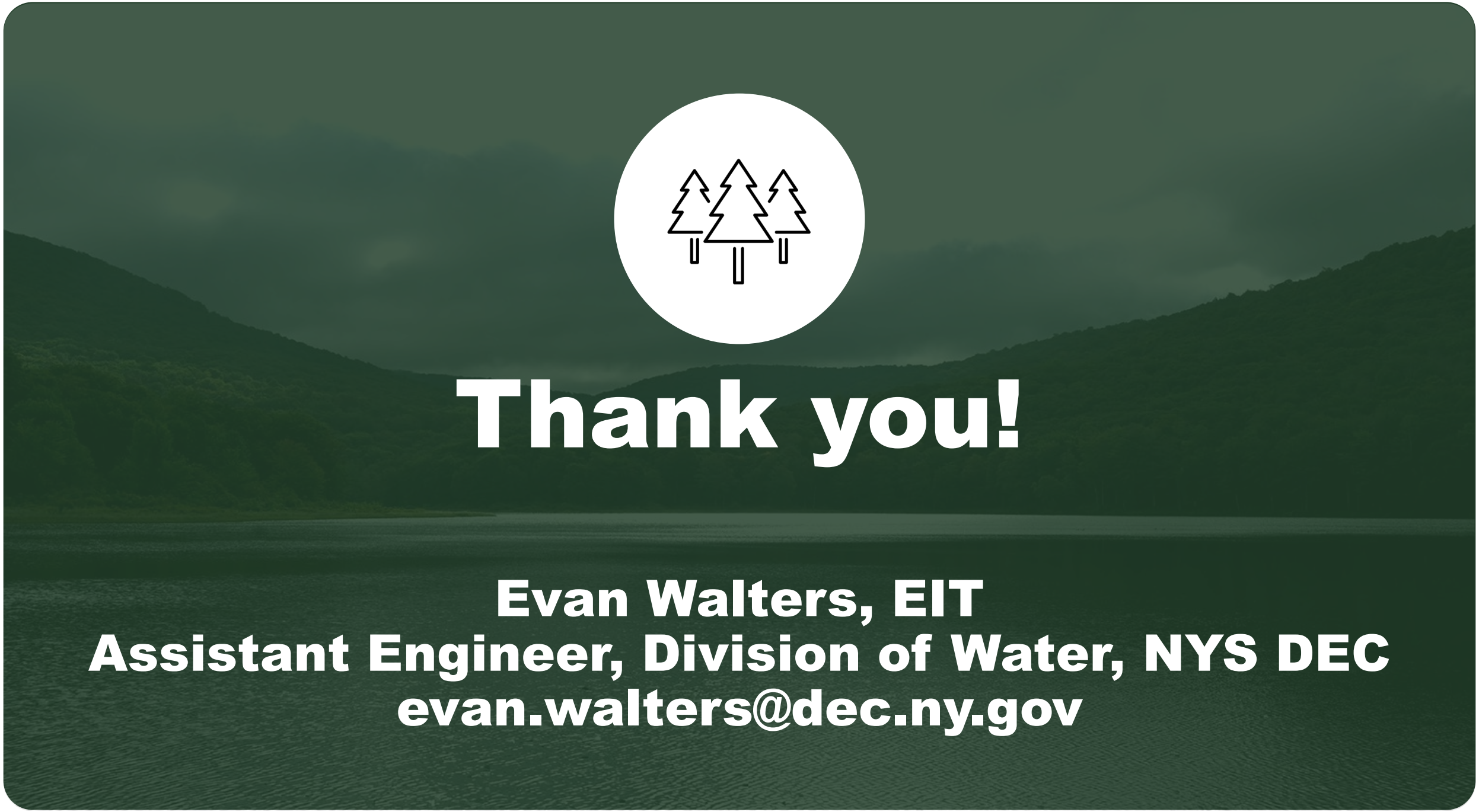
Regulatory References – 40 CFR § 125.3(d) Factors for Consideration

(1) For BPT requirements	(2) For BCT requirements	(3) For BAT requirements
(i) The total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application	(i) The reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived	(v) The cost of achieving such effluent reduction
	(ii) The comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources	


The Extras

Other Pieces of the TBEL Determination Process

- Reach out to other agencies for advice, input, data, feedback, etc.
- Take good notes
- Keep organized records
- Make sure your data is qualified
- Write a fact sheet or development document
- Public notice requirements



Thank you!

Evan Walters, EIT
Assistant Engineer, Division of Water, NYS DEC
evan.walters@dec.ny.gov

Department of Environmental Conservation