ATTACHMENT B of the Noncontact Cooling Water General Permit

Dilution Factor Calculations for Massachusetts and New Hampshire

The calculations provided below are for your information to use in calculating and determining your effluent limitations.

The state permitting authority must be contacted, via email at the addresses listed in Attachment A, to confirm the annual 7Q10 low flow for the facility prior to completing the NOI requirements for the permit.

Prior to contacting the state permitting authority, new applicants may wish to view the 7Q10 data posted at the USGS StreamStats website at http://water.usgs.gov/osw/streamstats/

For the convenience of Massachusetts facilities that were granted coverage under the expired NCCW general permit, the 7Q10 estimates for those permits are posted at http://www.epa.gov/region1/npdes/nccwgp.html and can be used by those applicants if re-applying for coverage under this general permit.

Note that in New Hampshire the Dilution Factor is calculated using two different equations based on the use of the receiving water as the applicant's public water supply.

Massachusetts:

Equation used to calculate the dilution factor at the treatment plant's outfall.

$$\text{Dilution Factor} = \frac{Q_R + (Q_P \times 1.55)}{Q_P \times 1.55}$$

where:

- Q_R = Estimated 7Q10 low flow for the receiving water at the plant's outfall, in cubic feet per second (cfs).
- Q_P = Plant's maximum design flow, in million gallons per day (mgd).
- 1.55 = Factor to convert mgd to cfs.

EXAMPLE

Q_R = 325 cfs

Q_P = 3.2 mgd

$$\text{Dilution Factor} = \frac{Q_R + (Q_P \times 1.55)}{Q_P \times 1.55} = \frac{325 + (3.2 \times 1.55)}{3.2 \times 1.55} = 66.5$$

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For New Hampshire:

Method 1: When the water supply is from outside the drainage basin.
Equation used to calculate the dilution factor at the treatment plant's outfall.

$$\text{Dilution Factor} = \frac{Q_R + (Q_P \times 1.55)}{Q_P \times 1.55} \times 0.9$$

where:

Q_R	=	Estimated 7Q10 low flow for the receiving water at the plant's outfall, in cubic feet per second (cfs).
Q_P	=	Treatment plant's maximum design flow, in million gallons per day (mgd).
1.55	=	Factor to convert mgd to cfs.
0.9	=	Factor to reserve of 10 percent of river's assimilative capacity.

EXAMPLE
Q_R = 325 cfs
Q_P = 3.2 mgd

$$\text{Dilution Factor} = \frac{Q_R + (Q_P \times 1.55)}{Q_P \times 1.55} \times 0.9 = \frac{325 + (3.2 \times 1.55)}{3.2 \times 1.55} \times 0.9 = 59.9$$

Method 2: When the water supply is from the drainage basin.
Equation used to calculate the dilution factor at the treatment plant's outfall.

$$\text{Dilution Factor} = \frac{Q_R}{Q_P \times 1.55} \times 0.9$$

where:

Q_R	=	Estimated 7Q10 low flow for the receiving water at the plant's outfall, in cubic feet per second (cfs).
Q_P	=	Treatment plant's maximum design flow, in million gallons per day (mgd).
1.55	=	Factor to convert mgd to cfs.
0.9	=	Factor to reserve 10 percent of river's assimilative capacity.

EXAMPLE
Q_R = 325 cfs
Q_P = 3.2 mgd

$$\text{Dilution Factor} = \frac{Q_R}{Q_P \times 1.55} \times 0.9 = \frac{325}{(3.2 \times 1.55)} \times 0.9 = 59.0$$