

FY 2014 NWPG Measure Definitions Long Island Sound



Measure Code: LI-SP41

Measure Language: Percent of goal achieved in reducing trade-equalized (TE) point source nitrogen discharges to Long Island Sound from the Long Island Sound 2000 nitrogen TMDL baseline of 59,146 TE lbs/day.

Type of Measure: Target measure; Annually reported

Measure Contact: Joe Salata, EPA Long Island Sound Office

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Measure Definition This measure is the annual aggregate reduction from the TMDL-defined baseline point source nitrogen discharge from 106 sewage treatment plants (STPs) in Connecticut and New York discharging to Long Island Sound waters.

Terms and phrases: *Long Island Sound Nitrogen Total Maximum Daily Load (TMDL)* is the TMDL submitted to the EPA in 2000 by Connecticut and New York to attain dissolved oxygen standards in Long Island Sound, an impaired water body consisting of New York and Connecticut waters. The States of Connecticut and New York proposed Long Island Sound as impaired waters for dissolved oxygen under Clean Water Act (CWA) 303(d).

Methodology for computation of results: TMDL baseline is 211,724 lbs/day converted to 59,146 Trade-equalized pounds per day. Annualized aggregate reduction = TMDL baseline minus 2014 target (84,474 lbs/day or 22,774 TE/lbs-day) divided by 15 year TMDL time period = 8,487 lbs/day or 2,425 TE/lbs-day.

States report sewage treatment plants' (STPs) nitrogen discharges through the EPA's Discharge Monitoring Report process. This measure is calculated based on total annual average loads from 106 STPs discharging to Long Island Sound from Connecticut and New York during the calendar year January-December. There is a 60 day lag time in reporting data due to the process established for state Discharge Monitoring Reports. Mid-year reporting is not predictive of nitrogen removal because of seasonal variability to nitrogen removal rates by STP processes.

Units: Average Trade-equalized (TE) pounds per day of nitrogen discharged by STPs over the calendar year.

Universe: There is no universe of point source nitrogen loads. Population increases in the watershed would increase the nitrogen load. However, if considered in the context of the TMDL-defined allocation, the universe of nitrogen reduction would be the difference between the baseline load (211,724 lbs/day or 59,146 TE/lbs-day) and the TMDL 2014 limit (84,474 lbs/day or 22,774 TE/lbs-day), = 127,250 lbs/day or 36,372 TE/lbs-day.

Baseline: Long Island Sound 2000 nitrogen TMDL. Baseline is 211,724 pounds per day of nitrogen or 59,146 TE/lbs–day as calculated in the TMDL. Please see the Long Island Sound Study [Website](#) for more information.

Measure Code: LI-SP42.N11

Measure Language: Reduce the size (square miles) of observed hypoxia (Dissolved Oxygen <3mg/l) in Long Island Sound.

Type of Measure: Annually reported

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Measure Definition This measure refers to the area in square miles of the maximum area of hypoxia, or lack of dissolved oxygen, in Long Island Sound as measured from water samples taken at given intervals at established monitoring stations in Long Island Sound. The measure refers to bottom water hypoxia measured at <1 meter from the bottom. Hypoxic conditions generally set up sometime in the western Sound basin in late June to early July and may extend to early to late September.

Terms and phrases:

- *Hypoxia* is defined as dissolved oxygen (DO) concentrations less than three milligrams of dissolved oxygen per liter of water.
- *Dissolved oxygen (DO)* refers to the amount of oxygen that is present in the water. It is measured in units of milligrams per liter (mg/L), or the milligrams of oxygen dissolved in a liter of water.

Methodology for computation of results: Dissolved oxygen is calculated for each water sample taken from fixed stations sampled from June to October. The area of hypoxia is estimated based on an interpolation of the maximum area from stations where DO concentrations are less than 3.0 milligrams per liter.

Units: Area = square miles

Universe: The total surface area of Long Island Sound is approximately 1,268 square miles. The potential for the maximum area of hypoxia would be 1,268 square miles.

Baseline: The baseline is defined as the pre-TMDL average conditions based on 1987–1999 data and is 208 square miles

Measure Code: LI-SP43

Measure Language: Restore, protect or enhance acres of coastal habitat from the 2010 baseline of 2,975 acres.

Type of Measure: Target measure; Annually reported

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Measure Definition This measure is the number of acres reported as restored or protected.

Terms and phrases:

- *Restoration* is the intentional alteration of a site to attempt to reestablish the approximate biogeophysical conditions that existed in the pre-disturbance ecosystem or habitat. (Long Island Sound Study Habitat Restoration Technical Manual, Introduction, ii. November 2003).
- *Protection* is the removal of a threat to, or preventing the decline of conditions. Includes mechanisms such as land acquisition, conservation easements, deed restrictions, etc. or other designation to prevent alteration of the site. This term also includes activities commonly associated with the term preservation. Protection/maintenance does not result in a gain of acres or habitat function. (EPA National Estuary Program On-line Reporting Tool User Manual for NEP Staff, August 19, 2011, Appendix D, p. 55).

Methodology for computation of results: States report categorical acres of habitat based on physical projects reported as completed by the implementing or funded partners as of September 1, annually.

Units: Acre = 44,000 square feet or 4.046 square meters

Universe: The universe of acres that could be restored or protected is currently not known. Additional research would be needed to identify all areas currently degraded that could be feasibly restored.

Baseline: 2,975 acres restored and protected (FY 2010)

Measure Code: LI-SP44

Measure Language: Reopen miles of river and stream corridors to diadromous fish passage from the 2010 baseline of 177 river miles by removal of dams and barriers or by installation of bypass structures.

Type of Measure: Target measure; Annually reported

Measure Contact: Joe Salata, EPA Long Island Sound Office

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Measure Definition This measure indicates the linear miles of river or stream corridor that is reopened to diadromous fish passage by physical means. The measure includes river/stream reaches above the impairment that is removed or mitigated and the actionable river/stream is a historical diadromous fish habitat.

Terms and phrases: *Diadromous fish* travel between salt and fresh water to spawn.

Methodology for computation of results: This measure is calculated and reported by the states of New York and Connecticut into the EPA's NEPORT reporting system upon physical completion of the project as of September 1 annually. River/stream reach reopened is measured from the physical impairment that is mitigated to the established breeding ground of the species in question.

Units: Linear mile = 5,280 feet or fraction thereof reopened.

Universe: There is currently no accepted figure for the universe of historical diadromous fish river/stream reaches. Preliminary estimates are that the historical universe of rivers or stream reaches that may have had diadromous fish runs may have been approximately 562 miles at some past point in time. The universe of potentially restorable river miles is not known.

Baseline: 177 miles (FY 2010). The baseline is the number of river miles reopened to diadromous fish passage by LISS partners from 1998-2010.