Four Major Indicators of Environmental Change

Dissolved Oxygen (DO) - The levels of oxygen dissolved in the water column are critical for the respiration of most aquatic life forms, including fish and invertebrates such as crabs, clams, zooplankton, etc. Dissolved oxygen concentration is, therefore, one of the most universal indicators of overall water quality and a means of determining habitat and ecosystem conditions.

Fecal Coliform (FC) Bacteria - Fecal coliform concentrations are measured in NY Harbor as human health-related indicators of sewage-related pollution. Fecal coliform are a group of bacteria primarily found in human and animal intestines and are associated with sewage waste. These bacteria are widely used as indicator organisms to show the presence of such wastes in water and the possible presence of pathogenic (disease-producing) bacteria.

Enterococci Bacteria - Enterococci are a subgroup within the fecal streptococcus group and are distinguished by their ability to survive in salt water, and in this respect they more closely mimic many pathogens than do the other indicators. Enterococci are typically more human-specific than the larger fecal streptococcus group. The US Environmental Protection Agency recommends enterococci as the best indicator of health risk in salt water used for recreation and as a useful indicator in fresh water as well.

Secchi Transparency - A Secchi disk is used to estimate the clarity of surface waters. High Secchi transparency (greater than 5.0 feet) is indicative of clear water, with declines in transparency typically due to high suspended solids concentrations or plankton blooms. Low Secchi readings (less than 3.0 feet) are typically associated with degraded waters. These conditions are indicative of light-limiting conditions, which in turn affect primary productivity and nutrient cycling.

NYSDEC Standards - Coliform and dissolved oxygen indicators are used in New York State Department of Environmental Conservation (NYSDEC) standards to quantify ecosystem health or degradation. NYSDEC standards reflect a range of acceptable water quality conditions corresponding to the State-designated "best usage" of the water body. Common uses and NYSDEC standards for fecal coliform and dissolved oxygen are noted in the following chart.

Common Water Use And NYSDEC Standards For Fresh And Saline Waters

Class	Best Usage of Waters	Fecal Coliform	Dissolved Oxygen (never-less-than)	Enterococcus
SA	Shellfishing and all other recreational use	No standard	5.0 mg/L	For Class SB / Bathing
SB	Bathing and other recreational use	Monthly geometric mean less than or equal to 200 cells/100mL from 5 or more samples	5.0 mg/l	(Monthly geometric mean) <35 cells/100mL
I	Fishing or boating	Monthly geometric mean less than or equal to 2,000 cells/100mL from 5 or more samples	4.0 mg/L	(Single sample) Max 10+ cells/100mL
SD	Fish survival	No standard	3.0 mg/L	