

Library Reference 11.2.2

Regulatory compliance in Onondaga Lake waters (South Deep), 2009.

Parameter (units)	NYSDEC Standard (Class B&C) ¹	2009 measured concentrations ²	Measurements in Compliance
pH (standard units)	Shall not be less than 6.5 nor more than 8.5	UML: 7.6 - 8.3	100%
		LWL: 7.2 - 7.9	100%
Dissolved Oxygen ³ (mg/l)	For nontrout waters, the minimum daily average shall not be less than 5.0 mg/L, and at no time shall the DO concentration be less than 4.0 mg/L. (15-min buoy data, 2m and 12m depths)	UML: 7.2 (Daily)	100%>5
		LWL: 0.4 (Daily)	79%>5
Dissolved Solids (mg/L)	Shall be kept as low as practicable to maintain the best usage of waters but in no case shall it exceed 500 mg/L.	UML: 1004 - 1248	0%
		LWL: 1032 - 1306	0%
Fecal Coliform ⁴ (cells/100 ml)	The monthly geometric mean, from a minimum of five examinations, shall not exceed 200 cfu/100ml during the disinfection period Apr 1 to Oct 15. <i>showing monthly geometric mean with number of measurements used in geometric mean.</i>	0 m - Apr: 9 (6)	100%
		May: 17 (5)	
		Jun: 9 (5)	
		Jul: 10 (5)	
		Aug: 19 (8)	
		Sep: N = 4	
		Oct: N = 2	
		Nearshore (Class B five stations) - Apr: 10 (30)	
		May: 7 (25)	
		Jun: 9 (25)	
<i>Class B monitoring stations are: Bloody Brook, Onondaga Lake Park, Willow Bay, Maple Bay and Westside Wastebeds.</i>	Jul: 11 (23)		
	Aug: 13 (40)		
	Sep: 14 (20)		
	Oct: 20 (10)		
Ammonia-N (mg/l)	Standard varies with pH and temperature	0 m: 0.02 - 0.02	100%
		3 m: 0.03 - 0.32	100%
		6 m: 0.05 - 0.31	100%
		9 m: 0.04 - 0.33	100%
		12 m: 0.06 - 0.54	100%
		15 m: 0.13 - 1.15	100%
		18 m: 0.15 - 1.83	100%
Arsenic ^{5,6} (ug/l)	150 ug/l [A(C)]	UML: < 2.0	100%
		LWL: < 2.0	100%
Nitrite-N (ug/l)	100 ug/L (warm water fishery)	UML: 20 - 64	100%
		LWL: < 10 - 279	95%
Copper ^{6,7} (ug/l)	0.96 exp (0.8545 [ln (ppm hardness)] - 1.702) [A(C)] Standard Range (ug/l): 29 - 32	UML: < 2.5 - 3.1	100%
		LWL: < 2.5 - 3.0	100%

Regulatory compliance in Onondaga Lake waters (South Deep), 2009. (continued)

Parameter (units)	NYSDEC Standard (Class B&C) ¹	2009 measured concentrations ²	Measurements in Compliance
Mercury ⁹ (ng/l)	0.7 ng/l [H(FC)]	3 m: 2.3 - 7 18 m: 2.8 - 12.6	0% 0%
Lead ^{6,7} (ug/l)	(1.46203 - [ln (hardness) 0.145712]) exp (1.273 [ln (hardness)] - 4.297) [A(C)] Standard Range (ug/l): 16 - 18	UML: < 2.0 LWL: < 2.0	100% 100%
Cadmium ^{6,7} (ug/l)	0.85 exp (0.7852 [ln (ppm hardness)] - 2.715) [A(C)] Standard Range (ug/l): 6.2 - 6.8	UML: < 0.80 LWL: < 0.80	100% 100%
Zinc ^{6,7} (ug/l)	exp (0.85 [ln (ppm hardness)] + 0.50) [A(C)] Standard Range (ug/l): 267 - 296	UML: < 5.0 - 9.1 LWL: < 5.0 - 8.6	100% 100%
Chromium ^{6,7} (ug/l)	0.86 exp (0.819 [ln (ppm hardness)] + 0.6848) [A(C)] Standard Range (ug/l): 230 - 253	UML: < 2.0 LWL: < 2.0	100% 100%
Nickel ^{6,7} (ug/l)	0.997 exp (0.846 [ln (ppm hardness)] + 0.0584) [A(C)] Standard Range (ug/l): 167 - 185	UML: < 3.8 LWL: < 3.8	100% 100%
Total Phosphorus ⁸ (ug/L)	None in amounts that will result in growths of algae, weeds, and slimes that will impair the waters for their best usages. Guidance value of 20 ug/L summer average. <i>1 m, biweekly, June 1 – Sept 30 average</i>	1 m: 19	100%

Notes:

¹ Standard values are derived from NYSDEC Ambient Water Quality Standards and Guidance Values, 1993, for Class B and C surface waters and 6NYCRR Part 703, with updates. Current as of 4/7/2010 (<http://www.dec.ny.gov/regs/4590.html>).

[A(C)] = Aquatic (Chronic); [H(FC)] = Health (Fish Consumption)

² South Deep sample locations: UML = upper mixed layer; LWL = lower water layer; m = meters depth of a sample. Unless otherwise noted, measured concentrations shown reflect the range from minimum to maximum for samples collected throughout the year. Where a single value is shown with a “<” beside it, results did not exceed the minimal reportable limit.

³ Dissolved oxygen concentrations shown represent the minimum daily average (“daily”) and the instantaneous reading (“15 min”) for the period of measurement throughout the year.

⁴ Fecal coliform compliance was assessed as the geometric mean of a minimum of 5 samples a month during the period of disinfection from April 1 to October 15. NYCRR Part 895.

⁵ Standard applies to dissolved fraction, though currently only acid soluble, total recoverable fraction is measured within the monitoring program. Standards for all other metals apply to acid soluble, total recoverable fraction.

⁶ Averages derived from observations made during quarterly sampling. All other averages derived from observations made during the bi-weekly sampling program. Calculations use the laboratory limit of detection when observations are below that limit.

⁷ Actual sample results for hardness were used to calculate compliance. Federal criteria for metals cap the hardness at 400 mg/l. 2009 average hardness for Onondaga Lake South Deep was 436 mg/l.

⁸ Guidance value of 20 ug/l from New York State Ambient Water Quality Standards and Guidance Values, June, 1998. TOGS 1.1.1.

⁹ Range of 2009 total mercury concentrations shown for low-level analytical results by EPA Method 1631.