

Norrie Point Hydrological Metadata
Latest Update: March 24, 2010

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Distribution

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The National Estuarine Research Reserve, which operates this station, also requires compliance with the NOAA Ocean and Coastal Resource Management Data Ownership and Dissemination Policy for the NERRS System-wide National Monitoring Program (cdmo.baruch.sc.edu/data/policy.cfm).

Entry Verification:

Data collection and verification were performed according to the HRECOS Quality Management Plan and the HRECOS Estuary Stations Quality Assurance Project Plan. Both are available at www.hrecos.org. This station is quality level B; the data is verified once per quarter.

Site Location and Character:

Norrie Point (41°49'54.75264"N 73°56'29.7812"W) is a bedrock outcropping into the main stem of the Hudson River adjacent to a cove. During the growing season (June – September), the cove is dominated by the invasive floating macrophyte *Trapa natans*. Norrie Point has a tidal range of 1.19 meters and has a soft silty bottom. The depth at the sampling location ranges from approximately 1.0 to 3.0 meters. YSI 6600 dataloggers are deployed at Norrie Point approximately 3.0 meters off the bottom in a perforated four-inch aluminum tube that is vertically mounted to a piling at the end of a dock. The datalogger contains sensors for temperature, conductivity, pH, dissolved oxygen, turbidity, chlorophyll a, and depth. The depth sensor at Norrie Point is vented to the atmosphere for more precise depth readings. GOES telemetry equipment includes a larger solar panel and battery, a larger enclosure to house the battery, a Sutron Satlink 2 transmitter, associated GPS for time synchronization and a Yagi antenna.

Norrie Point Hydrological Station is located at the headquarters of the Hudson River National Estuarine Research Reserve within the Margaret Lewis Norrie State Park, operated by the Taconic Region of New York State Office of Parks, Recreation, and Historic Preservation. Permission for research work can be obtained through Frank Boger, Manager of NYSOPRHP Taconic Region (Frank.Boger@oprhp.state.ny.us; 845-889-4100).

Sensor Specifications

General Information	Date first operational	6/16/08
	Date of first transmission	7/1/08
	Data Logger Model	YSI 6600 V2/4
	Data Transmitter	Sutron Model #SL2-G312-1 geo-stationary satellite data transmitter
	Vented to Atmosphere?	vented
	Collection Interval	15 min
Temperature	Units	Celsius (°C)
	Sensor type	Thermistor
	Model #	YSI 6560
	Range	-5 to 45 °C
	Accuracy	+/-0.15 °C
	Resolution	0.01 °C
Conductivity	Units	mS/cm
	Sensor type	4-electrode cell with autoranging
	Model #	YSI 6560
	Range	0 to 100 mS/cm
	Accuracy	+/-0.5% of reading + 0.001 mS/cm
	Resolution	0.001 mS/cm to 0.1 mS/cm (range dependent)
Salinity	Units	parts per thousand (ppt)
	Sensor type	Calculated from conductivity and temperature
	Range	0 to 70 ppt
	Accuracy	+/- 1.0% of reading or 0.1 ppt, whichever is greater
	Resolution	0.01 ppt
Dissolved Oxygen % Saturation	Units	percent air saturation (%)
	Sensor type	Optical probe w/ mechanical cleaning
	Model #	YSI 6150 ROX
	Range	0 to 500% air saturation
	Accuracy	0-200% air saturation: +/-1% of the reading or 1% air saturation, whichever is greater 200-500% air saturation: +/-15% or reading
	Resolution	0.1% air saturation

Dissolved Oxygen mg/L	Units	milligrams/Liter (mg/L)
	Sensor type	Calculated from % air saturation, temperature, and salinity
	Model #	YSI 6150 ROX
	Range	0 to 50 mg/L
	Accuracy	0-20 mg/L: +/-0.1 mg/l or 1% of the reading, whichever is greater; 20 to 50 mg/L: +/-15% of the reading
	Resolution	0.01 mg/L
	Water Level (shallow depth)	Units
Sensor type		Stainless steel strain gauge
Vented to Atmosphere		vented
Range		0 to 30 ft (9.1 m)
Accuracy		0-10 ft: +/- 0.01 ft (0.003 m); 10-30 ft: +/- 0.06 ft (0.018 m)
Resolution		0.001 ft (0.001 m)
pH		Units
	Sensor type	Glass combination electrode
	Model #	YSI 6561 Flat Glass
	Range	0 to 14 units
	Accuracy	+/- 0.2 units
	Resolution	0.01 units
Turbidity	Units	nephelometric turbidity units (NTU)
	Sensor type	Optical, 90 ° scatter, with mechanical cleaning
	Model #	YSI 6136
	Range	0 to 1000 NTU
	Accuracy	+/- 2 % of reading or 0.3 NTU (whichever is greater)
	Resolution	0.1 NTU
Chlorophyll	Units	micrograms/Liter (ug/L)
	Sensor type	optical fluorescence sensor
	Model #	6025
	Range	0 to 400 ug/L chl a; 0 to 100 RFU
	Detection Limit	~ 0.1 ug/L
	Resolution	0.1 ug/L chl a, 0.1% FS

QAOC flag definitions:

	Flag	Description
Automatic Data Flags	0	Acceptable data
	5	Data that demonstrate a dramatic increase or decrease from the previous value. This flag will be applied to all parameters except chlorophyll, radiation, rainfall, wind direction, and wind direction standard deviation where dramatic increases and decreases are expected. The boundaries for these flags are: <ul style="list-style-type: none"> ○ $x > 3(\text{previous value})$ for Acidity, Dissolved Oxygen, Water Level, Water Temperature, Barometric Pressure, and Absolute Pressure. ○ $x < 1/3(\text{previous value})$ for Specific Conductivity, Salinity, and Relative Humidity. ○ $x > 10 + 3(\text{previous value})$ for Turbidity, Wind Gusts, and Wind Speed. ○ $x > 10 + 3(\text{previous value})$ for Air Temperature
	6	Flat lined data (20 or more repeated records of the same value). This flag will be applied to all parameters except specific conductivity, chlorophyll, radiation, and rainfall where flat lined data is expected. For the same reason, this flag will not be applied to salinity data from Norrie Point.
	30	Hydrological data outside three standard deviations of the seasonal mean. The seasons will be defined by the solstices and equinoxes.
	40	Hydrological data outside four standard deviations of the seasonal mean. The seasons will be defined by the solstices and equinoxes.
	100	Data outside the range of the instrument.
Added by Site	0	Data determined to be acceptable after a final review by the site manager.
	10,000	Suspicious data according to a final review by the site manager
	20,000	Corrected Data
	500,000	Rejected data according to a final review by the site manager.
Added by HRECOS	5,000	Data from instruments that exceed the post-deployment warning level as defined by the HRECOS quality management plan
	9,000	Data from instruments that exceed the post-deployment alarm level as defined by the HRECOS quality management plan

QAQC Comment Code definitions:

Comment Codes Added By Site Managers	General Errors	Hyd + Met	[GIM]	instrument malfunction	[GPF]	power failure/low battery	
			[GIT]	instrument recording error, recovered telemetry data	[GQR]	rejected due to QAQC checks	
			[GMC]	no instrument deployed due to maintenance/calibration	[GSM]	see metadata	
		Hyd	[GIC]	no instrument deployed due to ice	[GOW]	out of water event	
			[GNF]	deployment tube clogged/no flow			
		Met	[GMT]	instrument maintenance	[GIM]	program reload	
			[GPD]	power down			
		Sensor Errors	Hyd	[SBO]	blocked optic	[SPC]	post calibration out of range
				[STF]	catastrophic temperature sensor failure	[SSDN]	sensor drift, record not corrected
	[SCF]			conductivity sensor failure	[SSDC]	sensor drift, record corrected	
	[SDF]			depth port frozen	[SSM]	sensor malfunction	
	[SDP]			DO membrane puncture	[SOW]	sensor out of water	
	[SDO]			DO suspect	[SSR]	sensor removed (not deployed)	
	[SIC]			incorrect calibration/contaminated standard	[STS]	turbidity spike	
	[SNV]			negative value	[SWM]	wiper malfunction/loss	
	Met		[SIC]	incorrect calibration constant, multiplier or offset	[SOC]	out of calibration	
			[SNV]	negative value	[SSM]	sensor malfunction	
			[SSN]	not a number/unknown value	[SSR]	sensor removed	
	Comments		Hyd	[CAF]	acceptable calibration/accuracy error of sensor	[CRE]	significant rain event
		[CBF]		biofouling	[CSM]	see metadata	
		[CCU]		cause unknown	[CTS]	turbidity spike	
		[CDA]		DO hypoxia <28 percent saturation	[CWD]	data collected at wrong depth	
		[CDB]		disturbed bottom	[CAP]	depth sensor in water, affected by atmospheric pressure	
		[CDF]		data appear to fit conditions	[CAB]	algal bloom	
		[CFK]		fish kill	[CVT]	possible vandalism/tampering	
		[CIP]		surface ice present at sample station	[CMC]	in field maintenance/cleaning	
		[CLT]		low tide	[CMD]	mud in probe guard	
		[CND]		new deployment begins			
		Met	[CAF]	acceptable calibration/accuracy error of sensor	[CSM]	see metadata	
			[CDF]	data appear to fit conditions	[CVT]	possible vandalism/tampering	
[CRE]			significant rain event				