

*NJWMC Continuous Monitoring
Inventory & DEP's Continuous
Monitoring*

Leslie McGeorge
NJ Department of Environmental Protection
Water Monitoring and Standards

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NJWMC – Sensors & Continuous Monitoring Technical Sessions

- September 2008 and January 2009
 - USGS, NJDEP, DRBC, Rutgers/IMCS, MERI

- September 2009
 - Delaware Demo Project for NMN (USGS)
 - Sensors: A New Way to Collect Data for Environmental Decision Making (NJDEP)
 - Continuous Monitoring for Nitrate in NJ Surface Waters (USGS)

Presentations available on Council website (Technical Topics):
<http://www.state.nj.us/dep/wms/wmccpresentations.html>

Council Product – NJ Continuous Monitoring Inventory

Spreadsheet Categories

- Agency
- Cooperators for USGS monitoring (e.g., DRBC, NJWSA)
- Monitoring Program/Project
- Objectives/Management Need
- Waterbody (Reach) Monitored ([hot link to online data](#))
- Parameters (DO, temp, salinity/conductivity, pH, turbidity, chl a, flow, stage, other)
- Location (lat, long)
- Duration/Status
- Data Management (e.g., real time, web enabled, other)
- Data Storage/Repository

- Inventory on Council website (Products):
<http://www.state.nj.us/dep/wms/wmcchome.html>

NJ Inventory (June 2010):

- 62 Sensor Locations

- 34 - river/stream
- 28 - estuarine

- Council orgs w/ sensors:

- DEP/WM&S
- USGS (& cooperators: e.g. DRBC)
- Rutgers/IMCS
- MERI

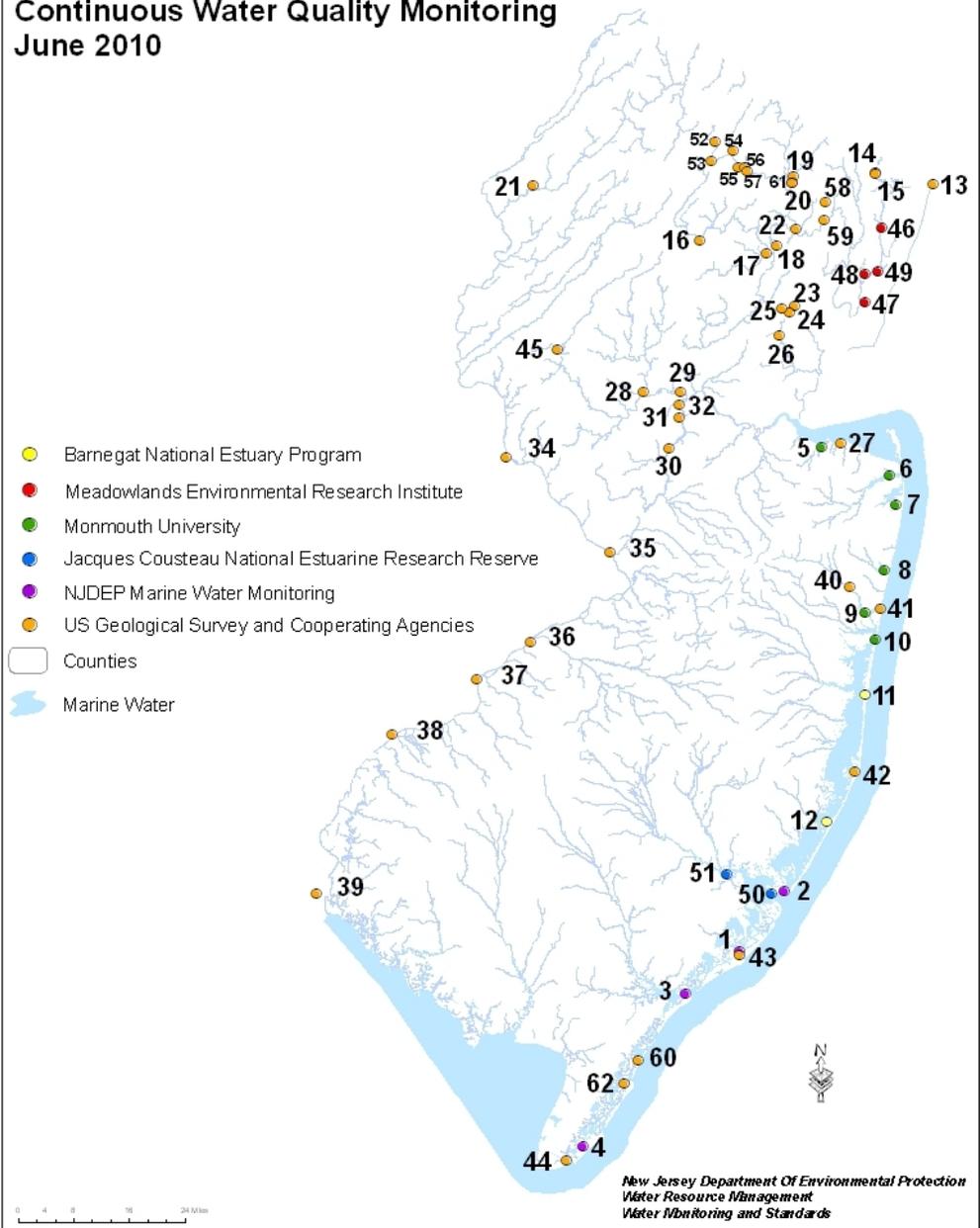
- Other orgs:

- Monmouth Univ.
- Barnegat National Estuary Program

- Common parameters:

- Temp (most)
- pH, DO, salinity, turbidity (many)
- Flow & stage (USGS)

Inventory of NJ Continuous Water Quality Monitoring June 2010



1. DEP Continuous Monitoring - Freshwaters

- Water temperature data loggers
 - Deployed June-August
 - ~25 sites/year
 - Data used for wq assessment & criteria development
- Diurnal DO monitoring
 - Deployed May-mid September
 - ~15 sites/year
 - Data used for wq assessment & TMDL development

DEP Diurnal DO Monitoring - Freshwaters

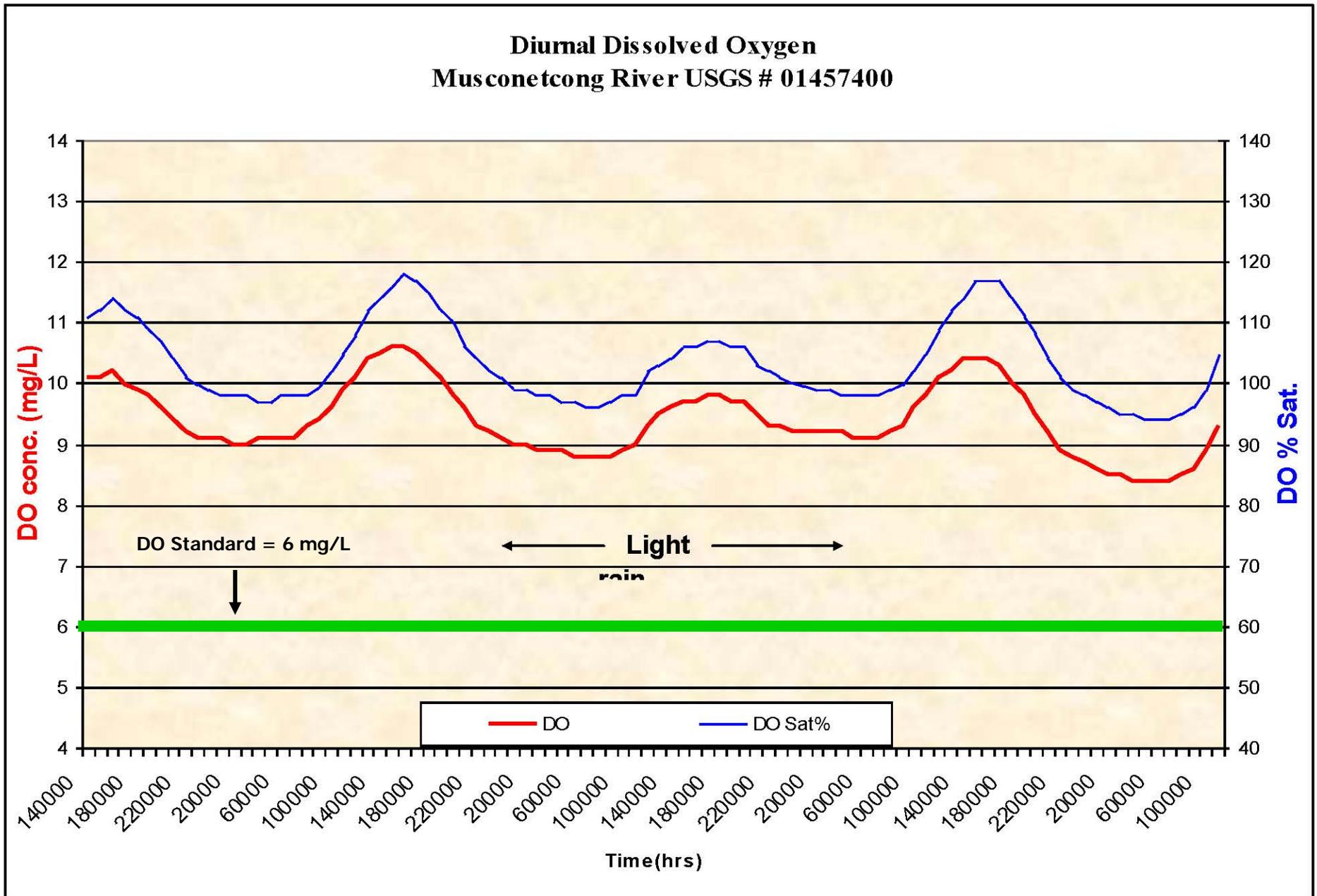
- Issue

- Surface water DO concentrations have diurnal component. Fluctuations 3-4 mg/L or greater are seen during the 24 hr cycle.
- In-stream photosynthesis - highest daily DO conc. occur in the late afternoon & lowest daily conc. occur near daybreak
- Routine monitoring does not record these daily highs and lows

DEP's Diurnal DO Monitoring - Freshwaters

- Initiated as part of Ambient Stream Monitoring Program -2000
- Data used to assess DO criteria, nutrient enrichment, biological impairment & for TMDL development
- Continuous Parameters Monitored: DO, DO sat, pH, temperature & specific conductance
- Additional parameters monitored: phytoplankton chlorophyll a, TP, TSS, dissolved NO₂ +NO₃, DOC & alkalinity

Typical Diurnal DO profile with moderate primary productivity



Diurnal DO Monitoring Criteria – Freshwater (currently under SAB review)

- Monitoring May - mid September
- Baseflow conditions (70% exceedance)
- No rainfall events within 72 hrs (rainfall event defined as ½ inch of rainfall within 24 hrs)
- 72 hr deployments

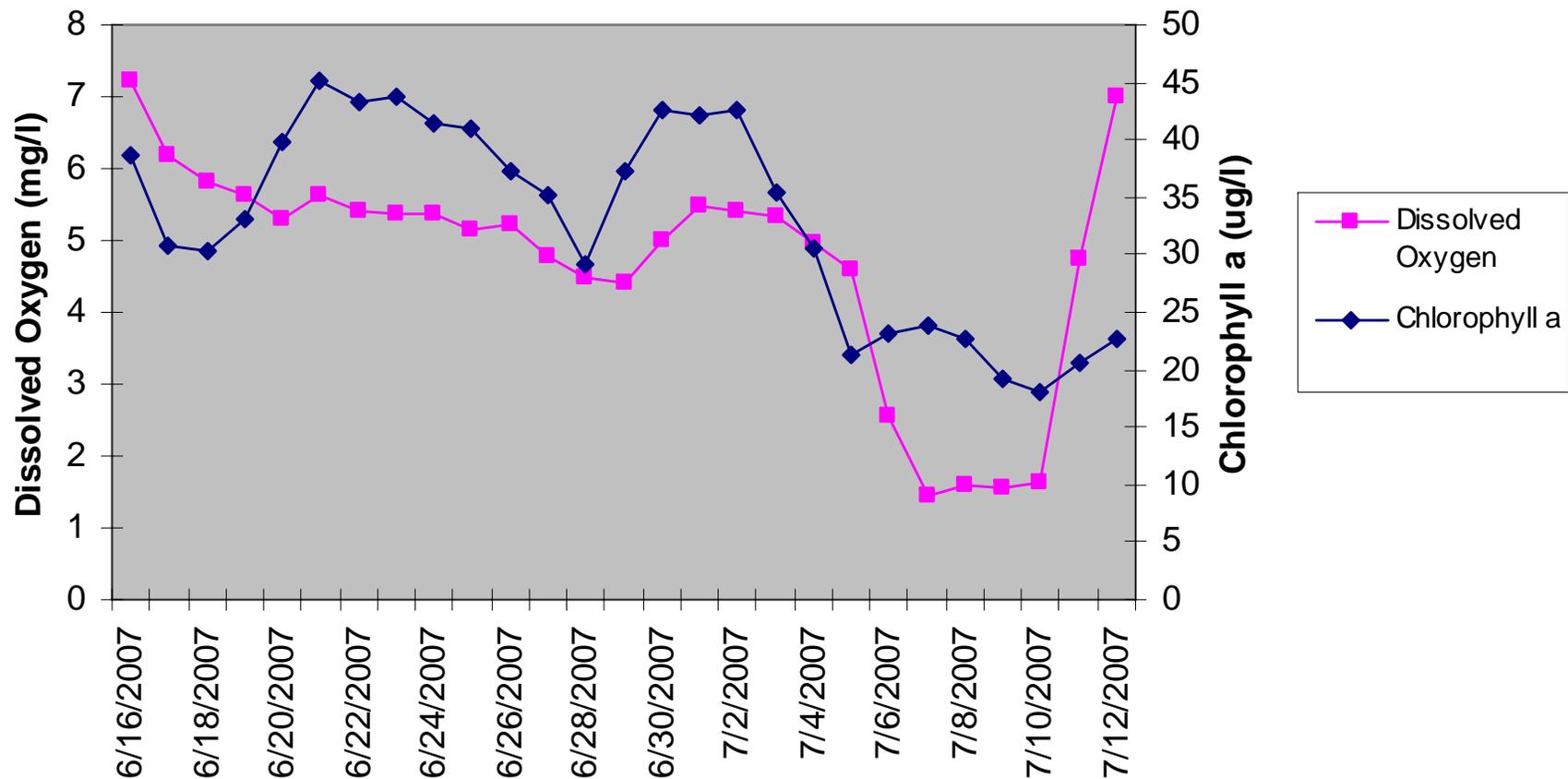
DEP Applications: 2. Continuous Water Quality Monitoring Use - Marine Waters

- Continuous data - used to correlate parameters for data assessment or to identify problems that may be episodic events (e.g., identified algal bloom and resulting low DO condition in Manahawkin Bay).
- Has been used in streams for storm water monitoring, can link parameters of interest to stream stage measurements.

DEP Applications: Real-time Water Quality Monitoring in Marine Waters

- Began in 2000 (via EPA EMPACT grant) - 4 continuous real time monitoring buoys deployed (Atlantic City, Sunset Lake, Lakes Bay, Great Egg Harbor)
- Subsequently worked with Barnegat Bay Estuary Program & Rutgers/IMCS to add 2 additional sites in Barnegat Bay
- Currently Monmouth University operates 8 sensors along NJ coast (including the 2 sensors in Barnegat Bay)
- DEP currently working to deploy original 4 buoys in Barnegat Bay

Manahawkin Bay Continuous Monitor Daily Average Dissolved Oxygen and Chlorophyll a



Data Availability

- Data in STORET as summary stats with attached raw data
 - 2002-2004: Marine Water Telemetry Buoy data
 - 2006-2007: Freshwater Diurnal DO data
 - 2005-2008: Freshwater Diurnal Temp data
- Data stored in WQDE
 - 2008 HOBO temp data (20 stations) – min, max w/ attached raw data