Continuous Diurnal D. O.
Water Monitoring

NJ DEP Water Monitoring and Standards
Bureau of Freshwater and Biological Monitoring

Presented by: Paul Burt, NJ DEP/WM&S/BFBM
NJ Water Monitoring Council Meeting
January 21, 2009
Objective:

- Develop an ambient surface water dissolved oxygen concentration database
  - Define critical surface water dissolved oxygen concentrations in a variety of NJ streams through continuous water monitoring
  - Develop a record of daily high and low D.O. concentrations
- Support proposed Nutrient Sample and Assessment Method
Yards Creek near Yards Creek Reservoir - typical diurnal cycle
Monitoring Design

• Automated monitoring/recording equipment will be deployed in designated locations:
  – Parameters
  – Deployment
Monitoring Design (con’t)

- Candidate Monitoring Locations
- Site Selection Determination
Current Monitoring Requirements

- Three (3) 72 hour monitoring events
- Steady state flows and rainfall
- Turbidity measurements
- Phytoplankton (Chlorophyll a) samples
- Visual Assessment
Data Quality Requirements

• To verify data quality
  – D.O. meter calibration
  – D.O. measurements
  – Comparative D.O. readings
  – Accuracy of D.O. meters
Continuous Ambient Water Temperature Monitoring

HOBO Units
Ambient Water Temperature Project

- Requested by the Bureau of Water Quality and Standards and Assessment (who suggest candidate sites)
  - Ambient monitoring fail to document highest daily water temperatures
  - Improved database may result in revised (and improved) water quality criteria
  - Deployments late June – mid September
  - Continuous monitoring allows for assessment of impacts resulting in changes in air temperature, rainfall, severe drought, etc.
Objective:

• Develop an ambient water temperature database
  - Critical high summer water temperatures
  - How water temperature is affected
Data Usage

- Surface water quality criteria
- Predictive tool
Monitoring Frequency

- Deployment
- Temperature measurements
- Statewide database
Data Quality Requirements

• To verify data quality
  – Side by side water temperature readings
  – Accuracy of the units
  – Certification of Bureau
Data Management/Data Availability

- EPA STORET
Primrose Brook – background site

01378780 Primrose Brook

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Temperature range: 0°C to 25°C
Hospitality Branch – water temperature violation site

01411050 Hospitality Branch

Date

06/13/07 06/18/07 06/24/07 06/29/07 07/05/07 07/10/07 07/16/07 07/21/07 07/27/07 08/01/07 08/07/07 08/12/07 08/18/07 08/23/07 08/29/07 09/03/07 09/09/07 09/14/07

Temperature °C

0 5 10 15 20 25 30 35
Data Management/Data Availability

• Summarized data is stored in EPA’s STORET database
  - Files containing this data will also be available at the Bureau of Freshwater and Biological Monitoring web site
    (www.state.nj.us/dep/wms/bfbm)