

# DELAWARE RIVER SPECIAL PROTECTION WATERS

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# Special Protection Waters (SPW)

- SPW Rules
- Action Proposed
- Timing/Process
- Questions



# Delaware River Basin Commission

- ❑ Founded in 1961
- ❑ Five Members:
  - Delaware
  - New Jersey
  - Pennsylvania
  - New York State
  - Federal Government



# General Areas of Commission Authority

- Water Supply/Flow Management
- Withdrawals and Diversions
- Recreation
- Hydroelectric Power
- Pollution Control
- Flood Protection
- Watershed Management

# WHAT DOES DRBC DO?

- ✓ Plan for Best Use of Water Resources
- ✓ Regulates Water Quality & Quantity
- ✓ Directs a Fair Distribution of Water
- ✓ Manages Resources on a Watershed Basis
- ✓ Coordinates / Facilitates
- ✓ Educates about Water Resources

# Delaware River Watershed Facts

Nearly **15 million** people (about 5% of the U.S. population) rely on the waters of the basin

- ❑ Drains **13,539 mi<sup>2</sup>** (34,659 km<sup>2</sup>), or 0.4 of 1% of the continental U.S. land area
- ❑ Flows **330** miles from Hancock, NY to Delaware Bay



# Non- Tidal Delaware River



- Flows **197 miles** from Hancock, NY to Trenton, NJ (Head of Tide)
- **Upper Delaware** – 73 miles
- **Delaware Water Gap** – 47 miles
- **Lower Delaware** – 77 miles

## Wild and Scenic Reaches in the Delaware Basin



# Special Protection Waters

Goal: Protect existing high quality waters with exceptionally high scenic, recreational, ecological or water supply values through the “**no measurable change**” policy



EWQ

NMC

# **Proposed Amendment Existing Water Quality**

§ 3.10.3 A.2.a.3), the definition of “Existing Water Quality,” is proposed to be replaced by the text below.

**3) "Existing Water Quality" in waters classified as Special Protection Waters is defined in Table 1 for stream reaches between Hancock, New York and the Delaware Water Gap and in Table 2 for stream reaches between the Delaware Water Gap and Trenton, New Jersey. Where existing water quality is not defined in Tables 1 and 2, existing water quality may be defined by extrapolation from the nearest upstream or downstream Interstate Special Protection Waters Control Point, from data obtained from sites within the same ecoregion, or on the basis of best scientific judgment.**

[Administrative Manual Part III – Water Quality Regulations, Article 3, Section 3.10.3.A.2.a.3)]

# Proposed Amendment Existing Water Quality

Note on the Derivation of Values Used to Define Existing Water Quality. The definitions of Existing Water Quality set forth in Table 2 were developed through field measurements and laboratory analysis of data collected over a time period determined by the Commission to adequately reflect the natural range of the hydraulic and climatologic factors which affect water quality. Existing water quality in Table 2 is defined in terms of (a) a median of water quality data; and (b) the two-tailed upper and lower 95 percent confidence limits around the median.

[Administrative Manual Part III – Water Quality Regulations, Article 3, Section 3.10.3.A.2.a.3]



# Proposed Amendment

## No Measurable Change

4) "Measurable Change" is defined as an actual or estimated change in a mean **or median [(annual or] seasonal or non-seasonal)** in-stream pollutant concentration that is outside the range of the two-tailed upper and lower 95 percent confidence limits that define existing water quality. **[In the absence of adequate available data, background concentrations will be assumed to be zero and "measurable change" will be based on in-stream concentrations greater than the detection limit for each parameter, based on the lowest limit of the most sensitive technique specified in 40 CFR Part 136.]**

[Administrative Manual Part III – Water Quality Regulations, Article 3, Section 3.10.3.A.2.a.4)]



# Special Protection Waters Rule

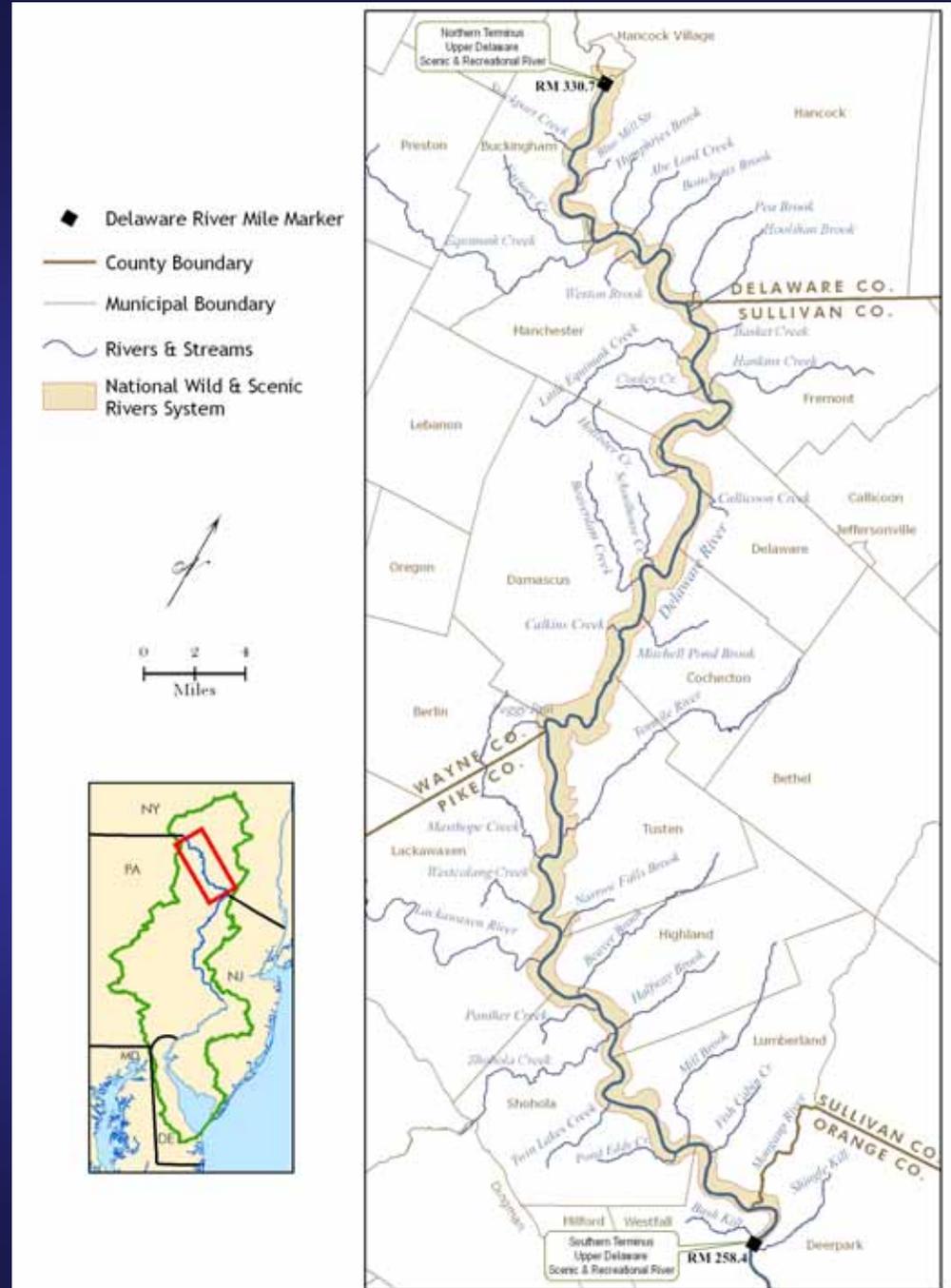
- On December 9, 1992, the Commission amended the Regulations to establish the Special Protection Water policy
- On February 23, 1994 the Commission amended the Regulations to add requirements for controlling non-point sources (NPS) of pollution in Special Protection Waters

# Stream Segments Designated by DRBC as SPW in 1992

## Upper Delaware

The Upper Delaware Scenic  
and Recreational River  
(Upper) as *Outstanding Basin  
Waters*

OBW



# Stream Segments Designated by DRBC as SPW in 1992

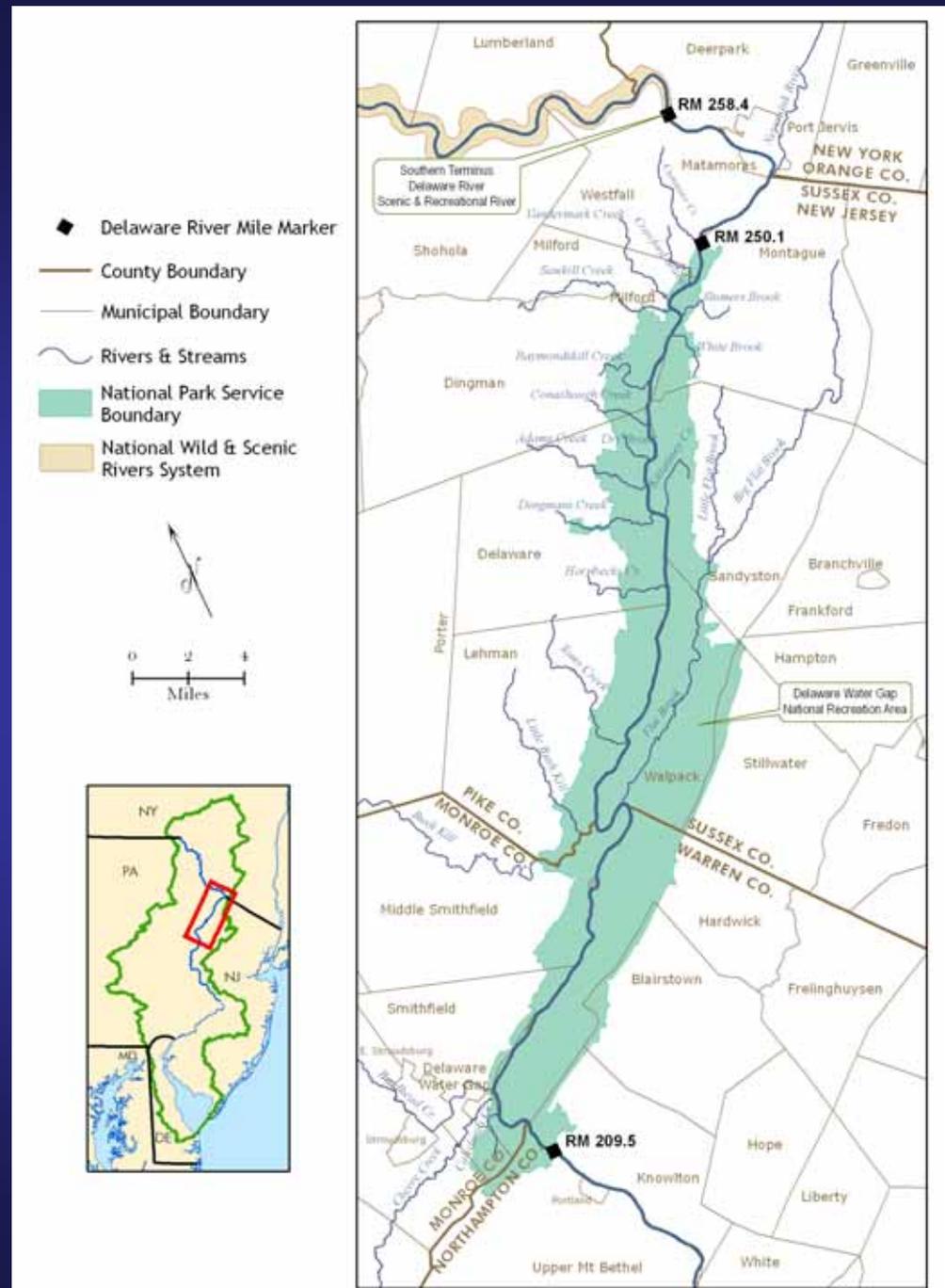
## Middle Delaware

- The 8.5-mile stretch of river above the Delaware Water Gap National Recreation Area and below the Upper Delaware National Scenic and Recreational River (Tri-State) as *Significant Resource Waters*

- Delaware Water Gap National Recreation Area (DWGNRA) as *Outstanding Basin Waters*

OBW

SRW



# Outstanding Basin Waters

Outstanding Basin Waters (OBW) are interstate and contiguous intrastate waters that are contained within the established boundaries of national parks; national wild, scenic and recreational rivers systems; and/or national wildlife refuges that are classified by the Commission as having exceptionally high scenic, recreational and ecological values that require special protection.

[Administrative Manual Part III –Water Quality Regulations, Article 3, Section 3.10.3.A.2.a.1)]



# Significant Resource Waters

Significant Resource Waters (SRW) are interstate waters classified by the Commission as having exceptionally high scenic, recreational, ecological, and/or water supply uses that require special protection.

[Administrative Manual Part III –Water Quality Regulations, Article 3, Section 3.10.3.A.2.a.2)]



# Hierarchy of SPW Requirements

## Point Sources:

1. No discharge alternatives (Direct to SPW)
2. Natural treatment alternatives
3. Minimum treatment of Best Demonstrable Technology (BDT) (Direct to SPW)
4. *No Measurable Change (NMC)* analysis
5. OBW – no mixing zone (direct to SPW)
6. Emergency power, alarms, EMP

## Non-Point Sources:

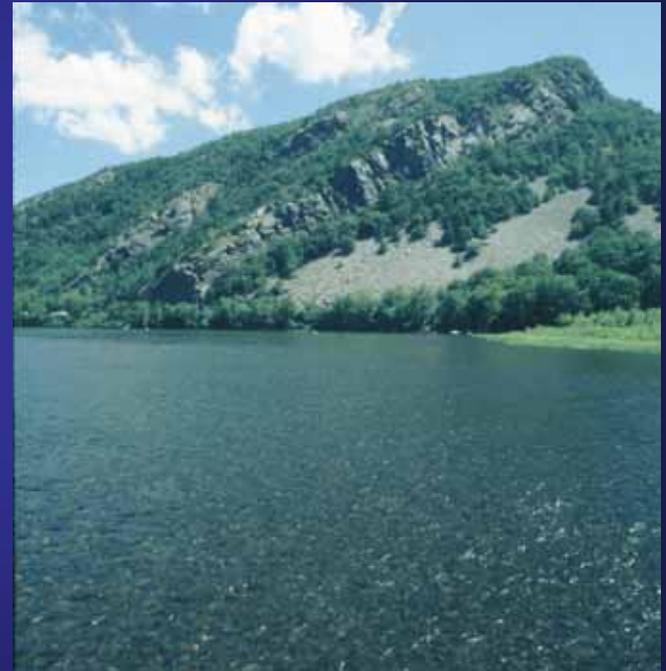
Non-Point Source Pollution Control Plan – applies to wastewater discharge and water withdrawal service areas

# Interim Designation of Lower Delaware River (LDR) as SPW

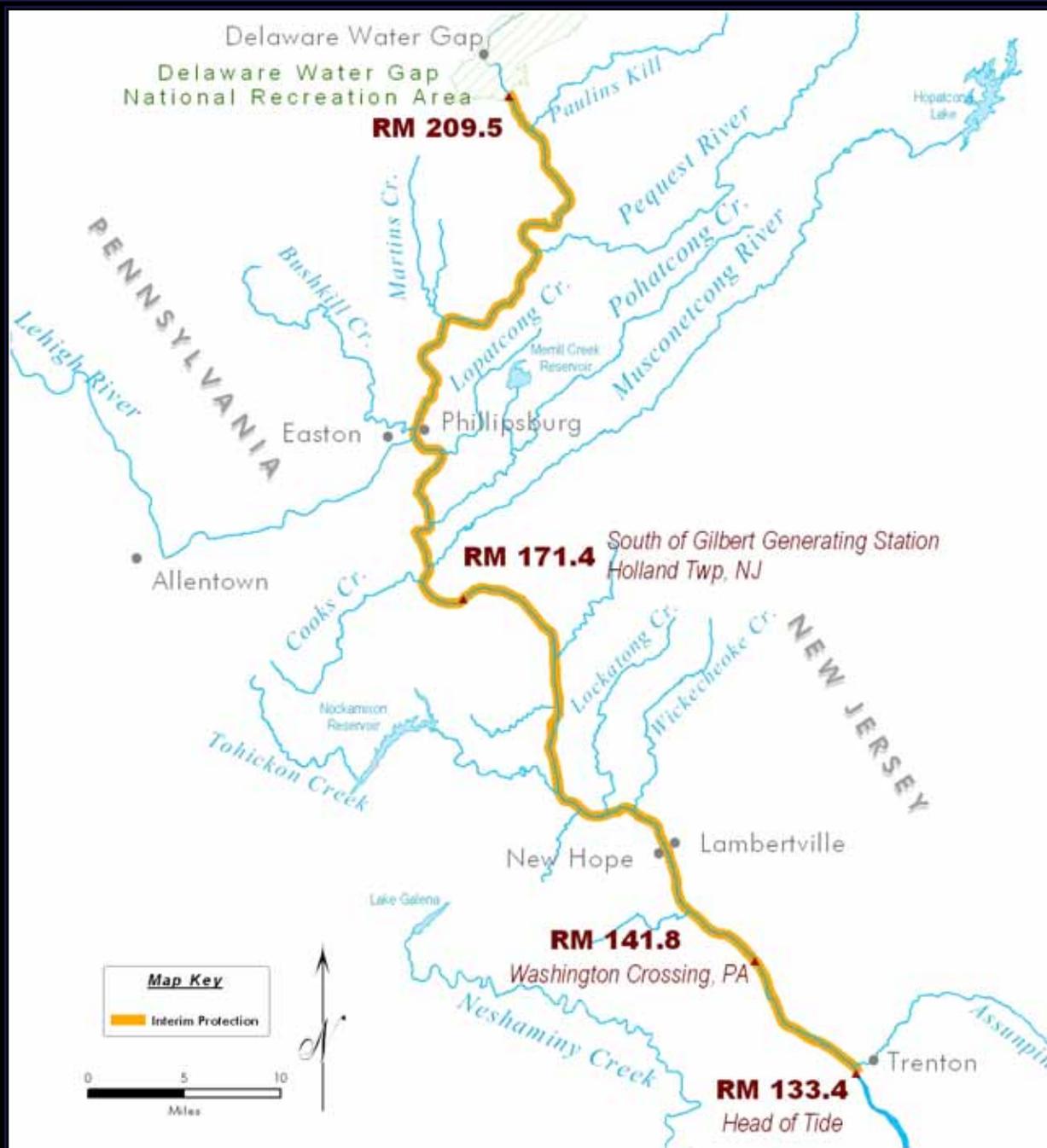
- Interim Classification as *Significant Resource Waters* on January 19, 2005
- Interim Classification as *Significant Resource Waters* extended on September 26, 2005; September 27, 2006; and September 26, 2007
- Interim Classification expires on May 15, 2008



## *Delaware Water Gap*



# Interim Classification of LDR as Significant Resource Waters



# Basic SPW Requirements in the LDR During Interim Designation

- Main stem projects:
  - BDT, non-discharge and natural treatment analysis
- Main stem and tributary projects:
  - Natural treatment analysis, NPSPCP, emergency power, emergency management plan and remote alarms

# BDT as Defined in DRBC Regs

- 5-Day CBOD 10 mg/l
- DO 6.0 mg/l
- TSS 10 mg/l
- Ammonia-N 1.5 mg/l
- Total N 10.0 mg/l
- Total P 2.0 mg/l
- Fecal Coliform 50/100 ml
- UV Disinfection



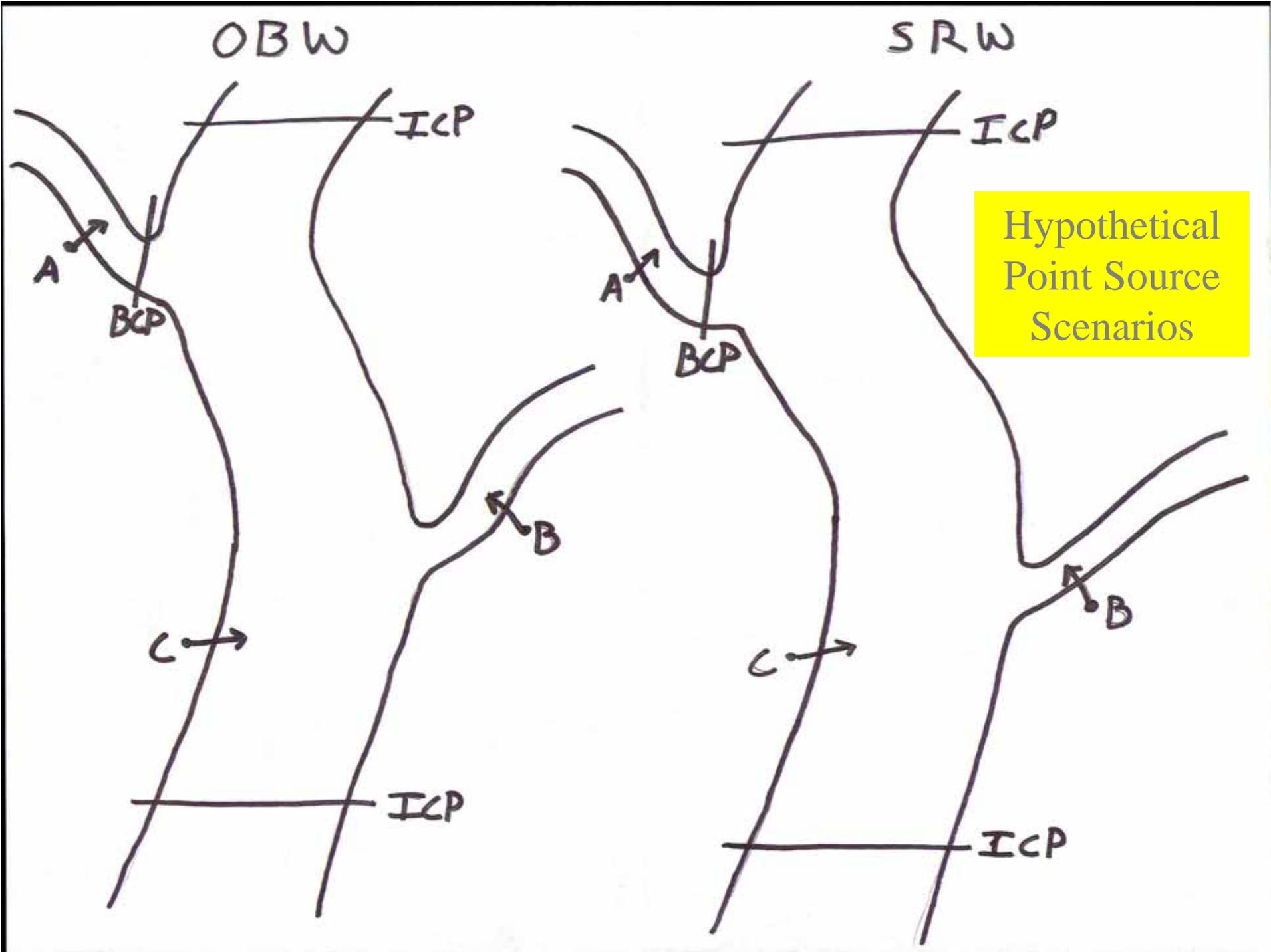
# NMC Demonstration

1. Discharge load is equal to actual load at time of SPW classification – no further analysis required
2. Discharge load uses mass balance approach demonstrating new or increased load (since SPW classification) does not produce MC to EWQ
3. Discharge load analyzed using sophisticated water quality models



## PROJECT LOCATION

- Direct to *Outstanding Basin Waters* (OBW) -- no mixing zone
- Direct to *Significant Resource Waters* (SRW) -- mixing zones are allowed
- On a tributary with a Boundary Control Point (BCP)
- On a tributary without a BCP
- Upper, Middle or Lower Delaware



Hypothetical  
Point Source  
Scenarios

**Proposed Permanent  
Classification of Lower  
Delaware as SPW**

## **Justification for Special Protection Waters**

**Water Quality** – Delaware River WQ is better than all tributaries in Lower Delaware, including C1, EV, HQ

**Water Supply** – Exceptional value with 2.9 Million relying on Lower Delaware

**Scenic Value** – Exceptional and unique in many locations

**Fisheries** – Exceptional and unique for migratory species; healthy warmwater fishery

# Justification for Special Protection Waters

(cont'd)

**Habitat** – Delaware River is unique free flowing river; exceptional habitat values; optimal assessment scores for fisheries and macroinvertebrates.

**Recreation** – Exceptional value with 15,000 canoes per season at Bucks County River Country; heavy use of access areas and by riverside communities; festivals centering on river.

# Proposed Regulations

- Proposal to designate LDR as permanent SPW
- Proposed changes to the SPW Rules:
  - LDR SPW
  - ICPs and BCPs for the LDR
  - EWQ table for LDR
  - Clarifications
  - Trigger for treatment alternatives and NMC analysis

### **3.10.3 A.2.a.15) Expanding Wastewater Treatment Project**

[16] 15) An “Expanding Wastewater Treatment Project” is [refers to] a project involving either (a) alterations or additions to an existing wastewater treatment facility [facilities] that result in a reviewable project in accordance with the Commission's *Rules of Practice and Procedure*; or (b) a [any] new load or increased flow or loading from an existing facility that was not included in a NPDES permit or docket effective on the date of SPW designation [anticipated at the time of NPDES permit issuance].

### **3.10.3 A.2.a.16) Substantial Alterations or Additions**

**16) “Substantial Alterations or Additions” are those additions and alterations resulting in: (a) a complete upgrade or modernization of an existing wastewater treatment plant, including substantial replacement or rehabilitation of the existing wastewater treatment process or major physical structures such as headworks, settling tanks, and biological/chemical treatment or filtration tanks, whether conducted as a single phase or a multi-phased project; or (b) an increased flow or loading from an existing wastewater treatment plant that was not included in a NPDES permit or docket effective on the date of SPW designation. Among other projects, alterations that are limited to changes in the method of disinfection and/or the addition of treatment works for nutrient removal are not deemed to be “Substantial Alterations or Additions.”**

### **3.10.3 A.2.a.16) Substantial Alterations or Additions**

#### Examples of *substantial* alterations or additions

- complete upgrade or modernization of an existing wastewater treatment plant
- increased flow or loading from an existing wastewater treatment plant that was not included in a NPDES permit or docket effective on the date of SPW designation

### 3.10.3 A.2.a.16) Substantial Alterations or Additions

#### Examples of *non-substantial* alterations or additions

- If just replacing mechanical equipment with no increase in the 1992 flow or load.
- If an increase in flow is proposed but the load stays at the actual 1992 load.
- Routine operation and maintenance of existing facilities which may involve the in-kind replacement of equipment such as pumps and motors, equipment in the settling tanks, etc.
- Routine maintenance, repair, replacement or modification of pump stations, whether on- or off-site.
- Alterations that are limited to changes in the method of disinfection and/or the addition of treatment works for nutrient removal

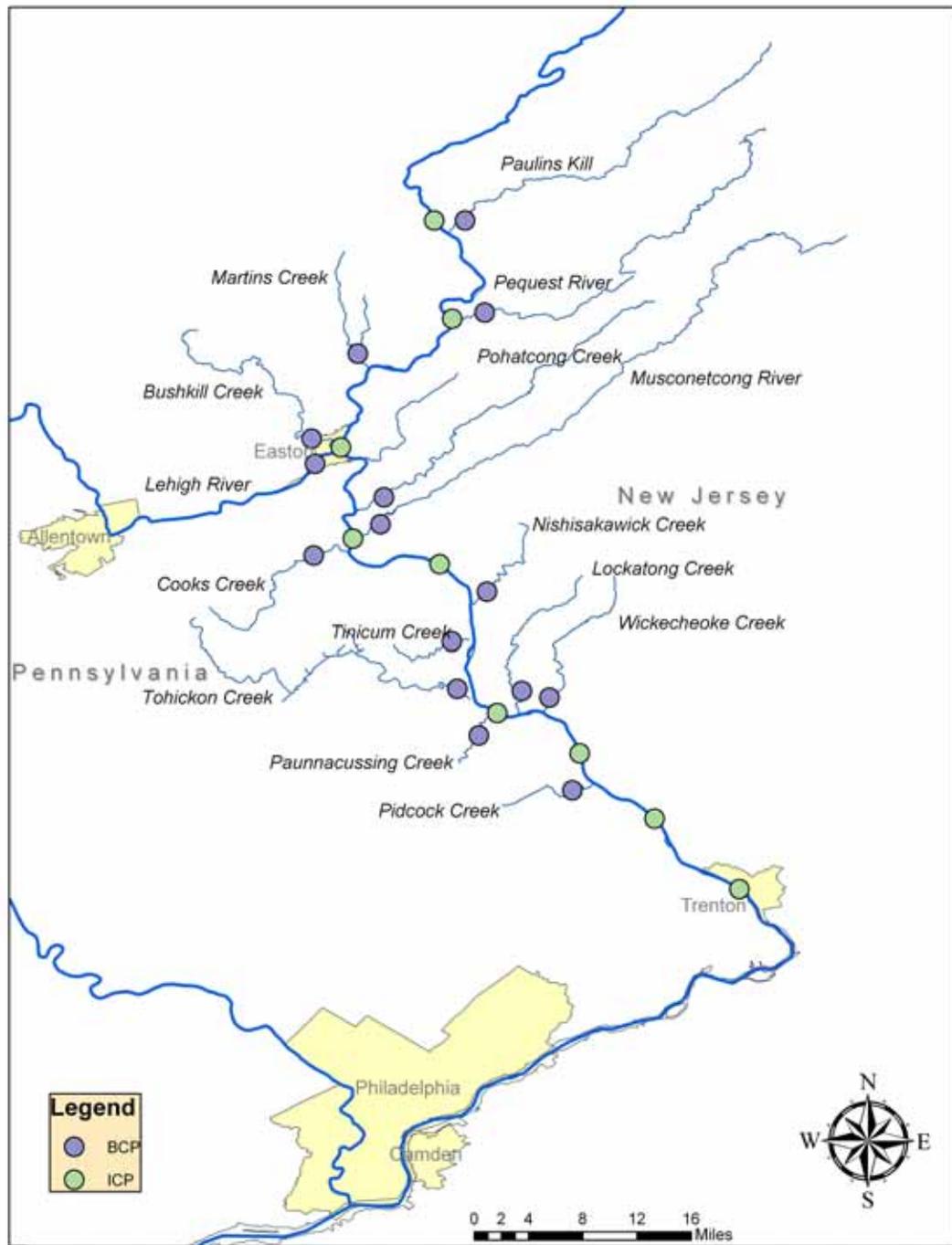
### **3.10.3 A.2.d.7) Trading**

- 7) For point source discharge projects that satisfy applicable requirements of Sections 3.10.3 A.2.b. through d. above, the Commission may approve effluent trading on a voluntary basis between point sources within the same watershed or between the same Interstate Boundary Control Points to achieve no measurable change to existing water quality. Applicants seeking the Commission's approval for a trade must demonstrate equivalent load and pollutant reductions and the ability (through contracts, docket conditions, NPDES effluent limits or other legal instruments) to ensure continuous achievement of the required reductions for a term of not less than five (5) years or the time required for the point source(s) to install the treatment needed to demonstrate no measurable change to Existing Water Quality, whichever term is longer. States will be encouraged to incorporate appropriate conditions in the next NPDES permits issued to the trading dischargers.**



# Lower Delaware Monitoring Program

## Interstate Control Points and Boundary Control Points With a Proposed EWQ



# Index to Lower Delaware River Control Points by River Mile Location

<b>EWQ Table</b>	<b>Tributary or Delaware River Site</b>	<b>Latitude</b>	<b>Longitude</b>	<b>River Mile</b>
<b>Table 2C</b>	<b>Portland ICP</b>	40.784722	-75.184722	<b>207.50</b>
	Jacoby Creek (PA)			207.48
<b>Table 2D</b>	<b>Paulins Kill (NJ)</b>	40.920833	-75.088333	<b>207.16-0.07</b>
	Delawanna Creek (NJ)			205.20
	Allegheny Creek (PA)			199.76
<b>Table 2E</b>	<b>Belvidere ICP</b>	40.828889	-75.085000	<b>197.84</b>
<b>Table 2F</b>	<b>Pequest River (NJ)</b>	40.834167	-75.061111	<b>197.80-1.48</b>
	Pophandusing Brook (NJ)			197.66
	Oughoughton Creek (PA)			194.32
	Buckhorn Creek (NJ)			192.90
<b>Table 2G</b>	<b>Martins Creek (PA)</b>	40.784722	-75.184722	<b>190.65-0.96</b>
	Mud Run (PA)			189.10
<b>Table 2H</b>	<b>Bushkill Creek (PA)</b>	40.695278	-75.206111	<b>184.10-0.05</b>
<b>Table 2I</b>	<b>Easton ICP</b>	40.691111	-75.204167	<b>183.82</b>
<b>Table 2J</b>	<b>Lehigh River (PA)</b>	40.691111	-75.204722	<b>183.66-0.27</b>
	Lopatcong Creek (NJ)			182.00
<b>Table 2K</b>	<b>Pohatcong Creek (NJ)</b>	40.624722	-75.186111	<b>177.36-0.35</b>
	Fry's Run (PA)			176.60
<b>Table 2L</b>	<b>Riegelsville ICP</b>	40.593889	-75.191111	<b>174.80</b>
<b>Table 2M</b>	<b>Musconetcong River (NJ)</b>	40.592500	-75.186667	<b>174.60-0.15</b>
<b>Table 2N</b>	<b>Cooks Creek (PA)</b>	40.586667	-75.211944	<b>173.70-1.06</b>
	Gallows Run (PA)			171.80
<b>Table 2O</b>	<b>Milford ICP</b>	40.566389	-75.098889	<b>167.70</b>
	Hakihokake Creek (NJ)			167.20
	Harihokake Creek (NJ)			165.70
<b>Table 2P</b>	<b>Nishisakawick Creek (NJ)</b>	40.526389	-75.060278	<b>164.10-0.35</b>
	Little Nishisakawick Creek (NJ)			164.00
	Copper Creek (NJ)			162.90

# Index to Lower Delaware River Control Points by River Mile Location (Continued)

<b>EWQ Table</b>	<b>Tributary or Delaware River Site</b>	<b>Latitude</b>	<b>Longitude</b>	<b>River Mile</b>
<b>Table 2Q</b>	<b>Tinicum Creek (PA)</b>	40.485278	-75.072500	<b>161.60-0.24</b>
	Warford Creek (NJ)			160.50
	Smithtown Creek (PA)			159.90
	Warsaw Creek (NJ)			159.50
<b>Table 2R</b>	<b>Tohickon Creek (PA)</b>	40.423056	-75.066667	<b>157.00-0.19</b>
	Hickory Creek (PA)			156.98
<b>Table 2S</b>	<b>Paunacussing Creek (PA)</b>	40.407500	-75.041667	<b>155.90-0.12</b>
<b>Table 2T</b>	<b>Bulls Island ICP</b>	40.407500	-75.037778	<b>155.40</b>
	Cuttalossa Creek (PA)			154.50
<b>Table 2U</b>	<b>Lockatong Creek (NJ)</b>	40.415833	-75.018056	<b>154.00-0.75</b>
<b>Table 2V</b>	<b>Wickecheoke Creek (NJ)</b>	40.411667	-74.986944	<b>152.51-0.21</b>
	Primrose Creek (PA)			150.50
	Alexauken Creek (NJ)			149.50
	Rabbit Run (PA)			149.45
<b>Table 2W</b>	<b>Lambertville ICP</b>	40.365833	-74.949167	<b>148.70</b>
	Swan Creek (NJ)			148.60
	Aquetong Creek (PA)			148.50
	Dark Hollow Run (PA)			148.20
<b>Table 2X</b>	<b>Pidcock Creek (PA)</b>	40.32907	-74.94566	<b>146.30-0.90</b>
	Moore Creek (NJ)			145.20
	Jericho Creek (PA)			144.20
	Fiddlers Creek (NJ)			143.20
<b>Table 2Y</b>	<b>Washington Crossing ICP</b>	40.295278	-74.868889	<b>141.80</b>
	Houghs Creek (PA)			140.60
	Jacobs Creek (NJ)			140.46
	Dyers Creek (PA)			139.80
	Reeds Run (NJ)			138.50
	Buck Creek (PA)			138.00
	Gold Run (NJ)			137.25
<b>Table 2Z</b>	<b>Trenton ICP</b>	40.219722	-74.778333	<b>134.34</b>



# Definition of Existing Water Quality: Lehigh River BCP

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow-Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	0.08	0.06	0.09	
Chloride (mg/l)	21	19	24	$Y = -16.5077 (\log Q) + 76.7534$
Chlorophyll a (mg/m <sup>3</sup> )	2.70	1.80	3.60	
Dissolved Oxygen (mg/l) mid-day *	8.85	8.46	9.20	
Dissolved Oxygen Saturation (%)	97%	94%	98%	
E. coli (colonies/100 ml)	49	36	120	$Y = \text{antilog} (1.5045 (\log Q) - 3.0132)$
Enterococcus (colonies/100 ml)	110	56	210	
Fecal coliform (colonies/100 ml) *	120	70	200	$Y = \text{antilog} (1.4387 (\log Q) - 2.5712)$
Nitrate NO3-N (mg/l) *	1.80	1.70	2.00	
Orthophosphate (mg/l)	0.11	0.09	0.15	
pH *	7.60	7.50	7.70	
Specific Conductance (umhos/cm)	264	218	292	$Y = -186.4602 (\log Q) + 870.6296$
Total Dissolved Solids (mg/l)	178	150	190	$Y = -93.4568 (\log Q) + 482.4929$
Total Kjeldahl Nitrogen (mg/l)	0.50	0.41	0.58	
Total Nitrogen (mg/l) *	2.42	2.10	2.74	
Total Phosphorus (mg/l) *	0.17	0.15	0.24	
Total Suspended Solids (mg/l) *	3.8	2.5	4.5	
Turbidity (NTU)	3.1	2.2	6.0	$Y = \text{antilog} (0.901 (\log Q) - 2.335)$
Alkalinity (mg/l)	55	49	69	$Y = -51.44 (\log Q) + 227.86$
Hardness (mg/l)	96	81	105	$Y = -58.1224 (\log Q) + 285.2788$

# Definition of Existing Water Quality: Lambertville ICP

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow-Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	0.05	
Chloride (mg/l)	18	16	20	$Y = -0.00046965 Q + 22.449$
Chlorophyll a (mg/m <sup>3</sup> )	2.95	2.00	4.70	
Dissolved Oxygen (mg/l) mid-day *	8.50	7.90	8.63	
Dissolved Oxygen Saturation (%)	94%	93%	95%	
E. coli (colonies/100 ml)	40	16	62	$Y = \text{antilog} (0.00004662 Q + 1.0027)$
Enterococcus (colonies/100 ml)	60	38	80	
Fecal coliform (colonies/100 ml) *	55	32	120	$Y = \text{antilog} (0.00003689 Q + 1.3656)$
Nitrate NO3-N (mg/l) *	1.11	0.90	1.28	
Orthophosphate (mg/l)	0.04	0.03	0.07	
pH *	7.55	7.40	7.60	
Specific Conductance (umhos/cm)	191	156	207	$Y = -0.00448812 Q + 229.4$
Total Dissolved Solids (mg/l)	140	127	160	$Y = -0.0020763 (\log Q) + 159.338$
Total Kjeldahl Nitrogen (mg/l)	0.46	0.32	0.65	
Total Nitrogen (mg/l) *	1.42	1.27	1.83	
Total Phosphorus (mg/l) *	0.10	0.08	0.12	
Total Suspended Solids (mg/l) *	4.8	3.5	8.0	$Y = 0.00075399 Q - 0.3458$
Turbidity (NTU)	2.5	1.8	6.0	$Y = \text{antilog} (0.00003256 Q + 0.0989)$
Alkalinity (mg/l)	46	36	52	$Y = -0.00162641 Q + 60.322$
Hardness (mg/l)	68	56	77	$Y = -0.00146091 Q + 80.092$



# Timing/Process

LDR permanent designation:

- 2 public availability meetings -- Stockton, NJ (10/25/07) and Easton, PA (11/1/07)
- Commission hearing 12/4/07
- Comment period ending 12/6/07
- Staff prepares response to comments and recommendation to Commissioners
- Commission action on 2/27/08

*Lower Delaware*





*Photo by Kim Weimer,  
Buck County Courier Times*



## *Delaware River at Washington Crossing*



*Questions ?*

