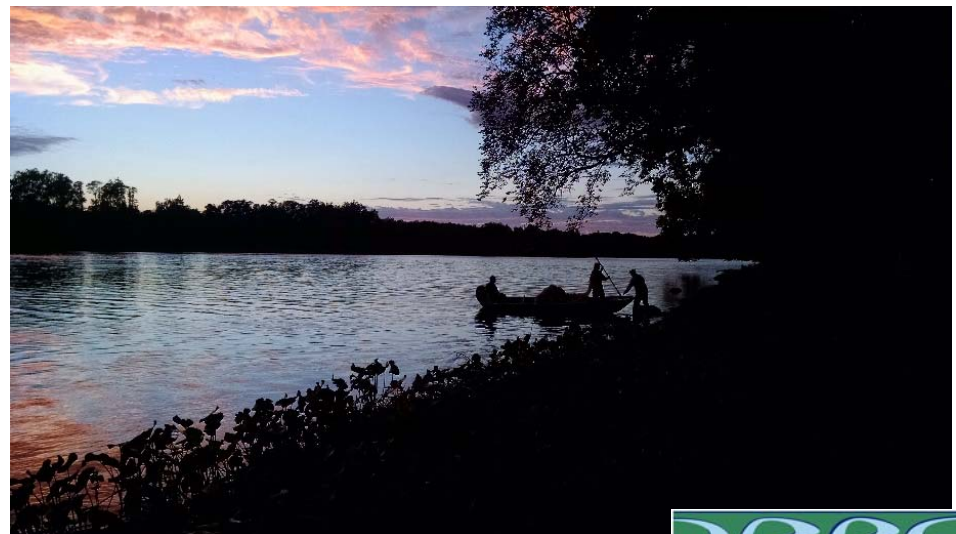
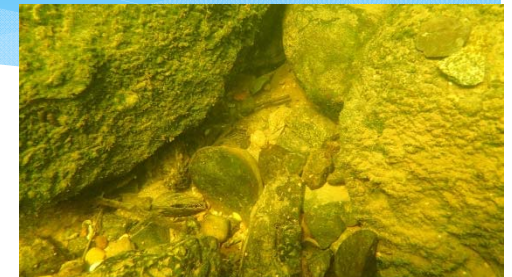


# Revisiting Temperature Criteria for the non-tidal Delaware

## Water Quality Advisory Committee

July 28, 2016

John Yagecic, P.E.



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# Existing Temperature Criteria non-tidal Zones

2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.1.]
  - a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C),
  - b. natural temperature will prevail above 87°F (30.6°C).

- \* Applies at the edge of a heat dissipation area;
- \* “ambient temperature” not defined;
- \* We have temperature data (USGS monitors, SRMP) but nothing against which to compare;

# Approach discussed by WQAC in 2010

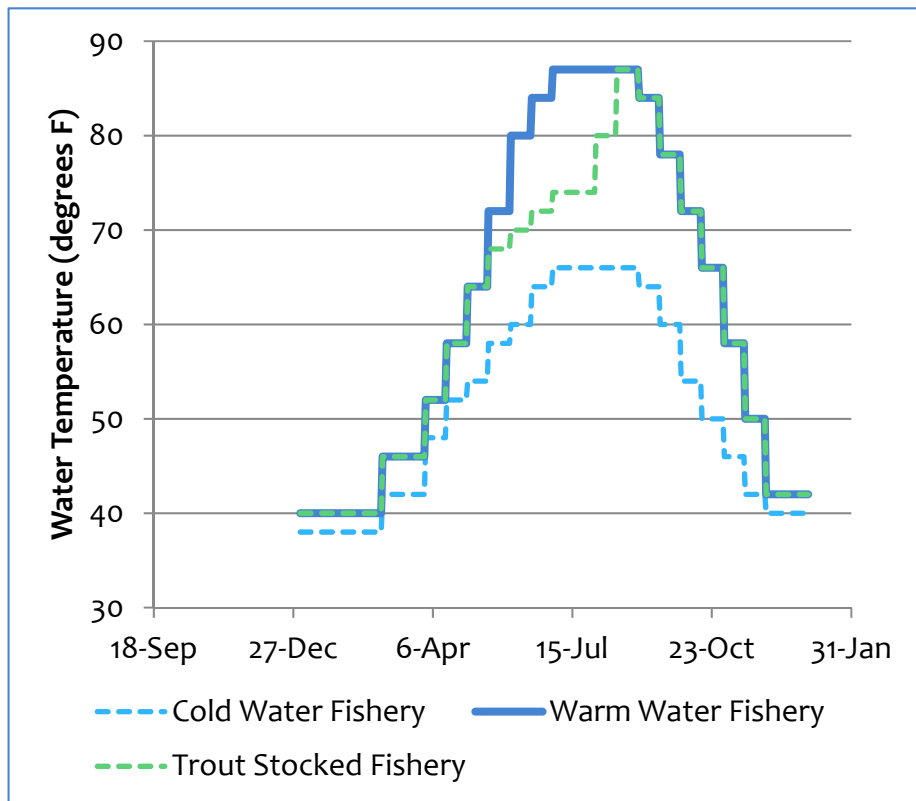
- \* Adopt PA's warm water fishery temperature criteria in Zones 1B through 1E;
- \* **§ 93.7. Specific water quality criteria.**
- \* <http://www.pacode.com/secure/data/025/chapter93/s93.7.html>
  - \* Acknowledge Zone 1A as a transitional zone between the reservoir influenced temperatures from the east and west branch and more naturalized temperature regime downstream;

# Uses to be Protected, Zones 1B to 1E

- B. Water Uses to be Protected.** The quality of Zone 1B waters shall be maintained in a safe and satisfactory condition for the following uses:
1. a. public water supplies after reasonable treatment,  
b. industrial water supplies after reasonable treatment,  
c. agricultural water supplies;
  2. a. maintenance and propagation of resident game fish and other aquatic life,  
b. spawning and nursery habitat for anadromous fish,  
c. passage of anadromous fish,  
d. wildlife;
  3. a. recreation.

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# PA's Temperature Criteria

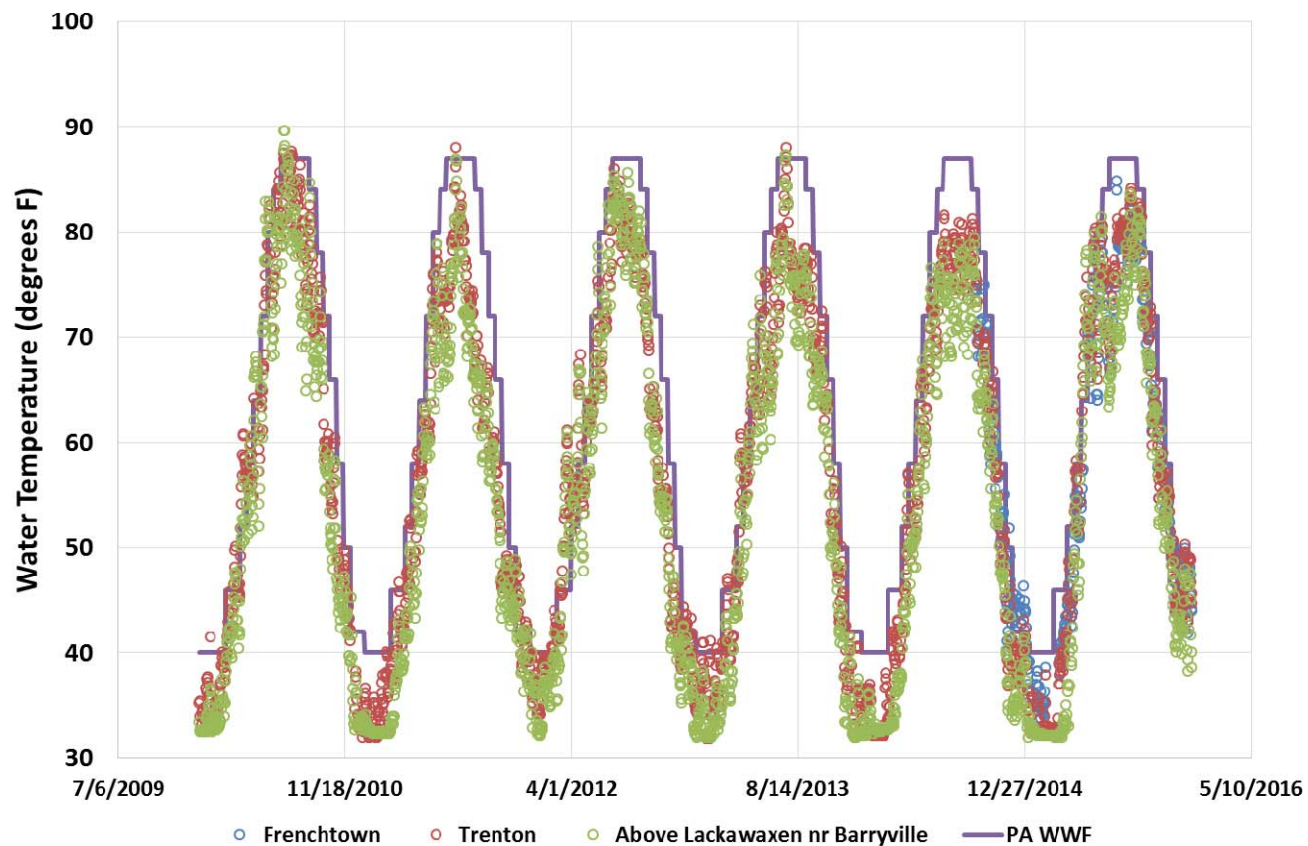


<i>SYMBOL:</i> <i>CRITICAL USE:</i> <i>PERIOD</i>	<i>TEMP<sub>1</sub></i> <i>CWF</i>	<i>TEMP<sub>2</sub> WWF</i> <i>TEMPERATURE</i> <i>°F</i>	<i>TEMP<sub>3</sub></i> <i>TSF</i>
January 1-31	38	40	40
February 1-29	38	40	40
March 1-31	42	46	46
April 1-15	48	52	52
April 16-30	52	58	58
May 1-15	54	64	64
May 16-31	58	72	68
June 1-15	60	80	70
June 16-30	64	84	72
July 1-31	66	87	74
August 1-15	66	87	80
August 16-30	66	87	87
September 1-15	64	84	84
September 16-30	60	78	78
October 1-15	54	72	72
October 16-31	50	66	66
November 1-15	46	58	58
November 16-30	42	50	50
December 1-31	40	42	42

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# Compare Observations to PA WWF

Comparison of USGS Continuous Temperature Observations to PA WWF Criteria, 2010-2015



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# Likelihood of Exceedance

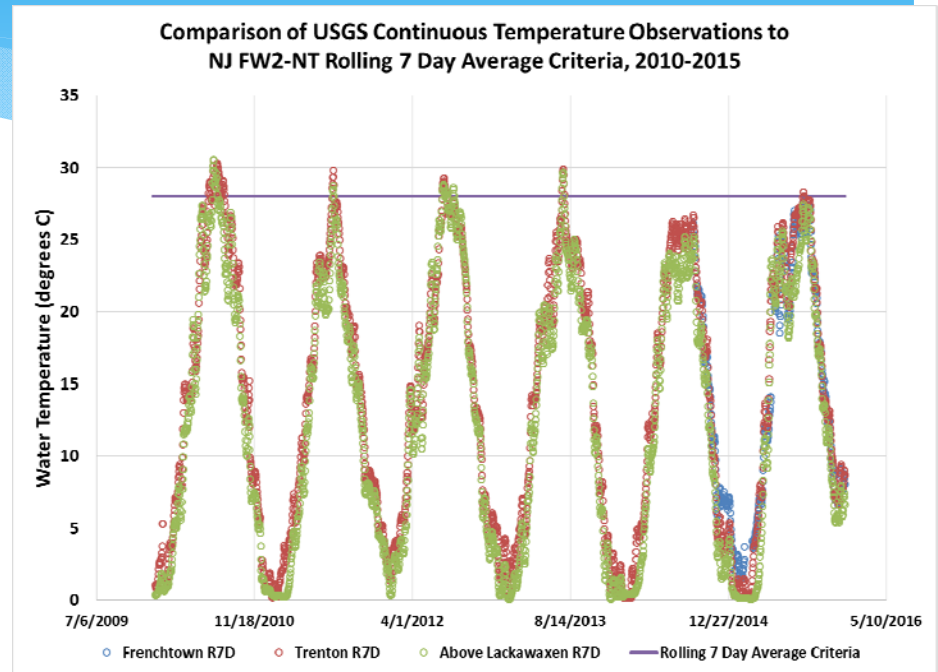
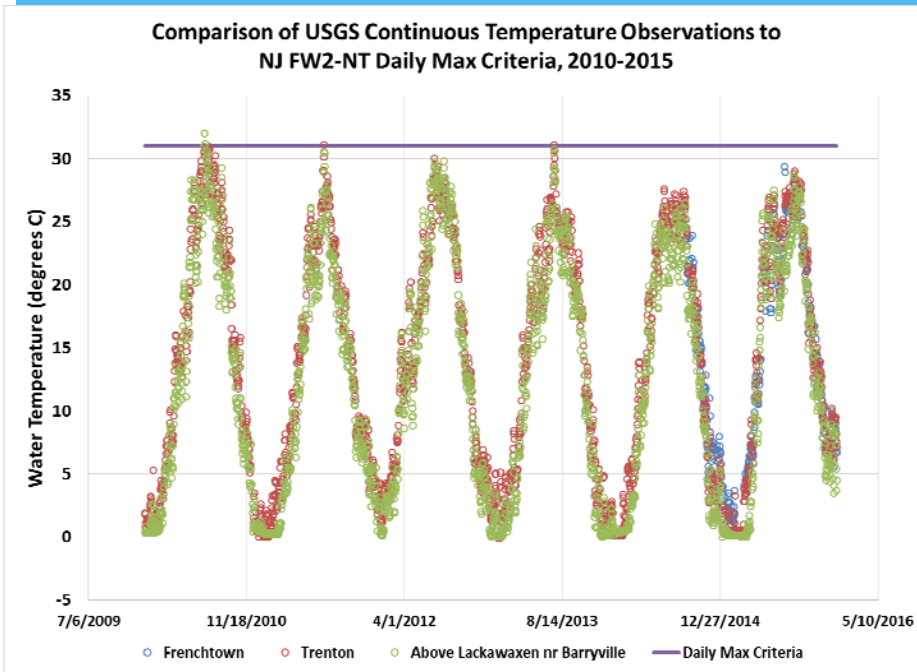
Month	Trenton	Above Lackawaxen
Jan	3%	2%
Feb	7%	1%
Mar	13%	13%
Apr	25%	24%
May	20%	32%
Jun	5%	5%
Jul	3%	4%
Aug	0%	0%
Sep	0%	1%
Oct	1%	0%
Nov	1%	0%
Dec	22%	18%

- \* 13% > PA WWF at Trenton
- \* 8% > PA WWF above Lackawaxen
- \* If adopted, exceedances most likely in spring and in December

- \* Percent of the total potential exceedances at each site by month

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# Compare Observations to NJ FW2-NT



Above Criteria	Daily Max	7 Day Average
Trenton	0.1%	3%
Above Lackawaxen	0.1%	2%

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# Discussion / Next Steps

- \* DRBC intends to follow-up at next WQAC meeting in late 2016.
  
- \* WQAC Discussion

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