

TDS

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Water Quality Criteria

- Narrative – Section 93.6 – Water may not contain substances from discharges in amounts that are adverse or harmful to the protected water uses.
- Numeric
 - Magnitude
 - Duration
 - Frequency

Water Quality Criteria

- Magnitude – How much?

A measure of the amount of a substance that can be present over which adverse affects to designated uses will be realized.

Water Quality Criteria

- Duration – How long?
 - A measure of the amount of time that a Magnitude can be exceeded over which adverse affects to designated uses will be realized.
 - When magnitude is exceeded for a period longer than the duration, a violation of numeric criteria has occurred.

Water Quality Criteria

- Frequency – How often?
 - A measure of the number of violations of magnitude and frequency that are publicly acceptable.
 - Section 96.3(b) sets this policy decision in regulation and establishes that criteria (magnitude and duration) must be achieved 99% of the time.
 - Q_{7-10} design condition provides for this frequency of protection.

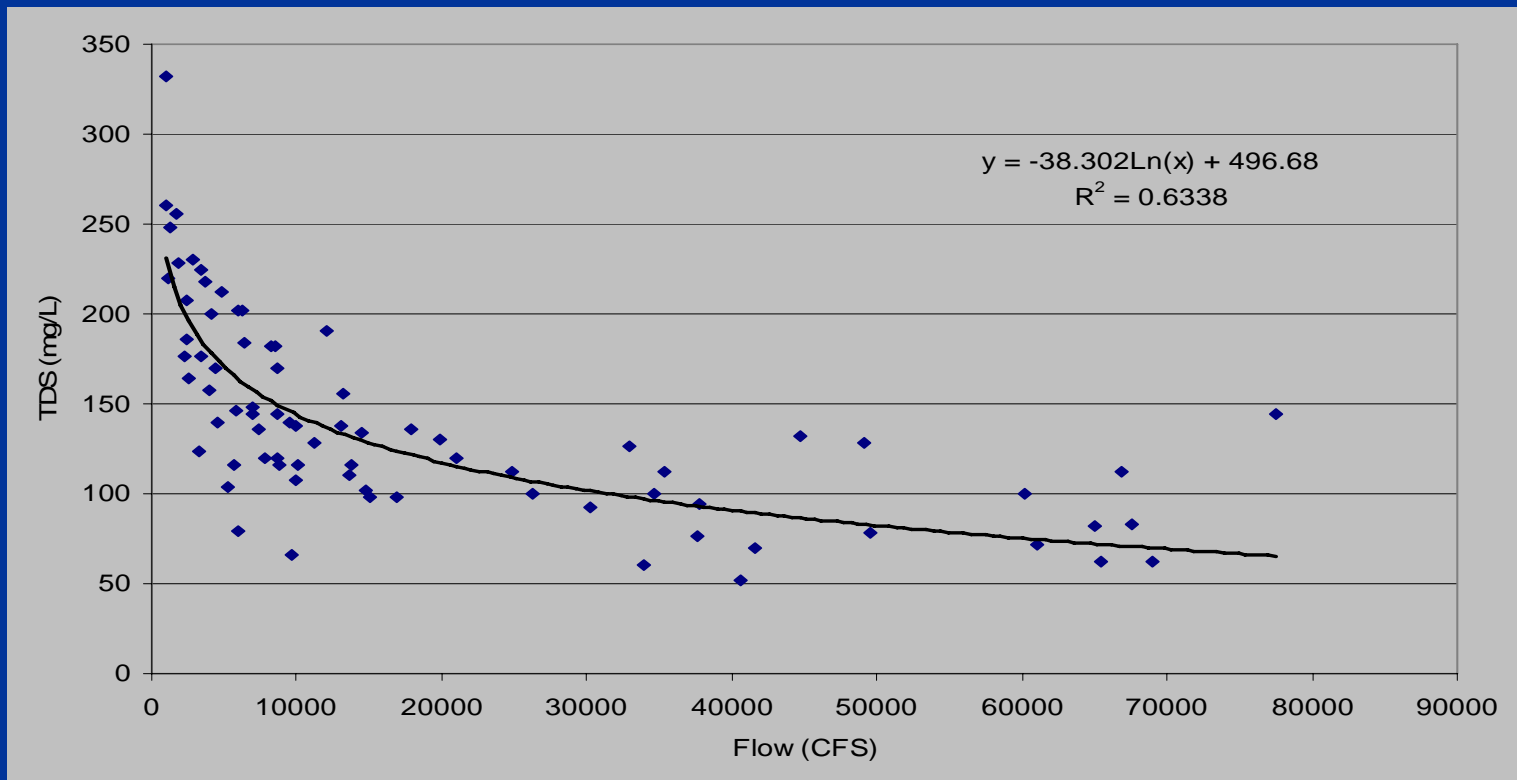
West Branch

Susquehanna River

- TDS in the West Branch is already 48% of the 500 mg/L water quality criterion during design-flow conditions.

TDS REGRESSION WQN 401 WEST BRANCH
FLOW DATA FROM WEST BRANCH AT LEWISBURG, PA

Q7-10 of 764 cfs is equivalent to 242 mg/L TDS

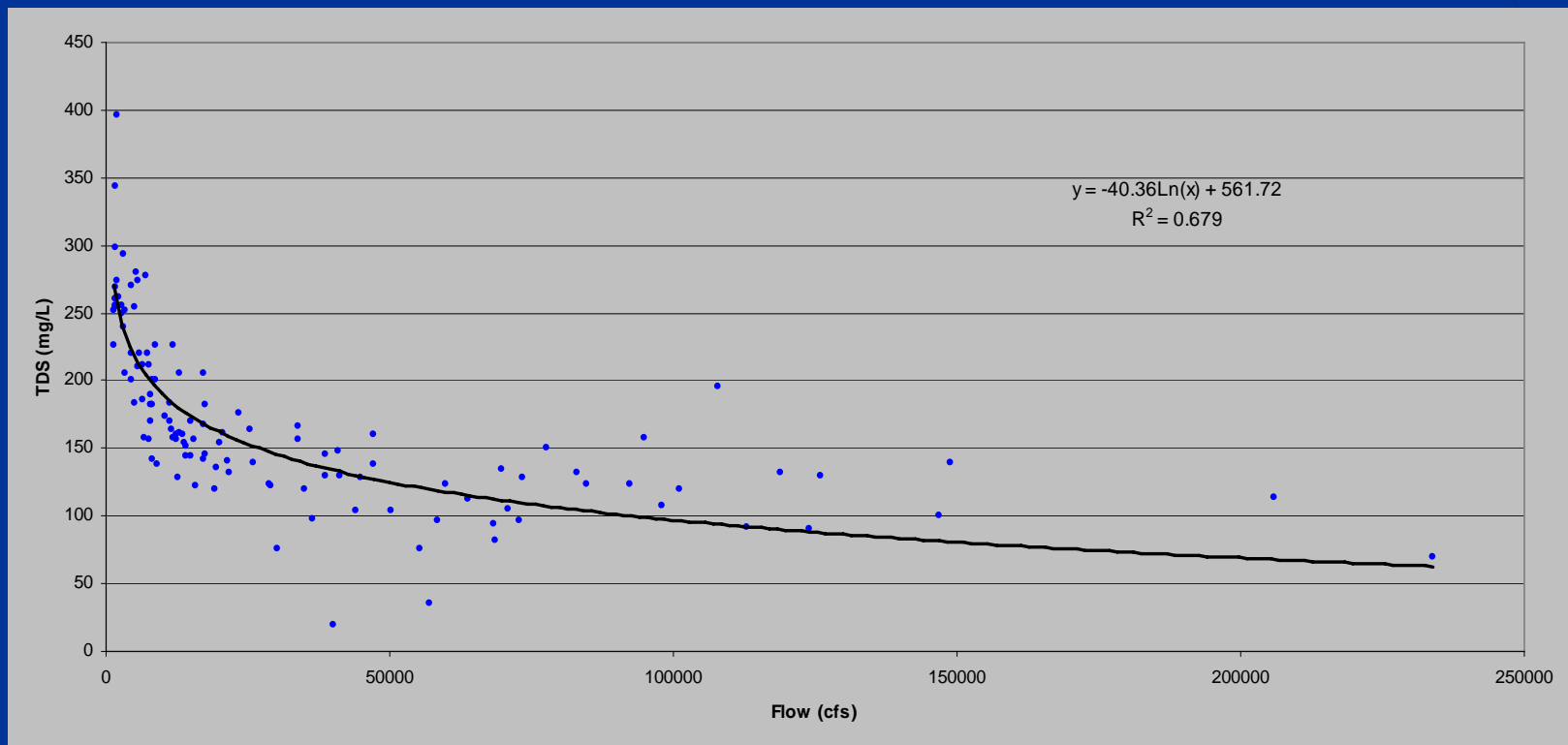


North Branch Susquehanna River

- TDS in the North Branch is already 56% of the 500 mg/L water quality criterion during design-flow conditions.

TDS REGRESSION WQN 301 NORTH BRANCH
FLOW DATA FROM NORTH BRANCH AT DANVILLE, PA

Q7-10 of 1,130 cfs is equivalent to 278 mg/L TDS

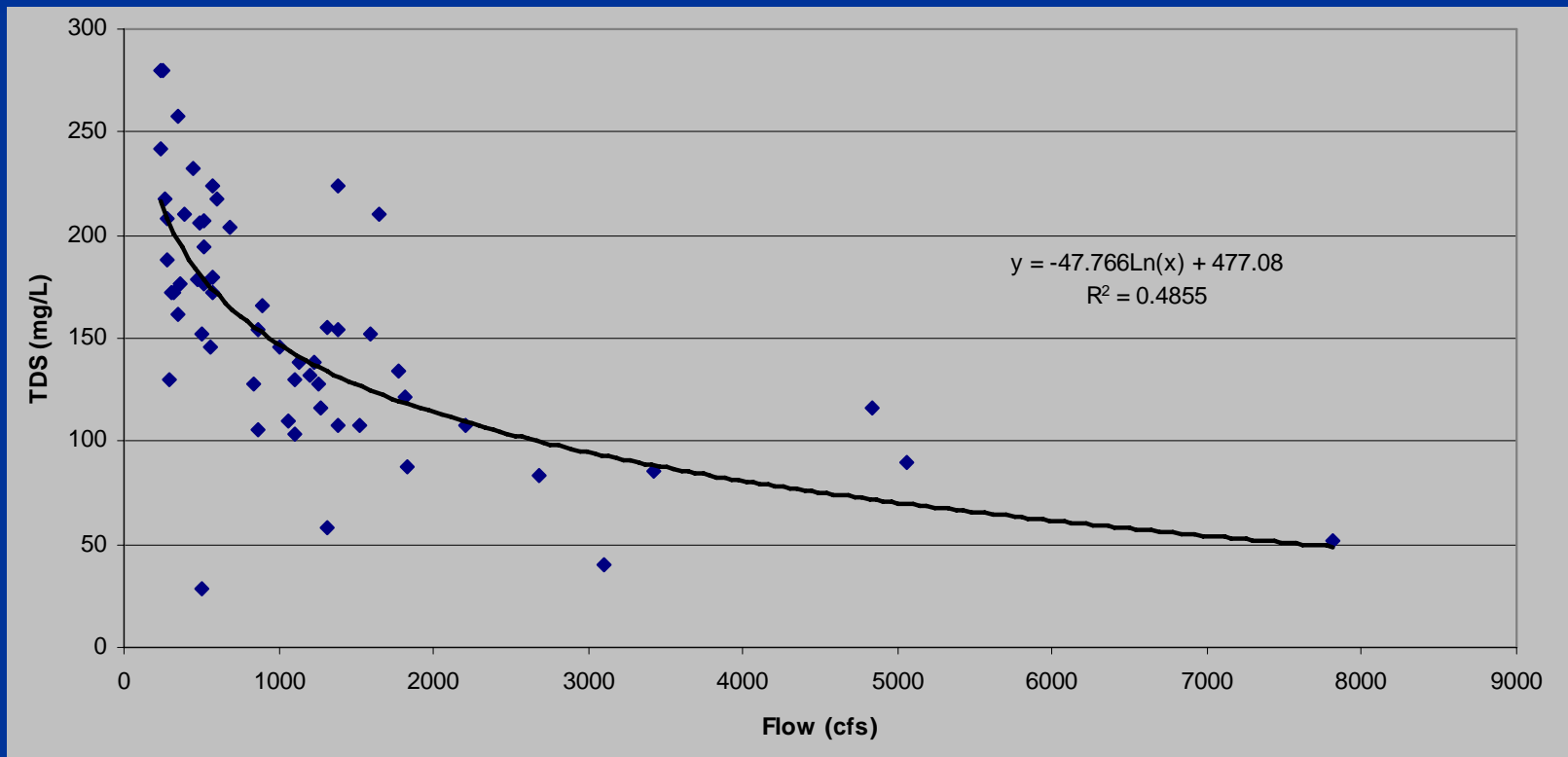


Clarion River

- TDS in the Clarion River is already 51% of the 500 mg/L water quality criterion during design-flow conditions.

TDS REGRESSION WQN 822 AT CLARION RIVER
FLOW DATA FROM COOKSBURG, PA, PA

Q7-10 of 105 cfs is equivalent to 255 mg/L TDS



Summary

- The major watersheds of the Commonwealth already are limited in the ability to accept new loads of TDS, chloride, and sulfate, even before we consider any new loads related to the development of the Marcellus Shale formation.
- TDS concentrations the Monongahela River and the Beaver River have interfered with achieving the Potable Water Supply and Industrial Water Supply uses, and need to be reduced rather than increased.
- New water quality criteria for dissolved solids designed to protect aquatic life-related uses will likely increase the challenge and further constrain our ability to accommodate TDS loads.