

Water Use Aspects of Land Development



Tioga County Planning “Plan the Land”
Public Learning Seminar
June 23, 2026

Susquehanna River Basin

The Basin

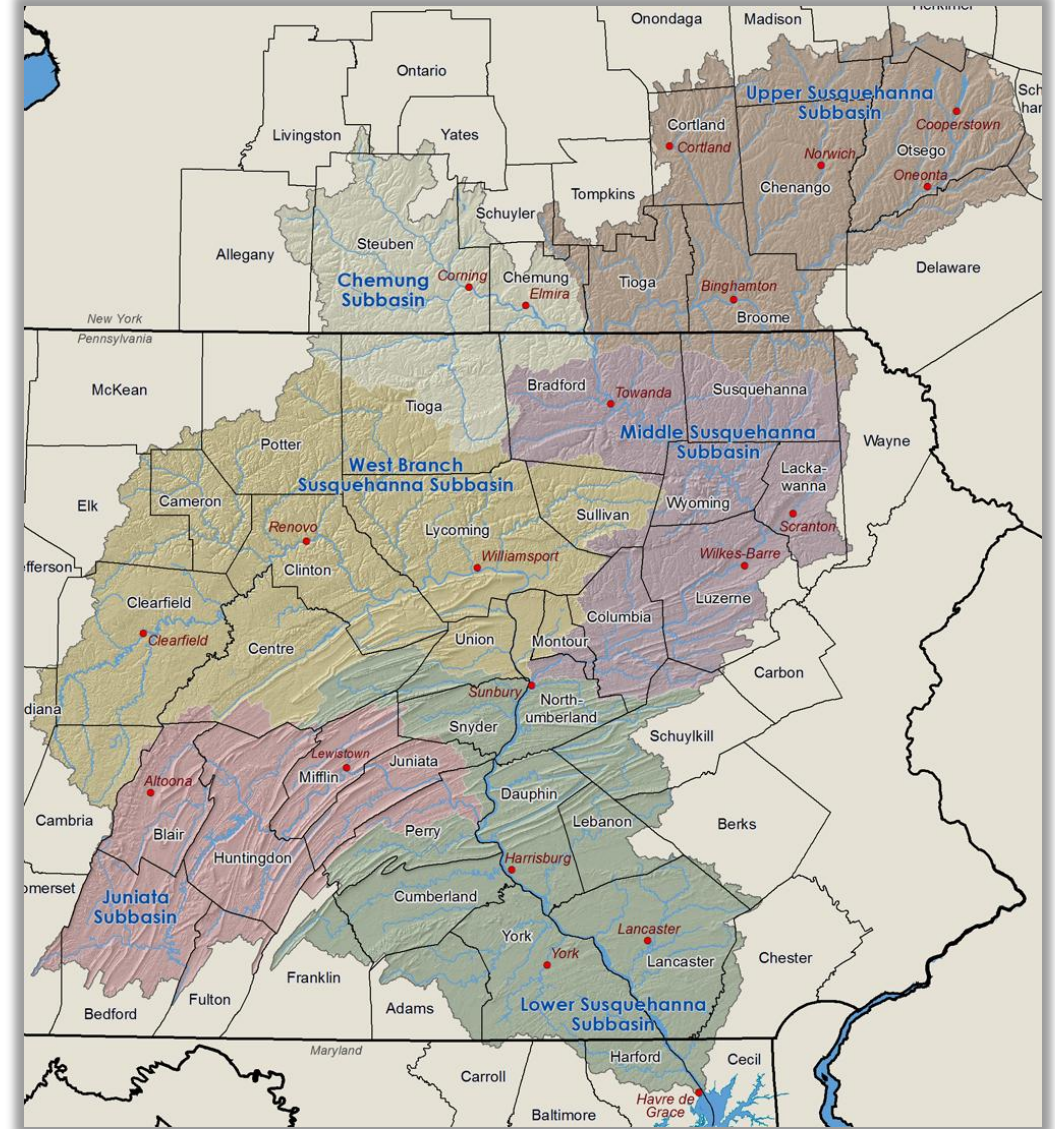
- 27,510-square-mile watershed
- About the size of South Carolina
- 4.2 million population
- Nearly 50,000 miles of waterways

The River

- 444 miles
- Supplies 26 billion gallons per day to the Bay
- That's about 50% of the freshwater inflow

The Commission

- Interstate gov't agency – NY, PA, MD & the USA
- Compact signed by President Nixon 12/24/1970



Susquehanna River Basin Commission

- Mission: enhance public welfare by balancing economic development with conservation of water resources and aquatic ecosystems
- Fill gaps; avert conflicts; foster cooperation
- Sixty-five staff (45 technical)



What We Do

- Water Supply – regulate large water users
- Water Quality – nutrient trends, monitoring network, abandoned mine drainage, invasives
- Flooding and Drought – build community resilience to extreme events, inundation maps
- **Watershed Management – promote practices that allow for healthy watersheds**

Underpinned by Planning, Coordination and Outreach



SRBC Regulatory Authority

- Groundwater Withdrawals
 - 100,000 gallons per day (gpd)
- Surface Water Withdrawals
 - 100,000 gpd
- Consumptive Use
 - 20,000 gpd



Non-Duplicative

Our agency was designed to be non-duplicative of other agencies... we do not regulate water quality issues and land development issues

ANY INDUSTRY THAT EXCEEDS COMMISSION THRESHOLDS IN THE BASIN WILL REQUIRE APPROVAL AND REPORTING OF DAILY WITHDRAWAL AND CONSUMPTIVE USE

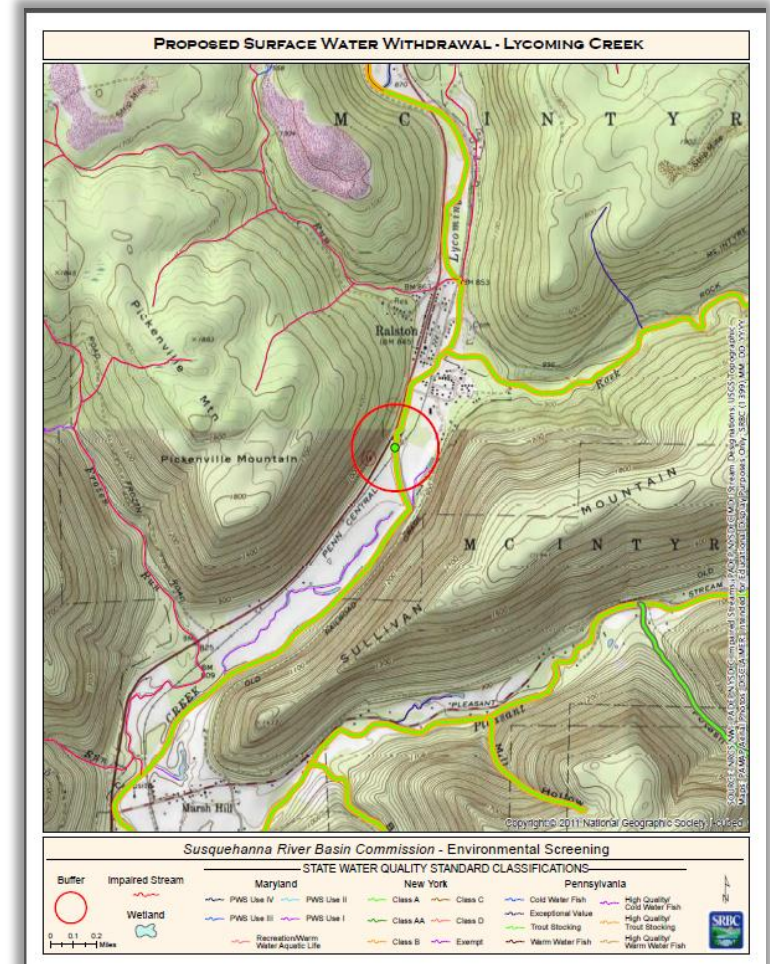
Consumptive Water Use

Water that is used but not returned to rivers and streams because it is evaporated, transpired, incorporated into products, or otherwise lost.



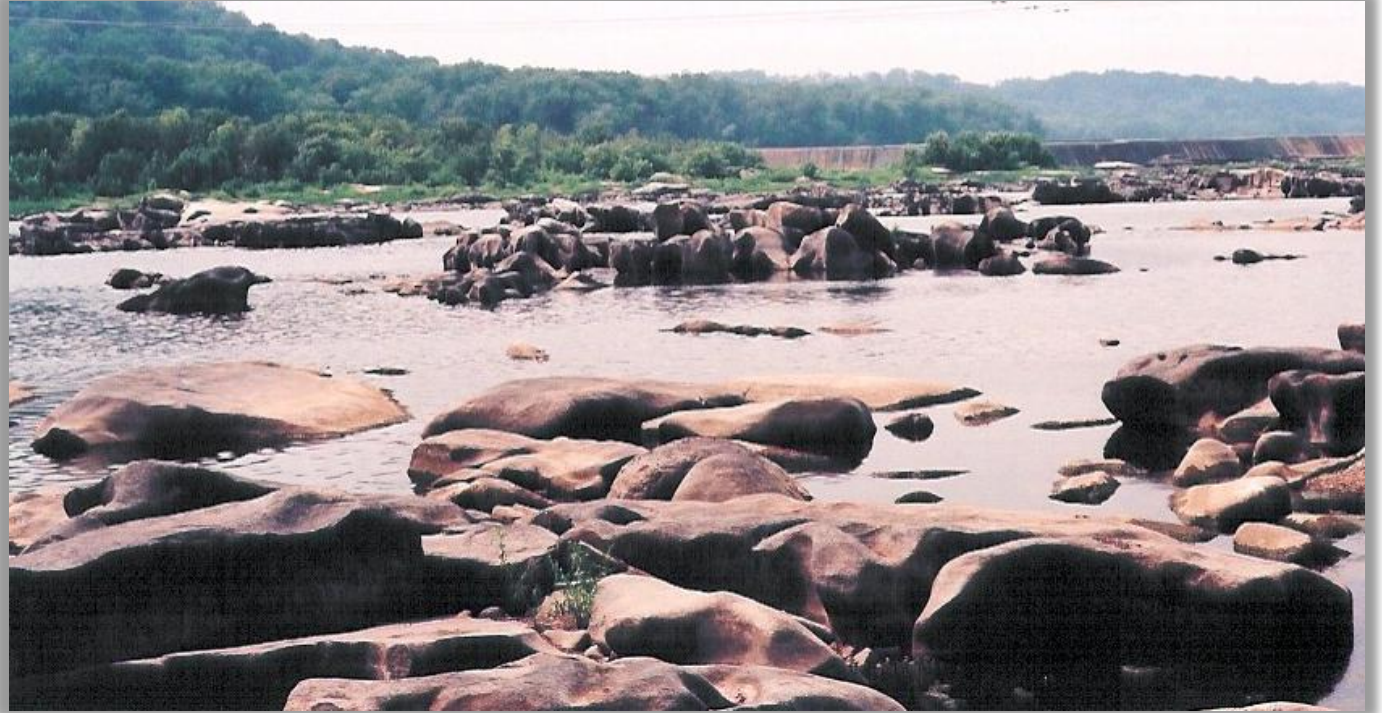
SRBC Requirements and Review Standards

- Public Notice
- Agency Coordination
- Applying Water Science:
 - Groundwater - Hydrogeologic Evaluation (Aquifer Testing)
 - Yield and Availability Analysis
 - Desktop Environmental Screening & Site Assessments
 - Cumulative and Individual Impact Analysis



Environmental and Water Availability Concerns

- Sustainability for Multiple Uses and Users
- Cumulative Impacts
- Preservation of Water Quality
- Loss of Fishery Habitat
- Impacts on Recreational Uses



Approval Conditions and Compliance

Permits are not One-Size-Fits-All

- Metering and Reporting
- Groundwater Elevations
- Inspections – dedicated staff
- Mitigation for Adverse Impacts
- Water Conservation
- Low Flow Protection
- Special Monitoring
- Expiration/Approval Term



Water impacts associated with development

Facility water demand

- drinking water
- process water and cleaning
- cooling - water-based systems are convenient and cost effective

Site development

- altered infiltration and pathways
- stormwater runoff
- wetland disturbance
- discharge of used water

Authority over land development matters such as discharges and encroachments is held by the individual states and the federal government



Smart siting and/or the use of conserving technology can greatly reduce water impacts!

Data Centers and Water Demand

Rapidly Growing/Evolving Industry

- “Hyperscale” - Artificial Intelligence, Cryptocurrency

Water Demands

- High speed computing generates a lot of heat
- Traditionally, cooling can consume millions of gallons of water per day

Source of water?

- surface water or groundwater wells
- public water supply
- treated wastewater
- inactive mines



Consumptive use of water

- water lost through evaporation in the cooling process

Data Center Water Use

Cooling technology dictates water demand

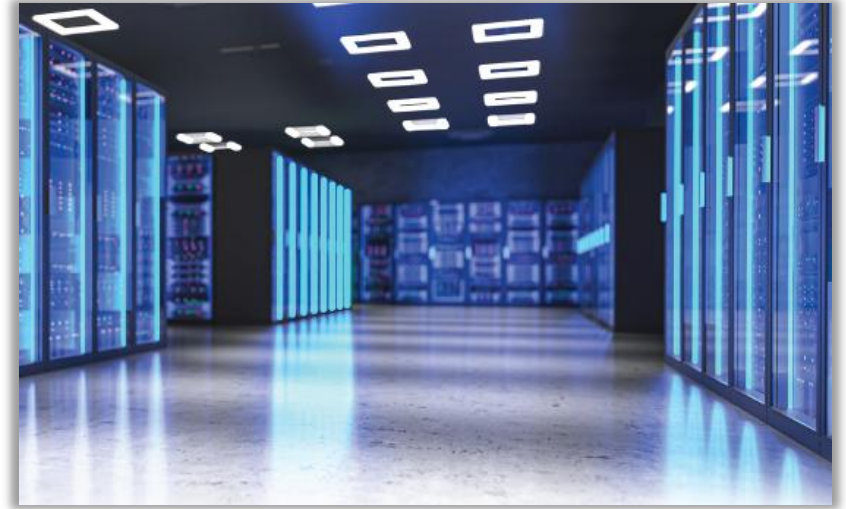
- Evaporative – millions of gallons
- Hybrid systems – 100s of thousands of gallons
- Dry – minimal/seasonal demand

By Comparison

- Power Generation – 10s of millions gpd
- Food Industry – 100s of thousands gpd
- Golf Course Irrigation, Snowmaking – 10s of thousands to 100s of thousands gpd

Stress on Water Utilities?

- water already accounted for by SRBC
- water reserves availability?
- *data center may need use approval from SRBC*



Water use varies greatly based on the cooling technology used – from millions of gallons per day to under SRBC thresholds.

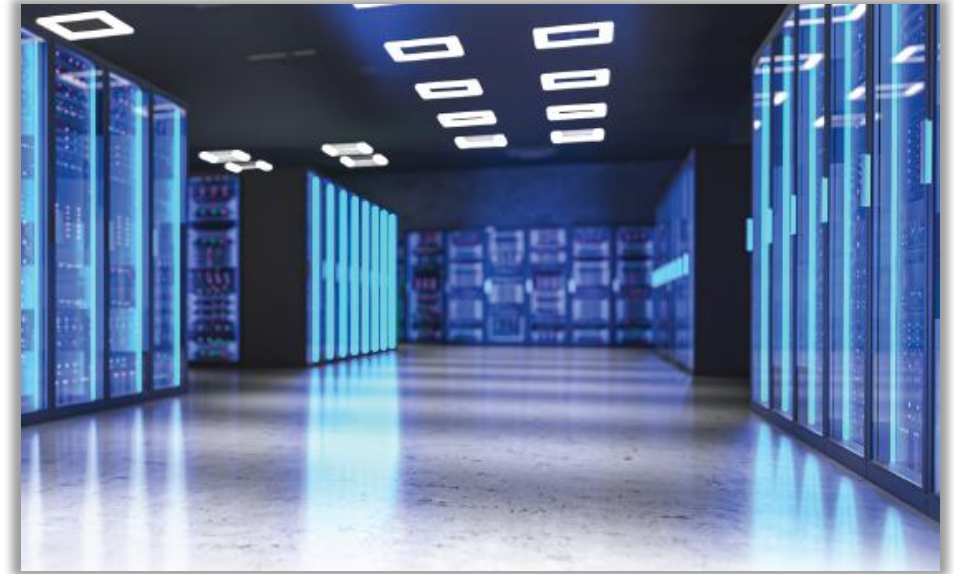
Many large corporations are interested in water saving technologies and the industry is evolving quickly.

Limited trend – water utilities and water efficiency

Observed Data Center Water Use

A lot of talk, Not a lot of action – yet?

- One SRBC permit issued – Amazon Data Services
 - Approved for 129,000 gpd consumptive use
 - less than average golf course irrigation
 - No withdrawal permit – using public water supply
- One other application in house; project stalled
 - 67,000 gpd consumptive use of municipal wastewater
- One application withdrawn/under threshold due to dry cooling technology chosen
- One application expected soon
- Maintaining a tracking list of over 20 proposed projects



New power plants?

- *will also require cooling technology*

Dry Cooling Resolution Success Story

In 2015, existing power generation = 73% of regulated consumptive use; 93 mgd

- Six new natural gas-fired power plants were proposed

SRBC adopted a Dry Cooling Resolution

- Use of ambient air (instead of water) to cool (think car radiator)
- Regulatory and financial incentives

Four new power plants are using dry cooling in the basin for more than 7 years with impressive results!

- Dry cooling uses 98% less water than evaporative cooling
- Water savings of 5.8 billion gallons of water every year
 - 16 million gallons per day
 - 2x the water use by the natural gas industry

Other benefits

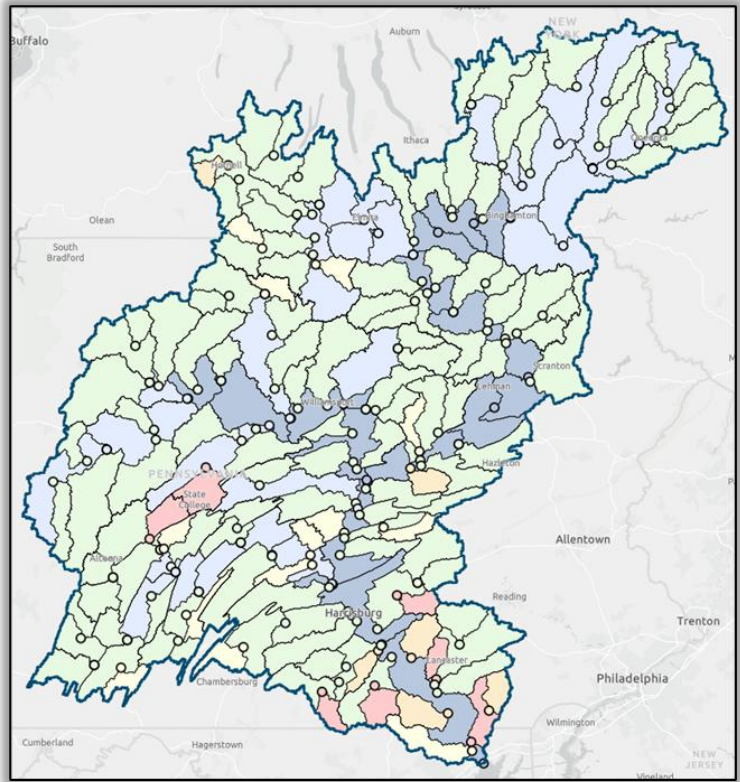
- Increased siting flexibility – minimized transmission extensions, redevelopment opportunities and incentives
- Opportunities to use lesser quality waters
- Operational resiliency (drought proof!)



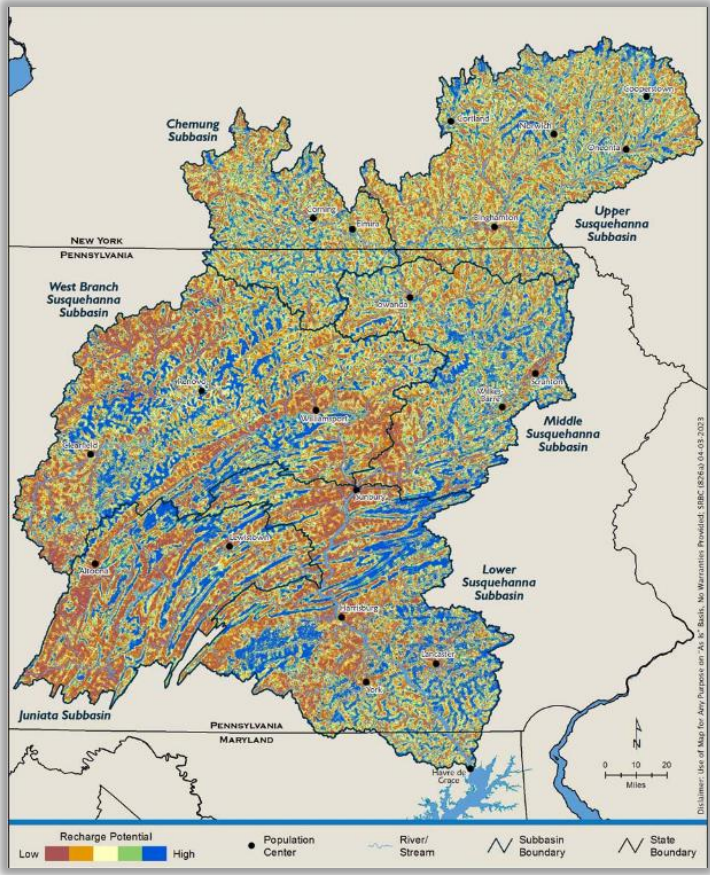
We recently expanded the resolution to encourage data centers and other large water users

SRBC as a Resource

Water Availability



Groundwater Recharge Potential



NEW DATA CENTERS & WATER
USE WEBPAGE



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