

Susquehanna River Basin Commission

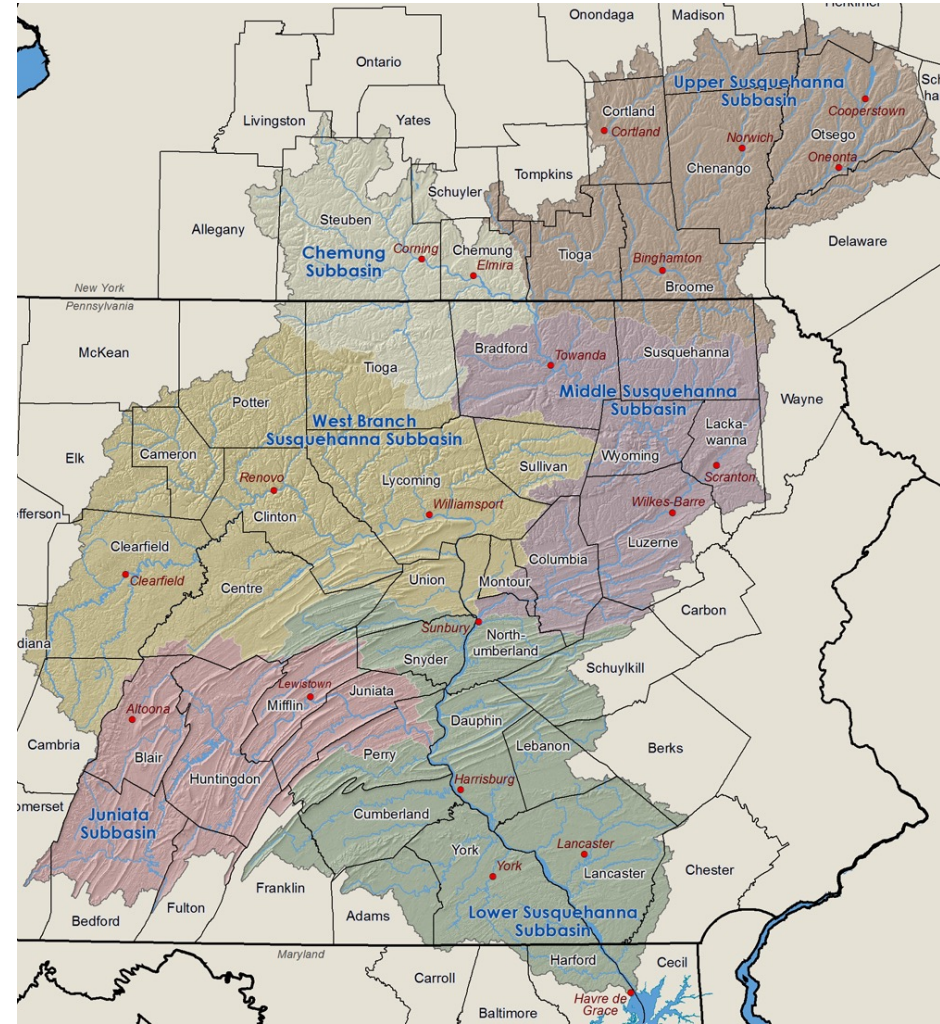
Environmental Flow Initiatives



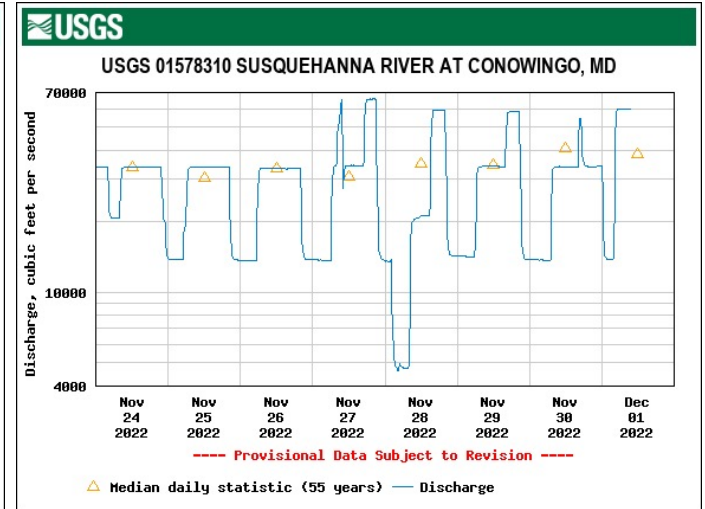
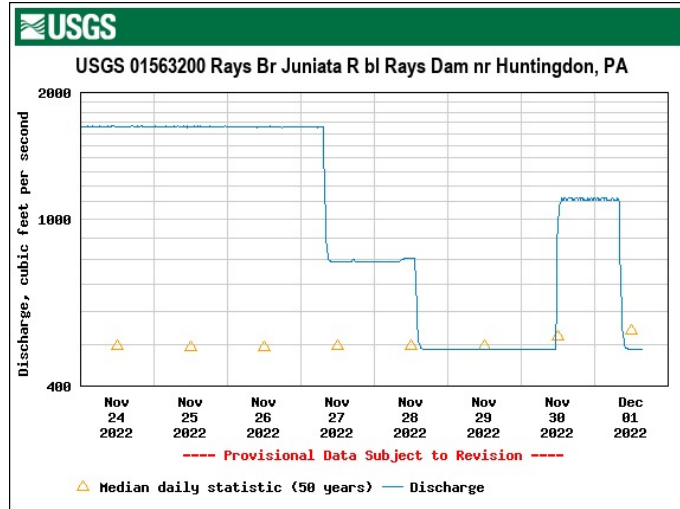
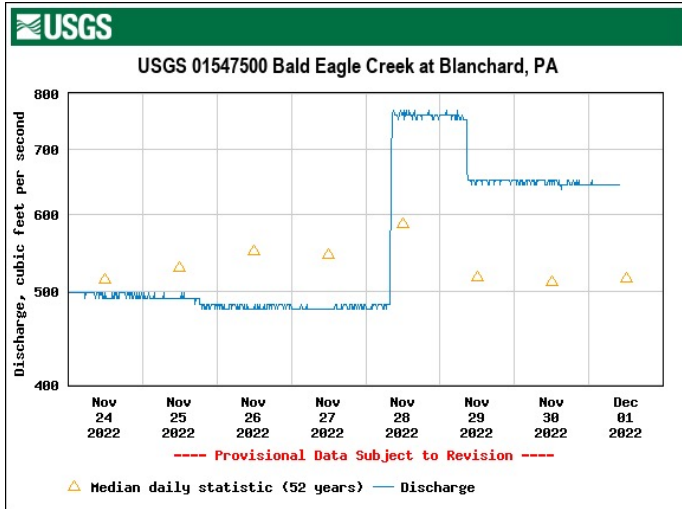
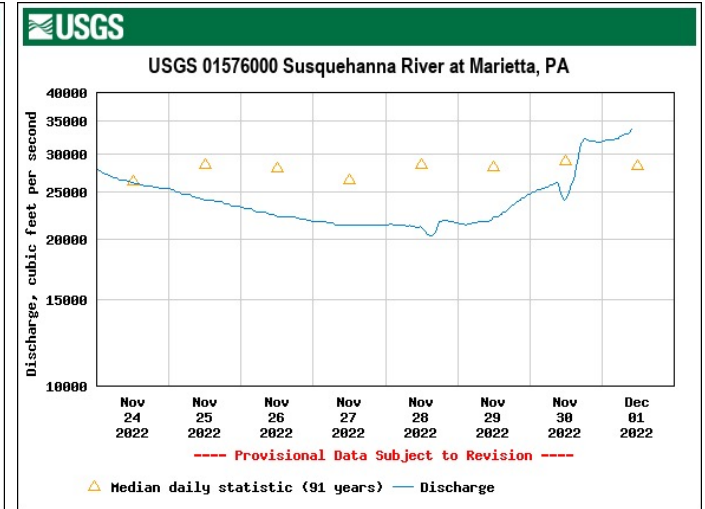
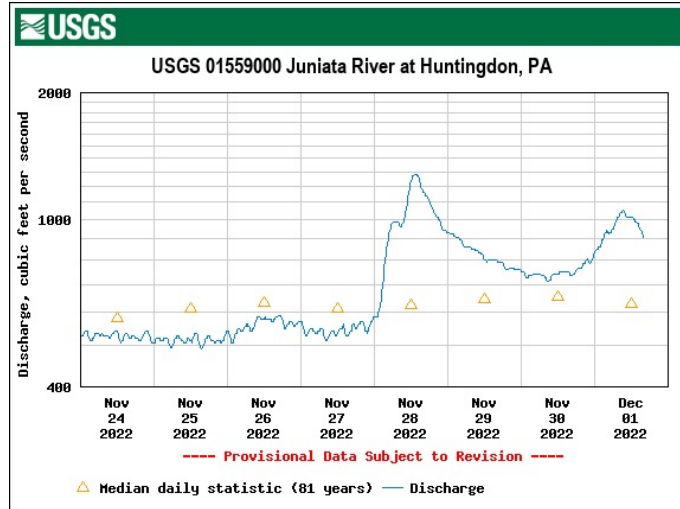
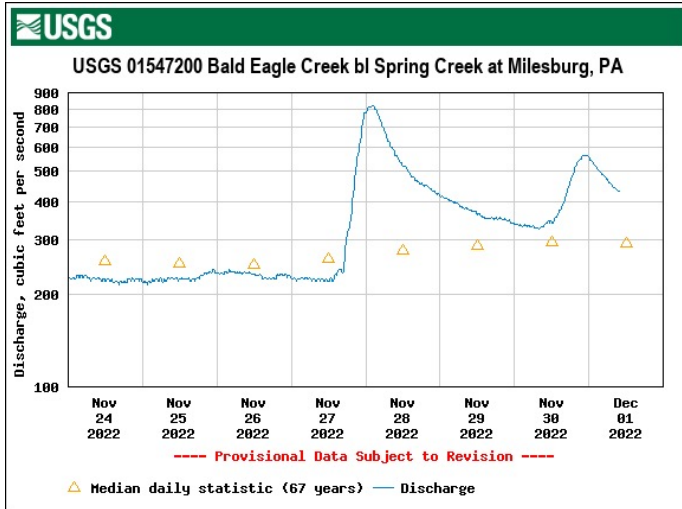
Chesapeake Bay Scientific and Technical Advisory Committee
December 7, 2022

Drivers of Hydrologic Alteration

- Dams & dam operations
 - >100 dams/reservoirs in SRB.
 - Hydroelectric, flood control, water supply, etc.
- Water use
 - Withdrawals, diversions, consumptive use, etc.
 - ~300 mgd CU in SRB.
- Land development
 - Converting forest/agriculture to urban.
 - Impervious surfaces & stormwater.
- Climate change

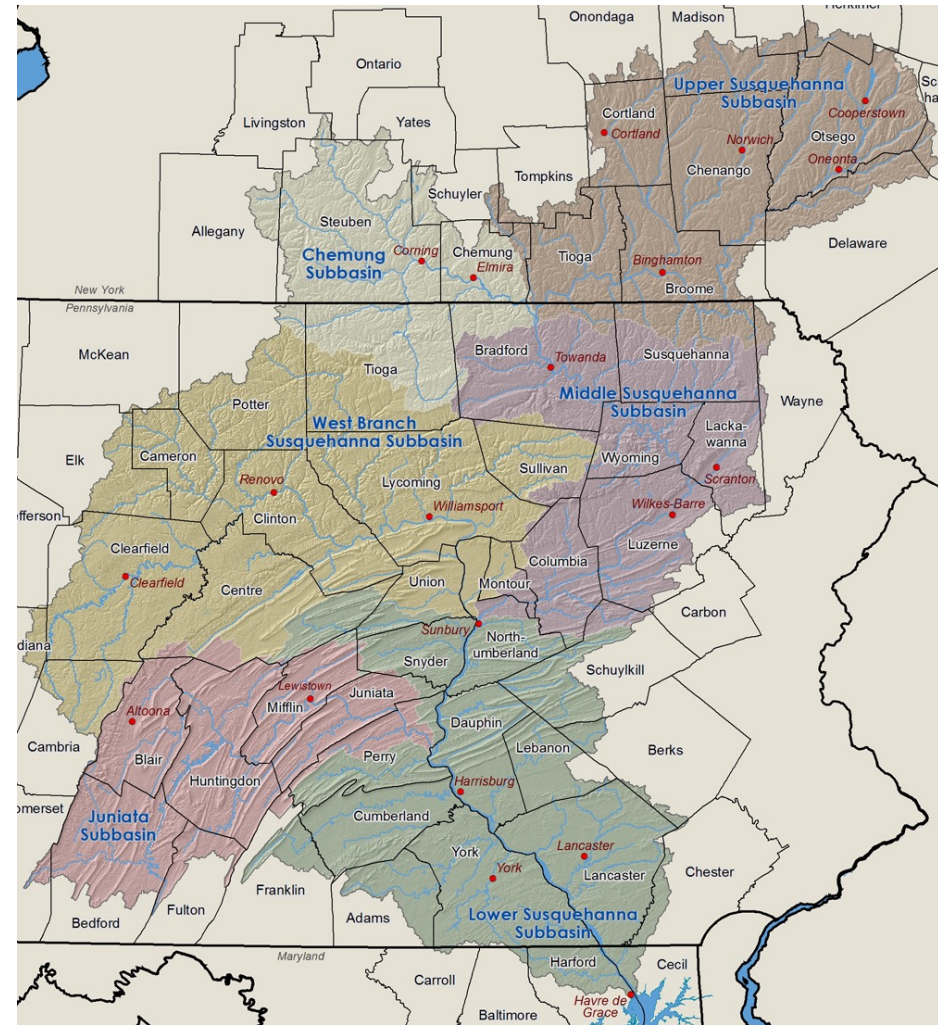


Hydrologic Alteration



Impacts of Hydrologic Alteration

- Habitat fragmentation
 - Obstructions to fish passage.
 - Less persistent suitable habitat.
- Altered flow/thermal regimes
 - See previous slide.
 - Transition from coldwater to warmwater communities.
- Degraded water quality
 - Reduced DO & increased T downstream.
 - More pollution tolerant species downstream.



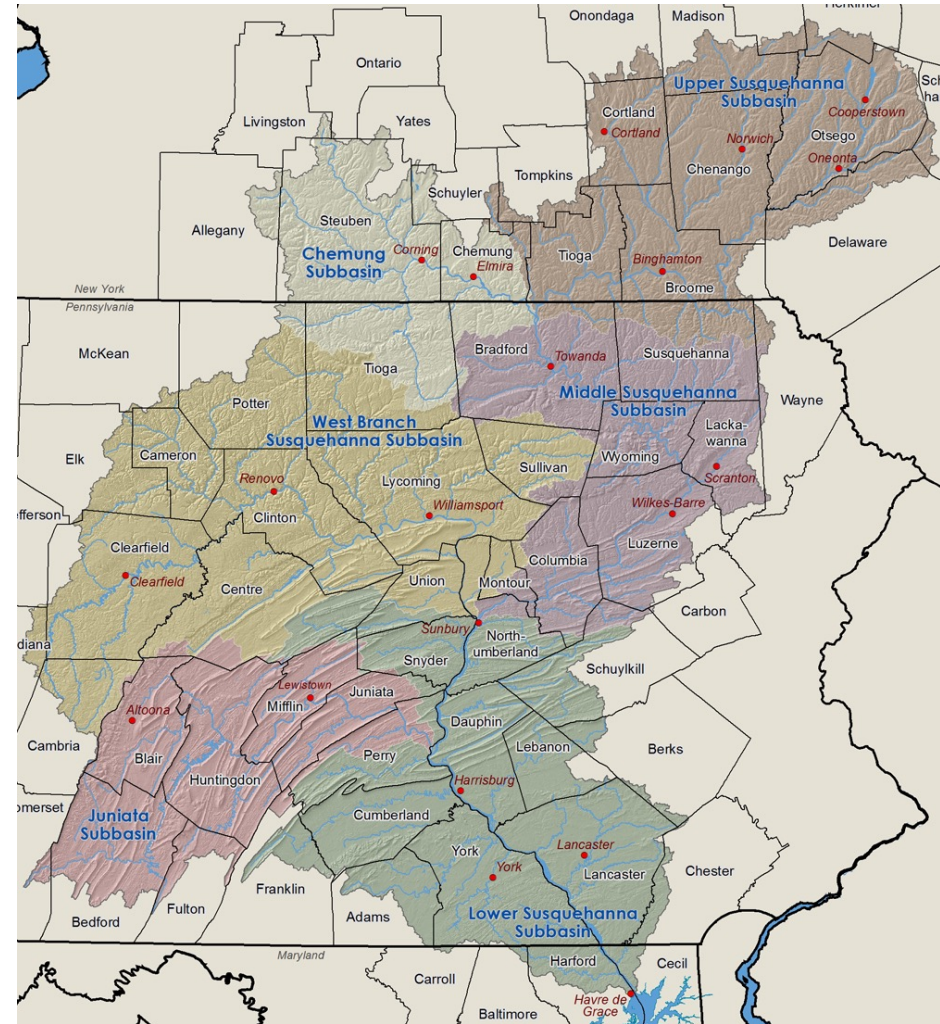
TNC Ecosystem Flow Study

Table 5.1 Flow recommendations for the Susquehanna River ecosystem.

Season	Flow Component	Flow Statistic	Flow Recommendations		
			Headwater streams < 50 sq mi	Streams and small rivers (50 – 200 sq mi)	Major tributaries and mainstream (>200 sq mi)
Annual and Interannual Events	High Flows	Large flood	Maintain magnitude and frequency of annual Q0.05 (20-yr flood)	Same for all streams	Same for all streams
		Small flood	Maintain magnitude and frequency of annual Q0.2 (5-yr flood)	Same for all streams	Same for all streams
		Bankfull	Maintain magnitude and frequency of annual Q0.5 (Approx. 1 to 2-yr flood)	Same for all streams	Same for all streams
All Months	High flows	Monthly Q10	<10% change to magnitude of monthly Q10	Same for all streams	Same for all streams
	Seasonal flows	Monthly Median	Between 45 th and 55 th percentiles	Same for all streams	Same for all streams
		Monthly Range	≤ 20% change to area under curve between Q10 and Q75	Same for all streams	Same for all streams
	Low flows	Monthly Low Flow Range	No change to area under curve between Q75 and Q99	≤ 10% change to area under curve between Q75 and Q99	≤ 10% change to area under curve between Q75 and Q99
		Monthly Q75 Monthly Q95	No change	No change	No change
Fall	High flows	Frequency of events > Monthly Q10	NA	NA	1-5 events
Summer		Frequency of events > Monthly Q10	2-8 events	2-8 events	2-8 events

Management Measures

- Low Flow Protection Policy
 - Passby flows & conservation releases.
 - Withdrawal limits.
- CU Mitigation Policy
 - Water supply, project operation, demand modification, environmental/water quality alternatives.
 - CU Mitigation Grants.
- Modify Reservoir Operations
 - FERC relicensing.
 - Federal, state, and private reservoir operations plans.



Questions & Discussion

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