



SUSQUEHANNA RIVER  
BASIN COMMISSION

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NY ■ PA ■ MD ■ USA

October 11, 2023

SUBJECT: Deliverables  
Grant No. CB-96343801 (PADEP ME# 4100071363)

TO: Kaylyn Gootman

FROM: Brianna Hutchison  
Aquatic Biologist

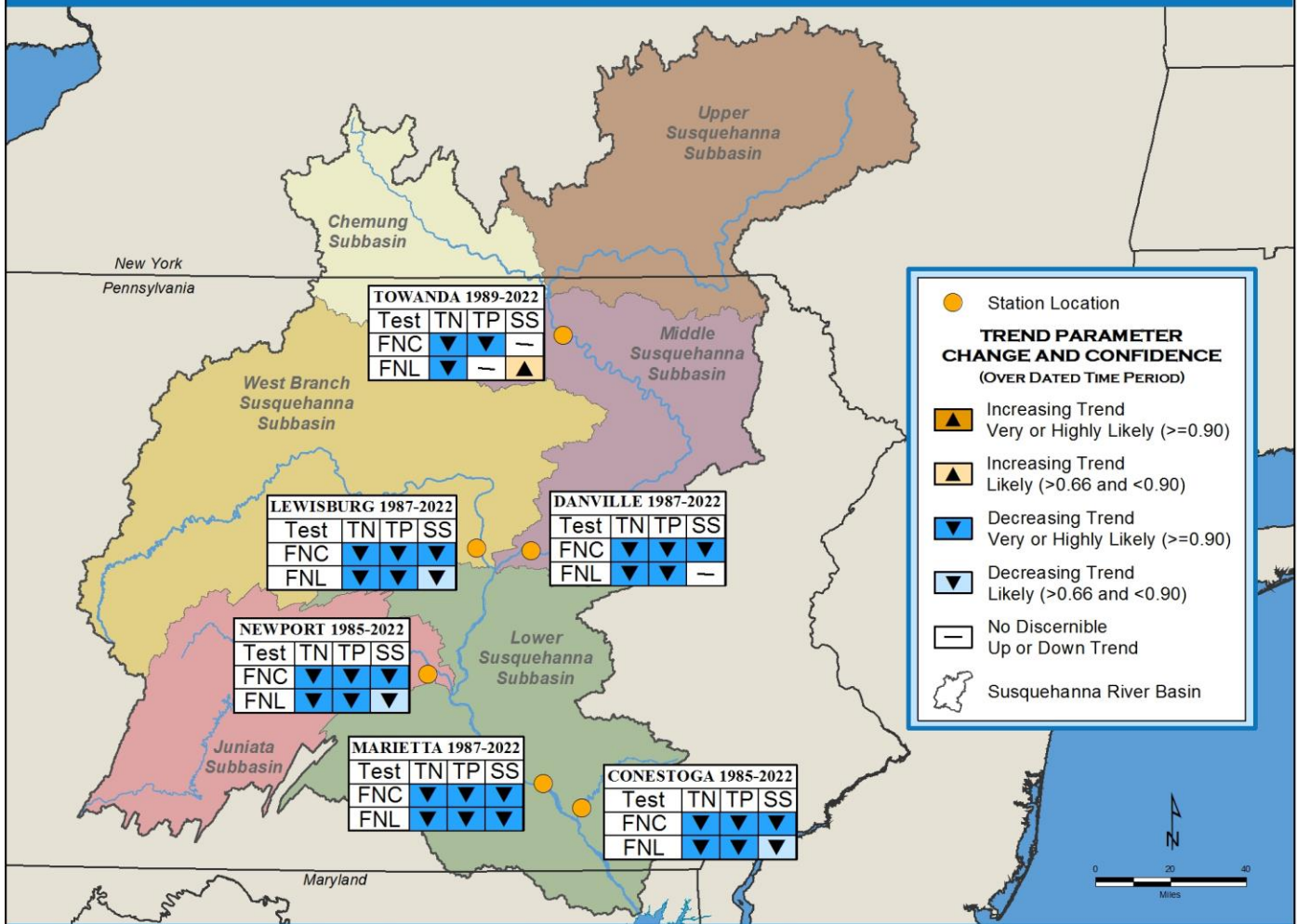
I am writing to submit the trends deliverables for the Comprehensive Analysis of Tidal and Non-Tidal Tributary Water Quality Habitat and Living Resource Status, Trends, and Linkages section of the grant listed in the subject line. These deliverables will also be uploaded to the SRBC website at <https://www.srbc.net/portals/water-quality-projects/sediment-nutrient-assessment/index.html>. Please contact me if you have any questions.

cc: Holly Waldman

572762.1

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the Susquehanna River Watershed*

## LONG TERM FLOW NORMALIZED TRENDS IN TOTAL NITROGEN (TN), TOTAL PHOSPHORUS (TP), AND SUSPENDED SEDIMENT (SS) THROUGH 2022



The Susquehanna River Basin Commission estimates annual trends in concentrations and loads of nutrients and sediment as part of the Chesapeake Bay Program's efforts to monitor progress towards pollutant reductions. The 2022 trend analyses were completed using the USGS Weighted Regression on Time, Discharge, and Season (WRTDS) model\*. WRTDS removes variation attributed to differences in streamflow to produce trends in Flow Normalized Concentration (FNC) and Flow Normalized Load (FNL).

The map above depicts the direction of long-term trends in total nitrogen, total phosphorus, and suspended sediment, as well as the confidence level for the detected trend. The chart below lists the magnitude and direction of the trends in FNC (mg/L) and FNL (annual tons); the direction of trends is indicated on the map by up/down arrows. WRTDS estimates confidence in detected trends using likelihood factors, which are indicated on the map by colors corresponding to a particular confidence interval.

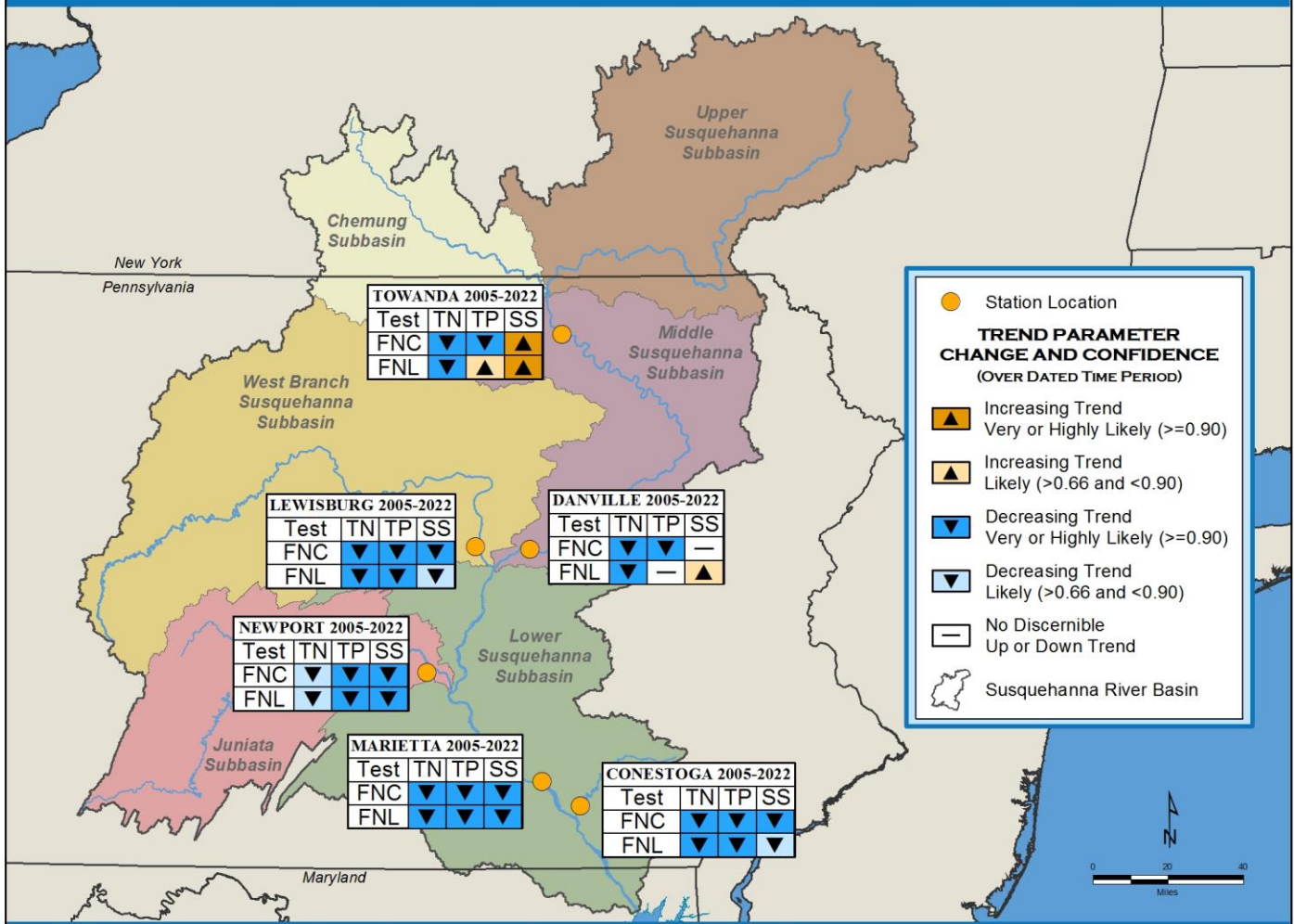
Most of the sites are experiencing downward trends in concentrations and loads over the period of record. There were no discernible trends in suspended sediment (SS) concentrations or total phosphorus (TP) loads at Towanda, and an upward trend in SS loads. No trends in TP loads were detected at Danville.

Site	Trend (Change**) Time Period	Flow Normalized Concentration Change (mg/L)			Flow Normalized Load Change (Annual Tons)		
		Total Nitrogen	Total Phosphorous	Suspended Sediment	Total Nitrogen	Total Phosphorous	Suspended Sediment
Towanda	1989-2022	-0.063	-0.039	-2.9	-7,288	37	175,395
Danville	1987-2022	-0.844	-0.057	-20.5	-14,003	-46	-419,445
Marietta	1987-2022	-0.747	-0.057	-26.4	-29,993	-1,875	-1,555,860
Lewisburg	1987-2022	-0.549	-0.039	-10.1	-5,220	-25	-148,177
Newport	1985-2022	-0.378	-0.007	-23.5	-1,997	-303	-227,100
Conestoga	1985-2022	-2.694	-0.378	-110.0	-2,066	-265	-188,866

\*Hirsch, R.M., and De Cicco, L.A., 2015, User guide to Exploration and Graphics for RivEr Trends (EGRET) and dataRetrieval: R packages for hydrologic data (version 2.0, February 2015); U.S. Geological Survey Techniques and Methods book 4, chap. A10, 93 p., <http://dx.doi.org/10.3133/tm4A10>  
\*\*Change is the difference between the starting and ending years. DISCLAIMER: Use of Map for Any Purpose on "As Is" Basis, No Warranties Provided; SRBC (878a) 08-21-2023



## SHORT TERM FLOW NORMALIZED TRENDS IN TOTAL NITROGEN (TN), TOTAL PHOSPHORUS (TP), AND SUSPENDED SEDIMENT (SS) THROUGH 2022



The Susquehanna River Basin Commission estimates annual trends in concentrations and loads of nutrients and sediment as part of the Chesapeake Bay Program's efforts to monitor progress towards pollutant reductions. The 2022 trend analyses were completed using the USGS Weighted Regression on Time, Discharge, and Season (WRTDS) model\*. WRTDS removes variation attributed to differences in streamflow to produce trends in Flow Normalized Concentration (FNC) and Flow Normalized Load (FNL).

The map above depicts the direction of recent (2005 – 2022) trends in total nitrogen, total phosphorus, and suspended sediment, as well as the confidence level for the detected trend. The chart below lists the magnitude and direction of the trends in FNC (mg/L) and FNL (annual tons); the direction of trends is indicated on the map by up/down arrows. WRTDS estimates confidence in detected trends using likelihood factors, which are indicated on the map by colors corresponding to a particular confidence interval.

Most of the sites experienced downward trends in concentrations and loads between 2005 and 2022. Upward trends were detected at Towanda for suspended sediment (SS) concentrations and loads, as well as total phosphorus (TP) concentrations. An upward trend was also observed for SS loads at Danville. There were no discernible trends in SS concentrations or TP loads at Danville.

Site	Trend (Change**) Time Period	Flow Normalized Concentration Change (mg/L)			Flow Normalized Load Change (Annual Tons)		
		Total Nitrogen	Total Phosphorous	Suspended Sediment	Total Nitrogen	Total Phosphorous	Suspended Sediment
Towanda	2005-2022	-0.107	-0.026	8.3	-641	181	583,370
Danville	2005-2022	-0.191	-0.027	5.9	-1,728	-76	649,653
Marietta	2005-2022	-0.328	-0.024	-8.8	-8,844	-924	-370,755
Lewisburg	2005-2022	-0.247	-0.022	-6.1	-1,235	-187	-65,924
Newport	2005-2022	-0.083	-0.033	-9.3	-169	-144	-96,130
Conestoga	2005-2022	-1.540	-0.078	-23.4	-903	-41	-24,770

\*Hirsch, R.M., and De Cicco, L.A., 2015, User guide to Exploration and Graphics for RivEr Trends (EGRET) and dataRetrieval: R packages for hydrologic data (version 2.0, February 2015); U.S. Geological Survey Techniques and Methods book 4, chap. A10, 93 p., <http://dx.doi.org/10.3133/tm4A10>

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## Individual Site Trends Statistics

FNC – Flow Normalized Concentration – mg/L

FNF – Flow Normalized Flux – 10<sup>6</sup> kg/yr

FNC/FNF alpha level – 0.1

BMDL – Below Method Detection Limit; Percentage of BMDL values is too high for analysis

NS – Not significant, UP – Increasing trend, DWN – Decreasing trend

HL – Highly Likely  $\geq 0.95$  and  $\leq 1.00$

VL – Very Likely  $\geq 0.90$  and  $< 0.95$

L – Likely  $\geq 0.66$  and  $< 0.90$

ALAN – About as Likely as Not  $> 0.33$  and  $< 0.66$

01531500; Towanda 1989-2022 Parameter/code	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
	Change	Likelihood Test			Change	Likelihood Test		
		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.630	0.99	HL	DWN	-7.29	0.99	HL	DWN
Nitrate-Nitrite	-0.279	0.99	HL	DWN	-2.98	0.99	HL	DWN
Ammonia	-0.039	0.99	HL	DWN	-0.52	0.97	HL	DWN
Dissolved Nitrogen	-0.502	0.99	HL	DWN	-5.88	0.99	HL	DWN
Nitrate-Nitrite	-0.283	0.99	HL	DWN	-3.01	0.99	HL	DWN
Ammonia	-0.037	0.99	HL	DWN	-0.45	0.99	HL	DWN
Total Phosphorus	-0.039	0.99	HL	DWN	0.04	0.54	ALAN	NS
Particulate Phosphorus	-0.004	0.66	ALAN	NS	0.48	0.99	HL	UP
Dissolved Phosphorus	-0.034	0.99	HL	DWN	-0.32	0.99	HL	DWN
Orthophosphate	-0.006	0.99	HL	DWN	-0.02	0.81	L	DWN
Total Organic Carbon	-0.740	0.99	HL	DWN	-6.92	0.97	HL	DWN
Total Suspended Solids	13.374	0.89	L	UP	933.38	0.89	L	UP
Suspended Sediment	-2.928	0.58	ALAN	NS	175.39	0.74	L	UP

01531500; Towanda 2005-2022 Parameter/code	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
	Change	Likelihood Test			Change	Likelihood Test		
		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.107	0.99	HL	DWN	-0.64	0.93	VL	DWN
Nitrate-Nitrite	-0.001	0.54	ALAN	NS	-0.40	0.91	VL	DWN
Ammonia	-0.025	0.99	HL	DWN	-0.20	0.99	HL	DWN
Dissolved Nitrogen	-0.134	0.99	HL	DWN	-1.52	0.99	HL	DWN
Nitrate-Nitrite	0.002	0.54	ALAN	NS	-0.37	0.89	L	DWN
Ammonia	-0.025	0.99	HL	DWN	-0.20	0.99	HL	DWN
Total Phosphorus	-0.026	0.99	HL	DWN	0.18	0.83	L	UP
Particulate Phosphorus	0.007	0.97	HL	UP	0.56	0.99	HL	UP
Dissolved Phosphorus	-0.029	0.99	HL	DWN	-0.25	0.99	HL	DWN
Orthophosphate	-0.025	0.99	HL	DWN	-0.22	0.99	HL	DWN
Total Organic Carbon	-0.411	0.97	HL	DWN	-2.21	0.89	L	DWN
Total Suspended Solids	10.115	0.87	L	UP	796.74	0.87	L	UP
Suspended Sediment	8.265	0.95	HL	UP	583.37	0.99	HL	UP

01540500; Danville	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
1987-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.844	0.99	HL	DWN	-14.00	0.99	HL	DWN
Nitrate-Nitrite	-0.289	0.99	HL	DWN	-4.39	0.99	HL	DWN
Ammonia	-0.071	0.99	HL	DWN	-1.22	0.99	HL	DWN
Dissolved Nitrogen	-0.567	0.99	HL	DWN	-9.44	0.99	HL	DWN
Nitrate-Nitrite	-0.298	0.99	HL	DWN	-4.43	0.99	HL	DWN
Ammonia	-0.075	0.99	HL	DWN	-1.29	0.99	HL	DWN
Total Phosphorus	-0.006	0.95	HL	DWN	-0.07	0.70	L	DWN
Particulate Phosphorus	-0.057	0.99	HL	DWN	-0.46	0.97	HL	DWN
Dissolved Phosphorus	-0.034	0.99	HL	DWN	-0.03	0.56	ALAN	NS
Orthophosphate	-0.024	0.99	HL	DWN	-0.41	0.99	HL	DWN
Total Organic Carbon	-1.848	0.99	HL	DWN	-28.93	0.99	HL	DWN
Total Suspended Solids	6.541	0.77	L	UP	665.01	0.81	L	UP
Suspended Sediment	-20.515	0.93	VL	DWN	-419.45	0.64	ALAN	NS

01540500; Danville	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.191	0.99	HL	DWN	-1.73	0.99	HL	DWN
Nitrate-Nitrite	-0.071	0.99	HL	DWN	-0.98	0.99	HL	DWN
Ammonia	-0.026	0.99	HL	DWN	-0.32	0.99	HL	DWN
Dissolved Nitrogen	-0.202	0.99	HL	DWN	-2.62	0.99	HL	DWN
Nitrate-Nitrite	-0.072	0.99	HL	DWN	-0.97	0.99	HL	DWN
Ammonia	-0.028	0.99	HL	DWN	-0.36	0.99	HL	DWN
Total Phosphorus	-0.027	0.97	HL	DWN	-0.08	0.58	ALAN	NS
Particulate Phosphorus	0.003	0.62	ALAN	NS	0.44	0.77	L	UP
Dissolved Phosphorus	-0.027	0.99	HL	DWN	-0.39	0.99	HL	DWN
Orthophosphate	-0.025	0.99	HL	DWN	-0.36	0.99	HL	DWN
Total Organic Carbon	-0.480	0.99	HL	DWN	-4.50	0.93	VL	DWN
Total Suspended Solids	6.996	0.81	L	UP	575.94	0.81	L	UP
Suspended Sediment	5.869	0.64	ALAN	NS	649.65	0.75	L	UP

01576000; Marietta	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
1987-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.747	0.99	HL	DWN	-29.99	0.99	HL	DWN
Nitrate-Nitrite	-0.265	0.99	HL	DWN	-9.76	0.99	HL	DWN
Ammonia	-0.043	0.99	HL	DWN	-1.87	0.99	HL	DWN
Dissolved Nitrogen	-0.536	0.99	HL	DWN	-19.37	0.99	HL	DWN
Nitrate-Nitrite	-0.263	0.99	HL	DWN	-10.17	0.99	HL	DWN
Ammonia	-0.044	0.99	HL	DWN	-1.87	0.99	HL	DWN
Total Phosphorus	-0.057	0.99	HL	DWN	-1.88	0.99	HL	DWN
Particulate Phosphorus	-0.033	0.99	HL	DWN	-1.03	0.85	L	DWN
Dissolved Phosphorus	-0.025	0.99	HL	DWN	-0.86	0.99	HL	DWN
Orthophosphate	0.002	0.87	L	UP	0.14	0.97	HL	UP
Total Organic Carbon	-1.231	0.99	HL	DWN	-42.94	0.99	HL	DWN
Total Suspended Solids	-13.315	0.93	VL	DWN	-1184.21	0.91	VL	DWN
Suspended Sediment	-26.394	0.99	HL	DWN	-1553.86	0.95	HL	DWN

01576000; Marietta	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.328	0.99	HL	DWN	-8.84	0.99	HL	DWN
Nitrate-Nitrite	-0.222	0.99	HL	DWN	-5.77	0.99	HL	DWN
Ammonia	-0.031	0.99	HL	DWN	-1.08	0.99	HL	DWN
Dissolved Nitrogen	-0.308	0.99	HL	DWN	-8.31	0.99	HL	DWN
Nitrate-Nitrite	-0.216	0.99	HL	DWN	-5.40	0.99	HL	DWN
Ammonia	-0.029	0.99	HL	DWN	-1.05	0.99	HL	DWN
Total Phosphorus	-0.024	0.99	HL	DWN	-0.92	0.99	HL	DWN
Particulate Phosphorus	-0.010	0.97	HL	DWN	-0.44	0.93	VL	DWN
Dissolved Phosphorus	-0.013	0.99	HL	DWN	-0.42	0.99	HL	DWN
Orthophosphate	-0.010	0.99	HL	DWN	-0.33	0.99	HL	DWN
Total Organic Carbon	-0.494	0.97	HL	DWN	-15.03	0.91	VL	DWN
Total Suspended Solids	-6.904	0.97	HL	DWN	-623.04	0.91	VL	DWN
Suspended Sediment	-8.756	0.97	HL	DWN	-370.76	0.91	VL	DWN

01553500; Lewisburg	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
1987-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.549	0.99	HL	DWN	-5.22	0.99	HL	DWN
Nitrate-Nitrite	-0.134	0.99	HL	DWN	-0.68	0.93	VL	DWN
Ammonia	-0.047	0.99	HL	DWN	-0.42	0.99	HL	DWN
Dissolved Nitrogen	-0.398	0.99	HL	DWN	-3.54	0.99	HL	DWN
Nitrate-Nitrite	-0.166	0.99	HL	DWN	-0.91	0.97	HL	DWN
Ammonia	-0.040	0.99	HL	DWN	-0.39	0.99	HL	DWN
Total Phosphorus	-0.039	0.99	HL	DWN	-0.25	0.99	HL	DWN
Particulate Phosphorus	-0.013	0.99	HL	DWN	0.00	0.64	ALAN	NS
Dissolved Phosphorus	-0.029	0.99	HL	DWN	-0.27	0.99	HL	DWN
Orthophosphate	-0.009	0.97	HL	DWN	-0.03	0.95	HL	DWN
Total Organic Carbon	-0.554	0.97	HL	DWN	-4.35	0.93	VL	DWN
Total Suspended Solids	-8.381	0.91	VL	DWN	-134.57	0.77	L	DWN
Suspended Sediment	-10.077	0.97	HL	DWN	-148.18	0.83	L	DWN

01553500; Lewisburg	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.247	0.99	HL	DWN	-1.24	0.99	HL	DWN
Nitrate-Nitrite	-0.134	0.99	HL	DWN	-0.55	0.91	VL	DWN
Ammonia	-0.035	0.99	HL	DWN	-0.26	0.99	HL	DWN
Dissolved Nitrogen	-0.255	0.99	HL	DWN	-1.50	0.99	HL	DWN
Nitrate-Nitrite	-0.133	0.99	HL	DWN	-0.51	0.93	VL	DWN
Ammonia	-0.033	0.99	HL	DWN	-0.27	0.99	HL	DWN
Total Phosphorus	-0.022	0.99	HL	DWN	-0.19	0.99	HL	DWN
Particulate Phosphorus	-0.003	0.99	HL	DWN	-0.01	0.77	L	DWN
Dissolved Phosphorus	-0.019	0.99	HL	DWN	-0.17	0.99	HL	DWN
Orthophosphate	-0.016	0.99	HL	DWN	-0.14	0.99	HL	DWN
Total Organic Carbon	-0.326	0.95	HL	DWN	-2.28	0.87	L	DWN
Total Suspended Solids	-3.712	0.89	L	DWN	-40.99	0.66	ALAN	NS
Suspended Sediment	-6.104	0.99	HL	DWN	-65.92	0.85	L	DWN

01567000; Newport	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
1985-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.378	0.99	HL	DWN	-2.00	0.99	HL	DWN
Nitrate-Nitrite	0.043	0.76	L	UP	-0.14	0.56	ALAN	DWN
Ammonia	-0.040	0.99	HL	DWN	-0.19	0.99	HL	DWN
Dissolved Nitrogen	-0.138	0.89	L	DWN	-0.65	0.99	HL	DWN
Nitrate-Nitrite	0.106	0.95	HL	UP	0.34	0.85	L	UP
Ammonia	-0.032	0.99	HL	DWN	-0.18	0.97	HL	DWN
Total Phosphorus	-0.071	0.99	HL	DWN	-0.30	0.99	HL	DWN
Particulate Phosphorus	-0.025	0.97	HL	DWN	-0.18	0.97	HL	DWN
Dissolved Phosphorus	-0.045	0.99	HL	DWN	-0.15	0.99	HL	DWN
Orthophosphate	0.033	0.99	HL	DWN	-0.08	0.95	HL	DWN
Total Organic Carbon	-2.090	0.93	VL	DWN	-10.99	0.97	HL	DWN
Total Suspended Solids	-14.300	0.95	HL	DWN	-111.90	0.83	L	DWN
Suspended Sediment	-23.500	0.97	HL	DWN	-227.10	0.89	L	DWN

01567000; Newport	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.083	0.85	L	DWN	-0.17	0.70	L	DWN
Nitrate-Nitrite	0.006	0.52	ALAN	UP	0.10	0.52	ALAN	UP
Ammonia	-0.022	0.99	HL	DWN	-0.08	0.99	HL	DWN
Dissolved Nitrogen	-0.074	0.89	L	DWN	-0.15	0.74	L	DWN
Nitrate-Nitrite	0.005	0.64	ALAN	UP	0.11	0.74	L	UP
Ammonia	-0.018	0.99	HL	DWN	-0.07	0.99	HL	DWN
Total Phosphorus	-0.033	0.99	HL	DWN	-0.14	0.97	HL	DWN
Particulate Phosphorus	-0.009	0.97	HL	DWN	-0.09	0.95	HL	DWN
Dissolved Phosphorus	-0.024	0.99	HL	DWN	-0.08	0.99	HL	DWN
Orthophosphate	-0.021	0.99	HL	DWN	-0.07	0.99	HL	DWN
Total Organic Carbon	-0.427	0.93	VL	DWN	-1.31	0.79	L	DWN
Total Suspended Solids	-7.700	0.97	HL	DWN	-63.91	0.91	VL	DWN
Suspended Sediment	-9.300	0.97	HL	DWN	-96.13	0.93	VL	DWN



01576754; Conestoga	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
1985-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-2.694	0.99	HL	DWN	-2.07	0.99	HL	DWN
Nitrate-Nitrite	-1.612	0.97	HL	DWN	-1.02	0.99	HL	DWN
Ammonia	-0.338	0.99	HL	DWN	-0.26	0.99	HL	DWN
Dissolved Nitrogen	-1.773	0.99	HL	DWN	-1.16	0.99	HL	DWN
Nitrate-Nitrite	-1.439	0.97	HL	DWN	-0.86	0.99	HL	DWN
Ammonia	-0.324	0.99	HL	DWN	-0.25	0.99	HL	DWN
Total Phosphorus	-0.378	0.99	HL	DWN	-0.26	0.93	VL	DWN
Particulate Phosphorus	-0.151	0.99	HL	DWN	-0.15	0.85	L	DWN
Dissolved Phosphorus	-0.219	0.99	HL	DWN	-0.11	0.99	HL	DWN
Orthophosphate	-0.213	0.99	HL	DWN	-0.09	0.97	HL	DWN
Total Organic Carbon	-5.615	0.99	HL	DWN	-4.48	0.99	HL	DWN
Total Suspended Solids	-71.730	0.93	VL	DWN	-123.99	0.89	L	DWN
Suspended Sediment	-109.955	0.93	VL	DWN	-188.87	0.85	L	DWN

01576754; Conestoga	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-1.540	0.99	HL	DWN	-0.90	0.99	HL	DWN
Nitrate-Nitrite	-1.317	0.99	HL	DWN	-0.80	0.99	HL	DWN
Ammonia	-0.016	0.87	L	DWN	0.00	0.56	ALAN	NS
Dissolved Nitrogen	-1.535	0.99	HL	DWN	-0.94	0.99	HL	DWN
Nitrate-Nitrite	-1.193	0.99	HL	DWN	-0.75	0.99	HL	DWN
Ammonia	-0.020	0.93	VL	DWN	0.00	0.72	L	DWN
Total Phosphorus	-0.078	0.99	HL	DWN	-0.04	0.97	HL	DWN
Particulate Phosphorus	-0.027	0.97	HL	DWN	-0.02	0.77	L	DWN
Dissolved Phosphorus	-0.051	0.99	HL	DWN	-0.02	0.95	HL	DWN
Orthophosphate	-0.039	0.99	HL	DWN	-0.02	0.95	HL	DWN
Total Organic Carbon	-0.751	0.99	HL	DWN	-0.51	0.97	HL	DWN
Total Suspended Solids	-25.377	0.93	VL	DWN	-37.37	0.87	L	DWN
Suspended Sediment	-23.402	0.95	HL	DWN	-24.77	0.83	L	DWN

01502500; Unadilla	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2006-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	0.106	0.95	HL	UP	0.07	0.93	VL	UP
Nitrate-Nitrite	0.121	0.99	HL	UP	0.09	0.97	HL	UP
Ammonia	-0.022	0.99	HL	DWN	-0.02	0.99	HL	DWN
Dissolved Nitrogen	0.099	0.93	VL	UP	0.07	0.89	L	UP
Nitrate-Nitrite	0.158	0.99	HL	UP	0.12	0.99	HL	UP
Ammonia	-0.018	0.99	HL	DWN	-0.02	0.99	HL	DWN
Total Phosphorus	-0.033	0.99	HL	DWN	-0.04	0.99	HL	DWN
Particulate Phosphorus	-0.005	0.87	L	DWN	-0.01	0.74	L	DWN
Dissolved Phosphorus	-0.025	0.99	HL	DWN	-0.03	0.99	HL	DWN
Orthophosphate	-0.026	0.99	HL	DWN	-0.03	0.99	HL	DWN
Total Organic Carbon	0.021	0.62	ALAN	NS	0.10	0.75	L	UP
Total Suspended Solids	-1.200	0.70	L	DWN	-0.95	0.50	ALAN	NS
Suspended Sediment	2.228	0.77	L	UP	2.52	0.56	ALAN	NS

01503000; Conklin	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2006-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.016	0.68	L	DWN	-0.15	0.72	L	DWN
Nitrate-Nitrite	0.010	0.62	ALAN	NS	-0.07	0.77	L	DWN
Ammonia	-0.031	0.99	HL	DWN	-0.12	0.99	HL	DWN
Dissolved Nitrogen	-0.053	0.87	L	DWN	-0.23	0.89	L	DWN
Nitrate-Nitrite	0.029	0.50	ALAN	NS	0.03	0.52	ALAN	NS
Ammonia	-0.029	0.99	HL	DWN	-0.12	0.99	HL	DWN
Total Phosphorus	-0.039	0.99	HL	DWN	-0.16	0.95	HL	DWN
Particulate Phosphorus	-0.002	0.68	L	DWN	0.01	0.54	ALAN	NS
Dissolved Phosphorus	-0.032	0.99	HL	DWN	-0.12	0.99	HL	DWN
Orthophosphate	-0.030	0.99	HL	DWN	-0.11	0.99	HL	DWN
Total Organic Carbon	-0.119	0.74	L	DWN	0.20	0.68	L	UP
Total Suspended Solids	12.065	0.85	L	UP	282.21	0.79	L	UP
Suspended Sediment	14.529	0.83	L	UP	266.48	0.75	L	UP

01515000; Smithboro	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.118	0.99	HL	DWN	-0.93	0.97	HL	DWN
Nitrate-Nitrite	-0.038	0.93	VL	DWN	-0.47	0.97	HL	DWN
Ammonia	-0.027	0.99	HL	DWN	-0.25	0.99	HL	DWN
Dissolved Nitrogen	-0.136	0.99	HL	DWN	-1.10	0.99	HL	DWN
Nitrate-Nitrite	-0.023	0.83	L	DWN	-0.31	0.95	HL	DWN
Ammonia	-0.028	0.99	HL	DWN	-0.23	0.99	HL	DWN
Total Phosphorus	-0.039	0.99	HL	DWN	-0.35	0.99	HL	DWN
Particulate Phosphorus	-0.020	0.99	HL	DWN	-0.13	0.91	VL	DWN
Dissolved Phosphorus	-0.023	0.99	HL	DWN	-0.20	0.99	HL	DWN
Orthophosphate	-0.020	0.97	HL	DWN	-0.18	0.99	HL	DWN
Total Organic Carbon	-0.237	0.93	VL	DWN	-0.69	0.70	L	DWN
Total Suspended Solids	8.968	0.91	VL	UP	443.04	0.95	HL	UP
Suspended Sediment	17.569	0.95	HL	UP	523.76	0.97	HL	UP

01529500; Cohocton	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2006-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	0.176	0.95	HL	UP	0.10	0.93	VL	UP
Nitrate-Nitrite	0.243	0.99	HL	UP	0.13	0.99	HL	UP
Ammonia	-0.036	0.99	HL	DWN	-0.01	0.99	HL	DWN
Dissolved Nitrogen	0.183	0.97	HL	UP	0.12	0.97	HL	UP
Nitrate-Nitrite	0.264	0.99	HL	UP	0.14	0.99	HL	UP
Ammonia	-0.037	0.99	HL	DWN	-0.01	0.99	HL	DWN
Total Phosphorus	-0.041	0.99	HL	DWN	-0.01	0.72	L	DWN
Particulate Phosphorus	-0.006	0.79	L	DWN	0.01	0.87	L	UP
Dissolved Phosphorus	-0.035	0.99	HL	DWN	-0.01	0.99	HL	DWN
Orthophosphate	-0.031	0.99	HL	DWN	-0.01	0.99	HL	DWN
Total Organic Carbon	-0.340	0.87	L	DWN	-0.06	0.54	ALAN	NS
Total Suspended Solids	-0.959	0.50	ALAN	NS	13.06	0.89	L	UP
Suspended Sediment	3.165	0.66	ALAN	NS	23.08	0.87	L	UP

01531000; Chemung	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	0.049	0.60	ALAN	NS	-0.09	0.79	L	DWN
Nitrate-Nitrite	0.168	0.91	VL	UP	0.23	0.85	L	UP
Ammonia	-0.012	0.93	VL	DWN	-0.04	0.99	HL	DWN
Dissolved Nitrogen	-0.083	0.97	HL	DWN	-0.26	0.93	VL	DWN
Nitrate-Nitrite	0.055	0.72	L	UP	0.10	0.78	L	UP
Ammonia	-0.017	0.93	VL	DWN	-0.06	0.97	HL	DWN
Total Phosphorus	-0.067	0.99	HL	DWN	-0.15	0.95	HL	DWN
Particulate Phosphorus	-0.019	0.95	HL	DWN	-0.04	0.74	L	DWN
Dissolved Phosphorus	-0.043	0.97	HL	DWN	-0.08	0.99	HL	DWN
Orthophosphate	-0.045	0.97	HL	DWN	-0.08	0.99	HL	DWN
Total Organic Carbon	-0.164	0.85	L	DWN	-0.32	0.66	ALAN	NS
Total Suspended Solids	2.310	0.56	ALAN	NS	133.80	0.85	L	UP
Suspended Sediment	4.970	0.60	ALAN	NS	145.00	0.78	L	UP

01536500; Wilkes-Barre	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.078	0.95	HL	DWN	-0.03	0.60	ALAN	NS
Nitrate-Nitrite	-0.005	0.70	L	DWN	-0.10	0.75	L	DWN
Ammonia	-0.016	0.99	HL	DWN	-0.16	0.99	HL	DWN
Dissolved Nitrogen	-0.079	0.97	HL	DWN	-0.76	0.97	HL	DWN
Nitrate-Nitrite	-0.234	0.99	HL	DWN	-3.39	0.99	HL	DWN
Ammonia	-0.015	0.99	HL	DWN	-0.18	0.97	HL	DWN
Total Phosphorus	-0.024	0.99	HL	DWN	-0.09	0.62	ALAN	NS
Particulate Phosphorus	0.006	0.74	L	UP	0.41	0.74	L	UP
Dissolved Phosphorus	-0.027	0.99	HL	DWN	-0.38	0.99	HL	DWN
Orthophosphate	-0.024	0.99	HL	DWN	-0.36	0.99	HL	DWN
Total Organic Carbon	-0.491	0.99	HL	DWN	-7.02	0.95	HL	DWN
Total Suspended Solids	10.063	0.79	L	UP	302.71	0.64	ALAN	NS
Suspended Sediment	23.228	0.95	HL	UP	927.76	0.83	L	UP

01542500; Karthaus	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	0.012	0.62	ALAN	NS	0.17	0.87	L	UP
Nitrate-Nitrite	0.020	0.93	VL	UP	0.19	0.99	HL	UP
Ammonia	-0.026	0.99	HL	DWN	-0.05	0.99	HL	DWN
Dissolved Nitrogen	-0.027	0.72	L	DWN	0.05	0.70	L	UP
Nitrate-Nitrite	0.030	0.97	HL	UP	0.20	0.99	HL	UP
Ammonia	-0.025	0.99	HL	DWN	-0.05	0.99	HL	DWN
Total Phosphorus	-0.018	0.99	HL	DWN	-0.03	0.97	HL	DWN
Particulate Phosphorus	-0.010	0.99	HL	DWN	-0.02	0.95	HL	DWN
Dissolved Phosphorus	-0.012	0.99	HL	DWN	-0.02	0.99	HL	DWN
Orthophosphate	-0.008	0.99	HL	DWN	-0.01	0.99	HL	DWN
Total Organic Carbon	0.004	0.52	ALAN	NS	-0.07	0.52	ALAN	NS
Total Suspended Solids	0.348	0.56	ALAN	NS	4.01	0.60	ALAN	NS
Suspended Sediment	11.171	0.89	L	UP	34.85	0.81	L	UP

01549760; Jersey Shore	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	0.013	0.58	ALAN	NS	0.71	0.87	L	UP
Nitrate-Nitrite	0.006	0.58	ALAN	NS	0.43	0.93	VL	UP
Ammonia	-0.016	0.99	HL	DWN	-0.12	0.99	HL	DWN
Dissolved Nitrogen	-0.020	0.68	L	DWN	0.27	0.79	L	UP
Nitrate-Nitrite	0.016	0.68	L	UP	0.47	0.99	HL	UP
Ammonia	-0.016	0.99	HL	DWN	-0.13	0.99	HL	DWN
Total Phosphorus	-0.023	0.99	HL	DWN	-0.13	0.99	HL	DWN
Particulate Phosphorus	0.000	0.54	ALAN	NS	0.02	0.64	ALAN	NS
Dissolved Phosphorus	-0.024	0.99	HL	DWN	-0.15	0.99	HL	DWN
Orthophosphate	-0.018	0.99	HL	DWN	-0.10	0.99	HL	DWN
Total Organic Carbon	-0.040	0.52	ALAN	NS	-0.28	0.54	ALAN	NS
Total Suspended Solids	-0.789	0.64	ALAN	NS	21.91	0.68	L	UP
Suspended Sediment	3.850	0.89	L	UP	75.29	0.91	VL	UP



01555000; Penns Creek	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	0.112	0.89	L	UP	0.06	0.93	VL	UP
Nitrate-Nitrite	0.158	0.95	HL	UP	0.07	0.95	HL	UP
Ammonia	-0.015	0.99	HL	DWN	-0.01	0.93	VL	DWN
Dissolved Nitrogen	0.080	0.85	L	UP	0.05	0.93	VL	UP
Nitrate-Nitrite	0.157	0.95	HL	UP	0.06	0.93	VL	UP
Ammonia	-0.014	0.99	HL	DWN	-0.01	0.97	HL	DWN
Total Phosphorus	-0.027	0.97	HL	DWN	-0.01	0.93	VL	DWN
Particulate Phosphorus	0.002	0.68	L	UP	0.00	0.77	L	DWN
Dissolved Phosphorus	-0.029	0.99	HL	DWN	-0.01	0.97	HL	DWN
Orthophosphate	-0.023	0.99	HL	DWN	-0.01	0.95	HL	DWN
Total Organic Carbon	-0.247	0.75	L	DWN	-0.14	0.79	L	DWN
Total Suspended Solids	-0.869	0.62	ALAN	NS	-1.83	0.81	L	DWN
Suspended Sediment	0.513	0.70	L	UP	-6.21	0.83	L	DWN

01555500; East Mahantango	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2013-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.352	0.85	L	DWN	-0.22	0.97	HL	DWN
Nitrate-Nitrite	-0.339	0.79	L	DWN	-0.19	0.97	HL	DWN
Ammonia	-0.019	0.93	VL	DWN	-0.01	0.91	VL	DWN
Dissolved Nitrogen	-0.301	0.79	L	DWN	-0.18	0.97	HL	DWN
Nitrate-Nitrite	-0.204	0.74	L	DWN	-0.15	0.93	VL	DWN
Ammonia	-0.019	0.97	HL	DWN	-0.01	0.97	HL	DWN
Total Phosphorus	-0.004	0.68	L	DWN	-0.01	0.95	HL	DWN
Particulate Phosphorus	-0.008	0.85	L	DWN	-0.01	0.91	VL	DWN
Dissolved Phosphorus	0.004	0.79	L	UP	0.00	0.91	VL	DWN
Orthophosphate	0.003	0.79	L	UP	0.00	0.97	HL	DWN
Total Organic Carbon	-0.327	0.91	VL	DWN	-0.27	0.97	HL	DWN
Total Suspended Solids	-6.625	0.91	VL	DWN	-13.53	0.87	L	DWN
Suspended Sediment	0.371	0.77	L	UP	-16.20	0.77	L	DWN

01562000; Raystown	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	0.107	0.62	ALAN	NS	0.02	0.62	ALAN	NS
Nitrate-Nitrite	0.147	0.72	L	UP	0.02	0.56	ALAN	NS
Ammonia	-0.014	0.99	HL	DWN	-0.01	0.99	HL	DWN
Dissolved Nitrogen	0.088	0.52	ALAN	NS	-0.03	0.68	L	DWN
Nitrate-Nitrite	0.153	0.72	L	UP	0.02	0.52	ALAN	NS
Ammonia	-0.012	0.99	HL	DWN	-0.01	0.99	HL	DWN
Total Phosphorus	0.003	0.83	L	UP	0.00	0.50	ALAN	NS
Particulate Phosphorus	0.004	0.91	VL	UP	0.01	0.72	L	UP
Dissolved Phosphorus	-0.001	0.66	ALAN	NS	0.00	0.85	L	DWN
Orthophosphate	0.002	0.83	L	UP	0.00	0.60	ALAN	NS
Total Organic Carbon	-0.543	0.97	HL	DWN	-0.67	0.95	HL	DWN
Total Suspended Solids	-3.261	0.74	L	DWN	-23.29	0.81	L	DWN
Suspended Sediment	3.300	0.75	L	UP	-7.98	0.83	L	DWN

01565000; Kishacoquillas	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2013-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	0.125	0.75	L	UP	0.04	0.77	L	UP
Nitrate-Nitrite	0.133	0.74	L	UP	0.03	0.81	L	UP
Ammonia	0.001	0.64	ALAN	NS	0.00	0.62	ALAN	NS
Dissolved Nitrogen	0.140	0.77	L	UP	0.04	0.83	L	UP
Nitrate-Nitrite	0.169	0.81	L	UP	0.04	0.83	L	UP
Ammonia	-0.006	0.83	L	DWN	0.00	0.87	L	DWN
Total Phosphorus	-0.018	0.99	HL	DWN	0.00	0.87	L	DWN
Particulate Phosphorus	0.003	0.68	L	UP	0.00	0.54	ALAN	NS
Dissolved Phosphorus	-0.020	0.99	HL	DWN	0.00	0.95	HL	DWN
Orthophosphate	-0.019	0.99	HL	DWN	0.00	0.99	HL	DWN
Total Organic Carbon	-0.317	0.85	L	DWN	-0.16	0.95	HL	DWN
Total Suspended Solids	-4.631	0.87	L	DWN	-1.88	0.72	L	DWN
Suspended Sediment	8.679	0.85	L	UP	2.64	0.75	L	UP

01568000; Shermans	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.019	0.62	ALAN	NS	0.01	0.56	ALAN	NS
Nitrate-Nitrite	-0.008	0.58	ALAN	NS	0.02	0.72	L	UP
Ammonia	-0.015	0.99	HL	DWN	-0.01	0.93	VL	DWN
Dissolved Nitrogen	-0.051	0.68	L	DWN	0.00	0.58	ALAN	NS
Nitrate-Nitrite	-0.015	0.52	ALAN	NS	0.01	0.75	L	UP
Ammonia	-0.016	0.99	HL	DWN	-0.01	0.93	VL	DWN
Total Phosphorus	-0.001	0.56	ALAN	NS	0.00	0.58	ALAN	NS
Particulate Phosphorus	-0.001	0.54	ALAN	NS	0.00	0.66	ALAN	NS
Dissolved Phosphorus	0.000	0.56	ALAN	NS	0.00	0.60	ALAN	NS
Orthophosphate	0.002	0.64	ALAN	NS	0.00	0.56	ALAN	NS
Total Organic Carbon	-0.260	0.74	L	DWN	-0.19	0.81	L	DWN
Total Suspended Solids	-3.538	0.85	L	DWN	-5.01	0.79	L	DWN
Suspended Sediment	0.223	0.60	ALAN	NS	-3.83	0.70	L	DWN

01570000; Conodoguinet	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.425	0.97	HL	DWN	-0.17	0.97	HL	DWN
Nitrate-Nitrite	-0.444	0.97	HL	DWN	-0.17	0.93	VL	DWN
Ammonia	-0.013	0.97	HL	DWN	-0.01	0.99	HL	DWN
Dissolved Nitrogen	-0.542	0.99	HL	DWN	-0.01	0.99	HL	DWN
Nitrate-Nitrite	-0.353	0.91	VL	DWN	-0.14	0.87	L	DWN
Ammonia	-0.013	0.97	HL	DWN	-0.01	0.97	HL	DWN
Total Phosphorus	0.000	0.54	ALAN	NS	0.00	0.77	L	DWN
Particulate Phosphorus	0.002	0.72	L	UP	0.00	0.52	ALAN	NS
Dissolved Phosphorus	-0.003	0.85	L	DWN	0.00	0.83	L	DWN
Orthophosphate	-0.002	0.75	L	DWN	0.00	0.83	L	DWN
Total Organic Carbon	-0.193	0.70	L	DWN	-0.29	0.77	L	DWN
Total Suspended Solids	0.510	0.58	ALAN	NS	-2.01	0.60	ALAN	NS
Suspended Sediment	7.803	0.95	HL	UP	1.83	0.72	L	UP

01571005; Paxton	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2013-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.067	0.77	L	DWN	-0.001	0.75	L	DWN
Nitrate-Nitrite	-0.116	0.91	VL	DWN	-0.004	0.99	HL	DWN
Ammonia	0.005	0.79	L	UP	0.000	0.87	L	UP
Dissolved Nitrogen	-0.112	0.91	VL	DWN	-0.003	0.93	VL	DWN
Nitrate-Nitrite	-0.113	0.89	L	DWN	-0.003	0.97	HL	DWN
Ammonia	-0.002	0.56	ALAN	NS	0.000	0.68	L	UP
Total Phosphorus	0.013	0.97	HL	UP	0.001	0.93	VL	UP
Particulate Phosphorus	0.008	0.93	VL	UP	0.000	0.87	L	UP
Dissolved Phosphorus	0.004	0.99	HL	UP	0.000	0.93	VL	UP
Orthophosphate	0.001	0.66	ALAN	NS	0.000	0.66	ALAN	NS
Total Organic Carbon	0.128	0.79	L	UP	0.000	0.58	ALAN	NS
Total Suspended Solids	5.528	0.81	L	UP	0.862	0.87	L	UP
Suspended Sediment	20.536	0.93	VL	UP	1.420	0.68	L	UP

01573560; Swatara	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-1.153	0.99	HL	DWN	-0.57	0.99	HL	DWN
Nitrate-Nitrite	-1.193	0.99	HL	DWN	-0.68	0.99	HL	DWN
Ammonia	-0.022	0.97	HL	DWN	-0.02	0.91	VL	DWN
Dissolved Nitrogen	-1.182	0.99	HL	DWN	-0.60	0.99	HL	DWN
Nitrate-Nitrite	-1.147	0.99	HL	DWN	-0.62	0.99	HL	DWN
Ammonia	-0.022	0.97	HL	DWN	-0.01	0.91	VL	DWN
Total Phosphorus	-0.007	0.75	L	DWN	0.00	0.64	ALAN	NS
Particulate Phosphorus	0.000	0.62	ALAN	NS	0.00	0.54	ALAN	NS
Dissolved Phosphorus	-0.007	0.83	L	DWN	0.00	0.62	ALAN	NS
Orthophosphate	-0.006	0.85	L	DWN	0.00	0.70	L	UP
Total Organic Carbon	-0.156	0.66	ALAN	NS	-0.39	0.81	L	DWN
Total Suspended Solids	-2.086	0.62	ALAN	NS	-11.62	0.68	L	DWN
Suspended Sediment	6.407	0.85	L	UP	0.99	0.58	ALAN	NS

01576787; Pequea	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2005-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-1.052	0.97	HL	DWN	-0.16	0.97	HL	DWN
Nitrate-Nitrite	-0.706	0.89	L	DWN	-0.11	0.85	L	DWN
Ammonia	0.010	0.74	L	UP	0.01	0.89	L	UP
Dissolved Nitrogen	-1.107	0.95	HL	DWN	-0.17	0.95	HL	DWN
Nitrate-Nitrite	-0.547	0.83	L	DWN	-0.09	0.77	L	DWN
Ammonia	0.008	0.70	L	UP	0.01	0.85	L	UP
Total Phosphorus	0.028	0.72	L	UP	0.02	0.77	L	UP
Particulate Phosphorus	0.011	0.58	ALAN	NS	0.01	0.79	L	UP
Dissolved Phosphorus	0.019	0.77	L	UP	0.01	0.77	L	UP
Orthophosphate	0.019	0.83	L	UP	0.01	0.74	L	UP
Total Organic Carbon	-0.557	0.89	L	DWN	-0.16	0.91	VL	DWN
Total Suspended Solids	-3.412	0.62	ALAN	NS	-2.29	0.66	ALAN	NS
Suspended Sediment	58.686	0.87	L	UP	29.60	0.75	L	UP

01578475; Octoraro	Flow Normalized Concentration (mg/L)				Flow Normalized Load (Millions kg/yr)			
2007-2022	Change	Likelihood Test			Change	Likelihood Test		
Parameter/code		Value	Descriptor	Trend		Value	Descriptor	Trend
Total Nitrogen	-0.308	0.83	L	DWN	-0.04	0.75	L	DWN
Nitrate-Nitrite	-0.179	0.68	L	DWN	-0.01	0.62	ALAN	NS
Ammonia	-0.036	0.95	HL	DWN	-0.01	0.91	VL	DWN
Dissolved Nitrogen	-0.301	0.83	L	DWN	-0.05	0.75	L	DWN
Nitrate-Nitrite	-0.136	0.66	ALAN	NS	0.00	0.54	ALAN	NS
Ammonia	-0.034	0.95	HL	DWN	-0.01	0.91	VL	DWN
Total Phosphorus	-0.036	0.95	HL	DWN	-0.01	0.72	L	DWN
Particulate Phosphorus	-0.004	0.68	L	DWN	0.00	0.54	ALAN	NS
Dissolved Phosphorus	-0.032	0.99	HL	DWN	-0.01	0.85	L	DWN
Orthophosphate	-0.025	0.93	VL	DWN	-0.01	0.74	L	DWN
Total Organic Carbon	-0.709	0.95	HL	DWN	-0.26	0.93	VL	DWN
Total Suspended Solids	-4.894	0.87	L	DWN	-1.89	0.66	ALAN	NS
Suspended Sediment	6.325	0.93	VL	UP	2.55	0.74	L	UP



**Temperature, Dissolved Oxygen, Conductivity, and pH Summary Statistics of Samples Collected in 2022**

Station	# Samples Collected	Temperature (°C)					Dissolved Oxygen (mg/L)					Conductivity (µmhos/cm)					pH (S.U.)				
		Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD
Bald Eagle	16	1.6	23.9	9.1	11.1	7.40	8.64	14.00	11.63	11.50	1.67	182.0	445.1	287.4	294.3	79.51	7.35	8.20	7.87	7.85	0.23
Chemung	17	-0.1	24.3	5.5	10.3	8.93	9.21	119.00	13.27	18.23	26.06	159.0	633.2	391.4	382.2	125.93	7.24	8.75	8.01	7.97	0.40
Cohocton	21	-0.1	27.1	13.8	12.5	9.46	7.89	14.25	10.14	11.01	2.30	113.4	578.1	274.8	304.2	122.92	5.55	8.29	7.97	7.78	0.61
Conestoga	30	1.5	27.5	15.0	14.0	8.85	6.68	16.01	10.00	10.08	2.48	150.1	1109.0	675.2	661.0	162.15	7.74	8.36	8.01	8.00	0.18
Conodoguinet	19	-0.1	28.6	13.8	12.4	9.64	7.86	15.43	10.16	10.90	2.62	127.7	284.1	176.5	190.6	50.78	7.28	8.19	7.65	7.69	0.32
Juniata	17	1.0	26.2	11.6	13.0	8.13	7.00	16.07	10.34	11.12	2.49	198.0	618.8	433.7	418.9	121.59	7.31	8.50	8.07	7.95	0.32
Kishacoquillas	29	0.1	29.1	9.8	13.6	9.90	5.92	14.99	11.70	11.32	2.37	164.1	371.0	249.3	253.2	50.50	7.49	8.83	8.06	8.12	0.43
Mahantango	17	3.0	18.4	10.2	10.9	5.42	9.22	13.90	11.27	11.35	1.59	140.0	429.1	311.2	306.7	81.75	7.44	8.59	7.96	8.03	0.29
Octoraro	16	-0.1	30.1	10.2	11.5	8.56	7.86	14.69	10.44	10.77	2.04	120.0	292.2	165.6	179.8	55.32	6.83	8.79	7.13	7.32	0.51
Paxton	17	2.3	27.3	12.3	13.8	8.88	7.73	13.80	10.98	10.76	2.08	189.6	334.7	275.0	278.6	35.16	7.35	8.20	7.83	7.77	0.25
Penns	16	1.1	25.4	11.9	12.4	7.99	9.05	14.28	10.82	11.19	1.60	245.0	773.7	584.0	564.4	161.92	7.22	8.39	7.96	7.88	0.32
Pequea	16	-0.1	27.0	8.4	11.5	8.57	8.59	14.63	13.05	12.27	1.81	40.2	256.6	201.4	192.8	54.03	7.41	8.88	8.30	8.28	0.44
Raystown Branch	18	1.3	25.4	12.3	13.5	8.36	7.20	13.60	10.77	10.21	2.13	182.4	556.1	497.4	463.1	110.73	7.48	8.25	8.03	7.96	0.22
Sherman	16	-0.1	24.0	9.4	10.7	8.36	7.03	14.09	10.61	10.71	2.40	142.3	467.3	278.8	278.1	90.52	7.40	8.26	7.84	7.84	0.26
Susq @ Conklin	19	-0.1	25.5	12.6	11.7	8.90	7.46	15.93	9.84	10.82	2.77	130.0	417.6	264.1	259.7	75.41	7.20	8.32	7.71	7.77	0.29
Susq @ Danville	17	0.0	25.2	10.2	11.8	8.00	6.97	14.88	10.53	11.09	2.22	92.5	249.6	162.5	170.7	45.52	7.00	8.19	7.83	7.71	0.29
Susq @ Marietta	21	0.0	25.7	14.2	12.6	9.78	7.51	15.12	9.40	10.66	2.82	135.2	416.2	197.6	236.3	82.40	7.35	8.34	7.77	7.79	0.27
Susq @ Smithboro	29	0.0	30.1	13.1	13.5	10.74	8.01	16.45	10.27	10.89	2.59	136.8	848.0	256.4	293.8	140.79	7.33	8.41	7.72	7.75	0.28
Susq @ Towanda	29	0.0	30.4	12.8	13.0	9.91	7.30	14.87	10.43	10.66	2.38	151.1	536.2	236.7	257.6	90.72	7.25	8.40	7.83	7.81	0.34
Susq @ Wilkes-Barre	29	0.1	27.5	12.0	12.3	9.73	6.93	15.65	10.49	10.64	2.83	113.0	421.6	256.0	265.8	88.36	7.31	8.16	7.84	7.80	0.23
Swatara	17	0.0	28.1	13.0	12.4	10.00	7.22	13.94	10.85	10.52	2.41	146.6	472.4	252.9	268.2	91.78	7.24	8.67	7.46	7.53	0.32
Unadilla	16	0.8	27.7	10.0	12.1	8.39	7.78	14.00	11.00	10.75	1.87	15.5	517.8	262.7	260.1	125.24	7.13	8.05	7.60	7.62	0.26
WB Susq @ Jersey Shore	18	0.3	26.0	9.5	11.6	8.69	8.25	14.78	11.59	11.37	2.09	118.0	446.3	189.1	219.8	90.85	6.99	8.29	7.50	7.56	0.31
WB Susq @ Karthaus	19	-0.1	24.4	7.9	11.7	9.03	7.95	14.59	11.72	11.01	2.04	159.0	654.7	309.8	358.6	135.37	6.88	7.71	7.42	7.36	0.24
WB Susq @ Lewisburg	29	0.0	29.2	13.0	13.7	10.25	7.80	14.78	10.61	10.95	2.25	92.1	406.4	179.6	198.1	80.95	6.84	8.17	7.54	7.54	0.34
Yellow Breeches	16	1.7	24.4	10.9	12.5	7.05	8.48	14.13	10.39	10.83	1.68	34.4	397.6	311.5	296.0	96.68	7.32	8.30	8.04	7.91	0.27

*Various Total Nitrogen Species Summary Statistics of Samples Collected in 2022, in mg/L*

Station	# Samples Collected	Total Nitrogen					Total Ammonia					Total Nitrate Plus Nitrite				
		Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD
<b>Bald Eagle</b>	16	1.04	1.87	1.41	1.40	0.24	0.007	0.059	0.021	0.023	0.013	0.79	1.56	1.26	1.20	0.23
<b>Chemung</b>	21	0.03	0.17	0.09	0.09	0.04	0.003	0.075	0.025	0.030	0.021	0.00	1.28	0.57	0.61	0.26
<b>Cohocton</b>	17	0.03	2.06	0.07	0.25	0.53	0.004	0.106	0.011	0.021	0.027	0.00	2.39	1.20	1.10	0.51
<b>Conestoga</b>	30	3.98	7.96	5.55	5.80	1.18	0.007	1.597	0.037	0.130	0.295	3.06	7.68	4.89	5.16	1.32
<b>Conodoguinet</b>	17	2.71	5.03	3.82	3.82	0.64	0.007	0.131	0.028	0.036	0.035	2.12	4.23	3.56	3.43	0.60
<b>Juniata</b>	29	0.92	2.70	1.63	1.66	0.37	0.007	0.138	0.016	0.025	0.028	0.73	1.81	1.42	1.38	0.27
<b>Kishacoquillas</b>	17	2.21	3.77	2.80	2.89	0.45	0.007	0.120	0.025	0.038	0.032	1.62	3.67	2.64	2.65	0.54
<b>Mahantango</b>	16	1.91	5.23	4.00	3.70	0.98	0.009	0.099	0.023	0.033	0.026	1.69	4.81	3.39	3.32	0.85
<b>Octoraro</b>	17	4.76	7.99	6.61	6.62	1.01	0.007	0.527	0.032	0.098	0.149	3.12	8.04	5.83	5.78	1.17
<b>Paxton</b>	16	0.76	2.49	1.45	1.51	0.55	0.007	0.163	0.020	0.036	0.041	0.59	2.25	1.05	1.11	0.48
<b>Penns</b>	16	0.89	1.95	1.38	1.37	0.31	0.007	0.083	0.018	0.025	0.021	0.62	1.57	1.09	1.10	0.31
<b>Pequea</b>	18	4.25	8.86	7.00	7.03	1.29	0.007	0.916	0.046	0.146	0.239	2.38	8.55	6.01	5.91	1.89
<b>Raystown Branch</b>	16	1.70	2.75	2.13	2.14	0.29	0.007	0.090	0.016	0.025	0.022	0.01	2.33	1.88	1.79	0.55
<b>Sherman</b>	17	1.20	2.55	1.92	1.93	0.39	0.008	0.097	0.021	0.030	0.025	0.99	2.15	1.60	1.60	0.37
<b>Susq @ Conklin</b>	19	0.03	1.17	0.06	0.12	0.26	0.005	0.068	0.012	0.018	0.016	0.00	0.86	0.30	0.36	0.22
<b>Susq @ Danville</b>	29	0.38	1.75	0.80	0.85	0.30	0.007	0.136	0.014	0.032	0.035	0.01	1.01	0.54	0.54	0.24
<b>Susq @ Marietta</b>	29	0.56	2.39	1.12	1.18	0.39	0.007	0.148	0.019	0.027	0.029	0.40	1.60	0.86	0.89	0.30
<b>Susq @ Smithboro</b>	21	0.02	1.27	0.08	0.15	0.28	0.009	0.076	0.020	0.027	0.020	0.00	1.12	0.47	0.49	0.24
<b>Susq @ Towanda</b>	29	0.49	1.28	0.85	0.88	0.21	0.007	0.081	0.014	0.025	0.022	0.17	1.21	0.54	0.57	0.23
<b>Susq @ Wilkes-Barre</b>	17	0.58	1.58	0.80	0.92	0.30	0.009	0.113	0.030	0.042	0.030	0.26	1.01	0.49	0.54	0.22
<b>Swatara</b>	16	2.50	4.11	3.27	3.24	0.43	0.009	0.432	0.042	0.066	0.106	1.45	3.94	2.87	2.83	0.64
<b>Unadilla</b>	19	0.03	1.89	0.08	0.25	0.53	0.005	0.117	0.015	0.027	0.028	0.00	1.46	0.58	0.56	0.34
<b>WB Susq @ Jershey Shore</b>	18	0.47	0.89	0.70	0.70	0.12	0.007	0.042	0.015	0.018	0.010	0.22	0.82	0.54	0.53	0.14
<b>WB Susq @ Karthaus</b>	19	0.34	1.05	0.67	0.65	0.21	0.007	0.100	0.020	0.030	0.025	0.17	0.77	0.46	0.45	0.18
<b>WB Susq @ Lewisburg</b>	29	0.41	1.49	0.73	0.76	0.20	0.007	0.064	0.010	0.018	0.015	0.24	0.98	0.60	0.60	0.17
<b>Yellow Breeches</b>	16	1.71	2.31	2.05	2.03	0.18	0.007	0.097	0.014	0.024	0.025	0.93	2.10	1.82	1.72	0.35

*Various Dissolved Nitrogen Species Summary Statistics of Samples Collected in 2022, in mg/L*

Station	# Samples Collected	Dissolved Nitrogen					Dissolved Ammonia					Dissolved Nitrate Plus Nitrite				
		Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD
<b>Bald Eagle</b>	16	0.96	1.73	1.38	1.34	0.25	0.007	0.047	0.017	0.019	0.010	0.80	1.55	1.27	1.21	0.24
<b>Chemung</b>	21	0.02	0.12	0.07	0.07	0.03	0.005	0.064	0.017	0.027	0.019	0.00	1.28	0.57	0.62	0.26
<b>Cohocton</b>	17	0.03	2.09	0.06	0.26	0.57	0.005	0.101	0.010	0.019	0.025	0.00	2.38	1.21	1.11	0.51
<b>Conestoga</b>	30	3.67	8.10	5.42	5.65	1.24	0.007	0.364	0.035	0.076	0.096	3.08	7.73	4.86	5.12	1.30
<b>Conodoguinet</b>	17	2.08	4.47	3.80	3.65	0.67	0.007	0.128	0.022	0.030	0.031	1.61	4.22	3.58	3.37	0.72
<b>Juniata</b>	29	0.89	2.19	1.57	1.54	0.28	0.007	0.128	0.011	0.024	0.027	0.73	1.82	1.41	1.38	0.27
<b>Kishacoquillas</b>	17	1.99	3.76	2.83	2.84	0.53	0.007	0.110	0.023	0.033	0.028	1.52	3.65	2.67	2.65	0.56
<b>Mahantango</b>	16	1.86	5.06	3.80	3.56	0.90	0.007	0.081	0.021	0.029	0.022	1.71	4.81	3.43	3.32	0.85
<b>Octoraro</b>	17	3.83	7.99	6.60	6.44	1.15	0.007	0.522	0.029	0.095	0.151	3.09	7.99	5.87	5.79	1.16
<b>Paxton</b>	16	0.74	2.50	1.18	1.36	0.53	0.007	0.137	0.019	0.032	0.034	0.59	2.22	1.06	1.11	0.47
<b>Penns</b>	16	0.81	1.81	1.31	1.27	0.28	0.007	0.082	0.015	0.023	0.022	0.62	1.55	1.08	1.09	0.31
<b>Pequea</b>	18	3.21	8.75	6.63	6.55	1.66	0.007	0.897	0.041	0.136	0.233	2.37	8.42	6.00	5.85	1.85
<b>Raystown Branch</b>	16	1.55	2.45	2.04	2.02	0.28	0.007	0.085	0.010	0.021	0.020	0.01	2.32	1.88	1.79	0.55
<b>Sherman</b>	17	1.17	2.30	1.80	1.78	0.33	0.007	0.097	0.017	0.026	0.025	0.98	2.14	1.60	1.60	0.38
<b>Susq @ Conklin</b>	19	0.03	1.02	0.06	0.11	0.22	0.004	0.062	0.012	0.018	0.015	0.00	0.86	0.30	0.36	0.23
<b>Susq @ Danville</b>	29	0.26	1.05	0.70	0.71	0.20	0.007	0.104	0.012	0.023	0.027	0.01	1.01	0.54	0.54	0.24
<b>Susq @ Marietta</b>	29	0.53	1.96	1.04	1.06	0.33	0.007	0.141	0.013	0.025	0.028	0.40	1.59	0.88	0.88	0.30
<b>Susq @ Smithboro</b>	21	0.02	1.23	0.05	0.12	0.27	0.005	0.070	0.014	0.024	0.019	0.00	1.12	0.46	0.50	0.25
<b>Susq @ Towanda</b>	29	0.40	1.23	0.72	0.74	0.19	0.007	0.097	0.011	0.024	0.025	0.17	1.20	0.53	0.57	0.23
<b>Susq @ Wilkes-Barre</b>	17	0.48	1.17	0.71	0.74	0.20	0.010	0.124	0.023	0.038	0.031	0.26	1.00	0.49	0.54	0.22
<b>Swatara</b>	16	2.04	4.13	3.11	3.11	0.53	0.007	0.419	0.035	0.062	0.103	1.44	3.94	2.87	2.83	0.65
<b>Unadilla</b>	19	0.03	1.77	0.06	0.23	0.50	0.004	0.110	0.016	0.025	0.026	0.00	1.47	0.58	0.57	0.35
<b>WB Susq @ Jershey Shore</b>	18	0.38	0.86	0.61	0.62	0.13	0.007	0.041	0.010	0.014	0.010	0.22	0.85	0.53	0.53	0.15
<b>WB Susq @ Karthaus</b>	19	0.30	0.92	0.54	0.55	0.16	0.007	0.084	0.017	0.023	0.019	0.18	0.76	0.46	0.44	0.17
<b>WB Susq @ Lewisburg</b>	29	0.38	1.05	0.68	0.70	0.15	0.007	0.048	0.009	0.015	0.012	0.24	0.98	0.60	0.60	0.17
<b>Yellow Breeches</b>	16	1.44	2.30	1.90	1.90	0.24	0.007	0.091	0.012	0.022	0.023	0.93	2.09	1.81	1.70	0.35

*Various Phosphorus Species Summary Statistics of Samples Collected in 2022, in mg/L*

Station	# Samples Collected	Total Phosphorus					Dissolved Phosphorus					Total Orthophosphate					Dissolved Orthophosphate				
		Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD
Bald Eagle	16	0.017	0.051	0.033	0.031	0.010	0.008	0.028	258.000	0.014	0.006	0.003	0.022	0.011	0.011	0.005	0.004	0.021	0.011	0.011	0.005
Chemung	21	0.005	0.232	0.031	0.062	0.072	0.005	0.019	0.013	0.013	0.005	0.005	0.073	0.009	0.013	0.015	0.005	0.013	0.007	0.008	0.002
Cohocton	17	0.005	0.272	0.018	0.037	0.064	0.004	0.034	0.009	0.011	0.008	0.005	0.027	0.005	0.008	0.006	0.005	0.022	0.005	0.008	0.005
Conestoga	30	0.022	0.992	0.142	0.182	0.200	0.012	0.363	456.000	0.118	0.086	0.007	0.339	0.116	0.124	0.087	0.006	0.334	0.082	0.103	0.080
Conodoguinet	17	0.010	0.210	0.029	0.060	0.070	0.007	0.098	338.000	0.023	0.021	0.005	0.088	0.012	0.018	0.019	0.004	0.087	0.013	0.017	0.019
Juniata	29	0.010	0.300	0.025	0.049	0.067	0.004	0.105	204.000	0.020	0.024	0.002	0.088	0.009	0.019	0.024	0.002	0.084	0.007	0.014	0.019
Kishacoquillas	17	0.016	0.184	0.030	0.051	0.045	0.012	0.061	250.000	0.027	0.016	0.009	0.051	0.015	0.022	0.014	0.008	0.050	0.015	0.021	0.014
Mahantango	16	0.029	0.243	0.058	0.089	0.067	0.019	0.150	156.000	0.047	0.035	0.013	0.134	0.028	0.039	0.032	0.013	0.137	0.028	0.038	0.032
Octoraro	17	0.029	0.774	0.116	0.176	0.186	0.019	0.418	198.000	0.112	0.116	0.016	0.392	0.039	0.095	0.106	0.017	0.384	0.040	0.095	0.105
Paxton	16	0.009	0.313	0.027	0.064	0.090	0.006	0.075	982.000	0.022	0.018	0.004	0.049	0.014	0.016	0.012	0.004	0.058	0.013	0.016	0.014
Penns	16	0.010	0.211	0.027	0.047	0.054	0.006	0.083	154.000	0.024	0.024	0.003	0.065	0.011	0.016	0.018	0.004	0.064	0.010	0.017	0.019
Pequea	18	0.023	3.216	0.135	0.473	0.776	0.013	0.763	338.000	0.220	0.230	0.010	0.690	0.093	0.194	0.202	0.010	0.682	0.091	0.197	0.207
Raystown Branch	16	0.006	0.161	0.023	0.038	0.042	0.003	0.039	244.000	0.013	0.010	0.002	0.033	0.007	0.009	0.008	0.002	0.033	0.006	0.008	0.008
Sherman	17	0.009	0.250	0.033	0.069	0.080	0.006	0.133	144.000	0.036	0.034	0.004	0.111	0.017	0.028	0.028	0.004	0.111	0.016	0.028	0.028
Susq @ Conklin	19	0.004	0.151	0.023	0.042	0.038	0.004	0.021	0.009	0.010	0.005	0.005	0.015	0.005	0.007	0.003	0.005	0.012	0.005	0.006	0.002
Susq @ Danville	29	0.012	0.518	0.032	0.075	0.120	0.004	0.035	260.000	0.012	0.007	0.003	0.028	0.009	0.011	0.008	0.003	0.022	0.006	0.007	0.005
Susq @ Marietta	29	0.010	0.231	0.034	0.052	0.053	0.003	0.077	214.000	0.014	0.013	0.003	0.059	0.009	0.013	0.013	0.003	0.068	0.007	0.010	0.012
Susq @ Smithboro	21	0.005	0.166	0.040	0.050	0.041	0.004	0.021	0.013	0.011	0.005	0.005	0.012	0.007	0.008	0.003	0.005	0.010	0.006	0.007	0.002
Susq @ Towanda	29	0.013	0.407	0.032	0.065	0.090	0.003	0.038	236.000	0.012	0.007	0.003	0.034	0.008	0.011	0.009	0.003	0.025	0.006	0.008	0.005
Susq @ Wilkes-Barre	17	0.013	0.406	0.035	0.104	0.132	0.005	0.028	274.000	0.013	0.007	0.003	0.029	0.008	0.011	0.008	0.003	0.019	0.007	0.008	0.005
Swatara	16	0.018	0.331	0.038	0.083	0.095	0.014	0.210	250.000	0.043	0.049	0.011	0.187	0.019	0.033	0.042	0.010	0.192	0.018	0.033	0.044
Unadilla	19	0.005	0.210	0.025	0.044	0.053	0.005	0.027	0.008	0.011	0.007	0.005	0.022	0.006	0.009	0.005	0.005	0.016	0.005	0.007	0.003
WB Susq @ Jershey Shore	18	0.007	0.109	0.016	0.021	0.023	0.003	0.008	270.000	0.005	0.002	0.003	0.008	0.004	0.005	0.002	0.003	0.007	0.004	0.004	0.001
WB Susq @ Karthaus	19	0.005	0.083	0.011	0.021	0.022	0.003	0.007	460.000	0.004	0.001	0.003	0.007	0.004	0.004	0.001	0.003	0.006	0.004	0.004	0.001
WB Susq @ Lewisburg	29	0.007	0.193	0.013	0.026	0.035	0.003	0.014	216.000	0.007	0.003	0.003	0.008	0.006	0.005	0.002	0.003	0.008	0.005	0.005	0.002
Yellow Breeches	16	0.016	0.314	0.038	0.073	0.080	0.011	0.065	230.000	0.032	0.016	0.012	0.062	0.025	0.026	0.013	0.011	0.061	0.025	0.026	0.013

**Total Dissolved Solids, Total Suspended Solids, and Total Organic Carbon Summary Statistics of Samples Collected in 2022, in mg/L**

Station	# Samples Collected	Total Dissolved Solids					Total Suspended Solids					Total Organic Carbon				
		Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD	Min	Max	Med	Mn	SD
<b>Bald Eagle</b>	16	72	159	0	160	58.55	5	22	20	19	3.82	1.34	2.66	2.06	1.94	0.38
<b>Chemung</b>	21						1	320	7	53	96.66	0.70	5.70	3.30	3.31	1.11
<b>Cohocton</b>	17						1	204	3	19	49.06	1.00	6.30	3.40	3.39	1.14
<b>Conestoga</b>	30	244	360	0	349	64.72	8	440	20	46	83.95	1.98	8.71	3.36	3.57	1.55
<b>Conodoguinet</b>	17	104	220	0	233	74.38	5	138	20	36	38.47	1.61	6.54	2.34	3.14	1.64
<b>Juniata</b>	29	88	130	0	135	34.09	5	170	20	30	34.58	1.70	5.42	2.33	2.79	1.00
<b>Kishacoquillas</b>	17	104	160	0	172	45.29	5	72	20	23	13.38	1.11	5.64	1.81	2.25	1.13
<b>Mahantango</b>	16	44	92	0	97	32.85	5	252	20	49	62.76	1.23	5.04	2.02	2.49	1.21
<b>Octoraro</b>	17	126	160	0	158	24.83	5	186	20	33	41.49	1.95	9.23	3.37	4.06	2.25
<b>Paxton</b>	16	152	319	0	357	189.81	5	334	20	53	84.64	1.71	7.49	2.75	3.46	1.79
<b>Penns</b>	16	66	121	0	116	25.78	5	62	20	24	12.26	1.26	5.62	2.47	2.51	1.12
<b>Pequea</b>	18	128	284	0	272	57.18	8	1670	23	147	386.81	1.33	15.00	2.57	4.55	4.06
<b>Raystown Branch</b>	16	68	140	0	147	51.36	5	166	20	32	37.55	1.39	6.00	2.54	2.71	1.26
<b>Sherman</b>	17	46	92	0	96	31.85	5	110	20	32	30.45	1.25	7.86	2.20	3.17	2.10
<b>Susq @ Conklin</b>	19						1	189	14	36	53.42	1.00	5.70	3.00	2.98	1.10
<b>Susq @ Danville</b>	29	62	128	0	139	55.68	16	580	20	50	106.64	1.83	5.71	2.68	2.91	0.87
<b>Susq @ Marietta</b>	29	52	128	0	136	47.95	18	186	20	39	39.91	1.74	4.83	2.48	2.60	0.75
<b>Susq @ Smithboro</b>	21						1	159	19	34	47.50	1.00	4.70	3.25	3.08	0.94
<b>Susq @ Towanda</b>	29	56	148	0	147	52.73	5	442	20	59	100.67	2.01	6.69	2.99	3.07	0.89
<b>Susq @ Wilkes-Barre</b>	17	60	148	0	149	58.30	10	548	20	98	160.82	1.94	5.52	2.98	3.25	1.11
<b>Swatara</b>	16	96	157	0	163	51.94	5	146	20	34	36.00	1.48	6.93	2.30	3.09	1.84
<b>Unadilla</b>	19						1	281	11	30	64.06	1.00	5.60	3.00	3.11	1.36
<b>WB Susq @ Jershey Shore</b>	18	28	97	0	124	72.41	5	62	20	22	10.77	1.08	3.58	1.71	1.73	0.60
<b>WB Susq @ Karthaus</b>	19	96	180	0	221	112.43	20	84	20	28	16.62	1.15	5.17	1.73	2.09	1.19
<b>WB Susq @ Lewisburg</b>	29	26	102	0	107	48.64	5	182	20	27	31.14	0.90	4.77	1.74	1.93	0.92
<b>Yellow Breeches</b>	16	102	163	0	172	40.91	5	240	20	44	62.73	1.10	7.74	1.73	2.71	2.08



## 2022 Mean Daily Discharge Trends Chart <sup>1</sup>

SNAP Site	Start Year	Slope Estimate (%)	Trend Test (Alpha 0.05)	p-value	Reject H <sub>0</sub> ?
Towanda	1989	0.11	Mann-Kendall	0.813	No
Danville	1987	0.66	Mann-Kendall	0.131	No
Lewisburg	1987	0.22	Mann-Kendall	0.927	No
Newport	1985	0.37	Mann-Kendall	0.744	No
Marietta	1987	0.36	Mann-Kendall	0.495	No
Conestoga	1985	0.63	Mann-Kendall	0.472	No

Notes: (i) The above chart includes trend results for the mean daily flow statistic at each Long Term Monitoring Site from Start Year through Water Year 2022. For trend results on an expanded set of flow statistics, see plots below.

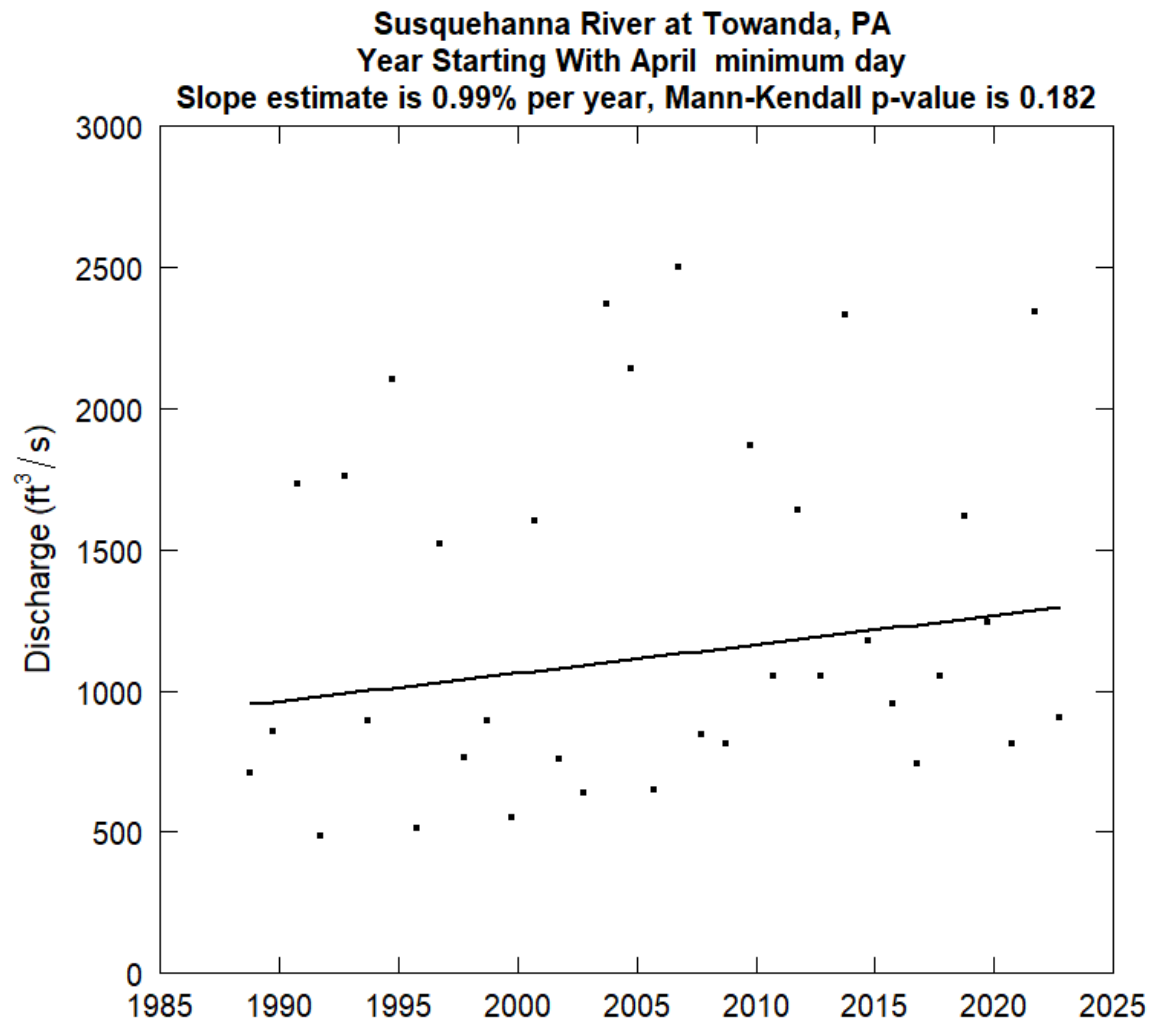
(ii) H<sub>0</sub> refers to the Null Hypothesis. In the Mann-Kendall Test, the Null Hypothesis is that there is no trend in the dataset. The Alternative Hypothesis (H<sub>a</sub>) is that there is a monotonic trend in the data.

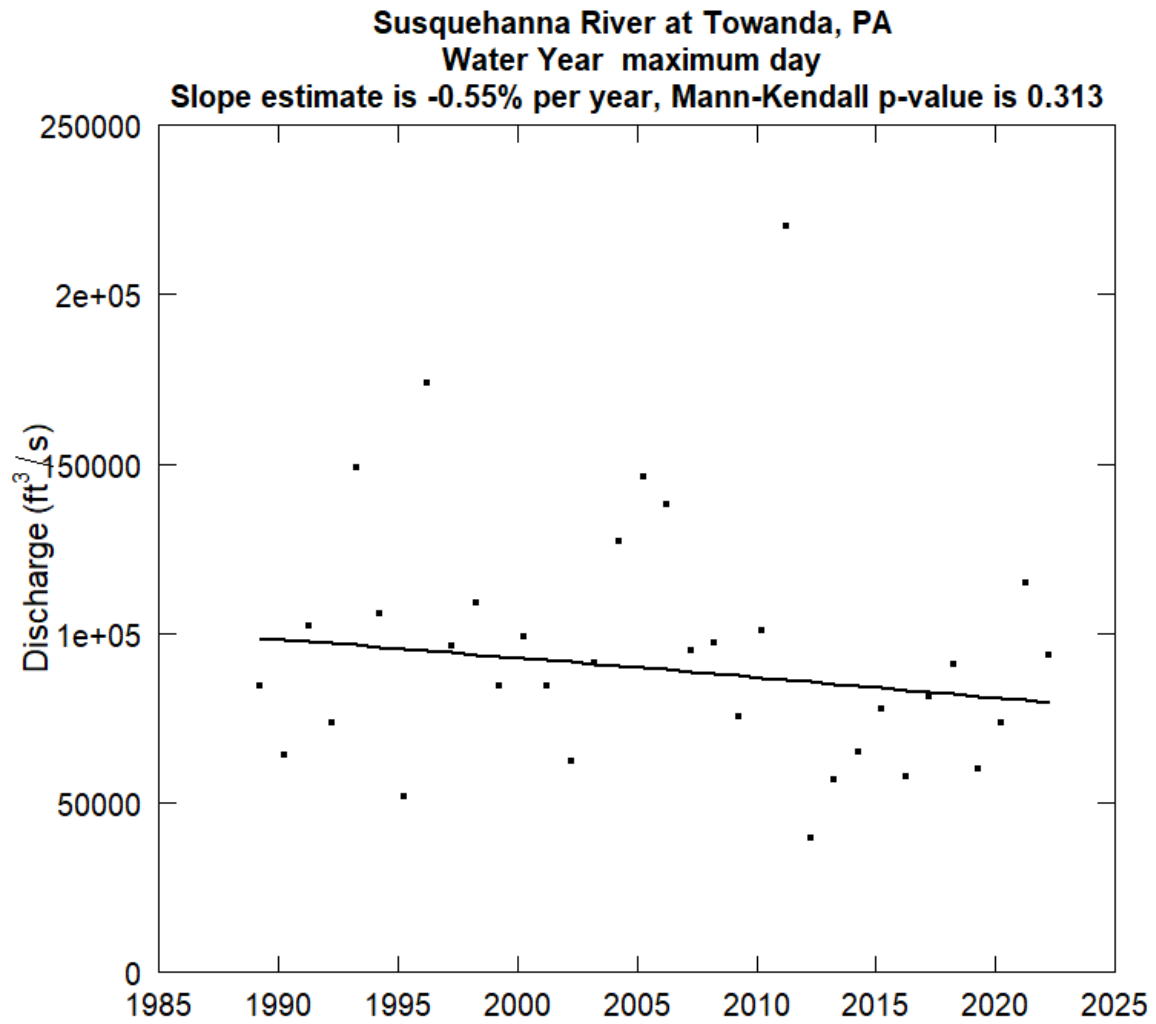
(iii) p-values less than the user defined level of significance (i.e.  $\alpha$ ) of 0.05, suggest that the flow dataset provides enough evidence to reject the Null Hypothesis.

(iv) For more information and specifics on methods or plots, please reference the source listed below.

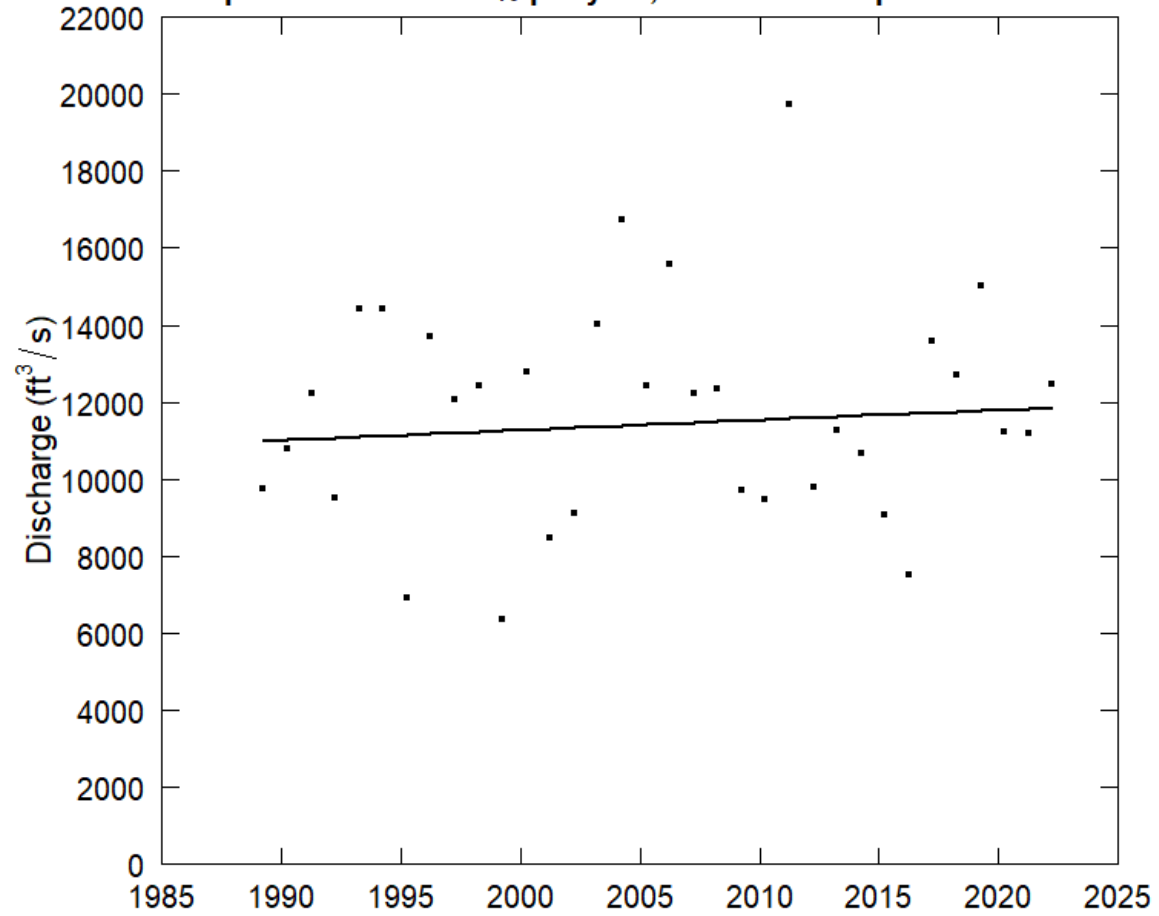
<sup>1</sup> Source: Hirsch, R.M. and De Cicco, L.A. 2019. Daily Streamflow Trend Analysis, 2018-05-29, [http://usgs-r.github.io/EGRET/articles/streamflow\\_trend.html](http://usgs-r.github.io/EGRET/articles/streamflow_trend.html).

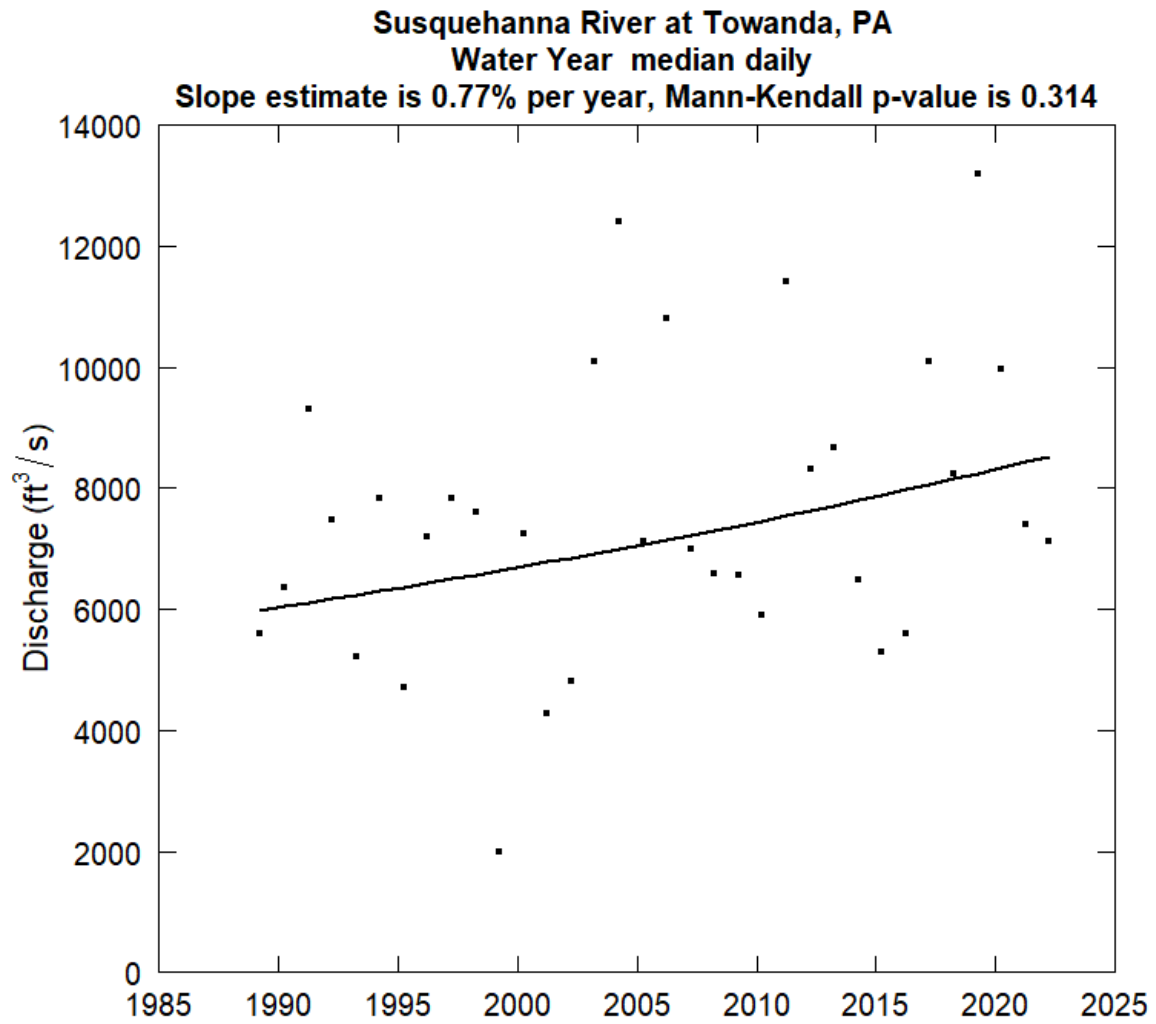
## Flow Trend Plots



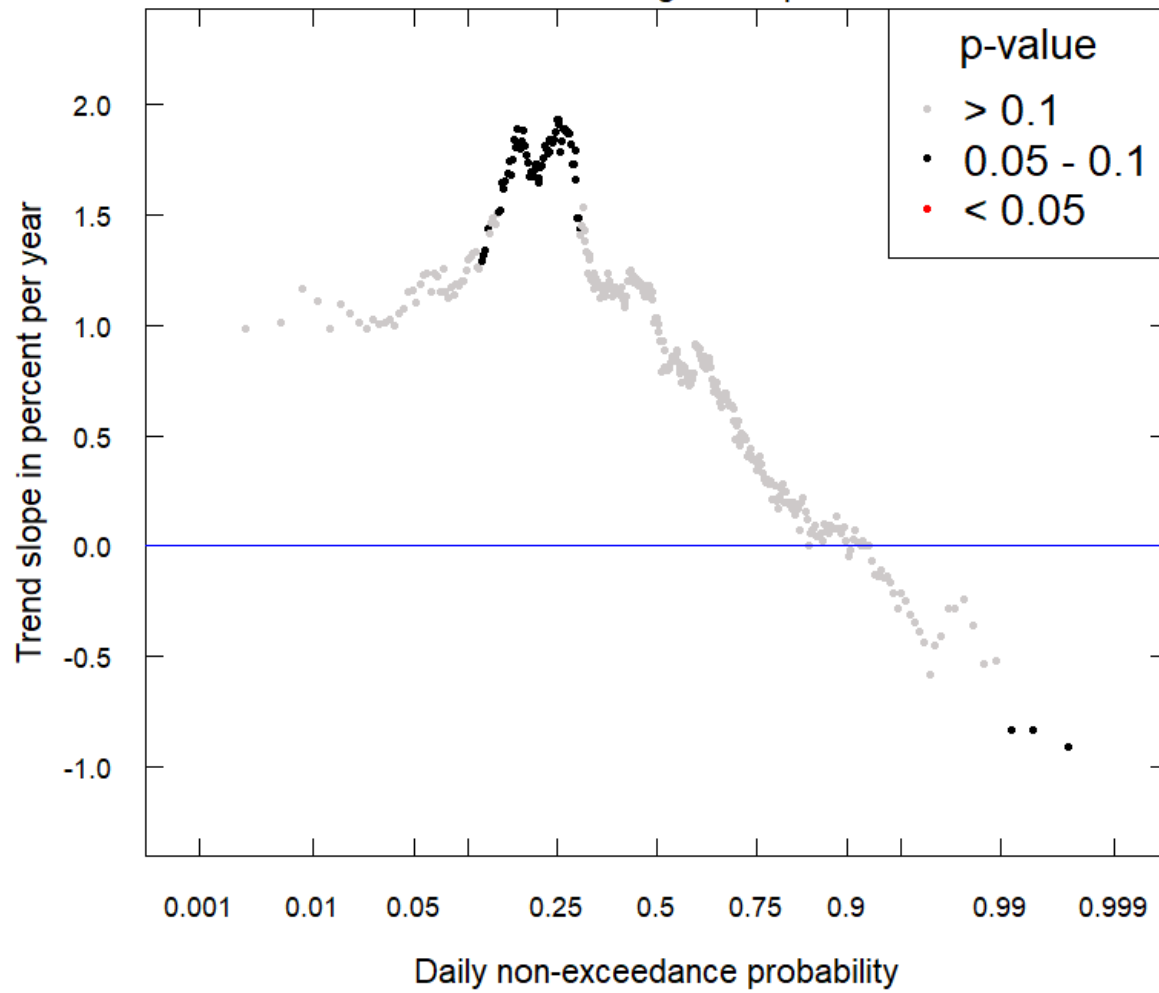


**Susquehanna River at Towanda, PA**  
**Water Year mean daily**  
**Slope estimate is 0.11% per year, Mann-Kendall p-value is 0.813**

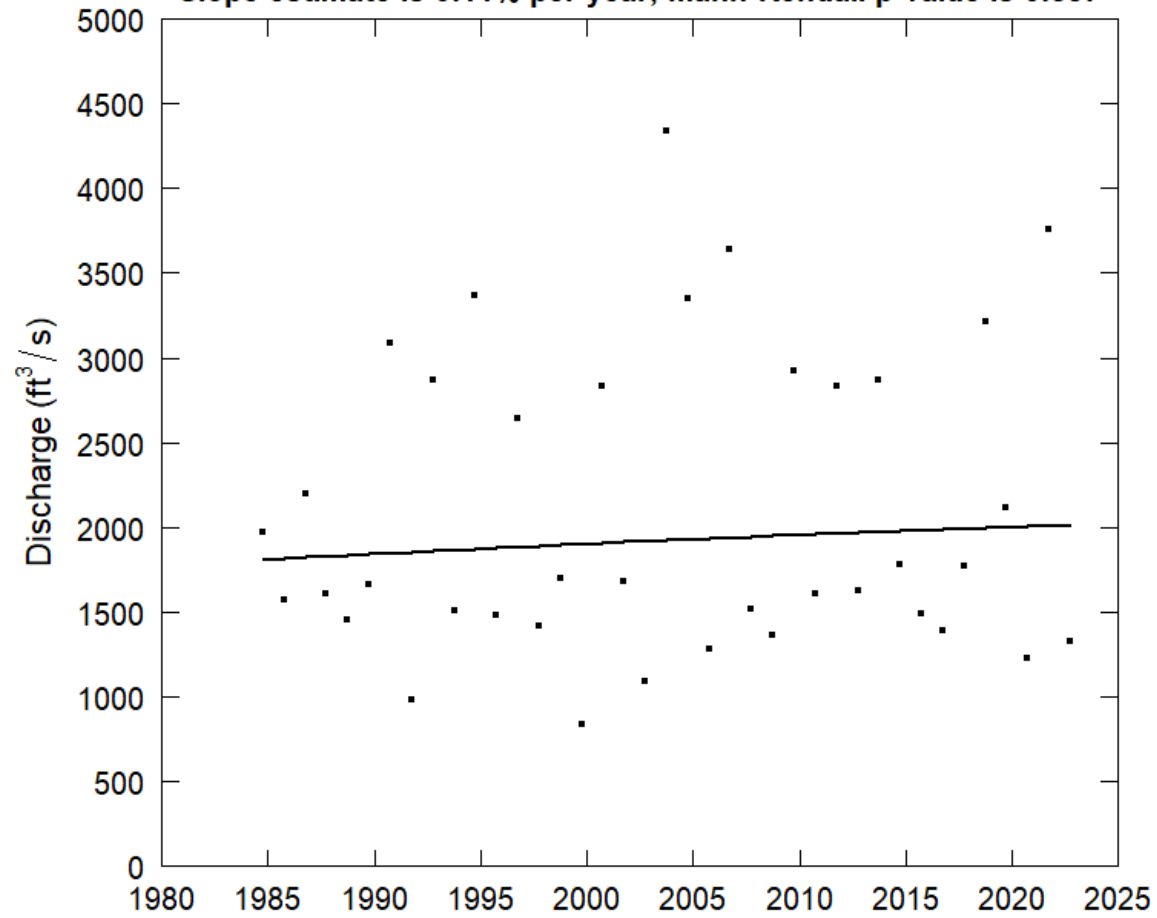


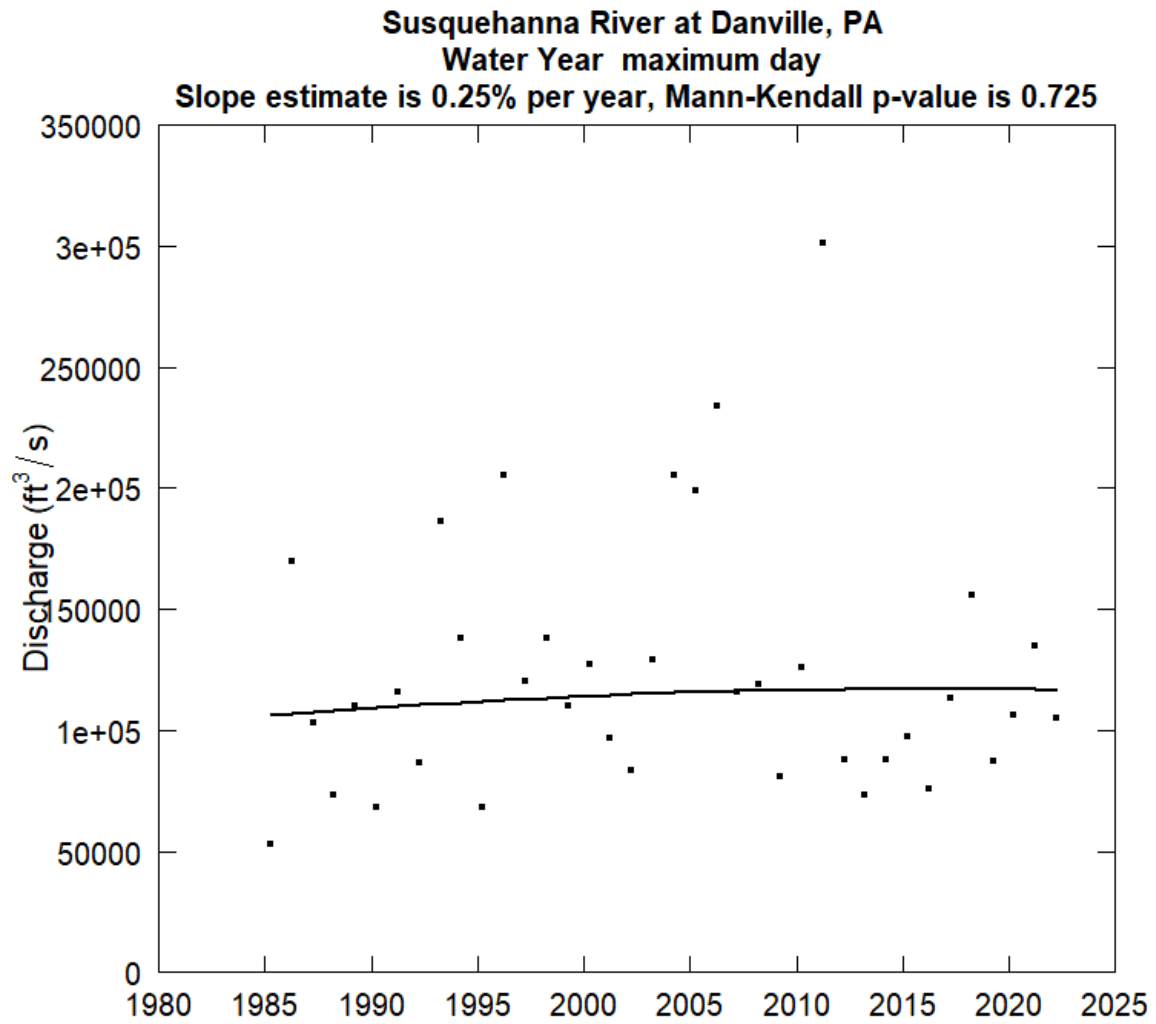


Susquehanna River at Towanda, PA  
1988-04-01 through 2023-03-31  
Year Starting With April

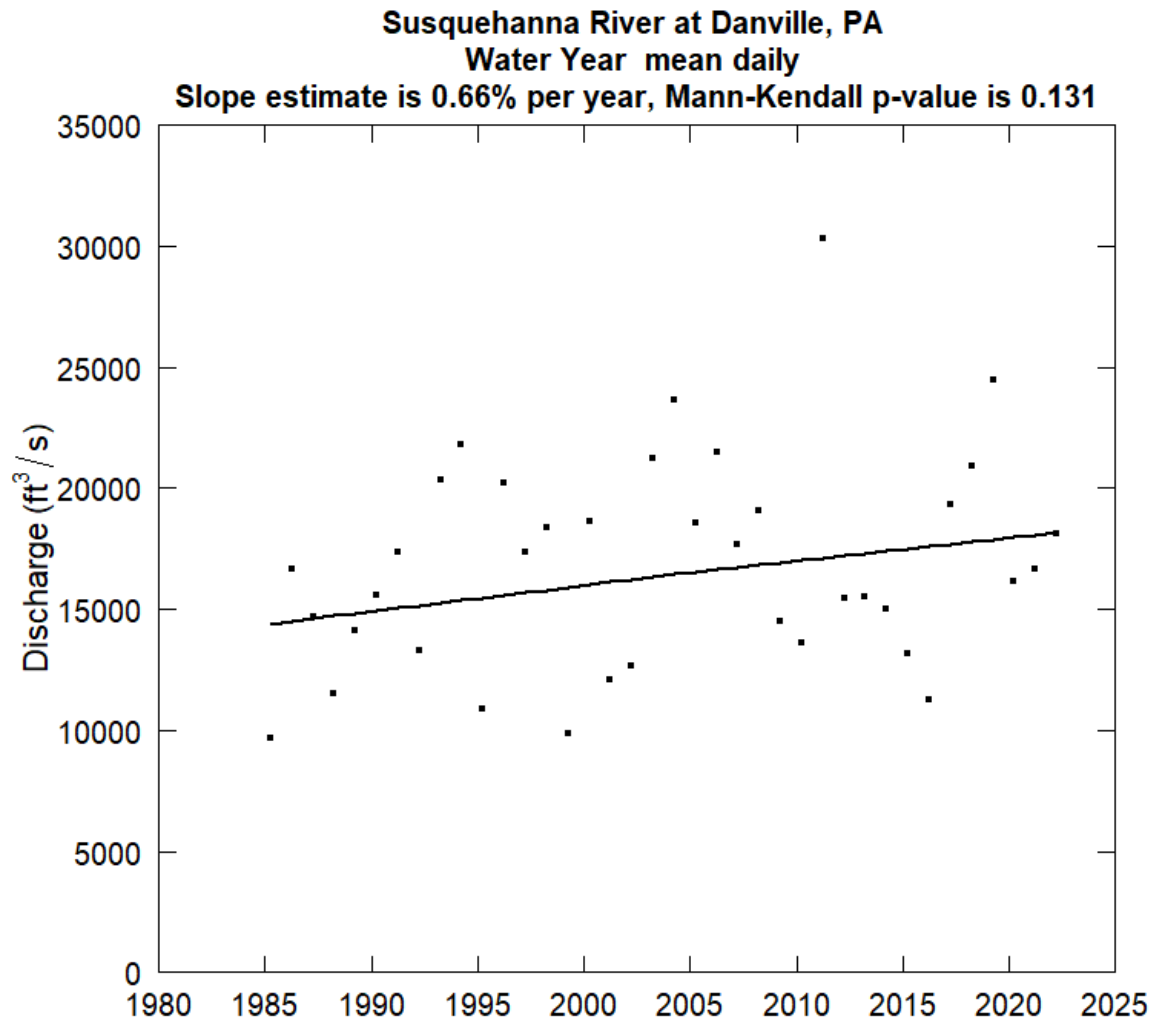


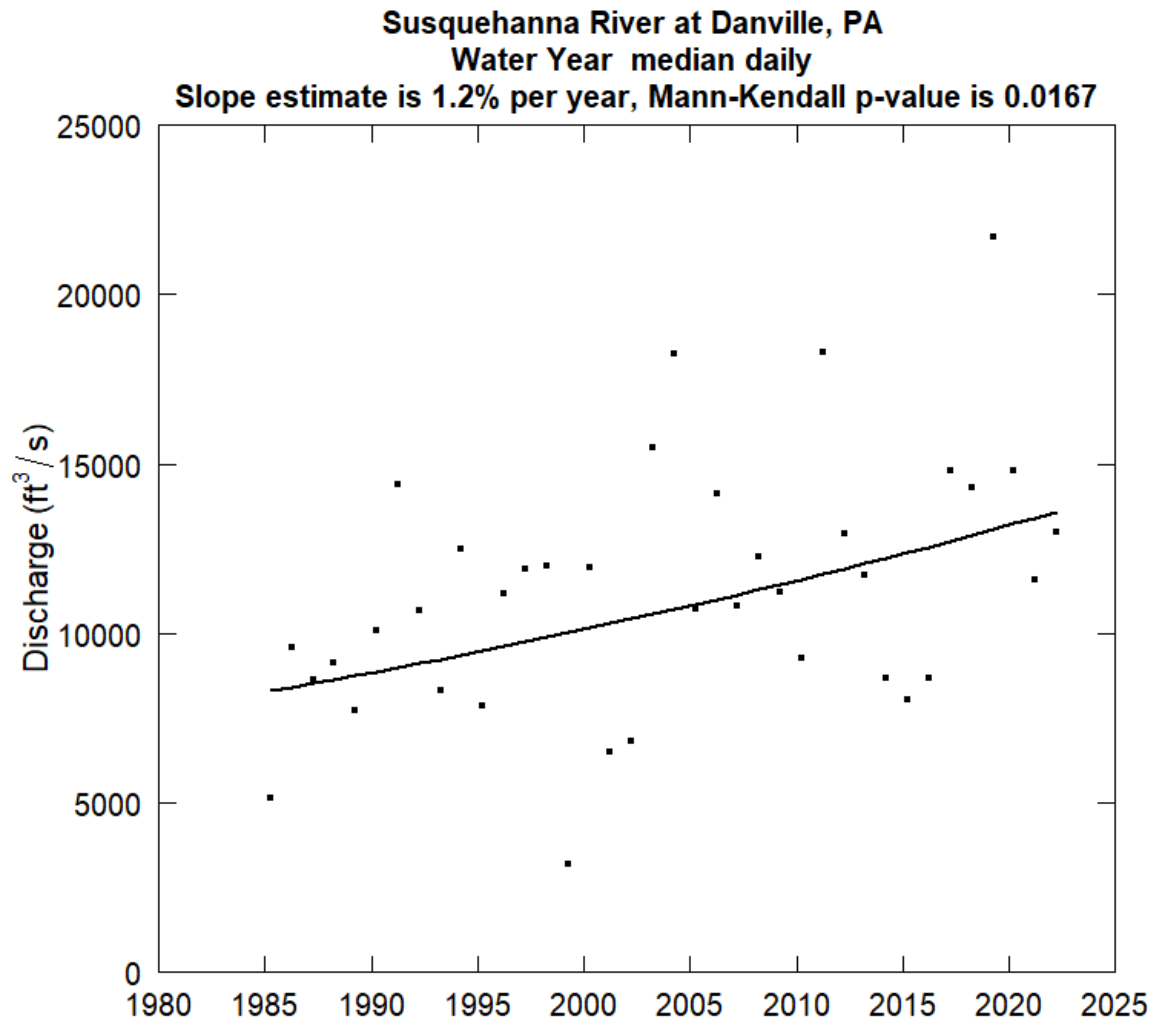
**Susquehanna River at Danville, PA**  
**Year Starting With April minimum day**  
**Slope estimate is 0.11% per year, Mann-Kendall p-value is 0.837**



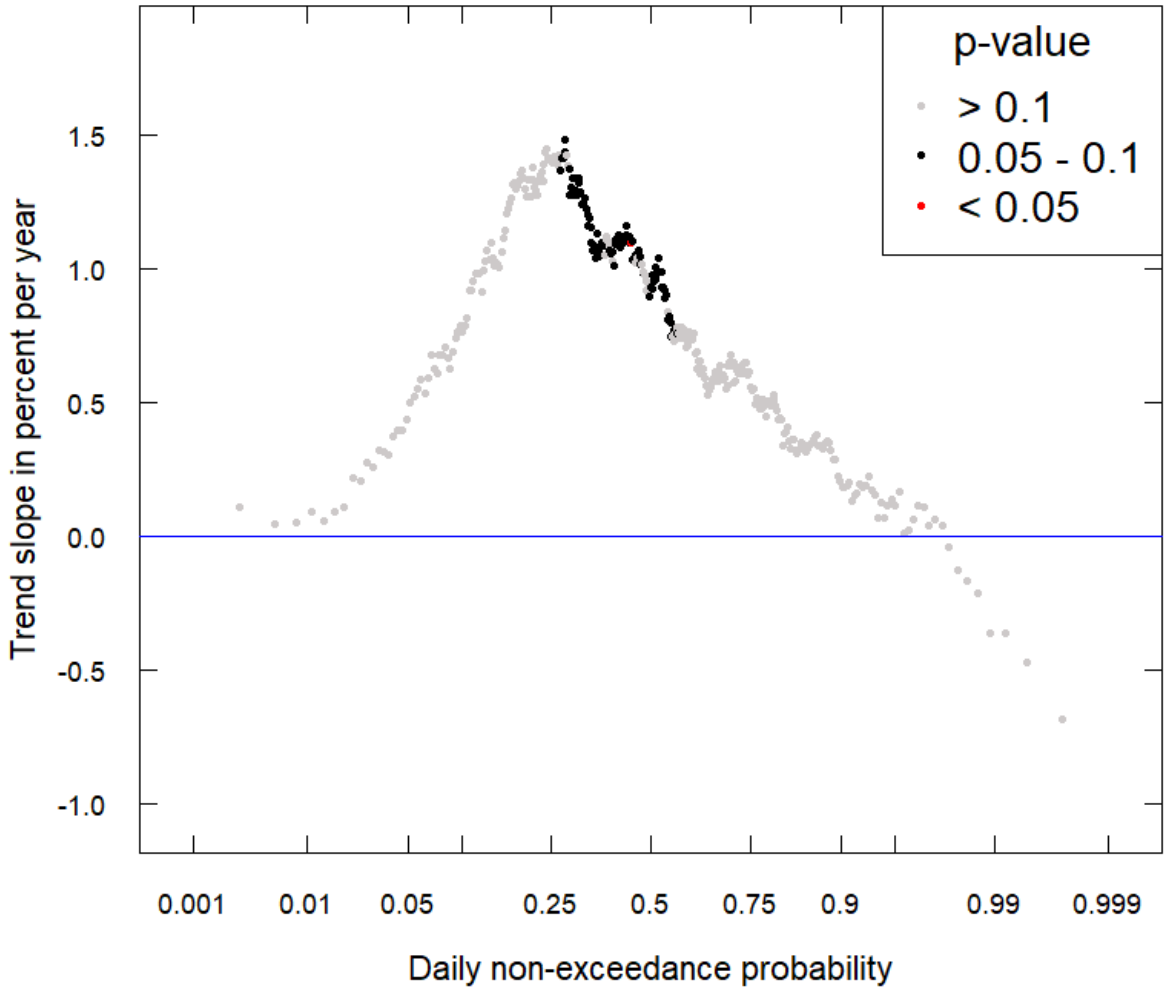




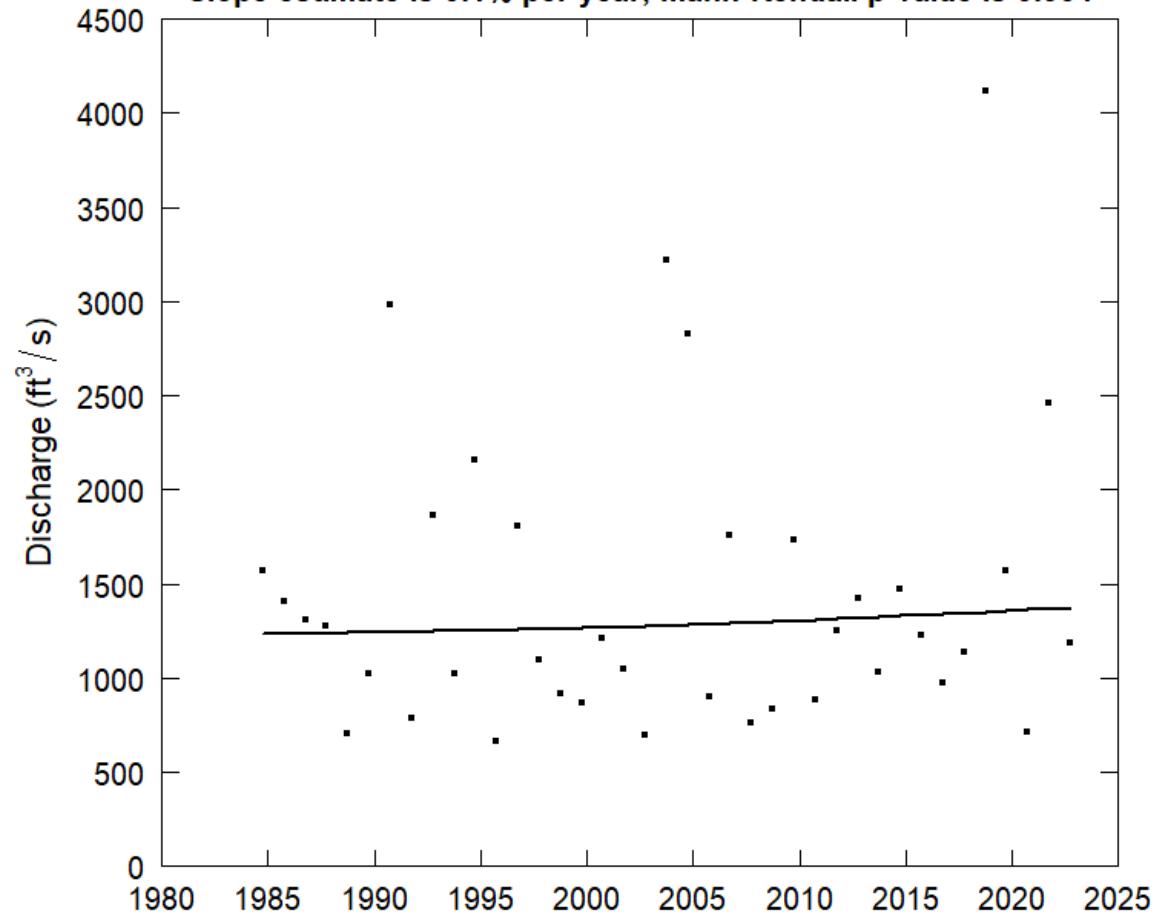




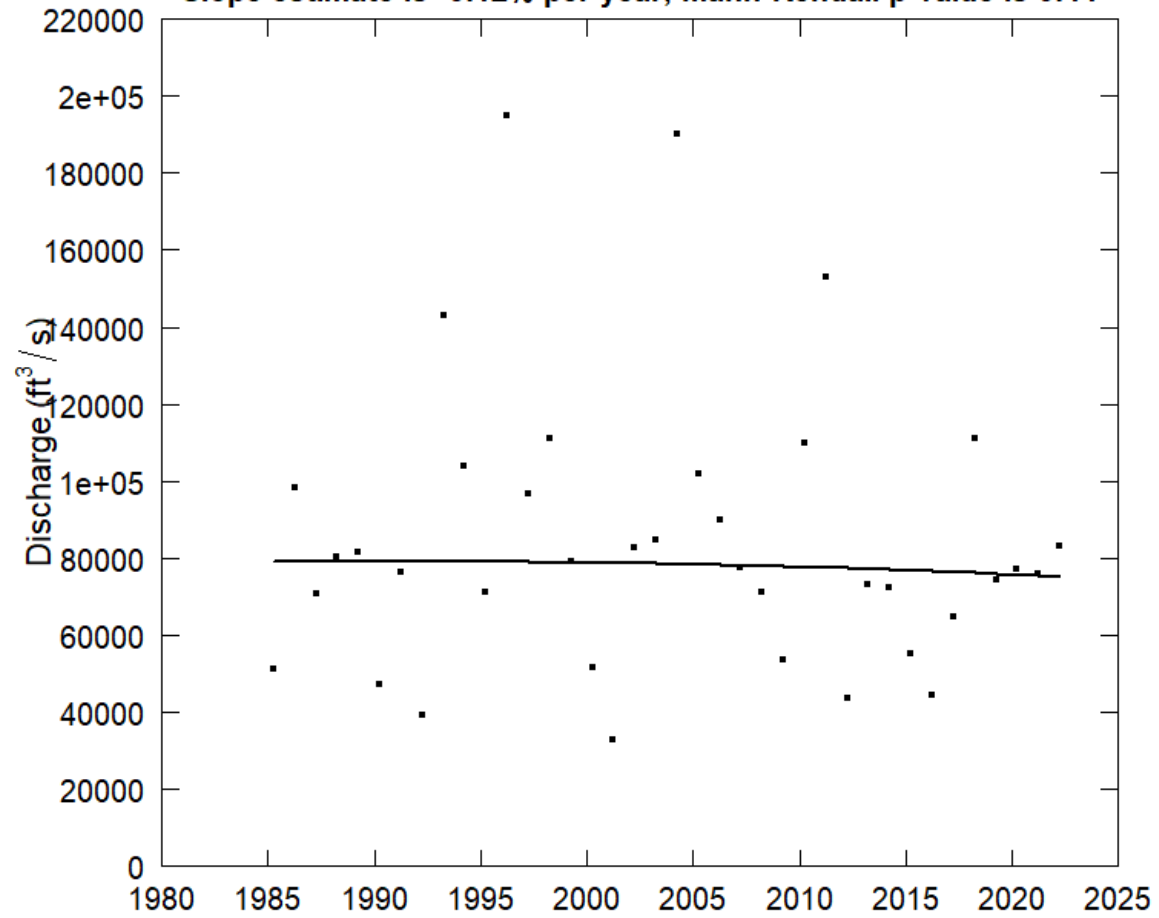
Susquehanna River at Danville, PA  
1984-04-01 through 2023-03-31  
Year Starting With April



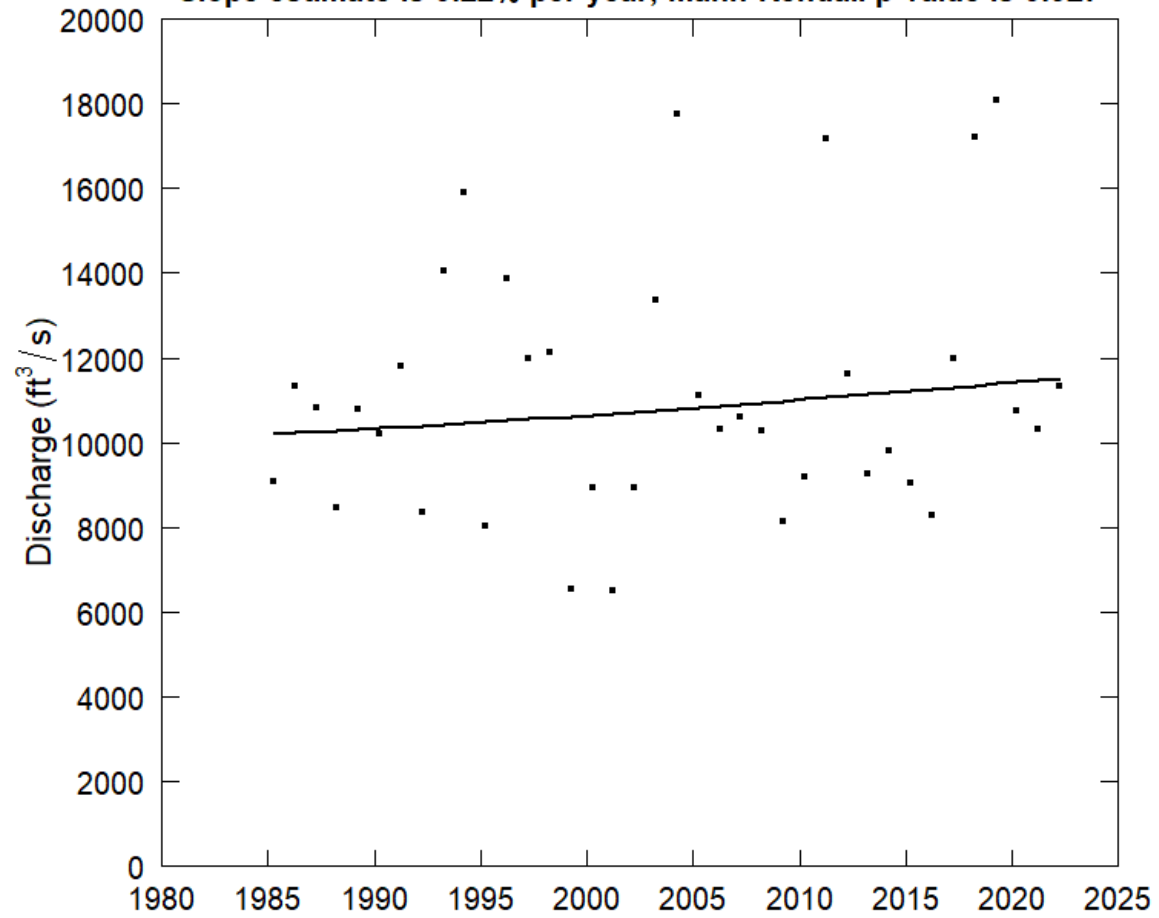
**West Branch Susquehanna River at Lewisburg, PA**  
**Year Starting With April minimum day**  
**Slope estimate is 0.1% per year, Mann-Kendall p-value is 0.904**



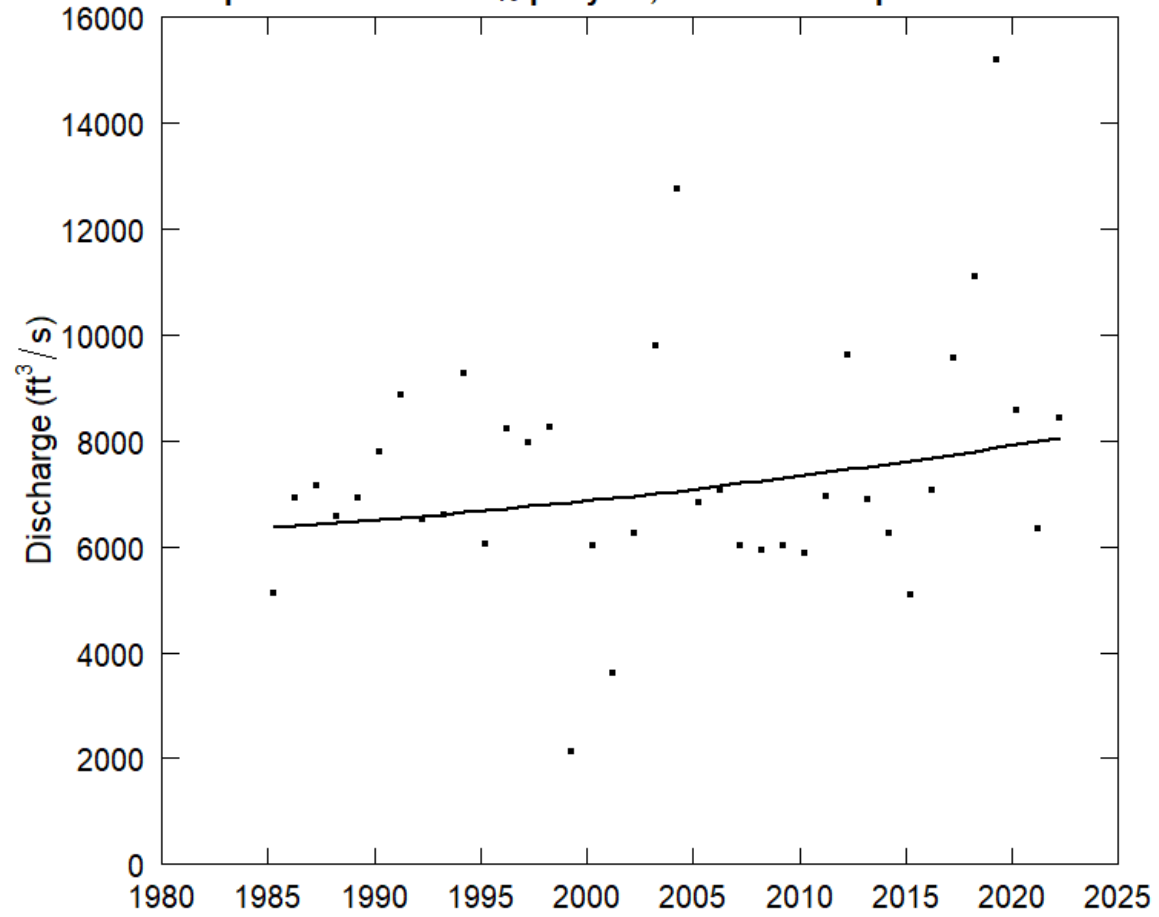
**West Branch Susquehanna River at Lewisburg, PA**  
**Water Year maximum day**  
**Slope estimate is -0.12% per year, Mann-Kendall p-value is 0.44**



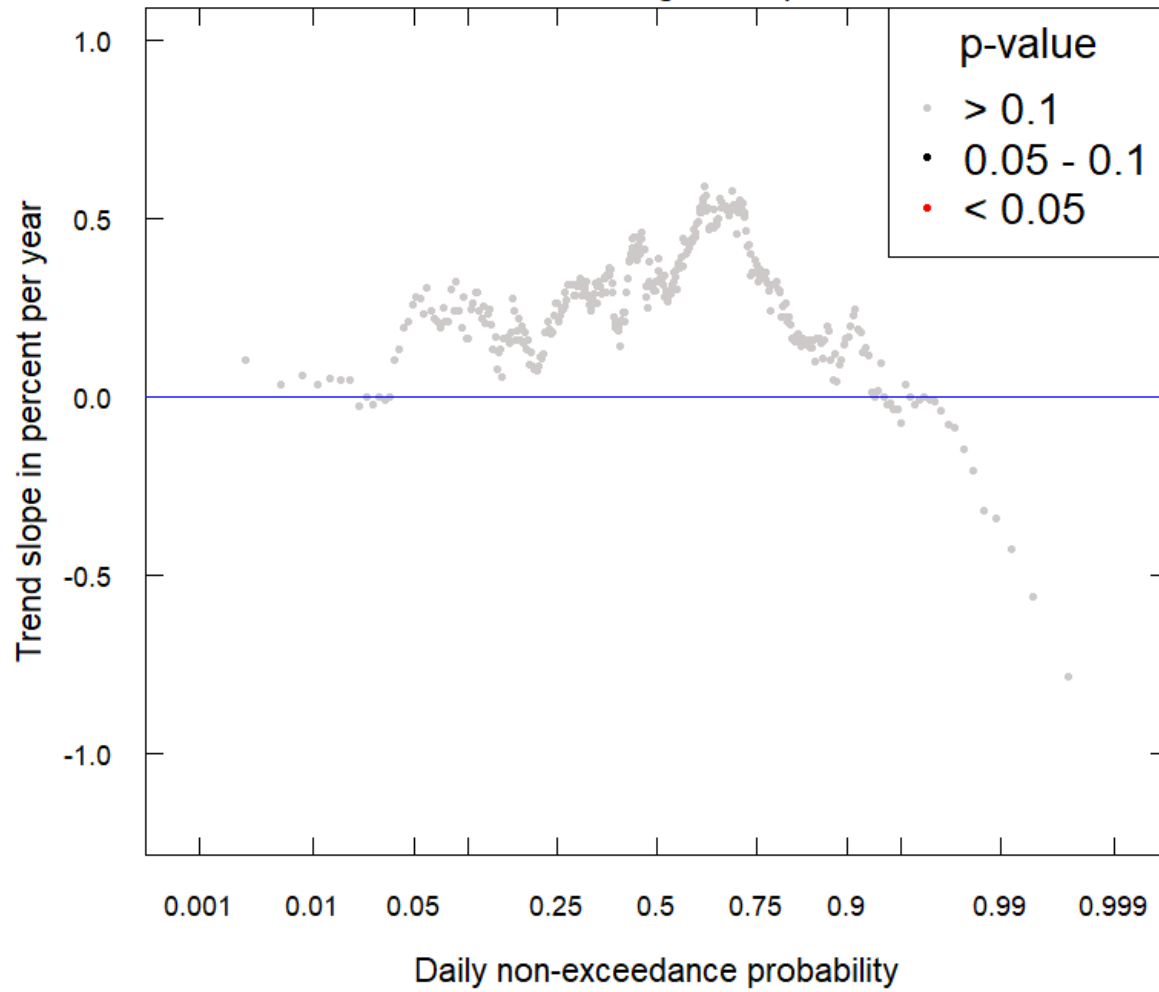
**West Branch Susquehanna River at Lewisburg, PA**  
**Water Year mean daily**  
**Slope estimate is 0.22% per year, Mann-Kendall p-value is 0.927**



**West Branch Susquehanna River at Lewisburg, PA**  
**Water Year median daily**  
**Slope estimate is 0.33% per year, Mann-Kendall p-value is 0.647**

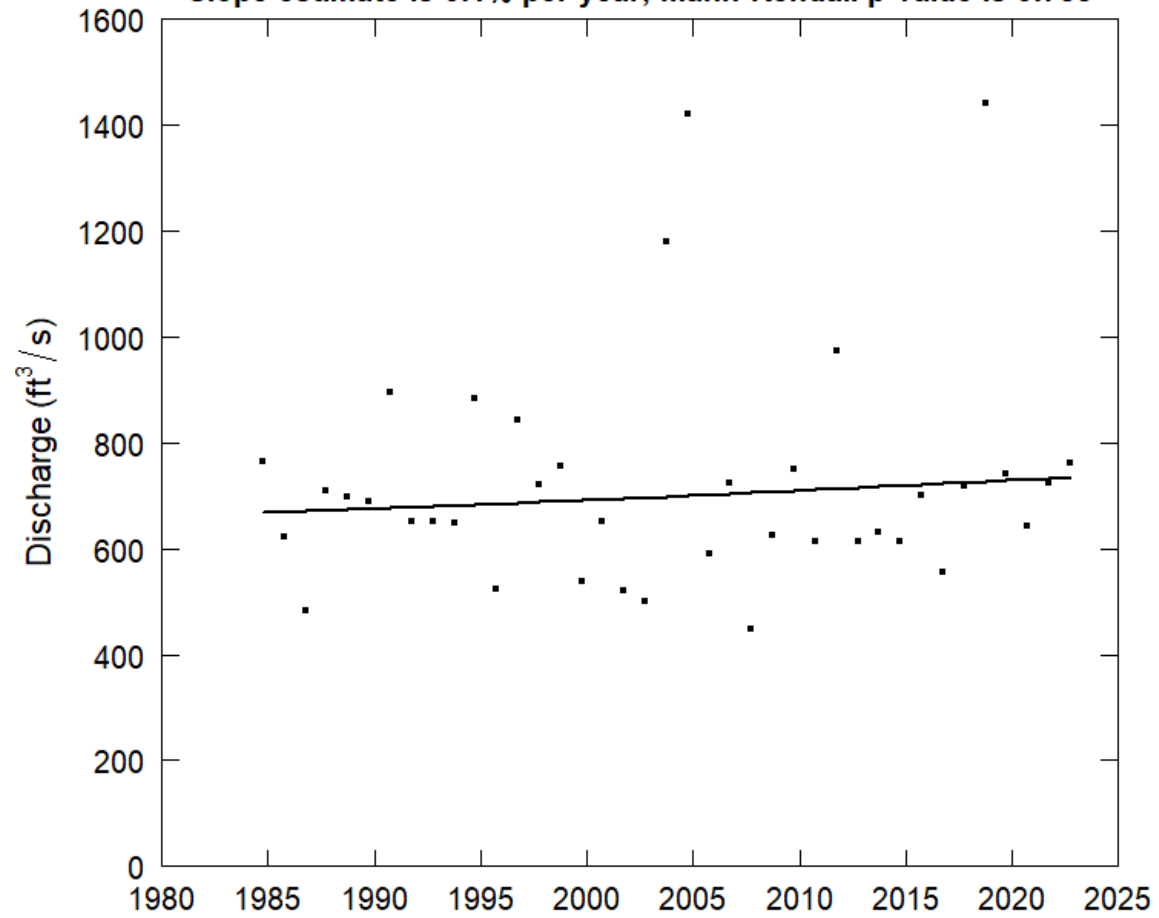


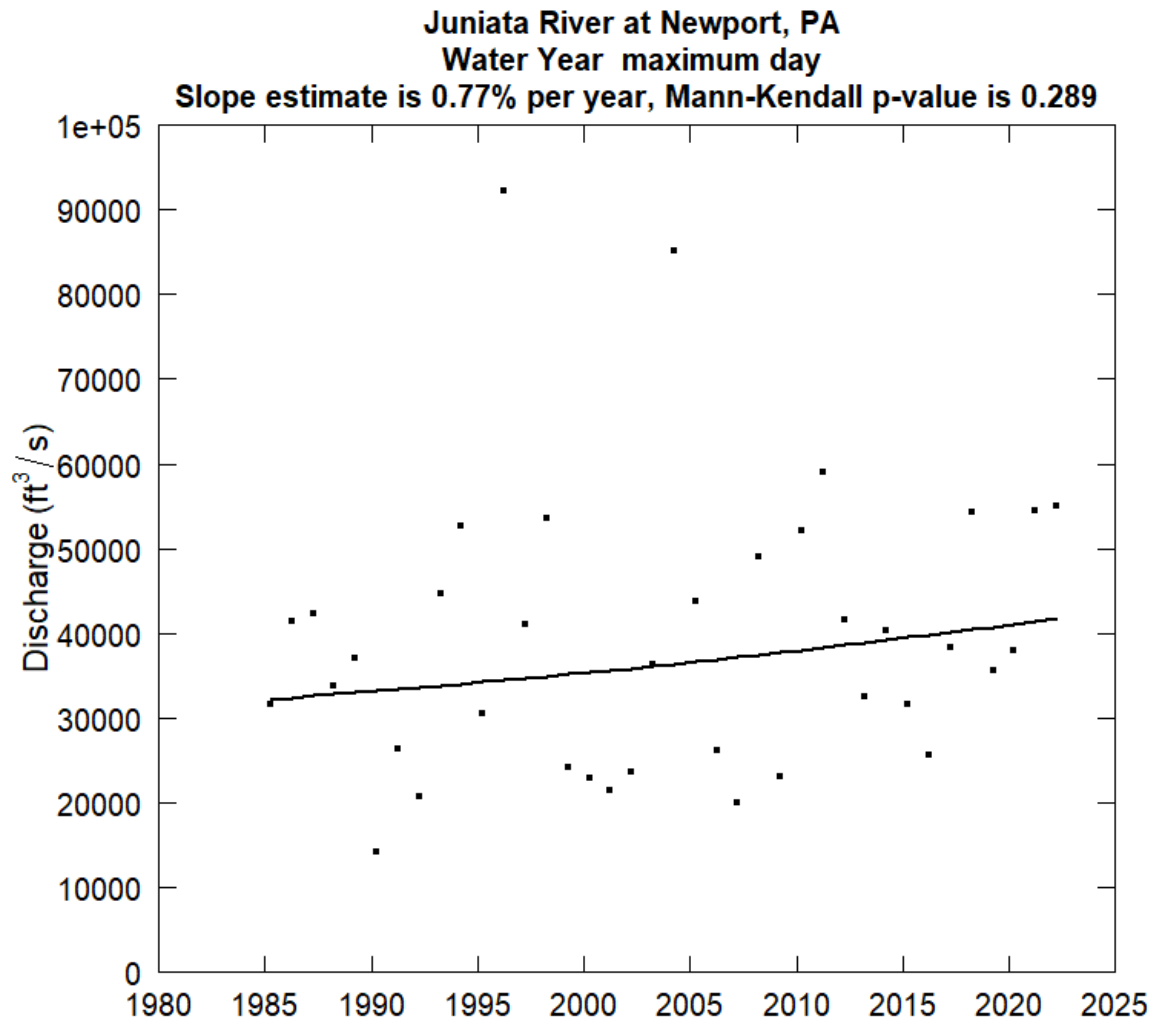
West Branch Susquehanna River at Lewisburg, PA  
1984-04-01 through 2023-03-31  
Year Starting With April

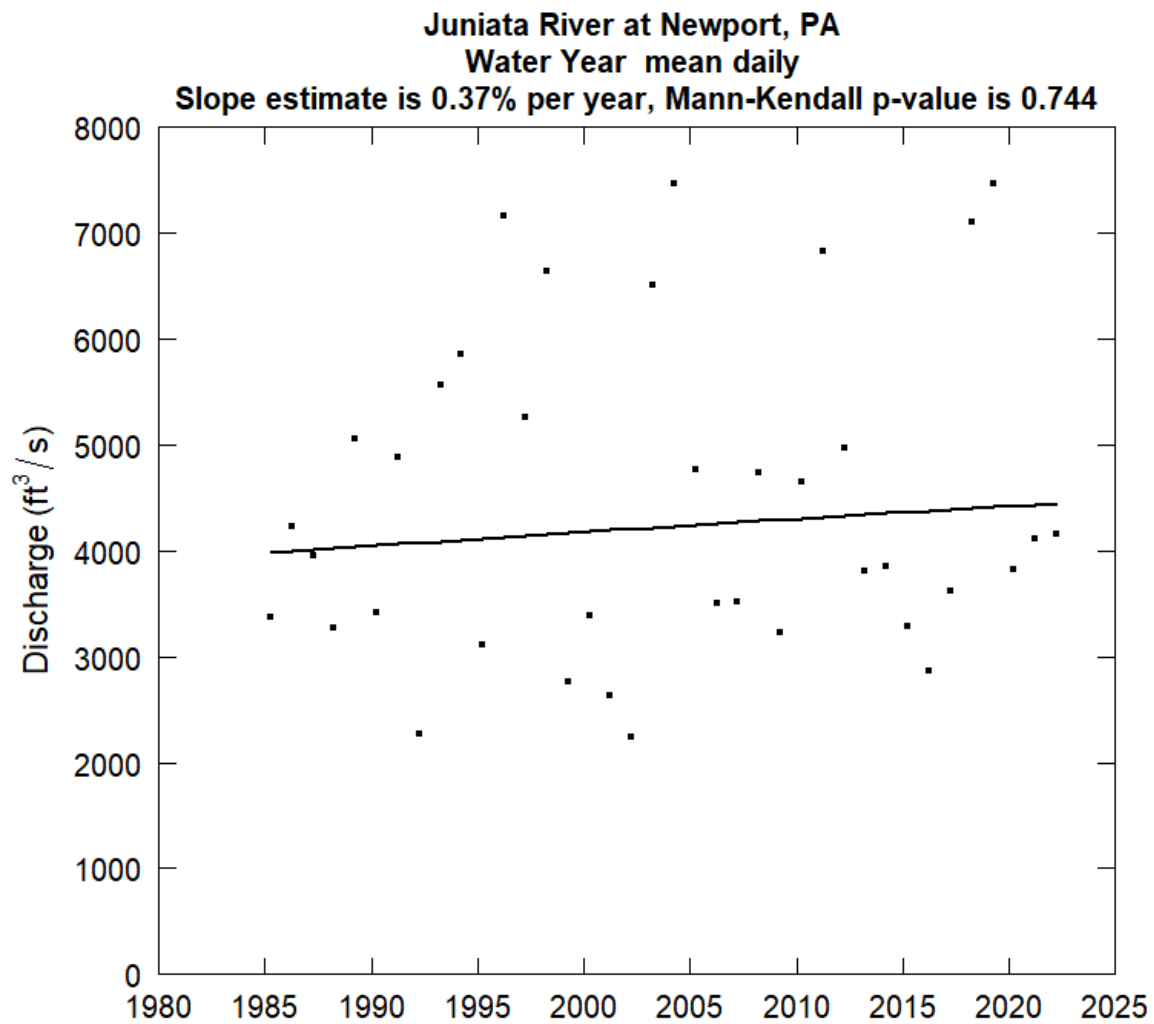


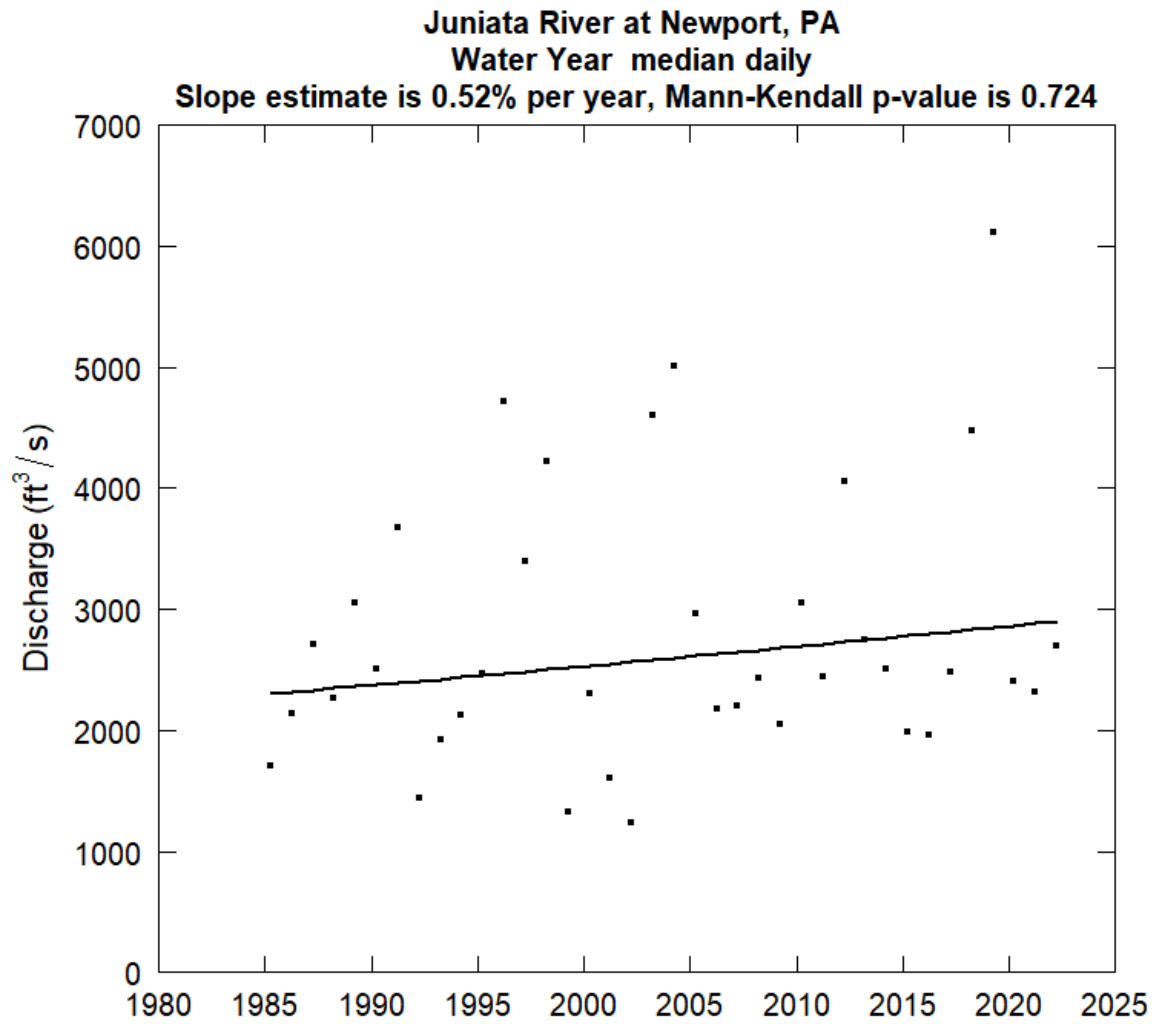


**Juniata River at Newport, PA**  
**Year Starting With April minimum day**  
**Slope estimate is 0.1% per year, Mann-Kendall p-value is 0.735**

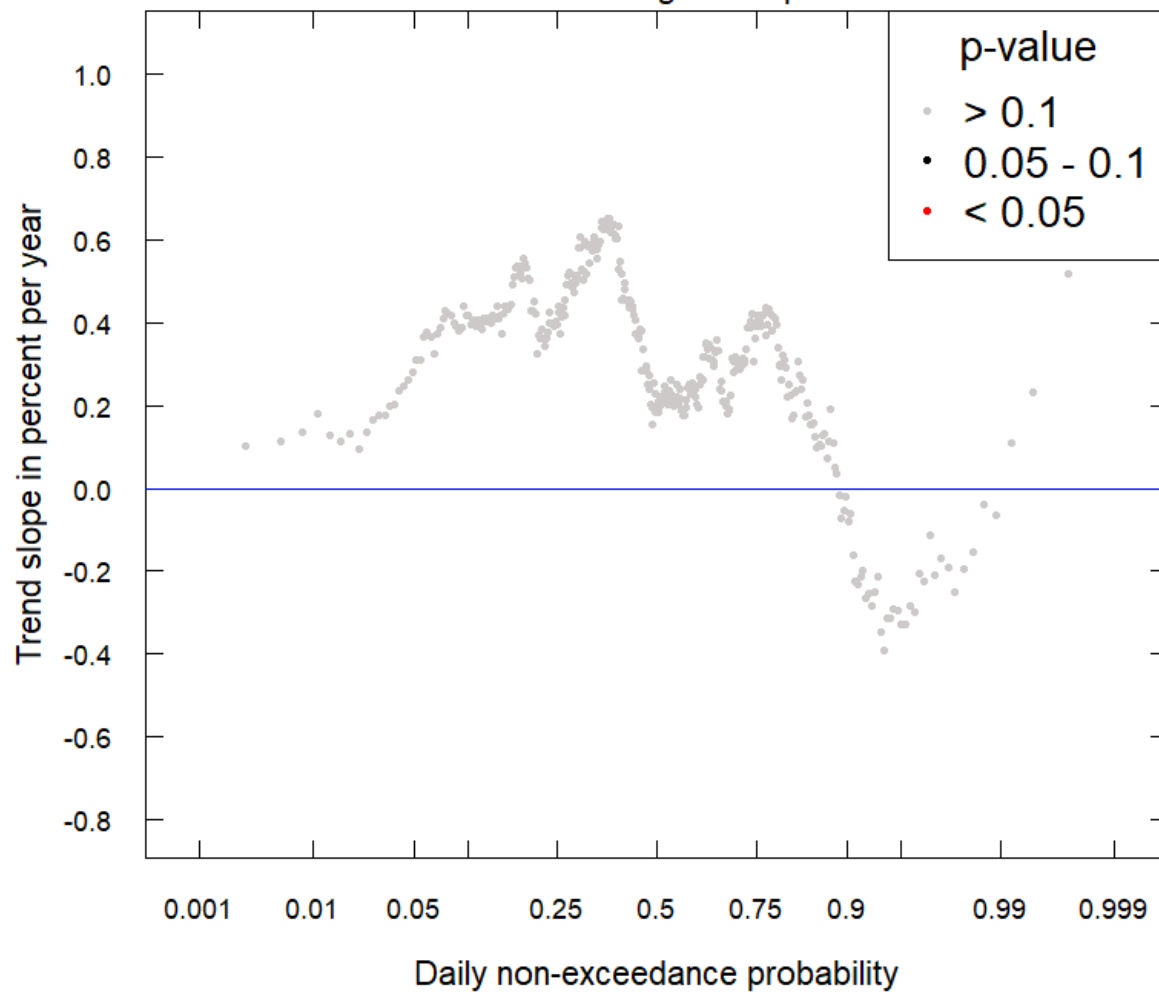




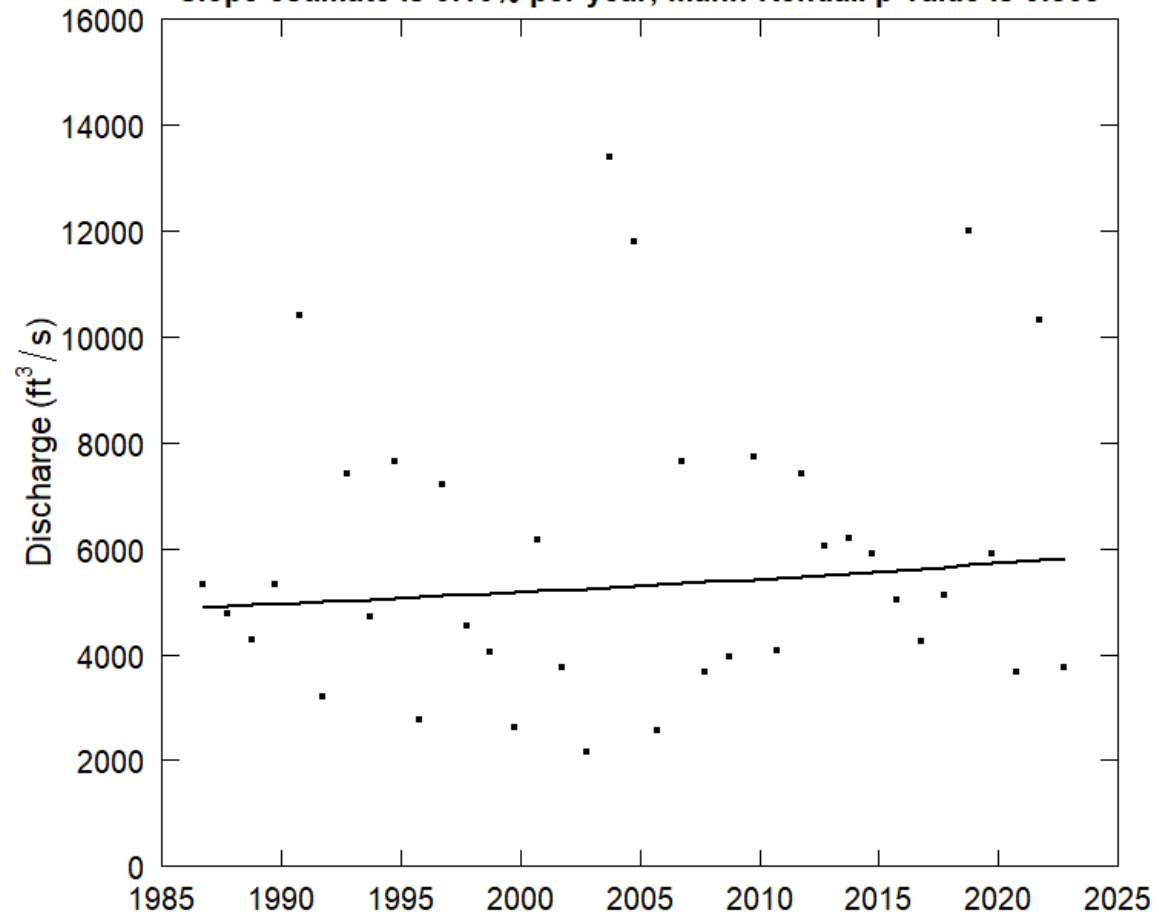


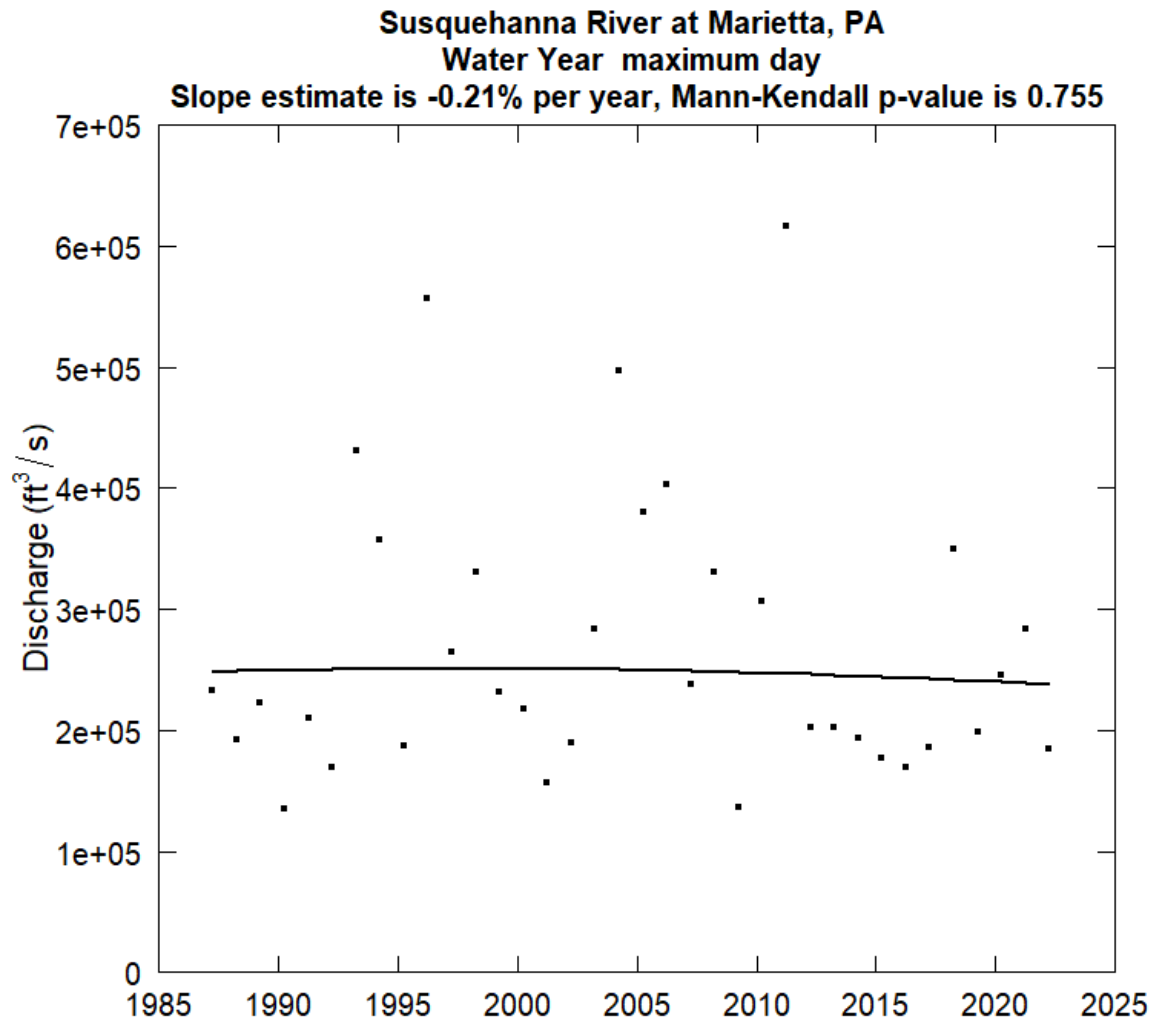


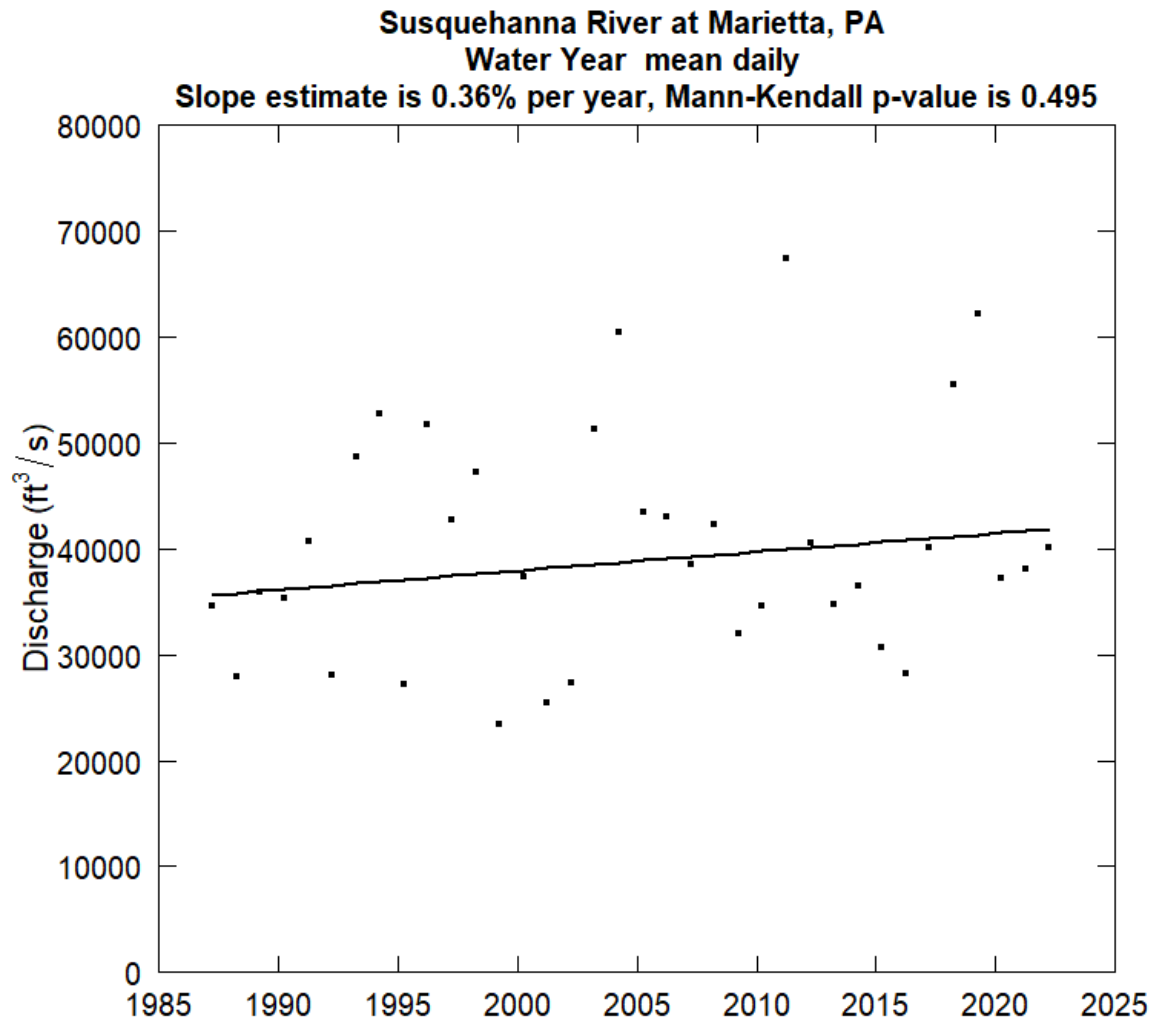
Juniata River at Newport, PA  
1984-04-01 through 2023-03-31  
Year Starting With April



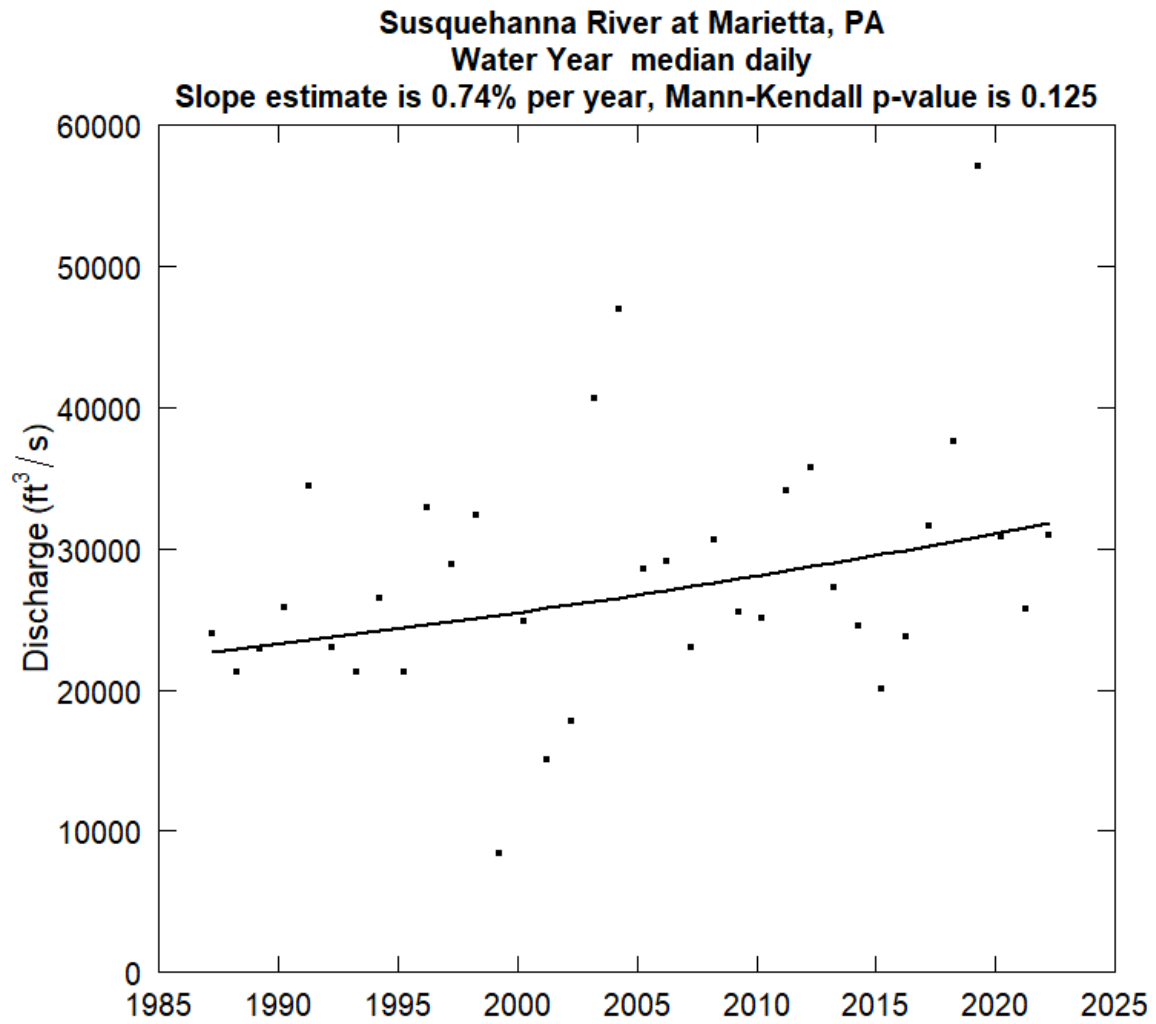
**Susquehanna River at Marietta, PA**  
**Year Starting With April minimum day**  
**Slope estimate is 0.16% per year, Mann-Kendall p-value is 0.865**



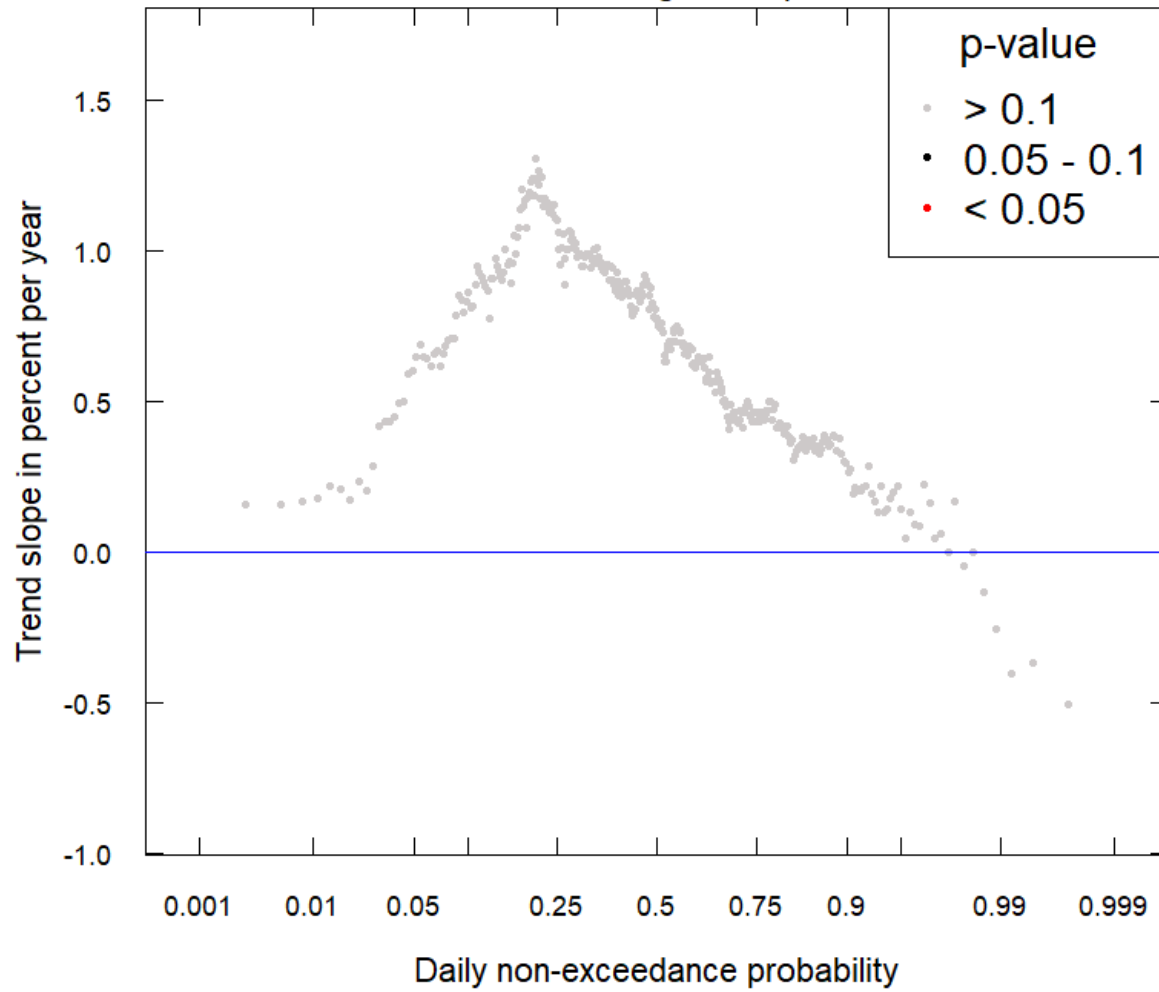




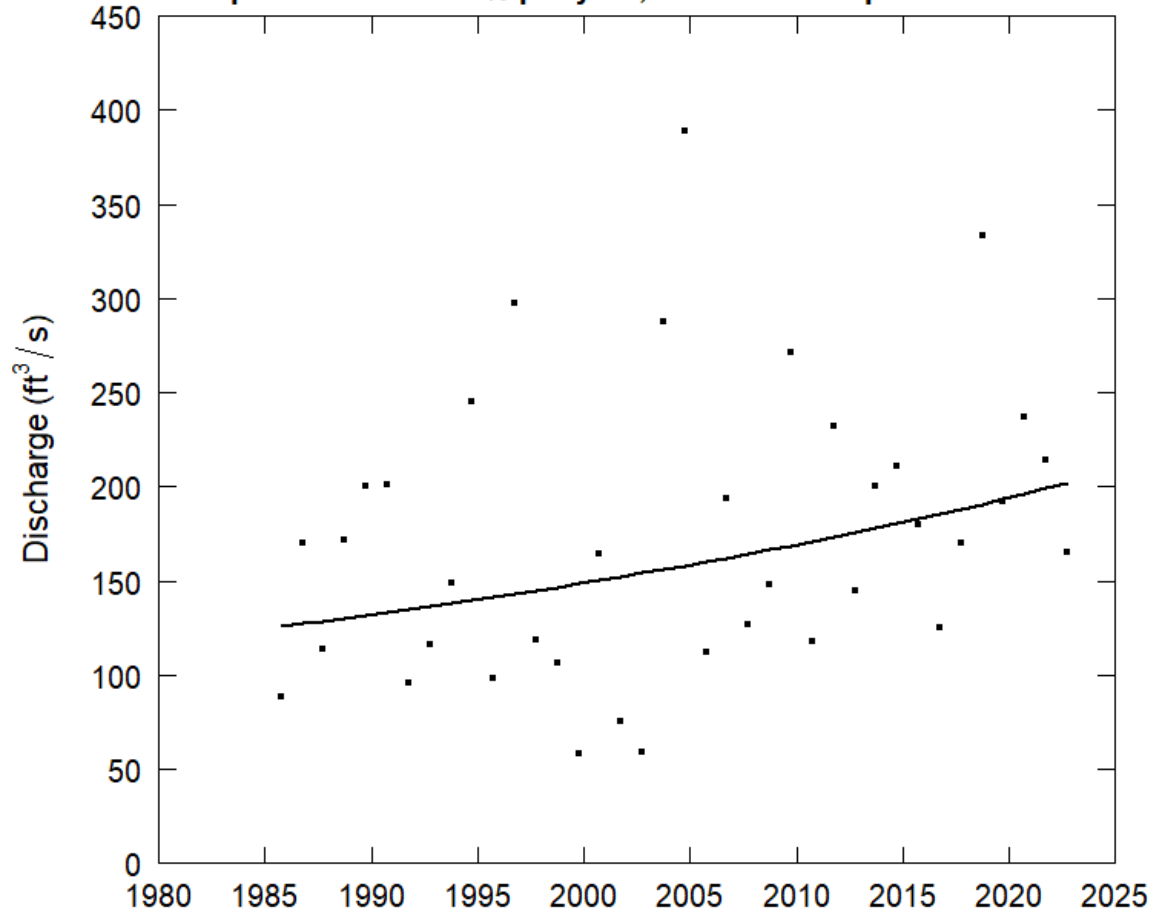


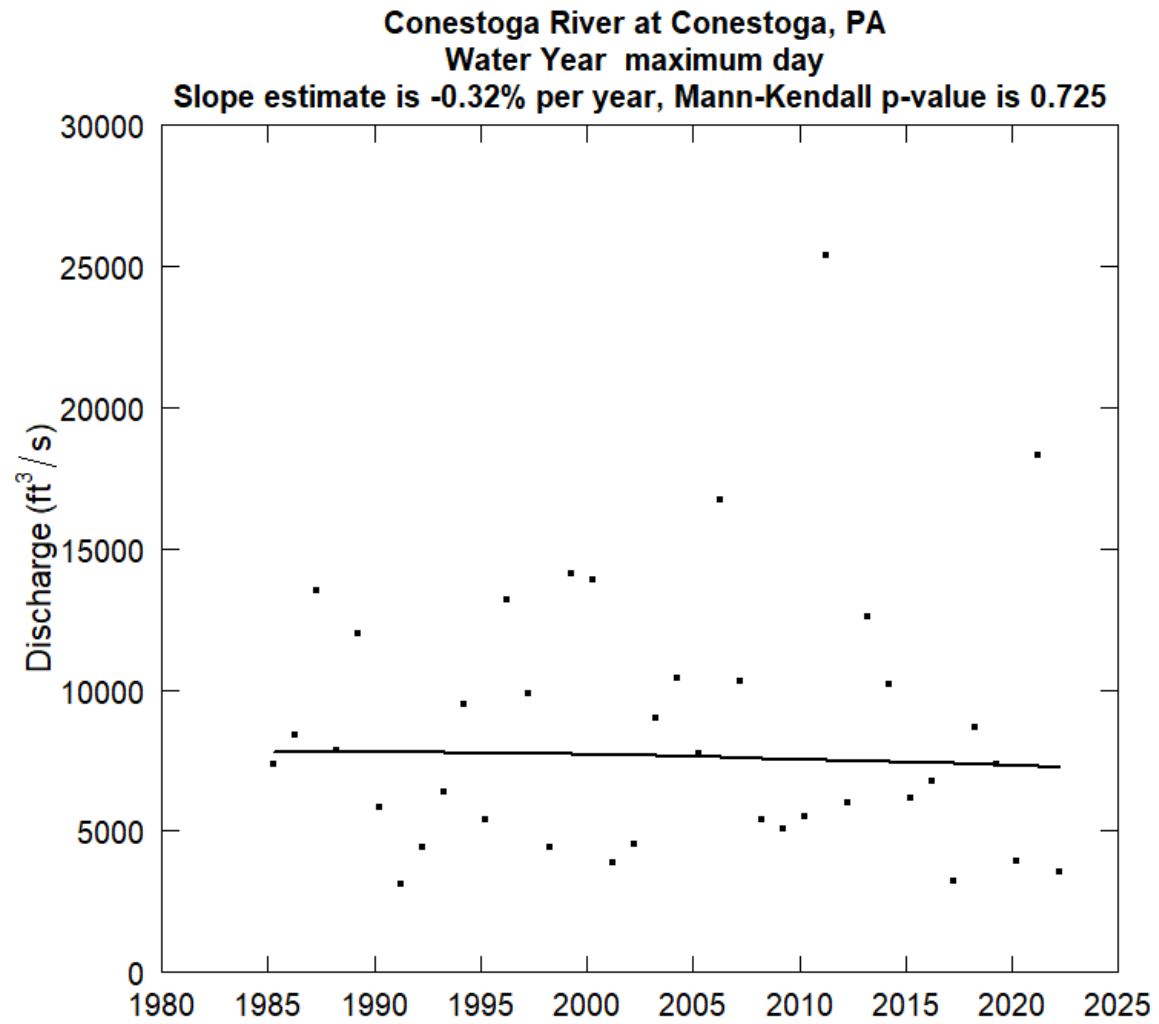


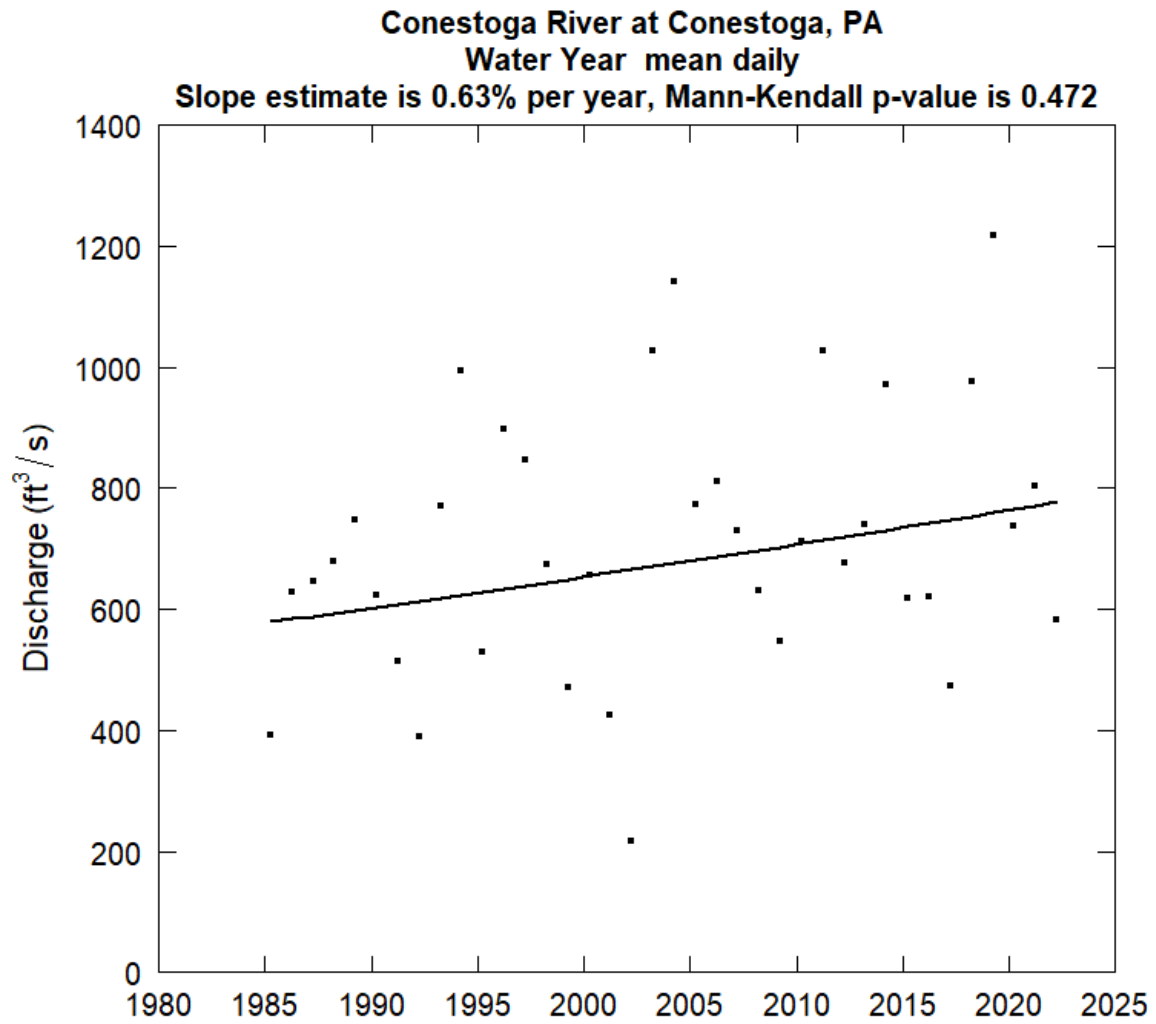
Susquehanna River at Marietta, PA  
1986-04-01 through 2023-03-31  
Year Starting With April

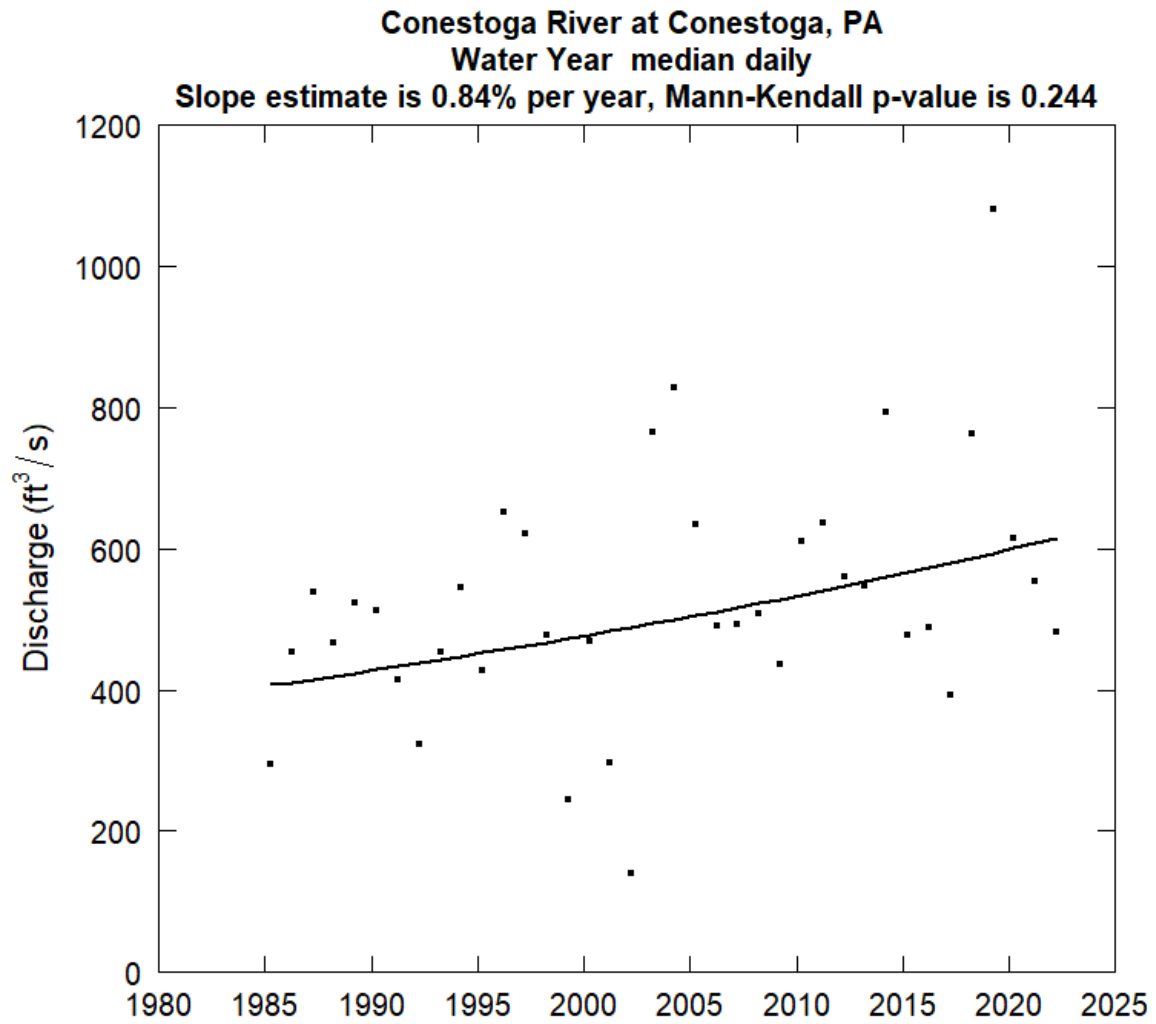


**Conestoga River at Conestoga, PA**  
**Year Starting With April minimum day**  
**Slope estimate is 1.3% per year, Mann-Kendall p-value is 0.047**









Conestoga River at Conestoga, PA  
1984-10-01 through 2023-03-31  
Year Starting With April

