Summary of Nitrogen, Phosphorus, and Suspended-Sediment Loads and Trends Measured at the Chesapeake Bay Nontidal Network Stations for Water Years 2009–2018

Prepared by Douglas L. Moyer and Joel D. Blomquist, U.S. Geological Survey, March 2, 2020

The Chesapeake Bay nontidal network (NTN) currently consists of 123 stations throughout the Chesapeake Bay watershed. Stations are located near U.S. Geological Survey (USGS) stream-flow gages to permit estimates of nutrient and sediment loadings and trends in the amount of loadings delivered downstream. Routine samples are collected monthly, and 8 additional storm-event samples are also collected to obtain a total of 20 samples per year, representing a range of discharge and loading conditions (Chesapeake Bay Program, 2020). The Chesapeake Bay partnership uses results from this monitoring network to focus restoration strategies and track progress in restoring the Chesapeake Bay.

Methods

Changes in nitrogen, phosphorus, and suspended-sediment loads in rivers across the Chesapeake Bay watershed have been calculated using monitoring data from 123 NTN stations (Moyer and Langland, 2020). Constituent loads are calculated with at least 5 years of monitoring data, and trends are reported after at least 10 years of data collection. Additional information for each monitoring station is available through the USGS website "Water-Quality Loads and Trends at Nontidal Monitoring Stations in the Chesapeake Bay Watershed" (https://cbrim.er.usgs.gov/). This website provides State, Federal, and local partners as well as the general public ready access to a wide range of data for nutrient and sediment conditions across the Chesapeake Bay watershed. In this summary, results are reported for the 10-year period from 2009 through 2018. All annual results are based on a water year, which extends from October 1 through September 30.

The USGS computes load and trend results from the NTN to display (1) the range in loads of nitrogen, phosphorus, and suspended sediment; and (2) the trends in these loads. Most of the NTN sites whose data were used for the analysis had data collected since 2009 (fig. 1; table 1). Load results from each NTN station are normalized by the respective drainage area to present the results as per-acre loads (also known as yields) to facilitate the comparison of loads and trends between sites. The total number of NTN stations analyzed for their total nitrogen, total phosphorus, and suspended-sediment loads and trends varies because of the length of the data-collection record and because of the presence or absence of targeted water-quality samples collected during stormflow conditions (see Chanat and others, 2015). Trends in loads at the NTN stations are flow-normalized to remove the year-to-year variability in river flow; by doing so, changes in nitrogen, phosphorus, and suspended-sediment loads resulting from changing sources, delays associated with storage and transport of historical inputs, and (or) implemented management actions are identified.

Patterns in Loads and Trends Across the Chesapeake Bay Watershed (2009–18)

Changes in loads for nitrogen, phosphorus, and suspended sediment are provided for 2009 through 2018. The monitoring station locations where loads are lower in the end year than in the start year are classified as having improving conditions, whereas those where the loads are higher in the end year than in the start year are classified as having degrading conditions. A location is classified as having no trend if there is no discernable difference between the loads in the start year and those in the end year.

Patterns in Total Nitrogen Loads

- Average annual total nitrogen loads for 2009 through 2018 range from 1.23 pounds per acre (lb/acre) to 29.10 lb/acre (fig. 2) with a combined average load for this period of 7.00 lb/acre. The average annual loads have been divided into three groups representing the following three categories: low (blue), medium (yellow), and high (red; fig. 2).

- Forty-one percent of the NTN stations are improving, whereas 40 percent are degrading, and the remaining 19 percent are showing no trend.
    - 37 of 90 stations (41 percent) have improving trends, with load reductions ranging from 0.09 to 5.49 lb/acre (fig. 3, green bars).
    - 36 of 90 stations (40 percent) have degrading trends, with load increases ranging from 0.09 to 1.80 lb/acre (fig. 3, orange bars).
    - 17 of 90 stations (19 percent) show no statistical change (fig. 3, gray bars).

Patterns in Total Phosphorus Loads

- Average annual total phosphorus loads for 2009 through 2018 range from 0.13 lb/acre to 2.01 lb/acre (fig. 4) with a combined average load for this period of 0.52 lb/acre. The average annual loads for phosphorus also are divided into three categories: low (blue), medium (yellow), and high (red; fig.4).
- Forty-four percent of the NTN stations are improving, whereas one-third are degrading, and the remainder are showing no trend.
    - 29 of 66 stations (44 percent) have improving trends, with load reductions ranging from 0.0001 to 0.36 lb/acre (fig. 5, green bars).
    - 21 of 66 stations (32 percent) have degrading trends, with load increases ranging from 0.01 to 0.63 lb/acre (fig. 5, orange bars).
    - 16 of 66 stations (24 percent) show no statistical change (fig. 5, gray bars).

Patterns in Suspended-Sediment Loads

- Average annual suspended-sediment loads for 2009 through 2018 range from 18 to 1,920 lb/acre (fig. 6) with a combined average load for this period of 427 lb/acre. The average annual loads for suspended-sediments also are divided into three categories: low (blue), medium (yellow), and high (red; fig. 6).
- Twenty percent of the NTN stations are improving, whereas nearly 42 percent are degrading, and the remainder are showing no trend.
    - 13 of 66 stations (20 percent) have improving trends, with load reductions ranging from 1.01 to 480 lb/acre (fig. 7, green bars)
    - 28 of 66 stations (42 percent) have degrading trends, with load increases ranging from 7.83 to 861 lb/acre (fig. 7, orange bars)
    - 25 of 66 stations (38 percent) show no statistical change (fig. 7, gray bars).

The Chesapeake Nontidal Monitoring Network and the Role of the USGS

The NTN is a partnership implemented among the States in the watershed, the U.S. Environmental Protection Agency, the USGS, and the Susquehanna River Basin Commission. A network of monitoring stations has been established and is sampled using standardized protocols and quality-assurance procedures designed to measure nitrogen, phosphorus, and suspended-sediment loads and changes in these loads over time. The initial network formed in about 1985 with coordinated monitoring at the nine River Input Monitoring (RIM) stations (table 1). The RIM information is reported every year (Moyer and Blomquist, 2019), and the summary of the latest results are available by way of the "Water-Quality Loads and Trends at Nontidal Monitoring Stations in the Chesapeake Bay Watershed" website at https://cbrim.er.usgs.gov/data/RIM_Load_Trend_Summary_1985-2018_Combined.pdf. In 2004, the Chesapeake Bay Program formalized the network, and a period of expansion followed. In 2010 and 2011, the network was further expanded to address the Total Maximum Daily Load (TMDL) requirements. The network currently has 123 sites designed to measure changes in nitrogen, phosphorus, and suspended sediment in the Chesapeake Bay watershed. Through this partnership, nitrogen, phosphorus, and suspended-sediment loads and trends are determined based on (1) continuous streamflow monitoring, (2) extensive water-quality sampling, and (3) advanced statistical analysis. The USGS performs the analysis for computing loads and trends.

References Cited

Chesapeake Bay Program, 2020, Nontidal Water Quality Monitoring Program: Chesapeake Bay Program website, accessed February 4, 2020, at https://www.chesapeakebay.net/what/programs/chesapeake_bay_quality_assurance_program/quality_assurance_nontidal_water_quality_monitoring.

Chanat, J.G., Moyer, D.L., Blomquist, J.D., Hyer, K.E., and Langland, M.J., 2015, Application of a weighted regression model for reporting nutrient and sediment concentrations, fluxes, and trends in concentration and flux for the Chesapeake Bay Nontidal Water-Quality Monitoring Network, results through water year 2012: U.S. Geological Survey Scientific Investigations Report 2015–5133, 76 p., accessed January 14, 2015, at https://pubs.er.usgs.gov/publication/sir20155133/.

Moyer, D.L., and Langland, M.J., 2020, Nitrogen, phosphorus, and suspended-sediment loads and trends measured at the Chesapeake Bay nontidal network stations—Water years 1985–2018, U.S. Geological Survey data release, accessed February 25, 2020, at https://doi.org/10.5066/P931M7FT.

Moyer, D.L. and Blomquist, J.D., 2019, Nitrogen, phosphorus, and suspended-sediment loads and trends measured at the Chesapeake Bay River Input Monitoring stations—Water years 1985–2018: U.S. Geological Survey data release, accessed February 25, 2020, at https://doi.org/10.5066/P9P4H3ZX.

Additional Information and USGS Contacts

For more information on this topic, visit the "Water-Quality Loads and Trends at Nontidal Monitoring Stations in the Chesapeake Bay Watershed" website at https://cbrim.er.usgs.gov/., or contact:

Doug Moyer **dlmoyer@usgs.gov**
Joel Blomquist **jdblomqu@usgs.gov**

For more information on USGS Chesapeake Bay studies, visit http://chesapeake.usgs.gov/, or contact

Scott Phillips, **swphilli@usgs.gov**.

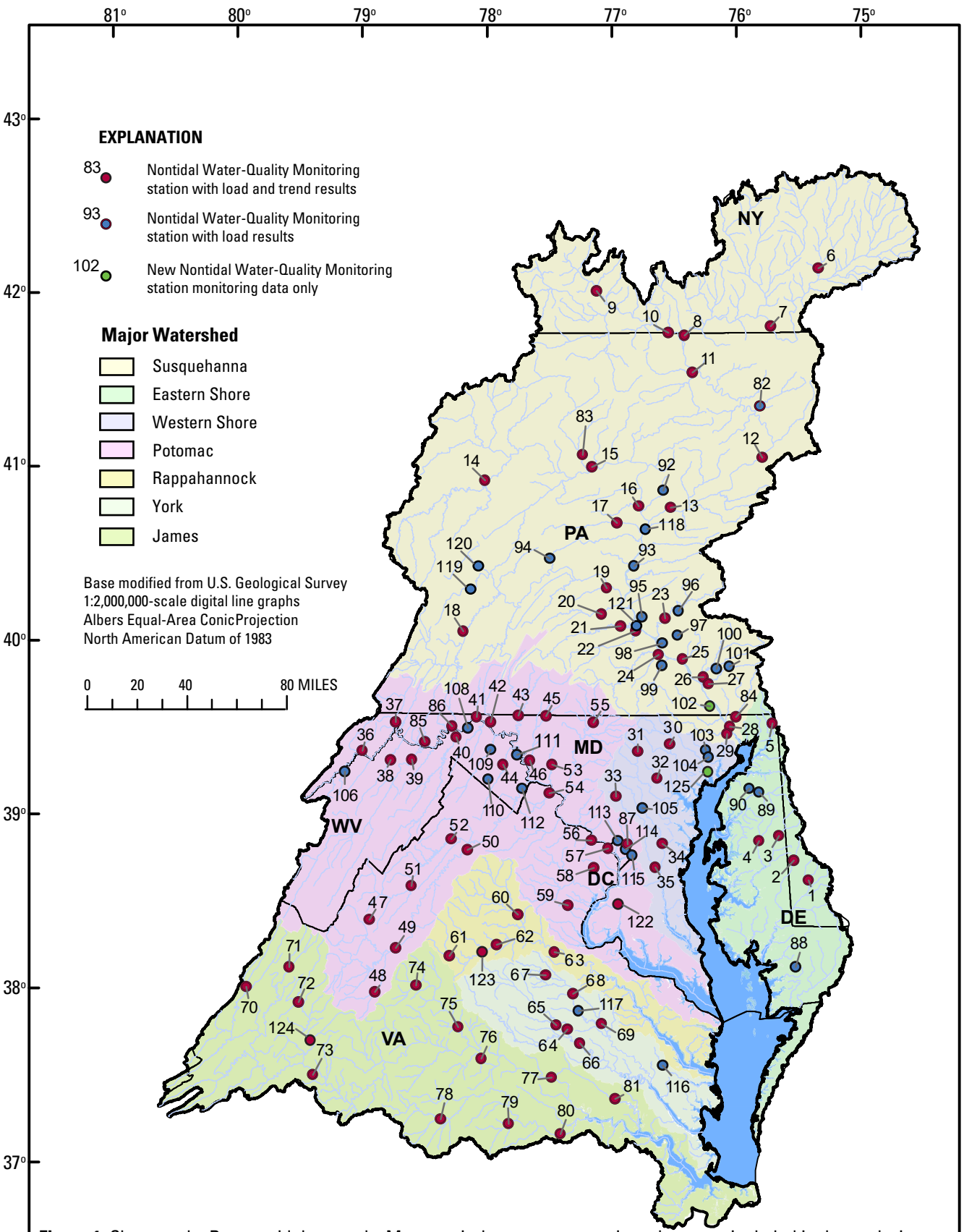

Figure 1. Chesapeake Bay nontidal network. Maroon circles represent stations that were included in the analysis of loads and trends; blue circles represent stations that were included in the analysis of loads only; and stations represented by green circles have fewer than 5 years of monitoring data (no load and trend analysis).

Table 1. Chesapeake Bay nontidal monitoring stations included in the determination of nutrient and suspended sediment loads and trends for the time period 1985 through 2018. Bold stations represent the nine River Input Monitoring stations. Stations with monitoring data start date after 2010 will have loads but no trends. Stations with monitoring data start date after 2014 will not have load or trend results

MAP ID	USGS STATION NUMBER	USGS STATION NAME	MAJOR WATERSHED/REGION	Drainage Area (mi^2)	MONITORING DATA	
					START DATE	END DATE
88	01486000	MANOKIN BRANCH NEAR PRINCESS ANNE, MD	Eastern Shore	5	2011	2018
1	01487000	NANTICOKE RIVER NEAR BRIDGEVILLE, DE	Eastern Shore	75	1998	2018
2	01488500	MARSHYHOPE CREEK NEAR ADAMSVILLE, DE	Eastern Shore	47	2005	2018
3	**01491000**	**CHOPTANK RIVER NEAR GREENSBORO, MD**	**Eastern Shore**	113	**1985**	**2018**
4	01491500	TUCKAHOE CREEK NEAR RUTHSBURG, MD	Eastern Shore	85	2005	2018
89	01493112	CHESTERVILLE BRANCH NEAR CRUMPTON, MD	Eastern Shore	6	2011	2018
90	01493500	MORGAN CREEK NEAR KENNEDYVILLE, MD	Eastern Shore	13	2011	2018
5	01495000	BIG ELK CREEK AT ELK MILLS, MD	Eastern Shore	52	2005	2018
6	01502500	UNADILLA RIVER AT ROCKDALE NY	Susquehanna	520	2005	2018
7	01503000	SUSQUEHANNA RIVER AT CONKLIN NY	Susquehanna	2,232	2006	2018
8	01515000	SUSQUEHANNA RIVER NEAR WAVERLY NY	Susquehanna	4,773	2005	2018
9	01529500	COHOCTON RIVER NEAR CAMPBELL NY	Susquehanna	470	2006	2018
10	01531000	CHEMUNG RIVER AT CHEMUNG NY	Susquehanna	2,506	2005	2018
11	01531500	SUSQUEHANNA RIVER AT TOWANDA, PA	Susquehanna	7,797	1985	2018
82	01534000	TUNKHANNOCK CREEK NEAR TUNKHANNOCK, PA	Susquehanna	383	2009	2018
12	01536500	SUSQUEHANNA RIVER AT WILKES-BARRE, PA	Susquehanna	9,960	1989	2018
13	01540500	SUSQUEHANNA RIVER AT DANVILLE, PA	Susquehanna	11,220	1985	2018
14	01542500	WB SUSQUEHANNA RIVER AT KARTHAUS, PA	Susquehanna	1,462	2005	2018
83	01549700	PINE CREEK BL L PINE CREEK NEAR WATERVILLE, PA	Susquehanna	944	2007	2018
15	01549760	WB SUSQUEHANNA RIVER AT JERSEY SHORE, PA	Susquehanna	5,225	2006	2018
16	01553500	WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG, PA	Susquehanna	6,847	1985	2018
92	01553700	CHILLISQUAQUE CREEK AT WASHINGTONVILLE, PA	Susquehanna	51	2013	2018
118	01554000	SUSQUEHANNA RIVER AT SUNBURY, PA	Susquehanna	18,300	2012	2018
17	01555000	PENNS CREEK AT PENNS CREEK, PA	Susquehanna	301	2005	2018
93	01555500	EAST MAHANTANGO CREEK NEAR DALMATIA, PA	Susquehanna	162	2012	2018
119	01556000	FRANKSTOWN BR JUNIATA RIVER AT WILLIAMSBURG, PA	Susquehanna	291	2012	2018
120	01558000	LITTLE JUNIATA RIVER AT SPRUCE CREEK, PA	Susquehanna	220	2012	2018
18	01562000	RAYSTOWN BRANCH JUNIATA RIVER AT SAXTON, PA	Susquehanna	756	2005	2018
94	01565000	KISHACOQUILLAS CREEK AT REEDSVILLE, PA	Susquehanna	164	2012	2018
19	01567000	JUNIATA RIVER AT NEWPORT, PA	Susquehanna	3,354	1985	2018
20	01568000	SHERMAN CREEK AT SHERMANS DALE, PA	Susquehanna	207	2005	2018
21	01570000	CONODOGUINET CREEK NEAR HOGESTOWN, PA	Susquehanna	470	2005	2018
121	01570500	SUSQUEHANNA RIVER AT HARRISBURG, PA	Susquehanna	24,100	2012	2018
95	01571005	PAXTON CREEK NEAR GLENNWOOD, PA	Susquehanna	11	2013	2018
22	01571500	YELLOW BREECHES CREEK NEAR CAMP HILL, PA	Susquehanna	213	2005	2018
96	01573160	QUITTAPAHILLA CREEK NEAR BELLEGROVE	Susquehanna	74	2013	2018
23	01573560	SWATARA CREEK NEAR HERSHEY, PA	Susquehanna	483	2005	2018
97	01573695	CONEWAGO CREEK NEAR BELLAIRE, PA	Susquehanna	21	2013	2018
98	01573710	CONEWAGO CREEK NEAR FALMOUTH, PA	Susquehanna	48	2011	2018
24	01574000	WEST CONEWAGO CREEK NEAR MANCHESTER, PA	Susquehanna	510	2005	2018
99	01575585	CODORUS CREEK NEAR PLEASUREVILLE, PA	Susquehanna	267	2013	2018
25	01576000	SUSQUEHANNA RIVER AT MARIETTA, PA	Susquehanna	25,990	1987	2018
100	015765195	BIG SPRING RUN NEAR MYLIN CORNERS, PA	Susquehanna	2	2011	2018
26	01576754	CONESTOGA RIVER AT CONESTOGA, PA	Susquehanna	470	1985	2018
101	01576767	PEQUEA CREEK NEAR RONKS, PA	Susquehanna	70	2013	2018
27	01576787	PEQUEA CREEK AT MARTIC FORGE, PA	Susquehanna	148	2005	2018
102	01577500	MUDDY CREEK AT CASTLE FIN, PA	Susquehanna	133	2015	2018
28	**01578310**	**SUSQUEHANNA RIVER AT CONOWINGO, MD**	**Susquehanna**	27,100	**1985**	**2018**
84	01578475	OCTORARO CREEK NEAR RICHARDSMERE, MD	Susquehanna	177	2007	2018
29	01580520	DEER CREEK NEAR DARLINGTON, MD	Susquehanna	164	2006	2018
103	01581752	PLUMTREE RUN NEAR BEL AIR, MD	Western Shore	3	2013	2018
104	0158175320	WHEEL CREEK NEAR ABINGDON, MD	Western Shore	1	2011	2018
30	01582500	GUNPOWDER FALLS AT GLENCOE, MD	Western Shore	160	1985	2018
125	01585075	FOSTER BRANCH NEAR JOPPATOWNE, MD	Western Shore	2	2015	2018
31	01586000	NORTH BRANCH PATAPSCO RIVER AT CEDARHURST, MD	Western Shore	57	1985	2018
32	01589300	GWYNNS FALLS AT VILLA NOVA, MD	Western Shore	32	2003	2018
33	01591000	PATUXENT RIVER NEAR UNITY, MD	Western Shore	35	1985	2018
105	01593500	LITTLE PATUXENT RIVER AT GUILFORD, MD	Western Shore	38	2011	2018
34	**01594440**	**PATUXENT RIVER NEAR BOWIE, MD**	**Western Shore**	348	**1985**	**2018**
35	01594526	WESTERN BRANCH AT UPPER MARLBORO, MD	Western Shore	90	2006	2018
106	01595300	ABRAM CREEK AT OAKMONT, WV	Potomac	43	2013	2018
36	01599000	GEORGES CREEK AT FRANKLIN, MD	Potomac	72	1985	2018
37	01601500	WILLS CREEK NEAR CUMBERLAND, MD	Potomac	247	1985	2018
38	01604500	PATTERSON CREEK NEAR HEADSVILLE, WV	Potomac	221	2006	2018

Table 1. Chesapeake Bay nontidal monitoring stations included in the determination of nutrient and suspended sediment loads and trends for the time period 1985 through 2018. Bold stations represent the nine River Input Monitoring stations. Stations with monitoring data start date after 2010 will have loads but no trends. Stations with monitoring data start date after 2014 will not have load or trend results

MAP ID	USGS STATION NUMBER	USGS STATION NAME	MAJOR WATERSHED/REGION	Drainage Area (mi^2)	MONITORING DATA	
					START DATE	END DATE
39	01608500	SOUTH BRANCH POTOMAC RIVER NEAR SPRINGFIELD, WV	Potomac	1,461	2006	2018
85	01609000	TOWN CREEK NEAR OLDTOWN, MD	Potomac	148	2007	2018
86	01610155	SIDELING HILL CREEK NEAR BELLEGROVE, MD	Potomac	102	2007	2018
40	01611500	CACAPON RIVER NEAR GREAT CACAPON, WV	Potomac	675	2006	2018
108	01613030	WARM SPRINGS RUN NEAR BERKELEY SPRINGS, WV	Potomac	7	2011	2018
41	01613095	TONOLOWAY CREEK NEAR HANCOCK, MD	Potomac	111	2006	2018
42	01613525	LICKING CREEK AT PECTONVILLE, MD	Potomac	193	2006	2018
109	01614000	BACK CREEK NEAR JONES SPRINGS, WV	Potomac	235	2012	2018
43	01614500	CONOCOCHEAGUE CREEK AT FAIRVIEW, MD	Potomac	494	1985	2018
110	01616400	MILL CREEK AT BUNKER HILL, WV	Potomac	18	2011	2018
44	01616500	OPEQUON CREEK NEAR MARTINSBURG, WV	Potomac	273	2006	2018
111	01618100	ROCKYMARSH RUN AT SCRABBLE, WV	Potomac	16	2011	2018
45	01619000	ANTIETAM CREEK NEAR WAYNESBORO, PA	Potomac	93	2006	2018
46	01619500	ANTIETAM CREEK NEAR SHARPSBURG, MD	Potomac	281	1985	2018
47	01621050	MUDDY CREEK AT MOUNT CLINTON, VA	Potomac	14	1994	2018
48	01626000	SOUTH RIVER NEAR WAYNESBORO, VA	Potomac	127	1985	2018
49	01628500	S F SHENANDOAH RIVER NEAR LYNNWOOD, VA	Potomac	1,079	1985	2018
50	01631000	S F SHENANDOAH RIVER AT FRONT ROYAL, VA	Potomac	1,634	1985	2018
51	01632900	SMITH CREEK NEAR NEW MARKET, VA	Potomac	94	1985	2018
52	01634000	N F SHENANDOAH RIVER NEAR STRASBURG, VA	Potomac	770	1985	2018
112	01636500	SHENANDOAH RIVER AT MILLVILLE, WV	Potomac	3,041	2013	2018
53	01637500	CATOCTIN CREEK NEAR MIDDLETOWN, MD	Potomac	67	1985	2018
54	01638480	CATOCTIN CREEK AT TAYLORSTOWN, VA	Potomac	89	1985	2018
55	01639000	MONOCACY RIVER AT BRIDGEPORT, MD	Potomac	173	1985	2018
56	01646000	DIFFICULT RUN NEAR GREAT FALLS, VA	Potomac	58	1985	2018
57	**01646580**	**POTOMAC RIVER AT CHAIN BRIDGE, AT WASHINGTON, DC**	**Potomac**	11,570	**1985**	**2018**
113	01648010	ROCK CREEK AT JOYCE ROAD, WASHINGTON, DC	Potomac	64	2013	2018
87	01651000	NORTHWEST BR ANACOSTIA RIVER NR HYATTSVILLE, MD	Potomac	49	2007	2018
114	01651770	HICKEY RUN AT NEW YORK AVENUE AT WASHINGTON, DC	Potomac	1	2013	2018
115	01651800	WATTS BRANCH AT WASHINGTON, DC	Potomac	3	2013	2018
58	01654000	ACCOTINK CREEK NEAR ANNANDALE, VA	Potomac	24	1991	2018
122	01658000	MATTAWOMAN CREEK NEAR POMONKEY, MD	Potomac	55	2013	2018
59	01658500	S F QUANTICO CREEK NEAR INDEPENDENT HILL, VA	Potomac	8	1994	2018
60	01664000	RAPPAHANNOCK RIVER AT REMINGTON, VA	Virginia	619	1985	2018
61	01665500	RAPIDAN RIVER NEAR RUCKERSVILLE, VA	Virginia	115	2003	2018
123	01666500	ROBINSON RIVER NEAR LOCUST DALE, VA	Virginia	179	1985	2018
62	01667500	RAPIDAN RIVER NEAR CULPEPER, VA	Virginia	468	2005	2018
63	**01668000**	**RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA**	**Virginia**	1,595	**1985**	**2018**
116	01669520	DRAGON SWAMP AT MASCOT, VA	Virginia	109	2011	2018
64	01671020	NORTH ANNA RIVER AT HART CORNER NEAR DOSWELL, VA	Virginia	462	1985	2018
65	01671100	LITTLE RIVER NEAR DOSWELL, VA	Virginia	107	2001	2018
66	**01673000**	**PAMUNKEY RIVER NEAR HANOVER, VA**	**Virginia**	1,078	**1985**	**2018**
67	01673800	PO RIVER NEAR SPOTSYLVANIA, VA	Virginia	78	1987	2018
68	01674000	MATTAPONI RIVER NEAR BOWLING GREEN, VA	Virginia	256	1985	2018
117	01674182	POLECAT CREEK AT ROUTE 301 NEAR PENOLA, VA	Virginia	49	2013	2018
69	**01674500**	**MATTAPONI RIVER NEAR BEULAHVILLE, VA**	**Virginia**	603	**1985**	**2018**
70	02011500	BACK CREEK NEAR MOUNTAIN GROVE, VA	Virginia	134	1985	2018
71	02015700	BULLPASTURE RIVER AT WILLIAMSVILLE, VA	Virginia	110	1985	2018
72	02020500	CALFPASTURE RIVER ABOVE MILL CREEK AT GOSHEN, VA	Virginia	141	1999	2018
124	02024000	MAURY RIVER NEAR BUENA VISTA, VA	Virginia	647	1985	2018
73	02024752	JAMES RIVER AT BLUE RIDGE PKWY NR BIG ISLAND, VA	Virginia	3,076	2006	2018
74	02031000	MECHUMS RIVER NEAR WHITE HALL, VA	Virginia	95	1985	2018
75	02034000	RIVANNA RIVER AT PALMYRA, VA	Virginia	663	1985	2018
76	**02035000**	**JAMES RIVER AT CARTERSVILLE, VA**	**Virginia**	6,252	**1985**	**2018**
77	02037500	JAMES RIVER NEAR RICHMOND, VA	Virginia	6,753	1985	2018
78	02039500	APPOMATTOX RIVER AT FARMVILLE, VA	Virginia	302	1985	2018
79	02041000	DEEP CREEK NEAR MANNBORO, VA	Virginia	158	1991	2018
80	**02041650**	**APPOMATTOX RIVER AT MATOACA, VA**	**Virginia**	1,342	**1985**	**2018**
81	02042500	CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA	Virginia	251	1985	2018

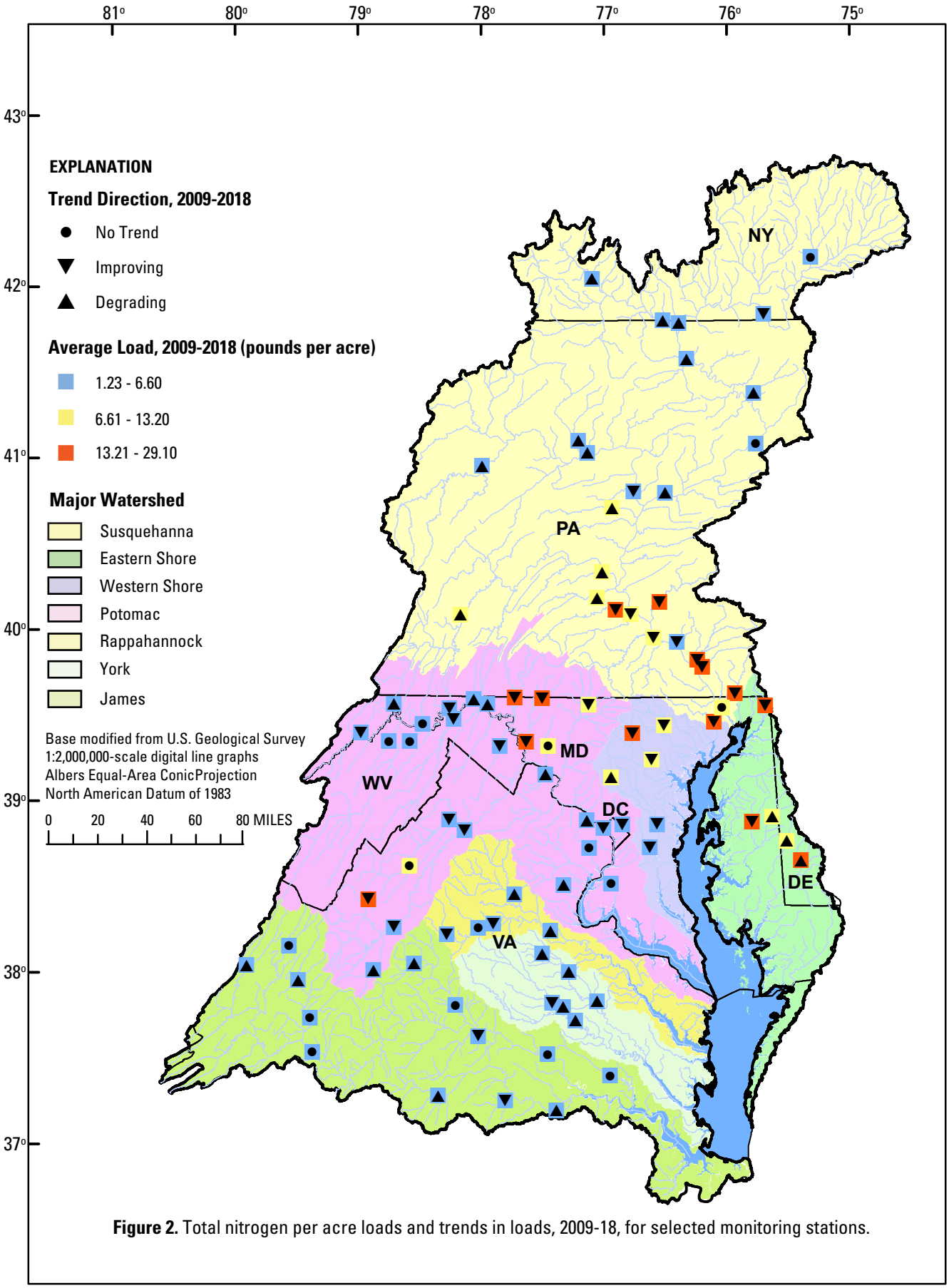

Figure 2. Total nitrogen per acre loads and trends in loads, 2009-18, for selected monitoring stations.

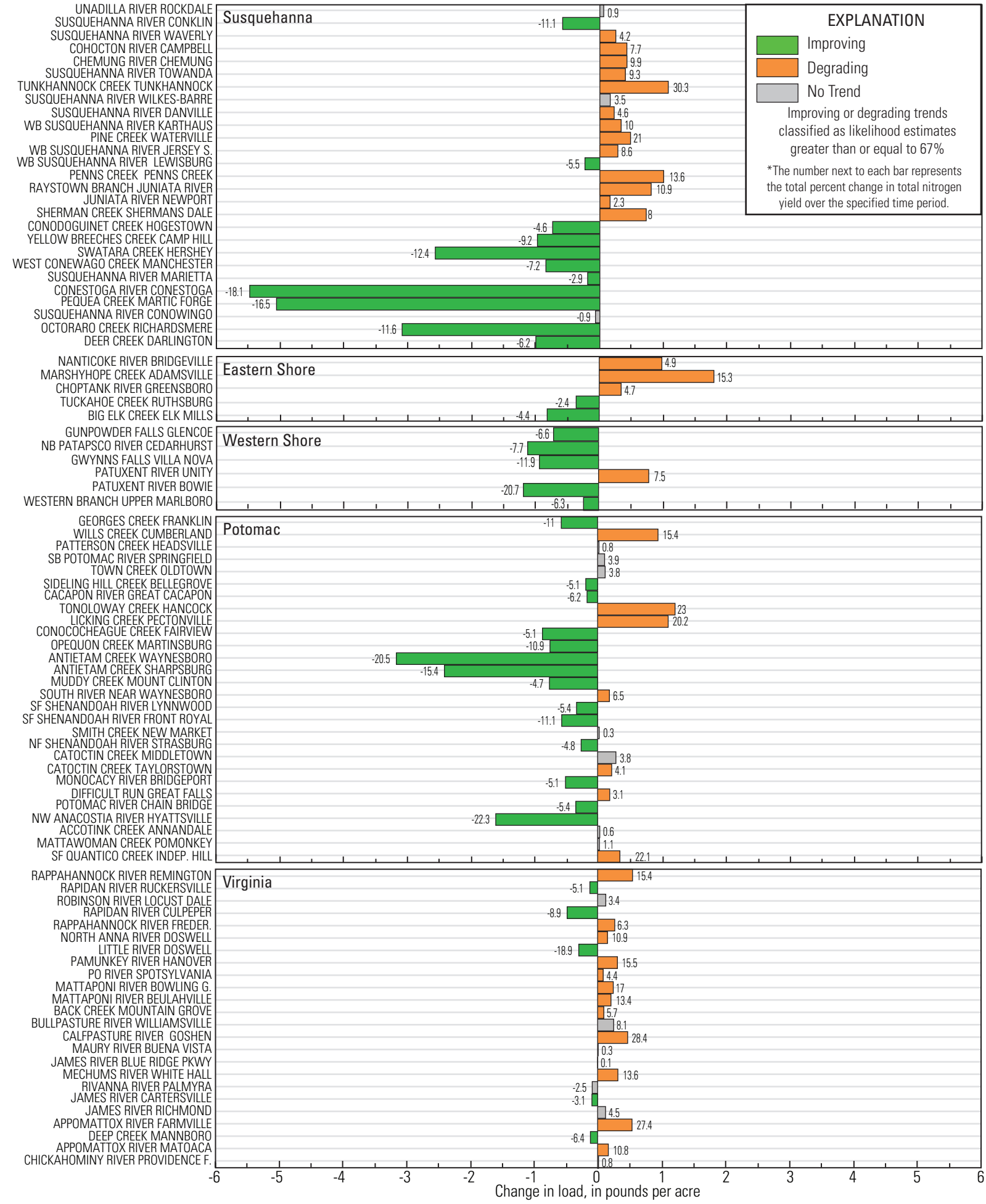

Figure 3. Change in total nitrogen per acre loads during the period, 2009-18, for selected Chesapeake Bay nontidal monitoring stations.

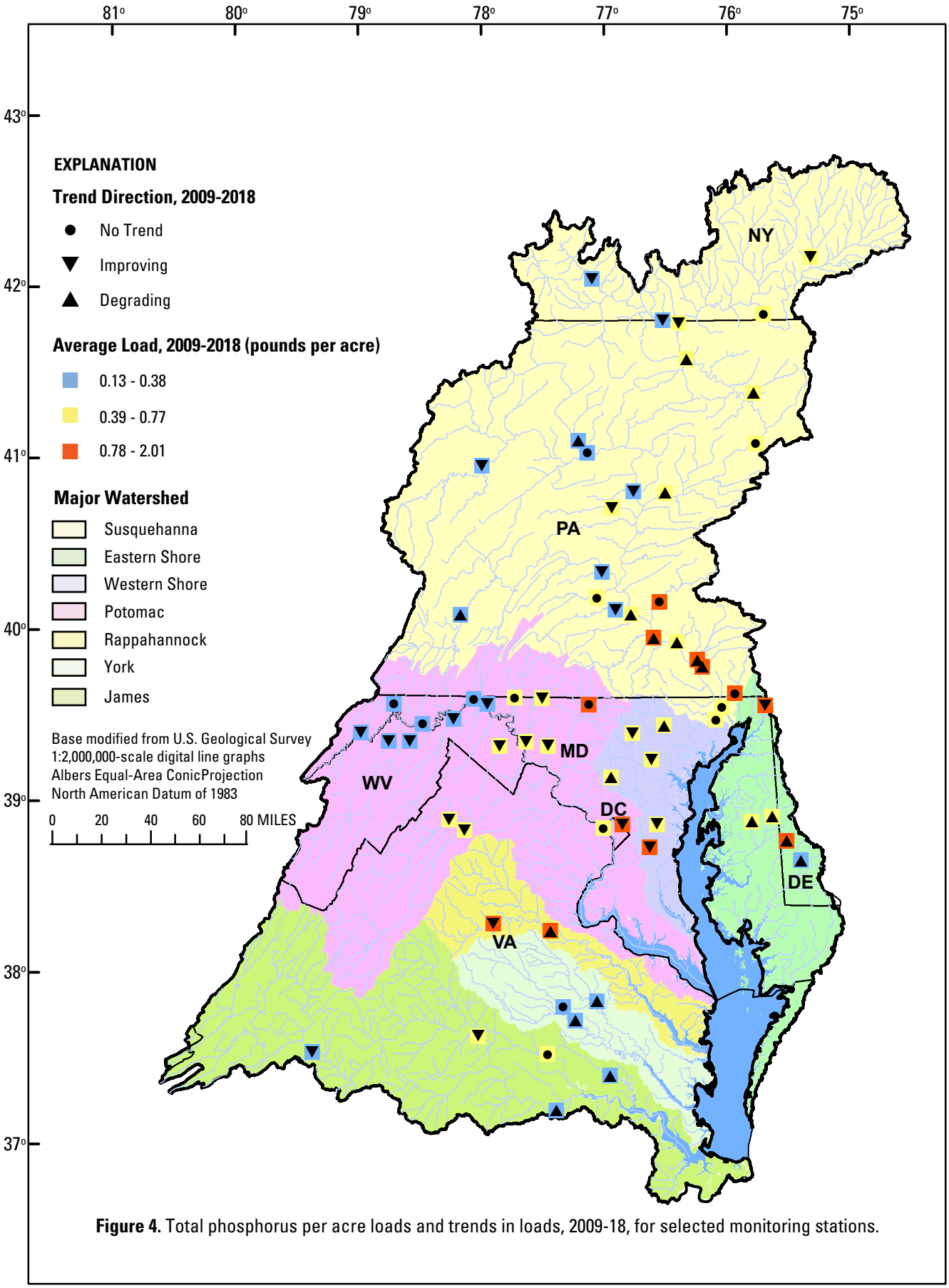

Figure 4. Total phosphorus per acre loads and trends in loads, 2009-18, for selected monitoring stations.

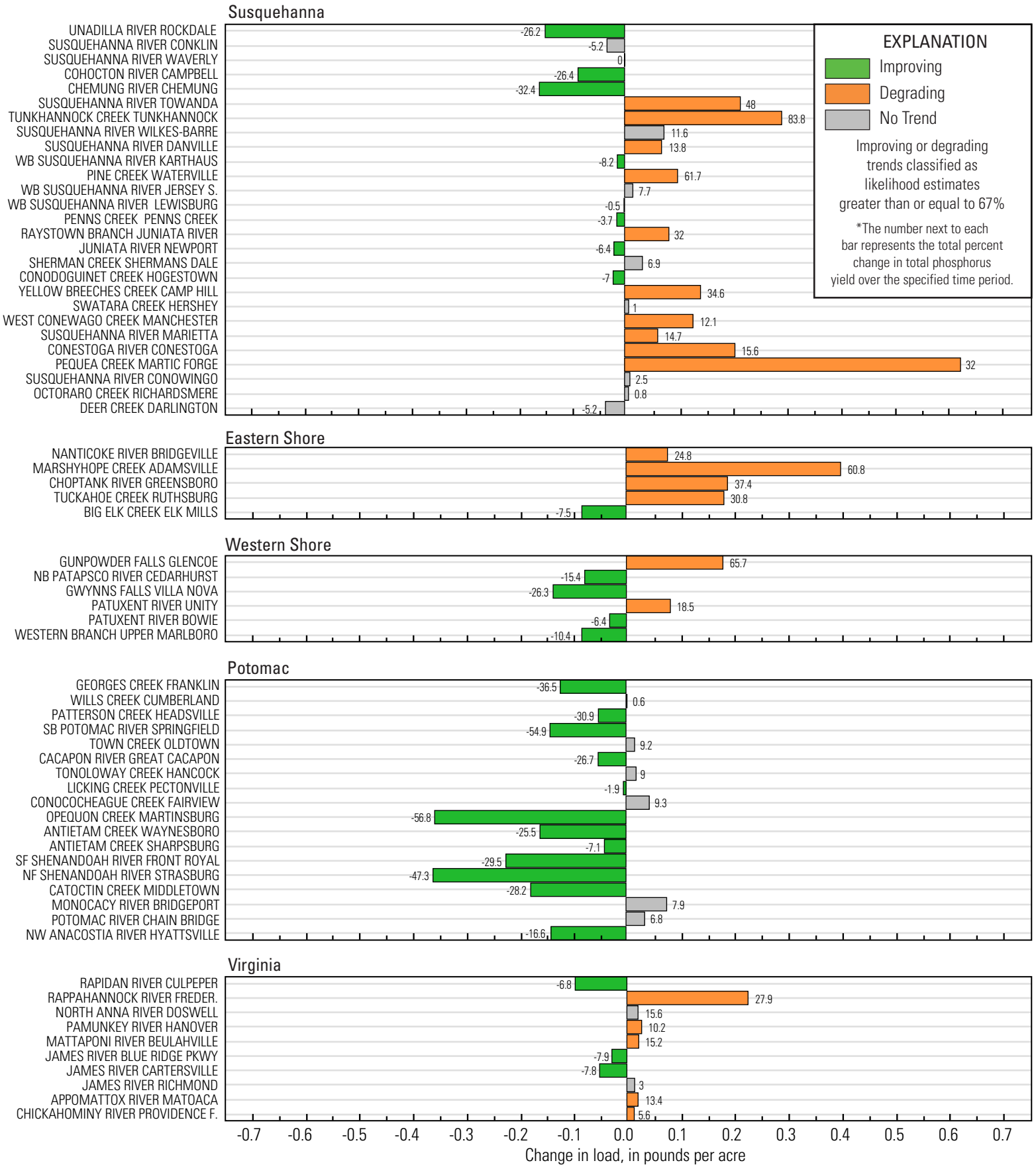

Figure 5. Change in total phosphorus per acre loads during the period, 2009-18, for selected Chesapeake Bay nontidal monitoring stations.

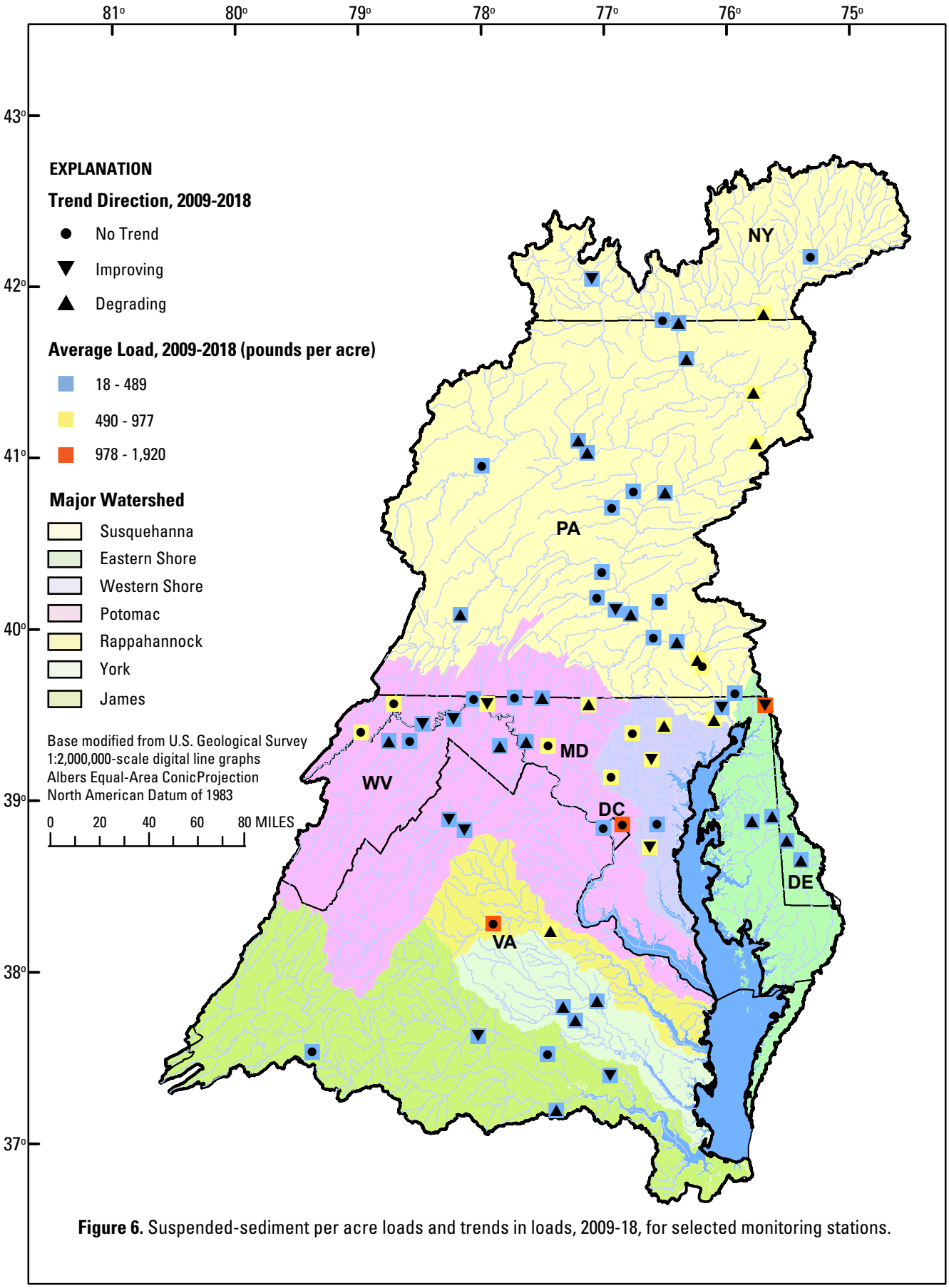

Figure 6. Suspended-sediment per acre loads and trends in loads, 2009-18, for selected monitoring stations.

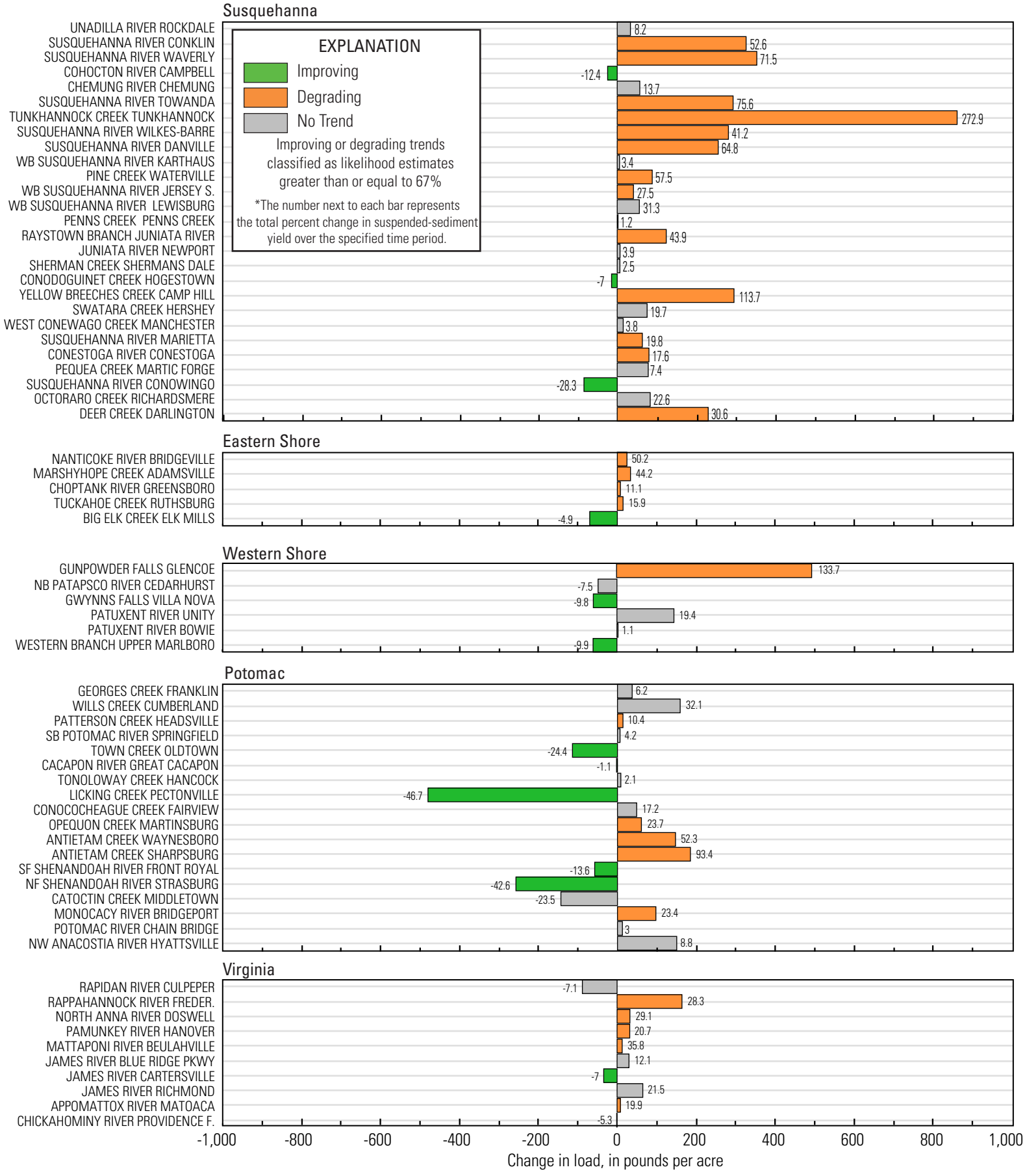

Figure 7. Change in suspended-sediment per acre loads during the period, 2009-18, for selected Chesapeake Bay nontidal monitoring stations.