Appendix 1. Contributing Watersheds and Nutrient Load Summaries for Major Lakes and Estuaries in the Eastern United States (North and Middle Atlantic Coast)

From Moorman, M.C., Hoos, A.B., Bricker, S.B., Moore, R.B., García, A.M., and Ator, S.W., 2014, Nutrient load summaries for major lakes and estuaries of the Eastern United States, 2002: U.S. Geological Survey Data Series 820, 94 p., *http://dx.doi.org/10.3133/ds820*.

[The number(s) at the beginning of each map or table title in appendix 1 (for example "1–4. Cobscook, Englishman, Machias…") refers to the map index number(s) (fig. 1A, Moorman and others, 2014) for the estuaries and their contributing watersheds. Abbreviations used in maps and tables: kg/km^2/yr, kilogram per square kilometer per year; km^2, square kilometer; kg/yr, kilogram per year; kg/ha/yr, kilogram per hectare per year; lbs/acre, pounds per acre; d, days; d/m, days per meter; Mg, megagram; kg, kilogram; mg/L, milligram per liter; TN, total nitrogen; TP, total phosphorus; TN:TP, ratio of total nitrogen to total phosphorus; NA, not assessed or data not available]

1–4. Cobscook, Englishman, Machias, Narraguagus, and Blue Hill Bays (Machias, Narraguagus, and Union River Basins)

5. Penobscot Bay (Penobscot River Basin)

6–8. Muscongus Bay, Damariscotta River Estuary, and Sheepscot Bay (St. George, Medomak, Damariscotta, and Sheepscot River Basins)

9. Kennebec/Androscoggin River Estuary (Kennebec and Androscoggin River Basins)

10. Casco Bay (Presumpscot and Royal River Basins)

11, 12, and 14. Saco and Wells Bays and Hampton Harbor Estuary (Saco, Scarborough, Mousam, and Hampton River Basins)

13. Great Bay (Piscataqua River Basin)

15 and 16. Merrimack River Estuary and Plum Island Sound (Merrimack River Basin and adjacent drainages)

17–19. Massachusetts Bay, Boston Harbor, and Cape Cod Bay (Charles, Neponset, and North River Basins)

20 and 21. Waquoit and Buzzards Bays and for the Rhode Island coast west of Narragansett Bay (Acushnet, Westport, and Weweantic River Basins)

22. Narragansett Bay (Providence and Taunton River Basins)

23. Connecticut River Estuary (Connecticut River Basin)

24. Long Island Sound (Housatonic, Thames, Saugatuck, and Bronx River Basins)

25 and 26. Gardiners and Great South Bays (Peconic and Carmans River Basins)

27 and 28. Hudson River Estuary and Raritan Bay (Hudson, Raritan, Passaic, and Hackensack River Basins)

29 and 30. Barnegat and New Jersey Inland Bays (Mullica, Great Egg Harbor, and Toms River Basins)

31. Delaware Bay (Delaware River Basin)

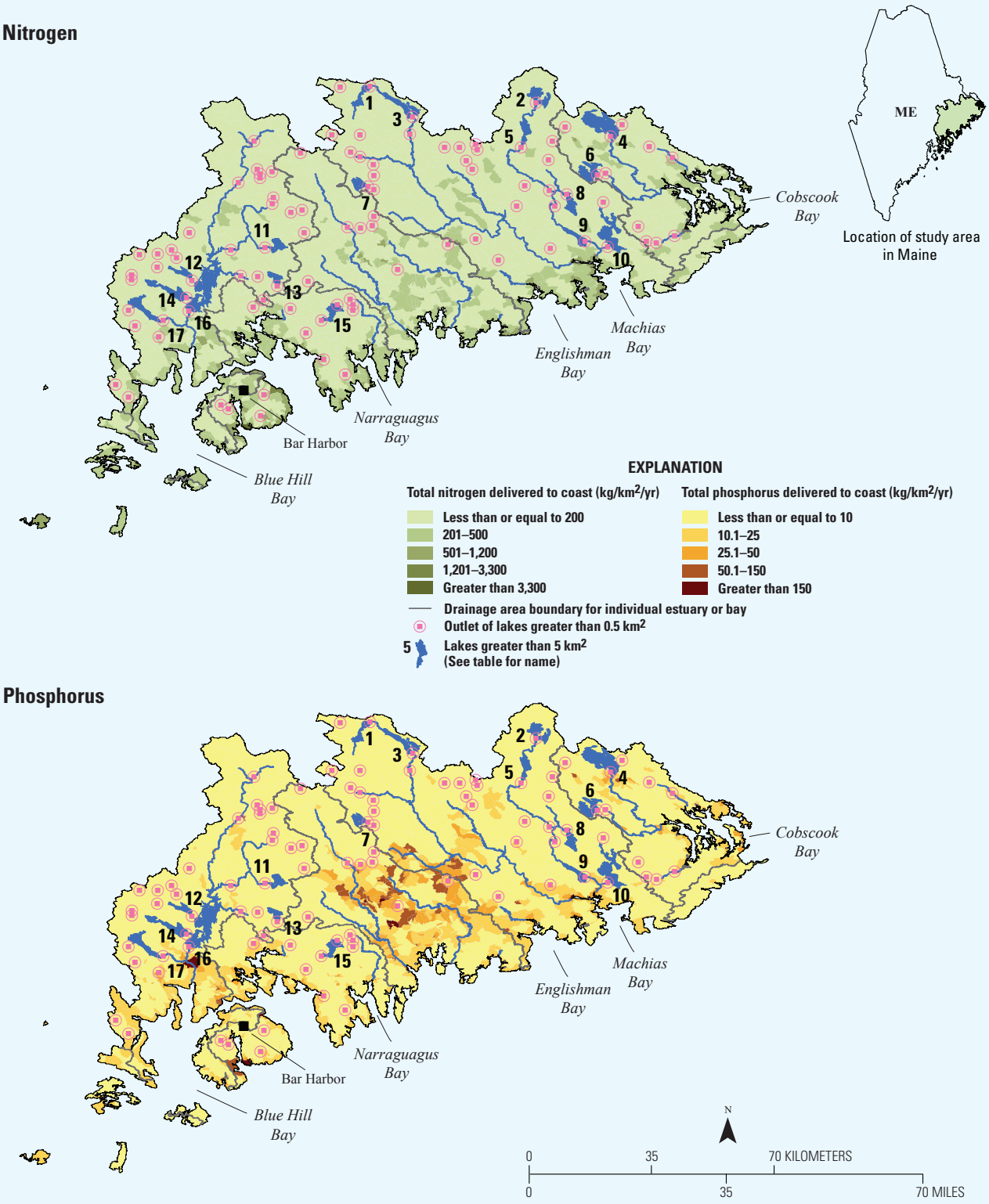
32–34. Delaware Inland Bays and Maryland Coastal Bays (Indian and Saint Martin River Basins)

35. Upper Chesapeake Bay (Susquehanna River Basin)

36–43. Riverine estuaries that discharge to Chesapeake Bay and Tangier/Pokomoke Sounds (Patuxent, Potomac, Rappahannock, York, James, Chester, and Choptank River Basins)

1–4. Contributing watersheds and nutrient yield for Cobscook, Englishman, Machias, Narraguagus, and Blue Hill Bays

(Machias, Narraguagus, and Union River Basins)



1–4. Nutrient source shares and loads delivered from the watershed to Cobscook, Englishman, Machias, Narraguagus, and Blue Hill Bays, and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Cobscook Bay, ME	0	24	14	6	7	17	18	15	134,947	154
Englishman/Machias Bay, ME	2	17	16	6	7	18	19	15	350,850	143
Narraguagus Bay, ME	0	24	24	5	5	16	15	11	253,410	201
Blue Hill Bay, ME	4	33	6	6	6	18	16	11	263,895	139
Major lakes										
1. Fourth Machias Lake, ME	0	2	4	9	10	26	27	22	13,102	76
2. Pocomoonshine Lake, ME	0	22	15	7	6	17	16	17	6,658	84
3. Third Machias Lake, ME	0	2	4	9	10	26	27	22	14,705	65
4. Meddybemps Lake, ME	0	21	21	6	6	16	16	15	5,977	52
5. Crawford Lake, ME	0	17	11	7	7	19	20	18	18,989	95
6. Lake Cathance, ME	0	13	22	6	7	18	19	16	3,263	61
7. Mopang Lake, ME	0	0	8	9	10	25	27	22	1,513	50
8. Rocky Lake, ME	0	15	7	7	8	22	23	19	5,921	87
9. Hadley Lake, ME	0	12	12	7	8	21	22	18	68,014	105
10. Gardner Lake, ME	0	11	6	7	8	23	24	20	8,699	65
11. Spectacle Pond, ME	0	5	3	6	9	33	27	17	4,672	57
12. Beech Hill Pond, ME	0	37	5	4	6	21	17	11	1,498	58
13. Molasses Pond, ME	0	22	3	5	7	27	22	14	695	49
14. Green Lake, ME	0	24	5	7	7	23	21	13	10,431	71
15. Tunk Lake, ME	0	8	3	7	9	27	27	18	1,763	48
16. Graham Lake, ME	0	17	6	7	7	25	22	15	112,151	88
17. Branch Lake, ME	0	23	7	7	7	22	21	13	6,108	76

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

1–4. Nutrient source shares and loads delivered from the watershed to Cobscook, Englishman, Machias, Narraguagus, and Blue Hill Bays, and to major lakes in the watershed

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Cobscook Bay, ME	0	16	36	0	48	5,398	6.2
Englishman/Machias Bay, ME	4	9	40	0	47	16,720	6.8
Narraguagus Bay, ME	0	11	60	0	29	18,650	14.8
Blue Hill Bay, ME	11	27	12	1	50	11,756	6.2
Major lakes							
1. Fourth Machias Lake, ME	0	1	2	0	96	453	2.6
2. Pocomoonshine Lake, ME	0	11	30	0	59	281	3.5
3. Third Machias Lake, ME	0	1	2	0	96	453	2.0
4. Meddybemps Lake, ME	0	10	47	0	43	233	2.0
5. Crawford Lake, ME	0	8	21	0	72	767	3.8
6. Lake Cathance, ME	0	7	44	0	49	74	1.4
7. Mopang Lake, ME	0	0	11	0	88	46	1.5
8. Rocky Lake, ME	0	12	20	0	68	136	2.0
9. Hadley Lake, ME	0	6	26	0	68	2,553	3.9
10. Gardner Lake, ME	0	9	14	0	77	211	1.6
11. Spectacle Pond, ME	0	3	1	0	96	172	2.1
12. Beech Hill Pond, ME	0	33	11	1	56	55	2.1
13. Molasses Pond, ME	0	17	5	0	77	19	1.3
14. Green Lake, ME	0	19	10	1	70	349	2.4
15. Tunk Lake, ME	0	7	1	0	92	34	0.9
16. Graham Lake, ME	0	12	11	1	76	4,735	3.7
17. Branch Lake, ME	0	16	15	1	69	195	2.4

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

1–4. Estuary and lake characteristics: Cobscook, Englishman, Machias, Narraguagus, and Blue Hill Bays, and major lakes in the watershed

				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Cobscook Bay, ME[i]	875	74	33	4,453	178	0.23	0.01	25	NA	NA	Moderate
Englishman/Machias Bay, ME	2,458	225	5	1,754	84	0.20	0.01	21	NA	NA	Unknown
Narraguagus Bay, ME	1,264	206	4	1,014	75	0.28	0.02	14	NA	NA	Unknown
Blue Hill Bay, ME	1,892	317	28	7,389	329	0.20	0.01	22	NA	NA	Low
Major lakes											
1. Fourth Machias Lake, ME	172	6	18	308,409	11,219	0.14	0.00	27	3,919	166	NA
2. Pocomoonshine Lake, ME	79	10	65	839,540	40,572	0.22	0.01	21	6,313	345	NA
3. Third Machias Lake, ME	225	11	25	487,712	15,378	0.12	0.00	32	4,792	162	NA
4. Meddybemps Lake, ME	115	27	120	2,323,099	104,654	0.23	0.01	22	13,424	641	NA
5. Crawford Lake, ME	200	7	18	449,882	19,140	0.17	0.01	24	5,981	296	NA
6. Lake Cathance, ME	54	13	118	1,141,324	30,055	0.25	0.01	38	6,432	182	NA
7. Mopang Lake, ME	30	6	103	447,983	16,884	0.20	0.01	27	2,850	118	NA
8. Rocky Lake, ME	68	7	49	508,640	12,594	0.21	0.01	40	4,565	124	NA
9. Hadley Lake, ME	651	7	5	383,725	14,541	0.15	0.01	26	5,136	218	NA
10. Gardner Lake, ME	134	21	78	1,656,041	45,520	0.22	0.01	36	12,556	373	NA
11. Spectacle Pond, ME	83	7	43	327,805	12,711	0.13	0.00	26	2,951	124	NA
12. Beech Hill Pond, ME	26	6	111	492,634	20,309	0.24	0.01	24	2,944	128	NA
13. Molasses Pond, ME	14	5	185	418,229	12,525	0.22	0.01	33	1,564	49	NA
14. Green Lake, ME	147	13	43	822,127	29,769	0.18	0.01	28	8,566	339	NA
15. Tunk Lake, ME	37	8	114	623,681	14,073	0.20	0.00	44	3,692	89	NA
16. Graham Lake, ME	1,278	40	16	2,150,370	94,313	0.15	0.01	23	25,763	1,314	NA
17. Branch Lake, ME	80	12	75	1,139,534	40,834	0.26	0.01	28	9,184	353	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

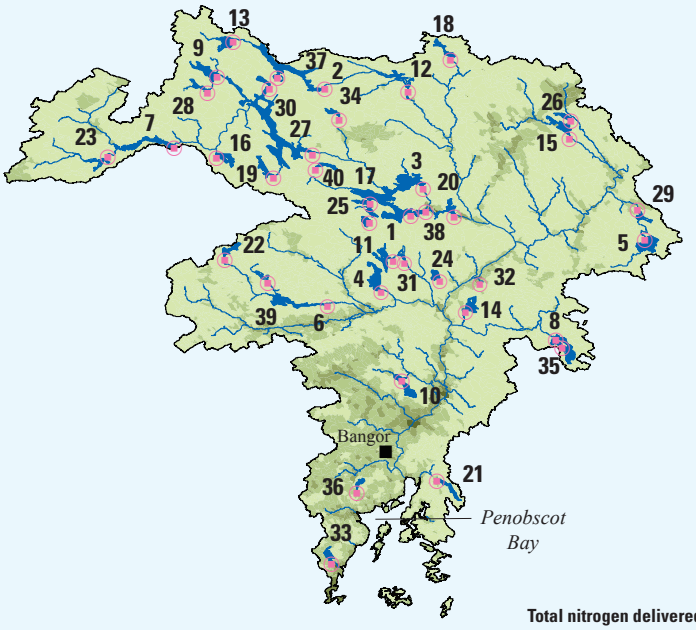
[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

[i] Surface area of Cobscook Bay from Brooks, 2004.

5. Contributing watersheds and nutrient yield for Penobscot Bay
(Penobscot River Basin)

Nitrogen





Location of study area in Maine

EXPLANATION

Total nitrogen delivered to coast (kg/km²/yr)

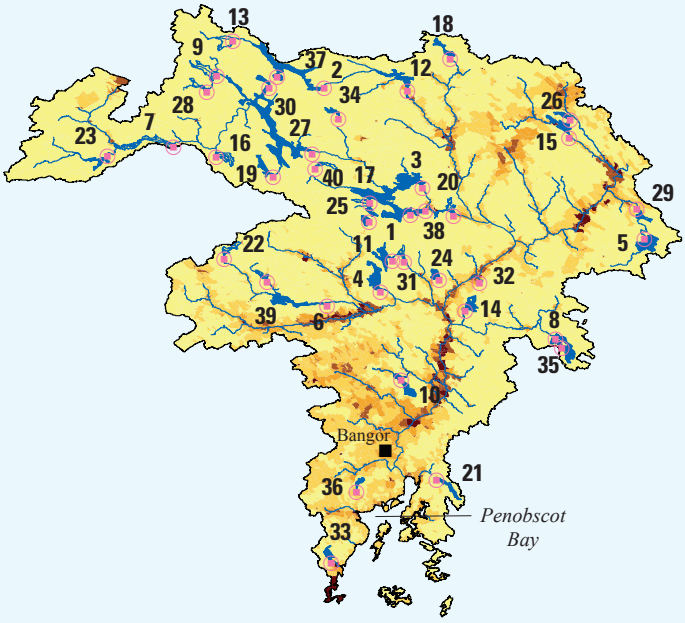
- Less than or equal to 200
- 201–500
- 501–1,200
- 1,201–3,300
- Greater than 3,300

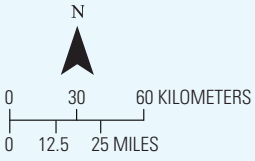
Total phosphorus delivered to coast (kg/km²/yr)

- Less than or equal to 10
- 10.1–25
- 25.1–50
- 50.1–150
- Greater than 150

- Outlet of lakes greater than 0.5 km²
- 5 Lakes greater than 5 km² (See table for name)

Phosphorus





5. Nutrient source shares and loads delivered from the watershed to Penobscot Bay and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Penobscot Bay, ME	7	22	14	9	5	13	14	16	3,971,497	171
Major lakes										
1. South Twin Lake, ME	0	5	3	8	9	19	21	35	481,160	98
2. Chamberlain Lake, ME	0	5	3	8	9	19	22	34	35,581	55
3. Millinocket Lake, ME	0	6	3	10	9	21	22	29	21,252	67
4. Schoodic Lake, ME	0	15	3	10	7	20	22	22	2,853	31
5. Baskahegan Lake, ME	0	14	7	9	7	20	21	21	26,473	82
6. Sebec Lake, ME	0	14	4	9	8	20	22	24	92,796	110
7. Seboomook Lake, ME	0	4	3	7	9	17	20	40	243,958	173
8. Nicatous Lake, ME	0	0	4	9	9	27	27	23	8,462	46
9. Caucomgomoc Lake, ME	0	1	3	8	10	19	22	37	45,496	98
10. Pushaw Lake, ME	0	23	36	16	2	8	9	6	65,664	236
11. Seboeis Lake, ME	0	10	5	10	8	20	22	25	9,863	64
12. Grand Lake Matagamon, ME	0	6	3	8	9	20	22	32	102,935	80
13. Allagash Lake, ME	0	4	3	8	9	18	21	37	17,697	86
14. Cold Stream Pond, ME	0	29	8	9	5	16	18	16	4,035	55
15. Upper Mattawamkeag Lake, ME	0	19	32	8	4	11	12	15	158,636	195
16. Lobster Lake, ME	0	1	3	9	10	22	25	31	10,402	69
17. Middle Jo-Mary Lake, ME	0	0	3	10	9	23	25	29	12,880	58
18. Grand Lake Seboeis, ME	0	0	4	9	10	21	23	33	7,154	64
19. Ragged Lake, ME	0	6	3	8	10	21	23	29	9,895	97
20. Dolby Pond, ME	3	7	3	8	9	18	20	33	543,546	98
21. Toddy Pond, ME	0	28	14	7	6	18	17	11	5,905	88
22. Lower Wilson Pond, ME	0	15	3	9	8	19	21	25	10,953	108
23. Canada Falls Lake, ME	0	4	2	6	9	17	20	42	109,720	211
24. South Branch Lake, ME	0	5	3	10	8	24	25	25	1,059	32
25. Upper Jo-Mary Lake, ME	0	0	4	10	9	23	25	29	3,759	57
26. Pleasant Lake, ME	0	10	22	7	6	15	17	22	652	34
27. Rainbow Lake, ME	0	0	3	9	10	22	24	32	1,198	45
28. Loon Lake, ME	0	0	3	8	10	20	23	37	18,744	122
29. Crooked Brook Flowage, ME	0	15	10	9	7	18	20	21	40,674	88
30. Umbazooksus Lake, ME	0	1	3	9	9	20	23	34	3,769	53
31. Endless Lake, ME	0	7	5	10	8	21	23	26	10,941	56
32. Mattanawcook Pond, ME	0	33	18	10	4	11	12	12	11,015	132
33. Norton Pond, ME	0	28	18	14	4	13	14	7	16,963	241
34. Nesowadnehunk Lake, ME	0	7	3	8	9	20	22	30	2,002	61
35. West Lake, ME	0	0	4	9	9	27	27	24	683	35
36. Swan Lake, ME	0	38	18	14	3	10	11	7	3,223	113
37. Mud Pond, ME	0	4	3	9	9	20	22	33	2,657	59
38. Twin Lakes, ME	0	34	2	7	5	17	17	17	50	71
39. Lake Onawa, ME	0	6	3	10	9	22	24	27	16,094	120
40. Chesuncook Lake, ME	0	5	3	7	9	18	21	37	407,536	109

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

5. Nutrient source shares and loads delivered from the watershed to Penobscot Bay and to major lakes in the watershed

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Penobscot Bay, ME	9	16	16	2	58	282,802	12.1
Major lakes							
1. South Twin Lake, ME	0	3	0	0	97	20,259	4.1
2. Chamberlain Lake, ME	0	2	0	0	98	1,497	2.3
3. Millinocket Lake, ME	0	3	0	0	97	869	2.7
4. Schoodic Lake, ME	0	7	0	1	91	101	1.1
5. Baskahegan Lake, ME	0	10	8	1	81	865	2.7
6. Sebec Lake, ME	0	7	2	0	90	4,473	5.3
7. Seboomook Lake, ME	0	2	0	0	97	9,721	6.9
8. Nicatous Lake, ME	0	0	3	0	96	262	1.4
9. Caucomgomoc Lake, ME	0	1	0	0	99	1,596	3.4
10. Pushaw Lake, ME	0	14	39	7	40	3,594	12.9
11. Seboeis Lake, ME	0	5	2	1	93	407	2.6
12. Grand Lake Matagamon, ME	0	3	0	0	97	4,534	3.5
13. Allagash Lake, ME	0	2	0	0	98	557	2.7
14. Cold Stream Pond, ME	0	21	7	1	71	102	1.4
15. Upper Mattawamkeag Lake, ME	0	7	38	1	54	9,262	11.4
16. Lobster Lake, ME	0	0	0	0	100	464	3.1
17. Middle Jo-Mary Lake, ME	0	0	0	0	100	573	2.6
18. Grand Lake Seboeis, ME	0	0	0	0	100	476	4.2
19. Ragged Lake, ME	0	3	0	0	97	501	4.9
20. Dolby Pond, ME	7	4	0	0	88	23,892	4.3
21. Toddy Pond, ME	0	21	35	2	42	199	3.0
22. Lower Wilson Pond, ME	0	9	0	0	91	389	3.8
23. Canada Falls Lake, ME	0	2	0	0	98	2,446	4.7
24. South Branch Lake, ME	0	2	0	0	97	30	0.9
25. Upper Jo-Mary Lake, ME	0	0	0	0	100	196	3.0
26. Pleasant Lake, ME	0	4	33	0	62	23	1.2
27. Rainbow Lake, ME	0	0	0	0	100	45	1.7
28. Loon Lake, ME	0	0	0	0	100	523	3.4
29. Crooked Brook Flowage, ME	0	8	17	1	75	1,673	3.6
30. Umbazooksus Lake, ME	0	0	0	0	99	194	2.7
31. Endless Lake, ME	0	4	1	1	94	384	2.0
32. Mattanawcook Pond, ME	0	23	21	4	52	301	3.6
33. Norton Pond, ME	0	24	21	8	47	470	6.7
34. Nesowadnehunk Lake, ME	0	3	0	0	97	49	1.5
35. West Lake, ME	0	0	3	0	97	21	1.1
36. Swan Lake, ME	0	32	16	6	46	40	1.4
37. Mud Pond, ME	0	2	0	0	98	116	2.6
38. Twin Lakes, ME	0	17	0	0	82	3	3.9
39. Lake Onawa, ME	0	2	0	0	98	649	4.8
40. Chesuncook Lake, ME	0	3	0	0	97	17,511	4.7

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

5. Estuary and lake characteristics: Penobscot Bay and major lakes in the watershed

	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		Overall Eutrophic Condition[h]
				TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	
Estuaries and other coastal waterbodies											
Penobscot Bay, ME	23,290	992	29	115,173	8,201	0.27	0.02	14	NA	NA	Low
Major lakes											
1. South Twin Lake, ME	4,929	75	9	4,506,930	193,365	0.17	0.01	23	48,863	2,481	NA
2. Chamberlain Lake, ME	641	54	51	3,365,324	148,451	0.17	0.01	23	30,713	1,427	NA
3. Millinocket Lake, ME	319	35	62	2,332,484	102,954	0.18	0.01	23	16,439	794	NA
4. Schoodic Lake, ME	91	28	155	1,754,855	66,069	0.17	0.01	27	8,480	326	NA
5. Baskahegan Lake, ME	324	27	51	2,156,296	76,147	0.22	0.01	28	15,866	630	NA
6. Sebec Lake, ME	844	26	16	1,785,947	87,925	0.19	0.01	20	21,262	1,142	NA
7. Seboomook Lake, ME	1,410	26	10	2,901,718	119,286	0.31	0.01	24	39,003	1,912	NA
8. Nicatous Lake, ME	183	20	66	1,124,262	37,176	0.15	0.00	30	8,660	305	NA
9. Caucomgomoc Lake, ME	464	20	24	1,478,113	52,020	0.20	0.01	28	15,312	544	NA
10. Pushaw Lake, ME	278	19	40	3,356,840	180,779	0.49	0.03	19	18,218	923	NA
11. Seboeis Lake, ME	154	17	57	1,080,982	48,289	0.17	0.01	22	9,221	446	NA
12. Grand Lake Matagamon, ME	1,280	17	8	936,611	42,486	0.15	0.01	22	12,870	719	NA
13. Allagash Lake, ME	206	17	50	1,654,237	58,828	0.27	0.01	28	15,632	628	NA
14. Cold Stream Pond, ME	73	15	121	1,401,432	43,012	0.26	0.01	33	7,591	255	NA
15. Upper Mattawamkeag Lake, ME	812	15	11	2,041,138	121,625	0.38	0.02	17	26,117	1,747	NA
16. Lobster Lake, ME	151	14	52	1,056,456	53,018	0.21	0.01	20	9,982	559	NA
17. Middle Jo-Mary Lake, ME	221	12	31	524,531	24,167	0.12	0.01	22	4,064	208	NA
18. Grand Lake Seboeis, ME	113	10	56	742,458	58,074	0.19	0.02	13	6,050	557	NA
19. Ragged Lake, ME	102	10	58	871,665	45,218	0.23	0.01	19	5,165	281	NA
20. Dolby Pond, ME	5,532	10	1	580,479	25,573	0.15	0.01	23	7,206	372	NA
21. Toddy Pond, ME	67	10	86	1,180,557	45,540	0.33	0.01	26	7,799	329	NA
22. Lower Wilson Pond, ME	101	10	48	973,222	38,612	0.28	0.01	25	9,434	420	NA
23. Canada Falls Lake, ME	520	9	10	1,285,893	29,728	0.37	0.01	43	16,258	466	NA
24. South Branch Lake, ME	33	8	142	509,683	17,249	0.18	0.01	30	2,535	92	NA
25. Upper Jo-Mary Lake, ME	66	8	65	452,922	27,540	0.16	0.01	16	3,247	230	NA
26. Pleasant Lake, ME	19	7	230	698,844	28,578	0.27	0.01	24	2,388	101	NA
27. Rainbow Lake, ME	26	7	141	491,073	18,235	0.20	0.01	27	2,292	85	NA
28. Loon Lake, ME	154	7	24	594,865	17,517	0.25	0.01	34	6,063	207	NA
29. Crooked Brook Flowage, ME	460	7	9	415,910	18,358	0.17	0.01	23	6,694	418	NA
30. Umbazooksus Lake, ME	71	6	50	354,194	19,777	0.15	0.01	18	3,354	204	NA
31. Endless Lake, ME	197	6	16	212,503	7,734	0.10	0.00	27	2,716	113	NA
32. Mattanawcook Pond, ME	83	6	42	680,123	20,640	0.32	0.01	33	5,228	192	NA
33. Norton Pond, ME	70	6	41	1,119,050	32,831	0.53	0.02	34	10,410	333	NA
34. Nesowadnehunk Lake, ME	33	6	98	505,573	13,938	0.24	0.01	36	3,137	92	NA
35. West Lake, ME	20	6	170	480,832	15,761	0.23	0.01	31	2,137	72	NA
36. Swan Lake, ME	29	6	97	796,362	11,007	0.39	0.01	72	4,986	74	NA
37. Mud Pond, ME	45	5	71	366,870	18,247	0.19	0.01	20	2,474	139	NA
38. Twin Lakes, ME	1	5	4,174	16,843,286	846,454	8.84	0.44	20	3,986	200	NA
39. Lake Onawa, ME	134	5	19	403,587	17,249	0.22	0.01	23	4,766	243	NA
40. Chesuncook Lake, ME	3,737	113	17	8,426,576	378,415	0.20	0.01	22	89,852	4,825	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

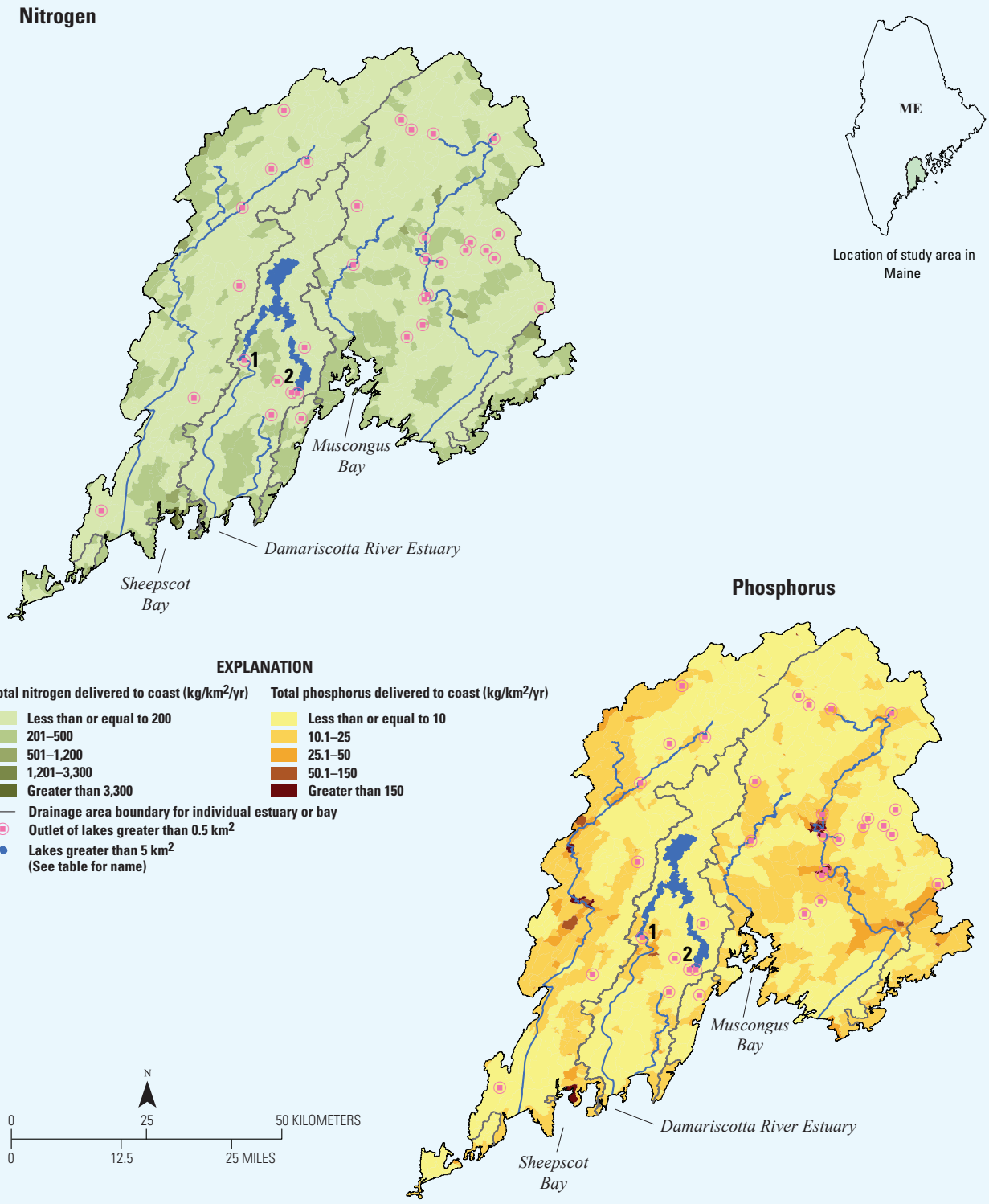
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

6–8. Contributing watersheds and nutrient yield for Muscongus Bay, Damariscotta River Estuary, and Sheepscot Bay
(St. George, Medomak, Damariscotta, and Sheepscot River Basins)



6–8. Nutrient source shares and loads delivered from the watershed to Muscongus Bay, Damariscotta River Estuary, and Sheepscot Bay, and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]									
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies										
Muscongus Bay, ME	1	35	13	13	5	13	14	7	250,889	230
Damariscotta River Estuary, ME	0	41	6	11	5	14	16	7	78,131	191
Sheepscot Bay, ME	3	33	11	14	4	12	15	7	212,267	255
Major lakes										
1. Damariscotta Lake, ME	0	33	11	15	5	13	16	7	17,821	119
2. Pemaquid Pond, ME	0	32	5	11	7	18	19	8	5,542	95

Total phosphorus	Source shares, in percent[a]						
	Wastewater[b]	Urban land	Fertilizer	Manure	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies							
Muscongus Bay, ME	2	27	20	6	44	11,934	10.9
Damariscotta River Estuary, ME	0	34	8	4	54	2,432	5.9
Sheepscot Bay, ME	8	24	13	8	48	9,866	11.8
Major lakes							
1. Damariscotta Lake, ME	0	25	15	7	53	562	3.8
2. Pemaquid Pond, ME	0	27	5	2	65	103	1.8

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

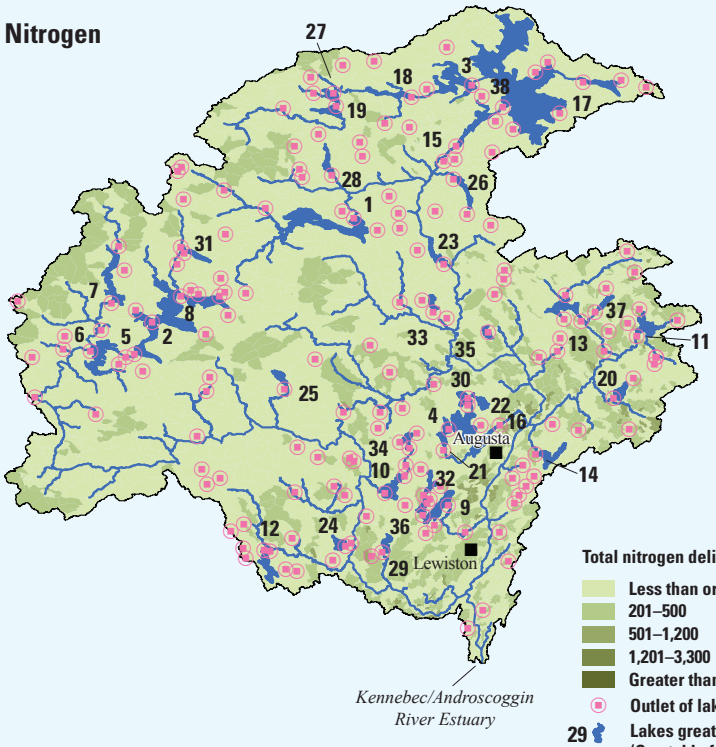
6–8. Estuary and lake characteristics: Muscongus Bay, Damariscotta River Estuary, and Sheepscot Bay, and major lakes in the watershed

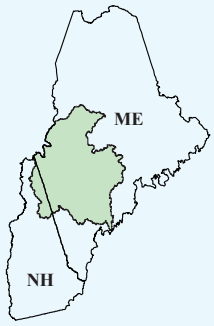
				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Muscongus Bay, ME	1,092	201	10	2,509	119	0.41	0.02	21	NA	NA	Unknown
Damariscotta River Estuary, ME	409	53	11	859	27	0.34	0.01	32	NA	NA	Low
Sheepscot Bay, ME	833	107	23	4,882	227	0.46	0.02	22	NA	NA	Unknown
Major lakes											
1. Damariscotta Lake, ME	150	19	81	3,499,572	122,162	0.51	0.02	29	25,325	944	NA
2. Pemaquid Pond, ME	58	6	69	819,304	17,460	0.36	0.01	47	6,416	152	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.
[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).
[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

9. Contributing watersheds and nutrient yield for Kennebec/Androscoggin River Estuary
(Kennebec and Androscoggin River Basins)

Nitrogen





Location of study area in
Maine and New Hampshire

EXPLANATION

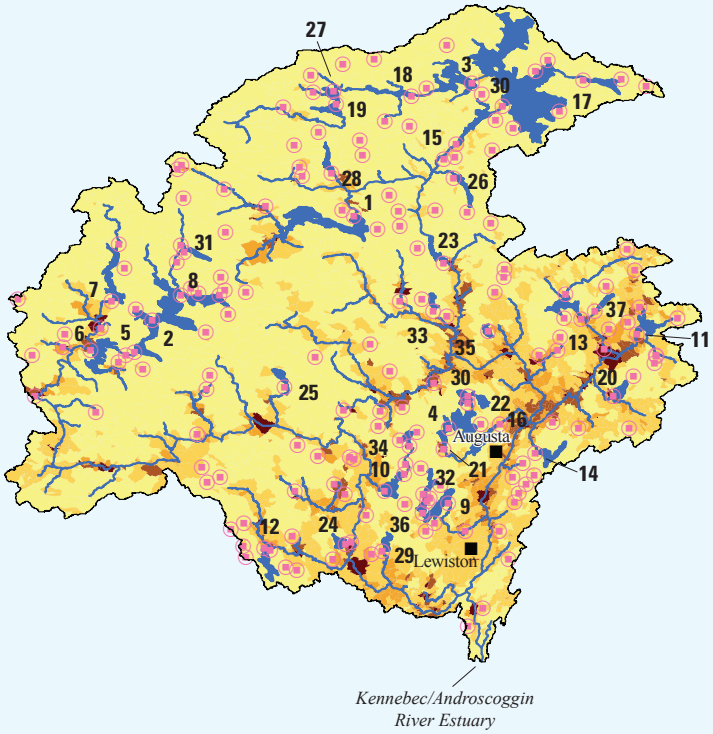
Total nitrogen delivered to coast (kg/km²/yr)

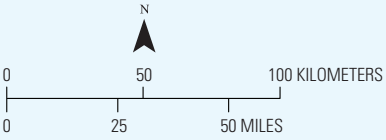
- Less than or equal to 200
- 201–500
- 501–1,200
- 1,201–3,300
- Greater than 3,300
- Outlet of lakes greater than 0.5 km²
- 29 Lakes greater than 5 km² (See table for name)

Total phosphorus delivered to coast (kg/km²/yr)

- Less than or equal to 10
- 10.1–25
- 25.1–50
- 50.1–150
- Greater than 150

Phosphorus





9. Nutrient source shares and loads delivered from the watershed to Kennebec/Androscoggin River Estuary and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Kennebec/Androscoggin River Estuary, ME	15	20	10	12	5	11	13	13	5,571,577	225
Major lakes										
1. Flagstaff Lake, ME	0	12	3	8	9	19	22	27	181,491	135
2. Mooselookmeguntic Lake, ME	0	11	3	8	10	19	22	28	140,520	140
3. Brassua Lake, ME	0	9	3	8	9	17	20	34	317,328	171
4. Great Pond, ME	0	36	11	17	4	12	13	8	12,039	55
5. Lower Richardson Lake, ME	0	10	3	8	10	19	22	28	148,285	120
6. Umbagog Lake, NH	0	7	3	8	10	19	22	30	426,947	159
7. Aziscohos Lake, ME	0	4	3	8	10	19	22	35	123,715	224
8. Rangeley Lake, ME	0	28	2	7	8	16	18	21	30,602	119
9. Cobbosseecontee Lake, ME	0	30	19	25	3	9	10	5	52,033	154
10. Androscoggin Lake, ME	0	28	12	23	4	13	14	8	18,547	91
11. Sebasticook Lake, ME	0	27	33	16	2	7	8	6	129,854	271
12. Thompson Lake, ME	0	25	20	12	5	13	15	10	12,698	103
13. Great Moose Lake, ME	0	27	15	14	4	13	14	12	108,862	177
14. China Lake, ME	0	29	19	21	3	10	12	6	11,291	127
15. Indian Pond near Somerset Junction, ME	0	9	3	8	9	18	21	33	381,497	106
16. Messalonskee Lake, ME	0	31	14	20	4	11	13	7	49,730	107
17. First Roach Pond, ME	0	7	3	8	9	21	23	29	19,334	105
18. Long Pond near Mackamp, ME	0	9	2	8	9	17	20	35	289,031	200
19. Attean Pond, ME	0	1	3	8	10	19	22	38	147,691	206
20. Unity Pond, ME	0	24	24	18	3	11	12	8	19,290	142
21. Long Pond near Mount Vernon, ME	0	29	12	19	4	13	14	8	26,075	81
22. North Pond, ME	0	24	19	21	4	11	12	9	5,157	69
23. Wyman Lake, ME	0	9	3	9	9	19	21	30	828,608	122
24. Lake Auburn, ME	0	27	19	24	3	10	11	6	4,785	97
25. Webb Lake, ME	0	22	5	11	7	17	20	17	28,911	148
26. Moxie Pond, ME	0	8	3	11	9	21	23	25	22,355	107
27. Wood Pond, ME	0	2	3	8	9	19	22	38	173,800	194
28. Fish Pond, ME	0	2	3	10	9	19	22	35	13,366	107
29. Sabattus Pond, ME	0	28	23	27	2	7	8	4	16,287	200
30. East Pond, ME	0	21	26	26	3	8	9	7	5,101	148
31. Kennebago Lake, ME	0	2	3	8	11	21	24	31	16,271	162
32. Maranacook Lake, ME	0	35	17	21	3	9	10	6	14,474	173
33. Embden Pond, ME	0	21	3	11	7	18	21	19	3,981	66
34. Parker Pond, ME	0	18	12	21	5	16	18	10	2,481	63
35. Wesserunsett Lake, ME	0	34	20	20	3	8	9	7	4,420	95
36. Annabessacook Lake, ME	0	35	16	23	3	9	10	5	39,408	183
37. Indian Pond near St. Albans, ME	0	28	23	22	3	8	9	8	17,250	219
38. Moosehead Lake, ME	0	10	3	8	9	18	21	33	356,410	108

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

9. Nutrient source shares and loads delivered from the watershed to Kennebec/Androscoggin River Estuary and to major lakes in the watershed

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Kennebec/Androscoggin River Estuary, ME	28	16	9	5	42	401,760	16.2
Major lakes							
1. Flagstaff Lake, ME	0	13	0	1	86	10,314	7.7
2. Mooselookmeguntic Lake, ME	0	8	0	0	92	2,773	2.8
3. Brassua Lake, ME	0	5	0	0	94	9,963	5.4
4. Great Pond, ME	0	27	12	7	54	512	2.4
5. Lower Richardson Lake, ME	0	7	0	0	93	2,904	2.4
6. Umbagog Lake, NH	0	9	0	0	91	17,715	6.6
7. Aziscohos Lake, ME	0	3	0	0	97	1,995	3.6
8. Rangeley Lake, ME	0	19	0	1	80	736	2.9
9. Cobbosseecontee Lake, ME	0	26	18	13	43	1,627	4.8
10. Androscoggin Lake, ME	0	24	7	6	63	572	2.8
11. Sebasticook Lake, ME	0	17	40	8	35	6,328	13.2
12. Thompson Lake, ME	0	15	16	3	66	510	4.2
13. Great Moose Lake, ME	0	16	16	5	63	5,581	9.1
14. China Lake, ME	0	28	14	13	46	285	3.2
15. Indian Pond near Somerset Junction, ME	0	5	0	0	95	13,314	3.7
16. Messalonskee Lake, ME	0	21	10	9	60	2,098	4.5
17. First Roach Pond, ME	0	3	0	0	97	703	3.8
18. Long Pond near Mackamp, ME	0	5	0	0	95	8,595	5.9
19. Attean Pond, ME	0	1	0	0	99	4,632	6.5
20. Unity Pond, ME	0	19	21	8	52	655	4.8
21. Long Pond near Mount Vernon, ME	0	18	8	6	68	1,160	3.6
22. North Pond, ME	0	17	17	10	55	269	3.6
23. Wyman Lake, ME	0	7	0	1	92	35,519	5.2
24. Lake Auburn, ME	0	21	23	7	49	125	2.5
25. Webb Lake, ME	0	14	2	2	82	796	4.1
26. Moxie Pond, ME	0	4	0	1	95	1,128	5.4
27. Wood Pond, ME	0	1	0	0	99	5,429	6.1
28. Fish Pond, ME	0	1	0	1	98	335	2.7
29. Sabattus Pond, ME	0	23	33	10	34	689	8.5
30. East Pond, ME	0	13	24	14	50	350	10.1
31. Kennebago Lake, ME	0	1	0	0	99	475	4.7
32. Maranacook Lake, ME	0	30	11	11	48	349	4.2
33. Embden Pond, ME	0	10	0	1	89	145	2.4
34. Parker Pond, ME	0	13	7	6	74	52	1.3
35. Wesserunsett Lake, ME	0	25	19	11	45	87	1.9
36. Annabessacook Lake, ME	0	32	11	11	47	1,097	5.1
37. Indian Pond near St. Albans, ME	0	19	23	12	47	841	10.7
38. Moosehead Lake, ME	0	5	0	0	95	11,621	3.5

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.

[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.

[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

9. Estuary and lake characteristics: Kennebec/Androscoggin River Estuary and major lakes in the watershed

	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		Overall Eutrophic Condition[h]
				TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	
Estuaries and other coastal waterbodies											
Kennebec/Androscoggin River Estuary, ME	5,358	148	33	15,905	632	0.14	0.01	25	NA	NA	Moderate
Major lakes											
1. Flagstaff Lake, ME	1,341	71	28	7,013,848	411,444	0.27	0.02	17	70,730	4,482	NA
2. Mooselookmeguntic Lake, ME	1,002	66	32	6,806,935	142,440	0.28	0.01	48	71,646	1,667	NA
3. Brassua Lake, ME	1,857	39	11	3,938,428	128,582	0.28	0.01	31	43,169	1,807	NA
4. Great Pond, ME	217	34	88	2,580,534	122,222	0.21	0.01	21	17,233	874	NA
5. Lower Richardson Lake, ME	1,233	31	12	2,200,300	44,977	0.19	0.00	49	29,506	731	NA
6. Umbagog Lake, NH	2,684	30	6	2,474,834	105,874	0.22	0.01	23	22,842	1,528	NA
7. Aziscohos Lake, ME	551	26	23	3,965,429	68,089	0.42	0.01	58	50,341	993	NA
8. Rangeley Lake, ME	258	25	47	2,607,654	67,604	0.29	0.01	39	24,587	695	NA
9. Cobbosseecontee Lake, ME	337	21	35	2,874,903	99,818	0.38	0.01	29	30,971	1,255	NA
10. Androscoggin Lake, ME	204	19	52	1,647,312	56,577	0.23	0.01	29	13,048	513	NA
11. Sebasticook Lake, ME	480	19	22	3,839,029	198,186	0.56	0.03	19	45,223	2,711	NA
12. Thompson Lake, ME	123	17	78	1,889,512	65,852	0.30	0.01	29	11,389	329	NA
13. Great Moose Lake, ME	615	17	15	1,983,724	102,835	0.32	0.02	19	21,016	1,152	NA
14. China Lake, ME	89	16	97	3,034,005	96,610	0.54	0.02	31	19,913	708	NA
15. Indian Pond near Somerset Junction, ME	3,587	15	2	858,947	30,434	0.16	0.01	28	12,395	643	NA
16. Messalonskee Lake, ME	465	15	18	1,133,139	49,132	0.21	0.01	23	14,649	694	NA
17. First Roach Pond, ME	183	13	37	1,205,182	45,702	0.25	0.01	26	12,835	517	NA
18. Long Pond near Mackamp, ME	1,446	12	4	1,295,103	39,044	0.30	0.01	33	18,730	684	NA
19. Attean Pond, ME	718	11	8	1,247,410	39,770	0.32	0.01	31	11,635	448	NA
20. Unity Pond, ME	136	10	42	1,438,922	53,916	0.38	0.01	27	14,602	615	NA
21. Long Pond near Mount Vernon, ME	322	10	18	616,847	26,252	0.16	0.01	23	8,567	314	NA
22. North Pond, ME	75	10	76	960,136	55,043	0.26	0.01	17	7,438	454	NA
23. Wyman Lake, ME	6,808	9	1	610,775	26,219	0.18	0.01	23	10,056	485	NA
24. Lake Auburn, ME	50	9	102	1,272,036	37,221	0.38	0.01	34	7,739	241	NA
25. Webb Lake, ME	196	9	25	997,620	29,656	0.31	0.01	34	11,321	400	NA
26. Moxie Pond, ME	209	9	22	660,151	34,020	0.21	0.01	19	8,290	452	NA
27. Wood Pond, ME	895	8	5	887,565	28,028	0.30	0.01	32	12,065	441	NA
28. Fish Pond, ME	125	8	34	726,912	20,427	0.24	0.01	36	7,941	264	NA
29. Sabattus Pond, ME	82	8	54	1,622,227	74,732	0.56	0.03	22	13,928	703	NA
30. East Pond, ME	34	7	117	889,205	59,670	0.34	0.02	15	2,490	159	NA
31. Kennebago Lake, ME	101	7	34	777,629	22,632	0.30	0.01	34	6,417	186	NA
32. Maranacook Lake, ME	84	7	47	1,239,359	32,606	0.49	0.01	38	12,128	351	NA
33. Embden Pond, ME	60	6	59	453,031	18,190	0.20	0.01	25	3,738	165	NA
34. Parker Pond, ME	39	6	86	537,644	12,765	0.24	0.01	42	3,805	97	NA
35. Wesserunsett Lake, ME	46	6	68	619,794	13,429	0.30	0.01	46	4,755	112	NA
36. Annabessacook Lake, ME	215	6	14	686,566	19,798	0.34	0.01	35	8,211	276	NA
37. Indian Pond near St. Albans, ME	79	5	37	1,015,190	58,949	0.53	0.03	17	10,218	754	NA
38. Moosehead Lake, ME	3,292	302	48	24,757,701	926,229	0.22	0.01	27	162,203	7,782	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

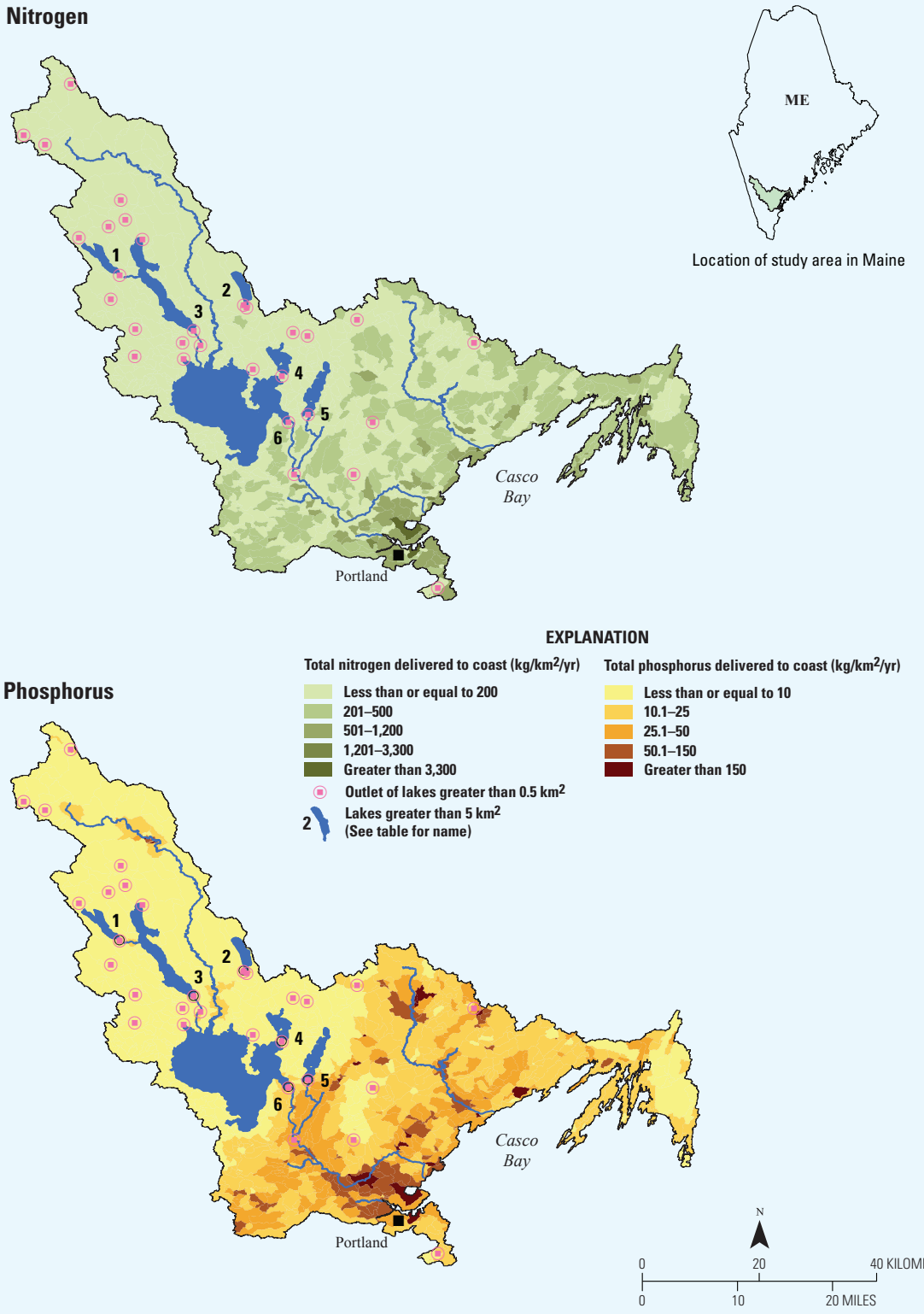
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

10. Contributing watersheds and nutrient yield for Casco Bay
(Presumpscot and Royal River Basins)



10. Nutrient source shares and loads delivered from the watershed to Casco Bay and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]									
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies										
Casco Bay, ME	47	27	6	5	2	5	6	3	1,174,685	460
Major lakes										
1. Highland Lake, ME	0	36	8	9	5	14	18	10	5,512	107
2. Pleasant Lake, ME	0	37	10	9	5	13	17	9	2,315	91
3. Long Lake, ME	0	40	10	10	5	12	15	8	34,412	115
4. Panther Pond, ME	0	41	6	9	5	14	18	8	3,809	100
5. Little Sebago Lake, ME	0	36	5	10	5	15	20	9	7,144	81
6. Sebago Lake, ME	0	35	10	10	5	14	17	9	101,904	92

Total phosphorus	Source shares, in percent[a]						
	Wastewater[b]	Urban land	Fertilizer	Manure	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies							
Casco Bay, ME	56	18	7	2	17	87,989	34.4
Major lakes							
1. Highland Lake, ME	0	20	5	1	74	156	3.0
2. Pleasant Lake, ME	0	25	7	2	66	70	2.8
3. Long Lake, ME	0	25	7	2	65	1,169	3.9
4. Panther Pond, ME	0	27	4	2	67	133	3.5
5. Little Sebago Lake, ME	0	24	2	1	74	262	3.0
6. Sebago Lake, ME	0	21	8	2	69	4,374	4.0

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

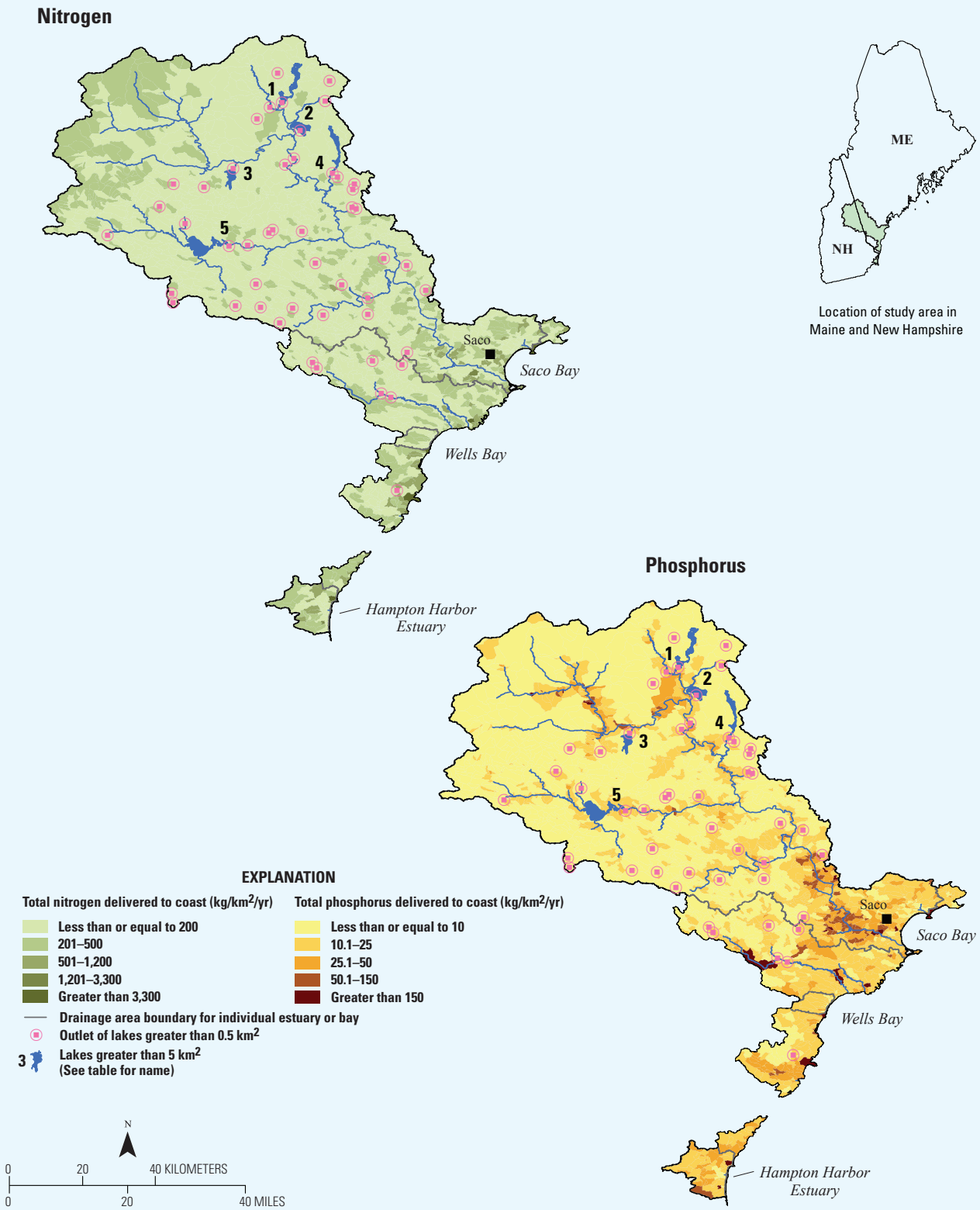
10. Estuary and lake characteristics: Casco Bay and major lakes in the watershed

				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Casco Bay, ME	2,555	427	10	11,747	880	0.69	0.05	13	NA	NA	Unknown
Major lakes											
1. Highland Lake, ME	52	5	56	585,771	18,040	0.30	0.01	32	4,934	166	NA
2. Pleasant Lake, ME	25	5	115	677,414	22,116	0.35	0.01	31	3,600	123	NA
3. Long Lake, ME	300	21	38	2,301,653	84,989	0.30	0.01	27	25,486	1,043	NA
4. Panther Pond, ME	38	6	83	760,758	29,528	0.36	0.01	26	5,380	223	NA
5. Little Sebago Lake, ME	88	8	50	696,831	28,927	0.24	0.01	24	6,815	317	NA
6. Sebago Lake, ME	1,105	123	60	10,314,128	464,668	0.23	0.01	22	69,321	3,340	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.
[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).
[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

11, 12, and 14. Contributing watersheds and nutrient yield for Saco and Wells Bays and Hampton Harbor Estuary

(Saco, Scarborough, Mousam, and Hampton River Basins)



11, 12, and 14. Nutrient source shares and loads delivered from the watershed to Saco and Wells Bays and Hampton Harbor Estuary and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Saco Bay, ME	10	27	11	8	6	13	16	8	1,102,075	241
Wells Bay, ME	0	57	7	4	4	11	12	5	10,552	301
Hampton Harbor Estuary, NH	51	32	2	2	2	4	5	2	101,110	868
Major lakes										
1. Kezar Lake, ME	0	23	8	10	8	17	21	14	13,425	93
2. Kezar Pond, ME	0	27	12	10	6	15	20	10	3,834	91
3. Conway Lake, NH	0	28	10	9	7	16	20	11	6,508	110
4. Moose Pond, ME	0	39	11	9	5	12	16	8	10,797	154
5. Ossipee Lake, NH	0	23	9	9	8	18	22	11	151,871	178

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Saco Bay, ME	19	20	11	2	47	64,861	14.2
Wells Bay, ME	0	50	5	1	44	503	14.3
Hampton Harbor Estuary, NH	71	18	1	1	9	9,344	80.2
Major lakes							
1. Kezar Lake, ME	0	11	4	1	85	713	5.0
2. Kezar Pond, ME	0	13	7	1	79	162	3.8
3. Conway Lake, NH	0	16	1	1	82	248	4.2
4. Moose Pond, ME	0	23	9	2	66	343	4.9
5. Ossipee Lake, NH	0	19	1	1	79	6,185	7.2

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.

[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.

[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

11, 12, and 14. Estuary and lake characteristics: Saco and Wells Bays and Hampton Harbor Estuary and major lakes in the watershed

				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Saco Bay, ME	4,576	49	7	7,715	454	0.29	0.02	17	NA	NA	Unknown
Wells Bay, ME	35	1	0	0	0	0.52	0.02	21	NA	NA	Low
Hampton Harbor Estuary, NH	116	3	0	0	0	1.60	0.15	11	NA	NA	Moderate
Major lakes											
1. Kezar Lake, ME	144	11	32	651,036	37,053	0.17	0.01	18	7,133	457	NA
2. Kezar Pond, ME	42	8	77	489,392	22,790	0.18	0.01	21	2,497	133	NA
3. Conway Lake, NH	59	5	38	424,886	17,427	0.22	0.01	24	4,637	209	NA
4. Moose Pond, ME	70	7	42	742,024	25,627	0.30	0.01	29	6,891	268	NA
5. Ossipee Lake, NH	855	16	8	1,361,124	56,803	0.23	0.01	24	15,709	809	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

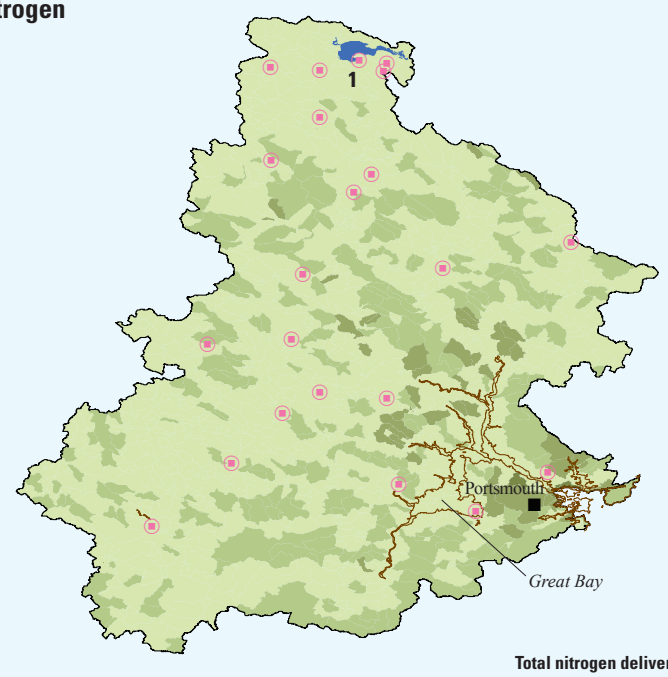
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

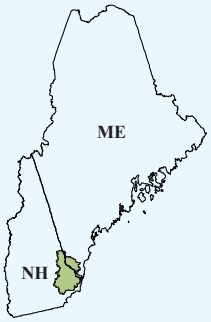
[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

13. Contributing watersheds and nutrient yield for Great Bay
(Piscataqua River Basin)

Nitrogen





Location of study area in Maine and New Hampshire

EXPLANATION

Total nitrogen delivered to coast (kg/km^2/yr)

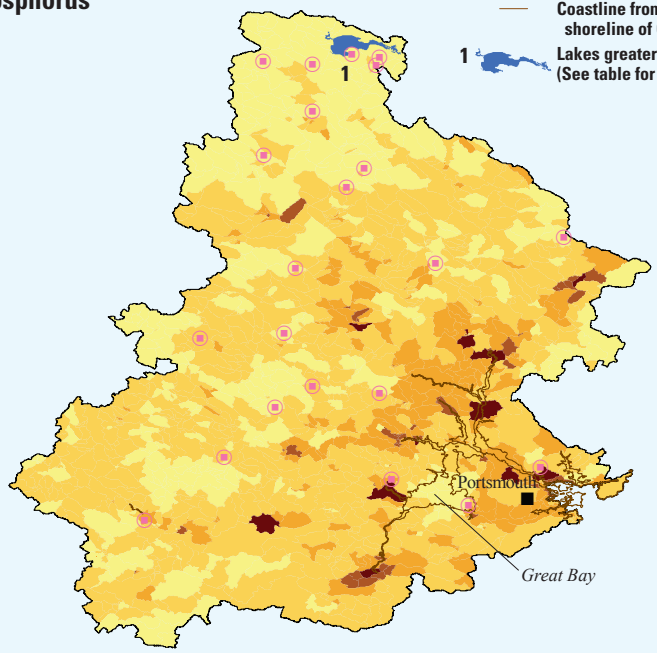
- Less than or equal to 200
- 201–500
- 501–1,200
- 1,201–3,300
- Greater than 3,300

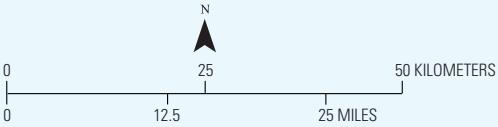
Total phosphorus delivered to coast (kg/km^2/yr)

- Less than or equal to 10
- 10.1–25
- 25.1–50
- 50.1–150
- Greater than 150

- Outlet of lakes greater than 0.5 km^2
- Coastline from National Hydrography Dataset showing shoreline of Great Bay
- 1 Lakes greater than 5 km^2 (See table for name)

Phosphorus





13. Nutrient source shares and loads delivered from the watershed to Great Bay and Great East Lake

Total nitrogen	Source shares, in percent[a]									
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies										
Great Bay, NH-ME	28	33	11	5	3	8	9	3	1,062,130	403
Major lakes										
1. Great East Lake, ME	0	38	12	7	5	14	17	7	3,229	79

Total phosphorus	Source shares, in percent[a]						
	Wastewater[b]	Urban land	Fertilizer	Manure	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies							
Great Bay, NH-ME	43	23	5	2	27	74,022	28.1
Major lakes							
1. Great East Lake, ME	0	29	2	2	66	96	2.3

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

13. Estuary and lake characteristics: Great Bay and Great East Lake

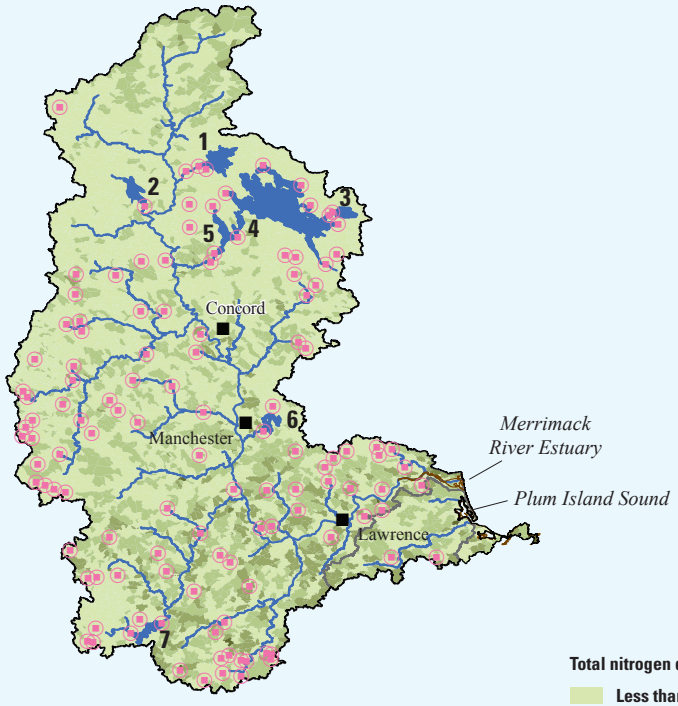
				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Great Bay, NH-ME	2,638	47	1	1,062	74	0.76	0.05	14	NA	NA	Moderate
Major lakes											
1. Great East Lake, ME	41	7	123	1,060,106	32,190	0.40	0.01	33	5,382	165	NA

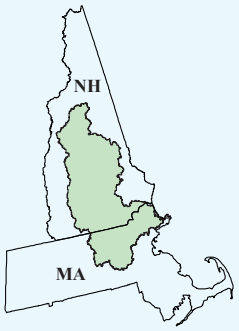
[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.
[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).
[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

15 and 16. Contributing watersheds and nutrient yield for Merrimack River Estuary and Plum Island Sound

(Merrimack River Basin and adjacent drainages)

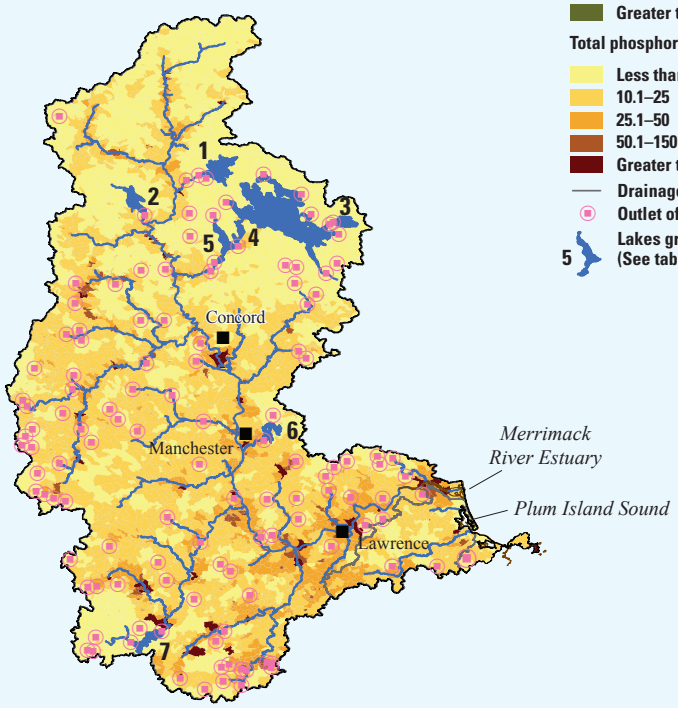
Nitrogen





Location of study area in New Hampshire and Massachusetts

Phosphorus



EXPLANATION

Total nitrogen delivered to coast (kg/km^2/yr)

- Less than or equal to 200
- 201–500
- 501–1,200
- 1,201–3,300
- Greater than 3,300

Total phosphorus delivered to coast (kg/km^2/yr)

- Less than or equal to 10
- 10.1–25
- 25.1–50
- 50.1–150
- Greater than 150
- Drainage area boundary for individual estuary or bay
- Outlet of lakes greater than 0.5 km^2
- 5 Lakes greater than 5 km^2 (See table for name)

N

0 50 100 KILOMETERS

0 25 50 MILES

15 and 16. Nutrient source shares and loads delivered from the watershed to Merrimack River Estuary and Plum Island Sound and to major lakes in the watershed

Total nitrogen

	Source shares, in percent[a]									
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies										
Merrimack River Estuary, MA	46	24	7	4	2	6	8	3	7,219,363	557
Plum Island Sound, MA	5	49	15	4	3	10	11	3	287,752	459
Major lakes										
1. Squam Lake, NH	0	24	7	11	8	17	23	11	7,466	66
2. Newfound Lake, NH	0	13	10	15	8	18	25	11	32,737	132
3. Lake Wentworth, NH	0	32	12	8	6	15	18	8	7,750	89
4. Lake Winnipesaukee, NH	0	51	6	7	5	11	14	6	60,612	63
5. Winnisquam Lake, NH	0	49	7	7	5	11	14	6	77,253	70
6. Massabesic Lake, NH	0	54	6	5	4	11	14	4	17,970	146
7. Wachusett Reservoir, MA	0	31	19	9	5	14	18	4	90,419	284

Total phosphorus

	Source shares, in percent[a]						
	Wastewater[b]	Urban land	Fertilizer	Manure	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies							
Merrimack River Estuary, MA	63	15	2	1	19	481,430	37.2
Plum Island Sound, MA	13	50	9	3	26	12,681	20.2
Major lakes							
1. Squam Lake, NH	0	15	1	2	82	225	2.0
2. Newfound Lake, NH	0	8	2	4	86	1,510	6.1
3. Lake Wentworth, NH	0	22	2	2	74	273	3.1
4. Lake Winnipesaukee, NH	0	40	1	2	57	1,828	1.9
5. Winnisquam Lake, NH	0	38	1	3	59	2,369	2.1
6. Massabesic Lake, NH	0	45	2	2	51	881	7.1
7. Wachusett Reservoir, MA	0	29	8	5	58	3,010	9.5

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

15 and 16. Estuary and lake characteristics: Merrimack River Estuary and Plum Island Sound and major lakes in the watershed

				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Merrimack River Estuary, MA	12,950	16	1	7,219	481	0.92	0.06	15	NA	NA	Unknown
Plum Island Sound, MA	626	15	0	NA	NA	0.73	0.03	23	NA	NA	Moderate High
Major lakes											
1. Squam Lake, NH	114	27	114	2,377,297	72,804	0.24	0.01	33	13,370	413	NA
2. Newfound Lake, NH	248	17	33	1,652,195	80,560	0.26	0.01	21	17,043	917	NA
3. Lake Wentworth, NH	87	12	91	1,690,094	66,158	0.38	0.01	26	10,768	452	NA
4. Lake Winnipesaukee, NH	962	186	126	22,649,105	778,283	0.33	0.01	29	119,646	4,366	NA
5. Winnisquam Lake, NH	1,102	17	10	905,093	29,282	0.15	0.00	31	14,443	598	NA
6. Massabesic Lake, NH	123	10	53	1,820,296	100,348	0.49	0.03	18	16,072	996	NA
7. Wachusett Reservoir, MA	319	15	30	4,100,383	144,653	0.74	0.03	28	44,804	1,760	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

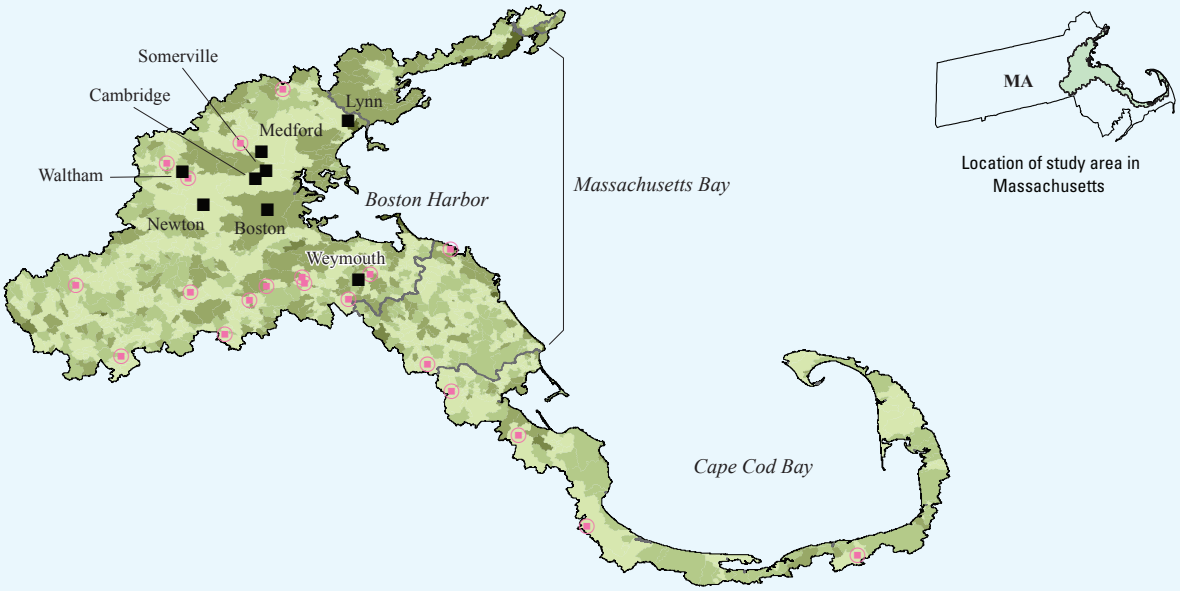
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

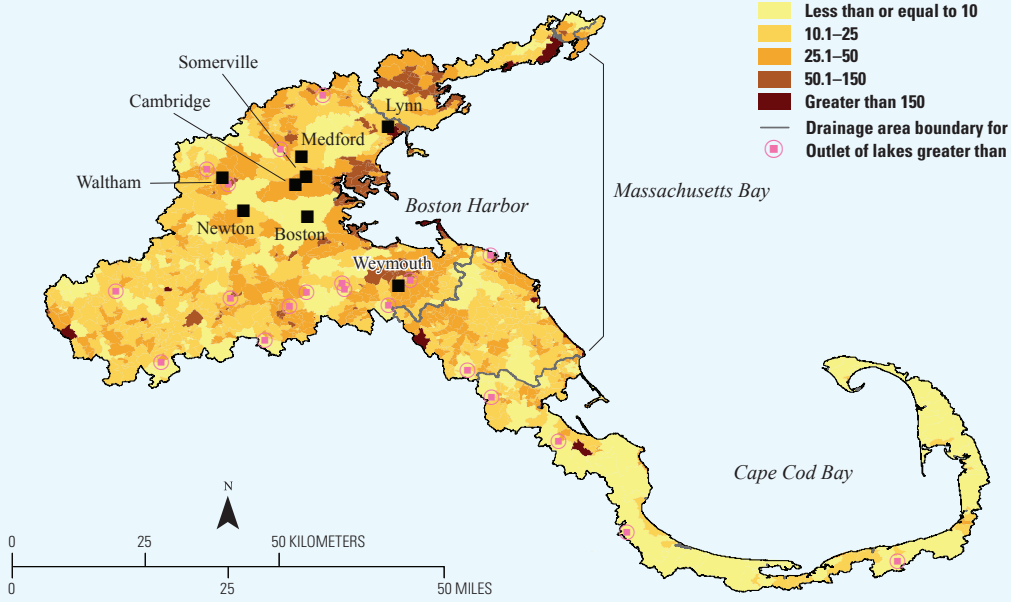
[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

17–19. Contributing watersheds and nutrient yield for Massachusetts Bay, Boston Harbor, and Cape Cod Bay
(Charles, Neponset, and North River Basins)

Nitrogen



Phosphorus



EXPLANATION

Total nitrogen delivered to coast (kg/km^2/yr)

- Less than or equal to 200
- 201–500
- 501–1,200
- 1,201–3,300
- Greater than 3,300

Total phosphorus delivered to coast (kg/km^2/yr)

- Less than or equal to 10
- 10.1–25
- 25.1–50
- 50.1–150
- Greater than 150
- Drainage area boundary for individual estuary or bay
- Outlet of lakes greater than 0.5 km^2

17–19. Nutrient source shares and loads delivered from the watershed to Massachusetts Bay, Boston Harbor, and Cape Cod Bay

Total nitrogen	Source shares, in percent[a]									
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies										
Massachusetts Bay, MA - drainage from areas other than Boston Harbor	69	22	1	1	1	3	3	1	991,256	1,746
Boston Harbor, MA	39	45	2	1	1	5	6	1	1,765,084	1,031
Total from all tributaries to Massachusetts Bay[d]	49	37	2	1	1	4	5	1	2,761,832	1,207
Cape Cod Bay, MA	13	57	6	2	3	8	8	2	217,357	355

Total phosphorus	Source shares, in percent[a]						
	Wastewater[b]	Urban land	Fertilizer	Manure	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies							
Massachusetts Bay, MA - drainage from areas other than Boston Harbor	83	12	1	0	4	77,210	136.0
Boston Harbor, MA	64	28	1	0	7	102,418	59.8
Total from all tributaries to Massachusetts Bay[d]	72	21	1	0	5	179,837	78.6
Cape Cod Bay, MA	42	37	8	1	12	7,494	12.2

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.
[d] Estimates do not include discharge from Deer Island Wastewater Treatment Plant.

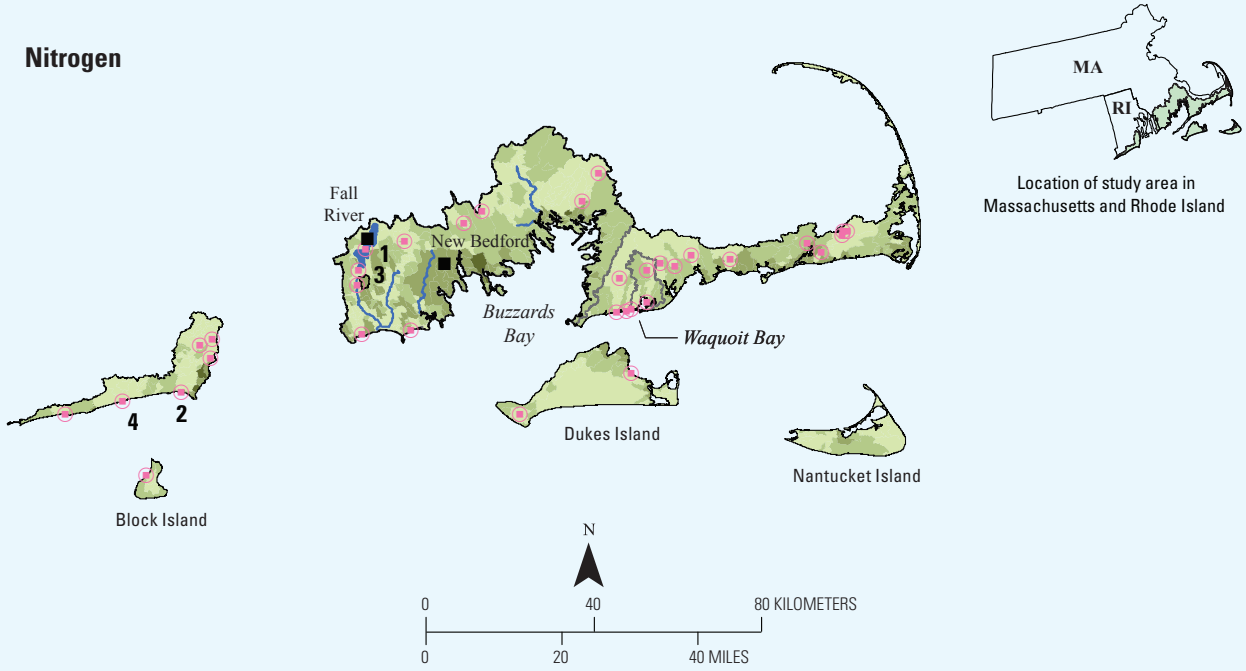
17–19. Estuary and lake characteristics: Massachusetts Bay, Boston Harbor, and Cape Cod Bay

				Load from watershed per hydraulic flushing rate of receiving waterbody[e]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[f]		
	Contributing watershed area, km²[g]	Surface area, km²	Residence time, d or d/m[h]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[i]
Estuaries and other coastal waterbodies											
Massachusetts Bay, MA - drainage from areas other than Boston Harbor	568	768	60	59,475	4,633	2.77	0.22	13	NA	NA	Moderate
Boston Harbor, MA	1,712	186	2	3,530	205	1.80	0.10	17	NA	NA	Low
Total from all tributaries to Massachusetts Bay[j]	2,287	NA	NA	NA	NA	2.05	0.13	15	NA	NA	Moderate
Cape Cod Bay, MA	613	1439	34	7,390	255	0.76	0.03	29	NA	NA	Moderate

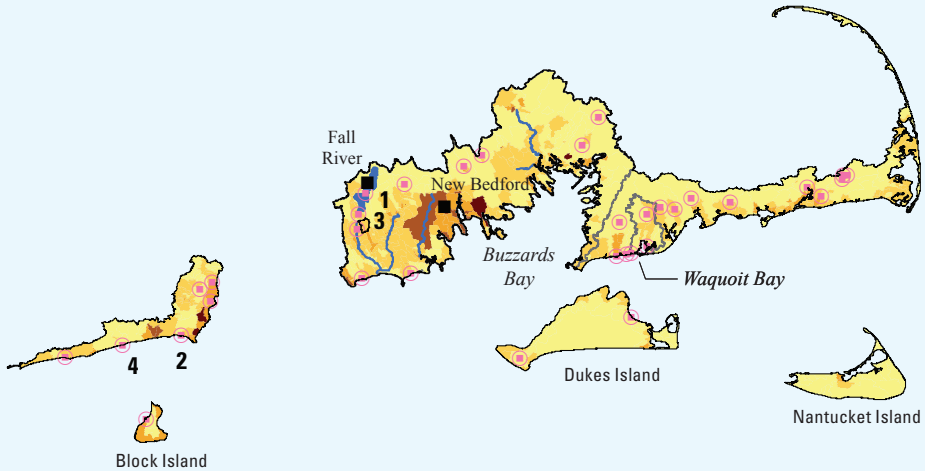
[e] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.
[f] Estimated for lakes and reservoirs only (estuary assimilation not assessed).
[g] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.
[h] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).
[i] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).
[j] Estimates do not include discharge from Deer Island Wastewater Treatment Plant.

20 and 21. Contributing watersheds and nutrient yield for Waquoit and Buzzards Bays and for the Rhode Island coast west of Narragansett Bay (Acushnet, Westport, and Weweantic River Basins)

Nitrogen



Phosphorus



EXPLANATION

Total nitrogen delivered to coast (kg/km^2/yr)	Total phosphorus delivered to coast (kg/km^2/yr)
Less than or equal to 200	Less than or equal to 10
201–500	10.1–25
501–1,200	25.1–50
1,201–3,300	50.1–150
Greater than 3,300	Greater than 150

Drainage area boundary for individual estuary or bay

Outlet of lakes greater than 0.5 km^2

3 Lakes greater than 5 km^2 (See table for name)

20 and 21. Nutrient source shares and loads delivered from the watershed to Waquoit and Buzzards Bays and Rhode Island coast west of Narragansett Bay and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]									
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies										
Waquoit Bay, MA	0	73	3	2	3	8	8	2	14,791	262
Buzzards Bay, MA	37	29	14	4	2	6	6	1	772,072	642
Major lakes										
1. Watuppa Pond, MA	0	56	6	4	5	13	13	3	3,988	136
2. Point Judith Pond, RI	0	56	20	4	3	7	8	2	15,307	231
3. South Watuppa Pond, MA	0	62	8	4	4	10	10	2	15,230	226
4. Ninigret Pond, RI	0	52	16	4	4	10	11	2	4,861	109

Total phosphorus	Source shares, in percent[a]						
	Wastewater[b]	Urban land	Fertilizer	Manure	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies							
Waquoit Bay, MA	0	77	7	0	15	484	8.6
Buzzards Bay, MA	71	16	7	2	5	42,275	35.1
Major lakes							
1. Watuppa Pond, MA	0	69	4	2	25	90	3.1
2. Point Judith Pond, RI	0	43	21	2	33	698	10.5
3. South Watuppa Pond, MA	0	75	6	2	16	416	6.2
4. Ninigret Pond, RI	0	41	12	1	45	176	3.9

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

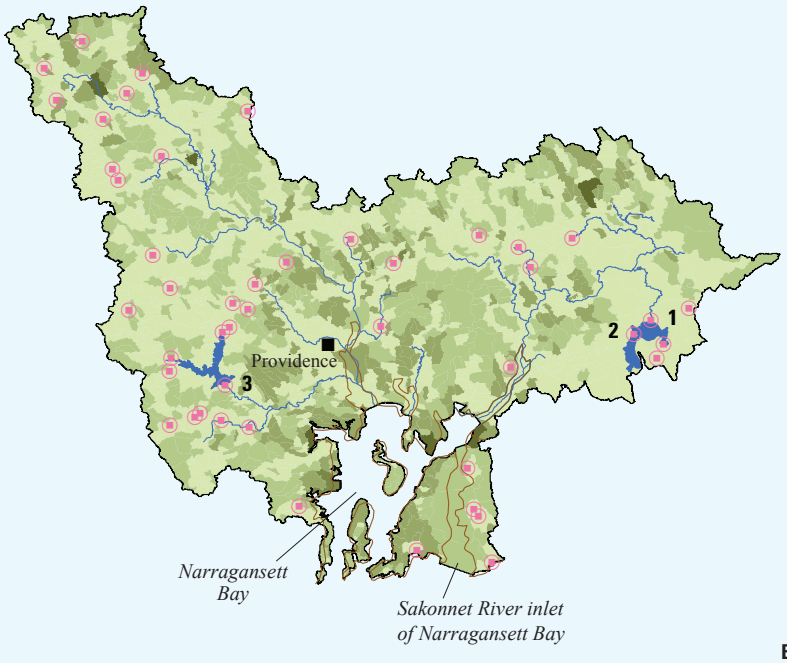
20 and 21. Estuary and lake characteristics: Waquoit and Buzzards Bays and major lakes in the watershed

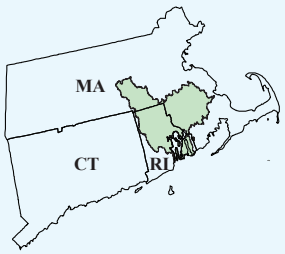
				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Waquoit Bay, MA	56	5	4	59	2	0.36	0.01	31	NA	NA	Moderate
Buzzards Bay, MA	1,203	639	42	32,427	1,776	1.11	0.06	18	NA	NA	Moderate
Major lakes											
1. Watuppa Pond, MA	29	7	135	1,630,614	40,473	0.66	0.02	40	8,074	209	NA
2. Point Judith Pond, RI	66	6	50	1,459,685	76,619	0.66	0.03	19	14,006	840	NA
3. South Watuppa Pond, MA	67	6	51	1,454,824	43,904	0.68	0.02	33	13,517	451	NA
4. Ninigret Pond, RI	45	8	97	1,231,797	47,915	0.42	0.02	26	7,829	318	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.
[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).
[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

22. Contributing watersheds and nutrient yield for Narragansett Bay
(Providence and Taunton River Basins)

Nitrogen





Location of study area in Massachusetts, Connecticut, and Rhode Island

EXPLANATION

Total nitrogen delivered to coast (kg/km²/yr)

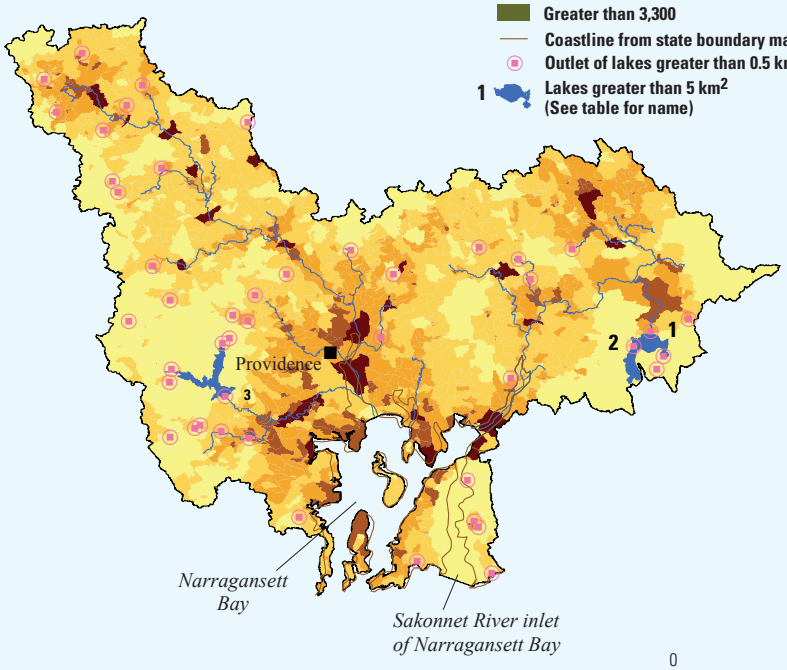
- Less than or equal to 200
- 201–500
- 501–1,200
- 1,201–3,300
- Greater than 3,300

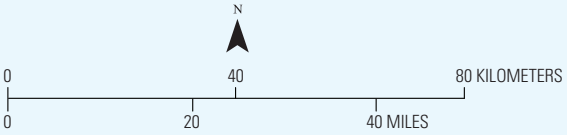
Total phosphorus delivered to coast (kg/km²/yr)

- Less than or equal to 10
- 10.1–25
- 25.1–50
- 50.1–150
- Greater than 150

- Coastline from state boundary map
- Outlet of lakes greater than 0.5 km²
- 1 Lakes greater than 5 km² (See table for name)

Phosphorus





22. Nutrient source shares and loads delivered from the watershed to Narragansett Bay and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]									
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies										
Narragansett Bay, RI	68	18	4	2	1	3	3	1	6,486,012	1,464
Major lakes										
1. Assawompset Pond, MA	0	34	19	6	6	15	16	3	10,896	86
2. Long Pond, MA	0	40	16	6	6	14	15	3	8,200	136
3. Scituate Reservoir, RI	0	32	6	10	7	18	22	4	45,759	186

Total phosphorus	Source shares, in percent[a]						
	Wastewater[b]	Urban land	Fertilizer	Manure	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies							
Narragansett Bay, RI	84	10	2	1	4	510,678	115.3
Major lakes							
1. Assawompset Pond, MA	0	33	30	3	34	288	2.3
2. Long Pond, MA	0	46	17	4	33	158	2.6
3. Scituate Reservoir, RI	0	30	5	4	61	1,500	6.1

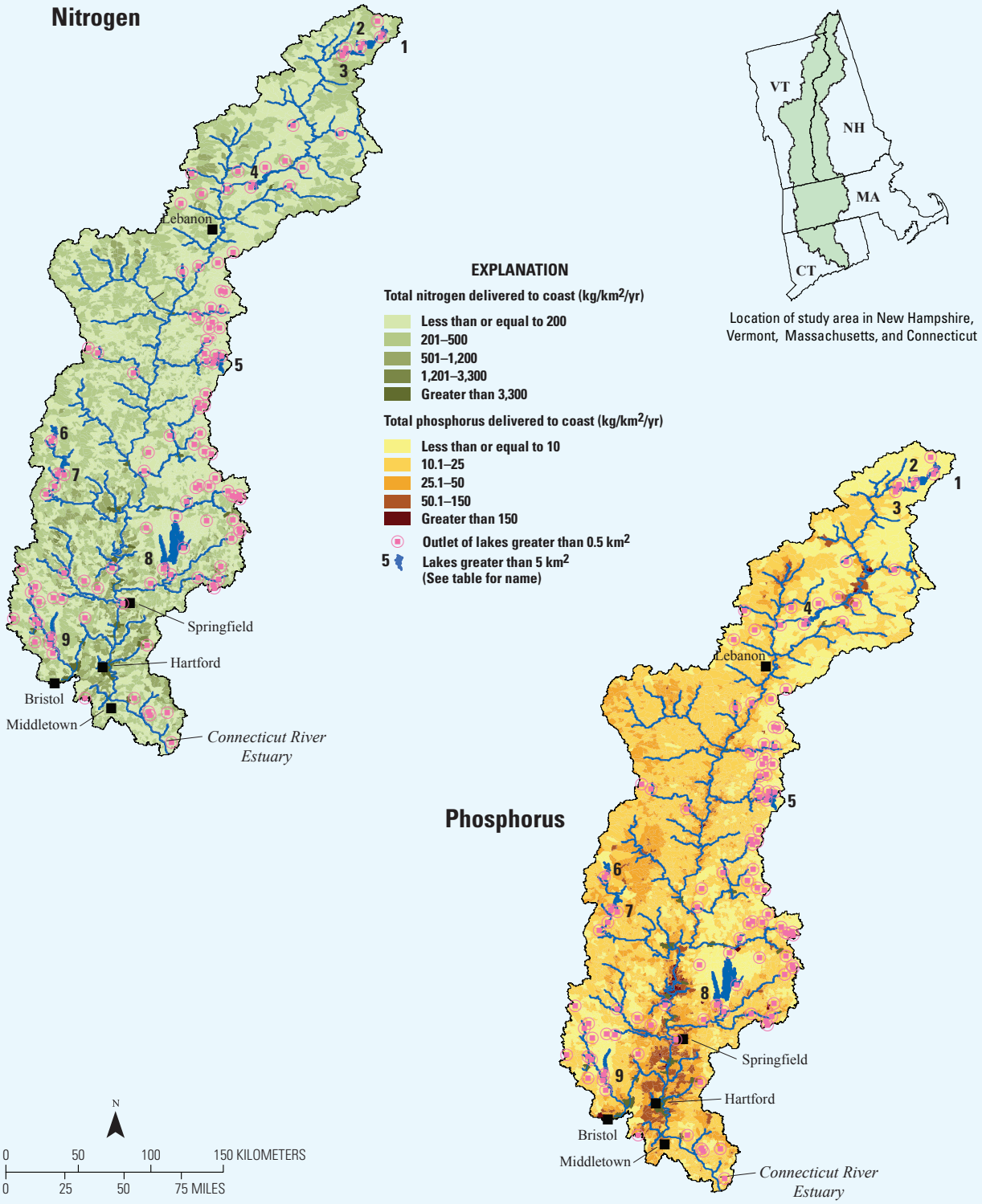
[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

22. Estuary and lake characteristics: Narragansett Bay and major lakes in the watershed

				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Narragansett Bay, RI	4,429	416	24	155,664	12,256	2.37	0.19	13	NA	NA	Unknown
Major lakes											
1. Assawompset Pond, MA	127	11	48	907,925	26,588	0.24	0.01	34	7,919	263	NA
2. Long Pond, MA	60	7	68	1,249,920	26,884	0.49	0.01	46	10,159	237	NA
3. Scituate Reservoir, RI	246	13	31	2,256,718	79,507	0.47	0.02	28	25,889	1,025	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.
[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).
[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

23. Contributing watersheds and nutrient yield for Connecticut River Estuary
(Connecticut River Basin)



23. Nutrient source shares and loads delivered from the watershed to Connecticut River Estuary and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Connecticut River Estuary, CT	31	19	15	9	4	8	10	5	14,638,096	502
Total from all tributaries to Long Island Sound, including Connecticut River	56	15	10	5	2	5	6	2	40,046,148	934
Major lakes										
1. Second Connecticut Lake, NH	0	17	3	8	9	16	18	30	40,277	338
2. First Connecticut Lake, NH	0	19	3	8	8	16	18	28	59,492	276
3. Lake Francis, NH	0	16	3	8	9	16	19	29	122,342	277
4. Moore Reservoir, NH	1	14	11	13	8	14	17	22	1,118,485	270
5. Sunapee Lake, NH	0	38	14	10	5	11	15	6	11,462	93
6. Somerset Reservoir, VT	0	2	3	12	13	26	32	12	10,407	151
7. Harriman Reservoir, VT	0	16	8	14	10	20	24	9	138,863	293
8. Quabbin Reservoir, MA	0	16	12	9	8	22	27	7	6,111	13
9. Barkhamsted Reservoir, CT	0	14	10	10	9	23	28	6	26,578	191

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Connecticut River Estuary, CT	49	13	7	3	28	1,097,373	37.6
Total from all tributaries to Long Island Sound, including Connecticut River	77	7	3	1	11	3,783,802	88.3
Major lakes							
1. Second Connecticut Lake, NH	0	14	0	0	85	722	6.1
2. First Connecticut Lake, NH	0	15	0	0	85	1,062	4.9
3. Lake Francis, NH	0	12	0	0	88	2,308	5.2
4. Moore Reservoir, NH	3	16	6	7	68	58,612	14.2
5. Sunapee Lake, NH	0	26	4	3	67	580	4.7
6. Somerset Reservoir, VT	0	2	0	0	98	696	10.1
7. Harriman Reservoir, VT	0	12	2	3	83	9,710	20.5
8. Quabbin Reservoir, MA	0	15	5	2	77	191	0.4
9. Barkhamsted Reservoir, CT	0	12	6	1	80	828	6.0

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

23. Estuary and lake characteristics: Connecticut River Estuary and major lakes in the watershed

	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		Overall Eutrophic Condition[h]
				TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	
Estuaries and other coastal waterbodies											
Connecticut River Estuary, CT	29,167	42	1	14,638	1,097	0.83	0.06	13	NA	NA	Low
Total from all tributaries to Long Island Sound, including Connecticut River	42,856	3301	56	2,242,584	211,893	1.55	0.15	11	NA	NA	High
Major lakes											
1. Second Connecticut Lake, NH	485	5	155	1,251,808	24,050	0.66	0.01	52	15,593	351	NA
2. First Connecticut Lake, NH	139	11	36	2,224,724	42,337	0.53	0.01	53	22,225	493	NA
3. Lake Francis, NH	69	8	43	1,305,013	25,343	0.45	0.01	51	18,198	421	NA
4. Moore Reservoir, NH	215	14	27	1,987,470	104,520	0.40	0.02	19	28,979	1,732	NA
5. Sunapee Lake, NH	4,137	16	2	2,609,604	147,562	0.43	0.02	18	18,335	1,105	NA
6. Somerset Reservoir, VT	119	6	22	776,600	57,587	0.35	0.03	13	7,786	653	NA
7. Harriman Reservoir, VT	442	8	9	1,315,725	94,147	0.44	0.03	14	19,218	1,602	NA
8. Quabbin Reservoir, MA	124	95	88	13,560,501	535,465	0.39	0.02	25	81,438	3,266	NA
9. Barkhamsted Reservoir, CT	475	9	8	1,647,892	56,952	0.51	0.02	29	18,870	743	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

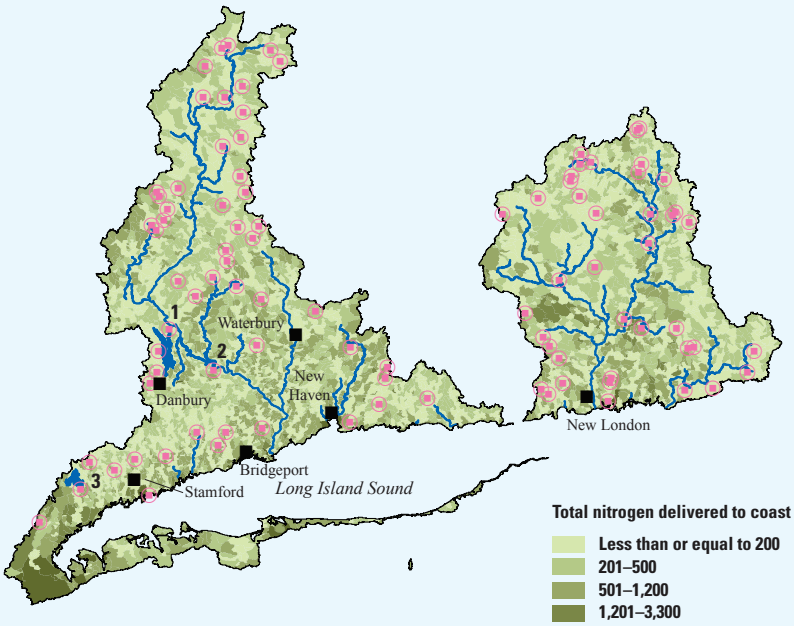
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

24. Contributing watersheds and nutrient yield for Long Island Sound
(Housatonic, Thames, Saugatuck, and Bronx River Basins)

Nitrogen





Location of study area in Connecticut, New York, Massachusetts, and Rhode Island

EXPLANATION

Total nitrogen delivered to coast (kg/km²/yr)

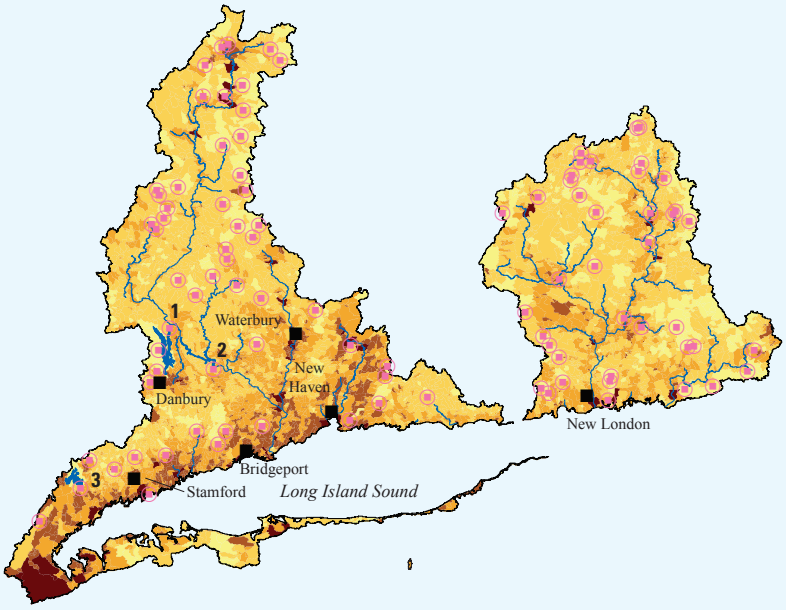
- Less than or equal to 200
- 201–500
- 501–1,200
- 1,201–3,300
- Greater than 3,300

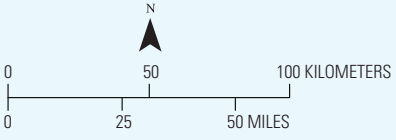
Total phosphorus delivered to coast (kg/km²/yr)

- Less than or equal to 10
- 10.1–25
- 25.1–50
- 50.1–150
- Greater than 150

- Outlet of lakes greater than 0.5 km²
- 3 Lakes greater than 5 km² (See table for name)

Phosphorus





24. Nutrient source shares and loads delivered from the watershed to Long Island Sound and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Long Island Sound, CT-NY - drainage from areas other than Connecticut River Basin	70	12	7	2	1	3	4	1	25,408,051	1,856
Total from all tributaries to Long Island Sound, including Connecticut River	56	15	10	5	2	5	6	2	40,046,148	934
Major lakes										
1. Lake Candlewood, CT	0	46	4	5	6	15	20	3	13,591	130
2. Lake Lillinonah, CT	15	21	24	9	4	11	13	3	1,819,776	505
3. Kensico Reservoir, NY	1	11	24	16	8	15	18	6	234,784	7,346

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Long Island Sound, CT-NY - drainage from areas other than Connecticut River Basin	88	5	1	1	5	2,686,429	196.2
Total from all tributaries to Long Island Sound, including Connecticut River	77	7	3	1	11	3,783,802	88.3
Major lakes							
1. Lake Candlewood, CT	0	34	1	1	64	548	5.2
2. Lake Lillinonah, CT	31	19	6	5	39	91,677	25.4
3. Kensico Reservoir, NY	3	14	8	12	62	4,505	141.0

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

24. Estuary and lake characteristics: Long Island Sound and major lakes in the watershed

				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Long Island Sound, CT-NY - drainage from areas other than Connecticut River Basin	13,689	3,259	56	1,422,851	150,440	3.13	0.33	9	NA	NA	High
Total from all tributaries to Long Island Sound, including Connecticut River	42,856	3,301	56	2,242,584	211,893	1.55	0.15	11	NA	NA	High
Major lakes											
1. Lake Candlewood, CT	105	20	119	5,312,400	245,129	0.71	0.03	22	31,183	1,518	NA
2. Lake Lillinonah, CT	3,607	7	1	2,042,179	103,163	0.86	0.04	20	31,179	1,826	NA
3. Kensico Reservoir, NY	32	9	182	137,952,957	3,016,590	43.73	0.96	46	521,670	12,036	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

25 and 26. Contributing watersheds and nutrient yield for Gardiners and Great South Bays
(Peconic and Carmans River Basins)



Location of study area in New York

Nitrogen



EXPLANATION

Total nitrogen delivered to coast (kg/km^2/yr)

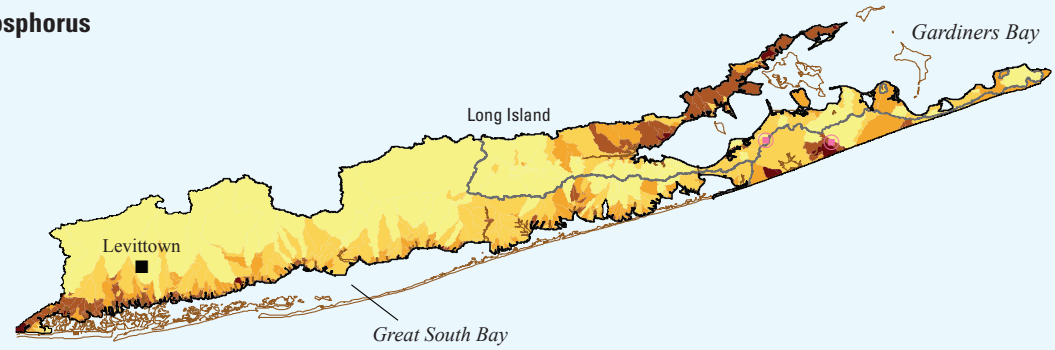
- Less than or equal to 200
- 201–500
- 501–1,200
- 1,201–3,300
- Greater than 3,300

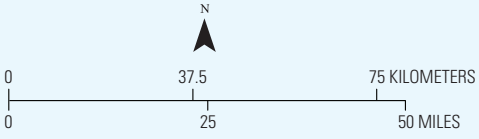
Total phosphorus delivered to coast (kg/km^2/yr)

- Less than or equal to 10
- 10.1–25
- 25.1–50
- 50.1–150
- Greater than 150

- Drainage area boundary for individual estuary or bay
- Coastline from National Hydrography Dataset showing additional details for coastal features
- Outlet of lakes greater than 0.5 km^2

Phosphorus





25 and 26. Nutrient source shares and loads delivered from the watershed to Gardiners and Great South Bays

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Gardiners Bay, NY	9	35	36	2	3	6	7	2	266,011	432
Great South Bay, NY	82	14	1	0	0	1	1	0	4,431,912	2,852

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Gardiners Bay, NY	11	21	62	0	6	18,618	30.2
Great South Bay, NY	92	6	1	0	1	266,463	171.5

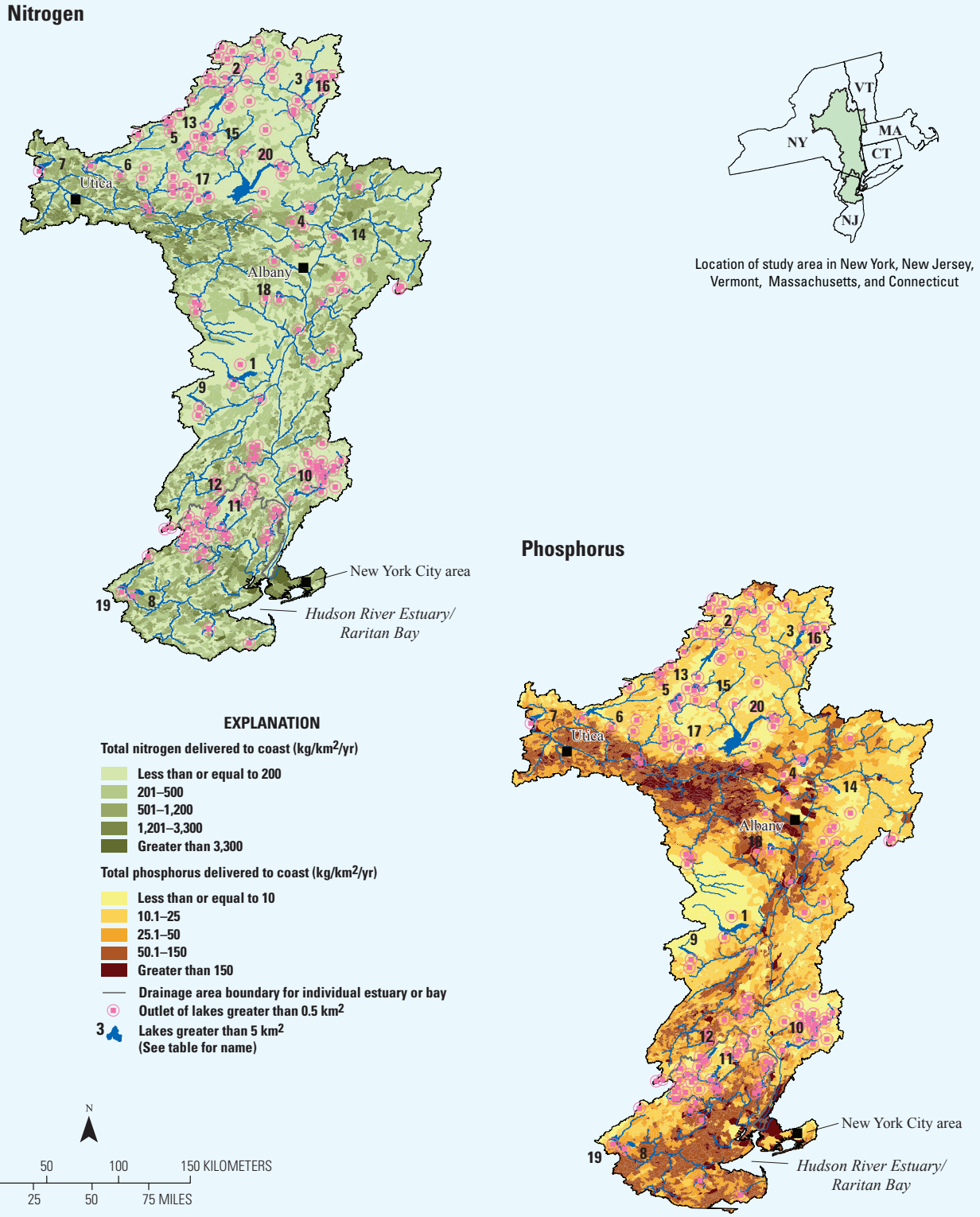
[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

25 and 26. Estuary characteristics: Gardiners and Great South Bays

				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Gardiners Bay, NY	616	512	37	9,842	689	1.45	0.10	14	NA	NA	Low
Great South Bay, NY	1,554	383	50	221,596	13,323	7.61	0.46	17	NA	NA	Moderate High

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.
[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).
[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

27 and 28. Contributing watersheds and nutrient yield for the Hudson River Estuary and Raritan Bay
(Hudson, Raritan, Passaic, and Hackensack River Basins)



27 and 28. Nutrient source shares and loads delivered from the watershed to the Hudson River Estuary and Raritan Bay and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Hudson River Estuary/Raritan Bay, NY-NJ	69	9	11	3	1	3	3	1	71,825,377	1,713
Major lakes										
1. Ashokan Reservoir, NY	0	12	16	12	10	19	23	8	327,359	495
2. Indian Lake, NY	0	11	4	10	14	22	25	14	93,266	184
3. Schroon Lake, NY	0	17	5	10	11	20	23	14	168,759	157
4. Saratoga Lake, NY	0	30	32	13	4	8	10	3	227,575	405
5. Piseco Lake, NY	0	7	4	13	14	23	26	13	42,227	211
6. Hinckley Reservoir, NY	0	4	7	15	14	22	25	14	293,259	307
7. Delta Reservoir, NY	0	2	49	19	5	8	9	7	265,189	712
8. Round Valley Reservoir, NJ	0	1	13	9	11	26	34	6	334	26
9. Rondout Reservoir, NY	2	8	28	18	8	14	17	6	542,771	2,205
10. New Croton Reservoir, NY	6	43	9	5	5	13	17	3	262,446	268
11. Wanaque Reservoir, NJ	0	23	12	6	9	20	26	5	39,322	244
12. Greenwood Lake, NJ	0	46	3	7	7	14	18	4	5,746	160
13. Sacandaga Lake, NY	0	18	4	10	13	20	23	12	8,921	170
14. Tomhannock Reservoir, NY	0	10	54	15	3	7	9	3	87,812	522
15. Lake Pleasant, NY	0	26	3	9	11	18	21	11	14,353	166
16. Brant Lake, NY	0	20	3	11	10	20	24	12	12,284	119
17. Peck Lake, NY	0	10	4	15	11	22	26	11	6,677	135
18. Alcove Reservoir, NY	0	15	34	13	6	12	15	5	22,707	269
19. Spruce Run Reservoir, NJ	0	8	48	9	6	11	15	3	32,958	306
20. Great Sacandaga Lake, NY	0	9	7	13	12	22	26	11	577,250	214

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

27 and 28. Nutrient source shares and loads delivered from the watershed to the Hudson River Estuary and Raritan Bay and to major lakes in the watershed

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Hudson River Estuary/Raritan Bay, NY-NJ	80	6	4	2	8	8,281,038	197.5
Major lakes							
1. Ashokan Reservoir, NY	0	15	5	4	75	6,903	10.4
2. Indian Lake, NY	0	4	0	0	96	5,142	10.2
3. Schroon Lake, NY	0	7	0	0	92	14,432	13.4
4. Saratoga Lake, NY	0	22	15	7	55	20,803	37.0
5. Piseco Lake, NY	0	4	0	0	96	1,379	6.9
6. Hinckley Reservoir, NY	0	3	1	1	96	15,191	15.9
7. Delta Reservoir, NY	0	4	31	19	47	8,397	22.5
8. Round Valley Reservoir, NJ	0	1	5	2	92	14	1.1
9. Rondout Reservoir, NY	4	12	9	15	60	11,566	47.0
10. New Croton Reservoir, NY	2	38	10	2	48	11,328	11.6
11. Wanaque Reservoir, NJ	0	17	4	1	78	1,938	12.0
12. Greenwood Lake, NJ	0	40	1	0	58	184	5.1
13. Sacandaga Lake, NY	0	10	0	0	90	238	4.5
14. Tomhannock Reservoir, NY	0	13	24	16	47	1,878	11.2
15. Lake Pleasant, NY	0	16	0	0	84	395	4.6
16. Brant Lake, NY	0	9	0	0	91	906	8.8
17. Peck Lake, NY	0	8	0	0	92	323	6.5
18. Alcove Reservoir, NY	0	16	14	7	63	1,854	22.0
19. Spruce Run Reservoir, NJ	0	12	28	9	51	1,251	11.6
20. Great Sacandaga Lake, NY	0	8	1	1	90	31,470	11.7

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

27 and 28. Estuary and lake characteristics: Hudson River Estuary and Raritan Bay and major lakes in the watershed

	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		Overall Eutrophic Condition[h]
				TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	
Estuaries and other coastal waterbodies											
Hudson River Estuary/Raritan Bay, NY-NJ	41,925	799	9	646,428	74,529	2.77	0.32	9	NA	NA	Moderate
Major lakes											
1. Ashokan Reservoir, NY	661	33	37	15,195,424	339,593	1.28	0.03	45	79,411	2,188	NA
2. Indian Lake, NY	506	19	22	2,885,362	163,254	0.42	0.02	18	36,361	2,192	NA
3. Schroon Lake, NY	1,074	17	9	1,796,556	159,120	0.29	0.03	11	23,093	2,560	NA
4. Saratoga Lake, NY	562	15	15	3,886,289	349,696	0.71	0.06	11	23,485	1,788	NA
5. Piseco Lake, NY	200	12	27	1,622,857	56,680	0.38	0.01	29	17,141	695	NA
6. Hinckley Reservoir, NY	954	11	6	1,847,360	97,440	0.45	0.02	19	25,075	1,599	NA
7. Delta Reservoir, NY	373	10	13	4,099,807	134,907	1.16	0.04	30	56,854	2,200	NA
8. Round Valley Reservoir, NJ	13	9	482	1,345,046	67,068	0.41	0.02	20	2,458	125	NA
9. Rondout Reservoir, NY	246	8	18	13,300,373	300,288	4.50	0.10	44	192,575	5,036	NA
10. New Croton Reservoir, NY	979	8	5	1,508,352	67,464	0.52	0.02	22	47,386	2,530	NA
11. Wanaque Reservoir, NJ	161	7	25	1,422,715	74,178	0.54	0.03	19	16,791	988	NA
12. Greenwood Lake, NJ	36	7	114	2,062,945	80,315	0.78	0.03	26	12,420	524	NA
13. Sacandaga Lake, NY	52	6	58	1,019,133	33,248	0.44	0.01	31	8,749	338	NA
14. Tomhannock Reservoir, NY	168	6	22	2,555,002	57,687	1.10	0.02	44	28,996	759	NA
15. Lake Pleasant, NY	87	6	32	687,567	21,153	0.32	0.01	33	7,320	272	NA
16. Brant Lake, NY	103	6	33	628,876	50,005	0.30	0.02	13	6,724	606	NA
17. Peck Lake, NY	49	6	56	707,961	41,123	0.34	0.02	17	6,023	415	NA
18. Alcove Reservoir, NY	84	6	49	1,931,453	171,991	0.96	0.09	11	16,343	1,623	NA
19. Spruce Run Reservoir, NJ	108	5	32	1,602,809	64,646	0.87	0.03	25	17,570	787	NA
20. Great Sacandaga Lake, NY	2,701	101	18	12,770,199	761,105	0.35	0.02	17	142,420	11,422	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

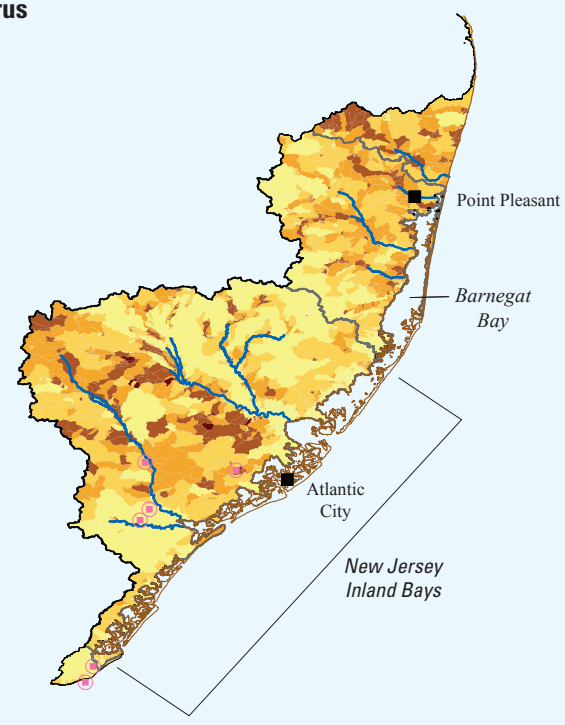
[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

29 and 30. Contributing watersheds and nutrient yield for Barnegat and New Jersey Inland Bays
(Mullica, Great Egg Harbor, and Toms River Basins)

Nitrogen



Phosphorus





Location of study area in New Jersey

EXPLANATION

Total nitrogen delivered to coast (kg/km^2/yr)

- Less than or equal to 200
- 201–500
- 501–1,200
- 1,201–3,300
- Greater than 3,300

Total phosphorus delivered to coast (kg/km^2/yr)

- Less than or equal to 10
- 10.1–25
- 25.1–50
- 50.1–150
- Greater than 150

- Drainage area boundary for individual estuary or bay
- Coastline from National Hydrography Dataset showing additional detail for coastal features
- Outlet of lakes greater than 0.5 km^2

N

0 50 100 KILOMETERS

0 25 50 MILES

29 and 30. Nutrient source shares and loads delivered from the watershed to Barnegat and New Jersey Inland Bays

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Barnegat Bay, NJ	0	59	9	4	5	10	12	2	461,575	397
New Jersey Inland Bays, NJ	2	25	29	6	7	14	14	3	849,640	257

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Barnegat Bay, NJ	0	56	10	1	34	26,111	22.5
New Jersey Inland Bays, NJ	2	18	40	1	39	76,137	23.0

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

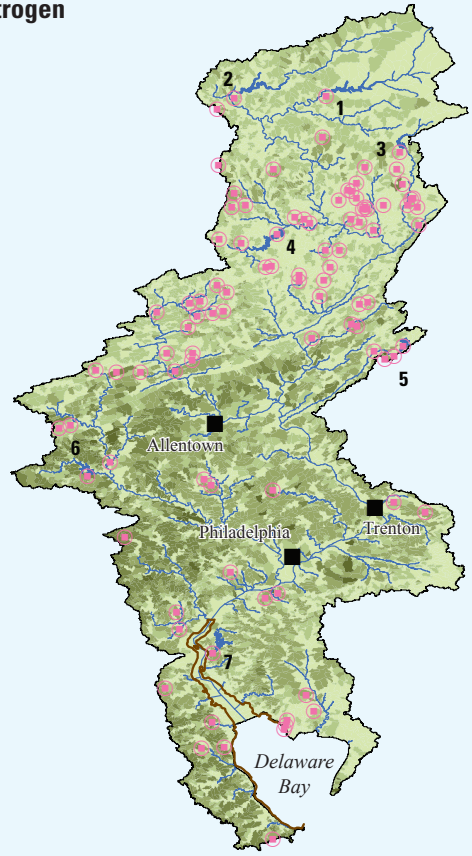
29 and 30. Estuary and lake characteristics: Barnegat and New Jersey Inland Bays

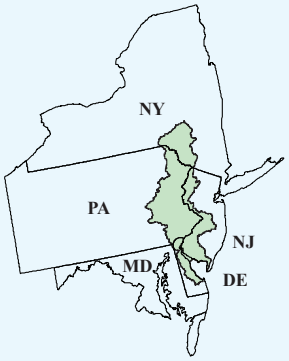
				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Barnegat Bay, NJ	1,163	182	24-74	22,617	1,279	0.62	0.04	18	NA	NA	High
New Jersey Inland Bays, NJ	3,308	278	24-74	41,632	3,731	0.49	0.04	11	NA	NA	High

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.
[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).
[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

31. Contributing watersheds and nutrient yield for Delaware Bay
(Delaware River Basin)

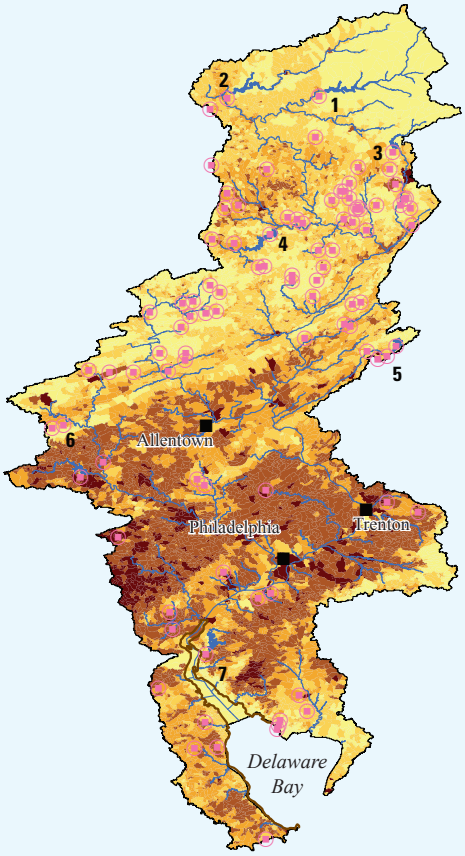
Nitrogen





Location of study area in New York, New Jersey, Pennsylvania, Maryland, and Delaware

Phosphorus



EXPLANATION

Total nitrogen delivered to coast (kg/km^2/yr)

- Less than or equal to 200
- 201–500
- 501–1,200
- 1,201–3,300
- Greater than 3,300

Total phosphorus delivered to coast (kg/km^2/yr)

- Less than or equal to 10
- 10.1–25
- 25.1–50
- 50.1–150
- Greater than 150

- Drainage area boundary for individual estuary or bay
- Coastline from National Hydrography Dataset showing the tidal section of the Delaware River
- Outlet of lakes greater than 0.5 km^2
- 4 Lakes greater than 5 km^2 (See table for name)

N

0 50 100 KILOMETERS

0 25 50 MILES

31. Nutrient source shares and loads delivered from the watershed to Delaware Bay and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Delaware Bay, DE-NJ	55	8	23	5	1	3	3	1	55,634,025	1,654
Major lakes										
1. Pepacton Reservoir, NY	0	10	27	17	9	14	17	6	389,470	406
2. Cannonsville Reservoir, NY	4	8	40	21	5	8	10	4	710,253	603
3. Neversink Reservoir, NY	0	4	6	14	14	24	29	10	91,618	382
4. Lake Wallenpaupack, PA	0	30	11	13	8	15	19	5	166,434	281
5. Lake Hopatcong, NJ	0	59	2	4	5	12	16	3	16,181	249
6. Blue Marsh Lake, PA	2	6	60	26	1	2	3	1	957,902	2,079
7. Mannington Meadow, NJ	0	4	80	6	2	4	4	1	156,617	623

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Delaware Bay, DE-NJ	65	9	13	4	9	3,781,461	112.5
Major lakes							
1. Pepacton Reservoir, NY	0	13	8	12	66	7,454	7.8
2. Cannonsville Reservoir, NY	9	12	12	20	47	19,752	16.8
3. Neversink Reservoir, NY	0	6	2	3	90	1,436	6.0
4. Lake Wallenpaupack, PA	0	33	6	10	51	9,508	16.1
5. Lake Hopatcong, NJ	0	52	0	0	48	255	3.9
6. Blue Marsh Lake, PA	3	7	39	40	11	34,082	74.0
7. Mannington Meadow, NJ	0	6	61	7	26	12,205	48.6

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.

[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.

[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

31. Estuary and lake characteristics: Delaware Bay and major lakes in the watershed

	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		Overall Eutrophic Condition[h]
				TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	
Estuaries and other coastal waterbodies											
Delaware Bay, DE-NJ	33,627	2070	8	445,072	30,252	2.80	0.19	15	NA	NA	Moderate
Major lakes											
1. Pepacton Reservoir, NY	960	21	11	4,822,710	95,331	0.64	0.01	51	69,458	1,618	NA
2. Cannonsville Reservoir, NY	1,177	19	9	7,260,354	208,480	1.06	0.03	35	97,099	3,431	NA
3. Neversink Reservoir, NY	240	6	14	1,571,011	25,788	0.71	0.01	61	19,268	384	NA
4. Lake Wallenpaupack, PA	592	22	21	4,719,698	286,358	0.58	0.03	16	55,787	3,975	NA
5. Lake Hopatcong, NJ	65	8	80	2,946,544	52,217	0.98	0.02	56	20,829	401	NA
6. Blue Marsh Lake, PA	461	5	8	8,463,682	306,059	4.53	0.16	28	100,067	4,176	NA
7. Mannington Meadow, NJ	251	12	34	8,032,870	665,890	1.79	0.15	12	78,780	7,309	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

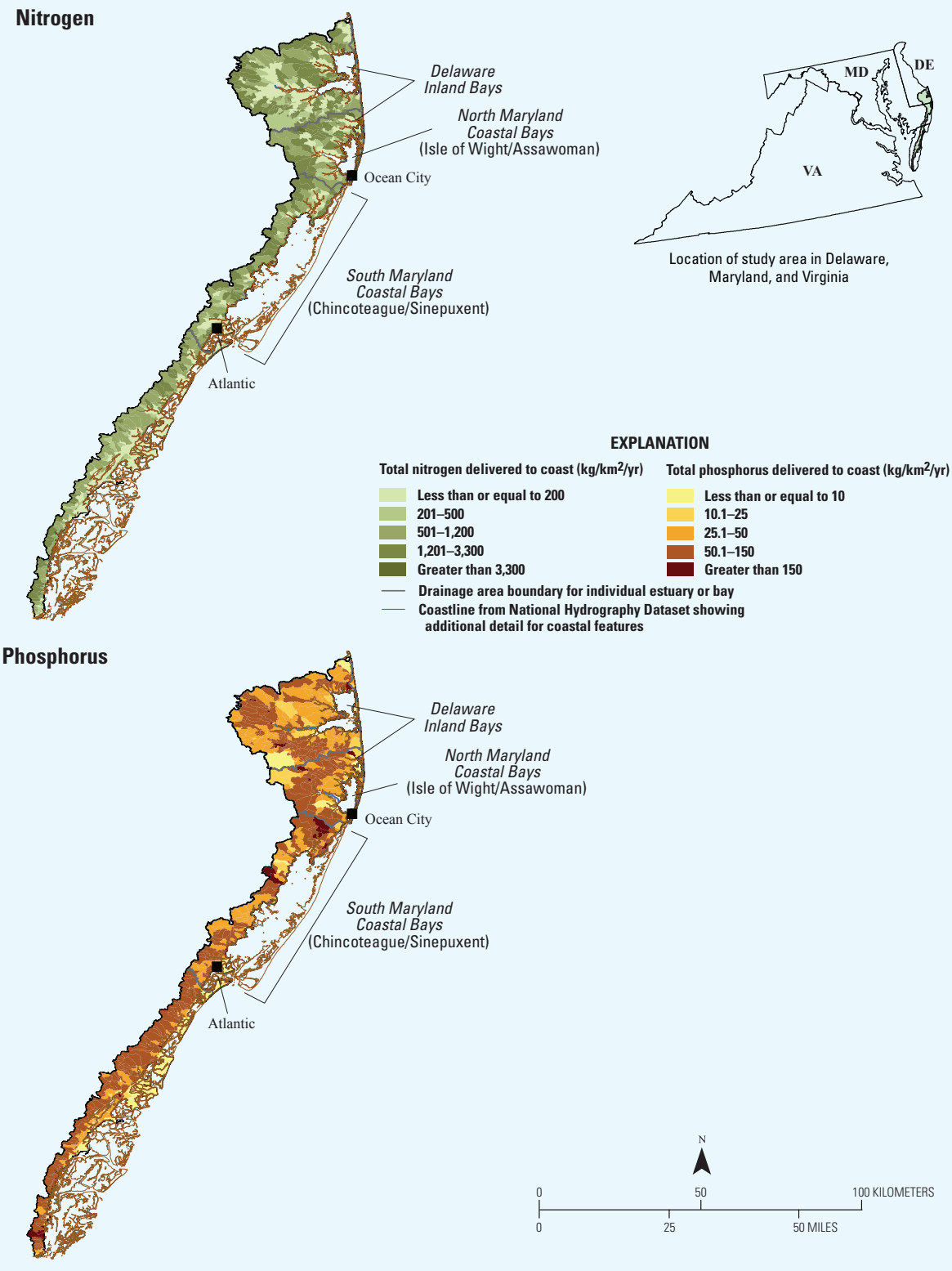
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

32–34. Contributing watersheds and nutrient yield for Delaware Inland Bays and Maryland Coastal Bays
(Indian and Saint Martin River Basins)



32–34. Nutrient source shares and loads delivered from the watershed to Delaware Inland Bays and Maryland Coastal Bays

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Delaware Inland Bays, DE-NJ	2	4	60	28	1	2	2	0	912,700	1,399
N. Maryland Coastal Bays (Isle of Wight/ Assawoman), MD	34	5	41	15	1	2	2	0	629,014	2,041
S. Maryland Coastal Bays (Chincoteague/ Sinepuxent), MD	0	2	71	20	1	2	2	1	441,019	1,117

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Delaware Inland Bays, DE-NJ	6	7	26	57	3	31,164	47.8
N. Maryland Coastal Bays (Isle of Wight/ Assawoman), MD	53	6	17	22	2	33,751	109.5
S. Maryland Coastal Bays (Chincoteague/ Sinepuxent), MD	0	3	53	40	4	24,280	61.5

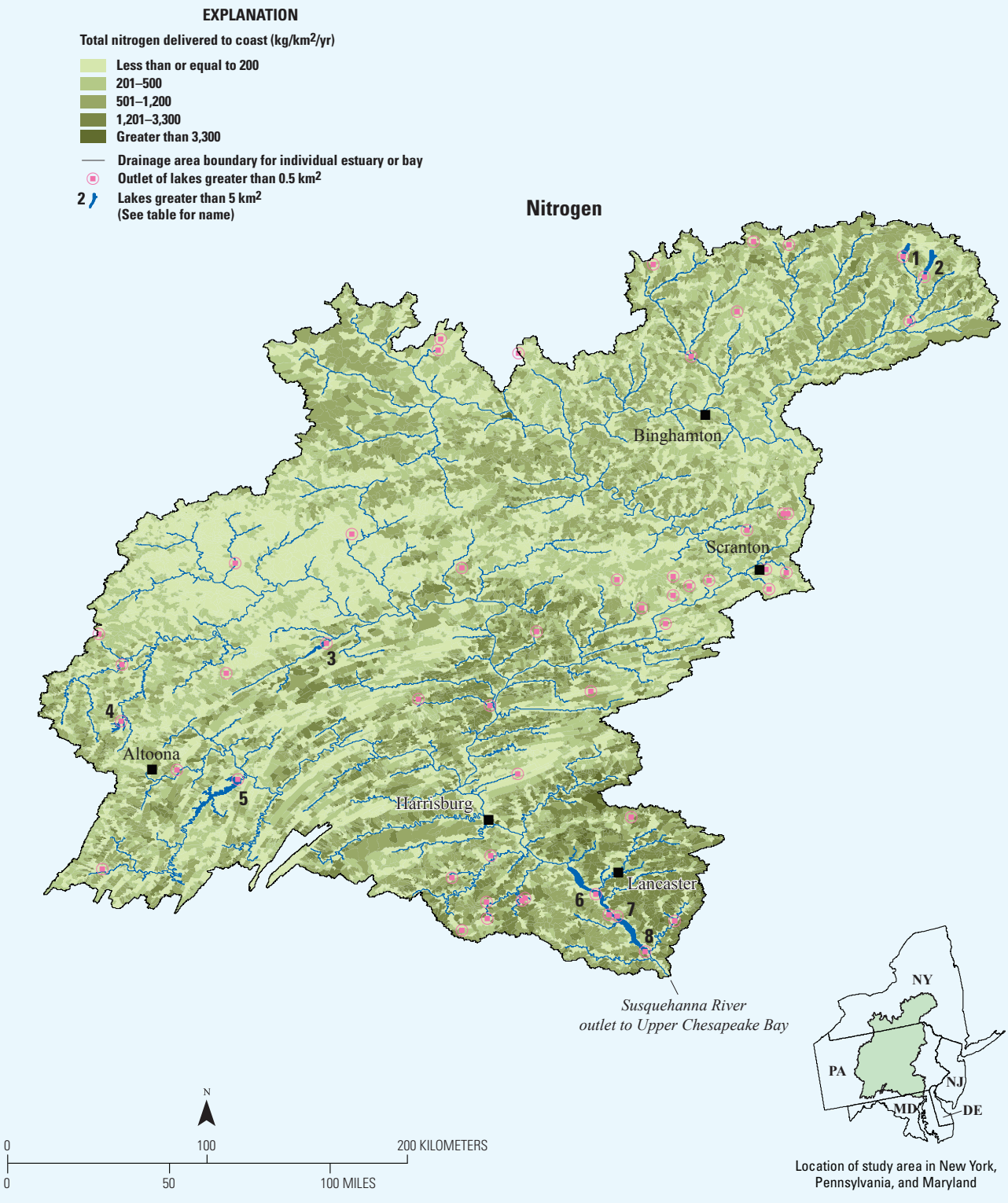
[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

32–34. Estuary characteristics: Delaware Inland Bays and Maryland Coastal Bays

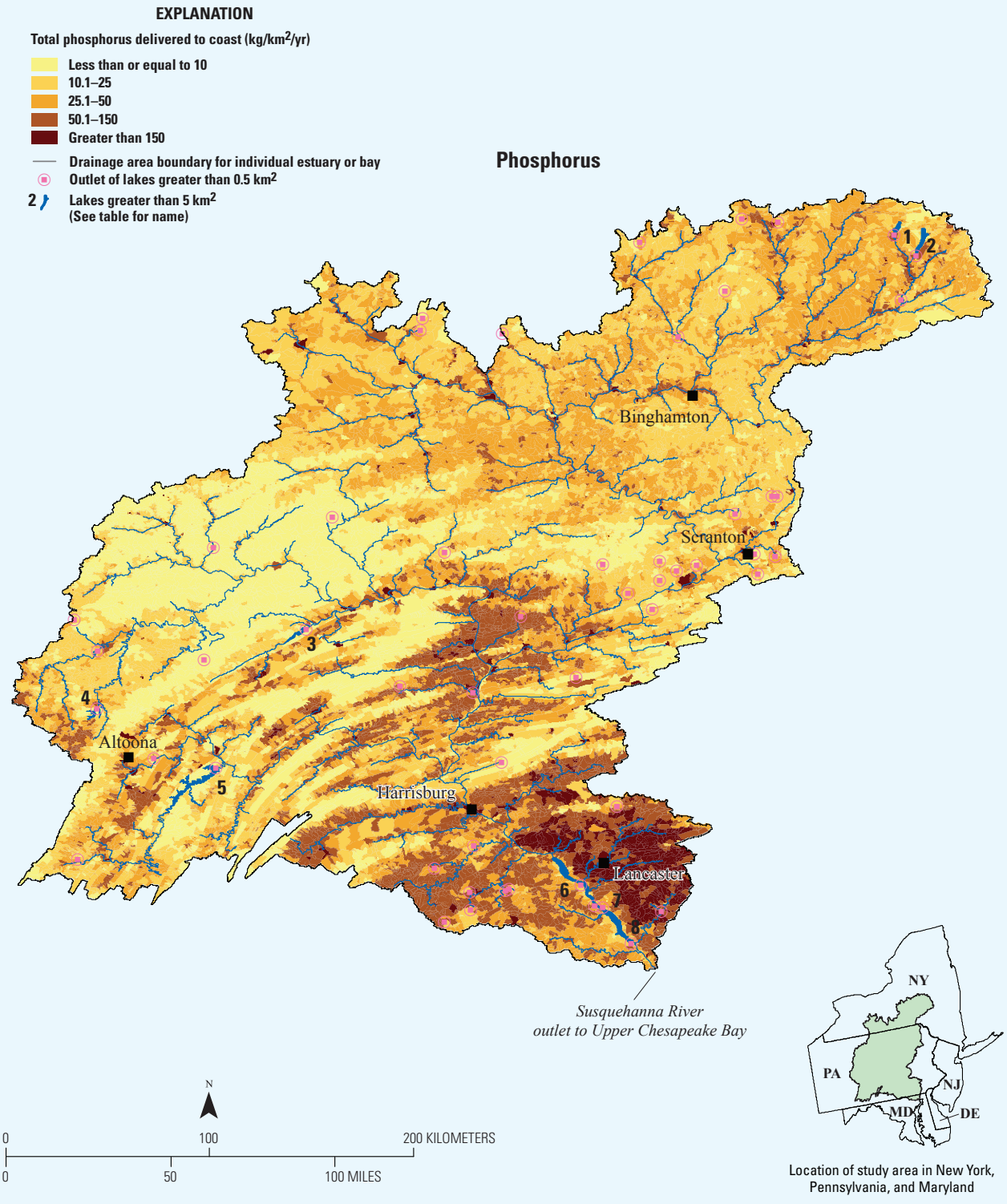
				Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		
	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	Overall Eutrophic Condition[h]
Estuaries and other coastal waterbodies											
Delaware Inland Bays, DE-NJ	652	81	80–100	82,143	2,805	2.57	0.09	29	NA	NA	Moderate
N. Maryland Coastal Bays (Isle of Wight/Assawoman), MD	308	54	21	13,209	709	2.96	0.16	19	NA	NA	Moderate
S. Maryland Coastal Bays (Chincoteague/Sinepuxent), MD	395	335	62–133	43,220	2,379	1.75	0.10	18	NA	NA	High

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.
[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.
[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).
[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

35. Contributing watersheds and nutrient yield Upper Chesapeake Bay
(Susquehanna River Basin)



35–Continued. Contributing watersheds and nutrient yield for Upper Chesapeake Bay
(Susquehanna River Basin)



35. Nutrient source shares and loads delivered from the watershed to Upper Chesapeake Bay and to major lakes in the watershed

Total nitrogen	Source shares, in percent[a]								Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background		
Estuaries and other coastal waterbodies										
Upper Chesapeake Bay (Susquehanna River Basin only)	8	10	47	19	4	5	6	2	58,708,462	825
Total from all tributaries to Chesapeake Bay, including Susquehanna River	19	9	42	17	3	4	5	1	130,058,451	763
Major lakes										
1. Canadarago Lake, NY	0	7	62	18	2	4	5	2	118,292	713
2. Otsego Lake, NY	0	7	60	18	3	4	5	2	85,990	425
3. Foster Joseph Sayers Lake, PA	11	13	50	12	4	4	5	1	776,571	886
4. Glendale Lake, PA	0	7	57	10	8	7	8	2	50,960	471
5. Raystown Lake, PA	0	11	54	16	6	5	6	1	1,576,103	635
6. Lake Clarke, PA	8	10	45	18	4	5	6	2	51,930,815	768
7. Lake Aldred, PA	8	10	45	19	4	5	6	2	56,117,540	809
8. Conowingo Reservoir, MD	8	10	46	19	4	5	6	2	56,836,162	810

Total phosphorus	Source shares, in percent[a]					Total load, kg/yr	Total yield, kg/km²/yr[c]
	Wastewater[b]	Urban land	Fertilizer	Manure	Background		
Estuaries and other coastal waterbodies							
Upper Chesapeake Bay (Susquehanna River Basin only)	24	11	22	23	19	3,056,500	42.9
Total from all tributaries to Chesapeake Bay, including Susquehanna River	26	12	25	21	16	8,034,765	47.1
Major lakes							
1. Canadarago Lake, NY	1	12	28	23	37	4,231	25.5
2. Otsego Lake, NY	0	13	28	19	39	3,427	17.0
3. Foster Joseph Sayers Lake, PA	13	21	31	17	18	22,572	25.7
4. Glendale Lake, PA	0	11	49	13	27	2,080	19.2
5. Raystown Lake, PA	2	17	31	26	24	58,079	23.4
6. Lake Clarke, PA	27	12	20	19	21	2,642,597	39.1
7. Lake Aldred, PA	26	11	21	22	20	2,914,704	42.0
8. Conowingo Reservoir, MD	25	11	21	22	20	2,952,418	42.1

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.

35. Estuary and lake characteristics: Upper Chesapeake Bay and major lakes in the watershed

	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		Overall Eutrophic Condition[h]
				TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	
Estuaries and other coastal waterbodies											
Upper Chesapeake Bay (Susquehanna River Basin only)	71,201	6,974	NA	NA	NA	1.64	0.09	19	NA	NA	NA
Total from all tributaries to Chesapeake Bay, including Susquehanna River	170,383	11,263	NA	NA	NA	1.75	0.11	16	NA	NA	NA
Major lakes											
1. Canadarago Lake, NY	166	8	29	4,984,898	187,183	1.82	0.07	27	56,323	2,325	NA
2. Otsego Lake, NY	202	17	52	9,186,993	407,024	1.51	0.07	23	90,958	4,413	NA
3. Foster Joseph Sayers Lake, PA	877	7	6	5,165,854	152,424	2.05	0.06	34	71,348	2,447	NA
4. Glendale Lake, PA	108	6	39	3,142,203	136,022	1.36	0.06	23	29,581	1,407	NA
5. Raystown Lake, PA	2,481	33	11	19,594,314	738,636	1.60	0.06	27	245,137	10,576	NA
6. Lake Clarke, PA	67,590	29	0	16,243,770	827,563	1.53	0.08	20	368,873	21,888	NA
7. Lake Aldred, PA	69,346	11	0	6,366,714	330,951	1.61	0.08	19	144,249	9,861	NA
8. Conowingo Reservoir, MD	70,131	36	0	21,088,344	1,096,901	1.62	0.08	19	352,118	22,205	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

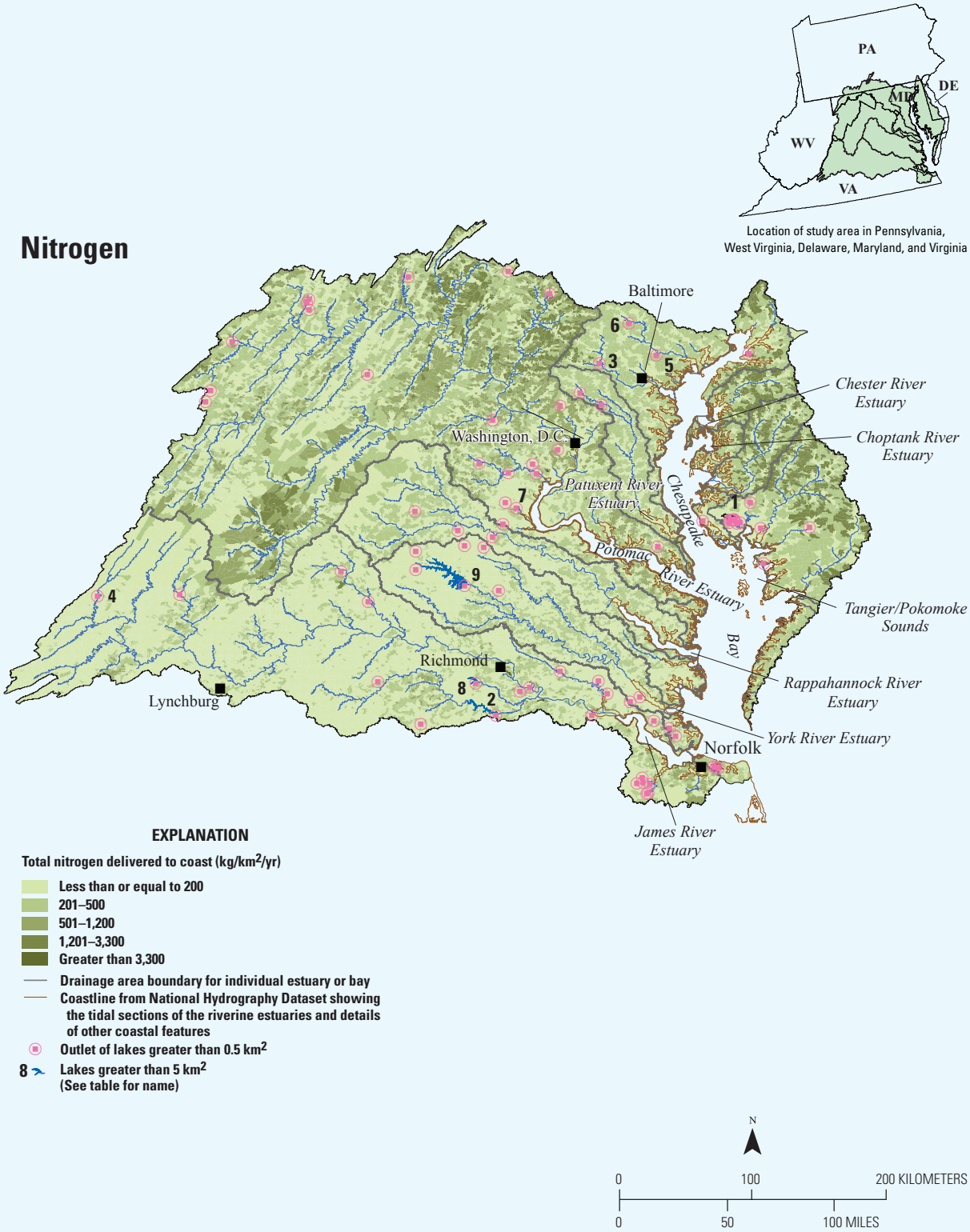
[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

36–43. Contributing watersheds and nutrient yield for the riverine estuaries that discharge to Chesapeake Bay and Tangier/Pokomoke Sounds

(Patuxent, Potomac, Rappahannock, York, James, Chester, and Choptank River Basins)

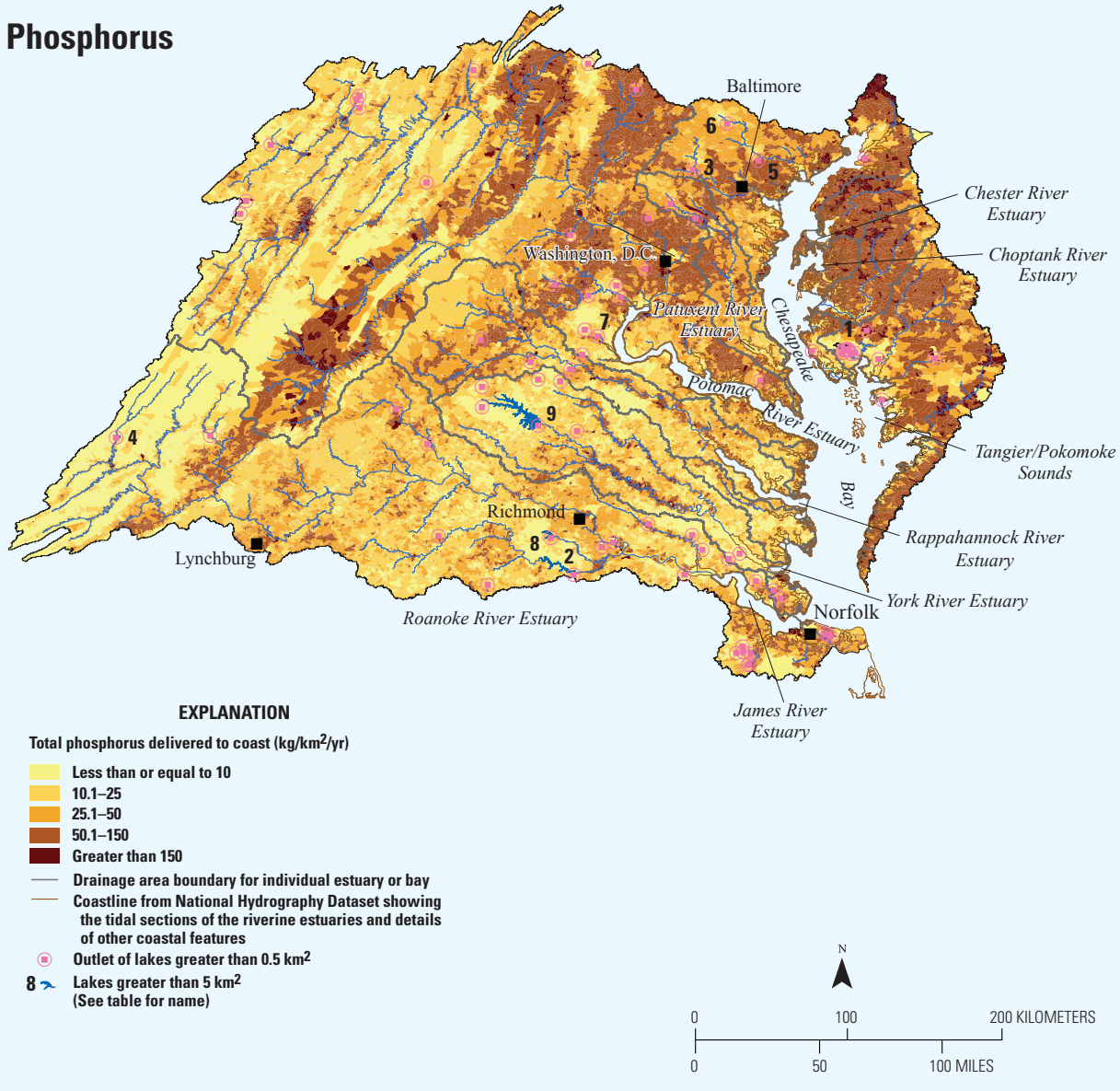


36–43–Continued. Contributing watersheds and nutrient yield for the riverine estuaries that discharge to Chesapeake Bay and Tangier/Pokomoke Sounds

(Patuxent, Potomac, Rappahannock, York, James, Chester, and Choptank River Basins)



Location of study area in Pennsylvania, West Virginia, Delaware, Maryland, and Virginia



36–43. Nutrient source shares and loads delivered from the watershed to Chesapeake Bay and to major lakes in the Lower Chesapeake Bay watershed

Total nitrogen

	Source shares, in percent[a]									
	Wastewater[b]	Urban land	Fertilizer	Manure	Powerplant emissions	Industrial emissions	Vehicle emissions	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies										
Patuxent River Estuary, MD	27	17	35	5	3	5	7	1	1,630,414	678
Potomac River Estuary, MD-VA	28	10	31	18	3	4	4	1	33,000,882	869
Rappahannock River Estuary, VA	5	6	56	15	4	6	7	1	2,450,106	349
York River Estuary, VA	15	3	54	8	5	7	7	1	2,002,142	290
James River Estuary, VA	49	11	15	10	4	5	6	1	11,305,934	422
Chester River Estuary, MD	0	1	86	6	1	2	2	0	1,633,630	1,351
Choptank River Estuary, MD	3	1	78	12	1	2	2	0	2,688,174	1,467
Tangier/Pocomoke Sounds, MD-VA	2	2	65	24	1	2	2	0	6,516,807	1,087
Other drainage to Chesapeake Bay, MD-VA[d]	37	10	40	4	2	3	3	1	10,094,111	1,106
Total from all tributaries to Chesapeake Bay, including Susquehanna River	19	9	42	17	3	4	5	1	130,058,451	763
Major lakes										
1. Raymond Pond, MD	0	2	74	13	3	4	4	1	78,808	434
2. Lake Chesdin, VA	2	7	37	29	6	9	9	1	873,330	253
3. Liberty Lake, MD	0	4	74	10	2	4	5	1	318,908	752
4. Lake Moomaw, VA	0	19	9	25	14	15	16	3	192,853	216
5. Loch Raven Reservoir, MD	0	6	67	10	3	6	7	1	495,601	629
6. Prettyboy Reservoir, MD	0	1	73	12	3	4	5	1	144,148	698
7. Occoquan Reservoir, VA	43	16	18	9	3	4	6	1	1,303,773	850
8. Swift Creek Reservoir, VA	0	40	14	12	8	12	13	2	27,011	162
9. Lake Anna, VA	0	5	46	22	6	9	10	2	142,873	162

Total phosphorus

	Source shares, in percent[a]						
	Wastewater[b]	Urban land	Fertilizer	Manure	Background	Total load, kg/yr	Total yield, kg/km²/yr[c]
Estuaries and other coastal waterbodies							
Patuxent River Estuary, MD	27	28	26	5	13	146,009	60.8
Potomac River Estuary, MD-VA	21	17	21	26	15	1,850,795	48.7
Rappahannock River Estuary, VA	10	8	40	22	20	232,736	33.1
York River Estuary, VA	19	4	51	11	15	198,159	28.7
James River Estuary, VA	51	12	10	13	15	1,187,461	44.3
Chester River Estuary, MD	3	2	74	10	11	125,344	103.7
Choptank River Estuary, MD	11	2	61	22	4	165,800	90.5
Tangier/Pocomoke Sounds, MD-VA	9	2	42	41	5	410,097	68.4
Other drainage to Chesapeake Bay, MD-VA[d]	30	18	36	6	10	659,717	72.3
Total from all tributaries to Chesapeake Bay, including Susquehanna River	26	12	25	21	16	8,034,765	47.1
Major lakes							
1. Raymond Pond, MD	0	4	62	23	11	6,114	33.7
2. Lake Chesdin, VA	5	10	22	43	20	75,983	22.0
3. Liberty Lake, MD	1	8	57	17	17	13,320	31.4
4. Lake Moomaw, VA	0	20	1	26	52	5,623	6.3
5. Loch Raven Reservoir, MD	1	11	49	13	26	22,753	28.9
6. Prettyboy Reservoir, MD	3	2	56	18	20	5,435	26.3
7. Occoquan Reservoir, VA	1	36	19	21	24	78,248	51.0
8. Swift Creek Reservoir, VA	0	53	11	13	24	1,380	8.3
9. Lake Anna, VA	1	8	31	35	25	8,980	10.2

[a] Due to rounding, the sum of source shares for a given lake or estuary may not equal 100.
[b] The types of nutrient sources included within each of the source shares are described in more detail in table 2.
[c] 1 kg/km²/yr = 0.01 kg/ha/yr = 0.00893 lbs/acre; therefore, to convert values reported as kg/km²/yr to kg/ha/yr, multiply by 0.01.
[d] Estimates include permitted discharges of wastewater to offshore areas of Chesapeake Bay.

36–43. Estuary and lake characteristics, Chesapeake Bay and major lakes in the Lower Chesapeake Bay watershed

	Contributing watershed area, km²[f]	Surface area, km²	Residence time, d or d/m[g]	Load from watershed per hydraulic flushing rate of receiving waterbody[d]		Concentration of tributary inflow to receiving waterbody			Load assimilated in receiving waterbody[e]		Overall Eutrophic Condition[h]
				TN, Mg*d or, for lakes, kg*d/m	TP, Mg*d or, for lakes, kg*d/m	TN, mg/L	TP, mg/L	Ratio of TN:TP	TN, kg/yr	TP, kg/yr	
Estuaries and other coastal waterbodies											
Patuxent River Estuary, MD	2,403	142	26	42,391	3,796	1.62	0.15	11	NA	NA	High
Potomac River Estuary, MD-VA	37,990	1,260	36	1,188,032	66,629	2.27	0.13	18	NA	NA	High
Rappahannock River Estuary, VA	7,030	377	24	58,803	5,586	0.92	0.09	11	NA	NA	Moderate High
York River Estuary, VA	6,900	206	11	22,024	2,180	0.85	0.08	10	NA	NA	Moderate High
James River Estuary, VA	26,792	640	8	90,447	9,500	1.17	0.12	10	NA	NA	Moderate High
Chester River Estuary, MD	1,209	196	27	44,108	3,384	3.02	0.23	13	NA	NA	High
Choptank River Estuary, MD	1,833	411	19	51,075	3,150	3.56	0.22	16	NA	NA	High
Tangier/Pocomoke Sounds, MD-VA	5,997	1,057	12	78,202	4,921	2.22	0.14	16	NA	NA	Moderate High
Other drainage to Chesapeake Bay, MD-VA[i]	9,123	NA	NA	NA	NA	2.46	0.16	15	NA	NA	NA
Total from all tributaries to Chesapeake Bay, including Susquehanna River	170,383	11,263	NA	NA	NA	1.75	0.11	16	NA	NA	NA
Major lakes											
1. Raymond Pond, MD	182	14	71	7,947,871	622,470	1.53	0.12	13	33,510	2,683	NA
2. Lake Chesdin, VA	3,457	13	4	3,980,308	349,143	0.83	0.07	11	55,489	5,491	NA
3. Liberty Lake, MD	424	12	25	11,502,735	514,062	2.63	0.12	22	142,079	7,282	NA
4. Lake Moomaw, VA	893	9	10	2,130,482	63,493	0.63	0.02	34	24,259	847	NA
5. Loch Raven Reservoir, MD	788	9	10	5,656,006	270,731	1.73	0.08	21	68,358	4,242	NA
6. Prettyboy Reservoir, MD	207	6	26	5,485,765	221,364	2.45	0.10	25	65,003	3,005	NA
7. Occoquan Reservoir, VA	1,533	6	4	4,807,194	291,046	2.28	0.14	17	69,616	4,902	NA
8. Swift Creek Reservoir, VA	167	6	38	1,756,140	97,355	0.84	0.05	18	18,666	1,152	NA
9. Lake Anna, VA	884	53	62	18,686,634	1,320,851	0.97	0.07	14	158,338	12,311	NA

[d] Large values of the metric 'Load from watershed per hydraulic flushing rate of receiving waterbody' (equivalent to load multiplied by residence time) characterize waterbodies with both high nutrient loading and low capacity to assimilate nutrients via hydraulic flushing alone.

[e] Estimated for lakes and reservoirs only (estuary assimilation not assessed).

[f] Calculated from modeled contributing area and may differ from values reported in Bricker and others, 2007.

[g] Estimate of residence time (in days) for estuaries is from Bricker and others, 2007. Residence time has not been estimated for lakes; the value reported is instead the ratio of lake surface area to outlet streamflow (days/meter) and is an approximation of residence time (it does not account for the effect of lake depth on residence time).

[h] Estimate of Overall Eutrophic Condition is for the year 2004 (Bricker and others, 2007), for estuaries only (lakes and reservoirs not assessed).

[i] Estimates include permitted discharges of wastewater to offshore areas of Chesapeake Bay.