Supplementary Files

Table S1. Potable source-water reservoirs (primary or reserve) omitted from consideration due to failure to meet data requirements, reservoir age, or artificial mixing. In addition, reservoirs with surface area ≥ 500 ha at conservation pool were considered except that smaller reservoirs were included if the estimated population served is ≥ 50,000. Data sources other than/in addition to those identified in the Study Area section are indicated; other information is compiled from local and state governments. This list presents examples and is not meant to include all drinking source-water reservoirs in the region.

Reservoir - surface area; population served with potable water; *river system*	Water quality data available from public repositories (2010-2020)	Notes
Joe Pool, TX 3,132 ha; 37,000 people; *Trinity River*	June 2019 – April 2020 only (TX CEQ SWQMP).	Eutrophic. Hydrilla infestation.
Lake Houston, TX 3,023 ha; > 2 million people; *San Jacinto River*	2010-2019 (Texas Commission on Environmental Quality [TX CEQ] Surface Water Quality Monitoring Program [SWQMP]). Few DO profiles; insufficient data for some key parameters (*n* < 70*).*	Eutrophic. Some evidence of hypoxia in June and September 2016, and June 2017. Large cyanobacteria blooms, taste-and-odor problems.
Lake Ray Hubbard, TX 8,498 ha; > 1 million - major potable supply for Dallas; *Sabine River*	2010, 2012-2020 (TX CEQ SWQMP), but insufficient data for chl*a*.	Eutrophic. Algal blooms; hydrilla infestation.
Big Creek Lake (J.B. Converse Reservoir), AL 1,457 ha; Mobile, 185,000 people; *Escatawpa River*	2011, 2014, 2017; insufficient data for chl*a* and nutrients.	Mesotrophic. Rapidly urbanizing watershed; high sediment loading; PFAs; chl*a* standard 11 µg L^{-1}). DO was < 2 mg L^{-1} in 2/3 of the water column (WC, mid-region) during June – August 2017; ~half of the upper region WC was so affected in July.
Inland Lake, AL 630 ha; Birmingham reserve, ~100,000 people; *Black Warrior River*	2011, 2012, 2017; insufficient data for some key parameters.	Mesotrophic. Deep, clear, mean depth 23 m.
Lake Tuscaloosa, AL 2,382 ha; Tuscaloosa - ~101,000 people; *North River* (*Black River*)	2011, 2012, 2017; insufficient chl*a* data.	Mesotrophic.
Lake Mitchell, AL 2,367 ha; ~14,000 people, City of Clanton; *Coosa River*	2010, 2013, 2015 (few), 2016, 2019; insufficient data for some key parameters.	Eutrophic. Algal blooms. Adversely affected by urban runoff and storm sewers.

Lake/Reservoir	Data availability	Notes
Weiss Lake, AL/GA 12,222 ha; ~180,000 people; *Coosa River*	2010, 2013, 2016, 2019; insufficient data for NOx, so TN could not be calculated.	Eutrophic. "Crappie capital of the world", but fish consumption advisory due to PCBs; also a PFAS problem.
Bear Creek Reservoir, GA 204 ha; 4 counties including Athens, with ~350,000 people; *Middle Oconee River*	2017-2020; fish mercury data only in public repositories—data n.a. for some key parameters.	Eutrophic. Filled in 2002. Cyanobacteria blooms common.
Lake McIntosh, Still Branch Reservoir, and Tussahaw Reservoir, GA 263-593 ha; > 50,000 people each; *Flint River, Ocmulgee River*	Water quality data n.a. Filled in 2012, 2005, and 2007, respectively.	Still Branch and Tussahaw - vacuolar myelinopathy confirmed (likely related to toxic cyanobacterial epiphyte *Aetokthonos hydrillicola* [258].
Bushy Park (Back-River) Reservoir, SC 324 ha; Charleston, etc., ~450,000 people; *Back River*, also *Cooper River* via the Durham Canal)	1.5 yr of water quality data (September 2013 – April 2015) [218].	Eutrophic. Surface/ near-surface hypoxia at 1 or more stations: CWS-7,-6,-5 – total WC (23 July); also at CWS-6: total WC 6 November, 26 March, 23 April morning (~2 mg DO L^{-1} just below the surface) and afternoon [218]. Cyanobacteria can cause taste-and-odor problems.
Goose Creek Reservoir, SC 243 ha; reserve for Charleston; *Cooper River*	2010-2019 (SCDHEC), but no DO profiles, and data for key parameters uneven across years.	Eutrophic. Cyanobacteria blooms; invasive macrophytes (hydrilla, water hyacinth, water lettuce *Pistia stratiodes*, water primrose *Ludwigia uruguayensis*, etc.).
Lake Greenwood, SC 4,613 ha; > 100,000 people; *Saluda River*	2010, 2012-2016; insufficient data for chl*a*, no DO depth profiles	Eutrophic. Extended periods of oxygen depletion previously reported below the thermocline. Massive high-biomass algal blooms.
Lake Hartwell, SC 22,662 ha; ~230,000 people; *Savannah, Tugaloo, Seneca Rivers*	2010-2020; no DO profiles	Eutrophic. Algal blooms can cause taste-and-odor problems; harmful cyanobacteria blooms since 2013; hydrilla and aetokthono-toxin con-firmed [133].

Lake Keowee, SC 7,487 ha; Greenville, 72,100 people; *Keowee River*	2010, 2012-2016; insufficient data for chl*a*, no DO depth profiles	Eutrophic. Much of the shoreline is heavily impacted by development.
Lake Marion, SC 44515 ha; ~125,000 people served/planned; *Santee River*	2010-2020 - but DO depth profiles and chl*a* data n.a.	Eutrophic throughout, although TSIs are higher in headwaters than near dam. Evidence of hypoxia. Invasive salvinia, hydrilla, water hyacinth.
Lake Moultrie, SC 24,443 ha; 40,000 people; *Santee-Cooper River*	2010, 2011, 2016; some parameters in 2017, 2018. But DO depth profiles and chl*a* data n.a.	Eutrophic. Extensive hypoxia; major algal blooms, invasive macrophytes (e.g., hydrilla) treated with herbicides.
Lake Murray, SC 19,425 ha; Columbia etc., ~300,000 people; *Saluda River*	2010-2017, 2019, 2020 (SCDHEC); but DO depth profiles n.a., and key parameters uneven across years.	Eutrophic. Evidence of hypoxia. Cyanobacteria can cause taste-and-odor problems; vacuolar myelinopathy confirmed (likely related to toxic cyanobacterial epiphyte *Aetokthonos hydrillicola*) [133].
Lake Wylie (Wateree), SC 5,423 ha; ~89,000 people; *Catawba River*	2010-2020, but only 2 yr of DO depth profiles (2019 with surface/near surface hypoxia, and 2020) [219,259]	Eutrophic. 2019 - at site CL089 (near dam), DO was < 2.5 mg L^{-1} for 2 weeks (September 26 –October 10) within 1.1 m of the surface, also < 2.5 mg L^{-1} at the surface for ~4 days in in mid-October (total depth ~17 m). Major planktonic and benthic harmful cyanobacteria blooms; invasive hydrilla.
City Lake (Arnold Koonce City Lake), NC 219 ha; City of High Point, most water for 114,100 people; *Deep River (Cape Fear)*	2010-2020; but artificially aerated hypolimnion.	Eutrophic. Algal blooms can cause taste-and-odor problems.
Lake Randleman, NC 1,204 ha; Greensboro etc., 298,300 people; *Deep River (Cape Fear)*	2011, 2013, 2015, 2018; but filled in 2004.	Eutrophic. PFAS; 1,4-dioxane. Sewage discharges to the reservoir (e.g., from the City of High Point).

Mountain Island Lake, NC 1,327 ha; Charlotte etc., etc., > 1 million people; *Catawba River*	2010-2020; no DO profiles.	Eutrophic. Coal ash contamination (high arsenic).
W. Kerr Scott Lake, NC 597 ha; Wilkesboro etc., ~60,000 people; *Yadkin River*	2014, 2019; insufficient data for chl*a* and nutrients; no DO depth profiles.	Mesotrophic to eutrophic; chl*a* can exceed the state standard of 40 µg L^{-1}.
Oak Hollow Lake, NC 328 ha; Backup for the City of High Point; *Deep River (Cape Fear)*	2010-2020; but artificially aerated hypolimnion.	Eutrophic. Algal blooms can cause taste-and-odor problems.
Lake Benson, NC 263 ha; ~34,000 people; Garner, secondary supply for Raleigh; *Neuse River*	2010, 2015 only (City of Raleigh).	Eutrophic. *Microseira* (*Lyngb*ya) *wollei* and mild to severe summer cyanobacteria blooms.

Table S2. The years, sites, frequency, depth, and number of samples (*n*) analyzed for environmental and water quality parameters in each reservoir (summers, 2010-2020; n.a., not available; temp., temperature; satn., saturation).

Reservoir	Years (summers, June-September), depth, sites, frequency	Temp., pH	Secchi	Surface DO, % satn.	TSS	TN	TP	TN:TP	NO$_3$-N	TNH$_3$, DIN	TKN, TON	TOC	Chl*a*
Eagle Mountain	2010-2018 (except TOC 2012-2018); ≤ 1 m; 5 sites (10964, 10960, 10956, 10952, 10944) for all parameters except DO depth profiles (upper 10960, middle 10952, lower 10944); twice per summer (July, Aug.)	334	82	n.a.	85	86	84	82	88	78	77-86	68	82
Cedar Creek	2010-2018; ≤ 1 m; 7 sites (16772, 16753, 21427, 16750, 16747, 16749, 16748) except DO depth profiles (upper 16772; middle 16750, 21427, lower 16748); twice per summer	526	85	n.a.	87	93	89	89	93	86	86-93	76	91
Ross Barnett	2011-2019; surface (0.5 m), PZ for chl*a*; 4 sites (111B90, 11B91, 549RBR02, 111B93) except DO depth profiles (upper 111B90, middle 549RBR02, lower 111B93); monthly	336	161	328	124	126	126	126	126	126	126	126	128

Guntersville	2013, 2015, 2018; surface; 11 sites (GUNM-1 to GUNM-10) except DO depth profiles (upper GUNM-1, lower GUNM-10); monthly	891	125	882	125	125	125	125	125	125	125	n.a.	125
Neely Henry	2010, 2013, 2016, 2019; surface ($\leq$ 3.8 m); 14 sites (NEES-1, NEES-2B, NEES-3, NEES-5-11, NEES-6A, NEES 16-18) except DO depth profiles (upper NEES-2B, middle NEES-3, lower NEES-1); monthly	615	133	598	123	126	126	126	131	127	122- 126	n.a.	130
Lay	2010, 2013, 2016, 2019; sur-face; 11 sites (LAYC-1 to -3, LAYC-6-12, LAYC-18) except DO depth profiles (upper LAYC-2, middle LAYC-3, lower LAYC-1); and except 2018 (all para-meters except DO, 1 site, LAYC-1; DO as above); monthly	809	131	825	130	98	101	98	129	88-89	89- 99	n.a.	130

Reservoir	Description											
R.L. Harris	2010, 2013, 2015, 2018, 2020; 2020 (3x); surface; 7 sites (RLHR-1 to 7) except DO depth profiles (upper RLHR-3, middle RLHR-2, lower RLHR-1); monthly	1336	123	1336	123	123	123	123	123	123	123	n.a.	118
Martin	2010, 2013, 2015, 2018, 2020; surface; 14 sites (MARE-1 to 11, MARE-14 to 16) except DO depth profiles (upper MARE-5, lower MARE-1; monthly (most parameters) except 2020 (3x)	2784	227	2783	227	226	227	226	226	226-227	227	n.a.	216
W.F. George	2010-2020; surface; 2 sites for all parameters (4097, 4103); monthly	350	89	187	93	86	91	86	92	85–86	84–86	92	91
Allatoona	2010-2020; surface; 5 sites (AL4494, AL4497, AL4502, AL4553, AL4556) except DO depth profiles (upper 4502, middle 4556, lower 4494); monthly	785	211	424	230	230	230	230	230	230	230	230	230

Lanier	2010-2020; surface (< 1 m or PZ < 4 m); 10 sites (3913, 3995, 3998, 4001, 4005, 4007, 4010, 4012, 4019, 4028) except DO depth profiles (upper 3913, middle 4001, lower 4028); monthly	1496–1504	390	764	409	409	409	409	409	409	409	409	410
Norman[a]	2010-2020; surface or PZ (twice Secchi, $\leq$ 4.6 m); 15 sites (1.0, 2.0, 5.0, 7.5, 8.0, 9.5, 11.0, 11.5, 12.5, 13.0, 15.0, 15.9, 62.0, 69.0, MRSVINT) except DO depth profiles (upper 15.9, middle 11.0, lower 1.0); once per summer except Secchi monthly	4488–4541	394	4524	n.a.	117	126	117	117	118–135	119–126	n.a.	111
Jordan[a]	2010-2019; PZ ($\leq$ 4 m); 20 sites (86CUPS, MC01-03, 86C, 81A1B, 81A1C, 86F, 87B3, 87D, 880A, 55C, 55C1-6, 55D, 55E) except DO depth profiles (upper 86F, middle 87D, lower 55E); TOC 2017 only; biweekly through 6/16, then monthly except bimonthly in 2018	2563	n.a.	n.a.	111	806	817	806	817	693	682–806	11	823

| Falls | 2010-2020; $\leq$ 1 m or PZ; 13 sites (FL 1-6, FLIN_1, FLINC, FL50_1, FL50C, FL85_1, FL85C, LC1) except DO depth profiles (upper FL85, middle FL50, lower FLIN); monthly | 2960 | 366 | 2922 | | 794 | 792 | 794 | 791 | | 793 | 793–795 | 793 | 794 | 794 |

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[a] Norman DO sampling varied by site, from once per summer to twice weekly during summers, and the sampling frequency decreased especially in the last 3 yr. Jordan DO data were collected biweekly in summers of 2010, 2011, 2012, and 2014.

[b] Violations of state chl*a* standards were assessed as follows: Eagle Mountain (all stations), > 26.7 µg L^{-1}; Cedar Creek (stations 16748 and 16749, > 23.47 µg L^{-1}) [89,260]. Chl*a* standards for AL waters included Guntersville (station GUNM-10, > 18 µg L^{-1}), R.L. Harris (stations RLHR-1, RLHR-2, and RLHR-3, > 10 µg L^{-1}; station RLHR-4, > 12 µg L^{-1}); Lay (stations C-1, C-2, and C-3, > 17 µg L^{-1}); Neely Henry (stations 1, 2B, 3, 11, and 18, > 17 µg L^{-1}); Martin (stations MARE-1, MARE-2, MARE-3, MARE-4, and MARE-5, > 5 µg L^{-1}) [134]. Georgia waters included Allatoona (stations 4494 and 4556, > 10 µg L^{-1}; station 4497, > 12 µg L^{-1}; station 4502, > 14 µg L^{-1}; station 4553, > 15 µg L^{-1}); W.F. George (station 4097, > 18 µg L^{-1}; station 4103, > 15 µg L^{-1}); Lanier (stations 3913, 3995, and 3998, > 10 µg L^{-1}; station 4001, > 7 µg L^{-1}; stations 4005, 4407, 4010, 4012, and 4019, > 6 µg L^{-1}; and station 4028, > 5 µg L^{-1}) [47]. North Carolina waters included Norman, Jordan, and Falls (> 40 µg L^{-1}) [45].