

Supplemental Text: Tapping perceptions of water systems

In the following supporting information, we provide additional details (1) on existing water system diagrams in textbooks, and (2) three additional expert diagrams.

1. Examining existing systems figures in textbooks

Thirty environmental/water textbooks (listed in Table S1) were examined to find a complete drinking water systems diagram that included both anthropogenic and natural components. We were unable to find a diagram that was adequate for our scoring task, as the textbooks typically contained diagrams for a specific part of the system (e.g. water treatment or wastewater treatment). Sample diagrams are shown below in Figure S1. After going through these texts, it was clear that we needed to conduct an expert elicitation to create our own accurate drinking water systems diagram.

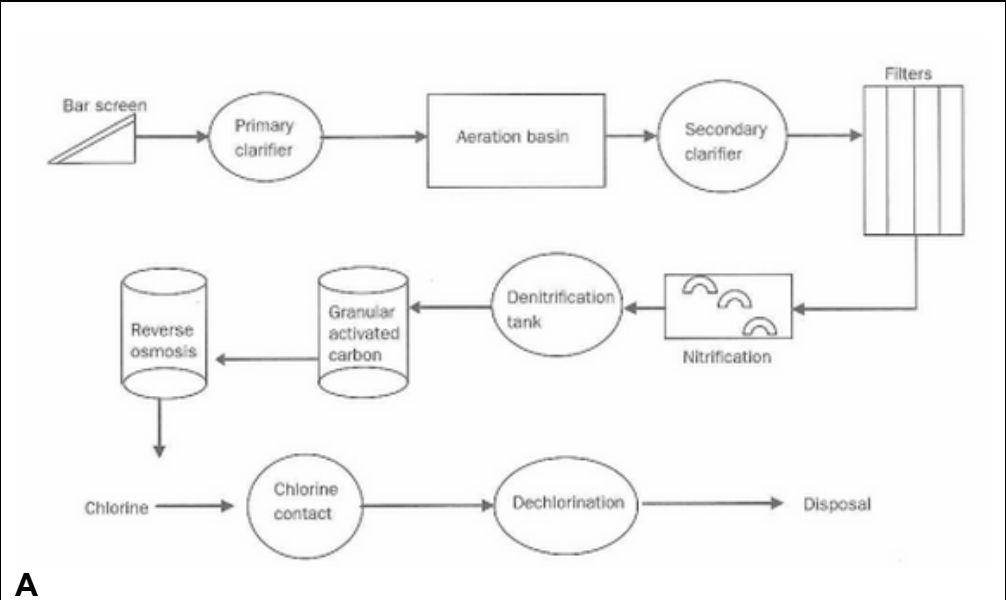
Table S1. Environmental and water textbooks (N = 30) examined for drinking water systems diagram, incorporating anthropogenic and natural components. The table contains the title of each book, year, whether it had a diagram, whether that diagram showed a process, what process it showed if applicable, and whether the diagram was integrated (e.g. anthropogenic and natural processes).

#	Title of Book	Diagram	Year	Shows a process	What process	Integrated or not
1	Water Basics for Decision Makers (Bloetscher, 2009)	Yes	2009	Yes	Wastewater	No
2	Drinking Water: Principles and Practices (Moel, Verberk, & Van Dijk, 2007)	Yes	2007	Yes	Drinking water up to home	No
3	Handbook of Water and Wastewater Treatment Technology (Cheremisinoff, 1994)	Yes	1994	Yes	Wastewater	No
4	Biological Wastewater Treatment (Grady Jr, Daigger, Love, & Filipe, 1999)	Yes	1999	Yes	Wastewater	No
5	Water Quality and Its Control (Lamb, 1985)	Yes	1985	Yes	Water cycle	No
6	Desalination: A National Perspective (Zander et al., 2008)	Yes	2008	Yes	Desalination	No
7	Ground Water Manual: A Water Resources Technical Publication	Yes	1977	Yes	Water recharge	No

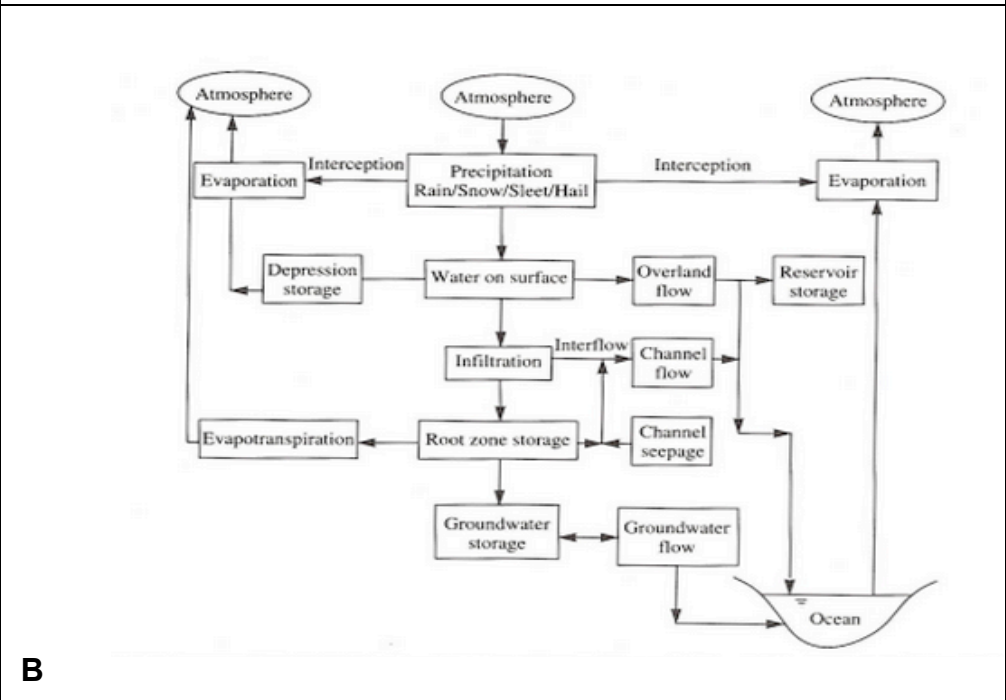
	(Interior, 1977)					
8	Groundwater Treatment Technology (Bedessem, 2009)	Yes	2009	Yes	Aquifer contamination	No
9	Storm water: Best Management Practices and Detention for Water Quality, Drainage, and CSO Management (Urbonas & Stahre, 1993)	Yes	1993	Yes	Water cycle	No
10	Water Treatment: Troubleshooting and Problem Solving (Tillman, 1996b)	No	1996			
11	Efficient Management of Wastewater: Its Treatment and Reuse in Water Scarce Countries (Al Baz, Otterpohl, & Wendland, 2008)	Yes	2008	Yes	Building water use	No
12	Wastewater Treatment: Troubleshooting and Problem Solving (Tillman, 1996a)	No	1996			
13	Non point Pollution and Urban Storm water Management (Novotny, 1995)	Yes	1995	Yes	Water cycle	No
14	Drinking Water Quality: Problems and Solutions (Gray, 1994)	Yes	1994	Yes	Municipal water use	Yes
15	Wastewater Reclamation and Reuse (Rowe & Abdel-Magid, 1995)	Yes	1995	Yes	Wastewater	Yes
16	Water and Wastewater Technology (Hammer, 2008)	Yes	2008	Yes	Municipal wastewater	No
17	Water and Wastewater Treatment Plant Operations (Spellman, 2009)	Yes	2009	Yes	Urban water cycle	Yes
18	Freshwater Ecology: Concepts & Environmental Applications of Limnology (Dodds, 2010)	Yes	2010	Yes	Water cycle	No
19	Water Quality & Treatment: A Handbook on Drinking Water (Association, 2011)	Yes	2011	Yes	Drinking water treatment	Yes

20	Water in Crisis: A Guide to the World's Fresh Water Resources (Gleick, 1993)	Yes	1993	Yes	Global Water exchange	No
21	Groundwater Resources: Sustainability, Management, and Restoration (Kresic, 2009)	Yes	2009	Yes	Groundwater pollution	Yes
22	Twort's Water Supply (Twort, Ratnayaka, & Brandt, 2009)	Yes	2009	Yes	Water purification	No
23	Limnology: Lake and River Ecosystems (Wetzel, 2001)	Yes	2001	Yes	Water cycle	No
24	Groundwater (Freeze & Cherry, 1979)	Yes	1979	Yes	Groundwater cycle	No
25	Water and Wastewater Technology: Seventh Edition (Hammer, 2012)	Yes	2012	Yes	Complete water cycle	Yes
26	Environmental Engineering(Kiely, 2012)	Yes	1997	Yes	Water treatment	No
27	Water Resources Engineering (Linsley, Crow, & Warren, 1992)	Yes	1992	Yes	Water cycle	No
28	Water Supply and Sewerage (McGhee & Steel, 1991)	No	1991			
29	Environmental Engineering: Fundamentals, Sustainability, Design (Mihelcic & Zimmerman, 2010)	Yes	2010	Yes	Complete water cycle	Yes
30	Wastewater Treatment Plants: Planning, Design, and Operation (Qasim, 1994)	Yes	1994	Yes	Wastewater treatment	No

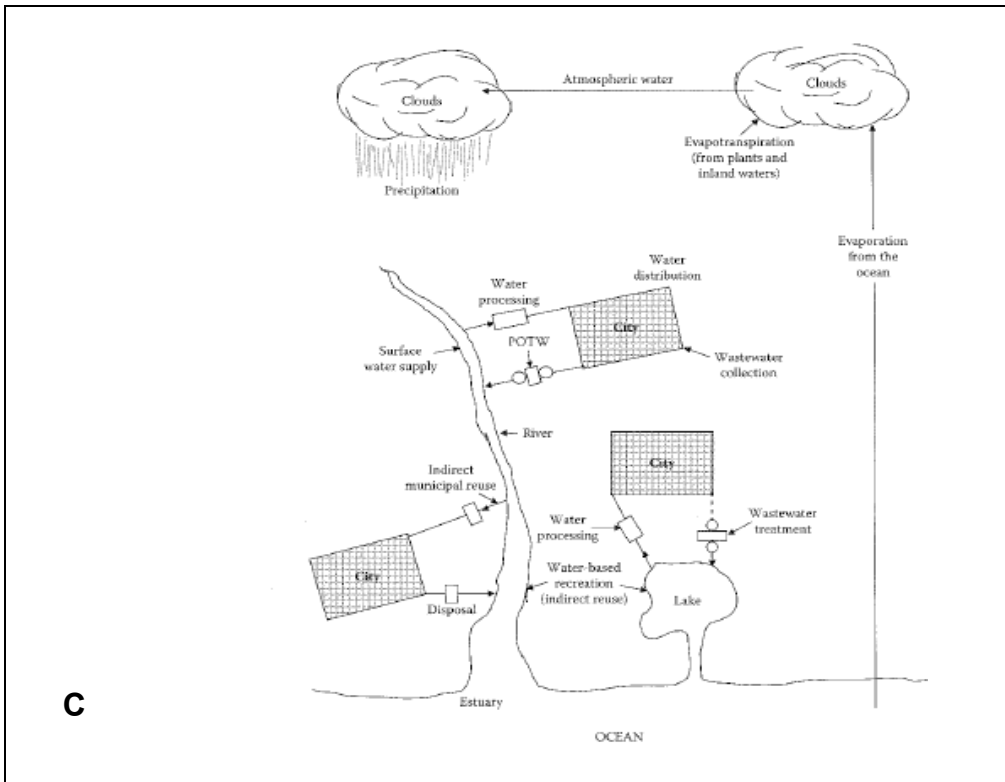
Figure S1. Panels A, B and C show sample diagrams from three textbooks used in the water systems diagram analysis described above. The diagram in panel A is taken from Bloetscher's *Water Basics for Decision Makers* (Bloetscher, 2009). The diagram in panel B is taken from Kiely's *Environmental Engineering* (Kiely, 2012). The diagram in panel C is taken from Spellman's *Water and Wastewater Treatment Plant Operations* (Spellman, 2009).



A

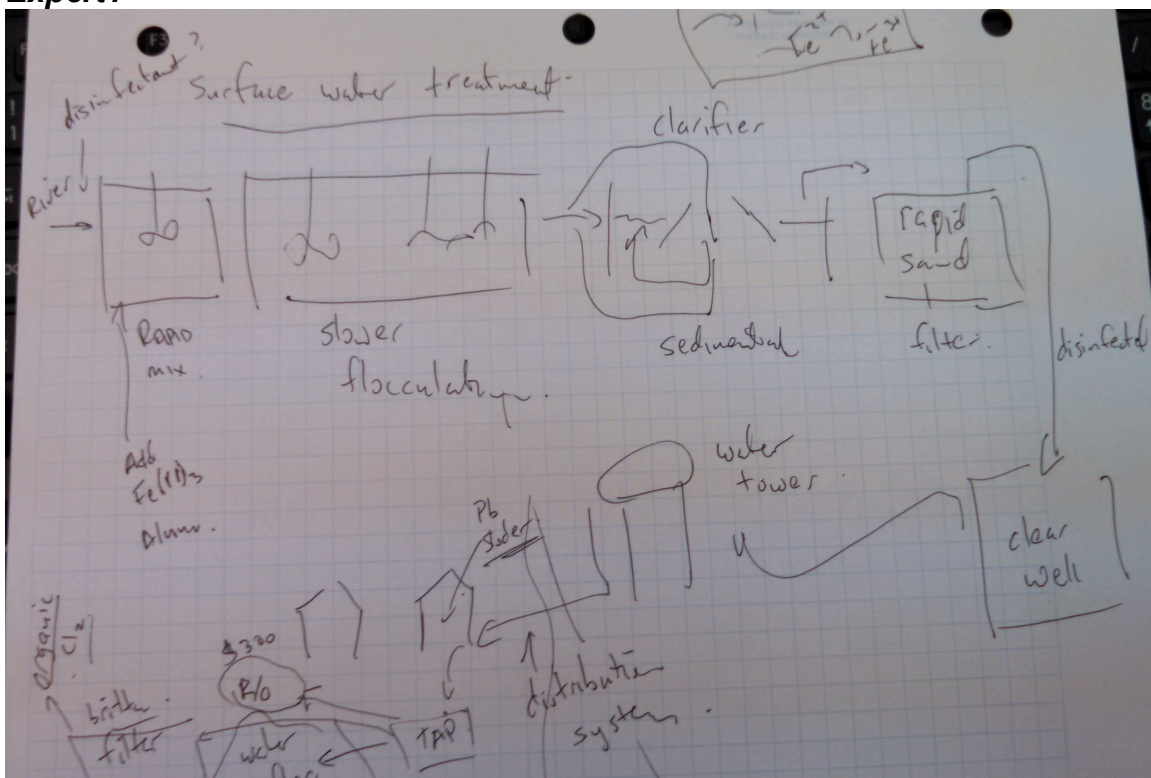


B

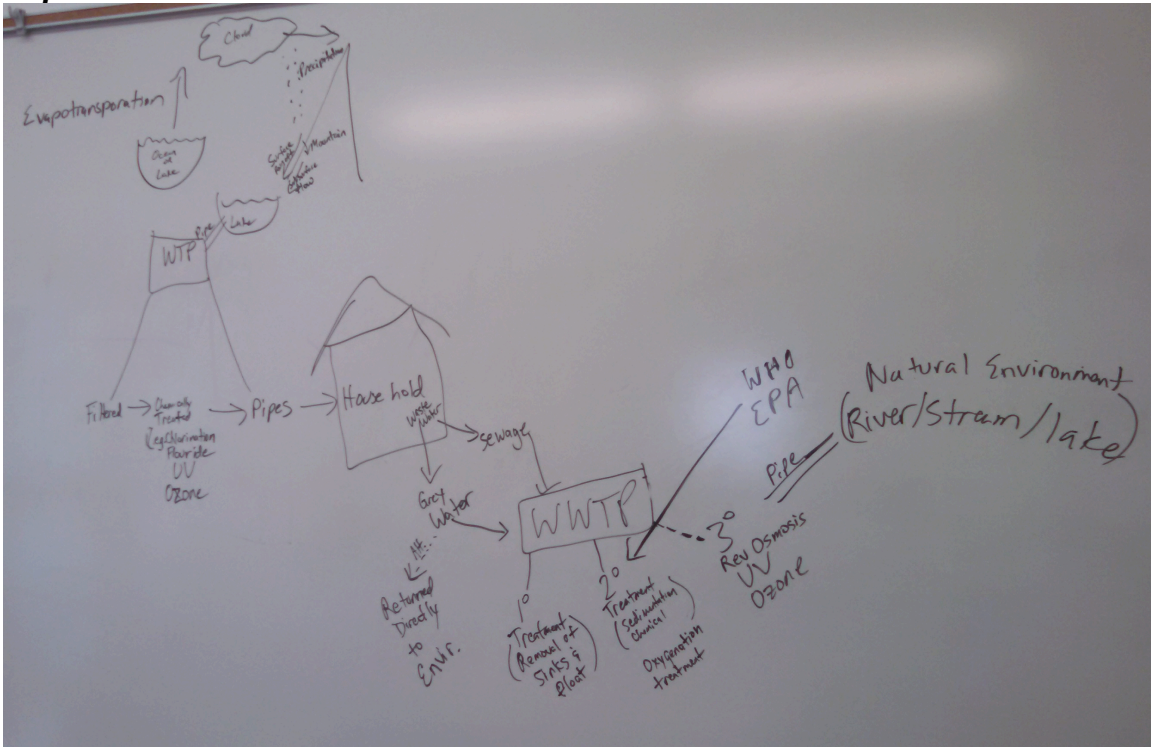


3. Additional expert diagrams

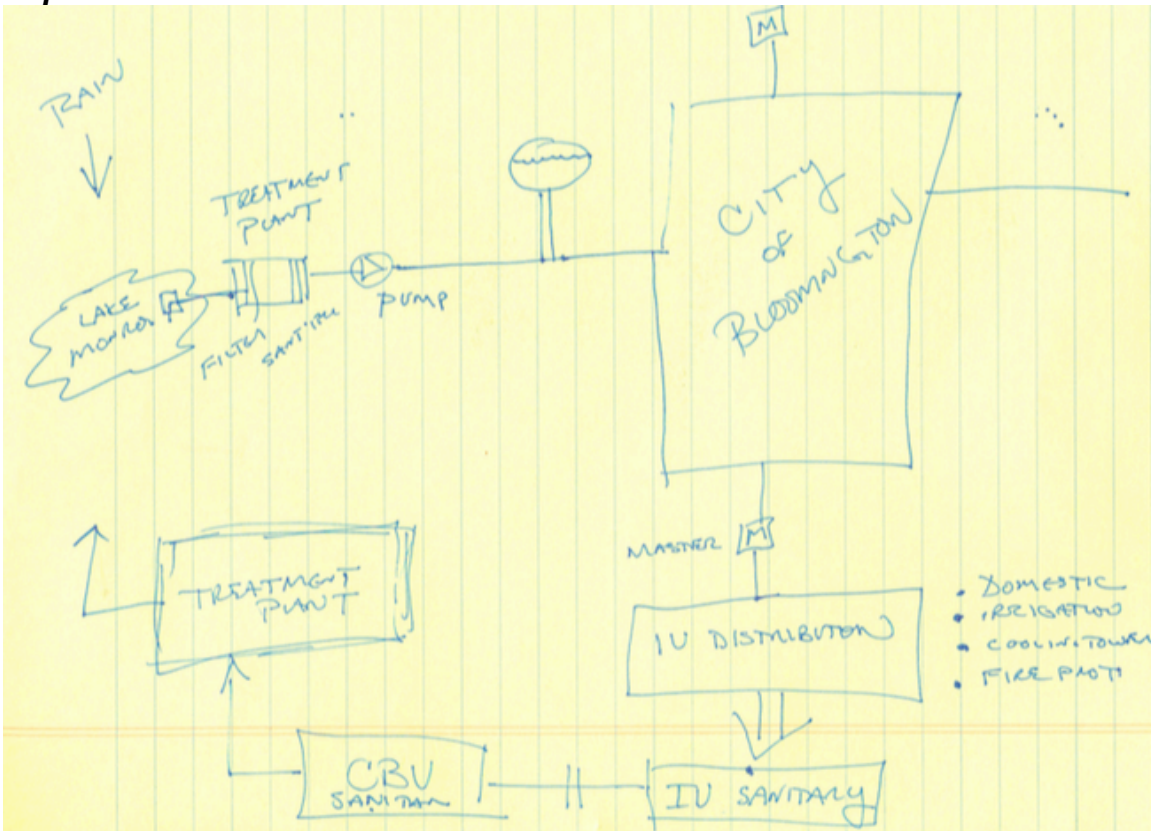
Figure S2. Shows three sample expert diagrams from our expert elicitation *Expert1*



Expert 2



Expert 3



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