APPENDIX A

United Water New York (UWNY) Water Production, Consumption, and Water Loss Data Sent to the Task Force Consultant, Versions 4, 5, 6, and 7

Appendix A. UWNY Population, Production, Consumption, and Nonrevenue Water Data Sets v4, v5, v6, and v7 Provided to Task Force Consultant; Revised and Missing Data Highlighted in Gray Cells

Source: UWNY, v4 (received 10April2015)

				TOTAL VOLUME–PRODUCTION, NRW, & DEMAND, MG/Y			VOLUME of Customer/Account Water Demands, Annual MG/Y			NUMBER of Customer Accounts			
Year	Population Served	Max Month (MG)	Peak Day Draft (mgd)	Total Production (Ground, Surface, & Other Sources), MG/Y	Non-revenue water/ Unaccounted-for Water, MG/Y	Total Customer/ Account Demands, MG/Y	Residential (Apartment, Hi Rise, Single Family, Multifamily)	NonResidential (Commercial, Hospital, Industrial, Municipal, School, Warehouse)	Other (Building Rates, Resale)	TOTAL NUMBER OF CUSTOMER ACCOUNTS	Residential (Apartment, Hi-rise, Single-family, Multifamily)	NonResidential (Commercial, Hospital, Industrial, Municipal, School, Warehouse)	Other (Building Rates, Resale)
2014		1,008.85	36.29	10,402	2,064.4	8,221	6,180.36	1,960.62	80.32	77,369	72,039	5,328	2
2013	278,037	1,048.05	40.94	10,358	2,232.3	8,068	5,972.60	2,024.92	70.98	77,297	71,766	5,529	2
2012	276,267	1,073.33	40.54	10,323	2,111.1	8,142	6,030.91	2,028.43	73.75	76,669	71,141	5,526	2
2011	274,497	1,118.04	43.70	10,650	2,465.4	8,191	6,043.16	2,020.90	112.19	Transition to new Customer Service data base system			
2010	272,726	1,166.86	47.23	10,889	2,133.6	8,706	6,405.01	2,213.08	88.16	72,615	66,969	5,643	
2009	270,544	955.19	35.33	10,442	2,395.0	8,017	5,967.80	2,017.62	31.50	72,705	66,914	5,787	
2008	268,363	1,105.35	40.85	11,055	2,129.2	8,830	6,287.57	2,459.03	83.09	71,812	66,086	5,723	
2007	266,181	1,155.76	45.18	11,498	2,307.7	9,130	6,484.07	2,562.49	83.66	70,920	65,253	5,664	
2006	263,999	1,148.91	44.78	11,256	2,174.6	9,108	6,422.07	2,601.35	85.03	70,379	64,774	5,602	
2005	261,818	1,162.68	43.64	11,291	2,065.8	9,225	6,559.96	2,623.62	41.92	69,779	64,242	5,536	
2004	259,636	1,042.80	40.34	10,676	1,874.4	8,815	6,189.69	2,589.99	35.75	69,247	63,776	5,470	
2003	257,454	1,032.23	37.35	10,416	1,852.1	8,564	6,127.81	2,399.10	36.63	68,667	63,265	5,401	
2002	255,272	928.40	31.94	9,736		8,276	5,921.00	2,315.31	40.07	68,031	62,716	5,314	
2001	253,091	1,123.36	46.48	10,841		9,091	6,538.10	2,501.13	51.92	67,322	62,073	5,248	
2000	250,909	1,015.19	39.07	10,447		8,756	6,208.49	2,498.94	48.97	66,519	61,335	5,183	

MG/Y–Million gallons per year

Source: UWNY, v5 (received 29April2015)

				TOTAL VOLUME–PRODUCTION, NRW, & DEMAND, MG/Y			VOLUME of Customer/Account Water Demands, Annual MG/Y			NUMBER of Customer Accounts			
Year	Population Served	Max Month (MG)	Peak Day Draft (mgd)	Total Production (Ground, Surface, & Other Sources), MG/Y	Non-revenue water/ Unaccounted-for Water, MG/Y	Total Customer/ Account Demands, MG/Y	Residential (Apartment, Hi Rise, Single Family, Multifamily)	NonResidential (Commercial, Hospital, Industrial, Municipal, School, Warehouse)	Other (Building Rates, Resale)	TOTAL NUMBER OF CUSTOMER ACCOUNTS	Residential (Apartment, Hi-rise, Single-family, Multifamily)	NonResidential (Commercial, Hospital, Industrial, Municipal, School, Warehouse)	Other (Building Rates, Resale)
2014		1,008.85	36.29	10,402	2,064.4	8,221	6,180.36	1,960.62	80.32	77,369	72,039	5,328	2
2013	278,037	1,048.05	40.94	10,358	2,232.3	8,068	5,972.60	2,024.92	70.98	77,297	71,766	5,529	2
2012	276,267	1,073.33	40.54	10,323	2,111.1	8,142	6,030.91	2,028.43	73.75	76,669	71,141	5,526	2
2011	274,497	1,118.04	43.70	10,650	2,465.4	8,191	6,043.16	2,020.90	112.19	Transition to new Customer Service data base system			
2010	272,726	1,166.86	47.23	10,889	2,133.6	8,706	6,405.01	2,213.08	88.16	72,615	66,969	5,643	
2009	270,544	955.19	35.33	10,442	2,395.0	8,017	5,967.80	2,017.62	31.50	72,705	66,914	5,787	
2008	268,363	1,105.35	40.85	11,055	2,129.2	8,830	6,287.57	2,459.03	83.09	71,812	66,086	5,723	
2007	266,181	1,155.76	45.18	11,498	2,307.7	9,130	6,484.07	2,562.49	83.66	70,920	65,253	5,664	
2006	263,999	1,148.91	44.78	11,256	2,174.6	9,108	6,422.07	2,601.35	85.03	70,379	64,774	5,602	
2005	261,818	1,162.68	43.64	11,291	2,065.8	9,225	6,559.96	2,623.62	41.92	69,779	64,242	5,536	
2004	259,636	1,042.80	40.34	10,676	1,874.4	8,815	6,189.69	2,589.99	35.75	69,247	63,776	5,470	
2003	257,454	1,032.23	37.35	10,416	1,852.1	8,564	6,127.81	2,399.10	36.63	68,667	63,265	5,401	
2002	255,272	928.40	31.94	9,736	1429.0	8,276	5,921.00	2,315.31	40.07	68,031	62,716	5,314	
2001	253,091	1,123.36	46.48	10,841	1714.3	9,091	6,538.10	2,501.13	51.92	67,322	62,073	5,248	
2000	250,909	1,015.19	39.07	10,447	1673.2	8,756	6,208.49	2,498.94	48.97	66,519	61,335	5,183	

Appendix A. UWNY Population, Production, Consumption, and Nonrevenue Water Data Sets v4, v5, v6, and v7 Provided to Task Force Consultant; Revised and Missing Data Highlighted in Gray Cells

Source: UWNY, v6 (received 13May2015)

				TOTAL VOLUME–PRODUCTION, NRW, & DEMAND, MG/Y			VOLUME of Customer/Account Water Demands, Annual MG/Y			NUMBER of Customer Accounts			
Year	Population Served	Max Month (MG)	Peak Day Draft (mgd)	Total Production (Ground, Surface, & Other Sources), MG/Y	Non-revenue water/ Unaccounted-for Water, MG/Y	Total Customer/ Account Demands, MG/Y	Residential (Apartment, Hi Rise, Single Family, Multifamily)	NonResidential (Commercial, Hospital, Industrial, Municipal, School, Warehouse)	Other (Building Rates, Resale)	TOTAL NUMBER OF CUSTOMER ACCOUNTS	Residential (Apartment, Hi-rise, Single-family, Multifamily)	NonResidential (Commercial, Hospital, Industrial, Municipal, School, Warehouse)	Other (Building Rates, Resale)
2014	278,920	1,008.85	36.29	10,402	2,064.4	8,221	6,180.36	1,960.62	80.32	77,369	72,039	5,328	2
2013	277,372	1,048.05	40.94	10,358	2,232.3	8,068	5,972.60	2,024.92	70.98	77,297	71,766	5,529	2
2012	275,823	1,073.33	40.54	10,323	2,111.1	8,142	6,030.91	2,028.43	73.75	76,669	71,141	5,526	2
2011	274,275	1,118.04	43.70	10,650	2,465.4	8,191	6,043.16	2,020.90	112.19	Transition to new Customer Service data base system			
2010	272,726	1,166.86	47.23	10,889	2,133.6	8,706	6,405.01	2,213.08	88.16	72,615	66,969	5,643	
2009	270,544	955.19	35.33	10,442	2,395.0	8,017	5,967.80	2,017.62	31.50	72,705	66,914	5,787	
2008	268,363	1,105.35	40.85	11,055	2,129.2	8,830	6,287.57	2,459.03	83.09	71,812	66,086	5,723	
2007	266,181	1,155.76	45.18	11,498	2,307.7	9,130	6,484.07	2,562.49	83.66	70,920	65,253	5,664	
2006	263,999	1,148.91	44.78	11,256	2,174.6	9,108	6,422.07	2,601.35	85.03	70,379	64,774	5,602	
2005	261,818	1,162.68	43.64	11,291	2,065.8	9,225	6,559.96	2,623.62	41.92	69,779	64,242	5,536	
2004	259,636	1,042.80	40.34	10,676	1,874.4	8,815	6,189.69	2,589.99	35.75	69,247	63,776	5,470	
2003	257,454	1,032.23	37.35	10,416	1,852.1	8,564	6,127.81	2,399.10	36.63	68,667	63,265	5,401	
2002	255,272	928.40	31.94	9,736	1429.0	8,276	5,921.00	2,315.31	40.07	68,031	62,716	5,314	
2001	253,091	1,123.36	46.48	10,841	1714.3	9,091	6,538.10	2,501.13	51.92	67,322	62,073	5,248	
2000	250,909	1,015.19	39.07	10,447	1673.2	8,756	6,208.49	2,498.94	48.97	66,519	61,335	5,183	

Source: UWNY, v7 (received 28May2015)

Year	Population Served	Max Month (MG)	Peak Day Draft (mgd)	Total Production (Ground, Surface, & Other Sources), MG/Y	South County Total Production MG/Y	Total Production (Rockland County) MG/Y	NRW Calc (NY Division), MG/Y	NRW Calc (Rockland Production minus Rockland Consumption), MG/Y	Total Customer/ Account metered consumption, MG/Y	South County Consumption, MG/Y	Total Consumption Rockland County, MG/Y	Total Residential	Residential South County	Total Commercial	Commercial South County	Total Industrial	Industrial South County	Resale
2014	278,920	1009.35	36.29	10,514	85	10,429	2,059.8	2,028.4	8,454	53	8,401	6,316.50	26.06	1,674.99	27.2	378.153		84.201
2013	277,372	1040.35	40.94	10,384	70	10,314	2,315.6	2,300.7	8,068	56	8,013	5,971.75	23.59	1,590.82	32.0	434.951	-0.082	70.866
2012	275,823	1065.08	40.54	10,349	69	10,280	2,206.9	2,183.6	8,142	45	8,097	6,014.15	24.22	1,627.96	20.8	426.266	0.402	73.569
2011	274,275	1109.97	43.70	10,650	70	10,580	2,464.2	2,447.7	8,186	53	8,133	6,024.39	24.67	1,607.51	26.3	451.277	2.454	103.055
2010	272,726	1158.00	47.23	10,889	73	10,816	2,178.9	2,158.5	8,710	53	8,657	6,408.29	27.45	1,691.70	23.3	521.844	2.144	88.159
2009	270,544	947.36	35.33	10,442	70	10,372	2,392.8	2,373.8	8,050	51	7,999	5,969.30	26.92	1,511.76	22.1	506.035	2.059	62.517
2008	268,363	1084.26	40.85	10,960	93	10,867	2,093.1	2,058.6	8,867	59	8,808	6,299.23	28.75	1,650.38	28.3	837.333	1.776	80.172
2007	266,181	1155.81	45.18	11,591	99	11,491	2,404.0	2,364.8	9,187	60	9,127	6,515.33	31.15	1,765.74	26.8	825.85	2.318	79.982
2006	263,999	1127.57	44.78	11,253		11,253	2,147.8	2,147.8	9,105		9,105	6,422.07		1,686.66		914.693		81.912
2005	261,818	1162.68	43.64	11,291		11,291	2,027.6	2,027.6	9,264		9,264	6,564.74		1,755.38		868.244		75.386
2004	259,636	1042.80	40.34	10,676		10,676	1,846.4	1,846.4	8,829		8,829	6,172.78		1,694.63		888.288		73.693
2003	257,454	1032.23	37.35	10,416		10,416	1,828.0	1,828.0	8,588		8,588	6,127.81		1,629.78		769.317		60.716
2002	255,272	926.79	31.94	9,735		9,735	1,431.3	1,431.3	8,304		8,304	5,921.00		1,628.23		687.054		67.722
2001	253,091	1128.00	46.48	10,841		10,841	1,713.0	1,713.0	9,128		9,128	6,538.96		1,766.48		734.503		87.756
2000	250,909	1015.19	39.07	10,447		10,447	1,684.8	1,684.8	8,762		8,762	6,195.23		1,722.38		769.738		74.836

Note: South County = Orange County

APPENDIX B

UWNY Annual Reports to the New York State Public Service Commission (PSC), pages 300, 305 and 400, 2012-2014

WATER OPERATING REVENUES (Account 400)

1. Report below water operating revenues for the year for each account.

2. Number of customers, columns (h) and (i), should be reported on the number of meters, plus number of flat rate accounts, except that where separate meter readings are added for billing purposes, one customer should be counted for each group of meters so added. The average number of customers means the average of twelve figures at the close of each month. If customer count in the residential and commercial classifications includes customers counted more than once because of special services, indicate in a footnote the number of such customers included in each of the two service classifications.

3. If preceding year columns (e), (g) and (i) are not derived from previously reported figures, explain any inconsistencies.

Line No. (a)	Account No. (b)	Account Title (c)	Operating Revenues		Number of Thousand Gallons Sold		Average Number of Customers Per Month	
			Amount for Year (d)	Amount for Previous Year (e)	Amount for Year (f)	Amount for Previous Year (g)	Number for Year (h)	Number for Previous Year (i)
1		SALES OF WATER						
2	460.1, 461.1	Residential Sales	$45,256,526	$42,026,165	6,014,149	6,024,385	67,471	67,245
3	460.2, 461.2	Commercial Sales	10,006,905	9,028,398	1,674,575	1,607,507	4,908	4,738
4	460.3, 461.3	Industrial Sales	2,089,407	1,945,533	426,266	451,277	105	113
5	460.7	Customer Main Extension Surcharge						
6	462	Private Fire Protection Service	2,455,053	2,384,653	0	0	1,644	1,563
7	463	Public Fire Protection Service	5,822,396	5,299,162	0	0	71	71
8	464	Other Sales to Public Authorities						
9	465	Sales to Irrigation Customers						
10	466	Sales for Resale	223,605	361,445	73,569	103,055	2	2
11	467	Interdepartmental Sales	1,424,687	1,421,071			1	1
12		Total Sales of Water	67,278,579	62,466,427	8,188,559	8,186,224	74,202	73,733
13								
14		OTHER OPERATING REVENUES						
15	470	Forfeited Discounts						
16	471	Misc. Service Revenues	56,492	33,568				
17	472	Rent from Water Property	207,666	184,418				
18	473	Interdepartmental Rents						
19	474	Other Water Revenues	7,835,556	7,498,078				
20		Total Other Operating Revenues	8,099,714	7,716,064				
21		Total Water Operating Revenues	$75,378,293	$70,182,491				

BILLING ROUTINE - WATER

Report the following information in days for Accounts 460 and 461:

1. The period for which bills are rendered.
2. The period between the date meters are read and the date customers are billed.
3. The period between the billing date and the date on which discounts are forfeited.

SALES FOR RESALE AND PURCHASED WATER (Account 466 and 602)

Report below particulars of sales or purchases for redistribution during the year.

Line No.	Sold To (a)	Thousand Gallons Supplied (b)	Revenue (c)	Average per Thousand Gallons (Cents) (d)	Purchased From (e)	Thousand Gallons (f)	Cost (g)	Average per Thousand Gallons (Cents) (h)
1								
2	United Water New Jersey	35,333	181,945	5.15	Lake Tiorati Releases		10,000	
3								
4	Village of Hillburn	38,236	89,331	2.34	New York State Office of Parks	182,500	178,317	0.98
5								
6	Town of Ramapo	0	(47,670)		Purchased Water Deferral		(15,533)	
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33	TOTAL	73,569	$223,605	7.49	TOTAL	182,500	$172,784	0.98

WATER PRODUCTION AND CONSUMPTION

1. Show quantities of water produced and purchased and the quantities delivered to consumers and lost or unaccounted for during the year. Where estimates are used, the bases thereof should be set forth in a footnote.

2. If respondent has two or more major plants, show the information called for in this schedule separately for each plant.

3. Insert in the column headings preceding the abbreviation "gals." the initial letter of Thousand, Million or Billion to indicate the unit in which the quantities are expressed.

LINE NO.	Month	Water Produced		Consumption							Losses Accounted for				Losses Un-accounted for
					General		Public*		Respondent						
		Gravity	Pumped	Water Purchased	Metered	Un-Metered	Metered	Un-Metered	Metered	Un-Metered	Pump Slip	Trans mission	Distri bution	Other	
		gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
1	Jan		818,231		641,714				0					37,353	139,164
2	Feb		760,061		535,489				0					31,229	193,343
3	Mar		798,674		605,527				0					26,238	166,909
4	Apr		833,102		641,671				0					38,416	153,015
5	May		883,045		578,746				0					30,009	274,290
6	Jun		943,275		703,684				0					23,846	215,745
7	Jul		1,073,325		836,340				0					22,617	214,368
8	Aug		994,859		755,349				0					41,919	197,591
9	Sep		878,391		822,407				0					12,319	43,665
10	Oct		796,622		772,564				0					16,792	7,266
11	Nov		779,488		610,915				0					20,658	147,915
12	Dec		789,792		637,541			43,117	825	2,670				2,065	149,361
13	Totals	0	10,348,865	0	8,141,947	0	0	43,117	825	2,670	0	0	0	303,461	1,902,632

*Includes all sales to public authorities except those made under service classifications having general consumer application.

WATER OPERATING REVENUES (Account 400)

1. Report below water operating revenues for the year for each account.
2. Number of customers, columns (h) and (i), should be reported on the number of meters, plus number of flat rate accounts, except that where separate meter readings are added for billing purposes, one customer should be counted for each group of meters so added. The average number of customers means the average of twelve figures at the close of each month. If customer count in the residential and commercial classifications includes customers counted more than once because of special services, indicate in a footnote the number of such customers included in each of the two service classifications.
3. If preceding year columns (e), (g) and (i) are not derived from previously reported figures, explain any inconsistencies.

Line No. (a)	Account No. (b)	Account Title (c)	Operating Revenues		Number of Thousand Gallons Sold		Average Number of Customers Per Month	
			Amount for Year (d)	Amount for Previous Year (e)	Amount for Year (f)	Amount for Previous Year (g)	Number for Year (h)	Number for Previous Year (i)
1		SALES OF WATER						
2	460.1, 461.1	Residential Sales	$46,661,572	$45,256,526	5,971,752	6,014,149	66,900	67,471
3	460.2, 461.2	Commercial Sales	10,227,233	10,006,905	1,590,821	1,627,963	4,427	4,908
4	460.3, 461.3	Industrial Sales	2,216,363	2,089,407	434,951	426,266	98	105
5	460.7	Customer Main Extension Surcharge						
6	462	Private Fire Protection Service	2,665,552	2,455,053	0	0	1,698	1,644
7	463	Public Fire Protection Service	5,943,094	5,822,396	0	0	71	71
8	464	Other Sales to Public Authorities						
9	465	Sales to Irrigation Customers						
10	466	Sales for Resale	286,824	223,605	70,866	73,569	2	2
11	467	Interdepartmental Sales	1,686,500	1,424,687			1	1
12		Total Sales of Water	69,687,138	67,278,579	8,068,390	8,141,947	73,197	74,202
13								
14		OTHER OPERATING REVENUES						
15	470	Forfeited Discounts						
16	471	Misc. Service Revenues	111,234	56,492				
17	472	Rent from Water Property	200,158	207,666				
18	473	Interdepartmental Rents						
19	474	Other Water Revenues	8,432,084	7,835,556				
20		Total Other Operating Revenues	8,743,476	8,099,714				
21		Total Water Operating Revenues	$78,430,614	$75,378,293				

BILLING ROUTINE - WATER

Report the following information in days for Accounts 460 and 461:

1. The period for which bills are rendered.
2. The period between the date meters are read and the date customers are billed.
3. The period between the billing date and the date on which discounts are forfeited.

SALES FOR RESALE AND PURCHASED WATER (Account 466 and 602)

Report below particulars of sales or purchases for redistribution during the year.

Line No.	Sold To (a)	Thousand Gallons Supplied (b)	Revenue (c)	Average per Thousand Gallons (Cents) (d)	Purchased From (e)	Thousand Gallons (f)	Cost (g)	Average per Thousand Gallons (Cents) (h)
1								
2	United Water New Jersey	38,453	211,748	5.51	Lake Tiorati Releases		10,000	
3								
4	Village of Hillburn	32,413	75,075	2.32	New York State Office of Parks	182,500	162,855	0.89
5								
6					Purchased Water Deferral		2,288	
7								
8					Miscellaneous		(319)	
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33	TOTAL	70,866	$286,824	7.82	TOTAL	182,500	$174,824	0.89

NYSPSC 347-97

WATER PRODUCTION AND CONSUMPTION

1. Show quantities of water produced and purchased and the quantities delivered to consumers and lost or unaccounted for during the year. Where estimates are used, the bases thereof should be set forth in a footnote.

2. If respondent has two or more major plants, show the information called for in this schedule separately for each plant.

3. Insert in the column headings preceding the abbreviation "gals." the initial letter of Thousand, Million or Billion to indicate the unit in which the quantities are expressed.

LINE NO.	Month	Water Produced		Consumption							Losses Accounted for				Losses Un-accounted for
					General		Public*		Respondent						
		Gravity	Pumped	Water Purchased	Metered	Un-Metered	Metered	Un-Metered [1]	Metered [2]	Un-Metered	Pump Slip	Trans mission	Distri bution	Other [3]	
		gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.	gals.
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
1	Jan		814,564		622,377			9,872	12	679				10,877	170,747
2	Feb		765,929		560,118			10,182	43	679				3,865	191,042
3	Mar		815,699		652,501			9,574	146	359				2,539	150,580
4	Apr		792,183		602,604			10,196	26	369				4,265	174,722
5	May		900,997		567,348			9,902	280	527				1,507	321,433
6	Jun		927,349		727,192			11,262	392	678				3,808	184,017
7	Jul		1,048,051		766,935			11,591	403	457				8,317	260,348
8	Aug		971,519		750,769			13,101	217	480				5,455	201,497
9	Sep		914,882		812,839			12,144	667	435				2,281	86,516
10	Oct		864,458		752,445			11,436	938	434				4,034	95,171
11	Nov		762,704		610,399			10,806	595	424				7,695	132,785
12	Dec		805,662		642,863			9,534	299	448				11,074	141,444
13	Totals	0	10,383,997	0	8,068,390	0	0	129,600	4,019	5,968	0	0	0	65,717	2,110,302

*Includes all sales to public authorities except those made under service classifications having general consumer application.

1 This represents any authorized unbilled consumption including fire fighting, street sweeping and other types of public use. This value is estimated based on AWWA recommendations.
2 This represents any authorized unbilled consumption used by the company for activities including flushing and plant use. This value represents metered consumption.
3 This represents losses that are accounted for through activities related to main break repair and service leaks.

WATER OPERATING REVENUES (Account 400)

1. Report below water operating revenues for the year for each account.
2. Number of customers, columns (h) and (i), should be reported on the number of meters, plus number of flat rate accounts, except that where separate meter readings are added for billing purposes, one customer should be counted for each group of meters so added. The average number of customers means the average of twelve figures at the close of each month. If customer count in the residential and commercial classifications includes customers counted more than once because of special services, indicate in a footnote the number of such customers included in each of the two service classifications.
3. If preceding year columns (e), (g) and (i) are not derived from previously reported figures, explain any inconsistencies.

Line No. (a)	Account No. (b)	Account Title (c)	Operating Revenues		Number of Thousand Gallons Sold		Average Number of Customers Per Month (note 1)	
			Amount for Year (d)	Amount for Previous Year (e)	Amount for Year (f)	Amount for Previous Year (g)	Number for Year (h)	Number for Previous Year (i)
1		SALES OF WATER						
2	460.1, 461.1	Residential Sales	$51,488,461	$46,661,572	6,316,500	5,971,752	67,170	66,900
3	460.2, 461.2	Commercial Sales	11,099,535	10,227,233	1,674,989	1,590,821	4,432	4,427
4	460.3, 461.3	Industrial Sales	2,100,969	2,216,363	378,153	434,951	94	98
5	460.7	Customer Main Extension Surcharge						
6	462	Private Fire Protection Service	2,753,317	2,665,552	0	0	1,768	1,698
7	463	Public Fire Protection Service	6,472,905	5,943,094	0	0	72	71
8	464	Other Sales to Public Authorities						
9	465	Sales to Irrigation Customers						
10	466	Sales for Resale	333,772	286,824	84,201	70,866	2	2
11	467	Interdepartmental Sales	1,814,641	1,686,500			1	1
12		Total Sales of Water	76,063,601	69,687,138	8,453,843	8,068,390	73,539	73,197
13								
14		OTHER OPERATING REVENUES						
15	470	Forfeited Discounts						
16	471	Misc. Service Revenues	97,416	111,234				
17	472	Rent from Water Property	189,988	200,158				
18	473	Interdepartmental Rents						
19	474	Other Water Revenues	5,126,702	8,432,084				
20		Total Other Operating Revenues	5,414,107	8,743,476				
21		Total Water Operating Revenues	$81,477,707	$78,430,614				

BILLING ROUTINE - WATER

Report the following information in days for Accounts 460 and 461:

1. The period for which bills are rendered.
2. The period between the date meters are read and the date customers are billed.
3. The period between the billing date and the date on which discounts are forfeited.

note 1 - represents count at 12/31/2014

SALES FOR RESALE AND PURCHASED WATER (Account 466 and 602)

Report below particulars of sales or purchases for redistribution during the year.

Line No.	Sold To (a)	Thousand Gallons Supplied (b)	Revenue (c)	Average per Thousand Gallons (Cents) (d)	Purchased From (e)	Thousand Gallons (f)	Cost (g)	Average per Thousand Gallons (Cents) (h)
1								
2	United Water New Jersey	39,460	230,696	5.85	Lake Tiorati Releases		10,000	
3								
4	Village of Hillburn	44,741	103,076	2.30	New York State Office of Parks	182,500	183,975	1.01
5								
6					Purchased Water Deferral		(31,169)	
7								
8					Miscellaneous		716	
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33	TOTAL	84,201	$333,772	8.15	TOTAL	182,500	$163,522	1.01

NYSPSC 347-97

WATER PRODUCTION AND CONSUMPTION

1. Show quantities of water produced and purchased and the quantities delivered to consumers and lost or unaccounted for during the year. Where estimates are used, the bases thereof should be set forth in a footnote.

2. If respondent has two or more major plants, show the information called for in this schedule separately for each plant.

3. Insert in the column headings preceding the abbreviation "gals." the initial letter of Thousand, Million or Billion to indicate the unit in which the quantities are expressed.

LINE NO.	Month	Water Produced		Consumption							Losses Accounted for				Losses Un-accounted for
					General		Public*		Respondent						
		Gravity	Pumped	Water Purchased	Metered	Un-Metered	Metered	Un-Metered [1]	Metered [2]	Un-Metered	Pump Slip	Trans mission	Distri bution	Other [3]	
	(a)	gals. (b)	gals. (c)	gals. (d)	gals. (e)	gals. (f)	gals. (g)	gals. (h)	gals. (i)	gals. (j)	gals. (k)	gals. (l)	gals. (m)	gals. (n)	gals. (o)
1	Jan		854,586		637,428			10,071	79	448				25,991	180,569
2	Feb		779,133		572,454			10,682	8	613				21,360	174,016
3	Mar		851,565		636,167			9,739	41	446				6,840	198,332
4	Apr		806,305		603,720			10,645	61	421				8,960	182,498
5	May		870,325		562,156			10,079	429	468				14,330	282,862
6	Jun		955,512		634,266			10,879	1,442	518				5,761	302,646
7	Jul		998,088		814,700			11,944	2,510	582				16,721	151,631
8	Aug		1,018,881		857,159			12,476	883	481				12,808	135,074
9	Sep		944,036		1,202,337			12,736	709	595				8,464	(280,805) (a)
10	Oct		834,837		750,130			11,800	502	618				8,021	63,766
11	Nov		783,097		591,683			10,435	1,401	584				4,442	174,552
12	Dec		817,317		591,643			9,789	185	611				3,751	211,338
13	Totals	0	10,513,682	0	8,453,843	0	0	131,275	8,250	6,385	0	0	0	137,450	1,776,479

*Includes all sales to public authorities except those made under service classifications having general consumer application.

1 This represents any authorized unbilled consumption including fire fighting, street sweeping and other types of public use. This value is estimated based on AWWA recommendations.
2 This represents any authorized unbilled consumption used by the company for activities including flushing and plant use. This value represents metered consumption.
3 This represents losses that are accounted for through activities related to main break repair and service leaks.

(a) UWNY started monthly billing

APPENDIX C

UWNY Annual Water Withdrawal Report Forms to the New York State Department of Environmental Conservation (DEC), Sections 1, 2 and 4, 2012-2014

2012

New York State Department of Environmental Conservation
Division of Water, Bureau of Water Resources Management
625 Broadway, Albany, NY 12233-3508

Jan 2013

Water Withdrawal Reporting Form

Due by March 31st each year

Prior to filling out this form, please read the instructions on the last page

This form not for Agricultural Facilities

Section 1

Facility Name United Water New York	Facility Street Address 360 West Nyack Road		Reporting Year 2012
City West Nyack	Zip 10994	Town Clarkstown	County Rockland
Contact Name Joshua Engelking	Email Joshua.Engelking@UnitedWater.com		Telephone 845-623-1500

Source Name	Source Type	Well Depth	Max Rate	Units
Source Name				
Source Name				
Source Name				
Source Name				
Source Name				
Source Name				

SEE ATTACHED SUMMARY SHEET

Average Day Withdrawal: 28.23	Maximum Day Withdrawal: 40.536	Permitted Withdrawal: 53.33
Submitted by: [signature]	Title: Manager Treatment and Supply	Date: 3/28/13

Water Withdrawal Category (Check one)

- Agricultural
- Bottled / Bulk Water
- Commercial
- Environmental
- Industrial
- Institutional
- Mine Dewatering
- Oil / Gas Production
- Power Production:
  - Fossil Fuel
  - Nuclear
  - Other Pwr:
- ✓ Public Water Supply
- Recreation:
  - Golf Course
  - Snow Making
  - Other Rec:
- Other:

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If you submit by this form by email and do not receive a confirmation email, please contact AWQRSDEC@gw.dec.state.ny.us or 518 402-8086.

Section 2

Calculation Method: M M = Metered readings W = Flow through a weir or flume P = Flow through a pipe or pump run times E = Estimated

Units: *Must be in gallons per month*	January	February	March	April	May	June
Withdrawn	818,231,000	760,061,000	798,674,000	832,309,000	881,756,000	942,483,000
Transferred / Imported	3,602,000	3,311,000	3,896,000	3,916,000	3,719,000	3,940,000
Consumed	641,714,000	535,489,000	605,937,000	641,671,000	578,745,000	703,684,000
Returned	3,178,000	3,485,000	3,350,000	4,700,000	8,330,000	10,820,000
Diversions In / Out, if any						

Units: *Must be in gallons per month*	July	August	September	October	November	December
Withdrawn	1,070,304,000	991,265,000	875,486,000	796,146,000	777,827,000	786,282,000
Transferred / Imported	4,679,000	4,120,000	3,309,000	2,475,000	2,139,000	2,437,000
Consumed	836,339,000	755,349,000	825,717,000	772564000	610,914,000	684,152,000
Returned	11,164,000	9,310,000	7,630,000	5,010,000	2,660,000	3,511,000
Diversions In / Out, if any						

Describe location of returned water

2012

Section 4

Water Conservation and Efficiencies

All permitted water withdrawal systems must have a Water Conservation Program.

Section A: Permitted Public Water Supply Facilities

Are all sources of supply including major interconnections equipped with master meters? ✓ Yes With the exception of emergency use interconnections

What percentage of your system is metered? 99 %. Residential charge per 1000 gallons of water: $ 5.15 avg

How often were customer meters read this past year (e.g. quarterly, yearly)? 80% quarterly, 20% monthly

Number of water service connections: 75,146 Total population served: 295,386

How many customer meters were recalibrated and/or replaced in the past year? 4400 replaced, 577 new meters installed

Miles of pipe in water distribution system: 1053 Length of pipe replaced in the past year: 4.24 Miles

Miles of pipe on which leak detection was performed using sonic listening equipment: 76 Type of equipment used: SePEM Noise Logger

How many system-wide water audits were performed in the past year? 2 350 mi w/ hand held acoustic sensor

What percentage of the water withdrawn was not billed to customers? 20.5 %. Lost to distribution system leakage? 11.2 %

Was information about household water saving devices and ways to reduce water use distributed to residential customers? ✓ Yes No

Was water conservation information about promoting recycling and reuse distributed to industrial and commercial customers? Yes ✓ No

Do you have lawn sprinkling time restrictions (e.g. odd/even days) during periods of peak demand? Yes ✓ No

Do you have a plan that takes progressive steps to further reduce outdoor water use during drought conditions with an ordinance or procedure to assure compliance? ✓ Yes No

Please review your permit(s) for any specific water conservation conditions and report below on progress made in past year.

While our permits don't have any specific water conservation conditions, United Water New York (UW) promotes water conservation though its website (www.uwconserve.com) and mailings by providing helpful information and links. UW posts a conservation guide both on the website as well as distributing it annually as an insert in the Journal News. The guide, bill inserts, cable tv spots and newspaper ads provides useful information on water saving devices, water conservation and water recycling.

Section B: Water Withdrawal Reporting and Registered Facilities (see permitting schedule in NYCRR Part 601.7)

Are all sources of supply including major interconnections equipped with master meters? Yes No

How often were master meters read in the past year?

How often were master meters calibrated in the past year?

Are there secondary meters located within the facility or system? Yes No

Identify other water conservation and efficiency measures currently used in your system (e.g. Best Management Practices such as recycling process and cooling waters, use of drip irrigation and moisture probes, utilizing storm water runoff and reclaimed wastewater or conducting facility water audits):

New York State Department of Environmental Conservation
Division of Water, Bureau of Water Resources Management
625 Broadway, Albany, NY 12233-3508

Jan 2013

Water Withdrawal Reporting Form

Due by March 31st each year

Prior to filling out this form, please read the instructions on the last page

This form not for Agricultural Facilities

Section 1

Facility Name United Water New York	Facility Street Address 360 West Nyack Road		Reporting Year 2013
City West Nyack	Zip 10994	Town Clarkstown	County Rockland
Contact Name Joshua Engelking	Email Joshua.Engelking@UnitedWater.com		Telephone 845-623-1500

Source Name	Source Type	Well Depth	Max Rate	Units
Source Name				
Source Name				
Source Name				
Source Name				
Source Name				
Source Name				

SEE ATTACHED SUMMARY SHEET

Average Day Withdrawal: 28.45 MGD	Maximum Day Withdrawal: 41.20 MGD	Permitted Withdrawal: 53.33
Submitted by: JOSHUA ENGELKING	Title: Manager Treatment and Supply	Date: 3/28/14

Water Withdrawal Category (Check one)

- Agricultural
- Bottled / Bulk Water
- Commercial
- Environmental
- Industrial
- Institutional
- Mine Dewatering
- Oil / Gas Production
- Power Production:
  - Fossil Fuel
  - Nuclear
  - Other Pwr:
- ✓ Public Water Supply
- Recreation:
  - Golf Course
  - Snow Making
  - Other Rec:
- Other:

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If you submit by this form by email and do not receive a confirmation email, please contact AWQRSDEC@gw.dec.state.ny.us or 518 402-8086.

2013

Section 2

Calculation Method: M

M = Metered readings W = Flow through a weir or flume P = Flow through a pipe or pump run times E = Estimated
C = Pump curve calcualtion

Units: *Must be in gallons per month*	January	February	March	April	May	June
Withdrawn	814,564,000	765,929,000	815,728,000	792,183,000	900,997,000	927,349,000
Transferred / Imported	3,091,000	2,932,000	2,528,000	2,236,000	2,694,000	2,802,000
Consumed	632,939,000	571,021,000	662,579,000	591,268,000	578,057,000	739,525,000
Returned	3,270,000	3,450,000	2,460,000	4,310,000	6,729,000	7,323,000
Diversions In / Out, if any						

Units: *Must be in gallons per month*	July	August	September	October	November	December
Withdrawn	1,048,051,000	971,519,000	914,882,000	864,458,000	762,704,000	805,662,000
Transferred / Imported	2,801,000	3,336,000	2,460,000	2,400,000	7,180,000	-2,052,000 *
Consumed	779,384,000	750,769,000	812,838,000	752,445,000	610,398,000	642,863,000
Returned	10,469,000	9,179,000	7,735,000	6,164,000	4,530,000	3,525,000
Diversions In / Out, if any						

Describe location of returned water: Lake Deforest Plant lagoon discharge to Hackensack River.

* THE NEGATIVE VALUE REPRESENTS A BILLING CORRECTION FOR THE MONTH OF NOVEMBER

2013

Section 4

Water Conservation and Efficiencies

All permitted water withdrawal systems must have a Water Conservation Program.

Section A: Public Water Supply Facilities

Are all sources of supply including major interconnections equipped with master meters? ✓ Yes No

What percentage of your system is metered? 99 % Average age of meters: 11 yrs Range of age of meters: 1 - 21 years

How often were customer meters read this past year (e.g. quarterly, yearly)? Quarterly

Number of water service connections: 75,177 Total population served: 298,778

How many customer meters were recalibrated and/or replaced in the past year? 5255

Miles of pipe in water distribution system: 1051 Length of pipe replaced in the past year: 2.70 Miles

Miles of pipe on which leak detection was performed using sonic listening equipment: 155.9 Type of equipment used: SePEM Noiselogger

How many system-wide water audits were performed in the past year? 2 Residential charge per 1000 gallons of water: $ 7.14

What percentage of the water withdrawn was not billed to customers? 21.5 %. Lost to distribution system leakage? 11 %

Was information about household water saving devices and ways to reduce water use distributed to residential customers? ✓ Yes No

Was water conservation information about promoting recycling and reuse distributed to industrial and commercial customers? ✓ Yes No

Do you have lawn sprinkling time restrictions (e.g. odd/even days) during periods of peak demand? Yes ✓ No

Do you have a plan that takes progressive steps to further reduce outdoor water use during drought conditions with an ordinance or procedure to assure compliance? ✓ Yes No If yes, please forward a copy to address shown on page one.

Please review your permit(s) for any specific water conservation conditions and report below on progress made in past year:

While our permits do not have any specific water conservation conditions, United Water New York (UW) promotes water conservation through its website (www.uwconserve.com) and mailings by providing helpful information and links. UW posts a conservation guide both on the website as well as distributing it annually as an insert in the journal news.

Section B: Non-Public Water Supply Facilities (see permitting schedule in NYCRR Part 601.7)

Are all sources of supply including major interconnections equipped with master meters? Yes No

How often were master meters read in the past year?

How often were master meters calibrated in the past year?

Are there secondary meters located within the facility or system? Yes No

Identify other water conservation and efficiency measures currently used in your system (e.g. Best Management Practices such as recycling process and cooling waters, use of drip irrigation and moisture probes, utilizing storm water runoff and reclaimed wastewater or conducting facility water audits):

2014

New York State Department of Environmental Conservation
Division of Water, Bureau of Water Resources Management
625 Broadway, Albany, NY 12233-3508

Jan 2013

Water Withdrawal Reporting Form

Due by March 31st each year

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This form not for Agricultural Facilities

Section 1

Facility Name United Water New York	Facility Street Address 360 West Nyack Road		Reporting Year 2014
City West Nyack	Zip 10994	Town Clarkstown	County Rockland
Contact Name Joshua Engelking	Email Joshua.Engelking@UnitedWater.com		Telephone 845-623-1500

Source Name	Source Type	Well Depth	Max Rate	Units
Source Name				
Source Name				
Source Name				
Source Name				
Source Name				
Source Name				

SEE ATTACHED SUMMARY SHEET

Average Day Withdrawal: 28.45 MGD	Maximum Day Withdrawal: 41.20 MGD	Permitted Withdrawal: 53.33
Submitted by: JOSHUA ENGELKING	Title: Manager Treatment and Supply	Date: MARCH 30, 2015

Water Withdrawal Category (Check one)

- Agricultural
- Bottled / Bulk Water
- Commercial
- Environmental
- Industrial
- Institutional
- Mine Dewatering
- Oil / Gas Production
- Power Production:
  - Fossil Fuel
  - Nuclear
  - Other Pwr:
- ✓ Public Water Supply
- Recreation:
  - Golf Course
  - Snow Making
  - Other Rec:
- Other:

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2014

Section 2

Calculation Method: M = Metered readings W = Flow through a weir or flume P = Flow through a pipe or pump run times E = Estimated
C = Pump curve calcualtion

Units: *Must be in gallons per month*	January	February	March	April	May	June
Withdrawn	854,586,000	779,133,000	851,565,000	806,305,000	870,325,000	955,512,000
Transferred / Imported	3,909,000	3,709,000	3,056,000	3,955,000	3,352,000	0
Consumed	633,702,000	568,012,000	639,167,000	603,720,000	562,156,000	634,266,000
Returned	5,298,000	5,684,000	6,189,000	4,550,000	5,132,000	8,636,000
Diversions In / Out, if any						

Units: *Must be in gallons per month*	July	August	September	October	November	December
Withdrawn	998088000	1,018,881,000	944,036,000	834,837,000	783,097,000	817,317,000
Transferred / Imported	7,214,000	3,124,000	3,770,000	2,772,000	3,184,000	6,688,000
Consumed	814,700,000	855,921,000	1,202,337,000	750130000	591,683,000	591,643,000
Returned	10,392,000	12,719,000	6,925,000	6,816,000	7,312,000	6,245,000
Diversions In / Out, if any						

Describe location of returned water: Lake Deforest Plant lagoon discharge to Hackensack River

2014

Section 4

Water Conservation and Efficiencies

All permitted water withdrawal systems must have a Water Conservation Program.

Section A: Public Water Supply Facilities

Are all sources of supply including major interconnections equipped with master meters? ✓ Yes No

What percentage of your system is metered? 99 % Average age of meters: 11 yrs Range of age of meters: 1 - 24 years

How often were customer meters read this past year (e.g. quarterly, yearly)? Monthly

Number of water service connections: 74,973 Total population served: 303,381

How many customer meters were recalibrated and/or replaced in the past year? 7,700

Miles of pipe in water distribution system: 1,056 Length of pipe replaced in the past year: 8143 Feet

Miles of pipe on which leak detection was performed using sonic listening equipment: 74.5 Type of equipment used: SePem Noise Logger

How many system-wide water audits were performed in the past year? 2 Residential charge per 1000 gallons of water: $ 3.82

What percentage of the water withdrawn was not billed to customers? 19.7%. Lost to distribution system leakage? 11 %

Was information about household water saving devices and ways to reduce water use distributed to residential customers? ✓ Yes No

Was water conservation information about promoting recycling and reuse distributed to industrial and commercial customers? ✓ Yes No

Do you have lawn sprinkling time restrictions (e.g. odd/even days) during periods of peak demand? Yes ✓ No

Do you have a plan that takes progressive steps to further reduce outdoor water use during drought conditions with an ordinance or procedure to assure compliance? ✓ Yes No If yes, please forward a copy to address shown on page one.

Please review your permit(s) for any specific water conservation conditions and report below on progress made in past year:

Section B: Non-Public Water Supply Facilities (see permitting schedule in NYCRR Part 601.7)

Are all sources of supply including major interconnections equipped with master meters? Yes No

How often were master meters read in the past year?

How often were master meters calibrated in the past year?

Are there secondary meters located within the facility or system? Yes No

Identify other water conservation and efficiency measures currently used in your system (e.g. Best Management Practices such as recycling process and cooling waters, use of drip irrigation and moisture probes, utilizing storm water runoff and reclaimed wastewater or conducting facility water audits):

APPENDIX D

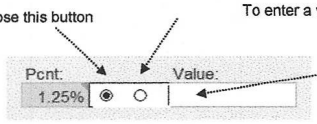
AWWA Water Audit Software: Definitions

AWWA Free Water Audit Software: Definitions

WAS v5.0

Item Name	Description
Apparent Losses Find	= unauthorized consumption + customer metering inaccuracies + systematic data handling errors Apparent Losses include all types of inaccuracies associated with customer metering (worn meters as well as improperly sized meters or wrong type of meter for the water usage profile) as well as systematic data handling errors (meter reading, billing, archiving and reporting), plus unauthorized consumption (theft or illegal use). NOTE: Over-estimation of Apparent Losses results in under-estimation of Real Losses. Under-estimation of Apparent Losses results in over-estimation of Real Losses.
AUTHORIZED CONSUMPTION Find	= billed water exported + billed metered + billed unmetered + unbilled metered + unbilled unmetered consumption The volume of metered and/or unmetered water taken by registered customers, the water utility's own uses, and uses of others who are implicitly or explicitly authorized to do so by the water utility; for residential, commercial, industrial and public-minded purposes. Typical retail customers' consumption is tabulated usually from established customer accounts as billed metered consumption, or - for unmetered customers - billed unmetered consumption. These types of consumption, along with billed water exported, provide revenue potential for the water utility. **Be certain to tabulate the water exported volume as a separate component and do not "double-count" it by including in the billed metered consumption component as well as the water exported component.** Unbilled authorized consumption occurs typically in non-account uses, including water for fire fighting and training, flushing of water mains and sewers, street cleaning, watering of municipal gardens, public fountains, or similar public-minded uses. Occasionally these uses may be metered and billed (or charged a flat fee), but usually they are unmetered and unbilled. In the latter case, the water auditor may use a default value to estimate this quantity, or implement procedures for the reliable quantification of these uses. This starts with documenting usage events as they occur and estimating the amount of water used in each event. (See Unbilled unmetered consumption)
View Service Connection Diagram **Average length of customer service line** Find	This is the average length of customer service line, Lp, that is owned and maintained by the customer; from the point of ownership transfer to the customer water meter, or building line (if unmetered). The quantity is one of the data inputs for the calculation of Unavoidable Annual Real Losses (UARL), which serves as the denominator of the performance indicator: Infrastructure Leakage Index (ILI). The value of Lp is multiplied by the number of customer service connections to obtain a total length of customer owned piping in the system. The purpose of this parameter is to account for the unmetered service line infrastructure that is the responsibility of the customer for arranging repairs of leaks that occur on their lines. In many cases leak repairs arranged by customers take longer to be executed than leak repairs arranged by the water utility on utility-maintained piping. Leaks run longer - and lose more water - on customer-owned service piping, than utility owned piping. If the customer water meter exists near the ownership transfer point (usually the curb stop located between the water main and the customer premises) this distance is zero because the meter and transfer point are the same. This is the often encountered configuration of customer water meters located in an underground meter box or "pit" outside of the customer's building. The Free Water Audit Software asks a "Yes/No" question about the meter at this location. If the auditor selects "Yes" then this distance is set to zero and the data grading score for this component is set to 10. If water meters are typically located inside the customer premise/building, or properties are unmetered, it is up to the water auditor to estimate a system-wide average Lp length based upon the various customer land parcel sizes and building locations in the service area. Lp will be a shorter length in areas of high density housing, and a longer length in areas of low density housing and varied commercial and industrial buildings. General parcel demographics should be employed to obtain a composite average Lp length for the entire system. Refer to the "Service Connection Diagram" worksheet for a depiction of the service line/metering configurations that typically exist in water utilities. This worksheet gives guidance on the determination of the Average Length, Lp, for each configuration.
Average operating pressure Find	This is the average pressure in the distribution system that is the subject of the water audit. Many water utilities have a calibrated hydraulic model of their water distribution system. For these utilities, the hydraulic model can be utilized to obtain a very accurate quantity of average pressure. In the absence of a hydraulic model, the average pressure may be approximated by obtaining readings of static water pressure from a representative sample of fire hydrants or other system access points evenly located across the system. A weighted average of the pressure can be assembled; but be sure to take into account the elevation of the fire hydrants, which typically exist several feet higher than the level of buried water pipelines. If the water utility is compiling the water audit for the first time, the average pressure can be approximated, but with a low data grading. In subsequent years of auditing, effort should be made to improve the accuracy of the average pressure quantity. This will then qualify the value for a higher data grading.
Billed Authorized Consumption	All consumption that is billed and authorized by the utility. This may include both metered and unmetered consumption. See "Authorized Consumption" for more information.
Billed metered consumption Find	All metered consumption which is billed to retail customers, including all groups of customers such as domestic, commercial, industrial or institutional. **It does NOT include water supplied to neighboring utilities (water exported) which is metered and billed. Be sure to subtract any consumption for exported water sales that may be included in these billing roles. Water supplied as exports to neighboring water utilities should be included only in the Water Exported component.** The metered consumption data can be taken directly from billing records for the water audit period. The accuracy of yearly metered consumption data can be refined by including an adjustment to account for customer meter reading lag time since not all customer meters are read on the same day of the meter reading period. However additional analysis is necessary to determine the lag time adjustment value, which may or may not be significant.
Billed unmetered consumption Find	All billed consumption which is calculated based on estimates or norms from water usage sites that have been determined by utility policy to be left unmetered. This is typically a very small component in systems that maintain a policy to meter their customer population. However, this quantity can be the key consumption component in utilities that have not adopted a universal metering policy. **This component should NOT include any water that is supplied to neighboring utilities (water exported) which is unmetered but billed. Water supplied as exports to neighboring water utilities should be included only in the Water Exported component.**
Customer metering inaccuracies Find	Apparent water losses caused by the collective under-registration of customer water meters. Many customer water meters gradually wear as large cumulative volumes of water are passed through them over time. This causes the meters to under-register the flow of water. This occurrence is common with smaller residential meters of sizes 5/8-inch and 3/4 inch after they have registered very large cumulative volumes of water, which generally occurs only after periods of years. For meters sized 1-inch and larger - typical of multi-unit residential, commercial and industrial accounts - meter under-registration can occur from wear or from the improper application of the meter; i.e. installing the wrong type of meter or the wrong size of meter, for the flow pattern (profile) of the consumer. For instance, many larger meters have reduced accuracy at low flows. If an oversized meter is installed, most of the time the routine flow will occur in the low flow range of the meter, and a significant portion of it may not be registered. It is important to properly select and install all meters, but particularly large customer meters, size 1-inch and larger. The auditor has two options for entering data for this component of the audit. The auditor can enter a percentage under-registration (typically an estimated value), this will apply the selected percentage to the two categories of metered consumption to determine the volume of water not recorded due to customer meter inaccuracy. Note that this percentage is a composite average inaccuracy for all customer meters in the entire meter population. The percentage will be multiplied by the sum of the volumes in the Billed Metered and Unbilled Metered components. Alternatively, if the auditor has substantial data from meter testing activities, he or she can calculate their own loss volumes, and this volume may be entered directly. Note that a value of zero will be accepted but an alert will appear asking if the customer population is unmetered. Since all metered systems have some degree of inaccuracy, a positive value should be entered. A value of zero in this component is valid only if the water utility does not meter its customer population.

Item Name	Description
Customer retail unit cost Find	The Customer Retail Unit Cost represents the charge that customers pay for water service. This unit cost is applied routinely to the components of Apparent Loss, since these losses represent water reaching customers but not (fully) paid for. Since most water utilities have a rate structure that includes a variety of different costs based upon class of customer, a weighted average of individual costs and number of customer accounts in each class can be calculated to determine a single composite cost that should be entered into this cell. Finally, the weighted average cost should also include additional charges for sewer, storm water or biosolids processing, but only if these charges are based upon the volume of potable water consumed. For water utilities in regions with limited water resources and a questionable ability to meet the drinking water demands in the future, the Customer Retail Unit Cost might also be applied to value the Real Losses; instead of applying the Variable Production Cost to Real Losses. In this way, it is assumed that every unit volume of leakage reduced by leakage management activities will be sold to a customer. Note: the Free Water Audit Software allows the user to select the units that are charged to customers (either $/1,000 gallons, $/hundred cubic feet, or $/1,000 litres) and automatically converts these units to the units that appear in the "WATER SUPPLIED" box. The monetary units are United States dollars, $.
Infrastructure Leakage Index (ILI) Find	The ratio of the Current Annual Real Losses (Real Losses) to the Unavoidable Annual Real Losses (UARL). The ILI is a highly effective performance indicator for comparing (benchmarking) the performance of utilities in operational management of real losses.
Length of mains Find	Length of all pipelines (except service connections) in the system starting from the point of system input metering (for example at the outlet of the treatment plant). It is also recommended to include in this measure the total length of fire hydrant lead pipe. Hydrant lead pipe is the pipe branching from the water main to the fire hydrant. Fire hydrant leads are typically of a sufficiently large size that is more representative of a pipeline than a service connection. The average length of hydrant leads across the entire system can be assumed if not known, and multiplied by the number of fire hydrants in the system, which can also be assumed if not known. This value can then be added to the total pipeline length. Total length of mains can therefore be calculated as: Length of Mains, miles = (total pipeline length, miles) + [{(average fire hydrant lead length, ft) x (number of fire hydrants)} / 5,280 ft/mile] or Length of Mains, kilometres = (total pipeline length, kilometres) + [{(average fire hydrant lead length, metres) x (number of fire hydrants)} / 1,000 metres/kilometre]
NON-REVENUE WATER Find	= Apparent Losses + Real Losses + Unbilled Metered Consumption + Unbilled Unmetered Consumption. This is water which does not provide revenue potential to the utility.
Number of active AND inactive service connections Find	Number of customer service connections, extending from the water main to supply water to a customer. Please note that this includes the actual number of distinct piping connections, including fire connections, whether active or inactive. This may differ substantially from the number of customers (or number of accounts). **Note: this number does not include the pipeline leads to fire hydrants - the total length of piping supplying fire hyrants should be included in the "Length of mains" parameter.**
Real Losses Find	Physical water losses from the pressurized system (water mains and customer service connections) and the utility's storage tanks, up to the point of customer consumption. In metered systems this is the customer meter, in unmetered situations this is the first point of consumption (stop tap/tap) within the property. The annual volume lost through all types of leaks, breaks and overflows depends on frequencies, flow rates, and average duration of individual leaks, breaks and overflows.
Revenue Water	Those components of System Input Volume that are billed and have the potential to produce revenue.
Service Connection Density Find	=number of customer service connections / length of mains
Systematic data handling errors Find	Apparent losses caused by accounting omissions, errant computer programming, gaps in policy, procedure, and permitting/activation of new accounts; and any type of data lapse that results in under-stated customer water consumption in summary billing reports. **Systematic Data Handling Errors result in a direct loss of revenue potential. Water utilities can find "lost" revenue by keying on this component.** Utilities typically measure water consumption registered by water meters at customer premises. The meter should be read routinely (ex: monthly) and the data transferred to the Customer Billing System, which generates and sends a bill to the customer. Data Transfer Errors result in the consumption value being less than the actual consumption, creating an apparent loss. Such error might occur from illegible and mis-recorded hand-written readings compiled by meter readers, inputting an incorrect meter register unit conversion factor in the automatic meter reading equipment, or a variety of similar errors. Apparent losses also occur from Data Analysis Errors in the archival and data reporting processes of the Customer Billing System. Inaccurate estimates used for accounts that fail to produce a meter reading are a common source of error. Billing adjustments may award customers a rightful monetary credit, but do so by creating a negative value of consumption, thus under-stating the actual consumption. Account activation lapses may allow new buildings to use water for months without meter readings and billing. Poor permitting and construction inspection practices can result in a new building lacking a billing account, a water meter and meter reading; i.e., the customer is unknown to the utility's billing system. Close auditing of the permitting, metering, meter reading, billing and reporting processes of the water consumption data trail can uncover data management gaps that create volumes of systematic data handling error. Utilities should routinely analyze customer billing records to detect data anomalies and quantify these losses. For example, a billing account that registers zero consumption for two or more billing cycles should be checked to explain why usage has seemingly halted. Given the revenue loss impacts of these losses, water utilities are well-justified in providing continuous oversight and timely correction of data transfer errors & data handling errors. If the water auditor has not yet gathered detailed data or assessment of systematic data handling error, it is recommended that the auditor apply the default value of 0.25% of the the Billed Authorized Consumption volume. However, if the auditor has investigated the billing system and its controls, and has well validated data that indicates the volume from systematic data handling error is substantially higher or lower than that generated by the default value, then the auditor should enter a quantity that was derived from the utility investigations and select an appropriate grading. Note: negative values are not allowed for this audit component. If the auditor enters zero for this component then a grading of 1 will be automatically assigned.
Total annual cost of operating the water system Find	These costs include those for operations, maintenance and any annually incurred costs for long-term upkeep of the drinking water supply and distribution system. It should include the costs of day-to-day upkeep and long-term financing such as repayment of capital bonds for infrastructure expansion or improvement. Typical costs include employee salaries and benefits, materials, equipment, insurance, fees, administrative costs and all other costs that exist to sustain the drinking water supply. Depending upon water utility accounting procedures or regulatory agency requirements, it may be appropriate to include depreciation in the total of this cost. This cost should not include any costs to operate wastewater, biosolids or other systems outside of drinking water.

Item Name	Description
Unauthorized consumption Find	Includes water illegally withdrawn from fire hydrants, illegal connections, bypasses to customer consumption meters, or tampering with metering or meter reading equipment; as well as any other ways to receive water while thwarting the water utility's ability to collect revenue for the water. Unauthorized consumption results in uncaptured revenue and creates an error that understates customer consumption. In most water utilities this volume is low and, if the water auditor has not yet gathered detailed data for these loss occurrences, it is recommended that the auditor apply a default value of 0.25% of the volume of water supplied. However, if the auditor has investigated unauthorized occurrences, and has well validated data that indicates the volume from unauthorized consumption is substantially higher or lower than that generated by the default value, then the auditor should enter a quantity that was derived from the utility investigations. Note that a value of zero will not be accepted since all water utilities have some volume of unauthorized consumption occurring in their system. Note: if the auditor selects the default value for unauthorized consumption, a data grading of 5 is automatically assigned, but not displayed on the Reporting Worksheet.
Unavoidable Annual Real Losses (UARL) Find	UARL (gallons)=(5.41Lm + 0.15Nc + 7.5Lc) xP, or UARL (litres)=(18.0Lm + 0.8Nc + 25.0Lc) xP where: Lm = length of mains (miles or kilometres) Nc = number of customer service connections Lp = the average distance of customer service connection piping (feet or metres) (see the Worksheet "Service Connection Diagram" for guidance on deterring the value of Lp) Lc = total length of customer service connection piping (miles or km) Lc = Nc X Lp (miles or kilometres) P = Pressure (psi or metres) The UARL is a theoretical reference value representing the technical low limit of leakage that could be achieved if all of today's best technology could be successfully applied. It is a key variable in the calculation of the Infrastructure Leakage Index (ILI). Striving to reduce system leakage to a level close to the UARL is usually not needed unless the water supply is unusually expensive, scarce or both. NOTE: The UARL calculation has not yet been proven as fully valid for very small, or low pressure water distribution systems. If, in gallons: (Lm x 32) + Nc < 3000 or P <35psi in litres: (Lm x 20) + Nc < 3000 or P < 25m then the calculated UARL value may not be valid. The software does not display a value of UARL or ILI if either of these conditions is true.
Unbilled Authorized Consumption	All consumption that is unbilled, but still authorized by the utility. This includes Unbilled Metered Consumption + Unbilled Unmetered Consumption. See "Authorized Consumption" for more information. For Unbilled Unmetered Consumption, the Free Water Audit Software provides the auditor the option to select a default value if they have not audited unmetered activities in detail. The default calculates a volume that is 1.25% of the Water Supplied volume. If the auditor has carefully audited the various unbilled, unmetered, authorized uses of water, and has established reliable estimates of this collective volume, then he or she may enter the volume directly for this component, and not use the default value.
Unbilled metered consumption Find	Metered consumption which is authorized by the water utility, but, for any reason, is deemed by utility policy to be unbilled. This might for example include metered water consumed by the utility itself in treatment or distribution operations, or metered water provided to civic institutions free of charge. **It does not include water supplied to neighboring utilities (water exported) which may be metered but not billed.**
Unbilled unmetered consumption Find	Any kind of Authorized Consumption which is neither billed or metered. This component typically includes water used in activities such as fire fighting, flushing of water mains and sewers, street cleaning, fire flow tests conducted by the water utility, etc. In most water utilities it is a small component which is very often substantially overestimated. **It does NOT include water supplied to neighboring utilities (water exported) which is unmetered and unbilled – an unlikely case.** This component has many sub-components of water use which are often tedious to identify and quantify. Because of this, and the fact that it is usually a small portion of the water supplied, it is recommended that the auditor apply the default value, which is 1.25% of the Water Supplied volume. Select the default percentage to enter this value. If the water utility has carefully audited the unbilled, unmetered activities occurring in the system, and has well validated data that gives a value substantially higher or lower than the default volume, then the auditor should enter their own volume. However the default approach is recommended for most water utilities. Note that a value of zero is not permitted, since all water utilities have some volume of water in this component occurring in their system.
Units and Conversions	The user may develop an audit based on one of three unit selections: 1) Million Gallons (US) 2) Megalitres (Thousand Cubic Metres) 3) Acre-feet Once this selection has been made in the instructions sheet, all calculations are made on the basis of the chosen units. Should the user wish to make additional conversions, a unit converter is provided below (use drop down menus to select units from the yellow unit boxes): Enter Units: 1 | Convert From... Million Gallons (US) = Converts to..... 3.06888329 Acre-feet (conversion factor = 3.06888328973723)
Use of Option Buttons	To use the default percent value choose this button To enter a value choose this button and enter the value in the cell to the right  **NOTE:** For Unbilled Unmetered Consumption, Unauthorized Consumption and Systematic Data Handling Errors, a recommended default value can be applied by selecting the Percent option. The default values are based on fixed percentages of Water Supplied or Billed Authorized Consumption and are recommended for use in this audit unless the auditor has well validated data for their system. Default values are shown by purple cells, as shown in the example above. If a default value is selected, the user does not need to grade the item; a grading value of 5 is automatically applied (however, this grade will not be displayed).

Item Name	Description
Variable production cost (applied to Real Losses) Find	The cost to produce and supply the next unit of water (e.g., $/million gallons). This cost is determined by calculating the summed unit costs for ground and surface water treatment and all power used for pumping from the source to the customer. It may also include other miscellaneous unit costs that apply to the production of drinking water. It should also include the unit cost of bulk water purchased as an import if applicable. It is common to apply this unit cost to the volume of Real Losses. However, if water resources are strained and the ability to meet future drinking water demands is in question, then the water auditor can be justified in applying the Customer Retail Rate to the Real Loss volume, rather than applying the Variable Production Cost. The Free Water Audit Software applies the Variable Production costs to Real Losses by default. However, the auditor has the option on the Reporting Worksheet to select the Customer Retail Cost as the basis for the Real Loss cost evaluation if the auditor determines that this is warranted.
Volume from own sources Find	The volume of water withdrawn (abstracted) from water resources (rivers, lakes, streams, wells, etc) controlled by the water utility, and then treated for potable water distribution. Most water audits are compiled for utility retail water distribution systems, so this volume should reflect the amount of treated drinking water that entered the distribution system. Often the volume of water measured at the effluent of the treatment works is slightly less than the volume measured at the raw water source, since some of the water is used in the treatment process. Thus, it is useful if flows are metered at the effluent of the treatment works. If metering exists only at the raw water source, an adjustment for water used in the treatment process should be included to account for water consumed in treatment operations such as filter backwashing, basin flushing and cleaning, etc. If the audit is conducted for a wholesale water agency that sells untreated water, then this quantity reflects the measure of the raw water, typically metered at the source.
Volume from own sources: Master meter and supply error adjustment Find	An estimate or measure of the degree of inaccuracy that exists in the master (production) meters measuring the annual Volume from own Sources, and any error in the data trail that exists to collect, store and report the summary production data. This adjustment is a weighted average number that represents the collective error for all master meters for all days of the audit year and any errors identified in the data trail. Meter error can occur in different ways. A meter or meters may be inaccurate by under-registering flow (did not capture all the flow), or by over-registering flow (overstated the actual flow). Data error can occur due to data gaps caused by temporary outages of the meter or related instrumentation. All water utilities encounter some degree of inaccuracy in master meters and data errors in archival systems are common; thus a value of zero should not be entered. Enter a negative percentage or value for metered data under-registration; or, enter a positive percentage or value for metered data over-registration.
Water exported Find	The Water Exported volume is the bulk water conveyed and sold by the water utility to neighboring water systems that exists outside of their service area. Typically this water is metered at the custody transfer point of interconnection between the two water utilities. Usually the meter(s) are owned by the water utility that is selling the water: i.e. the exporter. If the water utility who is compiling the annual water audit sells bulk water in this manner, they are an exporter of water. Note: The Water Exported volume is sold to wholesale customers who are typically charged a wholesale rate that is different than retail rates charged to the retail customers existing within the service area. Many state regulatory agencies require that the Water Exported volume be reported to them as a quantity separate and distinct from the retail customer billed consumption. For these reasons - and others - the Water Exported volume is always quantified separately from Billed Authorized Consumption in the standard water audit. **Be certain not to "double-count" this quantity by including it in both the Water Exported box and the Billed Metered Consumption box of the water audit Reporting Worksheet. This volume should be included only in the Water Exported box.**
Water exported: Master meter and supply error adjustment Find	An estimate or measure of the volume in which the Water Exported volume is incorrect. This adjustment is a weighted average that represents the collective error for all of the metered and archived exported flow for all days of the audit year. Meter error can occur in different ways. A meter may be inaccurate by under-registering flow (did not capture all the flow), or by over-registering flow (overstated the actual flow). Error in the metered, archived data can also occur due to data gaps caused by temporary outages of the meter or related instrumentation. All water utilities encounter some degree of error in their metered data, particularly if meters are aged and infrequently tested. Occasional errors also occur in the archived data. Thus, a value of zero should not be entered. Enter a negative percentage or value for metered data under-registration; or enter a positive percentage or value for metered data over-registration. If regular meter accuracy testing is conducted on the meter(s) - which is usually conducted by the water utility selling the water - then the results of this testing can be used to help quantify the meter error adjustment. Corrections to data gaps or other errors found in the archived data should also be included as a portion of this meter error adjustment.
Water imported Find	The Water Imported volume is the bulk water purchased to become part of the Water Supplied volume. Typically this is water purchased from a neighboring water utility or regional water authority, and is metered at the custody transfer point of interconnection between the two water utilities. Usually the meter(s) are owned by the water supplier selling the water to the utility conducting the water audit. The water supplier selling the bulk water usually charges the receiving utility based upon a wholesale water rate.
Water imported: Master meter and supply error adjustment Find	An estimate or measure of the volume in which the Water Imported volume is incorrect. This adjustment is a weighted average that represents the collective error for all of the metered and archived imported flow for all days of the audit year. Meter error can occur in different ways. A meter may be inaccurate by under-registering flow (did not capture all the flow), or by over-registering flow (overstated the actual flow). Error in the metered, archived data can also occur due to data gaps caused by temporary outages of the meter or related instrumentation. All water utilities encounter some level of meter inaccuracy, particularly if meters are aged and infrequently tested. Occasional errors also occur in the archived metered data. Thus, a value of zero should not be entered. Enter a negative percentage or value for metered data under-registration; or, enter a positive percentage or value for metered data over-registration. If regular meter accuracy testing is conducted on the meter(s) - which is usually conducted by the water utility selling the water - then the results of this testing can be used to help quantify the meter error adjustment.
WATER LOSSES Find	= apparent losses + real losses Water Losses are the difference between Water Supplied and Authorized Consumption. Water losses can be considered as a total volume for the whole system, or for partial systems such as transmission systems, pressure zones or district metered areas (DMA); if one of these configurations are the basis of the water audit.