Table 3
HOUSEHOLD DAMAGES OF WATER SUPPLY USE BY STATE
FOR 1970

DISCOUNT RATE = 7.5%

STATE	HOUSEHLD EXPND TOTAL ($M)	HOUSEHLD EXPND PER CAPITA ($)	TOTAL DAMAGES ($1 M) BY SOURCE SURFACE	TR.GROUND	RAW WELL	TOTAL
MAINE	119.0	119.97	0.7	0.5	1.5	2.6
MASSACHUSETTS	895.1	157.33	3.6	5.2	3.7	12.5
VERMONT	58.0	130.43	0.5	0.4	0.8	1.7
NEW HAMPSHIRE	105.2	142.60	0.3	1.0	1.3	2.5
CONNECTICUT	561.1	185.06	5.7	2.9	3.4	12.0
RHODE ISLAND	137.5	145.27	1.3	0.5	0.2	2.1
NEW YORK	3099.9	169.98	38.7	60.7	15.4	114.8
NEW JERSEY	1277.7	178.25	8.8	12.8	14.5	36.0
DIST. COLUMBIA	109.8	145.20	6.2	0.0	0.3	6.5
PENNSYLVANIA	1781.4	151.04	49.6	13.0	20.9	83.4
WEST VIRGINIA	202.8	116.30	3.4	2.7	3.7	9.8
MARYLAND	657.7	167.68	13.2	1.7	2.3	17.2
VIRGINIA	662.0	142.41	11.4	2.8	11.0	25.2
DELAWARE	87.0	158.64	0.8	1.9	0.7	3.4
KENTUCKY	390.3	121.25	11.0	2.4	10.6	24.1
TENNESSEE	472.3	120.38	8.1	2.7	3.7	14.6
MISSISSIPPI	207.3	93.52	0.6	3.3	1.4	5.3
ALABAMA	394.5	114.53	6.3	3.4	3.3	13.0
GEORGIA	582.2	126.84	2.8	3.7	9.9	16.4
NORTH CAROLINA	611.5	120.33	5.1	2.3	9.6	17.0
SOUTH CAROLINA	282.5	109.03	1.9	0.4	0.5	2.9
FLORIDA	1015.1	149.51	5.3	40.8	18.6	64.7
OHIO	1728.1	162.23	48.2	19.0	58.1	125.3

Table 3 (continued).

STATE	HOUSEHLD EXPND TOTAL ($M)	HOUSEHLD EXPND PER CAPITA ($)	TOTAL DAMAGES ($1 M) BY SOURCE SURFACE	TR:GROUND	RAW WELL	TOTAL
INDIANA	845.1	162.71	26.6	35.1	32.4	94.1
ILLINOIS	1957.5	176.13	51.6	61.9	56.7	170.2
MICHIGAN	1480.4	166.80	40.8	15.9	27.4	84.1
WISCONSIN	684.9	155.03	12.6	26.7	23.6	62.9
MINNESOTA	567.2	149.07	5.8	16.0	15.4	37.1
ARKANSAS	203.1	105.61	0.7	2.3	4.8	7.8
LOUISIANA	411.2	112.94	7.1	3.6	2.5	13.1
OKLAHOMA	350.3	136.87	12.9	6.1	10.9	29.8
TEXAS	1573.3	140.51	38.8	68.0	12.1	118.8
NEW MEXICO	134.6	132.48	0.3	10.1	8.5	18.9
MISSOURI	687.9	147.09	17.3	15.2	16.0	48.6
IOWA	420.4	148.86	4.4	25.9	12.9	43.2
NEBRASKA	208.1	140.25	2.4	10.8	4.9	18.1
KANSAS	332.1	147.82	10.9	8.6	9.0	28.5
NORTH DAKOTA	77.2	124.96	1.6	2.1	3.6	7.4
SOUTH DAKOTA	85.3	128.23	0.5	3.2	7.7	11.5
MONTANA	92.0	132.48	2.3	1.3	2.3	5.9
WYOMING	48.4	145.46	0.9	1.3	1.6	3.9
UTAH	151.0	142.57	3.6	6.2	6.3	16.0
COLORADO	327.6	148.44	9.0	2.2	8.0	19.1
CALIFORNIA	3395.7	170.19	101.4	109.4	14.7	225.5
ARIZONA	277.5	156.70	9.6	21.4	7.8	38.8
NEVADA	81.5	166.76	0.6	3.4	1.1	5.1
HAWAII	120.4	156.61	0.2	3.3	1.2	4.6
WASHINGTON	529.5	155.32	3.1	9.3	2.4	14.8
OREGON	304.7	145.67	0.6	1.5	1.7	3.9
IDAHO	94.4	132.52	0.4	3.3	2.8	6.5
ALASKA	47.2	157.09	0.4	0.6	1.0	2.1

Table 3 (continued).

STATE	PER CAPITA DAMAGES ($) BY SOURCE			
	SURFACE	TR.GROUND	RAW WELL	TOTAL
MAINE	1.15	3.37	5.56	2.67
MASSACHUSETTS	0.97	3.77	6.50	2.21
VERMONT	2.89	3.92	4.91	3.86
NEW HAMPSHIRE	1.04	3.69	6.29	3.38
CONNECTICUT	2.99	4.84	6.64	3.97
RHODE ISLAND	2.11	2.29	2.40	2.18
NEW YORK	3.15	14.67	8.44	6.29
NEW JERSEY	3.56	5.80	5.80	5.03
DIST. COLUMBIA	8.64	0.0	8.64	8.64
PENNSYLVANIA	5.68	9.15	12.64	7.07
WEST VIRGINIA	3.77	6.28	8.79	5.59
MARYLAND	4.43	4.35	4.20	4.39
VIRGINIA	3.95	6.21	8.43	5.43
DELAWARE	3.69	7.82	7.92	6.20
KENTUCKY	5.96	7.97	9.98	7.47
TENNESSEE	4.53	2.46	3.62	3.71
MISSISSIPPI	2.17	2.37	2.53	2.38
ALABAMA	3.76	3.79	3.81	3.78
GEORGIA	1.46	3.09	6.76	3.58
NORTH CAROLINA	2.38	3.33	4.29	3.35
SOUTH CAROLINA	1.15	1.11	1.04	1.12
FLORIDA	9.60	8.99	10.97	9.53
OHIO	8.42	7.99	22.73	11.76
INDIANA	12.86	22.44	20.81	18.13
ILLINOIS	9.12	19.14	25.49	15.31

Table 3 (continued).

STATE	PER CAPITA DAMAGES ($) BY SOURCE			
	SURFACE	TR.GROUND	RAW WELL	TOTAL
MICHIGAN	7.18	11.29	15.42	9.48
WISCONSIN	8.10	17.39	17.79	14.23
MINNESOTA	4.45	10.28	16.14	9.75
ARKANSAS	1.09	3.90	6.73	4.04
LOUISIANA	4.73	2.52	3.38	3.60
OHLAHOMA	8.68	10.79	21.22	11.65
TEXAS	7.30	13.03	18.00	10.61
NEW MEXICO	5.46	16.30	25.38	18.61
MISSOURI	6.07	17.13	17.13	10.38
IOWA	7.85	16.29	22.76	15.29
NEBRASKA	10.80	11.26	16.37	12.21
KANSAS	12.12	9.61	20.02	12.70
NORTH DAKOTA	8.28	11.64	15.14	11.93
SOUTH DAKOTA	5.20	14.09	23.20	17.28
MONTANA	6.94	8.86	10.83	8.54
WYOMING	7.93	9.96	19.76	11.68
UTAH	10.34	15.95	19.09	15.11
COLORADO	5.33	7.24	36.09	8.67
CALIFORNIA	9.34	13.51	14.72	11.30
ARIZONA	20.37	23.49	20.15	21.93
NEVADA	3.41	14.03	13.39	10.40
HAWAII	6.01	6.01	6.01	6.01
WASHINGTON	1.64	8.28	5.79	4.33
OREGON	0.55	3.29	3.29	1.85
IDAHO	5.71	7.74	12.66	9.08
ALASKA	4.72	7.68	7.68	6.86

Table 4
HOUSEHOLD DAMAGES OF WATER SUPPLY BY STATE
FOR 1970

DISCOUNT RATE = 10%

STATE	HOUSEHLD EXPND TOTAL ($M)	HOUSEHLD EXPND PER CAPITA ($)	TOTAL DAMAGES ($1 M) BY SOURCE SURFACE	TR.GROUND	RAW WELL	TOTAL
MAINE	133.2	134.22	0.7	0.5	1.5	2.6
MASSACHUSETTS	1002.3	176.18	3.6	5.2	3.7	12.4
VERMONT	64.8	145.81	0.5	0.4	0.8	1.7
NEW HAMPSHIRE	117.7	159.50	0.3	0.9	1.2	2.5
CONNECTICUT	627.7	207.05	5.7	2.9	3.4	11.9
RHODE ISLAND	154.0	162.66	1.3	0.5	0.2	2.0
NEW YORK	3462.3	189.85	38.4	60.4	15.3	114.1
NEW JERSEY	1428.5	199.28	8.7	12.6	14.4	35.7
DIST. COLUMBIA	122.4	161.77	6.2	0.0	0.3	6.5
PENNSYLVANIA	1987.5	168.52	49.2	12.9	20.8	82.9
WEST VIRGINIA	226.3	129.72	3.4	2.7	3.7	9.7
MARYLAND	735.5	187.51	13.1	1.7	2.3	17.1
VIRGINIA	739.4	159.06	11.3	2.8	11.0	25.1
DELAWARE	97.1	177.13	0.8	1.9	0.4	3.4
KENTUCKY	434.7	135.04	10.9	2.4	10.6	23.9
TENNESSEE	527.9	134.55	8.1	2.7	3.7	14.5
MISSISSIPPI	231.8	104.56	0.5	3.3	1.4	5.2
ALABAMA	440.7	127.96	6.2	3.4	3.2	12.9
GEORGIA	650.9	141.82	2.8	3.6	9.9	16.3
NORTH CAROLINA	683.7	134.52	5.1	2.3	9.5	16.9
SOUTH CAROLINA	316.4	122.14	1.9	0.4	0.5	2.8
FLORIDA	1130.1	166.45	5.3	40.3	18.5	64.2
OHIO	1922.4	180.47	47.8	18.8	58.0	124.6

Table 4 (continued).

STATE	HOUSEHLD EXPND TOTAL ($M)	HOUSEHLD EXPND PER CAPITA ($)	TOTAL DAMAGES ($1 M) BY SOURCE SURFACE	TR.GROUND	RAW WELL	TOTAL
INDIANA	936.2	180.26	26.5	35.0	32.4	93.9
ILLINOIS	2174.6	195.67	51.5	61.9	56.5	169.9
MICHIGAN	1650.0	185.91	40.7	15.9	27.3	83.9
WISCONSIN	760.5	172.14	12.6	26.7	23.5	62.8
MINNESOTA	631.6	166.00	5.7	16.0	15.3	37.0
ARKANSAS	226.8	117.92	0.7	2.3	4.7	7.7
LOUISIANA	459.3	126.13	7.0	3.3	2.4	12.7
OKLAHOMA	389.0	151.99	12.8	6.0	10.7	29.5
TEXAS	1748.5	156.16	38.2	67.0	11.9	117.1
NEW MEXICO	148.5	146.12	0.3	9.9	8.4	18.7
MISSOURI	765.0	163.59	17.0	15.1	15.8	47.9
IOWA	466.0	165.00	4.4	25.7	12.8	42.9
NEBRASKA	231.0	155.72	2.4	10.8	4.8	18.0
KANSAS	368.7	164.10	10.8	8.5	8.9	28.2
NORTH DAKOTA	85.5	138.42	1.6	2.0	3.5	7.2
SOUTH DAKOTA	94.1	141.46	0.5	3.2	7.6	11.3
MONTANS	102.4	147.40	2.3	1.2	2.3	5.8
WYOMING	53.7	161.68	0.9	1.3	1.6	3.9
UTAH	167.3	157.95	3.5	6.1	6.2	15.9
COLORADO	365.0	165.37	8.9	2.2	7.9	19.0
CALIFORNIA	3778.0	189.34	99.9	107.7	14.5	222.1
ARIZONA	306.0	172.79	9.4	21.2	7.7	38.3
NEVADA	90.8	185.75	0.5	3.4	1.1	5.1
HAWAII	134.3	174.80	0.2	3.2	1.1	4.5
WASHINGTON	592.1	173.67	3.0	9.3	2.4	14.7
OREGON	341.2	163.14	0.6	1.5	1.7	3.8
IDAHO	105.1	147.48	0.4	3.3	2.8	6.4
ALASKA	52.7	175.34	0.4	0.6	1.0	2.1

Table 4 (continued).

STATE	PER CAPITA DAMAGES ($) BY SOURCE			
	SURFACE	TR.GROUND	RAW WELL	TOTAL
MAINE	1.14	3.36	5.53	2.66
MASSACHUSETTS	0.96	3.73	6.43	2.18
VERMONT	2.88	3.90	4.88	3.84
NEW HAMPSHIRE	1.02	3.64	6.22	3.34
CONNECTICUT	2.96	4.78	6.55	3.93
RHODE ISLAND	2.09	2.26	2.36	2.16
NEW YORK	3.13	14.59	8.37	6.25
NEW JERSEY	3.53	5.74	5.74	4.99
DIST. COLUMBIA	8.60	0.0	8.60	8.60
PENNSYLVANIA	5.64	9.12	12.62	7.03
WEST VIRGINIA	3.74	6.23	8.73	5.55
MARYLAND	4.40	4.30	4.13	4.35
VIRGINIA	3.92	6.19	8.43	5.41
DELAWARE	3.66	7.74	7.84	6.14
KENTUCKY	5.89	7.92	9.95	7.42
TENNESSEE	4.51	2.43	3.61	3.69
MISSISSIPPI	2.15	2.32	2.47	2.34
ALABAMA	3.73	3.75	3.76	3.74
GEORGIA	1.44	3.06	6.75	3.56
NORTH CAROLINA	2.37	3.30	4.23	3.32
SOUTH CAROLINA	1.13	1.08	1.00	1.09
FLORIDA	9.55	8.89	10.92	9.45
OHIO	8.36	7.92	22.68	11.70
INDIANA	12.81	22.40	20.78	18.09
ILLINOIS	9.10	19.15	25.41	15.29

Table 4 (continued).

STATE	PER CAPITA DAMAGES ($) BY SOURCE			
	SURFACE	TR.GROUND	RAW WELL	TOTAL
MICHIGAN	7.15	11.27	15.40	9.45
WISCONSIN	8.08	17.39	17.77	14.22
MINNESOTA	4.41	10.25	16.13	9.73
ARKANSAS	1.08	3.85	6.64	3.99
LOUISIANA	4.66	2.37	3.26	3.49
OKLAHOMA	8.63	10.59	21.00	11.54
TEXAS	7.20	12.84	17.65	10.46
NEW MEXICO	5.35	16.09	25.13	18.40
MISSOURI	5.96	16.94	16.94	10.25
IOWA	7.74	15.17	22.64	15.18
NEBRASKA	10.63	11.17	16.26	12.10
KANSAS	11.96	9.45	19.88	12.54
NORTH DAKOTA	8.16	11.34	14.69	11.63
SOUTH DAKOTA	5.13	13.86	22.85	17.01
MONTANA	6.89	8.68	10.52	8.39
WYOMING	7.88	9.94	19.63	11.62
UTAH	10.32	15.72	18.98	14.98
COLORADO	5.29	7.16	35.84	8.60
CALIFORNIA	9.20	13.29	14.53	11.13
ARIZONA	20.03	23.21	19.86	21.63
NEVADA	3.37	14.01	13.33	10.37
HAWAII	5.88	5.88	5.88	5.88
WASHINGTON	1.63	8.28	5.77	4.32
OREGON	0.54	3.25	3.25	1.82
IDAHO	5.69	7.69	12.57	9.02
ALASKA	4.70	7.66	7.66	6.83

of the unit lengthens) by 1.31% at 5% interest but only by 0.33% at 10%. The ratio of decreases is thus 398% (=1.31/.33), which equals the ratio of changes in the capital recovery factor. Since the ratio of decreases exceeds the annualized value increase, the net result implies lower damages.

The highest per capita damages are identified with Arizona, New Mexico, Indiana, and South Dakota. In spite of the fact that South Dakotans have relatively good treated surface water, a high percentage of them own private wells whose water has high TDS loads. The other states have high concentrations of minerals from all supply sources. Because these states are not populous, their high per capita damages do not translate into the highest totals. Rather, this distinction belongs to California, Illinois, Texas, Ohio, and New York, in that order. New York has relatively clean water within this group of states, hut its large population and high standard of living rank it in the top five. Figure 3 compares per capita and total damages for the most populous state in each EPA region. State abbreviations are as follows: Massachusetts-MA New York-NY, Pennsylvania-PA, Florida-FL, Illinois-IL, Missouri-MO, Texas-TX, Colorado-CO, California-CA, and Washington-WA. Damages are consistently low in the New England and Southern states (except Florida) because of their relatively pure natural water supplies.

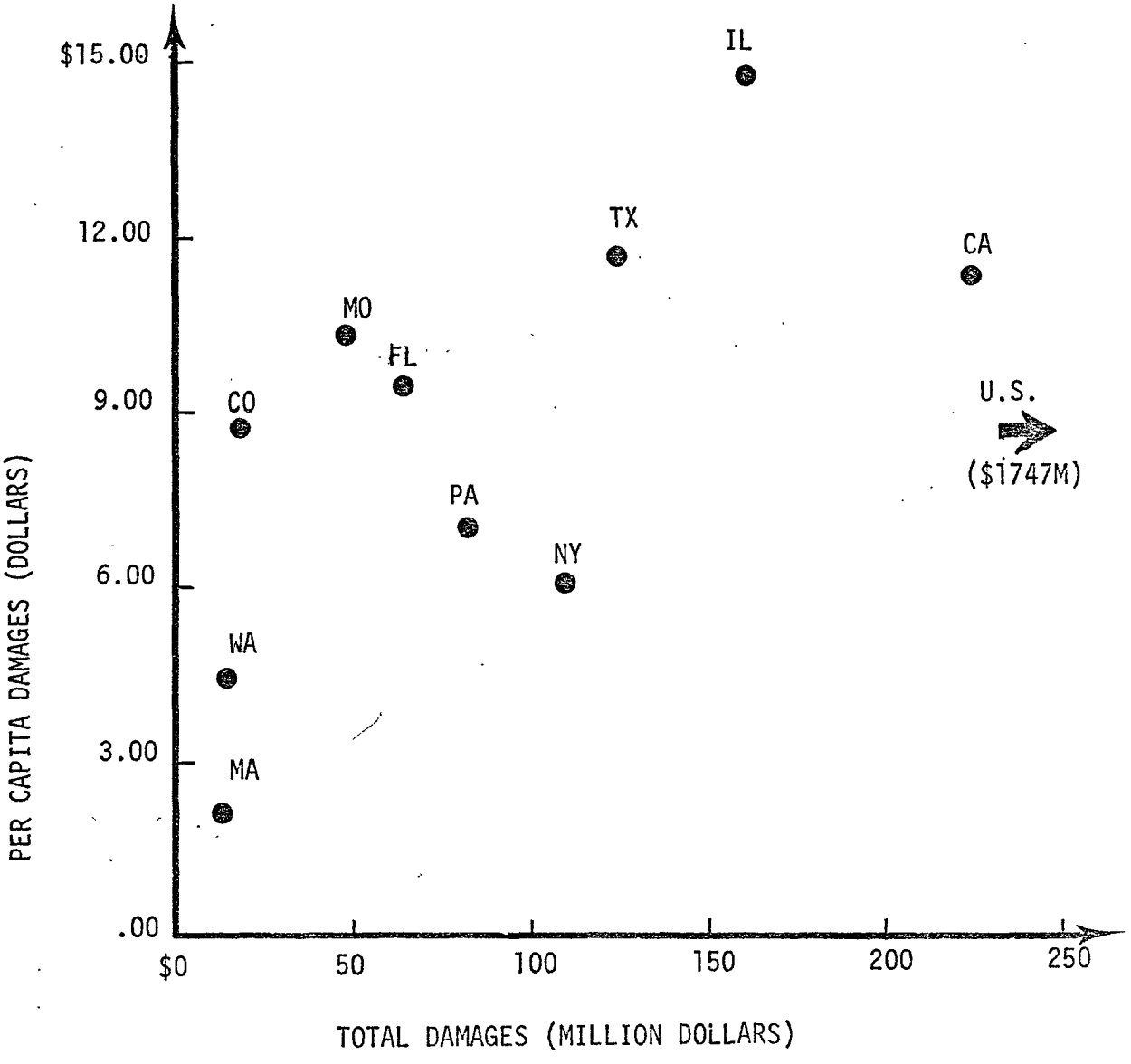

Fig. 3 1970 HOUSEHOLD DAMAGES OF WATER SUPPLY USE BY SELECTED STATE

SECTION VIII

RESULTS AT THE NATIONAL LEVEL

For the United States (see Table 3), household damages at 7.5% interest total around $1.75 billion or $8.60 per person. These estimates relate to complete removal of water constituents. Tables 5-10 list benefits of improving water quality at intermediate levels. Each pair of tables pertains to the same discount rate, comparing total and per capita benefits. The effects of TDS and hardness are separated for each source of water supply, with the latter accounting for almost two-thirds of all household expenses. Most TDS-related damages reduce investment life, whereas hardness contributes primarily to daily operating costs (soap and water softening).

Again at 7.5% interest, Figure 4 relates damages to various degrees of removal. For 10% improvement in overall water quality, total benefits increase by more than $175 million. At 50% improvement, per capita benefits are slightly less than half of potential benefits from complete removal. TDS-related damages maintain a fairly constant share of total costs, except below 40% removal. Their dominance in this range is influenced largely by the concavity of the damage curve for bottled water. The damage functions are very flat S-curves, concave in the lower water quality improvement range, convex in the upper range, with the flex point around 75% removal. In the lower range, concavity of household unit damage functions, i.e., bottled water and water softeners, is most important.

Table 5
HOUSEHOLD BENEFITS OF WATER SUPPLY TREATMENT IN THE U.S.
FOR 1970

DISCOUNT RATE = 5%

SUPPLY SOURCE	TOTAL BENEFITS ($1 M) AT VARIOUS LEVELS (PCT) OF WATER QUALITY IMPROVEMENT				
	10%	20%	30%	40%	50%
TDS AND HARDNESS					
TREATED SURFACE	60.8	121.6	182.3	242.9	303.5
TREATED GROUND	67.3	134.5	201.4	268.2	334.8
PRIVATE WELL	50.4	100.6	150.7	200.7	250.6
TOTAL	178.5	356.7	534.5	711.9	888.9
TDS ONLY					
TREATED SURFACE	22.7	45.2	67.8	90.2	112.6
TREATED GROUND	25.8	51.4	76.9	102.1	127.2
PRIVATE WELL	17.5	34.9	52.1	69.3	86.3
TOTAL	65.9	131.5	196.8	261.6	326.1
HARDNESS ONLY					
TREATED SURFACE	38.2	76.4	114.6	152.7	190.9
TREATED GROUND	41.5	83.1	124.6	166.1	207.6
PRIVATE WELL	32.9	65.7	98.6	131.4	164.3
TOTAL	112.6	225.2	337.7	450.3	562.8

Table 5 (continued).

SUPPLY SOURCE	TOTAL BENEFITS ($1 M) AT VARIOUS LEVELS (PCT) OF WATER QUALITY IMPROVEMENT 60%	70%	80%	90%	100%
TDS AND HARDNESS					
TREATED SURFACE	364.0	424.5	485.1	545.9	607.9
TREATED GROUND	401.2	467.5	533.7	600.0	667.2
PRIVATE WELL	300.3	349.9	399.4	448.9	499.0
TOTAL	1065.5	1241.9	1418.2	1594.8	1774.1
TDS ONLY					
TREATED SURFACE	134.9	157.3	179.7	202.4	226.2
TREATED GROUND	152.2	177.0	201.7	226.5	252.3
PRIVATE WELL	103.2	120.0	136.7	153.4	170.7
TOTAL	390.3	454.2	518.1	582.3	649.2
HARDNESS ONLY					
TREATED SURFACE	229.1	267.2	305.4	343.5	381.7
TREATED GROUND	249.1	290.5	332.0	373.4	414.9
PRIVATE WELL	197.1	229.9	262.7	295.5	328.3
TOTAL	675.2	787.7	900.1	1012.5	1124.9

Table 6
HOUSEHOLD BENEFITS OF WATER SUPPLY TREATMENT IN THE U.S.
FOR 1970

DISCOUNT RATE = 7.5%

SUPPLY SOURCE	TOTAL BENEFITS ($1 M) AT VARIOUS LEVELS (PCT) OF WATER QUALITY IMPROVEMENT				
	10%	20%	30%	40%	50%
TDS AND HARDNESS					
TREATED SURFACE	60.1	120.1	180.1	239.9	299.7
TREATED GROUND	66.6	133.0	199.2	265.2	330.9
PRIVATE WELL	50.0	99.9	149.6	199.2	248.6
TOTAL	176.7	353.0	528.9	704.3	879.2
TDS ONLY					
TREATED SURFACE	21.2	42.3	63.3	84.3	105.1
TREATED GROUND	24.3	48.4	72.3	96.0	119.4
PRIVATE WELL	16.5	32.9	49.1	65.2	81.2
TOTAL	62.0	123.6	184.1	245.5	305.7
HARDNESS ONLY					
TREATED SURFACE	38.9	77.8	116.7	155.6	194.5
TREATED GROUND	42.3	84.6	126.9	169.2	211.5
PRIVATE WELL	33.5	67.0	100.5	133.9	167.4
TOTAL	114.7	229.5	344.1	458.8	573.4

Table 6 (continued).

SUPPLY SOURCE	TOTAL BENEFITS ($1 M) AT VARIOUS LEVELS (PCT) OF WATER QUALITY IMPROVEMENT				
	60%	70%	80%	90%	100%
TDS AND HARDNESS					
TREATED SURFACE	359.4	419.1	478.8	538.8	599.9
TREATED GROUND	396.5	461.9	527.2	592.5	658.8
PRIVATE WELL	297.8	346.9	395.9	444.9	494.5
TOTAL	1053.7	1227.9	1401.9	1576.2	1753.2
TDS ONLY					
TREATED SURFACE	125.9	146.8	167.6	188.7	211.0
TREATED GROUND	142.7	165.8	188.9	212.0	236.0
PRIVATE WELL	97.0	112.6	128.2	143.8	159.9
TOTAL	365.6	425.2	484.7	544.4	606.9
HARDNESS ONLY					
TREATED SURFACE	233.4	272.3	311.2	350.1	389.0
TREATED GROUND	253.8	296.0	338.3	380.5	422.8
PRIVATE WELL	200.8	234.3	267.7	301.1	334.5
TOTAL	688.1	802.7	917.2	1031.8	1146.3

Table 7
HOUSEHOLD BENEFITS OF WATER SUPPLY TREATMENT IN THE U.S.
FOR 1970

DISCOUNT RATE = 10%

SUPPLY SOURCE	TOTAL BENEFITS ($1 M) AT VARIOUS LEVELS (PCT) OF WATER QUALITY IMPROVEMENT				
	10%	20%	30%	40%	50%
TDS AND HARDNESS					
TREATED SURFACE	59.6	119.1	178.4	237.7	297.0
TREATED GROUND	66.0	131.9	197.5	262.9	328.0
PRIVATE WELL	49.8	99.4	148.8	198.1	247.2
TOTAL	175.4	350.3	524.7	698.7	872.2
TDS ONLY					
TREATED SURFACE	19.9	39.7	59.4	79.0	98.6
TREATED GROUND	22.9	45.6	68.0	90.3	112.3
PRIVATE WELL	15.6	31.1	46.4	61.5	76.5
TOTAL	58.4	116.3	173.8	230.8	287.4
HARDNESS ONLY					
TREATED SURFACE	39.7	79.4	119.1	158.7	198.4
TREATED GROUND	43.2	86.3	129.5	172.6	215.7
PRIVATE WELL	34.2	68.3	102.5	136.6	170.7
TOTAL	117.0	234.0	351.0	467.9	584.8

Table 7 (continued).

SUPPLY SOURCE	TOTAL BENEFITS ($1 M) AT VARIOUS LEVELS (PCT) OF WATER QUALITY IMPROVEMENT				
	60%	70%	80%	90%	100%
TDS AND HARDNESS					
TREATED SURFACE	356.1	415.3	474.5	533.9	594.5
TREATED GROUND	392.9	457.7	522.4	587.1	652.8
PRIVATE WELL	296.1	344.9	393.6	442.3	491.5
TOTAL	1045.2	1217.9	1390.5	1563.3	1738.8
TDS ONLY					
TREATED SURFACE	118.0	137.6	157.1	176.9	197.8
TREATED GROUND	134.1	155.8	177.4	199.0	221.6
PRIVATE WELL	91.3	106.0	120.6	135.2	150.4
TOTAL	343.5	399.3	455.1	511.2	569.8
HARDNESS ONLY					
TREATED SURFACE	238.1	277.7	317.4	357.0	396.7
TREATED GROUND	258.8	301.9	345.0	388.1	431.2
PRIVATE WELL	204.8	238.9	273.0	307.1	341.2
TOTAL	701.7	818.6	935.4	1052.2	1169.0

Table 8
HOUSEHOLD BENEFITS OF WATER SUPPLY TREATMENT IN THE U.S.
FOR 1970

DISCOUNT RATE = 5%

SUPPLY SOURCE	PER CAPITA BENEFITS ($) AT VARIOUS LEVELS (PCT) OF WATER QUALITY IMPROVEMENT				
	10%	20%	30%	40%	50%
TDS AND HARDNESS					
TREATED SURFACE	0.59	1.18	1.77	2.36	2.95
TREATED GROUND	1.12	2.24	3.36	4.47	5.58
PRIVATE WELL	1.25	2.49	3.73	4.96	6.20
TOTAL	0.88	1.76	2.63	3.50	4.37
TDS ONLY					
TREATED SURFACE	0.22	0.44	0.66	0.88	1.10
TREATED GROUND	0.43	0.86	1.28	1.70	2.12
PRIVATE WELL	0.43	0.86	1.29	1.71	2.13
TOTAL	0.32	0.65	0.97	1.29	1.60
HARDNESS ONLY					
TREATED SURFACE	0.37	0.74	1.11	1.49	1.86
TREATED GROUND	0.69	1.39	2.08	2.77	3.46
PRIVATE WELL	0.81	1.63	2.44	3.25	4.06
TOTAL	0.55	1.11	1.66	2.22	2.77

Table 8 (continued).

SUPPLY SOURCE	PER CAPITA BENEFITS ($) AT VARIOUS LEVELS (PCT) OF WATER QUALITY IMPROVEMENT				
	60%	70%	80%	90%	100%
TDS AND HARDNESS					
TREATED SURFACE	3.54	4.13	4.72	5.31	5.91
TREATED GROUND	6.69	7.80	8.90	10.01	11.13
PRIVATE WELL	7.43	8.65	9.88	11.10	12.34
TOTAL	5.24	6.11	6.98	7.85	8.73
TDS ONLY					
TREATED SURFACE	1.31	1.53	1.75	1.97	2.20
TREATED GROUND	2.54	2.95	3.36	3.78	4.21
PRIVATE WELL	2.55	2.97	3.38	3.79	4.22
TOTAL	1.92	2.24	2.55	2.87	3.19
HARDNESS ONLY					
TREATED SURFACE	2.23	2.60	2.97	3.34	3.71
TREATED GROUND	4.15	4.85	5.54	6.23	6.92
PRIVATE WELL	4.87	5.69	6.50	7.31	8.12
TOTAL	3.32	3.88	4.43	4.98	5.54

Table 9
HOUSEHOLD BENEFITS OF WATER SUPPLY TREATMENT IN THE U.S.
FOR 1970

DISCOUNT RATE = 7.5%

SUPPLY SOURCE	PER CAPITA BENEFITS ($) AT VARIOUS LEVELS (PCT) OF WATER QUALITY IMPROVEMENT				
	10%	20%	30%	40%	50%
TDS AND HARDNESS					
TREATED SURFACE	0.58	1.17	1.75	2.33	2.91
TREATED GROUND	1.11	2.22	3.32	4.42	5.52
PRIVATE WELL	1.24	2.47	3.70	4.93	6.15
TOTAL	0.87	1.74	2.60	3.47	4.33
TDS ONLY					
TREATED SURFACE	0.21	0.41	0.62	0.82	1.02
TREATED GROUND	0.41	0.81	1.21	1.60	1.99
PRIVATE WELL	0.41	0.81	1.22	1.61	2.01
TOTAL	0.30	0.61	0.91	1.21	1.50
HARDNESS ONLY					
TREATED SURFACE	0.38	0.76	1.14	1.51	1.89
TREATED GROUND	0.71	1.41	2.12	2.82	3.53
PRIVATE WELL	0.83	1.66	2.48	3.31	4.14
TOTAL	0.56	1.13	1.69	2.26	2.82

Table 9 (continued).

SUPPLY SOURCE	PER CAPITA BENEFITS ($) AT VARIOUS LEVLES (PCT) OF WATER QUALITY IMPROVEMENT				
	60%	70%	80%	90%	100%
TDS AND HARDNESS					
TREATED SURFACE	3.49	4.08	4.66	5.24	5.83
TREATED GROUND	6.61	7.70	8.79	9.88	10.99
PRIVATE WELL	7.36	8.58	9.79	11.00	12.23
TOTAL	5.19	6.04	6.90	7.76	8.63
TDS ONLY					
TREATED SURFACE	1.22	1.43	1.63	1.84	2.05
TREATED GROUND	2.38	2.77	3.15	3.54	3.94
PRIVATE WELL	2.40	2.79	3.17	3.56	3.96
TOTAL	1.80	2.09	2.39	2.68	2.99
HARDNESS ONLY					
TREATED SURFACE	2.27	2.65	3.03	3.40	3.78
TREATED GROUND	4.23	4.94	5.64	6.35	7.05
PRIVATE WELL	4.97	5.79	6.62	7.45	8.27
TOTAL	3.39	3.95	4.51	5.08	5.64