



**Water Use Efficiency Report  
for  
California League of Food Processors**

11 February 2015

Prepared by

**Kennedy/Jenks Consultants  
and  
Brown & Caldwell**

Prepared for

**California League of Food Processors**  
2485 Natomas Park Drive, Suite 550  
Sacramento, CA 95883

## **Appendix C**

---

Data Tables from Literature Survey

(Continued)

TABLE 4  
REPORTED ANNUAL WATER INTAKE BY TYPE OF USE AND INDUSTRY GROUP IN 1970  
(MILLION GALLONS)  
1 MILLION GALLONS = 3785.4 CUBIC METRES

SIC CODE	INDUSTRY GROUP	NUMBER OF PLANTS		WATER INTAKE								TOTAL
		TOTAL	REPORTING	COOLING	PROCESSING	BOILER FEED	AIR COND.	SANITARY	OTHER			
190	ORDNANCE AND ACCESSORIES	54	9	45	154	16	183	257	47	706		
191	GUNS, HOWITZERS AND MORTARS	1										
192	AMMUNITION, EXCEPT FOR SMALL ARMS	29	4	0	95	15	182	232	44	571		
193	TANKS AND TANK COMPONENTS	1	3	45	58	1	*	24	3	133		
194	SIGHTING AND FIRE CONTROL EQUIPMENT	1										
195	SMALL ARMS	11	1	0	0	0	*	*	0	*		
196	SMALL ARMS AMMUNITION	6	1	0	0	0	0	*	0	*		
199	ORDNANCE AND ACCESSORIES, NEC	5										
200	FOOD AND KINDRED PRODUCTS	2461	502	17803	18347	2825	646	704	3013	43340		
201	MEAT PRODUCTS	315	63	601	1046	87	45	87	67	1936		
202	DAIRY PRODUCTS	278	40	1134	595	89	1	15	470	2306		
203	CANNED, CURED, AND FROZEN FOODS	508	115	3108	8775	1087	144	209	1643	14969		
204	GRAIN MILL PRODUCTS	221	51	222	179	76	1	14	140	635		
205	BAKERY PRODUCTS	241	31	47	50	38	*	48	22	207		
206	SUGAR	18	7	9766	3730	849	0	98	72	14517		
207	CONFECTIONERY AND RELATED PRODUCTS	119	21	1744	39	14	375	22	38	2235		
208	BEVERAGES	332	87	736	2682	305	41	138	499	4403		
209	MISC. FOODS AND KINDRED PRODUCTS	429	87	442	1248	275	35	69	58	2128		
210	TOBACCO MANUFACTURES	4										
211	CIGARETTES	1										
212	CIGARS	3										
220	TEXTILE MILL PRODUCTS	252	52	13	121	38	*	26	7	207		
221	WEAVING MILLS, COTTON	6										
222	WEAVING MILLS, SYNTHETICS	5	1	0	0	0	0	*	0	*		
223	WEAVING AND FINISHING MILLS, WOOL	11	1	0	2	*	0	*	0	3		
224	NARROW FABRIC MILLS	13	3	0	4	0	0	*	0	4		
225	KNITTING MILLS	71	8	0	6	2	*	6	7	23		
226	TEXTILE FINISHING, EXCEPT WOOL	24	3	10	25	23	0	*	0	60		
227	FLOOR COVERING MILLS	52	13	2	81	12	*	6	0	102		
228	YARN AND THREAD MILLS	8	2	0	0	0	0	*	0	*		
229	MISCELLANEOUS TEXTILE GOODS	62	21	*	1	*	*	12	0	14		
230	APPAREL AND OTHER TEXTILE PRODUCTS	2183	250	*	0	14	1	77	0	93		
231	MEN'S AND BOYS' SUITS AND COATS	24	8	0	0	*	0	7	0	7		
232	MEN'S AND BOYS' FURNISHINGS	186	26	0	0	*	*	14	0	15		
233	WOMEN'S AND MISSES' OUTERWEAR	1202	127	*	0	*	*	31	0	33		
234	WOMEN'S AND CHILDREN'S UNDERGARMENTS	55	0	0	0	0	0	2	0	2		
235	HATS, CAPS, AND MILLINERY	30	1	0	0	0	0	*	0	*		
236	CHILDREN'S OUTERWEAR	46	7	0	0	*	0	2	0	2		
237	FUR GOODS	28	2	0	0	0	0	*	0	*		
238	MISCELLANEOUS APPAREL AND ACCESSORIES	71	11	0	0	0	0	2	0	2		
239	MISC. FABRICATED TEXTILE PRODUCTS	537	61	0	0	13	*	15	0	30		
240	LUMBER AND WOOD PRODUCTS	1608	270	1708	1635	638	1072	105	421	5581		
241	LOGGING CAMPS, + LOGGING CONTRACTORS	442	40	*	24	*	0	4	4	34		
242	SAWHILLS AND PLANING MILLS	267	64	1079	1421	460	1071	55	384	4473		
243	MILLWORK, PLYWOOD + RELATED PRODUCTS	423	94	7	2	16		26	0	53		

\* indicates quantity between 0 and 1.  
NOTE: Totals include quantities between 0 and 1.

TABLE 5  
**REPORTED ANNUAL FRESH WATER INTAKE, RECIRCULATION, AND DISCHARGE IN 1970**  
 (MILLION GALLONS)  
 1 MILLION GALLONS = 3785.4 CUBIC METRES

SIC CODE	INDUSTRY GROUP	TOTAL NO. OF PLANTS	RECIRCULATION				DISCHARGE			
			PLANTS REPORTING	INTAKE	RECYCLED <sup>1/</sup>	GROSS USE	RECYCLE RATE	PLANTS REPORTING	INTAKE	WATER DISCHARGE
190	ORDNANCE AND ACCESSORIES	54	9	706	1576	2282	3	6	411	
191	GUNS, MORTARS AND MISSILES	1								
192	AMMUNITION, EXCEPT FOR SMALL ARMS	29	4	571	1565	2136	3	2	393	
193	TANKS AND TANK COMPONENTS	1	3	133	11	145	1	3	18	
194	SIGHTING AND FIRE CONTROL EQUIPMENT	1								
195	SMALL ARMS	11	1	*	0	*	1	1	*	
196	SMALL ARMS AMMUNITION	6	1	*	0	*	1			
199	ORDNANCE AND ACCESSORIES, NEC	5								
200	FOOD AND KINDRED PRODUCTS	2461	548	35656	57100	92757	2	411	21109	
201	MEAT PRODUCTS	315	75	2106	882	2989	1	59	1610	
202	DAIRY PRODUCTS	278	45	2282	1496	3778	1	38	1126	
203	CANNED, CURED, AND FROZEN FOODS	508	121	13692	16315	30007	3	104	9725	
204	GRAIN MILL PRODUCTS	221	57	468	33	502	1	37	304	
205	BAKERY PRODUCTS	241	38	269	29	298	1	13	74	
206	SUGAR	14	7	8057	27038	35096	4	2	1340	
207	CONFECTIONERY AND RELATED PRODUCTS	119	23	2338	227	2466	1	18	2097	
208	BEVERAGES	332	90	4412	4736	9149	2	67	3177	
209	MISC. FOODS AND KINDRED PRODUCTS	429	92	2129	6338	8468	3	73	1652	
210	TOBACCO MANUFACTURES	4								
211	CIGARETTES	1								
212	CIGARS	3								
220	TEXTILE MILL PRODUCTS	252	52	207	46	253	1	32	155	
221	WEAVING MILLS, COTON	6								
222	WEAVING MILLS, SYNTHETICS	5	1	*	0	*	1	1	2	
223	WEAVING AND FINISHING MILLS, WOOL	11	1	3	0	3	1	1	4	
224	WARPING FABRIC MILLS	13	3	4	0	4	1	2	4	
225	KNITTING MILLS	71	8	23	*	23	1	5	11	
226	TEXTILE FINISHING, EXCEPT WOOL	24	3	60	0	60	1	1	42	
227	FLOOR COVERING MILLS	52	13	102	0	102	1	9	91	
228	YARN AND THREAD MILLS	9	2	*	0	*	1	2	*	
229	MISCELLANEOUS TEXTILE GOODS	62	21	14	45	60	4	12	3	
230	APPAREL AND OTHER TEXTILE PRODUCTS	2183	250	78 <sup>2/</sup>	* <sup>2/</sup>	78 <sup>2/</sup>	1 <sup>2/</sup>	193	53	
231	MEN'S AND BOYS' SUITS AND COATS	28	8	7	*	7	1	7	5	
232	MEN'S AND BOYS' FURNISHINGS	186	26					20	11	
233	WOMEN'S AND MISSES' OUTERWEAR	1202	127	33	0	33	1	98	22	
234	WOMEN'S AND CHILDREN'S UNDERGARMENTS	55	7	2	0	2	1	5	2	
235	HATS, CAPS, AND MILLINERY	30	1	*	0	*	1	1	*	
236	CHILDREN'S OUTERWEAR	46	7	2	0	2	1	3	4	
237	FUR GOODS	28	2	*	0	*	1	2	*	

<sup>1/</sup> Recycled - The additional amount of water required without recirculation.

<sup>2/</sup> Totals do not include inconclusive data

<sup>3/</sup> INC - inconclusive data.

\* indicates quantity between 0 and 1.

NOTE: Totals include quantities between 0 and 1.

TABLE 6

## ESTIMATED ANNUAL TOTAL FRESH WATER USE BY COUNTY AND MAJOR INDUSTRY GROUP IN 1970

COUNTY CODE	SIC CODE	COUNTY AND MAJOR SIC INDUSTRY GROUP	* NUMBER OF PLANTS		NUMBER OF EMPLOYEES		FRESH WATER USE				
			TOTAL	REPORTING	TOTAL	REPORTED	MILLION LITRES	MILLION GALLONS	ACRE FEET		
1	24	ALPINE LUMBER AND WOOD PRODUCTS	1	0	3	0	*	*	*	*	*
		TOTAL	1	0	3	0	*	*	*	*	*
2	20	AMADOR FOOD AND KINDRED PRODUCTS	2	0	2	0	*	*	*	*	2
	24	LUMBER AND WOOD PRODUCTS	9	5	595	503	1516	401	1231	*	1231
	27	PRINTING AND PUBLISHING	2	0	11	0	*	*	*	*	*
	28	CHEMICALS AND ALLIED PRODUCTS	1	1	104	31	533	141	432	*	432
	33	PRIMARY METAL INDUSTRIES	1	0	1	0	*	*	*	*	*
	34	FABRICATED METAL PRODUCTS	1	0	1	0	*	*	*	*	*
	35	MACHINERY, EXCEPT ELECTRICAL	1	0	1	0	*	*	*	*	*
		TOTAL	17	6	715	534	2056	543	1667	*	1667
3	20	BUTTE FOOD AND KINDRED PRODUCTS	20	4	685	383	2807	741	2275	*	2275
	23	APPAREL AND OTHER TEXTILE PRODUCTS	2	0	2	0	*	*	*	*	*
	24	LUMBER AND WOOD PRODUCTS	32	10	1008	511	1095	289	888	*	888
	25	FURNITURE AND FIXTURES	1	0	9	0	*	*	*	*	*
	27	PRINTING AND PUBLISHING	11	2	217	58	11	2	9	*	9
	28	CHEMICALS AND ALLIED PRODUCTS	4	0	14	0	57	15	46	*	46
	29	PETROLEUM AND COAL PRODUCTS	1	0	3	0	23	6	19	*	19
	30	RUBBER AND PLASTICS PRODUCTS, NEC	2	0	2	0	*	*	*	*	*
	32	STONE, CLAY, AND GLASS PRODUCTS	4	0	81	0	46	12	37	*	37
	34	FABRICATED METAL PRODUCTS	8	3	146	133	46	12	37	*	37
	35	MACHINERY, EXCEPT ELECTRICAL	20	4	387	272	12	3	10	*	10
	36	ELECTRICAL EQUIPMENT AND SUPPLIES	1	0	21	0	14	3	11	*	11
	37	TRANSPORTATION EQUIPMENT	1	0	2	0	*	*	*	*	*
	38	INSTRUMENTS AND RELATED PRODUCTS	2	0	18	0	*	*	*	*	*
	39	MISCELLANEOUS MANUFACTURING INDUSTRIES	4	0	195	0	10	2	8	*	8
		TOTAL	113	23	2790	1357	4126	1090	3345	*	3345
4	24	CALAVERAS LUMBER AND WOOD PRODUCTS	11	2	143	46	203	53	165	*	165
	27	PRINTING AND PUBLISHING	4	1	31	2	1	*	*	*	*
	32	STONE, CLAY, AND GLASS PRODUCTS	3	3	367	368	996	263	807	*	807
	33	PRIMARY METAL INDUSTRIES	1	0	12	0	1	*	*	*	*
	34	FABRICATED METAL PRODUCTS	2	0	3	0	*	*	*	*	*
	35	MACHINERY, EXCEPT ELECTRICAL	1	1	1	1	*	*	*	*	*
		TOTAL	22	7	557	417	1203	318	975	*	975
5	20	COLUSA FOOD AND KINDRED PRODUCTS	3	0	53	0	59	15	48	*	48
	25	FURNITURE AND FIXTURES	1	1	2	5	*	*	*	*	*
	27	PRINTING AND PUBLISHING	2	0	15	0	*	*	*	*	*
	28	CHEMICALS AND ALLIED PRODUCTS	2	0	21	0	101	26	82	*	82

\* indicates quantity between 0 and 1.

NOTE: Totals include quantities between 0 and 1.

TABLE 7

## ESTIMATED ANNUAL TOTAL FRESH WATER USE AND UNIT EMPLOYEE USE BY INDUSTRY GROUP IN 1970

SIC CODE	MANUFACTURING CLASSIFICATION	NUMBER OF PLANTS		NUMBER OF EMPLOYEES		FRESH WATER			EMPLOYEE UNIT USE WORK DAY	
		TOTAL	REPORTING	TOTAL	REPORTED	MILLION LITRES	MILLION GALLONS	ACRE FEET	LITRES	GALLONS
190	ORDNANCE AND ACCESSORIES	54	9	65228	26085	6140	1622	4978	416	110
191	GUNS, MORTARS AND MORTARS	1	0	77	0	58	15	47	3384	894
192	AMMUNITION, EXCEPT FOR SMALL ARMS	29	4	61248	23686	5237	1383	4245	379	100
193	TANKS AND TANK COMPONENTS	1	3	2345	2344	507	134	411	958	253
194	SIGHTING AND FIRE CONTROL EQUIPMENT	1	0	109	0	83	22	67	3384	894
195	SMALL ARMS	11	1	759	54	36	9	29	216	57
196	SMALL ARMS AMMUNITION	6	1	423	1	13	3	10	136	36
199	ORDNANCE AND ACCESSORIES, NEC	5	0	267	0	204	53	165	3384	894
200	FOOD AND KINDRED PRODUCTS	2461	601	166068	57920	317413	83852	257332	8400	2219
201	MEAT PRODUCTS	315	79	18372	6960	20626	5448	16722	4966	1312
202	DAIRY PRODUCTS	278	53	17133	3931	25710	6792	20843	6640	1754
203	CANNED, CURED, AND FROZEN FOODS	508	129	56364	21742	125830	33241	102013	9732	2571
204	GRAIN MILL PRODUCTS	221	59	7280	2495	5425	1433	4398	3286	868
205	BAKERY PRODUCTS	241	42	20159	3714	4231	1117	3430	927	245
206	SUGAR	18	7	3804	2886	49256	13012	39933	54298	14344
207	CONFECTIONERY AND RELATED PRODUCTS	119	28	5254	2282	17343	4581	14060	14415	3808
208	BEVERAGES	332	96	19157	7436	45845	12111	37167	10588	2797
209	MISC. FOODS AND KINDRED PRODUCTS	429	108	18545	6574	23143	6113	18762	5523	1459
210	TOBACCO MANUFACTURES	4	0	45	0	34	9	27	3384	894
211	CIGARETTES	1	0	20	0	15	4	12	3384	894
212	CIGARS	3	0	25	0	19	5	15	3384	894
220	TEXTILE MILL PRODUCTS	252	52	9698	2222	3018	797	2447	1378	364
221	WEAVING MILLS, COTTON	6	0	86	0	65	17	53	3384	894
222	WEAVING MILLS, SYNTHETICS	5	1	43	15	1	*	*	121	32
223	WEAVING AND FINISHING MILLS, WOOL	11	1	580	81	81	21	65	621	164
224	NARROW FABRIC MILLS	13	3	289	17	279	73	226	4281	1131
225	KNITTING MILLS	71	8	2228	388	249	65	202	496	131
226	TEXTILE FINISHING, EXCEPT WOOL	24	3	610	196	642	169	520	4660	1231
227	FLOOR COVERING MILLS	52	13	3593	857	1566	413	1270	1931	510
228	YARN AND THREAD MILLS	8	2	560	10	17	4	14	136	36
229	MISCELLANEOUS TEXTILE GOODS	62	21	1709	658	114	30	92	295	78
230	APPAREL AND OTHER TEXTILE PRODUCTS	2183	250	69828	10399	2560	676	2076	163	43
231	MEN'S AND BOYS' SUITS AND COATS	28	8	3290	1706	55	14	44	76	20
232	MEN'S AND BOYS' FURNISHINGS	186	26	10575	1756	338	89	274	140	37
233	WOMEN'S AND MISSES' OUTERWEAR	1202	127	36839	4112	1100	290	892	132	35
234	WOMEN'S AND CHILDREN'S UNDERGARMENTS	55	7	4045	315	118	31	96	129	34
235	HATS, CAPS, AND MILLINERY	30	1	392	1	12	3	9	136	36
236	CHILDREN'S OUTERWEAR	46	7	1799	349	45	11	36	110	29
237	FUR GOODS	28	2	157	11	4	1	3	136	36
238	MISCELLANEOUS APPAREL AND ACCESSORIES	71	11	1662	309	67	17	54	178	47
239	MISC. FABRICATED TEXTILE PRODUCTS	537	61	11049	1840	817	216	663	329	87
240	LUMBER AND WOOD PRODUCTS	1608	277	46607	13067	83329	22013	67556	7877	2081
241	LOGGING CAMPS, + LOGGING CONTRACTORS	442	40	3616	788	670	177	543	821	217
242	SAWMILLS AND PLANING MILLS	267	71	20274	7763	74492	19678	60392	16258	4295

\* indicates quantity between 0 and 1.  
NOTE: Totals include quantities between 0 and 1.

**TABLE 8**  
**POTENTIAL ACCEPTANCE OF RECLAIMED WATER BY INDUSTRY GROUP IN 1970**  
(MILLION GALLONS)  
1 MILLION GALLONS = 3785.1 CUBIC METRES

SIC CODE	INDUSTRY GROUP	TOTAL NO. OF PLANTS	PLANTS REPORTING ON ACCEPTANCE				ACCEPTANCE AS RECLAIMED INTAKE
			RESPONDING		TOTAL INTAKE		
			TOTAL	NO			
190	ORONANCE AND ACCESSORIES	54	8	3	5	706	374
191	GUNS, MORTARS AND MORTARS	1					
192	AMMUNITION, EXCEPT FOR SMALL ARMS	29	4	2	2	571	250
193	TANKS AND TANK COMPONENTS	1	3	0	3	133	124
194	SIGHTING AND FIRE CONTROL EQUIPMENT	1					
195	SMALL ARMS	11	1	1	0	*	0
196	SMALL ARMS AMMUNITION	6					
199	ORONANCE AND ACCESSORIES, NEC	5					
200	FOOD AND KINDRED PRODUCTS	2461	509	252	257	43240	27274
201	MEAT PRODUCTS	315	68	44	24	1961	578
202	DAIRY PRODUCTS	278	44	25	19	2421	910
203	CANNED, CURED, AND FROZEN FOODS	508	119	46	73	14934	9316
204	GRAIN MILL PRODUCTS	221	48	23	25	524	395
205	BAKERY PRODUCTS	241	33	23	10	265	66
206	SUGAR	18	7	2	5	14737	11545
207	CONFECTIONERY AND RELATED PRODUCTS	119	24	11	13	2226	1637
208	BEVERAGES	332	92	38	44	4301	1830
209	MISC. FOODS AND KINDRED PRODUCTS	429	84	40	44	1867	588
210	TOBACCO MANUFACTURES	4					
211	CIGARETTES	1					
212	CIGARS	3					
220	TEXTILE MILL PRODUCTS	252	30	15	15	203	111
221	WEAVING MILLS, COTTON	6					
222	WEAVING MILLS, SYNTHETICS	5	1	0	1	*	*
223	WEAVING AND FINISHING MILLS, WOOL	11	1	0	1	3	*
224	NARROW FABRIC MILLS	13	2	1	1	4	*
225	KNITTING MILLS	71	4	4	0	22	0
226	TEXTILE FINISHING, EXCEPT WOOL	24	3	1	2	60	17
227	FLOOR COVERING MILLS	52	9	6	3	101	82
228	YARN AND THREAD MILLS	8					
229	MISCELLANEOUS TEXTILE GOODS	62	10	3	7	11	10
230	APPAREL AND OTHER TEXTILE PRODUCTS	2183	60	44	16	46	7
231	MEN'S AND BOYS' SUITS AND COATS	28	2	1	1	6	*
232	MEN'S AND BOYS' FURNISHINGS	186	7	3	4	8	4
233	WOMEN'S AND MISSES' OUTERWEAR	1202	29	22	7	7	1
234	WOMEN'S AND CHILDREN'S UNDERGARMENTS	55	2	2	0	*	0
235	HATS, CAPS, AND MILLINERY	30					
236	CHILDREN'S OUTERWEAR	46	2	1	1	*	*
237	FUR GOODS	28					
238	MISCELLANEOUS APPAREL AND ACCESSORIES	71	2	2	0		0
239	MISC. FABRICATED TEXTILE PRODUCTS	537	16	13	3	21	*
240	LUMBER AND WOOD PRODUCTS	1608	114	60	54	6458	3764
241	LOGGING CAMPS, + LOGGING CONTRACTORS	442	9	4	5	37	26

\* indicates quantity between 0 and 1.  
NOTE: Totals include quantities between 0 and 1

5. c. CA DWR, Bulletin No. 124. Water Use by Manufacturing Industries in California 1957-1959). April 1964. (EPA 1964)



RANGE OF AVERAGE ANNUAL WATER USE WITHIN INDUSTRY GROUPS  
1957 - 1959  
(MILLIONS OF CUBIC FEET)

TABLE 1

S.I.C. Code	Industry Group	Number of Plants	Total	Plants Reporting Water Intake						over 1000
				Gross Intake in millions of cubic feet per year						
				less than 0.1	0.1 - 1	1 - 10	10 - 100	100 - 1000		
191	GUNS, HOWITZERS, MORTARS & RELATED EQPMT									
192	AMMUNITION, EXCEPT SMALL ARMS	17	1			1				
193	TANKS & TANK COMPONENTS	1	1			1				
194	SIGHTING & FIRE CONTROL EQUIPMENT	2	1		1					
195	SMALL ARMS	9	1							
196	SMALL ARMS AMMUNITION	3								
199	ORDNANCE & ACCESSORIES N.E.C.	6	1							
190	ORDNANCE AND ACCESSORIES	38	5	2	1	2				
201	MEAT PRODUCTS	373	108	36	37	27	7	1		
202	DAIRY PRODUCTS	346	117	19	37	35	26			
203	CANNING & PRESERVING FRUITS ETC.	582	256	69	69	73	44	1		
204	GRAIN MILL PRODUCTS	232	83	51	21	9	2			
205	BAKERY PRODUCTS	309	76	40	29	7				
206	SUGAR	12	11				8	3		
207	CONFECTIONERY & RELATED PRODUCTS	139	41	20	18	3				
208	BEVERAGE INDUSTRIES	390	148	31	68	35	13	1		
209	MISCELLANEOUS FOOD PREPARATIONS ETC.	489	173	57	59	50	7			
200	FOOD AND KINDRED PRODUCTS	2872	1013	323	338	239	107	6		
211	CIGARETTES									
212	CIGARS	8								
213	TOBACCO AND SNUFF									
214	TOBACCO STEMMING AND REDRYING									
210	TOBACCO MANUFACTURES	8								
221	BROAD WOVEN FABRICS, COTTON	2								
222	BROAD WOVEN FABRICS, SYNTHETICS & SILK	4	1			1				

TABLE 2

AVERAGE ANNUAL WATER INTAKE BY INDUSTRY GROUP  
1957-1959  
(CUBIC FEET)

S.I.C. Code	Industry Group	No. of Plants Reporting	Fresh Water		Brackish Water	Total Water Intake
			Public Water System	Company Water System		
201	MEAT PRODUCTS	111	280,235,601	181,664,757	10,845,645	472,147,283
202	DAIRY PRODUCTS	116	159,240,829	505,661,792	18,766,666	759,075,287
203	CANNING & PRESERVING FRUITS ETC.	256	632,614,758	1,118,314,711	1,385,609,218	3,136,538,887
204	GRAIN MILL PRODUCTS	81	36,054,889	33,853,761	15,715,486	86,224,136
205	BAKERY PRODUCTS	77	36,798,222			36,798,322
206	SUGAR	11	138,473,935	1,044,100,759	659,936,343	1,842,441,037
207	CONFECTIONERY & RELATED PRODUCTS	38	12,298,110	5,867,408		18,165,518
208	BEVERAGE INDUSTRIES	148	245,167,971	353,391,204		598,558,775
209	MISCELLANEOUS FOOD PREPARATIONS ETC.	170	208,827,979	185,491,833	90,136,900	462,416,708
200	FOOD AND KINDRED PRODUCTS	1008	1,744,249,276	3,447,166,425	2,181,010,258	7,412,365,953
223	BROAD WOVEN FABRICS, WOOL	4	3,230,505			3,230,505
225	KNITTING MILLS	5	396,601			396,601
226	DYEING & FINISHING TEXTILES EXCEPT WOOL	7	6,862,156			6,862,156
227	FLOOR COVERING MILLS	7	2,739,733			2,739,733
229	MISCELLANEOUS TEXTILE GOODS	10	3,544,577			3,544,577
220	TEXTILE MILL PRODUCTS	33	16,773,572			16,773,572
232	MENS & BOYS FURNISHINGS ETC.	15	1,066,817			1,066,817
233	WOMENS MISSES & JRS OUTERWEAR	41	2,542,179	30,000		2,572,179
236	GIRLS CHILDRENS & INFANTS OUTERWEAR	4	84,895			84,893
238	MISC. APPAREL & ACCESSORIES	3	161,457			161,497
239	MISC. FABRICATED TEXTILE PRODUCTS	38	2,295,534			2,295,534
230	APPAREL & OTHER PRODUCTS ETC.	101	6,150,920	30,000		6,180,920
241	LOGGING CAMPS & CONTRACTORS	28	16,912,329	22,117,431		38,631,760
242	SAWMILLS & PLANING MILLS	148	169,471,106	1,876,485,606	13,368,055	1,857,324,849
243	MILLWORK VENEER PLYWOOD ETC.	101	3,260,200	108,718,772	125,185,520	237,304,515

TABLE 4

## AVERAGE ANNUAL WATER USE BY INDUSTRY GROUP

1957 - 1959

(MILLIONS OF CUBIC FEET)

S.I.C. Code	Standard Industrial Classification Industry Group	Number of plants reporting	Water Intake				Water recirculated All purposes*	Water required without recirculation	Water Treated*		Total discharged	
			Cooling	Processing	Boiler Feed	Sanitary and Misc.			Total	Prior to use		Prior to discharge
201	MEAT PRODUCTS	33	94	85	17	36	232	55	287	93	10	171
202	DAIRY PRODUCTS	50	150	114	19	231	514	104	618	34	8	351
203	CANNING PRESERVING FRUITS ETC.	127	347	617	107	141	1212	1915	3127	336	161	754
204	GRAIN MILL PRODUCTS	31	52	12	3	9	75	6	81	9	3	27
205	RAFFRY PRODUCTS	26	1	4	1	9	14		14			10
206	SUGAR	6	1006	231	20	50	1307	382	1689	20	43	331
207	CONFECTIONERY RELATED PRODUCTS	12	3	2	1	5	11	420	431			7
208	BEVERAGE INDUSTRIES	77	235	199	20	50	504	154	658	22	82	337
209	MISCELLANEOUS FOOD PREPARATIONS ETC.	74	61	77	15	57	210	135	345	64	20	82
200	FOOD AND KINDRED PRODUCTS	436	1949	1341	203	588	4079	3171	7250	578	327	2070
226	DYEING FINISHING TEXTILES EXCEPT WOOL	5		5	1		7		7	5		6
227	FLOOR COVERING MILLS	5				2	3	1	4			2
220	TEXTILE MILL PRODUCTS	10		5	1	2	10	1	11	5		8
213	WOMENS MISSES JRS OUTERWEAR	15				1	1		1			1
239	MISC. FABRICATED TEXTILE PRODUCTS	12					1		1			1
230	APPAREL OTHER PRODUCTS FTC.	27				1	2		2			2
241	LOGGING CAMPS CONTRACTORS	8				5	5		5			5
242	SAWMILLS PLANING MILLS	68	441	147	425	62	1076	510	1586	360	63	295
243	MILLWORK VENEER PLYWOOD ETC.	36	24	28	11	23	85	4	89	10	1	6
244	WOODEN CONTAINERS	11				1	1		1			1
249	MISC. WOOD PRODUCTS	14	9	2	2		13	1	14	1		6
240	LUMBER WOOD PRODUCTS EXCEPT FURNITURE	137	474	177	438	91	1180	515	1695	371	64	313
251	HOUSEHOLD FURNITURE	45				2	2	1	3			2
252	OFFICE FURNITURE	3	1	4		2	7		7			2
254	PARTITIONS FTC. OFFICE STORE FIXTURES	8										

\* Fresh Water Only

TABLE 5  
WEIGHTED AVERAGE ANNUAL UNIT VALUES OF FRESH WATER USE BY INDUSTRY GROUP  
1957 - 1959  
(CUBIC FEET)

S.I.C. Code	Industry Group	State wide		Plants reporting fresh water intake			
		No. of Plants	No. of Employees	No. of Plants	No. of Employees	Unit Value of Water Use in cubic feet	
						Per Employee working day	Per square foot of plant area
191	GUNS+HOWITZERS+MORTARS & RELATED EOPMNT						
192	AMMUNITION, EXCEPT SMALL ARMS	17	39402				478
193	TANKS & TANK COMPONENTS	1	2317				1034
194	SIGHTING & FIRE CONTROL EQUIPMENT	2	4818				325
195	SMALL ARMS	9	120				136
196	SMALL ARMS AMMUNITION	3	39				124
199	ORDNANCE & ACCESSORIES N.E.C.	6	67				224
190	ORDNANCE AND ACCESSORIES	38	46763				248
201	MEAT PRODUCTS	373	19070	63	5588	278	
202	DAIRY PRODUCTS	346	21826	82	4342	337	
203	CANNING & PRESERVING FRUITS ETC.	582	52205	187	35050	240	
204	GRAIN MILL PRODUCTS	232	7407	42	2708	73	
205	BAKERY PRODUCTS	309	22405	40	6687	17	
206	SUGAR	17	4650	10	4156	1300	
207	CONFECTIONERY & RELATED PRODUCTS	139	4478	27	1854	32	
208	BEVERAGE INDUSTRIES	390	14815	106	4951	372	
209	MISCELLANEOUS FOOD PREPARATIONS ETC.	489	14162	114	5597	175	
200	FOOD AND KINDRED PRODUCTS	2872	161018	671	70928		
211	CIGARETTES						
212	CIGARS	8	50				
213	TORACCO AND SNUFF						
214	TORACCO STEMMING AND REDRYING						
210	TORACCO MANUFACTURES	8	50				
221	BROAD WOVEN FABRICS, COTTON	2	27				
222	BROAD WOVEN FABRICS, SYNTHETICS & SILK	4	137				

TABLE 7  
ESTIMATED ANNUAL TOTAL FRESH WATER USE BY INDUSTRY GROUP  
1957 - 1959  
(CUBIC FEET)

S.I.C. Code	Standard Industrial Classification Industry Group	Water Use
192	AMMUNITION, EXCEPT SMALL ARMS	76,299,386
193	TANKS & TANK COMPONENTS	6,209,898
194	SIGHTING & FIRE CONTROL EQUIPMENT	3,950,784
195	SMALL ARMS	253,982
196	SMALL ARMS AMMUNITION	
199	ORDNANCE & ACCESSORIES N.F.C.	116,521
19	ORDNANCE AND ACCESSORIES	86,830,571
201	MEAT PRODUCTS	2,030,586,919
202	DAIRY PRODUCTS	2,085,978,249
203	CANNING & PRESERVING FRUITS ETC.	2,223,686,290
204	GRAIN MILL PRODUCTS	143,753,300
205	BAKERY PRODUCTS	92,711,297
206	SUGAR	1,401,060,166
207	CONFECTIONERY & RELATED PRODUCTS	31,798,557
208	BEVERAGE INDUSTRIES	1,333,812,278
209	MISCELLANEOUS FOOD PREPARATIONS ETC	777,699,441
20	FOOD AND KINDRED PRODUCTS	10,121,086,497
212	CIGARS	
21	TOBACCO MANUFACTURES	
221	BROAD WOVEN FABRICS, COTTON	
222	BROAD WOVEN FABRICS, SYNTHETICS & S	3,809,360
223	BROAD WOVEN FABRICS, WOOL	7,007,833
224	NARROW FABRICS & OTHER SMALLWARES	188,896
225	KNITTING MILLS	6,239,187
226	DYEING & FINISHING TEXTILES EXCEPT	13,019,151

TABLE 8  
WATER USE OF MAJOR INDUSTRY GROUPS IN PRINCIPAL WATER USING COUNTIES - 1957-1959

(Millions of Cubic Feet)

	Food & Kindred Products	Petroleum, refining & related Industries	Chemical & Allied Products	Paper & Allied Products	Stone, Clay and Glass Products	Fabricated Metal Products Exc. Ordnance, etc.	Transportation Equipment	Primary Metal Industries	Lumber & Wood Products Exc. Furniture	COUNTY TOTAL	Percent of County Totals
<u>Northern Mountainous Area</u>											
Plumas	4		1						5282	5282	100
Siskiyou	14								648	653	100
Shasta	7	1		201		1			566	581	100
Mendocino	43			14	2				325	533	100
Humboldt	5			258					662	722	100
Tehama	73	1	1	473	2	1			90	353	100
									7573	8124	
<u>Central Valley Area</u>											
San Joaquin	813	1	8	270	92	7		1	11	1203	99
Stanislaus	670	1	65	18	2	4			18	778	89
Fresno	747	32	30	1	25	2	25	1	109	972	98
Sacramento	533	31	8	5	84	7	43	3	3	717	96
Kern	110	239	9		92	1	5	3	7	466	84
Merced	301			3	5				7	316	99
	3174	304	120	297	300	21	73	8	155	4452	
<u>San Francisco Bay Area</u>											
Contra Costa	162	1355	2410	1169	18	13	4	88	1	5220	100
San Francisco	1672	721	79	94	36	34	13	14	13	2676	98
Alameda	656	18	192	149	183	90	33	71	42	1434	92
Santa Clara	410	3	85	12	125	8	17	21	3	684	85
	2900	2097	2766	1424	362	145	67	194	59	10014	
<u>Central Coastal Area</u>											
Monterey	343		1	4	56				8	412	98
Santa Barbara	301	25			29	1	2		3	361	98
	644	25	1	4	85	1	2		11	773	
<u>South Coastal Area</u>											
Los Angeles	1415	3282	961	857	314	899	713	242	22	8705	89
Orange	208	114	86	50	5	34	41	21	19	578	74
Sub Total	1623	3396	1047	907	319	933	754	263	41	9283	
San Bernardino	79	7	12	1	244	4	6	282	60	695	93
San Diego	160	401	49	1	8	12	115	3	5	754	93
Riverside	52	77		3	126	3	23	16		300	96
	1914	3881	1108	912	697	952	898	564	106	11032	
INDUSTRY TOTALS	8705	6308	3996	3110	1446	1120	1040	766	7904	34395	86
Percent of Industry Totals	86	98	96	98	84	97	99	95	85	86	



**INDUSTRIAL WATER USE SURVEY**

Date Form Completed: \_\_\_\_\_

Company Covered by This Report: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Product(s): \_\_\_\_\_

**INSTRUCTIONS:** Please complete this form and return to department within 30 days. Before completing this form please read the instructions below:

Report the total gallons, cubic feet, or other units of water (fresh and brackish) intake, discharge, and estimated total use for the entire years 1957, 1958, and 1959. Estimates are acceptable when exact records are not available.

Please report data separately for each branch plant.

FOR DEPARTMENTAL USE ONLY											
County	City	City Sub-Division	Industry	Quad Location	Hydro-graphic	Project or Service Area	Year	Serial	Dist.	Additional Identification	
NUMBER	ITEM	Check one:			FOR THE YEAR OF:						
		Gallons <input type="checkbox"/>	Cubic ft. <input type="checkbox"/>	Other <input type="checkbox"/>	1957	1958	1959				
Item I	<b>WATER INTAKE FOR:</b>										
	A. Cooling	1. fresh									
		2. brackish (salt)									
	B. Processing (entering into or contacting products manufactured)	1. fresh									
		2. brackish									
	C. Boiler feed	fresh									
	D. Sanitary, air-conditioning and misc.	1. fresh									
		2. brackish									
	E. Total intake for all purposes.	1. fresh									
		2. brackish									
Item II	<b>FRESH WATER INTAKE FROM:</b>										
	A. Public water system: municipal <input type="checkbox"/> private <input type="checkbox"/>										
	B. Name of public water system and quantity of water delivered:										
	(name)										
	C. Is your water supply developed by your company? Yes <input type="checkbox"/> no <input type="checkbox"/> partially <input type="checkbox"/>										
	D. If water is company developed and flow is metered, report quantity used and source										
	deep well <input type="checkbox"/> stream <input type="checkbox"/> other _____ (specify)										
	E. If water is company developed and flow is not metered but electric power for producing water is metered separately, complete the following:										
	1. Power consumption for water system										
	(Kilowatt-hours)	1957	1958	1959							
	2. Pump test _____ kilowatt-hours per _____ gallons										
	3. Source:										
	deep well <input type="checkbox"/> stream <input type="checkbox"/> other _____ (specify)										
	(Use space under "REMARKS"—ITEM XIII to report additional pumps—DO NOT INCLUDE BOOSTER PUMPS)										
	F. Total (B + D) should equal the figure in ITEM IE-1										
Item III	<b>WATER DISCHARGED AND NAME OF FACILITY:</b>										
	A. Sewer system (quantity)										
	(name of system)										
	B. Local Water Course (quantity)										
	(name of water course)										
	C. Percolated into ground (quantity)										
	D. Other (quantity)										
	(specify kind)										
	E. If disposal is B, C or D, give general location of discharge point under "Remarks," ITEM XIII										
Item IV	<b>WATER RECIRCULATED:</b>										
	A. Was any fresh water recirculated or re-used? yes <input type="checkbox"/> no <input type="checkbox"/>										
	B. If water is recirculated or re-used, indicate the amount by kind of use	cooling									
		processing									
		boiler feed									
		misc.									
		combined total									

\* A private water system can be a commercial or mutual water company or a district which supplies water

(See other side)

NUMBER	ITEM	1957	1958	1959
Item V	<b>WATER TREATED:</b> (include only fresh water)			
	A. Intake water (reported in ITEM IE-1) treated prior to use (quantity)			
	B. Waste water (reported in ITEM III) treated for discharge (quantity)			
	C. If discharge is treated, list treatment facilities used under "Remarks," ITEM XIII			
Item V	D. Was it necessary to treat water (reported in ITEM IV) prior to re-use? yes <input type="checkbox"/> no <input type="checkbox"/>			
	If answer is yes, indicate treatment facilities used under "Remarks," ITEM XIII			
Item VI	Please indicate by checks in the appropriate boxes, the primary basis for figures reported for the following items:			
	ITEM	METER RECORDS	ENGINEERING ESTIMATES	OTHER (Specify)
	Fresh water intake (ITEM I)			
	Fresh water intake (ITEM II)			
	Fresh water discharge (ITEM III)			
	Fresh water recirculation (ITEM IV)			
Item VI	Fresh water treated (ITEM V)			
Item VII	<b>EMPLOYEES:</b>	1957	1958	1959
	Average annual employment (if employment is highly seasonal indicate employment by the month, for each year. Use space in "Remarks," ITEM XIII, if necessary.)			
Item VIII	<b>AREA:</b>			acres <input type="checkbox"/>
	A. Indicate entire area of PROPERTY at this location. (Use acres or sq. ft.):			sq. ft. <input type="checkbox"/>
Item VIII	B. Indicate actual water using plant area:			(check one) acres <input type="checkbox"/>
				sq. ft. <input type="checkbox"/>
Item IX	<b>VEGETATED AREAS:</b>			square ft.
	Estimated vegetated area in and about plant grounds (lawns, shrubbery, and flower beds which are watered):			
Item X	<b>UNIT VALUES OF WATER USE:</b>	1957	1958	1959
	A. Quantity of water used related to quantity of PRODUCT			
	Example: $\frac{1,500,000 \text{ gallons}}{1,000 \text{ tons of steel}} = \frac{1,500 \text{ gallons per}}{1 \text{ ton of steel}}$			
				gallons
Item X	B. Gallons of water used per DOLLAR value added by manufacture:	1957	1958	1959
	Example: $\frac{1,500,000 \text{ gallons}}{150,000 \text{ dollars}} = \frac{10 \text{ gallons per}}{\text{dollar added (gross)}}$			
Item X	Note: If two or more products are involved, please indicate unit values for each, under A and B.			gallons
	C. For canneries and other industries processing or manufacturing two or more items identify under "Remarks," ITEM XIII, the total fresh water use associated with each product and the period of use; for example: Total water intake: 1,500,000 gallons peaches — 1,000,000 gallons, August pears — 500,000 gallons, September			
Item XI	<b>WORKING DAYS OF PLANT</b>	1957	1958	1959
Item XII	<b>FUTURE WATER USE:</b>			
	What do you expect your unit value (based on product) of water use to be in the foreseeable future, expressed as a percentage of the present unit requirements? _____% (See Item XA)			
Item XIII	<b>REMARKS</b> (Please add any information that will help us evaluate water use by your company)			



6. Mannapperuma, Jatal D., Yates, E. D., and Singh, R. Paul. "Survey of Water Use in the California Food Processing Industry." Food Industry Environmental Conference. 1996. (FEIC 1993)

forced to transport wastewater by truck to a treatment plant. Besides this plant there were four other plants spending over \$5000 per million gallons for wastewater disposal through public facilities.

#### Overall Cost of Water Use

The total cost of water is obtained by summing up the cost of fresh water supply and cost of wastewater disposal. When this statistic was compiled it was found that 14 plants spent over \$5000 per million gallons of water use and another 33 spent between \$1000 to \$5000.

The cost of water use amounts to \$0.26 to \$4.50 per ton of tomatoes, \$8.95 to \$58.91 per ton of olives, and \$0.84 to \$11.38 per ton of peaches. The wide variation is due to differences in rates of the water agency and the POTW and also due to differences in conservation measures in the processing plant.

#### Product Specific Water Use and Effluent Strength

The largest number of responses received for a specific product was 23 for tomatoes. The specific water use for tomato processing ranged from 144 to 1870 gallons per ton of tomatoes and the median was 920. The biochemical oxygen demand (BOD) of the tomato processing effluent was reported by 17 plants. The reported values ranged from 0.3 to 32 lb/ton of tomatoes and median was 8. The total suspended solids (TSS) was reported by 13 plants. The values ranged from 0.55 to 20 lb/ton and the median was 6. The lower end of the ranges belong to bulk tomato paste plants while the higher end correspond to retail tomato sauce plants.

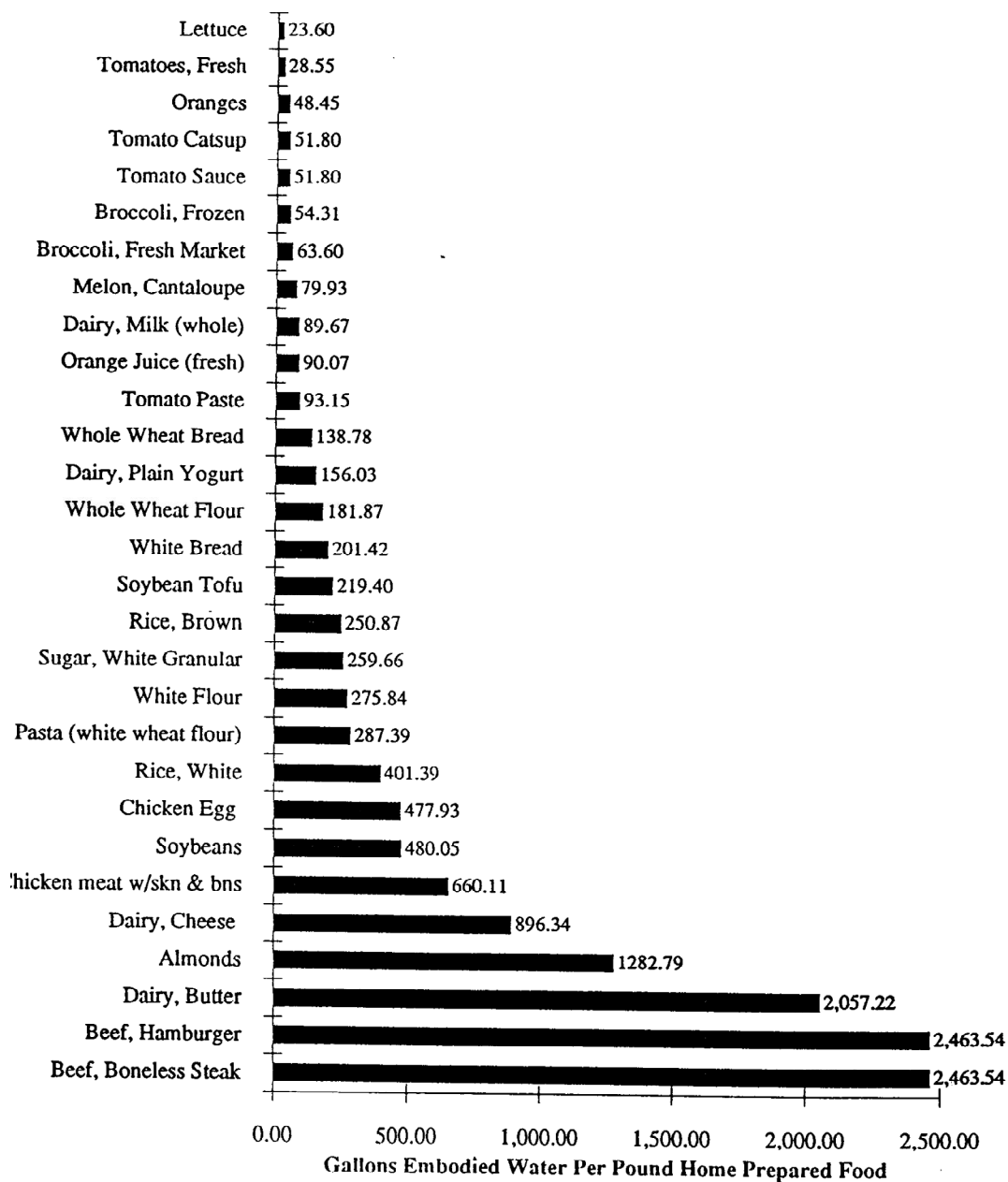
Table 3. Specific Water Use and Effluent Strength for Some Products

Product	Flow Gallons per ton	BOD lb per ton	TSS lb per ton
Apple Sauce	275		
Apricots	2,992	39.0	9.0
Artichokes	766	3.3	3.9
Asparagus	808		
Brussels Sprout	813		
Cheese	1,700	1000	29.0
Cherry	11,932	102	21.0
Frozen Fruits	1,780		
Garlic	2,800	1.8	
Meat	4,000		
Mushrooms	1,818	1.8	0.8
Mushrooms*	781		
Onions	1,000		
Pears	4,174	11.0	6.0
Pumpkins	3,690		
Raisins	2,000	75.0	15.0
Seafood	2,700	12.9	7.9
Seafood*	2,662		4.0
Specialty	3,514		12.7
Vegetable Oils	2,111	1.1	0.3
Yams	6,094	8	3.0
Yams*	4,186	39.8	22.3
Zucchini	7,975	340	104.0

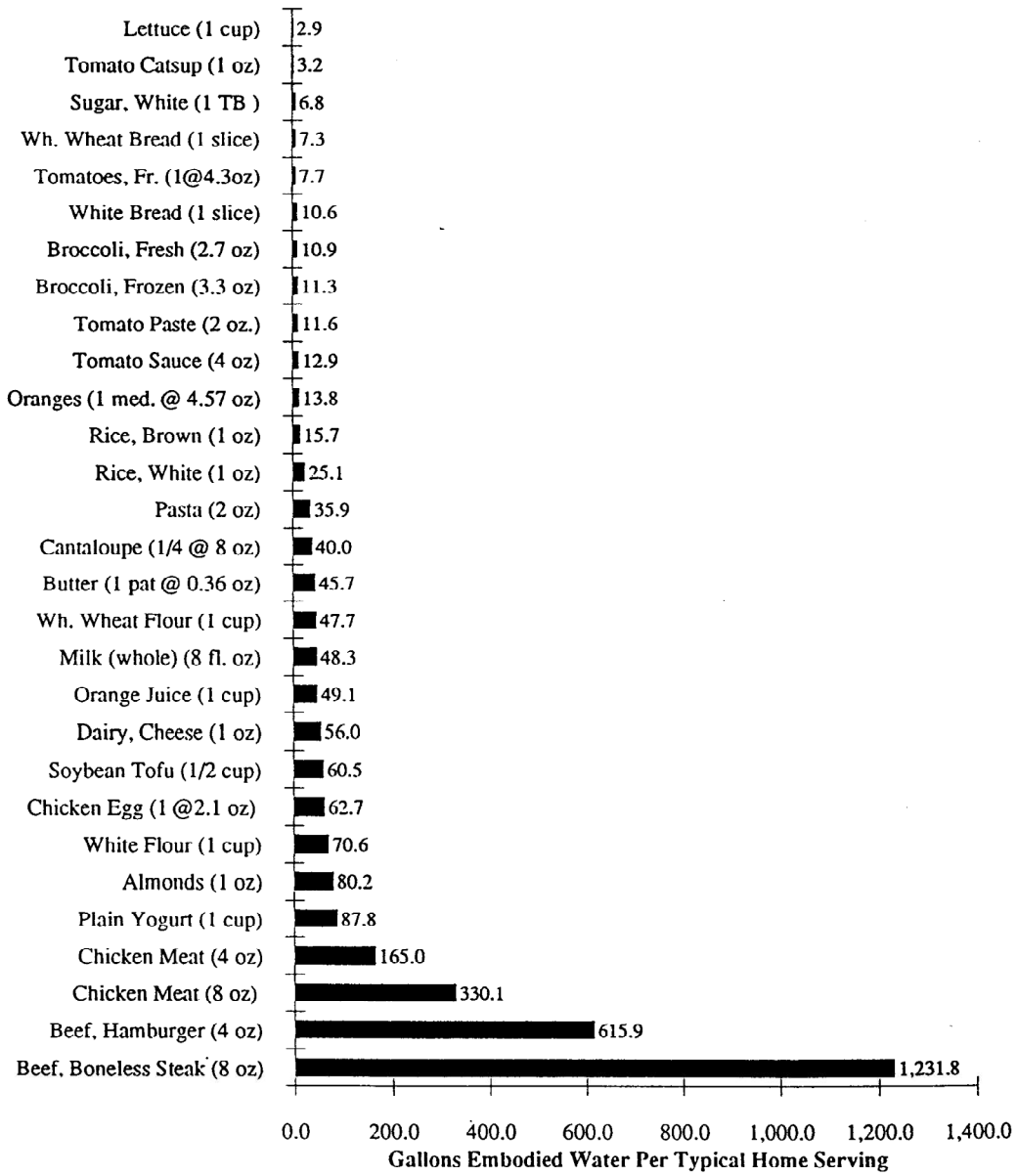
\* Data from two different plants

7. Kreith, Marcia. Water Inputs in California Food Production, Sacramento, Calif.: Water Education Foundation. September 27, 1991. (WEF 1991)

Chart E.2 Gallons Water Use Per Pound Home Prepared Food

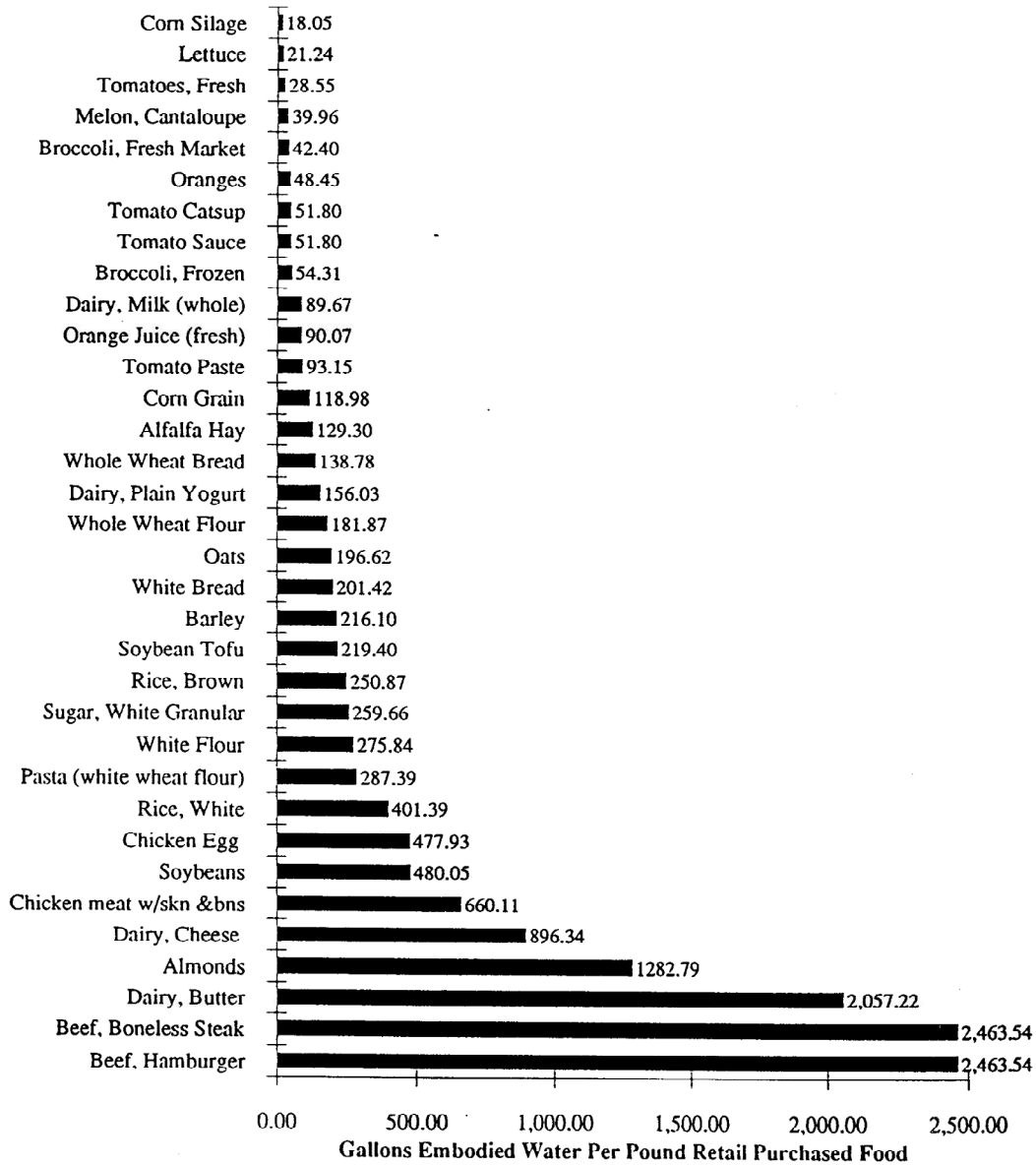


**Chart E.3 Gallons Water Use Per Typical Home Serving**



Section E. Summary Tables & Charts

Chart E.4 Gallons Water Use Per Pound Retail Purchased Food



## **Appendix D**

---

CLFP Surveys

## **2011 Survey**

---



## CLFP Process Water Survey

>The data collected is for aggregation purposes, all individual responses will be kept confidential<

1. Facility Location: \_\_\_\_\_ (City or County)
2. What type of food products do you pack/ manufacture at your factory/ plant (list)?  
\_\_\_\_\_  
\_\_\_\_\_

3. Do you operate your factory year-round or seasonally (check)?

\_\_\_\_\_ Year-Round  
\_\_\_\_\_ Seasonally

4. If you primarily operate your plant/ factory seasonally, during what months do you operate (e.g. June – July)? \_\_\_\_\_

5. What percentage of the total process water<sup>1</sup> supply at your facility in 2010 was obtained from the following sources?

\_\_\_\_\_ % Municipal water supply  
\_\_\_\_\_ % Your own well(s)  
\_\_\_\_\_ % Other source: (please specify) \_\_\_\_\_

6. How many total gallons of process water did your facility consume in the following seasons?

Year	Total Gallons of Process Water	Length of Processing Season (# of days)
2010		
2009		
2008		
2007		
2006		

---

<sup>1</sup> Process water is defined as water used for producing a product or product content or water used for research and development.

# Confidential

---

2005 (if available)		
2004 (if available)		
2003 (if available)		
2002 (if available)		
2001 (if available)		

7. How many total tons of raw product did you process at this facility during the following years?

- \_\_\_\_\_ 2010
- \_\_\_\_\_ 2009
- \_\_\_\_\_ 2008
- \_\_\_\_\_ 2007
- \_\_\_\_\_ 2006
- \_\_\_\_\_ 2005 (if available)
- \_\_\_\_\_ 2004 (if available)
- \_\_\_\_\_ 2003 (if available)
- \_\_\_\_\_ 2002 (if available)
- \_\_\_\_\_ 2001 (if available)

8. Regarding process water consumption per unit of finished product, how did your process water consumption in 2010 compare to 2006 at this facility?

- \_\_\_\_\_ % less process water was consumed *per unit of production* at the facility in 2010 than in 2006
- \_\_\_\_\_ % more process water was consumed *per unit of production* at the facility in 2010 than in 2006
- \_\_\_\_\_ About the same amount of process water was consumed *per unit of production* at the Facility in 2010 than in 2006
- \_\_\_\_\_ Insufficient data/not sure

9. What priority does water conservation/efficiency have at your facility?

- \_\_\_\_\_ High priority
- \_\_\_\_\_ Moderate priority
- \_\_\_\_\_ Low priority
- \_\_\_\_\_ Very low priority
- \_\_\_\_\_ Not sure

# Confidential

---

10. Do you think an effective water efficiency program could benefit your factory/ plant by reducing costs and sustaining local/ state water supplies?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No  
\_\_\_\_\_ Not Sure

11. Would you support the development of a water efficiency best practices manual by CLFP specific to the food processing industry in CA (similar to the Manual of Good Practice for Land Application of Food Processing/ Rinse Water developed by CLFP in 2007)?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No  
\_\_\_\_\_ Not sure, it would depend on the cost

12. Do you accurately meter/ track the amounts of fresh water (well and/or city water) used at your factory/ plant?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No  
\_\_\_\_\_ Not sure

13. Do you sub-meter/ track water uses inside your factory /plant (e.g., cooling tower make-up, boiler make-up, landscaping, domestic sanitary, etc.)?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No  
\_\_\_\_\_ Not sure

14. Have you ever calculated/ determined the true cost<sup>2</sup> of water use at your factory/ plant?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No  
\_\_\_\_\_ Not Sure

---

<sup>2</sup> Note: The true cost of water is generally defined as the amount on the water bill (for those plants using city water) and/or the cost to pump the water (for those plants using on-site wells) PLUS the expense to heat, cool, treat, and manage/ discharge water.

# Confidential

---

15. If you use municipal/ city water for manufacturing, please provide the cost of this water in 2010 (if known).

Fixed Service Cost (\$/ Year) \_\_\_\_\_

Water Rate Cost (\$/CCF) \_\_\_\_\_

*Note: 1 CCF = 748 gallons*

16. Do you know what percentage of your factory/ plant fixed costs is related to water and process water management?

\_\_\_\_\_ Yes

If yes, provide estimate: \_\_\_\_\_ %

\_\_\_\_\_ No

17. If you use city/ municipal water in your factory, has the cost of this water increased since 2001?

\_\_\_\_\_ Yes

If yes, provide estimate (e.g., 10%) \_\_\_\_\_ %

\_\_\_\_\_ No

\_\_\_\_\_ Not Sure

18. Does your factory/ plant engage in any formal and/or informal water efficiency/ conservation activities

\_\_\_\_\_ Yes

\_\_\_\_\_ No

\_\_\_\_\_ Not Sure

19. If you answered yes to the previous question, have you done any of the following *in the last five years?*

\_\_\_\_\_ Developed a facility water conservation plan

\_\_\_\_\_ Implemented a water conservation plan for employees

\_\_\_\_\_ Replaced high-volume hoses with high pressure

\_\_\_\_\_ Installed low-volume cleaning systems

\_\_\_\_\_ Improved clean-up procedures to save water

\_\_\_\_\_ Replaced single-pass cooling towers with re-circulating cooling towers

\_\_\_\_\_ Converted cleaning systems to ozone

\_\_\_\_\_ Other, please describe: \_\_\_\_\_

20. Does your plant/ company currently have any formal established water efficiency/ conservation goals (e.g., 10% overall reduction in plant fresh water use by 2016)?

# Confidential

---

\_\_\_\_\_ Yes  
If yes, please list goals: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ No

21. If you use city/ municipal water for manufacturing, have you recently been contacted by the water purveyor that you must reduce the amount of water you use in manufacturing?

\_\_\_\_\_ Yes  
If yes, by how much? \_\_\_\_\_ %  
\_\_\_\_\_ No

22. What is your best estimate regarding the percentage of you process water consumption is used at this facility for the following purposes in 2010?

- \_\_\_\_\_ % Flume raw product into the plant
- \_\_\_\_\_ % Wash raw product
- \_\_\_\_\_ % Boiler feed water
- \_\_\_\_\_ % Boiler make-up water
- \_\_\_\_\_ % Plant sanitation
- \_\_\_\_\_ % One-pass cooling
- \_\_\_\_\_ % Re-circulating cooling make-up
- \_\_\_\_\_ % Cooling and heating
- \_\_\_\_\_ % Domestic (sanitary, landscaping, etc.)
- \_\_\_\_\_ % Used in the finished product
- \_\_\_\_\_ % Other uses—please specify: \_\_\_\_\_

23. Regarding how much process water you reuse at your facility, what percentage of your total process water supply did you reuse on-site (use at least twice) for processing activities in 2010 versus 2006?

\_\_\_\_\_ % in 2010  
\_\_\_\_\_ % in 2006  
\_\_\_\_\_ Not sure

24. Regarding how much process water you reuse, what percentage of your total process water supply did you reuse at a crop production site in 2010 versus 2006?

\_\_\_\_\_ % in 2010  
\_\_\_\_\_ % in 2006  
\_\_\_\_\_ Not sure

25. Does your facility track how much water is recovered (extracted) from the raw product?

- Yes  
If yes, please provide an estimate for 2010 \_\_\_\_\_ %  
 No

26. Do you think that you could reduce process water use at this facility by 10 percent by 2020 without reducing the *quantity* of finished product production?

- Yes  
 No  
 Not sure

27. Do you think that you could reduce process water use at this facility by 10 percent by 2020 without reducing the *quality* of finished product production?

- Yes  
 No  
 Not sure

28. Have you, or an outside consultant, conducted a comprehensive facility water usage audit in the last five years to identify potential ways to conserve water?

- Yes  
 No  
 Not sure

29. Any other comments or information that you would like to share regarding process water conservation or state water policy?

---

**Thank you for completing the survey!**

Please return completed survey forms to Trudi Hughes ([Trudi@clfp.com](mailto:Trudi@clfp.com)) by May 31, 2010

**ALL RESPONSES WILL BE KEPT CONFIDENTIAL**

## **2014 Survey**

---

# CLFP Water Conservation Study

## Survey Questions

1. Facility Location (City or County) \_\_\_\_\_ Facility Name: \_\_\_\_\_

2. Food products produced:  
(specify crop and processing – i.e. canned, frozen, dehydrated, fresh, bulk paste, etc.)

Processing:  canned  frozen  dehydrated  fresh  bulk paste  other

Crop 1 \_\_\_\_\_ 2013 raw tons processed/year: \_\_\_\_\_

Crop 2 \_\_\_\_\_ 2013 raw tons processed/year: \_\_\_\_\_

Others \_\_\_\_\_ Total raw tons processed/year for others: \_\_\_\_\_

3. Months of operation per year: (i.e., July –Nov, year round, etc.) \_\_\_\_\_

4. What percentage of the total process water supply at your facility in 2013 was obtained from the following sources?

% Municipal water supply \_\_\_\_\_ Name of supplier: \_\_\_\_\_

% Private Well \_\_\_\_\_

% Other source \_\_\_\_\_ Specify: \_\_\_\_\_

5. Please fill in the table below.

Year	Fresh Intake Process Water <sup>a</sup> Gallons (gal/year)	Est. Accuracy (%) <sup>b</sup>	Processing Season Days (days)	Tons of Raw Product (tons/year)	Water Discharged from the Factory (gal/year)	Discharge Water Used for Irrigation (gal/year)
2013						
2012						
2011						
2010						
2009						

<sup>a.</sup> Fresh Process Water is defined as fresh water utilized for producing a product or product content or water used for research and development. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, space heating, kitchens, and laundry.

<sup>b.</sup> Estimated % of average reported values



6. Type and location of fresh water meter(s) and submeters:

Meter location/area:	_____	Type of meter:	_____
Meter location/area:	_____	Type of meter:	_____
Meter location/area:	_____	Type of meter:	_____
Meter location/area:	_____	Type of meter:	_____
Meter location/area:	_____	Type of meter:	_____

7. Frequency of meter calibration: \_\_\_\_\_

8. Estimate of cost of fresh water supply

Municipal Source	Fixed annual cost	_____		
	Est. unit cost	_____	Units	_____
Private Well	Est. fully loaded unit cost	_____	Units	_____
	Groundwater supply reliability	<input type="checkbox"/> high	<input type="checkbox"/> medium	<input type="checkbox"/> low

9. Have you done any of the following in the last ten years?

	Yes/No	If "Yes" Year Implemented	Est. % Savings
Developed a facility water conservation plan			
Implemented a water conservation plan for employees			
Replaced high-volume hoses with high pressure			
Installed low-volume cleaning systems			
Improved clean-up procedures to save water			
Replaced single-pass cooling towers with re-circulating cooling towers			
Converted cleaning systems to ozone			
Production worker training program on water conservation			
Other, please describe:			

10. What is your best estimate regarding the percentage of your process water consumption usage for the following purposes or in the following subareas:

- |  |                                  |                                   |
|--|----------------------------------|-----------------------------------|
| _____ % flume raw product into the plant         | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |
| _____ % wash raw product                         | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |
| _____ % boiler feed water                        | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |
| _____ % boiler make up water                     | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |
| _____ % plant sanitation                         | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |
| _____ % one-pass cooling                         | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |
| _____ % re-circulating cooling make-up           | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |
| _____ % product cooling and heating              | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |
| _____ % other ancillary utility use <sup>a</sup> | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |
| _____ % used in the finished product             | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |
| _____ % other uses – please specify              | <input type="checkbox"/> metered | <input type="checkbox"/> estimate |

<sup>a.</sup> pumps, seals, vacuum pump operation, etc.

11. How much total water per year leaving processes is recycled to the same or another process or use? \_\_\_\_\_  gal  %

12. What priority does water conservation/efficiency have at your facility?

- high     moderate     low     very low     not sure

13. Provide breakdown of water recycling practices (i.e. from which process and to which processes and whether treated prior to recycling)

- |                  |                   |          |                              |                             |
|------------------|-------------------|----------|------------------------------|-----------------------------|
| Water from _____ | Recycled to _____ | Treated? | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| Water from _____ | Recycled to _____ | Treated? | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| Water from _____ | Recycled to _____ | Treated? | <input type="checkbox"/> yes | <input type="checkbox"/> no |
| Water from _____ | Recycled to _____ | Treated? | <input type="checkbox"/> yes | <input type="checkbox"/> no |

14. Methods you plan on applying to achieve future reductions in fresh water demand.

15. List your company established water conservation/efficiency goals

16. Target water conservation goals:

Amount \_\_\_\_\_ By date \_\_\_\_\_ Established company policy  yes  no

17. Maximum estimated additional cost effective potential water conservation over the next 5 years: \_\_\_\_\_ gallons/year

18. Please rank the following factors that limit additional conservation (i.e. 1 for the most limiting factor, 2 for the next most limiting factor, etc.):

\_\_\_\_\_ product quality

\_\_\_\_\_ sanitation

\_\_\_\_\_ cost effectiveness

\_\_\_\_\_ lack of funding

\_\_\_\_\_ other specify \_\_\_\_\_

19. Have you conducted a comprehensive water usage assessment in the last five years to identify potential ways to conserve water?  yes  no

20. Do you use reverse osmosis for water treatment?  yes  no

If so, how are you using it

21. What other new technologies are you considering?

22. What types of technical assistance would help you most to conserve additional water?

23. Any other comments?