

Additional Physical, Mineral, and Metal Characteristics - Year 2001 by Water Treatment Plant

	Alvarado Plant			Miramar Plant			Otay Plant			Units
	Low	High	Avg	Low	High	Avg	Low	High	Avg	
*Hardness (Total) as CaCO3	204	251	228	241	274	250	166	251	200	mg/L
Calcium (Ca)	50.4	82.8	66.3	60.4	86.8	68.2	35	72.4	51	mg/L
Magnesium (Mg)	5.0	25.6	14.9	7.4	28	19.2	8.1	24.9	17.4	mg/L
Sodium (Na)	69.8	88.2	80.0	70.9	81.2	76.9	70.6	83.6	77.6	mg/L
Potassium (K)	3.69	4.16	3.88	3.61	4.11	3.80	3.63	4.03	3.81	mg/L
Alkalinity, (Total) as CaCO3	100	172	122	112	125	117	103	173	155	mg/L
Carbonate (CO3)	0	7.7	1.5	0	8.4	1.8	0	12.2	1.1	mg/L
Bicarbonate (HCO3)	120	212	146	119	152	139	125	211	187	mg/L
Sulfate (SO4)	120	176	150	167	185	174	42	182	80.1	mg/L
Chloride (Cl)	65.2	85.9	73.2	69.3	78	73.4	76.1	87.6	81.4	mg/L
Nitrate (as NO3)	< 0.2	1.18	0.919	0.650	1.19	0.893	< 0.2	0.825	0.228	mg/L
Fluoride (F) Temp Dependent	0.24	0.27	0.26	0.24	0.29	0.27	0.3	0.42	0.36	mg/L
pH, Laboratory	7.68	8.51	8.12	7.65	8.57	8.23	7.76	8.24	8.10	
Specific Conductance (E.C.)	782	909	847	855	909	886	648	865	761	uS/cm
Total Filterable Residue at 180 C (TDS)	434	540	487	504	527	515	372	539	425	mg/L
Color, Apparent (Unfiltered)	< 1	21	3	1	4	2	< 1	14	4	COLOR
Odor Threshold at 60 C	< 1	1	1	< 1	1	< 1	1	4	1.3	TON
Turbidity, Laboratory	0.07	0.25	0.13	< 0.07	0.20	0.09	0.07	0.65	0.14	NTU
Aluminum (Al)	< 2.0	8.81	2.89	< 2.0	41.8	8.05	< 2.0	15.7	5.47	ug/L
Antimony (Sb)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ug/L
Arsenic (As)	< 1.0	< 1.0	< 1.0	< 1.0	1.68	< 1.0	< 1.0	1.71	< 1.0	ug/L
Barium (Ba)	58.2	82.8	70.3	64.8	79.5	71.4	37.6	68.7	50.8	ug/L
Beryllium (Be)	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	ug/L
Cadmium (Cd)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	ug/L
Chromium (Total Cr)	< 2.0	< 2.0	< 2.0	< 1.0	3.19	< 2.0	< 1.0	3.4	< 2.0	ug/L
Copper (Cu)	1.07	37.4	5.98	3.39	8.79	5.19	1.51	19.7	4.89	ug/L
Iron (Fe)	< 50	61.3	< 50	< 50	91.6	< 50	< 50	59.5	< 50	ug/L
Lead (Pb)	< 0.5	< 5.0	< 2.0	< 0.5	< 5.0	< 2.0	< 0.5	< 5.0	< 2.0	ug/L
Manganese (Mn)	< 0.5	4.85	< 2.0	0.55	2.31	< 2.0	< 0.5	4.82	< 2.0	ug/L
Mercury (Hg)	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	ug/L
Nickel (Ni)	2.71	3.16	2.85	2.58	3.53	3.08	< 2.0	2.97	< 2.0	ug/L
Selenium (Se)	< 3.0	4.87	< 3.0	< 3.0	4.5	< 3.0	< 3.0	4.63	< 3.0	ug/L
Silver (Ag)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	ug/L
Thallium	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	ug/L
Zinc (Zn)	< 2.0	16.1	< 8	< 2.0	< 8.0	< 8.0	< 2.0	< 8	< 8	ug/L
Vanadium	< 0.2	< 0.2	< 0.2	< 0.2	1.0	< 0.4	< 0.2	1.0	< 1.0	ug/L
Langelier Index	0.03	1.08	0.54	0.10	1.04	0.69	0.25	0.98	0.55	
Aggressiveness Index	11.8	12.9	12.3	11.9	12.8	12.5	12.0	12.8	12.3	
Silica	8.7	13.4	11.6	8.1	10.5	9.2	10.3	14.4	12.8	mg/L
Phosphate	< 0.02	0.05	< 0.2	< 0.02	0.03	< 0.02	< 0.02	0.03	< 0.02	mg/L
Boron	94	119	107	112	162	128	74	127	103	ug/L
Nitrite as Nitrogen (N)	< 0.002	0.004	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.015	< 0.002	ug/L
Cyanide	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	mg/L
Bromide	< 0.100	0.257	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	0.130	< 0.100	mg/L

*These figures can be converted to grains per gallon (gpg) by dividing the number by a factor of 17.12. For example, Alvarado's average hardness of 228 mg/L can also be expressed as 13.32 gpg (228 divided by 17.12 =13.32)

Abbreviations

mg/L - Milligrams per liter or parts per million (ppm)
 ug/L - Micrograms per liter or parts per billion (ppb)
 ng/L - Nanograms per liter or parts per trillion (ppt)
 uS - Micro siemens per centimeter (a measure of conductivity)
 COLOR - Natural Color Units
 TON - Threshold Odor Number
 NTU - Nephelometric Turbidity Units