2021 Water Quality Report to SDCWA member agencies -- San Diego County Water Authority

Parameter	Units	State or Federal MCL [MRDL]	PHG (MCLG) [MRDLG]	State DLR	Range / Average	Treatment Plant Effluent: Twin Oaks Valley Water Treatment Plant	Major Sources in Drinking Water
PRIMARY STANDARDS--Mandatory Health-Related Standards							
CLARITY							
Combined Filter	NTU	0.1	NA	NA	Range	0.02-0.05	
Effluent Turbidity	NTU	0.1	NA	NA	Average	0.03	Soil runoff
	%	95 (a)	NA	NA	%≤ 0.1	100.0%	
MICROBIOLOGICAL							
Total Coliform					Range	ND	
Bacteria in Distribution System	%	5.0 (b)	0	NA	Average	ND	Naturally present in the environment
Total Coliform					Range	ND	
Bacteria in Treatment Plant effluent	%	5.0 (b)	0	NA	Average	ND	Naturally present in the environment
E. coli					Range	ND	
Bacteria in Treatment Plant effluent	(c)	(c)	0	NA	Average	ND	Human and animal fecal waste
ORGANIC CHEMICALS							
Pesticides/PCBs							
					Range	ND	
Alachlor	ppb	2	4	1	Average	ND	Runoff from herbicide used on row crops
					Range	ND	Runoff from herbicide used on row crops
Atrazine	ppb	1	0.15	0.5	Average	ND	and along highways
					Range	ND	Runoff/leaching from herbicide used on rice,
Bentazon	ppb	18	200	2	Average	ND	alfalfa, and grapes
					Range	ND	Leaching of soil fumigant used on rice, alfalfa,
Carbofuran	ppb	18	0.7	5	Average	ND	and grapes
					Range	ND	
Chlordane	ppt	100	30	100	Average	ND	Residue of banned insecticide
					Range	ND	Runoff from herbicide used on row crops,
2,4-D	ppb	70	20	10	Average	ND	range land, lawns and aquatic weeds
					Range	ND	Runoff from herbicide used on rights-of-way,
Dalapon	ppb	200	790	10	Average	ND	crops, and landscapes
Dibromochloropropane					Range	ND	Banned nematocide that may still be present
(DBCP)	ppt	200	1.7	10	Average	ND	in soils
					Range	ND	Runoff from herbicide used on soybeans,
Dinoseb	ppb	7	14	2	Average	ND	vegetables, and fruits
					Range	ND	Runoff from herbicide used for terrestrial
Diquat	ppb	20	6	4	Average	ND	and aquatic weeds
					Range	ND	Runoff from herbicide used for terrestrial
Endothall	ppb	100	94	45	Average	ND	and aquatic weeds
					Range	ND	
Endrin	ppb	2	0.3	0.1	Average	ND	Residue of banned insecticide and rodenticide
Ethylene Dibromide					Range	ND	Petroleum refinery discharges; underground
(EDB)	ppt	50	10	20	Average	ND	gas tank leaks
					Range	ND	
Glyphosate	ppb	700	900	25	Average	ND	Runoff from herbicide use
					Range	ND	
Heptachlor	ppt	10	8	10	Average	ND	Residue of banned insecticide
					Range	ND	
Heptachlor Epoxide	ppt	10	6	10	Average	ND	Breakdown product of heptachlor
					Range	ND	Runoff/leaching from insecticide used on cattle,
Lindane	ppt	200	32	200	Average	ND	lumber, and gardens
					Range	ND	
Methoxychlor	ppb	30	0.09	10	Average	ND	Runoff/leaching from insecticide uses
					Range	ND	
Molinate (Ordram)	ppb	20	1	2	Average	ND	Runoff/leaching from herbicide used on rice
					Range	ND	
Oxamyl (Vydate)	ppb	50	26	20	Average	ND	Runoff/leaching from insecticide uses
					Range	ND	Discharge from wood preserving factories
Pentachlorophenol	ppb	1	0.3	0.2	Average	ND	other insecticidal and herbicidal uses
					Range	ND	
Picloram	ppb	500	166	1	Average	ND	Herbicide runoff
Polychlorinated					Range	ND	
Biphenyls (PCBs)	ppt	500	90	500	Average	ND	Runoff from landfills; discharge of waste chemicals
					Range	ND	
Simazine	ppb	4	4	1	Average	ND	Herbicide runoff
					Range	ND	
Thiobencarb (d)	ppb	70	42	1	Average	ND	Runoff leaching from rice herbicide
2,4,5-TP					Range	ND	
(Silvex)	ppb	50	3	1	Average	ND	Residue of banned herbicide
					Range	ND	Runoff/leaching from insecticide used on
Toxaphene	ppb	3	0.03	1	Average	ND	cotton and cattle
Semi-Volatile Organic Compounds							
					Range	ND	
Acrylamide	NA	TT	(0)	NA	Average	ND	Water treatment chemical impurities
					Range	ND	Leaching from water storage tank linings
Benzo(a)pyrene	ppt	200	7	100	Average	ND	and distribution lines
					Range	ND	
Di(2-ethylhexyl)adipate	ppb	400	200	5	Average	ND	Discharge from chemical factories
					Range	ND	Chemical factory discharge; inert ingredient
Di(2-ethylhexyl)phthalate	ppb	4	12	3	Average	ND	in pesticides
					Range	ND	
Epichlorohydrin	NA	TT	(0)	NA	Average	ND	Water treatment chemical impurities
					Range	ND	Discharge from metal refineries & agrichemicals
Hexachlorobenzene	ppb	1	0.03	0.5	Average	ND	factories; wastewater chlorination reaction by-product
					Range	ND	
Hexachlorocyclopentadiene	ppb	50	2	1	Average	ND	Discharge from chemical factories
2,3,7,8-TCDD					Range	ND	Waste incineration emissions; chemical factory
(Dioxin)	ppq	30	0.05	5	Average	ND	discharge
Volatile Organic Compounds							
					Range	ND	Plastics factory discharge; gas tanks
Benzene	ppb	1	0.15	0.5	Average	ND	and landfill leaching
					Range	ND	Discharge from chemical plants and other industrial
Carbon Tetrachloride	ppt	500	100	500	Average	ND	waste
					Range	ND	
1,2-Dichlorobenzene	ppb	600	600	0.5	Average	ND	Discharge from industrial chemical factories
					Range	ND	
1,4-Dichlorobenzene	ppb	5	6	0.5	Average	ND	Discharge from industrial chemical factories
					Range	ND	
1,1-Dichloroethane	ppb	5	3	0.5	Average	ND	Extraction and degreasing solvent; fumigant
					Range	ND	
1,2-Dichloroethane	ppt	500	400	500	Average	ND	Discharge from industrial chemical factories
					Range	ND	
1,1-Dichloroethylene	ppb	6	10	0.5	Average	ND	Discharge from industrial chemical factories
					Range	ND	Industrial chemical factory discharge;
cis-1,2-Dichloroethylene	ppb	6	13	0.5	Average	ND	by-product of TCE and PCE biodegradation
					Range	ND	Industrial chemical factory discharge;

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trans-1,2-Dichloroethylene	ppb	10	50	0.5	Average	ND	by-product of TCE and PCE biodegradation
Dichloromethane					Range	ND	Discharge from pharmaceutical
(Methylene Chloride)	ppb	5	4	0.5	Average	ND	and chemical factories
					Range	ND	Industrial chemical factory discharge;
1,2-Dichloropropane	ppb	5	0.5	0.5	Average	ND	primary component of some fumigants
					Range	ND	Runoff/leaching from nematocide used on
1,3-Dichloropropene	ppt	500	200	500	Average	ND	croplands
					Range	ND	Petroleum refinery discharge; industrial
Ethylbenzene	ppb	300	300	0.5	Average	ND	chemical factories
Methyl *tert*-butyl ether					Range	ND	
(MTBE) (d,e)	ppb	13	13	3	Average	ND	Gasoline discharge from watercraft engines
					Range	ND	Discharge from industrial, agricultural, and chemical
Monochlorobenzene	ppb	70	70	0.5	Average	ND	factories, and dry cleaners
					Range	ND	Rubber and plastics factories discharge;
Styrene	ppb	100	0.5	0.5	Average	ND	landfill leaching
					Range	ND	Discharge from industrial, agricultural, and chemical
1,1,2,2-Tetrachloroethane	ppb	1	0.1	0.5	Average	ND	factories; solvent uses
Tetrachloroethylene					Range	ND	Discharge from factories, dry cleaners,
(PCE)	ppb	5	0.06	0.5	Average	ND	and auto shops
					Range	ND	
Toluene	ppb	150	150	0.5	Average	ND	Discharge from petroleum and chemical refineries
					Range	ND	
1,2,4-Trichlorobenzene	ppb	5	5	0.5	Average	ND	Discharge from textile-finishing factories
					Range	ND	Metal degreasing site discharge; manufacture
1,1,1-Trichloroethane	ppb	200	1000	0.5	Average	ND	of food wrappings
					Range	ND	
1,1,2-Trichloroethane	ppb	5	0.3	0.5	Average	ND	Discharge from industrial chemical factories
					Range	ND	Cleaning and degreasing solvent,
1,2,3-Trichloropropane	ppt	5	0.7	5	Average	ND	also associated with pesticide products
Trichloroethylene					Range	ND	Discharge from metal degreasing sites and
(TCE)	ppb	5	1.7	0.5	Average	ND	other factories
Trichlorofluoromethane					Range	ND	Industrial factory discharge; degreasing solvent;
(Freon-11)	ppb	150	1300	5	Average	ND	propellant
1,1,2-Trichloro-1,2,2-					Range	ND	Discharge from metal degreasing sites and other
trifluoroethane (Freon-113)	ppm	1.2	4	0.01	Average	ND	factories; dry cleaning solvent; refrigerant
					Range	ND	Leaching from PVC piping; plastic factory
Vinyl Chloride	ppt	500	50	500	Average	ND	discharge; by-product of TCE and PCE biodegradation
					Range	ND	Discharge from petroleum and chemical refineries;
Xylenes	ppm	1.750	1.8	0.0005	Average	ND	fuel solvent

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INORGANIC CHEMICALS							
					Range	ND-0.058	Natural deposits erosion;
Aluminum (d)	ppm	1	0.6	0.05	Average	ND	Residue from water treatment process.
					Single		Petroleum refinery discharges; fire retardants;
Antimony	ppb	6	1	6	Sample	ND	solder; electronics
					Single		Natural deposits erosion, glass and electronics
Arsenic	ppb	10	0.004	2	Sample	2.1	production wastes
					Single		Asbestos cement pipes internal corrosion;
Asbestos	MFL	7	7	0.2	Sample	ND	natural deposits erosion
					Single		Natural deposits erosion;
Barium	ppb	1000	2000	100	Sample	ND	Oil and metal refineries discharge.
					Single		Discharge from metal refineries, aerospace,
Beryllium	ppb	4	1	1	Sample	ND	and defense industries
					Single		Internal corrosion of galvanized pipes;
Cadmium	ppb	5	0.04	1	Sample	ND	natural deposits erosion
					Single		Discharge from steel and pulp mills;
Chromium	ppb	50	(100)	10	Sample	ND	natural deposits erosion
					Range	ND-0.22	Runoff/leaching from natural deposits;
Chromium VI (q)	ppb	NA	0.02	NA	Average	0.06	discharge from industrial waste factories
					Single		Internal corrosion of household pipes;
Copper (d,f)	ppm	1.0	0.3	0.05	Sample	ND	natural deposits erosion
					Single		Discharge from steel/metal, plastic, and
Cyanide	ppb	150	150	100	Sample	ND	fertilizer factories
					Control Range	0.6 - 1.2	
					Optimal Fluoride Level	0.7	Erosion of natural deposits;
Fluoride (g)					Range	0.6- 0.7	water additive that promotes strong teeth
Treatment-related	ppm	2.0	1	0.1	Average	0.6	
					Single		House pipes internal corrosion;
Lead (g)	ppb	AL=15	0.2	5	Sample	ND	erosion of natural deposits
					Single		Erosion of natural deposits; factory discharge;
Mercury	ppb	2	1.2	1	Sample	ND	landfill runoff
					Single		Erosion of natural deposits; discharge from
Nickel	ppb	100	12	10	Sample	ND	metal factories
					Range	ND - 0.5	Runoff and leaching from fertilizer use; septic tank
Nitrate (as N) (h)	ppm	10	10	0.4	Average	ND	and sewage; natural deposits erosion
					Range	ND	Runoff and leaching from fertilizer use; septic tank
Nitrite (as N)	ppm	1	1	0.4	Average	ND	and sewage; natural deposits erosion
					Single		
Perchlorate (i)	ppb	6	1	4	Sample	ND	Industrial waste discharge
					Single		Refineries, mines, and chemical
Selenium	ppb	50	30	5	Sample	ND	waste discharge; runoff from livestock lots
					Single		Leaching from ore processing; electronics
Thallium	ppb	2	0.1	1	Sample	ND	factory discharge
RADIOLOGICALS (j)							
Gross Alpha					Range	ND-4	
Particle Activity	pCi/L	15	(0)	3	Average	ND	Erosion of natural deposits
Gross Beta					Range	4.9-5.1	
Particle Activity (k)	pCi/L	50	(0)	4	Average	5	Decay of natural and man-made deposits
					Range	ND	
Radium-226	pCi/L	NA	0.05	1	Average	ND	Erosion of natural deposits
					Range	ND	
Radium-228	pCi/L	NA	0.019	1	Average	ND	Erosion of natural deposits
Combined					Range	ND	
Radium-226 + 228 (l)	pCi/L	5	(0)	NA	Average	ND	Erosion of natural deposits
					Range	ND	
Strontium-90	pCi/L	8	0.35	2	Average	ND	Decay of natural and man-made deposits
					Range	ND	
Tritium	pCi/L	20000	400	1000	Average	ND	Decay of natural and man-made deposits
					Range	2.3-3.0	
Uranium	pCi/L	20	0.43	1	Average	2.6	Erosion of natural deposits
DISINFECTION BY-PRODUCTS, DISINFECTANT RESIDUALS, AND DISINFECTION BY-PRODUCTS PRECURSORS (m)							
Total Trihalomethanes					Range	18-34	
(TTHM) (n)	ppb	80	NA	1	Highest TTHM	34	By-product of drinking water chlorination
Haloacetic Acids (five)					Range	ND-5	
(HAA5) (o)	ppb	60	NA	1	Highest HAA5	5	By-product of drinking water chlorination
					Range	ND-6	
Bromate (p)	ppb	10	0.1	1	Average	2	By-product of drinking water ozonation
					Range	2.3-3.2	
Total Chlorine Residual	ppm	[4.0]	[4.0]	NA	Average	3.2	Drinking watrer disinfectant added for treatment
					Range	2.30-2.70	Various natural and man-made sources; TOC is a precursor for the formation
Total Organic Carbon (TOC)	ppm	TT	NA	0.30	Average	2.50	of disinfection byproducts
SECONDARY STANDARDS--Aesthetic Standards							
					Range	ND-58	Residue from water treatment process;
Aluminum (d)	ppb	200	NA	50	Average	ND	natural deposits erosion
					Single		Runoff/leaching from natural deposits;
Chloride	ppm	500	NA	NA	Sample	99	seawater influence
	Color				Range	ND	
Color	Units	15	NA	NA	Average	ND	Naturally occurring organic materials
					Single		Internal corrosion of household pipes; natural
Copper (d,f)	ppm	1.3	NA	0.05	Sample	ND	deposits erosion; wood preservatives leaching
Foaming Agents					Single		
(MBAS)	ppb	500	NA	NA	Sample	ND	Municipal and industrial waste discharges
					Range	ND	
Iron	ppb	300	NA	100	Average	ND	Leaching from natural deposits; industrial wastes
					Range	ND	
Manganese	ppb	50	NL = 500	20	Average	ND	Leaching from natural deposits
					Range	ND	
MTBE (d,e)	ppb	5	NA	3	Average	ND	Gasoline discharge from watercraft engines
					Single		
Odor Threshold	TON	3	NA	1	Sample	ND	Naturally-occurring organic materials
					Single		
Silver	ppb	100	NA	10	Sample	ND	Industrial discharges
					Single		Substances that form ions in water;
Specific Conductance	µS/cm	1600	NA	NA	Sample	940	seawater influence
					Single		Runoff/leaching from natural deposits;
Sulfate	ppm	500	NA	0.5	Sample	220	industrial wastes
					Range	ND	
Thiobencarb (d)	ppb	1	NA	1	Average	ND	Runoff/leaching from rice herbicide
Total Dissolved Solids					Single		Runoff/leaching from natural deposits;
(TDS)	ppm	1000	NA	NA	Sample	610	seawater influence
					Range	ND	
Turbidity (a)	NTU	5	NA	0.1	Average	ND	Soil runoff
					Single		Runoff/leaching from natural deposits;
Zinc	ppm	5.0	NA	0.05	Sample	ND	industrial wastes

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OTHER PARAMETERS							
CHEMICAL							
					Range	ND	
Acetochlor	ppb	NA	NA	2	Average	ND	Herbicide runoff
					Range	ND	
Alachlor	ppb	NA	NA	2	Average	ND	Herbicide runoff
					Single		
Alkalinity (t)	ppm	NA	NA	NA	Sample	120	
					Single		Runoff/leaching from natural deposits;
Boron	ppb	NL = 1000	NA	100	Sample	120	industrial wastes
					Single		
Calcium	ppm	NA	NA	NA	Sample	67	
					Range	160-370	By-product of drinking water chlorination;
Chlorate	ppb	NL = 800	NA	20	Average	258	industrial processes
Corrosivity (r)					Single		Elemental balance in water; affected
(as Aggressiveness Index)	AI	NA	NA	NA	Sample	13	by temperature, other factors
Corrosivity (s)					Single		Elemental balance in water; affected
(as Saturation Index)	SI	NA	NA	NA	Sample	0.74	by temperature, other factors
					Range	ND	Runoff from insecticide used on crops
Dimethoate	ppb	NA	NA	0.7	Average	ND	and residential uses
					Single		
Hardness (t)	ppm	NA	NA	NA	Sample	270	
					Single		
Magnesium	ppm	NA	NA	NA	Sample	24	
					Range	ND	
Metolachlor	ppb	NA	NA	1	Average	ND	Herbicide runoff
	pH				Range	8.1-8.2	
pH	Units	NA	NA	NA	Average	8.2	
					Single		
Potassium	ppm	NA	NA	NA	Sample	4.6	
					Single		
Radon (j)	pCi/L	NA	NA	100	Sample	ND	
					Single		
Sodium	ppm	NA	NA	NA	Sample	93	
					Single		
Vanadium	ppb	NL = 50	NA	3	Sample	ND	Naturally-occurring; industrial waste discharge
N-Nitrosodiethylamine					Single		By-product of drinking water chloramination;
(NDEA)	ppb	NA	NA	0.005	Sample	ND	industrial processes
N-Nitrosodimethylamine					Single		By-product of drinking water chloramination;
(NDMA)	ppt	NL=10	3	2	Sample	ND	industrial processes
N-Nitroso-di-n-butylamine					Single		By-product of drinking water chloramination;
(NDBA)	ppb	NA	NA	.004	Sample	ND	industrial processes
N-Nitroso-di-n-propylamine					Single		By-product of drinking water chloramination;
(NDPA)	ppb	NA	NA	.007	Sample	ND	industrial processes
N-Nitrosomethylethylamine					Single		By-product of drinking water chloramination;
(NMEA)	ppb	NA	NA	.003	Sample	ND	industrial processes
N-Nitrosopyrrolidine					Single		By-product of drinking water chloramination;
(NPYR)	ppb	NA	NA	.002	Sample	ND	industrial processes
Dichlorodifluoromethane					Range	ND	
(Freon 12)	ppb	NL = 1000	NA	0.5	Average	ND	Industrial waste discharge
Ethyl-*tert*-butylether					Range	ND	
(ETBE)	ppb	NA	NA	3	Average	ND	Used as gasoline additive
tert-Amyl-methylether					Range	ND	
(TAME)	ppb	NA	NA	3	Average	ND	Used as gasoline additive
tert-Butyl alcohol					Single		MTBE breakdown product; used as gasoline
(TBA)	ppb	NL = 12	NA	2	Sample	ND	additive
OTHER PARAMETERS - VOLUNTARY SAMPLING							
Perfluorooctanoic Acid	ppt	NL=1400	NA	NA	Single		
PFOA					Sample	ND	
Perfluorooctanesufonic Acid	ppt	NL=1300	NA	NA	Single		
PFOS					Sample	ND	

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ABBREVIATIONS AND FOOTNOTES

Abbreviations

AI	Aggressiveness Index	N	Nitrogen
AL	Action Level	NA	Not Applicable
CFE	Combined Filter Effluent	NL	Notification Level
CFU	Colony-Forming Units	ND	None Detect
LRAA	Locational Running Annual Average; highest LRAA is the highest of all Locational Running Annual Averages calculated as average of all samples collected within a 12-month period	NTU	Nephelometric Turbidity Units
		pCi/L	picoCuries per Liter
		PHG	Public Health Goal
		ppb	parts per billion or micrograms per liter (µg/L)
DBP	Disinfection By-Products	ppm	parts per million or milligrams per liter (mg/L)
DLR	Detection Limits for purposes of Reporting	ppq	parts per quadrillion or picograms per liter (pg/L)
HPC	Heterotrophic Plate Count	ppt	parts per trillion or nanograms per liter (ng/L)
MBAS	Methylene Blue Active Substances	SI	Saturation Index (Langelier)
MCL	Maximum Contaminant Level	RAA	Running Annual Average
MCLG	Maximum Contaminant Level Goal	TOC	Total Organic Carbon
MFL	Million Fibers per Liter	TON	Threshold Odor Number
MRDL	Maximum Residual Disinfectant Level	TT	Treatment Technique
MRDLG	Maximum Residual Disinfectant Level Goal	µS/cm	microSiemen per centimeter; or micromho per centimeter (µmho/cm)

Footnotes

(a)	The turbidity level from the CFE of the membranes shall be less than or equal to 0.1 NTU in 95% of the measurements taken each month and shall not exceed 1.0 NTU at any time. Turbidity is a measure of the cloudiness of the water and is an indicator of treatment performance.
(b)	Total coliform MCLs: No more than 5.0% of the monthly samples may be total coliform-positive. In 2020, 287 samples were analyzed and all samples were negative for total coliforms. The MCL was not violated.
(c)	*E.coli* MCLs: The occurrence of two (2) consecutive total coliform-positive samples, one of which contains *E. coli*, constitutes an acute MCL violation. The MCL was not violated.
(d)	Aluminum, copper, MTBE, and thiobencarb have both primary and secondary standards.
(e)	MTBE reporting level is 0.5 ppb.
(f)	Lead and copper are regulated as a Treatment Technique under the Lead and Copper Rule. It requires systems to take water samples at the consumers' tap. The action levels, which trigger water systems into taking treatment steps if exceeded in more than 10% of the tap water samples, are 1.3 ppm for copper and 15 ppb for lead.
(g)	TOVWTP was in compliance with all provisions of the State's Fluoridation System Requirements.
(h)	State MCL is 45 mg/L as nitrate, which equals 10 mg/L as N.
(i)	TOVWTP's perchlorate reporting level is 2 ppb, which is below the state DLR of 4 ppb.
(j)	Data was collected from four consecutive quarters of monitoring in 2019 - 2020. TOVWTP's next required triennial monitoring will be performed during the period of 2022-2024
(k)	The gross beta particle activity MCL is 4 millirem/year annual dose equivalent to the total body or any internal organ. The screening level is 50 pCi/L.
(l)	State MCL is 5 pCi/L for combined Radium-226 and -228.
(m)	TOVWTP met all provisions of the Stage 2 Disinfectants/Disinfection By-Products (D/DBP) Rule. Compliance was based on the LRAA. Average and range for the treatment plant effluent were taken from daily and monthly samples for TTHM and HAA5.
(n)	DLR = 1.0 ppb for each TTHM (bromoform, chloroform, dibromochloromethane, bromodichloromethane).
(o)	DLR = 1.0 ppb for each HAA5 analyte (dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid) except for monochloroacetic acid which has a DLR = 2.0 ppb.
(p)	Running annual average was calculated from quarterly results of monthly and daily samples. Bromate reporting level is 3 ppb.
(q)	Chromium VI reporting level is 0.03 ppb.
(r)	AI is a calculated value that measures the aggressiveness of water transported through pipes. Water with AI <10.0 is highly aggressive and would be very corrosive to almost all materials found in a typical water system. AI > 12.0 indicates non-aggressive water. AI between 10.0 and 11.9 indicates moderately aggressive water.
(s)	SI measures the tendency for a water to precipitate or dissolve calcium carbonate (a natural mineral in water). Positive indices indicate the tendency to precipitate and/or deposit scale on pipes and are assumed to be non-corrosive. Negative indices indicate the tendency to dissolve calcium carbonate and are assumed to be corrosive.
(t)	Alkalinity and hardness was based on $CaCO_3$