

Appendix 1.15. Model Archive Summary for Chloride Concentration at U.S. Geological Survey site 07143672; Little Arkansas River at Highway 50 near Halstead, Kansas, during May 1998 through December 2019

This model archive summary summarizes the chloride model developed to compute hourly or daily chloride. Model development methods follow U.S. Geological Survey (USGS) guidance from Office of Surface Water/Office of Water Quality Technical Memoranda and USGS Techniques and Methods, book 3, chap. C4 (Rasmussen and others, 2009).

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Site and Model Information

Site Number: 07143672

Site Name: Little Arkansas River at Highway 50 near Halstead, Kansas

Location: Latitude 38°01'43", longitude 97°32'25" referenced to North American Datum of 1927, in NW 1/4 NE 1/4 NE 1/4 sec.28, T.23 S., R.2 W., Harvey County, Kansas, hydrologic unit 11030012.

Equipment: A Sutron Satlink II High Data Rate Collection Platform and a Design Analysis Water Log H350/355 nonsubmersible pressure transducer transfers real-time stage and water-quality data via satellite. The primary reference gage is a Type-A wire-weight gage located on the downstream bridge guardrail. Check-bar elevation is 33.396 feet. The orifice tube is enclosed in 1.25-inch steel conduit trenched into the ground down to the edge of water, where the orifice emerges from the bank and culminates in a 2-inch open-end orifice tethered to a steel fencepost near the left edge of water. Gage height was measured during May 1998 through December 2019. A YSI 6600 water-quality monitor equipped with water temperature, specific conductance, pH, dissolved oxygen, and turbidity (a YSI Model 6026 [December 1998 through December 2006] and YSI Model 6136 [July 2004 through December 2017]) sensors collected data during May 1998 through December 2017. A YSI EXO2 water-quality monitor equipped with water temperature, specific conductance, pH, dissolved oxygen, turbidity, and fluorescent dissolved organic matter sensors collected data during January 2017 through December 2019. A Hach Nitratex monitor collected nitrate data during February 2017 through December 2019.

Date model was developed: June 1, 2020

Model calibration data period: May 12, 1998 through December 10, 2019

Model Data

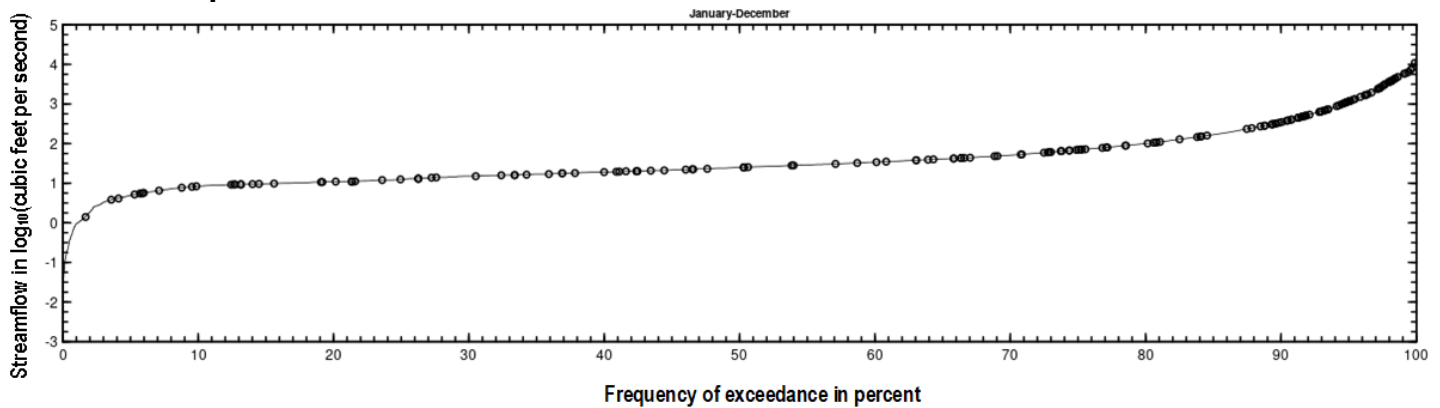
All data were collected using USGS protocols (U.S. Geological Survey, variously dated; Wagner and others, 2006; Sauer and Turnipseed, 2010; Turnipseed and Sauer, 2010) and are stored in the National Water Information System (NWIS) database (U.S. Geological Survey, 2021). Explanatory variables were evaluated individually and in combination. Potential explanatory variables included streamflow, water temperature, specific conductance, pH, dissolved oxygen, YSI EXO2 turbidity, nitrate, and fluorescent dissolved organic matter. Seasonal components (sine and cosine variables) also were evaluated as explanatory variables.

The regression model is based on 190 concomitant values of discretely collected chloride and continuously measured specific conductance during May 1998 through December 2019. Discrete samples were collected over a range of streamflow and specific conductance conditions. One sample had a concentration that was below the minimum reporting level (<5 mg/L) and a Tobit regression model was developed to compute estimates of chloride using the absolute maximum likelihood estimation approach (Hald, 1949; Cohen, 1950; Tobin, 1958; Helsel and others, 2020). Summary statistics and the complete model-calibration dataset are provided below. Outliers and influential points were identified using methods described in Rasmussen and others (2009), including leverage and Cook's distance (Cook's D; Cook, 1977) values. Outliers in previously published versions of this model (Christensen and others, 2003; Rasmussen and others, 2016) were examined and retained in the dataset if there were no clear issues, explanations, or conditions that would cause a result to be invalid for model calibration. All samples were retained in the dataset.

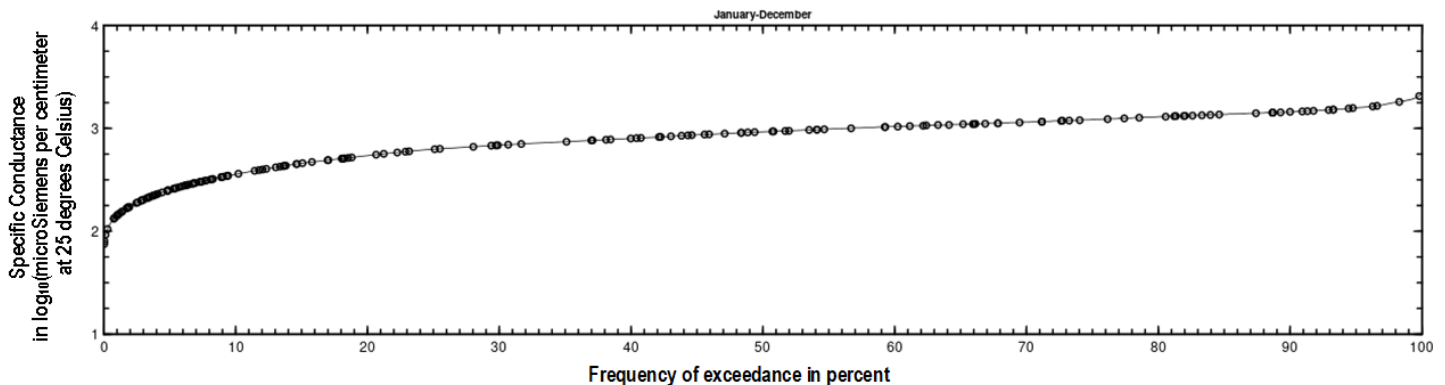
Chloride

Discrete samples were collected from the downstream side of the bridge or instream within 50 feet of the bridge using equal-width-increment, multi-vertical, single vertical or grab-dip methods following U.S. Geological Survey (variously dated) and Rasmussen and others (2014). Discrete samples were collected on a semifixed to event-based schedule ranging from 4 to 13 samples per year with a FISP US DH-95 or D-95 with a Teflon bottle, cap, and nozzle depth-integrating sampler, a DH-81 with a Teflon bottle, cap, and nozzle hand sampler or a grab sample with a Teflon bottle depending on sample location. Samples were analyzed for chloride by the Wichita Municipal Water and Wastewater Laboratory in Wichita, Kansas, or the USGS National Water Quality Laboratory according to standard methods (American Public Health Association and others, 1995).

Chloride Samples Plotted on Streamflow Duration Curve



Chloride Samples Plotted on Specific Conductance Duration Curve



Continuous Data

Concomitant specific conductance values were time interpolated. If no concomitant continuous data were available within 2 hours of sample collection, the sample was not included in the dataset.

Model Development

Tobit regression models were developed using absolute maximum likelihood estimation methods using the *smwrQW* (v.0.7.9) package in R (version 4.0.0) programming language (R Core Team, 2020).

Specific conductance was selected as the best predictor of chloride based on residual plots, a larger pseudo coefficient of determination (pseudo R^2), and a relatively low estimated residual standard error (RSE). Specific conductance was positively related to chloride because it measures water's capacity to conduct an electrical current and is related to the concentration of ionized substances in water (Hem, 1992).

Model Summary

Summary of final chloride regression analysis at USGS site number 07143672:

Chloride-based model:

$$\log_{10}(CL) = 1.337 \times \log_{10}(SC) - 1.81$$

where,

\log_{10} = logarithm base 10;

CL = chloride, in milligrams per liter (mg/L); and

SC = specific conductance, in microsiemens per centimeter at 25 degrees Celsius ($\mu\text{S}/\text{cm}$)

The log-transformed model may be retransformed to original units so that CL can be calculated directly. The retransformation introduces a bias in the calculated constituent. This bias may be corrected using Duan's bias correction factor (BCF; Duan, 1983). Extracted model residuals used for BCF computation included censored residuals that were replaced by their expected values. For this model, the calculated BCF is 1.04. The retransformed model, accounting for BCF is:

$$CL = 0.0161 \times SC^{1.337}$$

Model Statistics, Data, and Plots

Model

$$\text{LOGCL} = + 1.337 * \text{LOGSC} - 1.81$$

Variable Summary Statistics

	CL	SC
Minimum	<5	75.25
1st Quartile	28.7	279.5
Median	79.7	609.04
Mean	112.2	706.04
3rd Quartile	174	1080
Maximum	529	2060

Explanatory Variables

Coefficients:

	Estimate	Std. Error	z-score	p-value
(Intercept)	-1.810	0.07258	-24.94	0
logSC	1.337	0.02633	50.77	0

Basic Model Statistics

Estimated residual standard error (Unbiased) = 0.121

Distribution: normal

Number of observations = 190, number censored = 1 (0.5 percent)

Loglik(model) = 130.9 Loglik(intercept only) = -125.1

Chi-square = 512.2, degrees of freedom = 1, p-value = <0.0001

Computation method: AMLE

Pseudo R-squared: 0.9327

AIC: -255.9

BIC: -246.2

Outlier Test Criteria

leverage	cooksD
0.01579	0.69570

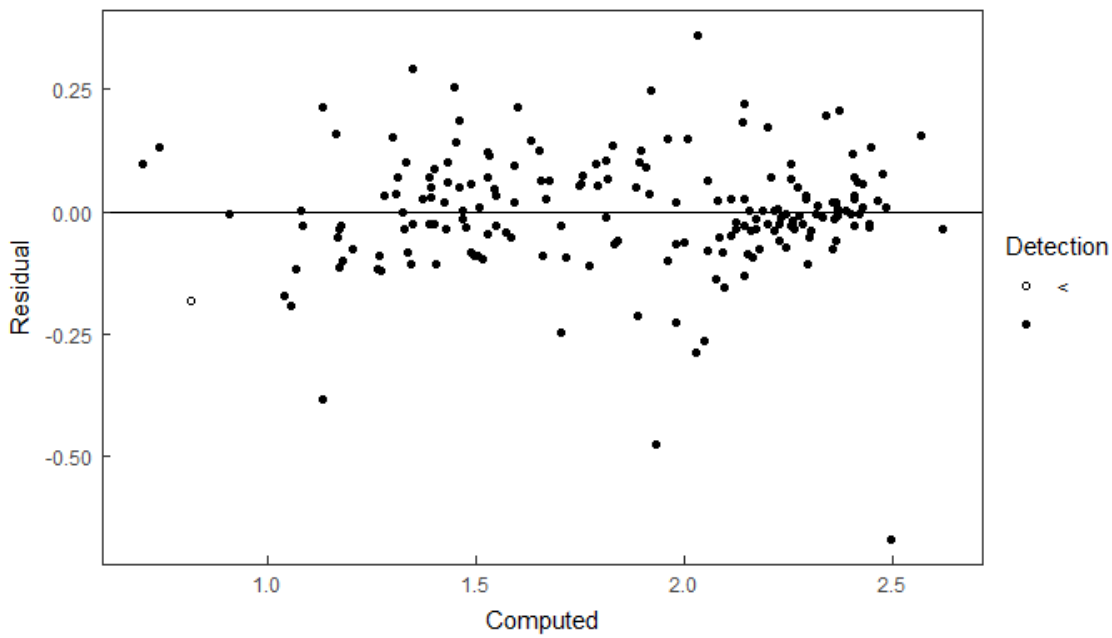
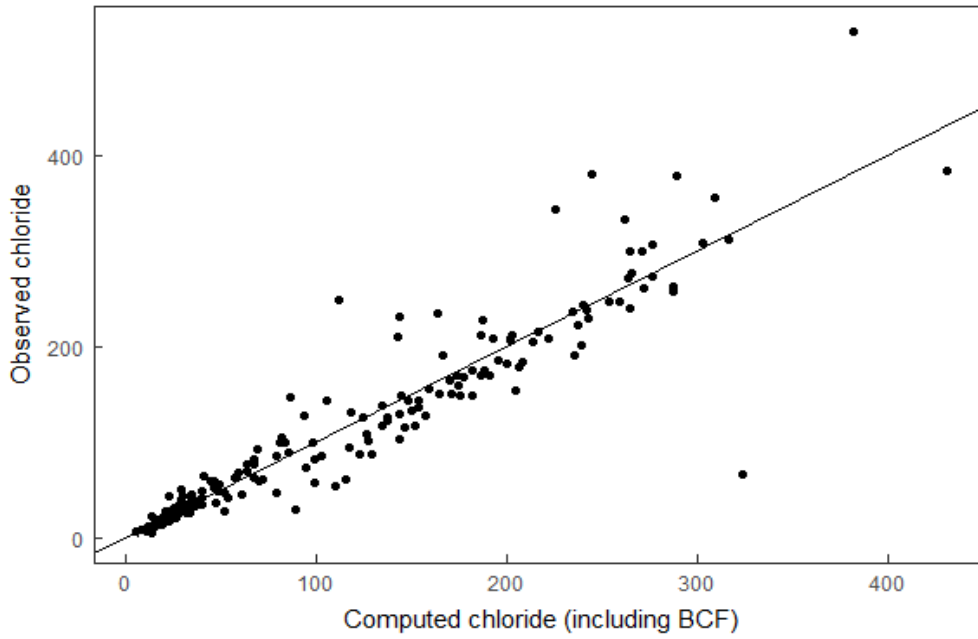
Flagged Observations

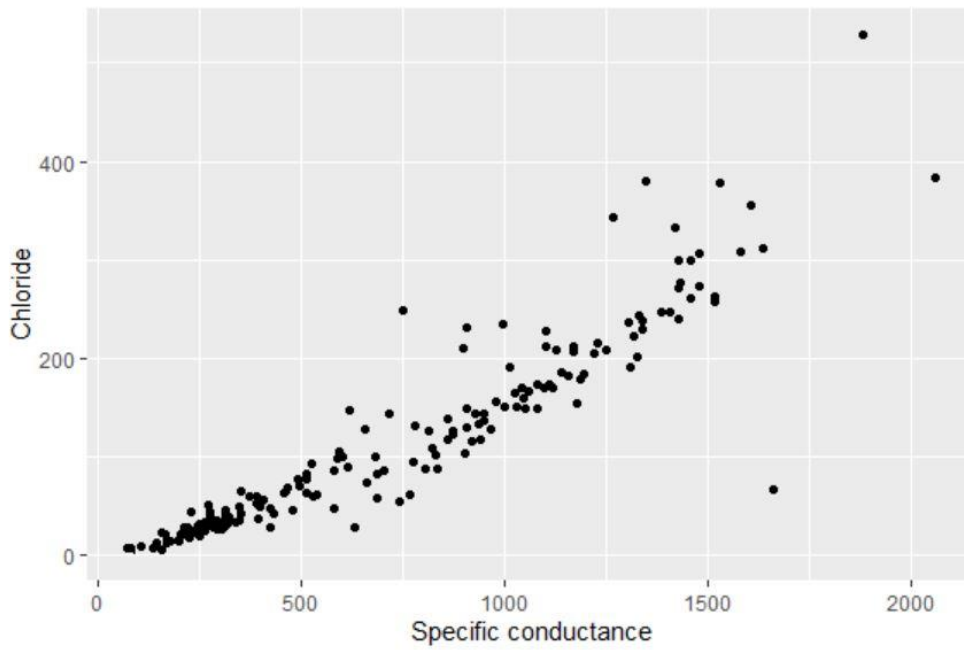
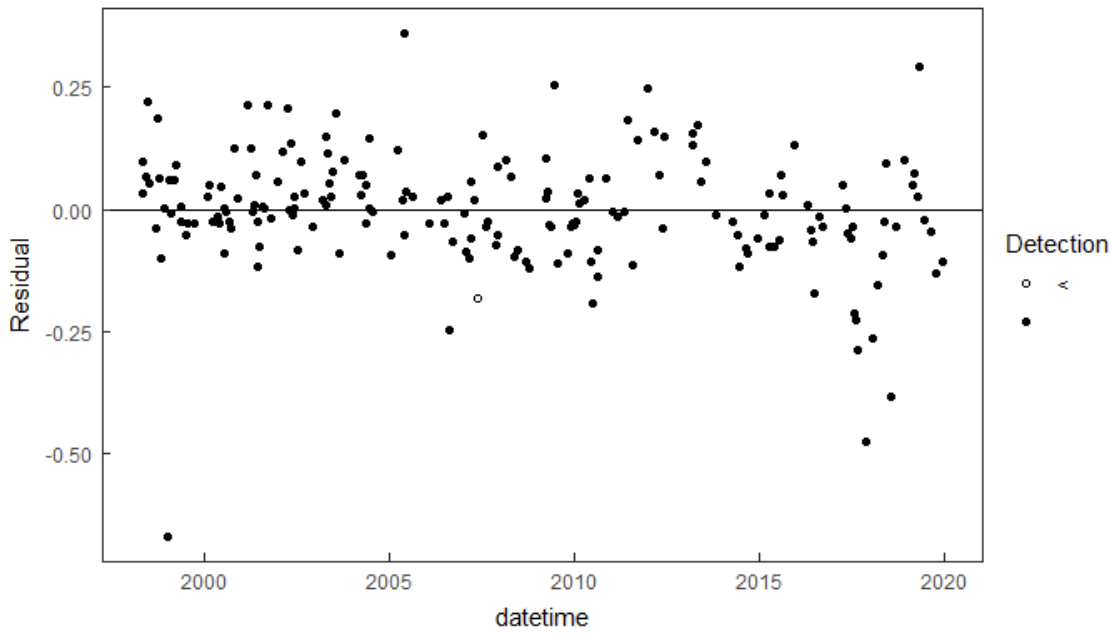
	logCL	ycen	yhat	resids	leverage	cooksD
9	1.0792	FALSE	1.1778	-0.098609	0.01696	5.83E-03
11	1.8261	FALSE	2.4952	-0.66914	0.01632	2.58E-01
18	1.1139	FALSE	1.1673	-0.053347	0.01733	1.75E-03
19	1.1461	FALSE	1.1744	-0.028278	0.01708	4.83E-04
20	1.0531	FALSE	1.0807	-0.027585	0.02061	5.59E-04
37	2.4942	FALSE	2.4857	0.008436	0.016	4.02E-05
44	1.3464	FALSE	1.1316	0.214792	0.01864	3.05E-02
53	1.0792	FALSE	1.0767	0.002521	0.02077	4.71E-06
57	2.5832	FALSE	2.6191	-0.035941	0.02094	9.64E-04
75	0.9031	FALSE	0.9076	-0.00456	0.02833	2.13E-05
95	0.699	TRUE	0.8146	-0.180213	0.03314	3.93E-02
125	0.8633	FALSE	1.0541	-0.190811	0.02169	2.82E-02
133	1.0569	FALSE	1.1701	-0.113242	0.01723	7.82E-03
136	1.3243	FALSE	1.1641	0.160151	0.01744	1.58E-02
141	2.7235	FALSE	2.5671	0.156365	0.0189	1.64E-02
144	0.7952	FALSE	0.6979	0.097276	0.0398	1.40E-02
148	0.9484	FALSE	1.0665	-0.118116	0.02118	1.05E-02
155	1.1239	FALSE	1.2009	-0.077096	0.01616	3.39E-03
159	0.8722	FALSE	0.7395	0.1327	0.03735	2.43E-02
163	0.8657	FALSE	1.0372	-0.171487	0.0224	2.36E-02
180	0.7459	FALSE	1.1285	-0.382652	0.01875	9.74E-02
181	1.1356	FALSE	1.171	-0.035423	0.0172	7.63E-04

95% Confidence Intervals

	2.5 %	97.5 %
(Intercept)	-1.952558	-1.668046
logSC	1.285040	1.388236

Plots





Model-Calibration Dataset

	datetime	logCL	logSC	CL	SC	Computed logCL	Computed CL
1	5/12/1998 12:05	2.36	3.04	227	1104	2.258	187.88
2	5/14/1998 11:40	1.31	2.31	20.4	204.3	1.279	19.7
3	6/15/1998 12:40	2.32	3.04	211	1102.7	2.258	187.58
4	6/25/1998 10:30	2.36	2.96	231	907	2.144	144.46
5	7/13/1998 10:05	1.8	2.66	63	457.8	1.747	57.9
6	9/14/1998 10:05	2.18	3.01	151	1031.1	2.219	171.48
7	10/1/1998 11:20	1.64	2.45	44	278.7	1.459	29.82
8	10/22/1998 13:15	1.74	2.61	55	406.2	1.678	49.36
9	11/6/1998 11:30	1.08	2.24	12	172	1.179	15.64
10	12/3/1998 11:25	2.19	2.99	155	978.2	2.188	159.83
11	1/6/1999 10:50	1.83	3.22	67	1664	2.497	325.17
12	2/1/1999 13:35	1.49	2.42	31	265.6	1.431	27.96
13	2/19/1999 10:15	2.36	3.13	230	1340.8	2.371	243.61

14	3/11/1999	11:10	2.48	3.16	300	1457.3	2.42	272.32
15	4/7/1999	10:55	2	2.78	99	603.1	1.907	83.71
16	5/20/1999	12:30	2.23	3.02	170	1045	2.227	174.58
17	5/24/1999	10:05	1.32	2.36	21	230.5	1.349	23.14
18	7/19/1999	13:05	1.11	2.23	13	168.9	1.168	15.27
19	8/4/1999	10:35	1.15	2.23	14	171	1.176	15.52
20	9/28/1999	10:30	1.05	2.16	11.3	145.5	1.082	12.51
21	2/8/2000	11:55	2.43	3.15	272	1428.6	2.408	265.18
22	3/6/2000	10:30	1.44	2.39	27.4	247.5	1.39	25.45
23	3/27/2000	10:40	1.37	2.4	23.6	252	1.401	26.07
24	5/19/2000	10:15	2.35	3.12	222	1317.8	2.361	238.04
25	5/30/2000	10:25	1.67	2.63	47	424.4	1.703	52.33
26	6/26/2000	10:30	1.59	2.51	39	323.5	1.546	36.4
27	7/19/2000	10:45	2.22	3.01	165	1026.5	2.216	170.46
28	7/27/2000	12:40	1.57	2.6	37	394.3	1.661	47.44
29	8/15/2000	10:45	2.24	3.03	174	1080	2.246	182.44
30	9/7/2000	11:10	2.23	3.04	171	1108.6	2.261	188.93
31	9/25/2000	10:25	2.26	3.08	184	1196.1	2.305	209.12
32	10/27/2000	10:15	1.78	2.59	60	389.5	1.654	46.66
33	11/30/2000	11:10	2.49	3.2	308	1582.3	2.467	304.01
34	3/13/2001	11:15	1.81	2.55	65	354.8	1.599	41.18
35	4/12/2001	11:50	2.02	2.77	105	592.8	1.897	81.82
36	4/26/2001	10:10	2.39	3.15	247	1408.7	2.4	260.25
37	5/9/2001	9:55	2.49	3.21	312	1637	2.487	318.14
38	6/1/2001	10:25	2.28	3.01	190	1013.2	2.209	167.51
39	6/11/2001	10:55	1.36	2.39	23	246.8	1.389	25.36
40	6/22/2001	10:35	1.15	2.3	14	199.6	1.265	19.09
41	7/12/2001	9:15	2.1	2.99	127	968	2.182	157.6
42	8/1/2001	10:00	2.38	3.13	238	1339	2.371	243.19
43	8/30/2001	9:45	2.39	3.14	246	1385	2.39	254.42
44	9/18/2001	12:05	1.35	2.2	22.2	158.8	1.133	14.06
45	10/30/2001	10:55	2.24	3.05	174	1110	2.262	189.25
46	1/9/2002	9:50	2.49	3.17	306	1480	2.429	278.02
47	2/20/2002	10:55	2.52	3.15	332	1420.8	2.405	263.26
48	4/10/2002	9:55	2.58	3.13	380	1350	2.375	245.86
49	4/22/2002	11:35	1.32	2.34	21	220.6	1.323	21.82
50	5/14/2002	10:05	1.96	2.72	92	526.4	1.828	69.8
51	5/23/2002	10:30	1.8	2.71	63	513	1.813	67.43
52	6/6/2002	12:00	2.32	3.07	207	1170	2.292	203.05
53	6/17/2002	9:15	1.08	2.16	12	144.5	1.078	12.39
54	7/9/2002	9:30	2.01	2.92	102	830	2.093	128.3
55	8/20/2002	10:10	1.89	2.69	77	492.5	1.79	63.85
56	9/18/2002	10:15	2.33	3.07	212	1172.5	2.293	203.63
57	12/17/2002	10:10	2.58	3.31	383	2060	2.621	432.59
58	3/24/2003	10:05	1.61	2.55	41	351.4	1.594	40.66
59	4/16/2003	11:30	2.44	3.17	273	1480	2.429	278.02
60	4/22/2003	10:10	2.16	2.86	143	717.7	2.008	105.63
61	5/15/2003	10:30	1.64	2.5	44	315	1.53	35.13
62	5/28/2003	10:30	1.85	2.7	70	495.5	1.793	64.37
63	6/10/2003	10:35	2.14	2.94	138	862.1	2.115	134.99
64	6/24/2003	9:25	2.55	3.21	356	1607.5	2.477	310.5
65	7/30/2003	9:20	2.54	3.1	343	1270	2.34	226.58
66	9/2/2003	11:30	1.41	2.48	26	302	1.506	33.2
67	10/15/2003	10:50	1.43	2.35	27	223.2	1.33	22.17
68	3/9/2004	12:00	1.38	2.33	24	216	1.311	21.21
69	3/29/2004	10:00	2.32	3.07	209	1170	2.292	203.05

70	4/26/2004 10:30	2.48	3.16	300	1430	2.409	265.53
71	5/13/2004 11:15	1.93	2.76	86	581.5	1.886	79.73
72	5/26/2004 10:35	2.11	2.96	130	907.2	2.144	144.52
73	6/16/2004 9:45	2.16	2.97	144	928.5	2.158	149.06
74	6/21/2004 9:10	1.78	2.57	60	375.3	1.632	44.4
75	7/26/2004 10:20	0.903	2.03	8	108	0.909	8.4
76	1/28/2005 10:45	1.62	2.64	42	435.5	1.718	54.17
77	3/25/2005 10:00	1.65	2.5	44.5	313	1.527	34.83
78	5/11/2005 9:40	2.37	3.12	237	1308.3	2.357	235.77
79	5/26/2005 12:00	2.39	2.88	248	751	2.035	112.24
80	6/7/2005 9:15	1.53	2.54	34.2	346.8	1.586	39.94
81	6/14/2005 8:40	1.34	2.33	22	214	1.306	20.95
82	8/31/2005 9:10	1.69	2.6	49.4	399.7	1.668	48.3
83	2/7/2006 11:15	2.23	3.04	169	1100	2.256	186.97
84	6/8/2006 9:35	2	2.83	99.2	683	1.98	98.87
85	6/26/2006 10:30	1.52	2.51	32.9	324	1.547	36.48
86	7/28/2006 9:25	1.4	2.38	24.9	240.1	1.373	24.43
87	8/23/2006 11:10	1.45	2.63	28.5	425.2	1.704	52.46
88	9/27/2006 9:40	1.92	2.84	82.5	686.3	1.982	99.51
89	1/10/2007 9:55	2.27	3.06	185	1140	2.277	196.12
90	1/30/2007 13:50	2.06	2.96	116	919.8	2.152	147.2
91	3/12/2007 10:15	1.86	2.82	72.6	663.2	1.963	95.06
92	3/21/2007 10:05	1.78	2.73	60.6	538.4	1.842	71.93
93	3/27/2007 10:05	1.54	2.47	34.8	292.2	1.487	31.78
94	4/18/2007 10:20	1.44	2.42	27.8	263	1.425	27.6
95	5/25/2007 10:20	<0.699	1.96	<5	92	0.816	6.78
96	7/11/2007 10:10	1.45	2.33	28.3	211.8	1.3	20.67
97	8/13/2007 11:00	2.14	2.98	137	952	2.172	154.12
98	9/5/2007 10:15	2.2	3.02	159	1047.5	2.228	175.14
99	11/27/2007 10:05	2.17	3.03	148	1080	2.246	182.44
100	12/4/2007 10:00	2.25	3.08	178	1190	2.302	207.7
101	12/12/2007 11:30	1.48	2.4	30.5	251	1.398	25.93
102	3/4/2008 10:15	1.53	2.42	33.9	265.8	1.432	27.99
103	4/14/2008 10:00	1.88	2.71	76.3	515	1.816	67.78
104	5/29/2008 9:40	1.42	2.49	26.3	307.7	1.517	34.04
105	6/30/2008 9:50	1.4	2.47	25.4	292.7	1.488	31.84
106	9/16/2008 9:40	1.3	2.4	19.8	253.3	1.404	26.25
107	10/17/2008 9:50	1.15	2.31	14.1	202	1.272	19.39
108	4/1/2009 11:10	1.92	2.71	82.4	513.2	1.814	67.46
109	4/6/2009 10:40	2.1	2.91	126	813	2.081	124.8
110	4/13/2009 10:20	1.95	2.79	89.7	615	1.919	85.93
111	4/30/2009 10:05	1.44	2.46	27.8	287.4	1.477	31.08
112	5/12/2009 10:15	1.39	2.42	24.7	264.8	1.429	27.85
113	6/16/2009 10:20	1.7	2.44	50.3	273.7	1.449	29.11
114	7/30/2009 12:30	1.66	2.68	45.8	478.5	1.773	61.44
115	11/2/2009 10:10	1.4	2.47	25.4	296.3	1.495	32.37
116	12/1/2009 9:55	2.23	3.05	170	1120	2.267	191.53
117	12/17/2009 10:00	2.38	3.16	240	1430	2.409	265.53
118	1/6/2010 10:10	2.41	3.18	258	1520	2.444	288.11
119	1/19/2010 11:45	2.42	3.18	262	1520	2.444	288.11
120	2/11/2010 10:30	2.44	3.16	277	1435	2.411	266.77
121	2/23/2010 10:25	2.33	3.09	215	1230	2.321	217.09
122	4/13/2010 9:20	2.38	3.12	243	1330	2.367	241
123	6/1/2010 9:50	2.12	2.89	132	782.3	2.058	118.55
124	6/15/2010 10:00	1.24	2.36	17.2	228	1.343	22.8
125	7/7/2010 10:00	0.863	2.14	7.3	139	1.055	11.77

126	8/19/2010 9:20	1.94	2.91	86.6	805.7	2.076	123.3
127	8/25/2010 9:10	1.25	2.35	17.8	224.8	1.334	22.38
128	11/16/2010 9:55	1.72	2.59	52.4	390.8	1.655	46.87
129	1/19/2011 9:45	2.42	3.16	261	1460	2.421	273.01
130	3/7/2011 9:40	2.15	2.98	143	951	2.172	153.91
131	5/16/2011 9:20	2.31	3.09	205	1220	2.316	214.73
132	6/20/2011 10:00	2.32	2.95	210	901	2.14	143.19
133	8/11/2011 9:45	1.06	2.23	11.4	169.8	1.171	15.37
134	9/22/2011 10:30	1.59	2.44	39.1	275.5	1.452	29.37
135	12/21/2011 12:05	2.17	2.79	147	618.8	1.922	86.65
136	3/1/2012 10:00	1.32	2.23	21.1	168	1.165	15.16
137	4/18/2012 10:30	1.6	2.5	39.6	314.5	1.529	35.06
138	5/29/2012 11:05	2.12	2.97	133	936.2	2.163	150.72
139	6/18/2012 9:30	2.11	2.82	128	660	1.96	94.44
140	3/12/2013 9:30	2.58	3.18	378	1530	2.448	290.65
141	3/13/2013 11:50	2.72	3.27	529	1883.3	2.569	383.72
142	4/29/2013 11:00	2.37	3	235	999	2.2	164.38
143	6/3/2013 10:00	1.81	2.67	64.4	463	1.754	58.79
144	7/30/2013 10:15	0.795	1.88	6.24	75.2	0.699	5.18
145	10/30/2013 9:10	2.22	3.03	167	1060	2.235	177.94
146	4/9/2014 9:20	2.26	3.06	182	1160	2.287	200.73
147	6/4/2014 9:20	2.03	2.91	108	821.7	2.087	126.58
148	6/12/2014 9:30	0.948	2.15	8.88	142	1.068	12.11
149	8/28/2014 8:20	1.98	2.89	94.5	778.3	2.055	117.74
150	9/4/2014 11:30	1.18	2.3	15	200.5	1.268	19.2
151	12/10/2014 10:15	2.31	3.12	202	1327.5	2.365	240.4
152	2/25/2015 9:35	2.32	3.1	208	1252.9	2.332	222.51
153	4/7/2015 9:55	2.28	3.12	191	1310	2.358	236.17
154	4/20/2015 11:25	1.58	2.51	38.1	325.1	1.549	36.64
155	5/28/2015 10:00	1.12	2.25	13.3	179	1.202	16.5
156	7/14/2015 11:05	1.93	2.85	85.9	706.3	1.999	103.41
157	8/6/2015 10:20	1.46	2.39	28.7	247.3	1.39	25.42
158	8/27/2015 9:00	1.42	2.39	26.4	248	1.391	25.52
159	12/14/2015 10:35	0.872	1.91	7.45	80.8	0.74	5.7
160	5/2/2016 11:00	1.52	2.48	33	304	1.51	33.5
161	6/1/2016 10:20	1.53	2.53	33.9	338.7	1.572	38.7
162	6/16/2016 10:05	1.77	2.73	58.6	531.7	1.834	70.73
163	7/5/2016 10:00	0.866	2.13	7.34	135	1.038	11.32
164	8/10/2016 13:15	1.45	2.45	28.4	283.2	1.469	30.48
165	9/12/2016 10:05	1.29	2.35	19.6	222.9	1.329	22.13
166	3/30/2017 10:30	1.51	2.44	32.1	278.5	1.459	29.8
167	5/3/2017 10:15	1.47	2.45	29.3	282	1.466	30.3
168	5/30/2017 12:10	2.07	2.94	116	862.2	2.115	135
169	6/27/2017 10:35	2.17	3.02	149	1053	2.231	176.37
170	7/12/2017 9:40	2.09	2.94	122	875.6	2.124	137.81
171	8/1/2017 10:25	1.67	2.77	47.1	582.5	1.887	79.92
172	8/17/2017 10:05	1.75	2.84	56.8	686.9	1.983	99.62
173	9/5/2017 9:50	1.74	2.87	54.6	741.9	2.028	110.43
174	11/14/2017 10:30	1.46	2.8	28.7	632.4	1.935	89.19
175	1/30/2018 10:00	1.78	2.89	60.6	768.8	2.048	115.81
176	3/21/2018 10:10	1.94	2.92	87.4	838.2	2.098	130
177	5/1/2018 11:10	2.07	2.97	118	943	2.167	152.18
178	5/22/2018 9:35	2.17	3	150	1001.8	2.202	165
179	6/2/2018 9:20	1.69	2.54	48.5	349.7	1.591	40.39
180	7/18/2018 10:20	0.746	2.2	5.57	158	1.13	13.96
181	9/6/2018 10:00	1.14	2.23	13.7	170	1.172	15.4

182	12/3/2018	11:05	1.99	2.77	98.7	589.5	1.894	81.2
183	2/26/2019	11:40	2.32	3.05	209	1130.7	2.272	193.97
184	3/14/2019	10:20	1.83	2.67	67.8	465.7	1.757	59.24
185	4/10/2019	12:00	2.17	2.96	148	909	2.146	144.89
186	4/29/2019	13:05	1.64	2.36	43.7	230.1	1.348	23.08
187	6/11/2019	10:10	2.1	2.94	126	875.8	2.124	137.86
188	8/21/2019	11:20	1.48	2.5	30.4	314.3	1.529	35.03
189	10/8/2019	10:10	2.01	2.96	103	905.8	2.144	144.21
190	12/10/2019	11:30	2.19	3.07	154	1180.5	2.297	205.49

Definitions

CL: Chloride in mg/L (00940)

SC: Specific conductance in $\mu\text{S}/\text{cm}$ @25C (00095)

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