Appendix 5A1

Chloride

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Chloride

This appendix is deleted in its entirety from the Draft Environmental Impact Report and is replaced in its entirety by Appendix 5A2 in the Final Environmental Impact Report. Both sets of appendices are presented without strikethrough and underline for readability.

5A.1 Appendix Overview

The information contained in this appendix supports the quantitative assessment of the Proposed Project's effects on chloride concentrations at Sacramento–San Joaquin Delta (Delta) assessment locations presented in Chapter 5, *Surface Water Quality*. Specifically, this appendix presents the following information.

- The source water concentrations used in the mass-balance modeling of chloride at the Delta assessment locations.
- Tables and figures presenting modeled concentrations at the Delta assessment locations for Baseline Conditions and the Proposed Project.

Chapter 5, *Surface Water Quality*, summarizes information contained in the tables and figures presented in this appendix to make determinations regarding the potential for the Proposed Project to result in significant impacts on chloride at Delta assessment locations.

5A.2 Source Water Concentrations

An input to the mass-balance calculation of chloride concentrations at the Delta assessment locations is the concentration of chloride in the primary source waters to the Delta: SAC, SJR, YOL, EST, BAY, and AGR. The concentrations of chloride for all source waters except the San Joaquin River were based on historical data. Table 5A-1 provides summary statistics for the primary source water concentrations, as well as information on the source of the data. Due to data availability, Yolo Bypass concentrations were set equal to Sacramento River concentrations, which is the source of flows to the Yolo Bypass.

Table 5A-1. Source Water Concentrations for Chloride (in milligrams per liter)

Data Parameter	Sacramento River	San Joaquin River	San Francisco Bay	Eastside Tributaries	Delta Agriculture Return Waters
Average	6.4	76	6,507	2.4	156
Minimum	1.0	1.0	8.0	0.3	3.0
Maximum	33	221	12,600	10	2,010
75th percentile	8.0	106	9,255	3.0	184
99th percentile	12	181	12,464	8.7	1,148
Data source	CEDEN, DWR	CEDEN, DWR	CEDEN	CEDEN, USGS	DWR
Station(s)	Sacramento River at Greene's Landing, Sacramento River at Hood	San Joaquin River at Vernalis	Suisun Bay at Bulls Head near Martinez	Mokelumne River, Cosumnes River	Multiple – see narrative description below
Date range	1980–2020	1980–2020	1980–2007	1952–2015	1985–2004
Non-detect results replaced with reporting limit for statistics	No	No	No	None	None
Data omitted	None	None	None	Single <0.1 value from each dataset, 0 values from Cosumnes River	Yes – see narrative description below
Number of data points	1,330	1,232	319	481	1,576

Sources: California Environmental Data Exchange Network 2020; California Department of Water Resources 2020; U.S. Geological Survey 2020.

CEDEN = California Environmental Data Exchange Network; DWR = California Department of Water Resources; USGS = U.S. Geological Survey.

Each source water dataset was evaluated to determine whether the primary source water concentration should be represented by a single value or a different value for each month. Analysis of the Sacramento River (Kruskal Wallis; $p<0.05$), eastside tributaries (Kruskal Wallis; $p<0.05$), and Delta agricultural return waters (Kruskal Wallis; $p<0.05$) datasets indicated significant differences in concentration by month. Due to the presence of a distinct monthly pattern in Sacramento River, eastside tributaries, and Delta agricultural return waters, monthly average concentrations were used for these locations in the mass-balance calculation. Table 5A-2, Table 5A-3, and Table 5A-4 present monthly average chloride concentrations for the Sacramento River, eastside tributaries, and Delta agriculture return waters used in the mass-balance calculation, respectively.

The source water concentrations for the San Joaquin River and San Francisco Bay were calculated in a different manner. Because San Joaquin River and San Francisco Bay chloride concentrations are closely related to flow, in addition to time of year, concentrations were calculated from DSM2-modeled electrical conductivity (EC). The EC-chloride regression equations defined below were applied to each modeled monthly average EC value for water years 1922–2021 to develop monthly average chloride concentrations for the modeled period, resulting in a time-series of monthly average chloride concentrations consisting of 1,188 values (i.e., 12 months times 99 water years). In the following equation, Cl is the chloride concentration in milligrams per liter (mg/L) and EC is in micromhos per centimeter (µmhos/cm).

$$San\ Joaquin\ River\ at\ Vernalis\ Cl = 0.1845 * EC\ at\ Vernalis - 23$$

$$San\ Francisco\ Bay\ at\ Martinez\ Cl = 0.285 * EC\ at\ Martinez - 50$$

The monthly average chloride concentrations were input as C_{SJR} and C_{BAY} in the mass-balance equation.

Table 5A-2. Monthly Average Source Water Chloride Concentrations for the Sacramento River (in milligrams per liter)

Data Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average concentration	7.1	6.9	6.0	5.8	6.5	6.1	5.0	5.7	7.2	6.1	7.1	7.0
Number of data points	107	109	112	110	112	113	112	117	116	114	104	104

Table 5A-3. Monthly Average Source Water Chloride Concentrations for the Eastside Tributaries (in milligrams per liter)

Data Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average concentration	2.7	2.6	2.4	2.0	1.9	2.0	1.8	2.1	2.0	2.5	3.1	2.7
Number of data points	40	30	51	36	34	42	35	25	54	31	31	43

Table 5A-4. Monthly Average Source Water Chloride Concentrations for Delta Agricultural Return Waters (in milligrams per liter)

Data Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average concentration	198	223	175	188	133	123	115	121	170	170	144	120
Number of data points	235	55	100	233	65	183	221	184	26	186	37	51

Agricultural return drains are distributed unevenly throughout the Delta. Water quality associated with these drains varies depending on the specific location of the drain within the Delta and largely coincides with the water quality of the water that is withdrawn from the Delta for application onto agricultural lands. To characterize chloride concentrations in agricultural drain water as a whole, the following process was followed.

1. All agricultural drain data from the DWR Water Data Library, which had historical chloride data, were compiled.
2. All agricultural drain data were pooled, and the results summarized in Table 5A-1.

Data for the Byron Tract #2 (16,800 mg/L on May 29, 1996) and Byron Tract #3 (24,000 micrograms per liter [µg/L] on May 29, 1996) agricultural drains in the west Delta were omitted

from the database due to their reported values being substantially outside the distribution of all other values.

5A.3 Modeling Results

The modeled monthly average concentrations of chloride at each Delta assessment location are presented on the following pages in tables and figures, in the following formats.

- Tables
  - Probability of exceedance of the monthly average concentration for water years 1922–2021.
  - Average of monthly average concentrations for water years 1922–2021 and by water year type: wet, above normal, below normal, dry, and critical.
  - Results shown for Baseline Conditions and the Proposed Project, and the Proposed Project minus Baseline Conditions.
- Monthly Average Plots
  - Average of monthly average concentrations for water years 1922–2021 and by water year type: wet, above normal, below normal, dry, and critical.
  - Baseline Conditions and the Proposed Project shown on the same plot.
- Exceedance Plots
  - Probability exceedance of the monthly average concentrations for water years 1922–2021.
  - Baseline Conditions and the Proposed Project shown on the same plot.

Table 5A-5a. Barker Slough at North Bay Aqueduct, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	27	28	29	51	69	52	40	23	20	19	20	27
1%	26	28	29	48	64	42	39	23	20	17	19	27
5%	26	27	27	47	54	39	36	22	19	16	18	25
10%	25	26	27	42	48	37	35	22	18	16	18	24
25%	23	25	25	34	39	33	32	20	16	14	15	21
50%	21	23	23	24	27	25	27	19	15	14	14	20
75%	20	21	22	20	22	21	24	18	14	13	14	20
99.9%	19	20	19	17	18	18	18	15	13	12	13	19

Table 5A-5b. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	22	23	23	28	31	27	28	19	16	14	15	21
Wet Water Years	21	23	24	25	25	23	27	18	14	13	14	20
Above Normal Water Years	22	24	24	32	36	28	28	18	15	13	14	20
Below Normal Water Years	21	23	23	28	30	25	26	19	15	14	14	21
Dry Water Years	21	23	22	27	33	30	29	20	16	14	14	21
Critical Water Years	23	24	23	35	40	34	33	21	19	16	18	25

Table 5A-6a. Barker Slough at North Bay Aqueduct, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	27	29	30	51	69	52	40	23	20	19	20	27
1%	26	28	30	51	64	42	39	23	20	17	19	27
5%	26	27	27	46	53	39	36	22	19	17	18	25
10%	25	26	27	42	48	37	35	22	18	16	18	24
25%	23	25	25	34	39	33	32	20	16	14	15	21
50%	21	23	23	24	27	25	27	19	15	14	14	20
75%	20	21	22	20	22	21	24	18	14	13	14	20
99.9%	19	20	19	17	18	18	18	15	13	12	13	19

Table 5A-6b. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), Proposed Project

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	21	23	23	28	31	27	28	19	16	14	15	21
Wet Water Years	21	23	24	25	25	23	27	18	14	13	14	20
Above Normal Water Years	22	24	24	31	36	28	28	18	15	13	14	20
Below Normal Water Years	21	23	23	27	30	25	26	19	15	14	14	21
Dry Water Years	21	23	22	27	33	30	29	20	16	14	14	21
Critical Water Years	23	24	23	35	40	34	33	21	19	16	18	25

Table 5A-6c. Barker Slough at North Bay Aqueduct, Difference in Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	0	0	1	0	0	0	0	0	0	0	0	0
1%	0	0	1	3	0	0	0	0	0	0	0	0
5%	0	0	0	-1	0	0	0	0	0	0	0	0
10%	0	0	0	0	0	-1	0	0	0	0	0	0
25%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
75%	0	0	0	0	0	0	0	0	0	0	0	0
99.9%	0	0	0	0	0	0	0	0	0	0	0	0

Table 5A-6d. Barker Slough at North Bay Aqueduct, Difference in Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	0	0	0	0	0	0	0	0	0	0	0	0
Wet Water Years	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal Water Years	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal Water Years	0	0	0	0	0	0	0	0	0	0	0	0
Dry Water Years	0	0	0	0	0	0	0	0	0	0	0	0
Critical Water Years	0	0	0	0	0	0	0	0	0	0	0	0

Table 5A-7a. San Joaquin River at Empire Tract, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	87	129	156	144	115	85	66	48	48	46	58	68
1%	85	119	147	129	105	70	65	47	46	45	57	67
5%	80	104	141	124	90	62	61	46	42	41	53	61
10%	75	92	125	113	77	54	56	45	39	39	48	59
25%	60	66	108	83	56	48	52	41	35	29	41	54
50%	47	49	88	55	46	41	45	36	31	24	34	47
75%	27	33	34	36	36	35	36	30	26	19	22	21
99.9%	20	15	7	5	6	5	3	2	1	11	12	19

Table 5A-7b. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	46	54	77	61	48	41	41	33	29	26	33	40
Wet Water Years	42	42	45	39	32	28	25	20	20	20	21	22
Above Normal Water Years	46	61	82	53	45	42	44	34	31	19	19	20
Below Normal Water Years	41	47	80	61	51	45	48	38	32	23	35	56
Dry Water Years	45	51	96	80	55	44	50	40	30	30	44	50
Critical Water Years	60	81	100	81	66	52	50	40	39	38	44	56

Table 5A-8a. San Joaquin River at Empire Tract, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	86	128	153	144	104	71	66	45	48	46	57	71
1%	85	117	146	127	99	69	65	45	46	45	57	68
5%	82	101	138	118	88	61	59	44	43	42	54	61
10%	76	91	126	106	77	57	56	43	39	40	52	59
25%	57	64	107	78	57	51	52	40	35	29	44	55
50%	46	49	87	52	46	42	46	35	31	24	34	49
75%	27	34	34	37	36	36	36	29	27	20	22	22
99.9%	19	15	7	5	6	5	3	2	1	11	13	19

Table 5A-8b. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), Proposed Project

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	45	53	76	60	48	41	41	32	29	26	34	41
Wet Water Years	42	43	45	38	32	28	24	19	20	20	22	22
Above Normal Water Years	46	59	83	53	46	43	44	33	31	20	21	21
Below Normal Water Years	40	47	80	60	52	47	48	36	32	23	35	54
Dry Water Years	44	50	95	79	56	46	50	40	30	31	47	52
Critical Water Years	62	78	97	77	63	51	50	39	39	38	44	57

Table 5A-8c. San Joaquin River at Empire Tract, Difference in Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	-2	0	-3	0	-11	-14	0	-3	0	0	-1	3
1%	0	-2	-2	-1	-7	-1	0	-2	0	0	0	0
5%	3	-3	-3	-7	-2	-1	-2	-1	0	1	1	0
10%	1	-1	0	-7	0	3	0	-2	0	1	4	-1
25%	-3	-2	-1	-5	1	3	0	-1	0	0	3	1
50%	-2	0	-2	-3	0	1	0	-1	1	0	0	1
75%	0	0	0	1	0	0	0	-1	1	0	1	1
99.9%	0	0	0	0	0	0	0	0	0	0	0	0

Table 5A-8d. San Joaquin River at Empire Tract, Difference in Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	0	-1	-1	-1	0	1	0	-1	0	0	1	0
Wet Water Years	0	0	1	0	0	0	0	-1	0	0	0	0
Above Normal Water Years	0	-2	0	0	0	1	0	-2	0	0	2	1
Below Normal Water Years	-1	-1	0	-1	1	2	0	-1	0	0	0	-2
Dry Water Years	-2	-1	-2	-1	1	2	0	-1	1	1	3	2
Critical Water Years	1	-2	-3	-4	-3	-1	-1	-1	0	0	1	1

Table 5A-9a. Banks Pumping Plant, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	162	193	227	203	163	140	102	84	81	107	142	172
1%	160	186	216	199	161	116	90	77	76	105	138	168
5%	153	173	208	183	129	106	87	72	67	88	126	152
10%	146	165	190	177	127	91	83	70	61	84	115	146
25%	138	140	171	137	91	80	79	67	49	57	93	131
50%	121	104	141	97	73	72	72	56	43	44	77	111
75%	33	48	63	62	57	48	39	36	37	28	40	47
99.9%	22	18	5	3	2	2	1	0	0	11	14	26

Table 5A-9b. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	92	96	123	100	75	65	58	49	41	46	70	94
Wet Water Years	85	78	77	62	47	37	28	25	23	25	35	41
Above Normal Water Years	95	101	136	90	72	63	55	44	39	30	39	47
Below Normal Water Years	81	85	126	103	78	70	63	52	45	45	83	141
Dry Water Years	90	98	152	130	89	79	78	66	44	63	104	119
Critical Water Years	121	142	157	134	105	93	82	70	65	76	92	126

Table 5A-10a. Banks Pumping Plant, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	162	194	223	202	160	120	91	78	80	106	140	166
1%	160	185	214	196	160	116	90	78	77	104	139	161
5%	155	177	209	179	129	100	85	71	69	90	131	150
10%	149	165	187	167	123	93	83	69	62	81	117	143
25%	135	135	172	132	91	83	79	66	49	56	95	134
50%	119	106	141	99	75	73	74	54	44	43	74	116
75%	35	49	63	63	57	49	39	34	37	28	44	51
99.9%	22	19	5	3	2	2	1	0	0	11	14	24

Table 5A-10b. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), Proposed Project

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	92	96	122	99	74	66	58	48	41	46	72	96
Wet Water Years	85	78	77	62	47	37	28	23	23	25	37	44
Above Normal Water Years	95	100	137	91	72	64	55	41	39	30	44	52
Below Normal Water Years	80	84	126	102	79	73	64	52	44	43	81	137
Dry Water Years	88	96	150	128	89	81	78	65	45	64	111	128
Critical Water Years	124	143	154	129	102	91	81	69	65	76	93	128

Table 5A-10c. Banks Pumping Plant, Difference in Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	0	1	-4	-1	-3	-19	-11	-5	-1	-1	-2	-6
1%	0	-1	-2	-3	-1	0	0	0	0	-1	1	-6
5%	1	4	1	-4	0	-5	-2	-1	2	2	5	-1
10%	3	0	-2	-10	-4	3	0	-1	0	-4	3	-3
25%	-3	-5	1	-5	1	2	0	-1	0	-1	2	3
50%	-2	1	0	2	2	2	2	-2	1	-1	-3	6
75%	2	1	0	1	0	1	0	-2	0	0	4	4
99.9%	0	0	0	0	0	0	0	0	0	0	0	-1

Table 5A-10d. Banks Pumping Plant, Difference in Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	0	0	-1	-1	0	1	0	-1	0	0	2	3
Wet Water Years	1	1	1	0	0	0	0	-1	0	0	2	4
Above Normal Water Years	0	0	1	1	0	1	0	-3	0	0	5	5
Below Normal Water Years	-1	-1	0	-1	1	2	0	0	-1	-2	-1	-4
Dry Water Years	-1	-3	-2	-1	0	2	0	-1	1	1	7	8
Critical Water Years	3	1	-3	-5	-3	-1	-1	-1	0	0	1	2

Table 5A-11a. Jones Pumping Plant, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	150	186	212	190	161	136	98	84	82	106	137	166
1%	149	179	199	186	156	124	91	80	78	105	134	161
5%	147	167	192	173	135	110	89	77	70	88	122	144
10%	140	158	176	168	127	99	87	74	65	85	113	139
25%	131	135	162	134	95	87	83	70	54	61	92	127
50%	115	109	135	98	79	78	75	56	49	50	78	108
75%	46	62	71	68	58	49	39	36	44	37	48	55
99.9%	25	19	5	3	2	2	1	1	1	10	13	30

Table 5A-11b. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	93	101	120	101	78	69	60	50	45	52	72	94
Wet Water Years	87	85	80	66	49	38	28	25	26	32	41	48
Above Normal Water Years	96	106	131	94	76	67	55	44	44	40	47	55
Below Normal Water Years	84	92	123	103	82	75	66	53	50	51	83	134
Dry Water Years	92	102	145	126	92	85	82	69	51	66	103	118
Critical Water Years	118	140	148	131	107	99	86	74	68	77	92	124

Table 5A-12a. Jones Pumping Plant, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	155	187	210	190	161	125	92	81	81	106	136	161
1%	152	178	198	185	155	124	91	80	78	103	136	156
5%	147	170	192	170	130	106	89	76	71	91	127	144
10%	140	159	174	161	122	100	87	73	65	81	117	138
25%	130	132	161	131	95	90	83	70	54	60	95	129
50%	110	108	134	99	80	80	76	56	50	50	77	114
75%	48	63	72	68	58	51	39	34	44	37	50	58
99.9%	25	20	5	3	2	2	1	1	1	10	13	30

Table 5A-12b. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), Proposed Project

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	94	101	119	99	77	70	60	50	45	52	75	97
Wet Water Years	87	86	81	66	49	38	28	24	26	32	43	51
Above Normal Water Years	97	106	133	95	77	67	55	42	44	40	51	59
Below Normal Water Years	83	92	122	102	83	77	66	53	49	50	82	131
Dry Water Years	91	100	143	125	93	87	83	69	51	67	110	125
Critical Water Years	120	140	146	127	104	99	86	73	68	77	93	126

Table 5A-12c. Jones Pumping Plant, Difference in Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	5	1	-3	0	0	-11	-6	-3	-1	-1	-1	-5
1%	4	-1	-1	-2	-1	0	0	0	0	-2	1	-5
5%	0	3	0	-3	-5	-4	0	-1	0	3	5	1
10%	0	0	-1	-7	-5	2	0	-1	0	-4	4	-1
25%	0	-3	0	-3	0	3	0	0	0	-1	3	2
50%	-5	0	-2	1	2	2	1	0	1	0	-1	6
75%	1	0	0	0	0	1	0	-2	0	0	2	3
99.9%	0	0	0	0	0	0	0	0	0	0	0	0

Table 5A-12d. Jones Pumping Plant, Difference in Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	0	0	0	-1	0	1	0	-1	0	0	2	3
Wet Water Years	0	1	1	0	0	0	0	-1	0	0	2	3
Above Normal Water Years	1	0	2	1	0	1	0	-2	0	0	4	4
Below Normal Water Years	-1	-1	0	-1	1	1	0	0	-1	-1	-1	-3
Dry Water Years	-1	-2	-2	-1	0	1	0	-1	1	1	7	7
Critical Water Years	2	1	-2	-4	-3	0	-1	-1	0	0	1	2

Table 5A-13a. San Joaquin River at Antioch, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	2030	2192	1764	1384	1313	622	530	675	1076	1198	1438	1787
1%	2027	2186	1711	1368	1090	511	412	652	963	1176	1434	1774
5%	1956	2125	1605	1196	592	288	287	477	866	1079	1294	1729
10%	1869	1897	1506	1029	323	217	214	346	651	1003	1234	1688
25%	1573	1549	1292	624	142	53	85	168	369	728	1095	1490
50%	1158	925	770	203	30	26	27	32	203	478	843	1128
75%	246	585	196	23	22	21	22	21	33	221	479	326
99.9%	22	18	17	14	16	14	11	11	12	15	20	18

Table 5A-13b. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	965	1071	762	360	137	72	76	121	264	493	786	947
Wet Water Years	784	747	272	76	26	21	20	25	54	155	375	281
Above Normal Water Years	985	1121	694	130	26	23	23	27	108	233	491	308
Below Normal Water Years	834	945	905	376	90	35	38	59	233	488	861	1156
Dry Water Years	942	1160	998	562	204	95	92	139	346	740	1068	1434
Critical Water Years	1495	1689	1215	748	392	216	243	421	691	974	1274	1689

Table 5A-14a. San Joaquin River at Antioch, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	2034	2189	1755	1240	1272	450	488	659	1068	1196	1515	1820
1%	2032	2184	1714	1199	740	396	412	656	982	1184	1441	1789
5%	1954	2112	1606	1153	559	244	292	502	874	1085	1291	1742
10%	1883	1900	1522	994	287	175	215	368	662	1012	1238	1692
25%	1585	1547	1240	610	149	55	78	168	364	724	1123	1517
50%	1192	960	746	206	30	26	27	40	191	461	815	1151
75%	251	585	191	23	22	22	22	21	30	206	513	349
99.9%	22	18	17	14	16	14	11	11	12	15	20	19

Table 5A-14b. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), Proposed Project

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	984	1074	757	344	123	63	74	125	263	487	804	980
Wet Water Years	816	755	274	74	26	21	21	29	53	154	413	310
Above Normal Water Years	1010	1109	723	134	26	23	23	28	103	227	529	328
Below Normal Water Years	833	954	897	357	85	33	36	65	226	454	823	1195
Dry Water Years	951	1161	992	561	182	74	82	137	344	745	1109	1492
Critical Water Years	1525	1682	1180	678	337	197	247	436	703	978	1283	1696

Table 5A-14c. San Joaquin River at Antioch, Difference in Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	4	-3	-9	-144	-41	-173	-42	-16	-8	-2	77	33
1%	5	-2	3	-169	-350	-115	0	4	19	9	7	15
5%	-1	-13	1	-43	-34	-43	5	26	8	6	-2	13
10%	14	3	16	-34	-36	-42	0	22	11	10	4	4
25%	12	-2	-52	-14	7	2	-7	0	-6	-4	28	26
50%	34	35	-24	3	0	0	0	8	-12	-18	-29	23
75%	4	1	-5	0	0	0	0	0	-3	-15	34	23
99.9%	1	0	0	0	0	0	0	0	0	0	0	1

Table 5A-14d. San Joaquin River at Antioch, Difference in Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	19	2	-5	-16	-15	-8	-2	5	-1	-6	18	33
Wet Water Years	32	8	2	-2	0	0	0	4	-1	-1	38	29
Above Normal Water Years	24	-12	29	4	0	0	0	1	-6	-6	38	21
Below Normal Water Years	-1	10	-8	-19	-5	-2	-2	6	-7	-34	-38	39
Dry Water Years	10	1	-6	-1	-22	-21	-10	-1	-2	5	42	57
Critical Water Years	30	-7	-35	-70	-55	-19	3	15	13	4	8	7

Table 5A-15a. San Joaquin River at Antioch, Frequency that Monthly Average Chloride Concentration Exceeds 250 milligrams per liter

Month	Baseline Conditions	Proposed Project
January	43%	41%
February	17%	15%
March	8%	5%
April	7%	7%
May	15%	15%
June	43%	43%
July	70%	67%
August	95%	95%
September	93%	95%
October	72%	76%
November	88%	88%
December	69%	69%

Table 5A-16a. Contra Costa Water District Pumping Plant #1, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	221	296	334	286	246	150	109	99	87	120	157	184
1%	219	272	316	253	220	109	98	94	84	116	150	183
5%	197	256	288	237	159	78	89	87	62	91	135	168
10%	187	229	268	225	132	60	70	72	47	87	122	160
25%	167	176	245	186	72	44	58	61	31	57	95	147
50%	137	134	192	91	42	34	43	42	28	39	80	122
75%	23	46	77	33	30	28	35	29	22	21	33	38
99.9%	18	19	20	8	13	7	6	7	10	15	17	17

Table 5A-16b. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	106	120	166	112	61	40	48	45	30	43	70	98
Wet Water Years	94	93	93	49	37	33	31	24	20	20	28	32
Above Normal Water Years	107	133	176	86	41	38	50	36	24	23	33	37
Below Normal Water Years	90	97	170	127	54	36	60	61	28	40	86	153
Dry Water Years	101	119	206	159	76	40	50	55	30	64	109	132
Critical Water Years	153	193	236	166	108	63	58	58	56	75	100	143

Table 5A-17a. Contra Costa Water District Pumping Plant #1, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	222	297	333	286	215	104	93	83	86	118	159	192
1%	218	273	316	253	188	104	90	75	84	115	148	184
5%	208	250	279	234	152	69	76	71	63	94	143	170
10%	192	230	268	216	129	58	69	63	48	86	132	159
25%	171	175	243	174	75	45	59	52	30	56	98	149
50%	140	135	187	96	42	37	45	41	27	34	78	127
75%	24	46	76	34	30	29	32	26	22	21	36	44
99.9%	18	19	20	8	13	7	6	6	10	15	17	17

Table 5A-17b. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), Proposed Project

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	107	120	165	110	59	40	46	40	30	43	73	102
Wet Water Years	96	95	95	49	37	33	31	21	19	20	30	38
Above Normal Water Years	108	131	177	89	40	38	45	31	24	23	39	44
Below Normal Water Years	88	96	170	124	53	39	62	52	27	39	84	149
Dry Water Years	100	117	203	155	76	40	48	50	29	65	117	141
Critical Water Years	159	193	230	157	96	58	54	54	56	76	101	146

Table 5A-17c. Contra Costa Water District Pumping Plant #1, Difference in Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	0	1	-1	0	-32	-46	-15	-16	-1	-2	2	8
1%	-1	1	0	0	-31	-6	-9	-20	0	-1	-2	1
5%	11	-5	-9	-3	-7	-8	-13	-16	1	3	8	2
10%	5	1	0	-8	-4	-2	-1	-9	0	-1	9	-1
25%	3	-1	-3	-12	2	1	1	-9	-1	-1	2	2
50%	3	0	-5	4	0	3	2	-2	-1	-5	-2	5
75%	1	0	-1	1	0	1	-3	-3	0	0	3	6
99.9%	0	0	0	0	0	0	0	0	0	0	0	0

Table 5A-17d. Contra Costa Water District Pumping Plant #1, Difference in Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	1	0	-1	-3	-2	0	-1	-5	0	0	3	4
Wet Water Years	2	2	1	0	0	0	0	-2	0	0	2	5
Above Normal Water Years	2	-1	1	3	-1	0	-5	-5	0	0	5	7
Below Normal Water Years	-2	-1	1	-3	0	3	2	-9	-1	-2	-2	-4
Dry Water Years	-2	-2	-3	-3	0	0	-1	-5	0	1	8	10
Critical Water Years	6	0	-5	-10	-11	-5	-3	-4	0	1	1	3

Table 5A-18a. Old River at State Route 4, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	185	230	283	269	223	180	148	118	86	101	130	150
1%	170	210	270	240	212	135	122	113	86	99	126	149
5%	154	200	249	222	163	106	112	107	71	85	112	138
10%	148	189	231	212	149	87	103	101	62	74	101	131
25%	136	152	209	180	93	67	93	87	47	52	83	120
50%	118	115	168	105	68	55	68	65	38	37	66	100
75%	27	40	83	51	48	46	55	45	29	24	30	37
99.9%	22	23	22	7	10	6	4	4	6	17	19	19

Table 5A-18b. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	90	103	148	119	78	60	70	65	39	41	60	82
Wet Water Years	82	83	93	64	53	46	44	35	24	23	28	32
Above Normal Water Years	91	110	161	105	68	59	74	58	32	25	31	36
Below Normal Water Years	78	86	146	131	75	59	78	76	40	38	70	124
Dry Water Years	87	102	178	158	93	60	83	86	43	55	92	109
Critical Water Years	123	157	205	165	117	87	88	83	67	73	86	116

Table 5A-19a. Old River at State Route 4, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	180	231	282	269	211	142	119	106	86	100	131	153
1%	174	211	270	240	195	133	116	106	86	98	124	150
5%	161	201	249	220	153	106	108	100	71	86	120	136
10%	154	191	228	205	143	86	103	97	61	77	105	130
25%	140	146	204	174	94	70	85	84	45	53	84	121
50%	120	115	165	109	68	59	70	66	38	35	64	105
75%	28	41	83	52	48	46	53	36	28	24	33	42
99.9%	22	23	19	7	10	6	4	4	6	17	19	19

Table 5A-19b. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), Proposed Project

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	91	103	147	118	77	61	69	61	39	41	62	86
Wet Water Years	84	85	94	64	53	45	43	29	23	23	29	36
Above Normal Water Years	92	109	160	108	63	61	71	47	31	26	34	42
Below Normal Water Years	77	85	147	130	76	64	82	79	39	37	68	121
Dry Water Years	86	100	175	155	95	63	82	80	43	56	98	117
Critical Water Years	128	158	201	158	109	83	84	79	66	73	87	119

Table 5A-19c. Old River at State Route 4, Difference in Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	-6	1	-1	0	-12	-38	-29	-12	0	-1	1	3
1%	4	1	0	0	-17	-2	-6	-7	0	-1	-2	1
5%	7	1	0	-2	-10	0	-4	-6	0	2	8	-2
10%	5	2	-3	-7	-6	-2	1	-4	-2	3	3	-1
25%	4	-6	-5	-6	2	3	-8	-3	-2	1	1	1
50%	2	0	-3	3	0	4	2	0	0	-2	-2	5
75%	1	0	0	2	0	0	-2	-9	-1	0	3	6
99.9%	0	0	-3	0	0	0	0	0	0	0	0	0

Table 5A-19d. Old River at State Route 4, Difference in Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	1	0	-1	-1	-1	1	-1	-4	-1	0	2	3
Wet Water Years	1	2	1	1	0	-1	-1	-6	-1	0	1	4
Above Normal Water Years	1	0	-1	3	-5	2	-3	-11	-1	0	3	6
Below Normal Water Years	-1	-1	0	-1	1	5	4	3	-2	-1	-2	-3
Dry Water Years	-1	-2	-3	-3	2	3	-1	-5	0	1	6	8
Critical Water Years	4	1	-4	-6	-8	-4	-4	-4	-1	1	1	2

Table 5A-20a. Victoria Canal, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	104	157	210	199	232	171	144	133	78	72	70	79
1%	104	147	187	191	180	154	138	123	77	71	70	79
5%	98	138	166	171	152	125	127	119	69	64	65	73
10%	92	127	160	159	139	112	120	111	66	54	60	69
25%	81	97	127	146	116	92	107	93	59	35	49	62
50%	67	67	105	121	93	84	86	75	50	30	35	53
75%	36	39	76	73	68	72	65	50	40	28	27	29
99.9%	27	29	28	9	11	6	4	4	7	17	19	24

Table 5A-20b. Victoria Canal, Monthly Average Chloride (in milligrams per liter), Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	62	72	104	111	96	84	82	71	47	34	39	48
Wet Water Years	56	59	79	82	74	62	50	39	30	26	27	29
Above Normal Water Years	64	77	117	115	98	92	92	68	44	28	26	30
Below Normal Water Years	57	64	96	112	100	90	89	82	52	29	35	57
Dry Water Years	60	69	112	128	105	87	101	96	54	34	50	58
Critical Water Years	78	106	144	135	117	104	100	88	67	58	59	71

Table 5A-21a. Victoria Canal, Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	113	157	208	199	232	158	141	119	78	73	69	90
1%	104	147	181	191	186	149	136	119	75	71	69	79
5%	99	139	171	171	151	130	128	108	68	64	63	73
10%	94	130	153	160	142	116	120	103	64	56	62	69
25%	81	95	127	144	119	95	106	92	58	35	50	63
50%	66	67	106	123	94	88	88	75	50	30	33	55
75%	37	39	76	77	70	72	63	49	39	28	28	29
99.9%	27	29	28	9	11	6	4	4	7	17	19	23

Table 5A-21b. Victoria Canal, Monthly Average Chloride (in milligrams per liter), Proposed Project

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	62	71	103	111	97	85	83	69	46	34	39	49
Wet Water Years	57	60	79	83	74	62	49	35	29	26	27	29
Above Normal Water Years	64	77	114	116	99	94	90	61	43	29	27	30
Below Normal Water Years	56	63	96	112	101	95	98	86	50	29	35	56
Dry Water Years	60	67	110	126	109	91	101	90	54	34	51	62
Critical Water Years	80	107	141	134	114	103	97	85	66	59	60	72

Table 5A-21c. Victoria Canal, Difference in Exceedance Probabilities for Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Probability of Exceedance	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.1%	9	0	-3	0	1	-13	-2	-14	0	1	-1	12
1%	0	0	-6	0	6	-4	-2	-4	-2	0	-1	0
5%	1	1	5	0	-1	5	1	-11	-1	0	-2	0
10%	1	3	-7	1	3	4	0	-8	-2	1	1	0
25%	-1	-2	0	-2	3	3	0	-1	-1	0	1	1
50%	-1	0	1	2	1	4	3	0	0	0	-1	1
75%	0	0	0	4	2	0	-2	-2	-2	0	0	0
99.9%	0	0	0	0	0	0	0	0	0	0	0	-1

Table 5A-21d. Victoria Canal, Difference in Monthly Average Chloride (in milligrams per liter), Proposed Project minus Baseline Conditions

Average	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period	0	0	-1	0	1	2	1	-3	-1	0	0	1
Wet Water Years	0	1	0	1	0	0	-1	-4	-1	0	0	0
Above Normal Water Years	0	0	-3	2	1	3	-2	-7	-1	0	1	1
Below Normal Water Years	-1	-1	0	0	2	5	9	4	-2	0	0	-1
Dry Water Years	-1	-2	-1	-1	4	4	0	-6	0	1	2	3
Critical Water Years	2	1	-3	-1	-3	-2	-3	-3	-1	0	0	1

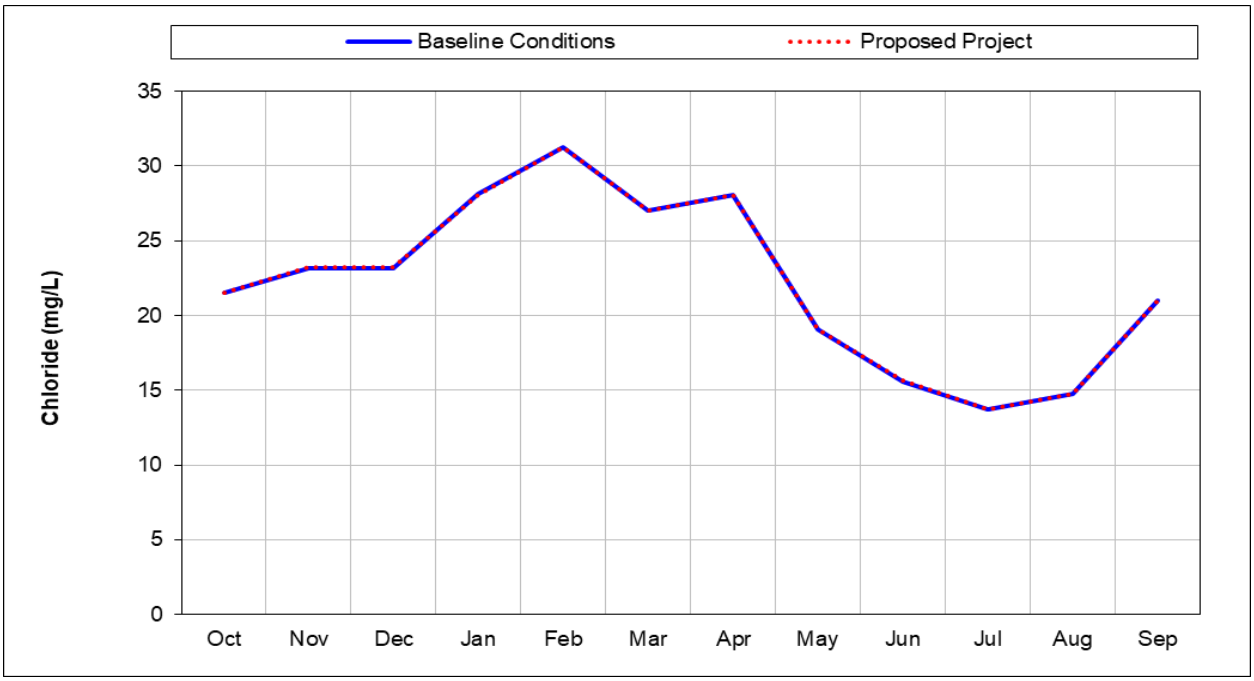

Figure 5A-1a. Barker Slough at North Bay Aqueduct, Long term Monthly Average Chloride (in milligrams per liter)

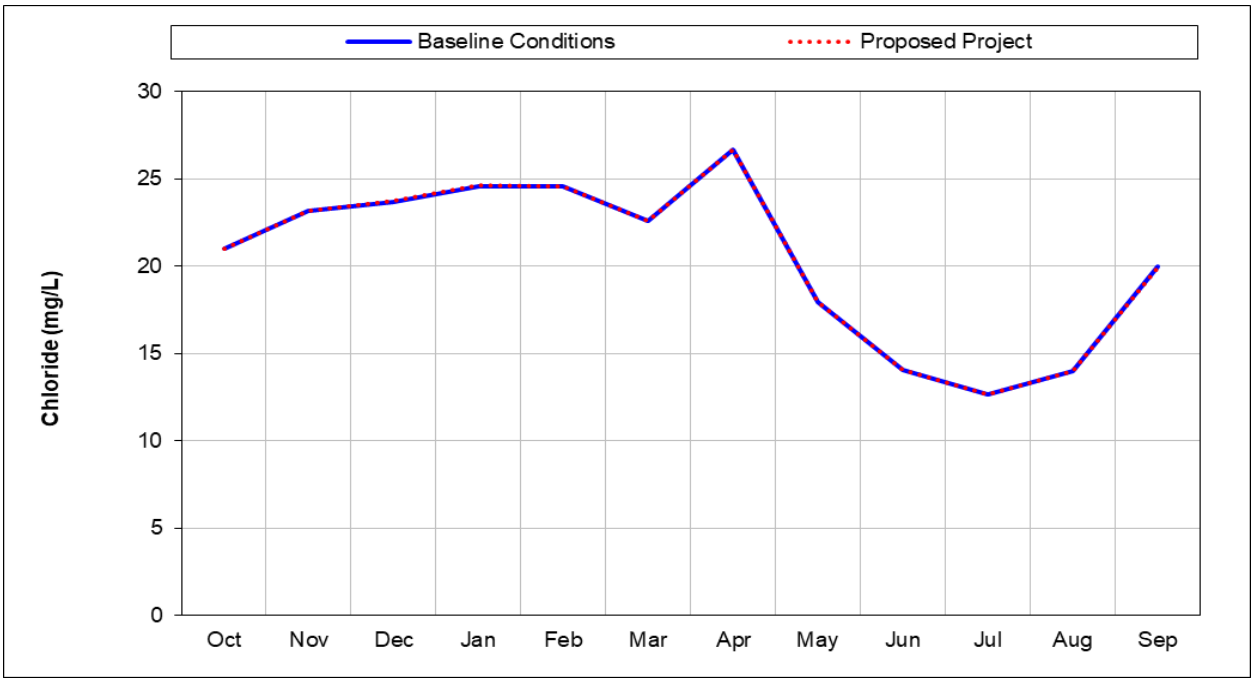

Figure 5A-1b. Barker Slough at North Bay Aqueduct, Wet Year Monthly Average Chloride (in milligrams per liter)

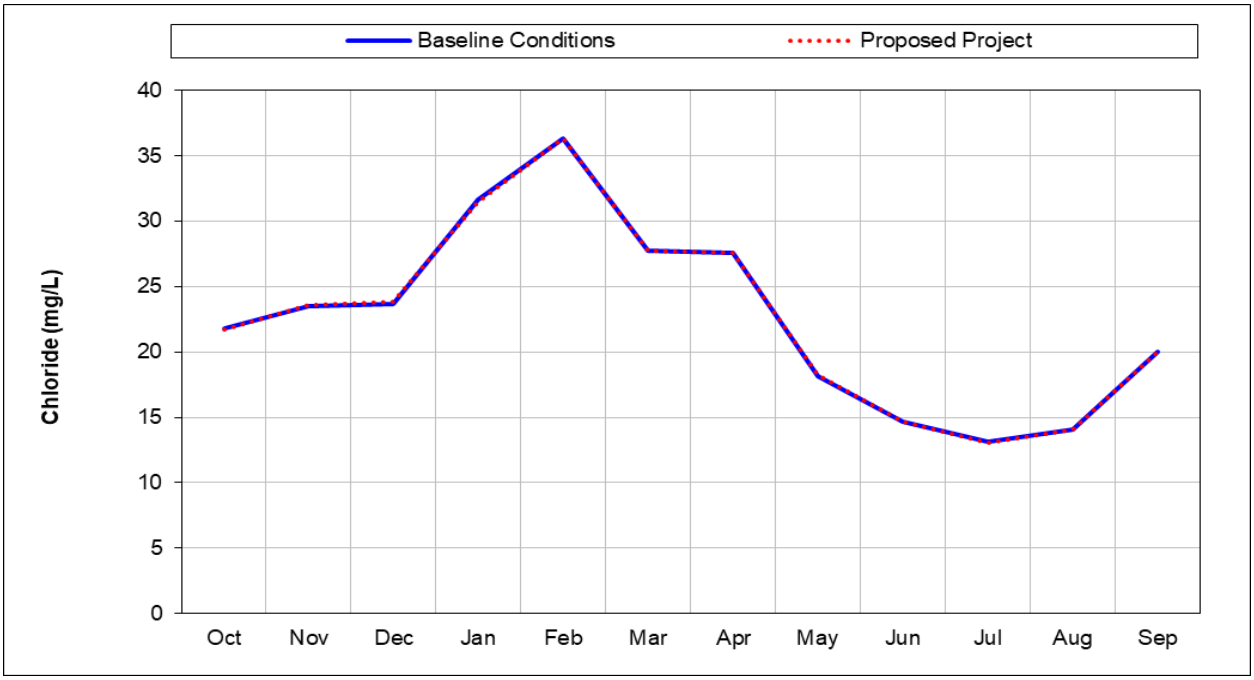

Figure 5A-1c. Barker Slough at North Bay Aqueduct, Above Normal Year Monthly Average Chloride (in milligrams per liter)

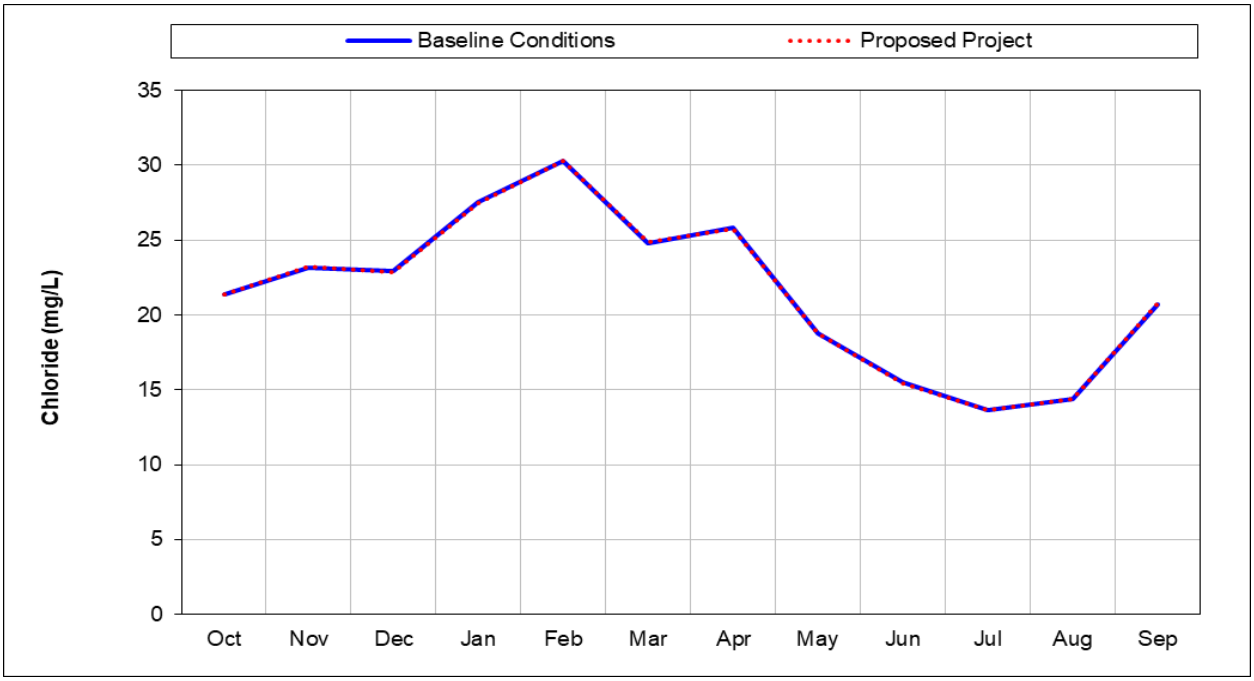

Figure 5A-1d. Barker Slough at North Bay Aqueduct, Below Normal Year Monthly Average Chloride (in milligrams per liter)

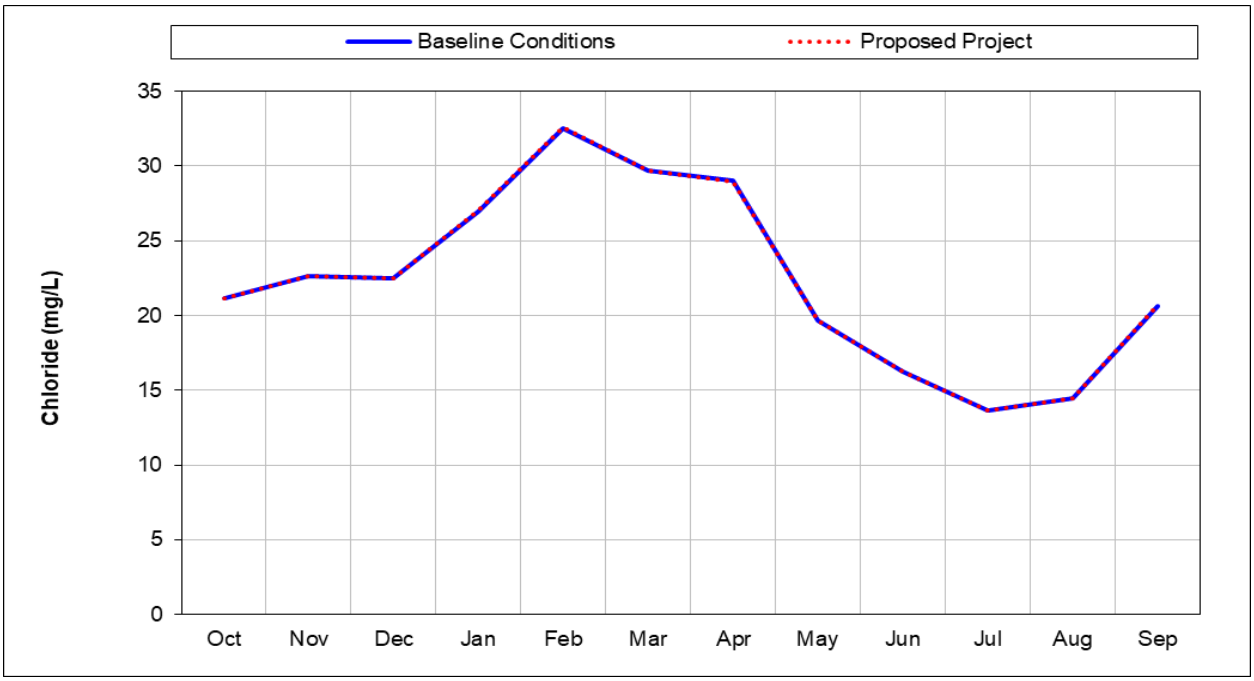

Figure 5A-1e. Barker Slough at North Bay Aqueduct, Dry Year Monthly Average Chloride (in milligrams per liter)

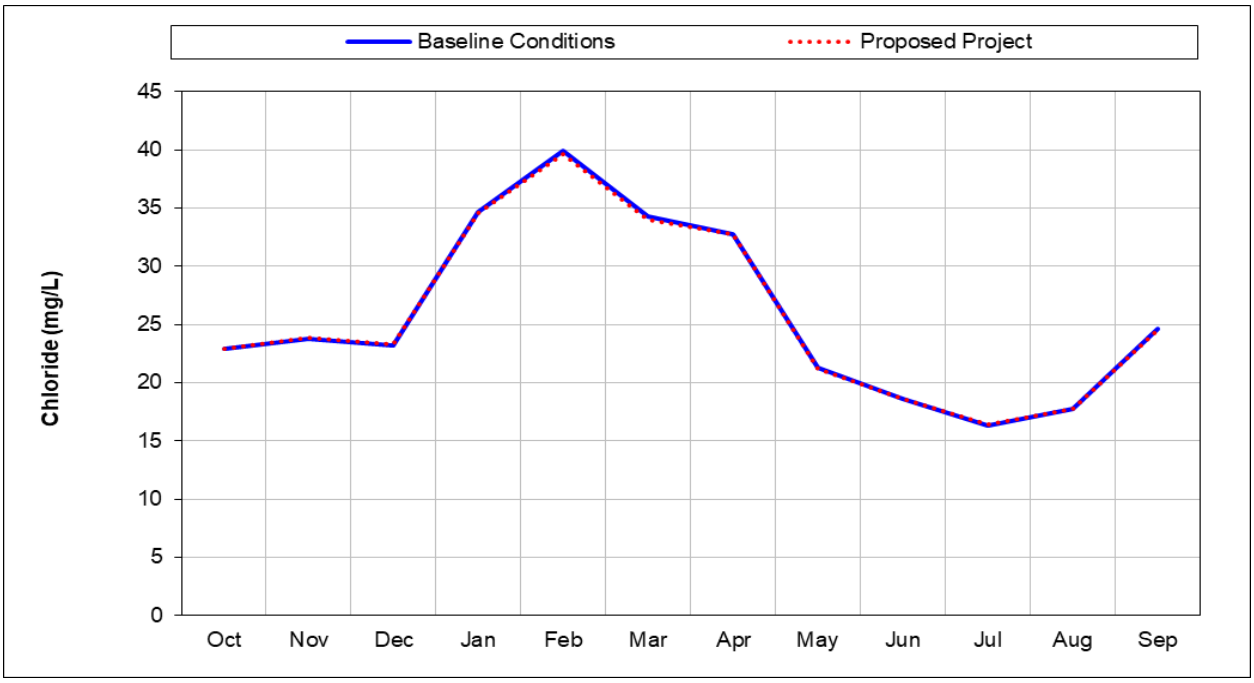

Figure 5A-1f. Barker Slough at North Bay Aqueduct, Critical Year Monthly Average Chloride (in milligrams per liter)

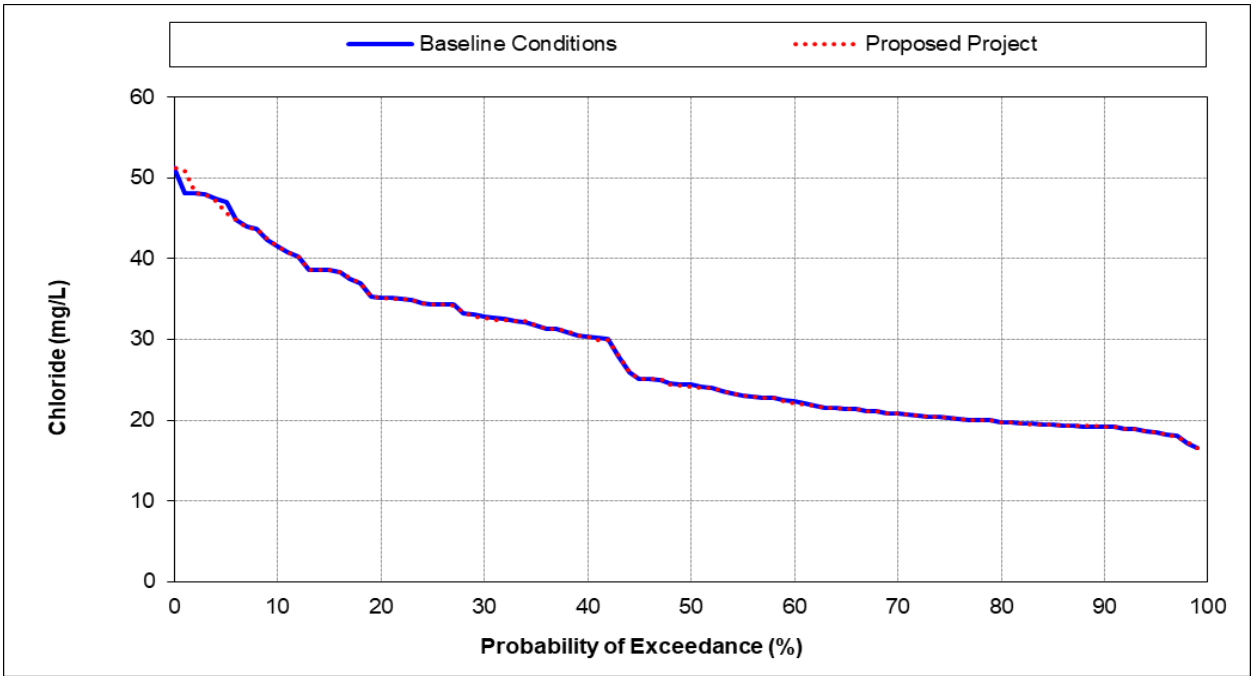

Figure 5A-1g. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), January

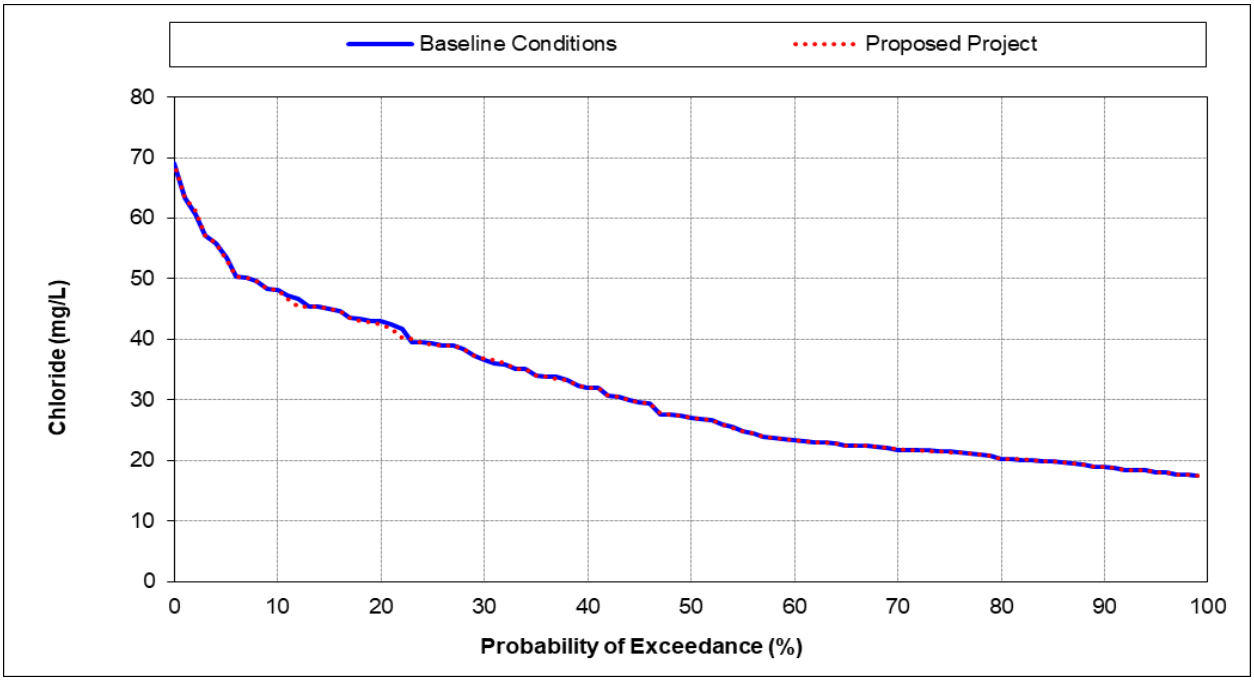

Figure 5A-1h. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), February

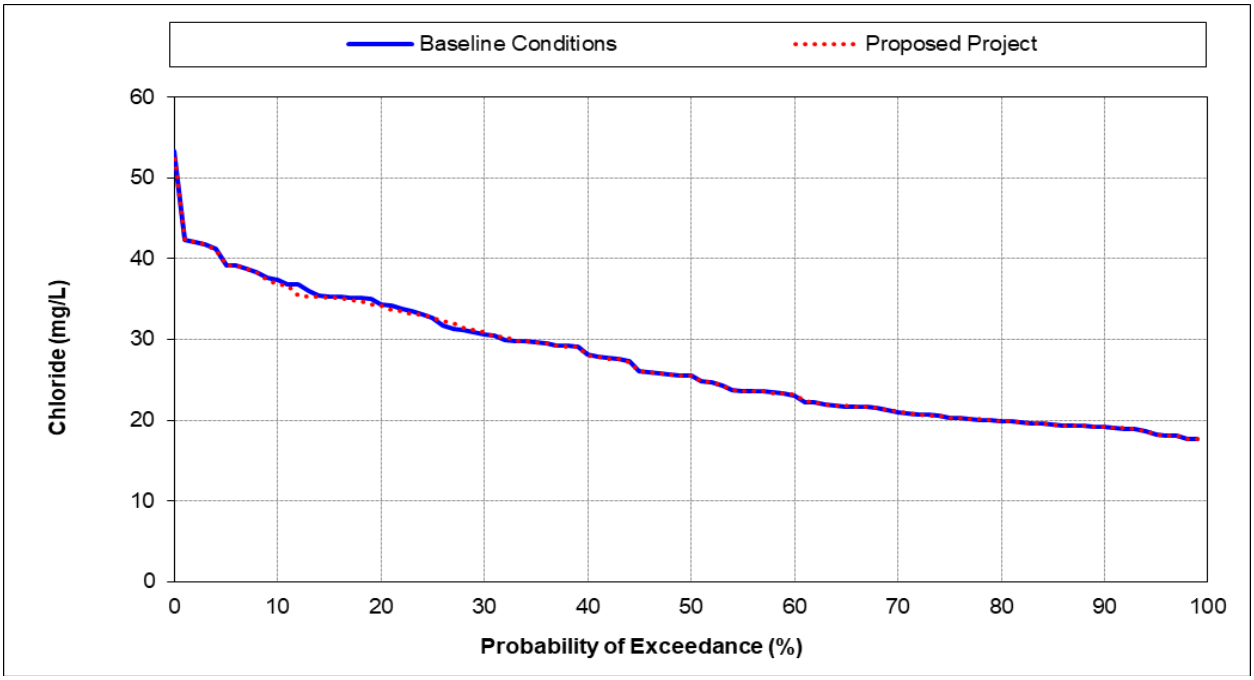

Figure 5A-1i. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), March

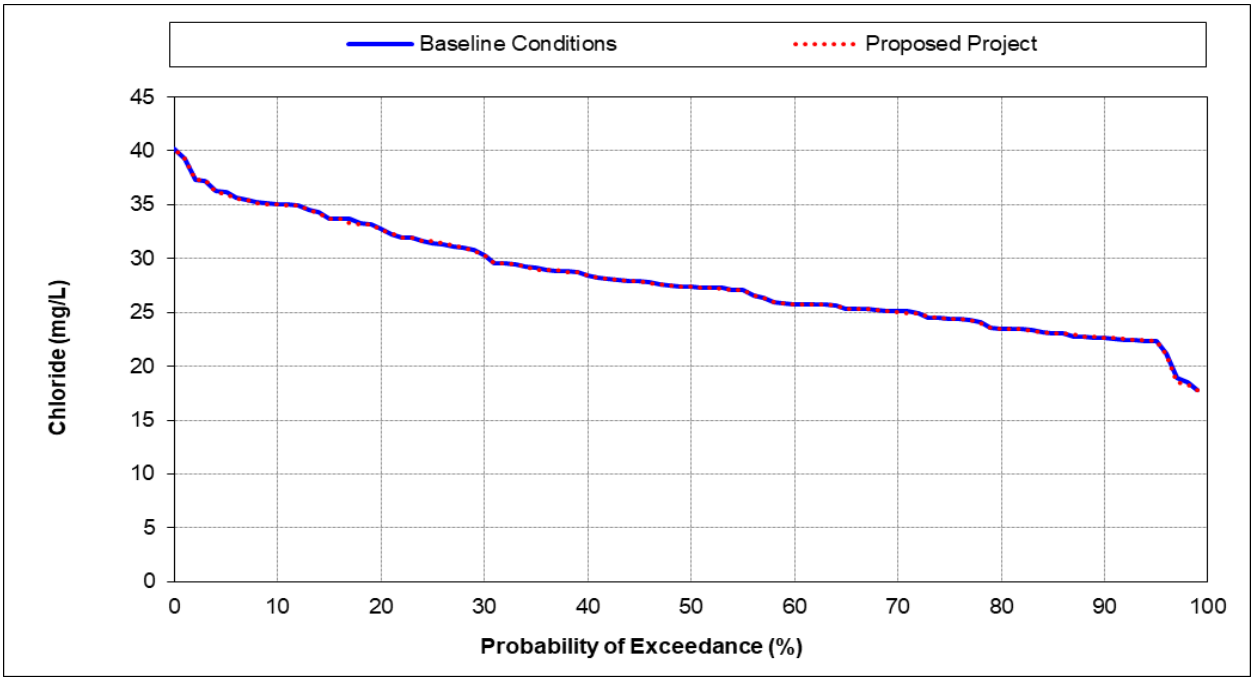

Figure 5A-1j. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), April

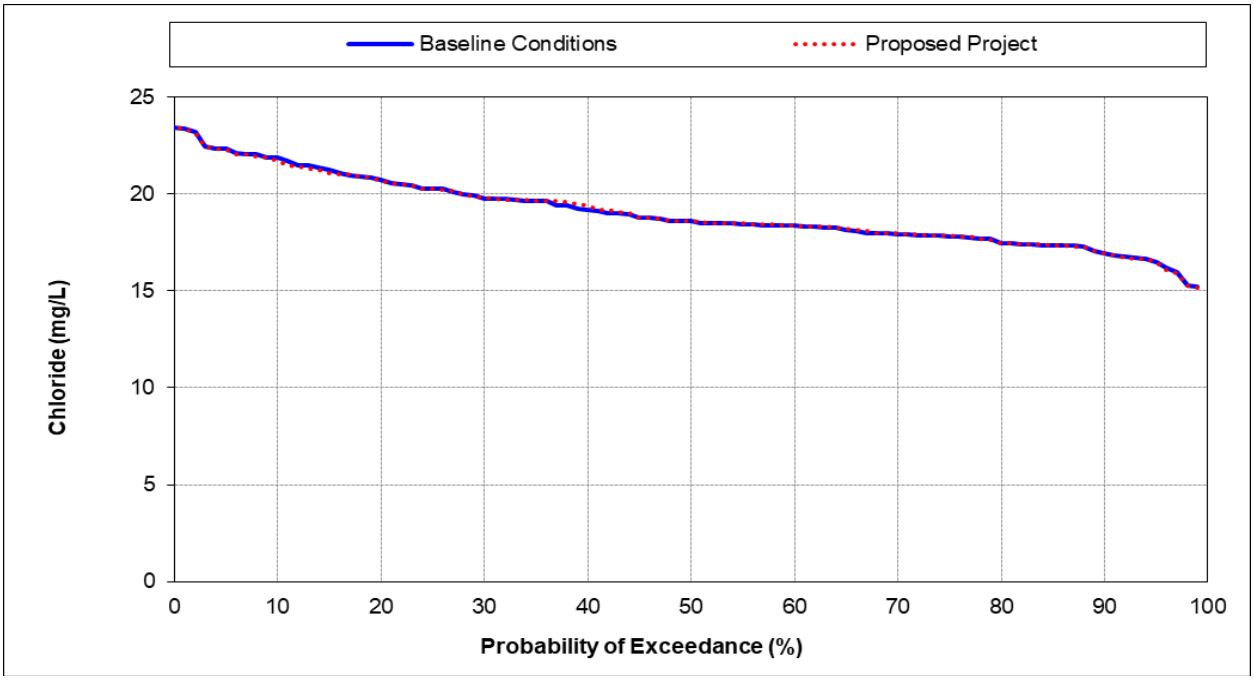

Figure 5A-1k. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), May

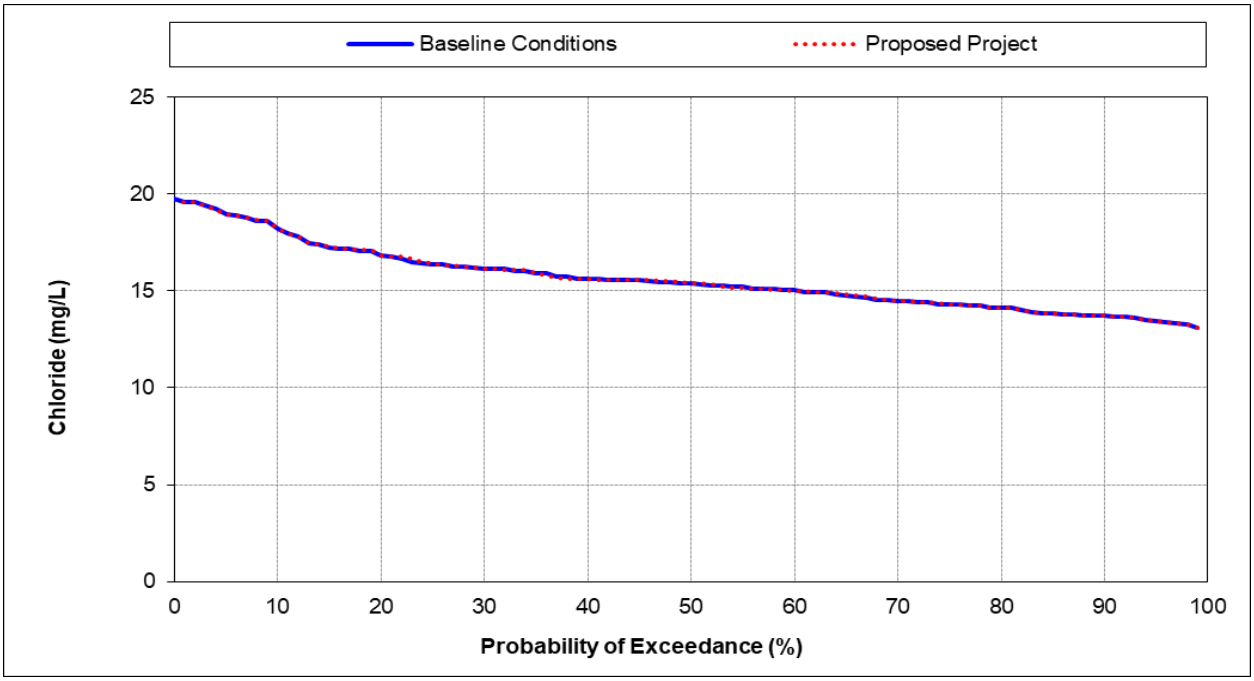

Figure 5A-1l. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), June

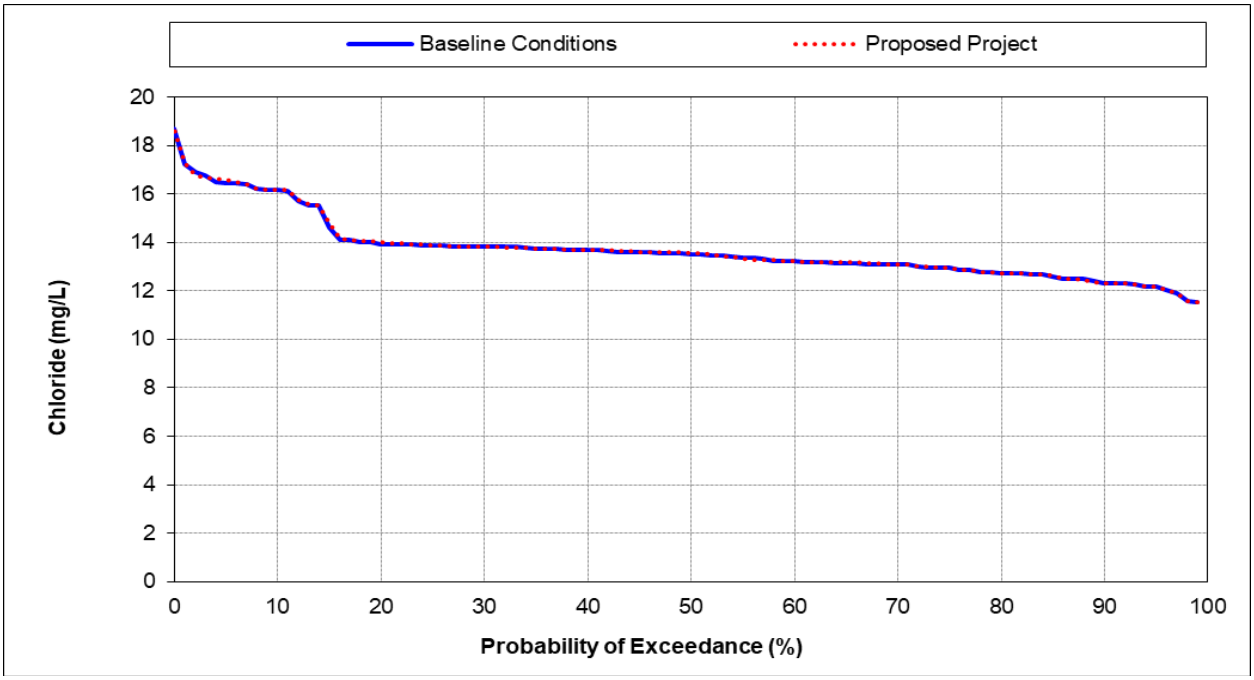

Figure 5A-1m. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), July

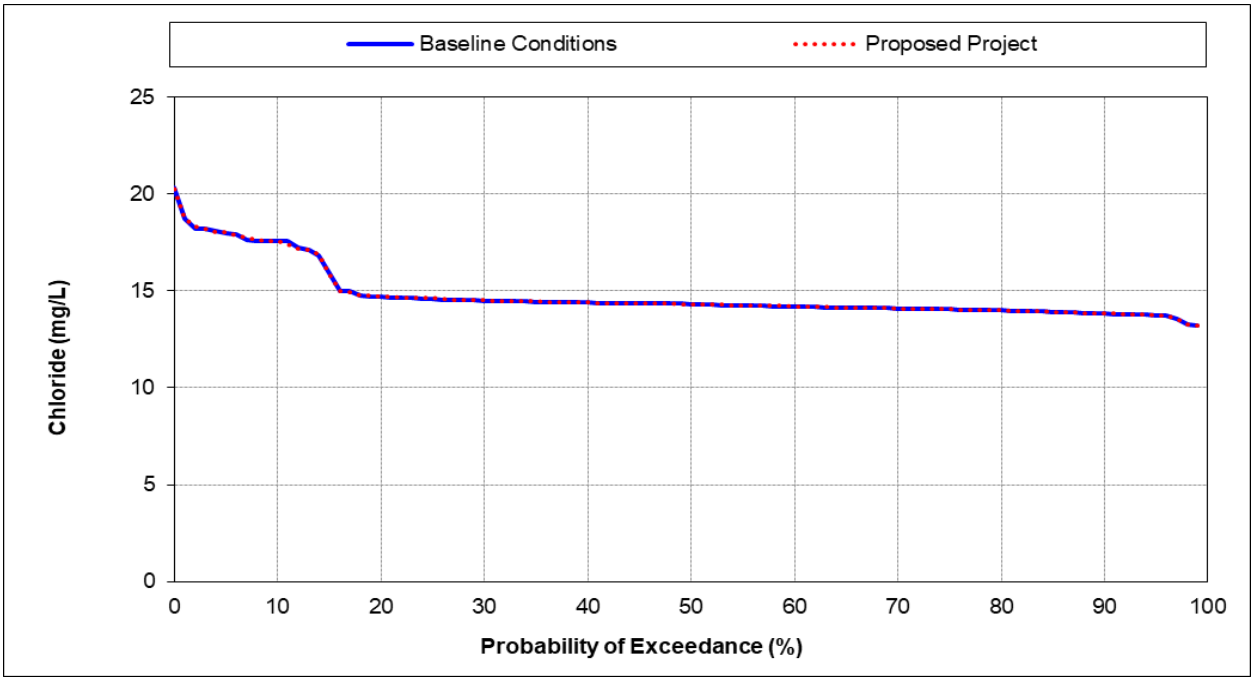

Figure 5A-1n. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), August

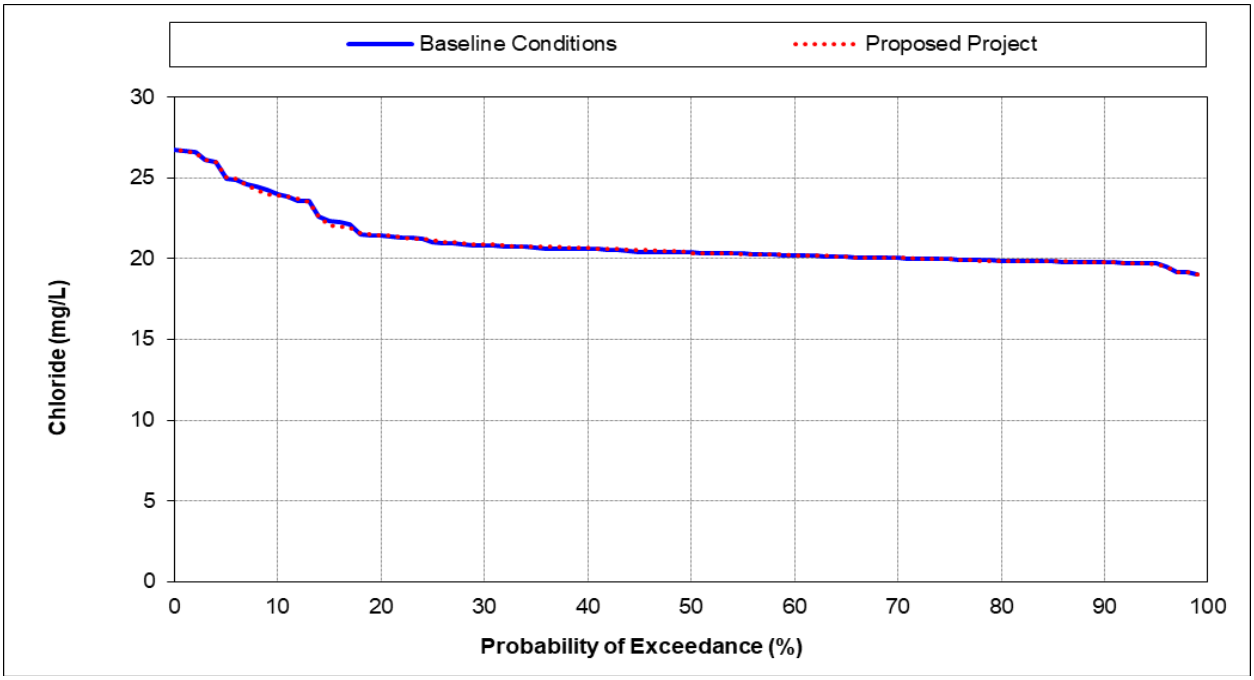

Figure 5A-1o. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), September

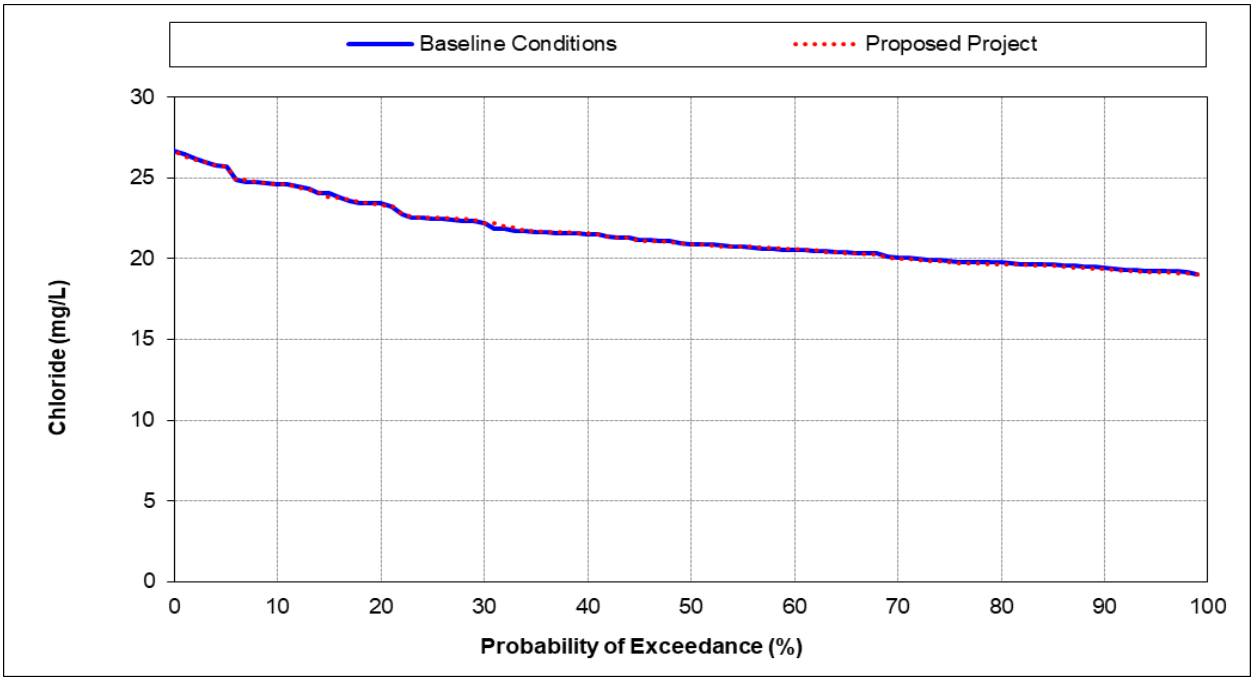

Figure 5A-1p. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), October

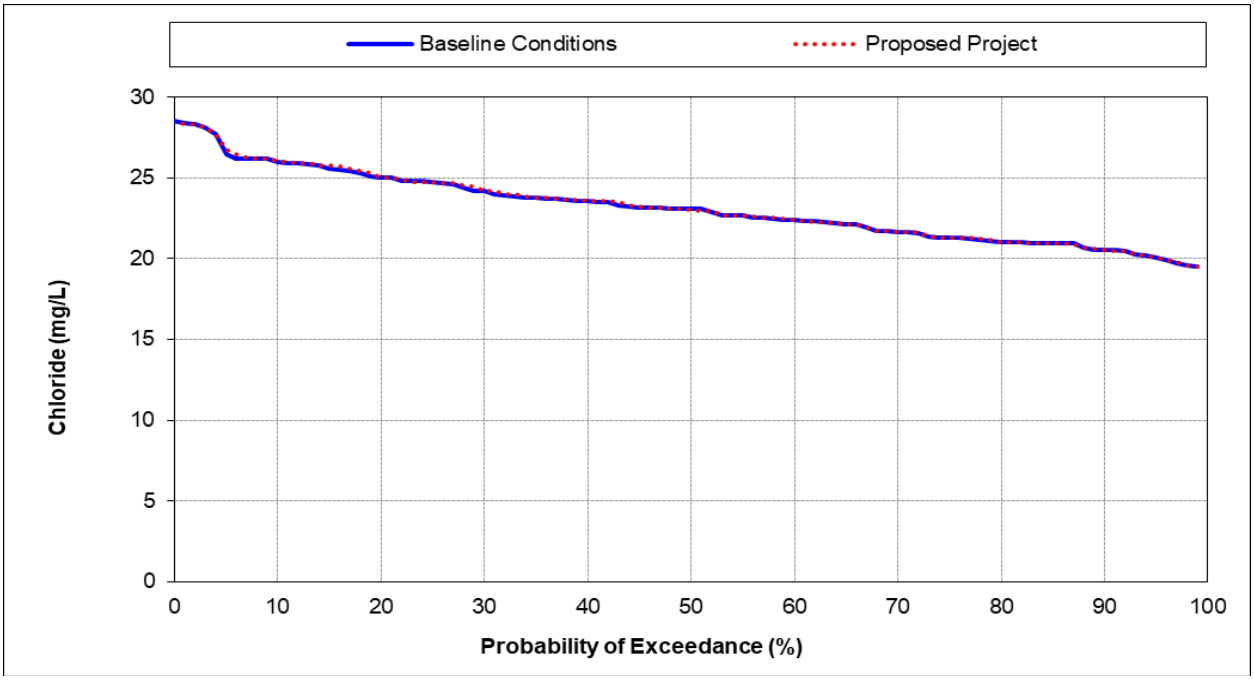

Figure 5A-1q. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), November

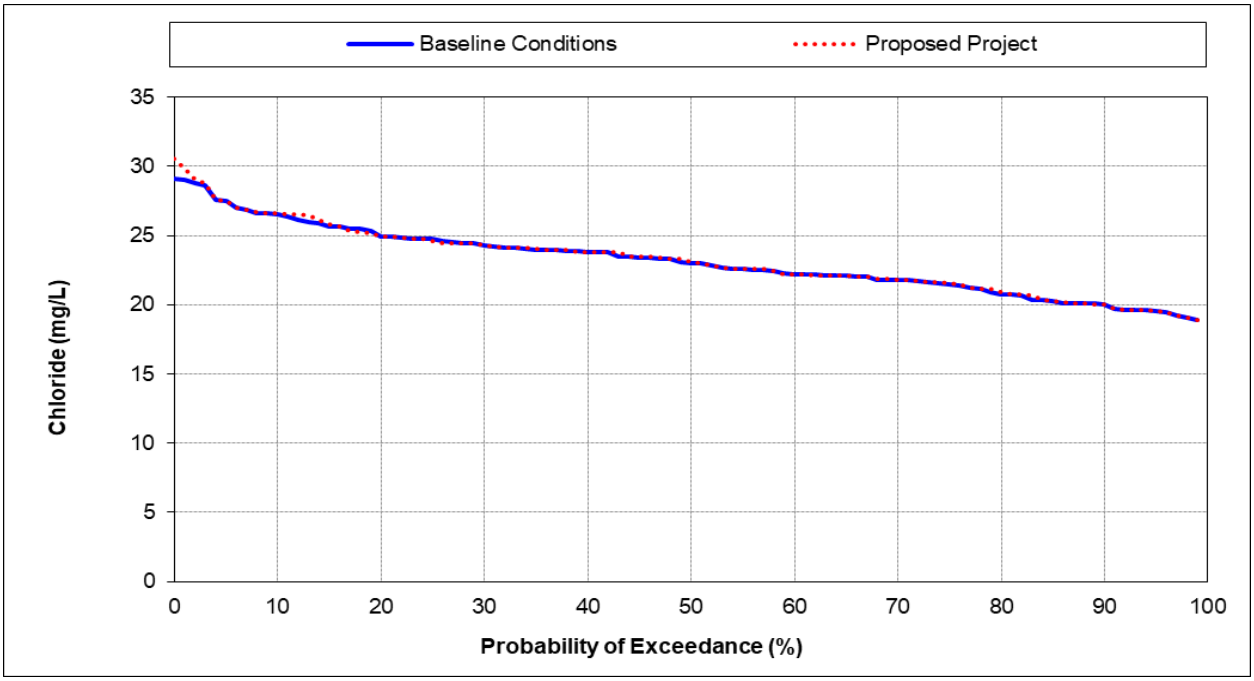

Figure 5A-1r. Barker Slough at North Bay Aqueduct, Monthly Average Chloride (in milligrams per liter), December

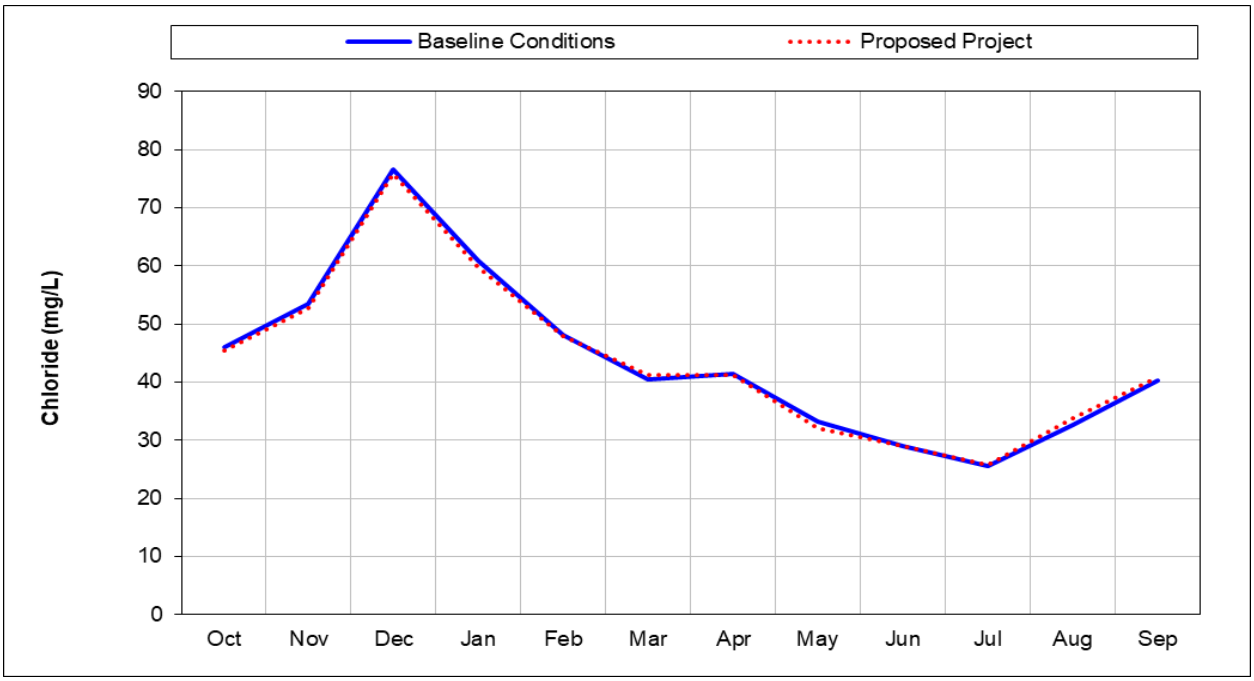

Figure 5A-2a. San Joaquin River at Empire Tract, Long term Monthly Average Chloride (in milligrams per liter)

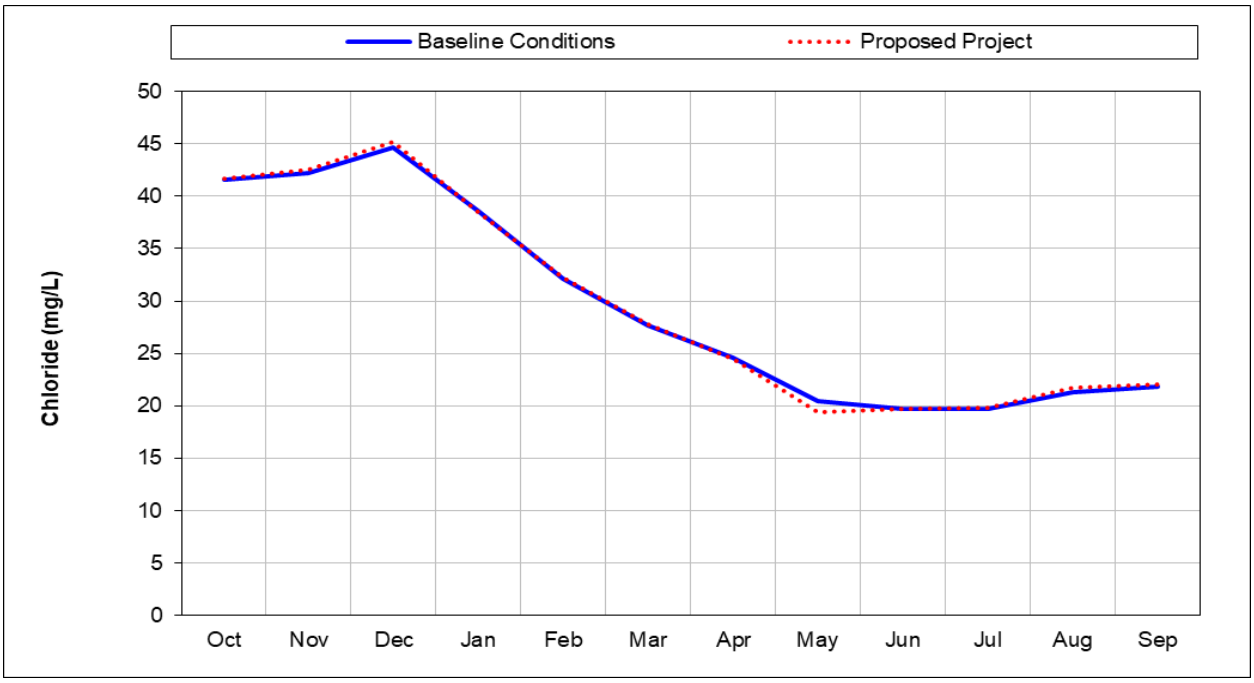

Figure 5A-2b. San Joaquin River at Empire Tract, Wet Year Monthly Average Chloride (in milligrams per liter)

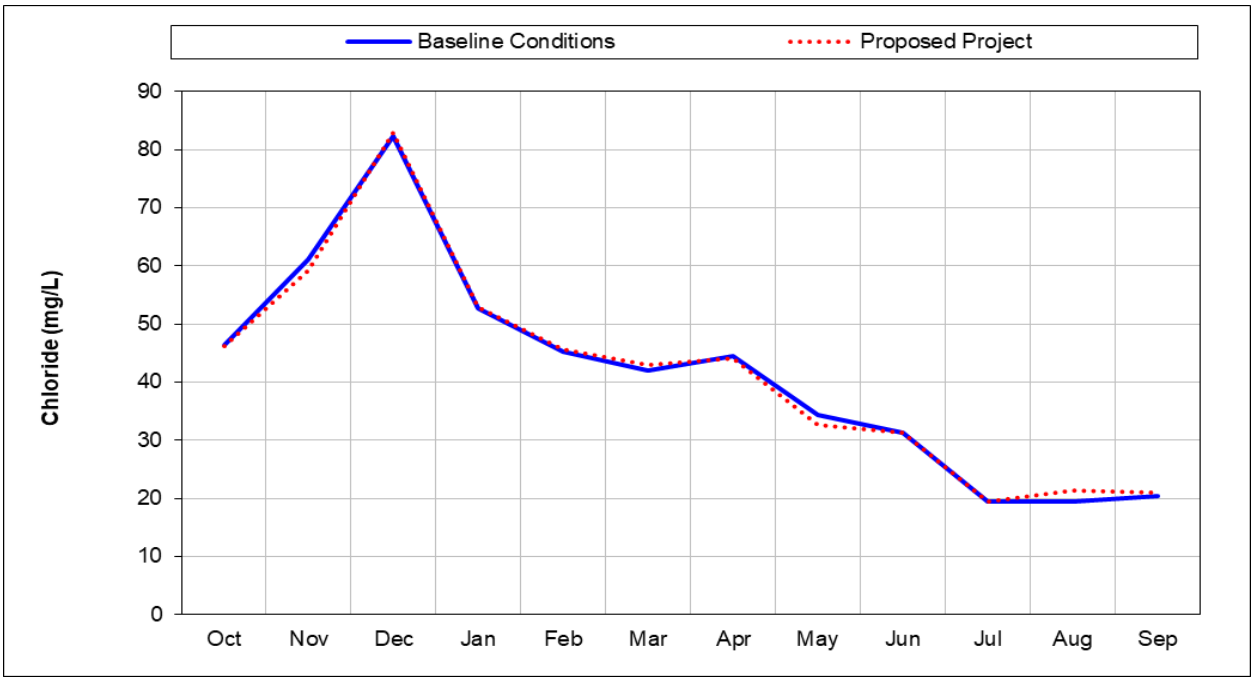

Figure 5A-2c. San Joaquin River at Empire Tract, Above Normal Year Monthly Average Chloride (in milligrams per liter)

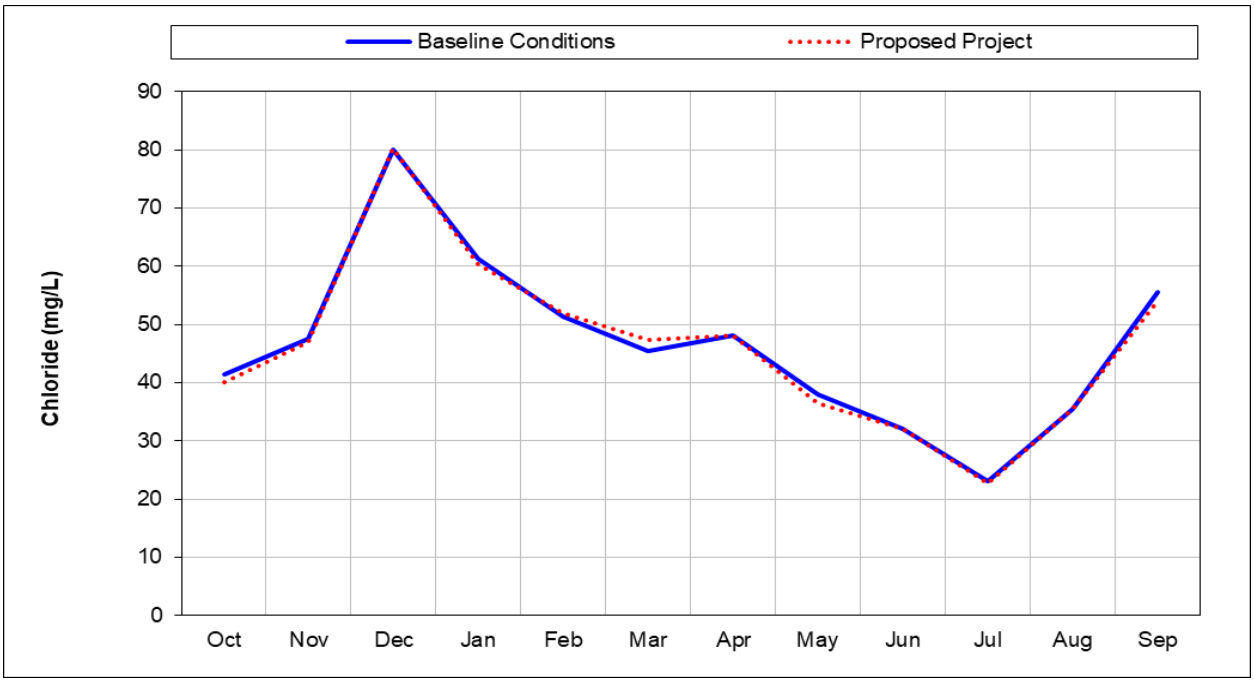

Figure 5A-2d. San Joaquin River at Empire Tract, Below Normal Year Monthly Average Chloride (in milligrams per liter)

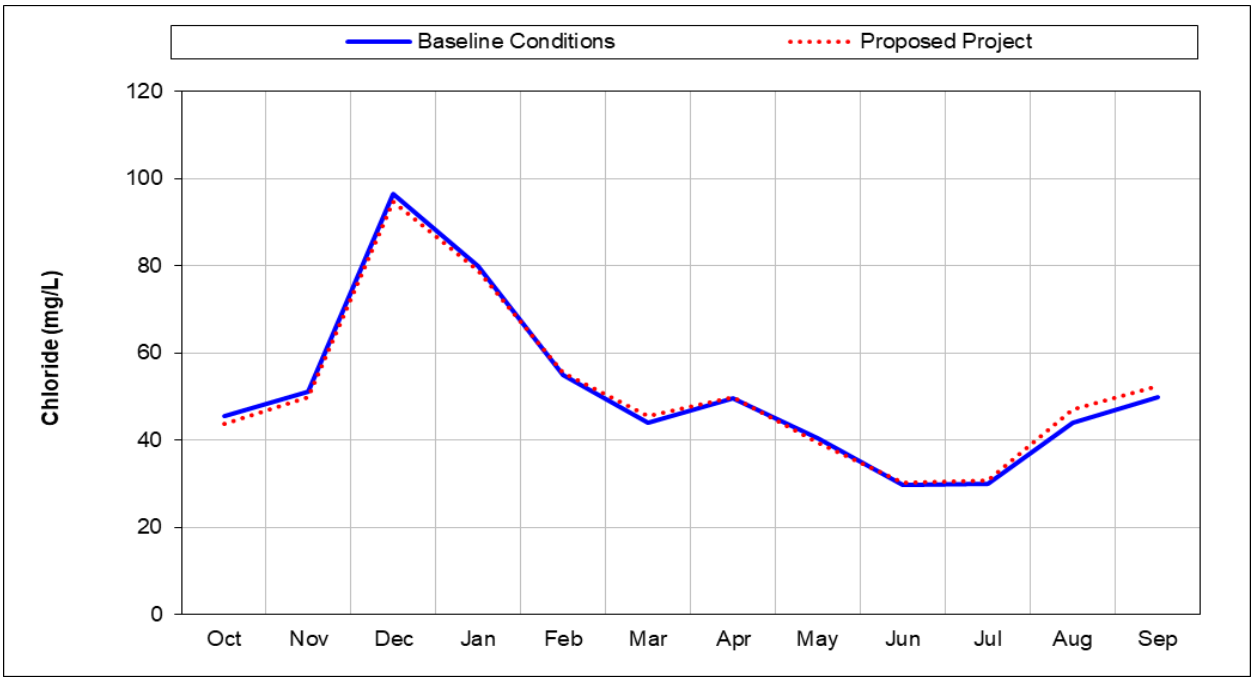

Figure 5A-2e. San Joaquin River at Empire Tract, Dry Year Monthly Average Chloride (in milligrams per liter)

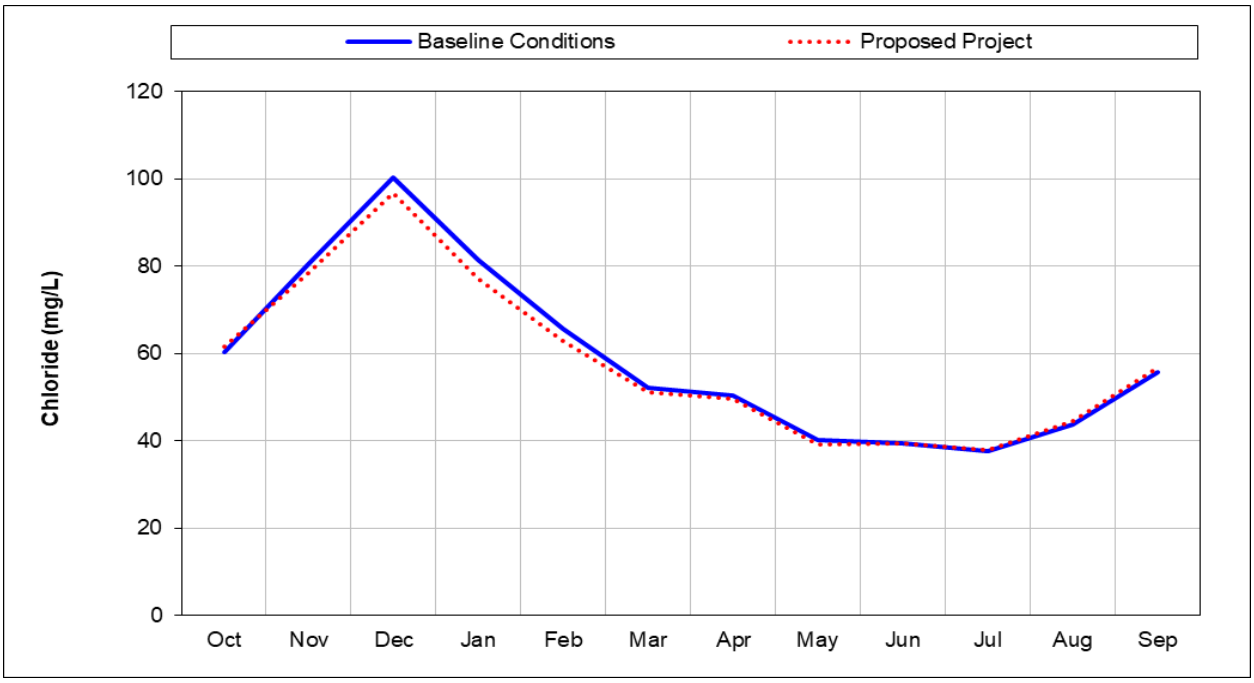

Figure 5A-2f. San Joaquin River at Empire Tract, Critical Year Monthly Average Chloride (in milligrams per liter)

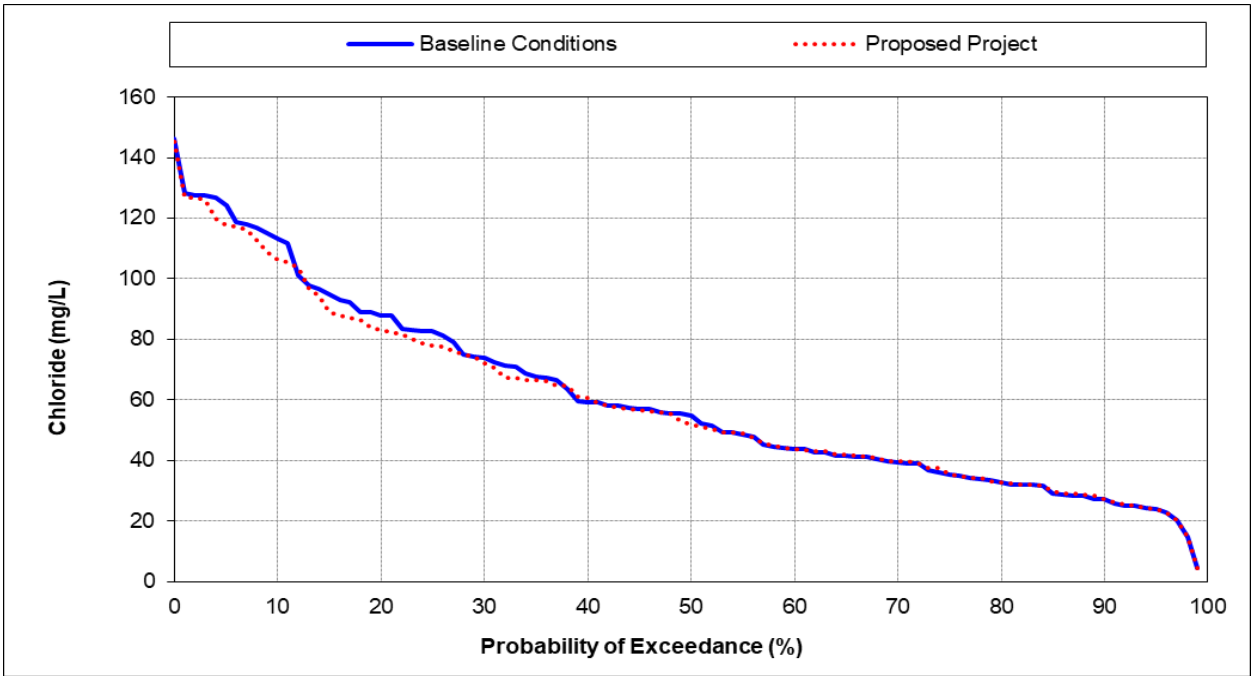

Figure 5A-2g. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), January

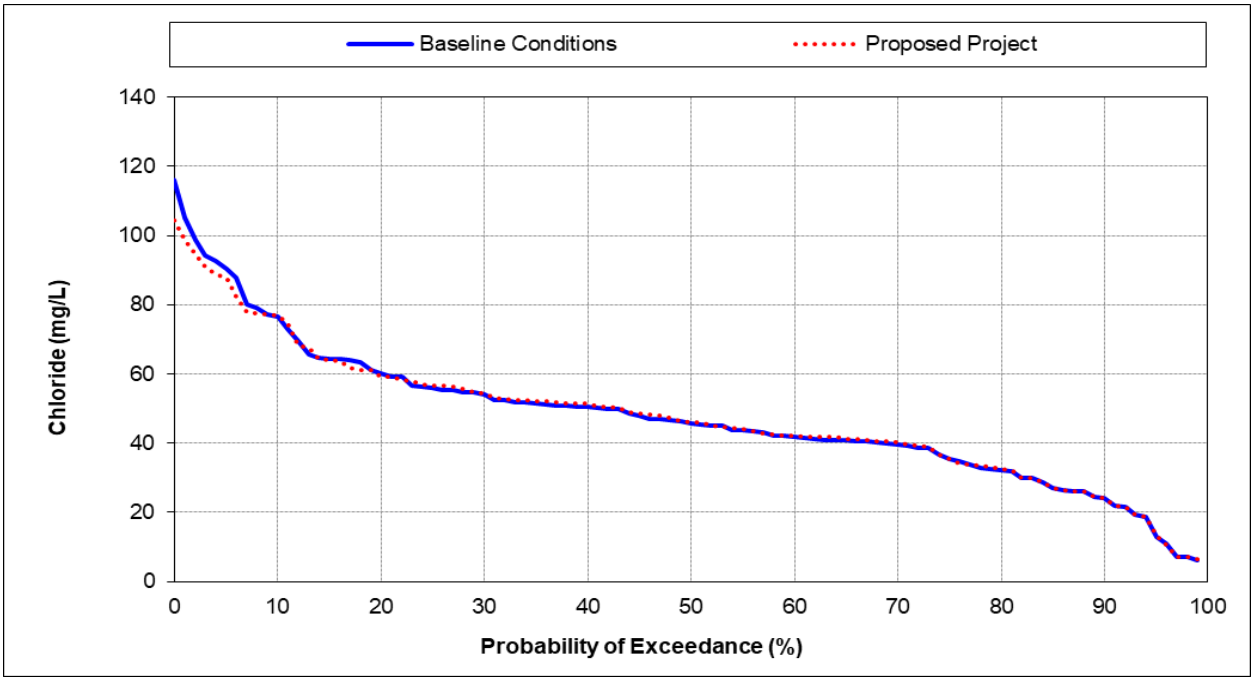

Figure 5A-2h. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), February

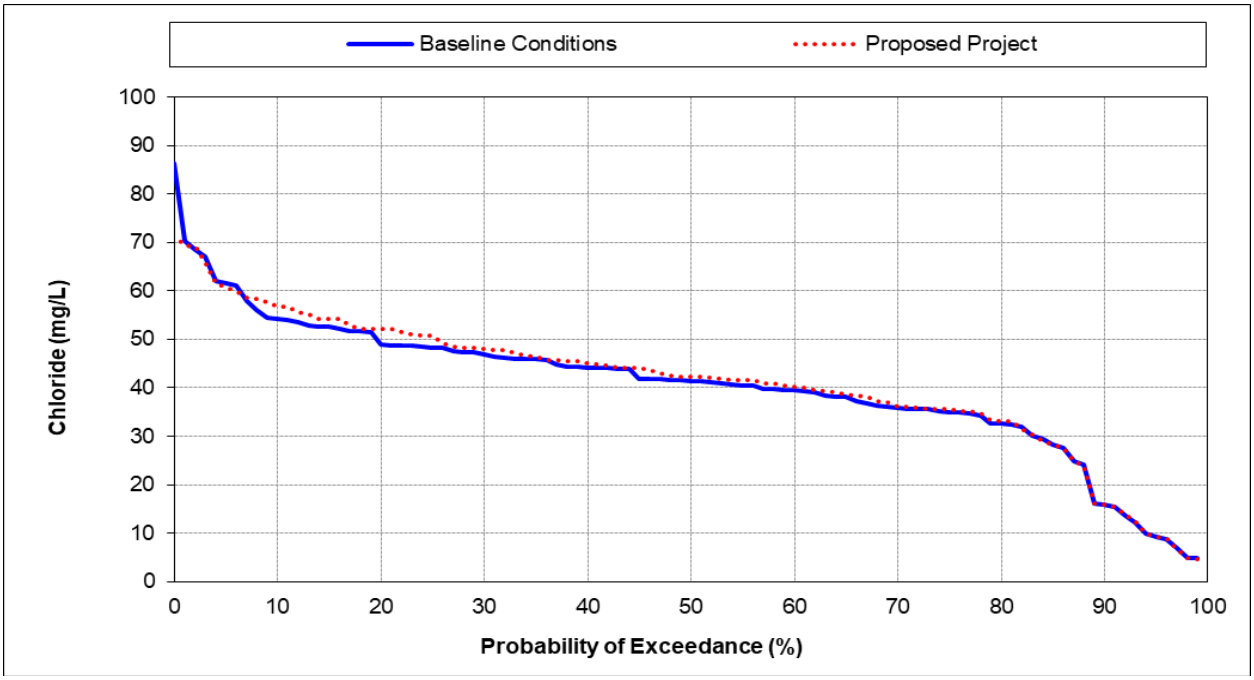

Figure 5A-2i. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), March

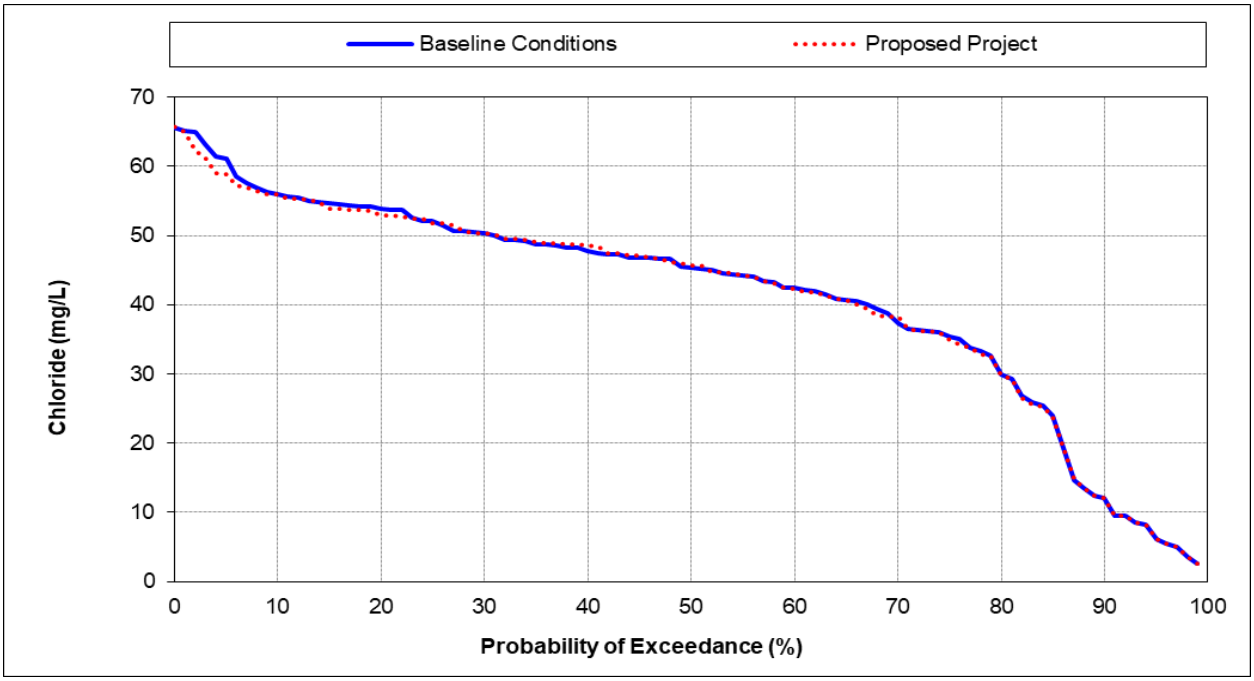

Figure 5A-2j. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), April

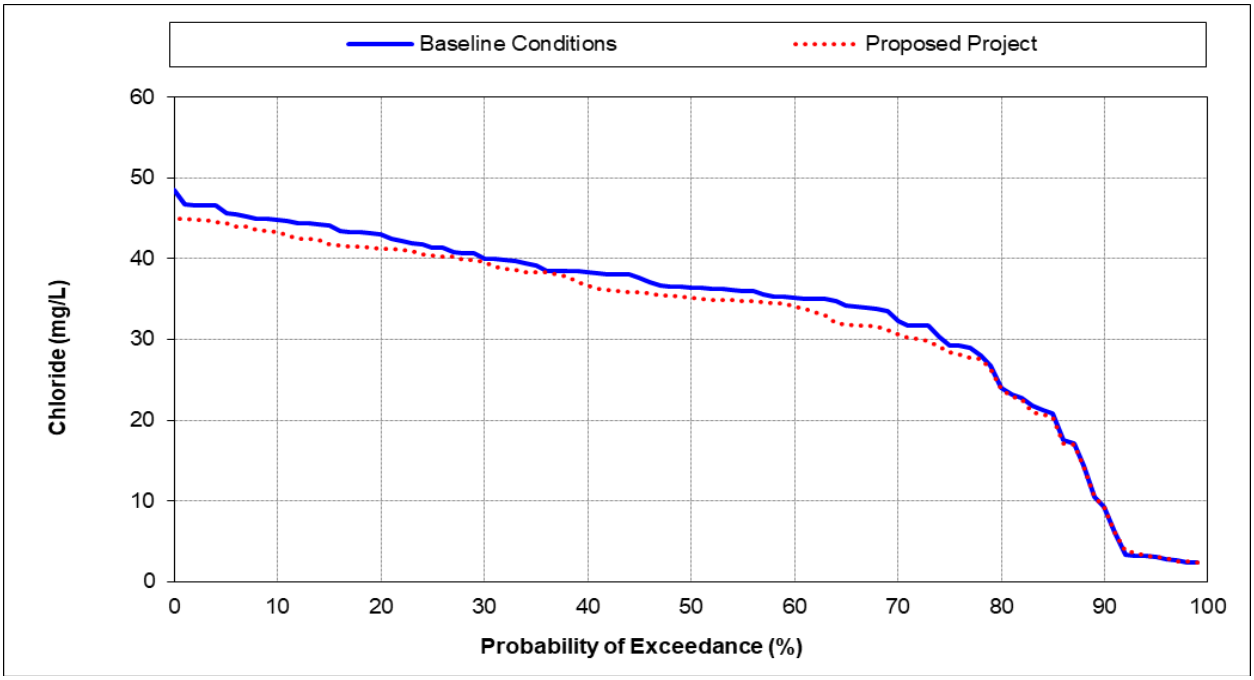

Figure 5A-2k. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), May

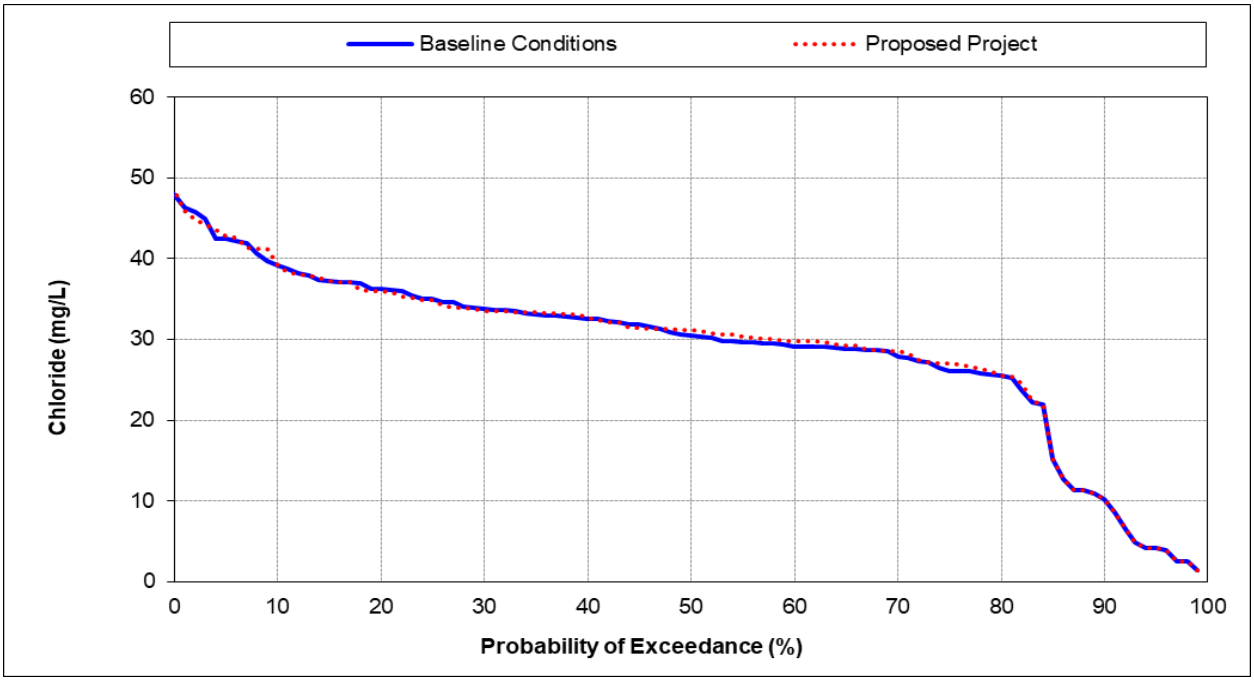

Figure 5A-2l. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), June

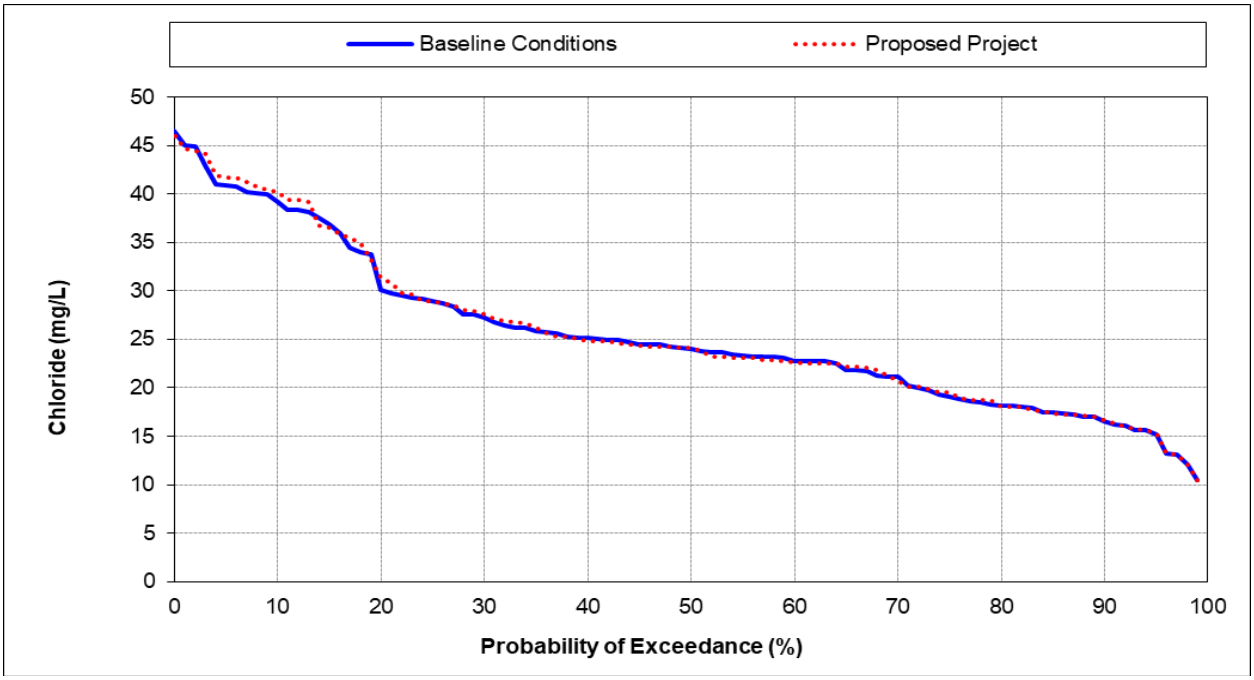

Figure 5A-2m. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), July

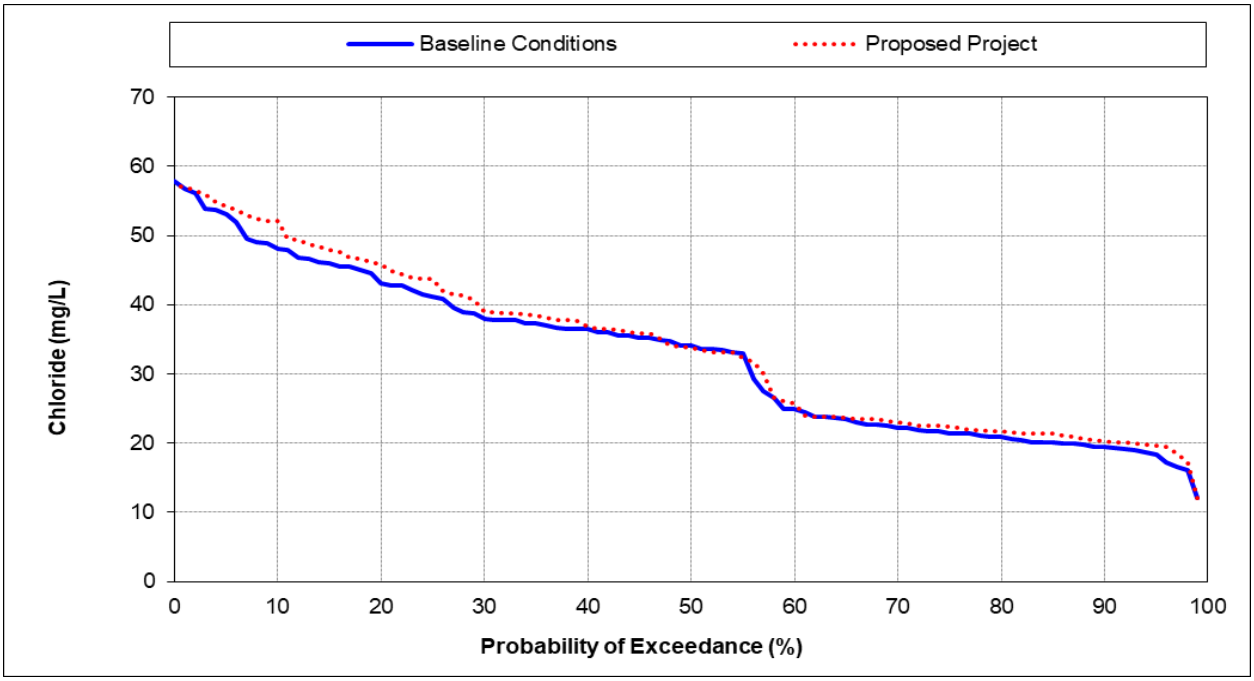

Figure 5A-2n. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), August

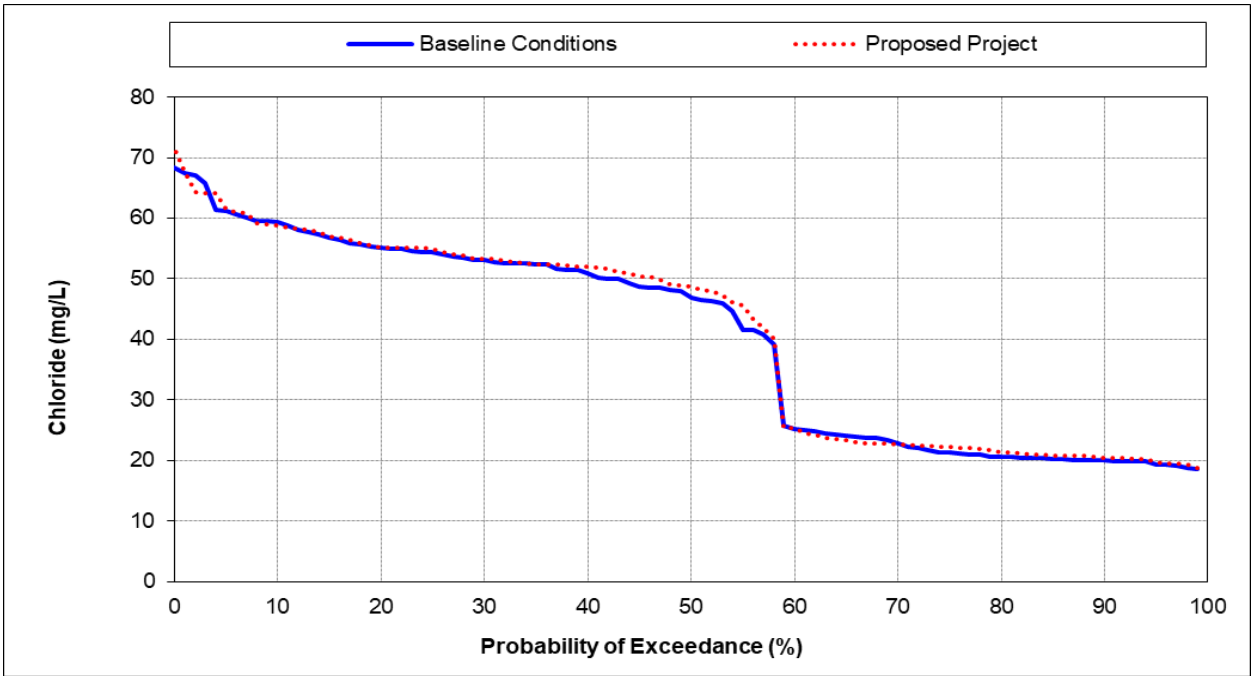

Figure 5A-2o. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), September

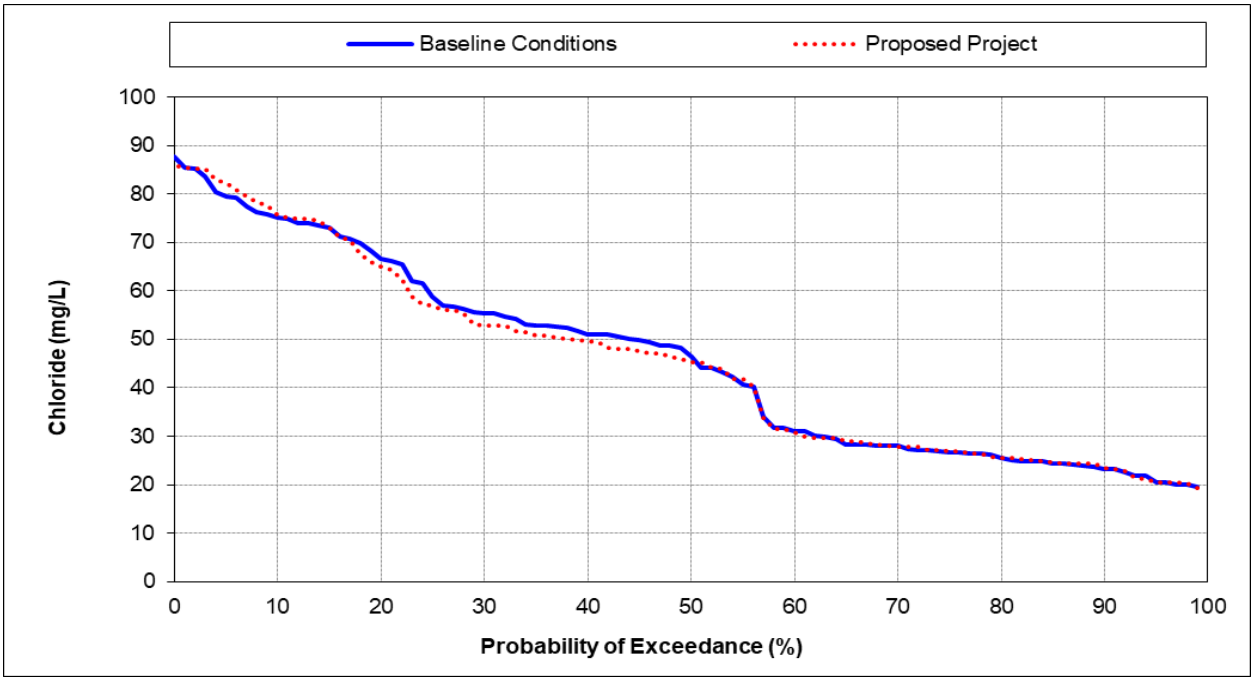

Figure 5A-2p. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), October

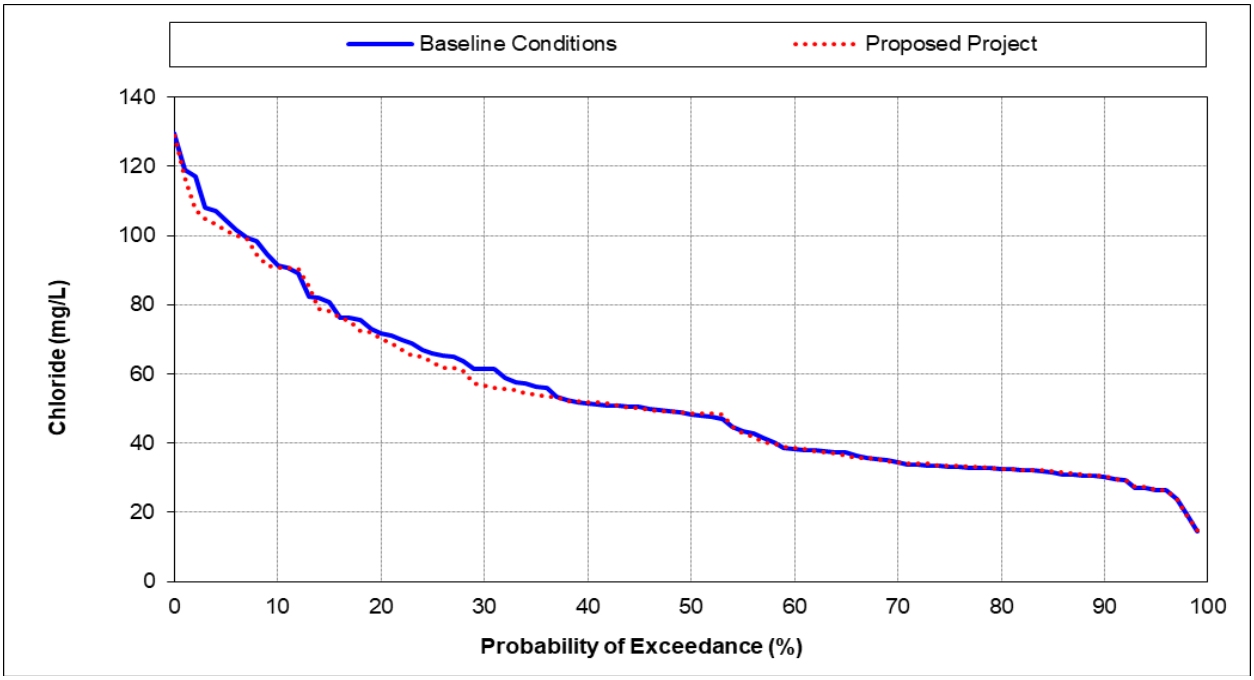

Figure 5A-2q. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), November

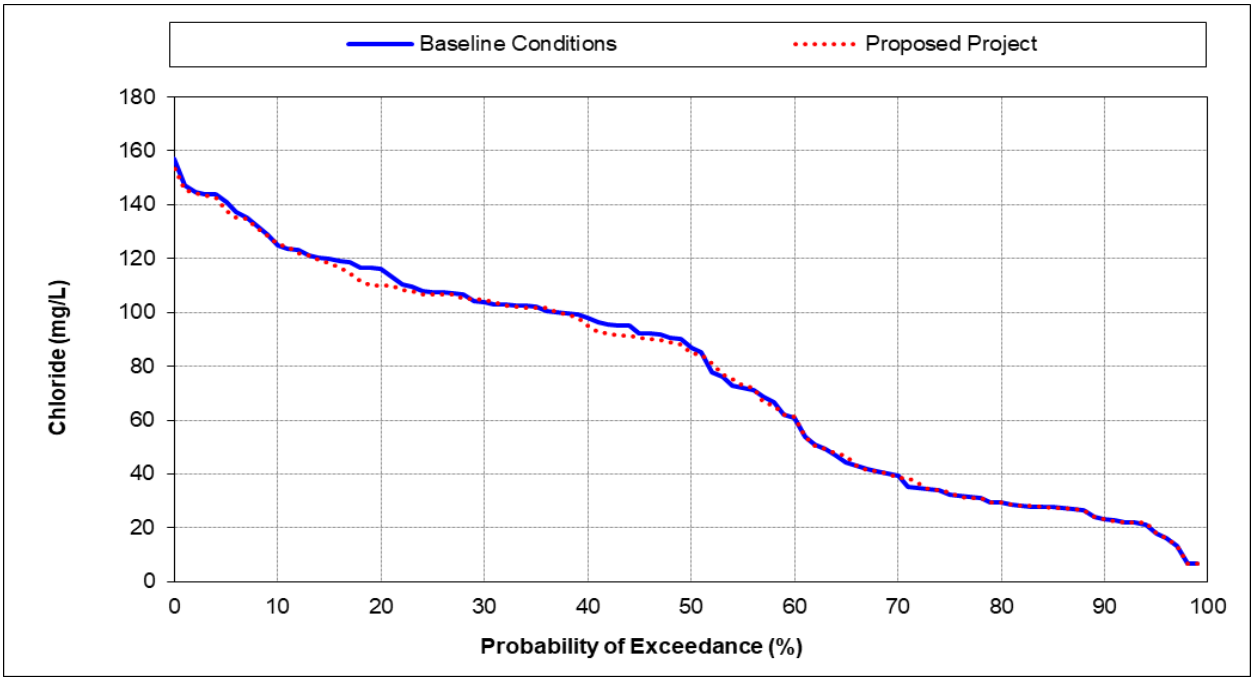

Figure 5A-2r. San Joaquin River at Empire Tract, Monthly Average Chloride (in milligrams per liter), December

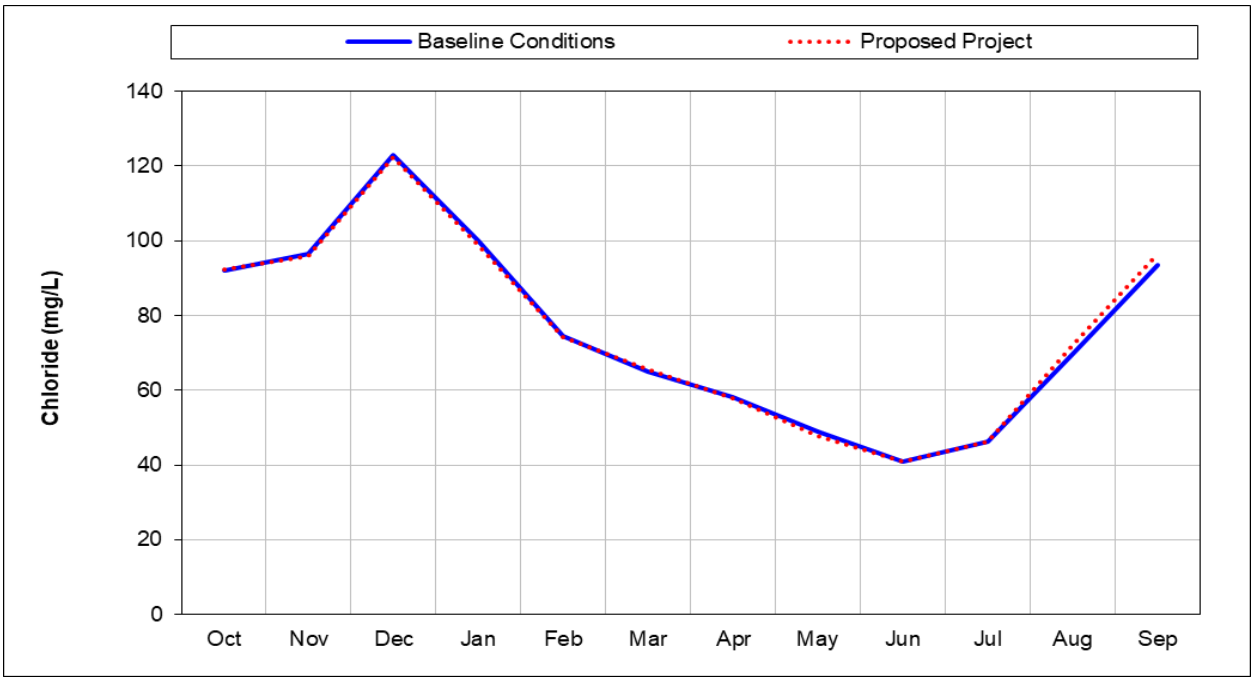

Figure 5A-3a. Banks Pumping Plant, Long term Monthly Average Chloride (in milligrams per liter)

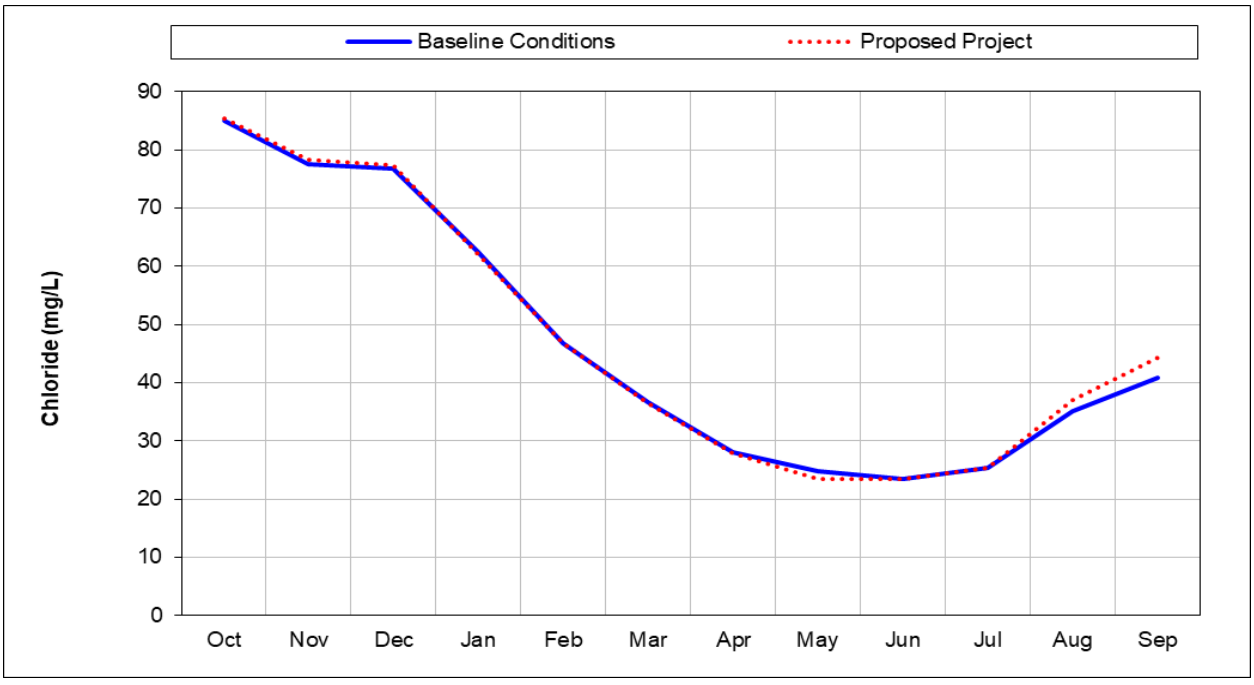

Figure 5A-3b. Banks Pumping Plant, Wet Year Monthly Average Chloride (in milligrams per liter)

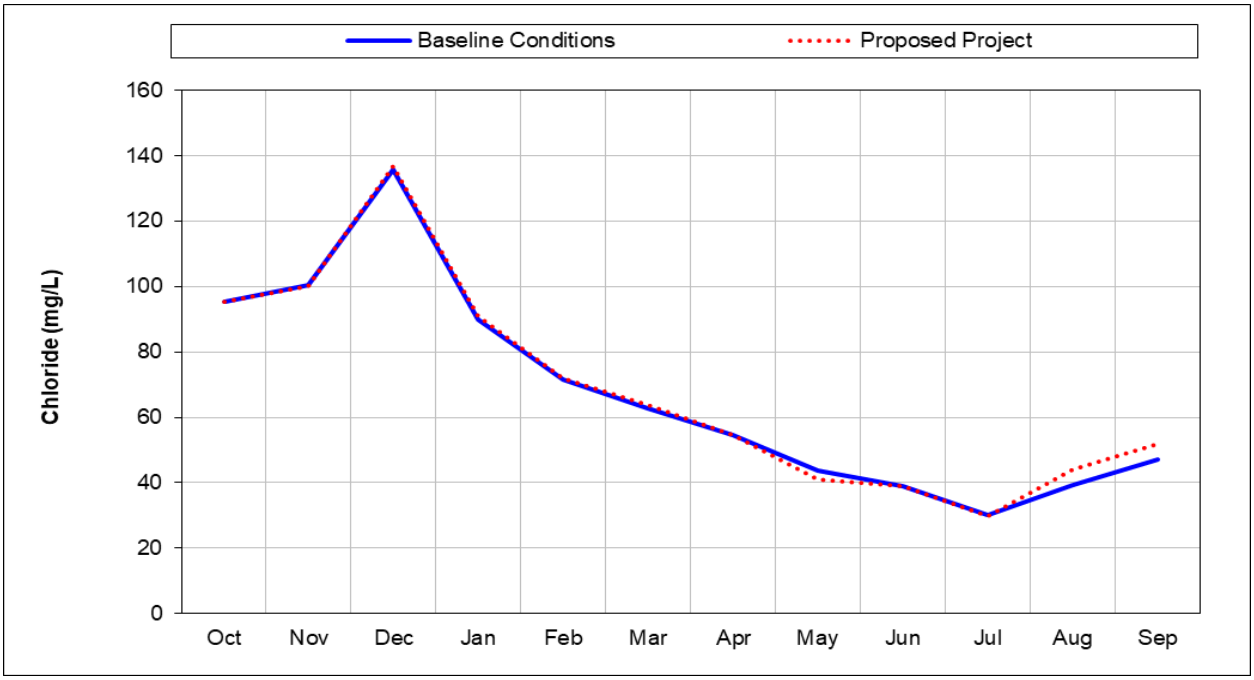

Figure 5A-3c. Banks Pumping Plant, Above Normal Year Monthly Average Chloride (in milligrams per liter)

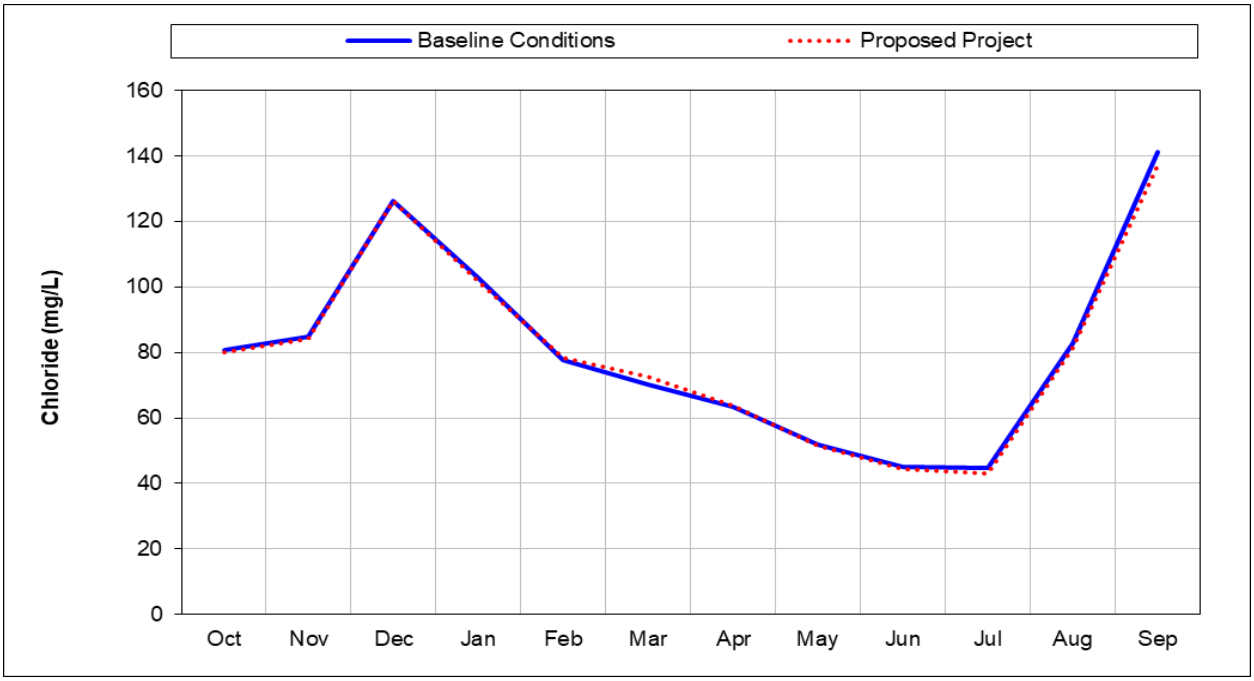

Figure 5A-3d. Banks Pumping Plant, Below Normal Year Monthly Average Chloride (in milligrams per liter)

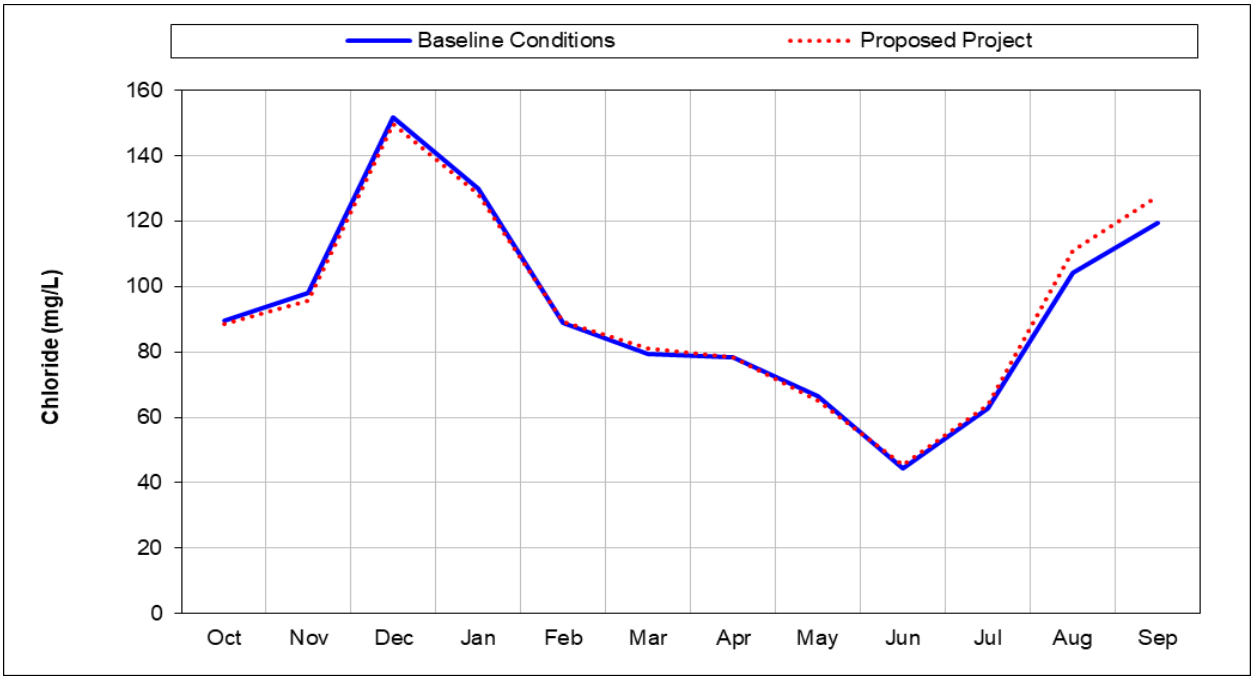

Figure 5A-3e. Banks Pumping Plant, Dry Year Monthly Average Chloride (in milligrams per liter)

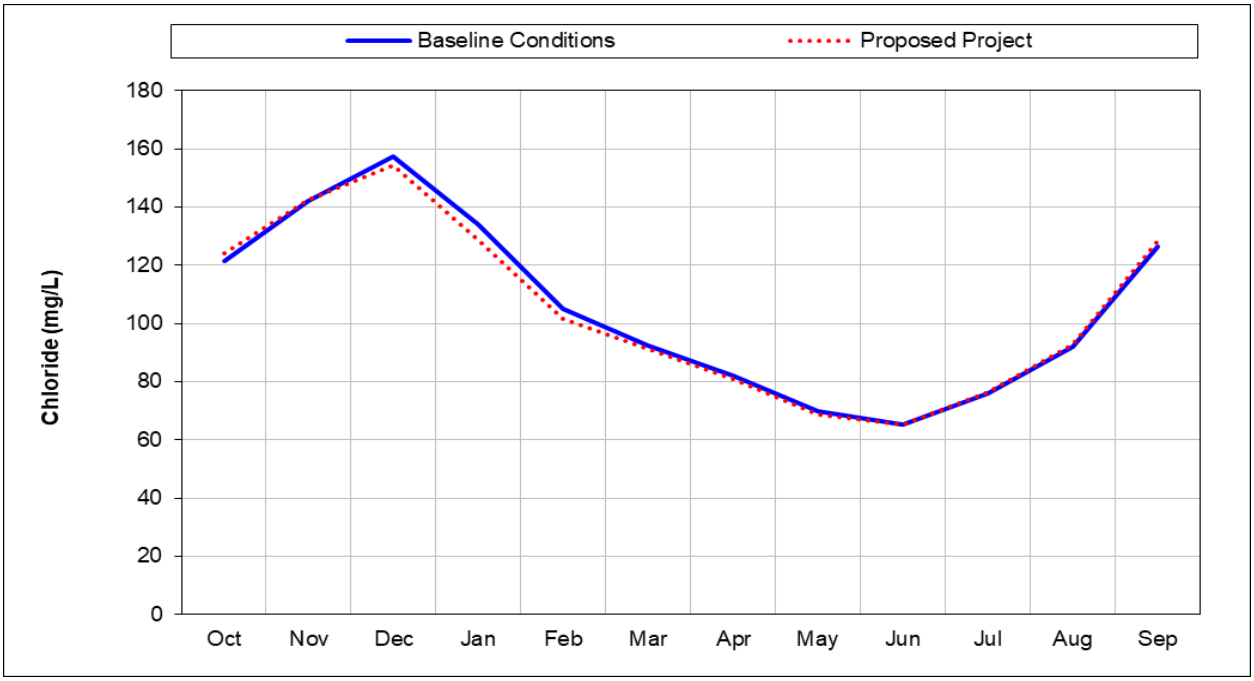

Figure 5A-3f. Banks Pumping Plant, Critical Year Monthly Average Chloride (in milligrams per liter)

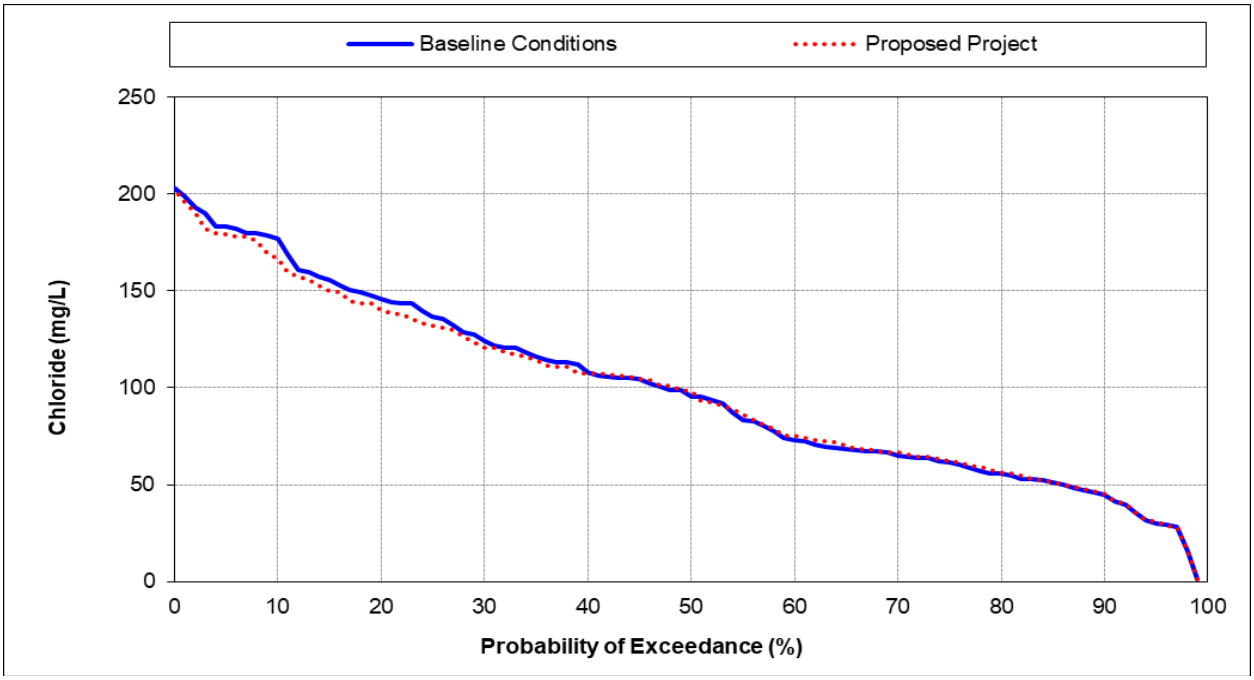

Figure 5A-3g. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), January

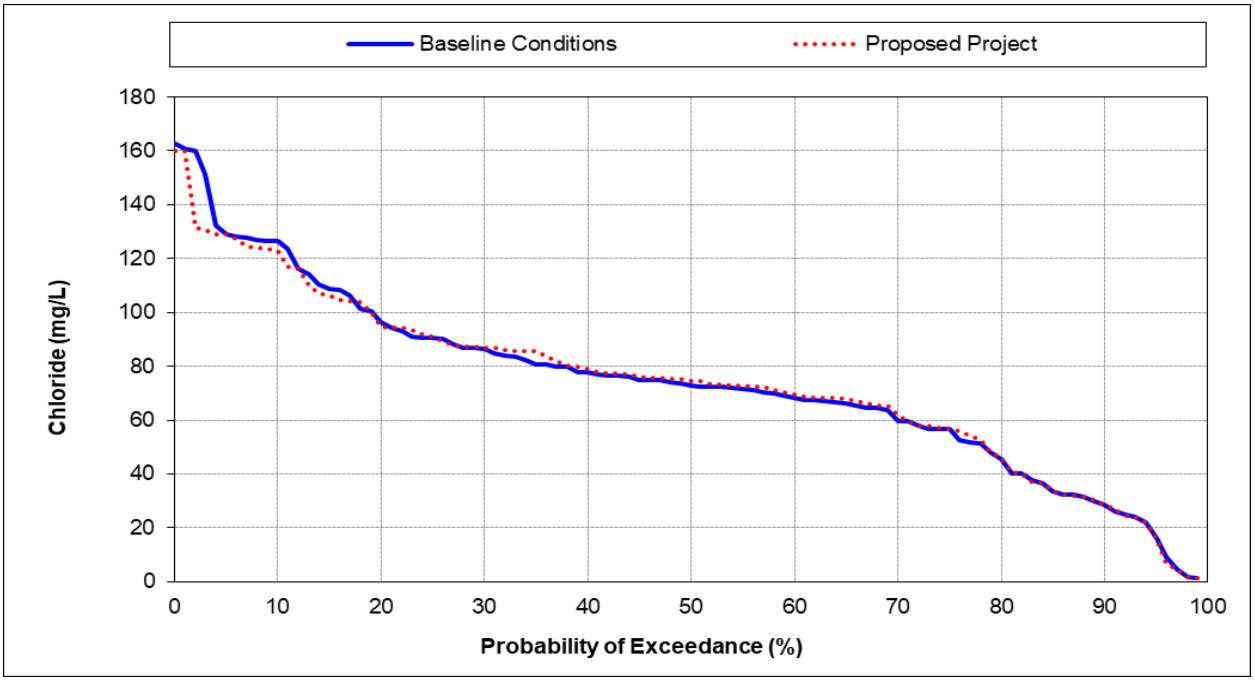

Figure 5A-3h. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), February

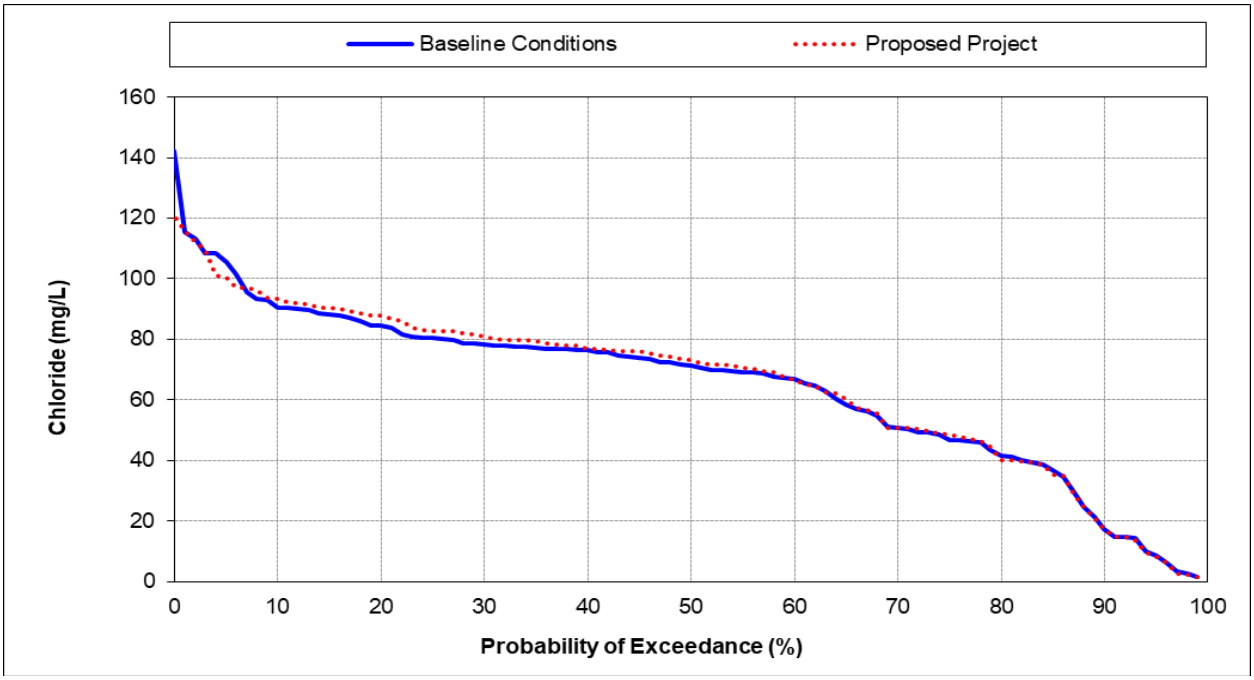

Figure 5A-3i. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), March

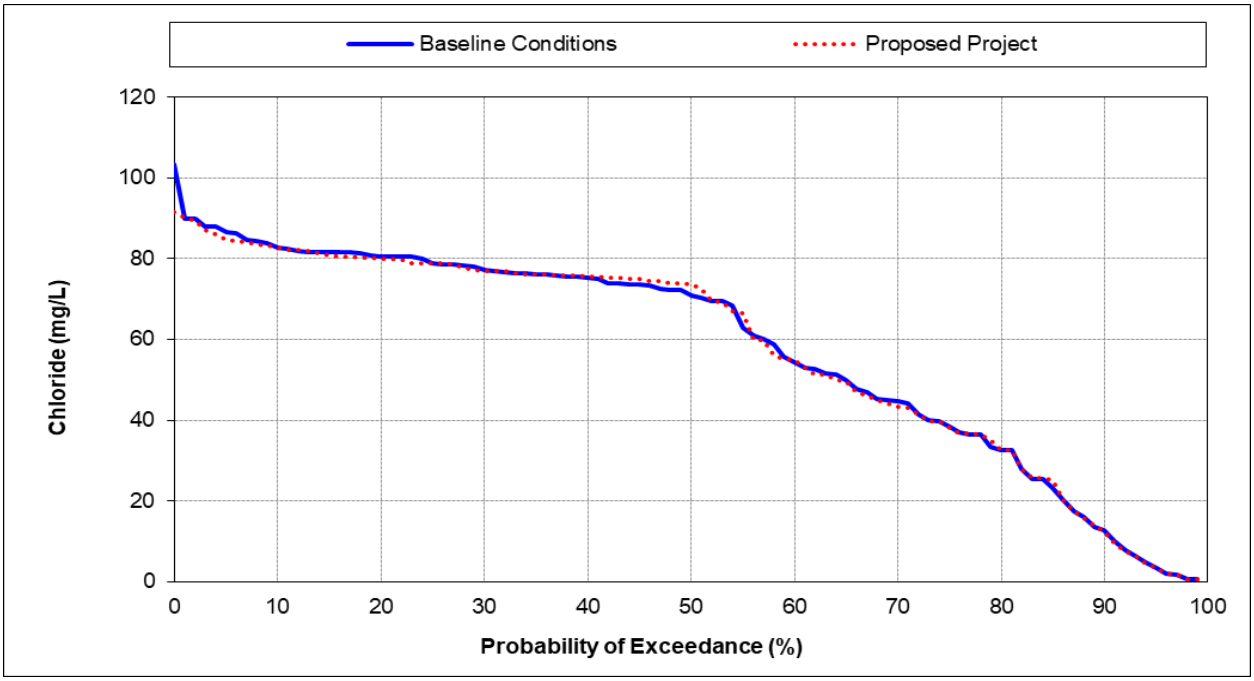

Figure 5A-3j. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), April

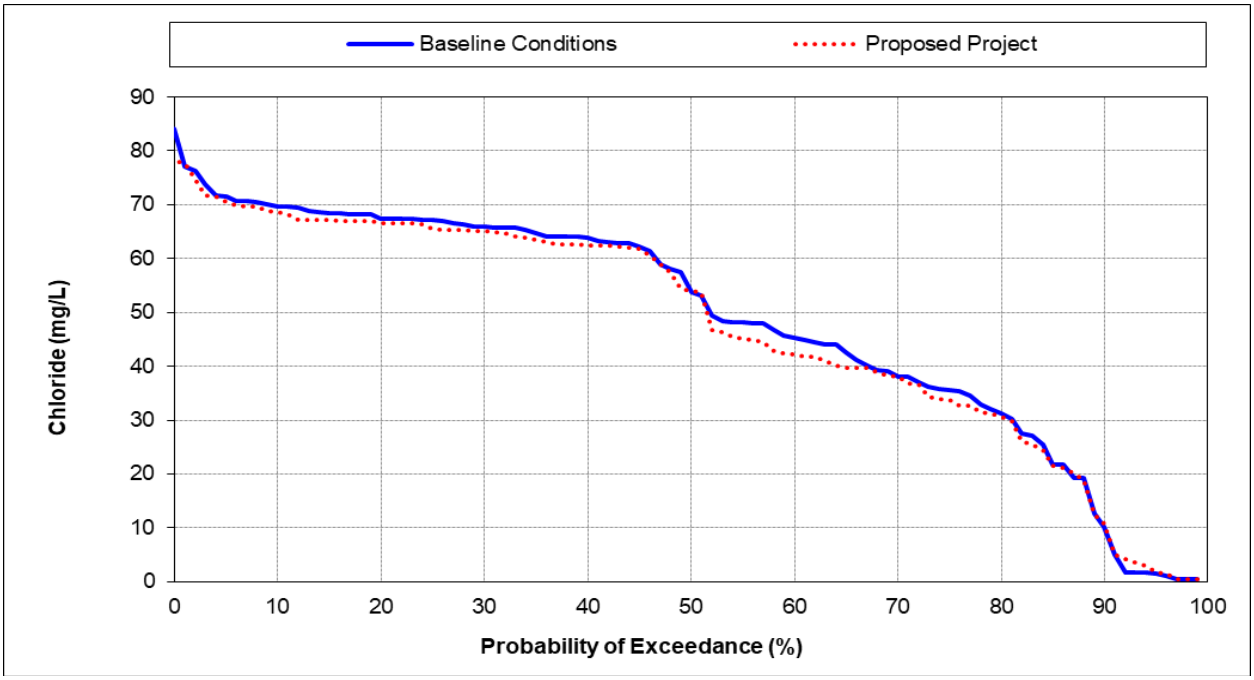

Figure 5A-3k. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), May

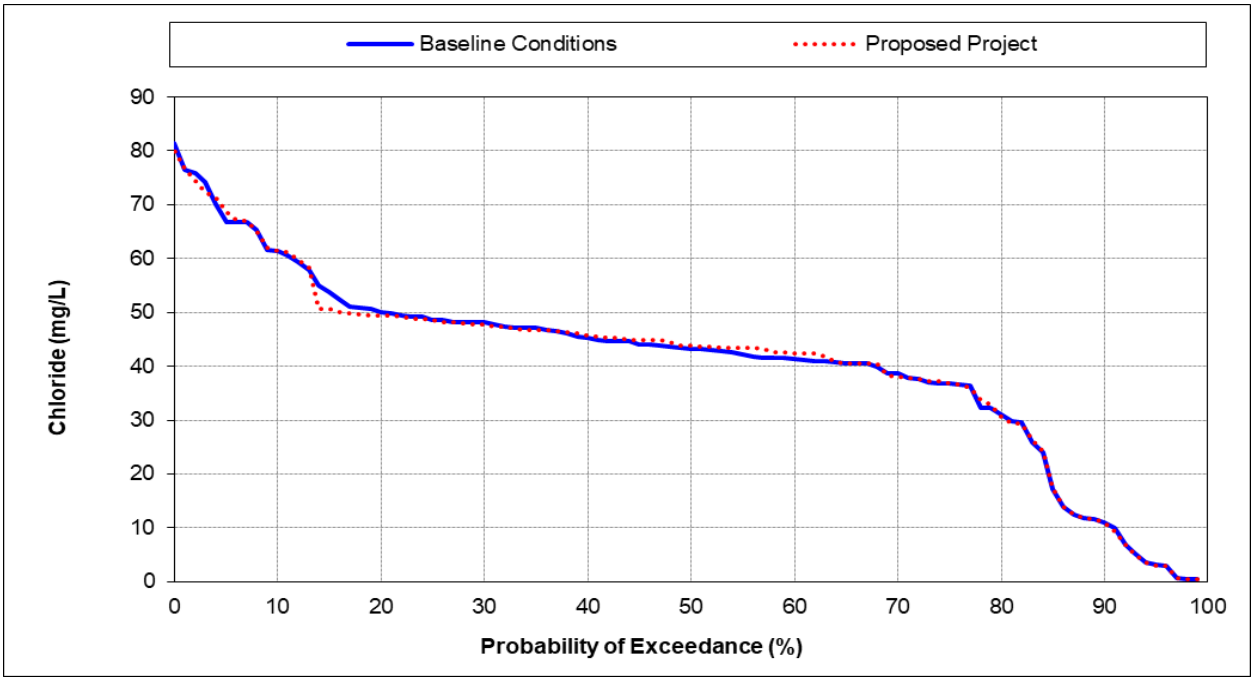

Figure 5A-3l. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), June

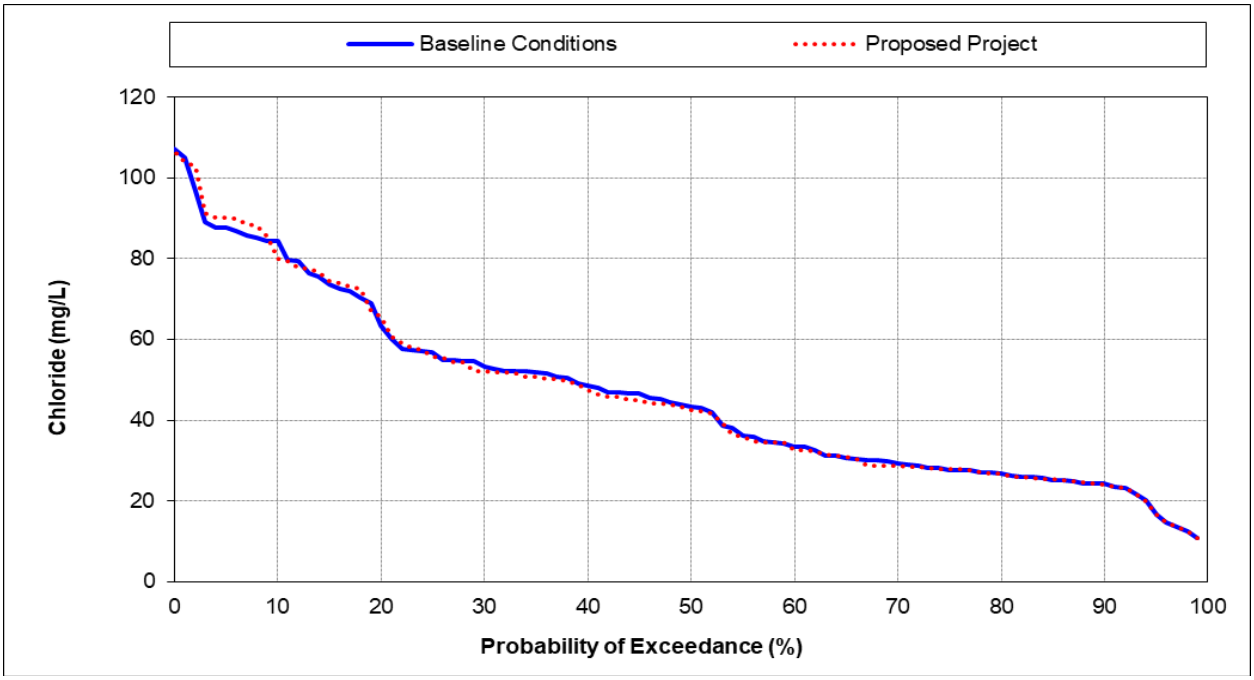

Figure 5A-3m. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), July

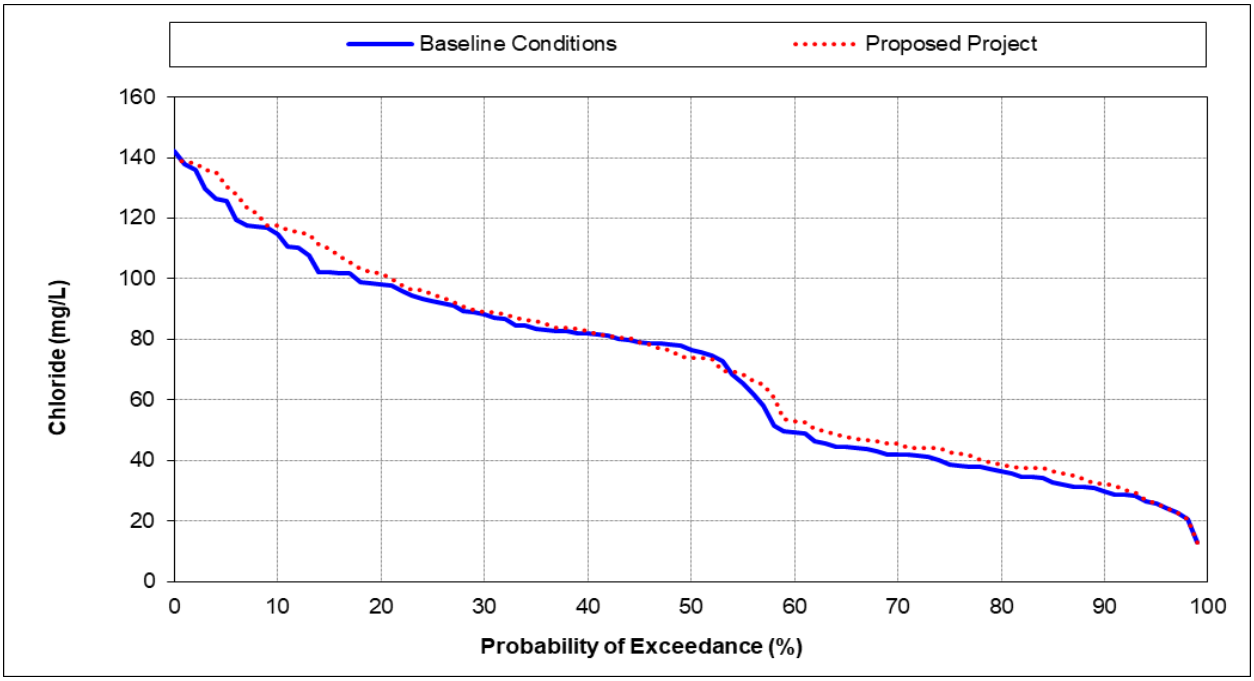

Figure 5A-3n. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), August

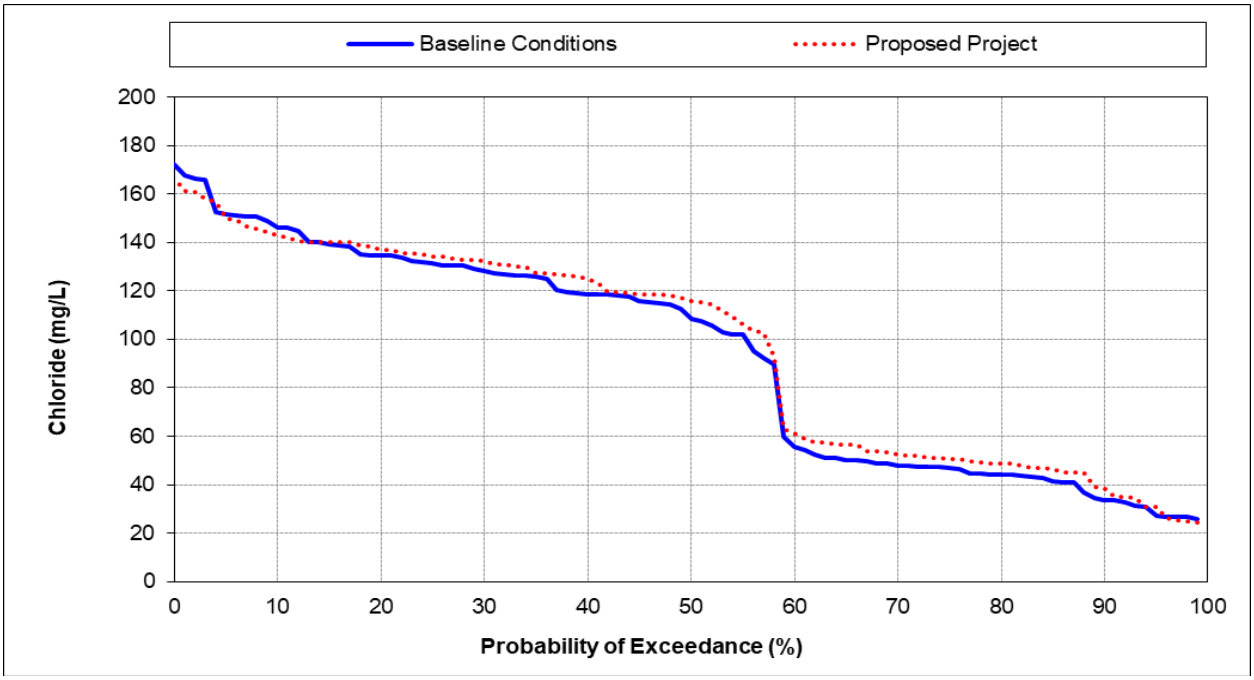

Figure 5A-3o. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), September

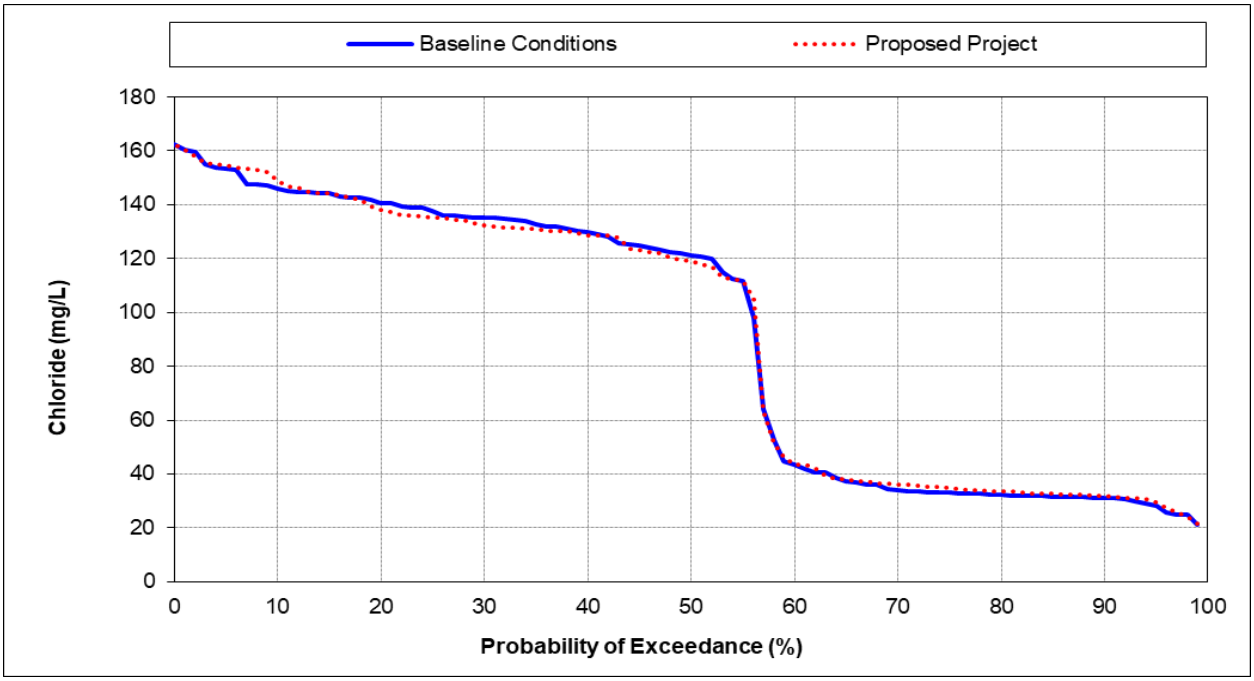

Figure 5A-3p. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), October

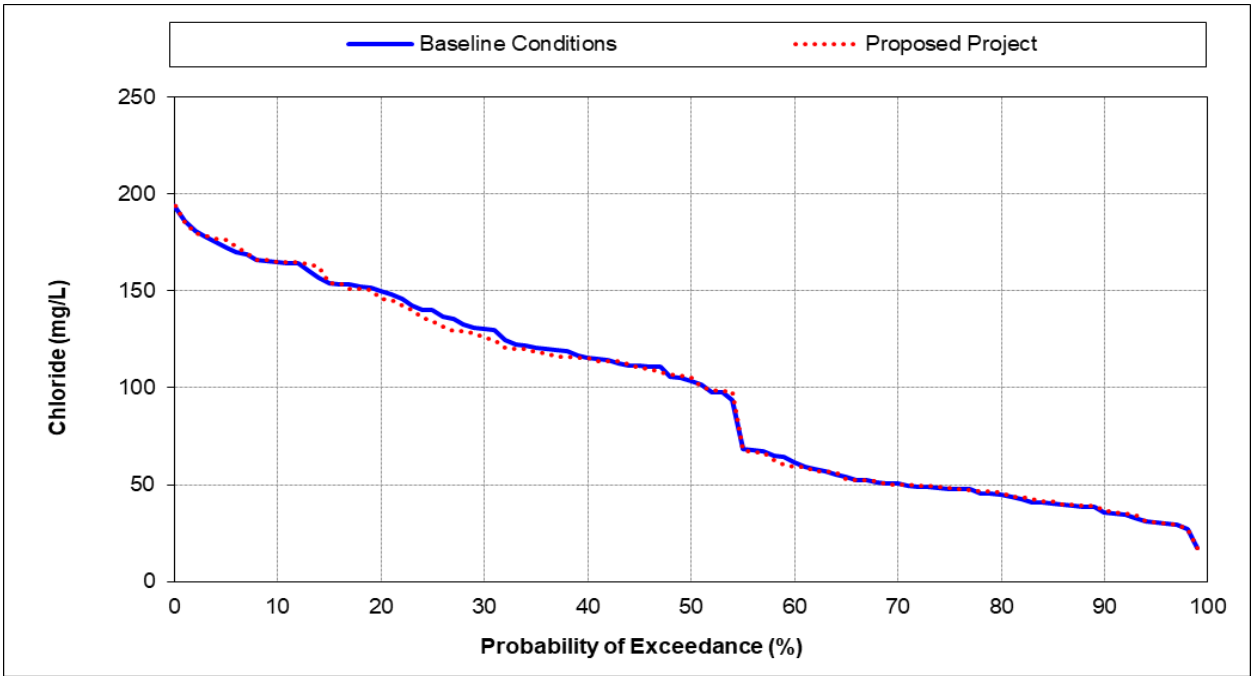

Figure 5A-3q. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), November

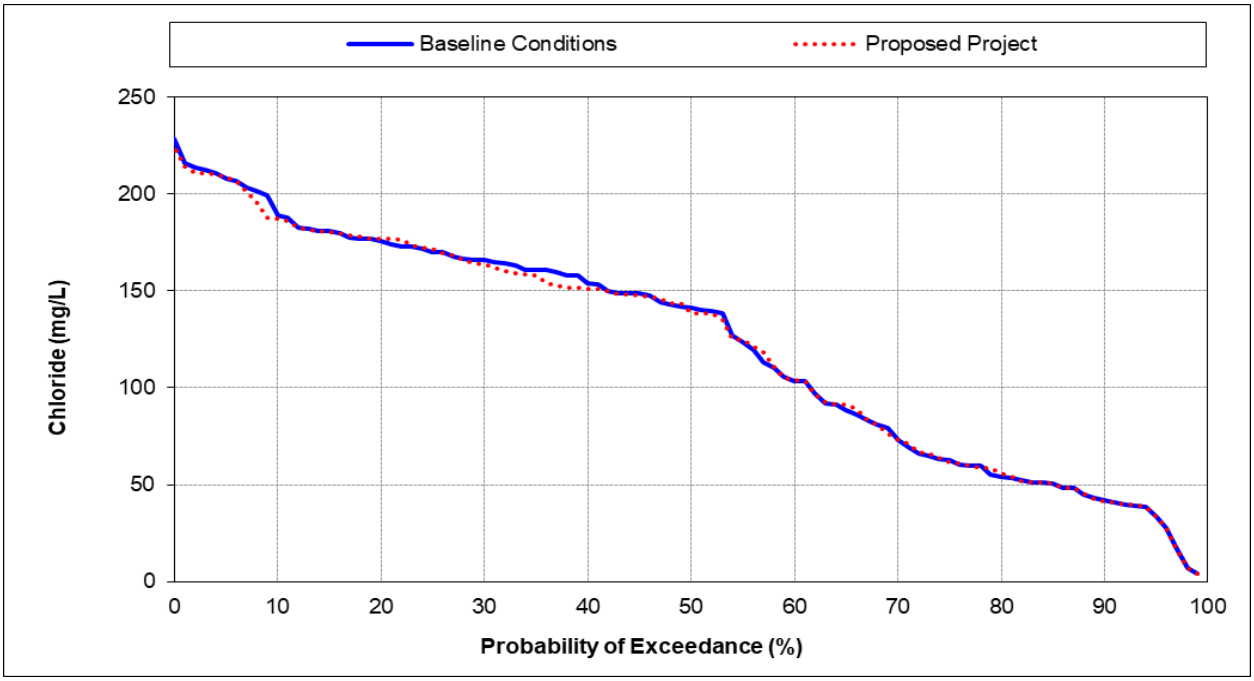

Figure 5A-3r. Banks Pumping Plant, Monthly Average Chloride (in milligrams per liter), December

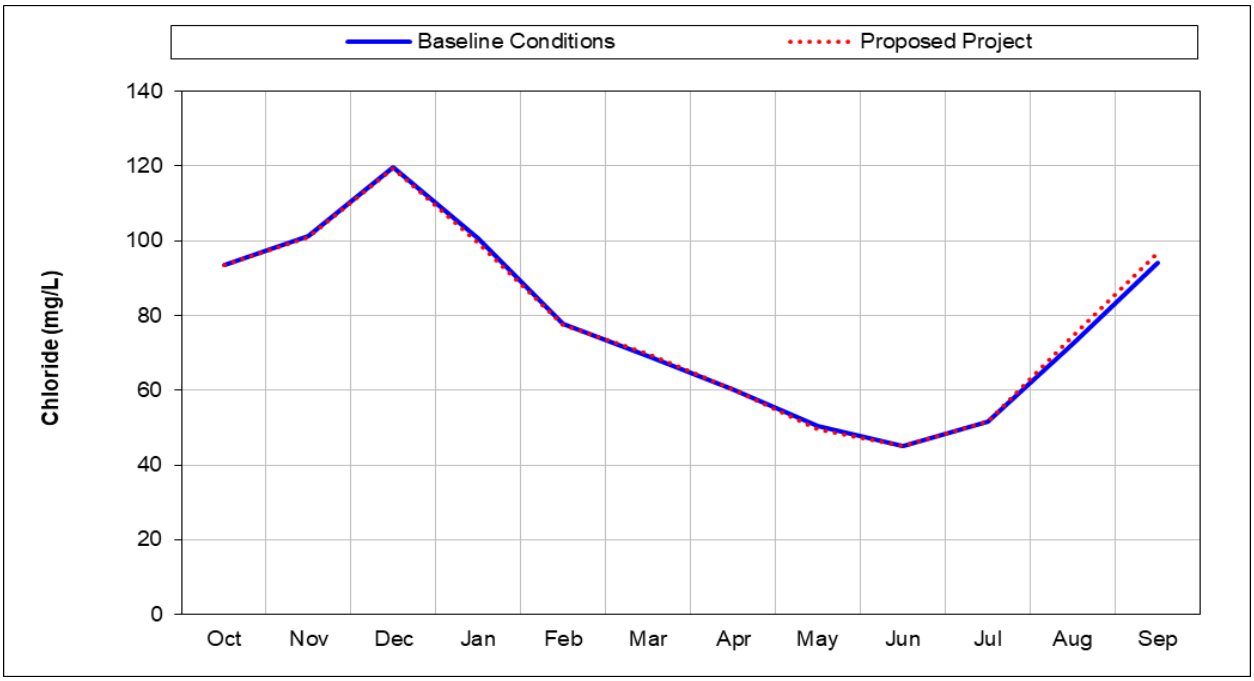

Figure 5A-4a. Jones Pumping Plant, Long term Monthly Average Chloride (in milligrams per liter)

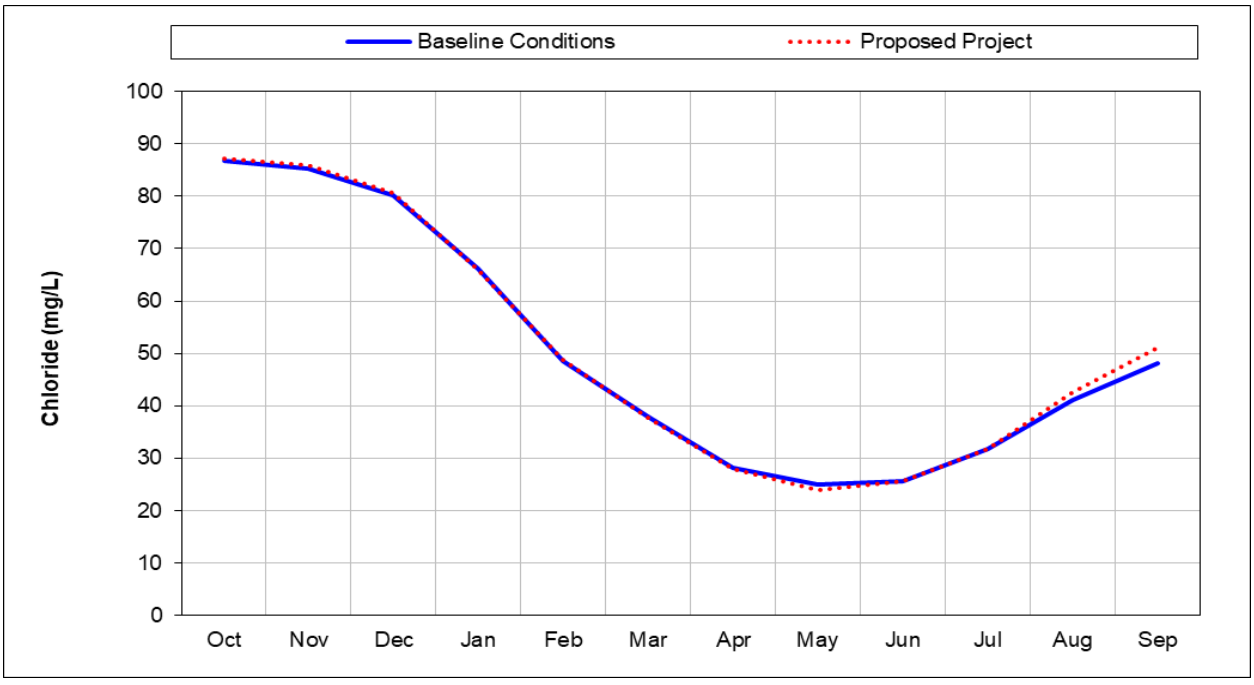

Figure 5A-4b. Jones Pumping Plant, Wet Year Monthly Average Chloride (in milligrams per liter)

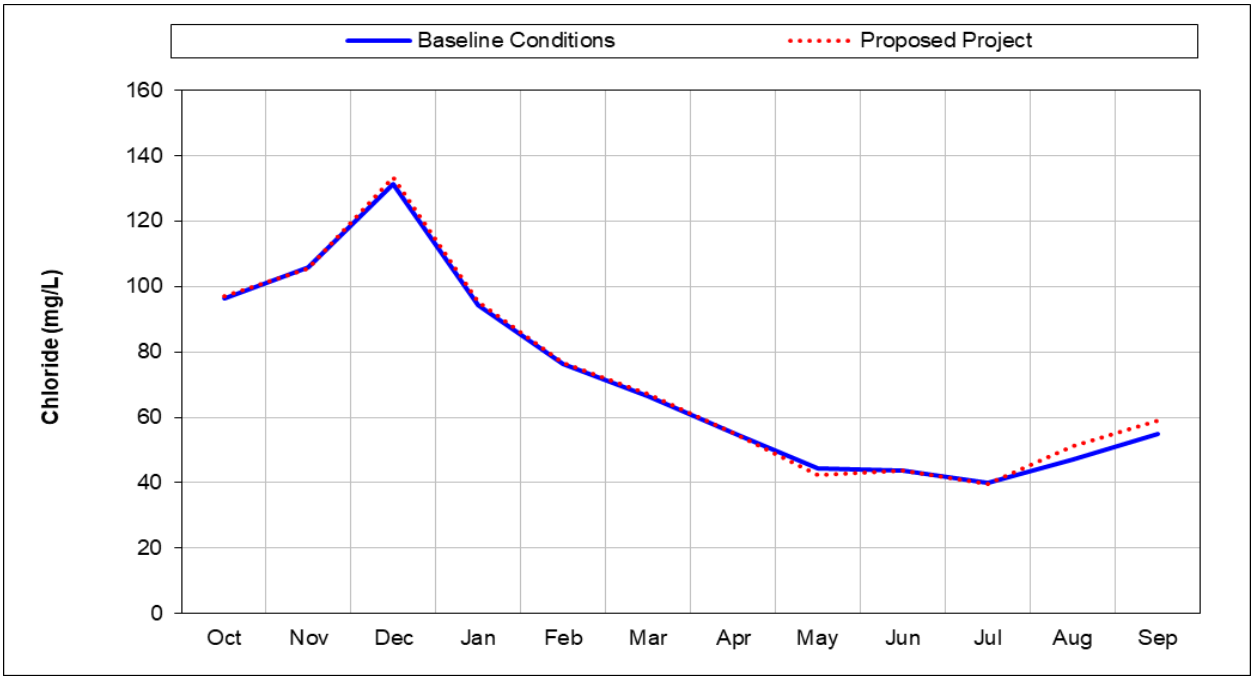

Figure 5A-4c. Jones Pumping Plant, Above Normal Year Monthly Average Chloride (in milligrams per liter)

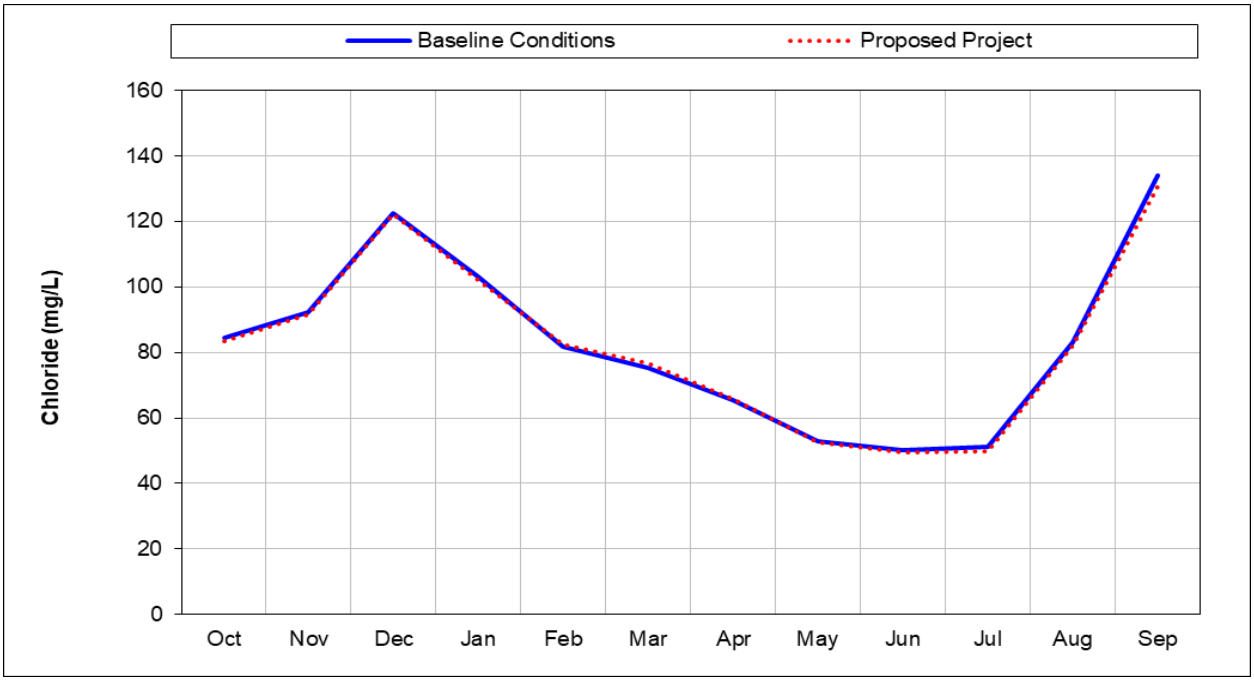

Figure 5A-4d. Jones Pumping Plant, Below Normal Year Monthly Average Chloride (in milligrams per liter)

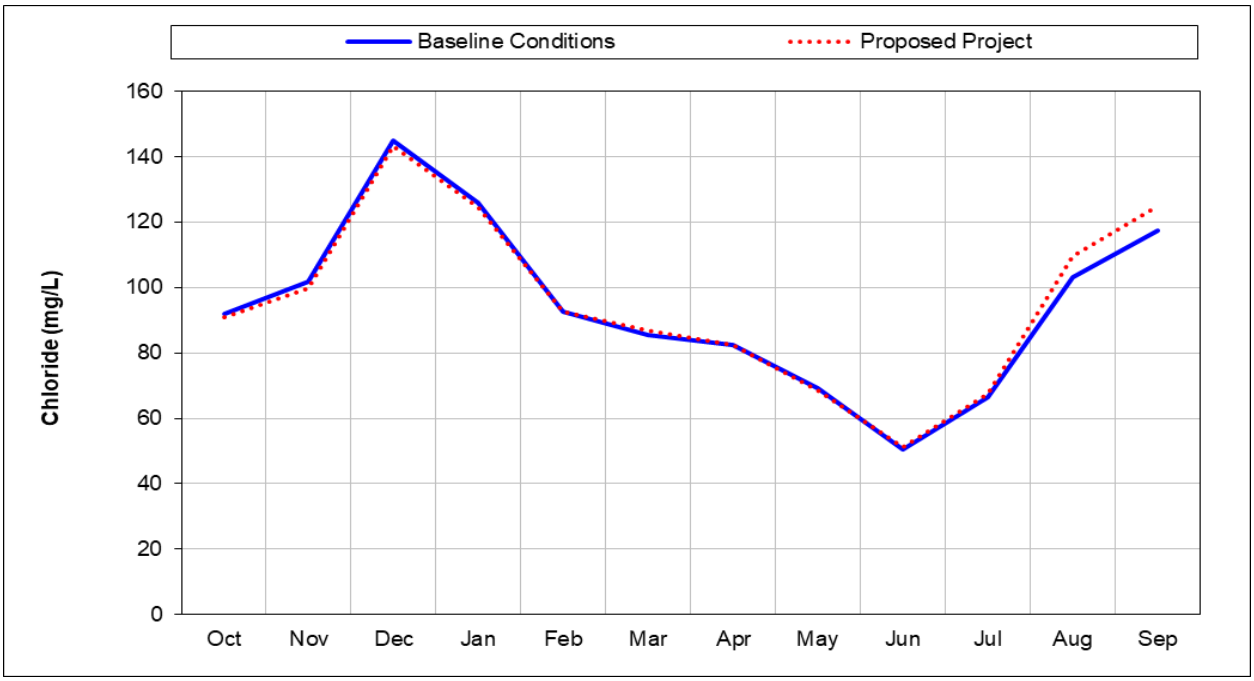

Figure 5A-4e. Jones Pumping Plant, Dry Year Monthly Average Chloride (in milligrams per liter)

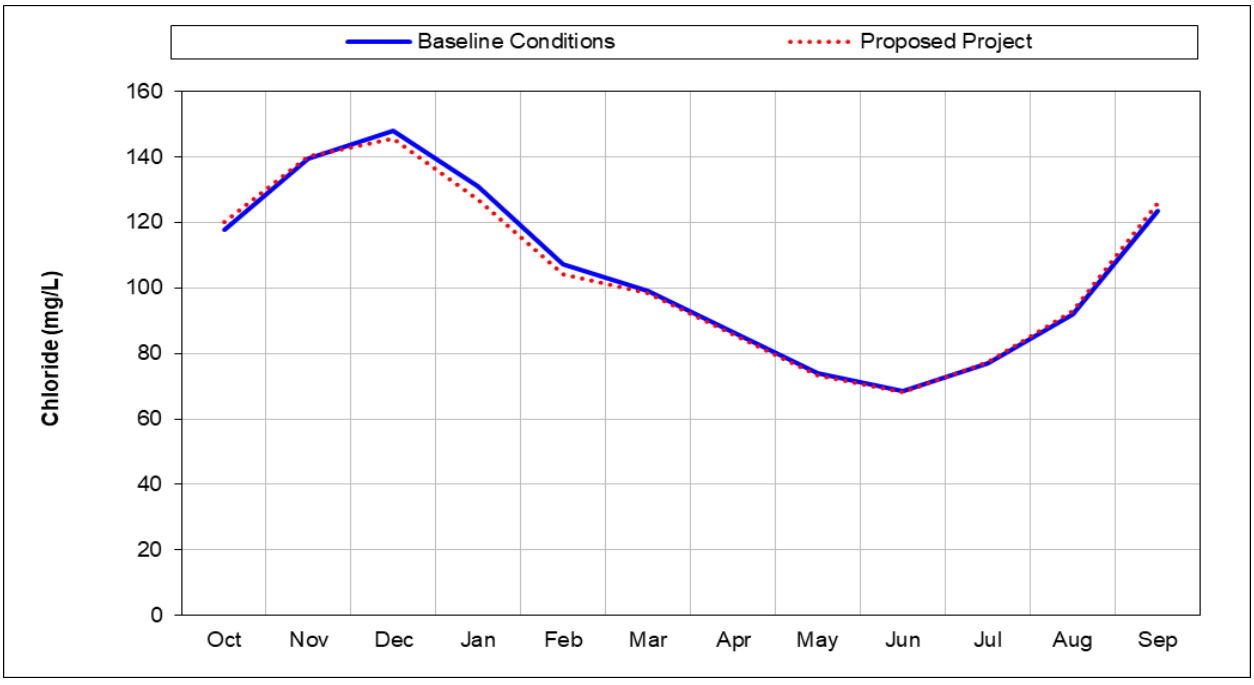

Figure 5A-4f. Jones Pumping Plant, Critical Year Monthly Average Chloride (in milligrams per liter)

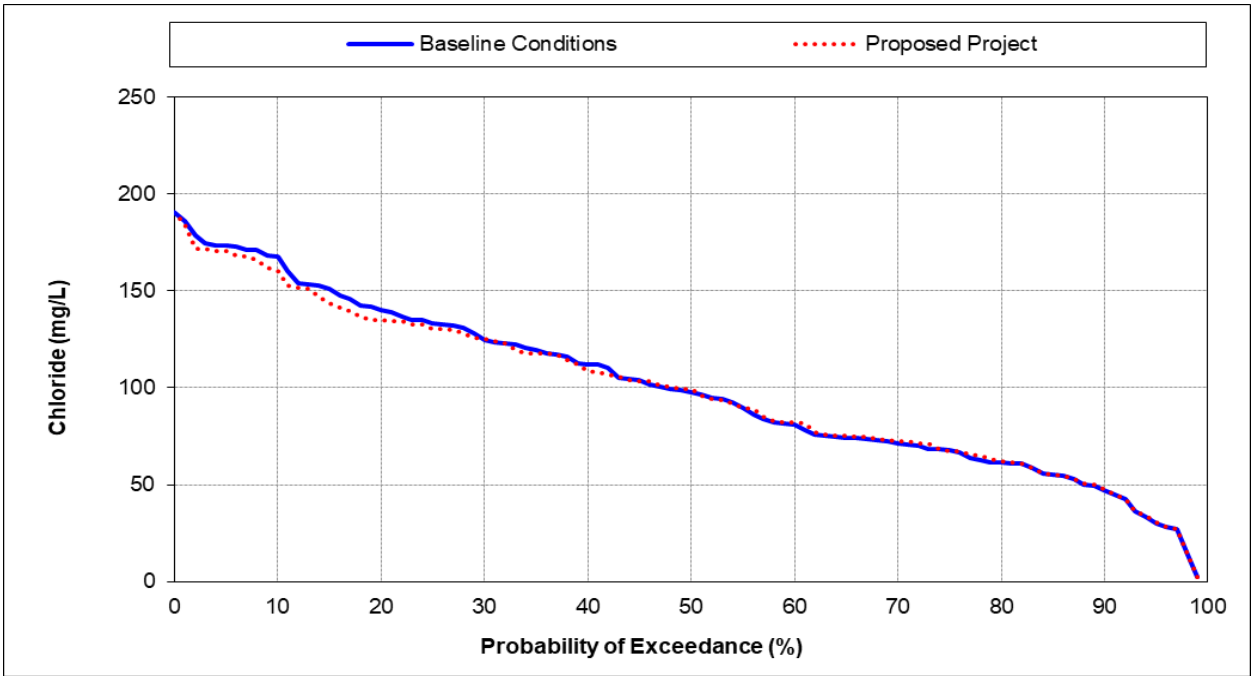

Figure 5A-4g. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), January

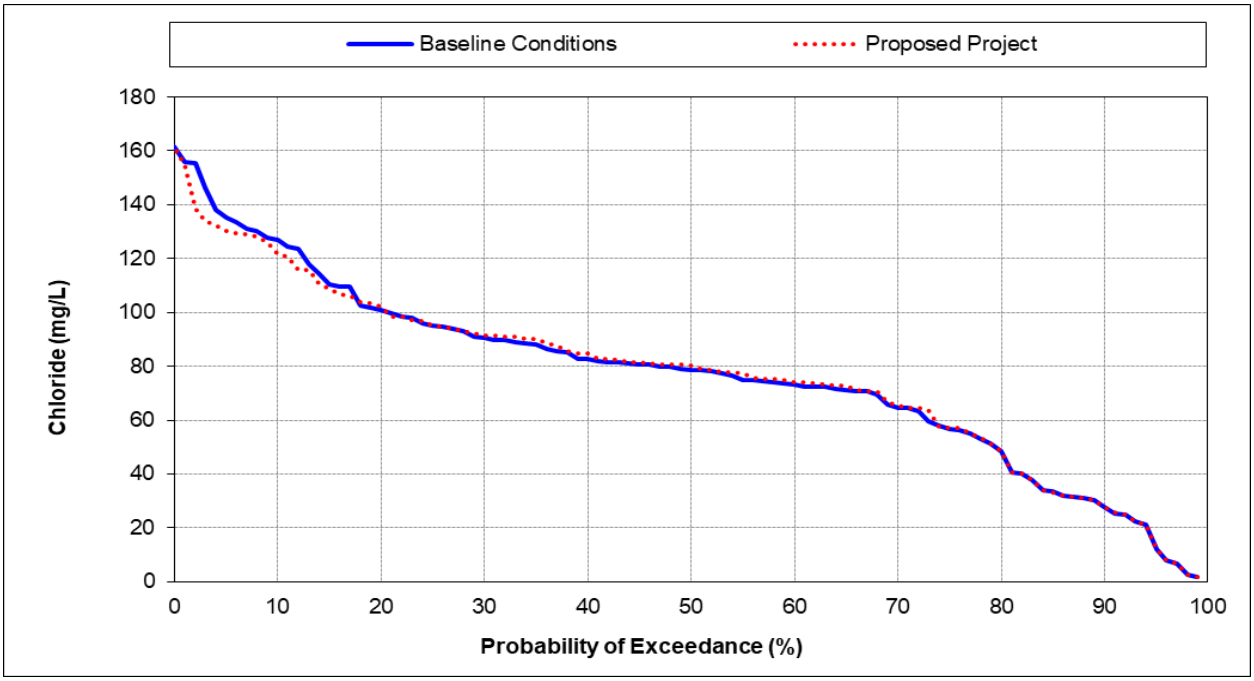

Figure 5A-4h. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), February

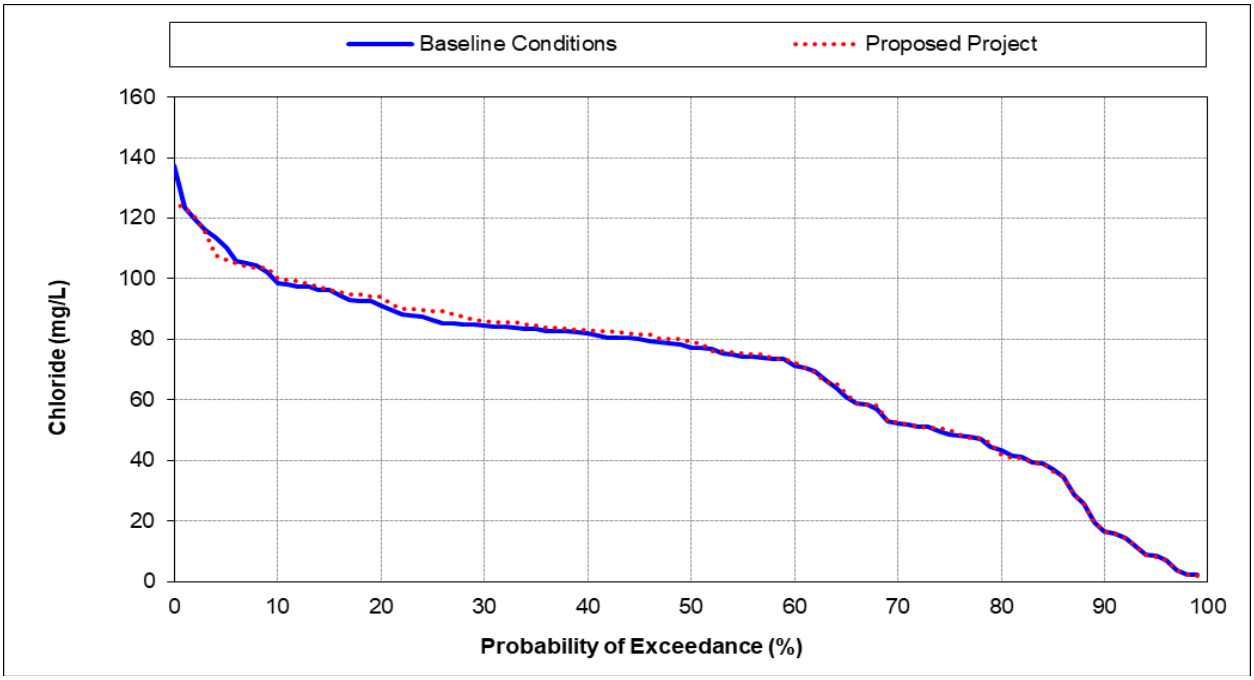

Figure 5A-4i. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), March

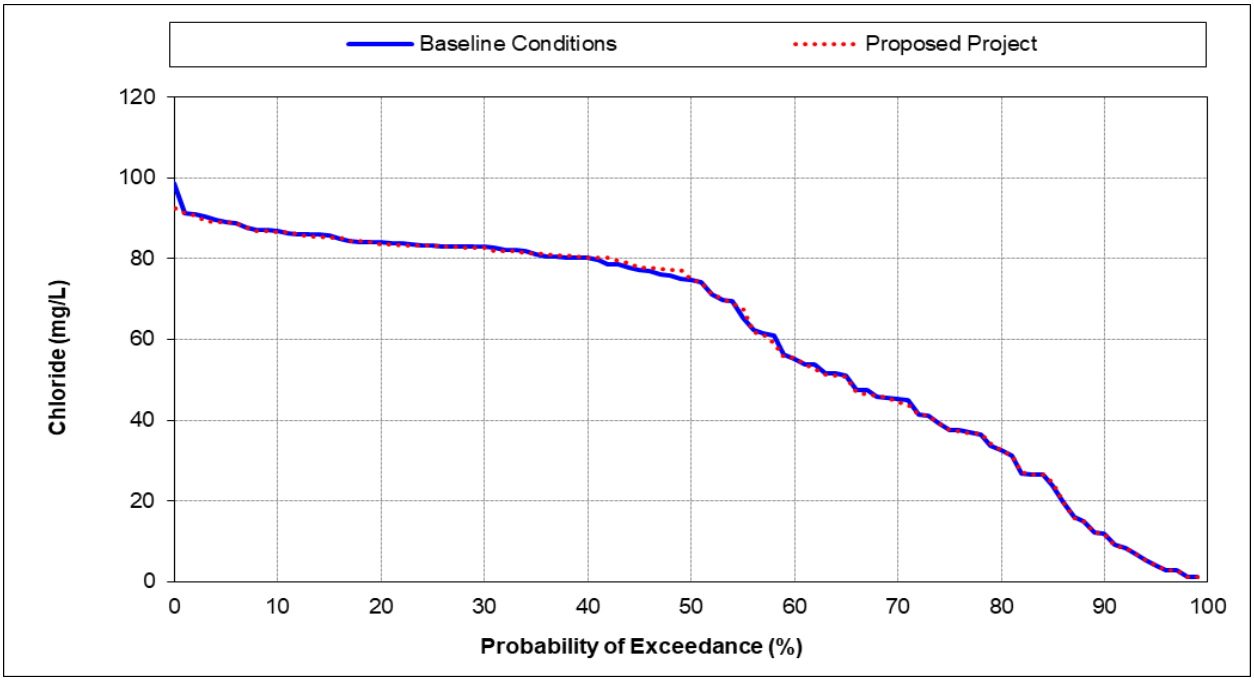

Figure 5A-4j. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), April

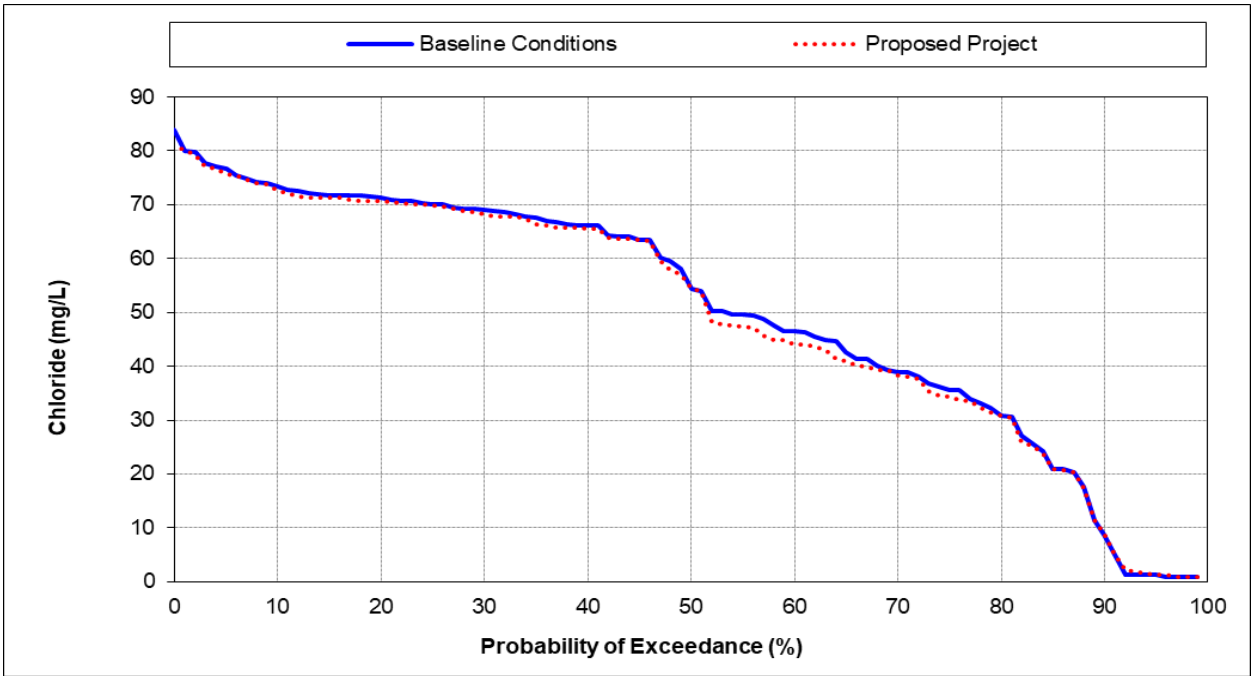

Figure 5A-4k. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), May

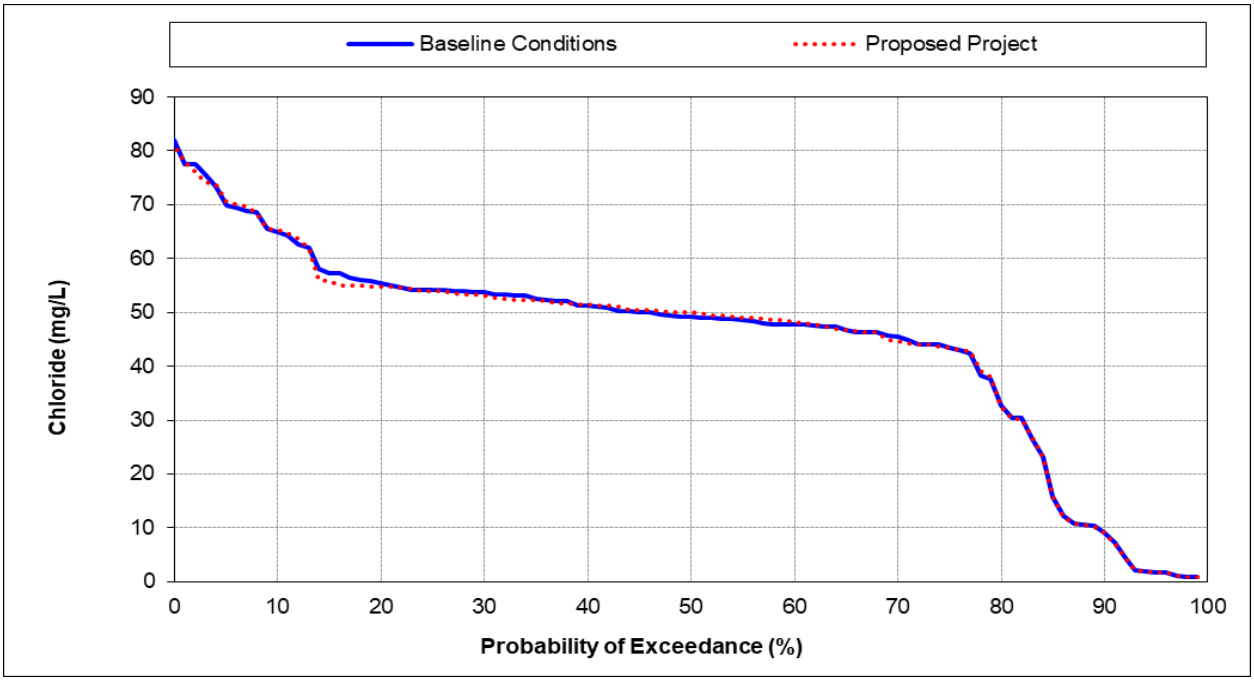

Figure 5A-4l. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), June

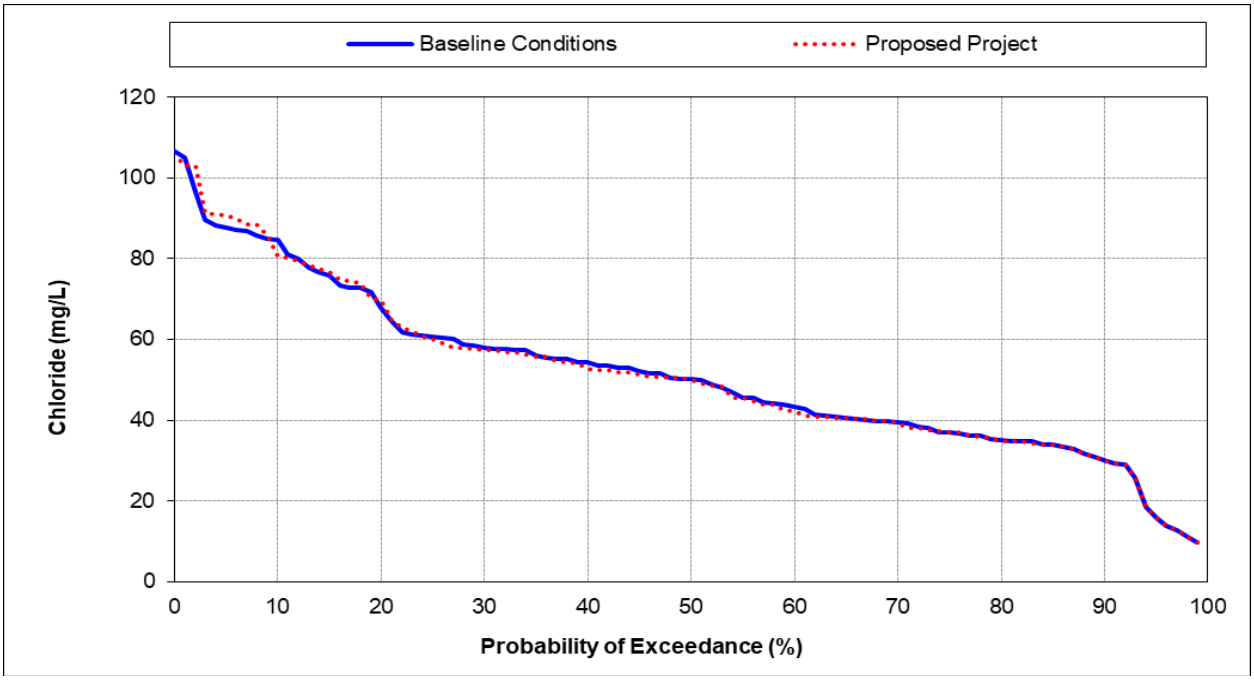

Figure 5A-4m. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), July

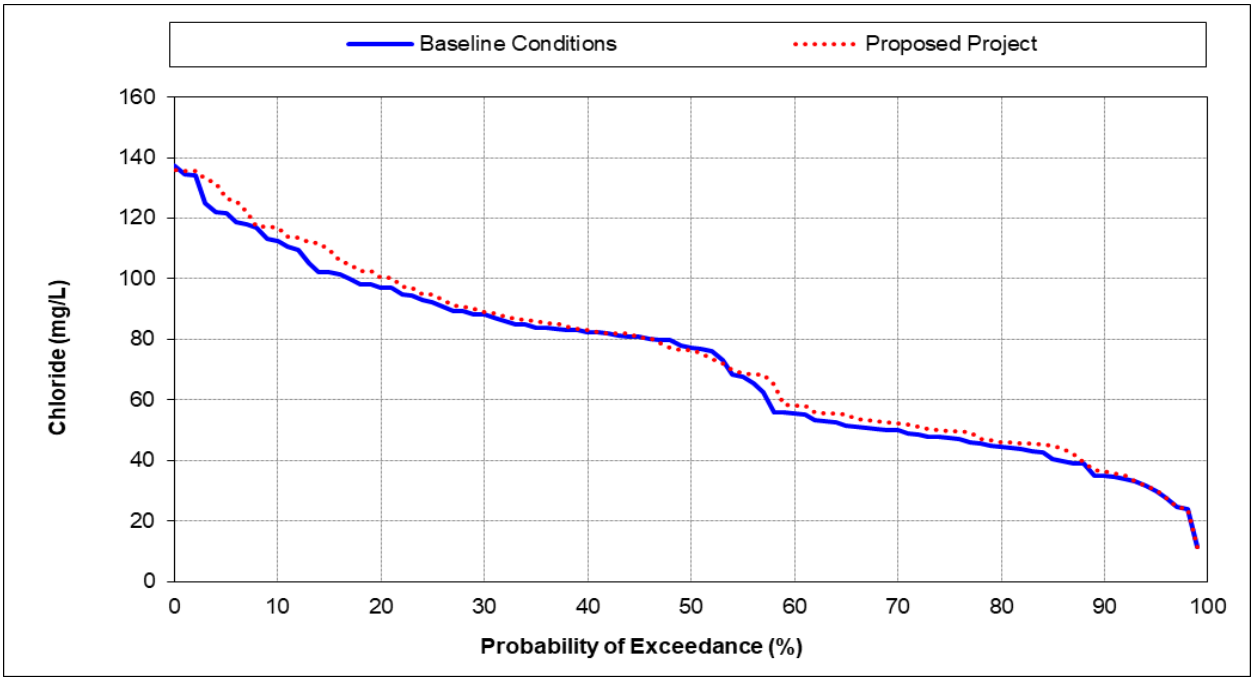

Figure 5A-4n. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), August

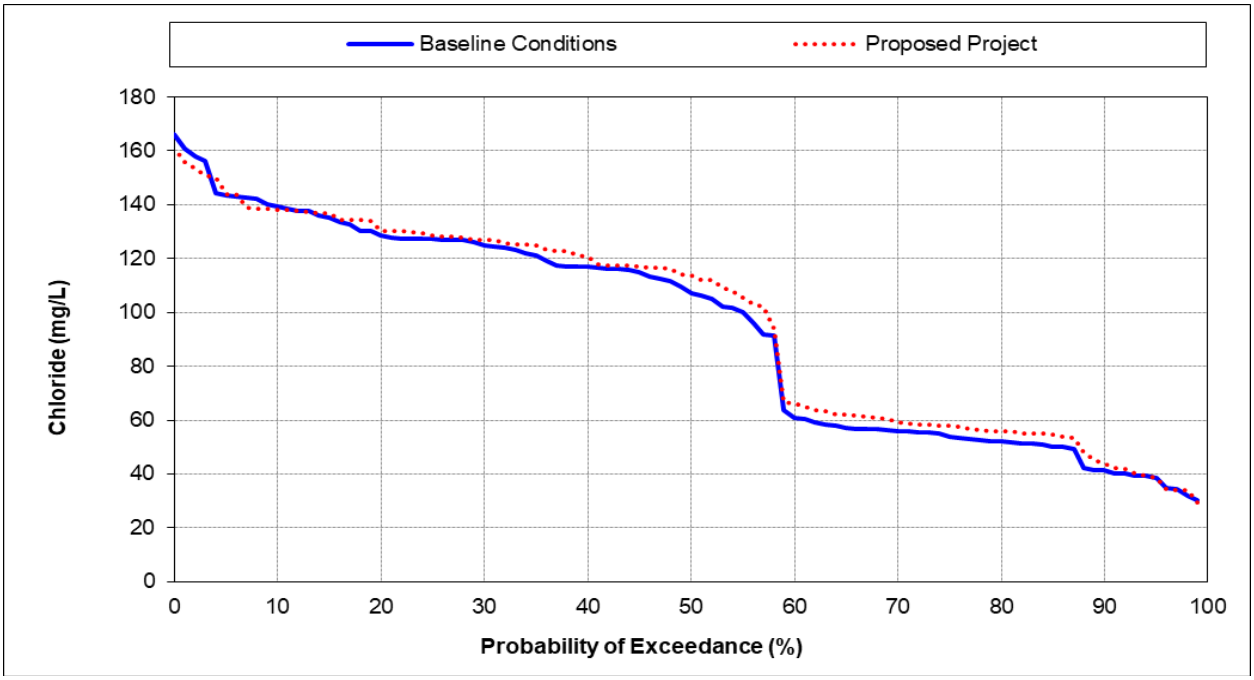

Figure 5A-4o. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), September

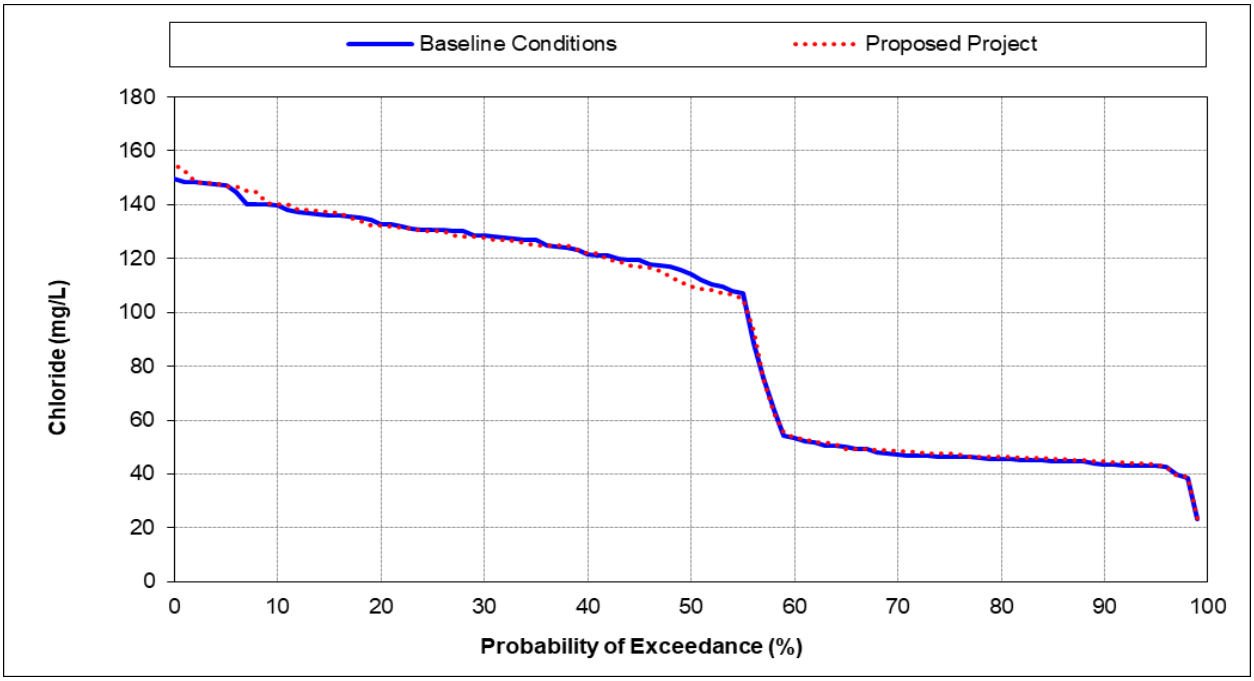

Figure 5A-4p. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), October

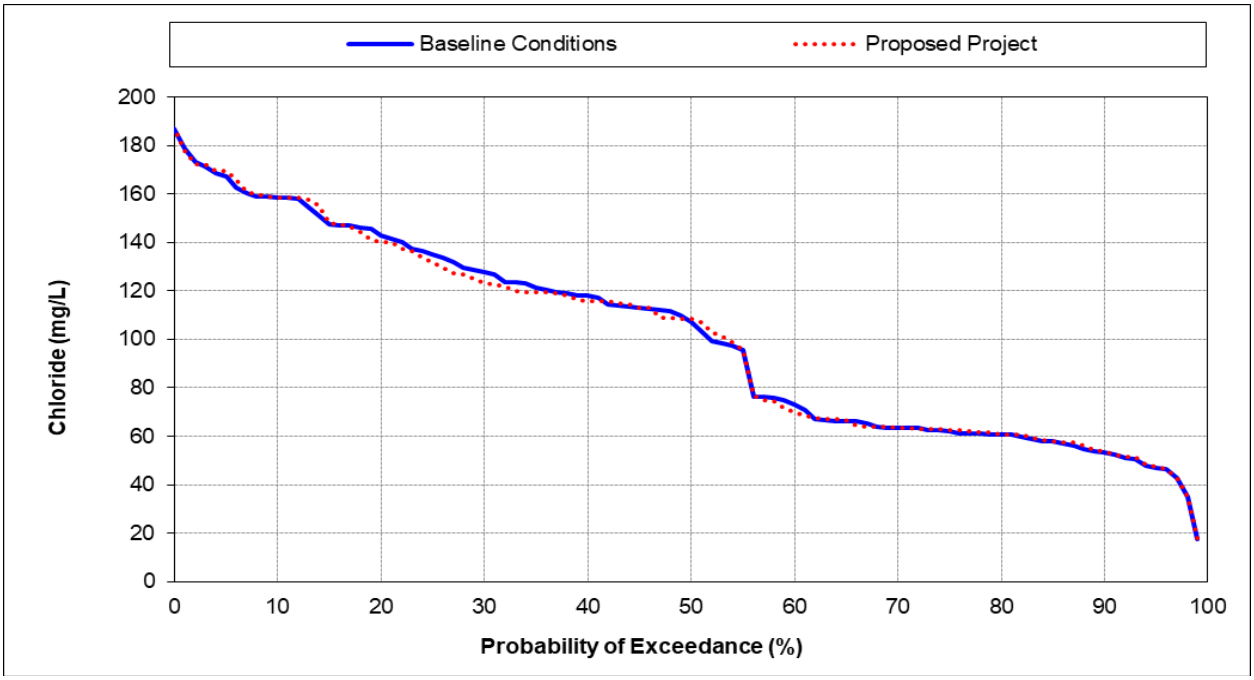

Figure 5A-4q. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), November

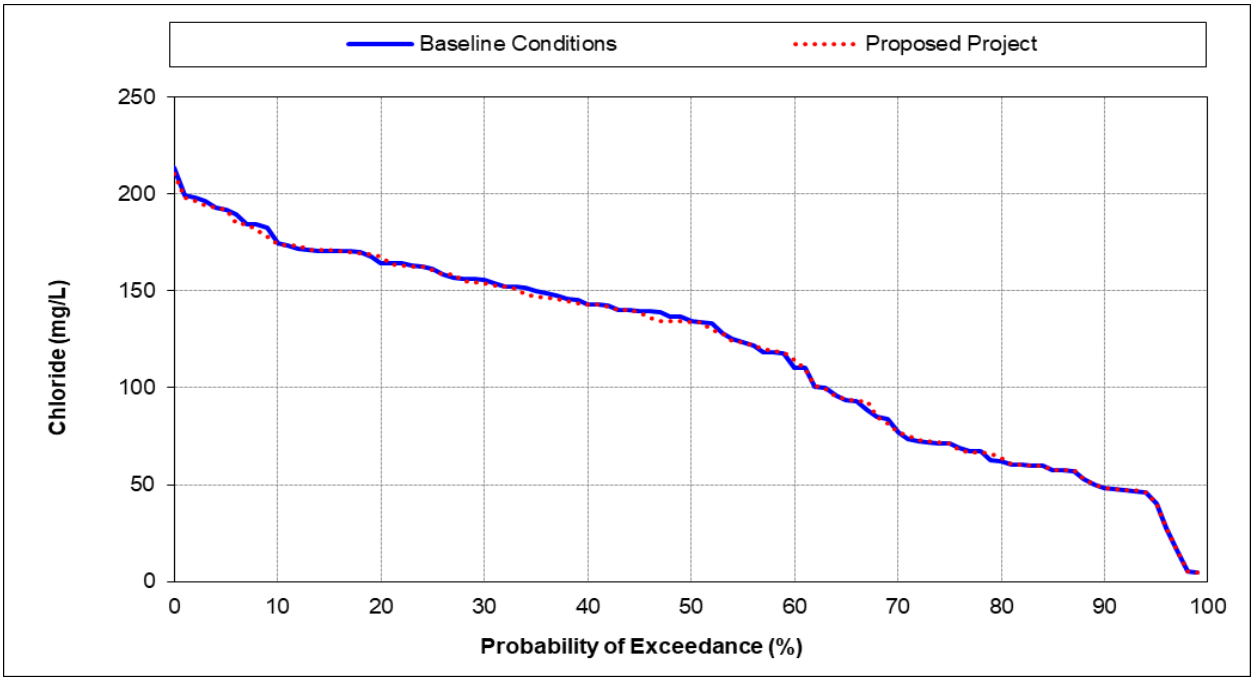

Figure 5A-4r. Jones Pumping Plant, Monthly Average Chloride (in milligrams per liter), December

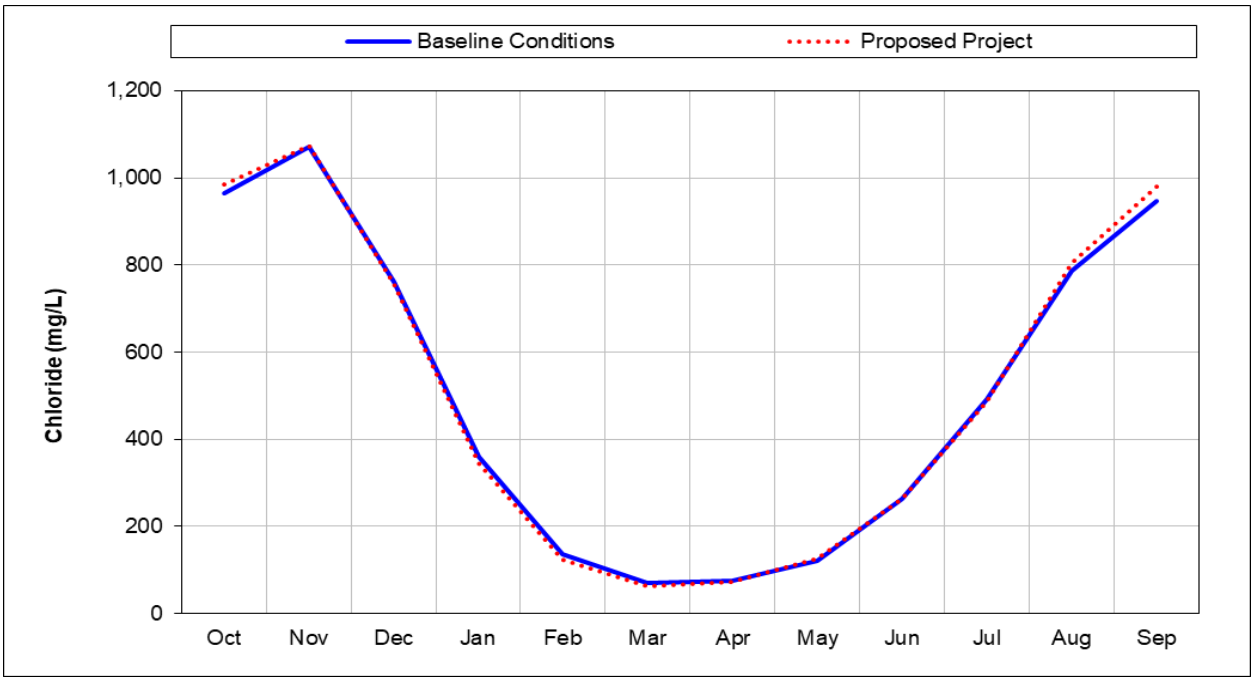

Figure 5A-5a. San Joaquin River at Antioch, Long term Monthly Average Chloride (in milligrams per liter)

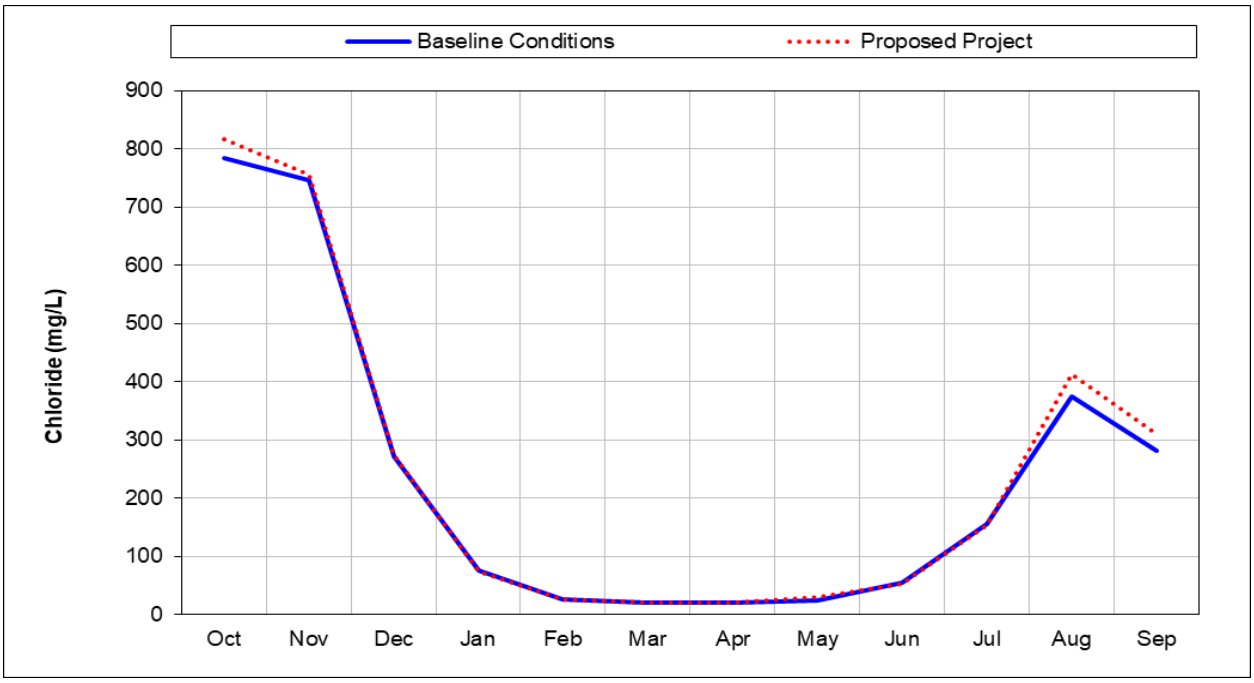

Figure 5A-5b. San Joaquin River at Antioch, Wet Year Monthly Average Chloride (in milligrams per liter)

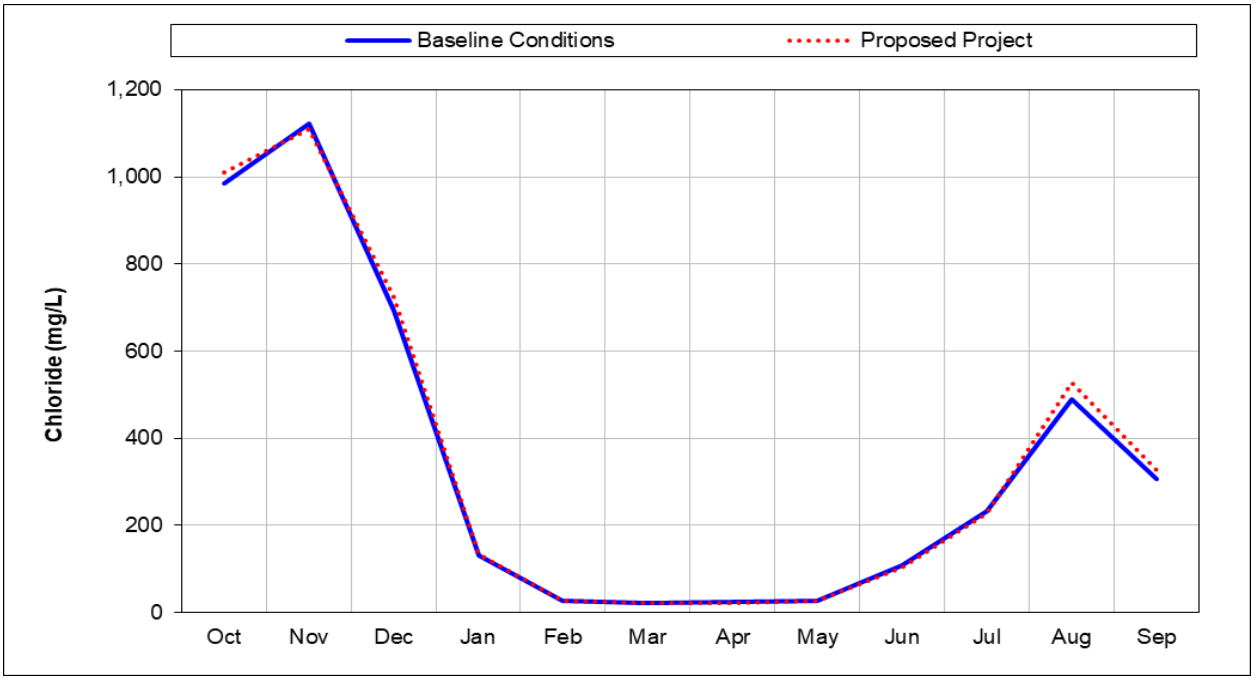

Figure 5A-5c. San Joaquin River at Antioch, Above Normal Year Monthly Average Chloride (in milligrams per liter)

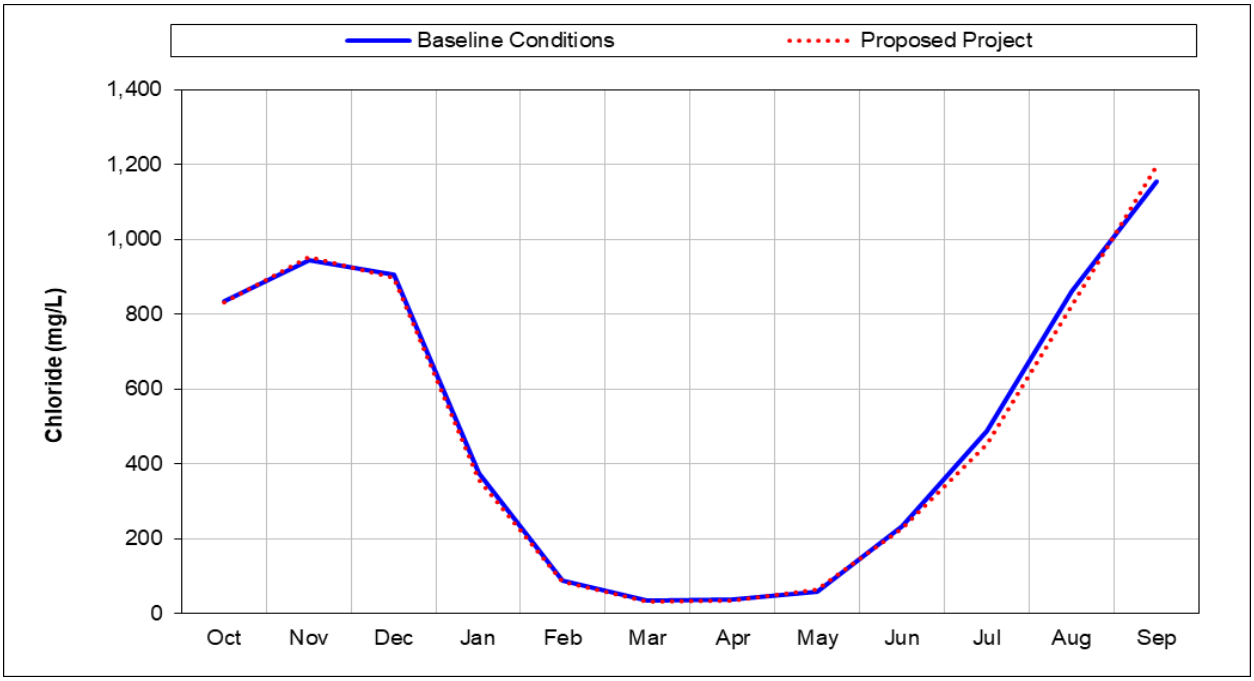

Figure 5A-5d. San Joaquin River at Antioch, Below Normal Year Monthly Average Chloride (in milligrams per liter)

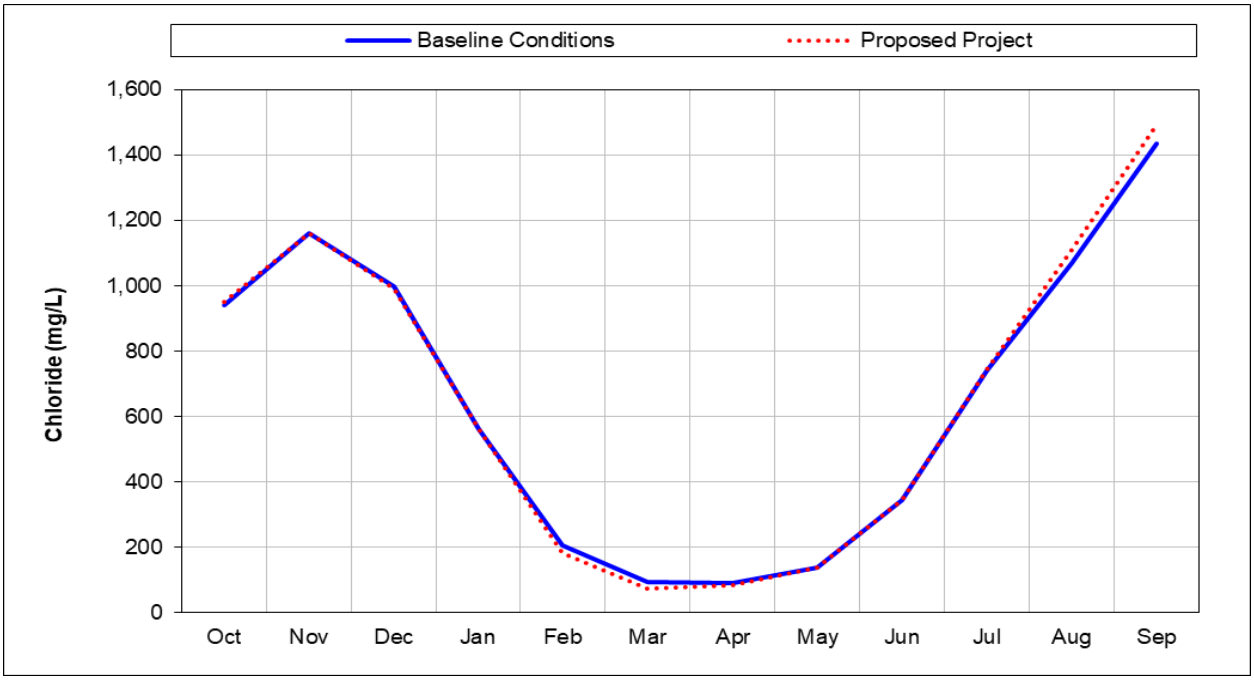

Figure 5A-5e. San Joaquin River at Antioch, Dry Year Monthly Average Chloride (in milligrams per liter)

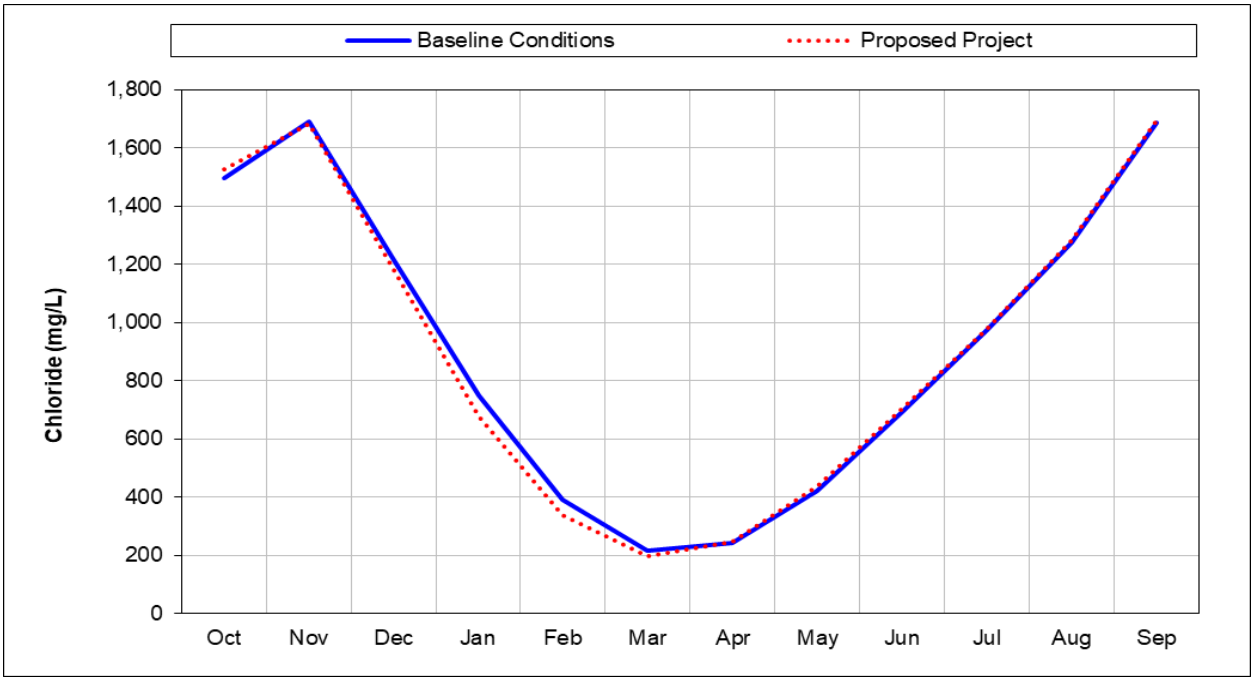

Figure 5A-5f. San Joaquin River at Antioch, Critical Year Monthly Average Chloride (in milligrams per liter)

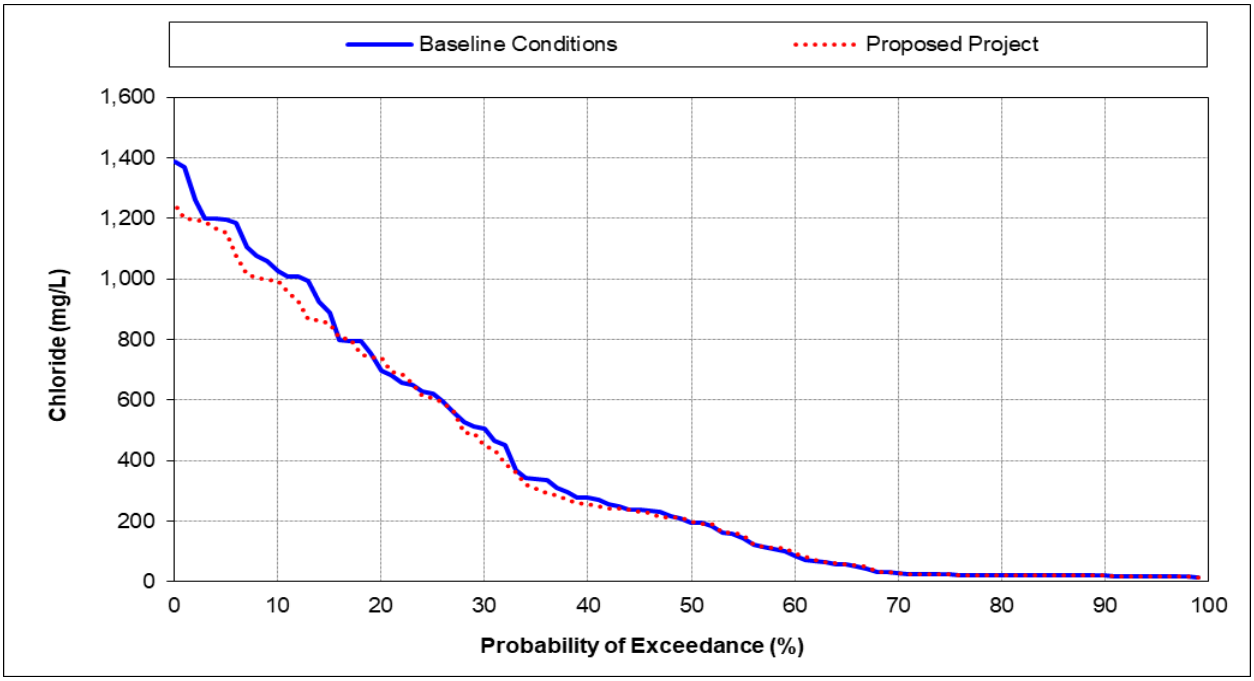

Figure 5A-5g. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), January

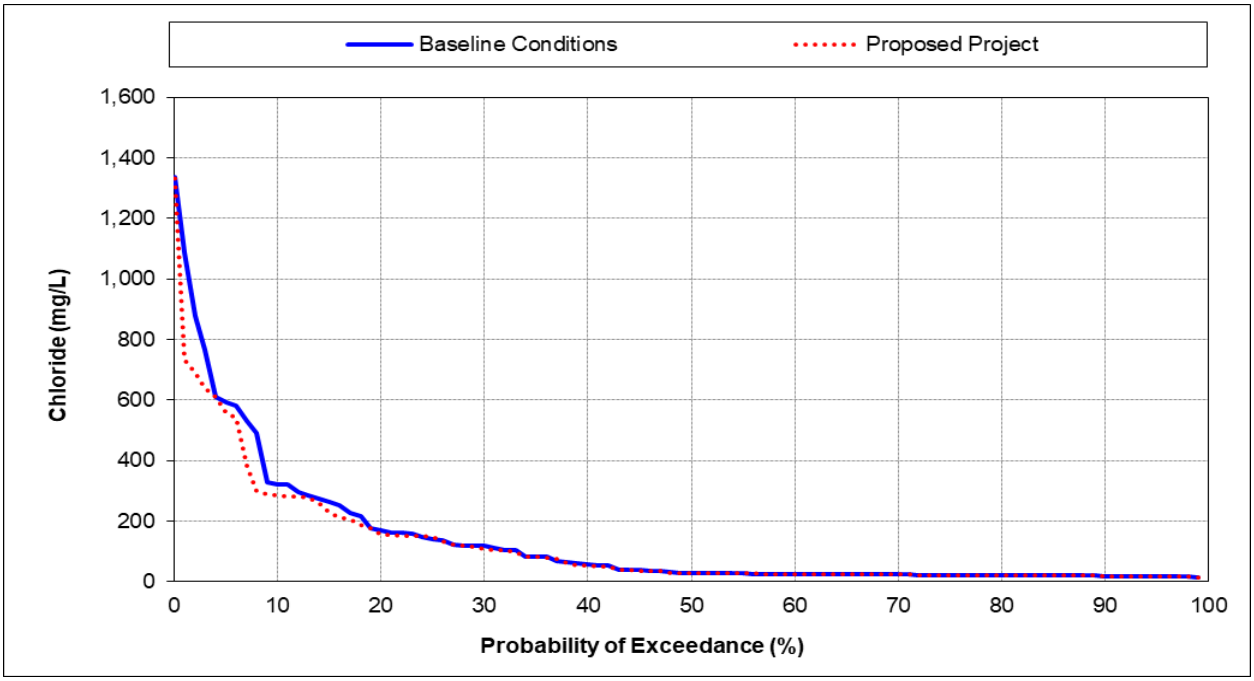

Figure 5A-5h. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), February

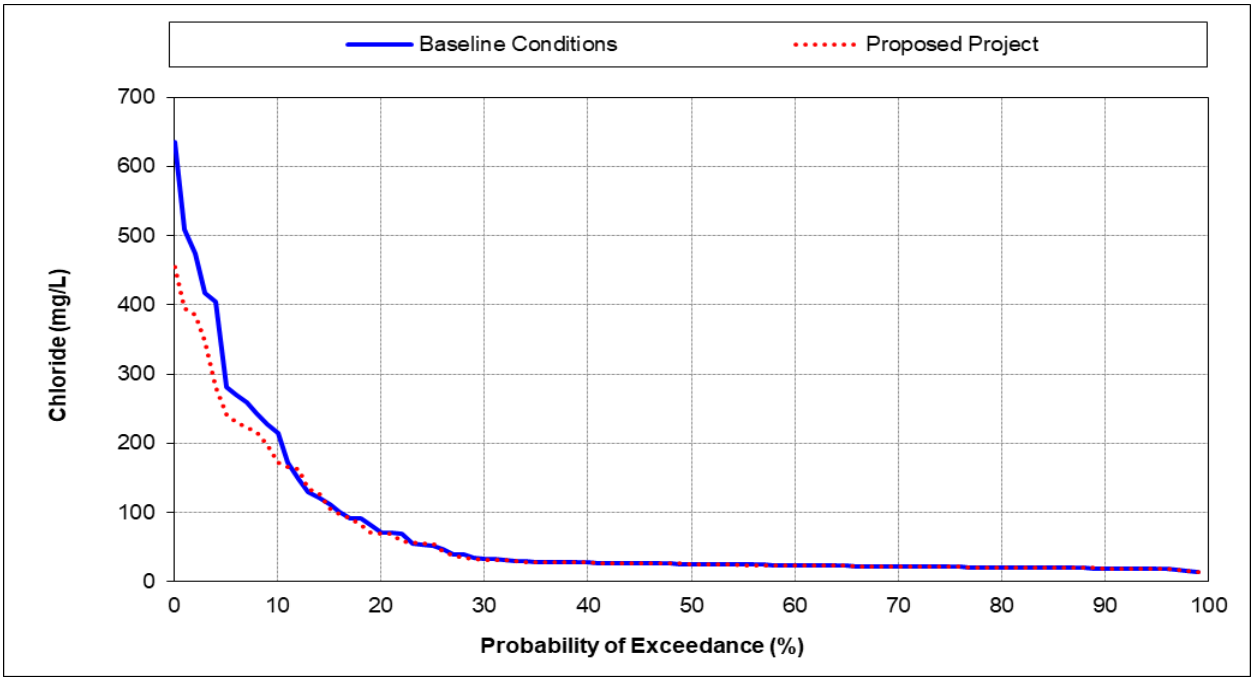

Figure 5A-5i. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), March

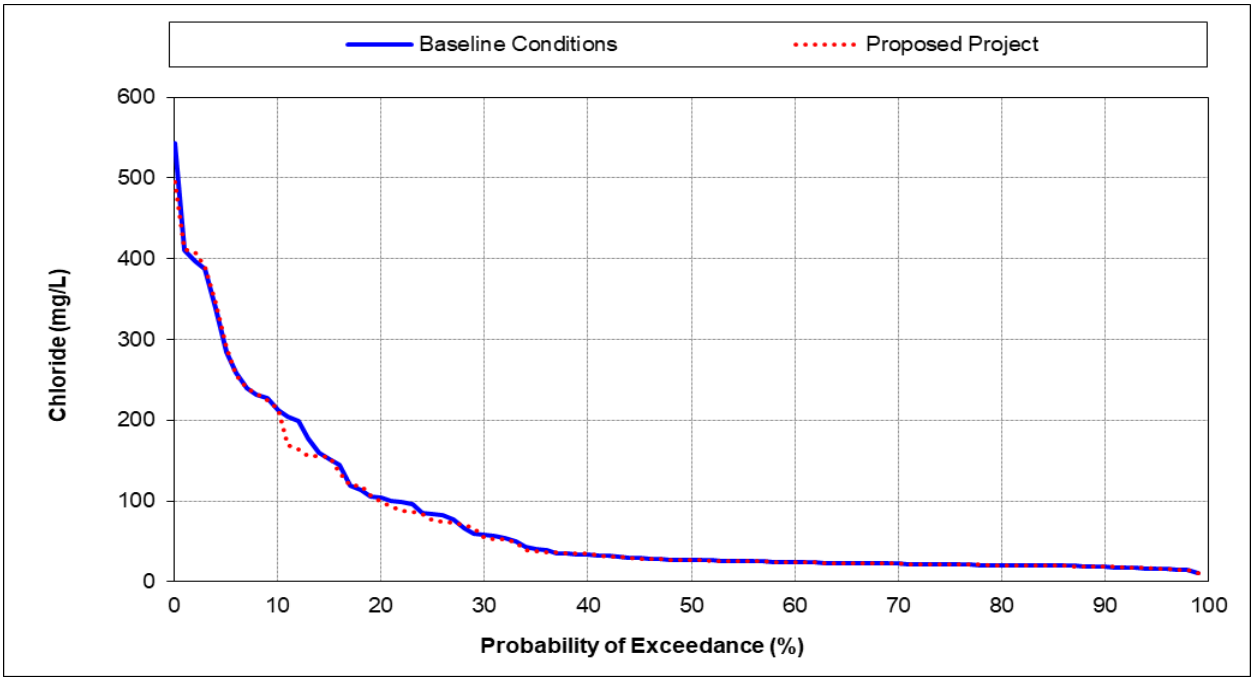

Figure 5A-5j. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), April

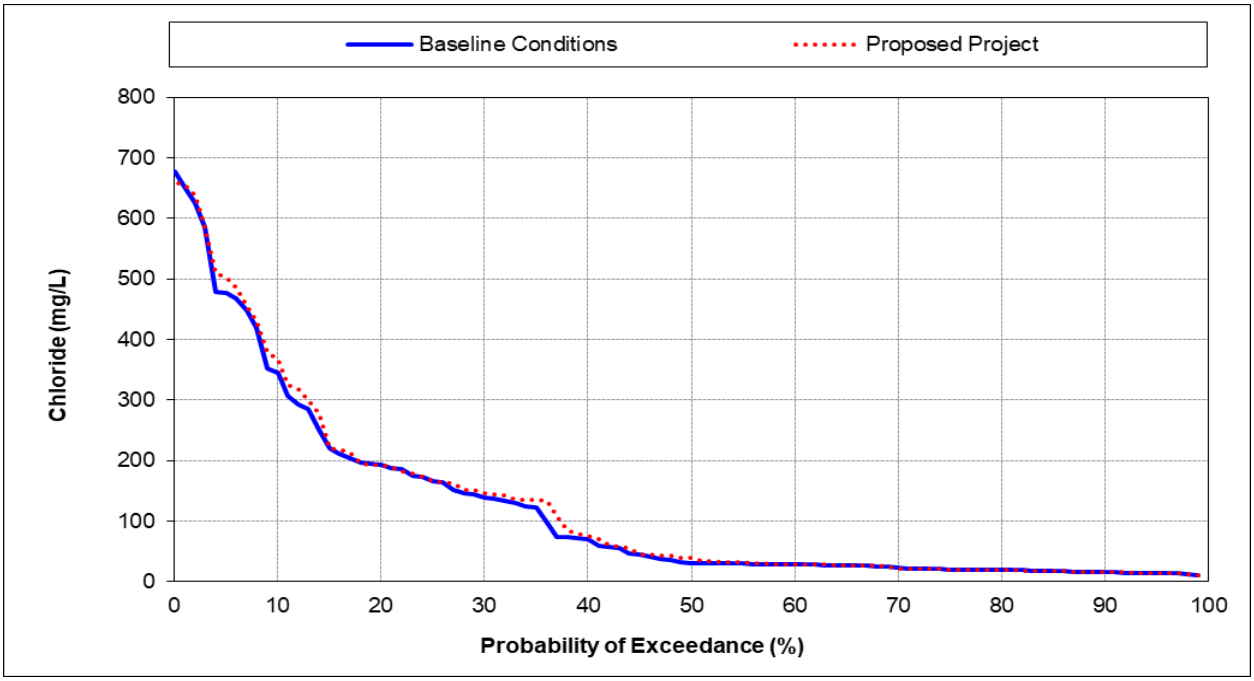

Figure 5A-5k. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), May

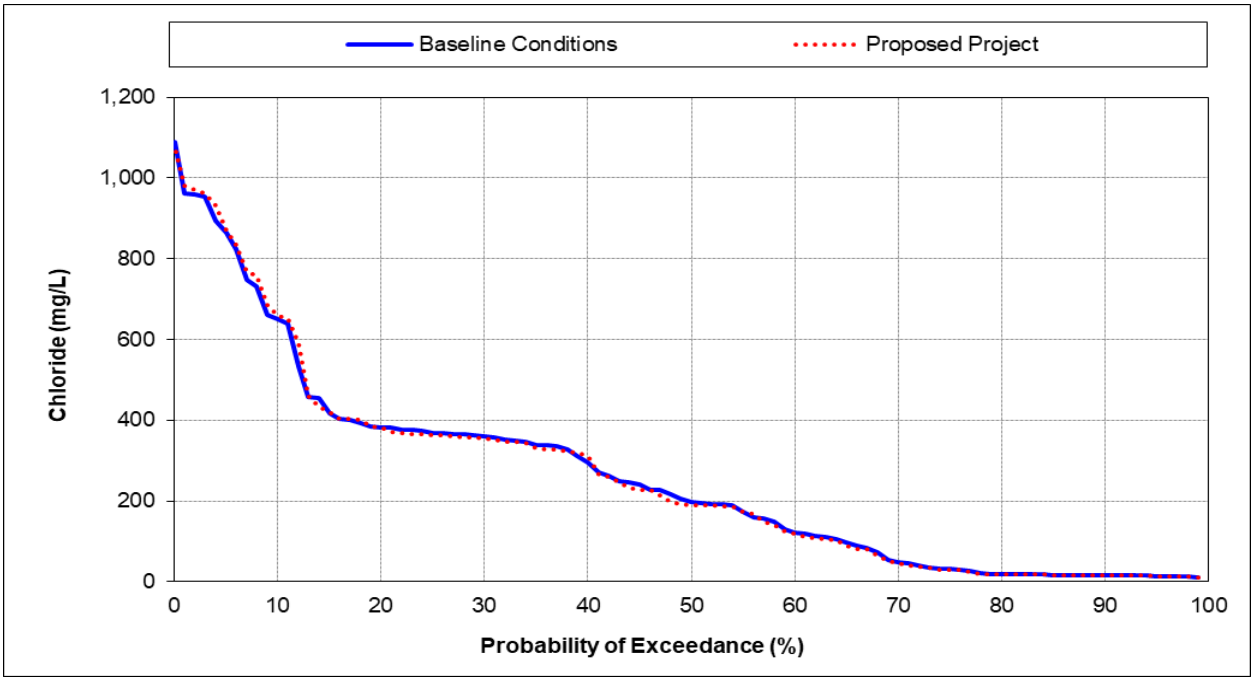

Figure 5A-5l. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), June

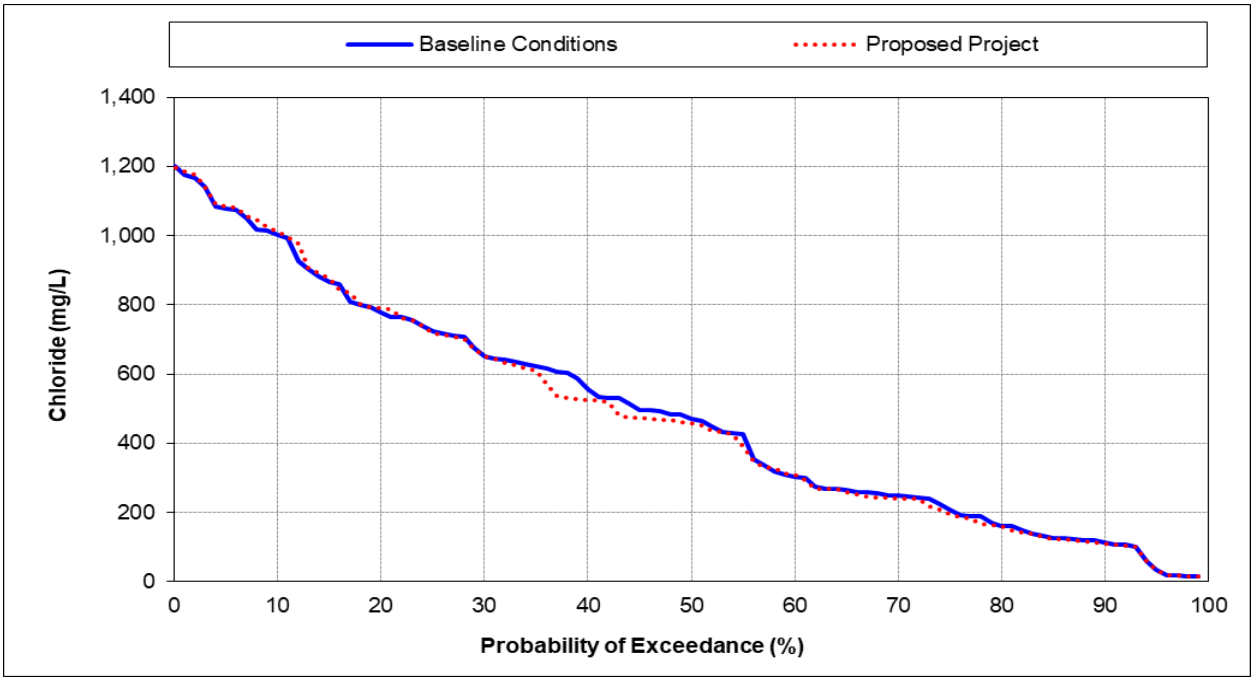

Figure 5A-5m. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), July

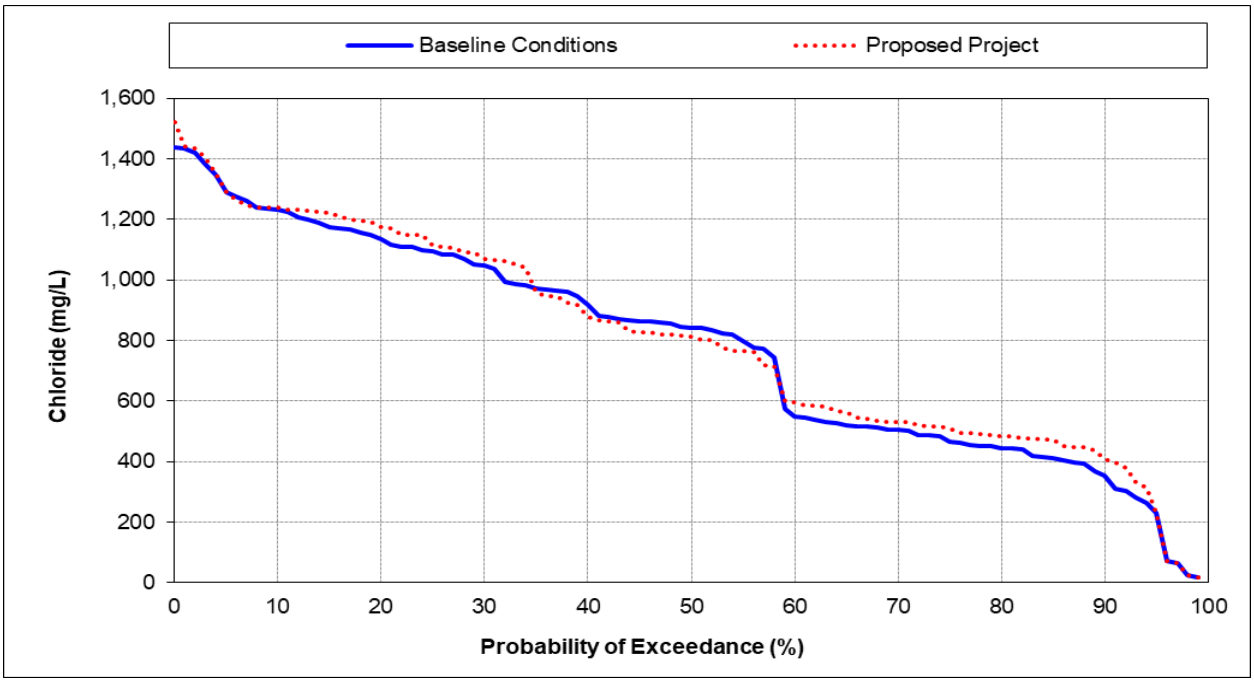

Figure 5A-5n. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), August

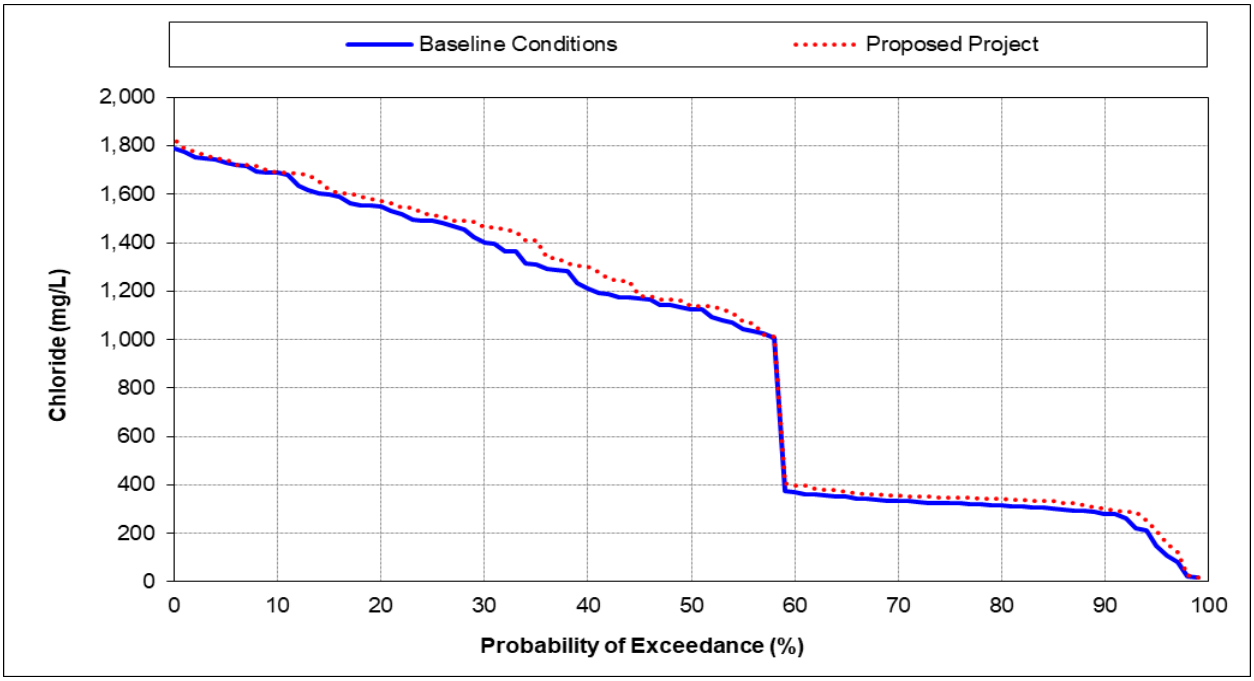

Figure 5A-5o. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), September

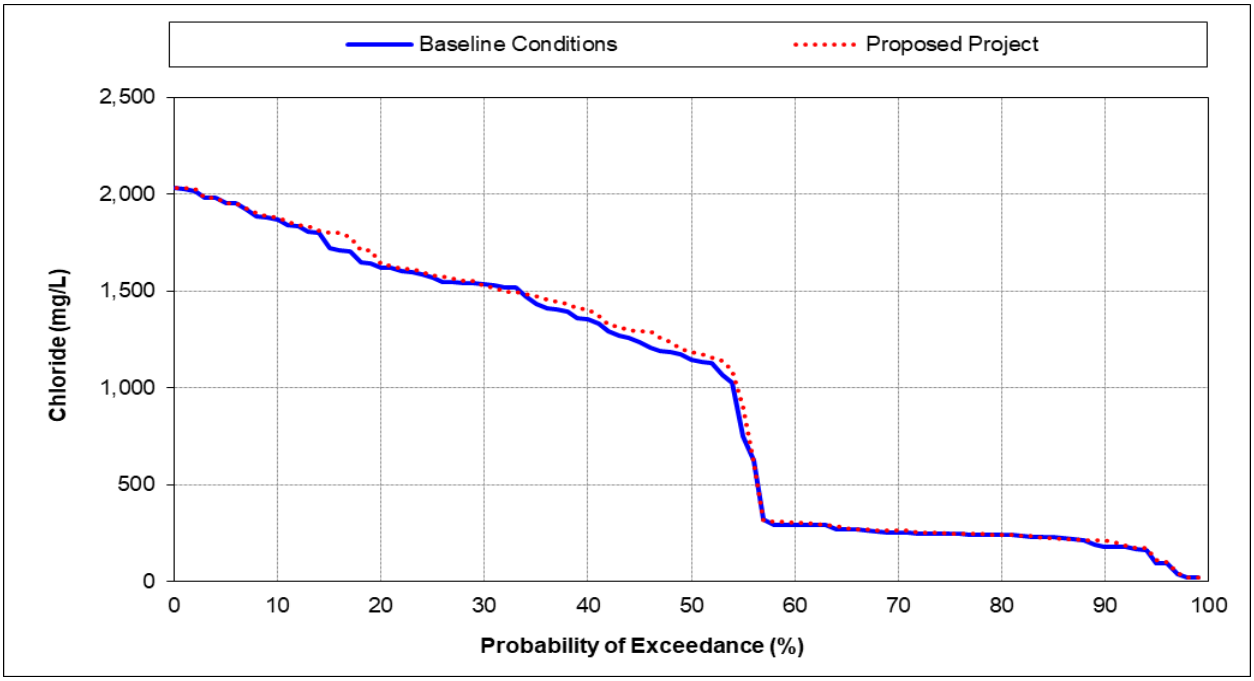

Figure 5A-5p. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), October

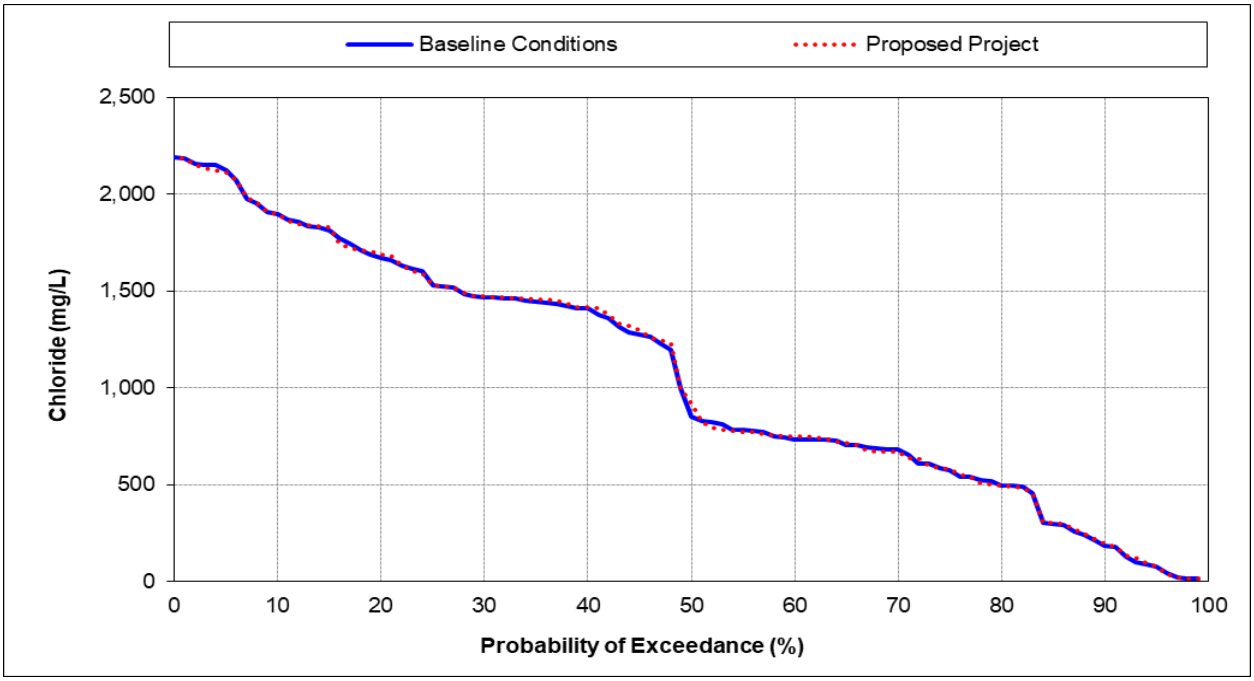

Figure 5A-5q. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), November

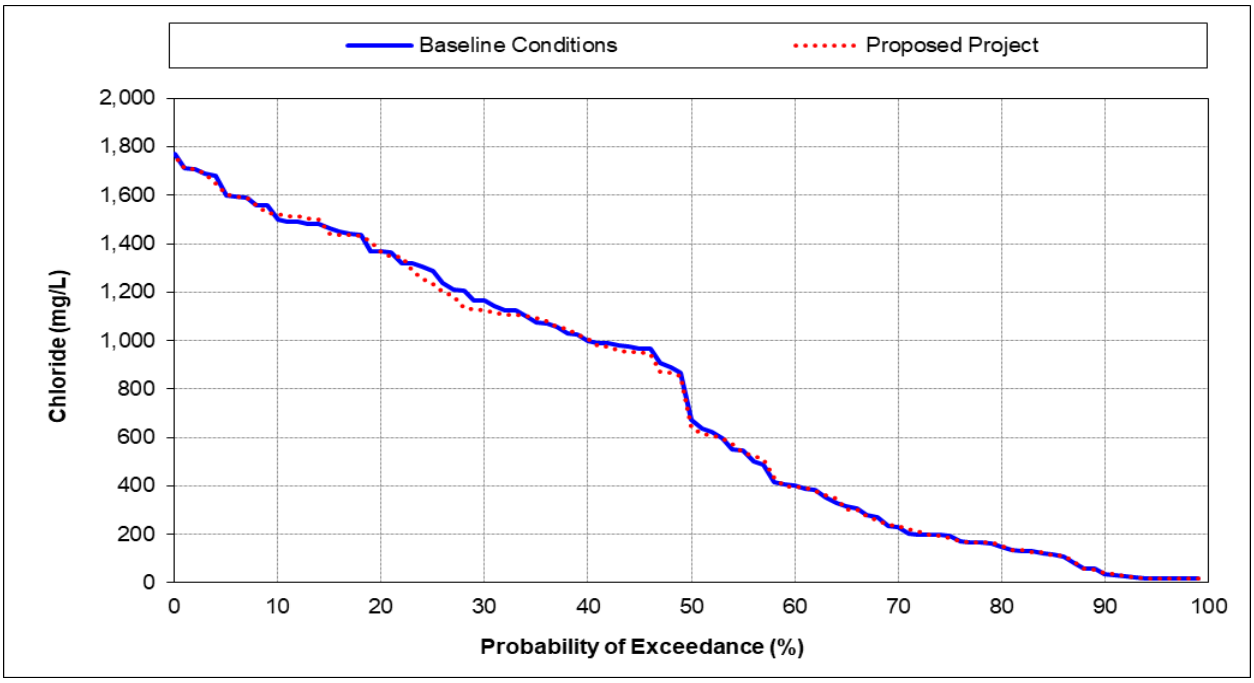

Figure 5A-5r. San Joaquin River at Antioch, Monthly Average Chloride (in milligrams per liter), December

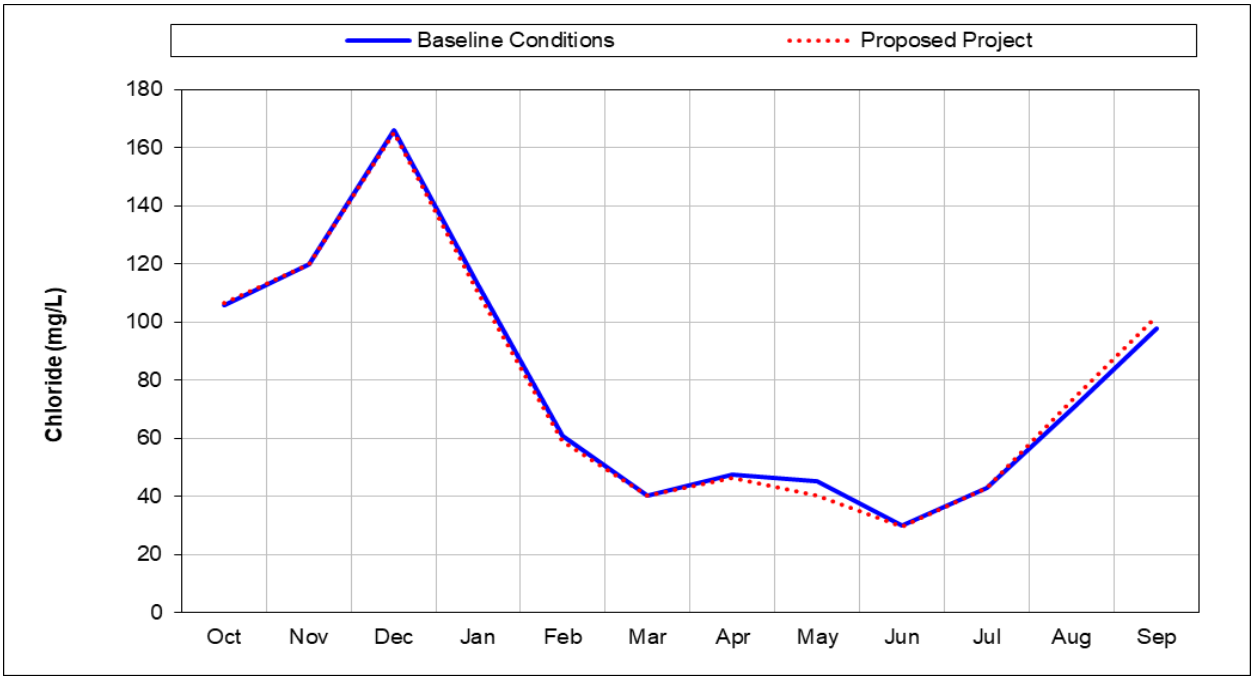

Figure 5A-6a. Contra Costa Water District Pumping Plant #1, Long term Monthly Average Chloride (in milligrams per liter)

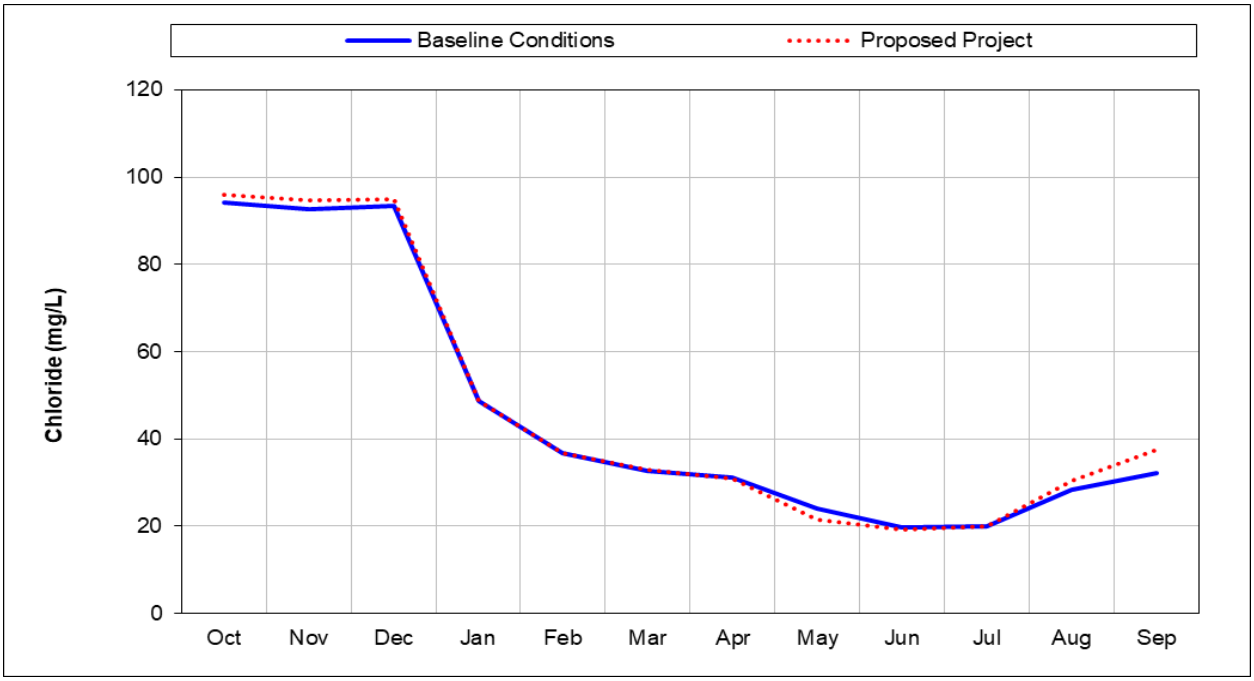

Figure 5A-6b. Contra Costa Water District Pumping Plant #1, Wet Year Monthly Average Chloride (in milligrams per liter)

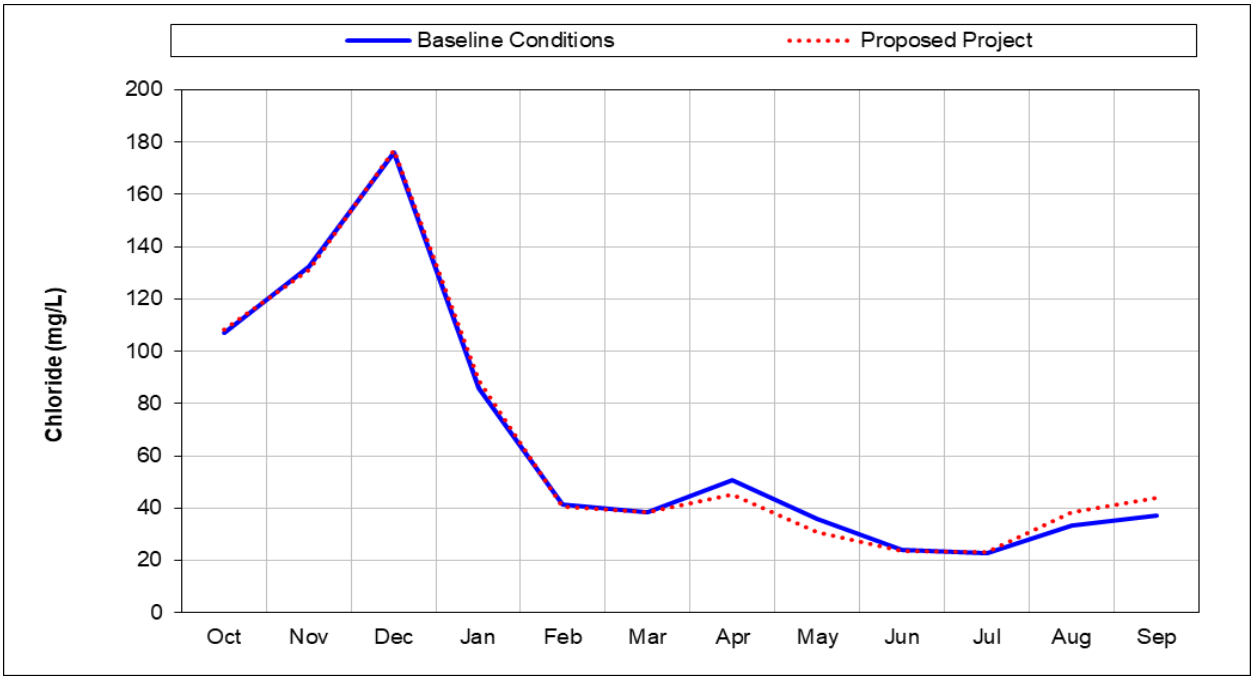

Figure 5A-6c. Contra Costa Water District Pumping Plant #1, Above Normal Year Monthly Average Chloride (in milligrams per liter)

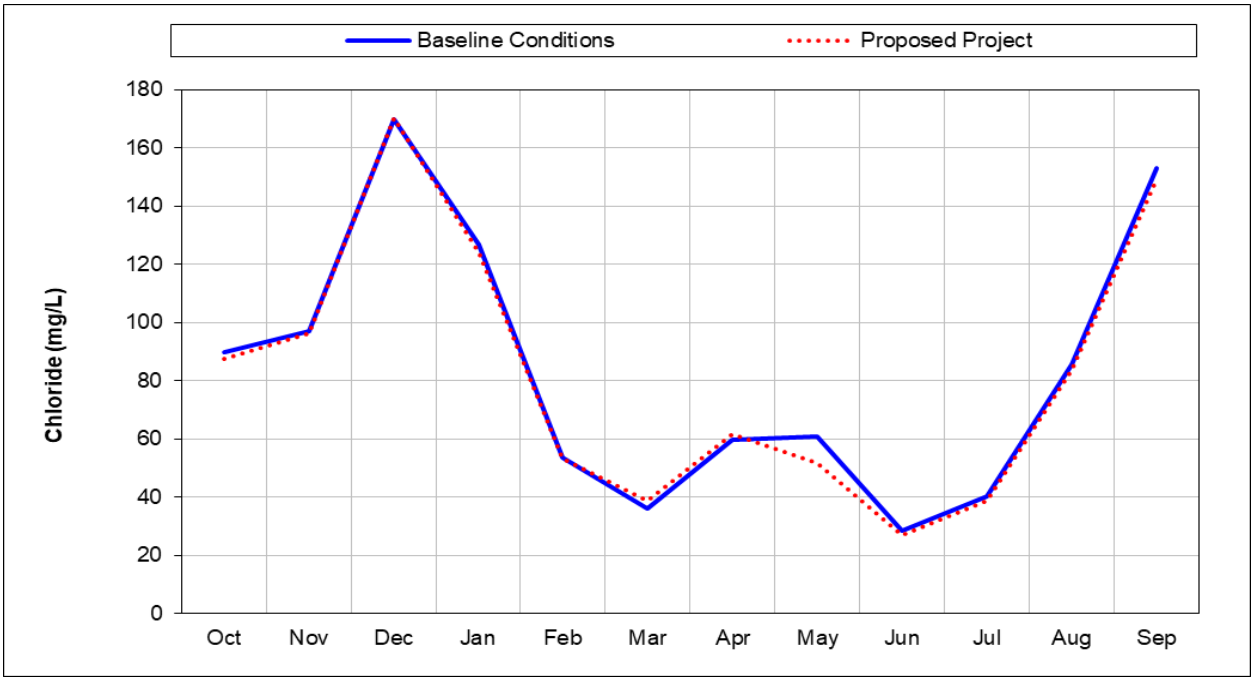

Figure 5A-6d. Contra Costa Water District Pumping Plant #1, Below Normal Year Monthly Average Chloride (in milligrams per liter)

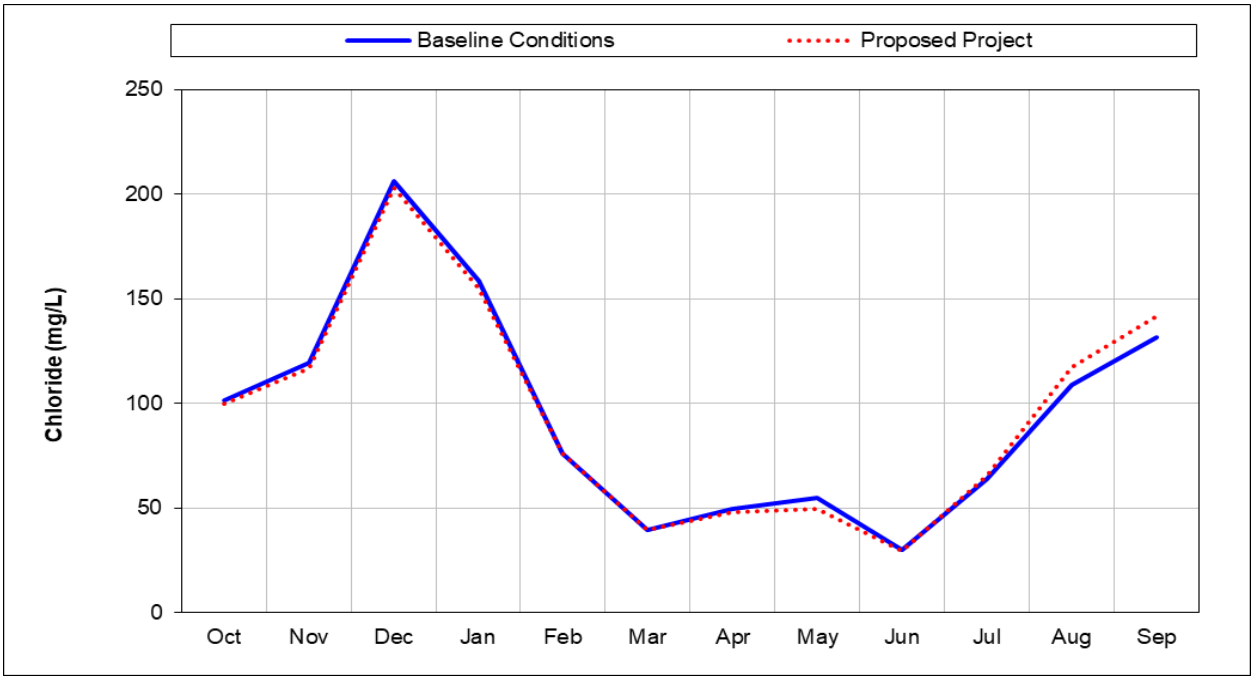

Figure 5A-6e. Contra Costa Water District Pumping Plant #1, Dry Year Monthly Average Chloride (in milligrams per liter)

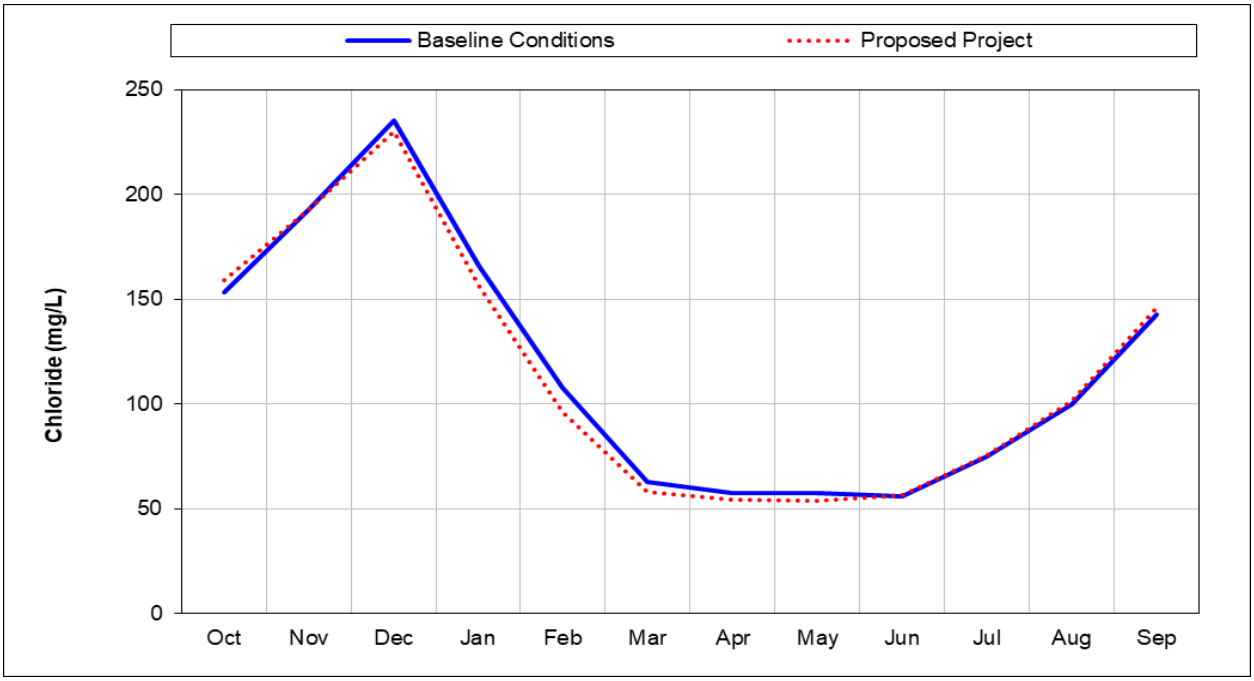

Figure 5A-6f. Contra Costa Water District Pumping Plant #1, Critical Year Monthly Average Chloride (in milligrams per liter)

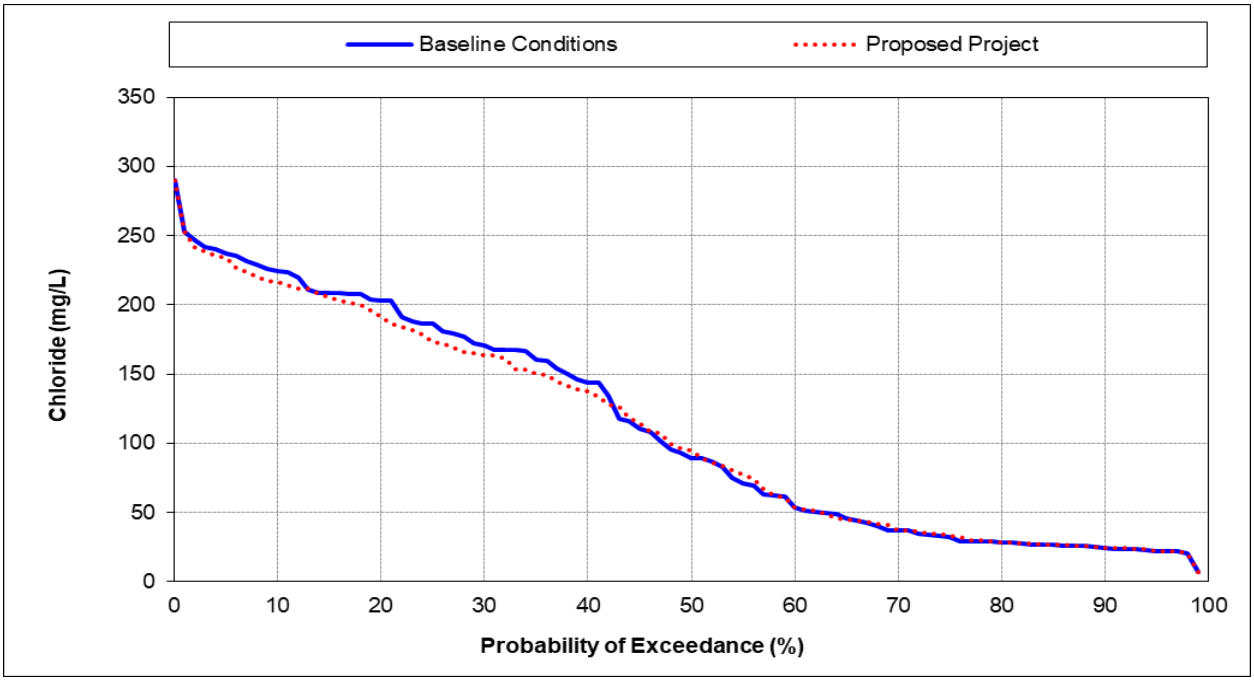

Figure 5A-6g. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), January

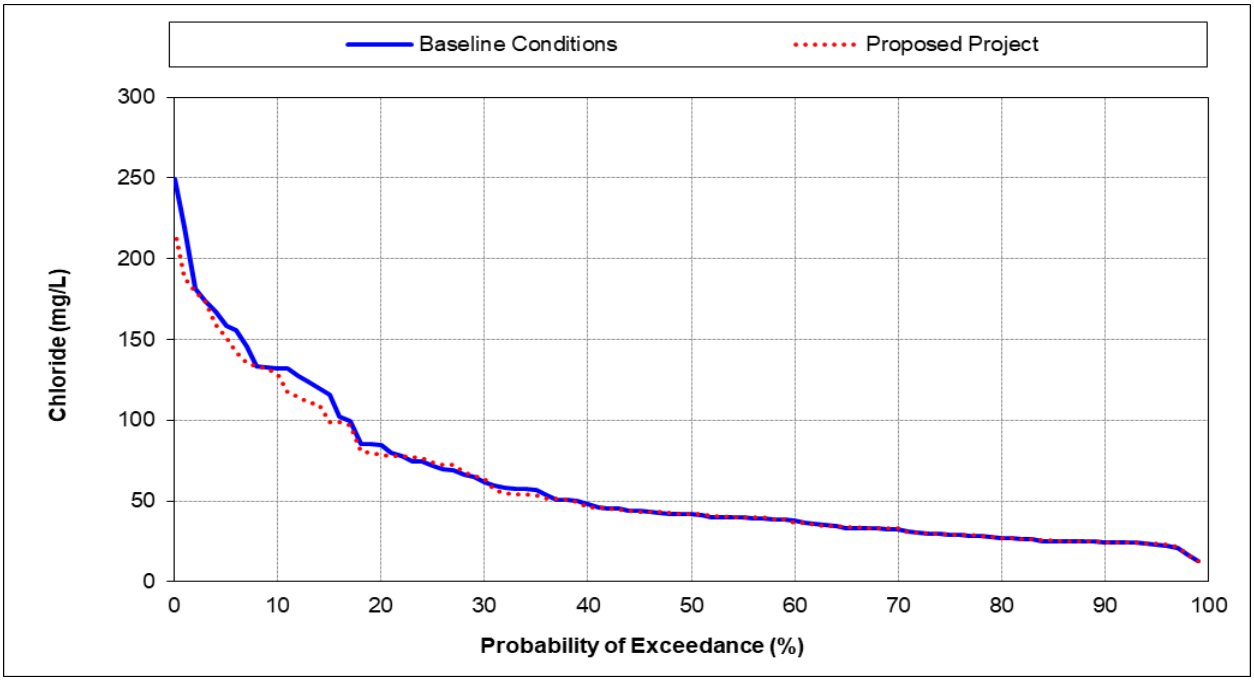

Figure 5A-6h. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), February

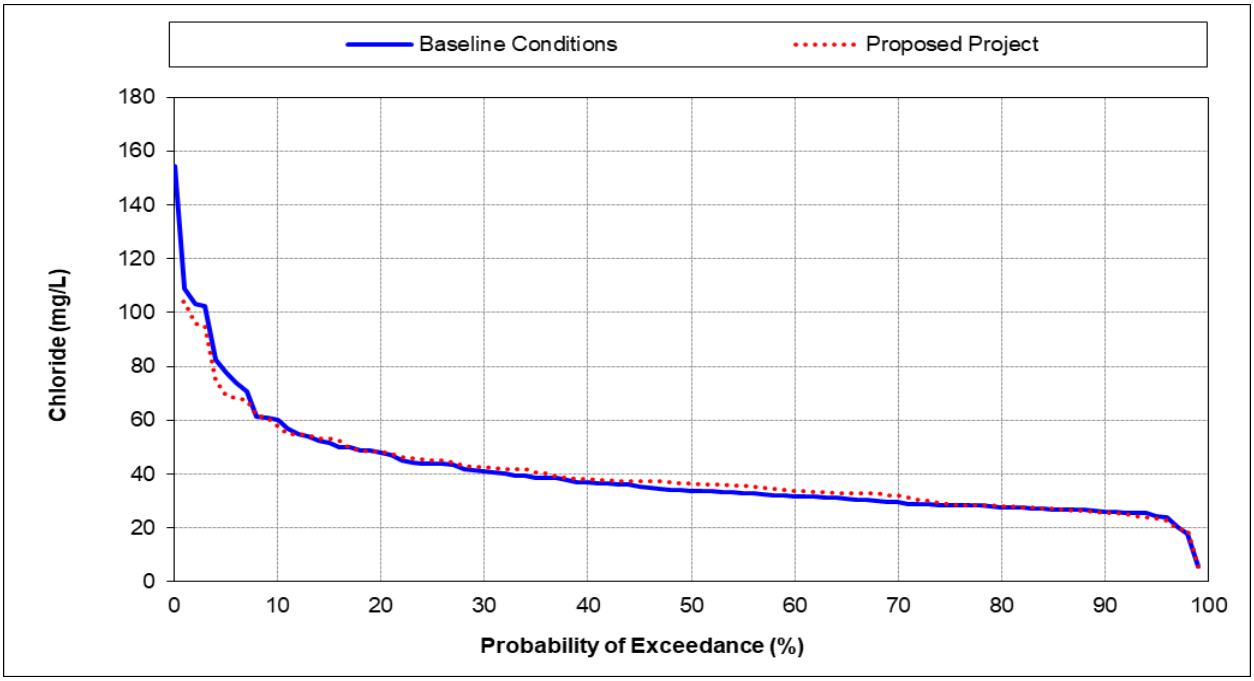

Figure 5A-6i. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), March

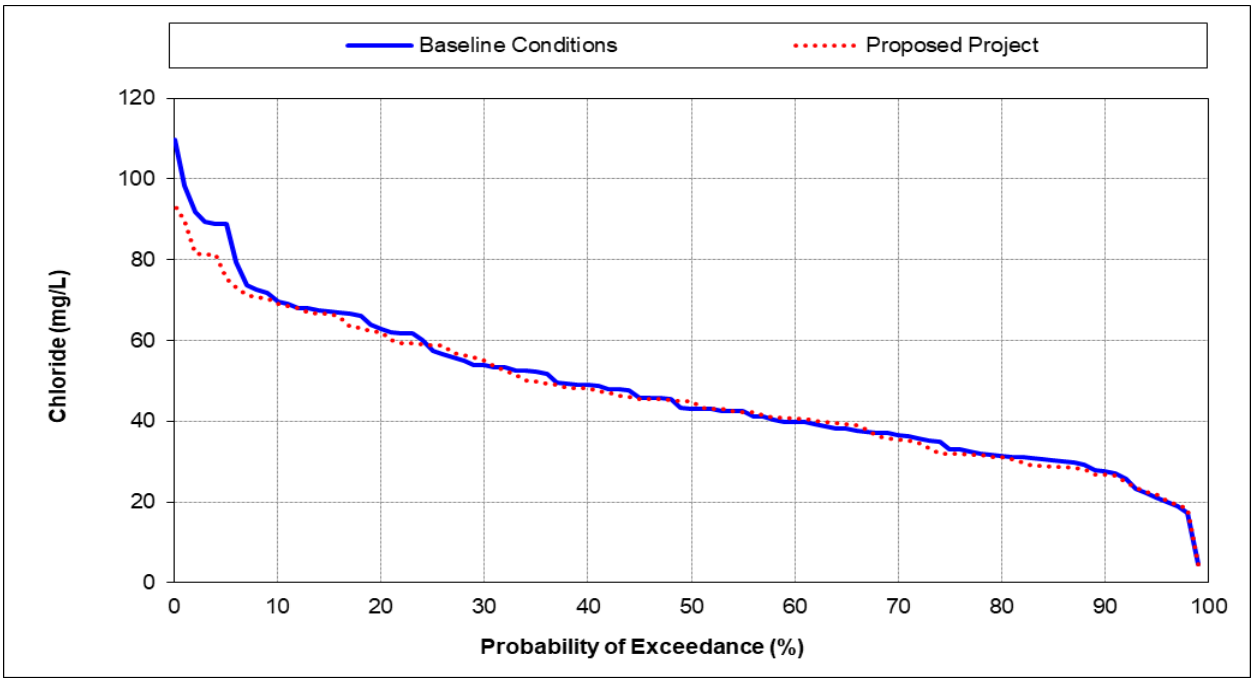

Figure 5A-6j. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), April

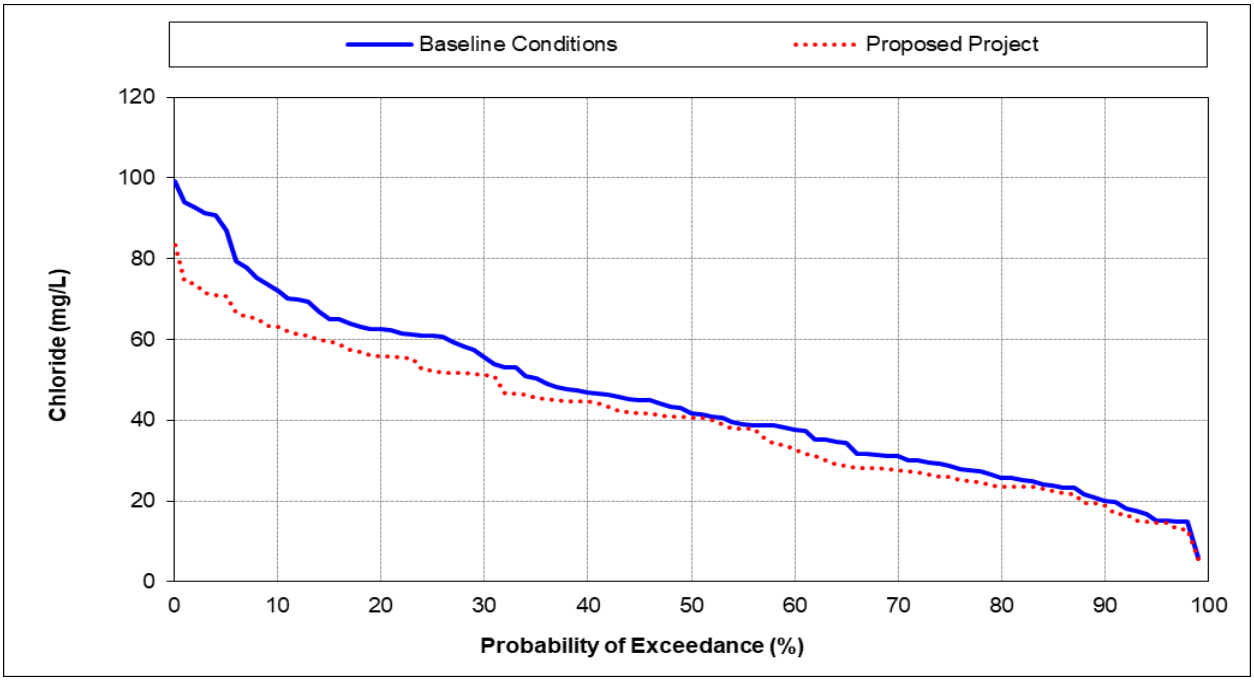

Figure 5A-6k. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), May

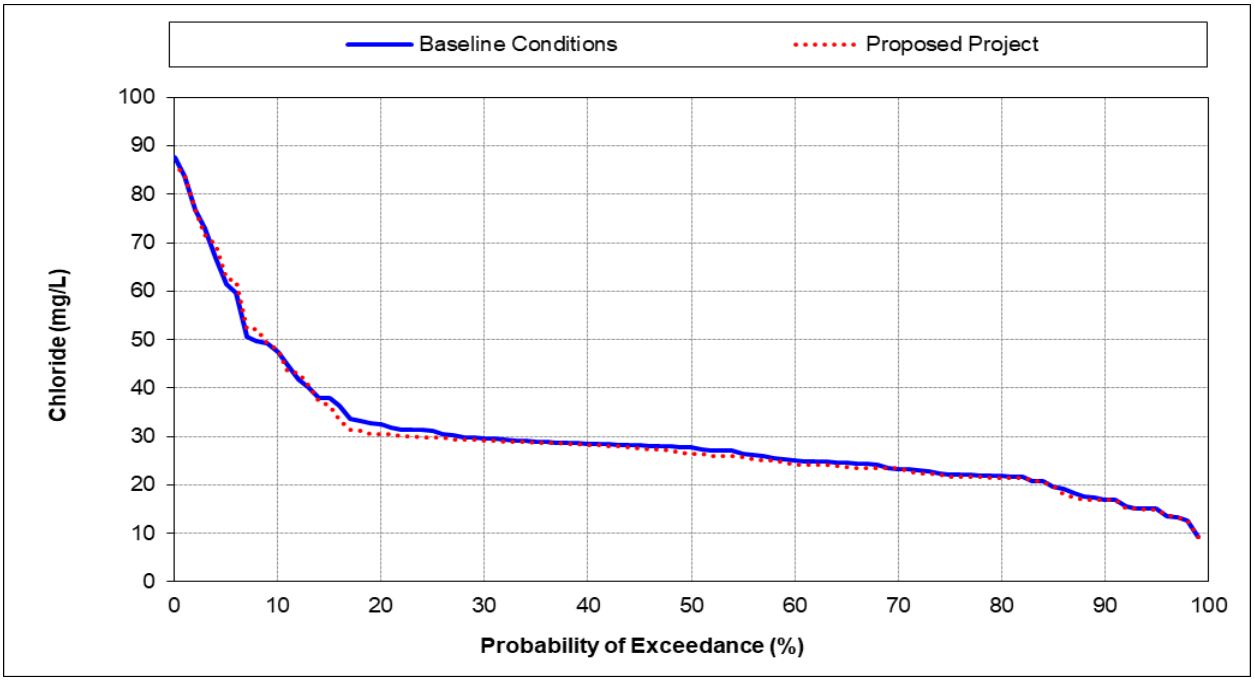

Figure 5A-6l. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), June

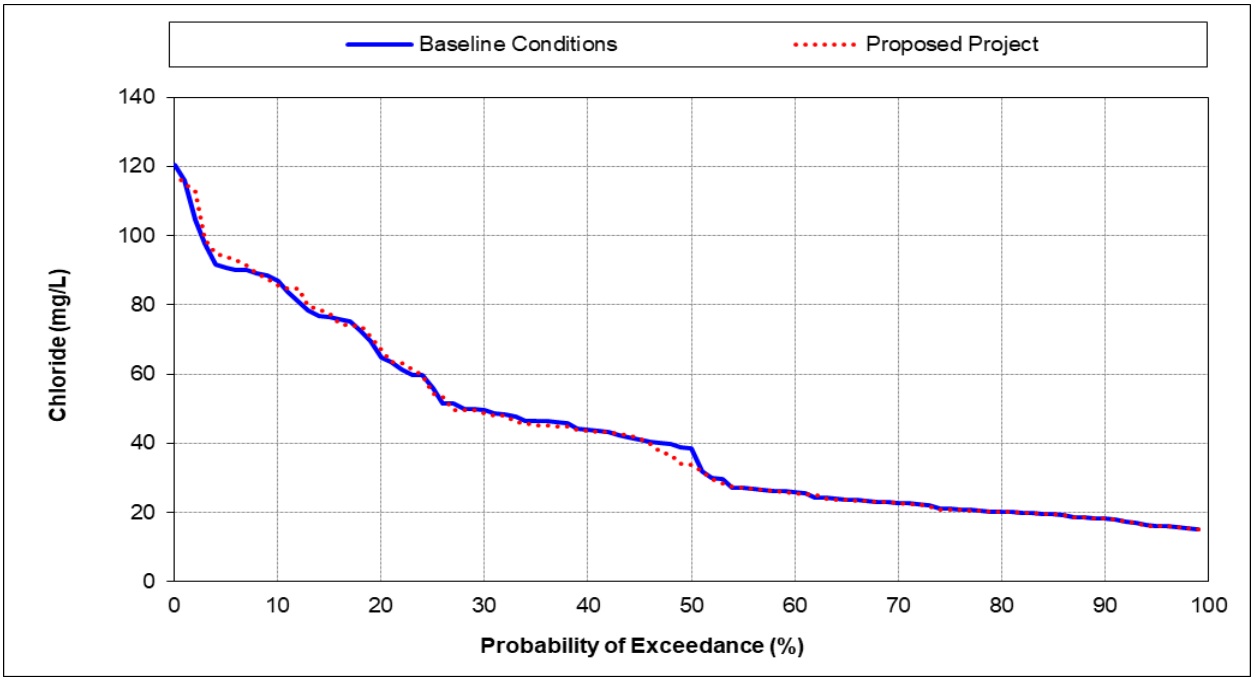

Figure 5A-6m. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), July

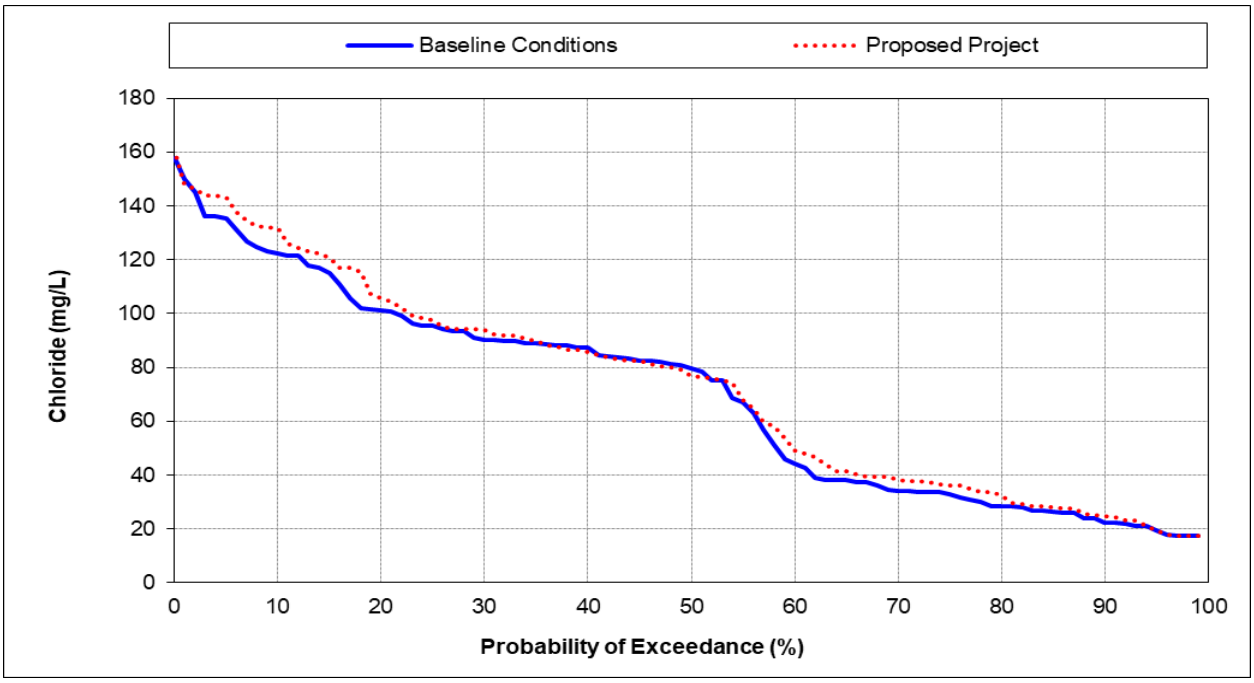

Figure 5A-6n. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), August

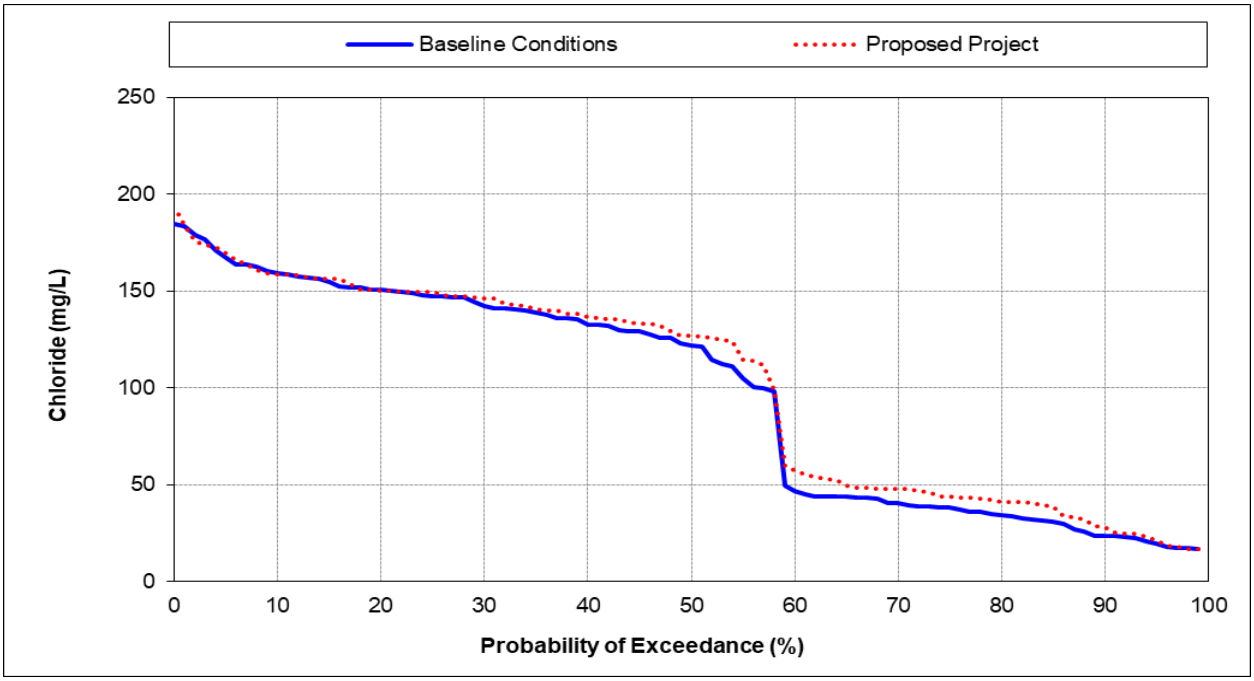

Figure 5A-6o. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), September

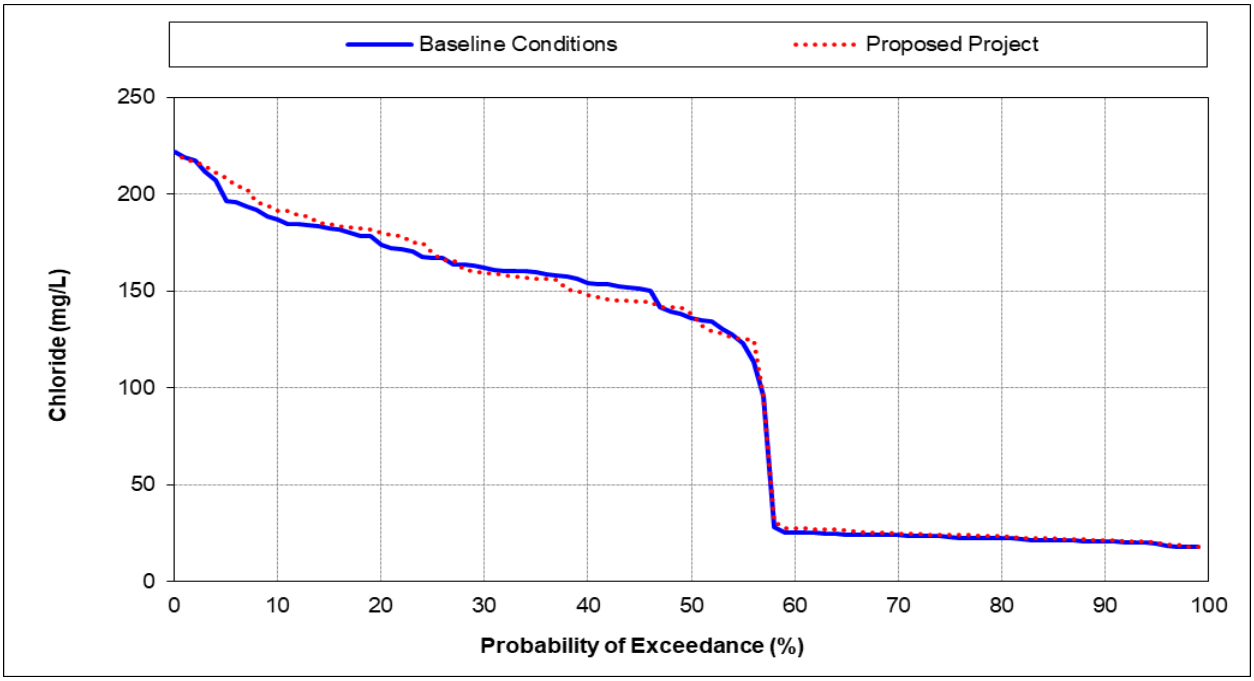

Figure 5A-6p. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), October

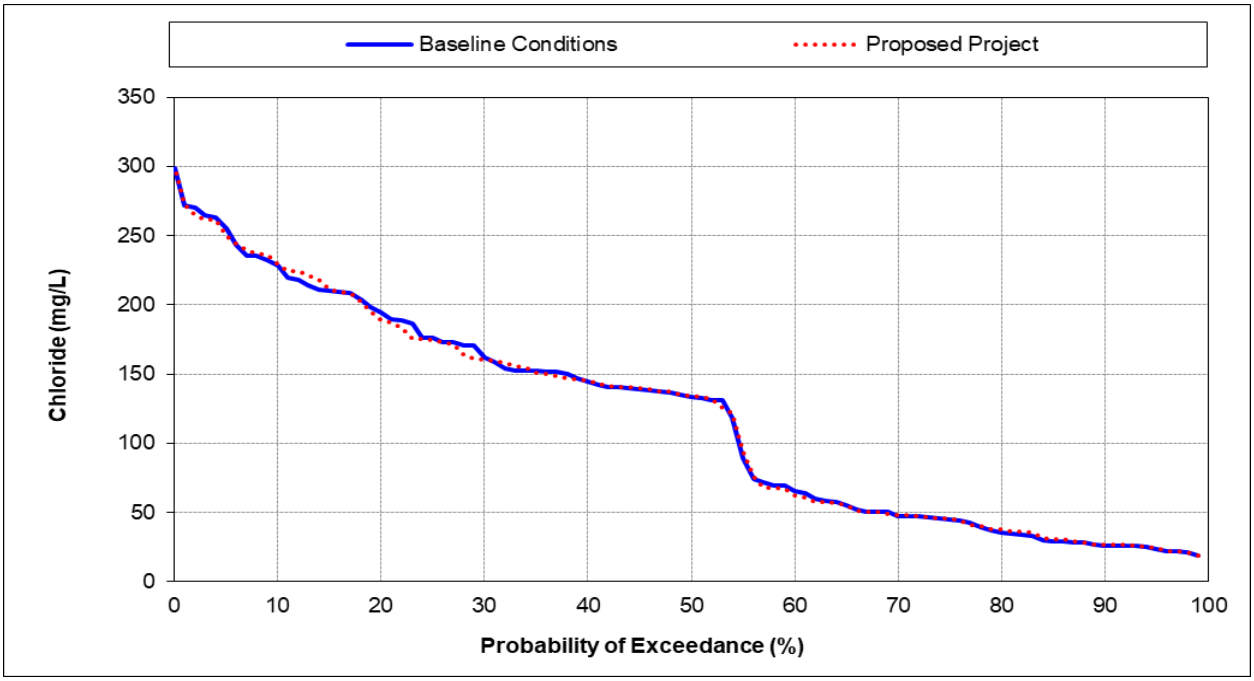

Figure 5A-6q. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), November

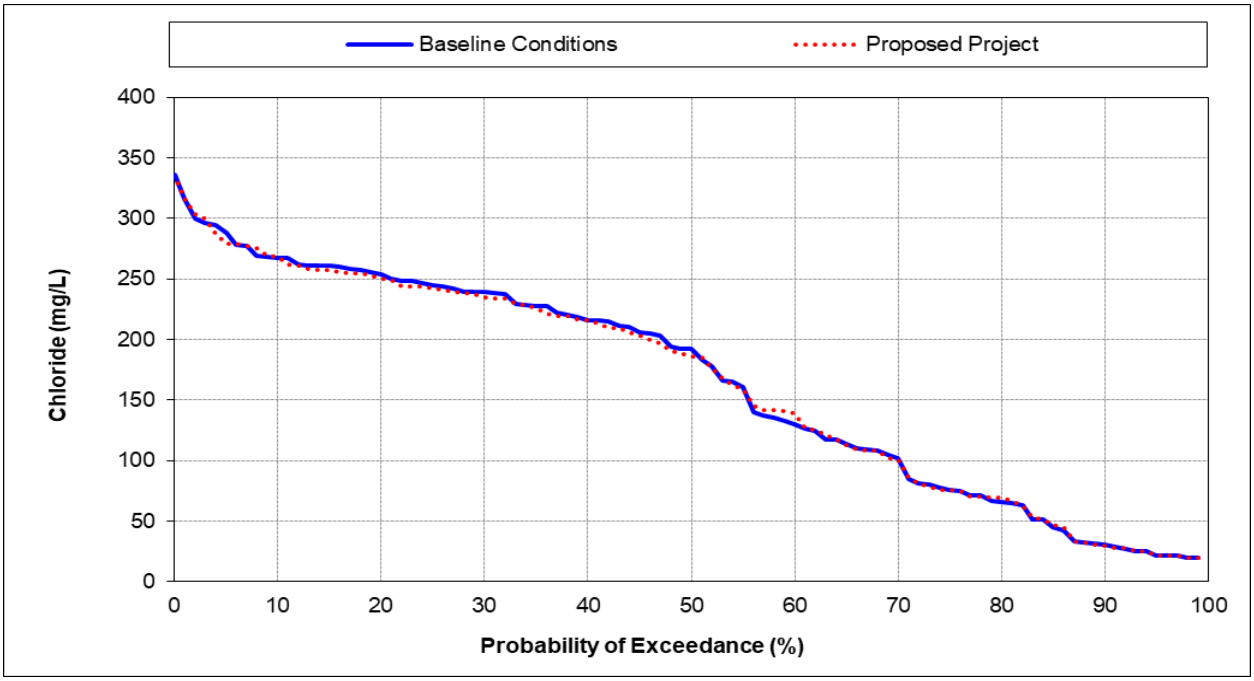

Figure 5A-6r. Contra Costa Water District Pumping Plant #1, Monthly Average Chloride (in milligrams per liter), December

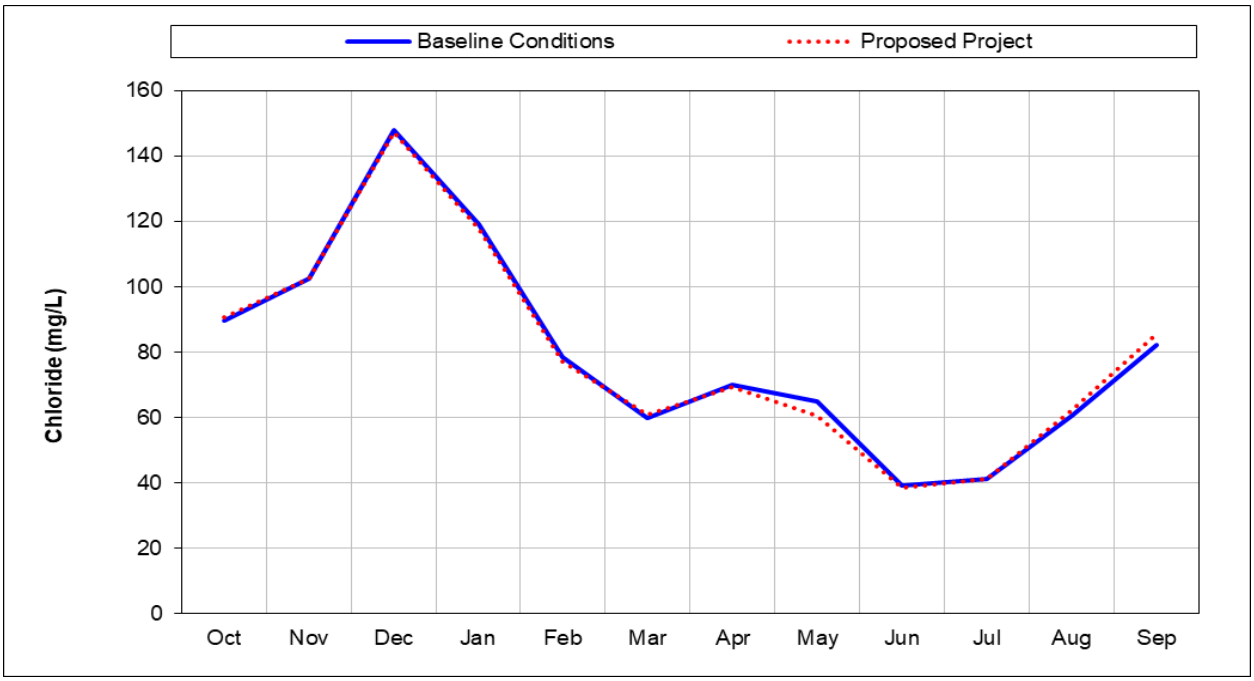

Figure 5A-7a. Old River at State Route 4, Long term Monthly Average Chloride (in milligrams per liter)

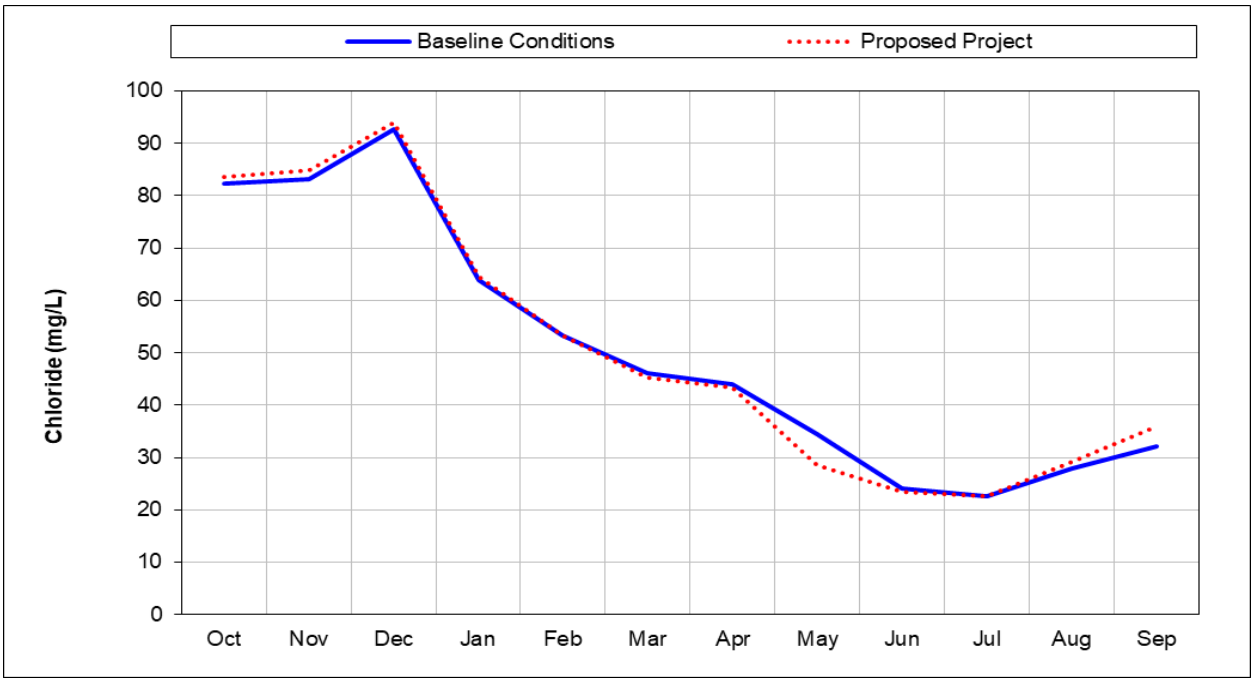

Figure 5A-7b. Old River at State Route 4, Wet Year Monthly Average Chloride (in milligrams per liter)

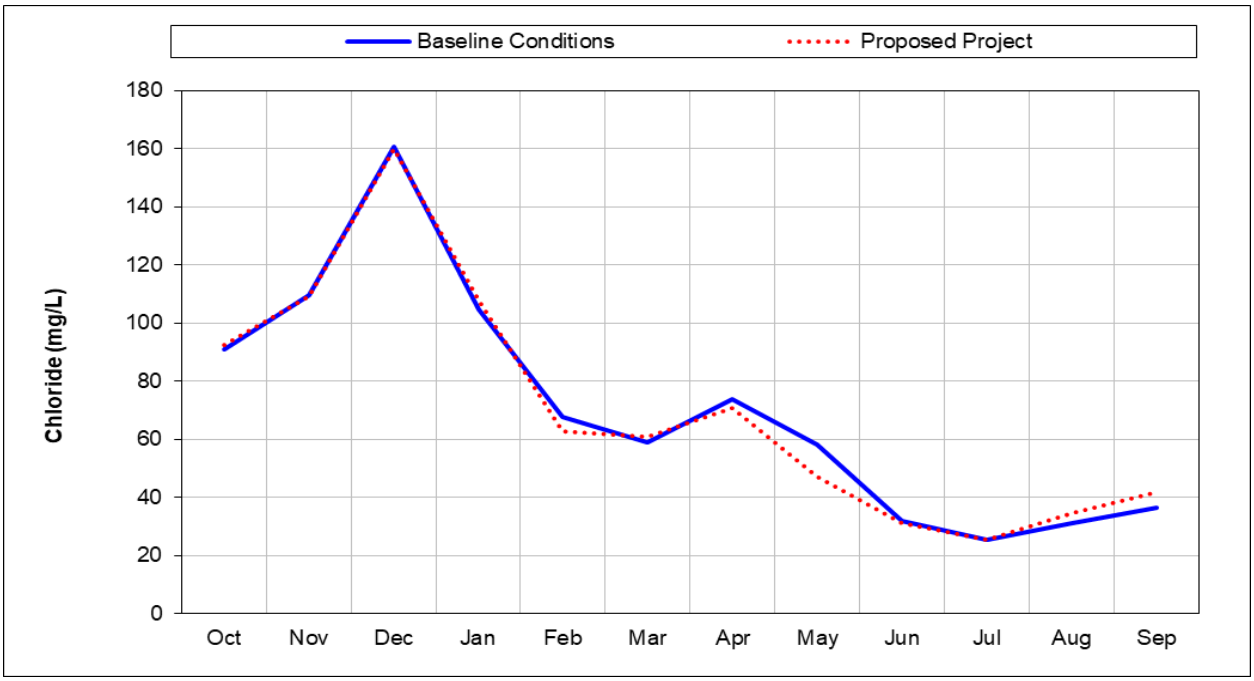

Figure 5A-7c. Old River at State Route 4, Above Normal Year Monthly Average Chloride (in milligrams per liter)

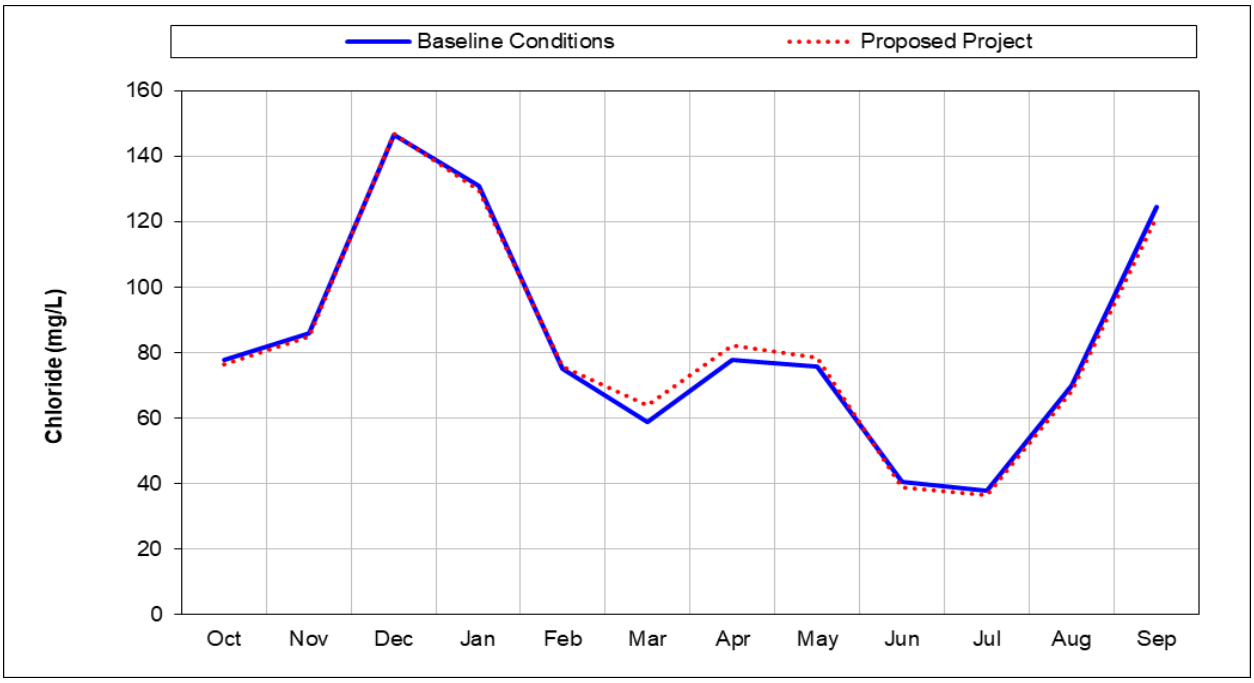

Figure 5A-7d. Old River at State Route 4, Below Normal Year Monthly Average Chloride (in milligrams per liter)

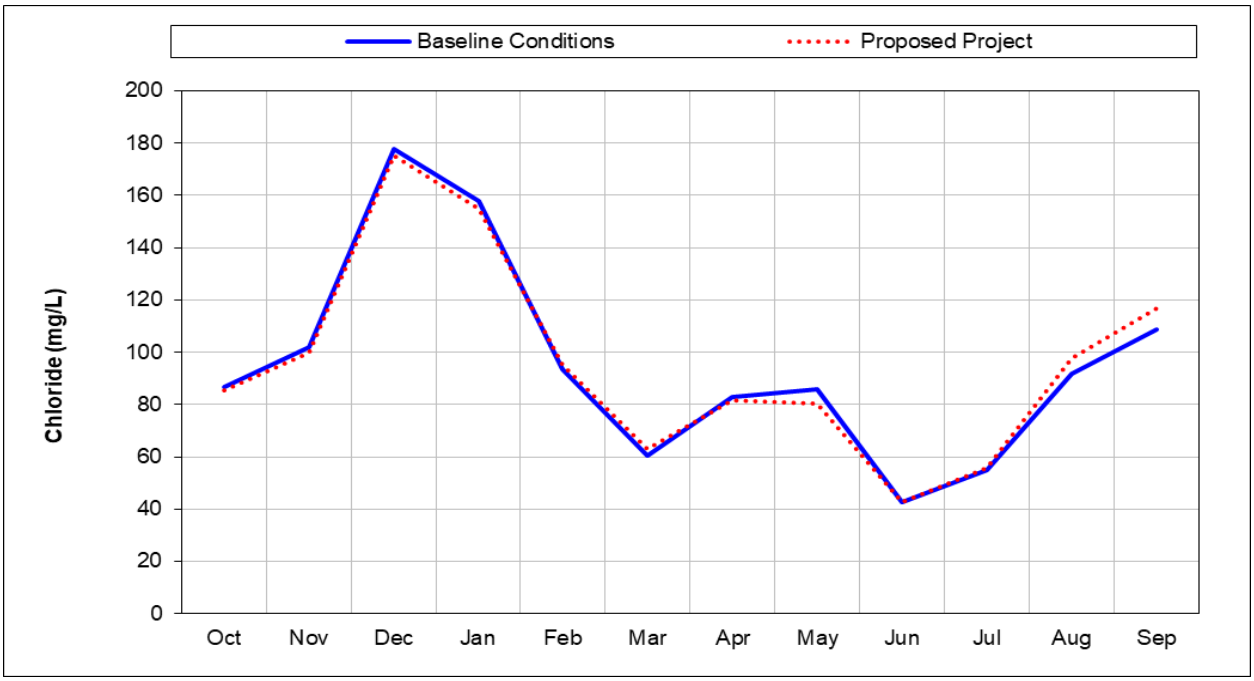

Figure 5A-7e. Old River at State Route 4, Dry Year Monthly Average Chloride (in milligrams per liter)

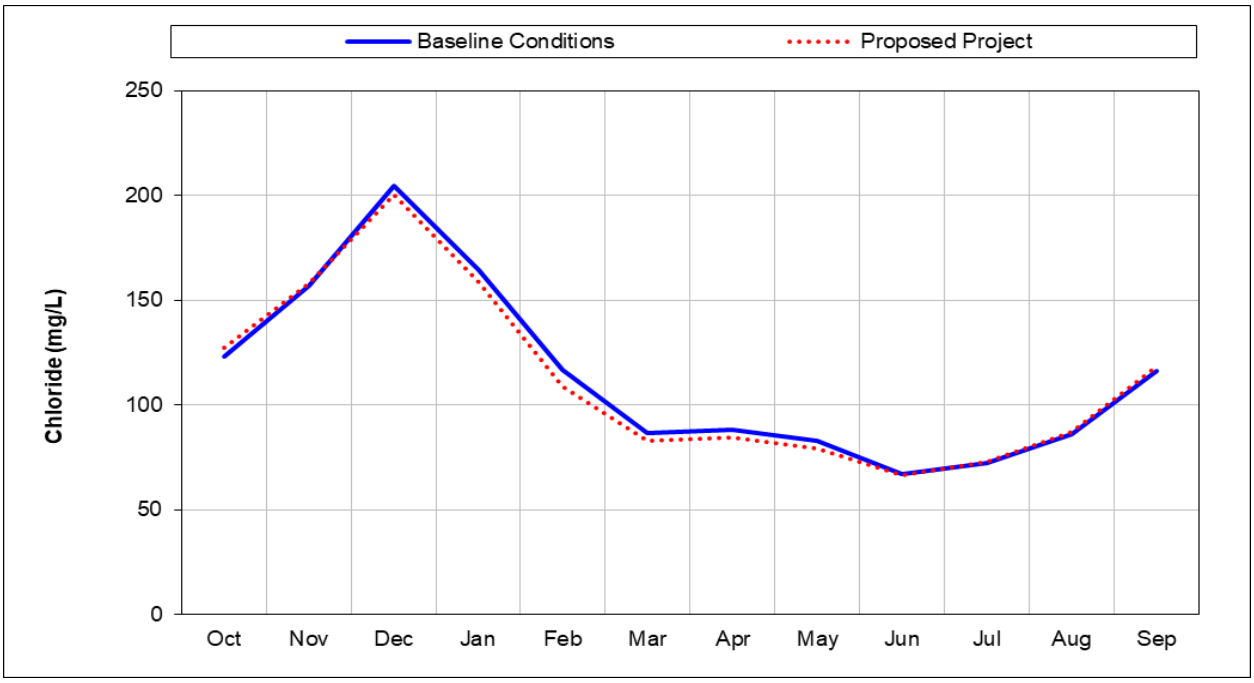

Figure 5A-7f. Old River at State Route 4, Critical Year Monthly Average Chloride (in milligrams per liter)

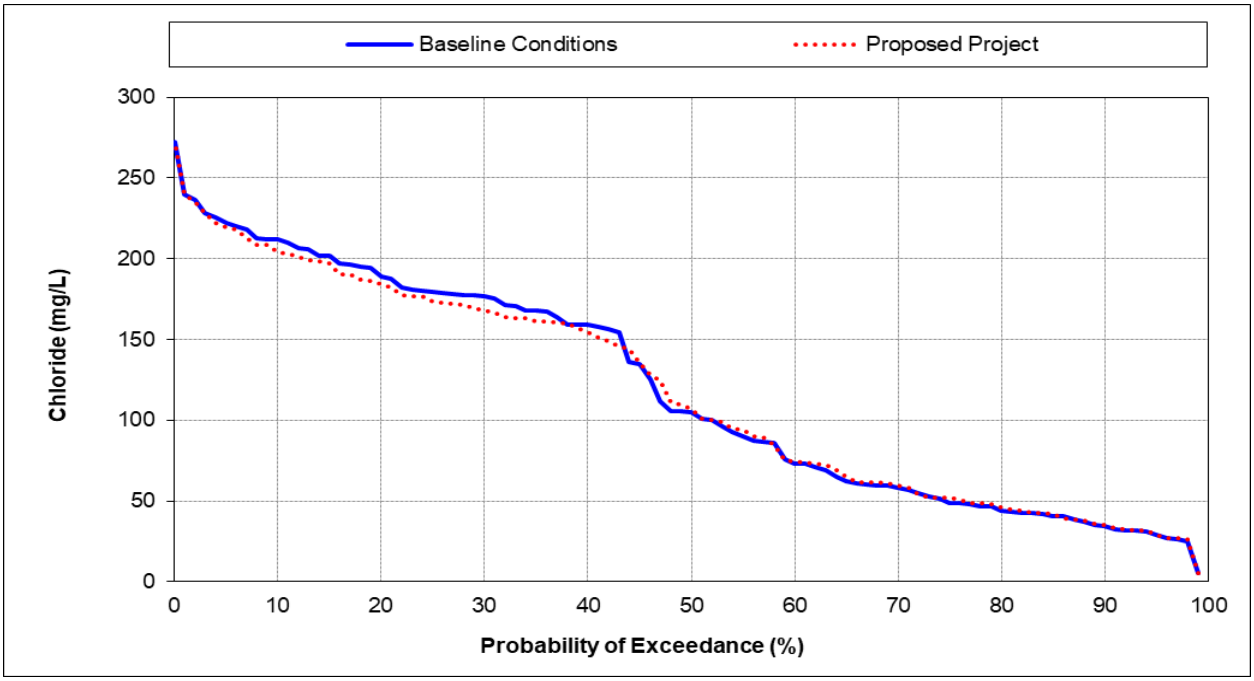

Figure 5A-7g. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), January

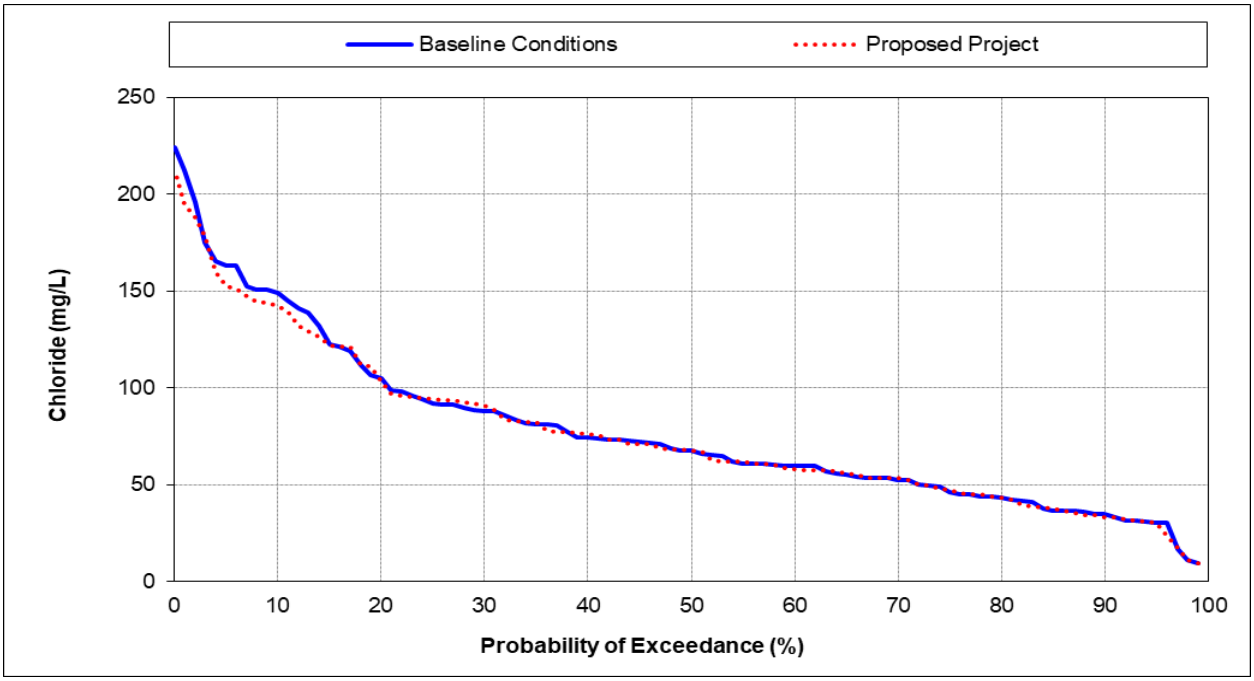

Figure 5A-7h. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), February

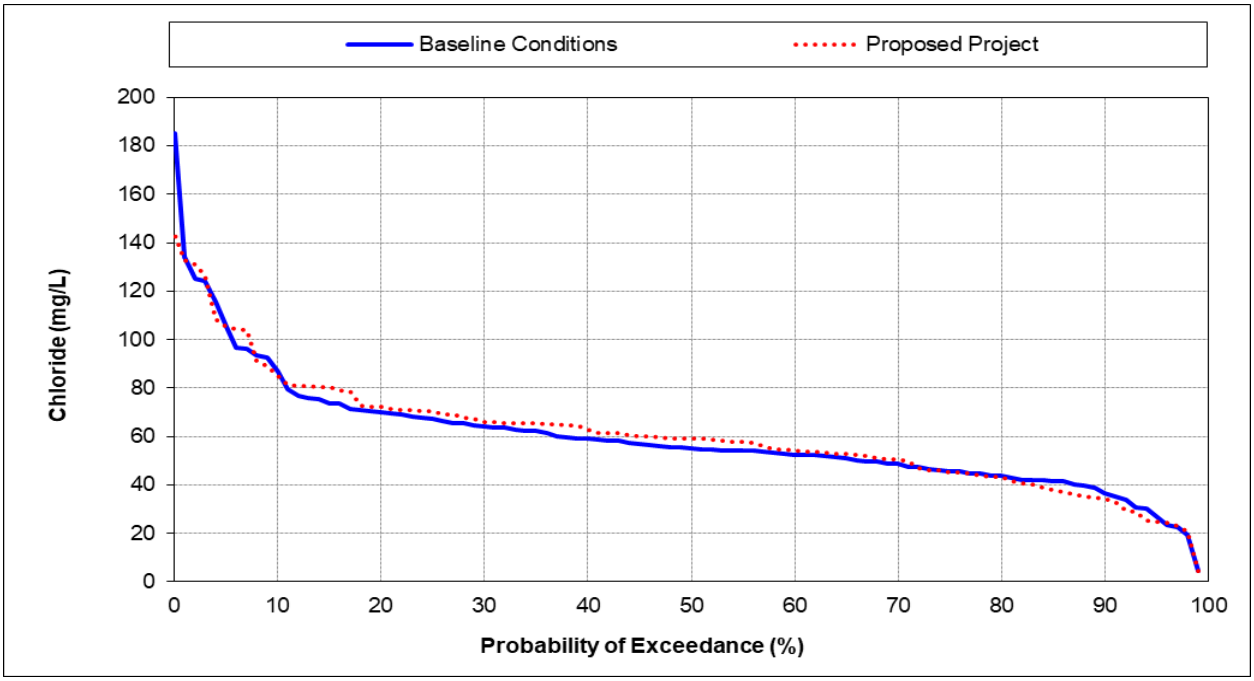

Figure 5A-7i. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), March

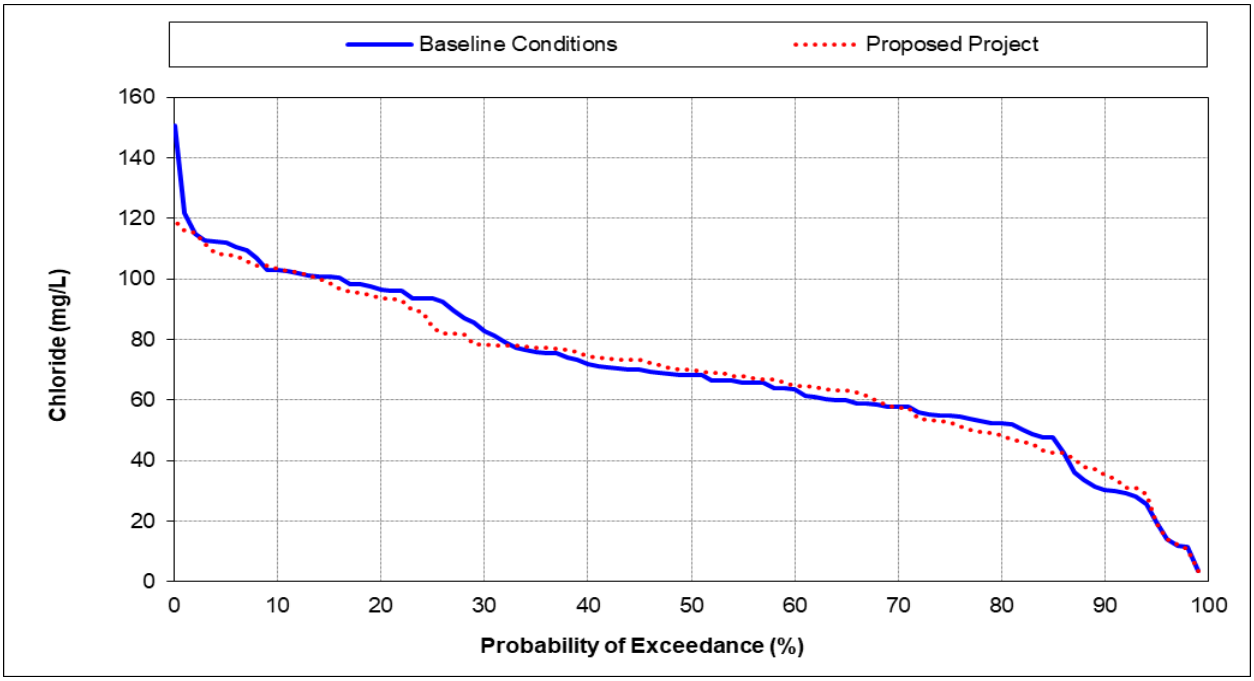

Figure 5A-7j. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), April

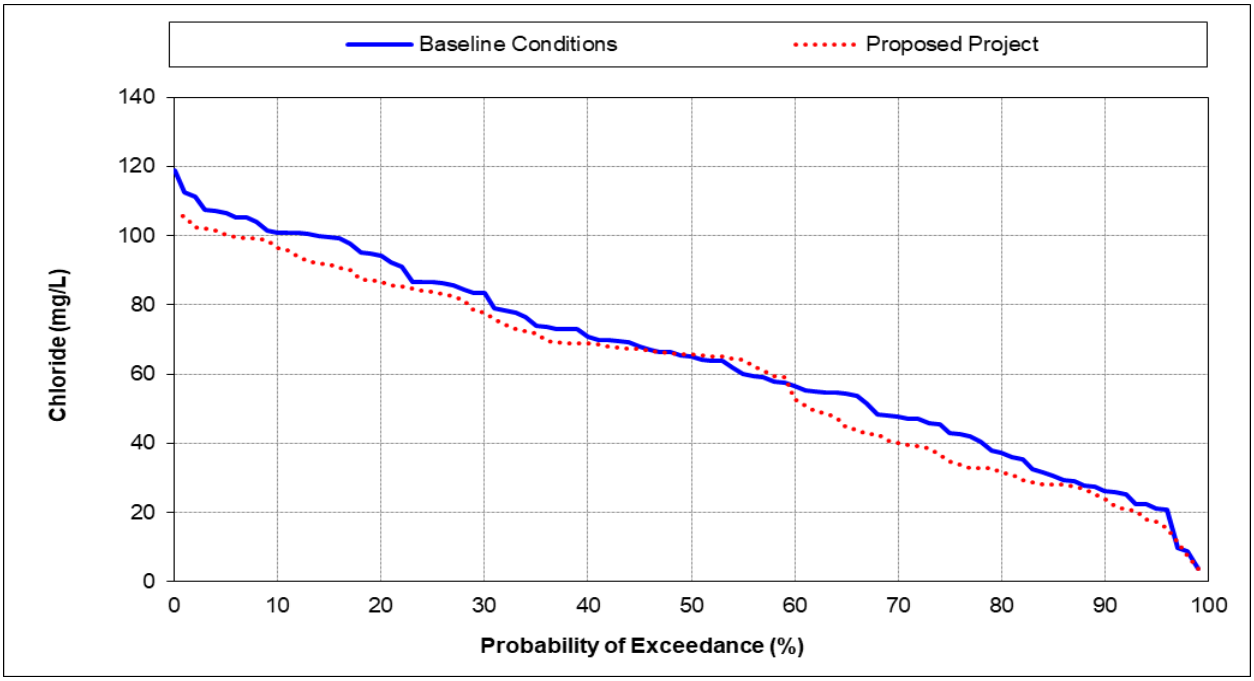

Figure 5A-7k. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), May

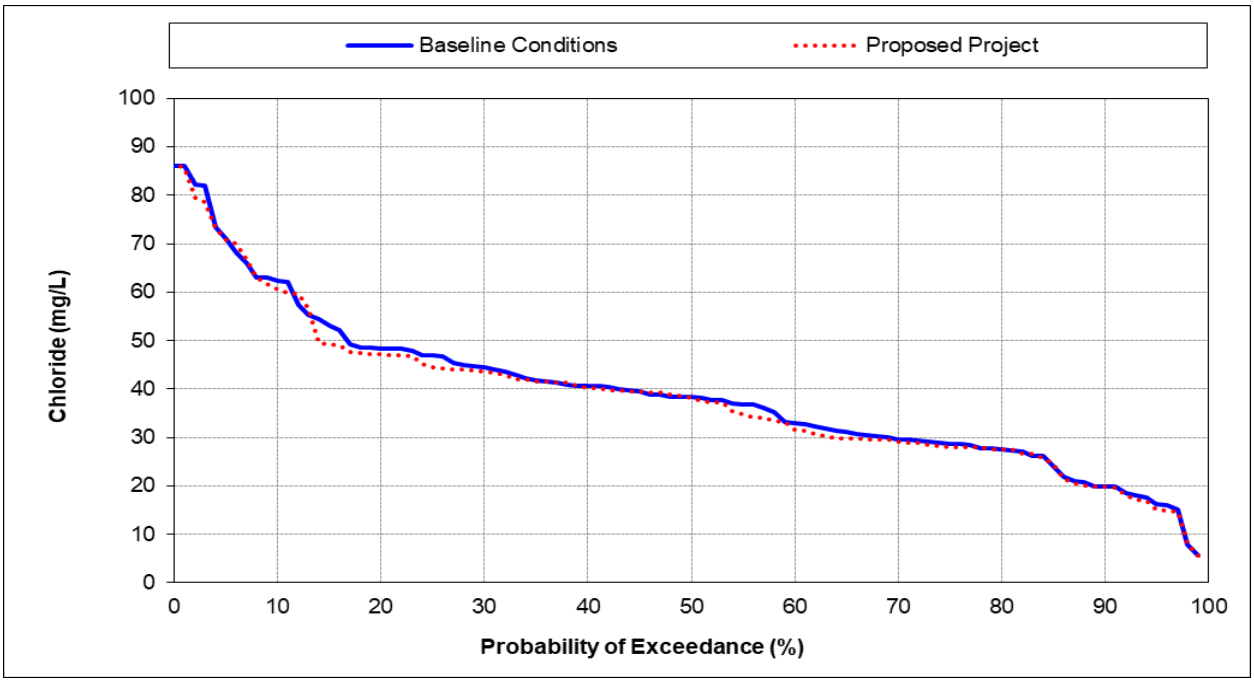

Figure 5A-7l. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), June

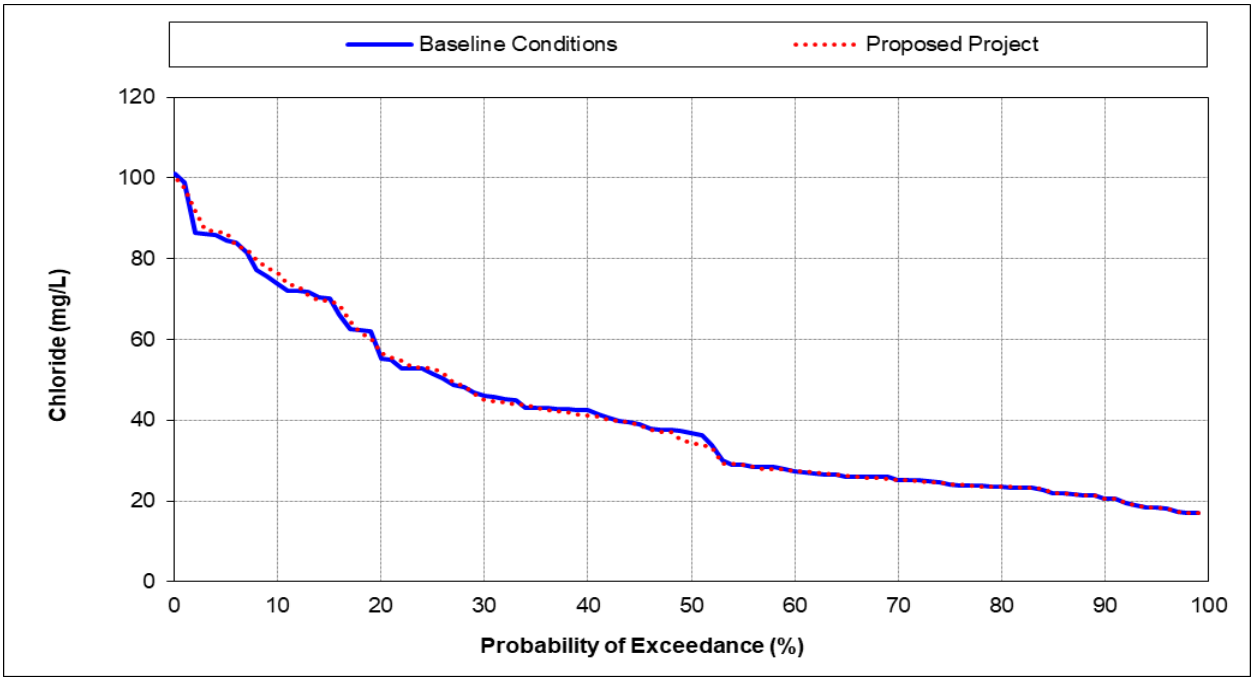

Figure 5A-7m. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), July

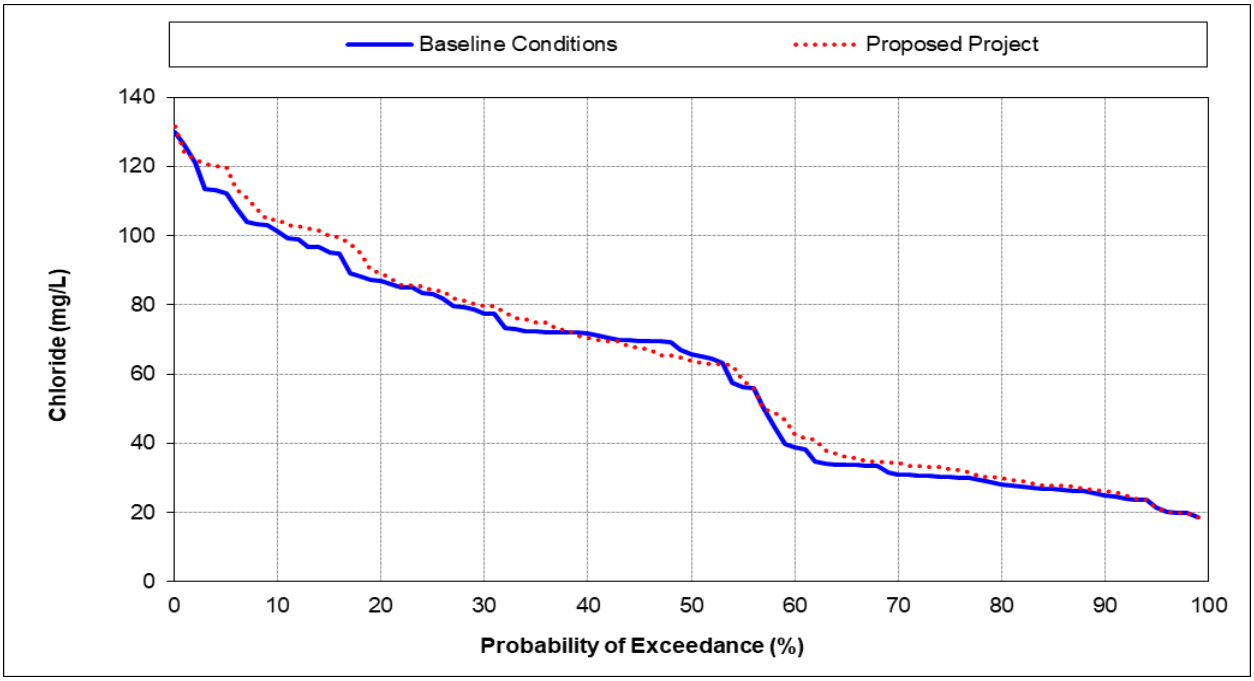

Figure 5A-7n. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), August

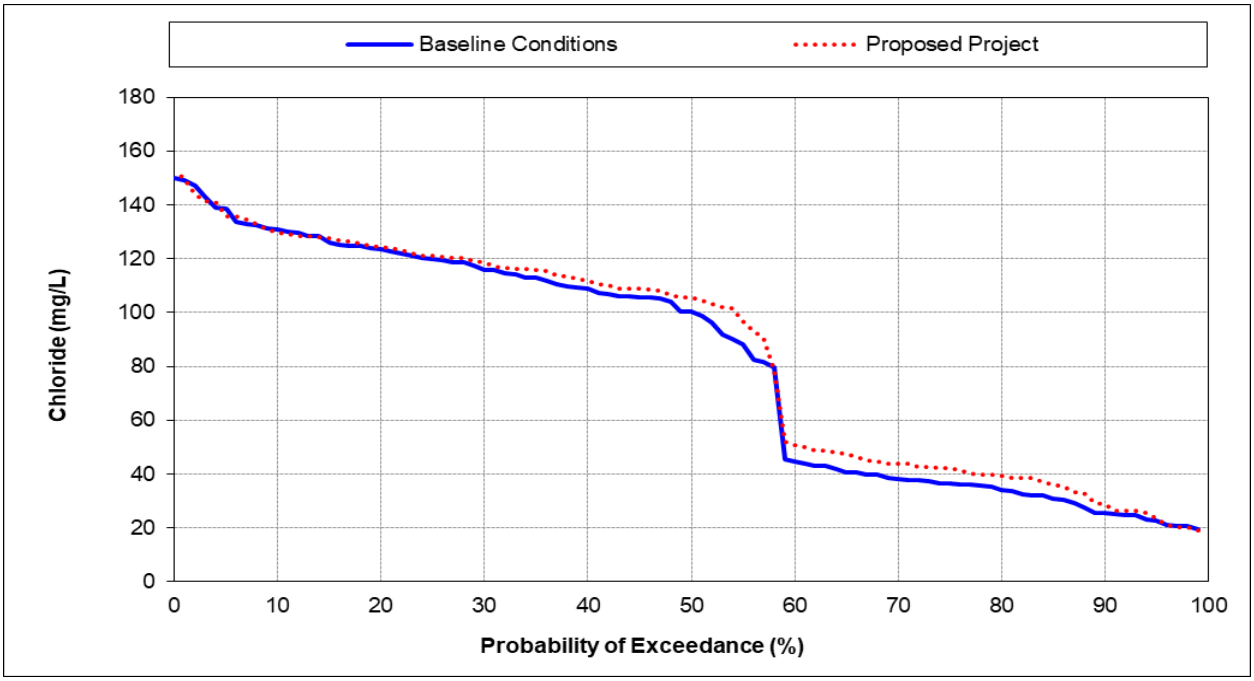

Figure 5A-7o. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), September

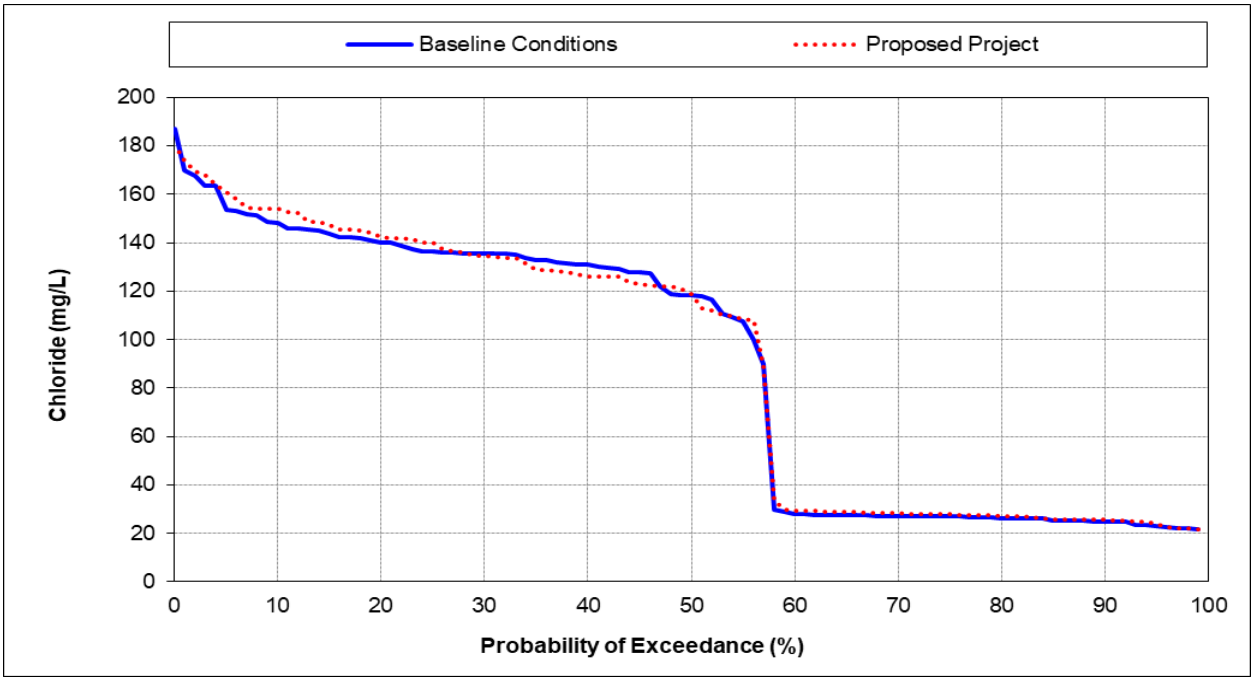

Figure 5A-7p. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), October

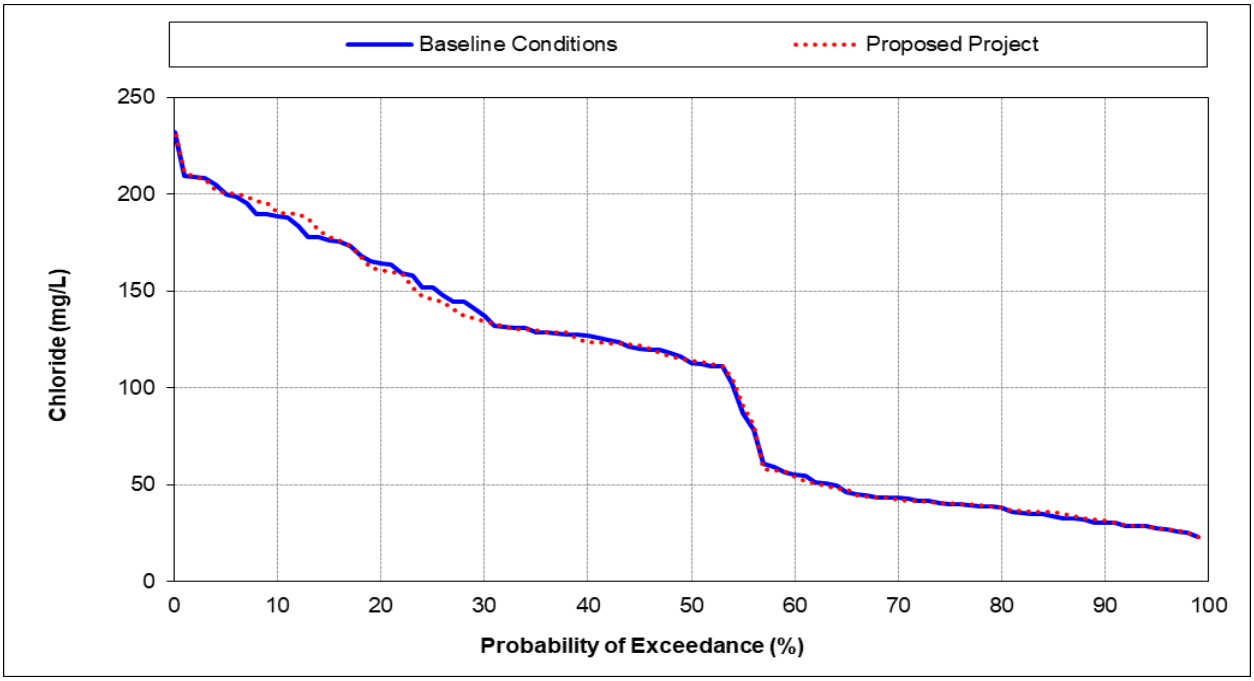

Figure 5A-7q. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), November

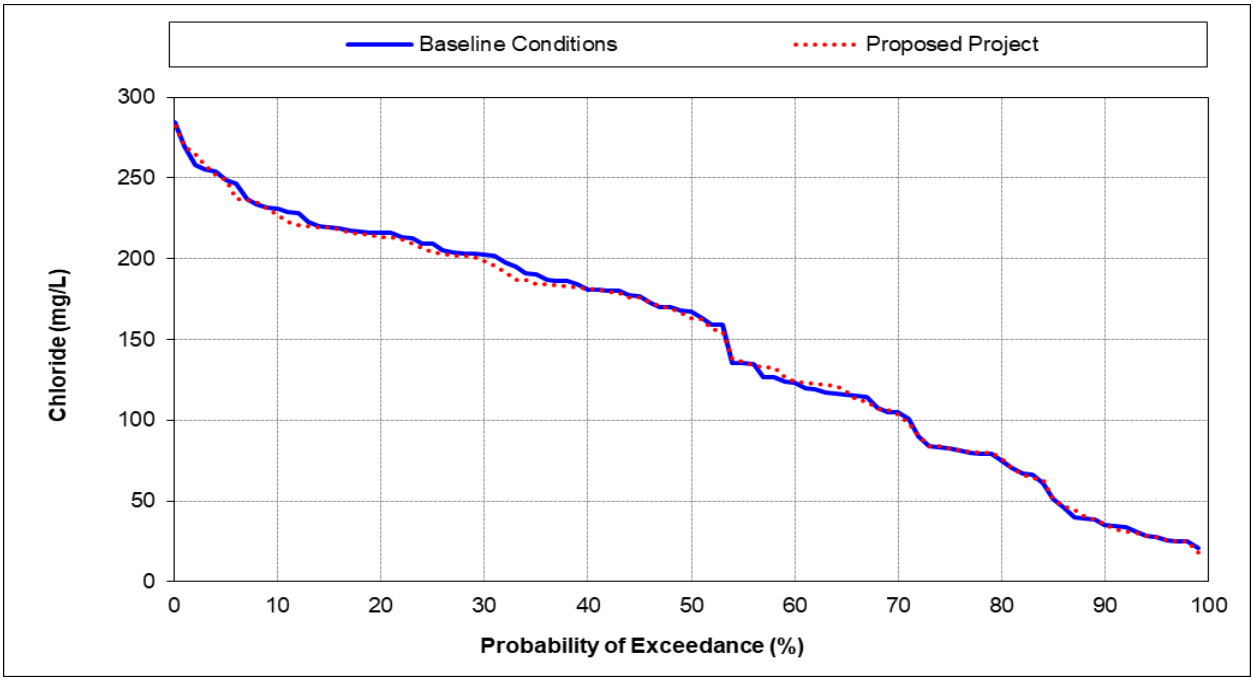

Figure 5A-7r. Old River at State Route 4, Monthly Average Chloride (in milligrams per liter), December

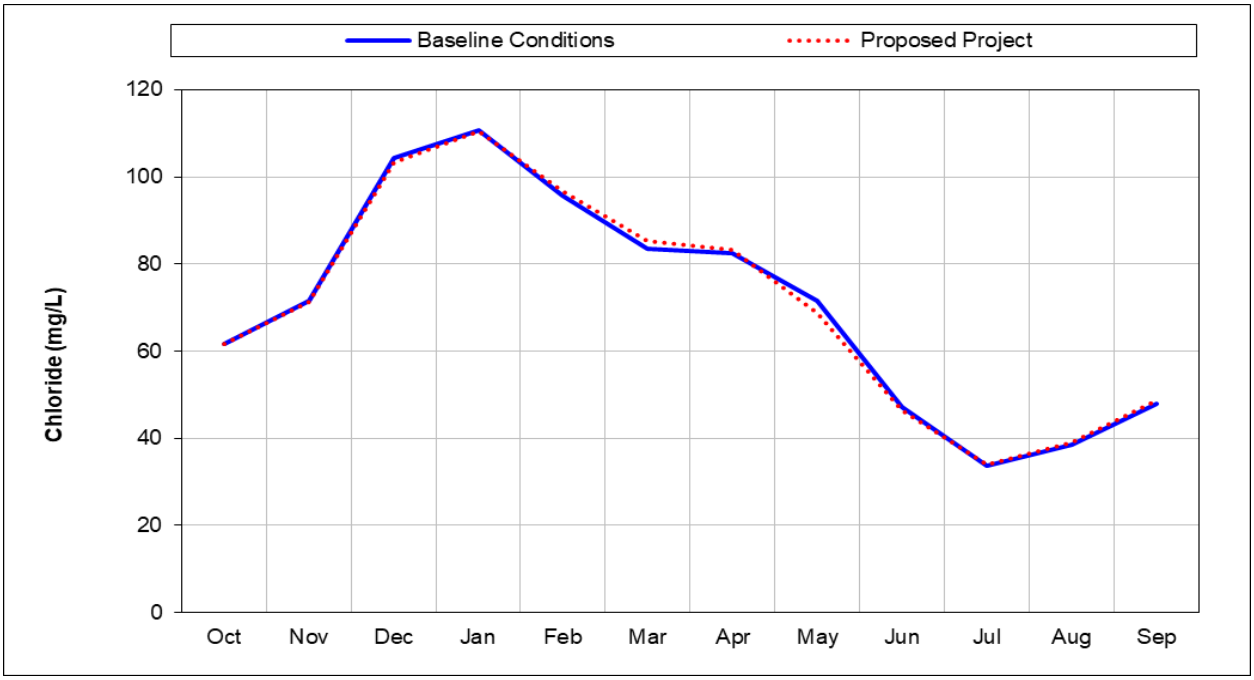

Figure 5A-8a. Victoria Canal, Long term Monthly Average Chloride (in milligrams per liter)

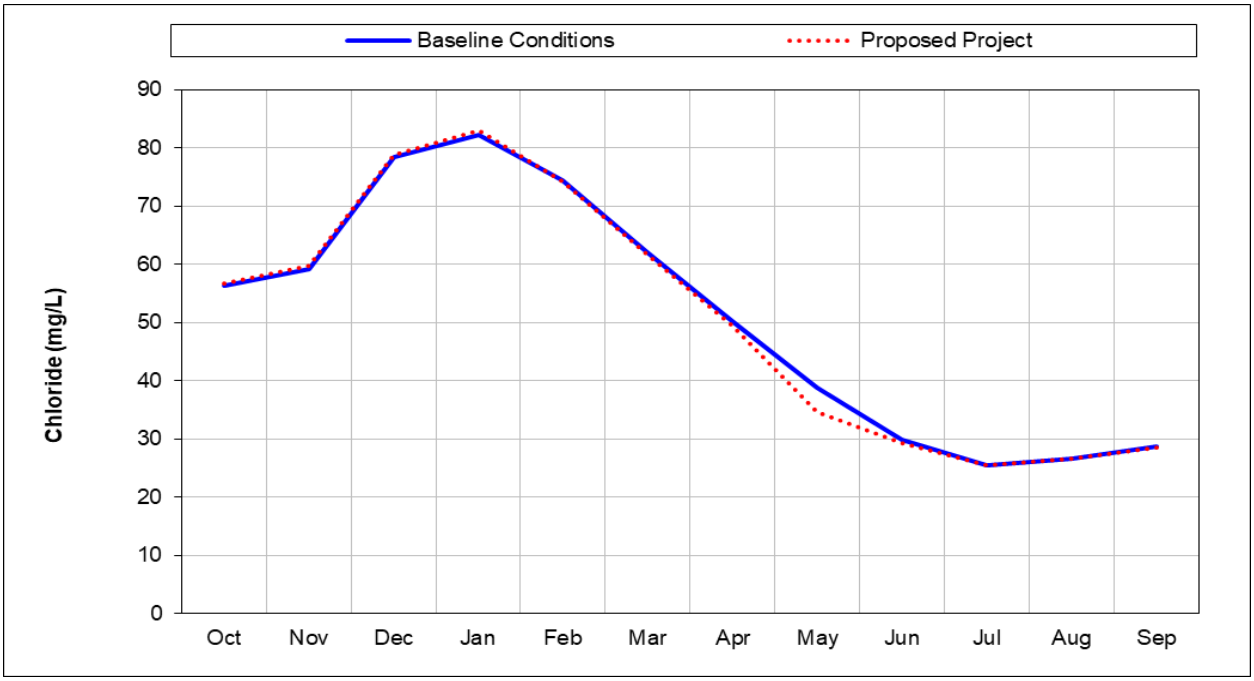

Figure 5A-8b. Victoria Canal, Wet Year Monthly Average Chloride (in milligrams per liter)

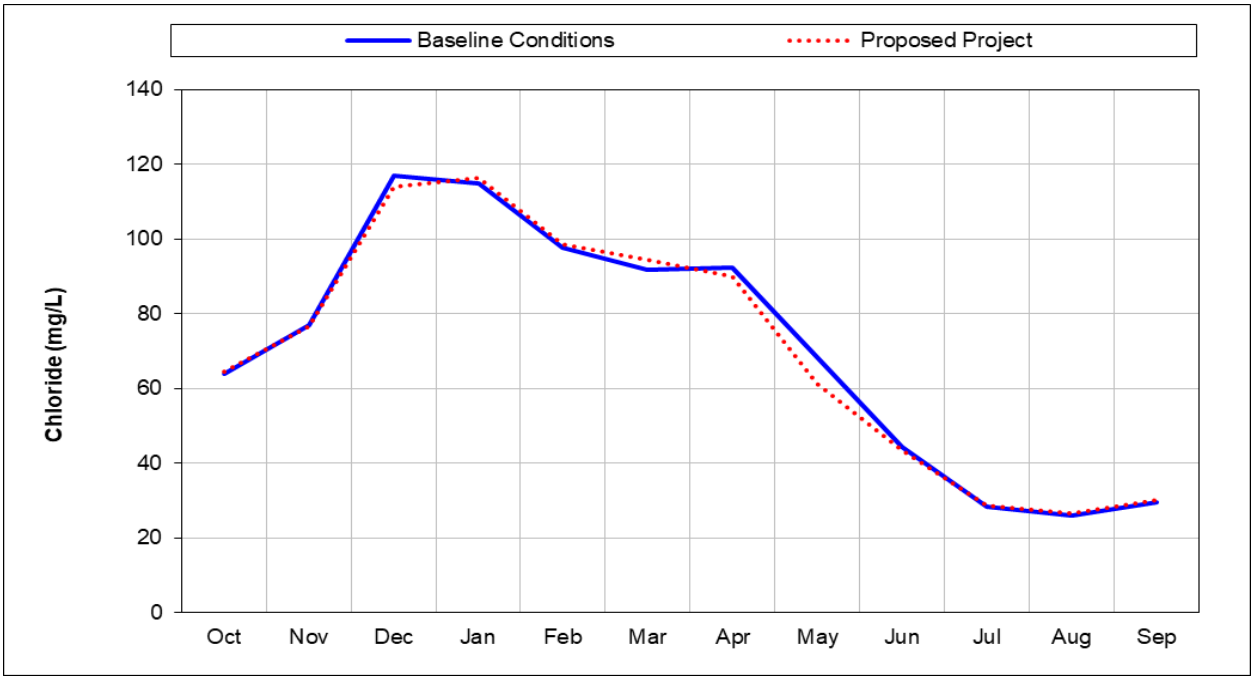

Figure 5A-8c. Victoria Canal, Above Normal Year Monthly Average Chloride (in milligrams per liter)

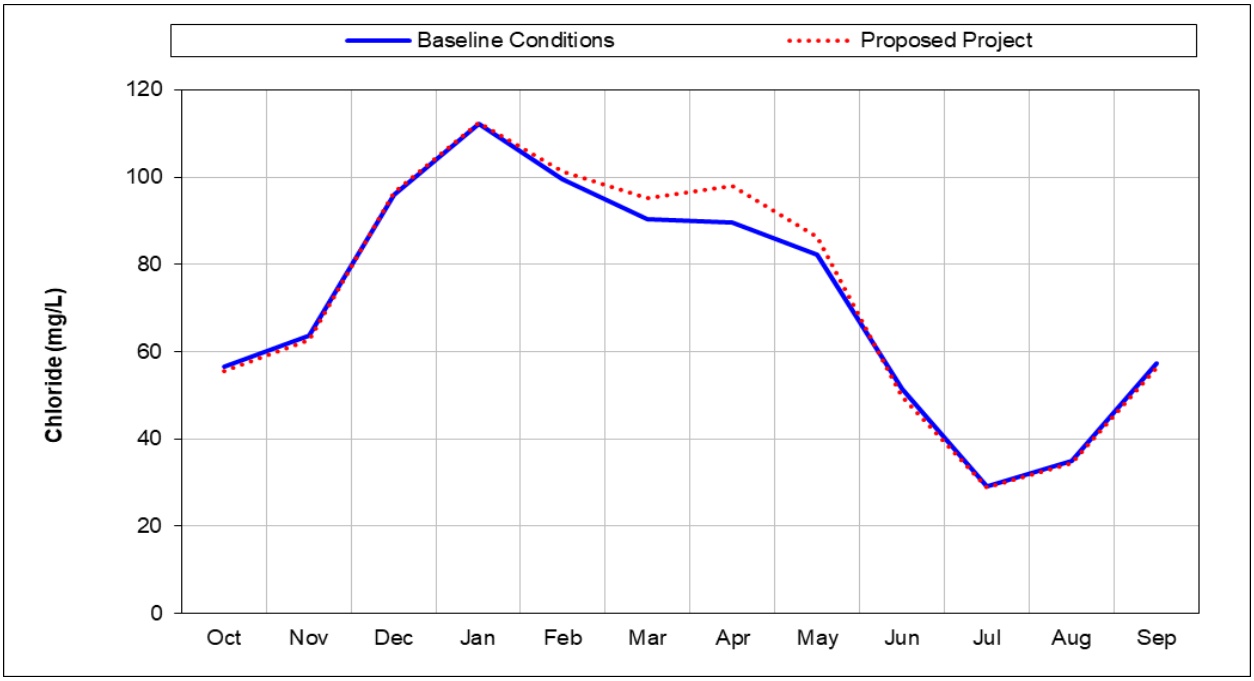

Figure 5A-8d. Victoria Canal, Below Normal Year Monthly Average Chloride (in milligrams per liter)

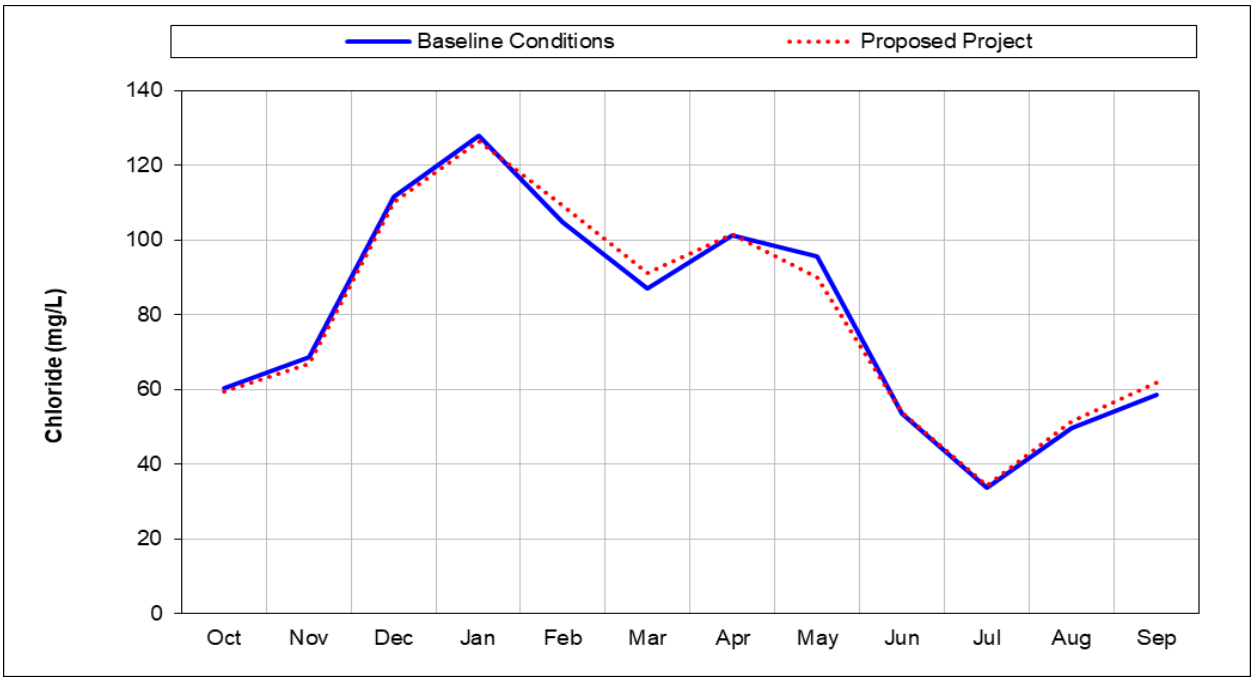

Figure 5A-8e. Victoria Canal, Dry Year Monthly Average Chloride (in milligrams per liter)

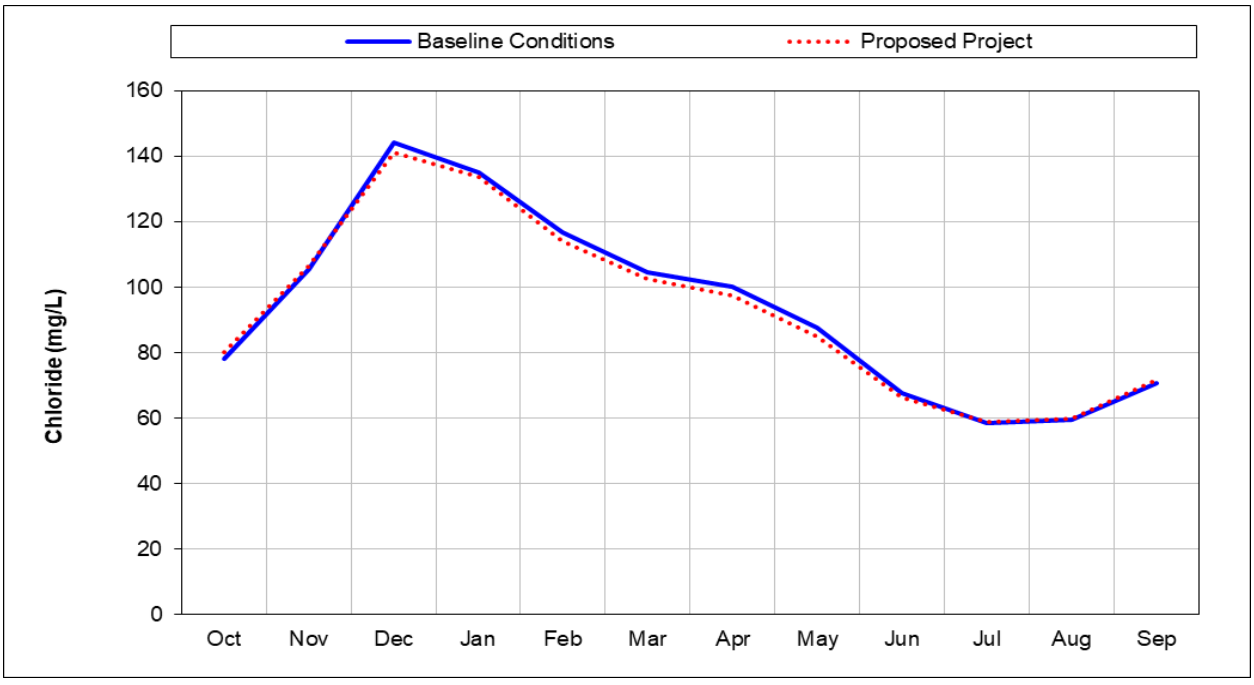

Figure 5A-8f. Victoria Canal, Critical Year Monthly Average Chloride (in milligrams per liter)

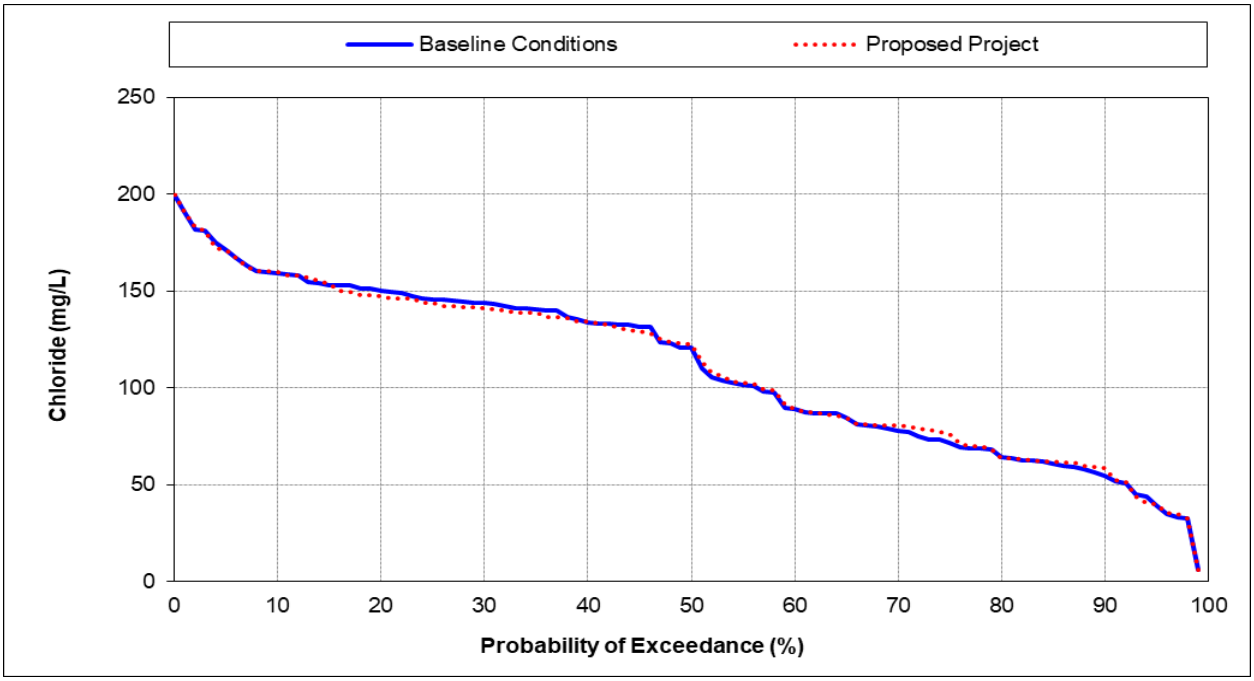

Figure 5A-8g. Victoria Canal, Monthly Average Chloride (in milligrams per liter), January

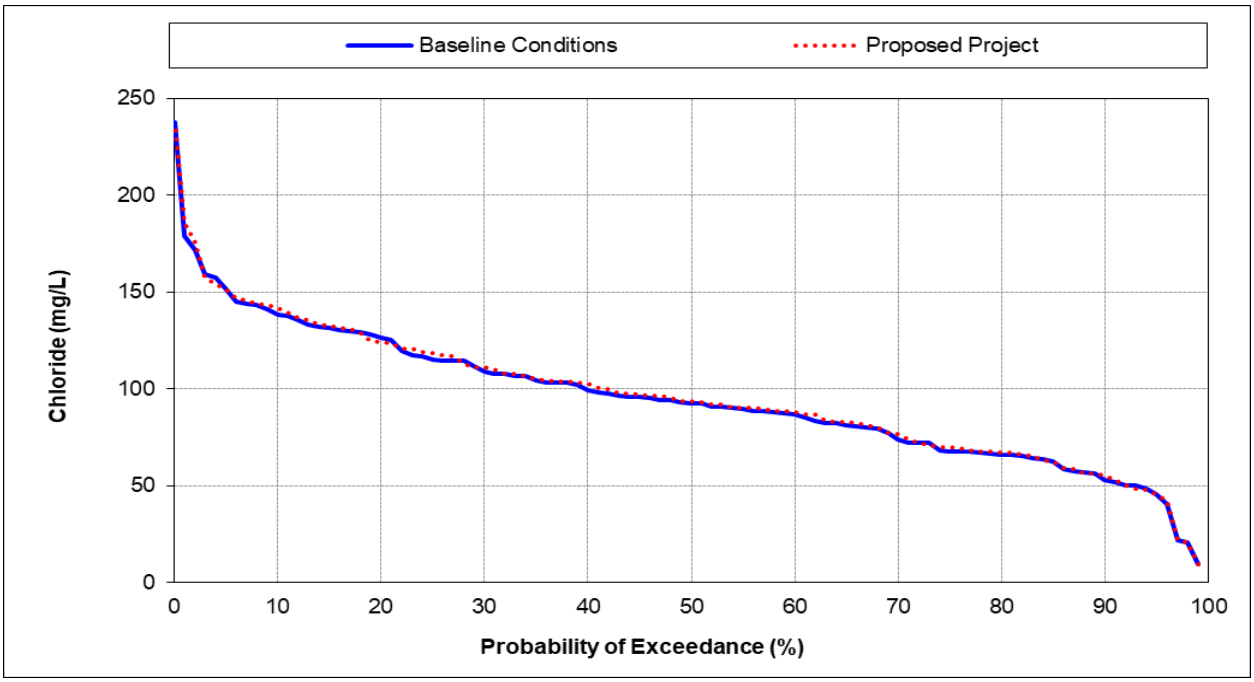

Figure 5A-8h. Victoria Canal, Monthly Average Chloride (in milligrams per liter), February

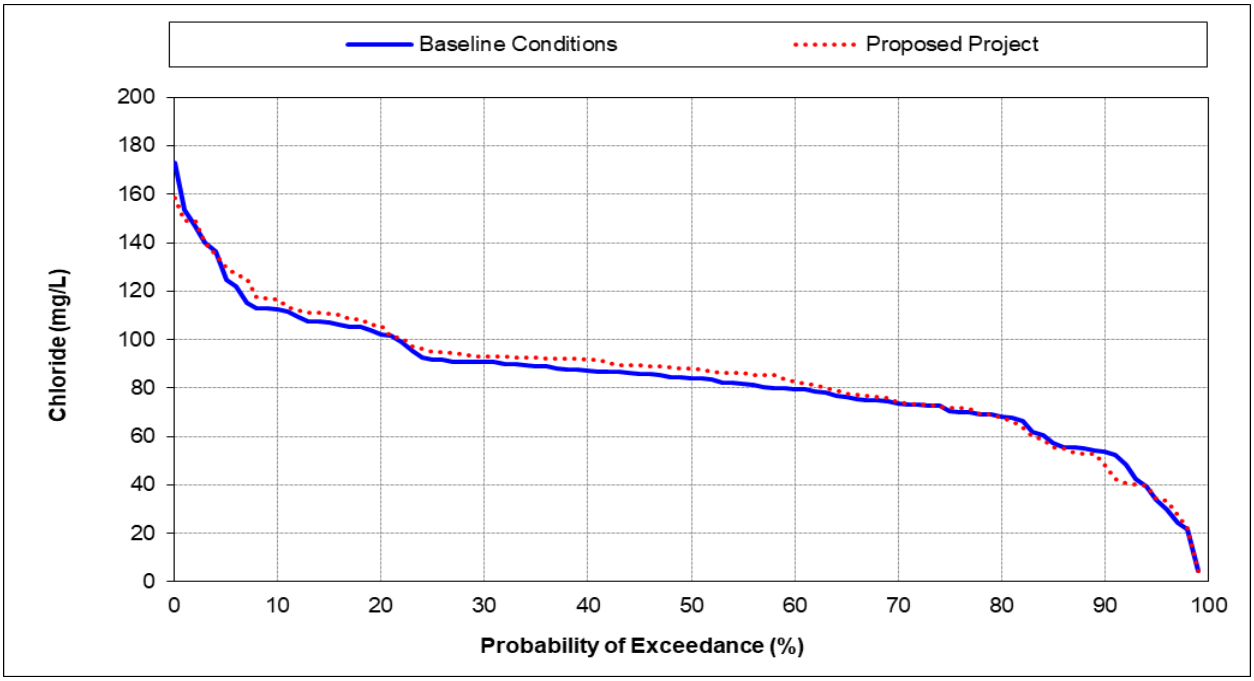

Figure 5A-8i. Victoria Canal, Monthly Average Chloride (in milligrams per liter), March

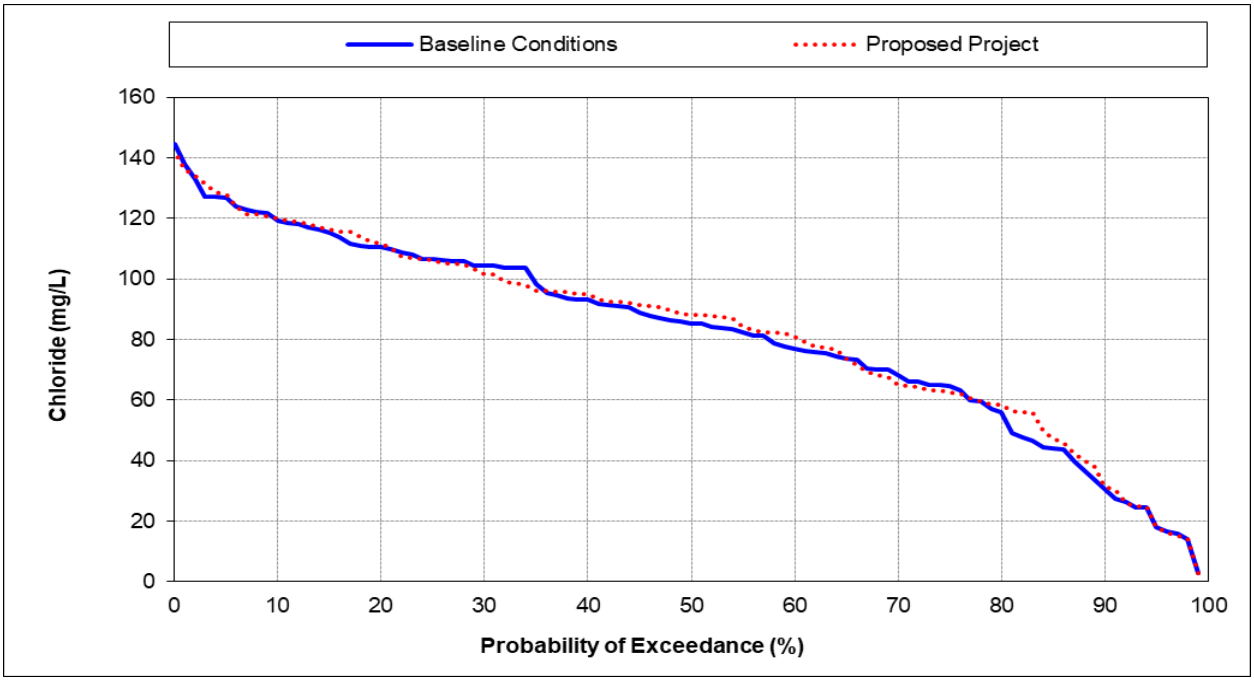

Figure 5A-8j. Victoria Canal, Monthly Average Chloride (in milligrams per liter), April

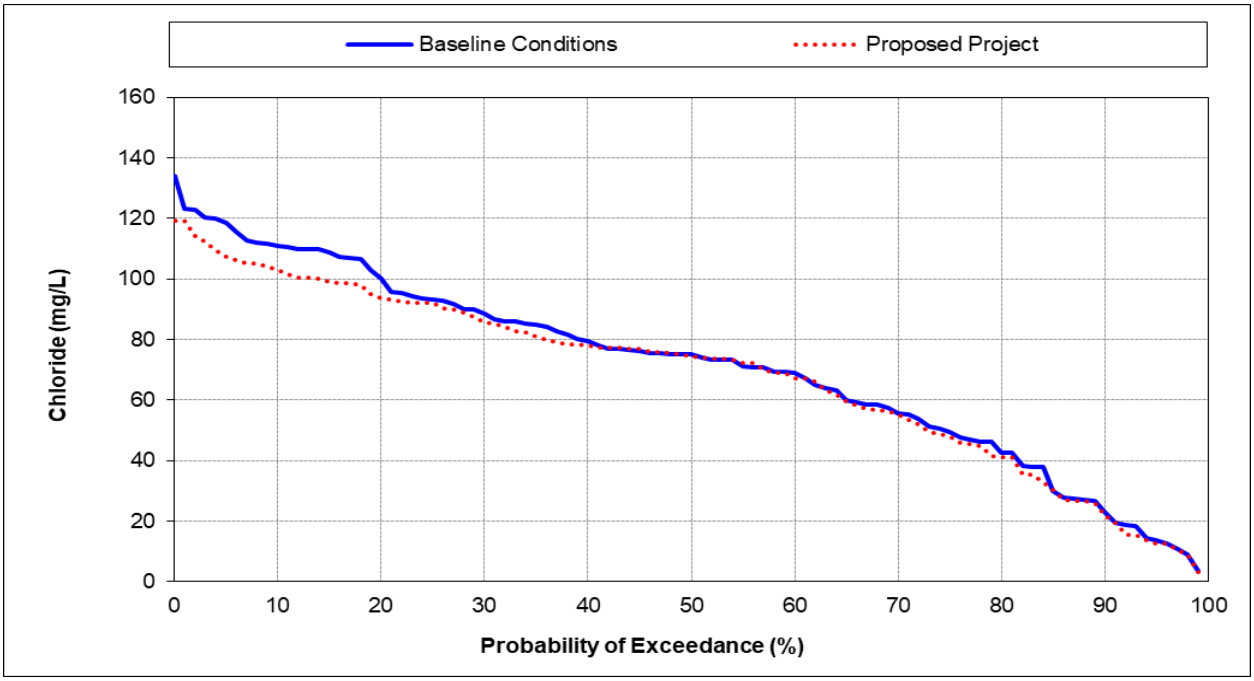

Figure 5A-8k. Victoria Canal, Monthly Average Chloride (in milligrams per liter), May

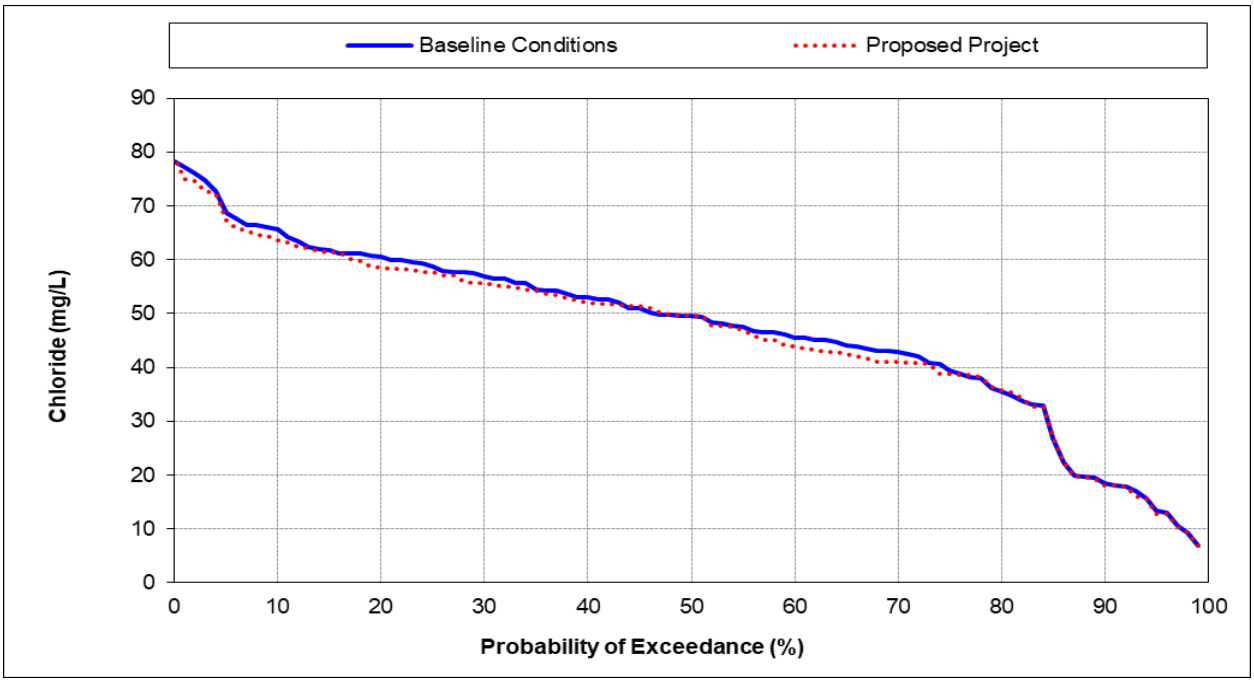

Figure 5A-8l. Victoria Canal, Monthly Average Chloride (in milligrams per liter), June

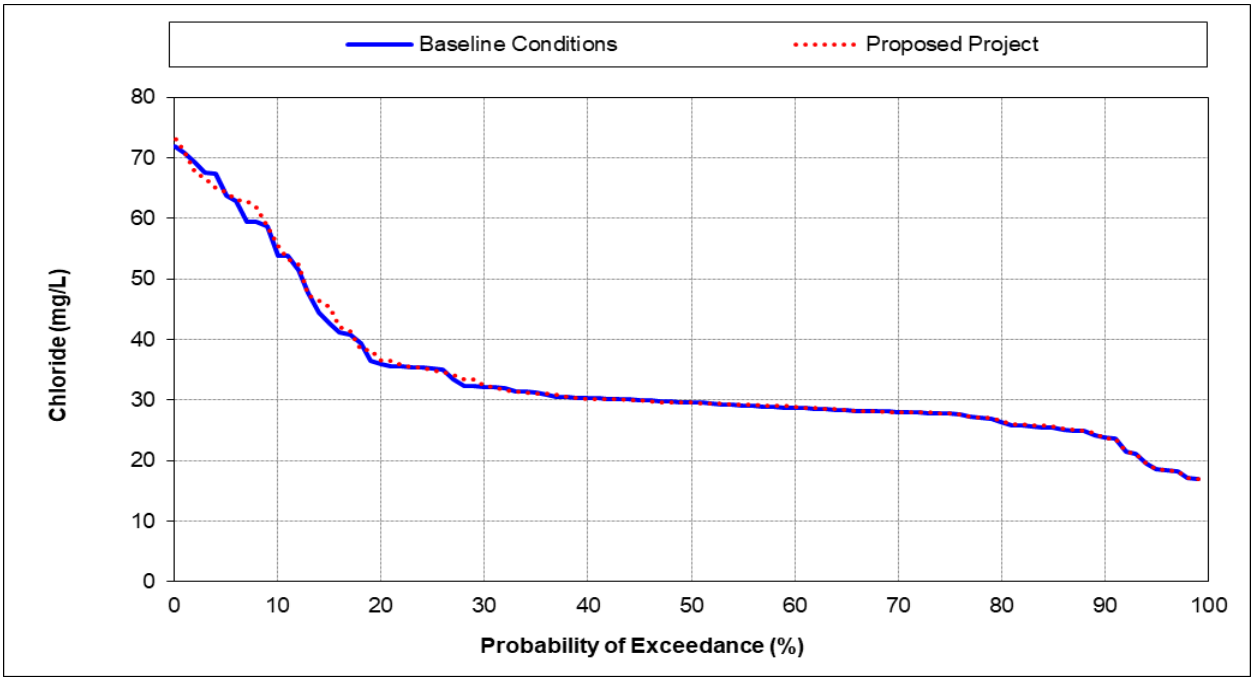

Figure 5A-8m. Victoria Canal, Monthly Average Chloride (in milligrams per liter), July

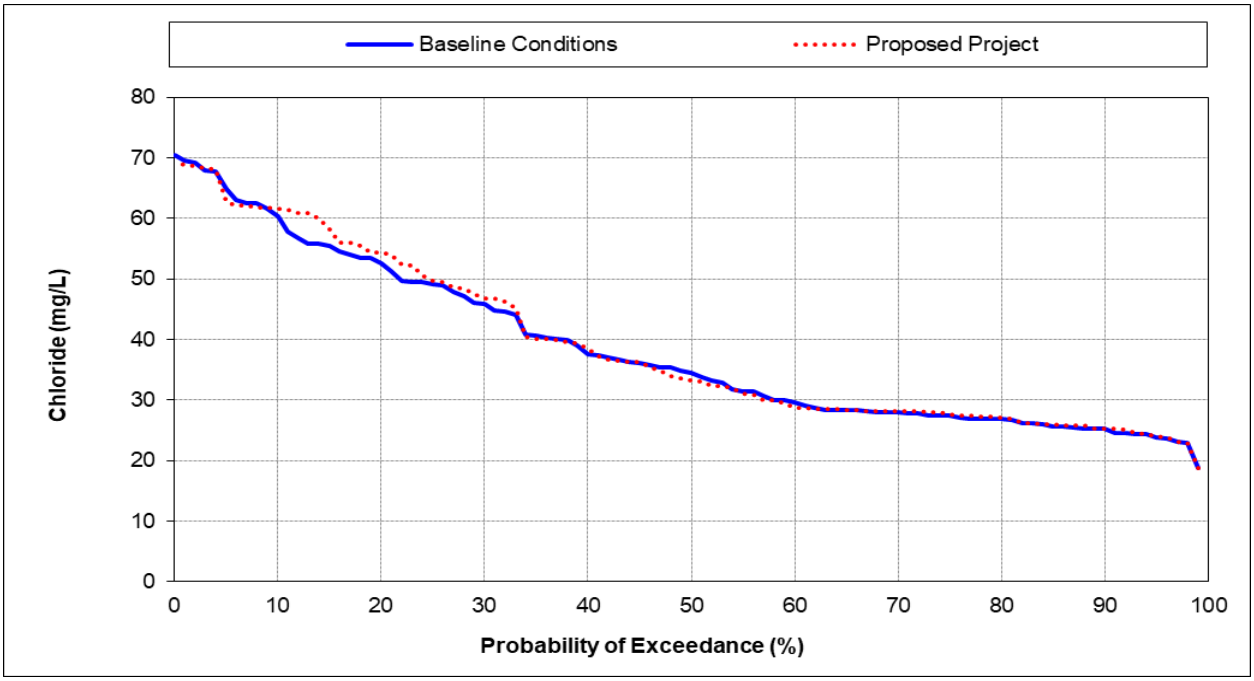

Figure 5A-8n. Victoria Canal, Monthly Average Chloride (in milligrams per liter), August

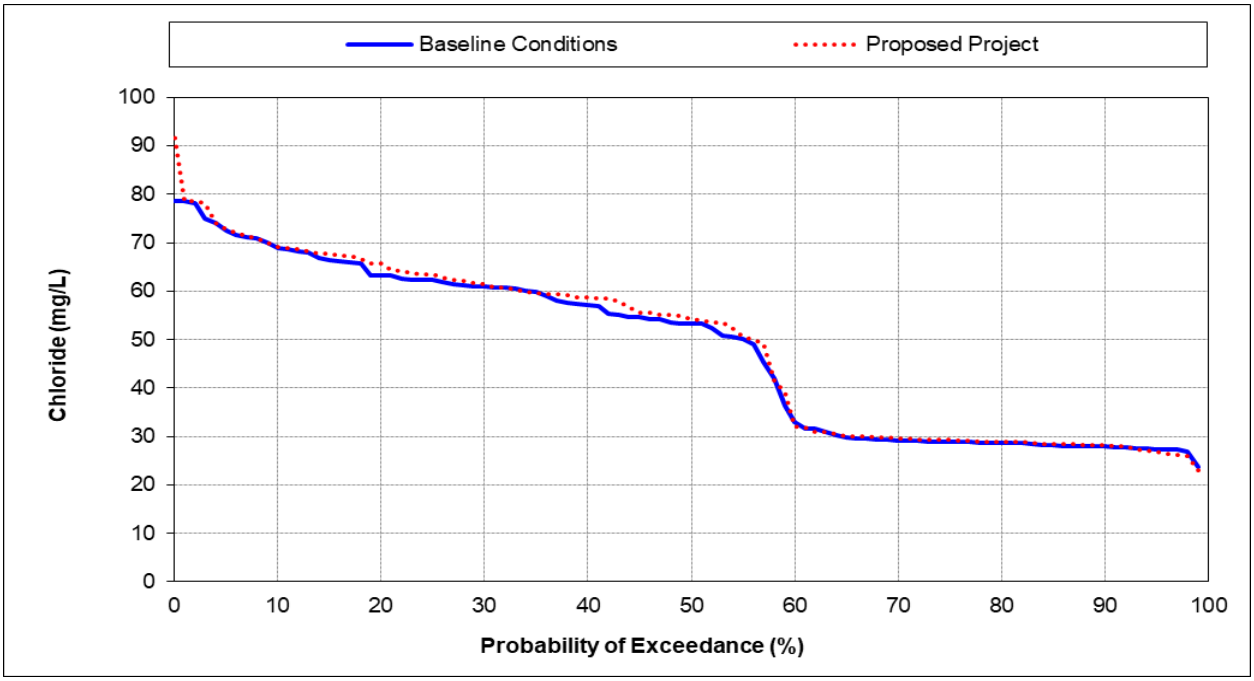

Figure 5A-8o. Victoria Canal, Monthly Average Chloride (in milligrams per liter), September

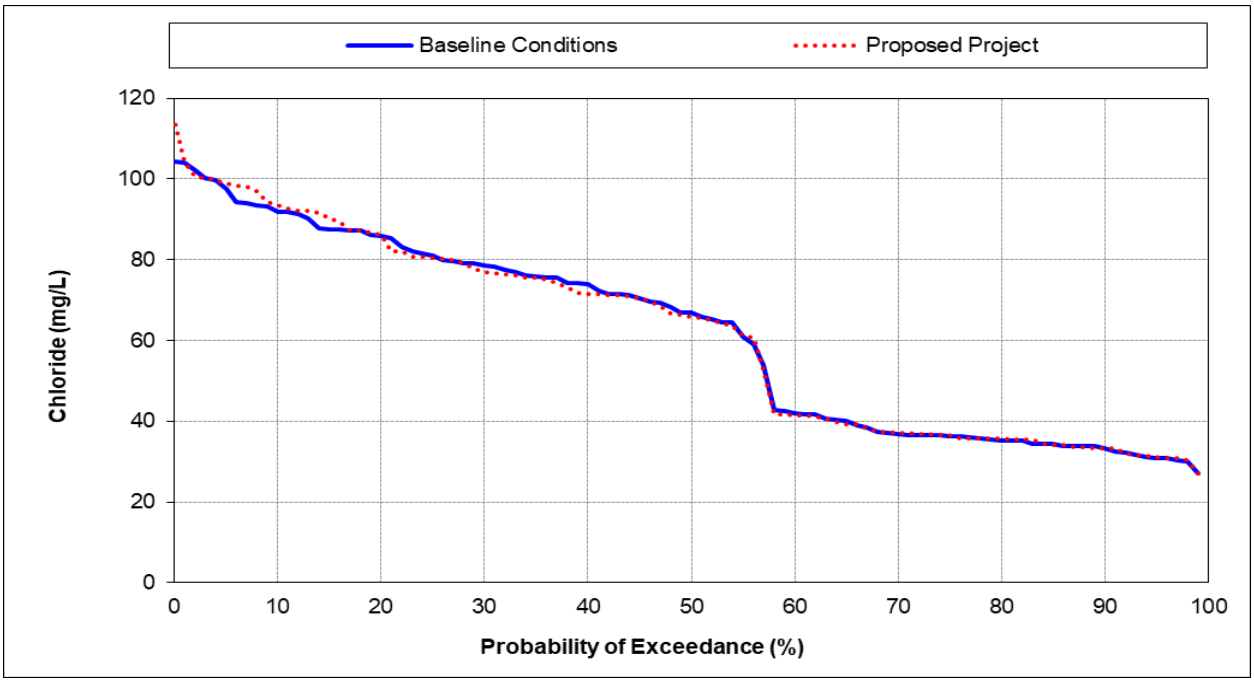

Figure 5A-8p. Victoria Canal, Monthly Average Chloride (in milligrams per liter), October

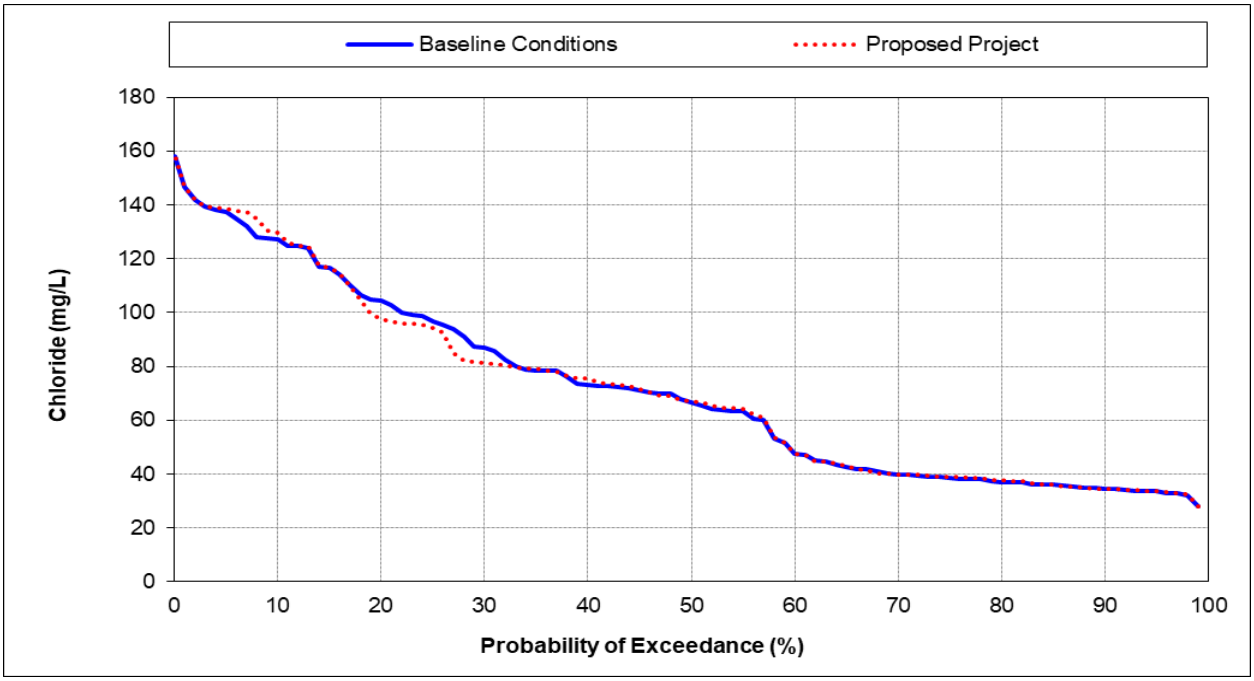

Figure 5A-8q. Victoria Canal, Monthly Average Chloride (in milligrams per liter), November

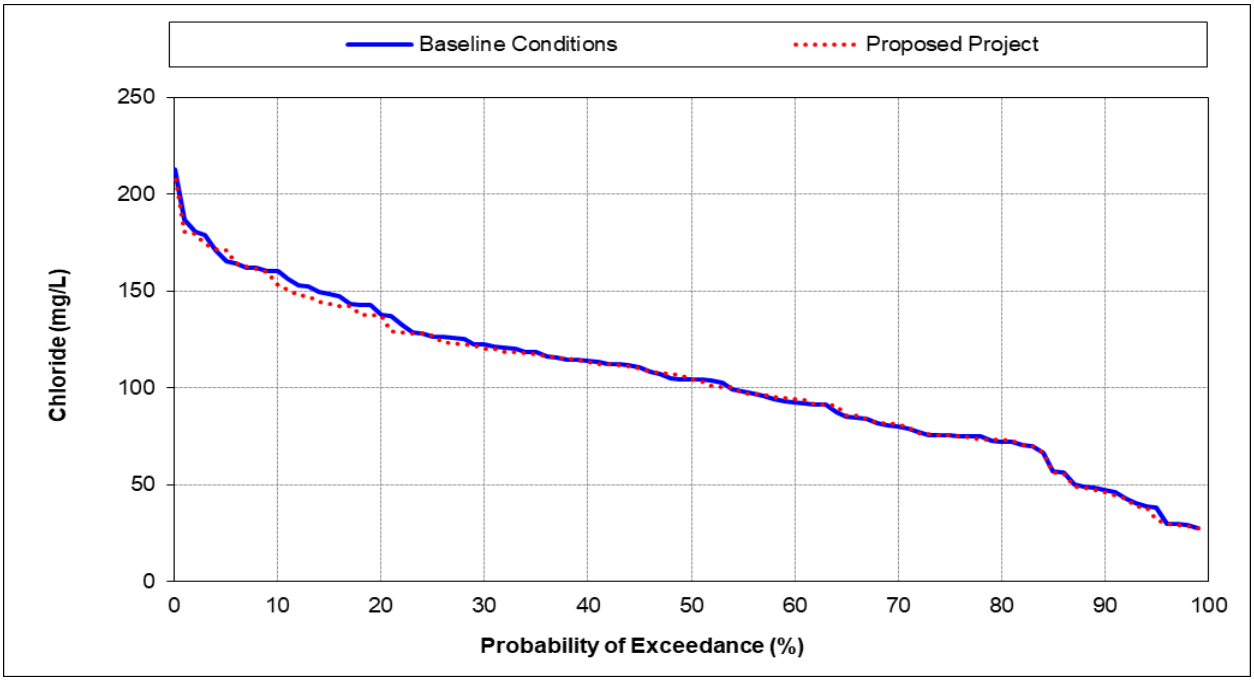

Figure 5A-8r. Victoria Canal, Monthly Average Chloride (in milligrams per liter), December