Appendix H

Water Quality Summaries Laboratory Reports

Lab Sample ID	Station Code	Fluoride, mg/L	Chloride, mg/L	Ammonia as N, mg/L	Ortho phosphate as P , mg/L	Total Phosphorus as P, mg/L	Nitrite + Nitrate as N, mg/L	Hydroxide Alkalinity as CaCO3, mg/L	Carbonate Alkalinity as CaCO3,mg/L	Bicarbonate Alkalinity as CaCO3, mg/L	Total Dissolved Solids, mg/L	Hardness,mg/L	Total Suspended Solids, mg/L	Boron, mg/L	Cyanide, mg/L	Molybdenum, mg/L
L-132-03-1	OC3	0.022	0.36	< 0.05	0.0211	< 0.03	0.0450	0	0	32.7	69	27.4	6.6	< 0.10	< 0.0050	< 0.0050
L-132-03-2	OC4	0.019 J	0.28	< 0.05	0.0134	< 0.03	0.0555	0	0	27.3	72	24.5	1.5	< 0.10	< 0.0050	< 0.0050
L-132-03-3	KF1	0.017 J	0.27	< 0.05	0.0122	< 0.03	0.0453	0	0	28.2	44	22.5	< 1.00	< 0.10	< 0.0050	< 0.0050
L-132-03-4	MC1	0.026	0.86	< 0.05	0.0263	< 0.03	0.0734	0	0	61.0	99	53.9	1.6	< 0.10	< 0.0050	< 0.0050
L-132-03-5	SC1	0.024	0.44	< 0.05	0.0176	< 0.03	0.0481	0	0	32.4	67	27.4	2.2	< 0.10	< 0.0050	< 0.0050
L-132-03-6	SC4	0.026	0.55	< 0.05	0.0189	< 0.03	0.0466	0	0	37.9	70	34.3	5.9	< 0.10	< 0.0050	< 0.0050
L-132-03-7	SC5	0.027	0.51	< 0.05	0.0193	< 0.03	0.0549	0	0	42.0	69	35.3	3.5	< 0.10	< 0.0050	< 0.0050
L-132-03-8	CCF1	0.024	0.43	< 0.05	0.0177	< 0.03	0.0437	0	0	33.9	72	28.4	1.9	< 0.10	< 0.0050	< 0.0050
Method Blank		0.015 J	< 0.2	< 0.05	< 0.005	< 0.03	< 0.005	0	0	3.2 J	< 10	< 1.0	< 1.00	< 0.10	< 0.0050	< 0.0050
MDL		0.01	0.2	0.05	0.005	0.03	0.005	0.5	0.5	1.6	10	1.0	1.0	0.045	0.002	0.005
RL		0.02	0.25	0.100	0.0100	0.050	0.0100	1.0	1.0	10.0	12	1.0	1.0	0.10	0.0050	0.0050
Method		EPA 340.2	EPA 300.0	EPA 350.3	QC 10115011M	EPA 365.3	QC 10107041B	EPA 310.1	EPA 310.1	QC10303311A	SM 2540	SM 2340C	SM 2540C	SM4500BB	SM4500CN-E	SM3113B
MDL - Method Detection Limit					J - detected but not quantified				RL - Reporting Limit							

REFERENCES:

EPA - Methods for Chemical Analysis of Water and Wastewater, EPA-600/4-79-020, March 1983.

QC - Lachat Quikchem Flow Injection Analyzer Method

SM - Standard Methods for the Examination of Water and Wastewater, 18th edition, 1992, American Public Health Association, American Water Works Association, Water Pollution Control Federation.

	Dissolved Iron, mg/L		
Reference Standard ID	Standard		
True Value Ref Std	0.0160		
Laboratory Result	0.0160		
% Recovery Ref Std	100		
Spiked Sample ID	L-132-03-3		
MS actual value	0.0144		
MSD actual value	0.0150		
Matrix spike expected value	0.0150		
MS % of expected value	96.0		
MSD % of expected value	100		
RPD	4.08		
Sample Duplicate ID	L-132-03-7		
Sample Value	0.0330		
Duplicate Value	0.0330		
RPD	0.00		

DEPARTMENT OF FISH AND GAME
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LABORATORY REPORT

Name: Brian Frantz
Agency: PG&E
Address: 3400 Crow Canyon Rd.
City: San Ramon, CA 94583

Lab Number: L-132-03 supplementary
Other Number:
Date Sampled: 03/18/03
Date Received: 03/19/03
Date Completed: 05/17/03
Index-PCA Code:

RE: Kilrac-Cow

RESULTS OF CHEMICAL ANALYSIS:

Laboratory Identification	Sample Description	Dissolved Iron, mg/L
L-132-03-1	OC3	0.0110
L-132-03-2	OC4	0.0140
L-132-03-3	KF1	0.0064
L-132-03-4	MC1	0.0940
L-132-03-5	SC1	0.0133
L-132-03-6	SC4	0.0290
L-132-03-7	SC5	0.0330
L-132-03-8	CCF1	0.0210
Report Limit		0.0050
Detection Limit		0.0012

See attached sheet for QA summary

Method References:
Methods for Chemical Analysis of Water and Wastewater, EPA-600/4-79-020, March 1983,
EPA Method 236.2 Iron by Graphite Furnace AAS.

Cost of Analysis: $400.00

Analyst: Sierra Foothills Laboratory

_____ _____ _____ _____
Inorganic Section Leader **Date** **Reviewed by** **Date**

_____ _____
Laboratory Director **Date**

	Fluoride, mg/L	Chloride, mg/L	Ammonia as N, mg/L	Ortho phosphate as P, mg/L	Total Phosphorus as P, mg/L	Nitrite + Nitrate as N, mg/L	Bicarbonate Alkalinity as CaCO3, mg/L	Total Dissolved Solids, mg/L	Hardness,mg/L	Total Suspended Solids, mg/L	Boron, mg/L	Cyanide, mg/L	Molybdenum, mg/L
Reference Standard ID	IPS-F-01-25	IPS-anions-mix-02-37	IPS-NH3-02-13B	IPS-anions-mix-02-37	IPS-nutrient-02-53	IPS-anions-mix-02-37	IPS-min-03-2D	IPS-MIN-03-2B	IPS-HARD-03-3A	IPS-HARD-03-3A	Standard	Standard	Standard
True Value Ref Std	1.00	20.0	10.0	0.0487	0.100	0.0530	65.4	323	244	32.3	0.50	0.19	0.015
Laboratory Result	1.01	19.5	10.8	0.0490	0.103	0.0609	65.8	365	237	28.4	0.53	0.18	0.0144
% Recovery Ref Std	101	97.5	108	101	103	115	101	113	97.1	87.9	106	94.7	96.0
Spiked Sample ID	L-132-03-1	L-132-03-1	L-132-03-1	L-132-03-1	L-132-03-1	L-132-03-1	L-132-03-1				534878	534873	
MS actual value	2.15	2.69	21.3	0.0436	0.188	0.0907	58.3				1.23	0.0226	
MSD actual value	2.12	2.65	21.5	0.0435	0.193	0.0911	59.4				1.17		
Matrix spike expected value	2.02	2.68	20.0	0.0436	0.227	0.0928	57.4				1.0	0.024	
MS % of expected value	106	100	107	100	82.8	97.7	102				123	94.2	
MSD % of expected value	105	98.9	108	99.8	85.0	98.2	103				117		
RPD	1.41	1.50	0.93	0.23	2.62	0.44	1.87				5.00		
Sample dilution for MS		1/2											
Sample Duplicate ID								L-132-03-8	L-134-03-1	L-134-03-1	534877	534872	
Sample Value								69	24.5	1.0	< 0.10	< 0.0050	
Duplicate Value								75	24.5	1.0	< 0.10	< 0.0050	
RPD								8.33	0.00	0.00	0.00	0.00	

LabSampleID	Station Code	Fluoride, mg/L	Chloride, mg/L	Ammonia as N, mg/L	Ortho phosphate as P, mg/L	Total Phosphorus as P, mg/L	Nitrite + Nitrate as N, mg/L	Hydroxide Alkalinity as CaCO3, mg/L	Carbonate Alkalinity as CaCO3,mg/L	Bicarbonate Alkalinity as CaCO3, mg/L	Total Dissolved Solids, mg/L	Hardness, mg/L	Total Suspended Solids, mg/L	Boron, mg/L	Cyanide, mg/L	Molybdenum, mg/L
L-134-03-1	OC1	0.019 J	0.26	< 0.05	0.0138	< 0.03	0.110	0	0	30.4	46	24.5	1.0	< 0.10	< 0.0050	< 0.0050
Method Blank		0.01 J	< 0.2	< 0.05	< 0.005	< 0.03	< 0.005	0	0	3.2 J	< 10	< 1.0	< 1.0	< 0.10	< 0.0050	< 0.0050
MDL		0.01	0.2	0.05	0.005	0.03	0.005	0.5	0.5	3	10	1.0	1.0	0.045	0.002	0.005
RL		0.02	0.25	0.100	0.0100	0.0500	0.0100	1.0	1.0	10.0	12	1.0	1.0	0.10	0.0050	0.0050
Method		EPA 340.2	EPA 300.0	EPA 350.3	QC 10115011M	QC 10115011D	QC 10107041B	EPA 310.1	EPA 310.1	QC10303311A	SM 2540	SM 2340C	SM 2540C	SM4500BB	SM4500CN-E	SM3113B
MDL - Method Detection Limit					J - detected but not quantified				RL - Reporting Limit							

REFERENCES:

EPA - Methods for Chemical Analysis of Water and Wastewater, EPA-600/4-79-020, March 1983.

QC - Lachat Quikchem Flow Injection Analyzer Method

SM - Standard Methods for the Examination of Water and Wastewater, 18th edition, 1992, American Public Health Association, American Water Works Association, Water Pollution Control Federation.

	Dissolved Iron, mg/L
Reference Standard ID	Standard
True Value Ref Std	0.0160
Laboratory Result	0.0150
% Recovery Ref Std	93.8
Spiked Sample ID	L-134-03-1
MS actual value	0.0128
MSD actual value	0.0128
Matrix spike expected value	0.0150
MS % of expected value	85.3
MSD % of expected value	85.3
RPD	0.00

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LABORATORY REPORT

Name: Brian Frantz
Agency: PG&E
Address: 3400 Crow canyon Rd.
City: San Ramon, CA 94583

Lab Number: L-134-03 supplementary
Other Number:
Date Sampled: 03/19/03
Date Received: 03/20/03
Date Completed: 05/14/03
Index-PCA Code:

RE: Kilrac-Cow

RESULTS OF CHEMICAL ANALYSIS:

Laboratory Identification	Sample Description	Dissolved Iron, mg/L
L-134-03-1	OC1	0.0060
Report Limit		0.0050
Detection Limit		0.0012

See attached sheet for QA summary

Method References:
Methods for Chemical Analysis of Water and Wastewater, EPA-600/4-79-020, March 1983, EPA Method 236.2 Iron by Graphite Furnace AAS.

Cost of Analysis: $50.00

Analyst: Sierra Foothills Laboratory

_____ _____ _____ _____
Inorganic Section Leader **Date** **Reviewed by** **Date**

_____ _____
Laboratory Director **Date**

	Fluoride, mg/L	Chloride, mg/L	Ammonia as N, mg/L	Ortho phosphate as P, mg/L	Total Phosphorus as P, mg/L	Nitrite + Nitrate as N, mg/L	Bicarbonate Alkalinity as CaCO3, mg/L	Total Dissolved Solids, mg/L	Hardness,mg/L	Total Suspended Solids, mg/L	Boron, mg/L	Cyanide, mg/L	Molybdenum, mg/L
Reference Standard ID	IPS-F-01-25	IPS-anions-mix-02-37	IPS-NH3-02-13B	IPS-anions-mix-02-37	IPS-nutrient-02-53	IPS-anions-mix-02-37	IPS-min-03-2D	IPS-MIN-03-2B	IPS-HARD-03-3A	IPS-HARD-03-3A	Standard	Standard	Standard
True Value Ref Std	1.00	20.0	10.0	0.0487	0.0835	0.0530	65.3	323	244	32.3	0.5	0.19	15
Laboratory Result	1.01	19.6	10.8	0.0487	0.0905	0.0542	65.8	365	237	28.4	0.53	0.18	14.4
% Recovery Ref Std	101	98.0	108	100	108	102	101	113	97.1	87.9	106	94.7	96.0
Spiked Sample ID	L-134-03-1	L-132-03-1	L-132-03-1	L-134-03-1	L-134-03-1	L-147-03-16	L-132-03-1				534619	534873	
MS actual value	1.96	2.69	21.3	0.0372	0.133	0.612	58.3				1.13	0.0226	
MSD actual value	2.04	2.65	21.5	0.0379	0.134	0.610	59.4				1.04		
Matrix spike expected value	2.02	2.68	20.0	0.0371	0.143	0.614	57.4				1.0	0.024	
MS % of expected value	97.0	100	107	100	93.0	99.7	102				113	94	
MSD % of expected value	101	98.9	108	102	93.7	99.3	103				104		
RPD	4.00	1.50	0.93	1.86	0.75	0.33	1.87				8.29		
Sample Duplicate ID								L-132-03-8	L-134-03-1	L-134-03-1	534929	534872	
Sample value								69	24.5	1.0	0.36	<0.0050	
Duplicate value								75	24.5	1.0	0.42	<0.0050	
RPD								8.33	0.00	0.00	15.4	0.00	

LabSampleID	Station Code	Fluoride, mg/L	Chloride, mg/L	Ammonia as N, mg/L	Ortho phosphate as P, mg/L	Total Phosphorus as P, mg/L	Nitrite + Nitrate as N, mg/L	Hydroxide Alkalinity as CaCO3, mg/L	Carbonate Alkalinity as CaCO3,mg/L	Bicarbonate Alkalinity as CaCO3, mg/L	Total Dissolved Solids, mg/L	Hardness,mg/L	Total Suspended Solids, mg/L	Boron, mg/L	Cyanide, mg/L	Molybdenum, mg/L
L-150-03-1	NC1	0.015 J	0.30	< 0.05	0.0122	< 0.03	0.0789	0	0	20.8	50	21.8	3.9	< 0.10	< 0.0050	< 0.0050
L-150-03-2	CC1	0.024	0.49	0.065 J	0.0331	< 0.03	0.0647	0	0	57.8	97	49.5	2.0	< 0.10	< 0.0050	< 0.0050
L-150-03-3	CC2	0.030	0.36	0.072 J	0.0439	< 0.03	0.0684	0	0	37.0	79	32.2	6.0	< 0.10	< 0.0050	< 0.0050
Method Blank		0.015 J	< 0.2	< 0.05	< 0.005	< 0.03	< 0.005	0	0	< 1.6	< 10	< 1.0	< 1.0	< 0.10	< 0.0050	< 0.0050
MDL		0.01	0.2	0.05	0.005	0.03	0.005	0.5	0.5	1.6	10	1.0	1.0	0.045	0.002	0.005
RL		0.02	0.25	0.100	0.0100	0.0500	0.0100	1.0	1.0	10.0	12	1.0	1.0	0.10	0.0050	0.0050
Method		EPA 340.2	EPA 300.0	EPA 350.3	QC 10115011M	QC 10115011D	QC 10107041B	EPA 310.1	EPA 310.1	QC10303311A	SM 2540	SM 2340C	SM 2540C	SM4500BB	SM4500CN-E	SM3113B
MDL - Method Detection Limit					J - detected but not quantified				RL - Reporting Limit							

REFERENCES:

EPA - Methods for Chemical Analysis of Water and Wastewater, EPA-600/4-79-020, March 1983.

QC - Lachat Quikchem Flow Injection Analyzer Method

SM - Standard Methods for the Examination of Water and Wastewater, 18th edition, 1992, American Public Health Association, American Water Works Association, Water Pollution Control Federation.

	Dissolved Iron, mg/L
Reference Standard ID	Standard
True Value Ref Std	0.0160
Laboratory Result	0.0160
% Recovery Ref Std	100
Spiked Sample ID	536594
MS actual value	0.0144
MSD actual value	0.0150
Matrix spike expected value	0.0150
MS % of expected value	96.0
MSD % of expected value	100
RPD	4.08

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LABORATORY REPORT

Name: Brian Frantz
Agency: PG&E
Address: 3400 Crow canyon Rd.
City: San Ramon, CA 94583

Lab Number: L-150-03 supplementary
Other Number:
Date Sampled: 03/26/03
Date Received: 03/27/03
Date Completed: 05/17/03
Index-PCA Code:

RE: Kilrac-Cow

RESULTS OF CHEMICAL ANALYSIS:

Laboratory Identification	Sample Description	Dissolved Iron, mg/L
L-150-03-1	NC1	0.0150
L-150-03-2	CC1	0.0088
L-150-03-3	CC2	0.0073
Report Limit		0.0050
Detection Limit		0.0012

See attached sheet for QA summary

Method References:
Methods for Chemical Analysis of Water and Wastewater, EPA-600/4-79-020, March 1983, EPA Method 236.2 Iron by Graphite Furnace AAS.

Cost of Analysis: $150.00

Analyst: Sierra Foothills Laboratory

_____ _____ _____ _____
Inorganic Section Leader **Date** **Reviewed by** **Date**

_____ _____
Laboratory Director **Date**

	Fluoride, mg/L	Chloride, mg/L	Ammonia as N, mg/L	Ortho phosphate as P, mg/L	Total Phosphorus as P, mg/L	Nitrite + Nitrate as N, mg/L	Bicarbonate Alkalinity as CaCO3, mg/L	Total Dissolved Solids, mg/L	Hardness,mg/L	Total Suspended Solids, mg/L	Boron, mg/L	Cyanide, mg/L	Molybdenum, mg/L
Reference Standard ID	IPS-F-01-25	IPS-anions-mix-02-37	IPS-NH3-02-13B	IPS-anions-mix-02-37	IPS-nutrient-02-53	IPS-anions-mix-02-37	IPS-min-03-2D	IPS-MIN-03-2B	IPS-HARD-03-3B	IPS-HARD-03-3A	Standard	Standard	Standard
True Value Ref Std	1.00	20.0	10.0	0.0487	0.0835	0.0530	65.3	323	244	32.3	0.50	0.19	15
Laboratory Result	1.01	18.9	11.2	0.0490	0.0751	0.0574	64.4	332	234	31.6	0.58	0.19	13.8
% Recovery Ref Std	101	94.5	112	101	89.9	108	98.6	103	95.9	97.8	116	100	92.0
Spiked Sample ID	L-132-03-1	L-150-03-1	L-150-03-1	L-150-03-1	L-150-03-1	L-150-03	L-147-03-15				534619	534883	
MS actual value	2.15	0.76	9.87	0.0361	0.123	0.124	247				1.13	0.0226	
MSD actual value	2.12	0.77	10.1	0.0357	0.125	0.125	246				1.04		
Matrix spike expected value	2.02	0.77	10.0	0.0357	0.136	0.125	251				1.0	0.0240	
MS % of expected value	106	98.7	98.7	101	90.4	99.2	98.4				113	94.2	
MSD % of expected value	105	100	101	100	91.9	100	98.0				104		
RPD	1.41	1.31	2.30	1.11	1.61	0.80	0.41				8.29		
Sample Duplicate ID								L-150-03-3	L-150-03-3	L-156-03-7	534583	534882	
Sample Value								79	31.7	1.3	10	< 0.0050	
Duplicate Value								79	32.7	1.3	10	< 0.0050	
RPD								0.00	3.11	0.00	0.00	0.00	

LabSampleID	Station Code	Sample Collection Date	Total Alkalinity as CaCO3, mg/L	Ammonia as N, mg/L	Chloride, mg/L	Hardness as CaCO3, mg/L	Fluoride, mg/L	Nitrite + Nitrate as N, mg/L	Ortho Phosphate as P, mg/L	Total Dissolved Solids, mg/L	Total Suspended Solids, mg/L	Total Phosphorus as P, mg/L	Dissolved Iron, mg/L	Boron, mg/L	Cyanide, mg/L	Molybdenum, mg/L
L-483-03-1	KF1	10/1/2003	58.8	< 0.05	0.33 J	49.0	0.025 J	0.0587	0.0188	76	5.8	< 0.015	< 0.0020	< 0.10	< 0.0050	< 0.005
L-483-03-2	OC1	10/1/2003	44.8	< 0.05	0.32 J	49.5	0.032 J	0.0546	0.0242	76	< 1.0	< 0.015	< 0.0020	< 0.10	< 0.0050	< 0.005
L-483-03-3	OC3	10/1/2003	48.7	< 0.05	0.55	49.5	0.035 J	0.0571	0.0361	90	1.5	0.0202 J	0.0099	< 0.10	< 0.0050	< 0.005
L-483-03-4	OC4	10/1/2003	46.5	< 0.05	0.34 J	50.0	0.028 J	0.0696	0.0228	77	1.4	< 0.015	0.0024 J	< 0.10	< 0.0050	< 0.005
L-483-03-5	SC1	10/1/2003	48.1	< 0.05	0.43	51.0	0.030 J	0.0532	0.0283	92	< 1.0	< 0.015	0.0474	< 0.10	< 0.0050	< 0.005
L-483-03-6	CCF1	10/1/2003	58.0	< 0.05	0.58	59.8	0.029 J	0.0586	0.0326	101	1.2	0.0164 J	0.0433	< 0.10	< 0.0050	< 0.005
L-483-03-7	SC4	10/1/2003	63.2	< 0.05	0.60	67.6	0.030 J	0.0787	0.0354	113	1.1	< 0.015	0.0188	< 0.10	< 0.0050	< 0.005
L-483-03-8	SC5	10/1/2003	65.0	< 0.05	0.60	67.6	0.029 J	0.0829	0.0358	109	1.4	0.0157 J	0.0233	< 0.10	< 0.0050	< 0.005
L-483-03-9	MC1	10/1/2003	80.5	< 0.05	0.81	87.0	0.029 J	0.119	0.0519	136	5.2	0.0299 J	0.0154	< 0.10	< 0.0050	< 0.005
Method Blank			< 3	< 0.05	< 0.2	< 1.0	< 0.02	< 0.001	< 0.001	< 10	< 1.0	< 0.015	< 0.0020	---	< 0.0050	---
MDL			3	0.05	0.2	1.0	0.02	0.001	0.001	10	1.0	0.015	0.0020	0.0450	0.0020	0.005
RL			8.0	0.10	0.35	1.0	0.050	0.0080	0.0080	12	1.0	0.0500	0.0050	< 0.10	< 0.0050	< 0.0050
Method			QC10303311A	EPA 350.3	EPA 300.0	SM 2340C	SM 4500-F⁻ C	QC 10107041B	QC 10115011M	SM 2540	SM 2540C	QC 10115011D	SM 3113	SM 4500BB	SM 4500CN-E	SM 3113B
Date of Analysis			10/13/2003	10/7/2003	10/17/2003	10/2/2003	10/2/2003	10/3/2003	10/2/2003	10/8/2003	10/2/2003	10/6/2003	10/3/2003	10/7/2003	10/8/2003	10/17/2003
MDL - Method Detection Limit				J - detected but not quantified												

REFERENCES:

EPA - Methods for Chemical Analysis of Water and Wastewater , EPA-600/4-79-020, March 1983.

QC - Lachat Quikchem Flow Injection Analyzer Method

SM - Standard Methods for the Examination of Water and Wastewater , 18th edition, 1992, American Public Health Association, American Water Works Association, Water Pollution Control Federation.

	Total Alkalinity as $CaCO_3$, mg/L	Ammonia as N, mg/L	Chloride, mg/L	Hardness as $CaCO_3$, mg/L	Fluoride, mg/L	Nitrite + Nitrate as N, mg/L	Ortho phosphate as P, mg/L	Total Dissolved Solids, mg/L	Total Suspended Solids, mg/L	Total Phosphorus as P, mg/L	Dissolved Iron GFAAS, mg/L	Boron, mg/L	Cyanide, mg/L	Molybdenum, mg/L
Reference Standard ID	IPS-min-03-11A	IPS-NH3-02-13A	IPS-anions-mix-02-57	IPS-HARD-03-40E	IPS-F-01-35	IPS-anions-mix-02-57	IPS-anions-mix-02-57	IPS-min-03-24C	IPS-HARD-03-40E	IPS-nutrient-02-53	IPS-1640-03-1	Standard	Standard	Standard
True Value Ref Std	58.8	1.00	20.0	112	1.00	0.0530	0.0487	355	60.5	0.0835	0.0343	0.50	0.19	0.0150
Laboratory Result	67.7	1.15	19.4	118	1.08	0.0555	0.0475	339	58.7	0.0900	0.0312	0.49	0.18	0.0140
% Recovery Ref Std	115	115	97.0	105	108	105	97.5	95.5	97.0	108	91.0	98.0	94.7	93.3
Spiked Sample ID	Run with L-487-03-1	L-483-03-2	L-483-03-9		L-483-03-1	L-483-03-1	L-483-03-1			L-483-03-1	L-483-03-3	L-483-03-2	L-483-03-2	L-483-03-5
MS actual value	76.5	2.05	1.17		1.91	0.165	0.0417			0.139	0.0144	0.960	0.0461	0.0103
MSD actual value	75.0	2.24	1.19		1.93	0.162	0.0420			0.135	0.0146			0.0098
Matrix spike expected value	76.6	2.02	1.23		2.02	0.153	0.0419			0.138	0.0135	1.00	0.0480	0.0100
MS % of expected value	99.9	101	95.1		94.6	108	99.5			101	107	96.0	96.0	103
MSD % of expected value	97.9	111	96.7		95.5	106	100			97.8	108			98.0
RPD	1.98	8.86	1.69		1.04	1.83	0.72			2.92	1.38			4.98
Sample Duplicate ID				L-483-03-9				L-483-03-1	IPS-HARD-03-40E			L-483-03-1	L-483-03-1	L-483-03-3
Sample Value				89.2				76	57.7			< 0.10	< 0.0050	< 0.005
Duplicate Value				84.8				77	59.7			< 0.10	< 0.0050	< 0.005
Sample Average				87.0				76	58.7			< 0.10	< 0.0050	< 0.005
RPD				5.06				1.31	3.41			0.00	0.00	0.00

LabSampleID	Station Code	Sample Collection Date	Total Alkalinity as CaCO3, mg/L	Ammonia as N, mg/L	Chloride, mg/L	Hardness as CaCO3, mg/L	Fluoride, mg/L	Nitrite + Nitrate as N, mg/L	Ortho Phosphate as P, mg/L	Total Dissolved Solids, mg/L	Total Suspended Solids, mg/L	Total Phosphorus as P, mg/L	Dissolved Iron, mg/L	Boron, mg/L	Cyanide, mg/L	Molybdenum, mg/L
L-487-03-1	CC1	10/2/2003	52.1	< 0.05	0.46	50.4	0.031 J	0.0547	0.0542	104	7.7	0.0932	< 0.0020	< 0.10	< 0.0050	< 0.005
L-487-03-2	CC2	10/2/2003	29.8	< 0.05	0.38	30.5	0.047 J	0.0773	0.0523	81	< 1.0	0.0410 J	0.0020 J	< 0.10	< 0.0050	< 0.005
L-487-03-3	NC1	10/2/2003	54.4	< 0.05	0.35	51.9	0.036 J	0.0408	0.0302	94	1.0	< 0.015	< 0.0020	< 0.10	< 0.0050	< 0.005
Method Blank			< 3	< 0.05	< 0.2	< 1.0	0.020 J	< 0.001	< 0.001	< 10	< 1.0	< 0.015	< 0.0020	---	< 0.0050	---
MDL			3	0.05	0.2	1.0	0.02	0.001	0.001	10	1.0	0.015	0.0020	0.0450	0.0020	0.005
RL			8.0	0.10	0.35	1.0	0.050	0.0080	0.0080	12	1.0	0.0500	0.0050	< 0.10	< 0.0050	< 0.0050
Method			QC10303311A	EPA 350.3	EPA 300.0	SM 2340C	SM 4500-F⁻ C	QC 10107041B	QC 10115011M	SM 2540	SM 2540C	QC 10115011D	SM 3113	SM 4500BB	SM 4500CN-	SM 3113B
Date of Analysis			10/13/2003	10/6/2003	10/14/2003	10/7/2003	10/14/2003	10/3/2003	10/3/2003	10/8/2003	10/7/2003	10/6/2003	10/3/2003	10/7/2003	10/8/2003	10/17/2003
MDL - Method Detection Limit				J - detected but not quantified												

REFERENCES:

EPA - Methods for Chemical Analysis of Water and Wastewater , EPA-600/4-79-020, March 1983.

QC - Lachat Quikchem Flow Injection Analyzer Method

SM - Standard Methods for the Examination of Water and Wastewater , 18th edition, 1992, American Public Health Association, American Water Works Association, Water Pollution Control Federation.

	Total Alkalinity as CaCO3, mg/L	Ammonia as N, mg/L	Chloride, mg/L	Hardness as $CaCO_3$, mg/L	Fluoride, mg/L	Nitrite + Nitrate as N, mg/L	Ortho phosphate as P, mg/L	Total Dissolved Solids, mg/L	Total Suspended Solids, mg/L	Total Phosphorus as P, mg/L	Dissolved Iron GFAAS, mg/L	Boron, mg/L	Cyanide, mg/L	Molybdenum, mg/L
Reference Standard ID	IPS-min-03-11A	IPS-NH3-02-13A	IPS-anions-mix-02-57	IPS-HARD-03-40A	IPS-F-01-35	IPS-anions-mix-02-57	IPS-anions-mix-02-57	IPS-min-03-24C	IPS-HARD-03-40E	IPS-nut-02-53	IPS-1640-03-1	Standard	Standard	Standard
True Value Ref Std	58.8	1.00	20.0	112	1.00	0.0530	0.0487	355	60.5	0.0835	0.0343	0.50	0.19	0.0150
Laboratory Result	67.7	1.13	18.7	107	1.14	0.0555	0.0478	339	64.4	0.0900	0.0312	0.49	0.18	0.0138
% Recovery Ref Std	115	113	93.5	95.5	114	105	98.1	95.5	106	108	91.0	98.0	94.7	92.0
Spiked Sample ID	L-487-03-1	L-487-03-2	L-487-03-1		L-487-03-1	Run with L-483-03-1	L-487-03-1			Run with L-483-03-1	Run with L-483-03-3	Run with L-483-03-2	Run with L-483-03-2	Run with L-483-03-1
MS actual value	76.5	1.91	0.84		2.04	0.165	0.0742			0.139	0.0144	0.960	0.0461	0.0105
MSD actual value	75.0	1.96	0.85		2.07	0.162	0.0745			0.135	0.0146			
Matrix spike expected value	76.6	2.03	0.91		2.03	0.153	0.0738			0.138	0.0135	1.00	0.0480	0.0100
MS % of expected value	99.9	94.1	92.3		100	108	101			101	107	96.0	96.0	105
MSD % of expected value	97.9	96.6	93.4		102	106	101			97.8	108			
RPD	1.98	2.58	1.18		1.46	1.83	0.40			2.92	1.38			
Sample Duplicate ID				L-487-03-1				Run with L-483-03-1	L-487-03-1			L-483-03-1	L-483-03-1	L-483-03-3
Sample Value				50.4				76	7.6			< 0.10	< 0.0050	< 0.005
Duplicate Value				50.4				77	7.9			< 0.10	< 0.0050	< 0.005
Sample Average				50.4				76	7.7			< 0.10	< 0.0050	< 0.005
RPD				0.00				1.31	3.87			0.00	0.00	0.00

NC1 Water Quality

NC1 (North Canyon Creek above diversion)

	2003					
	March	May	June	July	August	October
Time	10:00	16:25	13:14	13:15	10:54	8:44
In situ Parameters						
Water Temperature (°C)	5.31	8.85	10.28	11.60	9.78	9.21
Dissolved Oxygen (mg/L)	10.05	10.16	9.23	10.25	10.98	9.48
Specific Conductance (µmhos/cm)	52	54	79	102	105	117
pH	7.98	7.68	8.06	8.25	8.23	8.10
Turbidity (NTU)	2.8	<0.5	1.0	0.1	1.5	0.0
Depth (M)	1.0	1.0	1.0	1.0	1.0	1.0
Analytical Parameters						
Total Coliform (MPN/100 mL)	80	NS	NS	NS	NS	170
Fecal Coliform (MPN/100 mL)	2	NS	NS	NS	NS	4
Total Metals:						
Arsenic (µg/L)	<0.10	NS	NS	NS	NS	<0.10
Barium (mg/L)	0.0037	NS	NS	NS	NS	0.0058
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.11	NS	NS	NS	NS	<0.003
Lead (µg/L)	0.035	NS	NS	NS	NS	<0.002
Manganese (µg/L)	4.6	NS	NS	NS	NS	1.05
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.43	NS	NS	NS	NS	<0.02
Dissolved Metals:						
Arsenic (µg/L)	<0.10	NS	NS	NS	NS	<0.10
Barium (mg/L)	0.003	NS	NS	NS	NS	0.0057
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.07	NS	NS	NS	NS	<0.003
Iron (mg/L)	0.015	NS	NS	NS	NS	<0.0020
Lead (µg/L)	<0.01	NS	NS	NS	NS	<0.002
Manganese (µg/L)	0.24	NS	NS	NS	NS	<0.003
Mercury (µg/L)	0.00221	NS	NS	NS	NS	0.000395
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.3	NS	NS	NS	NS	<0.02
Ammonia - Total (mg/L)	<0.05	NS	NS	NS	NS	<0.05
Total Hardness, as CaCO3 (mg/L)	21.8	NS	NS	NS	NS	51.9
Chloride (mg/L)	0.30	NS	NS	NS	NS	0.35
Fluoride (mg/L)	0.02 J	NS	NS	NS	NS	0.036 J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.0789	NS	NS	NS	NS	0.0408
Alkalinity - Total (mg/L)	21	NS	NS	NS	NS	54.4
Total Dissolved Solids (mg/L)	50	NS	NS	NS	NS	94
Total Suspended Solids (mg/L)	3.9	NS	NS	NS	NS	1.0
Total Phosphorous (mg/L)	<0.03	NS	NS	NS	NS	<0.015
Orthophosphate (mg/L)	0.0122	NS	NS	NS	NS	0.0302
Total Calcium (mg/L)	5.33	NS	NS	NS	NS	11.30
Total Magnesium (mg/L)	2.20	NS	NS	NS	NS	5.51
Total Sodium (mg/L)	2.14	NS	NS	NS	NS	4.62
Dissolved Calcium (mg/L)	5.24	NS	NS	NS	NS	11.20
Dissolved Magnesium (mg/L)	2.2	NS	NS	NS	NS	5.56
Dissolved Sodium (mg/L)	2.12	NS	NS	NS	NS	4.66
Total Boron (mg/L)	<0.10	NS	NS	NS	NS	<0.1
Cyanide (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
Molybdenum (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
PCBs						
Aroclor 1016 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1221 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1232 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1242 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1248 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1254 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1260 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1268 (µg/L)	<1.0	NS	NS	NS	NS	<0.2

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	11.60	5.31	8.74
	10.25	9.48	9.99
	117.00	52.00	81.25
	8.25	7.68	8.00
	2.80	0.00	0.97
	1.00	1.00	1.00
	0	0	#DIV/0!
	0.0058	0.0037	0.00475
	0	0	#DIV/0!
	0.11	0.11	0.11
	0.035	0.035	0.035
	4.6	1.05	2.825
	0	0	#DIV/0!
	0.43	0.43	0.43
	0	0	#DIV/0!
	0	0	#DIV/0!
	0.07	0.07	0.07
	0.015	0.015	0.015
	0	0	#DIV/0!
	0.00221	0.000395	0.001303
	0	0	#DIV/0!
	0.3	0.3	0.3
	0	0	#DIV/0!
	51.9	21.8	36.85
	0.35	0.3	0.325
	0.0789	0.0408	0.05985
	54.4	20.8	37.6
	94	50	72
	3.9	1	2.45
	0	0	#DIV/0!
	0.0302	0.0122	0.0212
	11.3	5.33	8.315
	5.51	2.2	3.855
	4.62	2.14	3.38
	11.2	5.24	8.22
	5.56	2.2	3.88
	4.66	2.12	3.39

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

NC1 (North Canyon Creek above diversion)	March	Flag	California Toxics Rules Criteria (USEPA)[1] Freshwater Aquatic Life Protection			USEPA National Recommended[2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH)[3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB[4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:00														
In situ Parameters															
Water Temperature (°C)	5.31														
Dissolved Oxygen (mg/L)	10.05												*>7*		
Specific Conductance (µmhos/cm)	52									*900*					
pH (Standard Units)	7.98							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	2.8									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00370								*1*		2			*1.0*	
Cadmium (µg/L)	<0.002		*0.7445*	*0.8103*		*0.08754*	*0.45342*		*5*		5				
Copper (µg/L)	0.11000		*2.5383*	*3.3327*		*2.5383*	*3.3327*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (µg/L)	0.03500		*0.4576*	*11.7432*		*0.4576*	*11.7432*		*15*		15				
Manganese (µg/L)	4.60000									*50*		*50*			
Silver (µg/L)	<0.008				*0.2955*			*0.2755*		*100*					
Zinc (µg/L)	0.43000		*32.9603*	*32.9603*		*32.9603*	*32.9603*			*5,000*					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (µg/L)	<0.002		*0.7242*	*0.8166*		*0.08516*	*0.4569*								
Copper (µg/L)	0.07000		*2.4368*	*3.1994*		*2.4368*	*3.1994*								
Lead (µg/L)	<0.01		*0.4635*	*11.8953*		*0.4635*	*11.8953*								
Mercury (µg/L)	2.21E-03					*0.77*	*1.40*								
Silver (µg/L)	<0.008				*0.25117*			*0.23419*							
Zinc (µg/L)	0.30000		*32.4988*	*32.2351*		*32.4988*	*32.2351*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL)[10]	2												*200/400*		
Ammonia - Total (mg/L)[5]	<0.05					*2.50*	*5.83*								
Total Hardness, as CaCO3 (mg/L)	21.8														
Chloride (mg/L)[9]	0.3					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0	J							*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)][8]	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	20.8					*≥ 20*									
Total Dissolved Solids (mg/L)	50.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (µg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

NC1 (North Canyon Creek above diversion)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	16:25														
In situ Parameters															
Water Temperature (°C)	8.85														
Dissolved Oxygen (mg/L)	10.16												*>7*		
Specific Conductance (mmhos/cm)	54									*900*					
pH (Standard Units)	7.68							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	<0.5									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

NC1 (North Canyon Creek above diversion)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:14														
In situ Parameters															
Water Temperature (°C)	10.28														
Dissolved Oxygen (mg/L)	9.23												*>7*		
Specific Conductance (mmhos/cm)	79									*900*					
pH (Standard Units)	8.06							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

NC1 (North Canyon Creek above diversion)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:15														
In situ Parameters															
Water Temperature (°C)	11.60														
Dissolved Oxygen (mg/L)	10.25												*>7*		
Specific Conductance (mmhos/cm)	102									*900*					
pH (Standard Units)	8.25							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

NC1 (North Canyon Creek above diversion)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:54														
In situ Parameters															
Water Temperature (°C)	9.78														
Dissolved Oxygen (mg/L)	10.98												*>7*		
Specific Conductance (mmhos/cm)	105									*900*					
pH (Standard Units)	8.23							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.5									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

NC1 (North Canyon Creek above diversion)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:44														
In situ Parameters															
Water Temperature (°C)	9.21														
Dissolved Oxygen (mg/L)	9.48												*>7*		
Specific Conductance (mmhos/cm)	117									*900*					
pH (Standard Units)	8.10							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00580								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*1.4711*	*2.1557*		*0.16647*	*1.09513*		*5*		*5*				
Copper (mg/L)	<0.003		*5.3265*	*7.5462*		*5.3265*	*7.5462*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	<0.002		*1.3806*	*35.4273*		*1.3806*	*35.4273*		*15*		*15*				
Manganese (mg/L)	1.05000									*50*		*50*			
Silver (mg/L)	<0.008				*1.3137*			*1.2249*		*100*					
Zinc (mg/L)	<0.02		*68.7350*	*68.7350*		*68.7350*	*68.7350*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (mg/L)	<0.002		*1.3776*	*2.0942*		*0.15589*	*1.0639*								
Copper (mg/L)	<0.003		*5.1134*	*7.2444*		*5.1134*	*7.2444*								
Lead (mg/L)	<0.002		*1.2240*	*31.4087*		*1.2240*	*31.4087*								
Mercury (mg/L)	3.95E-04					*0.77*	*1.40*								
Silver (mg/L)	<0.008				*1.11662*			*1.04113*							
Zinc (mg/L)	<0.02		*67.7727*	*67.2228*		*67.7727*	*67.2228*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) 10	4												*200/400*		
Ammonia - Total (mg/L) 5	<0.05					*2.10*	*4.64*								
Total Hardness, as CaCO3 (mg/L)	51.9														
Chloride (mg/L) 9	0.4					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0	J							*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.0								*10*		*10*				
Alkalinity - Total (mg/L)	54.4					*≥ 20*									
Total Dissolved Solids (mg/L)	94.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

NC2 (North Canyon Creek above confluence with South Canyon Creek)

	2003					
	March	May	June	July	August	October
Time	NS	17:00	13:47	13:45	11:30	9:42
In situ Parameters						
Water Temperature (°C)	NS	8.36	10.82	11.91	10.90	10.26
Dissolved Oxygen (mg/L)	NS	10.31	9.04	10.01	9.14	8.45
Specific Conductance (µmhos/cm)	NS	67	79	93	95	18
pH	NS	7.51	7.89	8.06	8.08	7.97
Turbidity (NTU)	NS	0.5	1.0	0.1	1.9	0.8
Depth (M)	NS	1.0	1.0	1.0	1.0	1.0

NS = Constituent not sampled for during monitoring program

		Statistics	
	MAX	**MIN**	**AVG**
	11.91	8.36	10.18
	10.31	8.45	9.59
	93.00	18.00	59.33
	8.06	7.51	7.85
	0.80	0.10	0.47
	1.00	1.00	1.00

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

NC2 (North Canyon Creek above confluence with South Canyon Creek)	March	Flag	California Toxics Rules Criteria (USEPA) [1] Freshwater Aquatic Life Protection			USEPA National Recommended [2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB [4] Basin Plan Objectives	CTR (Human Health 30-day average)	
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	NS													Sources of Drinking water	Other waters
In situ Parameters															
Water Temperature (°C)	NS														
Dissolved Oxygen (mg/L)	NS												*>7*		
Specific Conductance (µmhos/cm)	NS									*900*					
pH (Standard Units)	NS							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	NS									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

NC2 (North Canyon Creek above confluence with South Canyon Creek)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	17:00														
In situ Parameters															
Water Temperature (°C)	8.36														
Dissolved Oxygen (mg/L)	10.31												*>7*		
Specific Conductance (mmhos/cm)	67									*900*					
pH (Standard Units)	7.51							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.5									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*). (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

NC2 (North Canyon Creek above confluence with South Canyon Creek)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:47														
In situ Parameters															
Water Temperature (°C)	10.82														
Dissolved Oxygen (mg/L)	9.04												*>7*		
Specific Conductance (mmhos/cm)	79									*900*					
pH (Standard Units)	7.89							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

NC2 (North Canyon Creek above confluence with South Canyon Creek)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:45														
In situ Parameters															
Water Temperature (°C)	11.91														
Dissolved Oxygen (mg/L)	10.01												*>7*		
Specific Conductance (mmhos/cm)	93									*900*					
pH (Standard Units)	8.06							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

NC2 (North Canyon Creek above confluence with South Canyon Creek)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	11:30														
In situ Parameters															
Water Temperature (°C)	10.90														
Dissolved Oxygen (mg/L)	9.14												*>7*		
Specific Conductance (mmhos/cm)	95									*900*					
pH (Standard Units)	8.08							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.9									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

NC2 (North Canyon Creek above confluence with South Canyon Creek)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:42														
In situ Parameters															
Water Temperature (°C)	10.26														
Dissolved Oxygen (mg/L)	8.45												*>7*		
Specific Conductance (mmhos/cm)	18									*900*					
pH (Standard Units)	7.97							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.8									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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NS = Constituent not sampled for during monitoring program

CC1 Water Quality

CC1 (South Canyon Creek above diversion)

	2003											
	March		May		June		July		August		October	
Time	9:00		16:10		13:01		13:02		10:36		8:16	
In situ Parameters												
Water Temperature (°C)	7.50		8.53		9.03		9.96		9.20		8.93	
Dissolved Oxygen (mg/L)	9.49		10.20		9.39		9.81		9.31		9.51	
Specific Conductance (µmhos/cm)	109		108		112		116		111		115	
pH	7.79		7.64		7.90		8.30		8.16		7.92	
Turbidity (NTU)	1.4		0.1		1.0		0.1		0.0		0.1	
Depth (M)	0.1		0.1		0.1		0.1		0.1		0.1	
Analytical Parameters												
Total Coliform (MPN/100 mL)	500		NS		NS		NS		NS		350	
Fecal Coliform (MPN/100 mL)	80		NS		NS		NS		NS		30	
Total Metals:												
Arsenic (µg/L)	<0.10		NS		NS		NS		NS		<0.10	
Barium (mg/L)	0.0085		NS		NS		NS		NS		0.0125	
Cadmium (µg/L)	<0.002		NS		NS		NS		NS		<0.002	
Copper (µg/L)	0.09		NS		NS		NS		NS		<0.003	
Lead (µg/L)	0.021		NS		NS		NS		NS		0.01	
Manganese (µg/L)	2.24		NS		NS		NS		NS		2.26	
Silver (µg/L)	<0.008		NS		NS		NS		NS		<0.008	
Zinc (µg/L)	1.56		NS		NS		NS		NS		0.93	
Dissolved Metals:												
Arsenic (µg/L)	<0.10		NS		NS		NS		NS		<0.10	
Barium (mg/L)	0.0081		NS		NS		NS		NS		0.0105	
Cadmium (µg/L)	<0.002		NS		NS		NS		NS		<0.002	
Copper (µg/L)	0.06		NS		NS		NS		NS		<0.003	
Iron (mg/L)	0.0088		NS		NS		NS		NS		<0.002	
Lead (µg/L)	<0.01	DNQ	NS		NS		NS		NS		<0.002	
Manganese (µg/L)	0.59		NS		NS		NS		NS		0.16	
Mercury (µg/L)	0.00195		NS		NS		NS		NS		0.000679	
Silver (µg/L)	<0.008		NS		NS		NS		NS		<0.008	
Zinc (µg/L)	1.18		NS		NS		NS		NS		0.48	
Ammonia - Total (mg/L)	0.065	J	NS		NS		NS		NS		<0.05	
Total Hardness, as CaCO3 (mg/L)	49.5		NS		NS		NS		NS		50.4	
Chloride (mg/L)	0.49		NS		NS		NS		NS		0.46	
Fluoride (mg/L)	0.024		NS		NS		NS		NS		0.031	J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.0647		NS		NS		NS		NS		0.0547	
Alkalinity - Total (mg/L)	57.8		NS		NS		NS		NS		52.1	
Total Dissolved Solids (mg/L)	97		NS		NS		NS		NS		104	
Total Suspended Solids (mg/L)	2.0		NS		NS		NS		NS		7.7	
Total Phosphorous (mg/L)	<0.03		NS		NS		NS		NS		0.0932	
Orthophosphate (mg/L)	0.0331		NS		NS		NS		NS		0.0542	
Total Calcium (mg/L)	11.00		NS		NS		NS		NS		10.90	
Total Magnesium (mg/L)	5.09		NS		NS		NS		NS		5.51	
Total Sodium (mg/L)	3.86		NS		NS		NS		NS		4.50	
Dissolved Calcium (mg/L)	11.10		NS		NS		NS		NS		10.50	
Dissolved Magnesium (mg/L)	5.10		NS		NS		NS		NS		5.43	
Dissolved Sodium (mg/L)	3.83		NS		NS		NS		NS		4.47	
Total Boron (mg/L)	<0.10		NS		NS		NS		NS		<0.10	
Cyanide (mg/L)	<0.0050		NS		NS		NS		NS		<0.0050	
Molybdenum (mg/L)	<0.0050		NS		NS		NS		NS		<0.0050	
PCBs												
Aroclor 1016 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1221 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1232 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1242 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1248 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1254 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1260 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1268 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	9.96	7.50	8.73
	10.20	9.49	9.75
	116.00	108.00	112.00
	8.30	7.64	7.91
	1.40	0.10	0.43
	0.10	0.10	0.10
	0	0	#DIV/0!
	0.0125	0.0085	0.0105
	0	0	#DIV/0!
	0.09	0.09	0.09
	0.021	0.01	0.0155
	2.26	2.24	2.25
	0	0	#DIV/0!
	1.56	0.93	1.245
	0	0	#DIV/0!
	0	0	#DIV/0!
	0.06	0.06	0.06
	0.0088	0.0088	0.0088
	0	0	#DIV/0!
	0.00195	0.000679	0.001315
	0	0	#DIV/0!
	1.18	0.48	0.83
	0.065	0.065	0.065
	50.4	49.5	49.95
	0.49	0.46	0.475
	0.0647	0.0547	0.0597
	57.8	52.1	54.95
	104	97	100.5
	7.7	2	4.85
	0.0932	0.0932	0.0932
	0.0542	0.0331	0.04365
	11	10.9	10.95
	5.51	5.09	5.3
	4.5	3.86	4.18
	11.1	10.5	10.8
	5.43	5.1	5.265
	4.47	3.83	4.15

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

CC1 (South Canyon Creek above diversion)	March	Flag	California Toxics Rules Criteria (USEPA)[1] Freshwater Aquatic Life Protection			USEPA National Recommended[2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH)[3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB[4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:00														
In situ Parameters															
Water Temperature (°C)	7.50														
Dissolved Oxygen (mg/L)	9.49												*>7*		
Specific Conductance (µmhos/cm)	109									*900*					
pH (Standard Units)	7.79							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.4									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00850								*1*		*2*			*1.0*	
Cadmium (µg/L)	<0.002		*1.4174*	*2.0436*		*0.16073*	*1.04367*		*5*		*5*				
Copper (µg/L)	0.09000		*5.1153*	*7.2170*		*5.1153*	*7.2170*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (µg/L)	0.02100		*1.2998*	*33.3551*		*1.2998*	*33.3551*		*15*		*15*				
Manganese (µg/L)	2.24000									*50*		*50*			
Silver (µg/L)	<0.008				*1.2109*			*1.1291*		*100*					
Zinc (µg/L)	1.56000		*66.0321*	*66.0321*		*66.0321*	*66.0321*			*5,000*					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (µg/L)	<0.002		*1.3301*	*1.9893*		*0.15083*	*1.0159*								
Copper (µg/L)	0.06000		*4.9107*	*6.9283*		*4.9107*	*6.9283*								
Lead (µg/L)	<0.01	DNQ	*1.1613*	*29.8017*		*1.1613*	*29.8017*								
Mercury (µg/L)	1.95E-03					*0.77*	*1.40*								
Silver (µg/L)	<0.008				*1.02929*			*0.95971*							
Zinc (µg/L)	1.18000		*65.1077*	*64.5794*		*65.1077*	*64.5794*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL)[10]	80												*200/400*		
Ammonia - Total (mg/L)[5]	0.065	J				*3.22*	*8.25*								
Total Hardness, as CaCO3 (mg/L)	49.5														
Chloride (mg/L)[9]	0.5					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)][8]	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	57.8					*≥ 20*									
Total Dissolved Solids (mg/L)	97.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (µg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

CC1 (South Canyon Creek above diversion)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average)	
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	16:10														
In situ Parameters															
Water Temperature (°C)	8.53														
Dissolved Oxygen (mg/L)	10.20												*>7*		
Specific Conductance (mmhos/cm)	108									*900*					
pH (Standard Units)	7.64							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

CC1 (South Canyon Creek above diversion)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:01														
In situ Parameters															
Water Temperature (°C)	9.03														
Dissolved Oxygen (mg/L)	9.39												*>7*		
Specific Conductance (mmhos/cm)	112									*900*					
pH (Standard Units)	7.90							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

CC1 (South Canyon Creek above diversion)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:02														
In situ Parameters															
Water Temperature (°C)	9.96														
Dissolved Oxygen (mg/L)	9.81												*>7*		
Specific Conductance (mmhos/cm)	116									*900*					
pH (Standard Units)	8.30							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

CC1 (South Canyon Creek above diversion)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:36														
In situ Parameters															
Water Temperature (°C)	9.20														
Dissolved Oxygen (mg/L)	9.31												*>7*		
Specific Conductance (mmhos/cm)	111									*900*					
pH (Standard Units)	8.16							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

CC1 (South Canyon Creek above diversion)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:16														
In situ Parameters															
Water Temperature (°C)	8.93														
Dissolved Oxygen (mg/L)	9.51												*>7*		
Specific Conductance (mmhos/cm)	115									*900*					
pH (Standard Units)	7.92							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.1									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.01250								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*1.4376*	*2.0856*		*0.16289*	*1.06297*		*5*		*5*				
Copper (mg/L)	<0.003		*5.1947*	*7.3406*		*5.1947*	*7.3406*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	0.01000		*1.3300*	*34.1290*		*1.3300*	*34.1290*		*15*		*15*				
Manganese (mg/L)	2.26000									*50*		*50*			
Silver (mg/L)	<0.008				*1.2491*			*1.1646*		*100*					
Zinc (mg/L)	0.93000		*67.0480*	*67.0480*		*67.0480*	*67.0480*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (mg/L)	<0.002		*1.3480*	*2.0286*		*0.15274*	*1.0339*								
Copper (mg/L)	<0.003		*4.9869*	*7.0469*		*4.9869*	*7.0469*								
Lead (mg/L)	<0.002	DNQ	*1.1848*	*30.4035*		*1.1848*	*30.4035*								
Mercury (mg/L)	6.79E-04					*0.77*	*1.40*								
Silver (mg/L)	<0.008				*1.06169*			*0.98992*							
Zinc (mg/L)	0.48000		*66.1093*	*65.5729*		*66.1093*	*65.5729*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) [10]	30												*200/400*		
Ammonia - Total (mg/L) 5	<0.05	J				*2.72*	*6.52*								
Total Hardness, as CaCO3 (mg/L)	50.4														
Chloride (mg/L) 9	0.5					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	52.1					*≥ 20*									
Total Dissolved Solids (mg/L)	104.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

OC1 (Old Cow Creek above diversion)

	2003					
	March	May	June	July	August	October
Time	9:40	12:18	10:55	10:52	8:05	11:51
In situ Parameters						
Water Temperature (°C)	3.30	8.25	9.83	10.27	8.01	7.87
Dissolved Oxygen (mg/L)	11.14	10.49	8.83	9.24	12.15	10.87
Specific Conductance (µmhos/cm)	58	51	59	93	93	101
pH	7.89	7.87	7.96	8.45	8.08	8.06
Turbidity (NTU)	2.8	0.1	0.5	0.1	0.0	0.0
Depth (M)	0.1	1.0	1.0	1.0	1.0	1.0
Analytical Parameters						
Total Coliform (MPN/100 mL)	26	NS	NS	NS	NS	11
Fecal Coliform (MPN/100 mL)	<2	NS	NS	NS	NS	2
Total Metals:						
Arsenic (µg/L)	<0.10	NS	NS	NS	NS	<0.10
Barium (mg/L)	0.0015	NS	NS	NS	NS	0.0017
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.077	NS	NS	NS	NS	<0.003
Lead (µg/L)	<0.01 DNQ	NS	NS	NS	NS	<0.002
Manganese (µg/L)	0.66	NS	NS	NS	NS	0.12
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.15	NS	NS	NS	NS	<0.02
Dissolved Metals:						
Arsenic (µg/L)	<0.10	NS	NS	NS	NS	<0.10
Barium (mg/L)	0.0014	NS	NS	NS	NS	0.0013
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.044	NS	NS	NS	NS	<0.003
Iron (mg/L)	0.006	NS	NS	NS	NS	<0.0020
Lead (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Manganese (µg/L)	0.19	NS	NS	NS	NS	<0.003
Mercury (µg/L)	0.00172	NS	NS	NS	NS	0.000126
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.16	NS	NS	NS	NS	<0.02
Ammonia - Total (mg/L)	<0.05	NS	NS	NS	NS	<0.05
Total Hardness, as CaCO3 (mg/L)	24.5	NS	NS	NS	NS	49.5
Chloride (mg/L)	0.26	NS	NS	NS	NS	0.32 J
Fluoride (mg/L)	0.02 J	NS	NS	NS	NS	0.032 J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.1100	NS	NS	NS	NS	0.0546
Alkalinity - Total (mg/L)	30	NS	NS	NS	NS	44.8
Total Dissolved Solids (mg/L)	46	NS	NS	NS	NS	76
Total Suspended Solids (mg/L)	1.0	NS	NS	NS	NS	<1.0
Total Phosphorous (mg/L)	<0.03	NS	NS	NS	NS	<0.015
Orthophosphate (mg/L)	0.0138	NS	NS	NS	NS	0.0242
Total Calcium (mg/L)	5.51	NS	NS	NS	NS	9.66
Total Magnesium (mg/L)	2.65	NS	NS	NS	NS	5.11
Total Sodium (mg/L)	1.78	NS	NS	NS	NS	3.50
Dissolved Calcium (mg/L)	5.52	NS	NS	NS	NS	9.55
Dissolved Magnesium (mg/L)	2.67	NS	NS	NS	NS	5.26
Dissolved Sodium (mg/L)	1.78	NS	NS	NS	NS	3.59
Total Boron (mg/L)	<0.10	NS	NS	NS	NS	<0.10
Cyanide (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
Molybdenum (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
PCBs						
Aroclor 1016 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1221 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1232 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1242 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1248 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1254 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1260 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1268 (µg/L)	<1.0	NS	NS	NS	NS	<0.2

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	10.27	3.30	7.42
	11.14	9.24	10.44
	101.00	51.00	75.75
	8.45	7.87	8.07
	2.80	0.00	0.75
	1.00	0.10	0.78
	0	0	#DIV/0!
	0.0017	0.0015	0.0016
	0	0	#DIV/0!
	0.077	0.077	0.077
	0	0	#DIV/0!
	0.66	0.12	0.39
	0	0	#DIV/0!
	0.15	0.15	0.15
	0	0	#DIV/0!
	0	0	#DIV/0!
	0.044	0.044	0.044
	0.006	0.006	0.006
	0	0	#DIV/0!
	0.00172	0.000126	0.000923
	0	0	#DIV/0!
	0.16	0.16	0.16
	0	0	#DIV/0!
	49.5	24.5	37
	0.32	0.26	0.29
	0.11	0.0546	0.0823
	44.8	30.4	37.6
	76	46	61
	1	1	1
	0	0	#DIV/0!
	0.0242	0.0138	0.019
	9.66	5.51	7.585
	5.11	2.65	3.88
	3.5	1.78	2.64
	9.55	5.52	7.535
	5.26	2.67	3.965
	3.59	1.78	2.685

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC1 (Old Cow Creek above diversion)	March	Flag	California Toxics Rules Criteria (USEPA) [1] Freshwater Aquatic Life Protection			USEPA National Recommended [2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB [4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:40														
In situ Parameters															
Water Temperature (°C)	3.30														
Dissolved Oxygen (mg/L)	11.14												*>7*		
Specific Conductance (µmhos/cm)	58									*900*					
pH (Standard Units)	7.89							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	2.8									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00150								*1*		*2*			*1.0*	
Cadmium (µg/L)	<0.002		*0.8160*	*0.9244*		*0.09545*	*0.51057*		*5*		*5*				
Copper (µg/L)	0.07700		*2.8046*	*3.7202*		*2.8046*	*3.7202*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (µg/L)	<0.01	DNQ	*0.5309*	*13.6251*		*0.5309*	*13.6251*		*15*		*15*				
Manganese (µg/L)	0.66000									*50*		*50*			
Silver (µg/L)	<0.008				*0.3612*			*0.3368*		*100*					
Zinc (µg/L)	0.15000		*36.3879*	*36.3879*		*36.3879*	*36.3879*			*5,000*					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (µg/L)	<0.002		*0.7897*	*0.9270*		*0.09239*	*0.5120*								
Copper (µg/L)	0.04400		*2.6924*	*3.5714*		*2.6924*	*3.5714*								
Lead (µg/L)	<0.002		*0.5288*	*13.5698*		*0.5288*	*13.5698*								
Mercury (µg/L)	1.72E-03					*0.77*	*1.40*								
Silver (µg/L)	<0.008				*0.30703*			*0.28628*							
Zinc (µg/L)	0.16000		*35.8784*	*35.5873*		*35.8784*	*35.5873*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) [10]	<2												*200/400*		
Ammonia - Total (mg/L) [5]	<0.05					*2.84*	*6.89*								
Total Hardness, as CaCO3 (mg/L)	24.5														
Chloride (mg/L) [9]	0.3					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0	J							*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] [8]	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	30.4					*≥ 20*									
Total Dissolved Solids (mg/L)	46.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (µg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC1 (Old Cow Creek above diversion)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	12:18														
In situ Parameters															
Water Temperature (°C)	8.25														
Dissolved Oxygen (mg/L)	10.49												*>7*		
Specific Conductance (mmhos/cm)	51									*900*					
pH (Standard Units)	7.87							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC1 (Old Cow Creek above diversion)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:55														
In situ Parameters															
Water Temperature (°C)	9.83														
Dissolved Oxygen (mg/L)	8.83												*>7*		
Specific Conductance (mmhos/cm)	59									*900*					
pH (Standard Units)	7.96							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.5									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC1 (Old Cow Creek above diversion)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:52														
In situ Parameters															
Water Temperature (°C)	10.27														
Dissolved Oxygen (mg/L)	9.24												*>7*		
Specific Conductance (mmhos/cm)	93									*900*					
pH (Standard Units)	8.45							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

OC1 (Old Cow Creek above diversion)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:05														
In situ Parameters															
Water Temperature (°C)	8.01														
Dissolved Oxygen (mg/L)	12.15												*>7*		
Specific Conductance (mmhos/cm)	93									*900*					
pH (Standard Units)	8.08							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

OC1 (Old Cow Creek above diversion)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	11:51														
In situ Parameters															
Water Temperature (°C)	7.87														
Dissolved Oxygen (mg/L)	10.87												*>7*		
Specific Conductance (mmhos/cm)	101									*900*					
pH (Standard Units)	8.06							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00170								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*1.4174*	*2.0436*		*0.16073*	*1.04367*		*5*		*5*				
Copper (mg/L)	<0.003		*5.1153*	*7.2170*		*5.1153*	*7.2170*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	<0.002	DNQ	*1.2998*	*33.3551*		*1.2998*	*33.3551*		*15*		*15*				
Manganese (mg/L)	0.12000									*50*		*50*			
Silver (mg/L)	<0.008				*1.2109*			*1.1291*		*100*					
Zinc (mg/L)	<0.02		*66.0321*	*66.0321*		*66.0321*	*66.0321*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (mg/L)	<0.002		*1.3301*	*1.9893*		*0.15083*	*1.0159*								
Copper (mg/L)	<0.003		*4.9107*	*6.9283*		*4.9107*	*6.9283*								
Lead (mg/L)	<0.002		*1.1613*	*29.8017*		*1.1613*	*29.8017*								
Mercury (mg/L)	1.26E-04					*0.77*	*1.40*								
Silver (mg/L)	<0.008				*1.02929*			*0.95971*							
Zinc (mg/L)	<0.02		*65.1077*	*64.5794*		*65.1077*	*64.5794*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) 10	2												*200/400*		
Ammonia - Total (mg/L) 5	<0.05					*2.23*	*5.01*								
Total Hardness, as CaCO3 (mg/L)	49.5														
Chloride (mg/L) 9	0.3					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0	J							*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	44.8					*≥ 20*									
Total Dissolved Solids (mg/L)	76.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

OC2 Water Quality

OC2 (Old Cow Creek above confluence with North Canyon Creek)

	2003					
	March	May	June	July	August	October
Time	NS	15:30	12:28	12:30	10:02	7:40
In situ Parameters						
Water Temperature (°C)	NS	11.55	12.63	16.64	12.55	10.44
Dissolved Oxygen (mg/L)	NS	9.98	9.48	8.63	9.97	9.63
Specific Conductance (µmhos/cm)	NS	54	63	97	97	103
pH	NS	7.73	7.94	8.17	8.18	7.89
Turbidity (NTU)	NS	0.7	1.7	0.0	0.0	0.0
Depth (M)	NS	1.0	1.0	1.0	1.0	1.0

NS = Constituent not sampled for during monitoring program

		Statistics	
	MAX	**MIN**	**AVG**
	16.64	10.44	12.88
	9.98	8.63	9.41
	103.00	54.00	84.67
	8.17	7.73	7.93
	0.70	0.00	0.23
	1.00	1.00	1.00

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC2 (Old Cow Creek above confluence with North Canyon Creek)	March	Flag	California Toxics Rules Criteria (USEPA) [1] Freshwater Aquatic Life Protection			USEPA National Recommended [2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB [4] Basin Plan Objectives	CTR (Human Health 30-day average)	
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	NS													Sources of Drinking water	Other waters
In situ Parameters															
Water Temperature (°C)	NS														
Dissolved Oxygen (mg/L)	NS												*>7*		
Specific Conductance (µmhos/cm)	NS									*900*					
pH (Standard Units)	NS							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	NS									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC2 (Old Cow Creek above confluence with North Canyon Creek)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	15:30														
In situ Parameters															
Water Temperature (°C)	11.55														
Dissolved Oxygen (mg/L)	9.98												*>7*		
Specific Conductance (mmhos/cm)	54									*900*					
pH (Standard Units)	7.73							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.7									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC2 (Old Cow Creek above confluence with North Canyon Creek)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	12:28														
In situ Parameters															
Water Temperature (°C)	12.63														
Dissolved Oxygen (mg/L)	9.48												*>7*		
Specific Conductance (mmhos/cm)	63									*900*					
pH (Standard Units)	7.94							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.7									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC2 (Old Cow Creek above confluence with North Canyon Creek)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	12:30														
In situ Parameters															
Water Temperature (°C)	16.64														
Dissolved Oxygen (mg/L)	8.63												*>7*		
Specific Conductance (mmhos/cm)	97									*900*					
pH (Standard Units)	8.17							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*). (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

OC2 (Old Cow Creek above confluence with North Canyon Creek)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:02														
In situ Parameters															
Water Temperature (°C)	12.55														
Dissolved Oxygen (mg/L)	9.97												*>7*		
Specific Conductance (mmhos/cm)	97									*900*					
pH (Standard Units)	8.18							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

OC2 (Old Cow Creek above confluence with North Canyon Creek)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	7:40														
In situ Parameters															
Water Temperature (°C)	10.44														
Dissolved Oxygen (mg/L)	9.63												*>7*		
Specific Conductance (mmhos/cm)	103									*900*					
pH (Standard Units)	7.89							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

OC3 Water Quality

OC3 (Old Cow Creek above Kilrac Powerhouse)

	2003											
	March		May		June		July		August		October	
Time	12:45		13:36		11:28		11:21		8:54		13:02	
In situ Parameters												
Water Temperature (°C)	6.40		10.61		12.57		16.05		12.46		13.04	
Dissolved Oxygen (mg/L)	10.62		10.33		9.29		8.12		11.07		9.42	
Specific Conductance (µmhos/cm)	69		61		70		106		103		109	
pH	7.75		7.82		7.96		8.21		8.16		8.07	
Turbidity (NTU)	5.8		2.2		5.6		2.5		0.8		0.4	
Depth (M)	0.6		1.0		1.0		1.0		1.0		1.0	
Analytical Parameters												
Total Coliform (MPN/100 mL)	220		NS		NS		NS		NS		500	
Fecal Coliform (MPN/100 mL)	8		NS		NS		NS		NS		240	
Total Metals:												
Arsenic (µg/L)	<0.10		NS		NS		NS		NS		0.22	DNQ
Barium (mg/L)	0.0061		NS		NS		NS		NS		0.079	
Cadmium (µg/L)	<0.002		NS		NS		NS		NS		<0.002	
Copper (µg/L)	0.384		NS		NS		NS		NS		0.174	
Lead (µg/L)	0.063		NS		NS		NS		NS		0.02	
Manganese (µg/L)	4.46		NS		NS		NS		NS		6.18	
Silver (µg/L)	<0.008		NS		NS		NS		NS		<0.008	
Zinc (µg/L)	0.65		NS		NS		NS		NS		<0.02	
Dissolved Metals:												
Arsenic (µg/L)	<0.10		NS		NS		NS		NS		0.23	DNQ
Barium (mg/L)	0.0043		NS		NS		NS		NS		0.0073	
Cadmium (µg/L)	<0.002		NS		NS		NS		NS		0.009	
Copper (µg/L)	0.162		NS		NS		NS		NS		0.23	
Iron (mg/L)	0.011		NS		NS		NS		NS		0.0099	
Lead (µg/L)	<0.002		NS		NS		NS		NS		<0.002	
Manganese (µg/L)	0.72		NS		NS		NS		NS		1.34	
Mercury (µg/L)	0.00151		NS		NS		NS		NS		0.000501	
Silver (µg/L)	<0.008		NS		NS		NS		NS		<0.008	
Zinc (µg/L)	0.25		NS		NS		NS		NS		<0.02	
Ammonia - Total (mg/L)	<0.05		NS		NS		NS		NS		<0.05	
Total Hardness, as CaCO3 (mg/L)	27.4		NS		NS		NS		NS		49.5	
Chloride (mg/L)	0.36		NS		NS		NS		NS		0.55	
Fluoride (mg/L)	0.02		NS		NS		NS		NS		0.035	J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.0450		NS		NS		NS		NS		0.0571	
Alkalinity - Total (mg/L)	33		NS		NS		NS		NS		48.7	
Total Dissolved Solids (mg/L)	69		NS		NS		NS		NS		90	
Total Suspended Solids (mg/L)	6.6		NS		NS		NS		NS		1.5	
Total Phosphorous (mg/L)	<0.03		NS		NS		NS		NS		0.0202	J
Orthophosphate (mg/L)	0.0211		NS		NS		NS		NS		0.0361	
Total Calcium (mg/L)	6.76		NS		NS		NS		NS		10.00	
Total Magnesium (mg/L)	3.01		NS		NS		NS		NS		5.21	
Total Sodium (mg/L)	2.39		NS		NS		NS		NS		4.64	
Dissolved Calcium (mg/L)	6.67		NS		NS		NS		NS		10.10	
Dissolved Magnesium (mg/L)	2.94		NS		NS		NS		NS		5.16	
Dissolved Sodium (mg/L)	2.37		NS		NS		NS		NS		4.62	
Total Boron (mg/L)	<0.10		NS		NS		NS		NS		<0.1	
Cyanide (mg/L)	<0.0050		NS		NS		NS		NS		<0.0050	
Molybdenum (mg/L)	<0.0050		NS		NS		NS		NS		<0.0050	
PCBs												
Aroclor 1016 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1221 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1232 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1242 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1248 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1254 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1260 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1268 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	16.05	6.40	11.53
	10.62	8.12	9.62
	109.00	61.00	86.25
	8.21	7.75	7.96
	5.80	0.40	2.73
	1.00	0.60	0.90
	0.22	0.22	0.22
	0.079	0.0061	0.04255
	0	0	#DIV/0!
	0.384	0.174	0.279
	0.063	0.02	0.0415
	6.18	4.46	5.32
	0	0	#DIV/0!
	0.65	0.65	0.65
	0.23	0.23	0.23
	0.009	0.009	0.009
	0.23	0.162	0.196
	0.011	0.0099	0.01045
	0	0	#DIV/0!
	0.00151	0.000501	0.001006
	0	0	#DIV/0!
	0.25	0.25	0.25
	0	0	#DIV/0!
	49.5	27.4	38.45
	0.55	0.36	0.455
	0.0571	0.045	0.05105
	48.7	32.7	40.7
	90	69	79.5
	6.6	1.5	4.05
	0.0202	0.0202	0.0202
	0.0361	0.0211	0.0286
	10	6.76	8.38
	5.21	3.01	4.11
	4.64	2.39	3.515
	10.1	6.67	8.385
	5.16	2.94	4.05
	4.62	2.37	3.495

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC3 (Old Cow Creek above Kilrac Powerhouse)	March	Flag	California Toxics Rules Criteria (USEPA)[1] Freshwater Aquatic Life Protection			USEPA National Recommended[2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH)[3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB[4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	12:45														
In situ Parameters															
Water Temperature (°C)	6.40														
Dissolved Oxygen (mg/L)	10.62												*>7*		
Specific Conductance (µmhos/cm)	69									*900*					
pH (Standard Units)	7.75							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	5.8									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00610								*1*		*2*			*1.0*	
Cadmium (µg/L)	<0.002		*0.8909*	*1.0487*		*0.10370*	*0.57207*		*5*		*5*				
Copper (µg/L)	0.38400		*3.0859*	*4.1338*		*3.0859*	*4.1338*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (µg/L)	0.06300		*0.6122*	*15.7104*		*0.6122*	*15.7104*		*15*		*15*				
Manganese (µg/L)	4.46000									*50*		*50*			
Silver (µg/L)	<0.008				*0.4379*			*0.4083*		*100*					
Zinc (µg/L)	0.65000		*40.0057*	*40.0057*		*40.0057*	*40.0057*			*5,000*					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (µg/L)	<0.002		*0.8581*	*1.0468*		*0.09988*	*0.5710*								
Copper (µg/L)	0.16200		*2.9625*	*3.9684*		*2.9625*	*3.9684*								
Lead (µg/L)	<0.002		*0.5997*	*15.3906*		*0.5997*	*15.3906*								
Mercury (µg/L)	1.51E-03					*0.77*	*1.40*								
Silver (µg/L)	<0.008				*0.37218*			*0.34702*							
Zinc (µg/L)	0.25000		*39.4457*	*39.1256*		*39.4457*	*39.1256*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL)[10]	8												*200/400*		
Ammonia - Total (mg/L)[5]	<0.05					*3.38*	*8.85*								
Total Hardness, as CaCO3 (mg/L)	27.4														
Chloride (mg/L)[9]	0.4					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)][8]	0.0								*10*		*10*				
Alkalinity - Total (mg/L)	32.7					*≥ 20*									
Total Dissolved Solids (mg/L)	69.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (µg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC3 (Old Cow Creek above Kilrac Powerhouse)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:36														
In situ Parameters															
Water Temperature (°C)	10.61														
Dissolved Oxygen (mg/L)	10.33												*>7*		
Specific Conductance (mmhos/cm)	61									*900*					
pH (Standard Units)	7.82							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	2.2									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC3 (Old Cow Creek above Kilrac Powerhouse)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	11:28														
In situ Parameters															
Water Temperature (°C)	12.57														
Dissolved Oxygen (mg/L)	9.29												*>7*		
Specific Conductance (mmhos/cm)	70									*900*					
pH (Standard Units)	7.96							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	5.6									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC3 (Old Cow Creek above Kilrac Powerhouse)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	11:21														
In situ Parameters															
Water Temperature (°C)	16.05														
Dissolved Oxygen (mg/L)	8.12												*>7*		
Specific Conductance (mmhos/cm)	106									*900*					
pH (Standard Units)	8.21							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	2.5									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

OC3 (Old Cow Creek above Kilrac Powerhouse)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:54														
In situ Parameters															
Water Temperature (°C)	12.46														
Dissolved Oxygen (mg/L)	11.07												*>7*		
Specific Conductance (mmhos/cm)	103									*900*					
pH (Standard Units)	8.16							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.8									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

OC3 (Old Cow Creek above Kilrac Powerhouse)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:02														
In situ Parameters															
Water Temperature (°C)	13.04														
Dissolved Oxygen (mg/L)	9.42												*>7*		
Specific Conductance (mmhos/cm)	109									*900*					
pH (Standard Units)	8.07							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.4									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	0.22000								*50*		*10*				
Barium (mg/L)	0.07900								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*1.4174*	*2.0436*		*0.16073*	*1.04367*		*5*		*5*				
Copper (mg/L)	0.17400		*5.1153*	*7.2170*		*5.1153*	*7.2170*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	0.02000		*1.2998*	*33.3551*		*1.2998*	*33.3551*		*15*		*15*				
Manganese (mg/L)	6.18000									*50*		*50*			
Silver (mg/L)	<0.008				*1.2109*			*1.1291*		*100*					
Zinc (mg/L)	<0.02		*66.0321*	*66.0321*		*66.0321*	*66.0321*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	0.23000		*150*	*340*		*150*	*340*								
Cadmium (mg/L)	0.00900		*1.3301*	*1.9893*		*0.15083*	*1.0159*								
Copper (mg/L)	0.23000		*4.9107*	*6.9283*		*4.9107*	*6.9283*								
Lead (mg/L)	<0.002		*1.1613*	*29.8017*		*1.1613*	*29.8017*								
Mercury (mg/L)	5.01E-04					*0.77*	*1.40*								
Silver (mg/L)	<0.008				*1.02929*			*0.95971*							
Zinc (mg/L)	<0.02		*65.1077*	*64.5794*		*65.1077*	*64.5794*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) 10	240												*200/400*		
Ammonia - Total (mg/L) 5	<0.05					*2.19*	*4.92*								
Total Hardness, as CaCO3 (mg/L)	49.5														
Chloride (mg/L) 9	0.6					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	48.7					*≥ 20*									
Total Dissolved Solids (mg/L)	90.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

KF1 Water Quality

KF1 (Kilrac Forebay)

	2003					
	March	May	June	July	August	October
Time	14:00	11:45	10:30	10:31	7:40	12:20
In situ Parameters						
Water Temperature (°C)	4.51	8.50	11.99	13.82	14.14	11.75
Dissolved Oxygen (mg/L)	10.77	11.03	8.68	8.49	8.76	9.48
Specific Conductance (µmhos/cm)	54	52	59	92	93	100
pH	8.00	7.77	7.90	8.44	8.68	8.28
Turbidity (NTU)	1.5	<0.1	0.9	0.8	2.4	0.4
Depth (M)	1.1	1.0	1.0	1.0	1.0	1.0
Analytical Parameters						
Total Coliform (MPN/100 mL)	80	NS	NS	NS	NS	130
Fecal Coliform (MPN/100 mL)	<2	NS	NS	NS	NS	2
Total Metals:						
Arsenic (µg/L)	<0.10	NS	NS	NS	NS	<0.10
Barium (mg/L)	0.0019	NS	NS	NS	NS	0.0028
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.088	NS	NS	NS	NS	<0.003
Lead (µg/L)	<0.01 DNQ	NS	NS	NS	NS	0.005 DNQ
Manganese (µg/L)	1.44	NS	NS	NS	NS	2.18
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.19	NS	NS	NS	NS	<0.02
Dissolved Metals:						
Arsenic (µg/L)	<0.10	NS	NS	NS	NS	<00.10
Barium (mg/L)	0.0015	NS	NS	NS	NS	0.0024
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.088	NS	NS	NS	NS	0.047
Iron (mg/L)	0.0064	NS	NS	NS	NS	<0.002
Lead (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Manganese (µg/L)	0.84	NS	NS	NS	NS	1.38
Mercury (µg/L)	0.00137	NS	NS	NS	NS	0.000277
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.19	NS	NS	NS	NS	<0.02
Ammonia - Total (mg/L)	<0.05	NS	NS	NS	NS	<0.05
Total Hardness, as CaCO3 (mg/L)	22.5	NS	NS	NS	NS	49.0
Chloride (mg/L)	0.27	NS	NS	NS	NS	0.33 J
Fluoride (mg/L)	0.02 J	NS	NS	NS	NS	0.03 J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.0453	NS	NS	NS	NS	0.0587
Alkalinity - Total (mg/L)	28	NS	NS	NS	NS	58.8
Total Dissolved Solids (mg/L)	44	NS	NS	NS	NS	76
Total Suspended Solids (mg/L)	<1.0	NS	NS	NS	NS	5.8
Total Phosphorous (mg/L)	<0.03	NS	NS	NS	NS	<0.015
Orthophosphate (mg/L)	0.0122	NS	NS	NS	NS	0.0188
Total Calcium (mg/L)	5.31	NS	NS	NS	NS	9.41
Total Magnesium (mg/L)	2.52	NS	NS	NS	NS	5.12
Total Sodium (mg/L)	1.73	NS	NS	NS	NS	3.56
Dissolved Calcium (mg/L)	5.04	NS	NS	NS	NS	9.50
Dissolved Magnesium (mg/L)	2.48	NS	NS	NS	NS	5.13
Dissolved Sodium (mg/L)	1.71	NS	NS	NS	NS	3.56
Total Boron (mg/L)	<0.10	NS	NS	NS	NS	<0.10
Cyanide (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
Molybdenum (mg/L)	<0.0050	NS	NS	NS	NS	<0.005
PCBs						
Aroclor 1016 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1221 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1232 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1242 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1248 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1254 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1260 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1268 (µg/L)	<1.0	NS	NS	NS	NS	<0.2

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	13.82	4.51	9.65
	11.03	8.49	9.94
	100.00	52.00	74.50
	8.44	7.77	8.12
	1.50	0.40	0.90
	1.10	1.00	1.03
	0	0	#DIV/0!
	0.0028	0.0019	0.00235
	0	0	#DIV/0!
	0.088	0.088	0.088
	0.005	0.005	0.005
	2.18	1.44	1.81
	0	0	#DIV/0!
	0.19	0.19	0.19
	0	0	#DIV/0!
	0	0	#DIV/0!
	0.088	0.047	0.0675
	0.0064	0.0064	0.0064
	0	0	#DIV/0!
	0.00137	0.000277	0.000824
	0	0	#DIV/0!
	0.19	0.19	0.19
	0	0	#DIV/0!
	49	22.5	35.75
	0.33	0.27	0.3
	0.0587	0.0453	0.052
	58.8	28.2	43.5
	76	44	60
	5.8	5.8	5.8
	0	0	#DIV/0!
	0.0188	0.0122	0.0155
	9.41	5.31	7.36
	5.12	2.52	3.82
	3.56	1.73	2.645
	9.5	5.04	7.27
	5.13	2.48	3.805
	3.56	1.71	2.635

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

KF1 (Kilrac Forebay)	March	Flag	California Toxics Rules Criteria (USEPA) [1] Freshwater Aquatic Life Protection			USEPA National Recommended [2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB [4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	14:00														
In situ Parameters															
Water Temperature (°C)	4.51														
Dissolved Oxygen (mg/L)	10.77												*>7*		
Specific Conductance (µmhos/cm)	54									*900*					
pH (Standard Units)	8.00							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.5									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00190								*1*		*2*			*1.0*	
Cadmium (µg/L)	<0.002		*0.7632*	*0.8397*		*0.08962*	*0.46823*		*5*		*5*				
Copper (µg/L)	0.08800		*2.6078*	*3.4334*		*2.6078*	*3.4334*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (µg/L)	<0.01	DNQ	*0.4764*	*12.2253*		*0.4764*	*12.2253*		*15*		*15*				
Manganese (µg/L)	1.44000									*50*		*50*			
Silver (µg/L)	<0.008				*0.3120*			*0.2909*		*100*					
Zinc (µg/L)	0.19000		*33.8548*	*33.8548*		*33.8548*	*33.8548*			*5,000*					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (µg/L)	<0.002		*0.7414*	*0.8451*		*0.08706*	*0.4712*								
Copper (µg/L)	0.08800		*2.5035*	*3.2961*		*2.5035*	*3.2961*								
Lead (µg/L)	<0.002		*0.4804*	*12.3274*		*0.4804*	*12.3274*								
Mercury (µg/L)	1.37E-03					*0.77*	*1.40*								
Silver (µg/L)	<0.008				*0.26520*			*0.24727*							
Zinc (µg/L)	0.19000		*33.3809*	*33.1100*		*33.3809*	*33.1100*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) [10]	<2												*200/400*		
Ammonia - Total (mg/L) [5]	<0.05					*2.43*	*5.62*								
Total Hardness, as CaCO3 (mg/L)	22.5														
Chloride (mg/L) [9]	0.3					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0	J							*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] [8]	0.0								*10*		*10*				
Alkalinity - Total (mg/L)	28.2					*≥ 20*									
Total Dissolved Solids (mg/L)	44.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (µg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

KF1 (Kilrac Forebay)	May	Flag	California Toxics Rules Criteria (USEPA) 1			USEPA National Recommended 2 Ambient Water Quality Criteria			Cal Dept. of Public Health (CDPH) 3		USEPA		RWQCB 4 Basin Plan	CTR (Human Health 30-day average)	
			Freshwater Aquatic Life Protection			Freshwater Aquatic Life Protection			Drinking Water Standards				Objectives	Sources of Drinking water	Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	11:45														
In situ Parameters															
Water Temperature (°C)	8.50														
Dissolved Oxygen (mg/L)	11.03												*>7*		
Specific Conductance (mmhos/cm)	52									*900*					
pH (Standard Units)	7.77							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	<0.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

KF1 (Kilrac Forebay)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:30														
In situ Parameters															
Water Temperature (°C)	11.99														
Dissolved Oxygen (mg/L)	8.68												*>7*		
Specific Conductance (mmhos/cm)	59									*900*					
pH (Standard Units)	7.90							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.9									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

KF1 (Kilrac Forebay)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:31														
In situ Parameters															
Water Temperature (°C)	13.82														
Dissolved Oxygen (mg/L)	8.49												*>7*		
Specific Conductance (mmhos/cm)	92									*900*					
pH (Standard Units)	8.44							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.8									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

KF1 (Kilrac Forebay)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	7:40														
In situ Parameters															
Water Temperature (°C)	14.14														
Dissolved Oxygen (mg/L)	8.76												*>7*		
Specific Conductance (mmhos/cm)	93									*900*					
pH (Standard Units)	8.68							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	2.4									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
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4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

KF1 (Kilrac Forebay)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	12:20														
In situ Parameters															
Water Temperature (°C)	11.75														
Dissolved Oxygen (mg/L)	9.48												*>7*		
Specific Conductance (mmhos/cm)	100									*900*					
pH (Standard Units)	8.28							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.4									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00280								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*1.4062*	*2.0204*		*0.15953*	*1.03296*		*5*		*5*				
Copper (mg/L)	<0.003		*5.0711*	*7.1483*		*5.0711*	*7.1483*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	0.00500	DNQ	*1.2831*	*32.9268*		*1.2831*	*32.9268*		*15*		*15*				
Manganese (mg/L)	2.18000									*50*		*50*			
Silver (mg/L)	<0.008				*1.1900*			*1.1095*		*100*					
Zinc (mg/L)	<0.02		*65.4666*	*65.4666*		*65.4666*	*65.4666*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	<00.10		*150*	*340*		*150*	*340*								
Cadmium (mg/L)	<0.002		*1.3202*	*1.9675*		*0.14977*	*1.0059*								
Copper (mg/L)	0.04700		*4.8683*	*6.8624*		*4.8683*	*6.8624*								
Lead (mg/L)	<0.002		*1.1483*	*29.4677*		*1.1483*	*29.4677*								
Mercury (mg/L)	2.77E-04					*0.77*	*1.40*								
Silver (mg/L)	<0.008				*1.01148*			*0.94310*							
Zinc (mg/L)	<0.02		*64.5500*	*64.0263*		*64.5500*	*64.0263*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) 10	2												*200/400*		
Ammonia - Total (mg/L) 5	<0.05					*1.57*	*3.27*								
Total Hardness, as CaCO3 (mg/L)	49.0														
Chloride (mg/L) 9	0.3					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0	J							*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	58.8					*≥ 20*									
Total Dissolved Solids (mg/L)	76.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

OC4 Water Quality

OC4 (Old Cow Creek below Kilrac Powerhouse)

	2003					
	March	May	June	July	August	October
Time	13:15	13:35	11:38	11:32	8:58	13:20
In situ Parameters						
Water Temperature (°C)	4.40	8.89	11.00	12.86	11.48	9.88
Dissolved Oxygen (mg/L)	10.89	10.50	9.65	8.95	9.69	9.88
Specific Conductance (µmhos/cm)	56	54	60	94	96	102
pH	7.95	7.73	7.84	8.32	8.16	8.24
Turbidity (NTU)	3.4	0.6	1.8	1.3	0.0	0.2
Depth (M)	0.4	1.0	1.0	1.0	1.0	1.0
Analytical Parameters						
Total Coliform (MPN/100 mL)	130	NS	NS	NS	NS	17
Fecal Coliform (MPN/100 mL)	<2	NS	NS	NS	NS	13
Total Metals:						
Arsenic (µg/L)	<0.10	NS	NS	NS	NS	<0.10
Barium (mg/L)	0.0028	NS	NS	NS	NS	0.0028
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.158	NS	NS	NS	NS	<0.003
Lead (µg/L)	0.022	NS	NS	NS	NS	0.015
Manganese (µg/L)	2.08	NS	NS	NS	NS	2.37
Silver (µg/L)	<0.008	NS	NS	NS	NS	0.012 DNQ
Zinc (µg/L)	0.27	NS	NS	NS	NS	<0.02
Dissolved Metals:						
Arsenic (µg/L)	<0.10	NS	NS	NS	NS	<0.10
Barium (mg/L)	0.0019	NS	NS	NS	NS	0.0022
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	0.003 DNQ
Copper (µg/L)	0.077	NS	NS	NS	NS	0.037
Iron (mg/L)	0.014	NS	NS	NS	NS	0.0024 J
Lead (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Manganese (µg/L)	0.75	NS	NS	NS	NS	0.4
Mercury (µg/L)	0.00175	NS	NS	NS	NS	0.000319
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.16	NS	NS	NS	NS	<0.02
Ammonia - Total (mg/L)	<0.05	NS	NS	NS	NS	<0.05
Total Hardness, as CaCO3 (mg/L)	24.5	NS	NS	NS	NS	50.0
Chloride (mg/L)	0.28	NS	NS	NS	NS	0.34 J
Fluoride (mg/L)	0.019 J	NS	NS	NS	NS	0.028 J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.0555	NS	NS	NS	NS	0.0696
Alkalinity - Total (mg/L)	27	NS	NS	NS	NS	46.5
Total Dissolved Solids (mg/L)	72	NS	NS	NS	NS	77
Total Suspended Solids (mg/L)	1.5	NS	NS	NS	NS	1.4
Total Phosphorous (mg/L)	<0.03	NS	NS	NS	NS	<0.015
Orthophosphate (mg/L)	0.0134	NS	NS	NS	NS	0.0228
Total Calcium (mg/L)	5.57	NS	NS	NS	NS	9.83
Total Magnesium (mg/L)	2.60	NS	NS	NS	NS	5.17
Total Sodium (mg/L)	1.82	NS	NS	NS	NS	3.57
Dissolved Calcium (mg/L)	5.44	NS	NS	NS	NS	9.75
Dissolved Magnesium (mg/L)	2.56	NS	NS	NS	NS	5.23
Dissolved Sodium (mg/L)	1.79	NS	NS	NS	NS	3.63
Total Boron (mg/L)	<0.10	NS	NS	NS	NS	<0.10
Cyanide (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
Molybdenum (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
PCBs						
Aroclor 1016 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1221 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1232 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1242 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1248 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1254 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1260 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1268 (µg/L)	<1.0	NS	NS	NS	NS	<0.2

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	12.86	4.40	9.01
	10.89	8.95	10.06
	102.00	54.00	76.50
	8.32	7.73	8.06
	3.40	0.20	1.38
	1.00	0.40	0.85
	0	0	#DIV/0!
	0.0028	0.0028	0.0028
	0	0	#DIV/0!
	0.158	0.158	0.158
	0.022	0.015	0.0185
	2.37	2.08	2.225
	0.012	0.012	0.012
	0.27	0.27	0.27
	0	0	#DIV/0!
	0.003	0.003	0.003
	0.077	0.037	0.057
	0.014	0.0024	0.0082
	0	0	#DIV/0!
	0.00175	0.000319	0.001035
	0	0	#DIV/0!
	0.16	0.16	0.16
	0	0	#DIV/0!
	50	24.5	37.25
	0.34	0.28	0.31
	0.0696	0.0555	0.06255
	46.5	27.3	36.9
	77	72	74.5
	1.5	1.4	1.45
	0	0	#DIV/0!
	0.0228	0.0134	0.0181
	9.83	5.57	7.7
	5.17	2.6	3.885
	3.57	1.82	2.695
	9.75	5.44	7.595
	5.23	2.56	3.895
	3.63	1.79	2.71

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC4 (Old Cow Creek below Kilrac Powerhouse)	March	Flag	California Toxics Rules Criteria (USEPA)[1] Freshwater Aquatic Life Protection			USEPA National Recommended[2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH)[3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB[4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:15														
In situ Parameters															
Water Temperature (°C)	4.40														
Dissolved Oxygen (mg/L)	10.89												*>7*		
Specific Conductance (µmhos/cm)	56									*900*					
pH (Standard Units)	7.95							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	3.4									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00280								*1*		*2*			*1.0*	
Cadmium (µg/L)	<0.002		*0.8160*	*0.9244*		*0.09545*	*0.51057*		*5*		*5*				
Copper (µg/L)	0.15800		*2.8046*	*3.7202*		*2.8046*	*3.7202*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (µg/L)	0.02200		*0.5309*	*13.6251*		*0.5309*	*13.6251*		*15*		*15*				
Manganese (µg/L)	2.08000									*50*		*50*			
Silver (µg/L)	<0.008				*0.3612*			*0.3368*		*100*					
Zinc (µg/L)	0.27000		*36.3879*	*36.3879*		*36.3879*	*36.3879*			*5,000*					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (µg/L)	<0.002		*0.7897*	*0.9270*		*0.09239*	*0.5120*								
Copper (µg/L)	0.07700		*2.6924*	*3.5714*		*2.6924*	*3.5714*								
Lead (µg/L)	<0.002		*0.5288*	*13.5698*		*0.5288*	*13.5698*								
Mercury (µg/L)	1.75E-03					*0.77*	*1.40*								
Silver (µg/L)	<0.008				*0.30703*			*0.28628*							
Zinc (µg/L)	0.16000		*35.8784*	*35.5873*		*35.8784*	*35.5873*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL)[10]	<2												*200/400*		
Ammonia - Total (mg/L)[5]	<0.05					*2.61*	*6.17*								
Total Hardness, as CaCO3 (mg/L)	24.5														
Chloride (mg/L)[9]	0.3					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0	J							*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)][8]	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	27.3					*≥ 20*									
Total Dissolved Solids (mg/L)	72.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (µg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
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5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC4 (Old Cow Creek below Kilrac Powerhouse)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:35														
In situ Parameters															
Water Temperature (°C)	8.89														
Dissolved Oxygen (mg/L)	10.50												*>7*		
Specific Conductance (mmhos/cm)	54									*900*					
pH (Standard Units)	7.73							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.6									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC4 (Old Cow Creek below Kilrac Powerhouse)	June	Flag	California Toxics Rules Criteria (USEPA) 1			USEPA National Recommended 2 Ambient Water Quality Criteria			Cal Dept. of Public Health (CDPH) 3		USEPA		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average)	
			Freshwater Aquatic Life Protection			Freshwater Aquatic Life Protection			Drinking Water Standards					Sources of Drinking water	Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	11:38														
In situ Parameters															
Water Temperature (°C)	11.00														
Dissolved Oxygen (mg/L)	9.65												*>7*		
Specific Conductance (mmhos/cm)	60									*900*					
pH (Standard Units)	7.84							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.8									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

OC4 (Old Cow Creek below Kilrac Powerhouse)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	11:32														
In situ Parameters															
Water Temperature (°C)	12.86														
Dissolved Oxygen (mg/L)	8.95												*>7*		
Specific Conductance (mmhos/cm)	94									*900*					
pH (Standard Units)	8.32							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.3									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

OC4 (Old Cow Creek below Kilrac Powerhouse)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:58														
In situ Parameters															
Water Temperature (°C)	11.48														
Dissolved Oxygen (mg/L)	9.69												*>7*		
Specific Conductance (mmhos/cm)	96									*900*					
pH (Standard Units)	8.16							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

OC4 (Old Cow Creek below Kilrac Powerhouse)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	13:20														
In situ Parameters															
Water Temperature (°C)	9.88														
Dissolved Oxygen (mg/L)	9.88												*>7*		
Specific Conductance (mmhos/cm)	102									*900*					
pH (Standard Units)	8.24							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.2									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00280								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*1.4286*	*2.0669*		*0.16193*	*1.05439*		*5*		*5*				
Copper (mg/L)	<0.003		*5.1594*	*7.2857*		*5.1594*	*7.2857*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	0.01500		*1.3165*	*33.7846*		*1.3165*	*33.7846*		*15*		*15*				
Manganese (mg/L)	2.37000									*50*		*50*			
Silver (mg/L)	0.01200				*1.2321*			*1.1488*		*100*					
Zinc (mg/L)	<0.02		*66.5968*	*66.5968*		*66.5968*	*66.5968*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (mg/L)	0.00300		*1.3401*	*2.0111*		*0.15189*	*1.0259*								
Copper (mg/L)	0.03700		*4.9530*	*6.9942*		*4.9530*	*6.9942*								
Lead (mg/L)	<0.002		*1.1744*	*30.1359*		*1.1744*	*30.1359*								
Mercury (mg/L)	3.19E-04					*0.77*	*1.40*								
Silver (mg/L)	<0.008				*1.04724*			*0.97644*							
Zinc (mg/L)	<0.02		*65.6645*	*65.1317*		*65.6645*	*65.1317*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) 10	13												*200/400*		
Ammonia - Total (mg/L) 5	<0.05					*1.68*	*3.54*								
Total Hardness, as CaCO3 (mg/L)	50.0														
Chloride (mg/L) 9	0.3					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0	J							*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	46.5					*≥ 20*									
Total Dissolved Solids (mg/L)	77.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

MC1 Water Quality

MC1 (Mill Creek above diversion)

	2003						
	March	May	June	July	August	October	
Time	9:15	9:05	8:42	9:03	17:08	10:23	
In situ Parameters							
Water Temperature (°C)	6.84	12.55	14.19	15.30	17.33	12.57	
Dissolved Oxygen (mg/L)	10.98	9.70	8.81	8.71	9.79	9.59	
Specific Conductance (µmhos/cm)	120	138	159	168	160	166	
pH	7.27	7.61	7.99	8.25	8.37	8.10	
Turbidity (NTU)	5.5	2.2	7.6	6.2	0.0	4.5	
Depth (M)	0.9	1.0	1.0	1.0	1.0	1.0	
Analytical Parameters							
Total Coliform (MPN/100 mL)	>1,600	NS	NS	NS	NS	900	
Fecal Coliform (MPN/100 mL)	900	NS	NS	NS	NS	30	
Total Metals:							
Arsenic (µg/L)	<0.10	NS	NS	NS	NS	0.13	DNQ
Barium (mg/L)	0.0072	NS	NS	NS	NS	0.0033	
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002	
Copper (µg/L)	0.706	NS	NS	NS	NS	0.13	
Lead (µg/L)	0.039	NS	NS	NS	NS	0.021	
Manganese (µg/L)	4.46	NS	NS	NS	NS	7.21	
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008	
Zinc (µg/L)	0.46	NS	NS	NS	NS	<0.02	
Dissolved Metals:							
Arsenic (µg/L)	<0.10	NS	NS	NS	NS	0.15	DNQ
Barium (mg/L)	0.0066	NS	NS	NS	NS	0.0029	
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002	
Copper (µg/L)	0.451	NS	NS	NS	NS	0.095	
Iron (mg/L)	0.094	NS	NS	NS	NS	0.0154	
Lead (µg/L)	<0.002	NS	NS	NS	NS	<0.002	
Manganese (µg/L)	1.96	NS	NS	NS	NS	1.19	
Mercury (µg/L)	0.00174	NS	NS	NS	NS	0.000309	
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008	
Zinc (µg/L)	0.2	NS	NS	NS	NS	<0.02	
Ammonia - Total (mg/L)	<0.05	NS	NS	NS	NS	<0.05	
Total Hardness, as CaCO3 (mg/L)	53.9	NS	NS	NS	NS	87.0	
Chloride (mg/L)	0.86	NS	NS	NS	NS	0.81	
Fluoride (mg/L)	0.03	NS	NS	NS	NS	0.029	J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.0734	NS	NS	NS	NS	0.1190	
Alkalinity - Total (mg/L)	61	NS	NS	NS	NS	80.5	
Total Dissolved Solids (mg/L)	99	NS	NS	NS	NS	136	
Total Suspended Solids (mg/L)	1.6	NS	NS	NS	NS	5.2	
Total Phosphorous (mg/L)	<0.03	NS	NS	NS	NS	0.0299	J
Orthophosphate (mg/L)	0.0263	NS	NS	NS	NS	0.0519	
Total Calcium (mg/L)	10.60	NS	NS	NS	NS	13.80	
Total Magnesium (mg/L)	7.58	NS	NS	NS	NS	10.50	
Total Sodium (mg/L)	3.01	NS	NS	NS	NS	4.55	
Dissolved Calcium (mg/L)	10.6	NS	NS	NS	NS	13.70	
Dissolved Magnesium (mg/L)	7.56	NS	NS	NS	NS	10.70	
Dissolved Sodium (mg/L)	3.02	NS	NS	NS	NS	4.67	
Total Boron (mg/L)	<0.10	NS	NS	NS	NS	<0.1	
Cyanide (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050	
Molybdenum (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050	
PCBs							
Aroclor 1016 (µg/L)	<1.0	NS	NS	NS	NS	<0.2	
Aroclor 1221 (µg/L)	<1.0	NS	NS	NS	NS	<0.2	
Aroclor 1232 (µg/L)	<1.0	NS	NS	NS	NS	<0.2	
Aroclor 1242 (µg/L)	<1.0	NS	NS	NS	NS	<0.2	
Aroclor 1248 (µg/L)	<1.0	NS	NS	NS	NS	<0.2	
Aroclor 1254 (µg/L)	<1.0	NS	NS	NS	NS	<0.2	
Aroclor 1260 (µg/L)	<1.0	NS	NS	NS	NS	<0.2	
Aroclor 1268 (µg/L)	<1.0	NS	NS	NS	NS	<0.2	

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	15.30	6.84	11.82
	10.98	8.71	9.75
	168.00	120.00	148.00
	8.25	7.27	7.81
	6.20	2.20	4.60
	1.00	0.90	0.98
	0.13	0.13	0.13
	0.0072	0.0033	0.00525
	0	0	#DIV/0!
	0.706	0.13	0.418
	0.039	0.021	0.03
	7.21	4.46	5.835
	0	0	#DIV/0!
	0.46	0.46	0.46
	0.15	0.15	0.15
	0	0	#DIV/0!
	0.451	0.095	0.273
	0.094	0.0154	0.0547
	0	0	#DIV/0!
	0.00174	0.000309	0.001025
	0	0	#DIV/0!
	0.2	0.2	0.2
	0	0	#DIV/0!
	87	53.9	70.45
	0.86	0.81	0.835
	0.119	0.0734	0.0962
	80.5	61	70.75
	136	99	117.5
	5.2	1.6	3.4
	0.0299	0.0299	0.0299
	0.0519	0.0263	0.0391
	13.8	10.6	12.2
	10.5	7.58	9.04
	4.55	3.01	3.78
	13.7	10.6	12.15
	10.7	7.56	9.13
	4.67	3.02	3.845

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

MC1 (Mill Creek above diversion)	March	Flag	California Toxics Rules Criteria (USEPA) [1] Freshwater Aquatic Life Protection			USEPA National Recommended [2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB [4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:15														
In situ Parameters															
Water Temperature (°C)	6.84														
Dissolved Oxygen (mg/L)	10.98												*>7*		
Specific Conductance (µmhos/cm)	120									*900*					
pH (Standard Units)	7.27							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	5.5									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.10								*50*		*10*				
Barium (mg/L)	0.00720								*1*		*2*			*1.0*	
Cadmium (µg/L)	<0.002		*1.5154*	*2.2497*		*0.17120*	*1.13805*		*5*		5				
Copper (µg/L)	0.70600		*5.5014*	*7.8199*		*5.5014*	*7.8199*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (µg/L)	0.03900		*1.4486*	*37.1743*		*1.4486*	*37.1743*		*15*		*15*				
Manganese (µg/L)	4.46000									*50*		*50*			
Silver (µg/L)	<0.008				*1.4020*			*1.3072*		*100*					
Zinc (µg/L)	0.46000		*70.9727*	*70.9727*		*70.9727*	*70.9727*			*5,000*					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.10		*150*	*340*		*150*	*340*								
Cadmium (µg/L)	<0.002		*1.4167*	*2.1819*		*0.16005*	*1.1037*								
Copper (µg/L)	0.45100		*5.2813*	*7.5071*		*5.2813*	*7.5071*								
Lead (µg/L)	<0.002		*1.2763*	*32.7527*		*1.2763*	*32.7527*								
Mercury (µg/L)	1.74E-03					*0.77*	*1.40*								
Silver (µg/L)	<0.008				*1.19166*			*1.11109*							
Zinc (µg/L)	0.20000		*69.9791*	*69.4113*		*69.9791*	*69.4113*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) [10]	900												*200/400*		
Ammonia - Total (mg/L) [5]	<0.05					*5.17*	*18.17*								
Total Hardness, as CaCO3 (mg/L)	53.9														
Chloride (mg/L) [9]	0.9					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] [8]	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	61.0					*≥ 20*									
Total Dissolved Solids (mg/L)	99.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (µg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

MC1 (Mill Creek above diversion)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:05														
In situ Parameters															
Water Temperature (°C)	12.55														
Dissolved Oxygen (mg/L)	9.70												*>7*		
Specific Conductance (mmhos/cm)	138									*900*					
pH (Standard Units)	7.61							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	2.2									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

MC1 (Mill Creek above diversion)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:42														
In situ Parameters															
Water Temperature (°C)	14.19														
Dissolved Oxygen (mg/L)	8.81												*>7*		
Specific Conductance (mmhos/cm)	159									*900*					
pH (Standard Units)	7.99							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	7.6									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

MC1 (Mill Creek above diversion)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:03														
In situ Parameters															
Water Temperature (°C)	15.30														
Dissolved Oxygen (mg/L)	8.71												*>7*		
Specific Conductance (mmhos/cm)	168									*900*					
pH (Standard Units)	8.25							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	6.2									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

MC1 (Mill Creek above diversion)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	17:08														
In situ Parameters															
Water Temperature (°C)	17.33														
Dissolved Oxygen (mg/L)	9.79												*>7*		
Specific Conductance (mmhos/cm)	160									*900*					
pH (Standard Units)	8.37							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

MC1 (Mill Creek above diversion)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:23														
In situ Parameters															
Water Temperature (°C)	12.57														
Dissolved Oxygen (mg/L)	9.59												*>7*		
Specific Conductance (mmhos/cm)	166									*900*					
pH (Standard Units)	8.10							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	4.5									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	0.13000								*50*		*10*				
Barium (mg/L)	0.00330								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*2.2070*	*3.8607*		*0.24409*	*1.85159*		*5*		*5*				
Copper (mg/L)	0.13000		*8.2823*	*12.2776*		*8.2823*	*12.2776*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	0.02100		*2.6647*	*68.3814*		*2.6647*	*68.3814*		*15*		*15*				
Manganese (mg/L)	7.21000									*50*		*50*			
Silver (mg/L)	<0.008				*3.1943*			*2.9783*		*100*					
Zinc (mg/L)	<0.02		*106.4807*	*106.4807*		*106.4807*	*106.4807*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	0.15000		*150*	*340*		*150*	*340*								
Cadmium (mg/L)	<0.002		*2.0190*	*3.6670*		*0.22330*	*1.7587*								
Copper (mg/L)	0.09500		*7.9510*	*11.7865*		*7.9510*	*11.7865*								
Lead (mg/L)	<0.002		*2.1619*	*55.4774*		*2.1619*	*55.4774*								
Mercury (mg/L)	3.09E-04					*0.77*	*1.40*								
Silver (mg/L)	<0.008				*2.71514*			*2.53158*							
Zinc (mg/L)	<0.02		*104.9900*	*104.1381*		*104.9900*	*104.1381*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) 10	30												*200/400*		
Ammonia - Total (mg/L) 5	<0.05					*2.10*	*4.64*								
Total Hardness, as CaCO3 (mg/L)	87.0														
Chloride (mg/L) 9	0.8					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	80.5					*≥ 20*									
Total Dissolved Solids (mg/L)	136.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California¢*alifornia Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

MC2 Water Quality

MC2 (Mill Creek)

2003

	March	May	June	July	August	October
Time	NS	9:12	8:35	8:55	16:59	10:43
In situ Parameters						
Water Temperature (°C)	NS	12.69	14.36	15.47	17.36	12.64
Dissolved Oxygen (mg/L)	NS	9.80	9.01	8.82	9.83	8.47
Specific Conductance (µmhos/cm)	NS	138	159	168	161	167
pH	NS	7.81	7.98	8.27	8.42	7.94
Turbidity (NTU)	NS	4.4	0.9	0.5	0.0	4.2
Depth (M)	NS	1.0	1.0	1.0	1.0	0.1

NS = Constituent not sampled for during monitoring program

		Statistics	
	MAX	**MIN**	**AVG**
	15.47	12.64	13.60
	9.80	8.47	9.03
	168.00	138.00	157.67
	8.27	7.81	8.01
	4.40	0.50	3.03
	1.00	0.10	0.70

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

MC2 (Mill Creek)	March	Flag	California Toxics Rules Criteria (USEPA) [1] Freshwater Aquatic Life Protection			USEPA National Recommended [2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB [4] Basin Plan Objectives	CTR (Human Health 30-day average)	
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		Sources of Drinking water	Other waters
														(water + organism consump)	*(aquatic org. consump)*
Time	NS														
In situ Parameters															
Water Temperature (°C)	NS														
Dissolved Oxygen (mg/L)	NS												*>7*		
Specific Conductance (µmhos/cm)	NS									*900*					
pH (Standard Units)	NS							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	NS									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

MC2 (Mill Creek)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:12														
In situ Parameters															
Water Temperature (°C)	12.69														
Dissolved Oxygen (mg/L)	9.80												*>7*		
Specific Conductance (mmhos/cm)	138									*900*					
pH (Standard Units)	7.81							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	4.4									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*). (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

MC2 (Mill Creek)	June	Flag	California Toxics Rules Criteria (USEPA) 1			USEPA National Recommended 2 Ambient Water Quality Criteria			Cal Dept. of Public Health (CDPH) 3	USEPA		RWQCB 4 Basin Plan	CTR (Human Health 30-day average)	
			Freshwater Aquatic Life Protection			Freshwater Aquatic Life Protection			Drinking Water Standards			Objectives	Sources of Drinking water	Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL* *2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:35													
In situ Parameters														
Water Temperature (°C)	14.36													
Dissolved Oxygen (mg/L)	9.01											*>7*		
Specific Conductance (mmhos/cm)	159									*900*				
pH (Standard Units)	7.98							*6.5-9.0*				*6.5-8.5*		
Turbidity (NTU)	0.9									*5*				

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

MC2 (Mill Creek)	July	Flag	California Toxics Rules Criteria (USEPA) 1			USEPA National Recommended 2 Ambient Water Quality Criteria			Cal Dept. of Public Health (CDPH) 3		USEPA		RWQCB 4 Basin Plan	CTR (Human Health 30-day average)	
			Freshwater Aquatic Life Protection			Freshwater Aquatic Life Protection			Drinking Water Standards				Objectives	Sources of Drinking water	Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:55														
In situ Parameters															
Water Temperature (°C)	15.47														
Dissolved Oxygen (mg/L)	8.82												*>7*		
Specific Conductance (mmhos/cm)	168									*900*					
pH (Standard Units)	8.27							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.5									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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NS = Constituent not sampled for during monitoring program

MC2 (Mill Creek)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	16:59														
In situ Parameters															
Water Temperature (°C)	17.36														
Dissolved Oxygen (mg/L)	9.83												*>7*		
Specific Conductance (mmhos/cm)	161									*900*					
pH (Standard Units)	8.42							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

MC2 (Mill Creek)	October	Flag	California Toxics Rules (Freshwater Aquatic L
			CCC *CMC*
Time	10:43		
In situ Parameters			
Water Temperature (°C)	12.64		
Dissolved Oxygen (mg/L)	8.47		
Specific Conductance (mmhos/cm)	167		
pH (Standard Units)	7.94		
Turbidity (NTU)	4.2		

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health b
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutar
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (US
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and Sar
NS = Constituent not sampled for during monitoring program

Criteria (USEPA) 1	USEPA National Recommended 2 Ambient Water Quality Criteria			Cal Dept. of Public Health (CDPH) [3]	
Life Protection	Freshwater Aquatic Life Protection			Drinking W	
Instantaneous Max	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*
					900
			6.5-9.0		
					5

ased criteria and secondary MCLs are human welfare based criteria

nts for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
SEPA, 2006; EPA 822-H-04-001)

n Joaquin River Basins.

USEPA		RWQCB 4	CTR (Human Health 30-day average)	
Water Standards		Basin Plan Objectives	Sources of Drinking water	Other waters
1° MCL	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
		>7		
		6.5-8.5		

SC1 Water Quality

SC1 (South Cow Creek above diversion)

	2003					
	March	May	June	July	August	October
Time	9:45	8:50	8:20	8:42	16:49	10:00
In situ Parameters						
Water Temperature (°C)	5.74	9.19	13.68	16.99	20.46	12.58
Dissolved Oxygen (mg/L)	10.37	10.93	8.99	8.59	7.73	8.77
Specific Conductance (µmhos/cm)	69	59	74	104	104	110
pH	7.55	7.52	7.69	8.01	8.17	7.88
Turbidity (NTU)	3.2	0.1	1.1	1.8	0.2	5.7
Depth (M)	1.5	1.0	1.0	1.0	1.0	1.0
Analytical Parameters						
Total Coliform (MPN/100 mL)	1,600	NS	NS	NS	NS	500
Fecal Coliform (MPN/100 mL)	50	NS	NS	NS	NS	500
Total Metals:						
Arsenic (µg/L)	<0.30 DNQ	NS	NS	NS	NS	0.56
Barium (mg/L)	0.0055	NS	NS	NS	NS	0.0076
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.309	NS	NS	NS	NS	0.068
Lead (µg/L)	0.026	NS	NS	NS	NS	<0.002
Manganese (µg/L)	4.4	NS	NS	NS	NS	4.91
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.4	NS	NS	NS	NS	<0.02
Dissolved Metals:						
Arsenic (µg/L)	<0.30 DNQ	NS	NS	NS	NS	0.54
Barium (mg/L)	0.0063	NS	NS	NS	NS	0.0073
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.187	NS	NS	NS	NS	0.18
Iron (mg/L)	0.0133	NS	NS	NS	NS	0.0474
Lead (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Manganese (µg/L)	1.6	NS	NS	NS	NS	3.07
Mercury (µg/L)	0.00203	NS	NS	NS	NS	0.0003
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.21	NS	NS	NS	NS	<0.02
Ammonia - Total (mg/L)	<0.05	NS	NS	NS	NS	<0.05
Total Hardness, as CaCO3 (mg/L)	27.4	NS	NS	NS	NS	51.0
Chloride (mg/L)	0.44	NS	NS	NS	NS	0.43
Fluoride (mg/L)	0.02	NS	NS	NS	NS	0.03 J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.0481	NS	NS	NS	NS	0.0532
Alkalinity - Total (mg/L)	32	NS	NS	NS	NS	48.1
Total Dissolved Solids (mg/L)	67	NS	NS	NS	NS	92
Total Suspended Solids (mg/L)	2.2	NS	NS	NS	NS	<1.0
Total Phosphorous (mg/L)	<0.03	NS	NS	NS	NS	<0.015
Orthophosphate (mg/L)	0.0176	NS	NS	NS	NS	0.0283
Total Calcium (mg/L)	6.98	NS	NS	NS	NS	10.30
Total Magnesium (mg/L)	2.81	NS	NS	NS	NS	5.02
Total Sodium (mg/L)	2.54	NS	NS	NS	NS	4.37
Dissolved Calcium (mg/L)	6.55	NS	NS	NS	NS	10.40
Dissolved Magnesium (mg/L)	2.81	NS	NS	NS	NS	5.11
Dissolved Sodium (mg/L)	2.49	NS	NS	NS	NS	4.43
Total Boron (mg/L)	<0.10	NS	NS	NS	NS	<0.10
Cyanide (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
Molybdenum (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
PCBs						
Aroclor 1016 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1221 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1232 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1242 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1248 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1254 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1260 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1268 (µg/L)	<1.0	NS	NS	NS	NS	<0.2

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	16.99	5.74	11.13
	10.93	8.59	9.67
	110.00	59.00	85.50
	8.01	7.52	7.74
	5.70	0.10	2.70
	1.50	1.00	1.13
	0.56	0.56	0.56
	0.0076	0.0055	0.00655
	0	0	#DIV/0!
	0.309	0.068	0.1885
	0.026	0.026	0.026
	4.91	4.4	4.655
	0	0	#DIV/0!
	0.4	0.4	0.4
	0.54	0.54	0.54
	0	0	#DIV/0!
	0.187	0.18	0.1835
	0.0474	0.0133	0.03035
	0	0	#DIV/0!
	0.00203	0.0003	0.001165
	0	0	#DIV/0!
	0.21	0.21	0.21
	0	0	#DIV/0!
	51	27.4	39.2
	0.44	0.43	0.435
	0.0532	0.0481	0.05065
	48.1	32.4	40.25
	92	67	79.5
	2.2	2.2	2.2
	0	0	#DIV/0!
	0.0283	0.0176	0.02295
	10.3	6.98	8.64
	5.02	2.81	3.915
	4.37	2.54	3.455
	10.4	6.55	8.475
	5.11	2.81	3.96
	4.43	2.49	3.46

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC1 (South Cow Creek above diversion)	March	Flag	California Toxics Rules Criteria (USEPA) [1] Freshwater Aquatic Life Protection			USEPA National Recommended [2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB [4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:45														
In situ Parameters															
Water Temperature (°C)	5.74														
Dissolved Oxygen (mg/L)	10.37												*>7*		
Specific Conductance (µmhos/cm)	69									*900*					
pH (Standard Units)	7.55							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	3.2									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.30	DNQ							*50*		*10*				
Barium (mg/L)	0.00550								*1*		*2*			*1.0*	
Cadmium (µg/L)	<0.002		*0.8909*	*1.0487*		*0.10370*	*0.57207*		*5*		*5*				
Copper (µg/L)	0.30900		*3.0859*	*4.1338*		*3.0859*	*4.1338*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (µg/L)	0.02600		*0.6122*	*15.7104*		*0.6122*	*15.7104*		*15*		*15*				
Manganese (µg/L)	4.40000									*50*		*50*			
Silver (µg/L)	<0.008				*0.4379*			*0.4083*		*100*					
Zinc (µg/L)	0.40000		*40.0057*	*40.0057*		*40.0057*	*40.0057*			*5,000*					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.30	DNQ	*150*	*340*		*150*	*340*								
Cadmium (µg/L)	<0.002		*0.8581*	*1.0468*		*0.09988*	*0.5710*								
Copper (µg/L)	0.18700		*2.9625*	*3.9684*		*2.9625*	*3.9684*								
Lead (µg/L)	<0.002		*0.5997*	*15.3906*		*0.5997*	*15.3906*								
Mercury (µg/L)	2.03E-03					*0.77*	*1.40*								
Silver (µg/L)	<0.008				*0.37218*			*0.34702*							
Zinc (µg/L)	0.21000		*39.4457*	*39.1256*		*39.4457*	*39.1256*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) [10]	50												*200/400*		
Ammonia - Total (mg/L) [5]	<0.05					*4.17*	*12.31*								
Total Hardness, as CaCO3 (mg/L)	27.4														
Chloride (mg/L) [9]	0.4					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] [8]	0.0								*10*		*10*				
Alkalinity - Total (mg/L)	32.4					*≥ 20*									
Total Dissolved Solids (mg/L)	67.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (µg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC1 (South Cow Creek above diversion)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:50														
In situ Parameters															
Water Temperature (°C)	9.19														
Dissolved Oxygen (mg/L)	10.93												*>7*		
Specific Conductance (mmhos/cm)	59									*900*					
pH (Standard Units)	7.52							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC1 (South Cow Creek above diversion)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:20														
In situ Parameters															
Water Temperature (°C)	13.68														
Dissolved Oxygen (mg/L)	8.99												*>7*		
Specific Conductance (mmhos/cm)	74									*900*					
pH (Standard Units)	7.69							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC1 (South Cow Creek above diversion)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:42														
In situ Parameters															
Water Temperature (°C)	16.99														
Dissolved Oxygen (mg/L)	8.59												*>7*		
Specific Conductance (mmhos/cm)	104									*900*					
pH (Standard Units)	8.01							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.8									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

SC1 (South Cow Creek above diversion)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	16:49														
In situ Parameters															
Water Temperature (°C)	20.46														
Dissolved Oxygen (mg/L)	7.73												*>7*		
Specific Conductance (mmhos/cm)	104									*900*					
pH (Standard Units)	8.17							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.2									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

SC1 (South Cow Creek above diversion)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:00														
In situ Parameters															
Water Temperature (°C)	12.58														
Dissolved Oxygen (mg/L)	8.77												*>7*		
Specific Conductance (mmhos/cm)	110									*900*					
pH (Standard Units)	7.88							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	5.7									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	0.56000	DNQ							*50*		*10*				
Barium (mg/L)	0.00760								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*1.4510*	*2.1136*		*0.16432*	*1.07583*		*5*		*5*				
Copper (mg/L)	0.06800		*5.2475*	*7.4229*		*5.2475*	*7.4229*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	<0.002		*1.3501*	*34.6471*		*1.3501*	*34.6471*		*15*		*15*				
Manganese (mg/L)	4.91000									*50*		*50*			
Silver (mg/L)	<0.008				*1.2747*			*1.1886*		*100*					
Zinc (mg/L)	<0.02		*67.7237*	*67.7237*		*67.7237*	*67.7237*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	0.54000	DNQ	*150*	*340*		*150*	*340*								
Cadmium (mg/L)	<0.002		*1.3599*	*2.0548*		*0.15400*	*1.0459*								
Copper (mg/L)	0.18000		*5.0376*	*7.1260*		*5.0376*	*7.1260*								
Lead (mg/L)	<0.002		*1.2004*	*30.8053*		*1.2004*	*30.8053*								
Mercury (mg/L)	3.00E-04					*0.77*	*1.40*								
Silver (mg/L)	<0.008				*1.08353*			*1.01027*							
Zinc (mg/L)	<0.02		*66.7755*	*66.2338*		*66.7755*	*66.2338*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) 10	500												*200/400*		
Ammonia - Total (mg/L) 5	<0.05					*2.87*	*7.02*								
Total Hardness, as CaCO3 (mg/L)	51.0														
Chloride (mg/L) 9	0.4					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	48.1					*≥ 20*									
Total Dissolved Solids (mg/L)	92.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

SC3 Water Quality

SC3 (South Cow Creek below diversion)

	2003					
	March	May	June	July	August	October
Time	NS	9:30	8:07	9:12	17:17	9:48
In situ Parameters						
Water Temperature (°C)	NS	9.44	13.76	16.57	19.36	12.50
Dissolved Oxygen (mg/L)	NS	10.92	9.28	7.80	8.79	9.44
Specific Conductance (µmhos/cm)	NS	62	80	121	121	127
pH	NS	7.70	7.67	8.04	8.31	7.95
Turbidity (NTU)	NS	0.4	1.7	1.7	0.0	8.5
Depth (M)	NS	1.0	1.0	1.0	1.0	1.0

NS = Constituent not sampled for during monitoring program

		Statistics	
	MAX	**MIN**	**AVG**
	16.57	9.44	12.84
	10.92	7.80	9.39
	127.00	62.00	103.33
	8.04	7.70	7.90
	8.50	0.40	3.53
	1.00	1.00	1.00

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC3 (South Cow Creek below diversion)	March	Flag	California Toxics Rules Criteria (USEPA) [1] Freshwater Aquatic Life Protection			USEPA National Recommended [2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB [4] Basin Plan Objectives	CTR (Human Health 30-day average)	
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		Sources of Drinking water	Other waters
														(water + organism consump)	*(aquatic org. consump)*
Time	NS														
In situ Parameters															
Water Temperature (°C)	NS														
Dissolved Oxygen (mg/L)	NS												*>7*		
Specific Conductance (µmhos/cm)	NS									*900*					
pH (Standard Units)	NS							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	NS									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC3 (South Cow Creek below diversion)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:30														
In situ Parameters															
Water Temperature (°C)	9.44														
Dissolved Oxygen (mg/L)	10.92												*>7*		
Specific Conductance (mmhos/cm)	62									*900*					
pH (Standard Units)	7.70							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.4									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*). (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC3 (South Cow Creek below diversion)	June	Flag	California Toxics Rules Criteria (USEPA) 1			USEPA National Recommended 2 Ambient Water Quality Criteria			Cal Dept. of Public Health (CDPH) 3		USEPA		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average)	
			Freshwater Aquatic Life Protection			Freshwater Aquatic Life Protection			Drinking Water Standards					Sources of Drinking water	Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:07														
In situ Parameters															
Water Temperature (°C)	13.76														
Dissolved Oxygen (mg/L)	9.28												*>7*		
Specific Conductance (mmhos/cm)	80									*900*					
pH (Standard Units)	7.67							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.7									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC3 (South Cow Creek below diversion)	July	Flag	California Toxics Rules Criteria (USEPA) 1			USEPA National Recommended 2 Ambient Water Quality Criteria			Cal Dept. of Public Health (CDPH) 3		USEPA		RWQCB 4 Basin Plan	CTR (Human Health 30-day average)	
			Freshwater Aquatic Life Protection			Freshwater Aquatic Life Protection			Drinking Water Standards				Objectives	Sources of Drinking water	Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:12														
In situ Parameters															
Water Temperature (°C)	16.57														
Dissolved Oxygen (mg/L)	7.80												*>7*		
Specific Conductance (mmhos/cm)	121									*900*					
pH (Standard Units)	8.04							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.7									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

SC3 (South Cow Creek below diversion)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	17:17														
In situ Parameters															
Water Temperature (°C)	19.36														
Dissolved Oxygen (mg/L)	8.79												*>7*		
Specific Conductance (mmhos/cm)	121									*900*					
pH (Standard Units)	8.31							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

SC3 (South Cow Creek below diversion)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:48														
In situ Parameters															
Water Temperature (°C)	12.50														
Dissolved Oxygen (mg/L)	9.44												*>7*		
Specific Conductance (mmhos/cm)	127									*900*					
pH (Standard Units)	7.95							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	8.5									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

SC4 Water Quality

SC4 (South Cow Creek above confluence with powerhouse diversion)

	2003					
	March	May	June	July	August	October
Time	11:05	10:36	9:23	7:23	18:25	7:57
In situ Parameters						
Water Temperature (°C)	6.79	11.00	15.45	19.28	19.93	14.19
Dissolved Oxygen (mg/L)	11.23	10.66	9.23	8.44	8.89	9.77
Specific Conductance (µmhos/cm)	84	73	90	133	134	137
pH	7.77	7.74	7.91	8.04	8.57	7.89
Turbidity (NTU)	8.1	0.9	3.2	0.4	0.8	0.1
Depth (M)	0.5	1.0	1.0	1.0	1.0	1.0
Analytical Parameters						
Total Coliform (MPN/100 mL)	900	NS	NS	NS	NS	900
Fecal Coliform (MPN/100 mL)	22	NS	NS	NS	NS	80
Total Metals:						
Arsenic (µg/L)	<0.30 DNQ	NS	NS	NS	NS	0.42
Barium (mg/L)	0.0071	NS	NS	NS	NS	0.0072
Cadmium (µg/L)	0.005	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.457	NS	NS	NS	NS	0.056
Lead (µg/L)	0.063	NS	NS	NS	NS	<0.002
Manganese (µg/L)	4.96	NS	NS	NS	NS	3.04
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.63	NS	NS	NS	NS	<0.02
Dissolved Metals:						
Arsenic (µg/L)	<0.30 DNQ	NS	NS	NS	NS	0.43
Barium (mg/L)	0.0059	NS	NS	NS	NS	0.007
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.238	NS	NS	NS	NS	0.163
Iron (mg/L)	0.029	NS	NS	NS	NS	0.0188
Lead (µg/L)	<0.01 DNQ	NS	NS	NS	NS	<0.002
Manganese (µg/L)	1.11	NS	NS	NS	NS	1.15
Mercury (µg/L)	0.002	NS	NS	NS	NS	0.000482
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.18	NS	NS	NS	NS	<0.02
Ammonia - Total (mg/L)	<0.05	NS	NS	NS	NS	<0.05
Total Hardness, as CaCO3 (mg/L)	34.3	NS	NS	NS	NS	67.6
Chloride (mg/L)	0.55	NS	NS	NS	NS	0.60
Fluoride (mg/L)	0.03	NS	NS	NS	NS	0.03 J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.0466	NS	NS	NS	NS	0.0787
Alkalinity - Total (mg/L)	38	NS	NS	NS	NS	63.2
Total Dissolved Solids (mg/L)	70	NS	NS	NS	NS	113
Total Suspended Solids (mg/L)	5.9	NS	NS	NS	NS	1.1
Total Phosphorous (mg/L)	<0.03	NS	NS	NS	NS	<0.015
Orthophosphate (mg/L)	0.0189	NS	NS	NS	NS	0.0354
Total Calcium (mg/L)	8.02	NS	NS	NS	NS	12.20
Total Magnesium (mg/L)	3.56	NS	NS	NS	NS	7.55
Total Sodium (mg/L)	2.86	NS	NS	NS	NS	4.81
Dissolved Calcium (mg/L)	8.16	NS	NS	NS	NS	12.20
Dissolved Magnesium (mg/L)	3.50	NS	NS	NS	NS	7.69
Dissolved Sodium (mg/L)	2.89	NS	NS	NS	NS	4.88
Total Boron (mg/L)	<0.10	NS	NS	NS	NS	<0.10
Cyanide (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
Molybdenum (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
PCBs						
Aroclor 1016 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1221 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1232 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1242 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1248 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1254 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1260 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1268 (µg/L)	<1.0	NS	NS	NS	NS	<0.2

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	19.28	6.79	12.82
	11.23	8.44	10.03
	137.00	73.00	106.75
	8.04	7.74	7.86
	8.10	0.10	2.38
	1.00	0.50	0.88
	0.42	0.42	0.42
	0.0072	0.0071	0.00715
	0.005	0.005	0.005
	0.457	0.056	0.2565
	0.063	0.063	0.063
	4.96	3.04	4
	0	0	#DIV/0!
	0.63	0.63	0.63
	0.43	0.43	0.43
	0	0	#DIV/0!
	0.238	0.163	0.2005
	0.029	0.0188	0.0239
	0	0	#DIV/0!
	0.002	0.000482	0.001241
	0	0	#DIV/0!
	0.18	0.18	0.18
	0	0	#DIV/0!
	67.6	34.3	50.95
	0.6	0.55	0.575
	0.0787	0.0466	0.06265
	63.2	37.9	50.55
	113	70	91.5
	5.9	1.1	3.5
	0	0	#DIV/0!
	0.0354	0.0189	0.02715
	12.2	8.02	10.11
	7.55	3.56	5.555
	4.81	2.86	3.835
	12.2	8.16	10.18
	7.69	3.5	5.595
	4.88	2.89	3.885

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC4 (South Cow Creek above confluence with powerhouse diversion)	March	Flag	California Toxics Rules Criteria (USEPA)[1] Freshwater Aquatic Life Protection			USEPA National Recommended[2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH)[3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB[4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	CMC	Instantaneous Max	CCC	CMC	Instantaneous Max	1° MCL	2° MCL	1° MCL	2° MCL		(water + organism consump)	(aquatic org. consump)
Time	11:05														
In situ Parameters															
Water Temperature (°C)	6.79														
Dissolved Oxygen (mg/L)	11.23												>7		
Specific Conductance (µmhos/cm)	84									900					
pH (Standard Units)	7.77							6.5-9.0					6.5-8.5		
Turbidity (NTU)	8.1									5					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.30	DNQ							50		10				
Barium (mg/L)	0.00710								1		2			1.0	
Cadmium (µg/L)	0.00500		1.0627	1.3511		0.12248	0.71880		5		5				
Copper (µg/L)	0.45700		3.7389	5.1080		3.7389	5.1080		1,300	1,000	1,300	1,000		1,300	
Lead (µg/L)	0.06300		0.8148	20.9103		0.8148	20.9103		15		15				
Manganese (µg/L)	4.96000									50		50			
Silver (µg/L)	<0.008				0.6443			0.6008		100					
Zinc (µg/L)	0.63000		48.3917	48.3917		48.3917	48.3917			5,000					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.30	DNQ	150	340		150	340								
Cadmium (µg/L)	<0.002		1.0136	1.3360		0.11682	0.7107								
Copper (µg/L)	0.23800		3.5893	4.9037		3.5893	4.9037								
Lead (µg/L)	<0.01	DNQ	0.7716	19.8003		0.7716	19.8003								
Mercury (µg/L)	2.00E-03					0.77	1.40								
Silver (µg/L)	<0.008				0.54768			0.51065							
Zinc (µg/L)	0.18000		47.7142	47.3271		47.7142	47.3271								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL)[10]	22												200/400		
Ammonia - Total (mg/L)[5]	<0.05					3.30	8.55								
Total Hardness, as CaCO3 (mg/L)	34.3														
Chloride (mg/L)[9]	0.6					230	860			250		250			
Fluoride (mg/L)	0.0								2		4	2			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)][8]	0.0								10		10				
Alkalinity - Total (mg/L)	37.9					≥ 20									
Total Dissolved Solids (mg/L)	70.0									500		500			
Cyanide (mg/L)	<0.0050		0.0052	0.022		0.0052	0.022		0.15		0.2			0.7	220
PCBs (µg/L)	0.0		0.014			0.014			0.5		0.5			0.00017	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC4 (South Cow Creek above confluence with powerhouse diversion)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:36														
In situ Parameters															
Water Temperature (°C)	11.00														
Dissolved Oxygen (mg/L)	10.66												*>7*		
Specific Conductance (mmhos/cm)	73									*900*					
pH (Standard Units)	7.74							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.9									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC4 (South Cow Creek above confluence with powerhouse diversion)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:23														
In situ Parameters															
Water Temperature (°C)	15.45														
Dissolved Oxygen (mg/L)	9.23												*>7*		
Specific Conductance (mmhos/cm)	90									*900*					
pH (Standard Units)	7.91							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	3.2									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC4 (South Cow Creek above confluence with powerhouse diversion)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	7:23														
In situ Parameters															
Water Temperature (°C)	19.28														
Dissolved Oxygen (mg/L)	8.44												*>7*		
Specific Conductance (mmhos/cm)	133									*900*					
pH (Standard Units)	8.04							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.4									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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SC4 (South Cow Creek above confluence with powerhouse diversion)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	18:25														
In situ Parameters															
Water Temperature (°C)	19.93														
Dissolved Oxygen (mg/L)	8.89												*>7*		
Specific Conductance (mmhos/cm)	134									*900*					
pH (Standard Units)	8.57							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.8									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
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3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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SC4 (South Cow Creek above confluence with powerhouse diversion)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	7:57														
In situ Parameters															
Water Temperature (°C)	14.19														
Dissolved Oxygen (mg/L)	9.77												*>7*		
Specific Conductance (mmhos/cm)	137									*900*					
pH (Standard Units)	7.89							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.1									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	0.42000	DNQ							*50*		*10*				
Barium (mg/L)	0.00720								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*1.8104*	*2.9045*		*0.20248*	*1.43269*		*5*		*5*				
Copper (mg/L)	0.05600		*6.6761*	*9.6800*		*6.6761*	*9.6800*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	<0.002		*1.9327*	*49.5966*		*1.9327*	*49.5966*		*15*		*15*				
Manganese (mg/L)	3.04000									*50*		*50*			
Silver (mg/L)	<0.008				*2.0697*			*1.9298*		*100*					
Zinc (mg/L)	<0.02		*85.9865*	*85.9865*		*85.9865*	*85.9865*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	0.43000	DNQ	*150*	*340*		*150*	*340*								
Cadmium (mg/L)	<0.002		*1.6753*	*2.7894*		*0.18737*	*1.3759*								
Copper (mg/L)	0.16300		*6.4090*	*9.2928*		*6.4090*	*9.2928*								
Lead (mg/L)	<0.002	DNQ	*1.6390*	*42.0608*		*1.6390*	*42.0608*								
Mercury (mg/L)	4.82E-04					*0.77*	*1.40*								
Silver (mg/L)	<0.008				*1.75925*			*1.64031*							
Zinc (mg/L)	<0.02		*84.7827*	*84.0948*		*84.7827*	*84.0948*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) 10	80												*200/400*		
Ammonia - Total (mg/L) 5	<0.05					*2.84*	*6.89*								
Total Hardness, as CaCO3 (mg/L)	67.6														
Chloride (mg/L) 9	0.6					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	63.2					*≥ 20*									
Total Dissolved Solids (mg/L)	113.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

SC5 Water Quality

SC5 (South Cow Creek below confluence with powerhouse diversion)

	2003					
	March	May	June	July	August	October
Time	11:35	7:26	9:35	7:03	18:35	7:29
In situ Parameters						
Water Temperature (°C)	7.22	11.04	16.04	19.52	23.40	14.27
Dissolved Oxygen (mg/L)	10.58	10.67	9.19	8.36	7.76	9.54
Specific Conductance (µmhos/cm)	86	76	95	134	137	138
pH	7.65	7.61	7.82	8.06	8.05	7.85
Turbidity (NTU)	5.8	2.2	1.6	0.4	2.5	0.3
Depth (M)	0.6	1.0	1.0	1.0	1.0	1.0
Analytical Parameters						
Total Coliform (MPN/100 mL)	900	NS	NS	NS	NS	220
Fecal Coliform (MPN/100 mL)	23	NS	NS	NS	NS	130
Total Metals:						
Arsenic (µg/L)	<0.30 DNQ	NS	NS	NS	NS	0.45
Barium (mg/L)	0.0075	NS	NS	NS	NS	0.0093
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Copper (µg/L)	0.478	NS	NS	NS	NS	0.093
Lead (µg/L)	0.057	NS	NS	NS	NS	0.002 DNQ
Manganese (µg/L)	6.66	NS	NS	NS	NS	4.41
Silver (µg/L)	<0.008	NS	NS	NS	NS	<0.008
Zinc (µg/L)	0.99	NS	NS	NS	NS	<0.02
Dissolved Metals:						
Arsenic (µg/L)	<0.30 DNQ	NS	NS	NS	NS	0.48
Barium (mg/L)	0.0059	NS	NS	NS	NS	0.0075
Cadmium (µg/L)	<0.002	NS	NS	NS	NS	0.006
Copper (µg/L)	0.248	NS	NS	NS	NS	0.191
Iron (mg/L)	0.033	NS	NS	NS	NS	0.0233
Lead (µg/L)	<0.002	NS	NS	NS	NS	<0.002
Manganese (µg/L)	1.15	NS	NS	NS	NS	2.45
Mercury (µg/L)	0.00201	NS	NS	NS	NS	0.000399
Silver (µg/L)	<0.008	NS	NS	NS	NS	0.02
Zinc (µg/L)	0.15	NS	NS	NS	NS	<0.002
Ammonia - Total (mg/L)	<0.05	NS	NS	NS	NS	<0.05
Total Hardness, as CaCO3 (mg/L)	35.3	NS	NS	NS	NS	67.6
Chloride (mg/L)	0.51	NS	NS	NS	NS	0.60
Fluoride (mg/L)	0.027	NS	NS	NS	NS	0.029 J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.0549	NS	NS	NS	NS	0.0829
Alkalinity - Total (mg/L)	42	NS	NS	NS	NS	65
Total Dissolved Solids (mg/L)	69	NS	NS	NS	NS	109
Total Suspended Solids (mg/L)	3.5	NS	NS	NS	NS	1.4
Total Phosphorous (mg/L)	<0.03	NS	NS	NS	NS	0.0157 J
Orthophosphate (mg/L)	0.0193	NS	NS	NS	NS	0.0358
Total Calcium (mg/L)	8.17	NS	NS	NS	NS	12.50
Total Magnesium (mg/L)	3.57	NS	NS	NS	NS	7.44
Total Sodium (mg/L)	2.96	NS	NS	NS	NS	4.79
Dissolved Calcium (mg/L)	7.95	NS	NS	NS	NS	12.30
Dissolved Magnesium (mg/L)	3.43	NS	NS	NS	NS	7.48
Dissolved Sodium (mg/L)	2.86	NS	NS	NS	NS	4.71
Total Boron (mg/L)	<0.10	NS	NS	NS	NS	<0.1
Cyanide (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
Molybdenum (mg/L)	<0.0050	NS	NS	NS	NS	<0.0050
PCBs						
Aroclor 1016 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1221 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1232 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1242 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1248 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1254 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1260 (µg/L)	<1.0	NS	NS	NS	NS	<0.2
Aroclor 1268 (µg/L)	<1.0	NS	NS	NS	NS	<0.2

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	19.52	7.22	13.01
	10.67	8.36	9.79
	138.00	76.00	108.50
	8.06	7.61	7.79
	5.80	0.30	2.18
	1.00	0.60	0.90
	0.45	0.45	0.45
	0.0093	0.0075	0.0084
	0	0	#DIV/0!
	0.478	0.093	0.2855
	0.057	0.002	0.0295
	6.66	4.41	5.535
	0	0	#DIV/0!
	0.99	0.99	0.99
	0.48	0.48	0.48
	0.006	0.006	0.006
	0.248	0.191	0.2195
	0.033	0.0233	0.02815
	0	0	#DIV/0!
	0.00201	0.000399	0.001205
	0.02	0.02	0.02
	0.15	0.15	0.15
	0	0	#DIV/0!
	67.6	35.3	51.45
	0.6	0.51	0.555
	0.0829	0.0549	0.0689
	65	42	53.5
	109	69	89
	3.5	1.4	2.45
	0.0157	0.0157	0.0157
	0.0358	0.0193	0.02755
	12.5	8.17	10.335
	7.44	3.57	5.505
	4.79	2.96	3.875
	12.3	7.95	10.125
	7.48	3.43	5.455
	4.71	2.86	3.785

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC5 (South Cow Creek below confluence with powerhouse diversion)	March	Flag	California Toxics Rules Criteria (USEPA)[1] Freshwater Aquatic Life Protection			USEPA National Recommended[2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH)[3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB[4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	CMC	Instantaneous Max	CCC	CMC	Instantaneous Max	1° MCL	2° MCL	1° MCL	2° MCL		(water + organism consump)	(aquatic org. consump)
Time	11:35														
In situ Parameters															
Water Temperature (°C)	7.22														
Dissolved Oxygen (mg/L)	10.58												>7		
Specific Conductance (µmhos/cm)	86									900					
pH (Standard Units)	7.65							6.5-9.0					6.5-8.5		
Turbidity (NTU)	5.8									5					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.30	DNQ							50		10				
Barium (mg/L)	0.00750								1		2			1.0	
Cadmium (µg/L)	<0.002		1.0869	1.3956		0.12512	0.74011		5		5				
Copper (µg/L)	0.47800		3.8318	5.2482		3.8318	5.2482		1,300	1,000	1,300	1,000		1,300	
Lead (µg/L)	0.05700		0.8452	21.6894		0.8452	21.6894		15		15				
Manganese (µg/L)	6.66000									50		50			
Silver (µg/L)	<0.008				0.6770			0.6312		100					
Zinc (µg/L)	0.99000		49.5845	49.5845		49.5845	49.5845			5,000					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.30	DNQ	150	340		150	340								
Cadmium (µg/L)	<0.002		1.0354	1.3783		0.11918	0.7309								
Copper (µg/L)	0.24800		3.6785	5.0383		3.6785	5.0383								
Lead (µg/L)	<0.002		0.7968	20.4472		0.7968	20.4472								
Mercury (µg/L)	2.01E-03					0.77	1.40								
Silver (µg/L)	<0.008				0.57543			0.53653							
Zinc (µg/L)	0.15000		48.8903	48.4936		48.8903	48.4936								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL)[10]	23												200/400		
Ammonia - Total (mg/L)[5]	<0.05					3.78	10.49								
Total Hardness, as CaCO3 (mg/L)	35.3														
Chloride (mg/L)[9]	0.5					230	860			250		250			
Fluoride (mg/L)	0.0								2		4	2			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)][8]	0.1								10		10				
Alkalinity - Total (mg/L)	42.0					≥ 20									
Total Dissolved Solids (mg/L)	69.0									500		500			
Cyanide (mg/L)	<0.0050		0.0052	0.022		0.0052	0.022		0.15		0.2			0.7	220
PCBs (µg/L)	0.0		0.014			0.014			0.5		0.5			0.00017	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
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Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

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2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
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5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
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7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC5 (South Cow Creek below confluence with powerhouse diversion)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	7:26														
In situ Parameters															
Water Temperature (°C)	11.04														
Dissolved Oxygen (mg/L)	10.67												*>7*		
Specific Conductance (mmhos/cm)	76									*900*					
pH (Standard Units)	7.61							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	2.2									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC5 (South Cow Creek below confluence with powerhouse diversion)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:35														
In situ Parameters															
Water Temperature (°C)	16.04														
Dissolved Oxygen (mg/L)	9.19												*>7*		
Specific Conductance (mmhos/cm)	95									*900*					
pH (Standard Units)	7.82							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.6									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

SC5 (South Cow Creek below confluence with powerhouse diversion)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	7:03														
In situ Parameters															
Water Temperature (°C)	19.52														
Dissolved Oxygen (mg/L)	8.36												*>7*		
Specific Conductance (mmhos/cm)	134									*900*					
pH (Standard Units)	8.06							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.4									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

SC5 (South Cow Creek below confluence with powerhouse diversion)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	18:35														
In situ Parameters															
Water Temperature (°C)	23.40														
Dissolved Oxygen (mg/L)	7.76												*>7*		
Specific Conductance (mmhos/cm)	137									*900*					
pH (Standard Units)	8.05							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	2.5									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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SC5 (South Cow Creek below confluence with powerhouse diversion)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	7:29														
In situ Parameters															
Water Temperature (°C)	14.27														
Dissolved Oxygen (mg/L)	9.54												*>7*		
Specific Conductance (mmhos/cm)	138									*900*					
pH (Standard Units)	7.85							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.3									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	0.45000	DNQ							*50*		*10*				
Barium (mg/L)	0.00930								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*1.8104*	*2.9045*		*0.20248*	*1.43269*		*5*		*5*				
Copper (mg/L)	0.09300		*6.6761*	*9.6800*		*6.6761*	*9.6800*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	0.00200		*1.9327*	*49.5966*		*1.9327*	*49.5966*		*15*		*15*				
Manganese (mg/L)	4.41000									*50*		*50*			
Silver (mg/L)	<0.008				*2.0697*			*1.9298*		*100*					
Zinc (mg/L)	<0.02		*85.9865*	*85.9865*		*85.9865*	*85.9865*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	0.48000	DNQ	*150*	*340*		*150*	*340*								
Cadmium (mg/L)	0.00600		*1.6753*	*2.7894*		*0.18737*	*1.3759*								
Copper (mg/L)	0.19100		*6.4090*	*9.2928*		*6.4090*	*9.2928*								
Lead (mg/L)	<0.002		*1.6390*	*42.0608*		*1.6390*	*42.0608*								
Mercury (mg/L)	3.99E-04					*0.77*	*1.40*								
Silver (mg/L)	0.02000				*1.75925*			*1.64031*							
Zinc (mg/L)	<0.002		*84.7827*	*84.0948*		*84.7827*	*84.0948*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) 10	130												*200/400*		
Ammonia - Total (mg/L) 5	<0.05					*2.99*	*7.41*								
Total Hardness, as CaCO3 (mg/L)	67.6														
Chloride (mg/L) 9	0.6					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	65.0					*≥ 20*									
Total Dissolved Solids (mg/L)	109.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

CCF1 Water Quality

CCF1 (Cow Creek Forebay)

	2003											
	March		May		June		July		August		October	
Time	8:00		8:18		7:52		8:16		17:36		9:10	
In situ Parameters												
Water Temperature (°C)	5.47		10.00		14.80		20.29		19.47		13.90	
Dissolved Oxygen (mg/L)	10.73		10.70		8.48		7.28		8.85		8.60	
Specific Conductance (µmhos/cm)	69		61		83		121		120		128	
pH	7.23		7.59		7.56		8.05		8.38		7.82	
Turbidity (NTU)	3.7		<0.1		1.7		4.4		1.1		0.8	
Depth (M)	1.0		1.0		1.0		1.0		1.0		1.0	
Analytical Parameters												
Total Coliform (MPN/100 mL)	500		NS		NS		NS		NS		>1600	
Fecal Coliform (MPN/100 mL)	11		NS		NS		NS		NS		280	
Total Metals:												
Arsenic (µg/L)	<0.30	DNQ	NS		NS		NS		NS		0.42	
Barium (mg/L)	0.0065		NS		NS		NS		NS		0.0071	
Cadmium (µg/L)	<0.002		NS		NS		NS		NS		<0.002	
Copper (µg/L)	0.309		NS		NS		NS		NS		0.056	
Lead (µg/L)	0.032		NS		NS		NS		NS		<0.002	
Manganese (µg/L)	4.61		NS		NS		NS		NS		9.12	
Silver (µg/L)	<0.008		NS		NS		NS		NS		<0.008	
Zinc (µg/L)	0.4		NS		NS		NS		NS		2.92	
Dissolved Metals:												
Arsenic (µg/L)	<0.30	DNQ	NS		NS		NS		NS		0.44	
Barium (mg/L)	0.0056		NS		NS		NS		NS		0.0064	
Cadmium (µg/L)	<0.002		NS		NS		NS		NS		<0.002	
Copper (µg/L)	0.275		NS		NS		NS		NS		0.116	
Iron (mg/L)	0.021		NS		NS		NS		NS		0.0433	
Lead (µg/L)	<0.01	DNQ	NS		NS		NS		NS		<0.002	
Manganese (µg/L)	2.02		NS		NS		NS		NS		3.66	
Mercury (µg/L)	0.00208		NS		NS		NS		NS		0.000426	
Silver (µg/L)	<0.008		NS		NS		NS		NS		<0.008	
Zinc (µg/L)	0.24		NS		NS		NS		NS		<0.02	
Ammonia - Total (mg/L)	<0.05		NS		NS		NS		NS		<0.05	
Total Hardness, as CaCO3 (mg/L)	28.4		NS		NS		NS		NS		59.8	
Chloride (mg/L)	0.43		NS		NS		NS		NS		0.58	
Fluoride (mg/L)	0.24		NS		NS		NS		NS		0.029	J
Nitrate, as NO3 (mg/L) + Nitrite (mg/L)	0.0437		NS		NS		NS		NS		0.0586	
Alkalinity - Total (mg/L)	34		NS		NS		NS		NS		58	
Total Dissolved Solids (mg/L)	72		NS		NS		NS		NS		101	
Total Suspended Solids (mg/L)	1.9		NS		NS		NS		NS		1.2	
Total Phosphorous (mg/L)	<0.03		NS		NS		NS		NS		0.0164	J
Orthophosphate (mg/L)	0.0177		NS		NS		NS		NS		0.0326	
Total Calcium (mg/L)	6.94		NS		NS		NS		NS		11.30	
Total Magnesium (mg/L)	2.95		NS		NS		NS		NS		6.68	
Total Sodium (mg/L)	2.51		NS		NS		NS		NS		4.48	
Dissolved Calcium (mg/L)	6.68		NS		NS		NS		NS		11.30	
Dissolved Magnesium (mg/L)	2.87		NS		NS		NS		NS		6.95	
Dissolved Sodium (mg/L)	2.52		NS		NS		NS		NS		4.72	
Total Boron (mg/L)	<0.10		NS		NS		NS		NS		<0.1	
Cyanide (mg/L)	<0.0050		NS		NS		NS		NS		<0.0050	
Molybdenum (mg/L)	<0.0050		NS		NS		NS		NS		<0.0050	
PCBs												
Aroclor 1016 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1221 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1232 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1242 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1248 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1254 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1260 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	
Aroclor 1268 (µg/L)	<1.0		NS		NS		NS		NS		<0.2	

J = Estimated concentration below the reporting limit (RL) and above the method detection limit (MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL by the analytical laboratory.

DNQ = Detected above MDL and below RL, but not quantified (Marine Pollution Studies Laboratory). Value listed as less than the RL.

NS = Constituent not sampled for during monitoring program

< VALUE = listed as less than the MDL unless a flag (DNQ) is noted, see notes for DNQ flag

		Statistics	
	MAX	**MIN**	**AVG**
	20.29	5.47	12.42
	10.73	7.28	9.33
	128.00	61.00	94.75
	8.05	7.23	7.67
	4.40	0.80	2.97
	1.00	1.00	1.00
	0.42	0.42	0.42
	0.0071	0.0065	0.0068
	0	0	#DIV/0!
	0.309	0.056	0.1825
	0.032	0.032	0.032
	9.12	4.61	6.865
	0	0	#DIV/0!
	2.92	0.4	1.66
	0.44	0.44	0.44
	0	0	#DIV/0!
	0.275	0.116	0.1955
	0.0433	0.021	0.03215
	0	0	#DIV/0!
	0.00208	0.000426	0.001253
	0	0	#DIV/0!
	0.24	0.24	0.24
	0	0	#DIV/0!
	59.8	28.4	44.1
	0.58	0.43	0.505
	0.0586	0.0437	0.05115
	58	33.9	45.95
	101	72	86.5
	1.9	1.2	1.55
	0.0164	0.0164	0.0164
	0.0326	0.0177	0.02515
	11.3	6.94	9.12
	6.68	2.95	4.815
	4.48	2.51	3.495
	11.3	6.68	8.99
	6.95	2.87	4.91
	4.72	2.52	3.62

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

CCF1 (Cow Creek Forebay)	March	Flag	California Toxics Rules Criteria (USEPA) [1] Freshwater Aquatic Life Protection			USEPA National Recommended [2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB [4] Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:00														
In situ Parameters															
Water Temperature (°C)	5.47														
Dissolved Oxygen (mg/L)	10.73												*>7*		
Specific Conductance (µmhos/cm)	69									*900*					
pH (Standard Units)	7.23							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	3.7									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) [7]															
Arsenic (µg/L)	<0.30	DNQ							*50*		*10*				
Barium (mg/L)	0.00650								*1*		*2*			*1.0*	
Cadmium (µg/L)	<0.002		*0.9163*	*1.0920*		*0.10649*	*0.59330*		*5*		*5*				
Copper (µg/L)	0.30900		*3.1819*	*4.2758*		*3.1819*	*4.2758*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (µg/L)	0.03200		*0.6408*	*16.4439*		*0.6408*	*16.4439*		*15*		*15*				
Manganese (µg/L)	4.61000									*50*		*50*			
Silver (µg/L)	<0.008				*0.4657*			*0.4342*		*100*					
Zinc (µg/L)	0.40000		*41.2395*	*41.2395*		*41.2395*	*41.2395*			*5,000*					
Dissolved Metals (units of milligrams per liter) [6]															
Arsenic (µg/L)	<0.30	DNQ	*150*	*340*		*150*	*340*								
Cadmium (µg/L)	<0.002		*0.8812*	*1.0884*		*0.10241*	*0.5913*								
Copper (µg/L)	0.27500		*3.0547*	*4.1048*		*3.0547*	*4.1048*								
Lead (µg/L)	<0.01	DNQ	*0.6244*	*16.0233*		*0.6244*	*16.0233*								
Mercury (µg/L)	2.08E-03					*0.77*	*1.40*								
Silver (µg/L)	<0.008				*0.39585*			*0.36908*							
Zinc (µg/L)	0.24000		*40.6621*	*40.3322*		*40.6621*	*40.3322*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) [10]	11												*200/400*		
Ammonia - Total (mg/L) [5]	<0.05					*5.30*	*19.06*								
Total Hardness, as CaCO3 (mg/L)	28.4														
Chloride (mg/L) [9]	0.4					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.2								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] [8]	0.0								*10*		*10*				
Alkalinity - Total (mg/L)	33.9					*≥ 20*									
Total Dissolved Solids (mg/L)	72.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (µg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria

J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory

Shaded cells represent exceedances of the criteria

NS = Constituent was not sampled for during this month

CCC = Continuous concentration (4-day average)

CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

CCF1 (Cow Creek Forebay)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:18														
In situ Parameters															
Water Temperature (°C)	10.00														
Dissolved Oxygen (mg/L)	10.70												*>7*		
Specific Conductance (mmhos/cm)	61									*900*					
pH (Standard Units)	7.59							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	<0.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

CCF1 (Cow Creek Forebay)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	7:52														
In situ Parameters															
Water Temperature (°C)	14.80														
Dissolved Oxygen (mg/L)	8.48												*>7*		
Specific Conductance (mmhos/cm)	83									*900*					
pH (Standard Units)	7.56							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.7									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

CCF1 (Cow Creek Forebay)	July	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:16														
In situ Parameters															
Water Temperature (°C)	20.29														
Dissolved Oxygen (mg/L)	7.28												*>7*		
Specific Conductance (mmhos/cm)	121									*900*					
pH (Standard Units)	8.05							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	4.4									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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CCF1 (Cow Creek Forebay)	August	Flag	California Toxics Rules Criteria (USEPA) 1			USEPA National Recommended 2 Ambient Water Quality Criteria			Cal Dept. of Public Health (CDPH) 3		USEPA		RWQCB 4	CTR (Human Health 30-day average)	
			Freshwater Aquatic Life Protection			Freshwater Aquatic Life Protection			Drinking Water Standards				Basin Plan Objectives	Sources of Drinking water	Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	17:36														
In situ Parameters															
Water Temperature (°C)	19.47														
Dissolved Oxygen (mg/L)	8.85												*>7*		
Specific Conductance (mmhos/cm)	120									*900*					
pH (Standard Units)	8.38							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.

CCF1 (Cow Creek Forebay)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	9:10														
In situ Parameters															
Water Temperature (°C)	13.90														
Dissolved Oxygen (mg/L)	8.60												*>7*		
Specific Conductance (mmhos/cm)	128									*900*					
pH (Standard Units)	7.82							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.8									*5*					
Analytical Parameters															
Total Metals (units of milligrams per liter) 7															
Arsenic (mg/L)	0.42000	DNQ							*50*		*10*				
Barium (mg/L)	0.00710								*1*		*2*			*1.0*	
Cadmium (mg/L)	<0.002		*1.6442*	*2.5293*		*0.18489*	*1.26480*		*5*		*5*				
Copper (mg/L)	0.05600		*6.0120*	*8.6240*		*6.0120*	*8.6240*		*1,300*	*1,000*	*1,300*	*1,000*		*1,300*	
Lead (mg/L)	<0.002		*1.6534*	*42.4298*		*1.6534*	*42.4298*		*15*		*15*				
Manganese (mg/L)	9.12000									*50*		*50*			
Silver (mg/L)	<0.008				*1.6762*			*1.5629*		*100*					
Zinc (mg/L)	2.92000		*77.5024*	*77.5024*		*77.5024*	*77.5024*			*5,000*					
Dissolved Metals (units of milligrams per liter) 6															
Arsenic (mg/L)	0.44000	DNQ	*150*	*340*		*150*	*340*								
Cadmium (mg/L)	<0.002		*1.5300*	*2.4421*		*0.17205*	*1.2212*								
Copper (mg/L)	0.11600		*5.7716*	*8.2790*		*5.7716*	*8.2790*								
Lead (mg/L)	<0.002	DNQ	*1.4317*	*36.7408*		*1.4317*	*36.7408*								
Mercury (mg/L)	4.26E-04					*0.77*	*1.40*								
Silver (mg/L)	<0.008				*1.42477*			*1.32845*							
Zinc (mg/L)	<0.02		*76.4174*	*75.7974*		*76.4174*	*75.7974*								
Additional Analytical Parameters															
Fecal Coliform (MPN/100mL) 10	280												*200/400*		
Ammonia - Total (mg/L) 5	<0.05					*3.10*	*7.82*								
Total Hardness, as CaCO3 (mg/L)	59.8														
Chloride (mg/L) 9	0.6					*230*	*860*			*250*		*250*			
Fluoride (mg/L)	0.0								*2*		*4*	*2*			
Nitrate, as NO3 (mg/L), [Nitrite (mg/L)] 8	0.1								*10*		*10*				
Alkalinity - Total (mg/L)	58.0					*≥ 20*									
Total Dissolved Solids (mg/L)	101.0									*500*		*500*			
Cyanide (mg/L)	<0.0050		*0.0052*	*0.022*		*0.0052*	*0.022*		*0.15*		*0.2*			*0.7*	220
PCBs (mg/L)	0.0		*0.014*			*0.014*			*0.5*		*0.5*			*0.00017*	0.00017

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
J = Estimated concentration below the reporting limit (RL) and above the method detection limit(MDL), the MDL is based on a statistical calculation, the RL is normally set to 5 to 10 times the MDL and the RL represents higher analytical accuracy that can be achieved by the laboratory
Shaded cells represent exceedances of the criteria
NS = Constituent was not sampled for during this month
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)

1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
5. Ammonia concentration range based on the pH and temperature measurements collected for the month during the sampling program, criteria are for when fish early life stages present (CCC) and when salmonid fish are present (CMC)
6. Dissolved metals criteria for cadmium, chromium, copper, lead, nickel, silver, and zinc are calculated using the site and time specific hardness value
7. Criteria for CTR and USEPA National ambient criteria expressed as total recoverable based on calculation using hardness for cadmium, chromium, copper, lead, nickel, silver, and zinc.
8. Criteria for total nitrate + nitrite as nitrogen (N)
9. USEPA National Ambient Criterion for chloride is for dissolved chloride associated with sodium, criterion will probably not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium
10. Fecal Coliform limit is a monthly geometric mean of < 200 / 100 mL, and no more than 10% of the monthly observations above 400 /100 mL.

HG1 Water Quality

HG1 (Hooten Gulch below Powerhouse)

2003

	March	May	June	July	August	October
Time	NS	10:18	7:30	7:39	18:11	8:20
In situ Parameters						
Water Temperature (°C)	NS	10.99	15.30	19.10	18.41	14.05
Dissolved Oxygen (mg/L)	NS	10.73	9.34	8.46	9.95	9.88
Specific Conductance (µmhos/cm)	NS	92	89	122	122	129
pH	NS	7.87	7.71	7.97	8.52	7.79
Turbidity (NTU)	NS	0.1	1.6	1.8	0.0	0.0
Depth (M)	NS	1.0	1.0	1.0	1.0	1.0

NS = Constituent not sampled for during monitoring program

		Statistics	
	MAX	**MIN**	**AVG**
	19.10	10.99	14.71
	10.73	8.46	9.69
	129.00	92.00	114.33
	7.97	7.79	7.88
	1.80	0.00	0.63
	1.00	1.00	1.00

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

HG1 (Hooten Gulch below Powerhouse)	March	Flag	California Toxics Rules Criteria (USEPA) [1] Freshwater Aquatic Life Protection			USEPA National Recommended [2] Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) [3] Drinking Water Standards		USEPA Drinking Water Standards		RWQCB [4] Basin Plan Objectives	CTR (Human Health 30-day average)	
														Sources of Drinking water	Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	NS														
In situ Parameters															
Water Temperature (°C)	NS														
Dissolved Oxygen (mg/L)	NS												*>7*		
Specific Conductance (µmhos/cm)	NS									*900*					
pH (Standard Units)	NS							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	NS									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

HG1 (Hooten Gulch below Powerhouse)	May	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	10:18														
In situ Parameters															
Water Temperature (°C)	10.99														
Dissolved Oxygen (mg/L)	10.73												*>7*		
Specific Conductance (mmhos/cm)	92									*900*					
pH (Standard Units)	7.87							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.1									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*). (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

HG1 (Hooten Gulch below Powerhouse)	June	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	7:30														
In situ Parameters															
Water Temperature (°C)	15.30														
Dissolved Oxygen (mg/L)	9.34												*>7*		
Specific Conductance (mmhos/cm)	89									*900*					
pH (Standard Units)	7.71							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.6									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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NS = Constituent not sampled for during monitoring program

Table 1. Monthly Water Quality Data Compared to Applicable Water Quality Criteria

HG1 (Hooten Gulch below Powerhouse)	July	Flag	California Toxics Rules Criteria (USEPA) 1			USEPA National Recommended 2 Ambient Water Quality Criteria			Cal Dept. of Public Health (CDPH) 3		USEPA		RWQCB 4 Basin Plan	CTR (Human Health 30-day average)	
			Freshwater Aquatic Life Protection			Freshwater Aquatic Life Protection			Drinking Water Standards				Objectives	Sources of Drinking water	Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	7:39														
In situ Parameters															
Water Temperature (°C)	19.10														
Dissolved Oxygen (mg/L)	8.46												*>7*		
Specific Conductance (mmhos/cm)	122									*900*					
pH (Standard Units)	7.97							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	1.8									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California (*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
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NS = Constituent not sampled for during monitoring program

HG1 (Hooten Gulch below Powerhouse)	August	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	18:11														
In situ Parameters															
Water Temperature (°C)	18.41														
Dissolved Oxygen (mg/L)	9.95												*>7*		
Specific Conductance (mmhos/cm)	122									*900*					
pH (Standard Units)	8.52							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program

HG1 (Hooten Gulch below Powerhouse)	October	Flag	California Toxics Rules Criteria (USEPA) 1 Freshwater Aquatic Life Protection			USEPA National Recommended 2 Ambient Water Quality Criteria Freshwater Aquatic Life Protection			Cal Dept. of Public Health (CDPH) 3 Drinking Water Standards		USEPA Drinking Water Standards		RWQCB 4 Basin Plan Objectives	CTR (Human Health 30-day average) Sources of Drinking water	CTR (Human Health 30-day average) Other waters
			CCC	*CMC*	*Instantaneous Max*	*CCC*	*CMC*	*Instantaneous Max*	*1° MCL*	*2° MCL*	*1° MCL*	*2° MCL*		*(water + organism consump)*	*(aquatic org. consump)*
Time	8:20														
In situ Parameters															
Water Temperature (°C)	14.05														
Dissolved Oxygen (mg/L)	9.88												*>7*		
Specific Conductance (mmhos/cm)	129									*900*					
pH (Standard Units)	7.79							*6.5-9.0*					*6.5-8.5*		
Turbidity (NTU)	0.0									*5*					

Primary and Secondary MCL = Maximum contaminant levels (MCLs), primary MCLs are health based criteria and secondary MCLs are human welfare based criteria
Shaded cells represent exceedances of the criteria
CCC = Continuous concentration (4-day average)
CMC = Maximum concentration (1-hour average)
1. USEPA Water Quality Standards; Establishment on Numeric Criteria for Priority Toxic Pollutants for the State of California [*California Toxics Rule*]. (USEPA, 2000; 40 CFR Part 131)
2. USEPA National Recommended Water Quality Criteria, Freshwater Aquatic Life Protection (USEPA, 2006; EPA 822-H-04-001)
3. CA CFR Title 22 Drinking Water Regulations. Updated March 9, 2008.
4. Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
NS = Constituent not sampled for during monitoring program