

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

May 2009

October 14, 2009

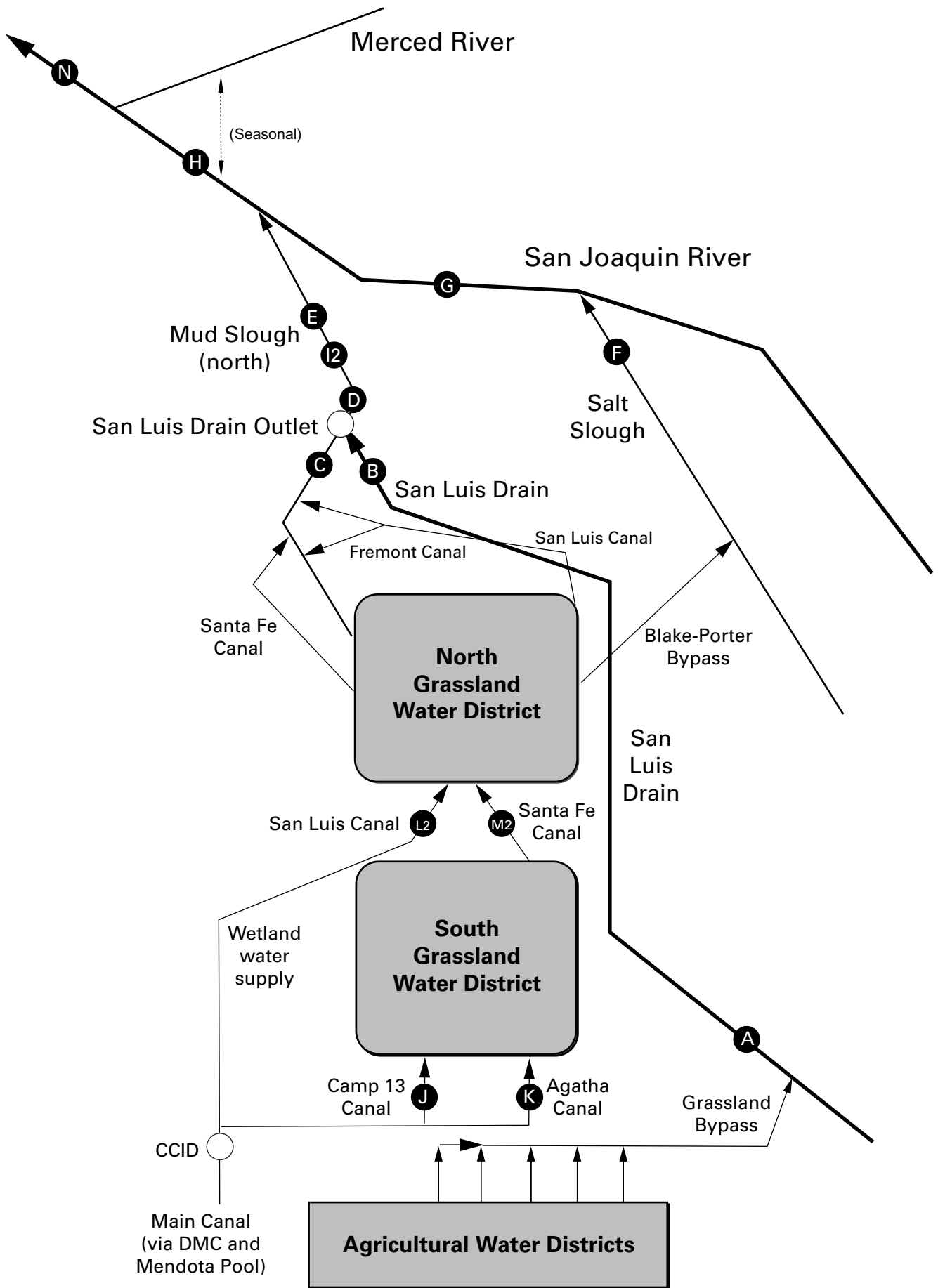
Preliminary Results

A cooperative effort of:

U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
California Department of Fish and Game
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

compiled by San Francisco Estuary Institute





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Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), May 2009.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
May-01-2009	17	3,820
May-02-2009	22	3,400
May-03-2009	23	3,380
May-04-2009	20	3,850
May-05-2009	17	3,950
May-06-2009	15	4,000
May-07-2009	14	4,030
May-08-2009	16	4,000
May-09-2009	14	4,220
May-10-2009	11	4,610
May-11-2009	11	4,690
May-12-2009	11	4,740
May-13-2009	9	4,790
May-14-2009	9	4,780
May-15-2009	10	4,800
May-16-2009	8	4,840
May-17-2009	9	4,710
May-18-2009	12	4,190
May-19-2009	12	4,400
May-20-2009	12	3,300
May-21-2009	10	3,410
May-22-2009	11	3,730
May-23-2009	11	3,710
May-24-2009	11	3,570
May-25-2009	12	3,790
May-26-2009	15	4,360
May-27-2009	25	4,240
May-28-2009	21	4,010
May-29-2009	29	3,960
May-30-2009	30	3,780
May-31-2009	28	3,650
Mean	15	4,090

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), May 2009.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	San Luis Drain Outlet Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	SLDMWA*	SLDMWA	CVRWQCB	SLDMWA	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
May-01-2009	15	NA	11.7	5,600	43.2	3.4
May-02-2009	15	NA	10.4	5,370	41.7	3.4
May-03-2009	19	NA	8.5	4,660	35.3	3.7
May-04-2009	21	NA	7.1	4,450	42.3	4.8
May-05-2009	18	NA	6.6	3,950	33.2	3.2
May-06-2009	15	NA	7.6	4,250	26.4	2.1
May-07-2009	12	NA	6.7	3,860	24.6	1.6
May-08-2009	12	NA	6.8	3,870	25.9	1.6
May-09-2009	13	NA	5.8	3,510	22.6	1.6
May-10-2009	12	NA	6.1	3,720	25.8	1.6
May-11-2009	9	NA	6.7	4,040	27.2	1.3
May-12-2009	8	NA	6.9	4,340	30.9	1.3
May-13-2009	8	NA	7.3	4,560	32.2	1.3
May-14-2009	7	21.4	6.3	4,180	30.7	1.1
May-15-2009	5	22.6	7.4	4,550	35.2	1.0
May-16-2009	8	23.0	7.0	4,240	29.3	1.3
May-17-2009	7	24.2	7.4	4,590	35.1	1.3
May-18-2009	7	25.7	7.2	4,570	33.8	1.2
May-19-2009	8	26.2	7.1	4,410	33.2	1.5
May-20-2009	9	25.3	8.3	5,000	42.3	2.1
May-21-2009	10	24.7	8.6	5,240	44.5	2.4
May-22-2009	7	24.4	9.2	5,320	43.9	1.7
May-23-2009	8	24.2	9.5	5,350	39.6	1.8
May-24-2009	8	23.4	9.4	5,390	42.1	1.9
May-25-2009	8	23.1	9.5	5,440	38.8	1.7
May-26-2009	11	23.7	10.3	5,180	27.3	1.6
May-27-2009	13	25.7	9.5	4,880	20.5	1.4
May-28-2009	22	26.8	9.1	4,610	17.2	2.0
May-29-2009	19	26.7	NA	NA	NA	NA
May-30-2009	26	26.2	NA	NA	NA	NA
May-31-2009	28	25.8	NA	NA	NA	NA
Mean	12	24.6	8.0	4,610	33.0	2.0
Total Acre-feet	770					
Total (lbs)						55

Load Limitation for May 2009 (lbs)	341
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◆To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, are measuring flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge is measured as stage over a sharp-crested weir, identical to Station A. This is a simpler and more accurate method that will not be altered by sediment accumulation. Water quality data are still collected at the old Site B.

Figure 2b. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.

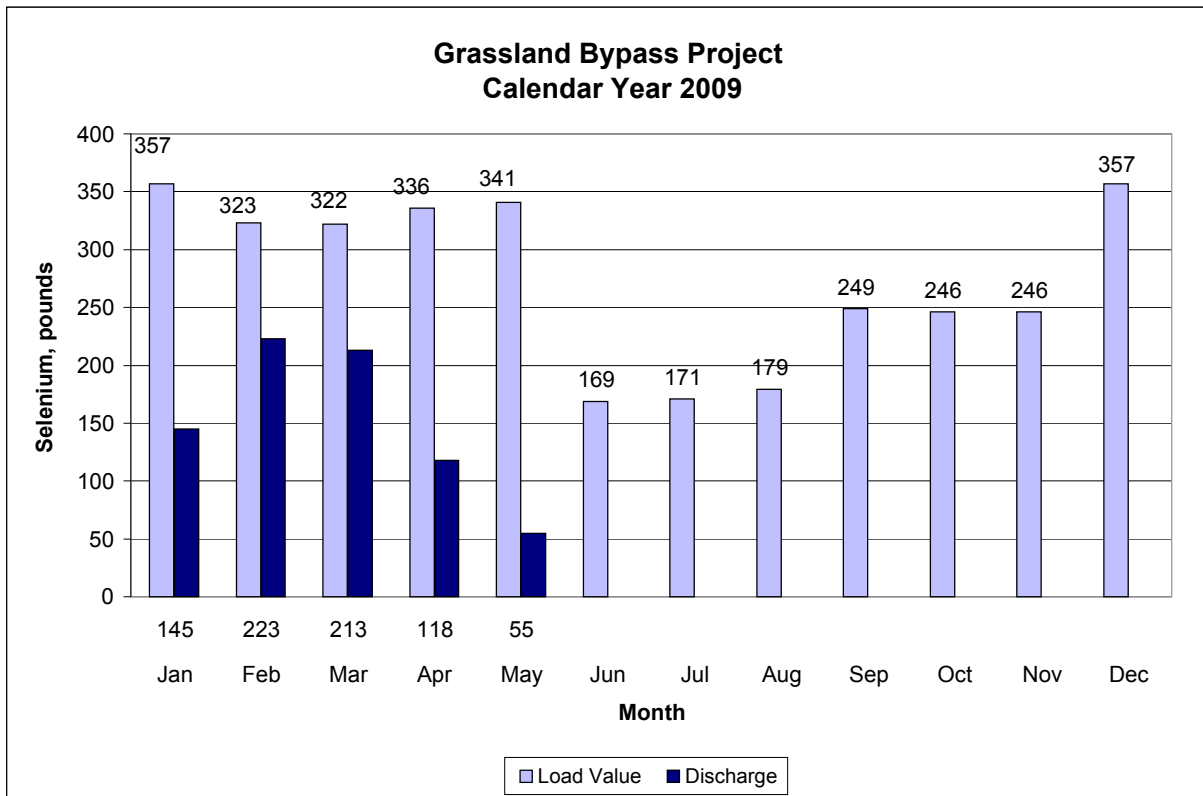


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), May 2009.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
May-01-2009	33	19.0	3,930
May-02-2009	33	18.8	3,680
May-03-2009	36	19.1	3,560
May-04-2009	36	20.2	3,400
May-05-2009	31	21.4	3,560
May-06-2009	28	22.2	3,460
May-07-2009	25	21.7	3,910
May-08-2009	29	20.4	3,110
May-09-2009	29	21.1	3,430
May-10-2009	31	21.8	3,410
May-11-2009	27	22.1	3,440
May-12-2009	29	21.0	2,880
May-13-2009	28	20.1	2,920
May-14-2009	27	21.0	2,960
May-15-2009	24	22.5	2,950
May-16-2009	25	24.3	3,200
May-17-2009	20	25.7	3,620
May-18-2009	25	25.9	3,160
May-19-2009	33	25.6	2,510
May-20-2009	31	24.4	2,660
May-21-2009	28	24.1	3,100
May-22-2009	28	24.3	3,040
May-23-2009	34	23.8	2,760
May-24-2009	47	22.9	2,090
May-25-2009	40	23.1	2,360
May-26-2009	31	24.3	3,500
May-27-2009	39	25.8	3,090
May-28-2009	44	26.5	3,300
May-29-2009	33	26.2	3,230
May-30-2009	37	25.8	3,500
May-31-2009	40	25.5	3,860
Mean	32	22.9	3,210

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), May 2009.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
May-01-2009	91	18.8	1,520
May-02-2009	124	18.3	1,450
May-03-2009	146	18.7	1,360
May-04-2009	155	19.7	1,300
May-05-2009	135	21.1	1,380
May-06-2009	121	22.2	1,480
May-07-2009	105	21.9	1,550
May-08-2009	93	20.7	1,620
May-09-2009	85	21.1	1,700
May-10-2009	81	21.9	1,770
May-11-2009	82	22.1	1,810
May-12-2009	75	21.0	1,760
May-13-2009	64	19.9	1,880
May-14-2009	56	20.9	1,980
May-15-2009	53	22.8	1,960
May-16-2009	63	24.7	1,890
May-17-2009	84	26.4	1,780
May-18-2009	92	26.4	1,560
May-19-2009	96	25.4	1,490
May-20-2009	118	24.1	1,380
May-21-2009	120	23.4	1,270
May-22-2009	113	23.3	1,240
May-23-2009	110	22.6	1,250
May-24-2009	104	21.8	1,250
May-25-2009	106	21.8	1,230
May-26-2009	111	23.0	1,240
May-27-2009	88	25.2	1,340
May-28-2009	62	26.3	1,580
May-29-2009	73	25.7	1,540
May-30-2009	88	25.1	1,400
May-31-2009	92	24.7	1,350
Mean	96	22.6	1,530

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), May 2009.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Selenium (total)
DATA SOURCE	usgs	usgs	cvrwqcb	cvrwqcb
UNITS	cfs	°C	µS/cm	µg/L
May-01-2009	405	19.7	1,660	3.0
May-02-2009	428	18.9	1,560	2.2
May-03-2009	508	19.4	1,390	1.8
May-04-2009	586	20.3	1,090	1.5
May-05-2009	585	21.8	1,070	1.4
May-06-2009	567	22.4	1,150	1.7
May-07-2009	581	22.5	1,140	1.6
May-08-2009	669	21.5	955	0.7
May-09-2009	740	21.4	806	0.6
May-10-2009	839	20.9	641	0.4
May-11-2009	894	20.6	604	0.5
May-12-2009	916	19.9	604	0.4
May-13-2009	723	19.6	639	0.5
May-14-2009	505	20.7	924	0.5
May-15-2009	412	22.4	1,090	1.0
May-16-2009	374	24.2	1,250	1.0
May-17-2009	346	26.1	1,280	0.9
May-18-2009	356	26.2	1,400	0.9
May-19-2009	366	25.7	1,230	0.7
May-20-2009	377	24.4	1,180	0.8
May-21-2009	364	23.9	1,250	1.0
May-22-2009	361	24.1	NA	NA
May-23-2009	356	24.3	NA	NA
May-24-2009	354	24.0	NA	NA
May-25-2009	353	23.6	NA	NA
May-26-2009	345	24.3	NA	NA
May-27-2009	347	25.6	NA	NA
May-28-2009	349	26.2	NA	NA
May-29-2009	314	25.7	NA	NA
May-30-2009	315	25.2	NA	NA
May-31-2009	335	24.8	NA	NA
Mean	483	22.9	1,090	1.1

Table 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Total Suspended Solids	.	.	.
DATA SOURCE	SLDMWA	.	.	CVRWQCB	CVRWQCB	.	.	.
UNITS	cfs	.	.	µS/cm	mg/L	.	.	.
Mar-04-2009	35	.	.	4,040	207	.	.	.
Mar-11-2009	20	.	.	4,850	57	.	.	.
Mar-18-2009	20	.	.	4,620	28	.	.	.
Mar-25-2009	31	.	.	4,430	70	.	.	.
Apr-01-2009	20	.	.	4,670	109	.	.	.
Apr-08-2009	16	.	.	3,860	65	.	.	.
Apr-15-2009	27	.	.	4,580	218	.	.	.
Apr-22-2009	21	.	.	5,080	228	.	.	.
Apr-29-2009	25	.	.	4,380	131	.	.	.
May-06-2009	15	.	.	4,630	11	.	.	.
May-13-2009	9	.	.	5,220	21	.	.	.
May-20-2009	12	.	.	3,270	103	.	.	.
May-27-2009	25	.	.	4,960	136	.	.	.

Table 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	.	Selenium (total)	.	Boron
DATA SOURCE	SLDMWA	.	.	CVRWQCB	.	CVRWQCB	.	CVRWQCB
UNITS	cfs	.	.	µS/cm	.	µg/L	.	mg/L
Mar-03-2009	39	.	.	3,800	.	38.4	.	6.2
Mar-10-2009	25	.	.	4,480	.	51.5	.	7.6
Mar-17-2009	19	.	.	4,730	.	45.8	.	7.8
Mar-24-2009	32	.	.	4,250	.	47.4	.	6.5
Mar-31-2009	21	.	.	4,450	.	45.9	.	7.3
Apr-07-2009	13	.	.	4,170	.	19.5	.	7.3
Apr-14-2009	21	.	.	3,830	.	26.7	.	6.1
Apr-21-2009	18	.	.	4,790	.	41.6	.	7.8
Apr-28-2009	26	.	.	4,390	.	41.3	.	8.8
May-05-2009	17	.	.	3,980	.	27.8	.	6.8
May-12-2009	11	.	.	5,130	.	37.6	.	7.8
May-19-2009	12	.	.	4,790	.	29.6	.	10.0
May-26-2009	15	.	.	4,610	.	20.8	.	7.1

Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	mg/L	µg/L	mg/L
Mar-05-2009	37	13.4	6.9	3,560	42	33.4	5.5
Mar-12-2009	22	18.0	7.1	4,390	31	48.2	7.0
Mar-19-2009	21	17.2	8.1	4,720	58	44.1	7.6
Mar-26-2009	31	15.1	8.2	4,410	50	54.3	7.0
Apr-02-2009	21	16.0	7.2	4,250	46	41.6	7.0
Apr-09-2009	15	16.1	8.0	4,660	42	44.5	6.8
Apr-16-2009	25	13.7	7.4	4,120	66	28.2	6.8
Apr-23-2009	18	22.3	7.5	4,510	77	32.9	8.3
Apr-30-2009	27	17.0	8.2	5,220	84	34.4	9.3
May-07-2009	12	21.4	7.7	3,640	49	21.6	6.5
May-14-2009	7	19.8	8.4	4,250	43	30.4	7.1
May-21-2009	10	23.9	8.2	5,280	35	42.2	9.4
May-28-2009	22	25.4	7.8	4,600	18	15.3	8.4

Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	.	Selenium (total)	Boron
DATA SOURCE	calculated **	CVRWQCB	CVRWQCB	CVRWQCB	.	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	.	µg/L	mg/L
Mar-05-2009	115	12.7	7.7	2,230	.	0.5	2.1
Mar-12-2009	150	12.0	7.9	2,210	.	0.7	2.1
Mar-19-2009	165	17.1	8.1	2,250	.	1.1	2.1
Mar-26-2009	115	15.1	8.2	2,420	.	0.8	2.2
Apr-02-2009	46	15.1	8.1	2,590	.	0.6	2.2
Apr-09-2009	48	15.5	8.1	2,370	.	0.8	2.3
Apr-16-2009	29	13.6	8.0	2,400	.	0.7	2.2
Apr-23-2009	12	18.4	7.8	3,580	.	0.5	3.1
Apr-30-2009	12	18.1	8.4	2,650	.	0.6	2.0
May-07-2009	13	18.7	8.1	3,200	.	NA	2.7
May-14-2009	20	19.0	8.1	2,310	.	0.5	1.9
May-21-2009	18	21.4	8.0	1,780	.	0.5	1.8
May-28-2009	22	24.5	8.1	1,470	.	NA	1.1

** Calculated flow value. Flow at Station C = flow at Station D - flow at Station B.

Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Mar-05-2009	152	12.9	7.6	2,690	8.8	2.9
Mar-12-2009	172 e	12.3	7.7	2,530	6.2	2.6
Mar-19-2009	186	17.0	8.0	2,520	5.4	2.6
Mar-26-2009	146	15.2	8.1	2,810	10.0	3.1
Apr-02-2009	67	15.4	8.0	3,300	12.3	3.7
Apr-09-2009	63	15.5	8.1	3,180	11.4	3.5
Apr-16-2009	54	13.4	8.0	3,210	10.8	4.2
Apr-23-2009	30	20.8	7.9	4,400	22.6	6.6
Apr-30-2009	39	17.3	8.3	3,970	23.4	6.6
May-07-2009	25	19.8	8.0	4,100	14.0	5.4
May-14-2009	27	18.7	8.1	3,350	10.2	4.4
May-21-2009	28	21.8	7.9	3,440	15.4	4.2
May-28-2009	44	24.4	8.0	3,100	7.6	4.6

Table 10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER		pH	Specific Conductance	Turbidity	Selenium	Boron
DATA SOURCE		USBR	USBR	USBR	USBR	USBR
UNITS		.	µS/cm	NTU	µg/L	mg/L
Mar-10-2009	.	8.1	2,870	44	12.0	2.9
Mar-18-2009	.	8.1	2,520	75	5.1	2.7
Mar-24-2009	.	8.3	2,740	69	8.6	2.9
Mar-31-2009	.	7.8	3,360	52	10.2	3.9
Apr-08-2009	.	8.3	3,630	58	9.4	4.0
Apr-14-2009	.	7.9	3,400	47	6.1	4.3
Apr-22-2009	.	8.1	4,790	26	24.2	6.4
Apr-28-2009	.	8.3	4,690	27	22.0	6.5
May-06-2009	.	8.4	3,860	34	11.9	4.7
May-12-2009	.	8.1	3,110	NA	6.8	3.3
May-19-2009	.	8.7	2,800	38	8.0	2.9
May-29-2009	.	8.4	3,380	37	6.8	4.7

Table 11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Mar-05-2009	152	12.7	6.5	1,900	<0.4	0.9
Mar-12-2009	135	12.0	7.6	2,090	0.5	1.2
Mar-19-2009	195	16.4	7.7	1,900	0.6	1.2
Mar-26-2009	174	15.1	7.8	1,920	0.6	1.2
Apr-02-2009	113	15.5	8.1	2,000	0.6	1.1
Apr-09-2009	96	15.4	7.5	1,840	0.5	0.9
Apr-16-2009	147	12.9	7.8	1,460	0.5	0.8
Apr-23-2009	84	20.1	7.6	1,830	0.4	0.9
Apr-30-2009	81	15.3	7.1	1,490	0.6	0.6
May-07-2009	105	20.2	7.6	1,530	NA	0.7
May-14-2009	56	17.8	7.6	1,660	0.4	0.8
May-21-2009	120	21.2	7.8	1,330	0.6	0.5
May-28-2009	62	23.7	7.4	1,510	NA	0.6

Table 12. Weekly water quality monitoring at Station J (Camp 13 Ditch).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Mar-04-2009	0	.	.	2,460	4.0	3.1
Mar-11-2009	0	.	.	2,690	2.5	4.1
Mar-18-2009	0	.	.	1,600	2.6	2.1
Mar-25-2009	0	.	.	1,930	2.0	2.4
Apr-01-2009	0	.	.	1,830	1.4	2.2
Apr-08-2009	0	.	.	2,050	1.5	2.5
Apr-15-2009	15	.	.	788	1.2	0.5
Apr-22-2009	30	.	.	637	0.9	0.4
Apr-29-2009	30	.	.	644	1.3	0.3
May-06-2009	30	.	.	667	0.9	0.4
May-13-2009	55	.	.	677	0.9	0.4
May-20-2009	55	.	.	549	0.9	0.3
May-27-2009	45	.	.	642	0.6	0.3

Table 13. Weekly water quality monitoring at Station K (Agatha Canal).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Mar-04-2009	0	.	.	1,520	2.1	1.5
Mar-11-2009	0	.	.	1,710	1.1	2.6
Mar-18-2009	0	.	.	1,670	0.6	2.8
Mar-25-2009	0	.	.	1,710	1.0	2.2
Apr-01-2009	0	.	.	1,910	1.2	2.4
Apr-08-2009	0	.	.	2,030	0.9	2.5
Apr-15-2009	10	.	.	2,040	1.3	2.7
Apr-22-2009	25	.	.	713	1.3	0.5
Apr-29-2009	40	.	.	816	2.8	0.6
May-06-2009	40	.	.	677	1.0	0.4
May-13-2009	60	.	.	652	1.2	0.4
May-20-2009	50	.	.	528	0.7	0.3
May-27-2009	30	.	.	1,150	1.4	1.5

Note: The peak in selenium is caused by no flow conditions at this site.

Table 14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Mar-04-2009	NA	.	.	2,260	2.2	2.5
Mar-11-2009	NA	.	.	2,830	3.3	3.6
Mar-18-2009	NA	.	.	1,760	2.3	1.9
Mar-25-2009	NA	.	.	1,550	1.6	1.3
Apr-01-2009	NA	.	.	1,700	1.6	1.6
Apr-08-2009	NA	.	.	2,110	1.0	2.2
Apr-15-2009	NA	.	.	2,110	2.0	2.1
Apr-22-2009	NA	.	.	1,640	1.8	1.7
Apr-29-2009	NA	.	.	1,630	1.5	1.5
May-06-2009	NA	.	.	1,570	1.6	1.5
May-13-2009	NA	.	.	893	1.1	0.7
May-20-2009	NA	.	.	833	1.2	0.6
May-27-2009	NA	.	.	978	1.1	0.6

Table 15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Mar-04-2009	NA	.	.	1,990	0.7	2.0
Mar-11-2009	NA	.	.	2,310	0.7	2.8
Mar-18-2009	NA	.	.	2,120	1.0	2.5
Mar-25-2009	NA	.	.	2,070	0.8	2.3
Apr-01-2009	NA	.	.	2,030	1.4	2.0
Apr-08-2009	NA	.	.	2,860	1.1	3.6
Apr-15-2009	NA	.	.	1,480	0.9	1.4
Apr-22-2009	NA	.	.	1,410	1.4	1.4
Apr-29-2009	NA	.	.	1,150	1.0	0.9
May-06-2009	NA	.	.	951	0.9	0.7
May-13-2009	NA	.	.	883	1.1	0.7
May-20-2009	NA	.	.	1,080	1.0	1.1
May-27-2009	NA	.	.	838	0.7	0.6

Table 16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	.	.	µS/cm	µg/L	mg/L
Mar-04-2009	.	.	.	1,010	2.9	0.6
Mar-11-2009	.	.	.	900	1.2	0.5
Mar-18-2009	.	.	.	800	1.3	0.5
Mar-25-2009	.	.	.	580	0.6	0.3
Apr-01-2009	.	.	.	651	0.8	0.3
Apr-08-2009	.	.	.	872	1.0	0.5
Apr-15-2009	.	.	.	891	1.2	0.5
Apr-22-2009	.	.	.	571	1.0	0.3
Apr-29-2009	.	.	.	655	1.1	0.3
May-06-2009	.	.	.	642	0.7	0.3
May-13-2009	.	.	.	656	0.9	0.4
May-20-2009	.	.	.	532	0.7	0.3
May-27-2009	.	.	.	693	0.6	0.3

Table 17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Mar-05-2009	274	13.3	7.0	1,640	<0.4	0.7
Mar-12-2009	259	12.4	7.2	1,590	0.4	0.8
Mar-19-2009	256	16.9	7.8	1,790	0.6	1.1
Mar-26-2009	227	15.0	8.1	2,020	0.7	1.1
Apr-02-2009	168	15.6	7.3	2,330	<0.4	1.0
Apr-09-2009	156	16.1	7.1	2,240	<0.4	0.9
Apr-16-2009	200	14.2	7.3	1,640	0.5	0.7
Apr-23-2009	114	21.3	7.2	2,400	0.5	0.9
Apr-30-2009	117	17.3	7.0	1,980	0.5	0.7
May-07-2009	187	21.1	7.9	1,530	NA	0.5
May-14-2009	85	19.5	7.7	2,440	NA	0.8
May-21-2009	122	22.5	7.1	1,390	0.6	0.5
May-28-2009	92	24.5	7.6	1,840	NA	0.6

Table 18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).

(Collected data intended for use with biological monitoring.)

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	SLDMWA	SLDMWA	SLDMWA
UNITS	.	.	.	µS/cm	µg/L	mg/L
Mar-03-2009	.	.	.	1,700	<0.4	1.5
Mar-10-2009	.	.	.	1,810	2.7	1.3
Mar-17-2009	.	.	.	2,030	<0.4	1.9
Mar-24-2009	.	.	.	2,410	4	1.7
Apr-07-2009	.	.	.	2,790	3.4	1.9
Apr-14-2009	.	.	.	2,280	3.2	1.5
Apr-21-2009	.	.	.	2,780	3.2	1.6
May-05-2009	.	.	.	1,890	3.1	1.2
May-12-2009	.	.	.	2,550	1.6	1.3
May-19-2009	.	.	.	957	1.9	0.7

Table 19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	usgs	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Mar-05-2009	943	13.0	7.3	1,320	1.9	0.9
Mar-12-2009	890	12.6	7.5	1,390	1.9	1.0
Mar-19-2009	810	17.2	8.0	1,630	1.6	1.2
Mar-26-2009	704	15.6	8.2	1,680	2.8	1.1
Apr-02-2009	536	16.5	7.8	1,760	1.7	1.0
Apr-09-2009	525	16.5	7.5	1,640	1.7	1.0
Apr-16-2009	542	15.0	7.4	1,370	0.9	0.8
Apr-23-2009	392	21.6	7.4	1,840	1.9	1.0
Apr-30-2009	395	17.7	7.3	1,610	2.0	0.9
May-07-2009	581	21.3	8.0	1,230	1.2	0.7
May-14-2009	505	19.5	7.9	1,020	0.7	0.5
May-21-2009	364	22.4	7.7	1,340	1.2	0.7
May-28-2009	349	24.5	7.9	1,390	1.2	0.8

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from June 2008 to May 2009. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
Jun-2008	98	95	100	93	100	98
Jul-2008	90	98	100	90	100	95
Aug-2008	98	93	95	98	100	100
Sep-2008	90	95	93	98	95	98
Oct-2008	100	98	95	100	93	98
Nov-2008	93	95	98	100	95	98
Dec-2008	100	100	100	95	100	100
Jan-2009	95	95	93	93	93	95
Feb-2009	98	95	100	98	100	95
Mar-2009	98	100	100	100	98	95
Apr-2009	100	93	95	95	73	98
May-2009	98	98	98	100	93	95

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from June 2008 to May 2009. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg	mg	mg	mg	mg	mg
Jun-2008	0.31	0.33	0.36	0.31	0.31	0.31
Jul-2008	0.32	0.34	0.30	0.26	0.29	0.25
Aug-2008	0.36	0.33	0.37	0.33	0.34	0.32
Sep-2008	0.30	0.36	0.30	0.33	0.33	0.28
Oct-2008	0.43	0.44	0.38	0.41	0.37	0.38
Nov-2008	0.32*	0.35	0.31	0.32*	0.38	0.35
Dec-2008	0.34	0.35	0.35	0.34	0.34	0.32
Jan-2009	0.35	0.37	0.36	0.33	0.30	0.36
Feb-2009	0.51	0.53	0.49	0.46	0.50	0.35
Mar-2009	0.50	0.50	0.45	0.50	0.44	0.44
Apr-2009	0.33	0.43	0.35	0.40	0.30	0.38
May-2009	0.48	0.41	0.41	0.42	0.42	0.42

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from June 2008 to May 2009. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
Jun-2008	100	100	100	90	90	90
Jul-2008	100	80	100	100	90	100
Aug-2008	100	70	70	100	100	100
Sep-2008	90	90	100	90	100	100
Oct-2008	90	100	90	90	100	100
Nov-2008	100	100	100	100	90	90
Dec-2008	100	100	100	100	100	90
Dec-2009	90	100	100	100	100	100
Feb-2009	100	80	90	70	90	80
Mar-2009	100	100	100	100	90	90
Apr-2009	100	100	80	90	90	100
May-2009	80	100	90	100	100	100

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from June 2008 to May 2009. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female
Jun-2008	23.4	21.0	29.3	23.6	26.6	26.0
Jul-2008	19.1	22.4	23.8	18.4	21.4	24.3
Aug-2008	26.5	15.3*	23.3	30.2	24.1	29.5
Sep-2008	27.3	24.9	36.6	22.3	27.3	23.8
Oct-2008	24.4	28.2	25.6	22.3	24.9	26.3
Nov-2008	57.7	43.0	50.1	41.2	46.6	30.1
Dec-2008	32.6	26.0	26.3	22.6	30.3	21.2
Jan-2009	19.7	22.4	21.0	24.1	19.0	19.3
Feb-2009	24.0	19.1	23.9	19.0	21.9	18.9
Mar-2009	43.9	34.5	41.2	35.6	37.5	27.2
Apr-2009	45.4	52.3	23.1	30.2	30.2	31.6
May-2009	22.1	31.8	36.3	29.3	29.9	23.6

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from June 2008 to May 2009. Each value is the mean of 4 replicates.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL
Jun-2008	15.9*	20.9	8.6*	22.7	20.5	20.1
Jul-2008	22.1	27.7	22.7	26.1	21.5	12.6
Aug-2008	16.8*	23.3	18.2*	19.5	20.9	20.8
Sep-2008	24.7	18.2*	10.0*	17.5*	26.5	17.1
Oct-2008	25.8	33.9	30.6	30.7	24.3	22.5
Nov-2008	15.8*	23.7	25.3	24.0	20.5	21.6
Dec-2008	17.5	23.9	21.0	20.0	20.3	18.4
Jan-2009	2.5*	27.9	20.2	25.1	3.2††††	22.6
Feb-2009	14.4*	36.5	42.9	33.8	34.9	29.4
Mar-2009	12.9*	32.9	31.3	34.0	27.4	29.9
Apr-2009	20.9*	22.2	27.0	24.3	25.0	19.3
May-2009	21.6	33.2	25.2	11.4*	21.4	22.8

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, March 2009 to May 2009.

See Table 27 for explanation of footnotes and agency abbreviations

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR
UNITS	µg/L	µg/L	µg/L	µg/L	µg/L
Mar-09-2009	49	0.5	8.7	0.4	<0.4
Mar-11-2009	45	0.5	8.1	<0.4	<0.4
Mar-13-2009	49	0.5	6.8	0.4	0.7
Apr-06-2009	39	0.5	10	<0.4	<0.4
Apr-08-2009	56	0.5	10	<0.4	<0.4
Apr-10-2009	49	0.5	11	<0.4	<0.4
May-04-2009	43	0.5	24	0.5	<0.4
May-06-2009	26	<0.4	14	<0.4	<0.4
May-08-2009	29	0.5	7.1	<0.4	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, March 2009 to May 2009.

See Table 27 for explanation of footnotes and agency abbreviations

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L
Mar-09-2009	42	98	91	53	11
Mar-11-2009	30	133	78	40	11
Mar-13-2009	56	90	117	53	26
Apr-06-2009	44	70	95	58	18
Apr-08-2009	34	132	92	47	11
Apr-10-2009	49	108	131	81	11
May-04-2009	60	108	79	31	11
May-06-2009	55	51	74	68	8
May-08-2009	105	149	89	109	13

Table 27. Explanations of footnotes and agency abbreviations.

Footnote	Explanation
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
SLDMWA	San Luis & Delta-Mendota Water Authority
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
e	Estimated value
.	Not applicable
<	Less than MDL. If needed in calculation, use 1/2 MDL
NA	Not analyzed - operator error, data will not be available in the future
NP	Not Provided. Data may be available in the future.
NT	Not tested
P	Pending, data not available at this time but will be available in the future
*	Significantly reduced from Delta Mendota Canal (p<0.05)
**	Sample re-analyzed and result confirmed.
L	Result may be biased low. Sample was not preserved in the field
†	DMC water failed to meet the survival (>80%) acceptability criteria.
††	Data from records of the Grassland Water District. Data is not subjected to the criteria documented in the Compliance Monitoring Program for the Use and Operation of the Grassland Bypass Project (1996) nor the Quality Assurance Project Plan for the GBP.
†††	DMC water failed to meet the reproduction (>10 neonates/adult) acceptability criteria.
††††	DMC water failed to meet minimum growth (10 ⁶ cell/mL) acceptability criteria.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
‡‡	Fungal growth observed on test organisms.
‡‡‡	Failed cell density requirement of 1E6 cells.
#	New testing laboratory with reporting limit of 0.4 µg/L as of June 1998.
❖	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated