GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

March 2009

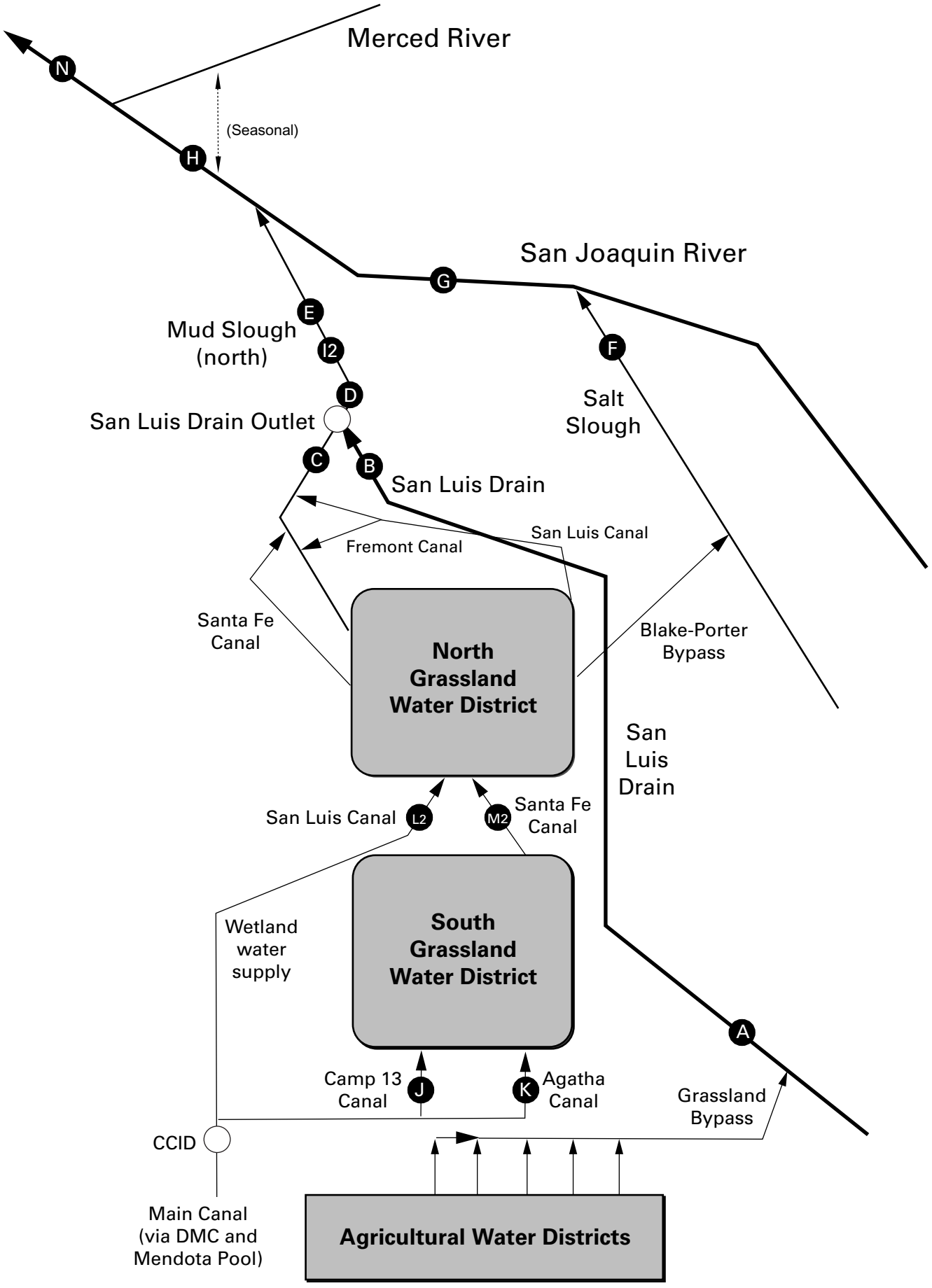
July 30, 2009

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


Merced River
N
(Seasonal)
H
San Joaquin River
G
E
Mud Slough
(north)
I2
F
D
San Luis Drain Outlet
Salt
Slough
C
B
San Luis Drain
San Luis Canal
Fremont Canal
Santa Fe
Canal
North
Grassland
Water District
Blake-Porter
Bypass
San
Luis
Drain
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L2
M2
Santa Fe
Canal
Wetland
water
supply
South
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Water District
A
Camp 13
Canal
J
K
Agatha
Canal
Grassland
Bypass
CCID
Main Canal
(via DMC and
Mendota Pool)
Agricultural Water Districts

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Mar-01-2009	40	3,460
Mar-02-2009	42	3,380
Mar-03-2009	39	3,450
Mar-04-2009	35	3,800
Mar-05-2009	33	4,100
Mar-06-2009	32	3,960
Mar-07-2009	31	3,910
Mar-08-2009	31	4,050
Mar-09-2009	31	4,110
Mar-10-2009	25	4,140
Mar-11-2009	20	4,250
Mar-12-2009	20	4,170
Mar-13-2009	21	4,380
Mar-14-2009	20	4,540
Mar-15-2009	21	4,340
Mar-16-2009	21	4,280
Mar-17-2009	19	4,470
Mar-18-2009	20	4,050
Mar-19-2009	30	4,040
Mar-20-2009	27	3,730
Mar-21-2009	24	3,800
Mar-22-2009	28	3,440
Mar-23-2009	23	3,690
Mar-24-2009	32	3,780
Mar-25-2009	31	3,830
Mar-26-2009	27	4,020
Mar-27-2009	23	3,810
Mar-28-2009	27	3,730
Mar-29-2009	24	3,920
Mar-30-2009	24	4,130
Mar-31-2009	21	4,310
Mean	27	3,970

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), March 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
Mar-01-2009	44	15.3	6.1	3,800	36.8	8.7
Mar-02-2009	43	14.8	6.1	3,920	38.2	8.9
Mar-03-2009	43	14.4	5.9	3,750	37.4	8.8
Mar-04-2009	41	14.3	5.7	3,650	34.5	7.6
Mar-05-2009	37	14.5	5.9	3,700	35.2	7.1
Mar-06-2009	35	14.6	5.8	3,590	34.7	6.6
Mar-07-2009	34	14.8	6.6	3,820	39.6	7.3
Mar-08-2009	34	15.3	6.8	4,130	46.4	8.5
Mar-09-2009	33	14.9	7.1	4,390	51.6	9.1
Mar-10-2009	32	13.9	7.0	4,240	47.0	8.2
Mar-11-2009	28	14.0	6.9	4,270	48.0	7.1
Mar-12-2009	22	14.6	7.3	4,360	50.5	5.9
Mar-13-2009	21	15.1	7.0	4,390	52.1	6.0
Mar-14-2009	21	15.9	7.4	4,350	52.2	6.0
Mar-15-2009	21	16.4	6.9	4,360	48.2	5.5
Mar-16-2009	22	16.8	6.9	4,400	42.8	5.1
Mar-17-2009	22	17.7	7.0	4,420	42.0	5.0
Mar-18-2009	21	17.9	6.9	4,450	43.3	4.8
Mar-19-2009	21	18.1	7.9	4,510	47.3	5.4
Mar-20-2009	30	19.1	7.0	4,730	43.6	7.1
Mar-21-2009	28	19.5	7.0	4,610	39.6	6.0
Mar-22-2009	24	17.2	6.7	4,710	35.2	4.6
Mar-23-2009	27	14.7	7.4	4,550	57.6	8.5
Mar-24-2009	25	14.5	6.8	4,290	56.2	7.6
Mar-25-2009	32	15.9	6.6	4,240	37.2	6.4
Mar-26-2009	31	16.7	6.1	4,170	47.2	7.9
Mar-27-2009	29	16.9	6.4	4,040	41.0	6.4
Mar-28-2009	24	17.8	6.2	4,400	51.8	6.6
Mar-29-2009	24	18.3	6.4	4,090	56.1	7.2
Mar-30-2009	24	14.5	7.6	4,400	58.9	7.7
Mar-31-2009	24	15.0	7.2	4,530	39.9	5.2
Mean	29	15.9	6.7	4,230	44.9	6.9
Total Acre-feet	1,780					
Total (lbs)						213

Load Limitation for March 2009 (lbs)	274

♦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.

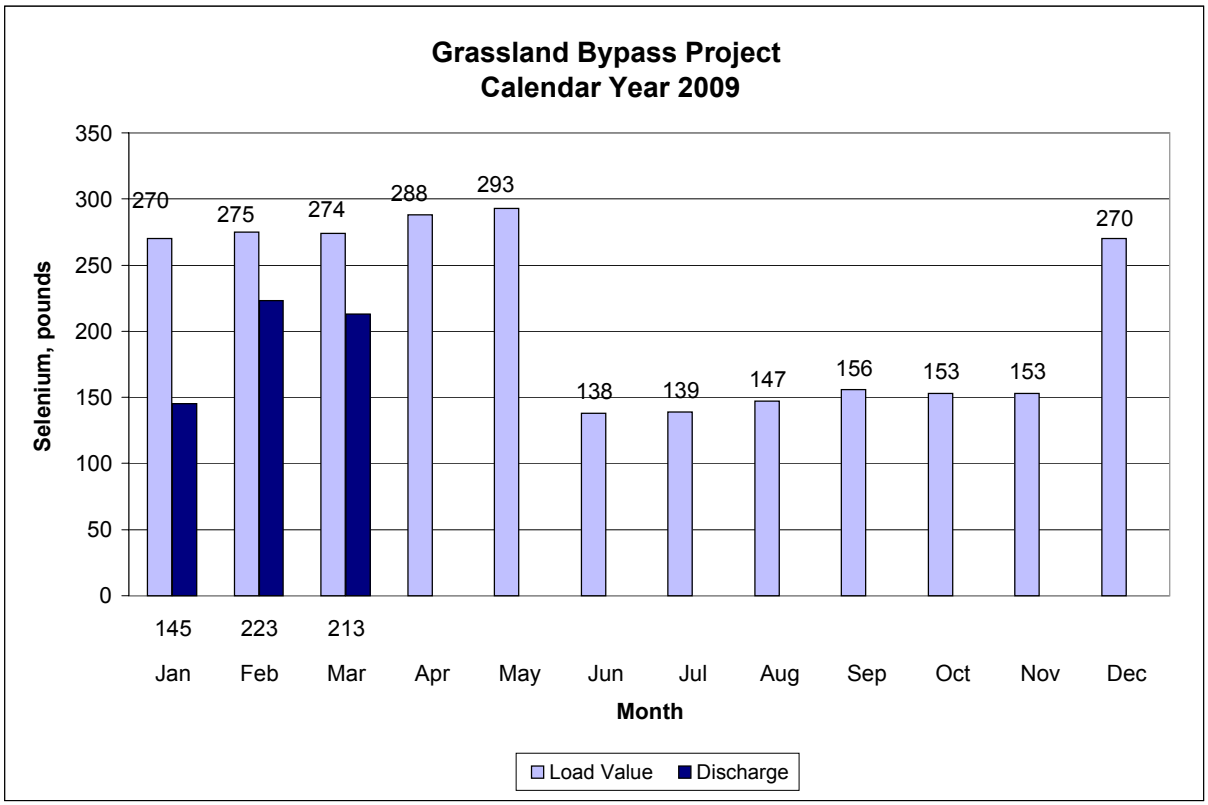

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), March 2009.

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
Mar-01-2009	140	14.5	2,750
Mar-02-2009	135	14.3	2,820
Mar-03-2009	143	13.9	2,710
Mar-04-2009	155	14.1	2,570
Mar-05-2009	152	14.2	2,600
Mar-06-2009	157	14.3	2,510
Mar-07-2009	177	14.3	2,480
Mar-08-2009	165	14.8	2,550
Mar-09-2009	165	14.2	2,620
Mar-10-2009	165	13.2	2,640
Mar-11-2009	170	13.4	2,530
Mar-12-2009	172	14.2	2,470
Mar-13-2009	170	15.2	2,490
Mar-14-2009	187	16.0	2,370
Mar-15-2009	191	16.0	2,460
Mar-16-2009	199	16.7	2,480
Mar-17-2009	173	17.5	2,570
Mar-18-2009	193	17.6	2,470
Mar-19-2009	186	18.5	2,510
Mar-20-2009	155	19.4	2,760
Mar-21-2009	161	19.3	2,660
Mar-22-2009	157	16.2	2,690
Mar-23-2009	141	13.7	2,860
Mar-24-2009	143	13.9	2,690
Mar-25-2009	152	15.5	2,710
Mar-26-2009	146	16.6	2,720
Mar-27-2009	146	17.1	2,620
Mar-28-2009	132	18.8	2,740
Mar-29-2009	124	18.4	2,720
Mar-30-2009	108	13.7	2,870
Mar-31-2009	93	15.0	3,030
Mean	157	15.6	2,630

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), March 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
Mar-01-2009	165	13.9	1,700
Mar-02-2009	167	14.0	1,680
Mar-03-2009	160	13.8	1,730
Mar-04-2009	147	13.9	1,830
Mar-05-2009	152	13.8	1,810
Mar-06-2009	164	14.0	1,760
Mar-07-2009	163	14.0	1,780
Mar-08-2009	148	14.3	1,870
Mar-09-2009	149	13.8	1,830
Mar-10-2009	153	12.8	1,830
Mar-11-2009	143	12.9	1,900
Mar-12-2009	135	13.7	1,950
Mar-13-2009	129	14.8	1,960
Mar-14-2009	144	15.4	1,950
Mar-15-2009	158	15.3	1,930
Mar-16-2009	168	15.8	1,910
Mar-17-2009	173	16.6	1,900
Mar-18-2009	179	17.0	1,940
Mar-19-2009	195	17.7	1,920
Mar-20-2009	205	18.3	1,950
Mar-21-2009	206	18.2	1,960
Mar-22-2009	199	16.1	1,900
Mar-23-2009	189	13.9	1,860
Mar-24-2009	183	13.8	1,880
Mar-25-2009	173	15.0	1,940
Mar-26-2009	174	16.1	1,930
Mar-27-2009	174	17.0	1,930
Mar-28-2009	162	18.2	1,990
Mar-29-2009	143	17.9	2,090
Mar-30-2009	130	14.4	2,050
Mar-31-2009	122	15.4	2,050
Mean	163	15.2	1,890

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), March 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
Mar-01-2009	788	14.2	1,440	2.5
Mar-02-2009	775	14.3	1,460	2.3
Mar-03-2009	777	14.1	1,460	2.4
Mar-04-2009	805	13.9	1,430	2.1
Mar-05-2009	943	13.6	1,190	1.6
Mar-06-2009	1,140	13.6	1,070	1.3
Mar-07-2009	1,150	13.5	930	1.4
Mar-08-2009	1,130	14.1	1,020	1.4
Mar-09-2009	1,060	14.2	1,180	1.6
Mar-10-2009	986	13.4	1,270	1.9
Mar-11-2009	928	13.3	1,360	1.9
Mar-12-2009	890	13.8	1,380	1.7
Mar-13-2009	861	14.7	1,490	1.7
Mar-14-2009	837	15.3	1,530	1.8
Mar-15-2009	834	15.6	1,570	1.8
Mar-16-2009	841	16.7	1,580	1.7
Mar-17-2009	846	17.3	1,630	1.6
Mar-18-2009	830	17.4	1,310	1.7
Mar-19-2009	810	18.1	1,620	1.6
Mar-20-2009	805	18.8	1,660	1.8
Mar-21-2009	789	18.8	1,690	2.2
Mar-22-2009	812	17.4	1,600	1.8
Mar-23-2009	800	15.0	1,620	2.0
Mar-24-2009	746 e	14.6	1,710	2.3
Mar-25-2009	710	15.7	1,690	2.4
Mar-26-2009	704	16.8	1,700	2.8
Mar-27-2009	691	17.5	1,800	2.0
Mar-28-2009	682	18.6	1,790	2.2
Mar-29-2009	690	18.6	1,760	1.8
Mar-30-2009	670	14.9	1,780	2.2
Mar-31-2009	611	15.9	1,850	2.4
Mean	837	15.6	1,500	1.9

PRELIMINARY RESULTS

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	.	.	.
Jan-07-2009	12	.	.	4,500	24	.	.	.
Jan-14-2009	9	.	.	4,670	19	.	.	.
Jan-21-2009	10	.	.	4,890	15	.	.	.
Jan-28-2009	30	.	.	3,950	198	.	.	.
Feb-04-2009	23	.	.	4,850	188	.	.	.
Feb-11-2009	23	.	.	4,640	119	.	.	.
Feb-18-2009	30	.	.	4,020	169	.	.	.
Feb-25-2009	36	.	.	4,030	220	.	.	.
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	.	.	.

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
Jan-05-2009	12	.	.	4,550	.	61.2	.	7.7
Jan-13-2009	12	.	.	4,660	.	61.5	.	7.2
Jan-20-2009	8	.	.	4,700	.	48.6	.	6.9
Jan-27-2009	27	.	.	4,720	.	56.1	.	8.6
Feb-03-2009	23	.	.	4,540	.	57.1	.	8.1
Feb-10-2009	27	.	.	4,310	.	58.6	.	7.4
Feb-17-2009	28	.	.	4,570	.	55.5	.	7.3
Feb-24-2009	34	.	.	4,010	.	44.1	.	6.5
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

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
Jan-08-2009	16	7.3	7.1	3,940	33	41.6	5.7
Jan-15-2009	14	9.1	6.8	4,100	28	53.0	6.0
Jan-22-2009	14	11.4	7.3	3,750	23	33.1	5.2
Jan-29-2009	34	9.5	6.8	4,030	42	45.2	6.4
Feb-05-2009	27	12.8	7.7	4,540	36	54.2	7.4
Feb-10-2009	34	10.7	7.1	4,150	26	52.2	6.9
Feb-19-2009	34	10.3	7.2	4,330	34	47.8	7.4
Feb-26-2009	39	14.8	7.1	3,830	26	41.2	5.7
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

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
Jan-08-2009	51	7.8	7.8	2,400	.	<0.4	1.6
Jan-15-2009	39	8.8	7.6	1,510	.	<0.4	1.9
Jan-22-2009	50	11.8	7.7	2,450	.	<0.4	1.7
Jan-29-2009	94	8.5	7.5	2,160	.	<0.4	1.7
Feb-05-2009	84	12.8	7.8	2,060	.	<0.4	1.7
Feb-10-2009	116	10.0	7.8	2,110	.	<0.4	1.7
Feb-19-2009	114	10.6	7.7	2,180	.	<0.4	1.9
Feb-26-2009	81	14.6	7.7	2,350	.	0.4	2.0
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

++ 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
Jan-08-2009	67	7.8	7.8	2,920	11.6	2.7
Jan-15-2009	53	9.0	7.4	3,110	11.5	2.9
Jan-22-2009	64	11.7	7.6	2,820	7.0	2.5
Jan-29-2009	128	8.9	7.4	2,620	10.8	2.8
Feb-05-2009	111	12.7	7.8	2,750	13.2	3.1
Feb-10-2009	e150	10.2	7.6	2,640	11.6	2.8
Feb-19-2009	148	10.6	7.6	2,750	11.0	3.1
Feb-26-2009	120	15.1	7.6	2,840	11.0	3.1
Mar-05-2009	152	12.9	7.6	2,690	8.8	2.9
Mar-12-2009	172	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

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
Jan-13-2009	.	8.0	3,010	18	13.6	3.3
Jan-27-2009	.	7.9	2,530	15	9.0	2.7
Feb-03-2009	.	8.1	2,590	31	7.1	2.6
Feb-10-2009	.	7.8	2,730	22	11.2	2.9
Feb-19-2009	.	7.5	2,830	26	10.9	3.0
Feb-25-2009	.	7.9	3,070	41	9.7	3.1
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

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
Jan-08-2009	27	8.1	7.8	2,440	<0.4	1.1
Jan-15-2009	33	8.7	6.8	2,770	<0.4	1.4
Jan-22-2009	39	11.8	7.3	2,090	1.0	1.0
Jan-29-2009	58	8.6	6.2	2,040	0.4	1.4
Feb-05-2009	89	12.0	7.7	1,900	<0.4	1.2
Feb-10-2009	169	9.8	7.8	1,530	0.6	0.8
Feb-19-2009	151	10.3	7.6	1,770	0.5	1.1
Feb-26-2009	172	14.3	7.6	1,960	0.8	1.1
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

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
Jan-07-2009	5	.	.	930	0.8	0.5
Jan-14-2009	0	.	.	900	2.5	0.5
Jan-21-2009	15	.	.	930	2.1	0.5
Jan-28-2009	0	.	.	1,030	1.1	0.7
Feb-04-2009	20	.	.	690	0.9	0.3
Feb-11-2009	5	.	.	960	2.0	0.5
Feb-18-2009	5	.	.	890	0.9	0.5
Feb-25-2009	5	.	.	980	2.6	0.5
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

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
Jan-07-2009	20	.	.	840	1.0	0.5
Jan-14-2009	0	.	.	940	1.4	0.6
Jan-21-2009	50	.	.	930	2.0	0.5
Jan-28-2009	0	.	.	1,100	1.5	0.9
Feb-04-2009	0	.	.	1,550	1.4	1.8
Feb-11-2009	35	.	.	970	1.5	0.5
Feb-18-2009	25	.	.	900	0.8	0.5
Feb-25-2009	25	.	.	1,020	2.6	0.7
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

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
Jan-07-2009	NA	.	.	2,090	1.2	1.5
Jan-14-2009	NA	.	.	1,160	1.0	0.8
Jan-21-2009	NA	.	.	1,810	1.5	1.6
Jan-28-2009	NA	.	.	1,940	0.6	2.3
Feb-04-2009	NA	.	.	1,560	1.0	1.5
Feb-11-2009	NA	.	.	1,900	1.3	1.8
Feb-18-2009	NA	.	.	950	0.6	0.8
Feb-25-2009	NA	.	.	1,990	1.7	2.2
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

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
Jan-07-2009	NA	.	.	1,500	<0.4	2.2
Jan-14-2009	NA	.	.	1,910	0.4	1.8
Jan-21-2009	NA	.	.	1,580	1.3	1.3
Jan-28-2009	NA	.	.	1,920	1.2	2.3
Feb-04-2009	NA	.	.	1,600	1.0	1.5
Feb-11-2009	NA	.	.	1,840	1.4	1.8
Feb-18-2009	NA	.	.	1,860	0.8	1.9
Feb-25-2009	NA	.	.	2,150	1.7	2.6
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

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
Jan-07-2009	.	.	.	630	0.5	0.2
Jan-14-2009	.	.	.	900	2.4	0.5
Jan-21-2009	.	.	.	930	1.5	0.4
Jan-28-2009	.	.	.	830	0.9	0.3
Feb-04-2009	.	.	.	840	2.5	0.5
Feb-11-2009	.	.	.	810	0.8	0.3
Feb-18-2009	.	.	.	900	1.0	0.4
Feb-25-2009	.	.	.	980	3.2	0.5
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

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
Jan-08-2009	53	7.4	7.8	2,940	<0.4	1.1
Jan-15-2009	61	8.2	6.9	2,910	<0.4	1.2
Jan-22-2009	64	11.4	8.0	2,610	0.4	0.9
Jan-29-2009	166	8.9	7.8	1,370	<0.4	0.7
Feb-05-2009	139	12.1	7.0	1,800	0.6	1.0
Feb-10-2009	205	9.8	7.7	1,490	0.8	0.7
Feb-19-2009	427	10.1	7.9	910	<0.4	0.4
Feb-26-2009	387	14.3	7.3	1,160	0.6	0.6
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

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
Jan-07-2009	.	.	.	1,460	<0.4	1.2
Jan-13-2009	.	.	.	3,230	4.5	2.0
Feb-03-2009	.	.	.	2,360	2.6	1.7
Feb-10-2009	.	.	.	1,620	<0.4	1.5
Feb-17-2009	.	.	.	1,570	<0.4	1.3
Feb-25-2009	.	.	.	1,610	<0.4	1.4
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	3.9	1.7

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
Jan-08-2009	441	8.1	8.0	1,460	1.5	0.8
Jan-15-2009	408	9.0	8.0	1,480	1.9	0.9
Jan-22-2009	412	11.0	8.0	1,460	1.6	0.8
Jan-29-2009	727	9.1	7.7	1,220	2.2	0.9
Feb-05-2009	579	12.2	7.5	1,460	2.0	1.0
Feb-10-2009	682	10.5	7.7	1,480	3.4	1.1
Feb-19-2009	1,080	10.1	7.8	910	1.5	0.7
Feb-26-2009	867	14.6	7.7	1,250	1.9	0.9
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

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from April 2008 to March 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	%	%	%	%	%	%
Apr-2008	98	100	100	100	95	98
May-2008	98	95	98	95	98	100
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

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from April 2008 to March 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
Apr-2008	0.31	0.39	0.31	0.24*	0.30	0.27
May-2008	0.31	0.31	0.29*	0.31	0.34	0.32
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

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from April 2008 to March 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	%	%	%	%	%	%
Apr-2008	100	100	80	100	90	90
May-2008	80	70	80	100	90	90
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

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from April 2008 to March 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
Apr-2008	31.4	31.1	27.5	24.8	33.6	25.8
May-2008	22.2	19.6	23.5	33.1	25.7	28.8
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

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from April 2008 to March 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
Apr-2008	13.3*	16.7	22.4	11.9*	17.2	18.3
May-2008	17.1	30.5	22.3	14.2*	21.6	19.8
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

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, January 2009 to March 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
Jan-12-2009	44	<0.4	13	<0.4	<0.4
Jan-14-2009	48	<0.4	11	<0.4	<0.4
Jan-16-2009	44	<0.4	10	0.8	<0.4
Feb-09-2009	53	<0.4	12	0.7	1.0**
Feb-11-2009	42	<0.4	11	0.5	1.0**
Feb-13-2009	47	<0.4	12	<0.4	0.7
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

Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, January 2009 to March 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
Jan-12-2009	19	25	23	9	2
Jan-14-2009	18	19	27	18	2
Jan-16-2009	43	11	30	50	5
Feb-09-2009	44	35	41	101	3
Feb-11-2009	32	23	24	46	3
Feb-13-2009	42	31	40	59	12
Mar-09-2009	42	98	91	53	11
Mar-11-2009	30	133	78	40	11
Mar-13-2009	56	90	117	53	26

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 (10^6cell/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