GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

June 2009

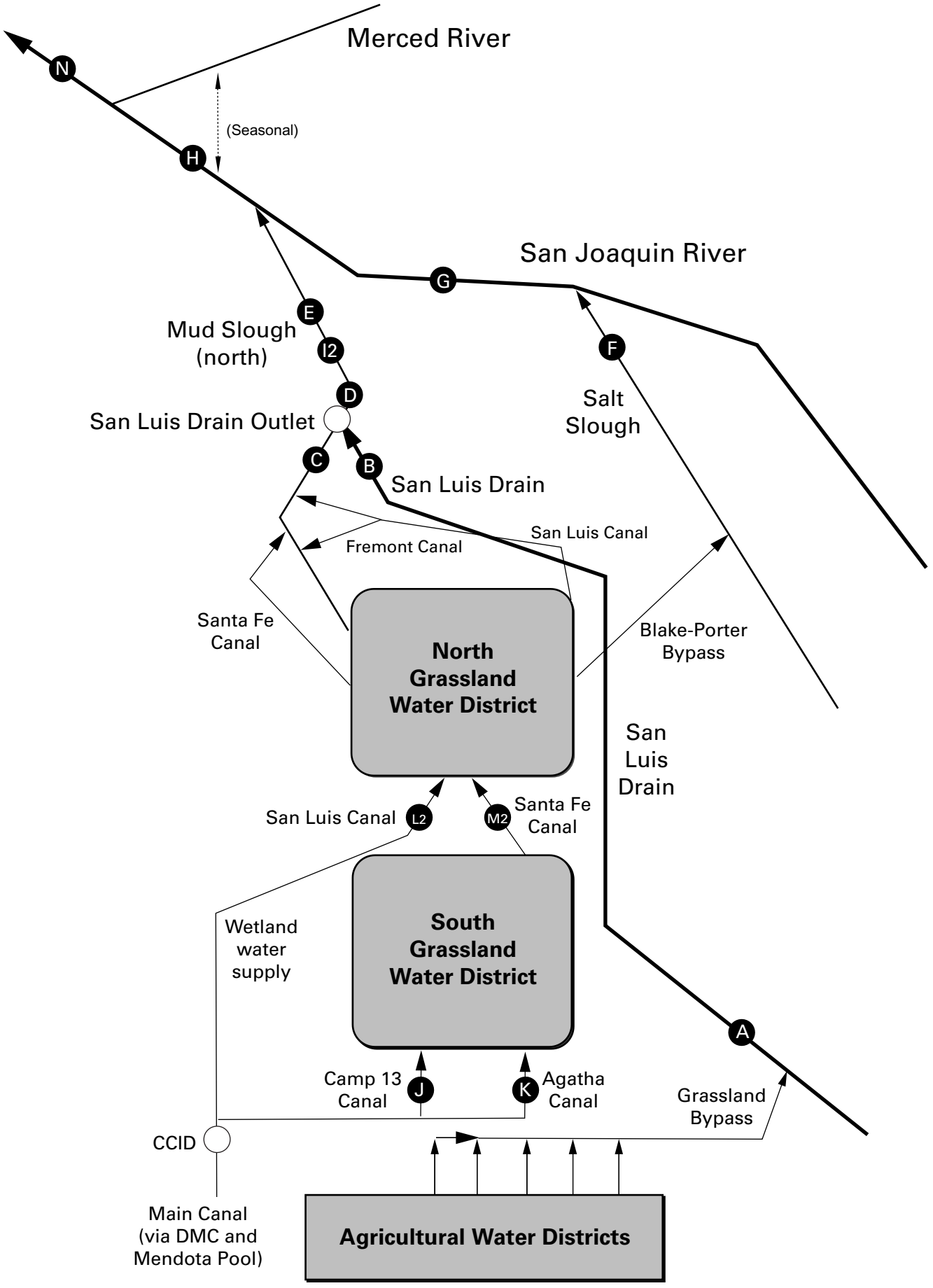
February 2, 2010

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

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MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Jun-01-2009	28	3,400
Jun-02-2009	25	3,490
Jun-03-2009	18	3,540
Jun-04-2009	23	4,210
Jun-05-2009	24	4,120
Jun-06-2009	17	4,110
Jun-07-2009	17	4,680
Jun-08-2009	17	4,350
Jun-09-2009	17	4,380
Jun-10-2009	11	4,450
Jun-11-2009	11	4,240
Jun-12-2009	12	4,160
Jun-13-2009	16	4,040
Jun-14-2009	18	4,120
Jun-15-2009	15	4,260
Jun-16-2009	13	4,250
Jun-17-2009	12	4,240
Jun-18-2009	13	4,300
Jun-19-2009	14	3,910
Jun-20-2009	15	3,970
Jun-21-2009	15	3,500
Jun-22-2009	16	3,420
Jun-23-2009	16	3,370
Jun-24-2009	17	3,410
Jun-25-2009	17	3,650
Jun-26-2009	17	3,700
Jun-27-2009	19	3,590
Jun-28-2009	23	3,610
Jun-29-2009	19	3,210
Jun-30-2009	19	3,180
.	.	.
Mean	17	3,900

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), June 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
Jun-01-2009	26	24.9	7.9	4,880	41.2	5.7
Jun-02-2009	26	24.2	7.5	4,620	46.4	6.6
Jun-03-2009	24	24.4	7.1	4,490	46.4	6.0
Jun-04-2009	16	23.1	6.6	4,310	44.8	4.0
Jun-05-2009	21	23.1	6.5	4,110	31.4	3.5
Jun-06-2009	22	22.2	5.7	3,930	28.0	3.3
Jun-07-2009	16	22.5	6.3	3,540	28.6	2.4
Jun-08-2009	14	23.4	5.8	3,920	26.4	2.1
Jun-09-2009	15	23.5	7.5	3,920	32.0	2.6
Jun-10-2009	15	23.8	8.8	4,810	39.0	3.2
Jun-11-2009	11	23.5	8.1	4,850	37.2	2.1
Jun-12-2009	9	23.9	7.3	4,590	42.7	2.0
Jun-13-2009	10	23.9	7.3	4,610	37.0	2.0
Jun-14-2009	13	23.6	8.8	4,930	43.0	3.0
Jun-15-2009	16	23.5	8.7	5,400	37.5	3.2
Jun-16-2009	13	23.1	8.1	5,040	36.5	2.5
Jun-17-2009	11	23.9	8.4	5,070	35.8	2.2
Jun-18-2009	10	24.8	7.9	5,250	33.6	1.7
Jun-19-2009	10	25.7	7.3	5,070	26.7	1.4
Jun-20-2009	11	24.4	7.4	4,830	25.9	1.5
Jun-21-2009	12	22.4	7.8	4,720	25.2	1.6
Jun-22-2009	13	23.5	7.9	4,750	32.5	2.2
Jun-23-2009	14	23.6	8.6	4,680	26.6	2.0
Jun-24-2009	13	25.3	8.3	4,970	26.2	1.9
Jun-25-2009	14	25.5	8.3	4,990	27.9	2.1
Jun-26-2009	14	25.7	9.0	4,800	24.4	1.9
Jun-27-2009	14	26.2	9.2	4,620	24.2	1.9
Jun-28-2009	17	27.5	7.2	4,340	19.3	1.7
Jun-29-2009	21	27.9	7.2	4,020	20.6	2.3
Jun-30-2009	17	27.1	7.5	3,950	20.2	1.8
.	.	.	.	.	.	.
Mean	15	24.3	7.7	4,600	32.2	2.7
Total Acre-feet	**910**					
Total (lbs)						**80**

Load Limitation for June 2009 (lbs)	**169**

♦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.

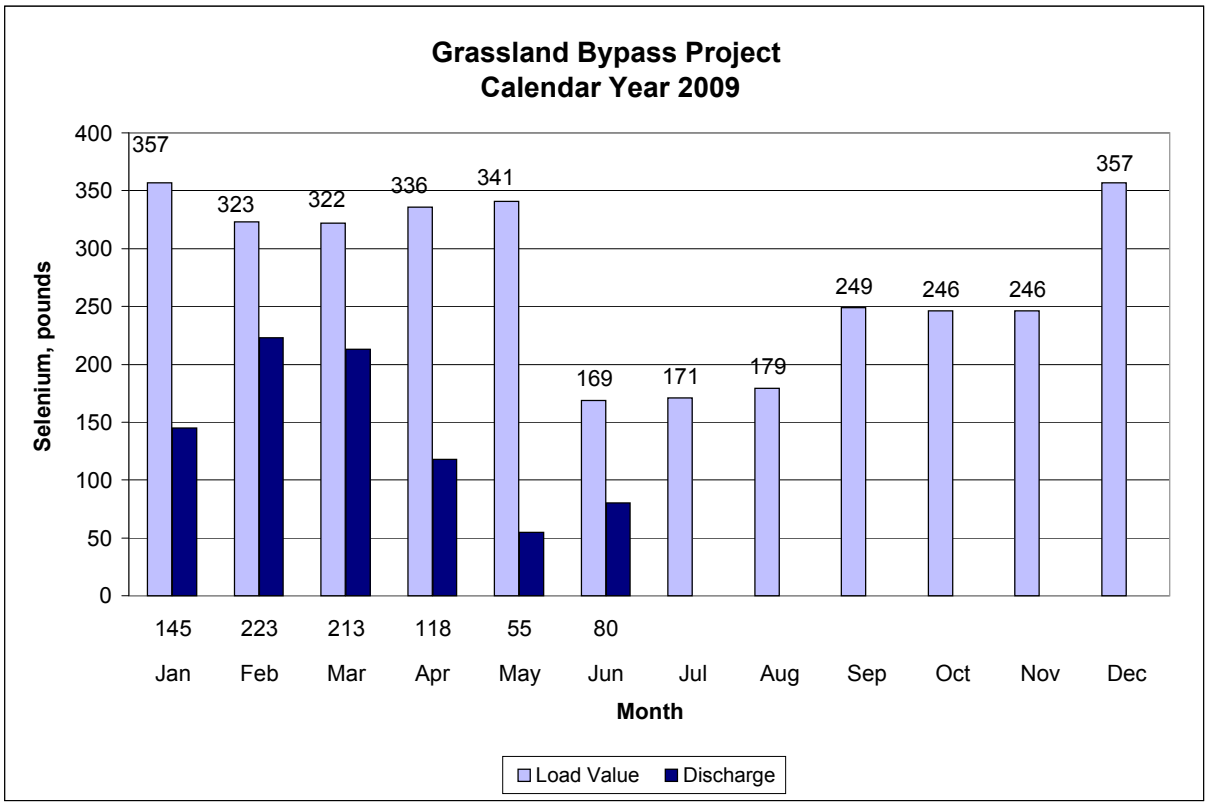

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), June 2009.

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
Jun-01-2009	43	24.5	3,390
Jun-02-2009	41	24.2	3,550
Jun-03-2009	45	24.2	3,150
Jun-04-2009	38	23.8	2,960
Jun-05-2009	40	23.0	3,080
Jun-06-2009	34	22.7	3,370
Jun-07-2009	26	23.1	3,300
Jun-08-2009	23	23.7	3,730
Jun-09-2009	24	23.7	3,750
Jun-10-2009	30	24.1	3,450
Jun-11-2009	25	24.1	3,510
Jun-12-2009	26	23.9	3,110
Jun-13-2009	23	24.1	3,400
Jun-14-2009	26	23.9	3,720
Jun-15-2009	27	23.1	4,320
Jun-16-2009	29	23.8	3,610
Jun-17-2009	24	24.5	3,690
Jun-18-2009	18	25.0	4,110
Jun-19-2009	26	25.8	3,290
Jun-20-2009	27	24.2	3,050
Jun-21-2009	27	22.7	3,210
Jun-22-2009	29	23.3	3,250
Jun-23-2009	28	24.5	3,430
Jun-24-2009	28	25.6	3,470
Jun-25-2009	27	25.8	3,500
Jun-26-2009	28	25.8	3,420
Jun-27-2009	30	26.4	3,120
Jun-28-2009	33	27.6	2,890
Jun-29-2009	34	28.0	3,070
Jun-30-2009	e25	27.1	3,340
.	.	.	.
Mean	30	24.5	3,410

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), June 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
Jun-01-2009	92	23.8	1,320
Jun-02-2009	85	23.3	1,300
Jun-03-2009	83	23.0	1,320
Jun-04-2009	80	22.8	1,350
Jun-05-2009	87	22.1	1,360
Jun-06-2009	86	21.8	1,380
Jun-07-2009	92	22.7	1,410
Jun-08-2009	106	23.2	1,400
Jun-09-2009	112	22.7	1,330
Jun-10-2009	102	22.5	1,350
Jun-11-2009	105	23.0	1,340
Jun-12-2009	92	23.0	1,400
Jun-13-2009	88	22.8	1,450
Jun-14-2009	101	22.6	1,400
Jun-15-2009	109	21.9	1,310
Jun-16-2009	108	22.5	1,280
Jun-17-2009	92	24.0	1,320
Jun-18-2009	107	24.5	1,210
Jun-19-2009	118	25.5	1,180
Jun-20-2009	114	23.6	1,190
Jun-21-2009	114	21.3	1,210
Jun-22-2009	115	22.2	1,210
Jun-23-2009	129	23.8	1,170
Jun-24-2009	131	25.2	1,170
Jun-25-2009	100	25.3	1,310
Jun-26-2009	91	25.0	1,380
Jun-27-2009	108	25.4	1,260
Jun-28-2009	87	27.1	1,320
Jun-29-2009	95	27.6	1,240
Jun-30-2009	102	26.6	1,200
.	.	.	.
Mean	101	23.7	1,300

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), June 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
Jun-01-2009	365	24.0	NA	NA
Jun-02-2009	380	23.7	NA	NA
Jun-03-2009	383	23.8	NA	NA
Jun-04-2009	371	24.2	NA	NA
Jun-05-2009	395	22.8	1,220	2.0
Jun-06-2009	398	22.3	1,230	2.1
Jun-07-2009	428	23.2	1,120	1.5
Jun-08-2009	424	23.8	1,140	1.3
Jun-09-2009	445	23.7	1,120	1.0
Jun-10-2009	427	23.7	1,040	1.0
Jun-11-2009	416	23.8	1,070	1.3
Jun-12-2009	399	23.7	1,120	1.3
Jun-13-2009	377	23.9	1,180	1.2
Jun-14-2009	370	23.6	1,170	1.1
Jun-15-2009	381	23.3	1,160	1.2
Jun-16-2009	400	23.5	1,150	1.5
Jun-17-2009	387	24.5	1,160	1.5
Jun-18-2009	339	25.4	1,240	1.3
Jun-19-2009	334	26.0	1,280	1.3
Jun-20-2009	336	25.0	1,310	1.1
Jun-21-2009	328	23.6	1,290	NA
Jun-22-2009	351	23.7	1,190	1.3
Jun-23-2009	335	24.8	1,250	1.2
Jun-24-2009	321	26.4	1,230	1.3
Jun-25-2009	337	26.4	1,390	1.3
Jun-26-2009	306	25.8	1,310	1.6
Jun-27-2009	303	26.4	1,450	1.5
Jun-28-2009	301	27.9	1,450	1.4
Jun-29-2009	303	28.4	1,310	1.3
Jun-30-2009	270	27.5	1,400	1.5
.	.	.	.	.
Mean	364	24.6	1,230	1.4

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	.	.	.
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	.	.	.
Jun-03-2009	18	.	.	4,180	91	.	.	.
Jun-10-2009	11	.	.	4,610	47	.	.	.
Jun-17-2009	12	.	.	4,540	30	.	.	.
Jun-24-2009	17			4,070	51			
Jun-30-2009	19	.	.	3,870	103	.	.	.

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
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
Jun-02-2009	25	.	.	3,740	.	37.8	.	6.5
Jun-09-2009	17	.	.	4,690	.	40.6	.	8.8
Jun-16-2009	13	.	.	4,670	.	29.2	.	7.9
Jun-23-2009	16	.	.	4,080	.	24.9	.	6.4
Jun-30-2009	19	.	.	3,670	.	27.7	.	6.7

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
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
Jun-04-2009	16	21.9	8.3	4,170	86	46.0	6.6
Jun-11-2009	11	22.6	7.7	4,580	52	38.2	8.2
Jun-18-2009	10	23.6	7.4	4,860	37	34.4	7.7
Jun-25-2009	14	26.7	8.8	4,810	35	28.2	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
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
Jun-04-2009	22	21.2	8.1	1,910	.	0.8	1.5
Jun-11-2009	14	22.3	7.9	1,120	.	0.7	1.8
Jun-18-2009	8	22.2	8.0	2,550	.	0.5	1.8
Jun-25-2009	13	24.8	8.0	1,100	.	0.6	1.6

++ 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
Apr-02-2009	67	15.4	8.0	3,300	12.3	3.7
Apr-09-2009	63 e	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
Jun-04-2009	38	21.4	8.1	2,890	19.7	3.8
Jun-11-2009	25	22.2	7.7	3,510	18.1	5.1
Jun-18-2009	18	22.4	7.9	4,140	18.2	5.4
Jun-25-2009	27	24.0	8.0	3,440	12.2	4.9

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
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
Jun-03-2009	.	8.4	3,390	45	23.8	4.6
Jun-09-2009	.	8.8	4,200	35	18.8	5.5
Jun-15-2009	.	8.4	3,740	23	14.4	5.1
Jun-23-2009	.	8.4	3,580	29	12.7	5.0
Jun-29-2009	.	9.0	3,130	23	11.6	4.6

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
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
Jun-04-2009	80	20.2	7.6	1,350	<0.4	0.5
Jun-11-2009	105	20.2	7.5	1,340	0.5	0.5
Jun-18-2009	107	21.8	7.9	1,250	0.6	0.5
Jun-25-2009	100	22.8	7.8	1,300	P	0.5

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
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
Jun-03-2009	25	.	.	691	1.0	0.3
Jun-10-2009	55	.	.	656	1.2	0.4
Jun-17-2009	20	.	.	675	0.9	0.4
Jun-24-2009	20	.	.	656	1.0	0.4
Jun-30-2009	20	.	.	1,040	0.7	0.8

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
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
Jun-03-2009	20	.	.	848	2.6	0.6
Jun-10-2009	20	.	.	780	1.8	0.6
Jun-17-2009	30	.	.	699	1.1	0.4
Jun-24-2009	25	.	.	787	1.4	0.5
Jun-30-2009	25	.	.	777	1.6	0.5

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
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
Jun-03-2009	NA	.	.	985	1.0	0.7
Jun-10-2009	NA	.	.	1,060	1.7	0.8
Jun-17-2009	NA	.	.	2,830	3.6	3.1
Jun-24-2009	NA	.	.	1,050	1.0	0.9
Jun-30-2009	NA	.	.	1,330	1.1	1.1

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
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
Jun-03-2009	NA	.	.	1,040	1.2	1.1
Jun-10-2009	NA	.	.	992	1.4	1.0
Jun-17-2009	NA	.	.	968	1.5	1.0
Jun-24-2009	NA	.	.	1,040	1.0	0.9
Jun-30-2009	NA	.	.	1,080	1.1	1.5

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
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
Jun-03-2009	.	.	.	686	0.6	0.3
Jun-10-2009	.	.	.	672	0.8	0.3
Jun-17-2009	.	.	.	657	0.8	0.3
Jun-24-2009	.	.	.	682	0.5	0.4
Jun-30-2009	.	.	.	634	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
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
Jun-04-2009	92	21.8	7.7	1,740	<0.4	0.5
Jun-11-2009	158	22.5	7.0	1,050	0.4	0.4
Jun-18-2009	132	23.3	7.1	1,510	0.5	0.5
Jun-25-2009	136	24.4	7.1	1,440	<0.4	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
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	1.2
May-12-2009	.	.	.	2,550	1.6	1.3
May-19-2009	.	.	.	957	1.9	0.7
Jun-02-2009	.	.	.	1,120	1.1	1.1
Jun-09-2009	.	.	.	1,800	2.0	0.9
Jun-16-2009	.	.	.	2,020	3.7	1.4
Jun-23-2009	.	.	.	931	0.4	0.1
Jun-30-2009	.	.	.	1,200	0.7	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
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
Jun-04-2009	371	22.7	8.2	1,400	3.0	1.0
Jun-11-2009	416	22.6	7.7	1,070	1.5	0.7
Jun-18-2009	339	23.5	7.6	1,250	1.4	0.7
Jun-25-2009	337	25.3	8.2	1,240	1.2	0.7

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from July 2008 to June 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	%	%	%	%	%	%
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
Jun-2009	95	95	95	93	93	95

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from July 2008 to June 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
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
Jun-2009	0.42	0.40	0.46	0.44	0.43	0.45

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from July 2008 to June 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	%	%	%	%	%	%
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
Jun-2009	100	0*	30*	90	100	100

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from July 2008 to June 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
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
Jun-2009	42.9	4.8*	13.6*	35.9	28.2	28.6

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from July 2008 to June 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
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
Jun-2009	19.8	20.2	24.4	21.7	20.1	17.0

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, April 2009 to June 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
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
Jun-15-2009	34	0.6	25	0.4	<0.4
Jun-17-2009	35	0.5	17	0.4	<0.4
Jun-19-2009	26	0.6	13	<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, April 2009 to June 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
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
Jun-15-2009	21	12	30	62	5
Jun-17-2009	28	10	21	67	4
Jun-19-2009	30	20	38	70	16

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