GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

November 2008

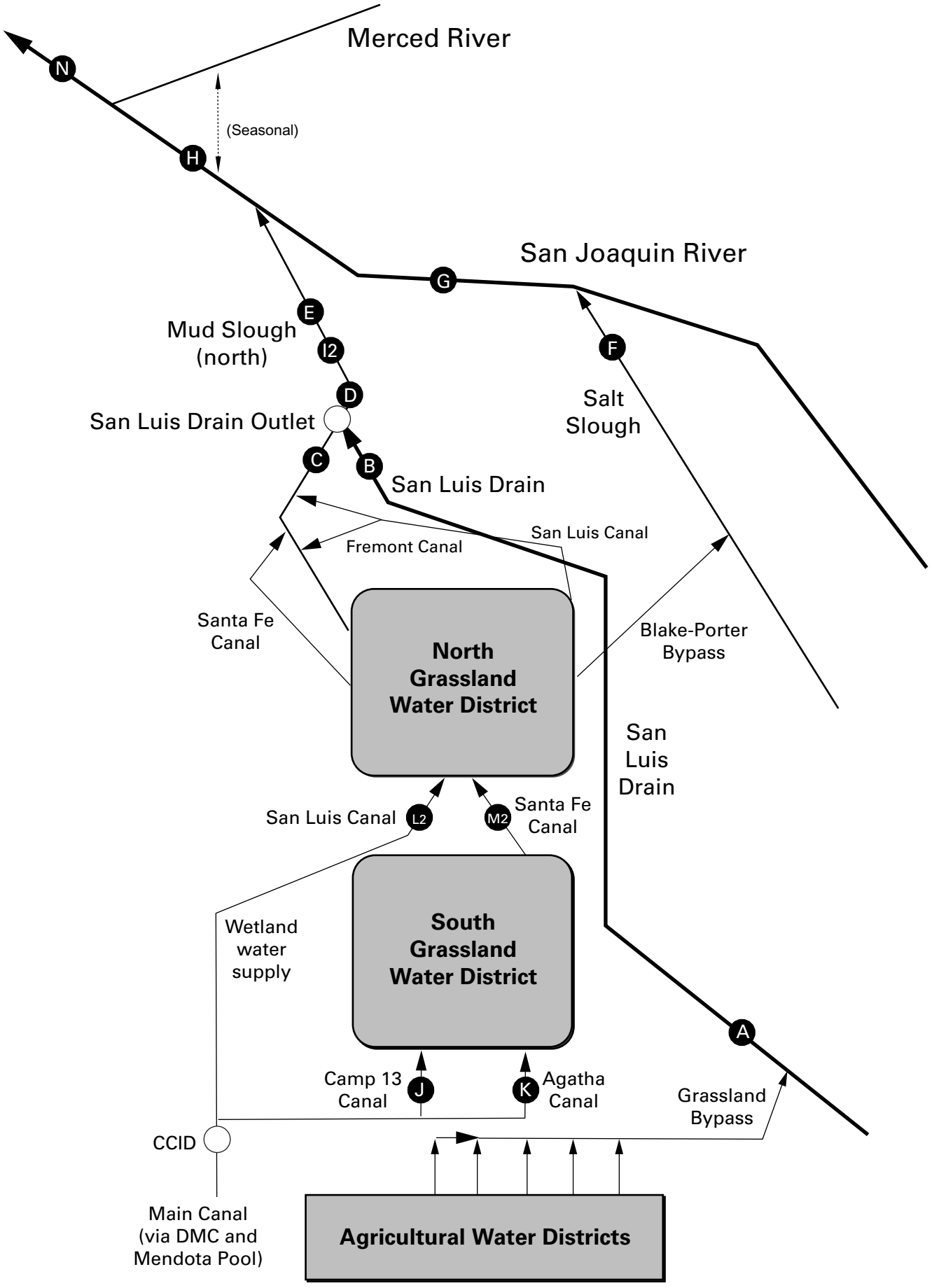
April 15, 2009

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
San Luis Canal
L2
M2
Santa Fe
Canal
Wetland
water
supply
South
Grassland
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), November 2008.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Nov-01-2008	11	3,020
Nov-02-2008	10	3,040
Nov-03-2008	12	2,880
Nov-04-2008	14	2,700
Nov-05-2008	11	2,970
Nov-06-2008	13	2,960
Nov-07-2008	15	2,820
Nov-08-2008	18	2,850
Nov-09-2008	22	3,180
Nov-10-2008	19	3,390
Nov-11-2008	15	3,820
Nov-12-2008	20	4,010
Nov-13-2008	21	3,920
Nov-14-2008	23	3,520
Nov-15-2008	22	3,900
Nov-16-2008	19	3,770
Nov-17-2008	22	3,730
Nov-18-2008	18	4,040
Nov-19-2008	18	4,110
Nov-20-2008	19	4,110
Nov-21-2008	17	4,280
Nov-22-2008	20	3,730
Nov-23-2008	23	3,370
Nov-24-2008	26	3,200
Nov-25-2008	23	3,320
Nov-26-2008	16	3,140
Nov-27-2008	10	3,950
Nov-28-2008	9	4,340
Nov-29-2008	9	4,420
Nov-30-2008	9	4,480
.	.	.
Mean	17	3,570

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), October 2008.

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
Nov-01-2008	18	17.5	5.7	3,470	13.9	1.4
Nov-02-2008	18	17.3	5.4	3,500	15.6	1.5
Nov-03-2008	18	17.2	4.4	3,430	13.3	1.3
Nov-04-2008	19	16.6	4.4	3,070	7.7	0.8
Nov-05-2008	19	15.6	4.9	3,190	9.5	1.0
Nov-06-2008	12	15.2	4.7	3,080	8.1	0.5
Nov-07-2008	16	15.0	4.3	3,070	9.3	0.8
Nov-08-2008	20	15.5	4.1	2,990	9.3	1.0
Nov-09-2008	21	15.8	4.0	2,940	8.5	1.0
Nov-10-2008	26	15.4	3.7	2,880	9.4	1.3
Nov-11-2008	24	15.4	4.0	3,020	13.5	1.7
Nov-12-2008	20	15.8	4.1	2,990	17.6	1.9
Nov-13-2008	23	16.4	4.2	3,010	20.2	2.5
Nov-14-2008	25	16.6	5.1	3,190	21.6	2.9
Nov-15-2008	26	16.7	5.5	3,340	20.7	2.9
Nov-16-2008	26	16.8	5.6	3,720	32.9	4.6
Nov-17-2008	23	16.8	6.6	4,160	45.0	5.5
Nov-18-2008	25	16.9	6.1	4,120	41.2	5.5
Nov-19-2008	23	16.6	5.6	3,720	36.6	4.5
Nov-20-2008	22	16.2	6.0	4,060	39.8	4.7
Nov-21-2008	22	15.2	5.8	3,980	41.6	5.0
Nov-22-2008	21	14.6	5.7	3,810	39.0	4.4
Nov-23-2008	24	14.3	6.2	4,030	41.0	5.3
Nov-24-2008	27	13.9	6.3	4,120	41.9	6.0
Nov-25-2008	29	13.7	6.2	4,100	38.1	6.0
Nov-26-2008	28	13.7	6.2	4,080	43.4	6.5
Nov-27-2008	21	13.9	5.9	3,790	40.6	4.7
Nov-28-2008	16	14.3	5.4	3,450	30.5	2.7
Nov-29-2008	15	13.7	5.2	3,380	31.8	2.6
Nov-30-2008	15	13.5	4.5	3,280	29.7	2.4
.	.	.	.	.	.	.
Mean	21	15.5	5.2	3,500	25.7	3.1
Total Acre-feet	1,270					
Total (lbs)						93

Load Limitation for November 2008 (lbs)	199

♦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.

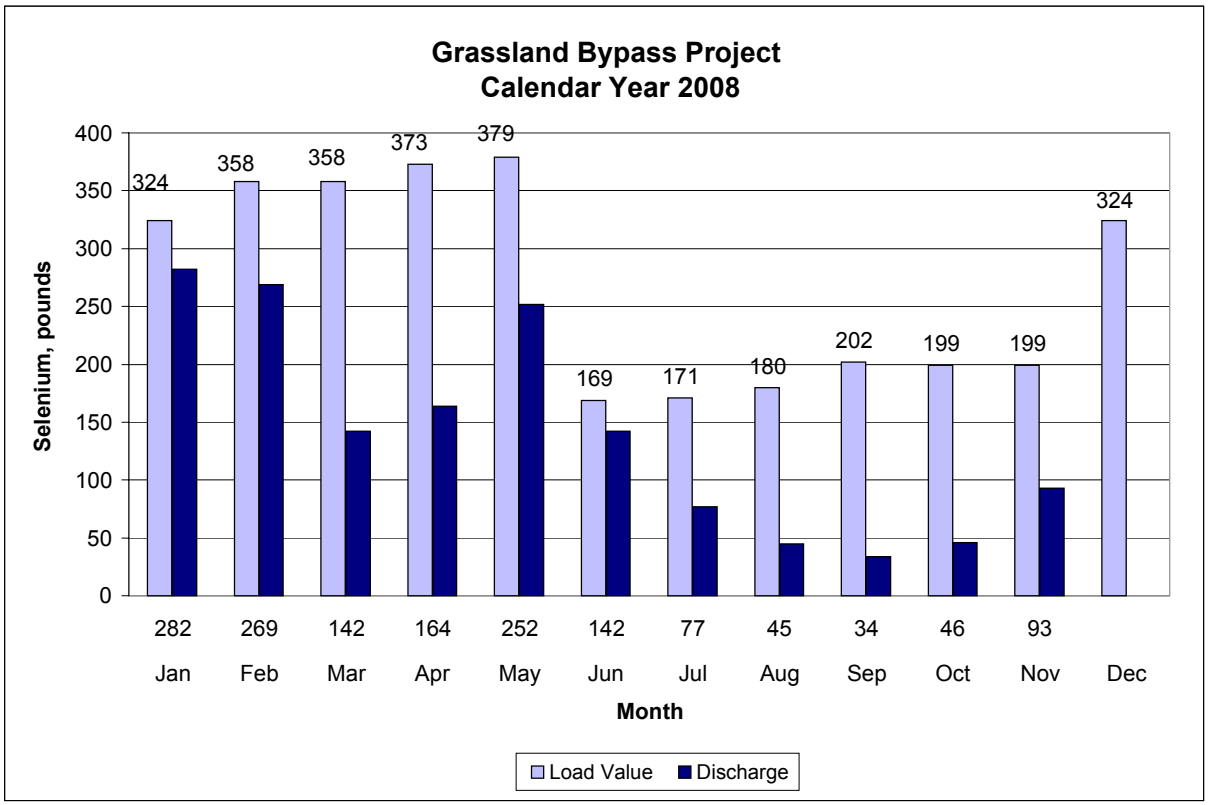


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), November 2008.

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
Nov-01-2008	90	16.9	1,910
Nov-02-2008	93	17.0	1,920
Nov-03-2008	94	16.6	1,900
Nov-04-2008	98	15.8	1,840
Nov-05-2008	99	14.5	1,890
Nov-06-2008	90	14.4	1,770
Nov-07-2008	90	14.8	1,870
Nov-08-2008	97	15.0	1,880
Nov-09-2008	99	15.1	1,910
Nov-10-2008	97	14.7	2,000
Nov-11-2008	92	14.7	2,040
Nov-12-2008	83	15.2	2,030
Nov-13-2008	83	16.0	2,110
Nov-14-2008	86	16.1	2,140
Nov-15-2008	83	16.1	2,310
Nov-16-2008	73	16.2	2,560
Nov-17-2008	69	16.2	2,630
Nov-18-2008	74	16.1	2,640
Nov-19-2008	69	15.7	2,520
Nov-20-2008	68	15.3	2,570
Nov-21-2008	67	14.4	2,580
Nov-22-2008	66	13.5	2,490
Nov-23-2008	74	13.3	2,580
Nov-24-2008	76	13.0	2,680
Nov-25-2008	77	13.0	2,770
Nov-26-2008	75	13.3	2,750
Nov-27-2008	74	13.8	2,480
Nov-28-2008	66	14.3	2,370
Nov-29-2008	67	13.4	2,280
Nov-30-2008	77	12.9	2,130
.	.	.	.
Mean	82	14.9	2,250

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), November 2008.

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
Nov-01-2008	93	16.4	1,650
Nov-02-2008	94	16.9	1,560
Nov-03-2008	107	16.2	1,530
Nov-04-2008	113	15.2	1,440
Nov-05-2008	112	13.9	1,440
Nov-06-2008	123	13.9	1,400
Nov-07-2008	116	14.2	1,400
Nov-08-2008	126	14.2	1,390
Nov-09-2008	113	14.6	1,450
Nov-10-2008	115	14.2	1,510
Nov-11-2008	111	14.2	1,510
Nov-12-2008	112	14.8	1,520
Nov-13-2008	101	15.7	1,570
Nov-14-2008	116	15.7	1,520
Nov-15-2008	127	15.6	1,430
Nov-16-2008	134	15.5	1,400
Nov-17-2008	138	15.4	1,410
Nov-18-2008	119	15.3	1,490
Nov-19-2008	114	15.0	1,580
Nov-20-2008	112	14.8	1,590
Nov-21-2008	103	14.2	1,640
Nov-22-2008	95	13.2	1,730
Nov-23-2008	97	12.8	1,670
Nov-24-2008	98	12.4	1,600
Nov-25-2008	91	12.6	1,650
Nov-26-2008	71	13.1	1,630
Nov-27-2008	79	13.9	1,720
Nov-28-2008	72	14.5	1,870
Nov-29-2008	65	13.5	1,970
Nov-30-2008	59	12.8	1,950
.	.	.	.
Mean	104	14.5	1,570

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), November 2008.

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
Nov-01-2008	487	23.5	960	0.8
Nov-02-2008	501	23.4	960	0.8
Nov-03-2008	517	22.0	930	0.8
Nov-04-2008	521	21.3	930	0.7
Nov-05-2008	525	20.6	940	0.9
Nov-06-2008	520	20.8	910	0.5
Nov-07-2008	521	20.8	970	0.6
Nov-08-2008	520	20.7	940	0.6
Nov-09-2008	534	19.2	960	0.6
Nov-10-2008	540	15.5	940	0.6
Nov-11-2008	545	13.7	1,000	0.7
Nov-12-2008	548	13.7	1,000	0.7
Nov-13-2008	547	14.5	990	0.9
Nov-14-2008	530	15.2	990	1.0
Nov-15-2008	523	15.8	1,010	1.1
Nov-16-2008	531	16.5	990	1.3
Nov-17-2008	526	17.1	1,000	1.3
Nov-18-2008	519	18.0	1,020	1.6
Nov-19-2008	512	18.0	1,050	2.0
Nov-20-2008	510	17.5	1,110	2.0
Nov-21-2008	512	17.1	1,110	1.6
Nov-22-2008	515	17.0	1,110	1.6
Nov-23-2008	520	17.3	1,120	1.7
Nov-24-2008	512 e	17.3	1,130	1.6
Nov-25-2008	512	17.1	1,190	2.0
Nov-26-2008	517	17.1	1,160	2.1
Nov-27-2008	520	17.0	1,170	2.1
Nov-28-2008	512	17.2	1,190	2.1
Nov-29-2008	508	17.1	1,170	1.6
Nov-30-2008	496	16.7	1,160	1.1
.	.	.	.	.
Mean	520	18.0	1,040	1.2

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	.	.	.
Sep-03-2008	17	.	.	3,660	105	.	.	.
Sep-10-2008	10	.	.	4,390	80	.	.	.
Sep-17-2008	4	.	.	5,920	32	.	.	.
Sep-24-2008	8	.	.	3,980	127	.	.	.
Oct-01-2008	13	.	.	4,220	176	.	.	.
Oct-08-2008	12	.	.	3,890	144	.	.	.
Oct-15-2008	8	.	.	4,870	NA	.	.	.
Oct-22-2008	10	.	.	4,460	99	.	.	.
Oct-29-2008	7	.	.	3,760	38	.	.	.
Nov-05-2008	11	.	.	3,190	39	.	.	.
Nov-12-2008	20	.	.	4,530	257	.	.	.
Nov-19-2008	18	.	.	4,450	207	.	.	.
Nov-25-2008	23	.	.	3,520	747	.	.	.

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
Sep-02-2008	22	.	.	3,040	.	19.6	.	4.9
Sep-09-2008	10	.	.	3,650	.	22.2	.	5.1
Sep-16-2008	5	.	.	5,200	.	33.3	.	11.0
Sep-23-2008	9	.	.	4,340	.	26.2	.	8.2
Sep-30-2008	10	.	.	4,260	.	20.1	.	8.4
Oct-07-2008	13	.	.	3,160	.	17.9	.	5.5
Oct-14-2008	9	.	.	4,550	.	42.1	.	7.7
Oct-21-2008	8	.	.	4,750	.	49.9	.	7.6
Oct-28-2008	6	.	.	4,070	.	29.8	.	7.4
Nov-04-2008	14	.	.	3,210	.	15.4	.	5.6
Nov-11-2008	15	.	.	3,520	.	28.7	.	6.2
Nov-18-2008	18	.	.	4,290	.	53.6	.	7.0
Nov-24-2008	26	.	.	3,370	.	45.9	.	6.6

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
Sep-04-2008	17	23.0	8.8	3,430	42	20.1	4.9
Sep-11-2008	9	22.8	8.4	2,930	25	12.2	4.8
Sep-18-2008	7	21.7	8.0	3,690	28	17.5	5.4
Sep-25-2008	12	22.1	8.1	4,710	33	22.5	9.4
Oct-02-2008	16	22.8	7.7	3,530	49	11.2	5.7
Oct-09-2008	16	20.5	7.8	2,680	36	8.1	3.7
Oct-16-2008	15	15.7	7.1	3,900	34	27.0	5.5
Oct-23-2008	17	17.8	8.2	3,680	37	22.7	5.0
Oct-30-2008	14	17.9	8.1	3,430	56	19.0	4.7
Nov-06-2008	12	13.9	8.1	3,080	36	7.5	4.6
Nov-13-2008	23	15.4	7.3	3,170	23	22.8	4.4
Nov-20-2008	22	15.3	7.4	4,060	46	41.8	5.8
Nov-25-2008	29	12.9	7.4	3,930	50	35.0	5.9

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
Sep-04-2008	0	22.8	8.5	1,110	.	<0.4	0.7
Sep-11-2008	4	19.9	8.2	970	.	<0.4	0.5
Sep-18-2008	4	18.6	8.1	1,280	.	0.6	0.8
Sep-25-2008	11	20.6	7.1	1,170	.	2.5	0.8
Oct-02-2008	29	22.0	7.6	1,040	.	<0.4	0.6
Oct-09-2008	66	19.1	7.7	1,010	.	<0.4	0.6
Oct-16-2008	63	16.0	7.7	1,170	.	<0.4	0.6
Oct-23-2008	129	16.8	7.7	1,160	.	0.6	0.7
Oct-30-2008	80	17.0	7.8	1,380	.	<0.4	0.9
Nov-06-2008	78	13.1	7.9	1,510	.	<0.4	1.0
Nov-13-2008	60	15.7	7.8	1,700	.	<0.4	1.1
Nov-20-2008	46	14.1	7.8	1,850	.	<0.4	1.2
Nov-25-2008	48	12.7	7.8	1,910	.	0.4	1.2

++ 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
Sep-04-2008	17	22.8	8.6	3,400	21.1	5.4
Sep-11-2008	13	21.5	8.1	2,170	7.6	2.9
Sep-18-2008	11	19.8	8.1	2,630	9.1	3.2
Sep-25-2008	23	21.1	7.7	2,750	9.5	4.6
Oct-02-2008	45	22.3	7.6	1,760	3.2	2.1
Oct-09-2008	82	19.6	7.6	1,380	1.8	1.2
Oct-16-2008	78	15.9	7.7	1,660	3.7	1.5
Oct-23-2008	146	16.9	7.6	1,560	3.3	1.3
Oct-30-2008	94	17.5	7.7	1,720	3.2	1.5
Nov-06-2008	90	13.3	8.0	1,740	1.2	1.4
Nov-13-2008	83	15.7	7.8	2,040	5.1	1.9
Nov-20-2008	68	14.2	7.8	2,620	11.0	2.8
Nov-25-2008	77	12.7	7.8	2,830	15.8	3.0

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
Sep-03-2008	.	8.3	4,180	13	24.8	6.8
Sep-08-2008	.	7.9	1,760	17	6.7	2.4
Sep-18-2008	.	8.8	2,580	11	8.7	3.6
Sep-22-2008	.	8.3	2,969	13	10.6	5.6
Sep-30-2008	.	7.9	1,745	14	3.1	2.1
Oct-07-2008	.	7.8	1,912	17	3.0	2.3
Oct-15-2008	.	7.7	1,700	16	3.8	1.8
Oct-23-2008	.	7.8	1,622	19	3.2	1.5
Oct-30-2008	.	8.0	1,770	13	3.1	1.6
Nov-04-2008	.	7.9	1,856	31	1.7	1.8
Nov-13-2008	.	7.7	2,108	13	4.6	2.0
Nov-18-2008	.	7.9	2,756	28	16.2	3.3
Nov-25-2008	.	8.3	2,531	13	15.8	3.5

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
Sep-04-2008	32	21.0	7.9	1,590	<0.4	0.6
Sep-11-2008	41	20.1	7.9	1,230	<0.4	0.5
Sep-18-2008	33	18.1	8.1	1,480	0.6	0.6
Sep-25-2008	57	21.0	7.3	1,290	<0.4	0.6
Oct-02-2008	54	21.1	7.8	1,580	<0.4	0.7
Oct-09-2008	38	17.6	7.9	1,610	<0.4	0.7
Oct-16-2008	40	14.2	7.7	1,650	<0.4	0.7
Oct-23-2008	49	16.1	7.8	1,740	<0.4	0.8
Oct-30-2008	74	15.9	7.8	1,530	<0.4	0.8
Nov-06-2008	123	12.5	8.1	1,350	0.5	0.6
Nov-13-2008	101	14.5	7.7	1,570	<0.4	0.7
Nov-20-2008	112	13.6	7.7	1,530	<0.4	0.7
Nov-25-2008	91	12.0	8.0	1,760	<0.4	0.8

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
Sep-03-2008	70	.	.	710	0.7	0.4
Sep-10-2008	70	.	.	660	0.5	0.2
Sep-17-2008	130	.	.	630	0.8	0.3
Sep-24-2008	180	.	.	700	0.5	0.2
Oct-01-2008	215	.	.	640	0.6	0.2
Oct-08-2008	105	.	.	580	<0.4	0.2
Oct-15-2008	80	.	.	580	<0.4	0.2
Oct-22-2008	80	.	.	590	0.5	0.2
Oct-29-2008	70	.	.	550	0.7	0.2
Nov-05-2008	50	.	.	570	0.6	0.2
Nov-12-2008	40	.	.	560	0.8	0.2
Nov-19-2008	65	.	.	600	0.8	0.2
Nov-25-2008	60	.	.	650	0.7	0.2

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
Sep-03-2008	80	.	.	760	1.0	0.5
Sep-10-2008	90	.	.	700	0.7	0.3
Sep-17-2008	150	.	.	620	0.7	0.2
Sep-24-2008	150	.	.	690	0.6	0.2
Oct-01-2008	150	.	.	670	0.7	0.3
Oct-08-2008	150	.	.	580	0.6	0.2
Oct-15-2008	70	.	.	570	<0.4	0.2
Oct-22-2008	35	.	.	550	<0.4	0.2
Oct-29-2008	35	.	.	560	0.7	0.3
Nov-05-2008	35	.	.	600	0.7	0.4
Nov-12-2008	35	.	.	790	1.3	0.5
Nov-19-2008	35	.	.	660	0.9	0.3
Nov-25-2008	30	.	.	610	0.6	0.3

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
Sep-03-2008	NA	.	.	880	0.7	0.5
Sep-10-2008	NA	.	.	890	0.6	0.3
Sep-17-2008	NA	.	.	800	0.7	0.3
Sep-24-2008	NA	.	.	760	1.0	0.2
Oct-01-2008	NA	.	.	700	0.6	0.3
Oct-08-2008	NA	.	.	640	0.5	0.2
Oct-15-2008	NA	.	.	680	0.5	0.3
Oct-22-2008	NA	.	.	690	0.5	0.3
Oct-29-2008	NA	.	.	660	0.6	0.3
Nov-05-2008	NA	.	.	650	0.7	0.4
Nov-12-2008	NA	.	.	1,080	0.8	0.9
Nov-19-2008	NA	.	.	1,030	0.8	0.8
Nov-25-2008	NA	.	.	1,040	0.7	0.8

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
Sep-03-2008	NA	.	.	760	0.6	0.4
Sep-10-2008	NA	.	.	820	0.8	0.4
Sep-17-2008	NA	.	.	800	0.9	0.4
Sep-24-2008	NA	.	.	830	0.5	0.4
Oct-01-2008	NA	.	.	820	0.5	0.4
Oct-08-2008	NA	.	.	840	0.6	0.5
Oct-15-2008	NA	.	.	830	0.4	0.5
Oct-22-2008	NA	.	.	840	0.5	0.5
Oct-29-2008	NA	.	.	870	0.5	0.6
Nov-05-2008	NA	.	.	920	0.6	0.7
Nov-12-2008	NA	.	.	890	0.6	0.6
Nov-19-2008	NA	.	.	940	0.5	0.7
Nov-25-2008	NA	.	.	1,040	0.6	0.8

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
Sep-03-2008	.	.	.	690	0.7	0.3
Sep-10-2008	.	.	.	630	0.6	0.2
Sep-17-2008	.	.	.	620	0.6	0.2
Sep-24-2008	.	.	.	700	<0.4	0.2
Oct-01-2008	.	.	.	640	0.4	0.2
Oct-08-2008	.	.	.	570	0.4	0.2
Oct-15-2008	.	.	.	650	<0.4	0.3
Oct-22-2008	.	.	.	530	0.5	0.2
Oct-29-2008	.	.	.	570	0.7	0.2
Nov-05-2008	.	.	.	560	0.7	0.2
Nov-12-2008	.	.	.	570	<0.4	0.2
Nov-19-2008	.	.	.	630	0.6	0.2
Nov-25-2008	.	.	.	720	0.8	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
Sep-04-2008	38	23.2	8.0	2,400	<0.4	0.7
Sep-11-2008	45	21.4	7.8	1,590	<0.4	0.5
Sep-18-2008	33	20.4	7.1	2,120	<0.4	0.7
Sep-25-2008	58	20.5	7.8	1,270	<0.4	0.6
Oct-02-2008	51	22.0	7.9	1,990	<0.4	0.8
Oct-09-2008	41	18.1	7.2	2,170	<0.4	0.9
Oct-16-2008	40	15.3	7.2	2,190	<0.4	0.9
Oct-23-2008	45	15.2	7.8	2,070	<0.4	0.8
Oct-30-2008	56	16.1	7.8	1,740	<0.4	0.8
Nov-06-2008	98	13.2	8.2	1,420	<0.4	0.7
Nov-13-2008	112	15.8	7.8	1,450	<0.4	0.7
Nov-20-2008	116	13.9	7.1	1,770	<0.4	0.7
Nov-25-2008	104	12.5	7.1	1,910	<0.4	0.7

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
Sep-09-2008	.	.	.	2,280	3.3	1.5
Sep-16-2008	.	.	.	2,050	0.9	1.2
Sep-24-2008	.	.	.	729	0.5	0.2
Sep-30-2008	.	.	.	1,910	1.3	1.5
Oct-07-2008	.	.	.	1,750	1.7	1.3
Oct-14-2008	.	.	.	1,880	1.5	1.1
Oct-21-2008	.	.	.	1,560	1.9	0.9
Oct-28-2008	.	.	.	1,930	1.6	1.3
Nov-04-2008	.	.	.	628	<0.4	0.2
Nov-11-2008	.	.	.	1,900	1.2	1.2
Nov-18-2008	.	.	.	2,060	4.3	1.6
Nov-25-2008	.	.	.	3,700	40.6	5.3

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
Sep-04-2008	419	23.0	8.1	990	1.2	0.5
Sep-11-2008	415	22.1	7.8	890	<0.4	0.3
Sep-18-2008	238	19.8	7.2	1,300	0.8	0.5
Sep-25-2008	280	20.7	7.8	1,100	0.7	0.7
Oct-02-2008	244	22.1	8.0	1,210	0.9	0.7
Oct-09-2008	466	18.9	8.0	790	0.5	0.4
Oct-16-2008	440	15.5	7.7	930	0.8	0.5
Oct-23-2008	494	16.3	7.7	840	1.2	0.5
Oct-30-2008	468	16.6	8.0	950	0.7	0.5
Nov-06-2008	520	13.9	8.1	940	0.8	0.5
Nov-13-2008	547	15.5	8.2	1,000	0.8	0.5
Nov-20-2008	510	14.1	7.9	1,130	1.9	0.7
Nov-25-2008	512	12.3	7.8	1,210	2.1	0.7

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from December 2007 to November 2008. 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	%	%	%	%	%	%
Dec-2008	93	93	98	98	95	95
Jan-2008	100	100	95	98	100	100
Feb-2008	100	95	100	95	98	100
Mar-2008	93	95	100	100	73	100
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

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from December 2007 to November 2008. 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
Dec-2008	0.31	0.33	0.32	0.32	0.32	0.32
Jan-2008	0.40	0.40	0.41	0.41	0.37	0.35
Feb-2008	0.46	0.43	0.41	0.41	0.38	0.33
Mar-2008	0.33	0.33	0.37	0.38	0.22	0.29
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

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from December 2007 to November 2008. 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	%	%	%	%	%	%
Dec-2008	90	100	100	100	100	80
Jan-2008	70	100	90	100	100	90
Feb-2008	100	90	80	90	100	100
Mar-2008	100	100	90	100	100	90
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

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from December 2007 to November 2008. 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
Dec-2008	32.2	24.4	32.2	28.7	30.7	23.0
Jan-2008	36.4	47.8	41.5	40.3	48.8	45.2
Feb-2008	35.6	33.6	33.4	35.8	27.7	28.3
Mar-2008	27.4	29.0	29.5	26.2	30.1	19.6
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

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from Decber 2007 to November 2008. 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
Dec-2008	11.7	19.3	17.7	18.3	13.2	14.1
Jan-2008	15.8	16.3	22.6	19.9	16.3	16.1
Feb-2008	6.2	13.9	12.1	12.8	7.7††††	12.3
Mar-2008	18.1	14.2*	22.2	11.2*	20.5	24.9
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

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, September 2008 to November 2008.

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
Sep-08-2008	11	<0.4	6.8	<0.4	<0.4
Sep-10-2008	11	<0.4	7.0	<0.4	<0.4
Sep-12-2008	13	<0.4	5.2	<0.4	<0.4
Oct-06-2008	11	<0.4	3.3	<0.4	<0.4
Oct-08-2008	8	<0.4	2.8	<0.4	<0.4
Oct-10-2008	11	<0.4	2.0	<0.4	<0.4
Nov-03-2008	11	0.4	3.2	<0.4	<0.4
Nov-05-2008	9	<0.4	2.2	0.5	<0.4
Nov-07-2008	9	<0.4	1.6	<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, September 2008 to November 2008.

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
Sep-08-2008	18	17	16	38	11
Sep-10-2008	11	8	16	59	10
Sep-12-2008	17	59	64	53	9
Oct-06-2008	32	16	14	34	10
Oct-08-2008	35	11	20	33	10
Oct-10-2008	54	50	19	24	16
Nov-03-2008	51	17	43	66	3
Nov-05-2008	45	32	35	88	9
Nov-07-2008	32	23	29	94	10

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