GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

December 2009

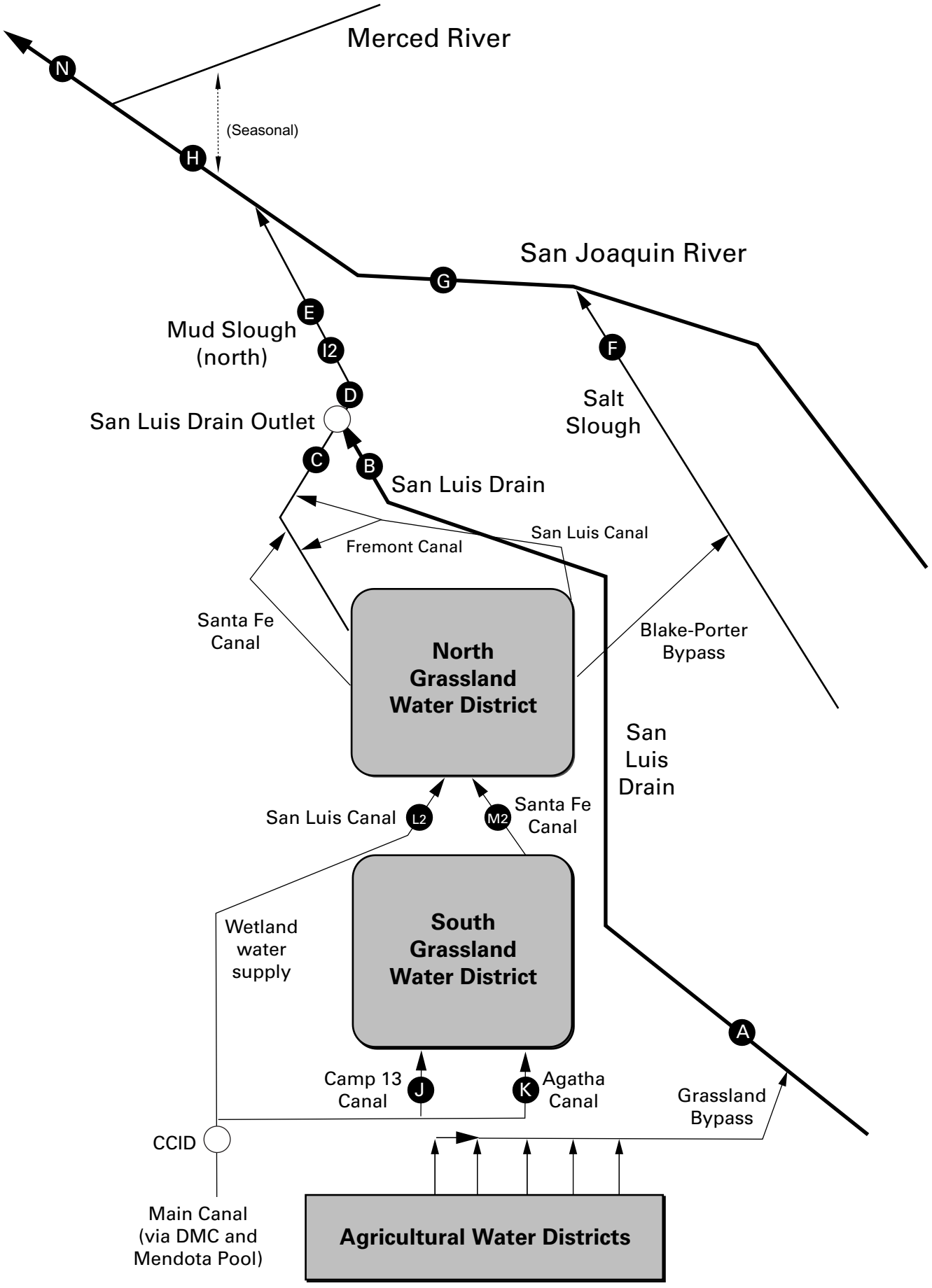
July 12, 2010

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
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), December 2009.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Dec-01-2009	13	3,710
Dec-02-2009	15	3,900
Dec-03-2009	14	3,770
Dec-04-2009	14	3,810
Dec-05-2009	12	3,970
Dec-06-2009	12	4,090
Dec-07-2009	17	4,220
Dec-08-2009	18	4,580
Dec-09-2009	17	4,460
Dec-10-2009	15	4,260
Dec-11-2009	19	4,170
Dec-12-2009	23	4,230
Dec-13-2009	26	4,010
Dec-14-2009	23	4,030
Dec-15-2009	19	4,230
Dec-16-2009	17	4,130
Dec-17-2009	17	4,160
Dec-18-2009	17	4,240
Dec-19-2009	17	4,350
Dec-20-2009	16	4,260
Dec-21-2009	16	4,270
Dec-22-2009	14	4,250
Dec-23-2009	14	4,450
Dec-24-2009	22	4,470
Dec-25-2009	20	4,170
Dec-26-2009	20	4,320
Dec-27-2009	19	4,530
Dec-28-2009	18	4,660
Dec-29-2009	13	4,470
Dec-30-2009	13	4,390
Dec-31-2009	15	4,240
Mean	17	4,220

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), December 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
Dec-01-2009	19	10.4	5.4	4,080	28.5	2.9
Dec-02-2009	16	10.5	6.2	4,190	41.6	3.7
Dec-03-2009	18	10.3	6.5	4,320	48.3	4.6
Dec-04-2009	18	10.2	6.7	4,430	41.2	4.0
Dec-05-2009	17	10.3	5.8	4,370	42.8	3.9
Dec-06-2009	16	8.8	5.8	4,140	40.0	3.5
Dec-07-2009	16	8.2	5.9	4,050	33.7	3.0
Dec-08-2009	21	7.1	7.2	4,170	32.0	3.6
Dec-09-2009	22	7.0	6.1	4,090	39.8	4.7
Dec-10-2009	21	7.5	5.9	4,170	36.4	4.1
Dec-11-2009	20	8.2	6.5	4,260	28.8	3.1
Dec-12-2009	23	9.0	7.0	4,420	34.7	4.3
Dec-13-2009	29	10.3	7.4	4,870	41.8	6.5
Dec-14-2009	29	10.6	7.1	4,790	40.6	6.4
Dec-15-2009	27	11.3	7.0	4,510	36.7	5.3
Dec-16-2009	23	11.4	7.4	4,800	43.0	5.4
Dec-17-2009	21	11.3	7.3	4,680	42.0	4.8
Dec-18-2009	21	11.5	7.3	4,680	38.9	4.5
Dec-19-2009	21	11.7	7.3	4,560	40.2	4.6
Dec-20-2009	21	11.6	7.7	4,670	38.2	4.4
Dec-21-2009	20	11.4	7.3	4,600	35.6	3.9
Dec-22-2009	18	10.5	7.5	4,630	40.4	3.9
Dec-23-2009	19	8.5	7.5	4,690	38.7	3.9
Dec-24-2009	19	8.0	7.8	4,840	36.7	3.7
Dec-25-2009	24	8.1	7.9	4,790	37.7	5.0
Dec-26-2009	24	8.1	7.9	4,680	36.6	4.7
Dec-27-2009	24	8.7	7.6	4,600	36.3	4.7
Dec-28-2009	23	9.0	8.4	4,770	40.5	5.0
Dec-29-2009	22	9.5	8.2	5,060	55.8	6.5
Dec-30-2009	18	10.2	7.7	4,700	52.9	5.1
Dec-31-2009	16	10.5	8.1	4,700	52.3	4.6
Mean	21	9.7	7.0	4,530	39.8	4.5
Total Acre-feet	**1,280**					
Total (lbs)						**138**

Load Limitation for December 2009 (lbs)	**357**

♦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.

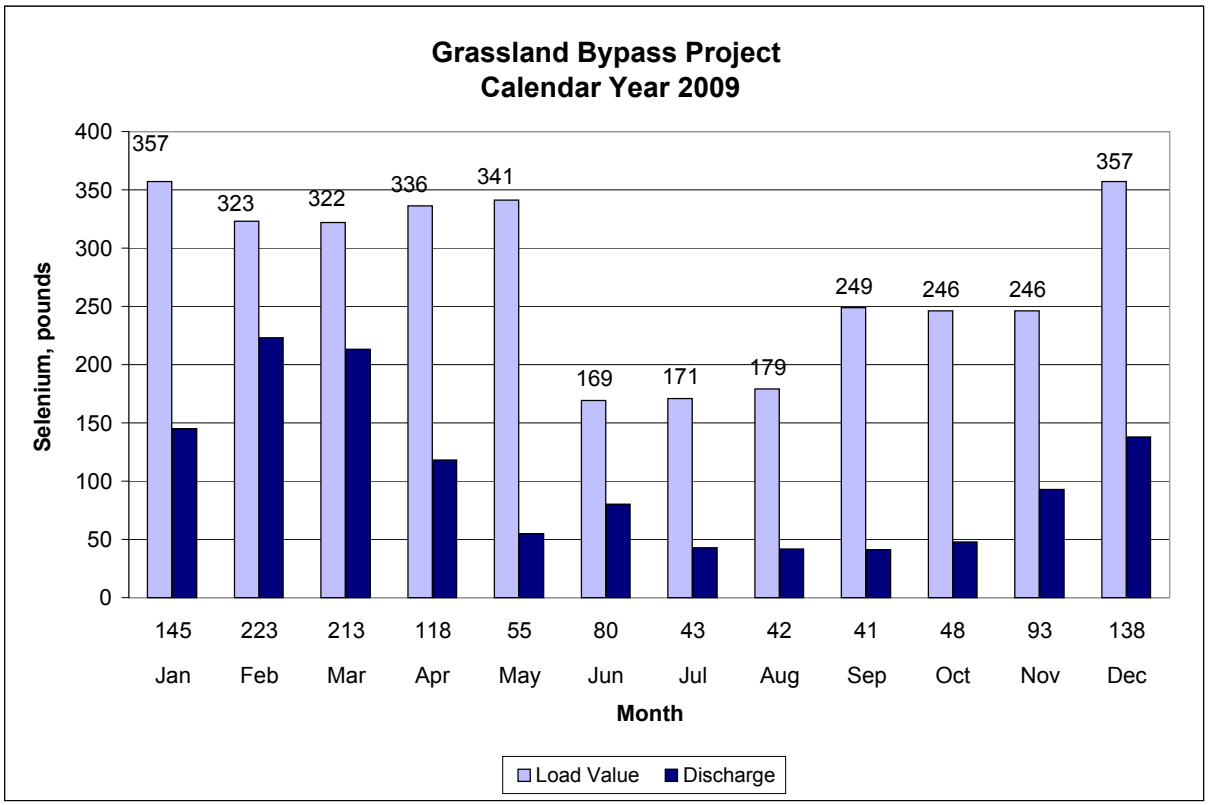


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), December 2009.

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
Dec-01-2009	69	10.5	2,750
Dec-02-2009	69	10.4	2,740
Dec-03-2009	66	10.3	2,870
Dec-04-2009	65	10.2	2,940
Dec-05-2009	74	10.3	2,750
Dec-06-2009	67	8.5	2,800
Dec-07-2009	75	8.1	2,660
Dec-08-2009	92	7.0	2,530
Dec-09-2009	92	6.9	2,560
Dec-10-2009	94	7.7	2,520
Dec-11-2009	97	8.7	2,530
Dec-12-2009	134	9.6	2,360
Dec-13-2009	195	10.3	2,140
Dec-14-2009	210	10.8	2,120
Dec-15-2009	190	11.2	2,110
Dec-16-2009	172	11.1	2,130
Dec-17-2009	157	11.1	2,180
Dec-18-2009	150	11.4	2,240
Dec-19-2009	150	11.3	2,210
Dec-20-2009	139	10.9	2,310
Dec-21-2009	131	11.0	2,310
Dec-22-2009	116	10.3	2,380
Dec-23-2009	99	8.3	2,530
Dec-24-2009	89	8.0	2,680
Dec-25-2009	89	8.1	2,850
Dec-26-2009	90	8.2	2,830
Dec-27-2009	96	9.2	2,740
Dec-28-2009	97	9.7	2,720
Dec-29-2009	95	10.1	2,800
Dec-30-2009	90	10.9	2,650
Dec-31-2009	90	10.9	2,580
Mean	111	9.7	2,530

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), December 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
Dec-01-2009	110	10.2	1,570
Dec-02-2009	98	10.2	1,640
Dec-03-2009	97	9.9	1,630
Dec-04-2009	96	9.9	1,560
Dec-05-2009	86	9.9	1,530
Dec-06-2009	80	8.5	1,570
Dec-07-2009	77	8.4	1,670
Dec-08-2009	71	7.5	1,720
Dec-09-2009	70	7.6	1,750
Dec-10-2009	70	8.6	1,800
Dec-11-2009	69	9.8	1,830
Dec-12-2009	72	10.8	1,820
Dec-13-2009	87	11.3	1,780
Dec-14-2009	101	11.2	1,610
Dec-15-2009	122	11.2	1,500
Dec-16-2009	134	10.9	1,480
Dec-17-2009	130	10.9	1,610
Dec-18-2009	113	11.3	1,680
Dec-19-2009	100	11.5	1,770
Dec-20-2009	91	11.2	1,760
Dec-21-2009	90	11.2	1,720
Dec-22-2009	85	10.4	1,770
Dec-23-2009	67	8.6	1,920
Dec-24-2009	52	8.8	1,990
Dec-25-2009	63	9.0	1,980
Dec-26-2009	52	8.9	2,120
Dec-27-2009	42	10.8	2,120
Dec-28-2009	43	11.0	2,130
Dec-29-2009	55	11.2	2,170
Dec-30-2009	57	11.9	2,220
Dec-31-2009	58	11.7	2,220
Mean	82	10.1	1,790

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), December 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
Dec-01-2009	517	9.9	1,280	1.4
Dec-02-2009	570	9.7	1,240	1.3
Dec-03-2009	594	9.5	1,240	1.0
Dec-04-2009	572	9.3	1,150	1.2
Dec-05-2009	539	9.3	1,190	2.1
Dec-06-2009	513	8.0	1,220	1.9
Dec-07-2009	498	7.7	1,270	1.9
Dec-08-2009	489	7.1	1,320	1.7
Dec-09-2009	494	6.8	1,320	1.5
Dec-10-2009	489	7.3	1,330	1.6
Dec-11-2009	484	8.3	1,360	2.0
Dec-12-2009	502	9.4	1,380	1.8
Dec-13-2009	551	10.1	1,310	1.4
Dec-14-2009	602	10.4	1,310	1.9
Dec-15-2009	664	10.4	1,310	2.1
Dec-16-2009	695	10.7	NA	NA
Dec-17-2009	695	10.8	NA	NA
Dec-18-2009	690	10.9	NA	NA
Dec-19-2009	651	11.0	NA	NA
Dec-20-2009	618	10.8	NA	NA
Dec-21-2009	589	10.9	NA	NA
Dec-22-2009	576	10.4	1,440	2.0
Dec-23-2009	555	8.6	1,410	1.6
Dec-24-2009	523	8.1	1,450	1.6
Dec-25-2009	504	8.1	1,500	1.9
Dec-26-2009	505	8.0	1,530	2.1
Dec-27-2009	504	8.8	1,520	2.5
Dec-28-2009	485	9.6	1,530	2.2
Dec-29-2009	477	9.9	1,550	2.3
Dec-30-2009	477	10.8	1,580	2.0
Dec-31-2009	474	10.9	1,550	2.5
Mean	551	9.4	1,370	1.8

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	.	.	.
Oct-05-2009	4	.	.	4,640	19	.	.	.
Oct-12-2009	9	.	.	4,090	64	.	.	.
Oct-19-2009	11	.	.	4,360	81	.	.	.
Oct-26-2009	19	.	.	4,880	193	.	.	.
Nov-02-2009	20	.	.	4,830	188	.	.	.
Nov-09-2009	17	.	.	4,240	62	.	.	.
Nov-16-2009	17	.	.	4,420	NA	.	.	.
Nov-23-2009	16	.	.	4,410	110			
Nov-30-2009	16	.	.	4,190	43	.	.	.
Dec-07-2009	17	.	.	4,990	117	.	.	.
Dec-14-2009	23	.	.	4,660	210	.	.	.
Dec-21-2009	16	.	.	5,030	73	.	.	.
Dec-28-2009	18	.	.	5,490	162			

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
Oct-04-2009	4	.	.	4,700	.	21.7	.	8.8
Oct-11-2009	10	.	.	4,180	.	21.6	.	8.5
Oct-18-2009	11	.	.	4,360	.	28.9	.	8.2
Oct-25-2009	23	.	.	4,380	.	35.4	.	7.8
Nov-01-2009	14	.	.	4,530	.	38.9	.	8.4
Nov-08-2009	17	.	.	4,250	.	37.6	.	7.4
Nov-15-2009	18	.	.	4,030	.	41.4	.	6.9
Nov-22-2009	14	.	.	4,430	.	41.9	.	7.1
Nov-29-2009	15	.	.	4,610	.	51.5	.	7.2
Dec-06-2009	12	.	.	4,920	.	48.1	.	8.2
Dec-13-2009	26	.	.	4,940	.	50.0	.	8.6
Dec-20-2009	16	.	.	5,010	.	45.8	.	9.0
Dec-27-2009	19	.	.	5,140	.	60.8	.	9.0

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
Oct-06-2009	7	15.9	8.3	3,710	30	12.2	6.5
Oct-13-2009	18	16.7	8.5	3,530	45	10.2	6.8
Oct-20-2009	15	18.6	8.2	3,390	41	16.6	5.5
Oct-27-2009	19	17.2	7.2	3,930	74	27.9	6.4
Nov-03-2009	22	15.9	8.2	4,270	42	29.6	6.8
Nov-10-2009	20	13.8	8.1	3,870	48	29.0	6.0
Nov-17-2009	20	11.5	8.0	3,750	30	30.4	5.9
Nov-24-2009	19	10.6	7.8	3,900	NA	30.5	6.2
Dec-01-2009	19	9.6	7.7	3,840	24	26.7	5.5
Dec-08-2009	21	6.2	7.5	4,210	20	33.6	7.1
Dec-15-2009	27	10.6	7.3	4,370	37	38.2	7.1
Dec-22-2009	18	10.3	7.7	4,400	31	37.4	7.3
Dec-29-2009	22	8.6	6.6	4,580	35	58.2	7.5

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
Oct-06-2009	41	14.5	7.6	1,130	.	<0.4	0.6
Oct-13-2009	149	15.7	7.7	1,010	.	0.7	0.7
Oct-20-2009	220	17.1	7.5	1,040	.	<0.4	0.7
Oct-27-2009	137	15.9	7.2	1,340	.	0.6	0.9
Nov-03-2009	70	16.0	7.9	1,660	.	0.4	1.3
Nov-10-2009	55	13.2	7.9	1,830	.	0.6	1.4
Nov-17-2009	55	10.8	7.7	1,890	.	<0.4	1.4
Nov-24-2009	49	10.2	7.9	2,110	.	<0.4	1.7
Dec-01-2009	50	9.0	7.9	1,630	.	<0.4	1.6
Dec-08-2009	71	5.8	7.9	2,020	.	<0.4	1.5
Dec-15-2009	163	10.5	7.8	1,770	.	<0.4	1.3
Dec-22-2009	98	9.7	7.8	1,890	.	0.5	1.5
Dec-29-2009	73	9.2	7.0	2,160	.	<0.4	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
Oct-06-2009	48	14.8	7.7	1,550	1.9	1.5
Oct-13-2009	167	16.1	7.7	1,470	2.2	1.6
Oct-20-2009	235	17.5	7.5	1,280	2.0	1.2
Oct-27-2009	156	16.2	7.1	1,750	4.9	1.8
Nov-03-2009	92	15.7	7.8	2,490	9.1	2.8
Nov-10-2009	75	13.3	7.9	2,520	8.0	2.8
Nov-17-2009	75	11.0	7.8	2,470	8.6	2.6
Nov-24-2009	68	10.3	7.9	2,560	7.9	2.9
Dec-01-2009	69	9.4	7.8	2,800	8.6	2.7
Dec-08-2009	92	5.9	7.8	2,460	6.9	2.5
Dec-15-2009	190	10.5	7.8	2,110	5.8	2.1
Dec-22-2009	116	9.9	7.8	2,420	6.7	2.6
Dec-29-2009	95	9.1	6.7	2,950	12.9	3.2

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
Oct-07-2009	.	7.8	1,740	21	2.1	2.0
Oct-22-2009	.	7.6	1,580	26	2.3	1.9
Oct-27-2009	.	8.3	1,950	42	4.6	2.1
Nov-03-2009	.	8.4	2,540	25	8.2	3.0
Nov-12-2009	.	6.5	2,690	24	9.3	3.4
Nov-24-2009	.	8.3	2,670	11	7.4	2.9
Dec-01-2009	.	8.4	2,880	16	7.8	3.1
Dec-08-2009	.	NA	2,490	14	7.7	2.7
Dec-15-2009	.	8.4	2,160	13	6.6	2.4
Dec-21-2009	.	7.8	2,420	NA	6.4	2.5

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
Oct-06-2009	63	13.7	7.9	1,060	<0.4	0.6
Oct-13-2009	93	15.8	7.9	420	0.7	0.6
Oct-20-2009	134	16.9	7.6	1,260	0.4	0.6
Oct-27-2009	130	16.3	7.1	1,190	0.5	0.6
Nov-03-2009	117	14.5	6.9	1,340	<0.4	0.7
Nov-10-2009	124	12.4	7.6	1,270	0.4	0.6
Nov-17-2009	143	10.1	7.8	1,200	<0.4	0.6
Nov-24-2009	131	10.0	7.7	1,380	<0.4	0.7
Dec-01-2009	110	8.8	7.6	1,660	<0.4	0.8
Dec-08-2009	71	6.1	7.2	1,840	<0.4	0.9
Dec-15-2009	122	10.4	7.4	1,520	<0.4	1.0
Dec-22-2009	85	10.2	7.5	1,880	0.6	1.2
Dec-29-2009	55	10.0	6.8	2,170	<0.4	1.1

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
Oct-05-2009	210	.	.	620	0.7	0.2
Oct-12-2009	135	.	.	600	<0.4	0.2
Oct-19-2009	135	.	.	640	<0.4	0.3
Oct-26-2009	85	.	.	530	0.6	0.3
Nov-02-2009	85	.	.	510	0.4	0.2
Nov-09-2009	85	.	.	520	0.8	0.3
Nov-16-2009	30	.	.	630	0.5	0.3
Nov-23-2009	10	.	.	560	0.5	0.3
Nov-30-2009	10	.	.	710	0.4	0.3
Dec-07-2009	5	.	.	660	0.7	0.3
Dec-14-2009	5	.	.	600	0.6	0.3
Dec-21-2009	5	.	.	620	<0.4	0.2
Dec-28-2009	5	.	.	730	2.2	0.4

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
Oct-05-2009	175	.	.	590	0.6	0.3
Oct-12-2009	85	.	.	600	0.5	0.2
Oct-19-2009	70	.	.	610	<0.4	0.2
Oct-26-2009	70	.	.	540	0.4	0.3
Nov-02-2009	70	.	.	510	0.6	0.3
Nov-09-2009	70	.	.	510	0.8	0.3
Nov-16-2009	60	.	.	510	<0.4	0.3
Nov-23-2009	50	.	.	530	<0.4	0.3
Nov-30-2009	50	.	.	510	<0.4	0.2
Dec-07-2009	30	.	.	620	1.3	0.4
Dec-14-2009	30	.	.	730	0.4	0.5
Dec-21-2009	30	.	.	740	0.6	0.5
Dec-28-2009	30	.	.	700	0.5	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
Oct-05-2009	NA	.	.	610	0.5	0.3
Oct-12-2009	NA	.	.	610	0.4	0.2
Oct-19-2009	NA	.	.	680	0.5	0.4
Oct-26-2009	NA	.	.	810	0.7	0.6
Nov-02-2009	NA	.	.	890	0.6	0.7
Nov-09-2009	NA	.	.	560	0.7	0.3
Nov-16-2009	NA	.	.	640	0.6	0.4
Nov-23-2009	NA	.	.	1,440	0.8	1.5
Nov-30-2009	NA	.	.	730	0.8	0.8
Dec-07-2009	NA			1,550	1.1	2.2
Dec-14-2009	NA	.	.	560	<0.4	0.3
Dec-21-2009	NA	.	.	1,260	0.6	1.2
Dec-28-2009	NA	.	.	670	0.6	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
Oct-05-2009	NA	.	.	730	0.7	0.4
Oct-12-2009	NA	.	.	730	0.5	0.4
Oct-19-2009	NA	.	.	780	0.5	0.5
Oct-26-2009	NA	.	.	790	0.5	0.6
Nov-02-2009	NA	.	.	860	0.5	0.7
Nov-09-2009	NA	.	.	910	0.6	0.7
Nov-16-2009	NA	.	.	830	0.4	0.7
Nov-23-2009	NA	.	.	1,070	<0.4	1.0
Nov-30-2009	NA	.	.	1,250	<0.4	1.2
Dec-07-2009	NA	.	.	1,300	0.7	1.5
Dec-14-2009	NA	.	.	1,030	0.5	0.7
Dec-21-2009	NA	.	.	1,400	0.5	1.5
Dec-28-2009	NA	.	.	1,540	0.5	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
Oct-05-2009	.	.	.	570	0.6	0.2
Oct-12-2009	.	.	.	600	<0.4	0.2
Oct-19-2009	.	.	.	560	0.4	0.2
Oct-26-2009	.	.	.	540	<0.4	0.3
Nov-02-2009	.	.	.	500	0.4	0.2
Nov-09-2009	.	.	.	480	0.7	0.2
Nov-16-2009	.	.	.	660	1.0	0.4
Nov-23-2009	.	.	.	600	0.7	0.3
Nov-30-2009	.	.	.	680	<0.4	0.3
Dec-07-2009				660	0.5	0.3
Dec-14-2009	.	.	.	720	<0.4	0.3
Dec-21-2009	.	.	.	680	0.8	0.4
Dec-28-2009	.	.	.	630	0.4	0.4

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
Oct-06-2009	71	14.2	7.8	1,410	<0.4	0.6
Oct-13-2009	98	15.6	7.3	1,430	0.5	0.7
Oct-20-2009	178	17.3	7.8	1,300	<0.4	0.6
Oct-27-2009	172	15.8	7.7	1,360	<0.4	0.6
Nov-03-2009	166	15.4	7.9	1,340	<0.4	0.6
Nov-10-2009	143	12.8	7.5	1,330	0.7	0.6
Nov-17-2009	153	10.3	7.8	1,090	<0.4	0.6
Nov-24-2009	144	9.9	7.7	1,490	<0.4	0.8
Dec-01-2009	210	8.9	7.4	1,460	<0.4	0.6
Dec-08-2009	115	5.9	7.9	2,040	<0.4	0.9
Dec-15-2009	185	10.0	7.3	1,490	<0.4	0.8
Dec-22-2009	133	9.9	7.1	1,960	<0.4	1.0
Dec-29-2009	81	9.5	6.9	2,390	<0.4	0.8

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
Oct-06-2009	.	.	.	1,920	20.6	1.5
Oct-21-2009	.	.	.	2,810	32.2	1.9
Oct-27-2009	.	.	.	1,610	2.6	1.2
Nov-04-2009	.	.	.	1,720	9.7	2.0
Nov-10-2009	.	.	.	2,200	16.8	2.6
Nov-18-2009	.	.	.	2,020	23.0	1.5
Nov-25-2009	.	.	.	1,420	11.4	1.2
Dec-02-2009	.	.	.	1,640	10.2	1.9
Dec-09-2009	.	.	.	1,630	16.6	1.4
Dec-22-2009	.	.	.	1,740	17.5	1.5

Outside of normal range.

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
Oct-06-2009	310	15.5	7.8	1,040	0.6	0.5
Oct-13-2009	431	16.2	7.7	1,000	0.8	0.6
Oct-20-2009	844	18.0	7.7	910	0.5	0.6
Oct-27-2009	1,070	16.5	7.7	740	1.1	0.5
Nov-03-2009	766	15.0	7.8	790	1.1	0.5
Nov-10-2009	563	13.1	7.7	1,050	1.6	0.7
Nov-17-2009	533	10.9	7.8	1,180	1.4	0.8
Nov-24-2009	524	10.4	7.9	1,210	1.2	0.8
Dec-01-2009	517	9.4	7.7	1,280	1.2	0.8
Dec-08-2009	489	6.5	8.0	1,360	1.8	0.8
Dec-15-2009	664	10.1	7.8	1,300	2.0	1.0
Dec-22-2009	576	10.0	7.8	1,420	1.8	1.0
Dec-29-2009	477	9.4	7.2	1,570	2.0	1.0

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from January 2009 to December 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	%	%	%	%	%	%
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
Jul-2009	95	98	93	98	98	100
Aug-2009	98	98	88	93	100	100
Sep-2009	100	98	98	100	100	98
Oct-2009	100	100	95	95	95	100
Nov-2009	100	93	90	83	95	100
Dec-2009	98	88	93	98	100	98

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from January 2009 to December 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
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
Jul-2009	0.46	0.49	0.50	0.52	0.44	0.47
Aug-2009	0.42	0.40	0.41	0.38	0.43	0.52
Sep-2009	0.43	0.41	0.42	0.45	0.39	0.43
Oct-2009	0.51	0.52	0.49	0.50	0.41	0.44
Nov-2009	0.38	0.40	0.37	0.38	0.36	0.43
Dec-2009	0.50	0.48	0.52	0.49	0.46	0.47

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from January 2009 to December 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	%	%	%	%	%	%
Jan-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
Jul-2009	90	70	100	100	90	90
Aug-2009	100	100	100	100	100	100
Sep-2009	100	100	80	90	100	100
Oct-2009	80	90	100	90	90	100
Nov-2009	90	80	90	90	70†	70†
Dec-2009	90	90	90	100	100	80

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from January 2009 to December 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
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
Jul-2009	34.2	21.6	38.5	32.1	26.4	22.4
Aug-2009	42.6	40.9	38.5	37.8	30.6	24.7
Sep-2009	34.8	43.3	26.8	25.1	28.7	22.7
Oct-2009	36.7	32.8	42.2	33.5	31.1	28.8
Nov-2009	38.5	21.3	29.1	21.8	16.4	18.6
Dec-2009	30.2	30.7	35.4	35.2	39.7	30.9

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from January 2009 to December 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
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
Jul-2009	22.5	28.4	28.2	26.8	22.9	19.7
Aug-2009	21.7	26.4	24.6	26.6	22.0	23.0
Sep-2009	31.6	32.6	25.6	28.9	27.6	22.3
Oct-2009	35.3	30.5	32.2	26.8	20.4	19.2
Nov-2009	20.6*	39.0	35.8	33.5	26.2	28.1
Dec-2009	6.8*	28.5	21.7	26.7	20.9	24.1

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, October 2009 to December 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
Oct-05-2009	10	<0.4	1.9	<0.4	<0.4
Oct-07-2009	12	<0.4	2.1	<0.4	<0.4
Oct-09-2009	11	<0.4	2.0	<0.4	<0.4
Nov-02-2009	32	<0.4	7.8	<0.4	<0.4
Nov-04-2009	26	<0.4	11	<0.4	<0.4
Nov-06-2009	28	<0.4	8.0	<0.4	<0.4
Dec-14-2009	42	<0.4	6.4	<0.4	<0.4
Dec-16-2009	42	<0.4	7.0	<0.4	<0.4
Dec-18-2009	38	<0.4	6.4	<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, October 2009 to December 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
Oct-05-2009	32	82	54	34	8
Oct-07-2009	20	56	48	39	12
Oct-09-2009	31	77	56	30	10
Nov-02-2009	42	18	42	45	4
Nov-04-2009	35	38	53	43	9
Nov-06-2009	34	44	63	59	13
Dec-14-2009	29	32	43	28	1
Dec-16-2009	29	28	36	37	2
Dec-18-2009	26	22	34	3	<1

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