GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

March 2013

August 2013

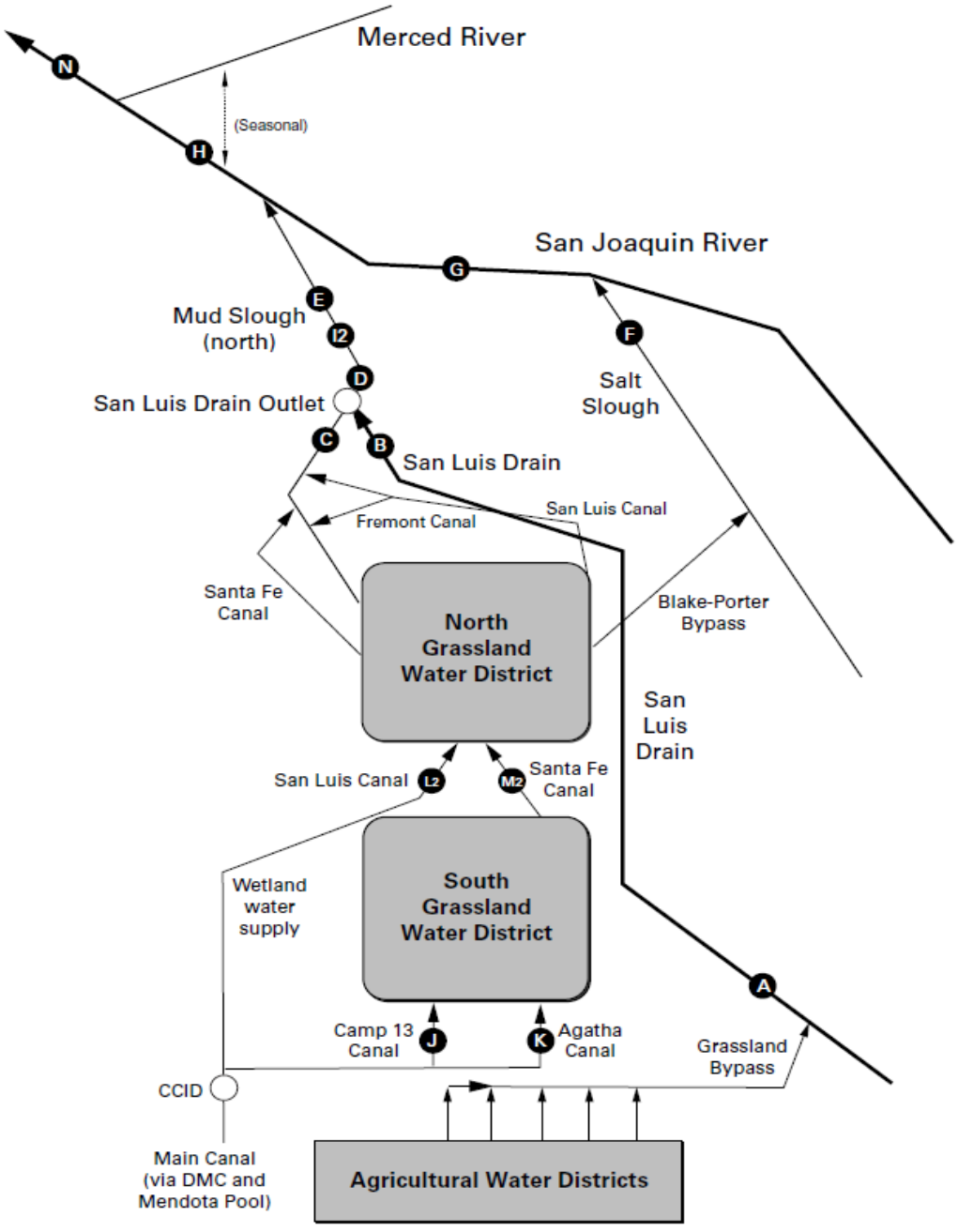
Preliminary Results

A cooperative effort of:

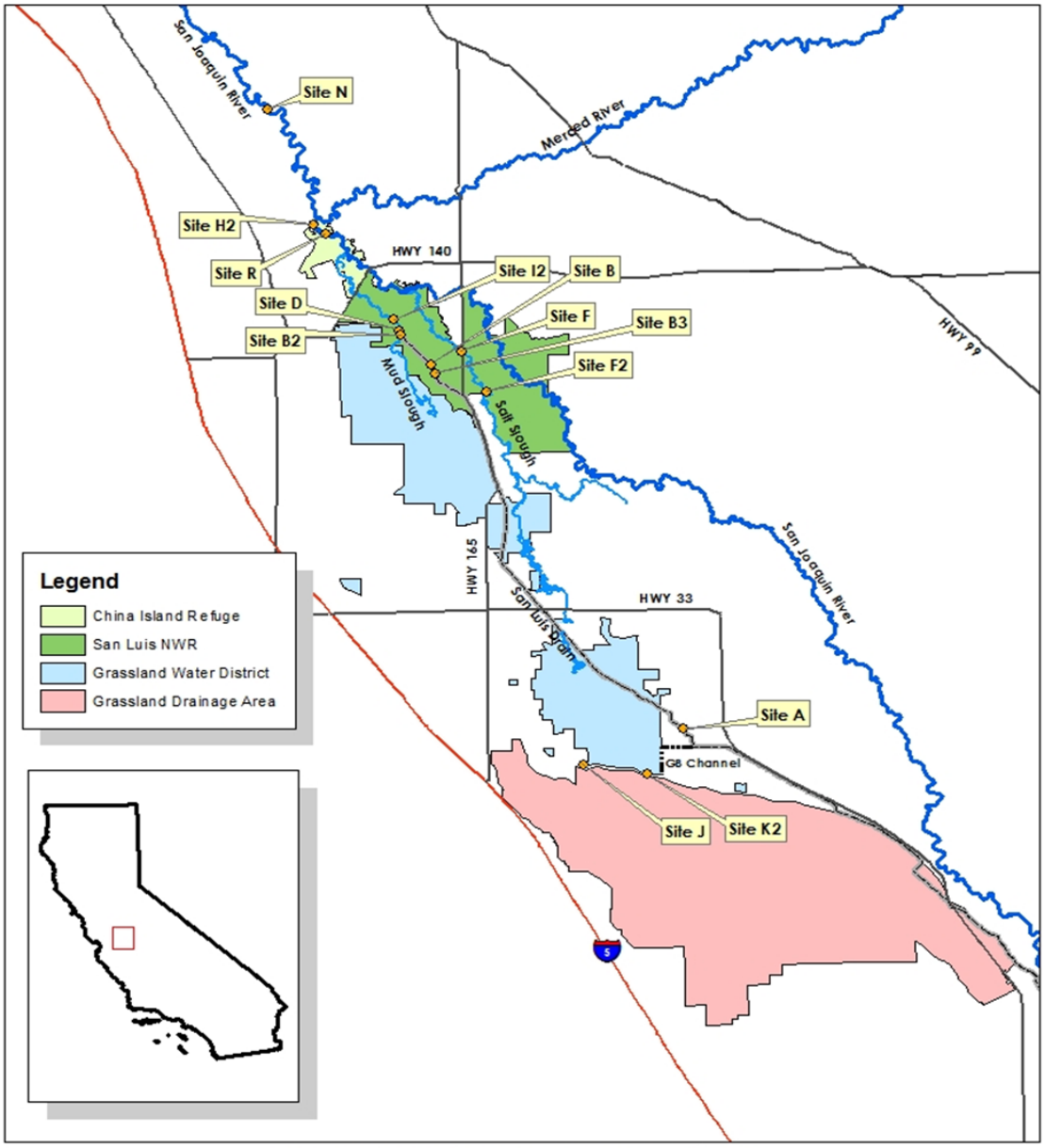
U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
California Department of Fish and Game
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

compiled by San Francisco Estuary Institute

Map 1: Current Monitoring Plan for the Grasslands Bypass Project



Map 2: Proposed 2013 Monitoring Plan for the Grasslands Bypass Project



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 2013.

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Salt Load
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	Computed
UNITS	cfs	°C	µS/cm	tons
Mar-01-2013	15	15.4	4,420	134
Mar-02-2013	22	16.0	4,100	181
Mar-03-2013	20	16.2	4,120	165
Mar-04-2013	16	15.7	4,390	142
Mar-05-2013	19	15.9	4,790	180
Mar-06-2013	22	14.3	4,760	207
Mar-07-2013	23	14.1	4,710	214
Mar-08-2013	19	13.9	4,700	174
Mar-09-2013	17	13.3	4,920	172
Mar-10-2013	12	14.2	4,830	114
Mar-11-2013	9	15.6	4,800	90
Mar-12-2013	10	17.1	4,860	96
Mar-13-2013	12	18.3	5,240	123
Mar-14-2013	10	19.1	5,330	110
Mar-15-2013	10	18.9	5,120	99
Mar-16-2013	12	18.4	5,000	123
Mar-17-2013	12	17.5	4,970	123
Mar-18-2013	12	16.8	5,010	125
Mar-19-2013	12	17.7	4,790	117
Mar-20-2013	10	17.9	4,650	89
Mar-21-2013	12	16.6	4,600	106
Mar-22-2013	13	14.1	4,400	118
Mar-23-2013	13	14.0	4,220	107
Mar-24-2013	14	15.9	4,340	122
Mar-25-2013	12	17.1	4,780	112
Mar-26-2013	11	17.5	5,250	119
Mar-27-2013	14	18.5	5,090	147
Mar-28-2013	11	19.1	5,170	117
Mar-29-2013	10	20.9	4,990	102
Mar-30-2013	14	21.5	5,020	136
Mar-31-2013	22	20.8	5,190	226
Mean	14	16.8	4,790	4,187
Total Acre-feet	875			
Salinity Load Value (Critical Year, March)				8,031

PRELIMINARY RESULTS

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), March 2013.

See Table 28 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	USBR	SLDMWA	USBR	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Mar-01-2013	24	15.6	8.4	4,860	25.0	3.2
Mar-02-2013	19	15.4	10.0	4,740	29.0	3.0
Mar-03-2013	24	15.4	10.0	5,410	25.0	3.3
Mar-04-2013	24	15.4	8.1	4,500	24.0	3.0
Mar-05-2013	19	15.4	8.1	4,320	23.0	2.4
Mar-06-2013	22	15.4	8.0	4,460	23.0	2.7
Mar-07-2013	24	15.4	8.2	4,350	23.0	3.0
Mar-08-2013	26	15.4	8.4	4,490	23.0	3.2
Mar-09-2013	21	15.4	9.0	4,630	26.0	3.0
Mar-10-2013	21	15.4	9.3	4,990	28.0	3.1
Mar-11-2013	16	15.4	8.4	5,010	36.0	3.0
Mar-12-2013	13	15.4	8.7	5,020	33.0	2.2
Mar-13-2013	12	15.4	8.4	5,020	27.0	1.8
Mar-14-2013	14	15.4	9.2	4,960	26.0	1.9
Mar-15-2013	12	15.4	10.0	4,880	27.0	1.8
Mar-16-2013	12	15.4	10.0	5,220	25.0	1.6
Mar-17-2013	13	15.4	9.2	4,940	23.0	1.6
Mar-18-2013	14	15.4	8.6	4,690	21.0	1.6
Mar-19-2013	13	15.4	9.2	4,720	20.0	1.4
Mar-20-2013	13	15.4	11.0	5,020	20.0	1.4
Mar-21-2013	10	15.4	9.8	5,310	19.0	1.0
Mar-22-2013	10	15.4	9.5	5,130	20.0	1.1
Mar-23-2013	14	15.4	9.8	5,060	21.0	1.6
Mar-24-2013	13	15.4	10.0	5,040	23.0	1.6
Mar-25-2013	14	15.4	10.0	5,120	22.0	1.7
Mar-26-2013	12	15.4	10.0	5,280	22.0	1.4
Mar-27-2013	12	15.4	9.6	5,030	19.0	1.2
Mar-28-2013	14	15.4	9.6	4,960	18.0	1.3
Mar-29-2013	12	15.4	8.4	4,930	17.0	1.1
Mar-30-2013	10	15.4	8.6	4,670	18.0	1.0
Mar-31-2013	13	15.4	9.3	4,870	19.0	1.3
Mean	16	15.4	9.2	4,890	23.4	2.0
Total Acre-feet	970					
Total (lbs)						63

Load Limitation for March 2013 (lbs)	92

♦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.

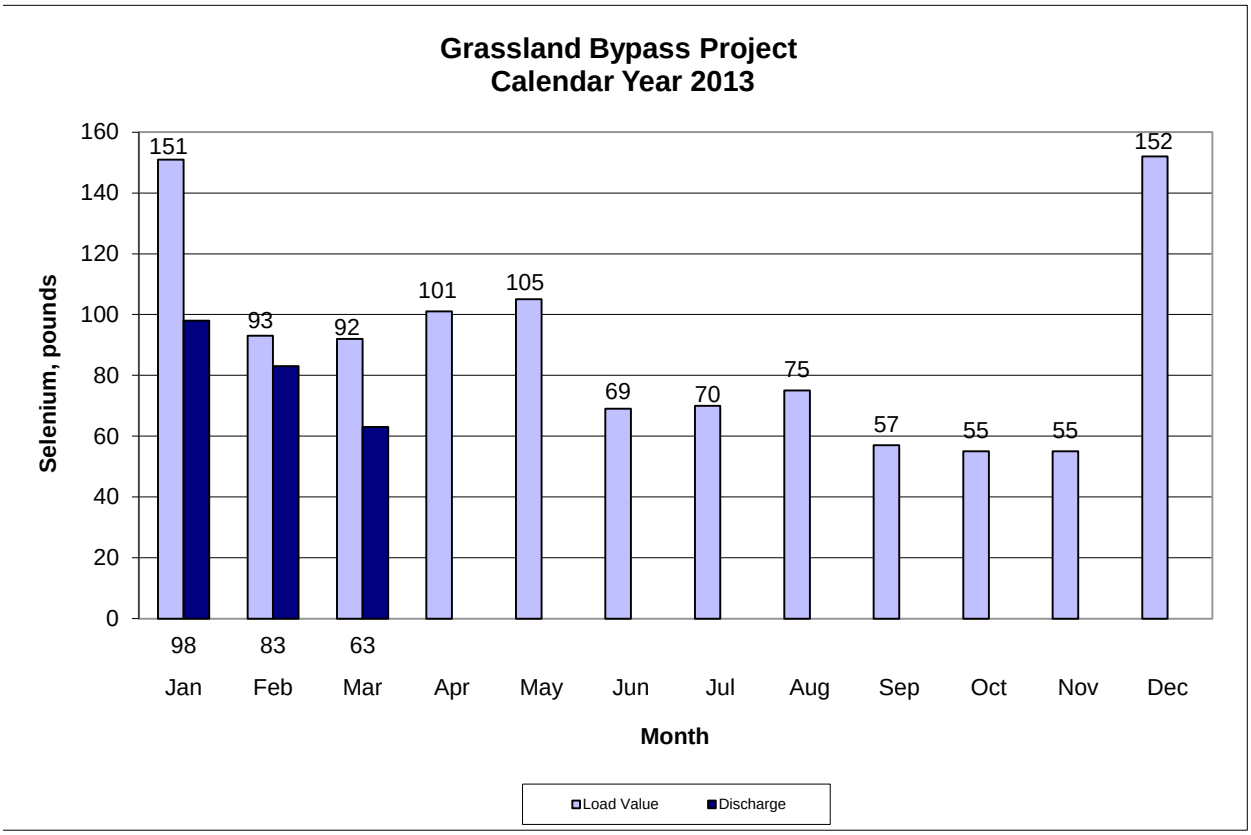


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), March 2013.

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Mar-01-2013	144	15.0	2,500
Mar-02-2013	146	15.9	2,370
Mar-03-2013	154	16.3	2,510
Mar-04-2013	171	16.0	2,330
Mar-05-2013	181	15.9	2,400
Mar-06-2013	179	14.8	2,470
Mar-07-2013	181	14.3	2,450
Mar-08-2013	190	14.6	2,420
Mar-09-2013	186	14.1	2,420
Mar-10-2013	179	14.3	2,480
Mar-11-2013	166	15.3	2,420
Mar-12-2013	178	16.6	2,240
Mar-13-2013	192	18.1	2,210
Mar-14-2013	196	19.1	2,320
Mar-15-2013	196	19.1	2,340
Mar-16-2013	190	18.7	2,420
Mar-17-2013	194	18.4	2,500
Mar-18-2013	196	17.6	2,470
Mar-19-2013	181	17.9	2,510
Mar-20-2013	164	18.4	2,600
Mar-21-2013	137	17.4	2,660
Mar-22-2013	119	14.7	2,610
Mar-23-2013	105	13.6	2,810
Mar-24-2013	83	15.3	3,040
Mar-25-2013	73	17.2	3,240
Mar-26-2013	84	18.0	2,880
Mar-27-2013	81	18.6	2,870
Mar-28-2013	79	19.3	2,860
Mar-29-2013	68	19.8	2,960
Mar-30-2013	62	20.9	3,130
Mar-31-2013	63	20.9	3,240
Mean	146	17.0	2,600

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), March 2013.

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Mar-01-2013	301	13.6	1,250
Mar-02-2013	292	14.8	1,320
Mar-03-2013	287	15.7	1,340
Mar-04-2013	287	15.4	1,290
Mar-05-2013	293	15.1	1,260
Mar-06-2013	298	14.6	1,320
Mar-07-2013	292	14.0	1,380
Mar-08-2013	284	14.1	1,380
Mar-09-2013	276	13.9	1,380
Mar-10-2013	259	13.8	1,420
Mar-11-2013	241	14.5	1,460
Mar-12-2013	220	15.8	1,570
Mar-13-2013	212	17.0	1,700
Mar-14-2013	219	18.0	1,680
Mar-15-2013	213	18.2	1,670
Mar-16-2013	193	18.0	1,680
Mar-17-2013	194	17.7	1,670
Mar-18-2013	202	17.0	1,640
Mar-19-2013	205	17.3	1,610
Mar-20-2013	201	17.8	1,680
Mar-21-2013	190	17.0	1,760
Mar-22-2013	179	14.9	1,830
Mar-23-2013	160	14.2	1,930
Mar-24-2013	142	15.3	2,000
Mar-25-2013	131	16.8	2,060
Mar-26-2013	126	17.6	2,030
Mar-27-2013	128	18.1	1,940
Mar-28-2013	136	19.0	1,790
Mar-29-2013	151	19.5	1,690
Mar-30-2013	160	20.5	1,690
Mar-31-2013	156	20.5	1,680
Mean	214	16.4	1,620

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), March 2013.

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Boron	Specific Conductance	Selenium (total)
DATA SOURCE	USGS	USGS	USBR	USGS	USBR
UNITS	cfs	°C	mg/L	µS/cm	µg/L
Mar-01-2013	681	14.5	1.0	1,350	1.2
Mar-02-2013	695	15.4	1.0	1,360	1.2
Mar-03-2013	712	16.1	1.0	1,350	1.1
Mar-04-2013	711	15.8	1.0	1,360	1.1
Mar-05-2013	720	15.9	1.0	1,380	1.2
Mar-06-2013	743	15.2	1.0	1,380	1.3
Mar-07-2013	768	14.5	1.0	1,390	1.0
Mar-08-2013	779	15.0	1.0	1,400	1.0
Mar-09-2013	805	14.8	1.0	1,390	1.1
Mar-10-2013	801	14.8	1.0	1,380	1.1
Mar-11-2013	759	15.2	1.0	1,400	1.1
Mar-12-2013	695	16.2	1.0	1,420	1.2
Mar-13-2013	677	17.1	1.0	1,500	1.1
Mar-14-2013	658	18.0	1.0	1,570	0.9
Mar-15-2013	676	18.2	1.2	1,580	0.9
Mar-16-2013	707	17.9	1.1	1,580	0.8
Mar-17-2013	750	17.9	1.2	1,620	0.9
Mar-18-2013	751	17.5	1.2	1,620	0.9
Mar-19-2013	769	17.7	1.2	1,570	0.9
Mar-20-2013	725	18.4	1.2	1,620	0.8
Mar-21-2013	704	17.7	1.3	1,690	0.8
Mar-22-2013	677	15.6	1.3	1,670	0.8
Mar-23-2013	670	14.4	1.2	1,620	0.7
Mar-24-2013	654	15.6	1.2	1,630	0.8
Mar-25-2013	649	16.7	1.2	1,650	0.7
Mar-26-2013	574	17.3	1.2	1,720	0.8
Mar-27-2013	535	18.1	1.2	1,710	0.8
Mar-28-2013	515	19.2	1.2	1,700	0.7
Mar-29-2013	511	19.7	1.1	1,660	0.7
Mar-30-2013	503	20.4	1.1	1,620	0.8
Mar-31-2013	510	20.9	1.0	1,580	0.7
Mean	680	16.8	NA	1,530	0.9
Total Acre-feet	41,820				

Table 6. Weekly water quality monitoring at Station A (inflow to San Luis Drain).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Total Suspended Solids	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA	Panoche DD	USBR	USBR	USBR
		Grab sample	Composite	Composite	Composite
UNITS	cfs	mg/L	µS/cm	µg/L	mg/L
Jan-02-2013	9	18	NA	NA	NA
Jan-07-2013	43	138	5,690	46	11.0
Jan-14-2013	10	13	6,330	50	12.0
Jan-21-2013	7	68	6,110	48	12.0
Jan-28-2013	10	38	5,970	50	10.0
Feb-04-2013	12	44	5,760	39	11.0
Feb-11-2013	12	71	5,600	30	11.0
Feb-18-2013	16	79	5,100	27	10.0
Feb-25-2013	20	90	4,850	26	9.9
Mar-04-2013	16	83	5,230	30	9.9
Mar-11-2013	9	81	5,550	26	10.0
Mar-18-2013	12	107	5,120	22	10.0
Mar-25-2013	12	53	5,730	33	10.0

Note: Weekly results for specific conductance, selenium, and boron from composite of seven daily samples.

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Total Suspended Solids	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA	Panoche DD	USBR	USBR	USBR	USBR	USBR
UNITS	cfs	mg/L	°C	.	µS/cm	µg/L	mg/L
Jan-03-2013	15	21	6.6	7.9	4,910	28.0	8.2
Jan-08-2013	48	21	7.9	8.0	4,640	26.0	8.0
Jan-15-2013	16	32	5.2	8.1	4,930	33.0	9.5
Jan-22-2013	13	22	7.9	8.1	4,800	32.0	8.5
Jan-29-2013	17	39	9.6	8.0	5,140	35.0	9.8
Feb-05-2013	16	33	11.5	8.1	4,920	37.0	8.6
Feb-12-2013	17	45	9.9	8.3	4,860	29.0	8.8
Feb-19-2013	20	52	12.0	8.0	4,870	26.0	9.0
Feb-26-2013	24	35	10.4	8.0	4,700	26.0	9.0
Mar-05-2013	19	34	14.8	8.3	4,360	23.0	8.5
Mar-12-2013	13	42	14.6	8.1	4,770	33.0	8.8
Mar-19-2013	13	37	16.9	8.5	4,550	20.0	8.2
Mar-29-2013	12	70	18.3	8.8	4,310	17.0	8.1

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow		Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	calculated ++		USBR	USBR	USBR	USBR	USBR
UNITS	cfs		°C	.	µS/cm	µg/L	mg/L
Jan-03-2013	127	.	6.3	8.0	1,870	0.6	1.4
Jan-08-2013	157	.	7.7	8.1	1,670	0.4	1.3
Jan-15-2013	112	.	4.8	8.1	1,960	0.4	1.5
Jan-22-2013	74	.	9.0	7.8	2,310	< 0.4	1.8
Jan-29-2013	86	.	9.0	8.0	2,310	<0.8	1.9
Feb-05-2013	76	.	11.5	8.0	2,290	0.5	2.0
Feb-12-2013	76	.	10.2	8.2	2,300	0.4	2.0
Feb-19-2013	83	.	11.5	7.8	2,210	0.4	1.9
Feb-26-2013	106	.	10.3	7.9	2,030	0.6	1.8
Mar-05-2013	162	.	14.5	8.0	2,190	1.0	2.0
Mar-12-2013	165	.	15.1	7.9	2,020	0.7	1.9
Mar-19-2013	168	.	15.7	8.1	2,330	0.7	2.3
Mar-29-2013	56	.	19.4	8.1	2,450	0.6	2.0

++ 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 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Turbidity	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	USBR	USBR	USBR	USBR	USBR	USBR
UNITS	cfs	°C	NTU	.	µS/cm	µg/L	mg/L
Jan-03-2013	142	6.4	9.5	7.8	2,190	3.6	2.2
Jan-08-2013	205	7.7	15.4	7.9	2,440	6.4	2.8
Jan-15-2013	128	5.0	NA	8.0	2,410	4.8	2.5
Jan-22-2013	87	8.8	9.1	8.0	2,760	4.5	2.8
Jan-29-2013	103	9.0	15.8	7.9	2,770	5.8	3.2
Feb-05-2013	92	11.3	14.1	7.8	2,880	7.2	3.0
Feb-12-2013	93	9.9	18.2	8.0	2,840	5.8	3.4
Feb-19-2013	103	11.6	23.6	7.8	2,810	5.0	3.3
Feb-26-2013	130	10.5	32.3	8.0	2,600	4.3	3.2
Mar-05-2013	181	14.9	45.1	8.0	2,450	3.3	2.6
Mar-12-2013	178	15.3	77.3	7.9	2,260	2.9	2.4
Mar-19-2013	181	15.4	99.9	8.0	2,510	2.0	2.9
Mar-29-2013	68	19.5	47.9	8.2	2,970	3.4	3.4

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER		Temperature	Turbidity	pH	Specific Conductance	Selenium	Boron
DATA SOURCE		USBR	USBR	USBR	USBR	USBR	USBR
UNITS		°C	NTU	.	µS/cm	µg/L	mg/L
Jan-03-2013	Site Inaccessible	NA	NA	NA	NA	NA	NA
Jan-08-2013	In Early January	NA	NA	NA	NA	NA	NA
Jan-15-2013	.	3.8	NA	8.0	2,870	4.4	2.5
Jan-22-2013	.	9.0	12	7.5	7,980	4.2	2.8
Jan-29-2013	Site Inaccessible	NA	NA	NA	NA	NA	NA
Feb-05-2013	Late January	NA	NA	NA	NA	NA	NA
Feb-12-2013	through	NA	NA	NA	NA	NA	NA
Feb-19-2013	mid-February	NA	NA	NA	NA	NA	NA
Feb-26-2013	.	10.3	45	7.9	3,910	4.1	3.2
Mar-05-2013	.	15.0	35	8.0	3,350	3.3	2.8
Mar-12-2013	.	14.4	64	7.9	2,460	3.0	2.4
Mar-19-2013	.	16.1	40	8.0	2,640	2.1	2.9
Mar-29-2013	No Flow	NA	NA	NA	NA	NA	NA

No samples collected at this site early January and late January through mid-February because site was inaccessible.

No samples collected late March because there was no flow at the site.

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	USBR	USBR	USBR	USBR	USBR
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Jan-03-2013	124	6.5	7.4	1,750	0.4	0.9
Jan-08-2013	160	7.6	7.6	1,540	0.5	0.7
Jan-15-2013	130	5.1	7.7	1,720	0.5	0.9
Jan-22-2013	118	7.8	7.4	1,600	0.4	0.8
Jan-29-2013	106	8.8	7.6	1,700	< 0.8	0.9
Feb-05-2013	93	10.7	6.9	1,880	0.8	0.9
Feb-12-2013	101	9.1	7.5	1,860	< 0.4	1.0
Feb-19-2013	208	10.9	7.2	1,300	0.7	0.6
Feb-26-2013	308	9.4	7.2	1,210	0.6	0.5
Mar-05-2013	293	13.8	7.0	1,310	0.7	0.6
Mar-12-2013	220	13.9	7.1	1,580	0.4	0.7
Mar-19-2013	205	15.4	7.5	1,570	0.6	0.7
Mar-29-2013	151	18.3	7.3	1,720	0.6	0.8

Table 12. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	USBR	USBR	USBR	USBR	USBR
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Jan-03-2013	385	6.1	8.0	1,020	< 0.4	0.4
Jan-08-2013	588	7.0	8.6	594	< 0.4	0.2
Jan-15-2013	297	5.0	7.9	1,350	< 0.4	0.5
Jan-22-2013	239	7.7	8.1	1,580	< 0.4	0.6
Jan-29-2013	195	9.0	7.8	1,670	< 0.8	0.7
Feb-05-2013	149	11.6	8.0	1,810	0.5	0.8
Feb-12-2013	134	9.9	8.0	2,250	< 0.4	0.9
Feb-19-2013	215	11.0	7.6	1,440	0.6	0.6
Feb-26-2013	315	9.8	8.0	1,360	0.6	0.5
Mar-05-2013	320	14.6	7.9	1,430	0.6	0.6
Mar-12-2013	287	14.8	8.0	1,670	0.5	0.7
Mar-19-2013	248	16.2	7.9	1,800	0.6	0.7
Mar-29-2013	186	19.3	8.0	1,980	0.6	0.8

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jan-02-2013	10	.	.	281	0.8	0.1
Jan-07-2013	15	.	.	400	1.5 U	0.2
Jan-14-2013	15	.	.	448	1.0	0.3
Jan-22-2013	15	.	.	363	1.5 U	0.2
Jan-28-2013	15	.	.	455	1.4 U	0.3
Feb-04-2013	15	.	.	607	1.2	0.4 U
Feb-11-2013	15	.	.	593	0.9	0.3
Feb-19-2013	5	.	.	790	1.3	0.4 U
Feb-25-2013	5	.	.	655	1.0	0.3
Mar-04-2013	5	.	.	540	0.9	0.3
Mar-11-2013	5	.	.	618	1.1	0.3
Mar-18-2013	5	.	.	693	1.5	0.4
Mar-25-2013	5	.	.	968	1.6	0.6 U

Table 14. Weekly water quality monitoring at Station K (Agatha Canal).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jan-02-2013	50	.	.	346	0.8	0.2
Jan-07-2013	50	.	.	452	1.1	0.3
Jan-14-2013	50	.	.	501	1.0	0.3
Jan-22-2013	75	.	.	349	0.9	0.2
Jan-28-2013	75	.	.	438	1.3	0.3
Feb-04-2013	75	.	.	556	1.1	0.3
Feb-11-2013	75	.	.	556	0.9	0.3
Feb-19-2013	65	.	.	621	0.8	0.3
Feb-25-2013	65	.	.	757	0.9	0.5
Mar-04-2013	0	.	.	653	1.1	0.4
Mar-11-2013	0	.	.	1,400	< 0.4	1.8 U
Mar-18-2013	0	.	.	1,590	0.5	3.0 U
Mar-25-2013	0	.	.	2,100	0.7	2.7 U

Table 15. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jan-02-2013	NA	.	.	539	0.6	0.4
Jan-07-2013	NA	.	.	933	0.5	0.9
Jan-14-2013	NA	.	.	1,510	1.0	1.4
Jan-22-2013	NA	.	.	1,470	0.9	1.4
Jan-28-2013	NA	.	.	1,090	< 0.8	1.1
Feb-04-2013	NA	.	.	1,160	1.0	1.1
Feb-11-2013	NA	.	.	2,020	1.5	2.4 U
Feb-19-2013	NA	.	.	1,340	0.9	1.3
Feb-25-2013	NA	.	.	1,130	1.3	1.0
Mar-04-2013	NA	.	.	2,200	2.7 U	2.5 U
Mar-11-2013	NA	.	.	2,340	2.3 U	2.9 U
Mar-18-2013	NA	.	.	2,990	2.9 U	3.6 U
Mar-25-2013	NA	.	.	1,770	1.7	1.8

Table 16. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	Panoche DD	Panoche DD	Panoche DD
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jan-02-2013	NA	.	.	549	0.5	0.4
Jan-07-2013	NA	.	.	1,260	0.8	1.4
Jan-14-2013	NA	.	.	1,290	0.9	1.4
Jan-22-2013	NA	.	.	1,250	1.0	1.4
Jan-28-2013	NA	.	.	1,100	0.9	1.2
Feb-04-2013	NA	.	.	1,170	1.1	1.1
Feb-11-2013	NA	.	.	1,020	0.8	1.1
Feb-19-2013	NA	.	.	1,420	0.9	1.3
Feb-25-2013	NA	.	.	1,250	1.0	1.2
Mar-04-2013	NA	.	.	1,730	2.0 U	1.9
Mar-11-2013	NA	.	.	1,560	0.8	1.6
Mar-18-2013	NA	.	.	2,160	0.9	2.5
Mar-25-2013	NA	.	.	2,260	1.1	2.5

Table 17. Weekly water quality monitoring at Station H1 (Above Newman WW (previously SJR at Hills Ferry)).

(Collected data intended for use with biological monitoring.)

See Table 28 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-03-2013	.	.	.	461	1.7	1.1
Jan-09-2013	.	.	.	449	1.5	1.1
Jan-16-2013	.	.	.	583	1.8	1.3
Jan-23-2013	.	.	.	408	1.2	1.0
Jan-30-2013	.	.	.	734	2.0	1.5
Feb-06-2013	.	.	.	452	1.5	1.1
Feb-13-2013	.	.	.	781	2.6	1.8
Feb-27-2013	.	.	.	1,790	1.9	1.2
Mar-06-2013	.	.	.	1,810	1.6	1.3
Mar-13-2013	.	.	.	2,250	8.8 U	1.5
Mar-20-2013	.	.	.	2,290	1.4	1.7
Mar-27-2013	.	.	.	1,910	1.6	1.3

Note: In March of 2013 samples were collected upstream of Station H1. Site name will be changed to Site R (SJR at China Island) under the 2013 Monitoring Plan.

Table 18. Weekly water quality monitoring at Station H2 (San Joaquin River at Hills Ferry).

(Collected data intended for use with biological monitoring.)

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	.	.	SLDMWA	SLDMWA	SLDMWA
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jan-03-2013	1,000	.	.	NA	NA	NA
Jan-09-2013	1,290	.	.	NA	NA	NA
Jan-16-2013	827	.	.	NA	NA	NA
Jan-23-2013	705	.	.	NA	NA	NA
Jan-30-2013	670	.	.	NA	NA	NA
Feb-06-2013	613	.		NA	NA	NA
Feb-13-2013	558	.	.	NA	NA	NA
Feb-27-2013	734	.	.	NA	NA	NA
Mar-06-2013	771	.	.	NA	NA	NA
Mar-13-2013	714	.	.	NA	NA	NA
Mar-20-2013	1,270	.	.	NA	NA	NA
Mar-27-2013	742	.	.	NA	NA	NA

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

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	USBR	USBR	USBR	USBR	USBR
UNITS	cfs	°C	°C	°C	µg/L	mg/L
Jan-03-2013	1050	6.4	7.8	1,020	0.9	0.6
Jan-08-2013	1200	7.5	8.0	863	0.8	0.5
Jan-15-2013	883	5.5	8.0	1,290	1.0	0.8
Jan-22-2013	733	8.1	8.1	1,400	1.0	0.8
Jan-29-2013	687	9.3	7.9	1,480	1.2	0.9
Feb-05-2013	613	11.5	8.1	1,560	1.3	0.9
Feb-12-2013	570	9.8	8.2	1,620	1.2	1.0
Feb-19-2013	588	11.5	7.9	1,420	1.2	0.9
Feb-26-2013	680	10.6	8.0	1,440	1.1	0.9
Mar-05-2013	720	15.1	8.0	1,510	1.4	1.0
Mar-12-2013	695	14.8	8.1	1,610	1.2	1.1
Mar-19-2013	769	16.4	8.0	1,680	0.9	1.2
Mar-29-2013	511	18.7	8.1	1,760	0.9	1.0

Table 20. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).

See Table 28 for explanation of footnotes and agency abbreviations.

PARAMETER				Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	USBR	USBR	USBR
UNITS	.	.	.	µS/cm	µg/L	mg/L
Jan-02-2013	.	.	.	306	1.0	0.2
Jan-07-2013	.	.	.	408	1.4 U	0.2
Jan-14-2013	.	.	.	501	1.3 U	0.3
Jan-22-2013	.	.	.	330	1.0	0.2
Jan-28-2013	.	.	.	455	1.1	0.3
Feb-04-2013	.	.	.	602	1.1	0.4 U
Feb-11-2013	.	.	.	672	1.0	0.4 U
Feb-19-2013	.	.	.	740	1.1	0.4 U
Feb-25-2013	.	.	.	712	0.9	0.4 U
Mar-04-2013	.	.	.	666	0.9	0.4 U
Mar-11-2013	.	.	.	669	1.0	0.4 U
Mar-18-2013	.	.	.	682	1.7	0.4
Mar-25-2013	.	.	.	674	1.1	0.4

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from April 2012 to March 2013. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 28 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-2012	98	100	98	95	93	93
May-2012	98	88	98	88	90	95
Jun-2012	95	100	100	98	100	98
Jul-2012	68	90	98	98	95	98
Aug-2012	65	93	100	100	93	93
Sep-2012	98	100	100	95	98	93
Oct-2012	NA	NA	NA	NA	NA	NA
Nov-2012	100	93	100	95	98	100
Dec-2012	NA	NA	NA	NA	NA	NA
Jan-2013	NA	NA	NA	NA	NA	NA
Feb-2013	NA	NA	NA	NA	NA	NA
Mar-2013	98	98	98	93	95	88

Table 22. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from April 2012 to March 2013. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 28 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-2012	0.39	0.35	0.34	0.40	0.34	0.34
May-2012	0.32	0.32	0.36	0.34	0.30	0.31
Jun-2012	0.34	0.37	0.39	0.38	0.38	0.36
Jul-2012	0.27	0.33	0.39	0.37	0.34	0.36
Aug-2012	0.22	0.33	0.31	0.30	0.33	0.30
Sep-2012	0.33	0.27	0.31	0.32	0.32	0.34
Oct-2012	NA	NA	NA	NA	NA	NA
Nov-2012	0.29	0.33	0.34	0.33	0.28	0.35
Dec-2012	NA	NA	NA	NA	NA	NA
Jan-2013	NA	NA	NA	NA	NA	NA
Feb-2013	NA	NA	NA	NA	NA	NA
Mar-2013	0.39	0.37	0.37	0.38	0.32	0.33

Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from April 2012 to March 2013. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 28 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-2012	100	80	90	100	100	90
May-2012	90	90	80	90	100	100
Jun-2012	90	80	90	90	100	100
Jul-2012	90	20*	40*	100	100	100
Aug-2012	40*	100	100	100	100	100
Sep-2012	90	100	90	80	90	100
Oct-2012	NA	NA	NA	NA	NA	NA
Nov-2012	80	90	100	90	90	100
Dec-2012	NA	NA	NA	NA	NA	NA
Jan-2013	NA	NA	NA	NA	NA	NA
Feb-2013	NA	NA	NA	NA	NA	NA
Mar-2013	90	100	90	100	100	100

Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from April 2012 to March 2013. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 28 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-2012	35.4	30.0	33.7	27.7	31.4	25.4
May-2012	33.0*	39.7	40.2	42.2	47.2	38.9
Jun-2012	41.9	37.7	33.1	29.8	35.7	28.3
Jul-2012	56.3	24.1*	36.4	54.3	46.8	55.8
Aug-2012	10.2*	25.0	26.2	27.3	29.3	24.5
Sep-2012	28.2	26.2	34.6	18.2*	29.7	24.2
Oct-2012	NA	NA	NA	NA	NA	NA
Nov-2012	25.7	21.1	23.8	21.6	22.6	22.8
Dec-2012	NA	NA	NA	NA	NA	NA
Jan-2013	NA	NA	NA	NA	NA	NA
Feb-2013	NA	NA	NA	NA	NA	NA
Mar-2013	32.9	28.9	32.7	36.2	34.8	31.7

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from April 2012 to March 2013. Each value is the mean of 4 replicates.

See Table 28 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-2012	22.2	30.9	27.5	24.4	23.4	23.5
May-2012	18.1	8.3*	20.2	21.1	19.5	16.7
Jun-2012	21.8	27.7	27.1	34.3	23.1	16.3‡
Jul-2012	23.8	22.8	23.3	26.2	25.8	27.2
Aug-2012	24.3	29.5	27.8	32.3	27.5	23.1
Sep-2012	13.7*	19.0	17.4	20.2	14.4	16.8
Oct-2012	NA	NA	NA	NA	NA	NA
Nov-2012	14.1*	25.4	24.7*	29.3	26.7	19.4
Dec-2012	NA	NA	NA	NA	NA	NA
Jan-2013	NA	NA	NA	NA	NA	NA
Feb-2013	NA	NA	NA	NA	NA	NA
Mar-2013	19.1*	22.8	22.7	19.2*	24.8	20.2

Table 26. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, January 2013 to March 2013.

See Table 28 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-17-2013	NA	NA	NA	NA	NA
Jan-19-2013	NA	NA	NA	NA	NA
Jan-21-2013	NA	NA	NA	NA	NA
Feb-17-2013	NA	NA	NA	NA	NA
Feb-19-2013	NA	NA	NA	NA	NA
Feb-21-2013	NA	NA	NA	NA	NA
Mar-04-2013	24	0.9	3.7	0.6	< 0.4
Mar-06-2013	24	0.7	3.3	0.5	< 0.4
Mar-08-2013	24	0.6	3.7	0.5	< 0.4

Table 27. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity January 2013 to March 2013.

See Table 28 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-17-2013	NA	NA	NA	NA	NA
Jan-19-2013	NA	NA	NA	NA	NA
Jan-21-2013	NA	NA	NA	NA	NA
Feb-17-2013	NA	NA	NA	NA	NA
Feb-19-2013	NA	NA	NA	NA	NA
Feb-21-2013	NA	NA	NA	NA	NA
Mar-04-2013	41	66	73	17	13
Mar-06-2013	50	94	95	28	15
Mar-08-2013	70	109	84	20	10

Table 28. 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
41,334.00	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 December 1998.
❖	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated
PPD	Panoche Drainage Distraict
U	results are determined to be an outlier at the time of data validation