GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

January 2013

July 2013

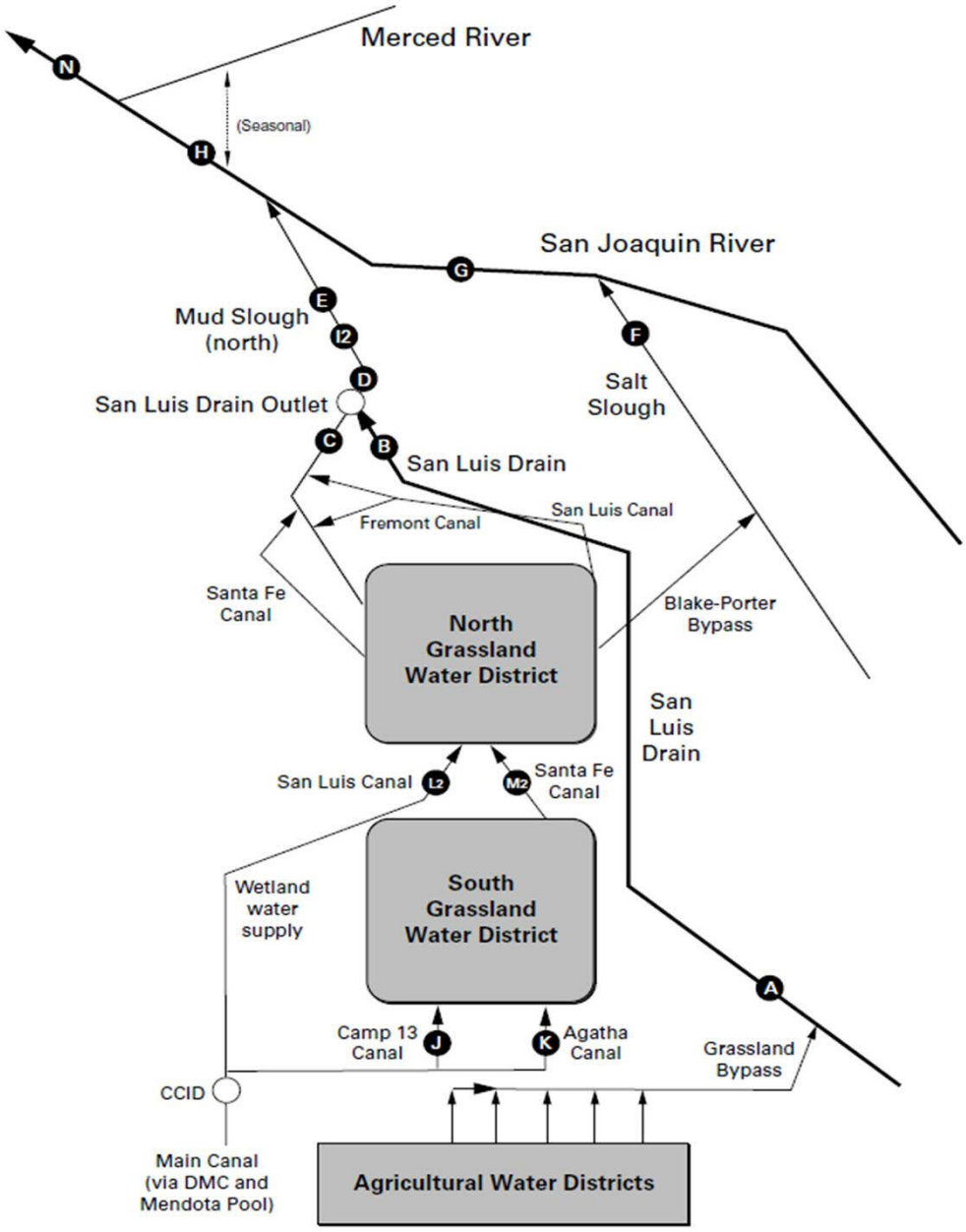
Preliminary Results

A cooperative effort of:

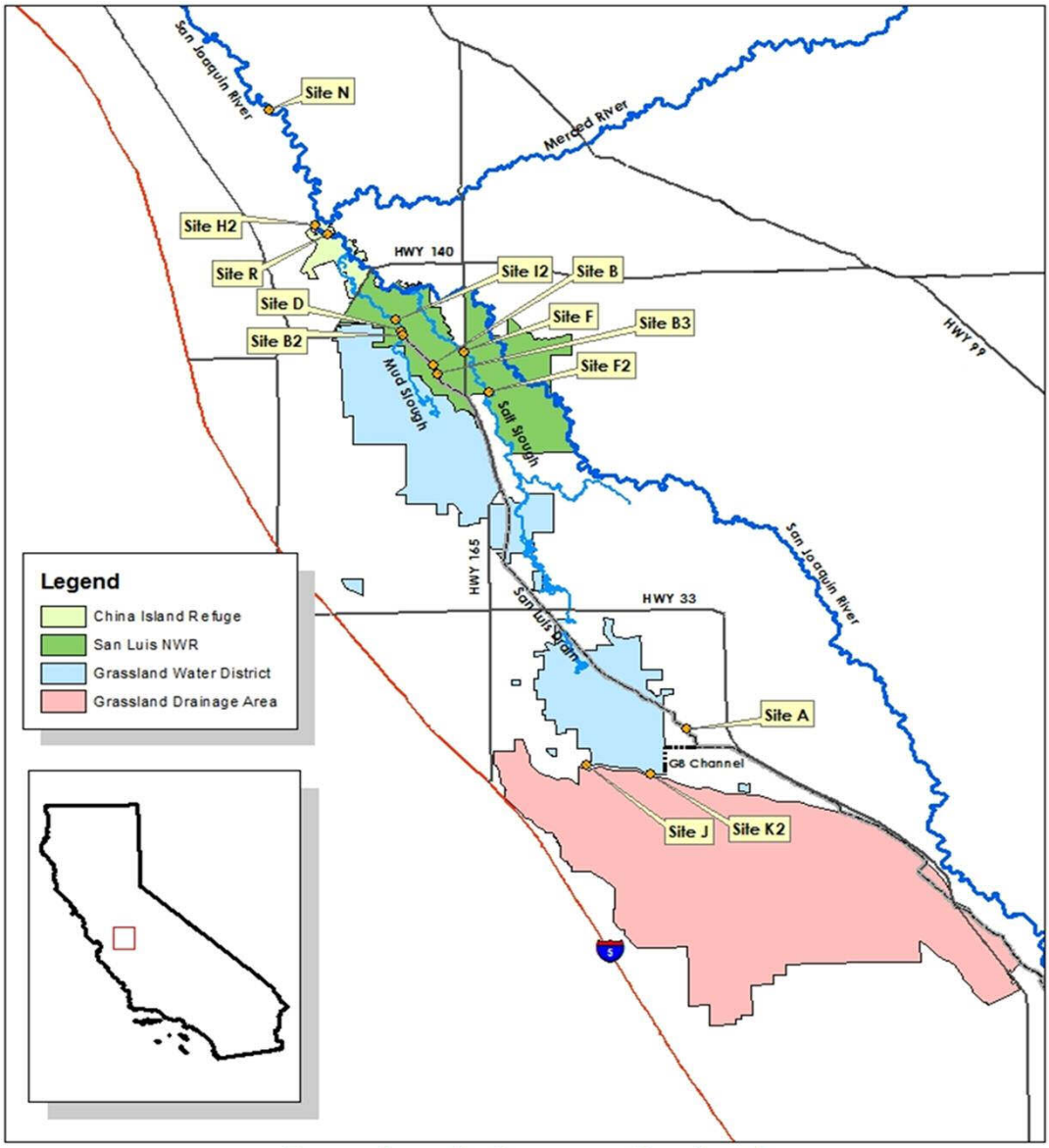
U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
California Department of Fish and Game
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

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), January 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
Jan-01-2013	12	7.1	5,400	132
Jan-02-2013	9	6.7	5,480	103
Jan-03-2013	8	6.5	5,750	87
Jan-04-2013	8	7.0	5,730	86
Jan-05-2013	7	7.3	5,700	85
Jan-06-2013	25	8.8	5,290	262
Jan-07-2013	43	8.2	4,890	419
Jan-08-2013	28	8.4	4,920	272
Jan-09-2013	21	8.6	5,090	213
Jan-10-2013	16	8.1	5,300	173
Jan-11-2013	12	6.7	5,110	125
Jan-12-2013	12	6.6	5,140	128
Jan-13-2013	11	5.7	5,250	110
Jan-14-2013	10	4.9	5,400	107
Jan-15-2013	8	4.9	5,720	94
Jan-16-2013	7	5.6	5,670	81
Jan-17-2013	7	6.4	5,670	77
Jan-18-2013	7	7.2	5,740	78
Jan-19-2013	10	8.0	5,330	111
Jan-20-2013	7	8.1	5,560	77
Jan-21-2013	7	8.1	5,830	80
Jan-22-2013	8	8.3	6,080	99
Jan-23-2013	9	8.5	6,060	104
Jan-24-2013	9	9.6	5,950	106
Jan-25-2013	8	11.5	5,830	99
Jan-26-2013	16	13.4	5,250	168
Jan-27-2013	15	10.9	4,990	154
Jan-28-2013	10	9.5	5,160	100
Jan-29-2013	11	9.7	5,410	119
Jan-30-2013	14	10.1	5,300	144
Jan-31-2013	13	10.9	5,190	138
Mean	13	8.1	5,460	4,131
Total Acre-feet	771			
Salinity Load Value (Critical Year, January)				**4,283**

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), January 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
Jan-01-2013	19	4.7	10.0	4,740	33.0	3.5
Jan-02-2013	18	5.3	9.7	4,750	34.0	3.4
Jan-03-2013	15	5.1	9.1	4,530	30.0	2.5
Jan-04-2013	14	5.5	9.5	4,570	30.0	2.2
Jan-05-2013	13	6.3	10.0	4,620	32.0	2.3
Jan-06-2013	16	7.5	9.0	4,500	30.0	2.6
Jan-07-2013	31	6.5	8.3	4,230	33.0	5.5
Jan-08-2013	48	7.3	8.1	4,220	27.0	7.0
Jan-09-2013	34	6.6	10.0	4,760	34.0	6.2
Jan-10-2013	27	6.2	10.0	4,920	32.0	4.6
Jan-11-2013	23	5.3	11.0	4,830	38.0	4.7
Jan-12-2013	19	4.7	9.8	4,680	35.0	3.5
Jan-13-2013	19	2.3	9.8	4,550	33.0	3.3
Jan-14-2013	17	2.9	9.7	4,520	32.0	2.9
Jan-15-2013	16	4.0	9.7	4,590	33.0	2.9
Jan-16-2013	15	5.6	8.6	4,490	30.0	2.4
Jan-17-2013	14	6.6	8.6	4,290	30.0	2.2
Jan-18-2013	13	6.9	NA	4,380	31.5 e	2.2
Jan-19-2013	13	7.1	8.1	4,340	33.0	2.3
Jan-20-2013	16	7.5	8.4	4,300	31.0	2.7
Jan-21-2013	13	7.2	8.6	4,310	28.0	2.0
Jan-22-2013	13	8.4	8.2	4,410	31.0	2.1
Jan-23-2013	14	8.5	8.5	4,470	29.0	2.2
Jan-24-2013	15	10.7	7.8	4,370	25.0	2.0
Jan-25-2013	16	13.3	9.0	4,540	28.0	2.4
Jan-26-2013	15	13.7	7.9	4,720	26.0	2.0
Jan-27-2013	20	8.2	8.6	4,470	31.0	3.3
Jan-28-2013	21	7.8	9.0	4,820	35.0	4.0
Jan-29-2013	17	8.7	9.3	4,970	35.0	3.2
Jan-30-2013	17	9.6	9.3	4,950	33.0	3.0
Jan-31-2013	19	9.5	9.8	5,000	31.0	3.2
Mean	19	7.1	9.1	4,580	31.4	3.2
Total Acre-feet	**1,150**					
Total (lbs)						**98**

Load Limitation for January 2013 (lbs)	**151**

Sampling error January 18, no sample taken

♦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.

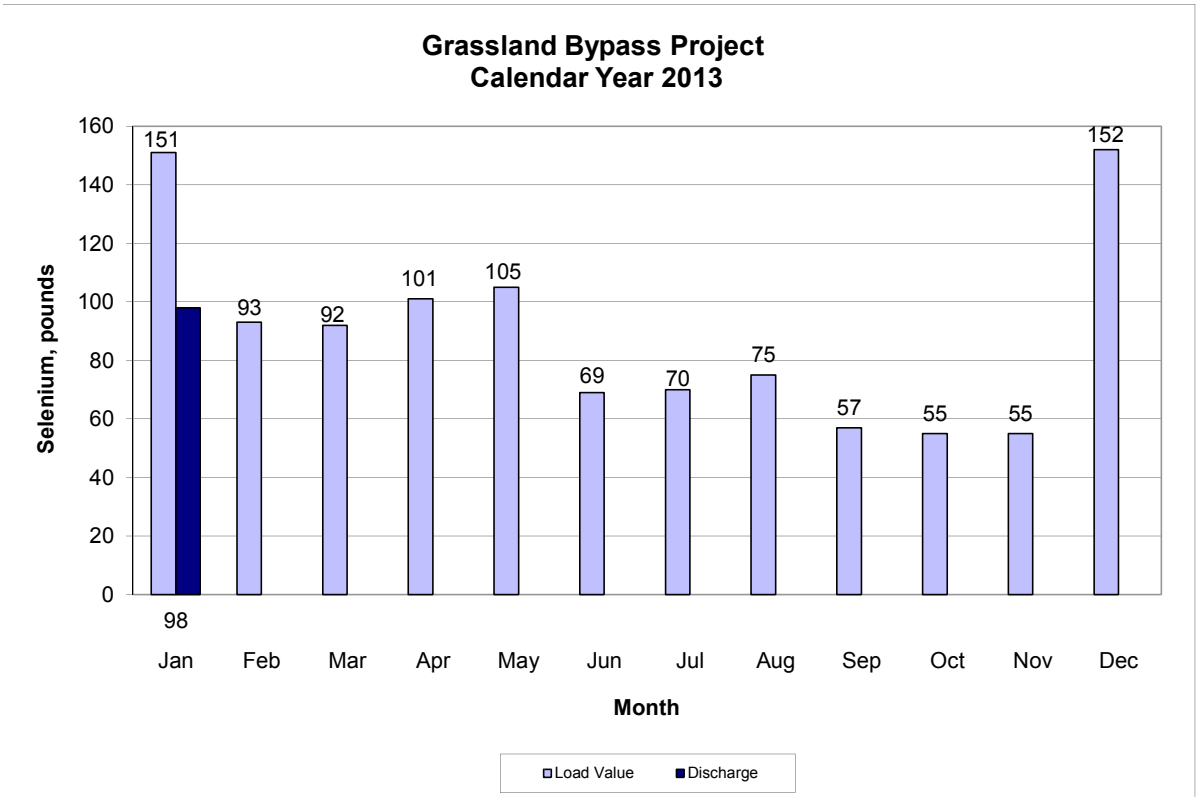


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), January 2013.

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
Jan-01-2013	157	7.9	2,160
Jan-02-2013	146	7.7	2,180
Jan-03-2013	142	7.8	2,110
Jan-04-2013	130	8.1	2,170
Jan-05-2013	121	8.4	2,230
Jan-06-2013	158	9.2	2,070
Jan-07-2013	187	8.8	2,110
Jan-08-2013	205	9.0	2,290
Jan-09-2013	194	9.1	2,270
Jan-10-2013	170	8.8	2,310
Jan-11-2013	160	8.1	2,250
Jan-12-2013	156	7.7	2,160
Jan-13-2013	150	7.0	2,210
Jan-14-2013	139	6.3	2,260
Jan-15-2013	128	6.4	2,330
Jan-16-2013	113	6.9	2,410
Jan-17-2013	102	7.6	2,440
Jan-18-2013	96	8.3	2,510
Jan-19-2013	91	8.8	2,560
Jan-20-2013	92	9.1	2,630
Jan-21-2013	88	9.4	2,610
Jan-22-2013	87	9.8	2,620
Jan-23-2013	99	10.2	2,500
Jan-24-2013	100	10.7	2,480
Jan-25-2013	104	11.7	2,490
Jan-26-2013	101	13.0	2,520
Jan-27-2013	106	11.9	2,550
Jan-28-2013	107	10.9	2,650
Jan-29-2013	103	10.8	2,660
Jan-30-2013	102	11.1	2,650
Jan-31-2013	106	11.5	2,660
Mean	127	9.1	2,390

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), January 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
Jan-01-2013	151	7.8	1,580
Jan-02-2013	134	7.8	1,680
Jan-03-2013	124	7.8	1,670
Jan-04-2013	118	7.9	1,660
Jan-05-2013	111	8.2	1,710
Jan-06-2013	127	9.0	1,630
Jan-07-2013	147	8.8	1,550
Jan-08-2013	160	8.6	1,480
Jan-09-2013	164	8.6	1,490
Jan-10-2013	158	8.6	1,550
Jan-11-2013	153	8.0	1,560
Jan-12-2013	148	7.5	1,570
Jan-13-2013	143	6.9	1,580
Jan-14-2013	137	6.4	1,570
Jan-15-2013	130	6.4	1,600
Jan-16-2013	124	6.8	1,620
Jan-17-2013	117	7.3	1,660
Jan-18-2013	123	7.8	1,610
Jan-19-2013	131	8.0	1,470
Jan-20-2013	127	8.3	1,490
Jan-21-2013	122	8.5	1,480
Jan-22-2013	118	8.9	1,510
Jan-23-2013	117	9.4	1,530
Jan-24-2013	116	10.2	1,510
Jan-25-2013	113	11.2	1,530
Jan-26-2013	113	12.5	1,540
Jan-27-2013	115	11.9	1,570
Jan-28-2013	113	10.7	1,530
Jan-29-2013	106	10.4	1,630
Jan-30-2013	98	10.6	1,720
Jan-31-2013	98	11.0	1,750
Mean	128	8.8	1,580

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), January 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
Jan-01-2013	1,290	8.0	NA	820	NA
Jan-02-2013	1,150	7.7	NA	895	NA
Jan-03-2013	1,050	7.5	NA	982	NA
Jan-04-2013	969	7.7	NA	1,030	NA
Jan-05-2013	896	8.0	NA	1,090	NA
Jan-06-2013	892	8.8	NA	1,170	NA
Jan-07-2013	929	8.5	NA	990	NA
Jan-08-2013	1,200	8.3	NA	618	NA
Jan-09-2013	1,260	8.3	NA	690	NA
Jan-10-2013	1,210	8.3	NA	807	NA
Jan-11-2013	1,120	7.9	NA	932	NA
Jan-12-2013	1,020	7.6	NA	1,040	NA
Jan-13-2013	960	7.1	NA	1,110	NA
Jan-14-2013	924	6.5	NA	1,190	NA
Jan-15-2013	883	6.6	NA	1,270	NA
Jan-16-2013	848	6.9	NA	1,350	NA
Jan-17-2013	815	7.2	NA	1,410	NA
Jan-18-2013	792	7.7	NA	1,480	NA
Jan-19-2013	768	8.1	NA	1,440	NA
Jan-20-2013	747	8.4	NA	1,400	NA
Jan-21-2013	747	8.6	NA	1,440	NA
Jan-22-2013	733	8.9	NA	1,500	NA
Jan-23-2013	714	9.4	NA	1,570	NA
Jan-24-2013	702	10.0	NA	1,640	NA
Jan-25-2013	691	11.2	NA	1,670	NA
Jan-26-2013	690	12.3	NA	1,690	NA
Jan-27-2013	680	11.6	NA	1,680	NA
Jan-28-2013	683	10.6	NA	1,650	NA
Jan-29-2013	687	10.4	NA	1,690	1.2
Jan-30-2013	670	10.7	NA	1,810	1.3
Jan-31-2013	651	11.0	NA	1,950	1.2
Mean	883	8.7	NA	1,290	1.2
Total Acre-feet	54,290				

No samples taken January 1 - 28 due to autosampler malfunction

January 29 - 31 very low sample volume, analyzed for selenium only

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
Nov-05-2012	0	40	4,830	27	9.7
Nov-12-2012	5	42	1,980	34	9.9
Nov-17-2012	4	96	4,770	34	9.5
Nov-26-2012	11	125	5,200	33	10.0
Dec-03-2012	24	145	5,530	30	11.0
Dec-10-2012	12	59	5,360	38	9.9
Dec-17-2012	10	88	5,920	41	12.0
Dec-24-2012	15	86	6,000	43	12.0
Dec-31-2012	13	NA	5,530	40	11.0
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

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
Nov-07-2012	9	34	19.6	8.2	3,760	9.6	6.9
Nov-15-2012	12	18	11.8	8.2	3,590	11.0	6.4
Nov-20-2012	15	25	14.0	7.9	3,430	11.0	6.0
Nov-26-2012	21	32	13.4	7.8	4,490	27.0	9.0
Dec-06-2012	24	87	14.4	7.6	4,560	27.0	8.8
Dec-13-2012	18	21	10.3	7.9	4,620	20.0	8.3
Dec-20-2012	17	43	8.6	7.9	4,990	22.0	7.2
Dec-27-2012	26	28	8.8	7.9	4,150	24.0	7.2
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

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
Nov-07-2012	86	.	18.6	7.9	1,550	<0.4	1.1
Nov-15-2012	76	.	11.5	8.0	1,680	<0.4	1.2
Nov-20-2012	101	.	14.2	8.0	1,510	0.7	1.1
Nov-26-2012	93	.	14.2	7.8	1,620	<0.4	1.1
Dec-06-2012	203	.	14.0	7.8	1,450	<0.4	1.1
Dec-13-2012	138	.	10.0	7.9	1,660	0.8	1.1
Dec-20-2012	113	.	8.4	8.1	1,020	<0.4	1.3
Dec-27-2012	185	.	8.7	8.0	1,440	0.4	1.1
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

++ 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
Nov-07-2012	95	18.4	16.8	7.8	1,750	1.0	1.6
Nov-15-2012	88	11.5	13.9	7.8	2,000	1.6	1.8
Nov-20-2012	116	14.5	20.0	7.8	1,440	2.2	1.7
Nov-26-2012	114	12.8	15.5	7.9	2,240	4.4	2.7
Dec-06-2012	227	13.9	19.3	7.6	1,810	3.3	1.9
Dec-13-2012	156	10.1	13.6	7.7	1,950	2.5	2.0
Dec-20-2012	130	8.4	11.0	7.7	2,070	3.2	2.0
Dec-27-2012	209	8.7	17.8	7.8	1,830	3.1	1.8
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

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
Nov-07-2012	.	17.5	7	7.7	2,900	2.0	2.3
Nov-15-2012	.	11.0	11	7.8	2,110	1.4	1.9
Nov-20-2012	.	14.0	16	7.8	1,820	2.2	1.7
Nov-26-2012	.	15.9	7	7.8	4,980	2.9	3.5
Dec-06-2012		NA	NA	NA	NA	NA	NA
Dec-13-2012	No Flow in	NA	NA	NA	NA	NA	NA
Dec-20-2012	December	NA	NA	NA	NA	NA	NA
Dec-27-2012	.	NA	NA	NA	NA	NA	NA
Jan-03-2013	Site Inaccessible	NA	NA	NA	NA	NA	NA
Jan-08-2013	In Early and	NA	NA	NA	NA	NA	NA
Jan-15-2013	Late January	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	.	NA	NA	NA	NA	NA	NA

No samples were collected because this site had no flow through early December and was inaccessible in early and late January

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
Nov-07-2012	121	16.2	7.3	1,400	<0.4	0.7
Nov-15-2012	111	10.7	7.5	1,440	<0.4	0.7
Nov-20-2012	173	13.5	7.4	1,210	0.5	0.7
Nov-26-2012	148	11.8	7.6	1,310	<0.4	0.7
Dec-06-2012	245	14.6	7.3	1,340	<0.4	0.8
Dec-13-2012	168	10.0	7.3	1,500	0.5	1.0
Dec-20-2012	e118	11.5	7.2	1,580	<0.4	1.0
Dec-27-2012	177	8.9	7.3	1,550	0.5	0.8
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

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
Nov-07-2012	162	17.5	8.0	1,510	<0.4	0.6
Nov-15-2012	129	10.7	7.9	1,570	<0.4	0.7
Nov-20-2012	205	14.0	8.0	1,170	0.8	0.6
Nov-26-2012	182	11.3	7.7	1,400	<0.4	0.7
Dec-06-2012	352	14.2	7.9	1,110	<0.4	0.7
Dec-13-2012	239	9.8	7.9	1,460	0.4	0.8
Dec-20-2012	197	8.5	7.6	1,670	<0.4	0.8
Dec-27-2012	1070	8.6	8.3	468	<0.4	0.2
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

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
Nov-05-2012	25	.	.	599	0.6	0.2
Nov-12-2012	25	.	.	634	0.9	0.3
Nov-19-2012	15	.	.	574	0.9	0.3
Nov-26-2012	10	.	.	500	0.5	0.2
Dec-03-2012	10	.	.	448	0.8	0.2
Dec-10-2012	10	.	.	612	1.3 U	0.4
Dec-17-2012	10	.	.	516	1.3	0.2
Dec-26-2012	10	.	.	354	0.6	0.2
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

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
Nov-05-2012	100	.	.	593	<0.4	0.2
Nov-12-2012	100	.	.	298	0.4	0.1
Nov-19-2012	85	.	.	538	0.8	0.3
Nov-26-2012	85	.	.	562	0.5	0.3
Dec-03-2012	85	.	.	457	0.6	0.2
Dec-10-2012	75	.	.	657	1.3	0.5 U
Dec-17-2012	75	.	.	529	1.1	0.3
Dec-26-2012	75	.	.	536	0.9	0.3
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

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
Nov-05-2012	NA	.	.	784	0.6	0.6
Nov-12-2012	NA	.	.	733	0.6	0.5
Nov-19-2012	NA	.	.	611	0.7	0.5
Nov-26-2012	NA	.	.	825	1.1	0.6
Dec-03-2012	NA	.	.	697	0.8	0.5
Dec-10-2012	NA	.	.	680	1.0	0.7
Dec-17-2012	NA	.	.	741	0.9	0.5
Dec-26-2012	NA	.	.	158	<0.4	0.2
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

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
Nov-05-2012	NA	.	.	944	<0.4	0.8
Nov-12-2012	NA	.	.	941	0.7	0.8
Nov-19-2012	NA	.	.	813	0.8	0.7
Nov-26-2012	NA	.	.	937	0.6	0.8
Dec-03-2012	NA	.	.	1,030	<0.4	1.0
Dec-10-2012	NA	.	.	1,080	0.6	1.2
Dec-17-2012	NA	.	.	1,030	0.8	1.0
Dec-26-2012	NA	.	.	1,330	0.5	1.4
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

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
Nov-07-2012	.	.	.	1,670	0.7	1.0
Nov-14-2012	.	.	.	1,840	0.6	1.1
Nov-21-2012	.	.	.	1,810	0.5	1.1
Nov-28-2012	.	.	.	1,810	0.7	1.1
Dec-10-2012	.	.	.	1,690	1.4	1.3
Dec-19-2012	.	.	.	305	1.3	0.6
Dec-27-2012	.	.	.	60	0.5	0.1
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

Note: In October of 2012 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
Nov-07-2012	e485	.	.	NA	NA	NA
Nov-14-2012	563	.	.	NA	NA	NA
Nov-21-2012	613	.	.	NA	NA	NA
Nov-28-2012	585	.	.	NA	NA	NA
Dec-10-2012	767	.	.	NA	NA	NA
Dec-19-2012	628	.	.	NA	NA	NA
Dec-27-2012	1,870	.	.	NA	NA	NA
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

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
Nov-07-2012	545	17.7	8.1	1,040	<0.4	0.5
Nov-15-2012	575	11.0	7.9	900	<0.4	0.5
Nov-20-2012	627	13.8	7.9	885	0.8	0.5
Nov-26-2012	607	11.6	7.5	1,070	0.7	0.7
Dec-06-2012	952	14.3	7.8	1,010	1.1	0.8
Dec-13-2012	712	10.2	7.9	1,170	0.8	0.9
Dec-20-2012	645	NA	NA	NA	1.0	0.8
Dec-27-2012	1,740	8.9	7.8	585	0.6	0.4
Jan-03-2013	1,050	6.4	7.8	1,020	0.9	0.6
Jan-08-2013	1,200	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

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
Nov-05-2012	.	.	.	516	<0.4	0.2
Nov-12-2012	.	.	.	300	<0.4	0.1
Nov-19-2012	.	.	.	404	0.9	0.2
Nov-26-2012	.	.	.	479	0.5	0.2
Dec-03-2012	.	.	.	469	0.7	0.3
Dec-10-2012	.	.	.	621	1.3 U	0.4 U
Dec-17-2012	.	.	.	490	1.0	0.2
Dec-26-2012	.	.	.	348	0.6	0.2
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

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from February 2012 to January 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	%	%	%	%	%	%
Feb-2012	98	90	100	100	98	98
Mar-2013	98	98	100	98	95	95
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

Table 22. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from February 2012 to January 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
Feb-2012	0.38	0.33	0.36	0.38	0.35	0.39
Mar-2012	0.56	0.46	0.45	0.44	0.41	0.49
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

Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from February 2012 to January 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	%	%	%	%	%	%
Feb-2012	100	90	100	90	100	100
Mar-2012	100	100	80	80	90	90
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

Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from February 2012 to January 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
Feb-2012	58.0	48.9	63.8	54.9	58.6	52.0
Mar-2013	58.3	49.7	41.8	40.8	45.1	31.5
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

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from February 2012 to January 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
Feb-2012	25.0	36.4	34.9	4.9*	29.8	23.5
Mar-2012	17.9*	27.6	17.8*	26.7	25.6	24.0
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

Table 26. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, November 2012 to January 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
Nov-26-2012	27	< 0.4	5	< 0.4	< 0.4
Nov-28-2012	30	< 0.4	4	< 0.4	< 0.4
Nov-30-2012	27	< 0.4	< 0.4	0.5	< 0.4
Dec-17-2012	NA	NA	NA	NA	NA
Dec-19-2012	NA	NA	NA	NA	NA
Dec-21-2012	NA	NA	NA	NA	NA
Jan-17-2013	NA	NA	NA	NA	NA
Jan-19-2013	NA	NA	NA	NA	NA
Jan-21-2013	NA	NA	NA	NA	NA

Table 27. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity November 2012 to January 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
Nov-26-2012	36	12	22	42	2
Nov-28-2012	25	17	72	44	0
Nov-30-2012	41	21	NA	63	3
Dec-26-2012	NA	NA	NA	NA	NA
Dec-28-2012	NA	NA	NA	NA	NA
Dec-30-2012	NA	NA	NA	NA	NA
Jan-17-2013	NA	NA	NA	NA	NA
Jan-19-2013	NA	NA	NA	NA	NA
Jan-21-2013	NA	NA	NA	NA	NA

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