

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

June 2013

December 5, 2013

Preliminary Results

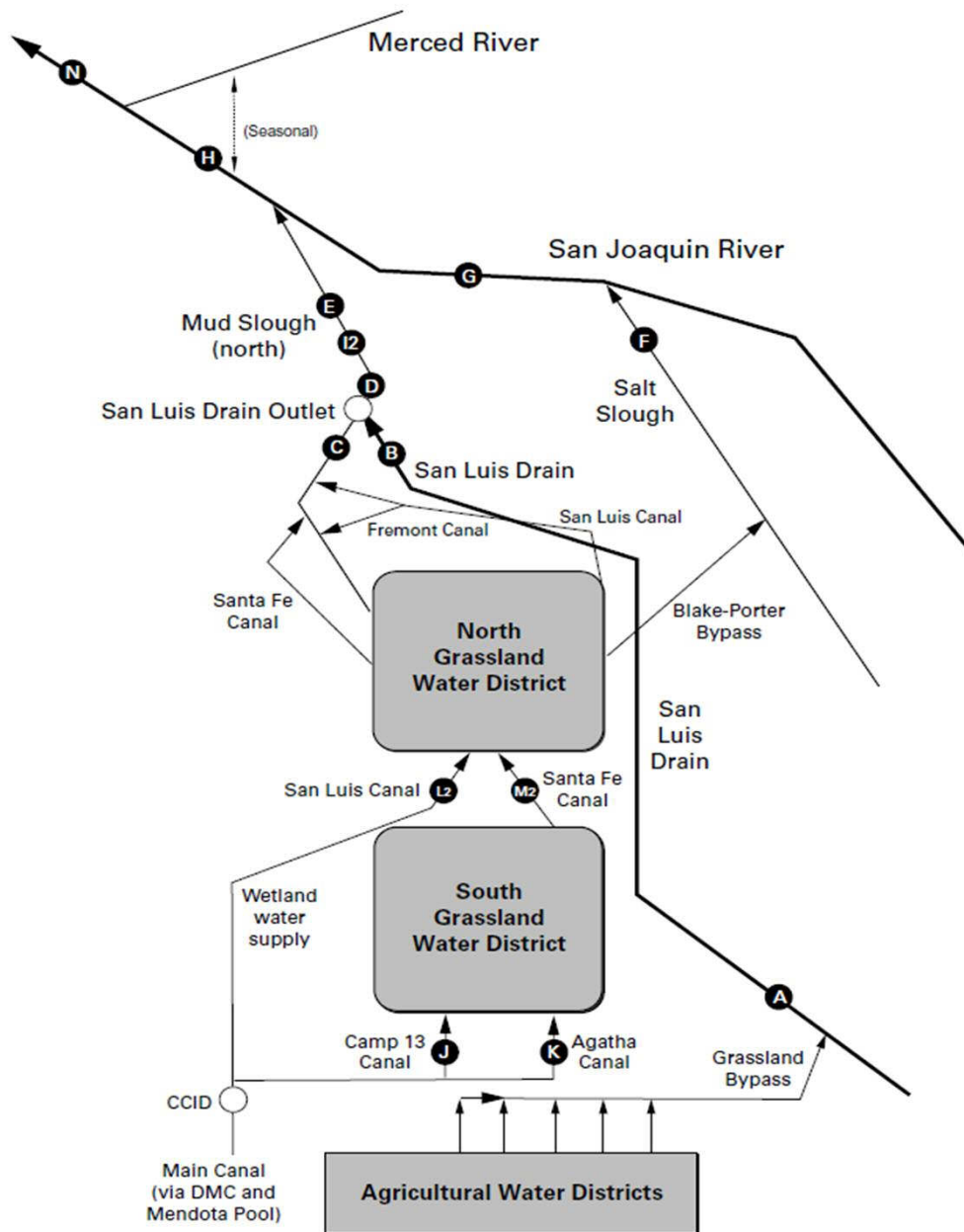
A cooperative effort of:

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

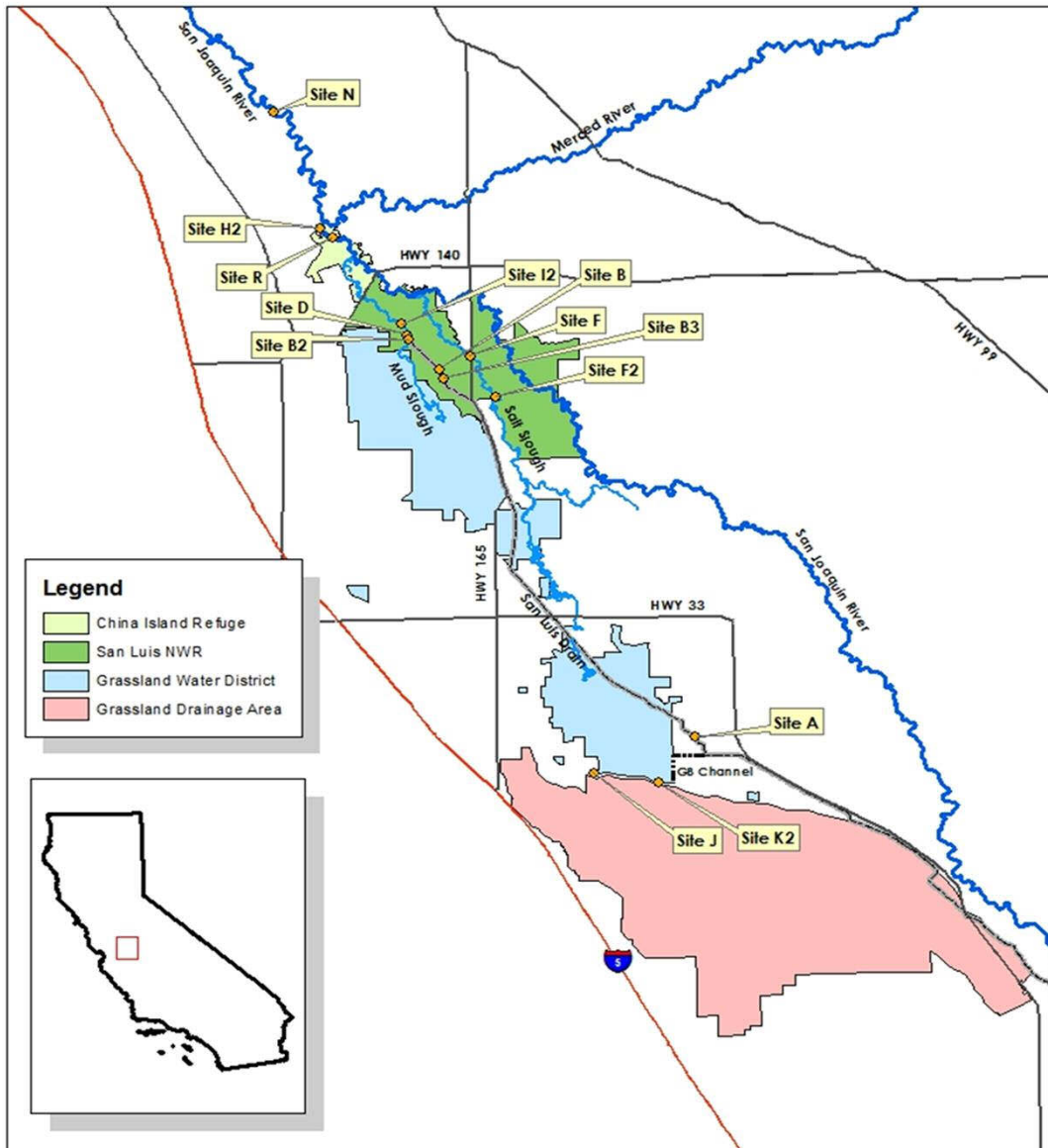
compiled by San Francisco Estuary Institute



Map 1: Current Monitoring Plan for the Grasslands Bypass Project

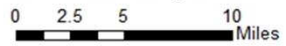


Map 2: Proposed 2013 Monitoring Plan for the Grasslands Bypass Project



Grasslands Bypass Project

2013 Monitoring Plan Sites



Grasslands Bypass Project
NAD 1983 California Zone 12
U.S. Bureau of Reclamation

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

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Monthly Monitoring

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Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), June 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
Jun-01-2013	13	25.1	4,850	124
Jun-02-2013	12	26.1	5,010	119
Jun-03-2013	12	24.5	4,950	120
Jun-04-2013	12	24.3	4,800	115
Jun-05-2013	9	24.0	4,740	87
Jun-06-2013	12	24.9	4,470	107
Jun-07-2013	14	26.7	4,380	123
Jun-08-2013	15	28.3	4,560	139
Jun-09-2013	14	25.8	4,600	126
Jun-10-2013	16	22.2	4,840	158
Jun-11-2013	15	23.8	4,600	136
Jun-12-2013	11	25.1	4,740	100
Jun-13-2013	9	23.0	4,770	88
Jun-14-2013	6	23.5	4,740	60
Jun-15-2013	6	24.3	5,010	62
Jun-16-2013	7	23.8	5,060	67
Jun-17-2013	5	23.7	5,140	54
Jun-18-2013	4	22.3	5,160	39
Jun-19-2013	3	21.2	5,170	27
Jun-20-2013	7	22.1	5,180	75
Jun-21-2013	9	22.9	5,070	94
Jun-22-2013	8	24.3	5,160	78
Jun-23-2013	8	22.5	5,240	80
Jun-24-2013	9	22.3	5,260	93
Jun-25-2013	11	24.7	5,130	115
Jun-26-2013	13	26.5	5,400	139
Jun-27-2013	9	28.0	5,370	100
Jun-28-2013	11	29.3	5,280	115
Jun-29-2013	16	29.6	5,530	172
Jun-30-2013	14	29.8	5,470	155
.
Mean	10	24.8	4,990	3,067
Total Acre-feet	614			
Salinity Load Value (Critical Year, June)				5,991

Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), April 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
Jun-01-2013	13	26.6	11.0	6,020	43.0	3.0
Jun-02-2013	12	27.2	10.0	6,190	43.0	2.8
Jun-03-2013	10	26.4	11.0	6,340	40.0	2.2
Jun-04-2013	11	24.4	11.0	6,660	41.0	2.4
Jun-05-2013	11	24.0	11.0	6,680	44.0	2.6
Jun-06-2013	9	25.5	11.0	6,590	44.0	2.1
Jun-07-2013	10	28.1	12.0	6,670	38.0	2.0
Jun-08-2013	13	31.1	12.0	6,740	37.0	2.6
Jun-09-2013	13	26.8	12.0	6,760	42.0	2.9
Jun-10-2013	12	21.4	12.0	6,810	41.0	2.7
Jun-11-2013	16	23.5	12.0	6,810	38.0	3.3
Jun-12-2013	15	25.0	10.0	6,530	33.0	2.6
Jun-13-2013	9	22.0	11.0	6,260	23.0	1.1
Jun-14-2013	8	23.5	12.0	6,050	20.0	0.9
Jun-15-2013	7	25.3	13.0	6,030	21.0	0.8
Jun-16-2013	6	23.9	12.0	6,280	21.0	0.6
Jun-17-2013	6	23.4	13.0	6,580	21.0	0.7
Jun-18-2013	6	21.5	13.0	6,340	21.0	0.7
Jun-19-2013	5	20.1	14.0	6,400	19.0	0.6
Jun-20-2013	5	22.1	14.0	6,620	18.0	0.5
Jun-21-2013	5	23.3	14.0	6,770	17.0	0.5
Jun-22-2013	7	25.2	12.0	6,950	18.0	0.7
Jun-23-2013	7	22.6	12.0	7,000	17.0	0.6
Jun-24-2013	6	22.9	12.0	6,890	17.0	0.6
Jun-25-2013	7	26.7	13.0	6,770	15.0	0.6
Jun-26-2013	9	27.4	13.0	5,580	13.0	0.6
Jun-27-2013	11	29.0	13.0	5,590	12.0	0.7
Jun-28-2013	9	30.8	14.0	5,600	11.0	0.5
Jun-29-2013	8	31.7	14.0	NA	12.0	0.5
Jun-30-2013	13	31.8	14.0	NA	9.9	0.7
.
Mean	9	25.4	12.3	6,450	26.3	1.4
Total Acre-feet	560					
Total (lbs)						43

Load Limitation for June 2013 (lbs)	69
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◆To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, are measuring flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge is measured as stage over a sharp-crested weir, identical to Station A. This is a simpler and more accurate method that will not be altered by sediment accumulation. Water quality data are still collected at the old Site B.

Figure 2b. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.

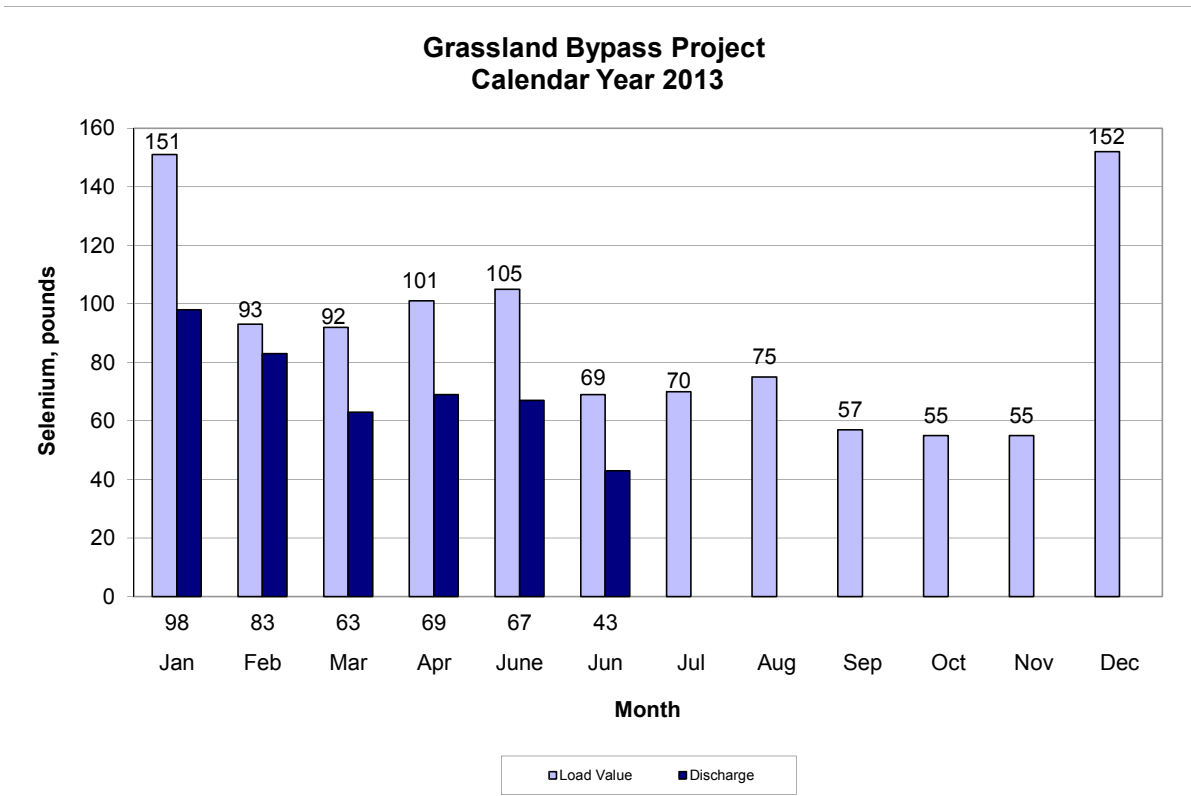


Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), June 2013.

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
Jun-01-2013	59	24.0	2,140
Jun-02-2013	55	25.5	2,280
Jun-03-2013	58	25.6	2,120
Jun-04-2013	68	25.4	1,960
Jun-05-2013	51	25.3	2,290
Jun-06-2013	41	25.7	2,520
Jun-07-2013	39	26.4	2,690
Jun-08-2013	44	27.6	2,710
Jun-09-2013	40	27.1	2,950
Jun-10-2013	35	24.9	3,330
Jun-11-2013	38	24.1	3,460
Jun-12-2013	41	24.4	2,990
Jun-13-2013	36	23.7	2,750
Jun-14-2013	32	22.9	2,830
Jun-15-2013	35	24.2	2,490
Jun-16-2013	32	24.0	2,430
Jun-17-2013	24	23.7	P
Jun-18-2013	21	P	P
Jun-19-2013	18	22.3	3,610
Jun-20-2013	17	22.5	3,960
Jun-21-2013	21	23.2	2,850
Jun-22-2013	29	24.0	2,750
Jun-23-2013	31	23.7	2,440
Jun-24-2013	30	23.4	2,460
Jun-25-2013	30	24.1	2,570
Jun-26-2013	34	25.4	2,590
Jun-27-2013	43	26.6	2,390
Jun-28-2013	44	27.9	2,170
Jun-29-2013	46	28.9	2,080
Jun-30-2013	49	29.6	2,610
.	.	.	.
Mean	38	25.0	2,660

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), June 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
Jun-01-2013	170	23.6	1,190
Jun-02-2013	186	25.0	1,140
Jun-03-2013	163	25.0	1,210
Jun-04-2013	154	24.6	1,260
Jun-05-2013	145	24.6	1,240
Jun-06-2013	147	24.8	1,190
Jun-07-2013	142	25.8	1,240
Jun-08-2013	136	27.5	1,300
Jun-09-2013	120	27.2	1,330
Jun-10-2013	100	23.7	1,500
Jun-11-2013	106	22.6	1,480
Jun-12-2013	120	24.3	1,410
Jun-13-2013	141	23.8	1,260
Jun-14-2013	143	22.7	1,230
Jun-15-2013	130	23.9	1,270
Jun-16-2013	131	23.8	1,200
Jun-17-2013	133	23.6	1,170
Jun-18-2013	137	23.6	1,070
Jun-19-2013	115	22.9	1,150
Jun-20-2013	115	22.5	1,150
Jun-21-2013	116	23.1	1,170
Jun-22-2013	129	23.8	1,150
Jun-23-2013	119	23.5	1,150
Jun-24-2013	110	22.5	1,250
Jun-25-2013	128	23.8	1,170
Jun-26-2013	146	25.7	1,090
Jun-27-2013	142	26.9	1,060
Jun-28-2013	126	28.0	1,110
Jun-29-2013	118	28.8	1,150
Jun-30-2013	113	29.3	1,150
.	.	.	.
Mean	133	24.7	1,210

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), June 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
Jun-01-2013	420	24.1	0.8	1,230	1.5
Jun-02-2013	454	25.5	0.8	1,220	1.5
Jun-03-2013	476	26.2	0.7	1,170	1.6
Jun-04-2013	440	25.9	0.8	1,220	1.4
Jun-05-2013	432	25.0	0.8	1,310	1.3
Jun-06-2013	401	25.3	0.9	1,350	1.4
Jun-07-2013	398	26.1	0.9	1,320	1.3
Jun-08-2013	362	27.6	0.8	1,370	1.2
Jun-09-2013	362	27.2	0.9	1,450	1.4
Jun-10-2013	361	24.4	0.9	1,430	1.4
Jun-11-2013	340	23.4	1.0	1,510	1.6
Jun-12-2013	340	24.2	1.0	1,570	1.9
Jun-13-2013	342	23.4	1.1	1,600	2.0
Jun-14-2013	357	22.6	1.0	1,480	1.7
Jun-15-2013	343	23.7	0.8	1,370	1.0
Jun-16-2013	329	24.1	0.8	1,410	1.1
Jun-17-2013	329	23.6	0.9	1,410	1.1
Jun-18-2013	305	23.2	0.7	1,280	0.7
Jun-19-2013	305	22.3	0.7	1,340	0.7
Jun-20-2013	279	22.6	0.8	1,410	0.8
Jun-21-2013	289	23.1	0.8	1,460	0.7
Jun-22-2013	301	23.7	0.7	1,430	0.6
Jun-23-2013	302	23.3	0.9	1,470	1.0
Jun-24-2013	314	22.7	0.9	1,390	0.9
Jun-25-2013	326	23.7	0.8	1,290	0.8
Jun-26-2013	319	25.6	0.7	1,310	0.8
Jun-27-2013	299	26.8	0.8	1,370	0.8
Jun-28-2013	303	27.7	1.0	1,460	0.9
Jun-29-2013	296	28.4	1.1	1,480	0.9
Jun-30-2013	288	28.7	1.0	1,460	0.8
.
Mean	347	24.8	0.8	1,390	1.2
Total Acre-feet	20,652				

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
Apr-01-2013	26	81	6,020	38	11.0
Apr-08-2013	26	277	5,800	35	11.0
Apr-15-2013	14	144	5,510	37	9.9
Apr-22-2013	10	131	6,110	49	11.0
Apr-29-2013	9	50	5,860	34	11.0
May-06-2013	21	102	5,720	44	10.0
May-13-2013	10	<10	5,150	42	8.0
May-20-2013	13	79	5,210	42	9.0
May-27-2013	11	107	5,480	45	9.8
Jun-03-2013	12	105	5,550	33	12.0
Jun-10-2013	16	145	5,430	24	12.0
Jun-17-2013	5	126	6,260	21	14.0
Jun-24-2013	9	158	6,410	30	14.0

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
Apr-04-2013	12	81	19.5	8.7	4,970	29.0	8.9
Apr-11-2013	27	45	16.7	8.0	6,070	41.0	11.0
Apr-16-2013	10	43	15.4	8.6	5,960	37.0	12.0
Apr-23-2013	9	72	17.9	8.8	5,780	31.0	11.0
May-02-2013	7	15	18.5	7.9	5,660	40.0	10.0
May-09-2013	14	33	20.5	8.5	5,680	36.0	10.0
May-15-2013	10	22	22.4	7.8	5,310	33.0	9.4
May-20-2013	12	81	20.5	8.5	5,370	32.0	8.8
May-30-2013	10	52	22.7	8.9	5,000	36.0	8.9
Jun-04-2013	11	105	24.2	8.5	5,810	40.0	9.8
Jun-10-2013	12	32	24.5	8.5	5,970	40.0	12.0
Jun-18-2013	6	<10	23.9	8.2	5,810	20.0	13.0
Jun-26-2013	9	44	26.3	9.1	6,110	12.0	13.0

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
Apr-04-2013	79	.	19.9	8.1	2,440	0.5	2.1
Apr-11-2013	30	.	16.4	8.0	3,100	0.5	2.7
Apr-16-2013	27	.	15.1	8.1	2,280	0.6	2.4
Apr-23-2013	21	.	16.7	8.2	2,580	0.7	2.9
May-02-2013	24	.	18.4	8.4	2,000	< 0.4	1.5
May-09-2013	37	.	20.1	8.1	1,510	< 0.4	1.3
May-15-2013	39	.	22.5	7.8	1,270	0.7	1.2
May-20-2013	40	.	19.9	7.9	1,510	0.5	1.3
May-30-2013	21	.	23.3	8.3	2,390	0.5	2.0
Jun-04-2013	57	.	23.0	8.0	1,380	1.1 U	1.2
Jun-10-2013	23	.	23.3	8.0	1,930	1.1	1.8
Jun-18-2013	15	.	23.2	8.1	2,190	0.9	2.1
Jun-26-2013	25	.	24.8	8.1	1,580	1.6 U	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 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
Apr-04-2013	91	19.9	53.2	8.2	2,810	3.8	2.9
Apr-11-2013	57	16.5	61.4	8.1	4,480	14 U	6.0 U
Apr-16-2013	37	15.0	40.2	8.3	4,520	14 U	6.2 U
Apr-23-2013	30	16.7	37.8	8.4	5,130	14 U	7.8 U
May-02-2013	31	18.4	44.6	8.0	3,450	10.0	4.6
May-09-2013	51	20.5	28.6	8.0	3,060	9.4	4.6
May-15-2013	49	22.2	47.0	7.9	2,360	5.8	3.1
May-20-2013	52	20.2	34.9	8.0	2,770	7.8	3.5
May-30-2013	31	22.9	12.8	8.4	3,600	14 U	4.8
Jun-04-2013	68	23.2	29.5	8.0	1,970	4.9	2.3
Jun-10-2013	35	23.0	31.6	8.2	3,320	14 U	4.7
Jun-18-2013	21	23.8	12.0	8.2	3,420	5.9	4.8
Jun-26-2013	34	24.7	27.0	8.4	2,760	4.5	4.0

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
Apr-04-2013	.	NA	NA	NA	NA	NA	NA
Apr-11-2013	.	NA	NA	NA	NA	NA	NA
Apr-16-2013	.	NA	NA	NA	NA	NA	NA
Apr-23-2013	.	NA	NA	NA	NA	NA	NA
May-02-2013	.	NA	NA	NA	NA	NA	NA
May-09-2013	.	NA	NA	NA	NA	NA	NA
May-15-2013	No Flow April	NA	NA	NA	NA	NA	NA
May-20-2013	Through June	NA	NA	NA	NA	NA	NA
May-30-2013	.	NA	NA	NA	NA	NA	NA
Jun-04-2013	.	NA	NA	NA	NA	NA	NA
Jun-10-2013	.	NA	NA	NA	NA	NA	NA
Jun-18-2013	.	NA	NA	NA	NA	NA	NA
Jun-26-2013	.	NA	NA	NA	NA	NA	NA

No samples were collected through mid-February because this site had no flow.

The site was also inaccessible in late March through April.

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
Apr-04-2013	192	18.3	7.1	1,690	< 0.4	0.9
Apr-11-2013	183	16.4	7.8	1,710	0.5	1.3
Apr-16-2013	130	14.2	7.5	1,480	0.5	0.9
Apr-23-2013	129	18.3	6.7	1,170	< 0.4	0.5
May-02-2013	141	18.4	6.7	1,400	< 0.4	0.7
May-09-2013	145	19.2	7.5	1,160	0.4	0.5
May-15-2013	112	21.0	6.9	1,520	0.4	0.7
May-20-2013	182	19.2	7.7	1,120	0.5	0.5
May-30-2013	165	20.8	7.1	1,190	0.6	0.5
Jun-04-2013	154	21.8	7.5	1,250	0.5	0.5
Jun-10-2013	100	21.8	7.8	1,490	0.9	0.6
Jun-18-2013	137	22.2	7.4	1,080	0.7	0.4
Jun-26-2013	146	22.9	7.6	1,120	0.5	0.4

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
Apr-04-2013	250	18.7	7.4	1,780	< 0.4	0.8
Apr-11-2013	250	16.5	8.1	1,860	< 0.4	1.0
Apr-16-2013	181	15.9	8.0	1,920	0.6	0.8
Apr-23-2013	163	18.4	8.3	1,860	< 0.4	0.6
May-02-2013	166	19.8	8.1	1,500	< 0.4	0.6
May-09-2013	181	20.4	8.0	1,330	< 0.4	0.5
May-15-2013	151	22.7	7.9	1,700	< 0.4	0.6
May-20-2013	200	20.4	8.1	1,250	0.5	0.5
May-30-2013	172	22.1	8.1	1,360	0.6	0.5
Jun-04-2013	179	23.7	7.9	1,380	0.5	0.5
Jun-10-2013	135	22.8	7.9	1,600	0.7	0.6
Jun-18-2013	155	23.4	8.1	1,310	0.5	0.4
Jun-26-2013	166	24.4	8.1	1,260	<0.4	0.4

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
Apr-01-2013	5	.	.	553	0.7	0.3
Apr-08-2013	5	.	.	1,420	2.6 U	1.9 U
Apr-15-2013	5	.	.	424	1.2	0.2
Apr-22-2013	5	.	.	633	0.8	0.4
Apr-29-2013	15	.	.	498	0.9	0.3
May-06-2013	55	.	.	434	1.4	0.3
May-14-2013	20	.	.	564	1.2	0.3
May-20-2013	20	.	.	572	1.2	0.3
May-28-2013	30	.	.	612	1.4	0.3
Jun-03-2013	5	.	.	658	2.1	0.3
Jun-10-2013	5	.	.	681	2.0	0.4
Jun-17-2013	5	.	.	880	1.3	0.5
Jun-24-2013	15	.	.	635	1.2	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
Apr-01-2013	0	.	.	2,010	0.7	2.2 U
Apr-08-2013	20	.	.	1,940	0.7	2.3 U
Apr-15-2013	20	.	.	542	0.9	0.5
Apr-22-2013	40	.	.	681	0.8	0.5
Apr-29-2013	40	.	.	525	0.8	0.3
May-06-2013	75	.	.	444	1.2	0.3
May-14-2013	55	.	.	571	1.2	0.3
May-20-2013	35	.	.	539	0.8	0.3
May-28-2013	35	.	.	628	1.5	0.3
Jun-03-2013	35	.	.	667	1.6	0.4
Jun-10-2013	25	.	.	680	1.5	0.4
Jun-17-2013	30	.	.	767	1.8	0.4
Jun-24-2013	30	.	.	633	1.2	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
Apr-01-2013	NA	.	.	465	< 0.4	0.5
Apr-08-2013	NA	.	.	774	0.9	0.6
Apr-15-2013	NA	.	.	727	1.1	0.6
Apr-22-2013	NA	.	.	659	0.8	0.4
Apr-29-2013	NA	.	.	677	0.9	0.4
May-06-2013	NA	.	.	757	1.1	0.5
May-14-2013	NA	.	.	663	1.2	0.4
May-20-2013	NA	.	.	775	1.1	0.6
May-28-2013	NA	.	.	787	1.4	0.4
Jun-03-2013	NA	.	.	2,800	2.3 U	2.4 U
Jun-10-2013	NA	.	.	2,660	2.4	3.2 U
Jun-17-2013	NA	.	.	1,790	3.2	1.7
Jun-24-2013	NA	.	.	3,030	2.4	3.0 U

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
Apr-01-2013	NA	.	.	1,940	0.9	2.3
Apr-08-2013	NA	.	.	843	0.9	0.7
Apr-15-2013	NA	.	.	826	1.1	0.8
Apr-22-2013	NA	.	.	853	0.9	0.7
Apr-29-2013	NA	.	.	766	1.1	0.6
May-06-2013	NA	.	.	789	1.2	0.5
May-14-2013	NA	.	.	706	1.2	0.5
May-20-2013	NA	.	.	928	1.4	0.8
May-28-2013	NA	.	.	842	1.5	0.6
Jun-03-2013	NA	.	.	1,050	1.4	1.0
Jun-10-2013	NA	.	.	1,260	2.6 U	1.5
Jun-17-2013	NA	.	.	1,520	1.8	1.7
Jun-24-2013	NA	.	.	1,200	1.7	1.4

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
Apr-03-2013	.	.	.	2,380	2.3	1.7
Apr-10-2013	.	.	.	2,340	2.0	1.7
Apr-17-2013	.	.	.	2,610	2.9	1.7
Apr-24-2013	.	.	.	2,590	1.9	1.8
May-01-2013	.	.	.	1,860	1.1	1.1
May-08-2013	.	.	.	1,830	0.8	1.0
May-15-2013	.	.	.	1,890	1.6	1.1
May-22-2013	.	.	.	1,880	1.5	1.2
May-29-2013	.	.	.	1,890	1.5	1.1
Jun-05-2013	.	.	.	1,850	2.4	1.3
Jun-12-2013	.	.	.	1,840	2.0	1.2
Jun-19-2013	.	.	.	1,670	0.9	1.0

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
Apr-10-2013	533	.	.	NA	NA	NA
Apr-17-2013	1,190	.	.	NA	NA	NA
Apr-24-2013	472	.	.	NA	NA	NA
May-01-2013	215	.	.	NA	NA	NA
May-08-2013	234	.	.	NA	NA	NA
May-15-2013	201	.	.	NA	NA	NA
May-22-2013	234	.	.	NA	NA	NA
May-29-2013	238	.	.	NA	NA	NA
Jun-05-2013	225	.	.	NA	NA	NA
Jun-12-2013	171	.	.	NA	NA	NA
Jun-19-2013	160	.	.	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
Apr-04-2013	616	19.4	8.1	1,590	1.2	1.0
Apr-11-2013	549	17.6	8.0	1,620	1.4	1.1
Apr-16-2013	434	15.7	8.1	1,630	1.0	0.9
Apr-23-2013	581	17.5	8.3	960	0.8	0.5
May-02-2013	471	19.2	8.0	1,280	0.6	0.7
May-09-2013	480	20.5	7.9	1,230	1.4	0.8
May-15-2013	442	23.4	8.0	1,260	0.8	0.7
May-20-2013	458	20.3	8.0	1,270	1.0	0.8
May-30-2013	453	22.3	8.1	1,250	1.1	0.7
Jun-04-2013	440	24.1	8.0	1,260	1.3	0.7
Jun-10-2013	361	22.5	8.0	1,420	1.6	0.9
Jun-18-2013	305	23.1	8.2	1,310	0.8	0.6
Jun-26-2013	319	23.6	8.2	1,330	0.7	0.7

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
Apr-01-2013	.	.	.	585	0.5	3.2
Apr-08-2013	.	.	.	480	0.5	0.3
Apr-15-2013	.	.	.	411	0.8	0.2
Apr-22-2013	.	.	.	485	0.6	0.3
Apr-29-2013	.	.	.	478	0.9	0.3
May-06-2013	.	.	.	429	1.4	0.3
May-14-2013	.	.	.	561	1.3	0.3
May-20-2013	.	.	.	578	1.1	0.3
May-28-2013	.	.	.	620	1.6	0.3
Jun-03-2013	.	.	.	653	1.8	0.3
Jun-10-2013	.	.	.	717	2.3	0.5
Jun-17-2013	.	.	.	680	1.8	0.4
Jun-26-2013	.	.	.	612	1.3	0.3

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from July 2012 to June 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	%	%	%	%	%	%
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
Apr-2013	NA	NA	NA	NA	NA	NA
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	95	95	88*	93	100	83

Table 22. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from July 2012 to June 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
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
Apr-2013	NA	NA	NA	NA	NA	NA
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	0.22	0.21	0.22	0.20	0.19***	0.22***

Table 23. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from July 2012 to June 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	%	%	%	%	%	%
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
Apr-2013	NA	NA	NA	NA	NA	NA
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	100	80	100	70	100	80

Table 24. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from July 2012 to June 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
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
Apr-2013	NA	NA	NA	NA	NA	NA
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	39.9	22.8	28.0	30.0	23.7	30.4

Table 25. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from July 2012 to June 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
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
Apr-2013	NA	NA	NA	NA	NA	NA
May-2013	NA	NA	NA	NA	NA	NA
Jun-2013	23.7	26.8	28.9	25.1	23.4	20.1

Table 26. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, April 2013 to June 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
Apr-06-2013	NA	NA	NA	NA	NA
Apr-08-2013	NA	NA	NA	NA	NA
May-04-2013	NA	NA	NA	NA	NA
May-06-2013	NA	NA	NA	NA	NA
May-08-2013	NA	NA	NA	NA	NA
Jun-10-2013	40	1.2	13	0.5	< 0.4
Jun-12-2013	34	1.5	12	0.5	< 0.4
Jun-14-2013	19	1.4	5.7	0.5	< 0.4
Jun-17-2013	20	1.1	4.9	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 April 2013 to June 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
Apr-06-2013	NA	NA	NA	NA	NA
Apr-08-2013	NA	NA	NA	NA	NA
May-04-2013	NA	NA	NA	NA	NA
May-06-2013	NA	NA	NA	NA	NA
May-08-2013	NA	NA	NA	NA	NA
Jun-10-2013	20	30	50	108	3
Jun-12-2013	13	36	41	89	5
Jun-14-2013	32	30	38	134	3
Jun-17-2013	39	3	7	87	2

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
<	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 June 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 June 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 ⁶ cell/mL) acceptability criteria.
***	DMC/Lab CI water failed to meet the growth (≥0.25 mg) 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 Distract
U	results are determined to be an outlier at the time of data validation