

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

August 2003

October 30, 2003

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





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Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), August 2003.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Aug-01-2003	58	3,500
Aug-02-2003	62	3,560
Aug-03-2003	67	3,660
Aug-04-2003	64	3,550
Aug-05-2003	61	3,480
Aug-06-2003	64	3,410
Aug-07-2003	65	3,140
Aug-08-2003	58	3,390
Aug-09-2003	51	3,490
Aug-10-2003	54	3,520
Aug-11-2003	53	3,500
Aug-12-2003	50	3,590
Aug-13-2003	46	3,580
Aug-14-2003	45	3,660
Aug-15-2003	41	4,300
Aug-16-2003	37	4,250
Aug-17-2003	37	4,210
Aug-18-2003	41	4,150
Aug-19-2003	46	3,970
Aug-20-2003	51	3,600
Aug-21-2003	53	3,470
Aug-22-2003	55	3,300
Aug-23-2003	56	3,310
Aug-24-2003	53	3,380
Aug-25-2003	52	3,560
Aug-26-2003	48	3,820
Aug-27-2003	47	3,540
Aug-28-2003	50	3,270
Aug-29-2003	46	3,420
Aug-30-2003	48	3,360
Aug-31-2003	41	3,630
Mean	52	3,600

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), August 2003.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Aug-01-2003	58	26.6	6.8	3,790	27.5	8.6
Aug-02-2003	60	26.4	6.4	3,620	26.2	8.5
Aug-03-2003	64	26.2	6.8	3,780	29.2	10.1
Aug-04-2003	69	26.5	6.7	3,750	27.5	10.2
Aug-05-2003	66	26.3	6.7	3,800	32.2	11.5
Aug-06-2003	63	26.2	6.8	3,920	37.6	12.8
Aug-07-2003	66	25.7	6.6	3,730	29.8	10.6
Aug-08-2003	66	25.3	6.4	3,610	44.5	15.8
Aug-09-2003	59	25.5	6.1	3,560	28.5	9.1
Aug-10-2003	53	25.6	5.4	3,250	23.9	6.8
Aug-11-2003	55	25.5	5.7	3,450	25.5	7.6
Aug-12-2003	54	25.4	6.1	3,610	25.6	7.5
Aug-13-2003	50	25.6	6.1	3,600	23.9	6.4
Aug-14-2003	47	25.6	6.6	3,870	28.3	7.2
Aug-15-2003	45	25.3	6.4	3,750	28.0	6.8
Aug-16-2003	42	25.4	6.6	3,860	29.0	6.6
Aug-17-2003	39	25.9	6.7	3,790	25.0	5.3
Aug-18-2003	38	26.3	6.6	3,710	21.3	4.4
Aug-19-2003	42	26.2	8.4	4,570	24.7	5.6
Aug-20-2003	47	26.4	8.4	4,480	22.9	5.8
Aug-21-2003	52	26.0	8.3	4,450	24.6	6.9
Aug-22-2003	55	25.4	8.1	4,300	23.6	7.0
Aug-23-2003	58	25.0	7.0	3,910	24.6	7.7
Aug-24-2003	58	25.4	6.2	3,670	26.3	8.2
Aug-25-2003	55	26.0	5.8	3,460	25.0	7.4
Aug-26-2003	54	27.1	5.6	3,410	25.0	7.3
Aug-27-2003	50	26.9	5.9	3,480	24.3	6.6
Aug-28-2003	50	25.8	6.0	3,540	26.4	7.1
Aug-29-2003	51	24.9	6.5	3,860	29.2	8.0
Aug-30-2003	48	24.7	6.9	4,030	34.8	9.0
Aug-31-2003	48	24.8	6.3	3,760	31.0	8.0
Mean	54	25.8	6.6	3,790	27.6	8.1
Total Acre-feet	3,300					
Total (lbs)						250

Load Limitation for August 2003 (lbs)	363
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Table 2b. Continuous water monitoring at San Luis Drain Outlet, August 2003.

Note: This is unofficial data reported for comparison with Station B.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	San Luis Drain Outlet Flow	Selenium (total) *	Selenium (total) Load
DATA SOURCE	SLDMWA	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Aug-01-2003	60	27.5	8.9
Aug-02-2003	62	26.2	8.8
Aug-03-2003	66	29.2	10.4
Aug-04-2003	71	27.5	10.5
Aug-05-2003	68	32.2	11.8
Aug-06-2003	65	37.6	13.3
Aug-07-2003	68	29.8	10.9
Aug-08-2003	68	44.5	16.3
Aug-09-2003	61	28.5	9.4
Aug-10-2003	55	23.9	7.0
Aug-11-2003	56	25.5	7.7
Aug-12-2003	56	25.6	7.7
Aug-13-2003	53	23.9	6.8
Aug-14-2003	49	28.3	7.4
Aug-15-2003	47	28.0	7.2
Aug-16-2003	44	29.0	6.8
Aug-17-2003	41	25.0	5.5
Aug-18-2003	40	21.3	4.6
Aug-19-2003	44	24.7	5.8
Aug-20-2003	50	22.9	6.1
Aug-21-2003	54	24.6	7.2
Aug-22-2003	56	23.6	7.2
Aug-23-2003	60	24.6	8.0
Aug-24-2003	60	26.3	8.6
Aug-25-2003	58	25.0	7.8
Aug-26-2003	57	25.0	7.6
Aug-27-2003	53	24.3	6.9
Aug-28-2003	52	26.4	7.4
Aug-29-2003	54	29.2	8.4
Aug-30-2003	51	34.8	9.6
Aug-31-2003	51	31.0	8.5
Mean	56	27.6	8.4
Total Acre-feet	3,430		
Total (lbs)			260

The US Geological Survey determines flow at Station B through continuous measurements of stage that is rated for a known cross-section. These flow data, listed in Table 2a, are verified with frequent current meter measurements.

Monitoring and Reporting Program No. 5-101-234 states:

"Samples representative of the discharge shall be collected from the San Luis Drain at the footbridge between Gun Club Road and the terminus (Site B)."

Accurate flow measurements are necessary to determine compliance with selenium load limits specified in Waste Discharge Requirement Order No. 5-101-234.

The accumulation of sediments, as documented in the 2001 Annual Report, have caused irregularities in flow measurements at Station B, resulting in "shifts" in the relationship between stage and discharge.

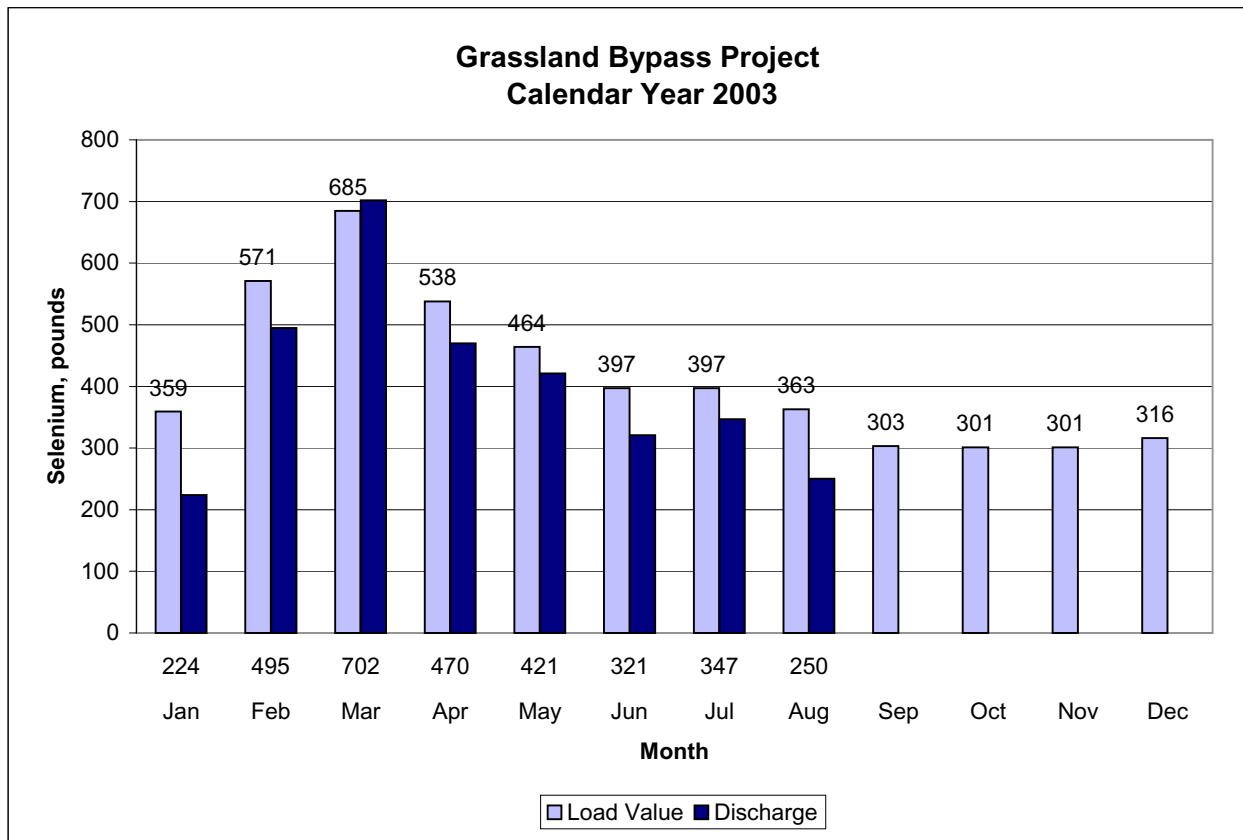
To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, propose to measure flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge will be measured as stage over a sharp-crested weir, identical to Station A. This is a simpler and more accurate method that will not be altered by sediment accumulation.

This change is subject to approval by the California Regional Water Quality Board and modification of the Waste Discharge Requirement Order and Monitoring and Reporting Program. It is anticipated that as of October 1, 2003, flow will be measured solely at the Outlet works for determination of GBP flow discharge.

Unofficial flow data for the Outlet works are presented in Table 2b for comparison and are not used to determine compliance with the Waste Discharge Requirement Order.

*Selenium (total) concentrations from Site B (San Luis Drain)
 Note: SLD Terminus weir under construction, flows are estimated.

Figure 2c. 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), August 2003.**

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
Aug-01-2003	52	26.8	3,480
Aug-02-2003	90	26.4	2,490
Aug-03-2003	106	26.4	2,450
Aug-04-2003	103	26.6	2,670
Aug-05-2003	105	26.4	2,590
Aug-06-2003	104	26.1	2,640
Aug-07-2003	93	25.7	2,810
Aug-08-2003	86	25.4	2,900
Aug-09-2003	73	25.6	2,910
Aug-10-2003	63	25.6	2,670
Aug-11-2003	59	25.5	2,980
Aug-12-2003	60	25.4	3,130
Aug-13-2003	52	25.7	3,280
Aug-14-2003	44	25.7	3,550
Aug-15-2003	41	25.5	3,450
Aug-16-2003	39	25.8	3,560
Aug-17-2003	37	26.2	3,430
Aug-18-2003	42	26.4	2,990
Aug-19-2003	46	26.6	3,490
Aug-20-2003	48	26.7	3,890
Aug-21-2003	52	26.3	3,910
Aug-22-2003	60	25.7	3,490
Aug-23-2003	63	25.4	3,340
Aug-24-2003	69	25.9	3,020
Aug-25-2003	62	26.3	2,960
Aug-26-2003	63	27.5	2,930
Aug-27-2003	64	27.1	2,890
Aug-28-2003	68	25.9	2,790
Aug-29-2003	69	24.9	2,950
Aug-30-2003	68	25.0	3,050
Aug-31-2003	75	25.3	2,640
Mean	66	26.0	3,080

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), August 2003.

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
Aug-01-2003	162	25.7	878
Aug-02-2003	170	25.4	835
Aug-03-2003	217	25.7	794
Aug-04-2003	242	26.0	771
Aug-05-2003	207	25.4	796
Aug-06-2003	187	25.3	842
Aug-07-2003	201	24.8	795
Aug-08-2003	227	24.6	755
Aug-09-2003	238	24.8	735
Aug-10-2003	208	24.9	811
Aug-11-2003	185	24.7	822
Aug-12-2003	167	24.6	829
Aug-13-2003	127	24.9	921
Aug-14-2003	97	25.2	974
Aug-15-2003	64	24.9	1,090
Aug-16-2003	73	25.3	1,130
Aug-17-2003	78	25.9	1,030
Aug-18-2003	95	26.0	944
Aug-19-2003	117	25.9	864
Aug-20-2003	126	25.7	846
Aug-21-2003	113	25.4	859
Aug-22-2003	113	24.8	885
Aug-23-2003	119	24.7	913
Aug-24-2003	119	25.7	894
Aug-25-2003	120	26.4	885
Aug-26-2003	128	27.6	883
Aug-27-2003	151	26.7	832
Aug-28-2003	138	25.3	841
Aug-29-2003	114	24.1	911
Aug-30-2003	122	24.2	960
Aug-31-2003	119	24.8	947
Mean	147	25.3	880

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), August 2003.

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
Aug-01-2003	436	25.7	1,320	2.5
Aug-02-2003	429	25.9	1,330	2.7
Aug-03-2003	518	25.8	1,240	2.8
Aug-04-2003	561	25.9	1,120	2.6
Aug-05-2003	562	25.7	1,060	2.7
Aug-06-2003	511	25.6	1,170	3.1
Aug-07-2003	507	24.8	1,240	3.4
Aug-08-2003	499	24.6	1,330	4.6
Aug-09-2003	528	24.9	1,280	3.5
Aug-10-2003	515	24.8	1,280	3.5
Aug-11-2003	510	24.6	1,190	3.0
Aug-12-2003	474	24.6	1,240	2.7
Aug-13-2003	477	24.7	1,280	3.0
Aug-14-2003	388	24.9	1,410	3.0
Aug-15-2003	364	24.4	1,580	3.1
Aug-16-2003	346	24.6	1,610	3.0
Aug-17-2003	323	25.4	1,650	3.3
Aug-18-2003	365	25.5	1,510	2.9
Aug-19-2003	381	25.7	1,420	2.5
Aug-20-2003	347	25.7	1,340	2.3
Aug-21-2003	344	25.1	1,440	2.6
Aug-22-2003	378	24.2	1,460	2.7
Aug-23-2003	372	24.3	1,560	3.2
Aug-24-2003	416	25.5	1,490	3.2
Aug-25-2003	447	26.2	1,360	3.2
Aug-26-2003	446	27.2	1,220	2.7
Aug-27-2003	411	26.1	1,250	2.8
Aug-28-2003	392	24.6	1,320	3.0
Aug-29-2003	407	23.7	1,270	2.7
Aug-30-2003	406	23.9	1,300	3.0
Aug-31-2003	423	24.6	1,380	3.3
Mean	435	25.1	1,340	3.0

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	.	.	.
Jun-04-2003	40	.	.	4,810	110	.	.	.
Jun-11-2003	41	.	.	4,550	90	.	.	.
Jun-18-2003	47	.	.	4,200	140	.	.	.
Jun-25-2003	59	.	.	4,350	100	.	.	.
Jul-02-2003	56	.	.	4,560	90	.	.	.
Jul-09-2003	54	.	.	4,320	85	.	.	.
Jul-16-2003	50	.	.	4,170	82	.	.	.
Jul-23-2003	58	.	.	3,990	150	.	.	.
Jul-30-2003	59	.	.	3,300	200	.	.	.
Aug-06-2003	64	.	.	3,680	77	.	.	.
Aug-13-2003	46	.	.	3,620	110	.	.	.
Aug-20-2003	51	.	.	3,650	160	.	.	.
Aug-27-2003	47	.	.	3,450	150	.	.	.

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
Jun-03-2003	43	.	.	4,480	.	38.8	.	8.2
Jun-10-2003	46	.	.	4,590	.	38.1	.	8.5
Jun-17-2003	50	.	.	4,610	.	41.3	.	8.1
Jun-24-2003	59	.	.	4,540	.	45.5	.	7.6
Jul-01-2003	54	.	.	4,560	.	43.8	.	P
Jul-08-2003	57	.	.	4,760	.	50.9	.	P
Jul-15-2003	37	.	.	4,380	.	34.2	.	P
Jul-22-2003	57	.	.	4,110	.	32.9	.	P
Jul-29-2003	53	.	.	3,780	.	27.2	.	P
Aug-05-2003	61	.	.	3,690	.	28.0	.	P
Aug-12-2003	50	.	.	3,590	.	26.0	.	P
Aug-19-2003	46	.	.	4,200	.	24.0	.	P
Aug-26-2003	48	.	.	3,710	.	28.6	.	P

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
Jun-05-2003	42	25.1	8.3	4,660	37	39.5	8.1
Jun-12-2003	43	21.5	8.3	4,330	54	38.1	7.8
Jun-19-2003	47	22.7	8.5	4,510	57	38.8	7.9
Jun-26-2003	56	24.2	8.6	4,400	85	45.7	7.6
Jul-03-2003	56	24.9	8.5	4,630	53	55.2	8.3
Jul-10-2003	55	24.9	8.5	4,500	48	47.4	8.1
Jul-17-2003	49	26.6	8.9	4,260	54	28.0	9.0
Jul-24-2003	59	27.8	8.4	4,020	44	P	7.5
Jul-03-2003	56	26.7	8.2	3,610	47	22.9	6.7
Aug-07-2003	66	24.5	8.4	3,700	51	31.6	6.4
Aug-14-2003	47	24.4	8.5	3,950	63	29.2	6.7
Aug-21-2003	52	25.6	8.9	4,400	39	25.2	8.0
Aug-28-2003	50	25.0	8.4	3,570	NA	25.3	6.0

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
Jun-05-2003	65	25.0	8.1	1,130	.	1.2	1.0
Jun-12-2003	40	21.6	8.2	1,210	.	1.3	1.2
Jun-19-2003	11	23.9	8.4	1,650	.	1.1	1.8
Jun-26-2003	27	24.5	8.1	1,210	.	1.0	1.1
Jul-03-2003	12	24.7	8.2	1,260	.	1.4	1.2
Jul-10-2003	-3	24.5	8.4	1,560	.	1.3	1.3
Jul-17-2003	15	26.1	8.0	711	.	1.1	0.7
Jul-24-2003	-5	26.0	8.4	1,260	.	P	1.1
Jul-31-2003	0	24.7	8.5	1,360	.	0.9	1.4
Aug-07-2003	27	23.6	8.2	1,010	.	1.1	1.2
Aug-14-2003	-3	21.8	8.4	930	.	0.8	1.4
Aug-21-2003	0	22.5	8.1	1,260	.	0.6	1.2
Aug-28-2003	18	22.9	7.7	795	.	0.6	0.7

** 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
Jun-05-2003	109	25.0	8.1	2,520	15.4	3.6
Jun-12-2003	85	21.4	8.3	2,730	16.8	4.4
Jun-19-2003	58	23.5	8.5	3,710	26.1	6.1
Jun-26-2003	83	23.8	8.5	3,500	31.4	5.6
Jul-03-2003	68	24.7	8.4	3,820	42.9	6.5
Jul-10-2003	52	24.8	8.4	4,370	48.0	7.7
Jul-17-2003	64	26.5	8.5	2,770	15.9	5.4
Jul-24-2003	54	27.3	8.4	3,740	P	6.8
Jul-31-2003	56	26.5	8.3	3,410	22.2	6.2
Aug-07-2003	93	24.1	8.4	2,810	20.9	4.6
Aug-14-2003	44	23.9	8.7	3,560	21.0	6.0
Aug-21-2003	52	25.2	8.4	4,110	21.2	7.4
Aug-28-2003	68	24.2	8.2	2,910	19.4	4.7

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
Jun-04-2003	.	8.4	2,710	44	15.6	4.0
Jun-11-2003	.	8.5	3,570	39	16.2	5.3
Jun-17-2003	.	8.5	4,200	31	23.3	7.2
Jun-23-2003	.	9.0	3,000	59	27.2	5.2
Jun-30-2003	.	7.0	4,600	49	33.4	7.5
Jul-08-2003	.	8.7	3,990	29	34.4	6.8
Jul-08-2003	.	8.7	3,990	29	34.4	6.8
Jul-15-2003	.	8.2	2,110	78	13.5	3.4
Jul-22-2003	.	8.5	3,620	25	27.3	6.2
Jul-30-2003	.	8.5	2,980	26	18.1	5.1
Aug-04-2003	.	8.3	3,360	48	17.7	4.7
Aug-11-2003	.	8.0	3,830	35	22.2	5.1
Aug-21-2003	.	8.4	4,080	33	21.2	7.6
Aug-27-2003	.	8.1	3,200	22	18.4	4.8

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
Jun-05-2003	123	23.4	7.6	1,140	0.7	0.5
Jun-12-2003	107	19.8	8.0	1,240	0.6	0.6
Jun-19-2003	99	21.1	7.7	1,220	0.5	0.5
Jun-26-2003	151	23.8	7.7	1,050	0.6	0.5
Jul-03-2003	148 e	23.4	7.7	921	0.8	P
Jul-10-2003	135 e	24.3	7.7	990	0.9	P
Jul-17-2003	135 e	25.6	7.8	906	0.6	P
Jul-24-2003	126 e	26.2	7.8	1,080	P	P
Jul-31-2003	170	25.9	7.6	936	0.5	P
Aug-07-2003	201	23.0	7.7	824	0.6	P
Aug-14-2003	97	22.8	7.8	1,030	0.5	P
Aug-21-2003	113	23.9	7.7	839	0.4	P
Aug-28-2003	138	23.3	7.7	772	0.6	P

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
Jun-04-2003	30	.	.	518	1.2	0.4
Jun-11-2003	10	.	.	821	1.9	0.7
Jun-18-2003	5	.	.	728	1.4	0.9
Jun-25-2003	5	.	.	614	1.1	0.6
Jul-02-2003	15	.	.	375	1.3	P
Jul-09-2003	5	.	.	669	1.5	P
Jul-16-2003	15	.	.	336	0.8	P
Jul-23-2003	15	.	.	327	P	P
Jul-30-2003	5	.	.	435	0.6	P
Aug-06-2003	25	.	.	342	0.5	P
Aug-13-2003	35	.	.	360	1.0	P
Aug-20-2003	75	.	.	382	0.7	P
Aug-27-2003	120	.	.	626	1.2	P

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
Jun-04-2003	80	.	.	452	1.0	0.3
Jun-11-2003	46	.	.	312	0.7	0.2
Jun-18-2003	26	.	.	343	0.8	0.2
Jun-25-2003	26	.	.	310	0.7	0.2
Jul-02-2003	26	.	.	257	1.0	P
Jul-09-2003	25	.	.	274	1.0	P
Jul-16-2003	26	.	.	436	0.8	P
Jul-23-2003	35	.	.	453	P	P
Jul-30-2003	35	.	.	302	0.6	P
Aug-06-2003	35	.	.	350	0.6	P
Aug-13-2003	45	.	.	499	0.9	P
Aug-20-2003	45	.	.	293	0.5	P
Aug-27-2003	45	.	.	323	0.7	P

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
Jun-04-2003	80	.	.	617	1.3	0.4
Jun-11-2003	20	.	.	688	1.4	0.5
Jun-18-2003	30	.	.	1,010	1.5	0.9
Jun-25-2003	60	.	.	527	1.0	0.4
Jul-02-2003	60	.	.	661	1.5	P
Jul-09-2003	60	.	.	646	1.6	P
Jul-16-2003	60	.	.	445	0.8	P
Jul-23-2003	60	.	.	NA	P	P
Jul-30-2003	40	.	.	623	1.0	P
Aug-06-2003	40	.	.	729	1.1	P
Aug-13-2003	95	.	.	504	1.2	P
Aug-20-2003	145	.	.	420	0.7	P
Aug-27-2003	145	.	.	491	1.1	P

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
Jun-04-2003	57	.	.	1,060	1.8	1.0
Jun-11-2003	129	.	.	1,160	1.8	1.6
Jun-18-2003	28	.	.	1,640	2.1	2.8
Jun-25-2003	32	.	.	1,150	1.3	1.7
Jul-02-2003	48	.	.	1,490	2.3	P
Jul-09-2003	26	.	.	1,060	1.5	P
Jul-16-2003	33	.	.	932	1.1	P
Jul-23-2003	51	.	.	944	P	P
Jul-30-2003	53	.	.	797	1.0	P
Aug-06-2003	63	.	.	1,060	1.0	P
Aug-13-2003	42	.	.	943	1.1	P
Aug-20-2003	57	.	.	680	0.8	P
Aug-27-2003	82	.	.	613	0.8	P

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
Jun-04-2003	.	.	.	670	1.4	0.4
Jun-11-2003	.	.	.	330	0.8	0.2
Jun-18-2003	.	.	.	298	0.7	0.2
Jun-25-2003	.	.	.	417	0.5	0.3
Jul-02-2003	.	.	.	285	0.9	P
Jul-09-2003	.	.	.	240	0.8	P
Jul-16-2003	.	.	.	287	0.9	P
Jul-23-2003	.	.	.	309	P	P
Jul-30-2003	.	.	.	297	0.6	P
Aug-06-2003	.	.	.	278	0.5	P
Aug-13-2003	.	.	.	289	0.7	P
Aug-20-2003	.	.	.	322	0.5	P
Aug-27-2003	.	.	.	283	0.6	P

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
Jun-05-2003	139	25.2	7.9	1,440	0.6	0.6
Jun-12-2003	132	20.7	7.6	1,570	0.6	0.6
Jun-19-2003	138	23.5	7.9	1,550	0.6	0.5
Jun-26-2003	181	24.1	7.7	1,060	P	0.4
Jul-03-2003	165	24.5	7.8	1,070	0.8	1.3
Jul-10-2003	164	24.8	7.8	1,180	0.8	0.7
Jul-17-2003	149	26.8	7.6	1,090	<0.4	0.5
Jul-24-2003	133	27.0	7.8	1,080	P	0.5
Jul-31-2003	207	26.1	7.6	1,060	0.5	0.5
Aug-07-2003	202	23.6	7.8	901	0.6	0.4
Aug-14-2003	135	23.3	7.7	1,270	0.4	0.5
Aug-21-2003	124	24.2	7.8	940	0.4	0.4
Aug-28-2003	147	23.9	8.1	995	0.5	0.4

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
Jun-03-2003	.	.	.	2,170	5.8	2.0
Jun-10-2003	.	.	.	2,100	5.9	2.1
Jun-17-2003	.	.	.	2,130	5.8	2.2
Jun-24-2003	.	.	.	1,890	7.6	1.9
Jul-01-2003	.	.	.	1,940	6.3	1.8
Jul-08-2003	.	.	.	2,120	9.0	2.4
Jul-15-2003	.	.	.	NA	NA	NA
Jul-22-2003	.	.	.	1,620	4.9	1.7
Aug-01-2003	.	.	.	1,700	4.7	1.8
Aug-05-2003	.	.	.	1,510	5.4	1.6
Aug-19-2003	.	.	.	1,940	4.3	1.7
Aug-26-2003	.	.	.	1,700	4.8	1.7

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
Jun-05-2003	519	25.4	8.0	1,370	3.2	1.0
Jun-12-2003	466	22.6	7.9	1,400	2.7	1.1
Jun-19-2003	415	24.4	8.2	1,540	4.1	1.2
Jun-26-2003	508	24.7	8.0	1,280	4.4	1.2
Jul-03-2003	440	23.9	8.1	1,390	4.5	0.5
Jul-10-2003	410	25.0	8.1	1,370	5.7	1.3
Jul-17-2003	364	25.8	8.0	1,360	3.0	1.2
Jul-24-2003	324	26.4	7.9	1,350	P	1.2
Jul-31-2003	452	25.3	7.9	1,250	2.6	1.2
Aug-07-2003	507	23.5	8.2	1,230	3.3	1.1
Aug-14-2003	388	23.2	8.2	1,460	0.6	1.2
Aug-21-2003	344	24.3	7.9	1,450	2.7	1.3
Aug-28-2003	392	23.1	7.9	1,300	2.9	1.1

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from September 2002 to August 2003. 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	%	%	%	%	%	%
Sep-2002	100	98	98	95	95	93
Oct-2002	93	98	100	93	98	100
Nov-2002	98	55*	83	65*	100	100
Dec-2002	100	88	78*	98	98	100
Jan-2003	98	65*	80	95	88	80
Feb-2003	98	78	73	88	98	100
Mar-2003	93	85*	100	95	100	100
Apr-2003	90	100	100	75*	88	100
May-2003	98	100	100	95	100	100
Jun-2003	95	93	98	93	65†	100
Jul-2003	95	100	93	98	93	100
Aug-2003	95	98	95	93	95	98

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from September 2002 to August 2003. 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
Sep-2002	0.38	0.38	0.29	0.33	0.31	0.30
Oct-2002	0.66	0.66	0.71	0.62	0.67	0.61
Nov-2002	0.41	0.22*	0.41	0.27*	0.38	0.33
Dec-2002	0.55	0.48*	0.49*	0.60	0.57	0.52
Jan-2003	0.37	0.32	0.33	0.32	0.40	0.35
Feb-2003	0.27	0.24	0.22	0.25	0.26	0.30
Mar-2003	0.33	0.36	0.34	0.28	0.30	0.35
Apr-2003	0.34	0.50	0.47	0.31	0.30	0.24
May-2003	0.37*	0.46*	0.40*	0.46	0.50	0.30
Jun-2003	0.47	0.43	0.40	0.40	0.47	0.37
Jul-2003	0.58*	0.61*	0.73	0.65	0.71	0.65
Aug-2003	0.39	0.38	0.33	0.33	0.33	0.33

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from September 2002 to August 2003. 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	%	%	%	%	%	%
Sep-2002	90	100	90	100	90	90
Oct-2002	100	89	90	100	100	89
Nov-2002	60*†† D	100	100	100	100	100
Dec-2002	100	100	100	90	100	90
Jan-2003	90	90	100	90	100	100
Feb-2003	100	100	100	100	100	100
Mar-2003	100	100	90	90	100	90
Apr-2003	90	100	100	100	80	100
May-2003	100	100	100	80	100	100
Jun-2003	90	100	90	100	80	90
Jul-2003	100	90	100	90	80	100
Aug-2003	90	100	90	90	90	100

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from September 2002 to August 2003. 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
Sep-2002	24.4	28.0	28.7	31.1	23.7	16.6
Oct-2002	70.4	30.2	29.6	27.9	29.9	21.1
Nov-2002	7.9* D	30.3	33.5	29.5	18.4	20.3
Dec-2002	22.8	26.3	36.7	29.9	26.7	21.4
Jan-2003	30.1	37.0	38.8	26.3*	38.6	43.0
Feb-2003	36.1	38.0	32.9	37.0	35.0	28.7
Mar-2003	50.9	43.2	46.6	44.4	44.0	41.5
Apr-2003	38.5	42.0	43.3	34.6	31.1	35.1
May-2003	31.7	29.2	34.6	19.0*	30.4	23.7
Jun-2003	28.5	23.0	24.3	29.7	19.5	27.4
Jul-2003	39.9	28.8	46.9	28.2	25.0	26.0
Aug-2003	30.1	33.5	29.0	24.4	33.5	26.7

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from September 2002 to August 2003. 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
Sep-2002	10.9	8.2	7.4	7.6	11.9	12.0
Oct-2002	8.9	5.9*	6.4*	6.4*	7.8	9.5
Nov-2002	10.8*	15.7	11.9*	10.8*	15.7	14.2
Dec-2002	7.3‡	9.7	10.0	6.8‡	2.4 † † † †	7.7‡‡
Jan-2003	3.9*	11.7	10.2	5.7*	7.7‡	7.7‡
Feb-2003	0.6*	2.0*‡	1.0*‡	1.5*	3.0††††	1.2††††
Mar-2003	12.4*	18.4	14.6	20.3	17.4	22.2
Apr-2003	11.1*	15.4	13.3	8.9*	15.7	27.6
May-2003	8.4*	12.9	10.4	10.9	12.1	13.2
Jun-2003	16.2*	15.8*	13.2*	22.8*	31.6	35.2
Jul-2003	15.9*	22.7	12.1*	8.7*	19.5	16.6
Aug-2003	11.9*	13.6	11.7*	13.9	14.5	10.9

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, June 2003 to August 2003.

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
Jun-23-2003	45	1.2	34	0.6	<0.4
Jun-25-2003	41	1.1	28	0.5	<0.4
Jun-27-2003	44	0.9	31	0.6	<0.4
Jul-21-2003	28	1.2	17	0.5	<0.4
Jul-23-2003	32	1.0	33	0.5	<0.4
Jul-25-2003	32	1.2	23	0.6	<0.4
Aug-18-2003	18	0.8	16	<0.4	<0.4
Aug-20-2003	22	0.7	18	<0.4	<0.4
Aug-22-2003	22	0.8	17	<0.4	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected from June 2003 to August 2003.

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
Jun-23-2003	54	110	79	152	36
Jun-25-2003	78	146	115	202	49
Jun-27-2003	102	164	159	222	32
Jul-21-2003	35	145	75	180	67
Jul-23-2003	27	79	84	175	41
Jul-25-2003	29	128	64	208	40
Aug-18-2003	69	110	89	216	45
Aug-20-2003	58	116	74	187	50
Aug-22-2003	36	193	183	262	30

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.
†	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.
‡	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