GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

April 2003

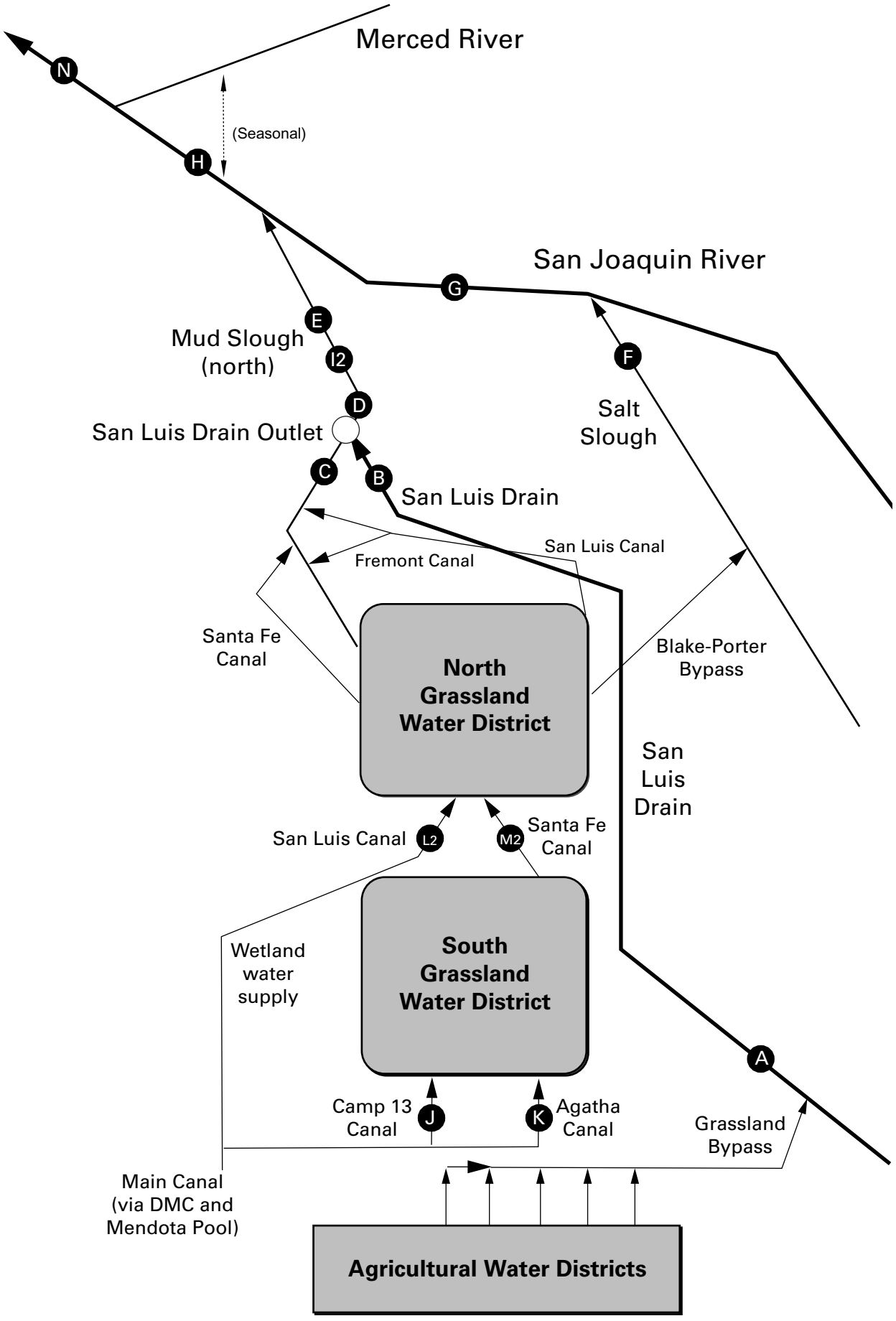
July 07, 2003

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


Merced River
N
(Seasonal)
H
San Joaquin River
G
E
Mud Slough
(north)
I2
F
D
Salt
Slough
San Luis Drain Outlet
C
B
San Luis Drain
San Luis Canal
Fremont Canal
Santa Fe
Canal
North
Grassland
Water District
Blake-Porter
Bypass
San
Luis
Drain
San Luis Canal
L2
M2
Santa Fe
Canal
Wetland
water
supply
South
Grassland
Water District
A
Camp 13
Canal
J
K
Agatha
Canal
Grassland
Bypass
Main Canal
(via DMC and
Mendota Pool)
Agricultural Water Districts

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MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

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

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Apr-01-2003	36	5,290
Apr-02-2003	43	5,340
Apr-03-2003	42	5,260
Apr-04-2003	43	5,200
Apr-05-2003	44	5,080
Apr-06-2003	43	5,010
Apr-07-2003	42	5,140
Apr-08-2003	44	5,140
Apr-09-2003	45	5,160
Apr-10-2003	43	5,020
Apr-11-2003	34	5,050
Apr-12-2003	29	5,060
Apr-13-2003	28	4,890
Apr-14-2003	32	4,970
Apr-15-2003	44	4,630
Apr-16-2003	41	4,780
Apr-17-2003	43	4,750
Apr-18-2003	45	4,670
Apr-19-2003	44	4,850
Apr-20-2003	42	4,770
Apr-21-2003	44	5,070
Apr-22-2003	44	5,300
Apr-23-2003	42	5,260
Apr-24-2003	36	5,270
Apr-25-2003	41	5,090
Apr-26-2003	42	4,850
Apr-27-2003	44	4,860
Apr-28-2003	44	4,790
Apr-29-2003	45	4,770
Apr-30-2003	46	4,860
.	.	.
Mean	41	5,010

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

See Table 26 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
Apr-01-2003	28	19.8	8.8	5,370	63.2	9.5
Apr-02-2003	40	17.5	9.0	5,310	58.3	12.6
Apr-03-2003	45	16.9	9.2	5,450	57.1	13.9
Apr-04-2003	45	16.8	9.3	5,580	53.6	13.0
Apr-05-2003	46	16.4	8.9	5,530	74.0	18.4
Apr-06-2003	46	16.2	9.0	5,590	83.2	20.6
Apr-07-2003	45	17.2	8.8	5,520	79.4	19.3
Apr-08-2003	44	18.8	8.8	5,450	73.8	17.5
Apr-09-2003	46	20.2	8.4	5,340	70.7	17.5
Apr-10-2003	47	21.0	8.0	5,210	67.5	17.1
Apr-11-2003	44	20.9	8.7	5,280	68.7	16.3
Apr-12-2003	34	19.3	8.6	5,300	68.6	12.6
Apr-13-2003	32	18.1	8.9	5,360	70.3	12.1
Apr-14-2003	31	18.0	8.8	5,290	70.5	11.8
Apr-15-2003	33	18.0	8.6	5,270	67.5	12.0
Apr-16-2003	44	17.8	8.6	5,330	58.1	13.8
Apr-17-2003	43	17.2	8.1	5,270	52.0	12.1
Apr-18-2003	44	17.1	7.9	5,220	59.0	14.0
Apr-19-2003	46	17.9	7.1	4,990	64.9	16.1
Apr-20-2003	45	18.3	8.2	5,130	64.4	15.6
Apr-21-2003	43	18.1	8.2	5,120	69.8	16.2
Apr-22-2003	45	18.0	8.2	5,170	74.1	18.0
Apr-23-2003	44	18.2	8.2	5,290	75.5	17.9
Apr-24-2003	40	17.7	P	5,190	68.2	14.7
Apr-25-2003	33	17.6	P	5,500	84.4	15.0
Apr-26-2003	38	17.6	P	5,680	94.1	19.3
Apr-27-2003	40	18.8	P	5,580	88.3	19.0
Apr-28-2003	43	19.1	P	5,640	81.7	18.9
Apr-29-2003	43	18.5	P	5,430	77.6	18.0
Apr-30-2003	45	18.8	P	5,240	68.9	16.7
.	.	.	.	.	.	.
Mean	41	18.2	8.5	5,350	70.2	15.7
Total Acre-feet	**2,460**					
Total (lbs)						**470**

Load Limitation for April 2003 (lbs)	**538**

Table 2b. Continuous water monitoring at San Luis Drain Outlet, April 2003.
Note: This is unofficial data reported for comparison with Station B.

See Table 26 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
Apr-01-2003	26	63.2	8.9
Apr-02-2003	40	58.3	12.7
Apr-03-2003	47	57.1	14.4
Apr-04-2003	47	53.6	13.6
Apr-05-2003	47	74.0	18.9
Apr-06-2003	48	83.2	21.3
Apr-07-2003	46	79.4	19.9
Apr-08-2003	46	73.8	18.4
Apr-09-2003	47	70.7	17.9
Apr-10-2003	47	67.5	17.3
Apr-11-2003	44	68.7	16.3
Apr-12-2003	35	68.6	13.1
Apr-13-2003	31	70.3	11.6
Apr-14-2003	29	70.5	11.1
Apr-15-2003	33	67.5	11.8
Apr-16-2003	46	58.1	14.4
Apr-17-2003	45	52.0	12.6
Apr-18-2003	36	59.0	11.6
Apr-19-2003	48	64.9	17.0
Apr-20-2003	47	64.4	16.4
Apr-21-2003	46	69.8	17.2
Apr-22-2003	48	74.1	19.1
Apr-23-2003	48	75.5	19.6
Apr-24-2003	43	68.2	15.9
Apr-25-2003	40	84.4	18.1
Apr-26-2003	42	94.1	21.3
Apr-27-2003	44	88.3	21.0
Apr-28-2003	46	81.7	20.4
Apr-29-2003	45	77.6	19.0
Apr-30-2003	46	68.9	17.0
.	.	.	.
Mean	43	70.2	16.3
Total Acre-feet	**2,550**		
Total (lbs)			**488**

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

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.

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

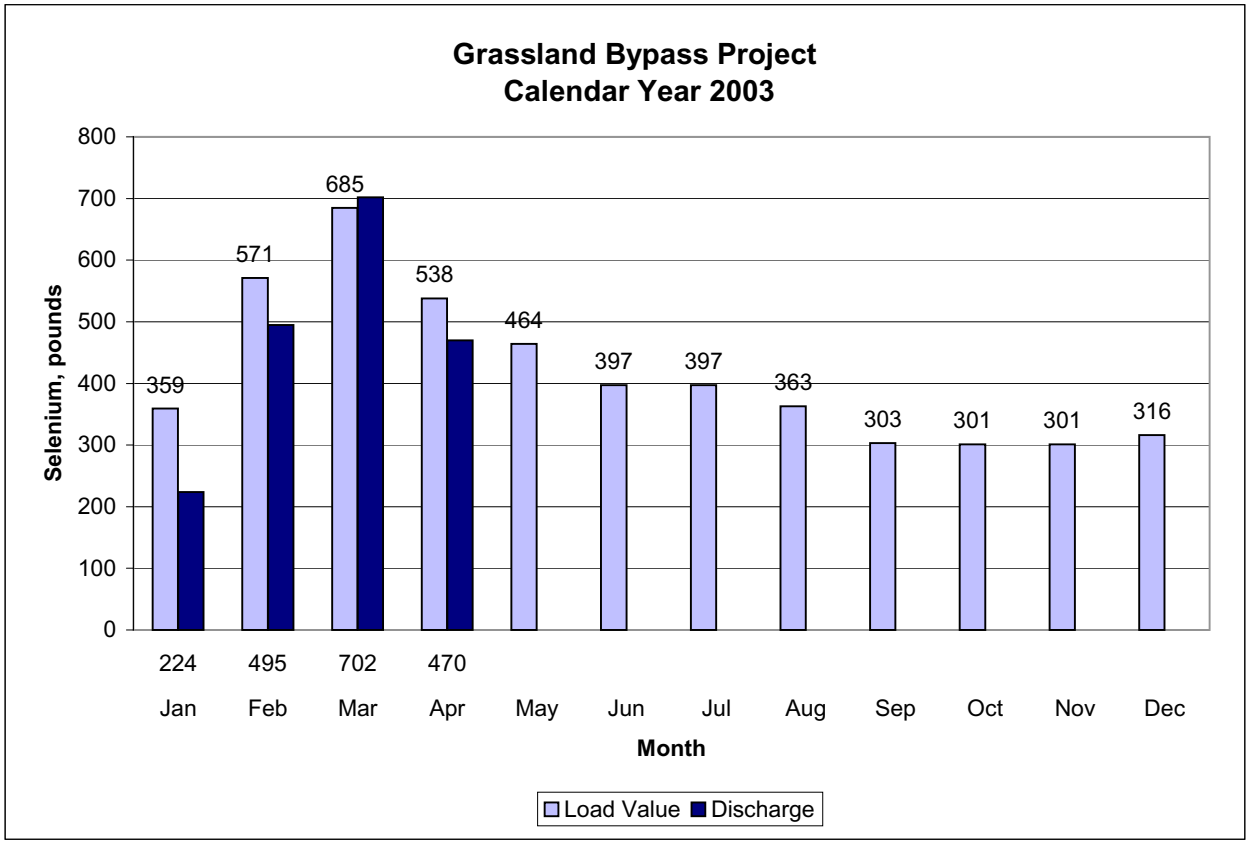

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), April 2003.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Apr-01-2003	138	18.6	3,400
Apr-02-2003	118	16.3	3,860
Apr-03-2003	94 e	16.2	4,390
Apr-04-2003	86 e	16.0	4,900
Apr-05-2003	80 e	15.9	4,860
Apr-06-2003	74 e	16.1	4,500
Apr-07-2003	68 e	17.0	4,400
Apr-08-2003	63 e	18.7	4,470
Apr-09-2003	58 e	19.6	4,430
Apr-10-2003	52 e	19.9	4,350
Apr-11-2003	65	19.7	3,880
Apr-12-2003	58	17.9	3,470
Apr-13-2003	55	17.2	3,460
Apr-14-2003	54	17.4	3,190
Apr-15-2003	49	17.4	3,520
Apr-16-2003	57	17.7	3,580
Apr-17-2003	58	17.4	3,570
Apr-18-2003	64	17.1	3,530
Apr-19-2003	68	17.8	3,110
Apr-20-2003	67	17.9	3,490
Apr-21-2003	64	17.7	3,310
Apr-22-2003	65	17.6	3,280
Apr-23-2003	65	18.3	3,510
Apr-24-2003	72	17.7	3,070
Apr-25-2003	72	17.5	3,060
Apr-26-2003	81	17.5	2,990
Apr-27-2003	78	18.7	2,900
Apr-28-2003	77	18.9	2,900
Apr-29-2003	77 e	18.3	3,210
Apr-30-2003	76 e	18.4	3,250
.	.	.	.
Mean	72	17.7	3,660

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

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Apr-01-2003	225	18.6	1,670
Apr-02-2003	220	16.0	1,700
Apr-03-2003	211	15.7	1,750
Apr-04-2003	206	15.6	1,740
Apr-05-2003	205	15.4	1,730
Apr-06-2003	210	15.8	1,670
Apr-07-2003	219	16.8	1,590
Apr-08-2003	209	18.3	1,640
Apr-09-2003	168	19.7	1,830
Apr-10-2003	156	20.0	1,790
Apr-11-2003	154	19.4	1,670
Apr-12-2003	146	17.8	1,750
Apr-13-2003	146	16.9	1,720
Apr-14-2003	156	17.0	1,570
Apr-15-2003	168	16.7	1,500
Apr-16-2003	161	17.1	1,550
Apr-17-2003	175	17.0	1,490
Apr-18-2003	193	16.8	1,410
Apr-19-2003	192	17.4	1,410
Apr-20-2003	197	17.7	1,380
Apr-21-2003	188	17.5	1,380
Apr-22-2003	156	17.1	1,460
Apr-23-2003	122	17.8	1,560
Apr-24-2003	116	17.4	1,700
Apr-25-2003	113	17.2	1,840
Apr-26-2003	109	17.5	1,930
Apr-27-2003	121	18.7	1,980
Apr-28-2003	134	19.0	1,880
Apr-29-2003	134	17.9	1,800
Apr-30-2003	133	18.2	1,750
.	.	.	.
Mean	168	17.5	1,660

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

See Table 26 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
Apr-01-2003	843	19.3	1,620	2.4
Apr-02-2003	850	17.2	1,620	2.4
Apr-03-2003	817	17.0	1,710	2.8
Apr-04-2003	835	17.0	1,760	3.3
Apr-05-2003	820	16.7	1,740	3.1
Apr-06-2003	814	16.9	NA	NA
Apr-07-2003	825	17.5	1,720	4.7
Apr-08-2003	800	18.6	1,700	5.1
Apr-09-2003	778	19.6	1,710	4.5
Apr-10-2003	744	19.9	1,790	4.5
Apr-11-2003	729	19.4	1,820	4.8
Apr-12-2003	756	18.5	1,740	4.6
Apr-13-2003	881	17.4	NA	NA
Apr-14-2003	1,000	17.0	1,120	2.5
Apr-15-2003	1,010	16.4	1,060	2.1
Apr-16-2003	1,000	16.7	1,050	2.2
Apr-17-2003	1,050	16.6	1,050	3.0
Apr-18-2003	1,070	16.4	1,100	2.4
Apr-19-2003	1,130	17.0	1,050	2.1
Apr-20-2003	1,170	17.1	983	2.5
Apr-21-2003	1,170	16.7	932	2.5
Apr-22-2003	1,150	16.6	908	2.4
Apr-23-2003	1,080	17.4	976	2.9
Apr-24-2003	991	17.2	1,070	3.5
Apr-25-2003	961	16.9	1,140	3.4
Apr-26-2003	985	17.0	1,090	2.9
Apr-27-2003	963	17.8	1,090	3.4
Apr-28-2003	990	18.2	1,130	4.0
Apr-29-2003	994	17.9	1,100	3.7
Apr-30-2003	983	17.6	1,080	3.6
.	.	.	.	.
Mean	940	17.5	1,320	3.3

Table 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.

See Table 26 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	.	.	.
Feb-05-2003	33	.	.	4,960	130	.	.	.
Feb-12-2003	54	.	.	4,630	190	.	.	.
Feb-19-2003	54	.	.	4,350	160	.	.	.
Feb-26-2003	82	.	.	4,210	180	.	.	.
Mar-05-2003	65	.	.	4,970	140	.	.	.
Mar-12-2003	58	.	.	5,510	NA	.	.	.
Mar-19-2003	40	.	.	5,940	40	.	.	.
Mar-26-2003	36	.	.	5,420	46	.	.	.
Apr-02-2003	43	.	.	5,770	50		.	
Apr-09-2003	45	.	.	5,160	P		.	
Apr-16-2003	41	.	.	4,850	86		.	
Apr-23-2003	42	.	.	5,570	P		.	
Apr-30-2003	46	.	.	5,110	NA		.	

Table 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.

See Table 26 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
Feb-04-2003	33	.	.	4,830	.	64.0	.	7.6
Feb-11-2003	52	.	.	4,750	.	70.3	.	7.3
Feb-18-2003	52	.	.	4,390	.	57.7	.	7.0
Feb-25-2003	72	.	.	4,690	.	59.9	.	7.7
Mar-04-2003	63	.	.	4,820	.	70.6	.	7.8
Mar-11-2003	58	.	.	5,490	.	87.1	.	8.5
Mar-18-2003	42	.	.	5,620	.	84.4	.	8.9
Mar-25-2003	31	.	.	5,740	.	72.1	.	8.9
Apr-01-2003	36	.	.	5,590	.	62.9	.	9.1
Apr-08-2003	44	.	.	5,400	.	73.6	.	8.7
Apr-15-2003	44	.	.	5,220	.	64.5	.	P
Apr-22-2003	44	.	.	5,300	.	74.6	.	P
Apr-29-2003	45	.	.	5,230	.	68.1	.	P

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

See Table 26 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
Feb-06-2003	36	10.4	7.9	4,610	44	60.6	.	7.2
Feb-13-2003	59	11.8	8.0	4,510	46	63.2	.	6.6
Feb-20-2003	58	12.4	8.1	4,280	54	54.4	.	6.8
Feb-27-2003	82	13.4	8.0	4,920	54	63.6	.	7.6
Mar-06-2003	69	15.0	7.7	5,080	39	73.5	.	8.4
Mar-13-2003	63	18.1	8.3	5,520	30	80.3	.	8.6
Mar-20-2003	46	14.9	8.1	5,580	NA	88.1	.	8.4
Mar-27-2003	46	16.6	8.4	5,590	54	66.6	.	8.1
Apr-03-2003	45	16.6	8.3	5,430	41	54.2	.	8.8
Apr-10-2003	47	18.7	8.2	5,190	28	67.0	.	8.2
Apr-17-2003	43	16.4	8.1	5,250	53	52.6	.	P
Apr-24-2003	40	17.1	8.3	5,130	60	66.9	.	P

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

See Table 26 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
Feb-06-2003	105	9.1	7.9	2,310	0.8	2.0
Feb-13-2003	130	13.1	7.9	1,890	1.3	1.6
Feb-20-2003	150	12.1	8.0	1,960	1.2	1.8
Feb-27-2003	140	12.6	7.9	1,930	0.8	1.7
Mar-06-2003	149	14.9	7.8	2,150	1.0	2.0
Mar-13-2003	144	18.2	8.1	1,970	1.1	1.9
Mar-20-2003	133	14.7	8.0	2,180	0.9	2.1
Mar-27-2003	125	15.7	8.3	1,940	1.1	1.7
Apr-03-2003	49	17.5	7.7	2,180	0.7	2.1
Apr-10-2003	5	19.7	8.2	2,790	0.9	2.6
Apr-17-2003	15	16.5	8.0	3,300	0.6	2.9
Apr-24-2003	32	16.5	8.4	1,880	1.0	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 26 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
Feb-06-2003	141	9.4	7.9	2,940	14.5	3.3
Feb-13-2003	189	12.6	7.8	2,780	21.1	3.1
Feb-20-2003	208	12.1	8.0	2,640	14.5	3.1
Feb-27-2003	222	13.3	7.9	3,100	23.6	3.9
Mar-06-2003	218	14.8	7.8	3,070	21.1	3.9
Mar-13-2003	207	18.4	8.0	3,030	20.2	3.7
Mar-20-2003	179	14.9	8.0	2,980	18.6	3.5
Mar-27-2003	171	15.8	8.3	2,270	13.6	3.0
Apr-03-2003	94 e	17.2	7.8	3,640	22.4	4.9
Apr-10-2003	52 e	18.9	8.2	4,510	45.9	6.1
Apr-17-2003	58	16.6	8.2	4,830	38.9	6.8
Apr-24-2003	72	17.7	8.3	3,680	34.0	4.9

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

See Table 26 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
Feb-02-2003	.	7.8	2,550	24	9.8	3.2
Feb-10-2003	.	7.8	3,060	23	21.6	3.8
Feb-19-2003	.	7.4	2,560	35	13.8	3.1
Feb-26-2003	.	7.2	2,870	38	19.8	3.6
Mar-04-2003	.	6.7	2,760	27	17.8	3.3
Mar-10-2003	.	7.6	2,910	39	20.2	3.5
Mar-17-2003	.	7.5	3,100	65	19.1	3.9
Mar-25-2003	.	8.1	2,850	55	15.4	3.6
Apr-02-2003	.	8.0	3,080	40	15.0	3.6
Apr-08-2003	.	7.8	5,200	26	36.1	5.7
Apr-14-2003	.	7.9	4,050	25	39.6	6.4
Apr-21-2003	.	8.3	4,650	19	44.8	6.1
Apr-28-2003	.	8.5	4,200	21	41.7	5.8

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

See Table 26 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
Feb-06-2003	112	9.7	7.7	2,230	0.5	1.2
Feb-13-2003	126	13.0	7.7	2,080	1.2	1.2
Feb-20-2003	241	11.3	7.8	1,340	1.0	0.8
Feb-27-2003	406	12.6	7.6	1,440	1.3	0.9
Mar-06-2003	404	13.4	7.9	1,590	1.2	1.1
Mar-13-2003	436	17.4	7.7	1,620	1.1	1.2
Mar-20-2003	324	14.6	7.7	1,820	0.9	1.3
Mar-27-2003	284	17.5	7.9	1,540	1.1	1.0
Feb-27-2003	406	12.6	7.6	1,440	1.3	0.9
Apr-03-2003	211	18.7	7.3	1,780	0.7	1.2
Apr-10-2003	156	18.2	7.8	1,840	0.9	1.0
Apr-17-2003	175	16.0	7.7	1,590	0.8	0.7
Apr-24-2003	116	16.5	7.6	1,850	0.4	0.8

Table 12. Weekly water quality monitoring at Station J (Camp 13 Ditch).

See Table 26 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
Feb-05-2003	10	.	.	736	2.7	0.6
Feb-12-2003	10	.	.	666	3.1	0.4
Feb-19-2003	10	.	.	683	1.7	0.5
Feb-26-2003	10	.	.	810	2.2	0.6
Mar-05-2003	5	.	.	1,050	3.3	1.1
Mar-12-2003	5	.	.	832	2.5	0.6
Mar-19-2003	50	.	.	656	1.7	0.4
Mar-26-2003	50	.	.	442	1.3	0.3
Apr-02-2003	0	.	.	692	<0.4	0.6
Apr-09-2003	0	.	.	740	1.8	0.5
Apr-16-2003	10	.	.	727	1.2	0.4
Apr-23-2003	0	.	.	1,640	1.4	2.3
Apr-30-2003	10	.	.	847	1.8	P

Table 13. Weekly water quality monitoring at Station K (Agatha Canal).

See Table 26 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
Feb-05-2003	30	.	.	769	2.4	0.5
Feb-12-2003	30	.	.	961	2.1	0.6
Feb-19-2003	30	.	.	672	1.1	0.5
Feb-26-2003	30	.	.	993	2.4	0.8
Mar-05-2003	10	.	.	1,250	3.3	1.1
Mar-12-2003	10	.	.	1,150	1.6	1.4
Mar-19-2003	80	.	.	676	1.8	0.4
Mar-26-2003	80	.	.	483	1.2	0.3
Apr-02-2003	0	.	.	1,220	2.1	1.1
Apr-09-2003	0	.	.	1,790	1.3	2.1
Apr-16-2003	20	.	.	765	1.2	0.6
Apr-23-2003	30	.	.	605	1.4	0.4
Apr-30-2003	30	.	.	594	1.1	P

Table 14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).

See Table 26 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
Feb-05-2003	0	.	.	1,980	2.3	2.2
Feb-12-2003	25	.	.	887	3.1	0.6
Feb-19-2003	25	.	.	882	1.8	0.6
Feb-26-2003	41	.	.	997	2.2	0.9
Mar-05-2003	25	.	.	873	2.0	0.7
Mar-12-2003	25	.	.	1,230	1.8	1.1
Mar-19-2003	25	.	.	808	1.6	0.6
Mar-26-2003	25	.	.	1,250	2.1	1.2
Apr-02-2003	50	.	.	1,100	1.9	1.1
Apr-09-2003	25	.	.	1,260	2.1	1.2
Apr-16-2003	40	.	.	905	1.6	0.6
Apr-23-2003	40	.	.	1,050	2.0	0.8
Apr-30-2003	40	.	.	1,010	1.6	P

Table 15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).

See Table 26 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
Feb-05-2003	107	.	.	1,840	3.2	1.9
Feb-12-2003	112	.	.	1,910	4.7	2.2
Feb-19-2003	108	.	.	1,970	3.7	2.3
Feb-26-2003	78	.	.	1,920	3.4	2.4
Mar-05-2003	118	.	.	2,370	3.8	2.6
Mar-12-2003	122	.	.	1,980	1.4	2.6
Mar-19-2003	117	.	.	1,910	2.1	2.1
Mar-26-2003	91	.	.	1,520	2.0	1.6
Apr-02-2003	66	.		2,060	1.8	2.3
Apr-09-2003	40	.	.	2,310	2.4	2.5
Apr-16-2003	30	.	.	2,080	1.5	2.0
Apr-23-2003	14	.	.	2,150	1.5	2.3
Apr-30-2003	40	.		1,600	1.5	P

Table 16. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 26 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
Feb-06-2003	153	9.4	7.7	2,450	<0.4	1.0
Feb-13-2003	152	12.3	7.7	2,420	0.9	1.1
Feb-20-2003	268	11.2	7.9	1,470	1.0	0.8
Feb-27-2003	401	13.1	7.8	1,490	1.2	0.9
Mar-06-2003	451	14.5	7.9	1,680	1.0	1.0
Mar-13-2003	503	17.5	7.6	1,650	1.2	1.1
Mar-20-2003	437	15.1	7.5	1,780	0.8	1.3
Mar-27-2003	360	17.6	7.9	1,890	1.0	0.9
Apr-03-2003	267	16.0	7.3	2,020	0.7	1.1
Apr-10-2003	220	19.2	7.7	2,170	0.8	0.9
Apr-17-2003	212	16.7	7.5	1,780	0.5	0.8
Apr-24-2003	154	17.3	7.8	2,090	0.4	0.8

Table 17. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).
(Collected data intended for use with biological monitoring.)

See Table 26 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
Feb-04-2003	.	.	.	2,400	3.7	1.8
Feb-11-2003	.	.	.	2,570	8.2	2.0
Feb-18-2003	.	.	.	2,160	7.0	1.8
Mar-04-2003	.	.	.	2,070	5.9	1.6
Mar-11-2003	.	.	.	2,070	6.3	1.7
Mar-18-2003	.	.	.	2,230	6.1	1.9
Mar-25-2003	.	.	.	2,370	5.1	1.7
Apr-01-2003	.	.	.	2,210	3.5	1.5
Apr-08-2003	.	.	.	2,580	7.6	2.1
Apr-15-2003	.	.	.	2,700	6.1	1.9
Apr-22-2003	.	.	.	2,290	8.3	1.9
Apr-29-2003	.	.	.	2,680	11.3	2.3

Table 18. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

See Table 26 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
Feb-06-2003	832	9.6	7.8	1,650	2.7	1.1
Feb-13-2003	813	11.7	7.7	1,730	6.0	1.3
Feb-20-2003	933	11.4	7.8	1,560	3.7	1.3
Feb-27-2003	1,040	13.9	7.8	1,570	4.8	1.3
Mar-06-2003	1,120	15.4	7.8	1,700	5.0	1.5
Mar-13-2003	1,140	18.1	8.0	1,710	4.9	1.4
Mar-20-2003	1,120	15.9	8.0	1,860	4.0	1.5
Mar-27-2003	945	16.4	7.9	1,640	3.2	1.1
Apr-03-2003	817	15.6	7.4	1,730	3.0	1.3
Apr-10-2003	744	19.3	8.0	1,770	4.7	1.2
Apr-17-2003	1,050	16.2	7.8	1,050	2.9	0.7
Apr-24-2003	991	16.7	7.9	1,080	3.5	0.7

Table 19. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from May 2002 to April 2003. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 26 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	%	%	%	%	%	%
May-2002	98	95	95	90	85	88
Jun-2002	98	100	100	95	95	100
Jul-2002	100	95	98	93	90	100
Aug-2002	85	88	95	90	95	98
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

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from May 2002 to April 2003. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 26 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
May-2002	0.63	0.70	0.62	0.65	0.61	0.56
Jun-2002	0.38	0.43	0.41	0.42	0.31	0.50
Jul-2002	0.31	0.33	0.34	0.35	0.31	0.34
Aug-2002	0.49*	0.49	0.49	0.58	0.57	0.55
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

Table 21. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from May 2002 to April 2003. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 26 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	%	%	%	%	%	%
May-2002	80	100	80	100	89	30†
Jun-2002	100	90	90	90	100	90
Jul-2002	90	100	100	100	100	100
Aug-2002	100	90	100	60*	100	90
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

Table 22. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from May 2002 to April 2003. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 26 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
May-2002	26.4	36.5	30.7	37.2	27.9	2.9†
Jun-2002	40.0	36.1	43.1	24.3*	45.3	28.6
Jul-2002	28.3	29.7	34.6	29.6	33.1	29.1
Aug-2002	40.8	26.6	34.1	20.4	25.6	22.9
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

(*) Although reproduction values were less at Stations C, D, and F, they were not statistically different from the DMC water.
This was due to the increased survival rate at Sation B.

Table 23. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from May 2002 to April 2003. Each value is the mean of 4 replicates.

See Table 26 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
May-2002	4.8 ‡	7.9	6.1	6.3	7.1 ‡‡‡	3.8 ‡
Jun-2002	3.7*	9.5	7.7*	6.8*	11.7	10.2
Jul-2002	6.0	10.2	10.3	10.5	6.8	8.7
Aug-2002	NA	NA	NA	NA	NA	NA
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

Table 24. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, February 2003 to April 2003.

See Table 26 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
Feb-17-2002	57	1.2	18	1.1	<0.4
Feb-19-2002	54	1.0	15	0.9	0.6
Feb-21-2002	56	1.0	15	1.0	<0.4
Mar-17-2003	74	0.7	20	1.3	0.9
Mar-19-2003	84	0.7	20	1.2	<0.4
Mar-21-2003	86	1.1	19	0.9	<0.4
Apr-14-2003	45	1.4	22	0.7	<0.4
Apr-16-2003	57	1.0	34	1.1	<0.4
Apr-18-2003	58	1.1	35	0.7	0.5

Table 25. Summary of total suspended solids concentrations in grab water samples collected from February 2003 to April 2003.

See Table 26 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
Feb-17-2003	117	70	88	164	19
Feb-19-2003	108	49	75	150	56
Feb-21-2003	92	65	72	103	37
Mar-17-2003	74	123	131	36	35
Mar-19-2003	44	110	100	37	27
Mar-21-2003	57	207	169	103	36
Apr-14-2003	60	155	84	110	24
Apr-16-2003	76	145	115	97	9
Apr-18-2003	97	334	112	205	14

Table 26. 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 (10^6cell/mL) acceptability criteria.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
‡‡	Fungal growth observed on test organisms.
‡‡‡	Failed cell density requirement of 1E6 cells.
#	New testing laboratory with reporting limit of 0.4 µg/L as of June 1998.
v	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated