

# GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

December 2004

April 7, 2005

### 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





**GRASSLAND BYPASS PROJECT**  
**MONTHLY DATA REPORT**

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**Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), December 2004.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>SLDMWA</b>	<b>SLDMWA</b>
<b>UNITS</b>	<b>cfs</b>	<b>µS/cm</b>
Dec-01-2004	16	5,350
Dec-02-2004	16	5,200
Dec-03-2004	16	5,190
Dec-04-2004	16	5,120
Dec-05-2004	18	4,980
Dec-06-2004	17	5,190
Dec-07-2004	19	5,130
Dec-08-2004	21	4,970
Dec-09-2004	18	4,870
Dec-10-2004	17	4,910
Dec-11-2004	17	4,710
Dec-12-2004	17	4,780
Dec-13-2004	17	4,950
Dec-14-2004	18	4,950
Dec-15-2004	18	5,150
Dec-16-2004	18	5,130
Dec-17-2004	18	5,170
Dec-18-2004	17	4,810
Dec-19-2004	17	4,650
Dec-20-2004	17	4,740
Dec-21-2004	19	4,840
Dec-22-2004	19	4,770
Dec-23-2004	18	4,630
Dec-24-2004	17	4,710
Dec-25-2004	17	4,790
Dec-26-2004	17	4,820
Dec-27-2004	19	4,900
Dec-28-2004	26	4,670
Dec-29-2004	33	4,390
Dec-30-2004	25	4,540
Dec-31-2004	32	4,350
Mean	19	4,880

**Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), December 2004.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Boron</b>	<b>Specific Conductance</b>	<b>Selenium (total)</b>	<b>Selenium (total) Load</b>
<b>DATA SOURCE</b>	<b>USGS</b>	<b>USGS</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>Computed</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>mg/L</b>	<b>µS/cm</b>	<b>µg/L</b>	<b>lbs</b>
Dec-01-2004	22	8.2	7.4	4,430	36.6	4.3
Dec-02-2004	22	8.0	7.1	4,320	33.2	3.9
Dec-03-2004	22	7.8	8.0	4,180	31.2	3.7
Dec-04-2004	22	7.8	7.6	4,440	34.9	4.1
Dec-05-2004	23	7.9	7.1	4,390	34.8	4.3
Dec-06-2004	23	8.3	7.7	4,380	38.7	4.8
Dec-07-2004	21	8.8	7.7	4,480	46.6	5.3
Dec-08-2004	24	9.8	7.6	4,340	43.1	5.6
Dec-09-2004	27	10.7	7.4	4,280	40.2	5.9
Dec-10-2004	25	11.7	7.3	4,320	42.4	5.7
Dec-11-2004	24	12.1	7.6	4,230	45.1	5.8
Dec-12-2004	23	12.4	7.6	4,300	46.6	5.8
Dec-13-2004	23	12.3	7.4	4,320	47.1	5.8
Dec-14-2004	23	12.6	7.1	4,260	42.5	5.3
Dec-15-2004	24	12.9	7.1	4,060	40.2	5.2
Dec-16-2004	25	12.1	7.2	4,210	38.9	5.2
Dec-17-2004	25	11.4	6.9	4,110	29.4	4.0
Dec-18-2004	24	10.8	7.0	4,230	30.4	3.9
Dec-19-2004	24	10.5	6.7	4,310	33.8	4.4
Dec-20-2004	23	9.9	7.0	4,390	39.1	4.9
Dec-21-2004	24	9.5	7.1	4,410	36.3	4.7
Dec-22-2004	25	9.1	7.5	4,510	36.0	4.9
Dec-23-2004	26	8.5	7.1	4,310	35.8	5.0
Dec-24-2004	24	8.2	6.8	4,120	33.2	4.3
Dec-25-2004	24	8.1	7.1	4,110	31.9	4.1
Dec-26-2004	23	8.2	7.4	4,270	35.8	4.4
Dec-27-2004	23	8.4	7.5	4,340	37.0	4.6
Dec-28-2004	29	9.0	6.6	4,070	33.5	5.2
Dec-29-2004	34	9.4	6.5	3,990	32.7	6.0
Dec-30-2004	39	9.6	6.6	4,020	36.4	7.7
Dec-31-2004	37	10.4	6.8	4,060	39.4	7.9
Mean	25	9.8	7.2	4,260	40.1	5.1
<b>Total Acre-feet</b>	<b>1,540</b>					
<b>Total (lbs)</b>						<b>157</b>

<b>Load Limitation for December 2004 (lbs)</b>	<b>298</b>
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Table 2b. Continuous water monitoring at San Luis Drain Outlet, December 2004.

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	USGS	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Dec-01-2004	23	36.6	4.5
Dec-02-2004	23	33.2	4.0
Dec-03-2004	23	31.2	3.8
Dec-04-2004	23	34.9	4.4
Dec-05-2004	23	34.8	4.2
Dec-06-2004	24	38.7	5.0
Dec-07-2004	25	46.6	6.3
Dec-08-2004	26	43.1	6.2
Dec-09-2004	28	40.2	6.0
Dec-10-2004	26	42.4	5.9
Dec-11-2004	25	45.1	6.0
Dec-12-2004	25	46.6	6.2
Dec-13-2004	25	47.1	6.2
Dec-14-2004	24	42.5	5.5
Dec-15-2004	25	40.2	5.4
Dec-16-2004	25	38.9	5.2
Dec-17-2004	25	29.4	3.9
Dec-18-2004	25	30.4	4.1
Dec-19-2004	24	33.8	4.4
Dec-20-2004	23	39.1	5.0
Dec-21-2004	24	36.3	4.7
Dec-22-2004	25	36.0	4.9
Dec-23-2004	26	35.8	5.0
Dec-24-2004	25	33.2	4.5
Dec-25-2004	24	31.9	4.2
Dec-26-2004	24	35.8	4.6
Dec-27-2004	25	37.0	5.0
Dec-28-2004	29	33.5	5.2
Dec-29-2004	35	32.7	6.1
Dec-30-2004	44	36.4	8.6
Dec-31-2004	37	39.4	7.9
Mean	26	40.1	5.3
Total Acre-feet	1,600		
Total (lbs)			163

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.

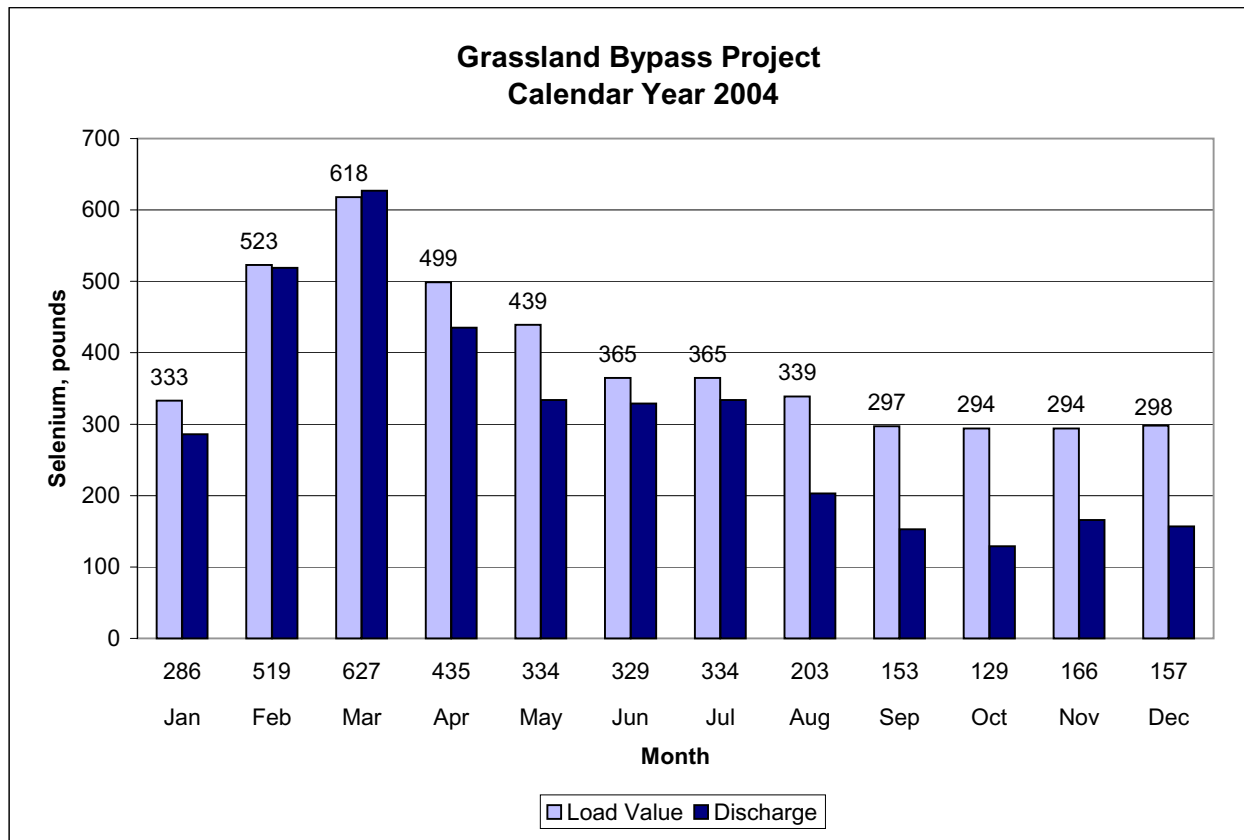
To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, are measuring flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge will be measured as stage over a sharp-crested 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 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)

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), December 2004.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>usgs</b>	<b>usgs</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>µS/cm</b>
Dec-01-2004	121	7.9	2,150
Dec-02-2004	118	7.9	2,160
Dec-03-2004	123	7.7	2,140
Dec-04-2004	136	7.4	2,030
Dec-05-2004	141	7.8	2,000
Dec-06-2004	140	8.3	2,060
Dec-07-2004	141	9.2	2,080
Dec-08-2004	148	10.2	2,050
Dec-09-2004	159	11.1	1,960
Dec-10-2004	161	12.3	1,900
Dec-11-2004	161	12.4	1,890
Dec-12-2004	161	12.3	1,890
Dec-13-2004	155	11.8	1,950
Dec-14-2004	158	12.2	1,890
Dec-15-2004	158	12.6	1,920
Dec-16-2004	158	11.5	1,940
Dec-17-2004	155	10.5	1,930
Dec-18-2004	156	9.9	1,940
Dec-19-2004	156	9.6	1,950
Dec-20-2004	158	9.1	1,950
Dec-21-2004	160	8.9	1,930
Dec-22-2004	159	8.6	1,970
Dec-23-2004	154	7.8	2,040
Dec-24-2004	151	7.7	2,010
Dec-25-2004	147	7.6	2,020
Dec-26-2004	146	7.9	2,050
Dec-27-2004	146	8.5	2,100
Dec-28-2004	180	9.2	1,950
Dec-29-2004	254	9.7	1,740
Dec-30-2004	328	9.7	1,730
Dec-31-2004	393	10.3	1,600
Mean	167	9.6	1,970



Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), December 2004.

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
Dec-01-2004	135	8.1	1,360
Dec-02-2004	129	8.0	1,390
Dec-03-2004	125	7.9	1,420
Dec-04-2004	127	7.7	1,430
Dec-05-2004	127	8.1	1,420
Dec-06-2004	126	8.7	1,440
Dec-07-2004	124	9.7	1,460
Dec-08-2004	121	10.8	1,500
Dec-09-2004	129	11.8	1,510
Dec-10-2004	125	12.8	1,510
Dec-11-2004	117	13.0	1,560
Dec-12-2004	111	12.9	1,600
Dec-13-2004	108	12.3	1,630
Dec-14-2004	110	12.8	1,650
Dec-15-2004	117	12.9	1,610
Dec-16-2004	120	11.6	1,630
Dec-17-2004	115	10.6	1,670
Dec-18-2004	111	10.3	1,700
Dec-19-2004	110	10.1	1,680
Dec-20-2004	107	9.6	1,680
Dec-21-2004	109	9.6	1,670
Dec-22-2004	109	9.1	1,660
Dec-23-2004	107	8.3	1,760
Dec-24-2004	108	8.3	1,870
Dec-25-2004	103	8.3	1,880
Dec-26-2004	99	8.5	1,980
Dec-27-2004	105	9.0	2,070
Dec-28-2004	116	9.8	2,060
Dec-29-2004	146	10.4	1,950
Dec-30-2004	171	10.2	1,810
Dec-31-2004	207	10.7	1,730
Mean	122	10.1	1,650

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), December 2004.

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
Dec-01-2004	706	8.4	1,260	1.8
Dec-02-2004	685	8.2	1,280	1.8
Dec-03-2004	659	8.0	1,350	1.8
Dec-04-2004	683	7.7	1,320	1.7
Dec-05-2004	686	8.0	1,310	1.8
Dec-06-2004	699	8.4	1,280	1.8
Dec-07-2004	720	9.3	1,280	1.9
Dec-08-2004	735	10.3	1,300	2.1
Dec-09-2004	749	11.4	1,270	2.0
Dec-10-2004	829	12.3	1,200	1.8
Dec-11-2004	906	12.2	1,060	1.8
Dec-12-2004	952	12.0	989	1.6
Dec-13-2004	1,010	11.6	866	1.7
Dec-14-2004	999	12.1	941	1.7
Dec-15-2004	959	12.4	995	1.7
Dec-16-2004	913	11.7	1,030	1.6
Dec-17-2004	878	10.7	1,090	1.7
Dec-18-2004	859	10.1	1,140	1.3
Dec-19-2004	843	9.9	1,180	1.1
Dec-20-2004	817	9.6	1,230	1.2
Dec-21-2004	801	9.3	1,260	1.3
Dec-22-2004	770	9.1	1,310	1.5
Dec-23-2004	748	8.5	NA	NA
Dec-24-2004	726	8.2	NA	NA
Dec-25-2004	717	8.1	NA	NA
Dec-26-2004	711	8.4	NA	NA
Dec-27-2004	712	8.9	NA	NA
Dec-28-2004	767	9.5	NA	NA
Dec-29-2004	844	10.0	NA	NA
Dec-30-2004	1,080	10.0	NA	NA
Dec-31-2004	1,590	10.3	NA	NA
Mean	830	9.8	1,180	1.7

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	.	.	.
Oct-06-2004	14	.	.	4,770	100	.	.	.
Oct-13-2004	15	.	.	3,850	51	.	.	.
Oct-20-2004	47	.	.	4,590	490	.	.	.
Oct-27-2004	37	.	.	4,130	220	.	.	.
Nov-03-2004	17	.	.	5,080	34	.	.	.
Nov-10-2004	18	.	.	4,960	32	.	.	.
Nov-17-2004	17	.	.	5,540	45	.	.	.
Nov-23-2004	17	.	.	5,250	20	.	.	.
Dec-01-2004	16	.	.	5,330	P	.	.	.
Dec-08-2004	21	.	.	4,940	120	.	.	.
Dec-15-2004	18	.	.	5,100	46	.	.	.
Dec-22-2004	19	.	.	4,900	23	.	.	.
Dec-29-2004	33	.	.	4,460	190	.	.	.

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
Oct-05-2004	12	.	.	4,500	.	P	.	P
Oct-12-2004	13	.	.	4,230	.	36.4	.	7.2
Oct-19-2004	18	.	.	4,710	.	45.6	.	9.1
Oct-26-2004	28	.	.	4,090	.	53.7	.	6.6
Nov-02-2004	16	.	.	4,900	.	62.2	.	9.0
Nov-09-2004	19	.	.	4,890	.	73.2	.	9.8
Nov-16-2004	17	.	.	5,330	.	51.0	.	10.0
Nov-22-2004	17	.	.	5,170	.	48.0	.	9.0
Nov-29-2004	16	.	.	5,230	.	53.2	.	9.6
Dec-07-2004	19	.	.	5,090	.	61.4	.	9.1
Dec-14-2004	18	.	.	4,770	.	53.0	.	8.5
Dec-21-2004	19	.	.	4,950	.	51.0	.	8.5
Dec-28-2004	26	.	.	4,710	.	58.3	.	7.8

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
Oct-07-2004	20	20.6	7.7	3,480	P	22.2	5.6
Oct-14-2004	21	18.8	7.5	3,630	50	27.0	5.9
Oct-21-2004	51	15.9	NA	3,510	46	19.4	5.4
Oct-28-2004	43	13.8	7.7	3,700	43	40.6	P
Nov-04-2004	23	13.2	8.4	4,100	P	35.5	7.2
Nov-11-2004	25	14.3	7.3	4,310	25	52.4	7.1
Nov-18-2004	24	14.0	7.6	4,410	52	36.8	7.8
Nov-23-2004	25	9.9	7.7	4,510	24	29.2	7.9
Dec-02-2004	22	7.6	8.0	4,390	P	32.0	7.4
Dec-09-2004	27	10.3	8.0	4,400	40	41.8	7.4
Dec-16-2004	25	11.7	7.4	4,170	P	34.8	7.4
Dec-22-2004	25	9.1	8.0	4,610	35	39.0	7.4
Dec-29-2004	34	9.2	7.6	4,070	38	33.3	6.4

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
Oct-07-2004	60	20.1	7.6	829	.	0.4	0.6
Oct-14-2004	114	18.9	7.5	789	.	<0.4	0.5
Oct-21-2004	197	15.1	NA	830	.	0.4	0.5
Oct-28-2004	268	NA	NA	NA	.	NA	NA
Nov-04-2004	115	12.8	8.0	1,230	.	0.9	0.8
Nov-11-2004	126	14.5	7.6	1,170	.	<0.4	0.8
Nov-18-2004	141	13.3	7.7	1,210	.	<0.4	0.9
Nov-23-2004	125	10.0	7.8	1,330	.	<0.4	1.1
Dec-02-2004	96	7.4	8.0	1,580	.	<0.4	1.2
Dec-09-2004	132	10.6	8.0	1,370	.	<0.4	1.1
Dec-16-2004	133	10.9	7.8	1,440	.	0.5	1.2
Dec-22-2004	134	8.6	7.9	1,480	.	0.4	1.1
Dec-29-2004	220	9.5	7.8	1,390	.	<0.4	1.0

\*\* Calculated flow value. Flow at Station C = flow at Station D - flow at Station B.

**Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges).**

See Table 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
Oct-07-2004	80	20.3	7.4	1,500	5.7	1.6
Oct-14-2004	135	18.8	7.4	1,240	3.6	1.2
Oct-21-2004	248	15.3	NA	1,480	4.8	1.7
Oct-28-2004	311	13.2	7.6	1,360	5.6	1.6
Nov-04-2004	138	12.8	7.9	1,780	6.2	1.9
Nov-11-2004	151	14.5	7.5	1,800	8.9	2.0
Nov-18-2004	165	13.5	7.7	1,750	6.0	1.9
Nov-23-2004	150	9.8	7.6	1,940	4.9	2.1
Dec-02-2004	118	7.4	8.0	2,280	7.2	2.3
Dec-09-2004	159	10.6	8.0	1,960	6.6	2.0
Dec-16-2004	158	11.0	7.7	1,970	6.2	2.2
Dec-22-2004	159	8.6	8.0	2,040	5.9	2.2
Dec-29-2004	254	9.4	7.8	1,800	4.7	1.7

**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
Oct-05-2004	.	7.6	1,690	21	5.6	1.9
Oct-12-2004	.	7.6	1,820	26	4.1	1.5
Oct-20-2004	.	7.7	1,290	20	2.3	1.0
Oct-26-2004	.	7.9	1,380	16	3.9	1.5
Nov-01-2004	.	7.8	1,570	14	6.0	1.6
Nov-09-2004	.	7.7	1,850	12	8.2	1.8
Nov-18-2004	.	7.6	1,860	9	5.7	1.9
Nov-23-2004	.	7.9	2,060	9	4.8	2.2
Dec-02-2004	.	8.0	2,620	8	7.2	2.4
Dec-06-2004	.	7.8	2,260	9	8.4	2.3
Dec-16-2004	.	7.6	2,070	10	5.7	2.0
Dec-21-2004	.	7.6	2,070	9	5.5	2.0
Dec-30-2004	.	7.8	1,850	12	5.1	1.8

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
Oct-07-2004	64	18.8	8.0	1,280	<0.4	0.7
Oct-14-2004	64	17.6	8.0	1,210	0.7	0.7
Oct-21-2004	156	14.8	NA	957	0.8	0.6
Oct-28-2004	191	12.8	7.6	1,060	0.6	0.8
Nov-04-2004	155	12.3	7.8	1,340	0.4	0.7
Nov-11-2004	150	14.0	7.0	1,400	0.4	0.8
Nov-18-2004	202	13.5	7.5	1,250	0.5	0.8
Nov-23-2004	183	9.5	7.5	1,330	0.5	0.8
Dec-02-2004	129	7.2	7.9	1,590	0.5	1.0
Dec-09-2004	129	11.2	7.9	1,660	0.5	1.0
Dec-16-2004	120	11.1	7.8	1,770	<0.4	1.2
Dec-22-2004	109	9.1	7.7	1,750	<0.4	1.2
Dec-29-2004	146	10.1	7.7	1,720	<0.4	1.2

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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Oct-06-2004	175	.	.	547	0.4	0.2
Oct-13-2004	130	.	.	589	0.5	0.2
Oct-20-2004	45	.	.	567	0.7	0.2
Oct-27-2004	0	.	.	NA	NA	NA
Nov-03-2004	35	.	.	702	1.1	0.3
Nov-10-2004	35	.	.	511	0.9	0.2
Nov-17-2004	35	.	.	511	1.1	0.3
Nov-24-2004	35	.	.	596	1.0	0.4
Dec-01-2004	35	.	.	666	1.2	0.4
Dec-08-2004	35	.	.	913	0.5	0.8
Dec-15-2004	35	.	.	675	0.5	0.4
Dec-22-2004	35	.	.	567	0.7	0.2
Dec-29-2004	35	.	.	931	0.4	0.8

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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Oct-06-2004	200	.	.	537	0.5	0.2
Oct-13-2004	200	.	.	672	0.5	0.2
Oct-20-2004	80	.	.	578	0.9	0.2
Oct-27-2004	30	.	.	593	0.5	0.3
Nov-03-2004	35	.	.	637	0.9	0.4
Nov-10-2004	45	.	.	514	0.6	0.2
Nov-17-2004	45	.	.	496	1.0	0.3
Nov-24-2004	45	.	.	499	0.8	0.2
Dec-01-2004	45	.	.	714	1.2	0.4
Dec-08-2004	45	.	.	752	1.2	0.4
Dec-15-2004	45	.	.	746	0.8	0.4
Dec-22-2004	45	.	.	624	0.6	0.3
Dec-29-2004	45	.	.	724	<0.4	0.3

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 <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Oct-06-2004	150	.	.	509	0.7	0.2
Oct-13-2004	170	.	.	592	0.5	0.2
Oct-20-2004	50	.	.	536	0.5	0.2
Oct-27-2004	0	.	.	560	0.6	0.4
Nov-01-2004	30	.	.	850	0.9	0.6
Nov-10-2004	30	.	.	651	0.9	0.4
Nov-17-2004	30	.	.	585	1.1	0.3
Nov-24-2004	30	.	.	723	1.1	0.6
Dec-01-2004	30	.	.	687	1.1	0.4
Dec-08-2004	30	.	.	574	1.0	0.3
Dec-15-2004	30	.	.	906	0.8	0.6
Dec-22-2004	30	.	.	660	0.7	0.4
Dec-29-2004	30	.	.	656	<0.4	0.3

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

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	.	.	<b>Specific Conductance</b>	<b>Selenium (total)</b>	<b>Boron</b>
<b>DATA SOURCE</b>	<b>SLDMWA<sup>††</sup></b>	.	.	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>
<b>UNITS</b>	<b>cfs</b>	.	.	<b>µS/cm</b>	<b>µg/L</b>	<b>mg/L</b>
Oct-06-2004	30	.	.	633	0.6	0.3
Oct-13-2004	2	.	.	812	0.6	0.5
Oct-20-2004	68	.	.	742	0.7	0.6
Oct-27-2004	139	.	.	898	0.4	0.9
Nov-03-2004	56	.	.	1,060	0.9	1.0
Nov-10-2004	74	.	.	1,080	0.7	1.0
Nov-17-2004	89	.	.	1,100	0.7	1.0
Nov-24-2004	93	.	.	1,100	0.6	1.0
Dec-01-2004	96	.	.	1,110	0.6	0.9
Dec-08-2004	90	.	.	1,280	0.7	1.3
Dec-15-2004	77	.	.	1,240	0.7	1.3
Dec-22-2004	140	.	.	1,260	0.6	1.2
Dec-29-2004	184	.	.	1,220	0.4	1.2

**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.

<b>PARAMETER</b>	.	.	.	<b>Specific Conductance</b>	<b>Selenium (total)</b>	<b>Boron</b>
<b>DATA SOURCE</b>	.	.	.	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>
<b>UNITS</b>	.	.	.	<b>µS/cm</b>	<b>µg/L</b>	<b>mg/L</b>
Oct-06-2004	.	.	.	522	0.5	0.1
Oct-13-2004	.	.	.	564	0.7	0.2
Oct-20-2004	.	.	.	566	0.6	0.2
Oct-27-2004	.	.	.	691	1.4	0.3
Nov-03-2004	.	.	.	585	0.9	0.2
Nov-10-2004	.	.	.	501	0.7	0.3
Nov-17-2004	.	.	.	481	0.9	0.3
Nov-23-2004	.	.	.	614	1.1	0.3
Dec-01-2004	.	.	.	646	1.4	0.3
Dec-08-2004	.	.	.	518	0.9	0.2
Dec-15-2004	.	.	.	724	1.2	0.4
Dec-22-2004	.	.	.	720	1.3	0.6
Dec-29-2004	.	.	.	780	0.8	0.7



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
Oct-07-2004	77	19.3	7.6	1,710	<0.4	0.7
Oct-14-2004	77	18.4	7.4	1,500	0.4	0.8
Oct-21-2004	153	15.6	NA	938	1.2	0.5
Oct-28-2004	198	12.6	7.8	1,080	0.9	0.5
Nov-04-2004	193	12.8	7.9	1,290	0.5	0.7
Nov-11-2004	180	14.2	7.2	1,450	<0.4	0.8
Nov-18-2004	271	13.5	7.7	1,120	0.5	0.7
Nov-23-2004	232	9.2	7.8	1,310	0.4	0.9
Dec-02-2004	170	7.3	7.6	1,750	0.7	1.0
Dec-09-2004	177	10.8	7.9	1,740	<0.4	1.0
Dec-16-2004	324	11.0	7.4	1,110	0.6	0.7
Dec-22-2004	201	9.1	7.9	1,610	0.6	1.0
Dec-29-2004	221	9.5	7.8	1,850	<0.4	1.1

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
Oct-12-2004	.	.	.	1,580	2.5	1.1
Oct-25-2004	.	.	.	1,760	2.6	1.1
Nov-02-2004	.	.	.	1,410	2.8	1.1
Nov-09-2004	.	.	.	1,540	3.1	1.1
Nov-16-2004	.	.	.	1,330	2.7	1.0
Nov-23-2004	.	.	.	1,620	1.8	1.2
Nov-30-2004	.	.	.	1,900	2.6	1.4
Dec-08-2004	.	.	.	1,190	<0.4	0.3
Dec-14-2004	.	.	.	1,300	2.2	0.9
Dec-21-2004	.	.	.	1,810	2.0	1.2
Dec-28-2004	.	.	.	961	0.4	0.3

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
Oct-07-2004	390	19.9	7.8	1,070	1.2	0.6
Oct-14-2004	472	18.5	7.6	990	1.5	0.5
Oct-21-2004	1,280	15.4	NA	468	0.8	0.4
Oct-28-2004	1,170	13.3	7.7	698	1.0	0.5
Nov-04-2004	800	13.3	7.8	1,000	1.2	0.7
Nov-11-2004	826	14.5	7.6	1,080	2.0	0.7
Nov-18-2004	899	13.8	7.7	991	1.4	0.7
Nov-23-2004	832	9.4	7.8	1,100	1.3	0.8
Dec-02-2004	685	8.0	7.8	1,310	1.2	0.9
Dec-09-2004	749	11.1	7.7	1,270	1.8	0.9
Dec-16-2004	913	11.5	7.7	1,060	1.5	0.7
Dec-22-2004	770	8.9	7.9	1,330	1.4	0.9
Dec-29-2004	844	9.5	7.8	1,340	1.3	1.0

**Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from January 2004 to December 2004. 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	%	%	%	%	%	%
Jan-2004	95	58*	75	93	98	100
Feb-2004	98	93	100	98	100	100
Mar-2004	100	90	53*	85	100	100
Apr-2004	100	100	95	95	90	98
May-2004	100	100	100	100	100	100
Jun-2004	98	93	98	100	88	95
Jul-2004	100	90	93	88	98	98
Aug-2004	98	98	100	95	85	100
Sep-2004	98	93	95	100	93	95
Oct-2004	100	95	98	95	98	98
Nov-2004	95	98	58*	88	98	98
Dec-2004	100	68*	75*	98	98	100

**Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from January 2004 to December 2004. 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
Jan-2004	0.60	0.37	0.49	0.58	0.55	0.58
Feb-2004	0.57	0.55	0.56	0.60	0.63	0.63
Mar-2004	0.44	0.39*	0.32*	0.42	0.48	0.46
Apr-2004	0.59	0.57	0.63	0.54	0.56	0.60
May-2004	0.49	0.55	0.53	0.57	0.43	0.49
Jun-2004	0.42	0.42	0.40	0.45	0.36	0.40
Jul-2004	0.55	0.50	0.51	0.54	0.51	0.48
Aug-2004	0.60	0.62	0.62	0.64	0.55	0.59
Sep-2004	0.71	0.60	0.75	0.74	0.62	0.51
Oct-2004	0.69	0.67	0.71	0.71	0.66	0.58
Nov-2004	0.58	0.62	0.41*	0.62	0.62	0.71
Dec-2004	0.58	0.47	0.53	0.66	0.54	0.48

**Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from January 2004 to December 2004. 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	%	%	%	%	%	%
Jan-2004	95	58*	75	93	98	100
Feb-2004	98	93	100	98	100	100
Mar-2004	100	100	90	100	100	100
Apr-2004	100	100	90	90	90	100
May-2004	90	100	90	80	90	90
Jun-2004	90	100	100	90	90	100
Jul-2004	100	100	80	90	90	90
Aug-2004	100	88	88	100	90	100
Sep-2004	80	100	90	100	100	90
Oct-2004	100	100	80	100	100	100
Nov-2004	80	70	90	80	100	80
Dec-2004	100	100	90	90	80	100

**Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from January 2004 to December 2004. 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
Jan-2004	46.8	45.0	40.7	44.5	54.1	41.5
Feb-2004	59.4	59.0	60.7	54.3	60.0	59.0
Mar-2004	59.7	55.3	58.8	58.6	58.4	51.6
Apr-2004	35.5	34.3	35.9	34.6	21.7	15.7
May-2004	32.4	29.6	37.5	34.9	30.7	24.7
Jun-2004	25.8	29.8	25.6	16.7	19.0	30.0
Jul-2004	51.3	32.4	48.5	36.2	38.8	34.9
Aug-2004	41.9	41.8	46.1	37.4	32.0	33.9
Sep-2004	49.8	48.0	40.4	38.7	41.8	44.3
Oct-2004	48.1	39.8	29.2*	36.6	47.0	32.1
Nov-2004	37.0	28.3	44.6	41.8	35.9	27.0
Dec-2004	30.8	30.8	32.8	34.4	26.6	31.1

**Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from January 2004 to December 2004. 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 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL
Jan-2004	9.7*	21.1	5.9*	8.8	18.4	20.9
Feb-2004	0.5*	32.5	21.9	0.4*	25.0	23.1
Mar-2004	24.0*	39.2	27.5	33.1	29.9	29.3
Apr-2004	19.9	31.6	20.0	25.5	19.5	26.5
May-2004	19.3*	29.5	25.1	25.1	24.5	14.5
Jun-2004	12.1	25.2	18.1	21.5	15.4	22.4
Jul-2004	3.6*	13.1	16.3	17.5	12.5	10.1
Aug-2004	14.8	17.7	14.2	16.9	12.2	17.6
Sep-2004	12.4*	13.4*	15.6	16.3	16.2	14.6
Oct-2004	14.5	22.1	17.7	5.9*	16.6	16.8
Nov-2004	18.5	21.1	20.4	22.0	16.5	17.6
Dec-2004	0.9*	10.4	12.2	23.4	3.5	15.6

**Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, October 2004 to December 2004.**

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
Oct-11-2004	24	0.5	5	0.5	<0.4
Oct-13-2004	27	<0.4	4	<0.4	<0.4
Oct-15-2004	22	<0.4	3	<0.4	<0.4
Nov-08-2004	52	<0.4	7.5	0.4	0.5
Nov-10-2004	49	<0.4	9.3	0.4	<0.4
Nov-12-2004	56	<0.4	9.5	0.4	<0.4
Dec-06-2004	44	<0.4	6.7	0.5	<0.4
Dec-08-2004	40	0.4	7.5	0.5	<0.4
Dec-10-2004	42	<0.4	6.3	0.5	0.9

**Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, October 2004 to December 2004.**

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
Oct-11-2004	34	18	75	88	90
Oct-13-2004	64	47	62	44	14
Oct-15-2004	83	107	76	46	16
Nov-08-2004	104	27	27	67	16
Nov-10-2004	51	28	19	83	80
Nov-12-2004	61	26	23	124	5
Dec-06-2004	38	15	18	35	8
Dec-08-2004	77	23	28	55	3
Dec-10-2004	56	18	37	48	4

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 $0.4 \mu\text{g/L}$ as of June 1998.
√	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated