

**GRASSLAND BYPASS PROJECT**

**MONTHLY DATA REPORT**

**December 1997**

February 1998

**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

## LIST OF TABLES FOR MONTHLY REPORT

**Continuous Monitoring**

1. Continuous water monitoring at Station A (inflow to San Luis Drain), December 1997.
2. Continuous water monitoring at Station B (discharge from San Luis Drain), December 1997.
3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), December 1997.
4. Continuous water monitoring at Station F (Salt Slough at Highway 165), December 1997.
5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), December 1997.

**Weekly Monitoring**

6. Weekly water quality monitoring at Station A (inflow to San Luis Drain), 1997.
7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), 1997.
8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharge), 1997.
9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharge), 1997.
10. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue), 1997.
11. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford), 1997.
12. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry), 1997.
13. Weekly water quality monitoring at Station J (Camp 13 Ditch), 1997.
14. Weekly water quality monitoring at Station K (Agatha Canal), 1997.
15. Weekly water quality monitoring at Station L (San Luis Canal at Henry Miller Road), 1997.
16. Weekly water quality monitoring at Station M (Santa Fe Canal at Henry Miller Road), 1997.
17. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing), 1997.

**Monthly Monitoring**

18. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from January 1997 to December 1997. Each value is the mean of 4 replicates with 10 fish in each replicate.
19. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from January 1997 to December 1997. Each value is the mean of 4 replicates with 10 fish in each replicate.
20. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from January 1997 to December 1997. Each value is the mean of 10 replicates with 1 animal in each replicate.
21. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from January 1997 to December 1997. Each value is the mean of 10 replicates with 1 animal in each replicate.
22. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from January 1997 to December 1997. Each value is the mean of 4 replicates.
23. Summary of selenium concentrations in grab water samples collected at study sites for use in laboratory toxicity tests, September 1997 to December 1997.
24. Summary of sulfate concentrations in grab water samples collected at study sites for use in laboratory toxicity tests, September 1997 to December 1997.

**Quarterly Monitoring**

25. Summary of quarterly in situ bioassay results from December 1995 to August 1997.
26. Explanations of footnotes and agency abbreviations.

**Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), December 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow
DATA SOURCE	USBR
UNITS	cfs
Dec-01-1997	24.9
Dec-02-1997	15.7
Dec-03-1997	17.2
Dec-04-1997	22.4
Dec-05-1997	35.4
Dec-06-1997	47.0
Dec-07-1997	38.0
Dec-08-1997	35.7
Dec-09-1997	32.2
Dec-10-1997	25.9
Dec-11-1997	22.0
Dec-12-1997	19.2
Dec-13-1997	17.3
Dec-14-1997	17.7
Dec-15-1997	14.7
Dec-16-1997	8.1
Dec-17-1997	7.7
Dec-18-1997	9.8
Dec-19-1997	10.5
Dec-20-1997	9.8
Dec-21-1997	10.4
Dec-22-1997	9.7
Dec-23-1997	9.0
Dec-24-1997	10.9
Dec-25-1997	13.6
Dec-26-1997	11.4
Dec-27-1997	8.7
Dec-28-1997	8.3
Dec-29-1997	7.1
Dec-30-1997	7.2
Dec-31-1997	11.8

**Table 2. Continuous water monitoring at Station B (discharge from San Luis Drain), December 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	USBR	USBR	CVRWQCB	CVRWQCB	Computed
UNITS	cfs	°C	µS/cm	µg/l	lbs
Dec-01-1997	31.4	12.4	4,270	26.7	4.5
Dec-02-1997	30.7	12.4	4,390	23.7	3.9
Dec-03-1997	26.3	12.2	4,510	28.2	4.0
Dec-04-1997	26.3	12.2	4,450	24.7	3.5
Dec-05-1997	34.6	12.1	4,500	33.8	6.3
Dec-06-1997	46.8	12.0	3,750	27.0	6.8
Dec-07-1997	52.8	12.0	4,370	34.8	9.9
Dec-08-1997	46.3	11.7	4,810	71.4	17.8
Dec-09-1997	42.5	11.0	4,540	73.5	16.8
Dec-10-1997	40.6	10.5	4,000	52.0	11.4
Dec-11-1997	36.3	10.4	4,310	56.0	11.0
Dec-12-1997	31.9	10.0	4,360	48.2	8.3
Dec-13-1997	11.3	9.5	4,220	45.0	2.7
Dec-14-1997	18.9	9.1	4,380	47.6	4.9
Dec-15-1997	20.9	9.2	4,400	48.1	5.4
Dec-16-1997	19.0	9.8	4,380	46.2	4.7
Dec-17-1997	14.5	9.8	4,580	45.2	3.5
Dec-18-1997	11.9	10.0	4,710	52.0	3.3
Dec-19-1997	16.8	13.0	4,670	47.0	4.3
Dec-20-1997	15.1	9.5	4,560	41.7	3.4
Dec-21-1997	14.4	9.1	4,590	46.5	3.6
Dec-22-1997	11.6	7.0	4,730	48.7	3.0
Dec-23-1997	13.2	6.7	5,040	61.6	4.4
Dec-24-1997	10.3	6.8	5,200	68.8	3.8
Dec-25-1997	12.0	6.8	5,070	66.2	4.3
Dec-26-1997	15.2	6.9	4,860	59.6	4.9
Dec-27-1997	13.8	7.0	4,910	58.8	4.4
Dec-28-1997	11.7	7.2	4,920	61.4	3.9
Dec-29-1997	10.7	7.3	5,060	59.5	3.4
Dec-30-1997	10.4	7.4	5,260	52.4	2.9
Dec-31-1997	10.4	8.2	5,110	54.3	3.0
Mean	22.9	9.7	4,610	48.7	
<b>Total</b>					<b>178</b>

<b>Load Limitation for December 1997 (lbs)</b>	<b>389</b>
--	------------

**Table 3. Continuous water monitoring at Station D  
(Mud Slough North downstream of drainage discharges), December 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	usgs	usgs	usgs
<b>UNITS</b>	cfs	°C	µS/cm
Dec-01-1997	245	10.9	1,700
Dec-02-1997	243	11.0	1,780
Dec-03-1997	233	10.8	1,760
Dec-04-1997	221	10.7	1,780
Dec-05-1997	230	10.8	1,880
Dec-06-1997	275	10.9	1,760
Dec-07-1997	300	10.8	1,850
Dec-08-1997	307	10.3	1,910
Dec-09-1997	310	9.3	1,870
Dec-10-1997	291	8.6	1,730
Dec-11-1997	265	8.3	1,840
Dec-12-1997	241	8.1	1,860
Dec-13-1997	200	7.4	1,680
Dec-14-1997	195	7.2	1,760
Dec-15-1997	205	7.5	1,830
Dec-16-1997	191	8.3	1,850
Dec-17-1997	186	8.4	1,750
Dec-18-1997	181	8.9	1,790
Dec-19-1997	175	7.8	1,860
Dec-20-1997	172	7.8	1,870
Dec-21-1997	165	7.6	1,870
Dec-22-1997	151	5.3	1,970
Dec-23-1997	147	5.2	2,010
Dec-24-1997	135	5.8	2,040
Dec-25-1997	129	5.7	2,150
Dec-26-1997	125	5.7	2,270
Dec-27-1997	120	5.8	2,310
Dec-28-1997	108	6.2	2,360
Dec-29-1997	99	6.6	2,400
Dec-30-1997	95	7.2	2,440
Dec-31-1997	93	8.2	2,460

**Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), December 1997.**

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
Dec-01-1997	154	11.5	1,550
Dec-02-1997	150	11.4	1,530
Dec-03-1997	140	11.5	1,580
Dec-04-1997	128	11.6	1,620
Dec-05-1997	136	11.7	1,640
Dec-06-1997	158	11.8	1,630
Dec-07-1997	164	11.7	1,610
Dec-08-1997	185	11.3	1,580
Dec-09-1997	186	10.4	1,590
Dec-10-1997	177	9.7	1,660
Dec-11-1997	164	9.4	1,710
Dec-12-1997	156	9.2	1,720
Dec-13-1997	151	9.0	1,780
Dec-14-1997	155	8.8	1,770
Dec-15-1997	162	9.1	1,730
Dec-16-1997	157	9.9	1,740
Dec-17-1997	141	10.1	1,780
Dec-18-1997	123	10.7	1,870
Dec-19-1997	113	10.0	1,940
Dec-20-1997	102	9.8	1,970
Dec-21-1997	95	9.4	1,940
Dec-22-1997	92	7.1	1,960
Dec-23-1997	74	7.7	1,990
Dec-24-1997	82	8.3	1,990
Dec-25-1997	82	8.0	2,000
Dec-26-1997	82	7.9	2,010
Dec-27-1997	78	7.9	2,020
Dec-28-1997	64	8.4	2,030
Dec-29-1997	72	9.0	2,050
Dec-30-1997	78	9.4	2,100
Dec-31-1997	74	10.4	2,070

**Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), December 1997.**

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
Dec-01-1997	896	11.9	1,264	1.7
Dec-02-1997	914	11.6	1,279	1.6
Dec-03-1997	1,040	11.4	1,284	1.4
Dec-04-1997	1,080	11.2	1,204	1.1
Dec-05-1997	1,110	11.3	1,123	1.3
Dec-06-1997	1,150	11.5	1,129	1.3
Dec-07-1997	1,160	11.6	1,167	1.8
Dec-08-1997	1,220	11.1	1,190	1.9
Dec-09-1997	1,250	10.4	1,222	2.1
Dec-10-1997	1,240	9.6	1,246	3.3
Dec-11-1997	1,190	9.1	1,239	3.2
Dec-12-1997	1,140	9.1	1,274	2.8
Dec-13-1997	1,050	8.8	1,334	2.6
Dec-14-1997	984	8.7	1,366	2.2
Dec-15-1997	954	8.7	1,366	1.2
Dec-16-1997	938	9.4	1,417	1.6
Dec-17-1997	901	9.8	1,450	1.9
Dec-18-1997	862	10.1	1,482	1.6
Dec-19-1997	817	9.4	1,574	1.4
Dec-20-1997	779	9.1	1,622	1.4
Dec-21-1997	768	9.0	1,646	1.5
Dec-22-1997	738	7.4	1,647	1.3
Dec-23-1997	697	7.0	1,641	1.2
Dec-24-1997	656	7.5	1,673	1.5
Dec-25-1997	643	7.5	1,710	2.0
Dec-26-1997	621	7.4	1,699	1.5
Dec-27-1997	599	7.3	1,672	2.0
Dec-28-1997	587	7.5	1,576	2.2
Dec-29-1997	565	7.9	1,694	1.4
Dec-30-1997	548	8.3	1,689	1.8
Dec-31-1997	538	9.3	1,675	1.8

**Table 6. Weekly water quality monitoring at Station A (inflow to San Luis Drain), 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Selenium (dissolved)	Boron
DATA SOURCE	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/l	µg/l	µg/l	mg/l
Oct-08-1997	22.0	NA	NA	4,190	89	55.8	55.6	P
Oct-15-1997	22.6	NA	NA	5,370	34	48.1	47.3	P
Oct-22-1997	17.5	NA	NA	5,520	12	74.8	75.1	P
Oct-29-1997	18.7	NA	NA	5,300	70	75.6	78.2	P
Nov-05-1997	16.3	NA	NA	4,920	77	79.5	77.2	P
Nov-12-1997	27.9	NA	NA	4,300	62	68.8	69.2	P
Nov-19-1997	16.4	NA	NA	5,070	74	75.4	74.6	P
Nov-25-1997	8.2	NA	NA	4,380	130	39.4	38.8	P
Dec-03-1997	17.2	NA	NA	4,470	61	54.2	54.5	P
Dec-10-1997	25.9	NA	NA	4,630	28	59.3	57.2	P
Dec-17-1997	7.7	NP	NP	5,520	NP	60.6	64.3	P
Dec-23-1997	9.0	NA	NA	5,800	NP	87.1	84.2	P
Dec-30-1997	7.2	NP	NP	6,190	45	92.5	91.7	P

**Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Selenium (dissolved)	Boron
DATA SOURCE	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/l	µg/l	µg/l	mg/l
Oct-02-1997	27.5	25.4	8.1	4,760	NA	46.6	45.1	P
Oct-09-1997	28.8	17.7	7.7	4,610	26	52.2	52.6	P
Oct-16-1997	30.2	22.1	8.1	5,290	32	51.6	51.6	P
Oct-24-1997	25.3	16.6	7.5	5,040	13	60.8	60.2	P
Oct-30-1997	26.9	16.6	7.7	4,970	25	61.0	60.9	P
Nov-06-1997	24.7	19.3	8.2	5,130	28	50.3	50.5	P
Nov-14-1997	31.4	16.6	7.6	4,460	11	41.6	43.3	P
Nov-19-1997	25.9	15.4	7.8	4,680	NA	51.0	50.2	P
Nov-25-1997	23.1	18.8	7.7	5,010	17	48.8	50.6	P
Dec-05-1997	34.6	13.2	8.1	4,530	33	34.0	33.9	P
Dec-11-1997	36.3	9.9	7.4	4,250	38	48.9	49.0	P
Dec-18-1997	11.9	12.7	7.6	4,680	NP	48.9	51.8	P
Dec-26-1997	15.2	7.7	8.1	5,040	NP	56.8	56.8	P



**Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges), 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	.	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	°C		µS/cm	µg/l	mg/l
Oct-02-1997	.	23.8	8.0	891	0.7	P
Oct-09-1997	.	18.2	8.0	998	0.7	P
Oct-16-1997	.	22.1	7.9	866	0.7	P
Oct-24-1997	.	15.4	7.9	1,164	0.5	P
Oct-30-1997	.	15.4	6.6	1,340	0.5	P
Nov-06-1997	.	18.8	8.0	1,395	0.3	P
Nov-14-1997	.	16.6	7.8	1,201	0.5	P
Nov-19-1997	.	15.4	8.1	1,303	0.7	P
Nov-25-1997	.	18.8	7.8	1,480	0.6	P
Dec-05-1997	.	12.7	8.6	1,430	0.8	P
Dec-11-1997	.	9.3	7.9	1,424	0.4	P
Dec-18-1997	.	12.1	7.8	1,642	0.5	P
Dec-26-1997	.	7.7	7.5	1,849	0.5	P

**Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges), 1997.**

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
Oct-02-1997	100	24.3	8.1	1,816	11.0	P
Oct-09-1997	117	17.1	8.0	1,859	12.6	P
Oct-16-1997	149	21.0	8.0	1,958	10.2	P
Oct-24-1997	128	15.4	7.9	2,050	11.4	P
Oct-30-1997	118	15.4	7.1	2,400	15.4	P
Nov-06-1997	122	18.2	8.0	2,340	9.2	P
Nov-14-1997	191	16.0	7.8	1,900	8.6	P
Nov-19-1997	193	15.4	8.0	1,822	7.3	P
Nov-25-1997	148	18.2	7.9	2,070	6.6	P
Dec-05-1997	230	13.2	8.4	2,030	6.1	P
Dec-11-1997	265	9.3	7.8	1,970	9.1	P
Dec-18-1997	181	11.6	7.8	1,889	3.2	P
Dec-26-1997	125	8.2	8.0	2,430	9.0	P

**Table 10. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue), 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/l	mg/l
Oct-02-1997	135	23.8	8.1	1,020	1.6	P
Oct-09-1997	e105	17.1	7.6	1,160	0.8	P
Oct-16-1997	110	20.4	7.9	1,380	1.0	P
Oct-24-1997	123	15.4	7.2	1,361	0.7	P
Oct-30-1997	125	16.6	8.0	1,390	0.7	P
Nov-06-1997	138	17.1	7.5	1,454	0.8	P
Nov-14-1997	199	14.9	7.7	1,320	0.8	P
Nov-19-1997	178	16.6	7.8	1,511	1.9	P
Nov-25-1997	104	17.7	7.4	1,960	0.5	P
Dec-05-1997	136	13.2	7.1	1,940	0.8	P
Dec-11-1997	164	8.8	7.8	2,060	0.7	P
Dec-18-1997	123	12.1	7.4	2,260	1.3	P
Dec-26-1997	82	7.7	7.8	2,470	2.0	P

**Table 11. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford), 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	.	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	°C		µS/cm	µg/l	mg/l
Oct-02-1997	.	23.8	7.9	1,040	1.3	P
Oct-09-1997	.	16.6	6.3	1,161	0.8	P
Oct-16-1997	.	20.4	7.8	1,324	0.8	P
Oct-24-1997	.	15.4	6.5	1,394	0.7	P
Oct-30-1997	.	17.1	7.5	1,188	0.6	P
Nov-06-1997	.	17.1	7.0	1,316	0.6	P
Nov-14-1997	.	14.9	7.8	1,336	0.8	P
Nov-19-1997	.	16.6	7.5	1,546	0.7	P
Nov-25-1997	.	17.7	7.8	2,120	0.4	P
Dec-05-1997	.	12.7	8.3	1,115	1.1	P
Dec-11-1997	.	8.8	8.0	1,433	1.1	P
Dec-18-1997	.	11.6	7.6	2,140	1.3	P
Dec-26-1997	.	7.1	7.4	2,480	1.3	P

**Table 12. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry), 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
Oct-02-1997	24.3	7.8	1,146	3.0	P
Oct-09-1997	19.3	7.7	1,556	7.8	P
Oct-16-1997	19.9	7.5	1,386	4.2	P
Oct-24-1997	15.4	8.0	1,697	5.5	P
Oct-30-1997	18.2	7.5	1,726	4.9	P
Nov-06-1997	18.8	7.0	1,703	5.0	P
Nov-14-1997	14.3	7.7	1,570	4.1	P
Nov-19-1997	15.4	7.7	1,639	3.3	P
Nov-25-1997	17.7	7.7	1,950	3.0	P
Dec-05-1997	13.2	8.2	1,391	1.7	P
Dec-11-1997	8.2	7.9	1,573	3.4	P
Dec-18-1997	11.0	7.6	2,020	2.0	P
Dec-26-1997	8.8	7.8	2,450	3.7	P

**Table 13. Weekly water quality monitoring at Station J (Camp 13 Ditch), 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
Oct-08-1997	NA	NA	569	1.1	P
Oct-15-1997	NA	NA	523	1.0	P
Oct-22-1997	NA	NA	524	0.8	P
Oct-29-1997	NA	NA	577	0.8	P
Nov-05-1997	NA	NA	673	0.8	P
Nov-12-1997	NA	NA	728	0.7	P
Nov-19-1997	NA	NA	833	1.6	P
Nov-25-1997	NA	NA	807	1.6	P
Dec-03-1997	NA	NA	1,219	8.4	P
Dec-10-1997	NA	NA	1,468	5.2	P
Dec-17-1997	NP	NP	2,890	8.9	P
Dec-23-1997	NA	NA	6,530	1.6	P
Dec-30-1997	NP	NP	1,078	0.8	P

**Table 14. Weekly water quality monitoring at Station K (Agatha Canal), 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
Oct-08-1997	NA	NA	539	0.8	P
Oct-15-1997	NA	NA	539	0.7	P
Oct-22-1997	NA	NA	466	0.8	P
Oct-29-1997	NA	NA	532	1.0	P
Nov-05-1997	NA	NA	634	0.7	P
Nov-12-1997	NA	NA	758	0.9	P
Nov-19-1997	NA	NA	623	1.8	P
Nov-25-1997	NA	NA	629	1.7	P
Dec-03-1997	NA	NA	631	1.9	P
Dec-10-1997	NA	NA	664	0.9	P
Dec-17-1997	NP	NP	765	1.5	P
Dec-23-1997	NA	NA	948	0.9	P
Dec-30-1997	NP	NP	1,079	5.9	P

**Table 15. Weekly water quality monitoring at Station L (San Luis Canal at Henry Miller Road), 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	°C		µS/cm	µg/l	mg/l
Oct-08-1997	NA	NA	660	1.6	P
Oct-15-1997	NA	NA	837	2.1	P
Oct-22-1997	NA	NA	671	2.0	P
Oct-29-1997	NA	NA	550	1.1	P
Nov-05-1997	NA	NA	772	0.8	P
Nov-12-1997	NA	NA	806	1.1	P
Nov-19-1997	NA	NA	788	1.4	P
Nov-25-1997	NA	NA	674	2.0	P
Dec-03-1997	NA	NA	1,220	7.2	P
Dec-10-1997	NA	NA	1,700	2.0	P
Dec-17-1997	NP	NP	1,884	1.3	P
Dec-23-1997	NA	NA	2,170	1.4	P
Dec-30-1997	NP	NP	2,320	1.1	P

**Table 16. Weekly water quality monitoring at Station M (Santa Fe Canal at Henry Miller Road), 1997.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	.	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	°C		µS/cm	µg/l	mg/l
Oct-08-1997	.	NA	NA	690	1.3	P
Oct-15-1997	.	NA	NA	852	1.6	P
Oct-22-1997	.	NA	NA	998	1.3	P
Oct-29-1997	.	NA	NA	987	1.1	P
Nov-05-1997	.	NA	NA	970	0.9	P
Nov-12-1997	.	NA	NA	1,100	1.1	P
Nov-19-1997	.	NA	NA	1,197	1.1	P
Nov-25-1997	.	NA	NA	1,390	1.1	P
Dec-03-1997	.	NA	NA	1,345	2.9	P
Dec-10-1997	.	NA	NA	1,710	1.2	P
Dec-17-1997	.	NP	NP	1,858	1.1	P
Dec-23-1997	.	NA	NA	2,130	1.4	P
Dec-30-1997	.	NP	NP	2,410	1.3	P

**Table 17. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing), 1997.**

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
Oct-02-1997	514	24.3	7.8	960	1.3	P
Oct-09-1997	e658	18.8	7.9	1,016	3.4	P
Oct-16-1997	e648	18.8	7.4	1,004	2.5	P
Oct-24-1997	730	16.0	8.1	1,046	2.4	P
Oct-30-1997	691	17.7	6.7	1,170	3.0	P
Nov-06-1997	702	18.8	7.7	1,163	2.7	P
Nov-14-1997	830	14.3	7.8	1,149	2.6	P
Nov-19-1997	893	15.4	6.7	1,162	2.0	P
Nov-25-1997	697	17.1	7.7	1,360	1.9	P
Dec-05-1997	1,110	13.2	8.4	1,119	1.4	P
Dec-11-1997	1,190	NA	7.8	1,241	2.7	P
Dec-18-1997	862	11.0	7.6	1,507	1.6	P
Dec-26-1997	621	9.3	7.8	1,664	1.6	P

Table 18. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from January 1997 to December 1997. 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	%	%	%	%	%	%
January-97	95	92	83	90	88	95
February-97	95	90*	95	90	100	48
March-97	95	98	98	93	98	95
April-97	95	100	95	98	88	83
May-97	95	100	95	100	93	100
June-97	93	98	95	93	90	90
July-97	100	93	98	98	100	98
August-97	88	85	95	78	83	98
September-97	98	90	93	85	83	90
October-97	88	88	85	60*	95	98
November-97	85	75*	88	88	98	98
December-97	90	50*	58*	83	88	85

Table 19. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from January 1997 to December 1997. 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
January-97	0.74	0.80	0.80	0.83	0.65	0.71
February-97	0.69*	0.79	0.77	0.92	0.76	0.31
March-97	0.99	0.96	1.01	0.90	0.81	0.81
April-97	1.11	1.02	1.06	1.15	1.05	0.83
May-97	0.85	0.91	0.95	0.89	0.88	0.80
June-97	0.66	0.69	0.71	0.72	0.68	0.73
July-97	0.97	0.80*	0.95	0.91	0.92	0.89
August-97	0.69	0.56	0.73	0.60	0.59	0.77
September-97	0.60	0.46	0.53	0.50	0.42	0.48
October-97	0.48*	0.44*	0.40*	0.34*	0.58	0.50
November-97	0.55*	0.57*	0.72	0.65*	0.76	0.71
December-97	0.60	0.38*	0.52	0.63	0.63	0.57

Table 20. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from January 1997 to December 1997. 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	%	%	%	%	%	%
January-97	100	90	100	100	100	100
February-97	100	100	100	100	100	100
March-97	100	90	90	80	100	50
April-97	80	90	100	90	90	50
May-97	90	90	90	80	90	30
June-97	90	100	70	100	80	90
July-97	90	90	100	100	100	90
August-97	90	100	100	100	80	90
September-97	90	100	100	100	100	80
October-97	80	90	100	90	100	90
November-97	100	80	100	100	100	0
December-97	100	100	90	80	100	80

**Table 21. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from January 1997 to December 1997. 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
January-97	15.2	15.4	15.3	15.6	13.6	10.9
February-97	25.1	23.0	22.8	20.1	18.0	22.7
March-97	22.8	16.6	15.3	9.7	8.9	5.5
April-97	23.6	24.4	24.6	16.3	12.9	10.0
May-97	30.6	33.8	34.0	21.6	17.2	20.0
June-97	50.9	58.8	41.1	50.2	29.6	31.6
July-97	35.6	28.1	33.2	27.7	19.1	17.1
August-97	55.8	55.4	53.1	54.1	40.7	44.3
September-97	33.0*	31.2*	45.8	47.1	39.7	23.2
October-97	42.2	37.9	41.7	34.8	34.9	32.0
November-97	37.3	28.6	34.0	30.0	22.0	21.5 (3)
December-97	46.0	44.5	41.2	32.7*	43.6	21.1

**Table 22. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from January 1997 to December 1997. 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 <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
January-97	11	9.3	12.5	11.6	8.0	8.2
February-97	10.6	5.5*	8.2*	13.7	19.8	22.2
March-97	11.0*	13.8	11.7*	6.0*	20.0	21.6
April-97	19.7*	35.4*	46.5	30.8*	78.5	62.9
May-97	22.4	12.6*	18.6*	16.8*	26.3	17.2
June-97	42.0*	55.6	44.6	44.4	54.2	57.9
July-97	41.9	72.5	47.6	66.6	45.1	60.2
August-97	56.2	61.6	43.0	52.6	47.5	59.9
September-97	21.5*	29.5	25.4	30.9	32.2	44.4
October-97	3.0*	42.3	47.4	43.9	50.4	50.3
November-97	23.8	19.6	23.8	29.0	15.8	31.3
December-97	14.8	14.2	24.2	19.2	6.3	25.0

**Table 23. Summary of selenium concentrations in grab water samples collected at study sites for use in laboratory toxicity tests, September to December 1997.**

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
Sep-11-1997	21	<2	15	<2	<2
Sep-13-1997	25	<2	15	<2	<2
Sep-16-1997	16	<2	7	<2	<2
Oct-14-1997	48	<2	10	<2	<2
Oct-16-1997	58	<2	10	<2	<2
Oct-18-1997	47	<2	12	<2	<2
Nov-04-1997	63	<2	18	<2	<2
Nov-06-1997	60	<2	10	<2	<2
Nov-08-1997	65	<2	12	<2	<2
Dec-06-1997	32	<2	4	<2	<2
Dec-04-1997	32	<2	3	<2	<2
Dec-06-1997	27	<2	6	<2	<2

**Table 24. Summary of sulfate concentrations in grab water samples collected at study sites for use in laboratory toxicity tests, September 1997 to December 1997.**

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
Sep-11-1997	839	118	649	186	16
Sep-13-1997	874	100	639	127	28
Sep-16-1997	734	85	370	147	20
Oct-14-1997	1,570	122	415	164	46
Oct-16-1997	2,010	120	481	209	44
Oct-18-1997	1,990	123	492	190	30
Nov-04-1997	1,730	173	545	205	41
Nov-06-1997	1,720	170	543	192	29
Nov-08-1997	1,800	179	528	202	28
Dec-06-1997	1,390	167	317	277	35
Dec-04-1997	1,440	166	299	297	57
Dec-06-1997	990	164	305	294	46



Table 25. Summary of quarterly in situ bioassay results from December 1995 to August 1997.

Results are the number of live fathead minnows (*Pimephales promelas*) per number of fish recovered at the end of the 7 day deployment at each station (initial count of 80 used at each station).

See Table 26 for explanation of footnotes and agency abbreviations.

LOCATION	Windmill (4 day old larvae)	Station B (4 day old larvae)	Station D (4 day old larvae)	Station D (14 day old larvae)	Station F (4 day old larvae)	Station F (14 day old larvae)
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	# alive/total count	# alive/total count	# alive/total count	# alive/total count	# alive/total count	# alive/total count
December-1995 <sup>(4)</sup>	NT	NT	NT	NT	NT	NT
March-1996 <sup>(5)</sup>	80/80	NT	NT	44/44	NT	70/70
August-1996 <sup>(6)</sup>	NT	NT	13/19	22/29	28/40	20/49
November-1996 <sup>(7)</sup>	46/62	63/68	0/2	.	16/36	.
February-1997 <sup>(8)</sup>	NT	3/13	0/0	.	0/11	.
May-1997	64/66	0/0	0/24	.	5/9	.
August-1997 <sup>(9)</sup>	NT	38/38	27/31	.	0/8	.

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
.	Not applicable
<	less than
e	estimated value
P	pending, data not available at this time but will be available in the future
NA	not analyzed - operator error, data will not be available in the future
NP	data not provided - future unknown
NT	not tested
(3)	There were no surviving <i>D. magna</i> at test completion. Value represents reproduction that occurred prior to mortality.
(4)	In situ cages could not be deployed due to wet weather conditions.
(5)	Baseline results for 3/96 are for 14-day old larvae. There was no survival for the 24-hour old larvae.
(6)	Windmill station was dry due to water drainage. Use of plastic screened beakers for Station F during 8/96 with use of 4-day old larvae resulted in 0/39. Apparent cause of mortality was elevated temperature and sediment which was found in all cages and beakers.
(7)	Heavy silt accumulation was noted in Sites D and F cages and light silt accumulation was observed in both the Windmill site and Site B.
(8)	Moderate silt accumulation was noted in Sites B and F cages and light silt accumulation was observed in Site D.
(9)	No test deployment was done at the Windmill Site due to extreme conditions (stagnant & pH>9.0). Site B replicate A was retrieved with no cork and replicate C lost its cork during retrieval.
*	There were no surviving fish for a growth determination for Sit
*	Significantly reduced from Delta Mendota Canal (p<0.05)
**	possible calibration problem