

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

March 1997

May 22, 1997

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), March 1997.

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow
DATA SOURCE	USBR
UNITS	cfs
Mar-01-1997	87.8
Mar-02-1997	83.3
Mar-03-1997	84.9
Mar-04-1997	84.5
Mar-05-1997	86.0
Mar-06-1997	85.8 ^b
Mar-07-1997	82.4
Mar-08-1997	83.5
Mar-09-1997	84.2
Mar-10-1997	84.3 ^b
Mar-11-1997	84.1
Mar-12-1997	85.7
Mar-13-1997	84.3
Mar-14-1997	83.1
Mar-15-1997	86.4
Mar-16-1997	90.2
Mar-17-1997	95.2
Mar-18-1997	96.3
Mar-19-1997	93.2
Mar-20-1997	84.7
Mar-21-1997	72.9
Mar-22-1997	67.3
Mar-23-1997	62.7
Mar-24-1997	76.2 [#]
Mar-25-1997	98.7 [#]
Mar-26-1997	68.4
Mar-27-1997	77.4
Mar-28-1997	82.0
Mar-29-1997	89.3
Mar-30-1997	82.7
Mar-31-1997	79.5

Table 2. Continuous water monitoring at Station B (discharge from San Luis Drain), March 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	USBR	CVRWQCB	Computed
UNITS	cfs	°C	µS/cm	µg/l	lbs
Mar-01-1997	78.3	12.4	4952	75.4	31.8
Mar-02-1997	83.1	13.0	4984	82.4	36.9
Mar-03-1997	79.0	12.9	5152	101.0	43.0
Mar-04-1997	80.5	12.8	5076	97.9	42.5
Mar-05-1997	79.9	13.3	5022	87.8	37.8
Mar-06-1997	84.3	13.8	4985	86.4	39.3
Mar-07-1997	82.3	14.7	4961	89.8	39.9
Mar-08-1997	78.1	15.4	4851	88.4	37.2
Mar-09-1997	79.5	16.1	4972	87.2	37.4
Mar-10-1997	79.2	16.9	4989	96.9	41.4
Mar-11-1997	79.2	17.4	4845	95.5	40.8
Mar-12-1997	79.2	16.9	4735	86.3	36.9
Mar-13-1997	82.4	16.0	4646	86.2	38.3
Mar-14-1997	80.9	15.7	4490	82.2	35.9
Mar-15-1997	79.3	16.2	4477	87.4	37.4
Mar-16-1997	81.8	16.2	4677	87.6	38.6
Mar-17-1997	85.7	16.6	4747	89.9	41.6
Mar-18-1997	89.9	17.9	4583	86.8	42.1
Mar-19-1997	91.4	18.3	4363	81.4	40.1
Mar-20-1997	86.8	19.3	4324	75.6	35.4
Mar-21-1997	71.9	19.5	4276	82.1	31.8
Mar-22-1997	68.2	19.7	4300	74.5	27.4
Mar-23-1997	57.8	19.7	4413	69.8	21.8
Mar-24-1997	64.3	19.7	4501	72.7	25.2
Mar-25-1997	80.2	20.4	4620	79.0	34.2
Mar-26-1997	77.4	21.5	4590	78.2	32.6
Mar-27-1997	70.5	20.8	4439	82.0	31.2
Mar-28-1997	78.8	19.3	4278	69.4	29.5
Mar-29-1997	82.9	18.3	4438	78.0	34.9
Mar-30-1997	85.8	18.7	4429	82.4	38.1
Mar-31-1997	79.6	17.8	4491	89.0	38.2
Mean	78.9	16.9	4687	84.3	
Total					1,119
Load Limitation for March 1997 (lbs)					1,066

**Table 3. Continuous water monitoring at Station D
(Mud Slough North downstream of drainage discharges), March 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
Mar-01-1997	208	12.1	2,350
Mar-02-1997	233	12.9	2,330
Mar-03-1997	247	12.5	2,250
Mar-04-1997	225	12.3	2,650
Mar-05-1997	187	13.2	3,270
Mar-06-1997	167	14.0	P
Mar-07-1997	164	15.0	3,590
Mar-08-1997	167	15.8	3,410
Mar-09-1997	157	16.3	3,570
Mar-10-1997	151	17.3	3,670
Mar-11-1997	161	17.8	3,540
Mar-12-1997	155	16.6	3,430
Mar-13-1997	159	15.1	3,360
Mar-14-1997	163	15.3	3,300
Mar-15-1997	166	16.7	3,360
Mar-16-1997	180	16.4	3,360
Mar-17-1997	199	16.9	3,300
Mar-18-1997	212	18.3	3,240
Mar-19-1997	225	19.1	3,170
Mar-20-1997	232	19.4	2,950
Mar-21-1997	212	19.1	2,880
Mar-22-1997	196	19.5	2,930
Mar-23-1997	172	19.6	2,910
Mar-24-1997	164	19.8	3,040
Mar-25-1997	164	20.7	3,420
Mar-26-1997	156	21.9	3,490
Mar-27-1997	134	20.4	3,500
Mar-28-1997	135	18.6	3,470
Mar-29-1997	145	17.8	3,380
Mar-30-1997	141	18.7	3,550
Mar-31-1997	123	17.5	3,780

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), March 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
Mar-01-1997	e357	11.6	1,010
Mar-02-1997	e371	12.4	977
Mar-03-1997	e384	12.4	976
Mar-04-1997	e400	12.0	981
Mar-05-1997	e410	12.4	1,030
Mar-06-1997	364	13.2	1,110
Mar-07-1997	367	14.2	1,130
Mar-08-1997	353	14.8	1,140
Mar-09-1997	318	15.5	1,220
Mar-10-1997	321	16.2	1,110
Mar-11-1997	311	16.7	1,090
Mar-12-1997	290	16.0	1,090
Mar-13-1997	256	14.7	1,180
Mar-14-1997	247	14.5	1,270
Mar-15-1997	266	15.6	1,140
Mar-16-1997	300	16.1	1,170
Mar-17-1997	351	16.5	1,170
Mar-18-1997	410	17.6	1,130
Mar-19-1997	420	18.6	1,160
Mar-20-1997	428	19.1	1,200
Mar-21-1997	426	19.1	1,200
Mar-22-1997	445	19.1	1,290
Mar-23-1997	429	19.0	1,400
Mar-24-1997	367	19.4	1,420
Mar-25-1997	332	20.3	1,420
Mar-26-1997	281	21.4	1,590
Mar-27-1997	258	20.2	1,780
Mar-28-1997	256	18.3	1,740
Mar-29-1997	250	17.6	1,700
Mar-30-1997	241	18.4	1,680
Mar-31-1997	222	17.3	1,660

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), March 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
Mar-01-1997	11,400	10.8	332	0.4
Mar-02-1997	10,500	11.2	369	0.5
Mar-03-1997	9,300	11.4	323	0.6
Mar-04-1997	8,900	11.2	307	0.6
Mar-05-1997	8,140	11.4	321	0.9
Mar-06-1997	7,390	12.0	359	0.9
Mar-07-1997	7,150	12.7	402	1.1
Mar-08-1997	6,760	13.3	NA	NA
Mar-09-1997	6,290	13.9	NA	NA
Mar-10-1997	5,540	14.6	NA	NA
Mar-11-1997	4,940	15.2	NA	NA
Mar-12-1997	4,210	15.2	NA	NA
Mar-13-1997	3,500	14.4	NA	NA
Mar-14-1997	2,930	13.9	739	2.6
Mar-15-1997	2,730	14.4	779	2.9
Mar-16-1997	2,670	14.9	817	3.0
Mar-17-1997	2,610	15.2	807	3.1
Mar-18-1997	2,530	16.0	812	3.2
Mar-19-1997	2,490	16.6	NA	NA
Mar-20-1997	2,420	17.0	NA	NA
Mar-21-1997	2,400	17.1	891	3.3
Mar-22-1997	2,340	17.3	899	3.1
Mar-23-1997	2,300	17.6	912	3.2
Mar-24-1997	2,270	18.0	901	2.4
Mar-25-1997	2,160	18.4	928	2.4
Mar-26-1997	2,120	19.1	956	3.1
Mar-27-1997	2,040	18.9	993	3.3
Mar-28-1997	1,950	18.0	1,015	3.3
Mar-29-1997	1,930	17.0	1,002	3.3
Mar-30-1997	1,970	17.4	993	3.4
Mar-31-1997	1,950	17.0	1,003	3.9

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) L	Selenium (dissolved) F	Boron
DATA SOURCE	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/l	µg/l	µg/l	µg/l	mg/l
Jan-09-1997	50.4	9.9	8.0	4,710	90	78.7	76.6	72.4	P
Jan-21-1997	71.0	16.0	8.0	4,870	180	88.2	84.8	NP	P
Feb-04-1997	38.0	16.6	8.0	5,140	71	72.0	70.2	70.5	P
Feb-11-1997	81.0	14.9	7.9	5,360	58	97.5	94.2	96.6	P
Feb-18-1997	85.2	12.7	7.9	5,140	41	80.3	89.4	78.6	P
Feb-28-1997	80.3	12.1	8.0	5,330	NA	90.3	NA	86.4	P
Mar-05-1997	86.0	14.3	7.5	5,100	38	88.4	.	91.1	P
Mar-12-1997	85.7	NA	NA	NA	NA	76.6	.	77.2	P
Mar-19-1997	93.2	NA	NA	4,420	85	74.6	.	71.1	P
Mar-26-1997	68.4	NA	NA	4,580	160	67.0	.	61.0	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) L	Selenium (dissolved) F	Boron
DATA SOURCE	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/l	µg/l	µg/l	µg/l	mg/l
Jan-09-1997	59.1	13.2	7.9	3,830	12	33.3	34.2	32.4	P
Jan-21-1997	64.8	12.1	7.9	4,530	33	57.0	56.4	NP	P
Feb-04-1997	64.7	16.6	7.6	4,510	27	63.6	61.8	61.8	P
Feb-11-1997	80.2	14.3	7.8	5,110	33	78.4	78.4	78.4	P
Feb-18-1997	83.6	12.1	8.1	5,150	34	79.7	76.5	83.2	P
Feb-28-1997	62.4	9.9	8.3	4,770	NA	77.6	NA	73.4	P
Mar-05-1997	79.9	14.3	8.3	5,210	26	89.3	.	87.1	P
Mar-13-1997	82.4	14.3	7.1	4,630	NA	91.8	.	84.4	P
Mar-20-1997	86.8	17.7	8.4	4,280	27	70.2	.	70.4	P
Mar-27-1997	70.5	22.1	8.5	4,630	45	78.9	.	78.1	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
Jan-09-1997	.	12.1	7.5	921	0.2	P
Jan-21-1997	.	11.6	7.6	1,070	0.4	P
Feb-04-1997	.	16.6	7.5	875	0.5	P
Feb-11-1997	.	13.2	7.2	1,430	0.7	P
Feb-18-1997	.	11.0	7.6	1,730	0.7	P
Feb-28-1997	.	9.9	7.6	2,040	1.0	P
Mar-05-1997	.	15.4	8.3	2,030	0.8	P
Mar-13-1997	.	10.4	7.1	1,970	1.0	P
Mar-20-1997	.	17.7	6.8	1,909	1.0	P
Mar-27-1997	.	22.1	8.1	2,350	0.9	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	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/l	mg/l
Jan-09-1997	573	12.1	7.7	1,284	5.0	P
Jan-21-1997	444	11.6	7.7	1,620	9.2	P
Feb-04-1997	651	16.6	7.5	1,310	7.4	P
Feb-11-1997	395	12.7	7.8	2,250	16.8	P
Feb-18-1997	258	11.0	7.8	3,140	33.2	P
Feb-28-1997	192	10.4	8.1	3,350	32.4	P
Mar-05-1997	187	14.3	8.5	3,770	44.8	P
Mar-13-1997	159	16.0	8.2	3,560	46.5	P
Mar-20-1997	232	17.7	7.8	2,980	33.2	P
Mar-27-1997	134	22.1	8.3	3,640	42.4	P

Table 10. Weekly water quality monitoring at Station F (Salt Slough at Highway 165), 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
Jan-09-1997	479	11.0	8.0	1,203	1.0	P
Jan-24-1997	414	11.0	7.0	1,609	1.0	P
Feb-07-1997	388	13.8	7.4	1,933	3.4	P
Feb-13-1997	297	12.1	7.8	1,668	0.7	P
Feb-21-1997	P	13.2	7.3	1,310	0.5	P
Feb-26-1997	P	11.6	7.4	1,110	0.6	P
Mar-05-1997	410 ^e	13.8	7.8	1,070	0.5	P
Mar-12-1997	291	14.9	7.8	1,091	0.6	P
Mar-20-1997	429	18.8	8.0	1,177	1.4	P
Mar-27-1997	258	21.0	7.5	1,775	1.1	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
Jan-09-1997	.	12.1	7.8	106	0.1	P
Jan-24-1997	.	10.4	7.1	102	0.2	P
Feb-07-1997	.	12.1	7.2	100	0.2	P
Feb-13-1997	.	11.0	7.7	92	0.1	P
Feb-21-1997	.	12.1	7.4	85	0.1	P
Feb-26-1997	.	12.1	7.8	128	0.2	P
Mar-05-1997	.	12.1	8.7	234	0.2	P
Mar-12-1997	.	16.0	7.7	617	0.4	P
Mar-20-1997	.	18.8	8.0	1,087	0.9	P
Mar-27-1997	.	19.9	7.7	1,362	0.7	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
Jan-09-1997	NA	NA	NA	NA	P
Jan-24-1997	11.0	7.6	548	1.1	P
Feb-07-1997	11.1	7.7	79	0.1	P
Feb-13-1997	13.2	8.2	76	0.2	P
Feb-21-1997	14.3	7.6	506	1.6	P
Feb-26-1997	12.1	7.7	473	1.4	P
Mar-05-1997	12.1	8.0	507	1.9	P
Mar-12-1997	16.0	7.3	968	3.9	P
Mar-20-1997	19.3	7.9	1,569	7.5	P
Mar-27-1997	21.0	7.3	1,831	7.0	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
Jan-09-1997	9.9	8.5	224	NA	P
Jan-21-1997	NA	NA	178	NA	P
Jan-27-1997	NA	NA	1,985	19.2	P
Feb-04-1997	14.3	7.6	1,600	23.4	P
Feb-12-1997	NA	NA	467	0.5	P
Feb-18-1997	13.2	7.9	172	0.3	P
Feb-27-1997	NA	NA	158	0.5	P
Mar-05-1997	14.3	6.6	1,380	2.0	P
Mar-12-1997	NA	NA	NA	2.8	P
Mar-19-1997	NA	NA	1,878	5.2	P
Mar-26-1997	NA	NA	3,760	3.7	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
Jan-09-1997	11.0	8.0	305	NA	P
Jan-21-1997	13.2	8.1	231	NA	P
Feb-04-1997	13.2	6.1	4,240	61.2	P
Feb-12-1997	NA	NA	295	0.5	P
Feb-18-1997	12.7	8.4	193	NA	P
Feb-21-1997	NA	NA	323	1.5	P
Mar-05-1997	NA	NA	187	0.8	P
Mar-12-1997	NA	NA	NA	0.5	P
Mar-19-1997	NA	NA	235	1.8	P
Mar-26-1997	NA	NA	317	1.0	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
January 1997	no data	no data	no data	no data	no data
Feb-04-1997	15.4	7.9	1,287	6.2	P
Feb-11-1997	14.9	7.2	1,240	1.1	P
Feb-18-1997	12.7	7.7	1,700	1.0	P
Feb-28-1997	11.0	8.2	1,300	1.6	P
Mar-05-1997	NA	NA	1,590	1.5	P
Mar-12-1997	NA	NA	1,227	1.1	P
Mar-19-1997	NA	NA	1,227	2.5	P
Mar-26-1997	NA	NA	1,839	2.5	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
January 1997	no data	no data	no data	no data	no data
Feb-04-1997	14.3	8.3	544	2.3	P
Feb-11-1997	14.3	7.9	339	0.8	P
Feb-18-1997	12.7	7.5	1,750	1.4	P
Feb-28-1997	12.1	8.3	1,760	2.3	P
Mar-05-1997	NA	NA	1,870	2.9	P
Mar-12-1997	NA	NA	1,398	2.0	P
Mar-19-1997	NA	NA	1,398	2.0	P
Mar-26-1997	NA	NA	1,873	3.1	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
Jan-09-1997	P	NA	NA	NA	NA	P
Jan-14-1997	P	NP	NP	NP	0.3	P
Jan-22-1997	P	NP	NP	NP	0.3	P
Jan-24-1997	P	10.4	7.6	154	NP	P
Jan-30-1997	P	NP	NP	128	0.2	P
Feb-07-1997	P	11.7	7.1	190	0.1	P
Feb-13-1997	P	11.6	7.6	279	0.2	P
Feb-21-1997	P	12.7	7.9	351	0.6	P
Feb-26-1997	P	12.1	7.3	312	0.6	P
Mar-05-1997	7,490	11.0	8.0	358	1.1	P
Mar-12-1997	4,210	15.4	7.4	670	2.0	P
Mar-20-1997	2,420	17.7	7.9	882	3.6	P
Mar-27-1997	2,040	21.0	7.4	994	3.7	P

Table 18. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from December 1995 to March 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	%	%	%	%	%	%
December-95	NT	83	95	93	90	93
March-96	NT	93	95	93	95	96
August-96	NT	98	93	96	90	100
October-96	68	83	88	88	93	98
November-96	98	98	95	85	95	93
December-96	98	50*	78*	93	98	100
January-97	95	92	83	90	88	95
February-97	95	90*	95	90	100	48
March-97	95	98	98	93	98	95

Table 19. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from December 1995 to March 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
December-95	NT	0.32	0.27	0.32	0.32	0.32
March-96	NT	0.43	0.44	0.44	0.47	0.48
August-96	NT	0.56	0.45	0.44	0.50	0.47
October-96	0.56	0.56	0.53*	0.59	0.60	0.59
November-96	0.53	0.57	0.63	0.53	0.55	0.59
December-96	0.71	0.71	0.83	0.65	0.68	0.58
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

Table 20. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from December 1995 to March 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	%	%	%	%	%	%
December-95	NT	100	100	100	100	100
March-96	NT	90	90	100	100	100
August-96	NT	100	100	100	100	100
October-96	90	100	100	100	100	70
November-96	100	90	90	100	100	100
December-96	100	80	80	100	100	100
January-97	100	90	100	100	100	100
February-97	100	100	100	100	100	100
March-97	100	90	90	80	100	50

Table 21. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from December 1995 to March 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
December-95 ⁽¹⁾	NT	21.5	18.5	18.4	19.8	15.5
March-96	NT	18.8	23.9	18.2	20.1	20.8
August-96	NT	27.0	32.8	27.4	27.8	26.4
October-96	16.8	20.2	17.9	13.1	12.9	16.0
November-96	30.6	21.8	21.9	22.4	21.5	15.9
December-96	23.2	14.0	17.2	17.8	16.8	14.8
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

Table 22. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from December 1995 to March 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 ⁵ cells/ml	10 ⁵ cells/ml	10 ⁵ cells/ml	10 ⁵ cells/ml	10 ⁵ cells/ml	10 ⁵ cells/ml
December-95	NT	22.0	12.0	11.0	12.0	11.0
March-96	NT	9.4*	11.3	14.7	11.9	10.7
August-96	NT	6.2*	5.6*	13.8	16.8	14.7
October-96 ⁽²⁾	4.3	12.3	11.3	8.5	3.5	36.6
November-96 ⁽³⁾	16.6	56.1	48.9	33.5	39.7	91.1
December-96	0.5*	5.9	0.5*	4.2	3.4	18.9
January-97	11.0	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

Table 23. Summary of selenium concentrations in grab water samples collected at study sites for use in laboratory toxicity tests, December 1995 to March 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
Dec-11-1995	NT	1	1	12	<1
Dec-12-1995	NT	<1	<1	14	<1
Dec-15-1995	NT	<1	<1	12	<1
Mar-18-1996	NT	<1	<1	17	<1
Mar-21-1996	NT	<1	<1	16	<1
Mar-23-1996	NT	<1	<1	18	<1
Mar-27-1996	NT	1	<1	19	<1
Aug-06-1996	NT	3	2	13	<1
Aug-08-1996	NT	<1	1	13	<1
Aug-10-1996	NT	2	2	11	<1
Aug-13-1996	NT	NT	NT	NT	NT
Oct-08-1996	65	<1	20	1	<1
Oct-10-1996	62	<1	16	1	<1
Oct-12-1996	72	<1	19	<1	<1
Nov-12-1996	59	<1	7	<1	<1
Nov-14-1996	75	<1	9	<1	<1
Nov-16-1996	69	<1	11	<1	<1
Nov-19-1996	94	<1	12	<1	<1
Dec-10-1996	36	<1	5	<1	<1
Dec-12-1996	54	<1	8	<1	<1
Dec-14-1996	51	<1	5	2	<1
Jan-07-1997	37	<2	3	<2	<2
Jan-09-1997	45	<2	4	<2	<2
Jan-11-1997	48	<2	5	<2	<2
Feb-04-1997	58	<2	6	5	<2
Feb-06-1997	66	<2	8	6	<2
Feb-08-1997	89	<2	15	<2	<2
Mar-11-1997	100	<2	50	<2	<2
Mar-13-1997	99	<2	49	<2	<2
Mar-15-1997	95	<2	33	<2	<2

Table 24. Summary of sulfate concentrations in grab water samples collected at study sites for use in laboratory toxicity tests, December 1995 to March 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
Dec-11-1995	NT	NT	NT	NT	NT
Dec-12-1995	NT	NT	NT	NT	NT
Dec-15-1995	NT	NT	NT	NT	NT
Mar-18-1996	NT	320	320	520	55
Mar-21-1996	NT	330	360	490	52
Mar-23-1996	NT	350	370	530	52
Mar-27-1996	NT	350	330	550	51
Aug-06-1996	NT	220	270	410	55
Aug-08-1996	NT	680	450	390	20
Aug-10-1996	NT	260	370	370	48
Aug-13-1996	NT	NT	NT	NT	NT
Oct-08-1996	1,400	89	480	140	32
Oct-10-1996	1,400	89	480	140	31
Oct-12-1996	1,600	85	540	150	26
Nov-12-1996	1,200	124	311	227	66
Nov-14-1996	1,380	120	336	231	26
Nov-18-1996	1,420	138	465	214	25
Dec-10-1996	1,590	138	330	284	33
Dec-12-1996	1,540	124	351	255	33
Dec-14-1996	1,330	133	269	288	33
Jan-07-1997	766	105	170	347	29
Jan-09-1997	1,210	107	229	172	27
Jan-11-1997	1,210	115	224	199	20
Feb-04-1997	1,310	104	241	389	49
Feb-06-1997	1,420	135	315	410	50
Feb-08-1997	1,660	200	450	351	59
Mar-11-1997	1,600	391	1,010	147	34
Mar-12-1997	1,500	361	953	156	39
Mar-13-1997	1,440	429	845	175	43

Table 25. Summary of quarterly in situ bioassay results from December 1995 to February 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-95 ⁽⁴⁾	NT	NT	NT	NT	NT	NT
March-96 ⁽⁵⁾	80/80	NT	NT	44/44	NT	70/70
August-96 ⁽⁶⁾	NT	NT	13/19	22/29	28/40	20/49
November-1996 ⁽⁷⁾	46/62	63/68	0/2	.	16/36	.
February-1997 ⁽⁸⁾	NT	3/13	0/0	.	0/11	.

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
b	value based on partial readings
#	boards at Site A were lowered
.	Not applicable
F	Sample filtered in the field
L	Sample filtered in the lab
<	less than
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
(1)	This test used <i>Ceriodaphnia dubia</i> in water with high hardness. Results were compared to hard water and moderately hard water for definitive bioassays. All treatment means were significantly different from the laboratory control (hard water) for definitive tests.
(2)	Selenate added
(3)	Lab Control was significantly different from DMC, Site B, and Site F samples. (There was no significant difference for site samples versus DMC water.)
(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.
*	Significantly reduced from Delta Mendota Canal (p<0.05)