

Comparison of DDT Sediment Data to State Board Criteria

For the the development of the TMDL, UC Davis sampled sediment in drainages throughout the Santa Maria Valley for concentrations of DDT. The samples were analyzed for concentrations of the isomers of DDT and the derivatives DDD and DDE. The results of the sampling are shown in Table 1. The results were compared to State Board 303(d) fresh water sediment criteria (Table 2). The guidelines are protective of aquatic health and are not bioaccumulation protective criteria.

Table 1: Concentrations of DDTs in Sediment. Values highlighted and in bold are greater than criteria

Station	Name	Date	Project ID	2,4'-DDT	4,4'-DDT	Sum DDT	2,4'-DDD	4,4'-DDD	Sum DDD	2,4'-DDE	4,4'-DDE	Sum DDE	Total DDTs
312SOL	Solomon Creek	6/19/2009	Oso_Orcutt	ND	5.8	5.8	18	32.6	50.6	4.4	207.5	211.9	268.3
312ORC	Orcutt Ck. At Sand Plant	12/9/2008	Oso_Orcutt	ND	3.2	3.2	10.3	21	31.3	2.5	130.1	132.6	167.1
312SMA	Santa Maria River above the estuary	12/9/2008	Oso_Orcutt	3	10.1	13.1	29.5	68.9	98.4	6.5	337.6	344.1	455.6
312SMA	Santa Maria River river above the estuary	6/19/2009	Oso_Orcutt	ND	7.6	7.6	20	31.6	51.6	6.1	275.3	281.4	340.6
312GVS	Green Valley Creek at Simas Rd.	6/19/2009	Oso_Orcutt	ND	9.8	9.8	11.4	30.5	41.9	3.2	167	170.2	221.9

Appendix C-1

DDT Sediment Monitoring Data

Station	Name	Date	Project ID	2,4'-DDT	4,4'-DDT	Sum DDT	2,4'-DDD	4,4'-DDD	Sum DDD	2,4'-DDE	4,4'-DDE	Sum DDE	Total DDTs
312GVT	Orcutt Ck. at Brown Rd.	6/19/2009	Oso_Orcutt	ND	9.3	9.3	9	26.5	35.5	2.3	61.4	63.7	108.5
312OFC	Oso Flaco Ck. at Oso Flaco Rd.	6/19/2009	Oso_Orcutt	ND	6.2	6.2	10.3	25	35.3	3	198.5	201.5	243
312OFL	Oso Flaco Lake	12/9/2008	Oso_Orcutt	ND	2.4	2.4	3.4	7.7	11.1	ND	66.1	66.1	79.6
312OFL	Oso Flaco Lake	6/19/2009	Oso_Orcutt	ND	6.9	6.9	8.8	17.4	26.2	2.3	146	148.3	181.4
312BRO	Bradley Channel at River Oaks	6/19/2009	Oso_Orcutt	ND	5.1	5.1	4.1	14.4	18.5	ND	93.4	93.4	117
312BCD	Blosser Channel	6/19/2009	Oso_Orcutt	ND	55.1	55.1	19.2	53.7	55.1	5.7	339	19.2	129.4
312MSS	Main Street Channel	6/19/2009	Oso_Orcutt	ND	11.3	11.3	22.5	60.8	11.3	7.8	326	22.5	45.1
312BCC	Bradley Canyon Creek	5/25/2010	RWB3_CCWQP	5.9	11.1	17	ND	47.6	47.6	-1	10.8	10.8	73.4
312BCJ	Bradley Channel at Jones Street	5/25/2010	RWB3_CCWQP	24.1	82.4	106.5	6.7	321.6	328.3	-1	16.3	16.3	450.1
312GVS	Green Valley at Simas	5/25/2010	RWB3_CCWQP	14	41	55	3.9	127.8	131.7	7.3	20	27.3	214

Appendix C-1

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Station	Name	Date	Project ID	2,4'-DDT	4,4'-DDT	Sum DDT	2,4'-DDD	4,4'-DDD	Sum DDD	2,4'-DDE	4,4'-DDE	Sum DDE	Total DDTs
312MSD	Main Street Canal u/s Ray Road at Highway 166	5/25/2010	RWB3_CCWQP	15.2	43.3	58.5	4.8	130.5	135.3	5.8	13.7	141.1	213.3
312OFC	Oso Flaco Ck. at Oso Flaco Rd.	5/25/2010	RWB3_CCWQP	10.1	22.4	32.5	2.7	144.6	147.3	12.9	44.1	160.2	236.8
312OFN	Little Oso Flaco Creek	5/25/2010	RWB3_CCWQP	6.8	12.7	19.5	ND	31.1	31.1	ND	ND	ND	47.6
312ORC	Orcutt Ck. at Sand Plant	5/25/2010	RWB3_CCWQP	20.3	51.2	71.5	3.9	158	161.9	7	13.8	168.9	254.2
312ORI	Orcutt Solomon Crk at Highway 1	5/25/2010	RWB3_CCWQP	17.3	48.1	65.4	3.7	119.6	123.3	8.6	21.5	131.9	218.8
312SMA	Santa Maria River at Estuary	5/25/2010	RWB3_CCWQP	5.2	8.8	14	ND	13.5	13.5	4.2	5.7	17.7	36.4

Table 2: State Board sediment quality criteria for freshwater sediments. ug/kg dry weight (ppb)

Chemical	Probable Effect Conc. (PEC)
Sum DDD	28.0
Sum DDE	31.3
Sum DDT	62.9
Total DDTs	572

Note: Sum DDD is the sum of the two DDD isomers, sum DDE is the sum of the two DDE isomers and sum DDT is the sum of the two DDD isomers. Total DDT is the total of the six DDT, DDE and DDD isomers.
MacDonald et al., 2000a