6. SEDIMENT QUALITY OF GALVESTON BAY

Sediment data for Galveston Bay were analyzed in exactly the same way as water quality data, therefore the introductory comments of Chapter 5 apply here as well. Again, the data record for each parameter was sorted into two different segmentations of the bay: the Texas Water Commission water quality segments, and the hydrographic segments developed for this project. Reference is made to Chapter 2 where both segmentation systems are described and to the defining quadrilaterals given in the Appendix, Tables A-4 and A-5. Similarly, the remarks in Chapter 5 about Galveston Bay being undersampled apply even more strongly to sediment, because there is roughly an order of magnitude less sediment data from Galveston Bay than water quality data. On the other hand, sediment transport processes and kinetics are thought to vary on time scales longer than that of the overlying water, so relative to the time and space scales of natural variability less data would be needed for sediment chemistry than water chemistry (though probably not an order of magnitude).

Again, as a preliminary, Table 6-1 shows nominal uncertainty levels for each of the primary sediment quality parameters of this study. The discussion in Chapter 5, and the information in Section 4.2.3 apply here as well.

TABLE 6-1

(continued)

abbreviation	*units*	*nominal standard deviation (as percentage of value)*
SED-CHLR	µg/kg	25
SED-DIEL	µg/kg	25
SED-ENDO	µg/kg	10
SED-ENDR	µg/kg	20
SED-TOXA	µg/kg	25
SED-HEPT	µg/kg	25
SED-HEPX	µg/kg	20
SED-MTHX	µg/kg	10
SED-PCB	µg/kg	25
SED-MALA	µg/kg	35
SED-PARA	µg/kg	10
SED-DIAZ	µg/kg	20
SED-MTHP	µg/kg	10
SED-24D	µg/kg	15
SED-245T	µg/kg	15
SED-PAH	µg/kg	25
SED-ACEN	µg/kg	15
SED-NAPT	µg/kg	25
SED-FLRA	µg/kg	5
SED-BNZA	µg/kg	10

TABLE 6-2
Period of Record Statistics
for Hydrographic Segments
SEDO&G

Segment	No.of obs	Avg >DL	St dev >DL	No.> DLs	% > DLs	Min	date	Min >0	date	Max	date	Avg w/ BDL=0	Avg w/ BDL=DL
C1	11	969	550	11	100.	100	830803	100	830803	1700	760525	969	969
C2	22	736	370	22	100.	190	850701	190	850701	1500	740605	736	736
C5	12	710	420	12	100.	31	760311	31	760311	1400	760916	710	710
C6	6	365	130	6	100.	220	810524	220	810524	640	810524	365	365
D1	10	2640	3600	10	100.	0.049	731024	0.049	731024	13000	811019	2640	2640
D3	1			0	0.							0	0.01
D4	11	723	780	11	100.	1	750529	1	750529	2700	760527	723	723
E2	11	505	290	10	90.9	250	880817	250	880817	1300	820825	459	459
E5	14	682	730	13	92.9	120	870226	120	870226	2400	840816	634	641
E6	5	547	220	5	100.	260	870226	260	870226	850	820429	547	547
E8	35	682	580	35	100.	83	760721	83	760721	2100	840816	682	682
E9	28	350	170	28	100.	39	870306	39	870306	690	760721	350	350
E10	22	466	510	22	100.	73	820428	73	820428	2300	840816	466	466
G2	10	736	320	10	100.	360	830809	360	830809	1300	880711	736	736
G3	6	316	260	6	100.	1	751202	1	751202	660	760916	316	316
G4	7	386	210	7	100.	100	720706	100	720706	750	770524	386	386
G5	1	2800		1	100.	2800	721229	2800	721229	2800	721229	2800	2800
G6	1	3000		1	100.	3000	720411	3000	720411	3000	720411	3000	3000
G8	1	1600		1	100.	1600	840330	1600	840330	1600	840330	1600	1600
G9	26	363	270	26	100.	0	750220	55	750220	960	740823	363	363
G10	1	1600		1	100.	1600	721229	1600	721229	1600	721229	1600	1600
G14	3	73.5		2	66.7	5	840330	5	840330	140	830627	49	50.7
G15	18	787	1100	17	94.4	150	800804	150	800804	5000	711228	744	744
G16	10	519	290	10	100.	130	860325	130	860325	970	771114	519	519
G17	24	817	1200	22	91.7	100	720621	100	720621	6000	761116	749	749
G18	37	446	270	33	89.2	36	850806	36	850806	1200	820825	397	400

TABLE 6-2
(continued)
SEDO&G

Segment	No.of obs	Avg >DL	St dev >DL	No.> DLs	% > DLs	Min	date	Min >0	date	Max	date	Avg w/ BDL=0	Avg w/ BDL=DL
G19	5	1500	1100	4	80.	310	830627	310	830627	2600	840330	1200	1200
G20	5	1420	640	5	100.	680	840330	680	840330	2600	840330	1420	1420
G21	1	2500		1	100.	2500	840330	2500	840330	2500	840330	2500	2500
G22	14	485	310	14	100.	180	810524	180	810524	1300	880727	485	485
G23	8	418	180	8	100.	190	880328	190	880328	680	751015	418	418
G24	7	512	270	7	100.	110	860325	110	860325	1000	771114	512	512
G25	4	309	57	4	100.	250	771114	250	771114	400	770121	309	309
G26	6	244	170	5	83.3	110	860325	110	860325	570	771114	203	204
G29	10	799	410	10	100.	170	760610	170	760610	1400	840816	799	799
G32	1	700		1	100.	700	720412	700	720412	700	720412	700	700
G33	41	441	450	39	95.1	16	820526	16	820526	1900	840816	420	425
G34	17	611	720	17	100.	100	780427	100	780427	2800	740815	611	611
G35	14	604	1200	12	85.7	4	780418	4	780418	4200	750821	517	532
G36	6	769	710	6	100.	2	780414	2	780414	1700	831116	769	769
G37	9	310	140	9	100.	130	851215	130	851215	560	801211	310	310
G38	6	336	220	6	100.	110	851215	110	851215	630	801211	336	336
H1	39	560	450	34	87.2	29	750618	29	750618	2400	750403	488	491
H3	4	1050	540	4	100.	200	880705	200	880705	1700	751125	1050	1050
H5	15	1030	390	15	100.	530	751016	530	751016	2000	751023	1030	1030
H6	4	1110	380	4	100.	630	750418	630	750418	1600	751023	1110	1110
H7	25	515	380	21	84.	0	750513	70	760212	1300	751016	433	433
H9	4	1800	75	4	100.	1700	760204	1700	760204	1900	750709	1800	1800
H10	9	821	560	9	100.	1	751125	1	751125	2000	820714	821	821
H11	10	446	310	8	80.	160	871118	160	871118	840	751016	357	358
H12	5	920	720	4	80.	110	811112	110	811112	2000	750709	736	737
H13	9	1260	870	8	88.9	190	750618	190	750618	3000	760204	1120	1120

TABLE 6-2
(continued)
SEDO&G

Segment	No.of obs	Avg >DL	St dev >DL	No.> DLs	% > DLs	Min	date	Min >0	date	Max	date	Avg w/ BDL=0	Avg w/ BDL=DL
H14	8	2720	5100	8	100.	99	851003	99	851003	16000	760419	2720	2720
H15	17	1350	1400	17	100.	42	821109	42	821109	6100	820819	1350	1350
H16	12	2530	2000	12	100.	170	750826	170	750826	7000	760204	2530	2530
H17	37	5870	3700	37	100.	9	861001	9	861001	13000	820819	5870	5870
H18	36	5790	4500	36	100.	130	760210	130	760210	15000	760419	5790	5790
H19	26	5610	5200	26	100.	1	731106	1	731106	20000	820819	5610	5610
H20	31	6160	8400	31	100.	93	760421	93	760421	32000	751106	6160	6160
M3	20	905	830	19	95.	10	751007	10	751007	2500	860225	859	864
S1	7	553	630	7	100.	0	750711	160	870909	2000	760204	553	553
S2	3	764	340	3	100.	420	870909	420	870909	1200	870909	764	764
T2	1	100		1	100.	100	720410	100	720410	100	720410	100	100
T3	12	313	250	11	91.7	1	750527	1	750527	840	820824	287	287
T5	1	3600		1	100.	3600	720412	3600	720412	3600	720412	3600	3600
T9	8	498	350	6	75.	210	740703	210	740703	1200	821020	374	380
T11	68	372	340	66	97.1	0	750828	1	750527	2200	860822	361	364
T12	22	357	540	22	100.	73	761123	73	761123	2600	720410	357	357
T13	3	270	71	3	100.	170	770112	170	770112	330	770112	270	270
T15	9	508	380	9	100.	100	810408	100	810408	1500	860822	508	508
T17	6	805	360	6	100.	240	860822	240	860822	1200	770523	805	805
W1	7	335	290	6	85.7	1	751212	1	751212	790	830105	287	287
W2	6	1080	500	4	66.7	320	821228	320	821228	1600	851018	722	755
W3	2	100		1	50.	100	810714	100	810714	100	810714	50	100
W5	10	337	35	10	100.	270	860326	270	860326	380	860326	337	337
W6	11	872	630	9	81.8	110	810714	110	810714	1800	851018	713	731
W7	10	617	520	9	90.	1	750522	1	750522	1400	760819	555	555
W8	8	557	390	7	87.5	1	751212	1	751212	1300	820913	487	487
W9	2	2370	2000	2	100.	360	860326	360	860326	4400	830105	2370	2370
W10	13	450	370	13	100.	1	751209	1	751209	1400	860612	450	450

TABLE 6-2
(continued)
SEDO&G

Segment	No.of obs	Avg >DL	St dev >DL	No.> DLs	% > DLs	Min	date	Min >0	date	Max	date	Avg w/ BDL=0	Avg w/ BDL=DL
W11	13	536	610	13	100.	96	860612	96	860612	1800	860612	536	536
W12	10	593	650	10	100.	100	810331	100	810331	1900	830105	593	593
W13	2	165		2	100.	150	810331	150	810331	180	810331	165	165
W15	6	312	190	6	100.	0.41	810909	0.41	810909	640	820921	312	312
W16	45	309	250	45	100.	0.86	810909	0.86	810909	1400	760824	309	309
W17	4	410	210	4	100.	110	750220	110	750220	700	740906	410	410
W18	29	1290	890	29	100.	1.4	810909	1.4	810909	4100	740823	1290	1290
W19	37	629	540	37	100.	0	750221	1	751209	2200	720411	629	629
W20	10	544	390	10	100.	100	810331	100	810331	1100	851018	544	544

TABLE 6-3
Time Trend Analysis
for Hydrographic Segments
SEDO&G

Segment	Period of record dates		Analysis period Start date	End date	Avg obs /yr	Regression on time slope (per yr)	intercept (@ start)	SEE	residual variance	95% confidence limits on slope lower	upper
C1	750916	880607	750916	880607	0.86	21.9	840	540	96.7%	-67	110
C2	740605	880607	740605	880607	1.6	-10.7	810	367	98.2%	-48	26
C5	760311	880607	760311	880607	0.98	-9.59	760	420	99.%	-77	58
C6	810524	880328	810524	880328	0.88	-12.3	410	125	89.8%	-63	38
D1	731024	871006	731024	871006	0.72	225	1200	3490	92.2%	-410	860
D3	720411	720411									
D4	740507	880817	740507	880817	0.77	-23.9	870	774	98.%	-150	100
E2	720713	880817	720713	880817	0.62	-3.72	540	291	99.6%	-49	42
E5	760629	870226	760629	870226	1.2	24.4	550	720	98.1%	-92	140
E6	760629	870226	760629	870226	0.47	-22.8	670	201	83.3%	-120	71
E8	760629	870226	760629	870226	3.3	44.2	450	556	91.1%	-4.5	93
E9	760721	870306	760721	870306	2.6	-7.66	380	171	96.7%	-25	9.2
E10	760629	870226	760629	870226	2.1	25.1	340	498	96.%	-32	83
G2	740605	880711	740605	880711	0.71	24.2	550	297	86.8%	-26	75
G3	740605	810708	740605	810708	0.85	-10	340	256	99.2%	-170	150
G4	720706	770524	720706	770524	1.4	71.1	94	170	67.1%	-46	190
G5	721229	721229	721229	721229	1						
G6	720411	720411	720411	720411	1						
G8	840330	840330	840330	840330	1						
G9	740815	770524	740815	770524	9.4	-63.3	420	264	94.%	-170	42
G10	721229	721229	721229	721229	1						
G14	830627	860325	830627	840330	2.6	-181	140	0	0.%		
G15	711228	860325	711228	860325	1.2	-150	2000	876	66.4%	-270	-34

TABLE 6-3
(continued)
SEDO&G

Segment	Period of record dates		Analysis period Start date	End date	Avg obs /yr	Regression on time slope (per yr)	intercept (@ start)	SEE	residual variance	95% confidence limits on slope lower	upper
G16	761116	860325	761116	860325	1.1	-49.9	660	240	67.8%	-110	9.2
G17	720621	860325	720621	860325	1.6	-43.2	1100	1160	98.7%	-220	130
G18	740507	900719	740507	900719	2	-1.45	430	265	98.3%	-22	19
G19	720411	860325	720411	840330	0.33	125	410	896	66.7%	-410	660
G20	840330	840330	840330	840330	5						
G21	840330	840330	840330	840330	1						
G22	711228	880727	711228	880727	0.84	-3.1	520	309	99.8%	-48	41
G23	750403	880328	750403	880328	0.62	-23.3	520	127	51.2%	-47	0.56
G24	761116	860325	761116	860325	0.75	-45.3	590	223	70.8%	-130	36
G25	770121	771114	770121	771114	4.9	-76.6	340	48.3	70.4%	-440	280
G26	770121	860325	770121	860325	0.54	-27.8	390	125	55.9%	-85	30
G29	730113	840816	730113	840816	0.86	-1.72	800	408	100.%	-89	86
G32	720412	720412	720412	720412	1						
G33	730113	870306	730113	870306	2.8	2.9	420	451	99.9%	-31	37
G34	720713	880414	720713	880414	1.1	-21.6	780	716	98.1%	-110	65
G35	750821	880414	750821	880414	0.95	-39.5	790	1160	97.2%	-200	120
G36	780414	880414	780414	880414	0.6	82.9	400	650	83.2%	-170	340
G37	801211	851215	801211	851215	1.8	-38.4	400	96.7	50.6%	-73	-3.7
G38	801211	851215	801211	851215	1.2	-84.3	550	40.9	3.6%	-110	-62
H1	750403	880727	750403	880727	2.6	-2.75	570	447	99.9%	-36	31
H3	751125	880705	751125	880705	0.32	-102	1800	238	19.7%	-260	52
H5	750403	770817	750403	770817	6.3	-116	1100	378	92.2%	-360	120
H6	750418	751023	750418	751023	7.8	1450	740	94.1	6.%	330	2600
H7	750513	871118	750513	871118	1.7	-9.9	540	374	98.9%	-56	36

TABLE 6-3
(continued)
SEDO&G

Segment	Period of record dates		Analysis period Start date	End date	Avg obs /yr	Regression on time slope (per yr)	intercept (@ start)	SEE	residual variance	95% confidence limits on slope lower	upper
H9	750709	760204	750709	760204	7	-264	1900	0	0.%		
H10	751125	880727	751125	880727	0.71	64.1	380	490	77.7%	-43	170
H11	750513	871118	750513	871118	0.64	-21.1	550	291	87.9%	-78	36
H12	750709	871118	750709	871118	0.49	-120	1500	455	40.1%	-260	17
H13	750618	811112	750618	811112	1.2	28.5	1200	870	99.6%	-400	460
H14	750729	851003	750729	851003	0.79	-1030	9600	3170	39.1%	-1900	-200
H15	750618	880727	750618	880727	1.3	42.8	1100	1360	97.9%	-120	200
H16	750826	861001	750826	861001	1.1	-182	3000	1830	85.8%	-500	130
H17	750618	880727	750618	880727	2.8	-384	7700	3190	76.4%	-610	-150
H18	750729	870825	750729	870825	3	-210	6700	4450	96.7%	-590	180
H19	731106	880727	731106	880727	1.8	251	4400	5030	94.%	-170	670
H20	751106	871117	751106	871117	2.9	-261	6500	7990	98.%	-880	360
M3	750821	880414	750821	880414	1.5	31.2	650	812	96.4%	-52	110
S1	750711	870909	750711	870909	0.58	-43	780	572	83.7%	-150	69
S2	870909	870909	870909	870909	3						
T2	720410	720410	720410	720410	1						
T3	720410	880816	740605	880816	0.77	8.33	260	252	97.6%	-32	49
T5	720412	720412	720412	720412	1						
T9	740703	840404	740703	821020	0.72	87.7	120	226	41.3%	-15	190
T11	740605	880816	740605	880816	4.6	10.8	320	339	98.1%	-8.3	30
T12	720410	870718	720410	870718	1.4	-61.7	810	466	74.1%	-110	-13
T13	770112	810505	770112	810505	0.7	13.9	250	65.3	84.2%	-390	420
T15	770318	860822	770318	860822	0.95	46.7	320	326	74.6%	-25	120
T17	770318	860822	770318	860822	0.64	-81.3	990	228	39.1%	-170	9.3
W1	740529	830105	740529	830105	0.7	11.8	280	284	98.2%	-110	130

TABLE 6-3
(continued)
SEDO&G

Segment	Period of record dates		Analysis period Start date	End date	Avg obs /yr	Regression on time slope (per yr)	intercept (@ start)	SEE	residual variance	95% confidence limits on slope lower	upper
W2	810714	851018	821228	851018	1.4	160	860	443	79.6%	-800	1100
W3	810714	810714	810714	810714	1						
W5	830105	860326	830105	860326	3.1	-1.69	340	34.9	99.8%	-31	28
W6	810331	851018	810331	851018	2	274	110	300	22.6%	140	410
W7	720411	880608	740529	880608	0.64	-9.75	680	516	98.9%	-94	75
W8	740529	880608	740529	880608	0.5	0.498	550	386	100.%	-83	84
W9	830105	860326	830105	860326	0.62	-1250	4400	0	0.%	0	0
W10	720706	880623	720706	880623	0.81	17.6	280	359	94.2%	-29	64
W11	830105	860612	830105	860612	3.8	126	140	597	96.4%	-310	560
W12	810331	830105	810331	830105	5.7	609	160	382	34.6%	250	970
W13	810331	810331	810331	810331	2						
W15	810909	880623	810909	880623	0.88	4.42	300	189	99.7%	-110	120
W16	720411	880817	720411	880817	2.8	-16.1	460	244	94.9%	-37	4.9
W17	740906	750220	740906	750220	8.8	-728	580	133	39.3%	-2500	1100
W18	720411	900815	720411	900815	1.6	-89.4	2100	786	77.2%	-150	-25
W19	720411	861117	720411	861117	2.5	-41.9	860	512	91.2%	-87	3.2
W20	810331	851018	810331	851018	2.2	155	190	156	16.2%	100	210

TABLE 6-4
Period of Record Statistics
for Hydrographic Segments
SEDMETCR

Segment	No.of obs	Avg >DL	St dev >DL	No.> DLs	% > DLs	Min	date	Min >0	date	Max	date	Avg w/ BDL=0	Avg w/ BDL=DL
C1	20	23	12	20	100.	10	780531	10	780531	60	760910	23	23
C2	37	20	7.4	35	94.6	7	880607	7	880607	48	760910	18.9	19.2
C5	20	19.3	7.2	18	90.	7	770323	7	770323	33	820721	17.3	17.7
C6	8	37.9	29	8	100.	15	880328	15	880328	100	760911	37.9	37.9
D1	13	18.8	17	13	100.	5.1	751112	5.1	751112	72	821026	18.8	18.8
D2	1	25.1		1	100.	25	761003	25	761003	25	761003	25.1	25.1
D3	3	16.6	9.8	3	100.	2.9	761003	2.9	761003	25	761003	16.6	16.6
D4	13	23	16	13	100.	8.4	760527	8.4	760527	67	761003	23	23
D5	1	24.5		1	100.	25	761003	25	761003	25	761003	24.5	24.5
E1	8	34.9	27	8	100.	7.2	761003	7.2	761003	78	761003	34.9	34.9
E2	17	23.9	26	17	100.	6.7	760810	6.7	760810	92	761003	23.9	23.9
E3	3	51.6	49	3	100.	8.8	761003	8.8	761003	120	761003	51.6	51.6
E4	4	50.8	9.4	4	100.	39	761003	39	761003	61	761003	50.8	50.8
E5	16	23.1	17	11	68.8	2.9	870226	2.9	870226	59	761003	15.9	17
E6	6	28.3	21	5	83.3	3	870226	3	870226	66	761003	23.6	24.4
E8	35	12.3	5.3	22	62.9	3.3	870226	3.3	870226	20	760629	7.74	9.37
E9	31	10.8	8.2	30	96.8	2.2	870306	2.2	870306	42	761003	10.5	10.5
E10	24	13	8.8	20	83.3	2.3	870226	2.3	870226	39	761003	10.8	11.3
G1	1	51		1	100.	51	761003	51	761003	51	761003	51	51
G2	10	19.5	7.8	10	100.	5.8	840829	5.8	840829	30	830809	19.5	19.5
G3	13	18.2	7.2	12	92.3	6.2	761003	6.2	761003	34	760916	16.8	17.1
G4	8	10.6	4.9	8	100.	4	770323	4	770323	17	720706	10.6	10.6
G5	4	48.3	16	4	100.	22	721229	22	721229	61	761003	48.3	48.3
G6	2	46.5	30	2	100.	17	720411	17	720411	76	761003	46.5	46.5
G7	12	29.2	9.6	12	100.	14	840731	14	840731	43	840731	29.2	29.2
G8	5	30	11	4	80.	16	761003	16	761003	47	761003	24	25
G9	28	30	17	28	100.	11	750220	11	750220	69	761021	30	30

TABLE 6-4
(continued)
SEDMETCR

Segment	No.of obs	Avg >DL	St dev >DL	No.> DLs	% > DLs	Min	date	Min >0	date	Max	date	Avg w/ BDL=0	Avg w/ BDL=DL
G10	11	28.3	19	11	100.	2.7	890615	2.7	890615	60	860731	28.3	28.3
G11	2	3.4		2	100.	3.4	890615	3.4	890615	3.4	890615	3.4	3.4
G12	1	37		1	100.	37	761003	37	761003	37	761003	37	37
G13	4	27.5	31	4	100.	2.4	890615	2.4	890615	78	761003	27.5	27.5
G14	4	10.2	1.8	3	75.	8.5	761003	8.5	761003	13	840330	7.63	10.1
G15	30	16.5	14	30	100.	2.8	890615	2.8	890615	79	761003	16.5	16.5
G16	14	17	9.5	14	100.	4.5	890615	4.5	890615	30	761116	17	17
G17	30	14	6.4	29	96.7	3.7	890615	3.7	890615	22	761116	13.6	13.7
G18	51	17.1	13	51	100.	2	850806	2	850806	64	820825	17.1	17.1
G19	7	13.2	8	6	85.7	3.4	890615	3.4	890615	26	720411	11.3	12.8
G20	5	14	3.7	5	100.	9	840330	9	840330	19	840330	14	14
G21	2	11.5	0.5	2	100.	11	761003	11	761003	12	840330	11.5	11.5
G22	17	27.1	26	17	100.	6.6	880328	6.6	880328	100	761003	27.1	27.1
G23	12	24.4	15	12	100.	6.7	890615	6.7	890615	59	761003	24.4	24.4
G24	14	25.2	24	14	100.	2.8	890615	2.8	890615	73	761003	25.2	25.2
G25	7	29.9	26	7	100.	12	770121	12	770121	85	761003	29.9	29.9
G26	13	21.6	20	13	100.	1.8	890615	1.8	890615	56	761003	21.6	21.6
G27	3	22.7	10	3	100.	15	761003	15	761003	37	761003	22.7	22.7
G28	6	38.5	6.6	6	100.	24	761003	24	761003	44	761003	38.5	38.5
G29	11	23.7	15	10	90.9	5	760610	5	760610	48	761003	21.5	22
G30	1	86		1	100.	86	761003	86	761003	86	761003	86	86
G31	2	68	6	2	100.	62	761003	62	761003	74	761003	68	68
G32	8	64.6	20	8	100.	35	720713	35	720713	96	870731	64.6	64.6
G33	43	9.47	9.4	24	55.8	3	760610	3	760610	43	761003	5.29	6.94
G34	22	9.56	5	18	81.8	1	890901	1	890901	19	780914	7.82	8.55
G35	20	8.99	8.1	19	95.	1.2	750821	1.2	750821	30	750412	8.55	8.8
G36	11	11.8	17	8	72.7	1.1	780414	1.1	780414	53	761026	8.61	9.97
G37	10	15.2	10	10	100.	5.5	851215	5.5	851215	41	761003	15.2	15.2

TABLE 6-4
(continued)
SEDMETCR

Segment	No.of obs	Avg >DL	St dev >DL	No.> DLs	% > DLs	Min	date	Min >0	date	Max	date	Avg w/ BDL=0	Avg w/ BDL=DL
G38	7	12.6	7.9	7	100.	5.3	851215	5.3	851215	24	801211	12.6	12.6
H1	51	27.2	15	49	96.1	6	840607	6	840607	88	820819	26.1	26.3
H2	1	43		1	100.	43	760911	43	760911	43	760911	43	43
H3	11	41.9	26	11	100.	5.8	761003	5.8	761003	92	821206	41.9	41.9
H5	18	47.6	18	18	100.	19	751016	19	751016	100	760911	47.6	47.6
H6	5	61	14	5	100.	44	750418	44	750418	81	760911	61	61
H7	30	31	19	26	86.7	7	760212	7	760212	80	720123	26.9	27.6
H8	1	58		1	100.	58	760911	58	760911	58	760911	58	58
H9	3	28.7	18	3	100.	2	760911	2	760911	51	750709	28.7	28.7
H10	14	52.7	27	14	100.	31	850708	31	850708	130	820714	52.7	52.7
H11	14	29.7	20	12	85.7	2.4	760911	2.4	760911	67	720123	25.4	26.1
H12	9	31.9	13	8	88.9	14	871118	14	871118	60	720123	28.4	28.9
H13	17	46	22	17	100.	19	780815	19	780815	110	720123	46	46
H14	18	52.4	41	18	100.	8.3	891115	8.3	891115	150	720123	52.4	52.4
H15	28	42.3	28	28	100.	3.1	760911	3.1	760911	110	820819	42.3	42.3
H16	19	89.4	62	19	100.	13	760911	13	760911	250	720123	89.4	89.4
H17	48	100	61	48	100.	11	760204	11	760204	250	720123	100	100
H18	36	62.8	47	36	100.	17	870825	17	870825	170	760419	62.8	62.8
H19	22	76.6	40	22	100.	14	870825	14	870825	150	820819	76.6	76.6
H20	36	39	48	36	100.	2.8	760421	2.8	760421	170	760421	39	39
M1	2	25.5	17	2	100.	8.9	761026	8.9	761026	42	761026	25.5	25.5
M2	3	9.83	5.8	3	100.	5.6	761026	5.6	761026	18	761026	9.83	9.83
M3	27	13.9	8.3	24	88.9	2.7	860225	2.7	860225	40	750412	12.3	12.9
M4	2	35.5	4.5	2	100.	31	761026	31	761026	40	761026	35.5	35.5
M6	3	35.7	9	3	100.	23	761026	23	761026	43	770915	35.7	35.7
S1	8	26	23	5	62.5	2	750711	2	750711	60	760912	16.3	16.6
S2	3	8.33	2.6	3	100.	6.3	870909	6.3	870909	12	870909	8.33	8.33
T1	2	52.2	44	2	100.	8.3	761003	8.3	761003	96	761003	52.2	52.2

TABLE 6-4
(continued)
SEDMETCR

Segment	No.of obs	Avg >DL	St dev >DL	No.> DLs	% > DLs	Min	date	Min >0	date	Max	date	Avg w/ BDL=0	Avg w/ BDL=DL
T2	7	38.1	21	7	100.	13	761003	13	761003	64	761003	38.1	38.1
T3	13	5.6	3.6	13	100.	1.7	740605	1.7	740605	12	751202	5.6	5.6
T4	3	55	14	3	100.	36	761003	36	761003	69	761003	55	55
T5	6	51.8	15	6	100.	25	720412	25	720412	72	761003	51.8	51.8
T6	3	32.7	5.6	3	100.	25	761003	25	761003	38	761003	32.7	32.7
W9	7	34.2	18	7	100.	13	770115	13	770115	59	770115	34.2	34.2
W10	18	19.1	20	18	100.	2.7	840917	2.7	840917	94	820921	19.1	19.1
T11	76	15.9	15	71	93.4	2	750516	2	750516	76	761003	14.9	15.1
T12	25	14.2	8.4	20	80.	2.3	870718	2.3	870718	37	720410	11.3	11.8
T13	3	12	5	2	66.7	7	770112	7	770112	17	810505	8	9
T14	1	23	0	1	100.	23	761003	23	761003	23	761003	23	23
T15	11	14.6	6.9	11	100.	4.4	860822	4.4	860822	23	810408	14.6	14.6
T16	1	8.6	0	1	100.	8.6	761003	8.6	761003	8.6	761003	8.6	8.6
T17	6	21.2	11	6	100.	8.4	860822	8.4	860822	43	770318	21.2	21.2
W1	12	29.9	21	11	91.7	7.4	810714	7.4	810714	73	760721	27.4	27.7
W2	8	15.8	6.2	7	87.5	11	780914	11	780914	30	760721	13.8	14.3
W3	2	10.8	2.2	2	100.	8.6	810714	8.6	810714	13	810714	10.8	10.8
W4	3	34.3	30	2	66.7	4.5	760721	4.5	760721	64	760721	22.8	24.2
W5	13	21.2	14	13	100.	9.2	860326	9.2	860326	62	760721	21.2	21.2
W6	12	22.3	15	12	100.	8.8	810714	8.8	810714	66	760721	22.3	22.3
W7	19	29.9	14	19	100.	4	860930	4	860930	66	760721	29.9	29.9
W8	14	43.5	31	14	100.	15	780914	15	780914	150	760721	43.5	43.5
W9	5	35.2	18	5	100.	13	860326	13	860326	59	770115	35.2	35.2
W10	21	20.1	19	21	100.	2.7	840917	2.7	840917	94	820921	20.1	20.1
W11	16	14.3	11	16	100.	5.1	860612	5.1	860612	43	770115	14.3	14.3
W12	10	26.3	21	10	100.	10	810331	10	810331	73	830105	26.3	26.3
W13	3	17.8	2.7	3	100.	15	810331	15	810331	22	770115	17.8	17.8
W15	13	25.7	13	13	100.	6.5	880623	6.5	880623	50	860731	25.7	25.7

TABLE 6-4
(continued)
SEDMETCR

Segment	No.of obs	Avg >DL	St dev >DL	No.> DLs	% > DLs	Min	date	Min >0	date	Max	date	Avg w/ BDL=0	Avg w/ BDL=DL
W16	50	17	7.2	50	100.	3.4	851022	3.4	851022	34	720411	17	17
W17	8	25.8	16	8	100.	11	761003	11	761003	60	750220	25.8	25.8
W18	33	96	120	33	100.	9.7	840911	9.7	840911	650	750328	96	96
W19	48	34.2	25	47	97.9	0.02	750520	0.02	750520	90	750920	33.5	33.6
W20	10	11.9	3.4	10	100.	6.1	810331	6.1	810331	17	851018	11.9	11.9
W21	4	26.3	12	4	100.	14	880731	14	880731	45	770115	26.3	26.3

TABLE 6-5
Time Trend Analysis
for Hydrographic Segments
SEDMETCR

Segment	Period of record dates		Analysis period Start date	End date	Avg obs /yr	Regression on time slope (per yr)	intercept (@ start)	SEE	residual variance	95% confidence limits on slope lower	upper
C1	750916	880607	750916	880607	1.6	-1.01	27	10.8	87.7%	-2.3	0.33
C2	740605	880607	740605	880607	2.5	-0.317	22	7.29	96.8%	-0.92	0.28
C5	760311	880607	760311	880607	1.5	0.128	19	7.14	99.5%	-0.81	1.1
C6	760911	880328	760911	880328	0.69	-5.26	70	15.5	29.%	-8.6	-1.9
D1	731024	871006	731024	871006	0.93	0.999	13	16.1	93.9%	-1.6	3.6
D2	761003	761003	761003	761003	1						
D3	720706	761003	720706	761003	0.71	-1.9	22	9.02	85.%	-59	55
D4	740507	880817	740507	880817	0.91	-0.316	25	15.5	99.2%	-2.6	2
D5	761003	761003	761003	761003	1						
E1	761003	761003	761003	761003	8						
E2	720713	880817	720713	880817	1.1	-1.65	35	24.4	91.%	-4.5	1.2
E3	761003	761003	761003	761003	3						
E4	761003	761003	761003	761003	4						
E5	760629	870226	760629	870226	1	-1.79	29	15.7	83.5%	-4.8	1.2
E6	760629	870226	760629	870226	0.47	-3.13	40	16.7	63.3%	-11	4.4
E8	760629	870226	760629	870226	2.1	-0.983	16	3.42	41.5%	-1.4	-0.6
E9	760721	870306	760721	870306	2.8	-0.846	14	7.53	83.3%	-1.6	-0.11
E10	760629	870226	760629	870226	1.9	-1.09	17	7.79	78.7%	-2.1	-0.052
G1	761003	761003	761003	761003	1						
G2	740605	880711	740605	880711	0.71	-0.621	24	7.16	84.%	-1.8	0.54
G3	740605	780821	740605	780821	2.8	1.94	14	6.88	90.4%	-2.2	6.1
G4	720706	770524	720706	770524	1.6	-1.6	17	4.23	73.8%	-4.3	1.1
G5	721229	761003	721229	761003	1.1	9.3	22	4.3	7.5%	1.3	17

TABLE 6-5
(continued)
SEDMETCR

Segment	Period of record dates		Analysis period Start date	End date	Avg obs /yr	Regression on time slope (per yr)	intercept (@ start)	SEE	residual variance	95% confidence limits on slope lower	upper
G6	720411	761003	720411	761003	0.45	13.2	17	0	0.%		
G7	761003	840731	761003	840731	1.5	-0.0866	30	9.64	99.9%	-2.1	1.9
G8	761003	840330	761003	761003	4						
G9	740815	770524	740815	770524	10	7.56	22	14.9	77.6%	1.9	13
G10	721229	890615	721229	890615	0.67	-0.153	30	18.7	99.8%	-2.7	2.4
G11	890615	890615	890615	890615	2						
G12	761003	761003	761003	761003	1						
G13	761003	890615	761003	890615	0.31	-3.95	53	18	34.1%	-13	4.7
G14	761003	860325	761003	860325	0.32	0.219	8.9	1.51	74.1%	-4.5	4.9
G15	711228	890615	711228	890615	1.7	-1.66	35	10.8	57.2%	-2.4	-0.92
G16	761116	890615	761116	890615	0.87	-1.21	24	6.54	56.6%	-2.3	-0.17
G17	720621	890615	720621	890615	1.2	-0.493	18	5.32	82.6%	-1.0	-0.023
G18	740507	900719	740507	900719	2.8	0.48	14	13.3	96.8%	-0.32	1.30
G19	720411	890615	720411	890615	0.35	-1.27	29	3.17	15.5%	-2	-0.51
G20	840330	840330	840330	840330	5						
G21	761003	840330	761003	840330	0.27	0.134	11	0	0.%		
G22	711228	880727	711228	880727	1	-2.11	51	24.5	86.8%	-5.1	0.87
G23	750403	890615	750403	890615	0.85	-1.76	34	10.7	51.%	-3	-0.49
G24	761003	890615	761003	890615	1.1	-2.92	38	16.9	51.%	-4.8	-1
G25	761003	771114	761003	771114	6.3	-28.6	41	22.6	74.3%	-84	27
G26	761003	890615	761003	890615	1	-3.08	36	11.6	35.%	-4.6	-1.6
G27	761003	761003	761003	761003	3						
G28	761003	761003	761003	761003	6						
G29	760610	840816	760610	820526	1.7	-2.34	25	14.7	93.%	-9.3	4.6

TABLE 6-5
(continued)
SEDMETCR

Segment	Period of record dates		Analysis period Start date	End date	Avg obs /yr	Regression on time slope (per yr)	intercept (@ start)	SEE	residual variance	95% confidence limits on slope lower	upper
G30	761003	761003	761003	761003	1						
G31	761003	761003	761003	761003	2						
G32	720713	870731	720713	870731	0.53	3.11	29	9.48	23.4%	1.4	4.8
G33	760610	870306	760610	870306	2.2	-0.353	10	9.39	98.7%	-1.7	1
G34	720411	900608	720411	890901	1	-0.735	16	2.84	32.4%	-1	-0.47
G35	750412	900608	750412	900608	1.3	-0.337	11	7.81	93.8%	-1	0.34
G36	750412	900608	750412	900608	0.53	-1.17	19	15	82.4%	-3.7	1.4
G37	761003	851215	761003	851215	1.1	-3.11	33	3.48	11.9%	-4	-2.2
G38	801211	881026	801211	881026	0.89	-2.43	21	3.13	15.6%	-3.6	-1.2
H1	720123	880727	720123	880727	3	-1.06	35	14.5	89.3%	-2	-0.18
H2	760911	760911	760911	760911	1						
H3	740515	880731	740515	880731	0.77	1.07	34	24.9	94.3%	-2.2	4.4
H5	750403	770817	750403	770817	7.6	-1.68	49	17.9	99.3%	-12	9
H6	750418	760911	750418	760911	3.6	25.3	49	4.48	10.7%	9.2	41
H7	720123	871118	720123	871118	1.6	-2.08	42	17.4	81.3%	-3.9	-0.26
H8	760911	760911	760911	760911	1						
H9	750709	760911	750709	760911	2.6	-41.9	53	2.76	1.8%	-110	-3.0
H10	740515	880727	740515	880727	0.99	-1.77	64	25.6	91.9%	-5.5	2
H11	720123	871118	720123	871118	0.76	-2.25	44	16.1	65.7%	-4.4	-0.055
H12	720123	871118	720123	871118	0.51	-1.94	43	9.03	50.8%	-3.9	0.031
H13	720123	820819	720123	820819	1.6	-2.64	60	21.2	89.1%	-6.8	1.5
H14	720123	891115	720123	891115	1	-5.92	100	20	23.3%	-7.7	-4.2
H15	720123	891115	720123	891115	1.6	-1.91	60	25.5	85.6%	-3.8	-0.031
H16	720123	861001	720123	861001	1.3	-9.52	140	49.6	63.1%	-16	-3.1
H17	720123	880727	720123	880727	2.9	-6.98	150	50.7	69.9%	-10	-3.9

TABLE 6-5
(continued)
SEDMETCR

Segment	Period of record dates		Analysis period Start date	End date	Avg obs /yr	Regression on time slope (per yr)	intercept (@ start)	SEE	residual variance	95% confidence limits on slope lower	upper
H18	720123	870825	720123	870825	2.3	-4.65	98	42.2	81.1%	-7.9	-1.4
H19	740515	880727	740515	880727	1.5	-6.57	120	25.9	41.9%	-9.2	-4
H20	751106	871117	751106	871117	3	-3.95	57	47.0	87.5%	-7.7	-0.17
M1	761026	761026	761026	761026	2						
M2	761026	761026	761026	761026	3						
M3	750412	900608	750412	900608	1.6	-0.423	17	7.91	90.4%	-1	0.15
M4	761026	761026	761026	761026	2	0	0	0	0.%	0	0
M6	761026	770915	761026	770915	3.4	21.4	23	0.816	0.8%	-3.4	46
S1	750711	870909	750711	760912	4.3	44.9	5.4	11.6	25.9%	-3.9	94
S2	870909	870909	870909	870909	3						
T1	761003	761003	761003	761003	2						
T2	720410	761003	720410	761003	1.6	5.5	17	19	82.9%	-8.4	19
T3	720410	880816	720410	880816	0.8	0.0162	5.5	3.6	100.%	-0.48	0.51
T4	761003	761003	761003	761003	3						
T5	720412	761003	720412	761003	1.3	7.19	25	9.69	39.4%	-0.88	15
T6	761003	761003	761003	761003	3	0	0	0	0.%	0	0
T9	740703	840404	740703	840404	1	0.929	6.9	7.34	86.7%	-1	2.9
T10	761003	761003	761003	761003	3	0	0	0	0.%	0	0
T11	740605	890323	740605	890323	4.8	-0.682	19	15.2	96.%	-1.5	0.11
T12	720410	890323	720410	890323	1.2	-0.923	21	7.2	72.8%	-1.7	-0.17
T13	770112	770112	770112	770112	1						
T14	761003	761003	761003	761003	1	0	0	0	0.%	0	0
T15	761003	860822	761003	860822	1.1	-0.996	18	5.62	65.6%	-2	0.041
T16	761003	761003	761003	761003	1	0	0	0	0.%	0	0
T17	770318	860822	770318	860822	0.64	-1.79	25	8.76	66.1%	-5.3	1.7

TABLE 6-5
(continued)
SEDMETCR

Segment	Period of record dates		Analysis period Start date	End date	Avg obs /yr	Regression on time slope (per yr)	intercept (@ start)	SEE	residual variance	95% confidence limits on slope lower	upper
W1	740529	830105	740529	830105	1.3	-1.33	34	20.6	97.%	-7	4.4
W2	760721	851018	760721	851018	0.76	-0.991	20	5.09	66.9%	-2.6	0.63
W3	810714	810714	810714	810714	2						
W4	760721	760721	760721	760721	2						
W5	760721	860326	760721	860326	1.3	-2.9	42	8.07	32.3%	-4.2	-1.6
W6	760721	851018	760721	851018	1.3	-3.59	45	10.8	53.9%	-6.3	-0.85
W7	720623	880728	720623	880728	1.2	-1.47	43	11.3	61.8%	-2.4	-0.51
W8	740529	880728	740529	880728	0.99	-2.51	63	27.8	78.6%	-5.5	0.51
W9	770115	860326	770115	860326	0.76	-1.13	37	17.4	95.1%	-6.8	4.5
W10	720706	880623	720706	880623	1.1	-0.16	20	19.6	99.8%	-2.3	2
W11	770115	860612	770115	860612	1.7	-2.17	30	7.09	44.3%	-3.3	-1.1
W12	810331	830105	810331	830105	5.7	20.5	12	10.4	25.7%	11	30
W13	770115	810331	770115	810331	0.71	-1.31	22	0.816	9.%	-6.5	3.9
W15	770115	880623	770115	880623	1.1	-0.707	31	13.2	95.1%	-2.8	1.4
W16	720411	880817	720411	880817	3.1	-1	26	6.22	74.1%	-1.5	-0.52
W17	740906	761003	740906	761003	3.9	-2.04	28	16.3	98.6%	-19	15
W18	720411	900815	720411	900815	1.8	-12.3	190	104	75.4%	-20	-4.7
W19	720411	890901	720411	890901	2.7	-2.55	50	21.6	76.3%	-3.9	-1.2
W20	810331	851018	810331	851018	2.2	1.27	9	1.84	28.9%	0.61	1.9
W21	770115	880731	770115	880731	0.35	-2.13	45	4.42	14.7%	-4.8	0.55

6.1 Space and Time Variation in Sediment Quality

Table 3-10 presents the baywide summary of sediment data. The historical statistics for each of the study parameters are given in detail in Appendix C, for each of the TWC segments and for each of the hydrographic segments (for which data exist); these tables together are regarded as the principal product of this study. As with water quality in Chapter 5, for each sediment parameter there is a pair of tables, the first presenting basic data on magnitude and variance of the measurements, and the second data on the time trend analysis. Tables 6-2 through 6-5 are examples. Reference is made to Chapter 5 for a discussion of the meaning and computation of the entries in these tables.

Figures 3-35 through 3-50 depict sampling intensity throughout the bay for several of the key sediment parameters. The sampling activities of the Corps of Engineers in association with channel maintenance dominates the data base in many areas of the bay, and the highest intensity is seen to track the presence of channels (more to the point, the presence of channels with frequent maintenance). Thus, for most of the sediment parameters, large areas of the bay have never been sampled. Moreover, for the measurements which do exist, there is a bias for those regions of the bay most heavily impacted by the activities of man. A few of the parameters, such as TOC, are dominated by the BEG submerged lands data base, and are therefore more uniformly distributed.

Tables 6-6 and 6-7 display the correlation arrays for the suite of sediment-quality variates. As with the water-quality data, in order to emphasize spatial associations among the variates, these correlations were computed using the average segment concentrations, rather than correlations among raw measurements. Those entries exceeding 40% are indicated in boldface. (We note, as before, that this correlation calculation does not weigh the individual data points by the area or volume of the segment, so that small segments are counted as heavily as their larger counterparts. This is particularly important for sediment as the numerous small segments in the Houston Ship Channel and other tributaries can overwhelm the associations in the open bay.)

Average concentrations (with BDL values taken to be 0) of representative parameters are depicted in Figs. 6-1 through 6-12. Figures 6-13 *et seq*. display the spatial distribution of time trends, following the same convention as described in Chapter 5. The segments with a "probable" trends have both 95% confidence limits of the same sign, and those with a "possible" trend have both 80% confidence bounds of the same sign.

TABLE 6-6

Correlation array of sediment metals parameters
based on average (non-BDL) segment concentrations

	SEDTOTP	SEDO&G	SEDKJLN	SEDTOC	SEDVOLS	SEDMETAS	SEDMETBA	SEDMETB
SEDORGN	**-0.41**	-0.22	0.29	0.07	0.00	-0.14	0.03	-0.02
SEDTOTP		0.09	-0.18	-0.27	0.08	0.25	-0.30	0.38
SEDO&G			0.03	0.07	0.04	0.03	-0.03	-0.13
SEDKJLN				0.25	-0.35	-0.10	-0.10	-0.26
SEDTOC					0.02	-0.06	-0.17	-0.06
SEDVOLS						**0.45**	-0.16	0.17
SEDMETAS							-0.14	0.27
SEDMETBA								0.11

	SEDMETCD	SEDMETCR	SEDMETCU	SEDMETFE	SEDMETPB	SEDMETMN	SEDMETHG	SEDMETNI
SEDORGN	-0.09	-0.09	-0.03	-0.21	0.08	0.05	-0.02	-0.08
SEDTOTP	0.03	-0.18	-0.15	-0.14	-0.04	**0.59**	0.20	-0.26
SEDO&G	0.00	-0.06	0.05	0.05	-0.02	0.04	0.01	-0.10
SEDKJLN	0.14	-0.08	0.25	0.23	-0.12	-0.01	0.12	-0.15
SEDTOC	-0.06	-0.08	-0.04	0.14	-0.11	-0.06	0.22	-0.07
SEDVOLS	0.07	0.13	-0.07	-0.09	-0.14	0.10	0.04	-0.27
SEDMETAS	-0.20	0.08	-0.14	0.05	-0.12	0.14	0.18	-0.09
SEDMETBA	-0.17	-0.11	-0.08	-0.20	-0.02	0.00	-0.26	-0.01
SEDMETB	-0.01	0.01	-0.10	**-0.44**	-0.02	0.13	0.03	-0.25
SEDMETCD		-0.05	0.01	0.32	-0.19	0.09	-0.33	-0.18
SEDMETCR			-0.04	0.00	0.33	0.00	0.16	0.14
SEDMETCU				0.09	-0.06	-0.01	-0.11	0.17
SEDMETFE					0.01	-0.15	0.01	0.05
SEDMETPB						0.01	0.09	0.31
SEDMETMN							-0.18	-0.06
SEDMETHG								-0.01

(continued)

TABLE 6-6

(continued)

	SEDMETSE	SEDMETAG	SEDMETSR	SEDMETZN
SEDORGN	0.23	0.18	-0.13	-0.02
SEDTOTP	-0.01	**-0.45**	0.24	**0.43**
SEDO&G	-0.36	-0.01	-0.10	-0.03
SEDKJLN	**-0.58**	**0.73**	0.00	-0.16
SEDTOC	0.08	0.39	0.08	-0.04
SEDVOLS	-0.17	**0.44**	-0.08	**0.45**
SEDMETAS	-0.10	-0.27	-0.12	0.23
SEDMETBA	-0.09	0.27	-0.15	-0.12
SEDMETB	0.37	0.35	0.14	0.12
SEDMETCD	-0.06	0.13	0.09	0.10
SEDMETCR	0.03	-0.32	0.11	-0.02
SEDMETCU	**0.45**	0.01	0.03	-0.09
SEDMETFE	-0.29	0.08	-0.15	-0.03
SEDMETPB	-0.23	-0.19	-0.05	-0.10
SEDMETMN	0.25	**-0.44**	0.02	0.10
SEDMETHG	-0.28	0.25	-0.01	0.03
SEDMETNI	0.14	-0.06	-0.07	-0.23
SEDMETSE		**-0.40**	0.23	-0.01
SEDMETAG			**-0.45**	**-0.61**
SEDMETSR				0.08

TABLE 6-7

Correlation array of sediment organic parameters
based on average (non-BDL) segment concentrations

	SEDTOTP	SEDO&G	SEDKJLN	SEDTOC	SEDVOLS	SED-ABHC	SED-LIND	SED-XDDT
SEDORGN	-0.41	-0.22	0.29	0.07	0.00	-0.29	-0.30	-0.18
SEDTOTP		0.09	-0.18	-0.27	0.08	-0.16	0.30	-0.19
SEDO&G			0.03	0.07	0.04	0.24	-0.36	0.11
SEDKJLN				0.25	-0.35	-0.21	-0.36	-0.15
SEDTOC					0.02	-0.06	-0.50	-0.03
SEDVOLS						-0.30	-0.17	0.12
SED-ABHC							0.02	-0.68
SED-LIND								0.10

	SED-ALDR	SED-CHLR	SED-DIEL	SED-ENDO	SED-ENDR	SED-TOXA	SED-HEPT	SED-HEPX
SEDORGN	-0.39	0.31	-0.03	†	-0.03	-0.78	-0.39	-0.24
SEDTOTP	0.26	-0.09	0.09	†	-0.19	0.81	0.00	0.37
SEDO&G	0.18	-0.56	-0.18	†	0.24	0.80	-0.06	-0.32
SEDKJLN	-0.04	-0.27	-0.04	†	-0.31	†	-0.29	-0.49
SEDTOC	-0.06	0.26	-0.18	†	0.15	-0.53	-0.32	0.03
SEDVOLS	-0.29	-0.29	-0.61	†	0.07	0.09	0.05	-0.29
SED-ABHC	0.11	0.72	0.79	†	-0.32	†	0.14	0.27
SED-LIND	0.44	0.32	0.47	†	-0.06	0.36	0.49	0.31
SED-XDDT	0.53	0.04	0.14	†	0.86	0.35	0.14	0.43
SED-ALDR		0.68	0.44	†	0.21	0.07	0.41	0.35
SED-CHLR			0.64	†	-0.35	*	0.09	0.78
SED-DIEL				†	0.09	0.63	0.21	0.83
SED-ENDO					†	†	†	†
SED-ENDR						0.32	0.20	0.39
SED-TOXA							*	0.11
SED-HEPT								0.71

(continued)

TABLE 6-7

(continued)

	SED-MTHX	SED-PCB	SED-MALA	SED-PARA	SED-DIAZ	SED-MTHP	SED-24D	SED-245T
SEDORGN	-0.45	-0.01	†	†	-0.04	†	†	†
SEDTOTP	0.35	0.27	†	†	-0.49	†	†	†
SEDO&G	0.77	-0.01	†	†	-0.06	†	†	†
SEDKJLN	†	0.67	†	†	*	†	†	†
SEDTOC	-0.42	-0.36	†	†	-0.30	†	†	†
SEDVOLS	-0.03	0.00	†	†	-0.62	†	†	†
SED-ABHC	†	†	†	†	†	†	†	†
SED-LIND	-0.04	0.50	†	†	-0.01	†	†	†
SED-XDDT	0.31	0.06	†	†	0.16	†	†	†
SED-ALDR	-0.01	0.70	†	†	-0.04	†	†	†
SED-CHLR	-0.76	-0.27	†	†	*	†	†	†
SED-DIEL	0.65	0.42	†	†	0.05	†	†	†
SED-ENDO	†	†	†	†	†	†	†	†
SED-ENDR	0.35	-0.11	†	†	0.16	†	†	†
SED-TOXA	*	0.28	†	†	-0.23	†	†	†
SED-HEPT	*	0.19	†	†	0.16	†	†	†
SED-HEPX	0.16	0.03	†	†	0.05	†	†	†
SED-MTHX		0.22	†	†	0.16	†	†	†
SED-PCB			†	†	-0.02	†	†	†
SED-MALA				†	†	†	†	†
SED-PARA					†	†	†	†
SED-DIAZ						†	†	†
SED-MTHP							†	†
SED-24D								†

(continued)

TABLE 6-7

(continued)

	SED-PAH	SED-NAPT	SED-ACEN	SED-FLRA	SED-BNZA
SEDORGN	0.04	-0.40	0.83	-0.13	-0.25
SEDTOTP	-0.77	*	0.99	-0.45	0.19
SEDO&G	-0.02	0.84	-0.65	0.02	-0.08
SEDKJLN	0.18	-0.98	0.97	-0.39	-0.18
SEDTOC	0.24	-0.65	-0.31	0.17	0.28
SEDVOLS	0.00	0.36	-0.96	-0.01	0.21
SED-ABHC	-0.25	0.97	†	-0.40	-0.87
SED-LIND	0.27	0.07	0.41	-0.26	-0.49
SED-XDDT	0.62	-0.55	-0.57	0.67	-0.07
SED-ALDR	-0.09	0.19	-0.14	-0.37	0.17
SED-CHLR	0.10	†	-0.22	0.20	0.34
SED-DIEL	-0.13	-0.51	0.67	0.05	0.08
SED-ENDO	†	†	†	†	†
SED-ENDR	*	†	-0.99	0.25	0.15
SED-TOXA	†	†	†	†	†
SED-HEPT	-0.08	*	-0.65	-0.10	-0.12
SED-HEPX	-0.07	0.50	-0.13	0.12	0.66
SED-MTHX	†	†	†	†	†
SED-PCB	-0.74	†	-0.16	-0.47	-0.11
SED-MALA	†	†	†	†	†
SED-PARA	†	†	†	†	†
SED-DIAZ	*	†	†	*	*
SED-MTHP	†	†	†	†	†
SED-24D	†	†	†	†	†
SED-245T	†	†	†	†	†
SED-PAH		*	-0.43	0.18	-0.25
SED-NAPT			-0.42	-0.39	0.05
SED-ACEN				-0.43	-0.52
SED-FLRA					0.01

† - no data * - inadequate data for correlation (r=±1)

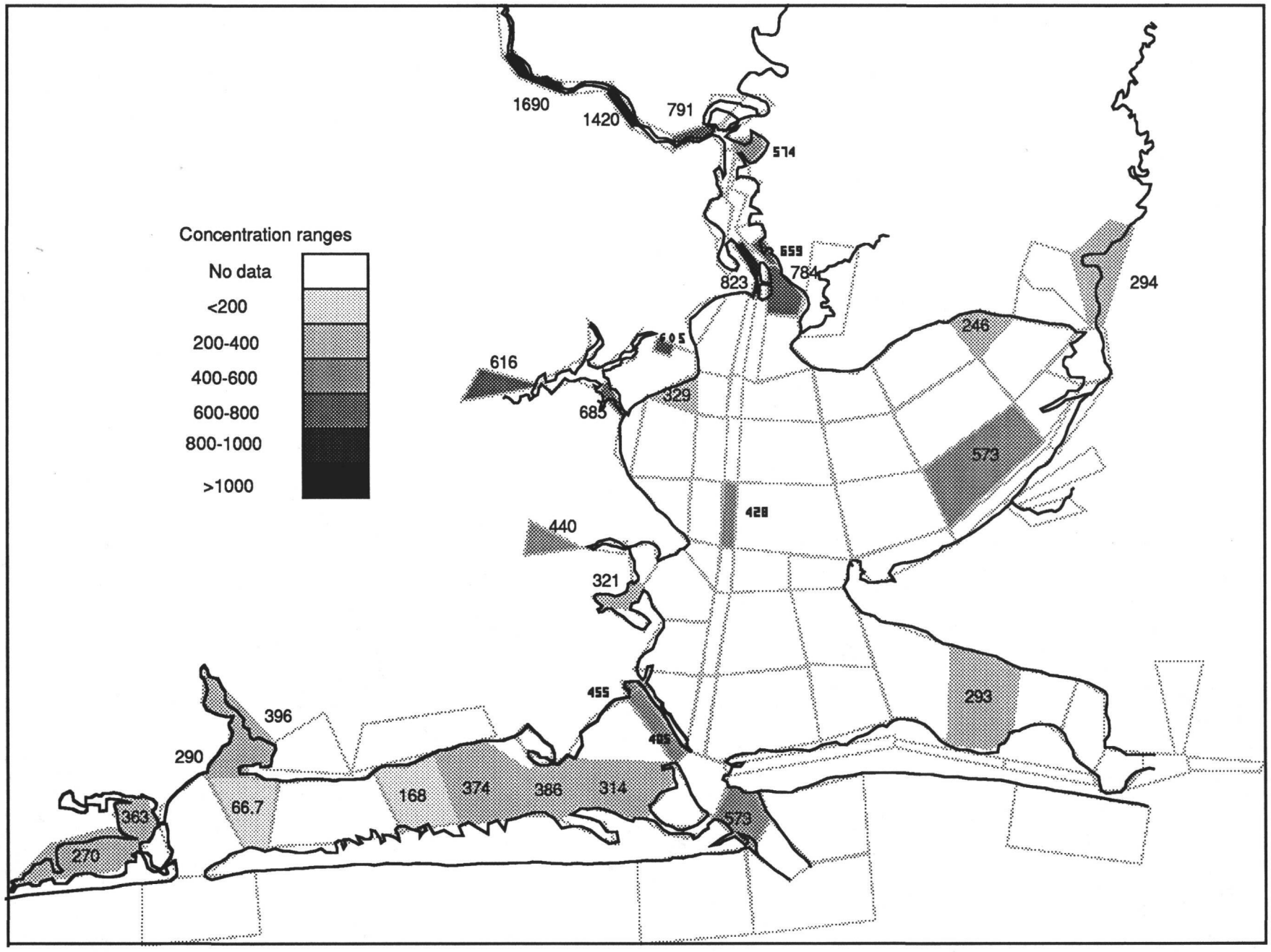


Fig. 6-1 Average (with BDL = 0) concentrations of SEDTOTP in Galveston Bay

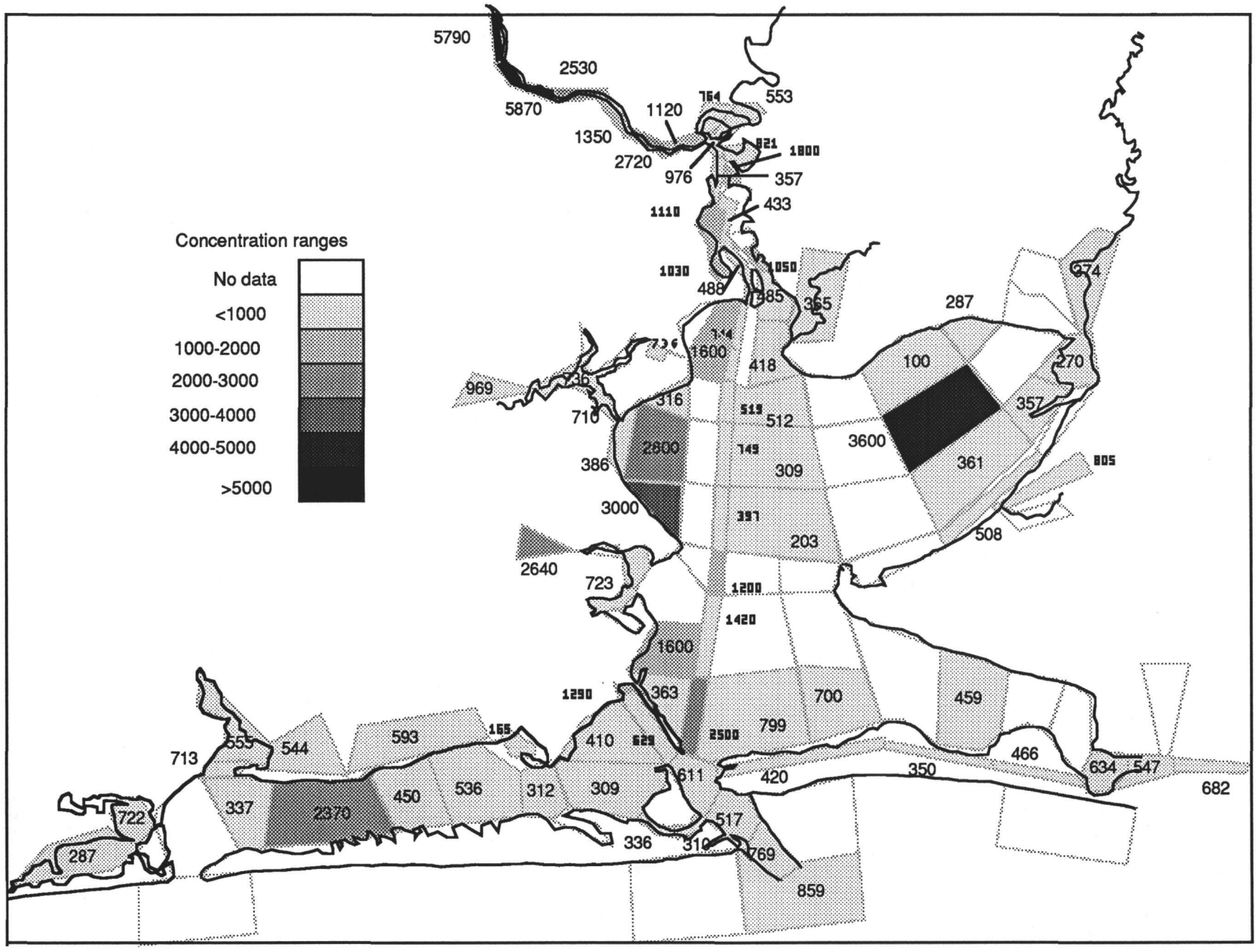


Fig. 6-2 Average (with BDL = 0) concentrations of SEDO&G in Galveston Bay

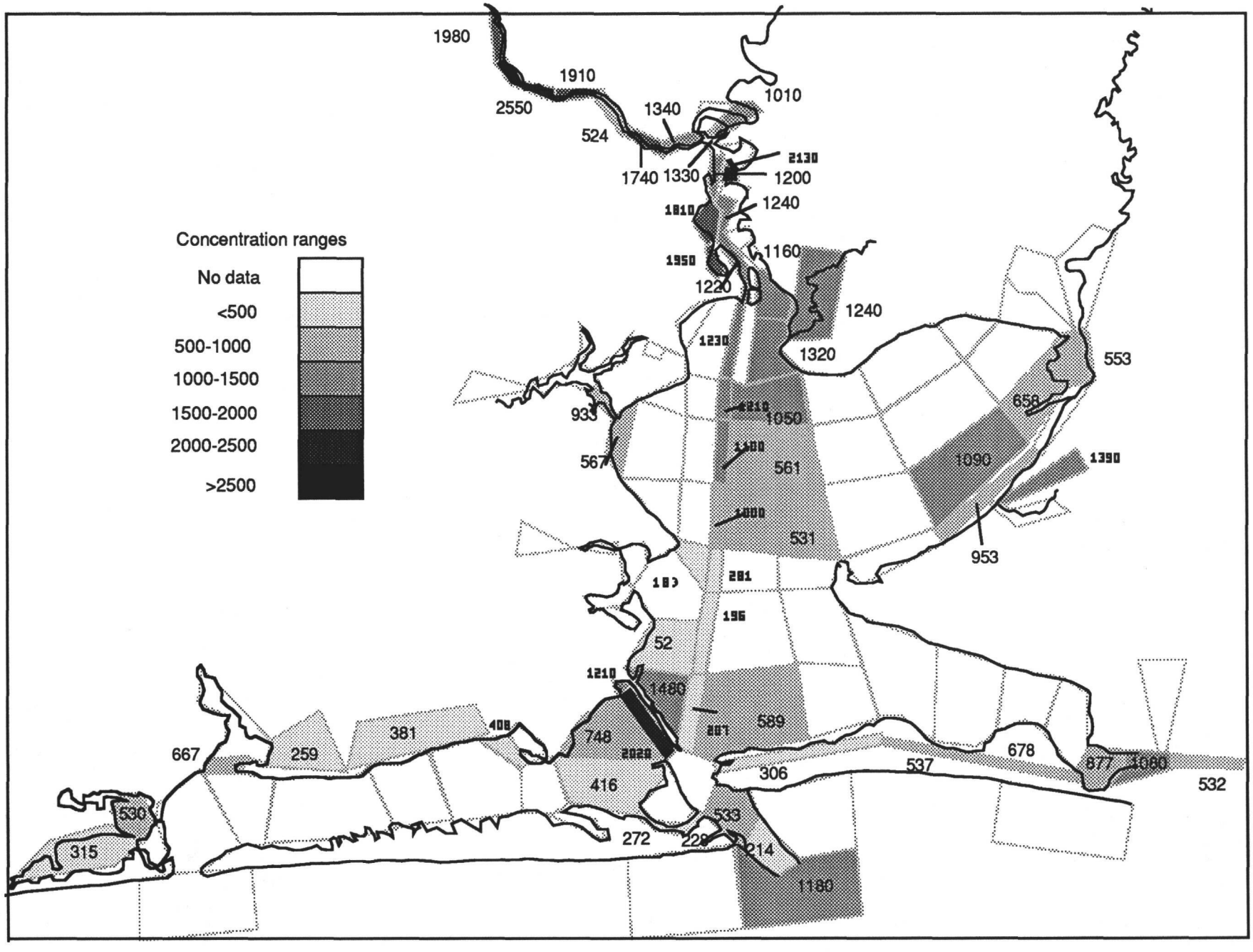


Fig. 6-3 Average (with BDL = 0) concentrations of SEDKJLN in Galveston Bay

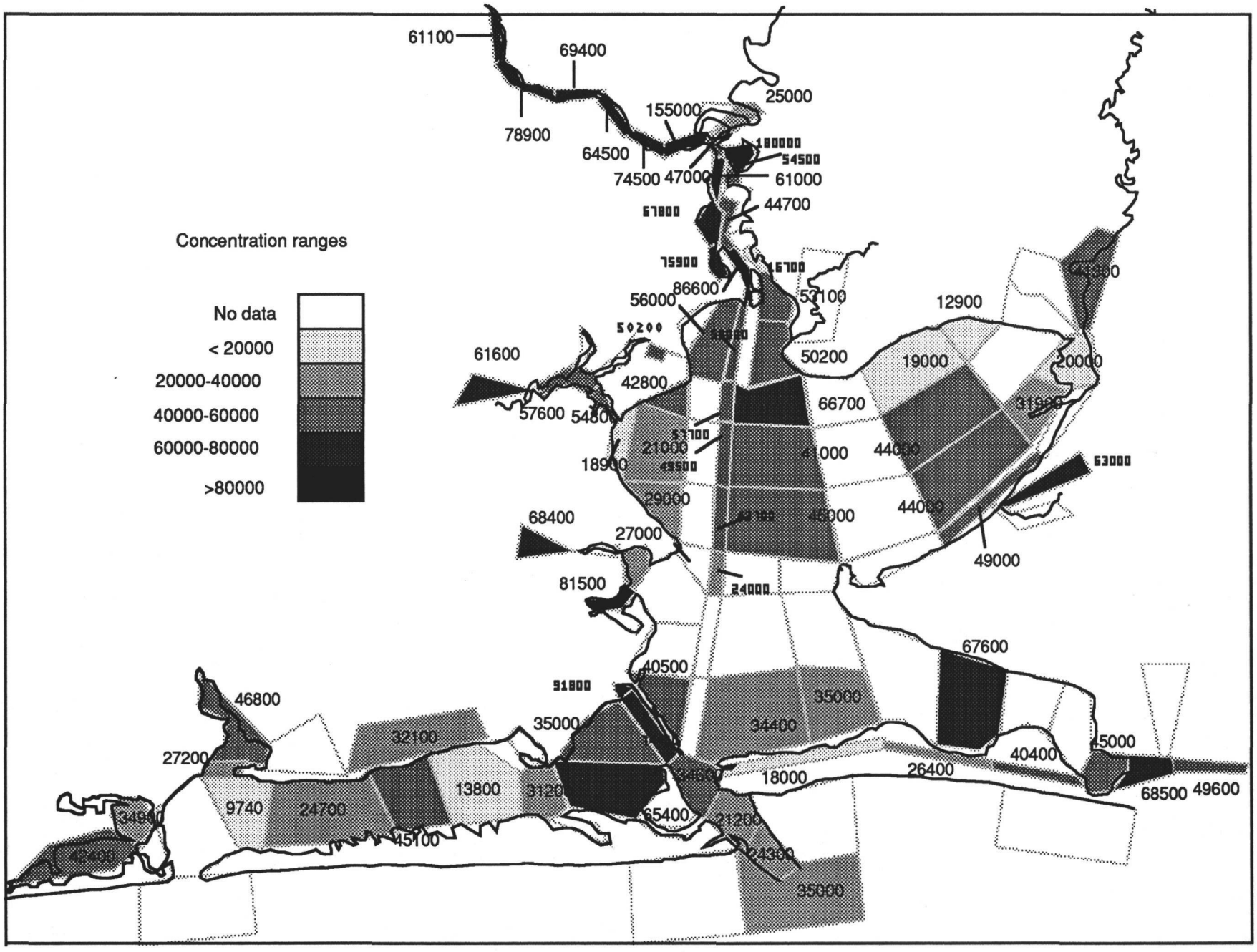


Fig. 6-4 Average (with BDL = 0) concentrations of SEDVOLS in Galveston Bay

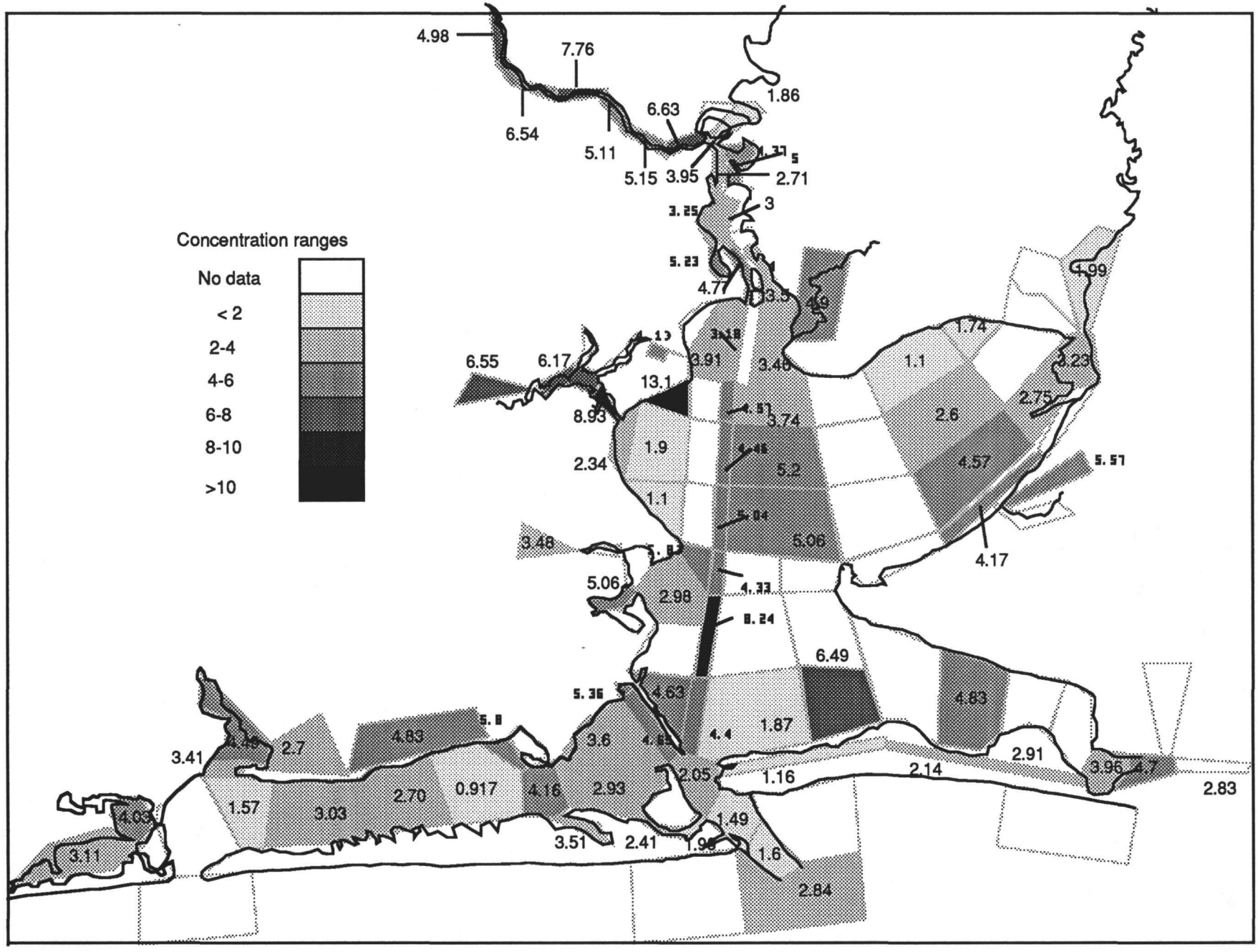


Fig. 6-5 Average (with BDL = 0) concentrations of SEDMETAS in Galveston Bay

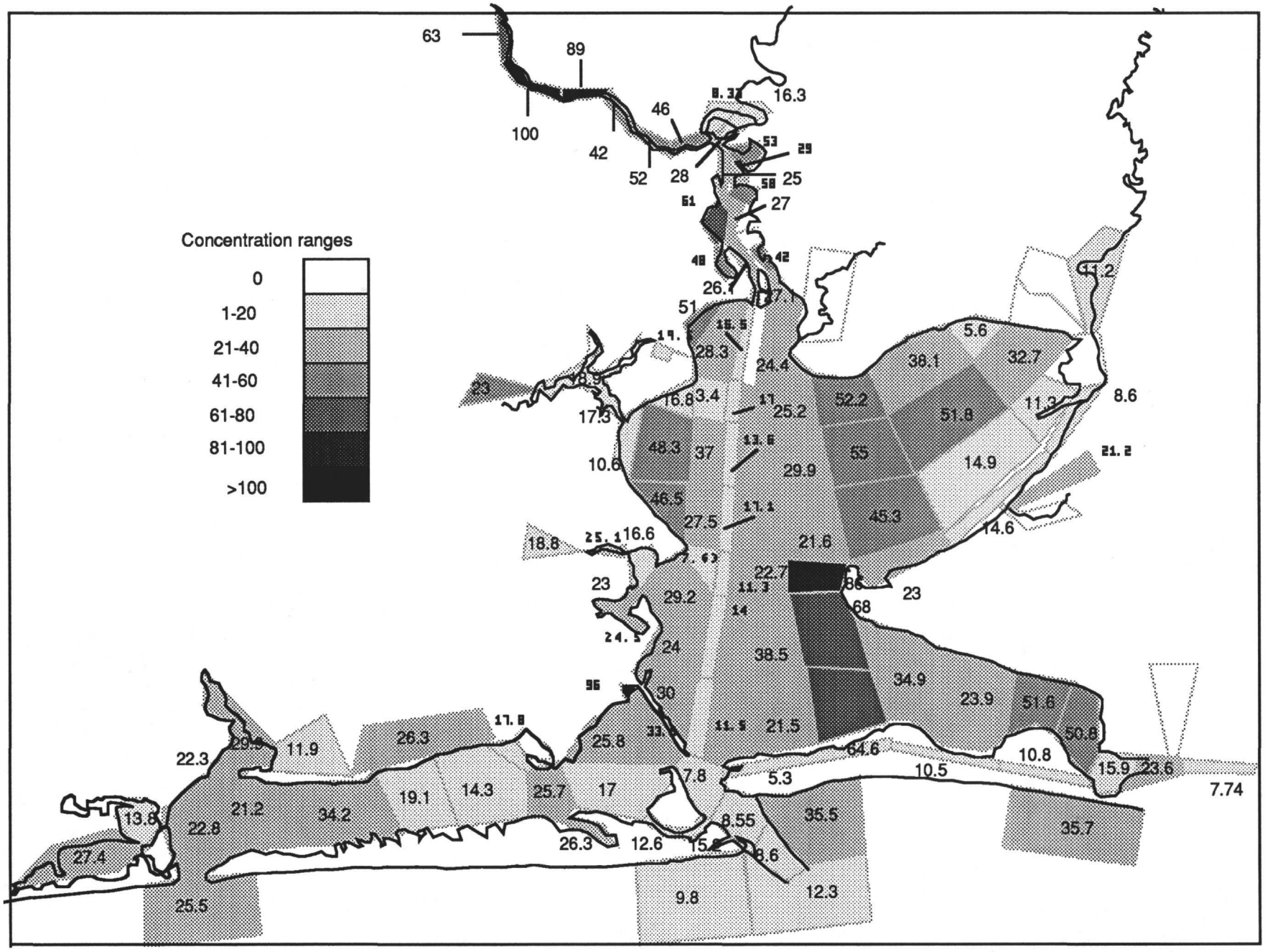


Fig. 6-6 Average (with BDL = 0) concentrations of SEDMETCR in Galveston Bay

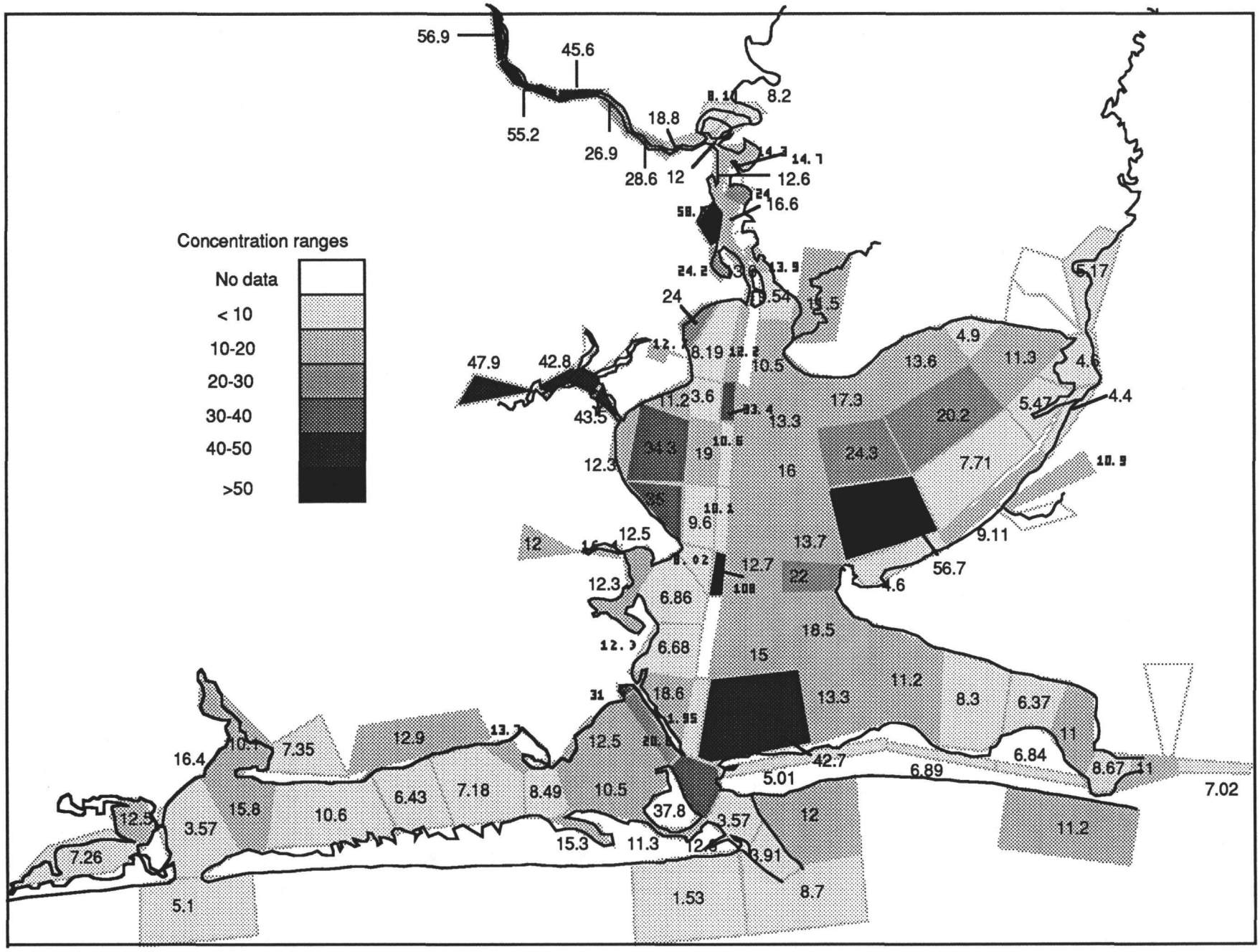


Fig. 6-7 Average (with BDL = 0) concentrations of SEDMETCU in Galveston Bay

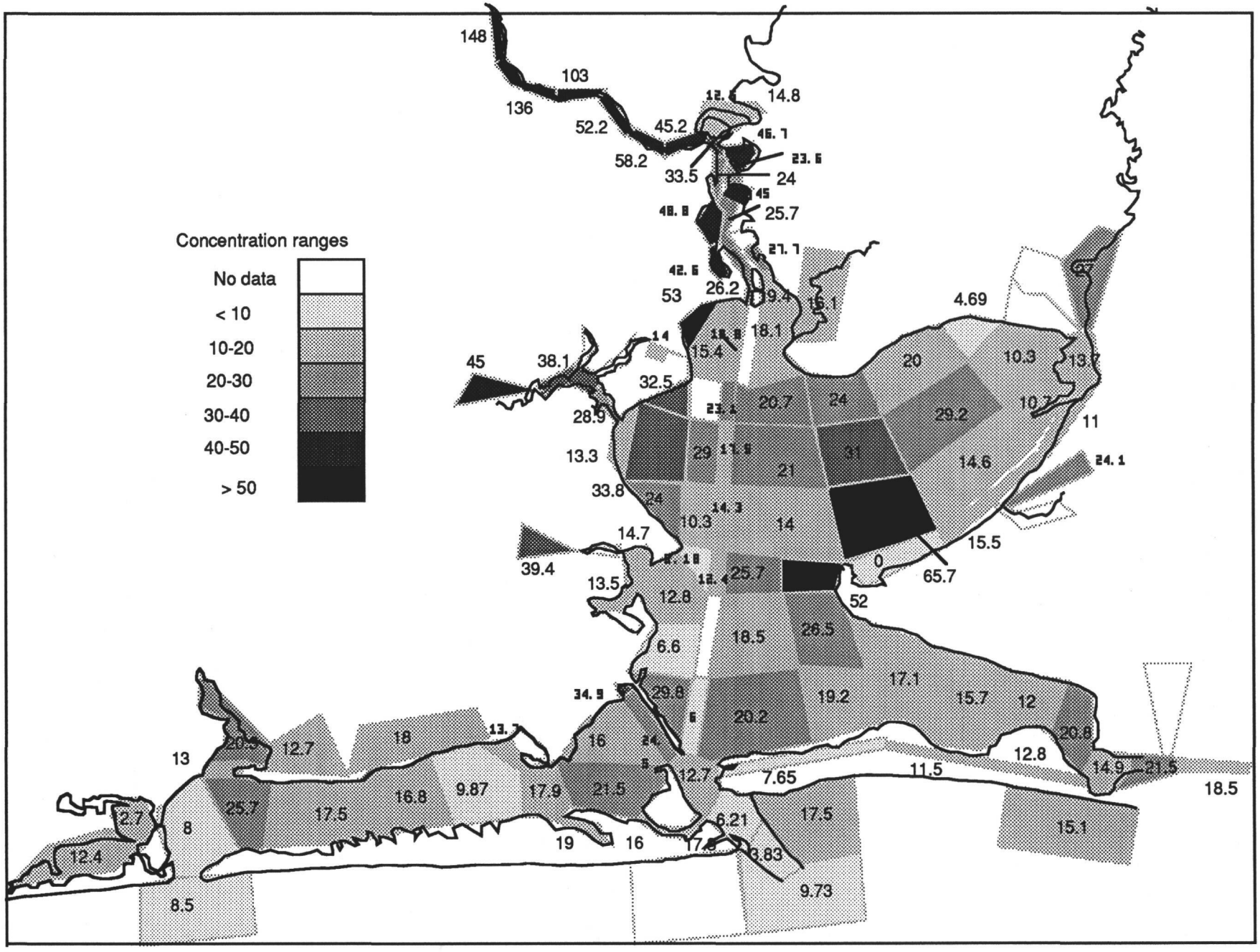


Fig. 6-8 Average (with BDL = 0) concentrations of SEDMETPB in Galveston Bay

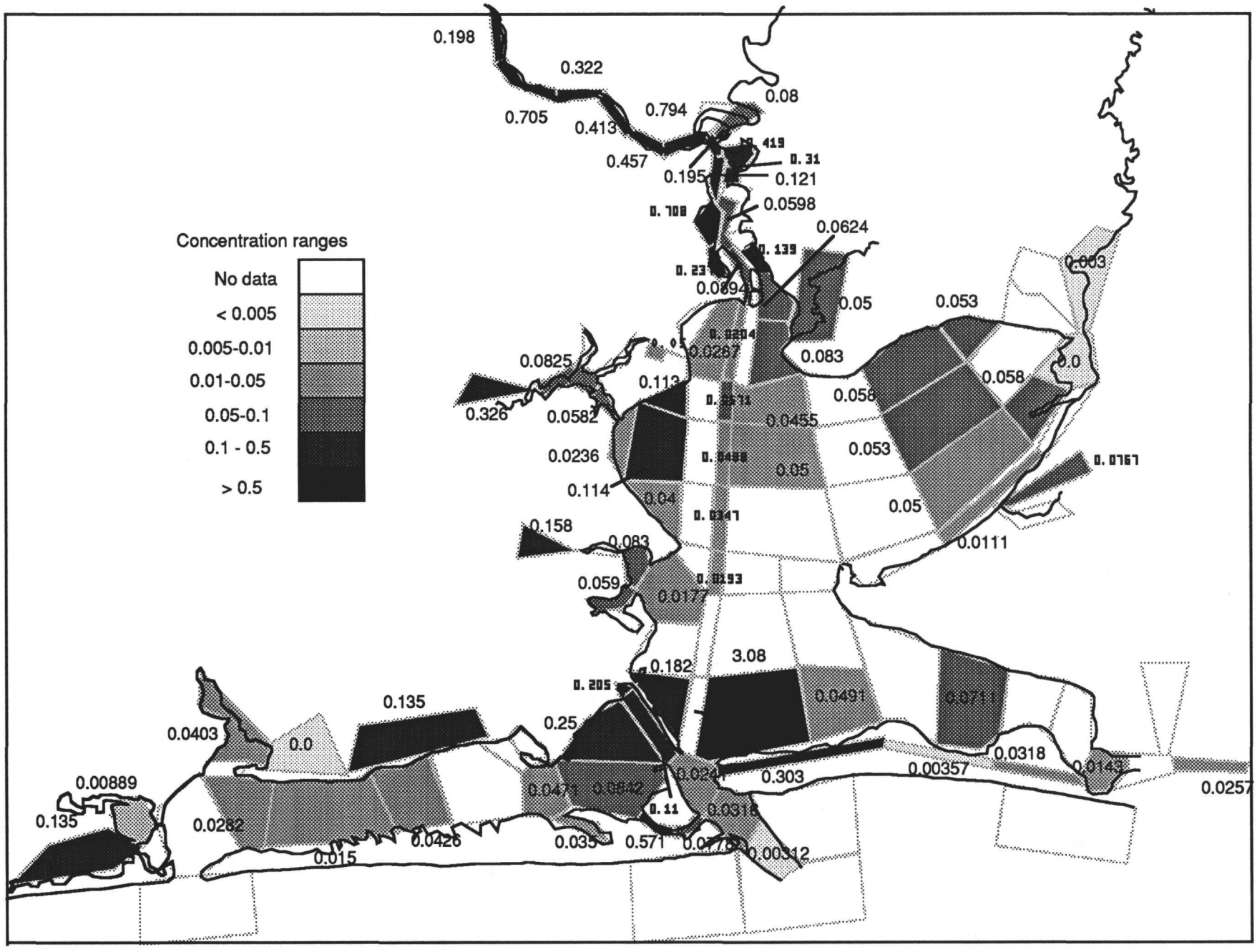


Fig. 6-9 Average (with BDL = 0) concentrations of SEDMETHG in Galveston Bay

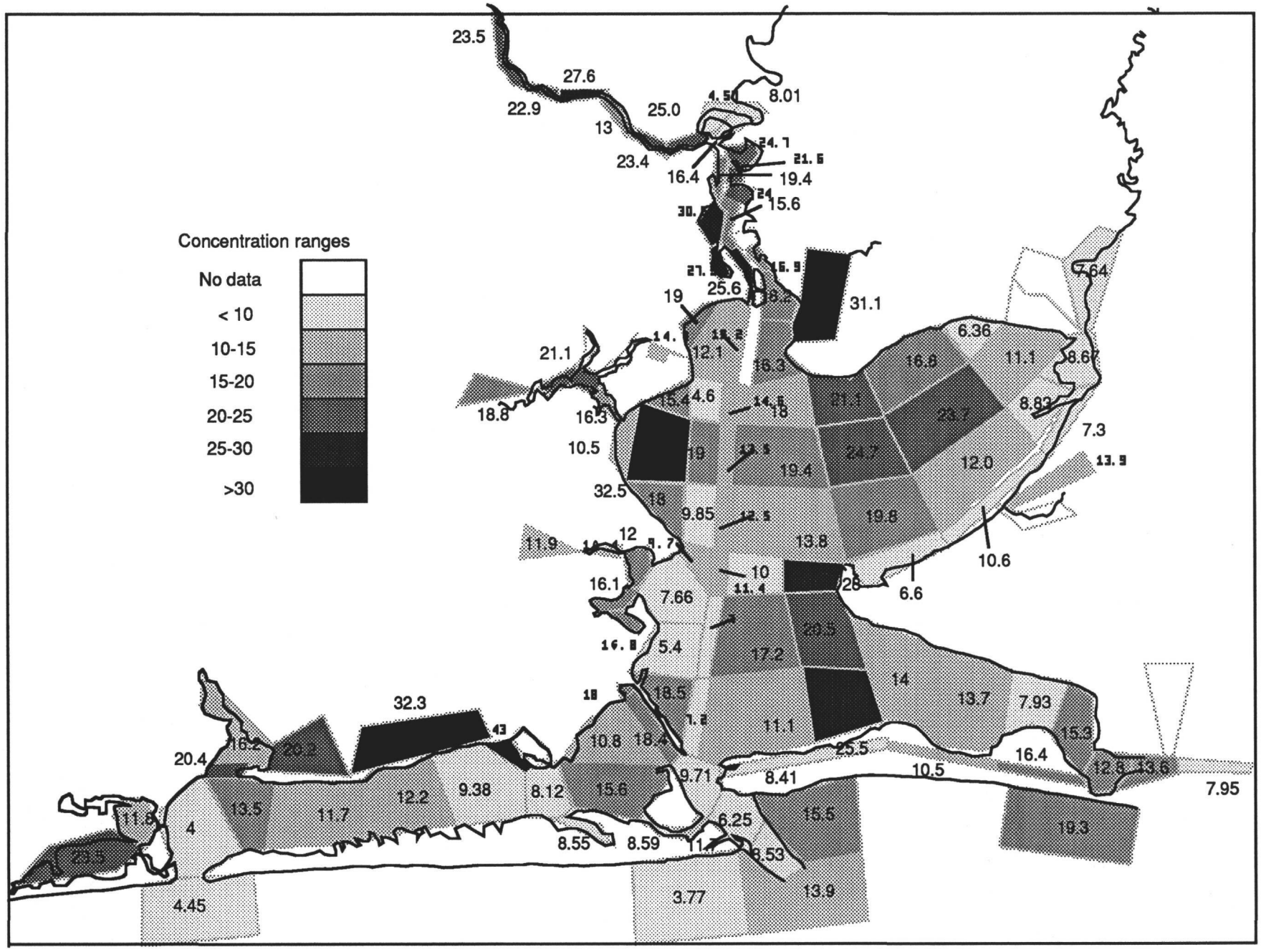


Fig. 6-10 Average (with BDL = 0) concentrations of SEDMETNI in Galveston Bay

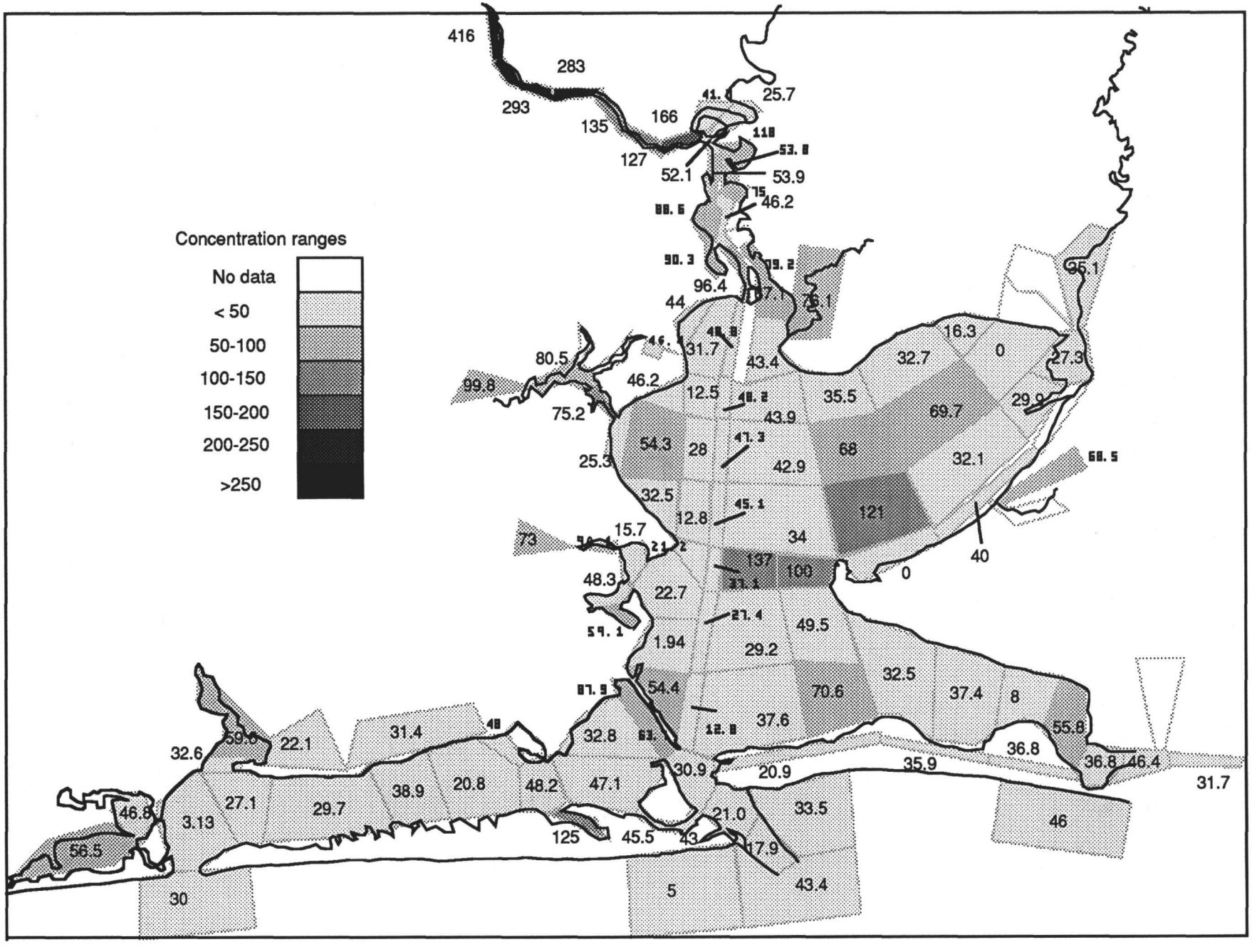


Fig. 6-11 Average (with BDL = 0) concentrations of SEDMETZN in Galveston Bay

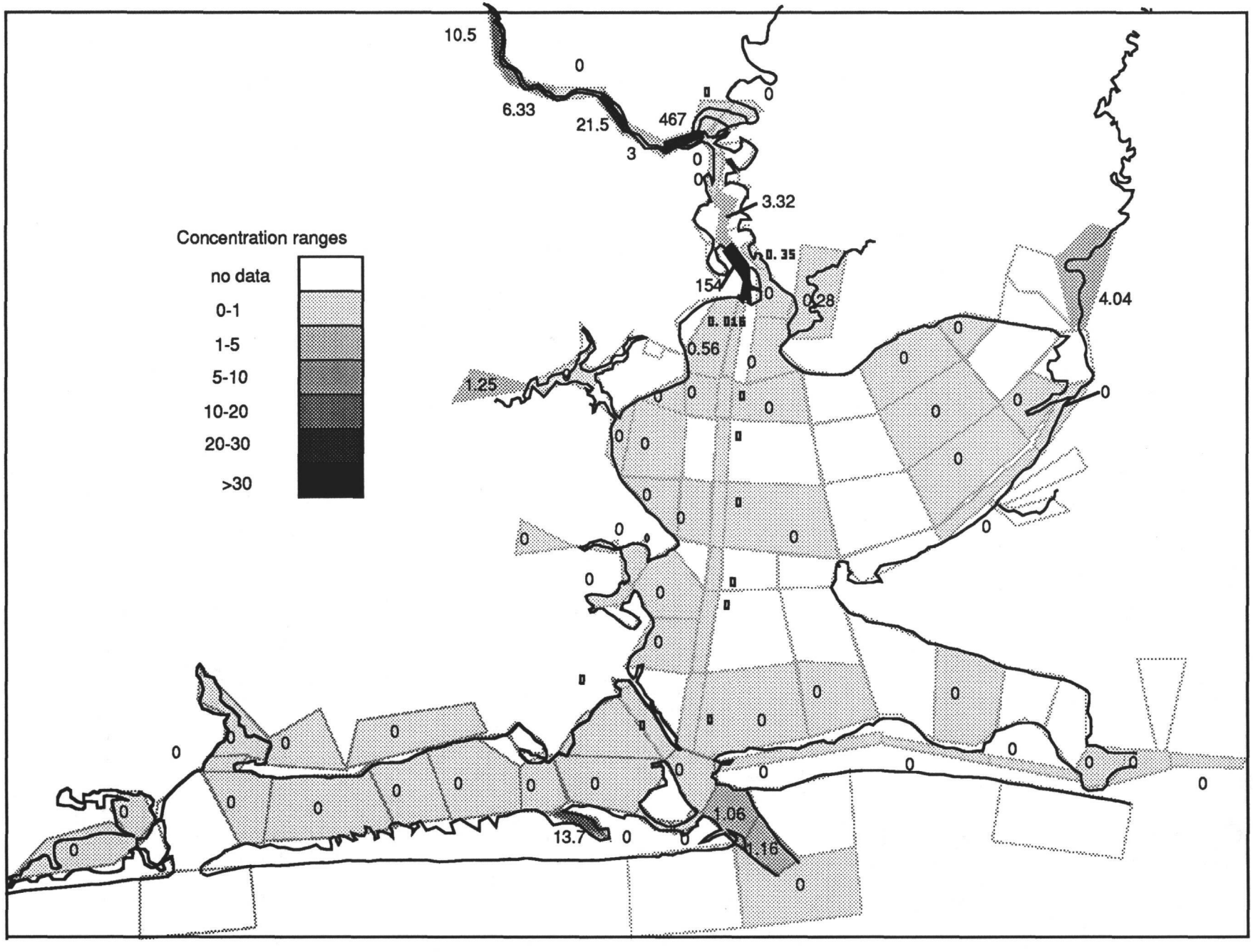
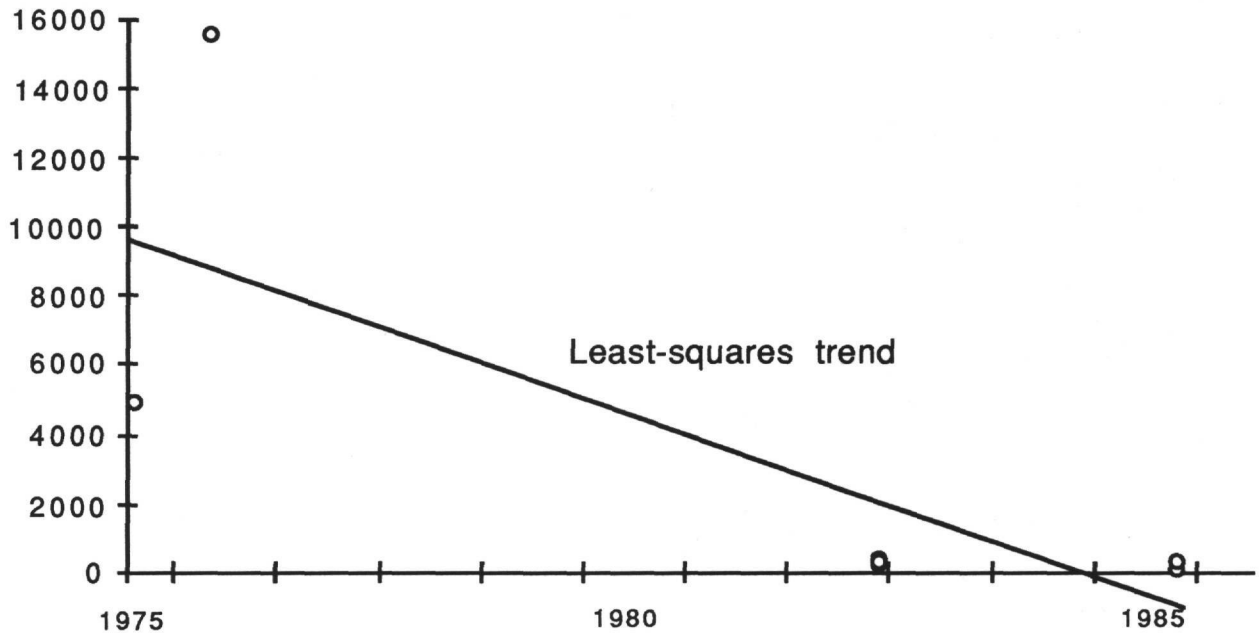
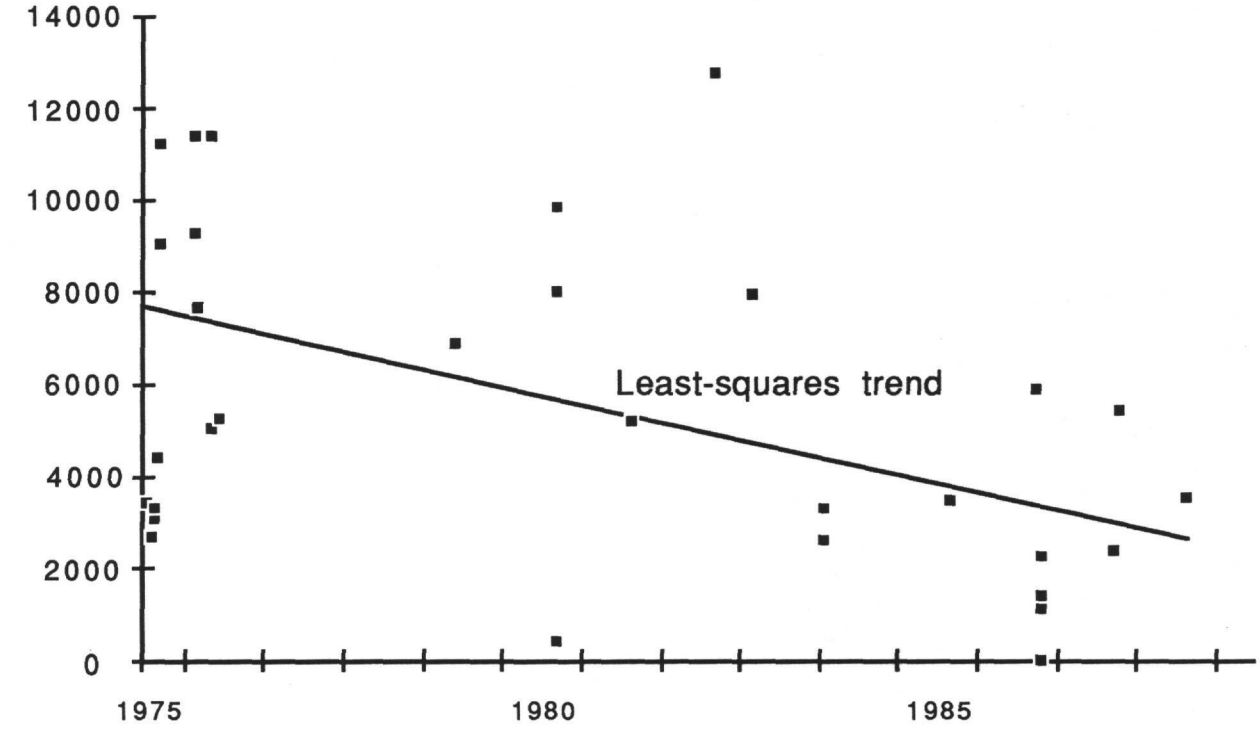


Fig. 6-12 Average (with BDL = 0) concentrations of SED-XDDT in Galveston Bay

Fig. 6-13 Statistical trends over period of record of SEDO&G in Galveston Bay



(a) Hydrographic Segment H14



(b) Hydrographic Segment H17

Fig. 6-14 Time Trend of SEDO&G in Upper Houston Ship Channel

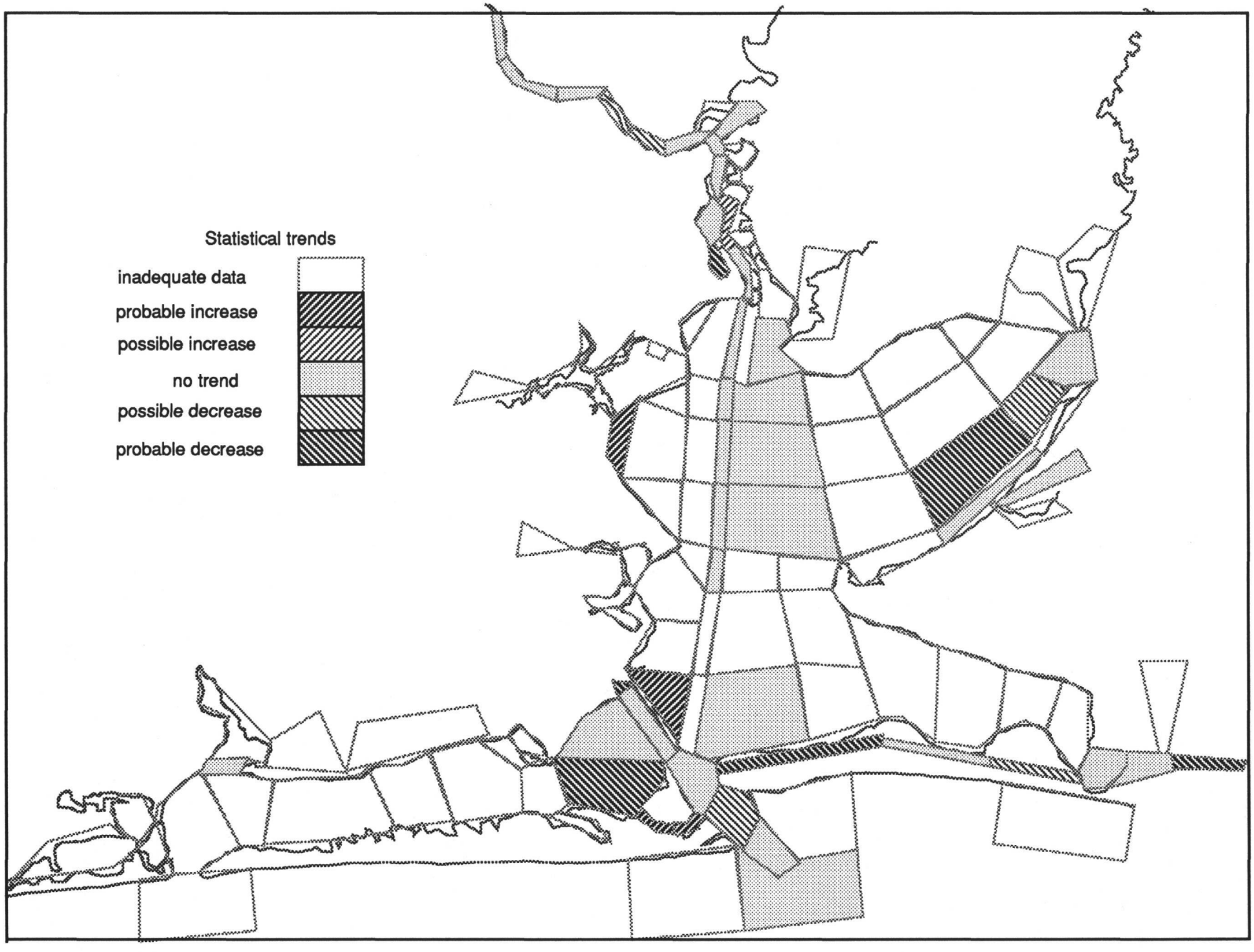


Fig. 6-15 Statistical trends over period of record of SEDKJLN in Galveston Bay

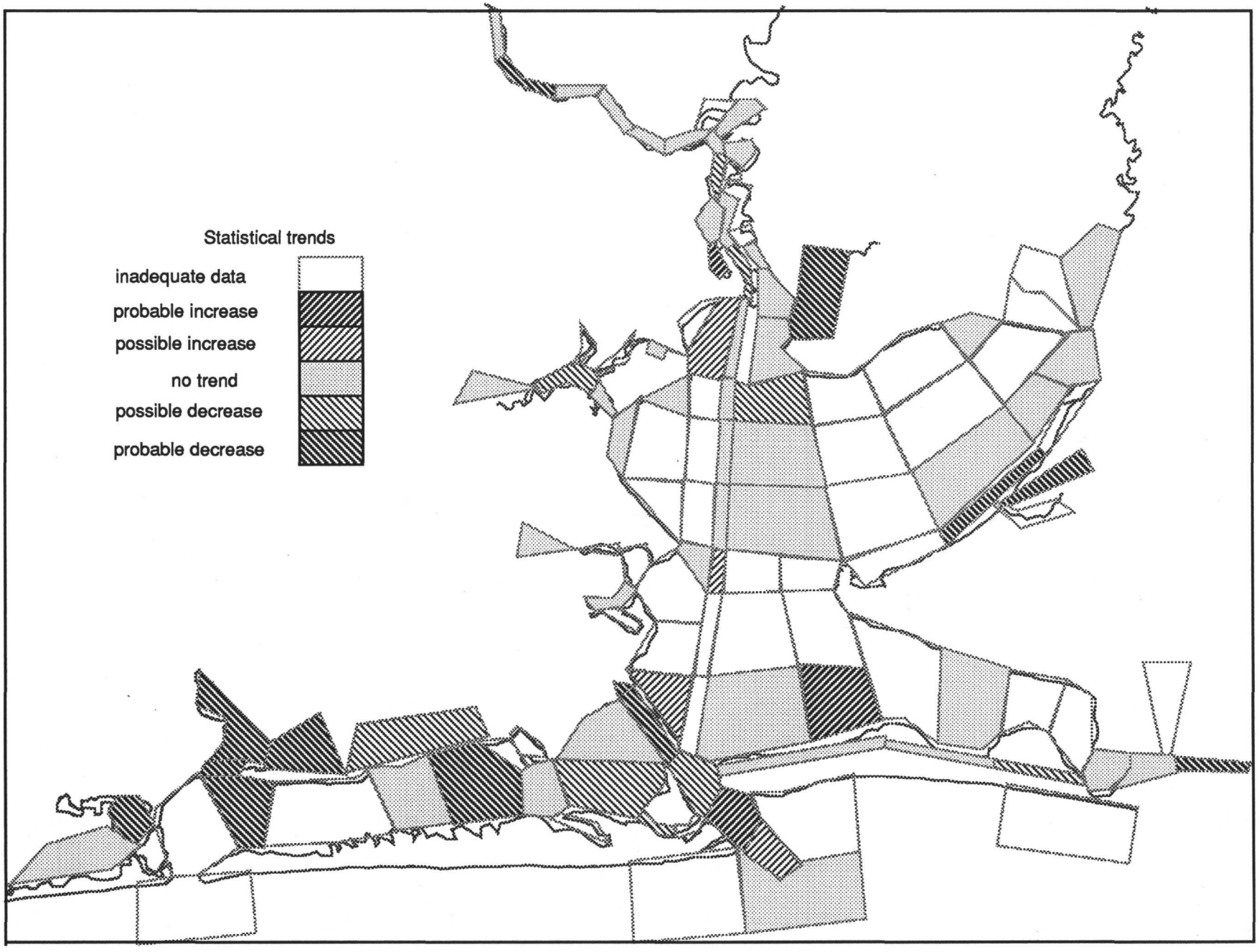


Fig. 6-16 Statistical trends over period of record of SEDMETAS in Galveston Bay

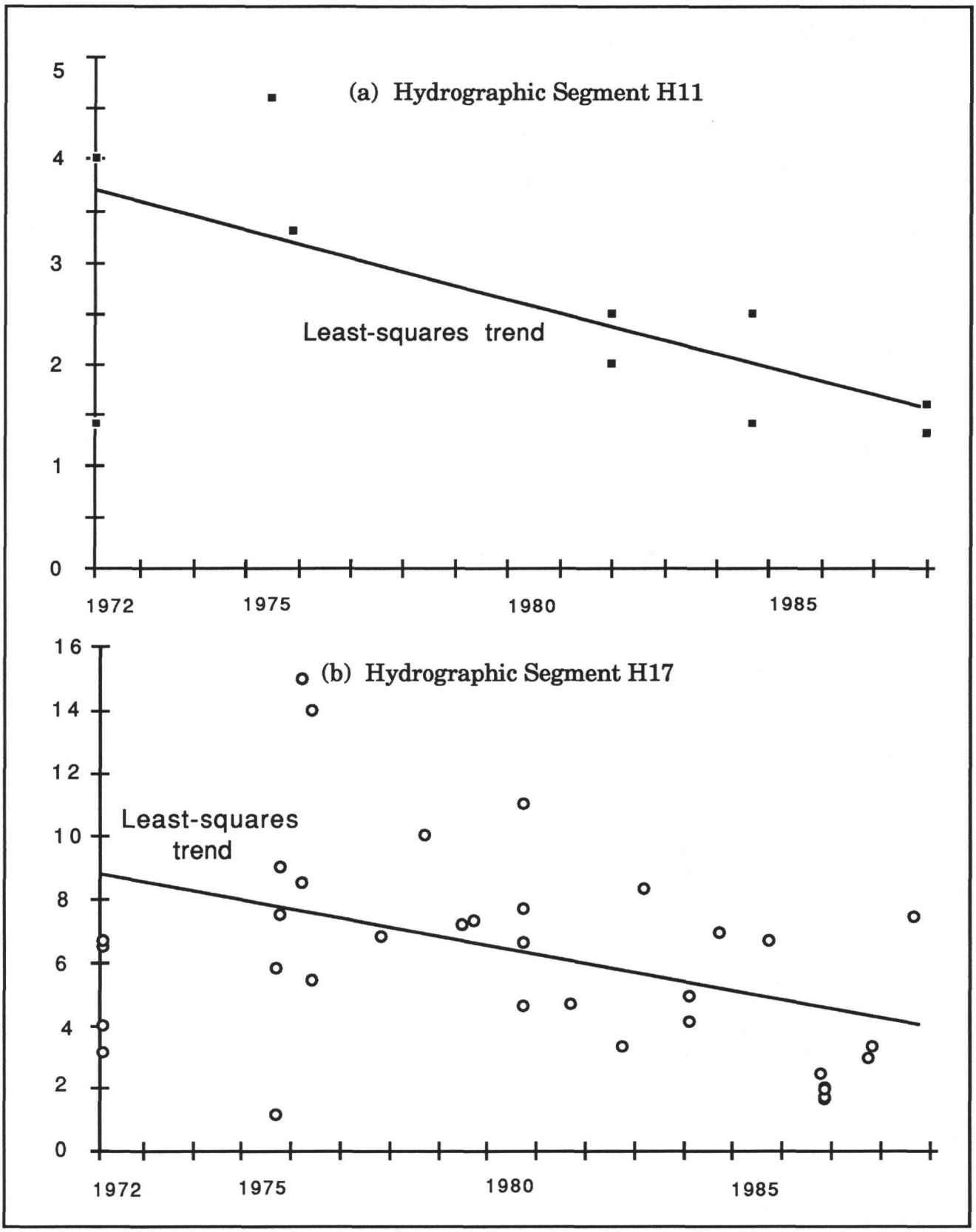


Fig. 6-17 Time Trend of SEDMETAS in upper Houston Ship Channel

Fig. 6-18 Statistical trends over period of record of SEDMETCU in Galveston Bay

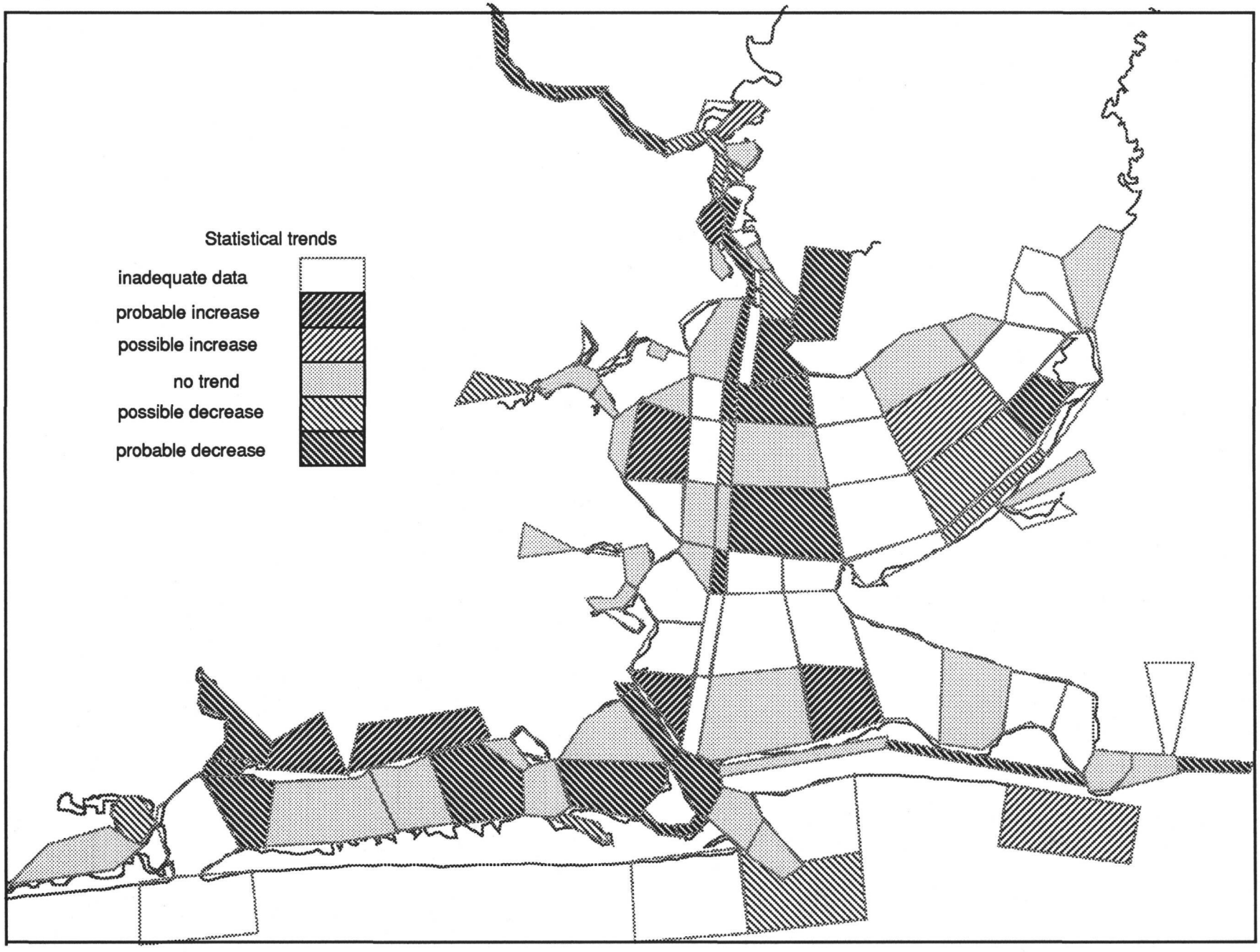


Fig. 6-19 Statistical trends over period of record of SEDMETCR in Galveston Bay

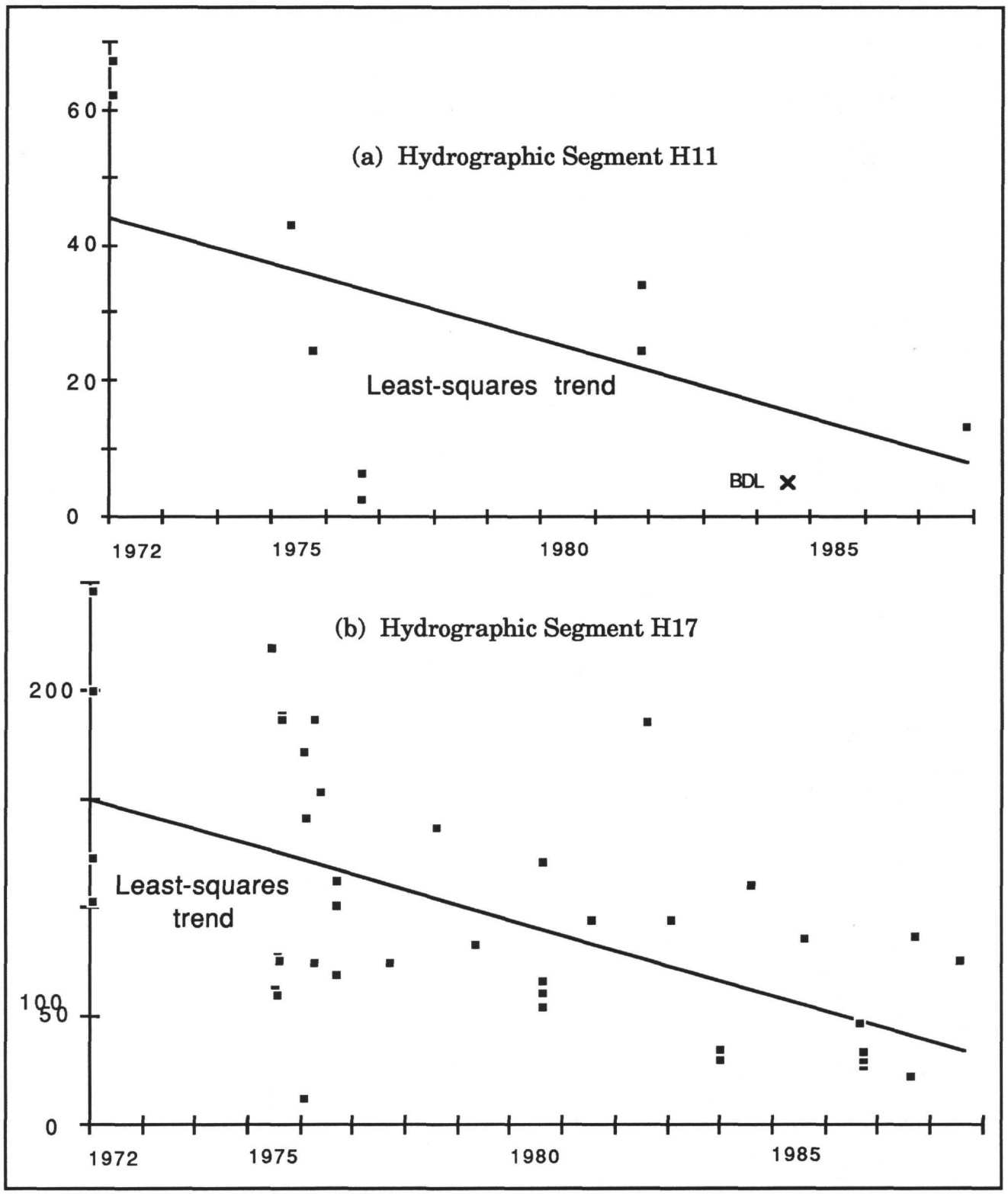


Fig. 6-20 Time Trend of SEDMETCR in upper Houston Ship Channel

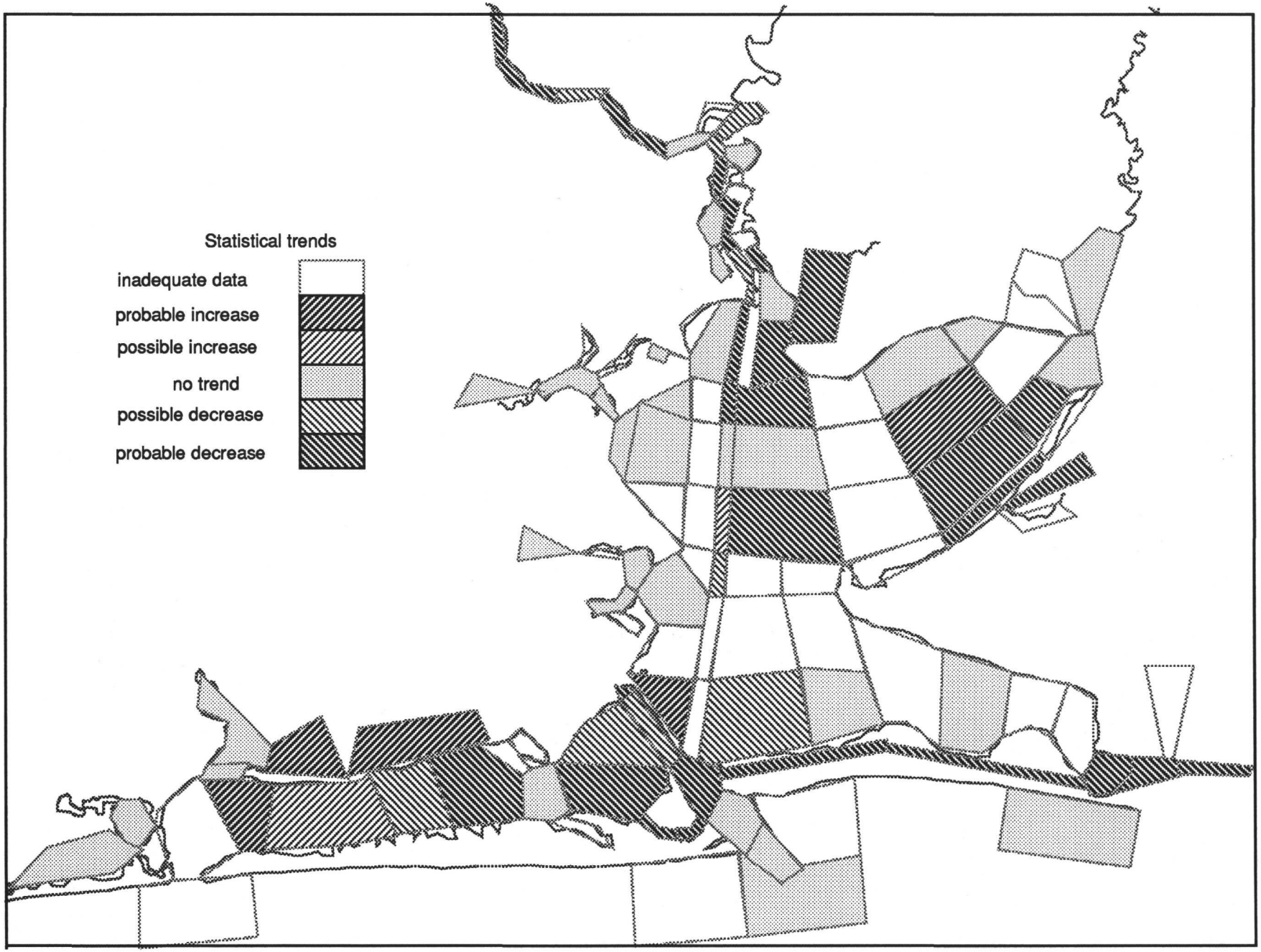


Fig. 6-21 Statistical trends over period of record of SEDMETPB in Galveston Bay

Fig. 6-22 Statistical trends over period of record of SEDMETHG in Galveston Bay

Fig. 6-23 Statistical trends over period of record of SEDMETNI in Galveston Bay

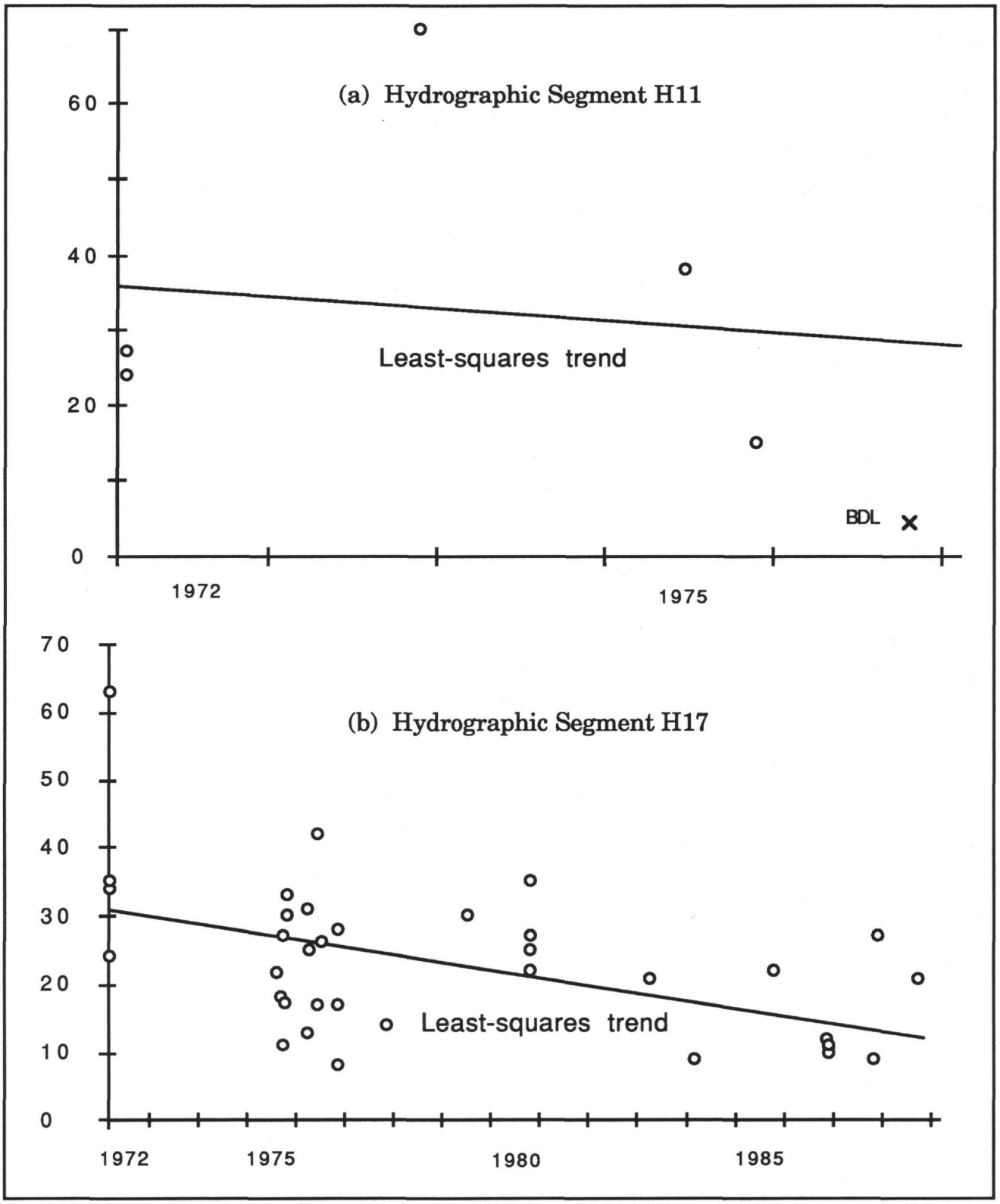


Fig. 6-24 Time Trend of SEDMETNI in upper Houston Ship Channel

Fig. 6-25 Statistical trends over period of record of SEDMETZN in Galveston Bay

6.2 Observations

The conventional organic constitutents in the sediment, *viz.* total phosphorus, oil & grease, Kjeldahl nitrogen, and volatile solids, all exhibit the same general pattern as conventional water-quality parameters loaded in waste discharges and runoff: fairly consistent values in the open bay segments and increasing levels in tributaries and near sources of waste discharge, Figs. 6-1 through 6-4. For all of these parameters, the upper Houston Ship Channel shows systematically elevated concentrations. Time trends are uncertain due to the paucity of data, Figs. 6-13 *et seq.*, though there appears to be a tendency for declining concentrations in the upper Houston Ship Channel, Fig. 6-14.

For the metals, Figs. 6-5 through 6-11, generally the highest concentrations are found in the upper Houston Ship Channel sediments. Clear Lake, and, to a lesser extent, Dickinson Bayou also display generally elevated concentrations, especially arsenic, copper and mercury. The relatively low concentrations of all of these metals in the vicinity of the Trinity River in upper Trinity Bay should be noted. For all of these metals, except perhaps arsenic, where a trend is discernible it is generally declining, Figs. 6-16 *et seq.* This is especially the case in the upper Houston Ship Channel, including in this case, arsenic. (Again, the increasing trends in the segment just north of the Texas City Dike lack validity, being based upon a few measurements in 1974-75.)

As was the case with water quality, the data base for complex organics is even more limited for sediment, with most of the measurements below detection limits. Fig. 6-12 shows the distribution of DDT through the bay sediments. Generally, the highest levels are in the Houston Ship Channel and other points of inflow, especially Cedar Bayou, Clear Creek and *(NB)* the Trinity River. The high concentration in Offatts Bayou should be noted. Data were inadequate for a meaningful trends analysis (see Appendix C).

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