

Table I-16. Between Zone Comparisons of 1998 Surface Sediments Metals (Non-transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean (µg/g)	Minimum (µg/g)	Maximum (µg/g)	Standard Deviation (µg/g)	Coefficient of Variation (%)
Antimony	3	8	A	1.085	0.95	1.14	0.065	5.968
Antimony	4	3	A	1.029	0.947	1.077	0.072	6.951
Antimony	2	8	A	1.022	0.92	1.08	0.047	4.594
Antimony	0	8	A	0.872	0.48	1.513	0.345	39.55
Antimony	1	8	A	0.814	0.67	1.11	0.144	17.684
Arsenic	2	8	A	11.962	8.9	14	1.665	13.916
Arsenic	3	8	A	8.912	7.4	9.9	0.895	10.043
Arsenic	4	3	A	8.422	6.733	10.233	1.753	20.816
Arsenic	0	8	A	8.238	2.5	14.3	4.275	51.899
Arsenic	1	8	A	8.163	5.2	13.1	2.82	34.552
Barium	2	8	A	904.125	870	964	29.381	3.25
Barium	3	8	A	887.792	846	916	26.54	2.989
Barium	4	3	AB	850.556	824.667	864.667	22.451	2.64
Barium	1	8	B	783.208	633	888	72.649	9.276
Barium	0	8	B	775.042	571	957	122.751	15.838
Beryllium	2	8	A	1.308	1.2	1.4	0.096	7.302
Beryllium	3	8	A	1.296	1.2	1.4	0.055	4.224
Beryllium	4	3	A	1.289	1.233	1.333	0.051	3.95
Beryllium	0	8	A	1.25	1	1.4	0.151	12.095
Beryllium	1	8	A	1.163	1	1.4	0.169	14.495
Cadmium	3	8	A	0.154	0.12	0.18	0.021	13.437
Cadmium	4	3	A	0.149	0.14	0.157	0.008	5.634
Cadmium	2	8	B	0.108	0.1	0.123	0.008	7.372
Cadmium	1	8	B	0.102	0.08	0.19	0.036	35.313
Cadmium	0	8	B	0.093	0.07	0.11	0.013	14.148

Table I-16. Between Zone Comparisons of 1998 Surface Sediments Metals (Non-transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean (µg/g)	Minimum (µg/g)	Maximum (µg/g)	Standard Deviation (µg/g)	Coefficient of Variation (%)
Chromium	2	8	A	82.108	69	86	5.513	6.715
Chromium	3	8	A	79.904	73.3	85.7	4.67	5.845
Chromium	4	3	A	78.922	75.8	82.1	3.15	3.992
Chromium	0	8	AB	69.058	47.5	91.6	15.817	22.904
Chromium	1	8	B	63.1	46	77.4	12.133	19.228
Copper	2	8	A	38.783	35.8	40.8	1.515	3.906
Copper	3	8	A	36.496	33	37.8	1.605	4.397
Copper	4	3	A	32.7	31.167	33.8	1.369	4.187
Copper	0	8	A	32.546	20	47.667	10.23	31.431
Copper	1	8	A	28.763	21.5	41.9	6.964	24.213
Lead	3	8	A	14.408	13.6	14.8	0.42	2.918
Lead	4	3	A	14.178	13.833	14.367	0.299	2.107
Lead	2	8	A	13.817	12.8	14.8	0.676	4.89
Lead	1	8	B	11.688	10.1	13.8	1.289	11.028
Lead	0	8	B	11.258	8	14	2.275	20.208
Manganese	2	8	A	1122.208	863	1458	173.82	15.489
Manganese	4	3	B	908.333	748.333	1085.333	169.142	18.621
Manganese	3	8	B	904	687	981	92.088	10.187
Manganese	1	8	B	895.292	708	1049	121.945	13.621
Manganese	0	8	B	830.333	611	999	121.898	14.681
Mercury	4	3	A	0.065	0.062	0.067	0.003	4.198
Mercury	2	8	A	0.062	0.054	0.069	0.006	9.001
Mercury	3	8	A	0.06	0.056	0.066	0.003	4.844
Mercury	0	8	A	0.057	0.028	0.113	0.035	60.725

Table I-16. Between Zone Comparisons of 1998 Surface Sediments Metals (Non-transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean (µg/g)	Minimum (µg/g)	Maximum (µg/g)	Standard Deviation (µg/g)	Coefficient of Variation (%)
Mercury	1	8	A	0.042	0.028	0.054	0.01	25.141
Nickel	3	8	A	38.567	35.6	40.1	1.407	3.648
Nickel	4	3	A	37.556	34.933	39.6	2.386	6.354
Nickel	2	8	A	37.271	32.4	41.7	3.96	10.625
Nickel	0	8	A	36.121	25.9	48.867	8.004	22.159
Nickel	1	8	A	32.117	26.2	38.6	4.181	13.017
Selenium	0	8	A	0.275	0.14	0.487	0.118	42.998
Selenium	2	8	A	0.241	0.1	0.407	0.11	45.694
Selenium	3	8	A	0.238	0.2	0.3	0.034	14.38
Selenium	4	3	A	0.236	0.18	0.27	0.049	20.62
Selenium	1	8	A	0.235	0.13	0.34	0.069	29.394
Silver	3	8	A	0.061	0.057	0.07	0.004	6.383
Silver	4	3	A	0.058	0.05	0.063	0.007	12.01
Silver	2	8	A	0.057	0.033	0.08	0.013	23.318
Silver	1	8	A	0.048	0.01	0.08	0.023	48.346
Silver	0	8	A	0.038	0.01	0.08	0.023	58.793
Thallium	3	8	A	0.496	0.47	0.52	0.018	3.562
Thallium	2	8	A	0.462	0.42	0.5	0.024	5.286
Thallium	4	3	AB	0.459	0.45	0.467	0.008	1.828
Thallium	0	8	B	0.418	0.34	0.51	0.053	12.697
Thallium	1	8	B	0.411	0.33	0.5	0.047	11.438
Tin	3	8	A	1.729	1.64	1.8	0.051	2.973
Tin	2	8	AB	1.601	1.43	1.8	0.148	9.217
Tin	4	3	AB	1.592	1.533	1.643	0.055	3.48

Table I-16. Between Zone Comparisons of 1998 Surface Sediments Metals (Non-transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean (µg/g)	Minimum (µg/g)	Maximum (µg/g)	Standard Deviation (µg/g)	Coefficient of Variation (%)
Tin	1	8	BC	1.379	1.01	1.75	0.283	20.523
Tin	0	8	C	1.18	0.71	1.53	0.313	26.525
Vanadium	3	8	A	153.375	144	159	5.041	3.287
Vanadium	2	8	A	151.458	144	167	8.506	5.616
Vanadium	4	3	AB	144.333	141	146.667	2.963	2.053
Vanadium	0	8	AB	133.542	91	166.333	23.409	17.529
Vanadium	1	8	B	127.375	111	145	9.753	7.657
Zinc	3	8	A	121.042	114	126	4.244	3.506
Zinc	2	8	A	119.375	114	124	3.114	2.609
Zinc	4	3	A	116.667	112.333	119.333	3.786	3.245
Zinc	0	8	B	93.775	64.6	118	19.22	20.496
Zinc	1	8	B	93.292	73.8	118	14.465	15.505

Table I-17. Between Zone Comparisons of 1998 Surface Sediments Metals (Percent Iron Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean (µg/g)	Minimum (µg/g)	Maximum (µg/g)	Standard Deviation (µg/g)	Coefficient of Variation (%)
Antimony	3	8	A	0.24	0.212	0.249	0.012	4.972
Antimony	4	3	A	0.237	0.229	0.244	0.008	3.333
Antimony	2	8	A	0.226	0.212	0.245	0.011	4.991
Antimony	0	8	A	0.217	0.132	0.319	0.058	26.802
Antimony	1	8	A	0.202	0.151	0.254	0.032	16.055
Arsenic	2	8	A	2.643	1.982	3.061	0.333	12.592
Arsenic	0	8	A	2.037	0.689	3.406	0.875	42.953
Arsenic	1	8	A	2.029	1.169	3.061	0.679	33.449
Arsenic	3	8	A	1.967	1.739	2.149	0.164	8.315
Arsenic	4	3	A	1.938	1.626	2.308	0.345	17.776
Barium	2	8	A	200.291	181.07	218.594	11.799	5.891
Barium	0	8	A	199.749	157.3	245.455	30.812	15.425
Barium	4	3	A	196.542	195.038	199.195	2.305	1.173
Barium	3	8	A	196.177	188.419	205.024	5.632	2.871
Barium	1	8	A	195.722	142.247	229.532	25.909	13.237
Beryllium	0	8	A	0.324	0.269	0.405	0.056	17.238
Beryllium	4	3	A	0.298	0.293	0.302	0.004	1.492
Beryllium	2	8	A	0.29	0.247	0.323	0.032	11.104
Beryllium	1	8	A	0.29	0.225	0.359	0.046	15.924
Beryllium	3	8	A	0.286	0.277	0.301	0.007	2.447
Cadmium	4	3	A	0.034	0.032	0.038	0.003	9.165
Cadmium	3	8	A	0.034	0.027	0.039	0.005	13.693
Cadmium	1	8	B	0.025	0.02	0.043	0.008	30.765
Cadmium	0	8	B	0.024	0.02	0.036	0.005	21.847
Cadmium	2	8	B	0.024	0.021	0.027	0.002	9.679

Table I-17. Between Zone Comparisons of 1998 Surface Sediments Metals (Percent Iron Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean (µg/g)	Minimum (µg/g)	Maximum (µg/g)	Standard Deviation (µg/g)	Coefficient of Variation (%)
Chromium	4	3	A	18.234	17.789	18.603	0.412	2.259
Chromium	2	8	A	18.2	14.744	19.501	1.625	8.929
Chromium	3	8	A	17.652	16.28	18.753	0.926	5.244
Chromium	0	8	A	17.566	13.085	20.538	2.443	13.907
Chromium	1	8	A	15.575	12.744	17.94	2.231	14.326
Copper	2	8	A	8.583	8.226	9.252	0.365	4.25
Copper	0	8	A	8.148	5.978	10.049	1.482	18.189
Copper	3	8	A	8.069	7.35	8.9	0.45	5.578
Copper	4	3	A	7.553	7.508	7.624	0.062	0.823
Copper	1	8	A	7.131	4.831	9.588	1.549	21.718
Lead	4	3	A	3.277	3.233	3.341	0.057	1.746
Lead	3	8	AB	3.183	3.118	3.254	0.051	1.596
Lead	2	8	AB	3.055	2.956	3.17	0.08	2.625
Lead	1	8	AB	2.907	2.27	3.158	0.299	10.27
Lead	0	8	B	2.873	2.204	3.406	0.381	13.274
Manganese	2	8	A	247.802	195.692	300	33.231	13.41
Manganese	1	8	AB	221.604	205.013	263.568	19.842	8.954
Manganese	0	8	AB	213.351	176.388	243.066	24.918	11.679
Manganese	4	3	AB	209.178	180.757	244.812	32.631	15.6
Manganese	3	8	B	199.317	164.354	218.486	15.774	7.914
Mercury	4	3	A	0.015	0.014	0.016	0.001	7.634
Mercury	0	8	A	0.014	0.007	0.024	0.007	48.074
Mercury	2	8	A	0.014	0.012	0.016	0.002	11.27
Mercury	3	8	A	0.013	0.012	0.015	0.001	5.706

Table I-17. Between Zone Comparisons of 1998 Surface Sediments Metals (Percent Iron Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean (µg/g)	Minimum (µg/g)	Maximum (µg/g)	Standard Deviation (µg/g)	Coefficient of Variation (%)
Mercury	1	8	A	0.01	0.007	0.014	0.002	23.874
Nickel	0	8	A	9.166	7.778	10.302	0.94	10.253
Nickel	4	3	A	8.67	8.438	8.932	0.249	2.866
Nickel	3	8	A	8.518	8.391	8.794	0.145	1.705
Nickel	2	8	A	8.225	7.483	8.825	0.589	7.166
Nickel	1	8	A	7.991	5.888	8.833	0.989	12.374
Selenium	0	8	A	0.069	0.034	0.103	0.022	31.405
Selenium	1	8	A	0.058	0.033	0.076	0.014	24.024
Selenium	4	3	A	0.055	0.041	0.065	0.013	23.19
Selenium	2	8	A	0.053	0.023	0.091	0.024	45.881
Selenium	3	8	A	0.053	0.043	0.065	0.007	13.54
Silver	3	8	A	0.013	0.012	0.015	0.001	6.794
Silver	4	3	A	0.013	0.011	0.015	0.002	15.068
Silver	2	8	A	0.013	0.007	0.018	0.003	23.676
Silver	1	8	A	0.012	0.003	0.018	0.006	47.428
Silver	0	8	A	0.009	0.003	0.018	0.005	49.475
Thallium	3	8	A	0.11	0.105	0.114	0.003	2.685
Thallium	0	8	A	0.109	0.089	0.149	0.021	19.566
Thallium	4	3	A	0.106	0.104	0.109	0.002	2.342
Thallium	1	8	A	0.103	0.074	0.117	0.014	13.551
Thallium	2	8	A	0.102	0.097	0.107	0.004	3.72
Tin	3	8	A	0.382	0.365	0.402	0.012	3.044
Tin	4	3	AB	0.368	0.346	0.397	0.026	7.069
Tin	2	8	AB	0.354	0.33	0.385	0.021	5.867

Table I-17. Between Zone Comparisons of 1998 Surface Sediments Metals (Percent Iron Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean (µg/g)	Minimum (µg/g)	Maximum (µg/g)	Standard Deviation (µg/g)	Coefficient of Variation (%)
Tin	1	8	AB	0.345	0.227	0.439	0.077	22.402
Tin	0	8	B	0.298	0.196	0.355	0.052	17.447
Vanadium	0	8	A	33.962	32.287	35.507	1.146	3.376
Vanadium	3	8	A	33.884	32.473	34.792	0.783	2.31
Vanadium	2	8	A	33.487	32.051	35.684	1.078	3.218
Vanadium	4	3	A	33.357	32.931	34.058	0.612	1.834
Vanadium	1	8	B	31.641	28.604	33.181	1.551	4.903
Zinc	4	3	A	26.955	26.813	27.134	0.164	0.607
Zinc	3	8	A	26.744	25.39	27.751	0.814	3.043
Zinc	2	8	A	26.427	24.786	27.65	1.036	3.922
Zinc	0	8	B	23.804	20.248	27.251	2.084	8.755
Zinc	1	8	B	23.101	19.303	27.002	2.601	11.26

Table I-18. Between Zone Comparisons of 1998 Surface Sediments Metals and Physical Parameters (Non-Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean (%)	Minimum (%)	Maximum (%)	Standard Deviation (%)	Coefficient of Variation (%)
Aluminum	1	8	A	8.035	7.53	9.37	0.636	7.914
Aluminum	3	8	A	7.988	7.82	8.13	0.109	1.368
Aluminum	2	8	A	7.965	7.65	8.44	0.246	3.084
Aluminum	4	3	A	7.71	7.573	7.813	0.123	1.601
Aluminum	0	8	A	7.44	6.6	7.92	0.452	6.08
Iron	3	8	A	4.527	4.18	4.65	0.147	3.254
Iron	2	8	A	4.522	4.33	4.86	0.195	4.303
Iron	4	3	A	4.329	4.14	4.433	0.164	3.786
Iron	1	8	A	4.033	3.42	4.45	0.35	8.686
Iron	0	8	A	3.924	2.75	4.743	0.627	15.975
Sand	0	8	A	48.166	7.297	78.55	28.698	59.583
Sand	1	8	A	40.811	12.22	68	24.472	59.964
Sand	2	8	B	5.025	1.3	10.53	3.42	68.058
Sand	3	8	B	1.912	0.41	5.317	1.772	92.668
Sand	4	3	B	1.123	0.477	1.92	0.733	65.276
Silt	3	8	A	69.419	58.38	83.86	8.082	11.642
Silt	4	3	A	68.147	62.827	71.21	4.625	6.787
Silt	2	8	A	68.094	63.1	77.04	4.774	7.011
Silt	1	8	B	40.468	14.25	71.06	20.544	50.766
Silt	0	8	B	34.161	7.87	72.14	24.144	70.676
Clay	4	3	A	30.727	28.31	35.25	3.92	12.759
Clay	3	8	A	28.669	15.3	41.21	7.745	27.016
Clay	2	8	A	26.877	20.92	29.61	2.715	10.103
Clay	1	8	B	18.722	6.84	27.35	6.442	34.41
Clay	0	8	B	17.673	11.76	29.73	5.714	32.334
TOC	4	3	A	1.134	1.107	1.177	0.037	3.276
TOC	3	8	A	0.985	0.82	1.15	0.098	9.991
TOC	2	8	AB	0.83	0.59	1.01	0.132	15.962
TOC	0	8	AB	0.816	0.32	1.37	0.356	43.684
TOC	1	8	B	0.605	0.4	0.92	0.202	33.381

Table I-19. Between Zone Comparisons of 1998 Surface Sediments Metals and Physical Parameters (Percent Iron Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean (%)	Minimum (%)	Maximum (%)	Standard Deviation (%)	Coefficient of Variation (%)
Aluminum	1	8	A	2.001	1.739	2.225	0.176	8.778
Aluminum	0	8	A	1.929	1.614	2.4	0.248	12.863
Aluminum	4	3	A	1.782	1.747	1.829	0.043	2.389
Aluminum	3	8	A	1.766	1.723	1.895	0.055	3.137
Aluminum	2	8	A	1.763	1.652	1.914	0.08	4.554
Iron	3	8	A	4.527	4.18	4.65	0.147	3.254
Iron	2	8	A	4.522	4.33	4.86	0.195	4.303
Iron	4	3	A	4.329	4.14	4.433	0.164	3.786
Iron	1	8	A	4.033	3.42	4.45	0.35	8.686
Iron	0	8	A	3.924	2.75	4.743	0.627	15.975
Sand	0	8	A	0.751	0.274	1.089	0.325	43.305
Sand	1	8	A	0.68	0.357	0.97	0.265	39.011
Sand	2	8	B	0.214	0.114	0.33	0.082	38.458
Sand	3	8	B	0.127	0.064	0.233	0.061	47.692
Sand	4	3	B	0.102	0.069	0.139	0.035	34.296
Silt	3	8	A	0.988	0.87	1.157	0.091	9.189
Silt	4	3	A	0.972	0.915	1.004	0.049	5.064
Silt	2	8	A	0.972	0.918	1.071	0.052	5.366
Silt	1	8	B	0.681	0.387	1.003	0.219	32.198
Silt	0	8	B	0.605	0.284	1.015	0.269	44.406
Clay	4	3	A	0.587	0.561	0.636	0.042	7.176
Clay	3	8	A	0.562	0.402	0.697	0.088	15.674
Clay	2	8	A	0.545	0.475	0.575	0.031	5.765
Clay	1	8	B	0.442	0.265	0.55	0.089	20.149
Clay	0	8	B	0.43	0.35	0.577	0.072	16.746
TOC	4	3	A	0.107	0.105	0.109	0.002	1.638
TOC	3	8	A	0.099	0.091	0.107	0.005	5.028
TOC	2	8	AB	0.091	0.077	0.101	0.008	8.267
TOC	0	8	AB	0.088	0.057	0.117	0.02	23.035
TOC	1	8	B	0.077	0.063	0.096	0.013	16.436

Table I-20. Results of Organic Compound Parameters in 1998 Surface Sediments (Non-transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
Total S/T (µg/g)	3	8	A	0.03	0.021	0.072	0.017	57.514
Total S/T (µg/g)	0	8	A	0.027	0.009	0.069	0.022	79.961
Total S/T (µg/g)	4	3	A	0.025	0.024	0.027	0.001	4.601
Total S/T (µg/g)	2	8	A	0.021	0.017	0.026	0.004	16.911
Total S/T (µg/g)	1	8	A	0.016	0.011	0.021	0.004	24.246
T19-Hopane (µg/g)	3	8	A	0.006	0.004	0.016	0.004	74.763
T19-Hopane (µg/g)	4	3	A	0.004	0.004	0.004	0	1.312
T19-Hopane (µg/g)	2	8	A	0.004	0.002	0.005	0.001	22.64
T19-Hopane (µg/g)	1	8	A	0.003	0.002	0.004	0.001	37.821
T19-Hopane (µg/g)	0	8	A	0.002	0.001	0.004	0.001	61.322
Ts/(Ts+Tm)	1	8	A	0.33	0.293	0.363	0.021	6.442
Ts/(Ts+Tm)	2	8	A	0.318	0.259	0.353	0.034	10.686
Ts/(Ts+Tm)	3	8	A	0.293	0.167	0.423	0.083	28.389
Ts/(Ts+Tm)	0	8	A	0.282	0.191	0.456	0.079	27.922
Ts/(Ts+Tm)	4	3	A	0.27	0.24	0.288	0.026	9.733
Oleanane/Hopane	2	8	A	0.178	0.121	0.204	0.026	14.866
Oleanane/Hopane	1	8	AB	0.172	0.075	0.218	0.049	28.537
Oleanane/Hopane	4	3	AB	0.168	0.159	0.174	0.008	4.494
Oleanane/Hopane	3	8	AB	0.144	0.106	0.177	0.022	15.044
Oleanane/Hopane	0	8	B	0.119	0.094	0.206	0.037	30.835
T21/T22	2	8	A	0.511	0.342	0.65	0.105	20.593
T21/T22	3	8	A	0.479	0.339	0.736	0.116	24.254
T21/T22	4	3	A	0.413	0.379	0.45	0.036	8.65
T21/T22	1	8	A	0.384	0.161	0.741	0.221	57.593
T21/T22	0	8	B	0.154	0.059	0.378	0.1	64.85

Table I-20. Results of Organic Compound Parameters in 1998 Surface Sediments (Non-transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
Total PAH (µg/g)	4	3	A	0.604	0.537	0.65	0.06	9.901
Total PAH (µg/g)	2	8	A	0.525	0.29	0.687	0.133	25.444
Total PAH (µg/g)	3	8	A	0.501	0.36	0.55	0.06	11.991
Total PAH (µg/g)	1	8	B	0.33	0.12	0.73	0.198	60.096
Total PAH (µg/g)	0	8	B	0.2	0.066	0.42	0.119	59.56
Perylene (µg/g)	4	3	A	0.022	0.02	0.025	0.003	12.031
Perylene (µg/g)	0	8	A	0.022	0.002	0.065	0.024	109.603
Perylene (µg/g)	3	8	A	0.019	0.015	0.022	0.003	14.093
Perylene (µg/g)	2	8	A	0.013	0.01	0.018	0.003	21.05
Perylene (µg/g)	1	8	A	0.008	0.004	0.013	0.003	39.217
Petrogenic PAH (µg/g)	4	3	A	0.541	0.478	0.581	0.055	10.155
Petrogenic PAH (µg/g)	2	8	A	0.473	0.254	0.625	0.124	26.267
Petrogenic PAH (µg/g)	3	8	A	0.447	0.313	0.492	0.057	12.719
Petrogenic PAH (µg/g)	1	8	B	0.297	0.101	0.668	0.184	61.94
Petrogenic PAH (µg/g)	0	8	C	0.156	0.056	0.316	0.085	54.644
Pyrogenic PAH (µg/g)	4	3	A	0.042	0.04	0.045	0.002	5.824
Pyrogenic PAH (µg/g)	2	8	A	0.038	0.022	0.048	0.009	23.662
Pyrogenic PAH (µg/g)	3	8	A	0.036	0.029	0.041	0.005	13.01
Pyrogenic PAH (µg/g)	1	8	A	0.025	0.011	0.056	0.015	60.955
Pyrogenic PAH (µg/g)	0	8	A	0.022	0.005	0.053	0.019	84.783
C2D/C2P	0	8	A	0.17	0.14	0.214	0.022	12.835
C2D/C2P	3	8	A	0.168	0.151	0.175	0.009	5.43
C2D/C2P	4	3	A	0.163	0.159	0.166	0.004	2.176
C2D/C2P	1	8	A	0.156	0.137	0.179	0.013	8.636

Table I-20. Results of Organic Compound Parameters in 1998 Surface Sediments (Non-transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
C2D/C2P	2	8	A	0.156	0.144	0.165	0.006	3.813
C3D/C3P	0	8	A	0.212	0.146	0.291	0.05	23.655
C3D/C3P	1	8	AB	0.176	0.119	0.221	0.032	17.976
C3D/C3P	2	8	AB	0.176	0.153	0.191	0.011	6.438
C3D/C3P	3	8	AB	0.172	0.155	0.2	0.015	8.851
C3D/C3P	4	3	B	0.137	0.113	0.169	0.029	20.902
N/P	4	3	A	1.183	1.063	1.26	0.105	8.862
N/P	0	8	A	1.163	0.915	1.422	0.176	15.158
N/P	3	8	A	1.158	1.051	1.34	0.116	10
N/P	2	8	A	1.153	1.069	1.217	0.056	4.858
N/P	1	8	A	1.086	0.896	1.271	0.119	10.957
nC16/(nC15+nC17)	4	3	A	0.366	0.324	0.396	0.037	10.147
nC16/(nC15+nC17)	2	8	A	0.366	0.34	0.394	0.021	5.722
nC16/(nC15+nC17)	3	8	A	0.349	0.301	0.429	0.053	15.221
nC16/(nC15+nC17)	0	8	A	0.343	0.222	0.447	0.067	19.608
nC16/(nC15+nC17)	1	8	A	0.331	0.3	0.395	0.03	9.087
Pyrogenic/Petrogenic	0	8	A	0.128	0.078	0.267	0.063	49.19
Pyrogenic/Petrogenic	1	8	A	0.085	0.07	0.105	0.012	13.82
Pyrogenic/Petrogenic	3	8	A	0.081	0.069	0.092	0.008	10.43
Pyrogenic/Petrogenic	2	8	A	0.08	0.075	0.088	0.004	5.123
Pyrogenic/Petrogenic	4	3	A	0.078	0.074	0.084	0.005	6.391
Pristane (µg/g)	4	3	A	0.142	0.123	0.173	0.027	19.089
Pristane (µg/g)	2	8	A	0.126	0.07	0.167	0.032	25.319
Pristane (µg/g)	3	8	A	0.11	0.081	0.14	0.017	15.88

Table I-20. Results of Organic Compound Parameters in 1998 Surface Sediments (Non-transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
Pristane (µg/g)	0	8	A	0.106	0.011	0.4	0.127	120.188
Pristane (µg/g)	1	8	A	0.102	0.041	0.21	0.058	56.296
nC15+nC17 (µg/g)	4	3	A	0.099	0.092	0.112	0.011	11.604
nC15+nC17 (µg/g)	3	8	A	0.097	0.077	0.121	0.017	17.783
nC15+nC17 (µg/g)	2	8	A	0.09	0.057	0.108	0.019	21.423
nC15+nC17 (µg/g)	1	8	AB	0.072	0.038	0.172	0.046	63.568
nC15+nC17 (µg/g)	0	8	B	0.041	0.016	0.087	0.025	61.476
nC27+nC29+nC31 (µg/g)	0	8	A	0.507	0.139	1.55	0.483	95.101
nC27+nC29+nC31 (µg/g)	3	8	A	0.506	0.39	0.58	0.066	13.1
nC27+nC29+nC31 (µg/g)	4	3	A	0.487	0.447	0.523	0.038	7.902
nC27+nC29+nC31 (µg/g)	2	8	A	0.367	0.314	0.439	0.043	11.663
nC27+nC29+nC31 (µg/g)	1	8	A	0.339	0.169	0.54	0.132	38.972
TALK (µg/g)	4	3	A	2.04	1.838	2.253	0.208	10.185
TALK (µg/g)	3	8	A	1.914	1.612	2.07	0.139	7.24
TALK (µg/g)	2	8	A	1.522	1.215	1.81	0.216	14.22
TALK (µg/g)	1	8	A	1.484	0.896	2.26	0.443	29.881
TALK (µg/g)	0	8	A	1.391	0.523	3.268	0.93	66.847
Isoprenoids (µg/g)	4	3	A	0.207	0.19	0.234	0.023	11.251
Isoprenoids (µg/g)	2	8	A	0.187	0.103	0.246	0.047	25.281
Isoprenoids (µg/g)	3	8	A	0.167	0.128	0.199	0.021	12.47
Isoprenoids (µg/g)	1	8	A	0.14	0.057	0.301	0.081	57.888
Isoprenoids (µg/g)	0	8	A	0.128	0.019	0.419	0.129	101.369
LALK (µg/g)	4	3	A	0.658	0.651	0.669	0.009	1.407
LALK (µg/g)	2	8	A	0.632	0.424	0.792	0.126	19.956

Table I-20. Results of Organic Compound Parameters in 1998 Surface Sediments (Non-transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
LALK (µg/g)	3	8	A	0.572	0.505	0.637	0.054	9.463
LALK (µg/g)	1	8	A	0.434	0.195	0.958	0.242	55.912
LALK (µg/g)	0	8	A	0.402	0.094	0.866	0.277	68.963
Phytane/Pristane	3	8	A	0.113	0.076	0.136	0.021	18.39
Phytane/Pristane	2	8	A	0.102	0.089	0.125	0.012	11.65
Phytane/Pristane	4	3	A	0.097	0.087	0.103	0.009	9.554
Phytane/Pristane	0	8	A	0.093	0	0.205	0.072	77.634
Phytane/Pristane	1	8	A	0.087	0.056	0.109	0.018	20.239
CPI	0	8	A	5.41	2.682	8.208	2.123	39.237
CPI	3	8	B	3.598	2.89	4.352	0.43	11.953
CPI	2	8	B	3.433	2.856	5	0.703	20.487
CPI	1	8	B	3.103	1.69	4.788	0.973	31.346
CPI	4	3	B	3.076	2.865	3.252	0.196	6.376
Total petroleum hydrocarbons (µg/g)	4	3	A	35.778	30.667	43.333	6.678	18.665
Total petroleum hydrocarbons (µg/g)	3	8	A	33.25	24	42	6.585	19.803
Total petroleum hydrocarbons (µg/g)	2	8	A	25.75	21	31	3.576	13.886
Total petroleum hydrocarbons (µg/g)	0	8	A	25.504	6.8	54.333	18.095	70.95
Total petroleum hydrocarbons (µg/g)	1	8	A	23.583	14	39	8.18	34.686

Table I-21. Results of Organic Compound Parameters in 1998 Surface Sediments (Total Organic Carbon Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
Total S/T (µg/g)	0	8	A	0.033	0.008	0.069	0.018	55.381
Total S/T (µg/g)	3	8	A	0.03	0.022	0.069	0.016	52.282
Total S/T (µg/g)	1	8	A	0.028	0.022	0.033	0.004	14.373
Total S/T (µg/g)	2	8	A	0.025	0.022	0.03	0.003	11.694
Total S/T (µg/g)	4	3	A	0.022	0.022	0.023	0	1.684
T19-Hopane (µg/g)	3	8	A	0.006	0.004	0.015	0.004	69.096
T19-Hopane (µg/g)	2	8	A	0.004	0.004	0.006	0.001	12.449
T19-Hopane (µg/g)	1	8	A	0.004	0.003	0.006	0.001	16.19
T19-Hopane (µg/g)	4	3	A	0.004	0.004	0.004	0	2.578
T19-Hopane (µg/g)	0	8	A	0.003	0.001	0.004	0.001	32.754
Ts/(Ts+Tm)	1	8	A	0.33	0.293	0.363	0.021	6.442
Ts/(Ts+Tm)	2	8	A	0.318	0.259	0.353	0.034	10.686
Ts/(Ts+Tm)	3	8	A	0.293	0.167	0.423	0.083	28.389
Ts/(Ts+Tm)	0	8	A	0.282	0.191	0.456	0.079	27.922
Ts/(Ts+Tm)	4	3	A	0.27	0.24	0.288	0.026	9.733
Oleanane/Hopane	2	8	A	0.178	0.121	0.204	0.026	14.866
Oleanane/Hopane	1	8	AB	0.172	0.075	0.218	0.049	28.537
Oleanane/Hopane	4	3	AB	0.168	0.159	0.174	0.008	4.494
Oleanane/Hopane	3	8	AB	0.144	0.106	0.177	0.022	15.044
Oleanane/Hopane	0	8	B	0.119	0.094	0.206	0.037	30.835
T21/T22	2	8	A	0.511	0.342	0.65	0.105	20.593
T21/T22	3	8	A	0.479	0.339	0.736	0.116	24.254
T21/T22	4	3	A	0.413	0.379	0.45	0.036	8.65
T21/T22	1	8	A	0.384	0.161	0.741	0.221	57.593
T21/T22	0	8	B	0.154	0.059	0.378	0.1	64.85

Table I-21. Results of Organic Compound Parameters in 1998 Surface Sediments (Total Organic Carbon Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
Total PAH (µg/g)	2	8	A	0.628	0.492	0.819	0.11	17.556
Total PAH (µg/g)	4	3	A	0.534	0.456	0.58	0.068	12.736
Total PAH (µg/g)	1	8	A	0.53	0.255	0.793	0.204	38.497
Total PAH (µg/g)	3	8	A	0.512	0.371	0.598	0.07	13.658
Total PAH (µg/g)	0	8	B	0.237	0.167	0.348	0.068	28.728
Perylene (µg/g)	0	8	A	0.024	0.002	0.065	0.02	84.554
Perylene (µg/g)	4	3	A	0.02	0.017	0.022	0.003	14.317
Perylene (µg/g)	3	8	A	0.019	0.015	0.023	0.002	11.963
Perylene (µg/g)	2	8	A	0.016	0.013	0.02	0.002	13.07
Perylene (µg/g)	1	8	A	0.014	0.008	0.033	0.008	57.649
Petrogenic PAH (µg/g)	2	8	A	0.565	0.431	0.747	0.105	18.629
Petrogenic PAH (µg/g)	4	3	A	0.478	0.406	0.519	0.062	13.006
Petrogenic PAH (µg/g)	1	8	A	0.477	0.214	0.727	0.193	40.522
Petrogenic PAH (µg/g)	3	8	A	0.456	0.322	0.542	0.067	14.712
Petrogenic PAH (µg/g)	0	8	B	0.187	0.14	0.277	0.045	23.855
Pyrogenic PAH (µg/g)	2	8	A	0.045	0.038	0.058	0.007	15.175
Pyrogenic PAH (µg/g)	1	8	AB	0.039	0.022	0.061	0.014	34.531
Pyrogenic PAH (µg/g)	4	3	AB	0.037	0.034	0.04	0.003	8.125
Pyrogenic PAH (µg/g)	3	8	AB	0.037	0.03	0.043	0.004	10.983
Pyrogenic PAH (µg/g)	0	8	B	0.025	0.014	0.048	0.014	57.194
C2D/C2P	1	8	A	0.28	0.179	0.382	0.08	28.632
C2D/C2P	0	8	AB	0.251	0.134	0.516	0.127	50.455
C2D/C2P	2	8	AB	0.192	0.158	0.263	0.035	18.222
C2D/C2P	3	8	AB	0.173	0.132	0.213	0.025	14.419

Table I-21. Results of Organic Compound Parameters in 1998 Surface Sediments (Total Organic Carbon Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
C2D/C2P	4	3	B	0.144	0.135	0.148	0.007	5.159
C3D/C3P	0	8	A	0.212	0.146	0.291	0.05	23.655
C3D/C3P	1	8	AB	0.176	0.119	0.221	0.032	17.976
C3D/C3P	2	8	AB	0.176	0.153	0.191	0.011	6.438
C3D/C3P	3	8	AB	0.172	0.155	0.2	0.015	8.851
C3D/C3P	4	3	B	0.137	0.113	0.169	0.029	20.902
N/P	4	3	A	1.183	1.063	1.26	0.105	8.862
N/P	0	8	A	1.163	0.915	1.422	0.176	15.158
N/P	3	8	A	1.158	1.051	1.34	0.116	10
N/P	2	8	A	1.153	1.069	1.217	0.056	4.858
N/P	1	8	A	1.086	0.896	1.271	0.119	10.957
nC16/(nC15+nC17)	4	3	A	0.366	0.324	0.396	0.037	10.147
nC16/(nC15+nC17)	2	8	A	0.366	0.34	0.394	0.021	5.722
nC16/(nC15+nC17)	3	8	A	0.349	0.301	0.429	0.053	15.221
nC16/(nC15+nC17)	0	8	A	0.343	0.222	0.447	0.067	19.608
nC16/(nC15+nC17)	1	8	A	0.331	0.3	0.395	0.03	9.087
Pyrogenic/Petrogenic	0	8	A	0.128	0.078	0.267	0.063	49.19
Pyrogenic/Petrogenic	1	8	A	0.085	0.07	0.105	0.012	13.82
Pyrogenic/Petrogenic	3	8	A	0.081	0.069	0.092	0.008	10.43
Pyrogenic/Petrogenic	2	8	A	0.08	0.075	0.088	0.004	5.123
Pyrogenic/Petrogenic	4	3	A	0.078	0.074	0.084	0.005	6.391
Pristane (µg/g)	1	8	A	0.172	0.087	0.356	0.088	51.139
Pristane (µg/g)	2	8	A	0.151	0.119	0.193	0.025	16.797
Pristane (µg/g)	4	3	A	0.125	0.111	0.147	0.02	15.613

Table I-21. Results of Organic Compound Parameters in 1998 Surface Sediments (Total Organic Carbon Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
Pristane (µg/g)	0	8	A	0.125	0.028	0.488	0.156	124.66
Pristane (µg/g)	3	8	A	0.112	0.084	0.134	0.015	13.189
nC15+nC17 (µg/g)	1	8	A	0.114	0.065	0.187	0.04	35.225
nC15+nC17 (µg/g)	2	8	A	0.108	0.09	0.125	0.011	10.424
nC15+nC17 (µg/g)	3	8	A	0.099	0.082	0.12	0.013	13.557
nC15+nC17 (µg/g)	4	3	A	0.087	0.083	0.095	0.007	8.236
nC15+nC17 (µg/g)	0	8	B	0.049	0.03	0.067	0.014	27.891
nC27+nC29+nC31 (µg/g)	0	8	A	0.614	0.117	1.54	0.422	68.763
nC27+nC29+nC31 (µg/g)	1	8	A	0.572	0.376	0.915	0.208	36.34
nC27+nC29+nC31 (µg/g)	3	8	A	0.522	0.371	0.683	0.108	20.614
nC27+nC29+nC31 (µg/g)	2	8	A	0.455	0.339	0.695	0.108	23.778
nC27+nC29+nC31 (µg/g)	4	3	A	0.43	0.38	0.467	0.045	10.537
TALK (µg/g)	1	8	A	2.51	1.669	3.293	0.474	18.891
TALK (µg/g)	3	8	AB	1.965	1.536	2.398	0.285	14.48
TALK (µg/g)	2	8	AB	1.845	1.627	2.059	0.136	7.398
TALK (µg/g)	4	3	AB	1.803	1.562	2.012	0.227	12.57
TALK (µg/g)	0	8	B	1.713	0.627	3.246	0.776	45.327
Isoprenoids (µg/g)	1	8	A	0.231	0.116	0.439	0.108	46.629
Isoprenoids (µg/g)	2	8	A	0.224	0.175	0.283	0.036	16.114
Isoprenoids (µg/g)	4	3	A	0.182	0.171	0.198	0.014	7.867
Isoprenoids (µg/g)	3	8	A	0.17	0.132	0.201	0.019	11.298
Isoprenoids (µg/g)	0	8	A	0.151	0.05	0.51	0.156	103.016
LALK (µg/g)	2	8	A	0.761	0.634	0.904	0.085	11.138
LALK (µg/g)	1	8	A	0.701	0.414	1.065	0.238	33.882

Table I-21. Results of Organic Compound Parameters in 1998 Surface Sediments (Total Organic Carbon Transformed) Using Student-Newman-Keuls Test.

Analyte	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
LALK (µg/g)	3	8	A	0.583	0.536	0.677	0.047	8.083
LALK (µg/g)	4	3	A	0.58	0.568	0.591	0.011	1.975
LALK (µg/g)	0	8	A	0.48	0.22	1.056	0.297	61.949
Phytane/Pristane	0	8	A	0.169	0	0.54	0.192	113.256
Phytane/Pristane	1	8	A	0.152	0.109	0.213	0.038	24.957
Phytane/Pristane	2	8	A	0.127	0.097	0.182	0.028	21.784
Phytane/Pristane	3	8	A	0.115	0.087	0.145	0.021	18.506
Phytane/Pristane	4	3	A	0.086	0.074	0.093	0.011	12.54
CPI	0	8	A	5.41	2.682	8.208	2.123	39.237
CPI	3	8	B	3.598	2.89	4.352	0.43	11.953
CPI	2	8	B	3.433	2.856	5	0.703	20.487
CPI	1	8	B	3.103	1.69	4.788	0.973	31.346
CPI	4	3	B	3.076	2.865	3.252	0.196	6.376
Total petroleum hydrocarbons (µg/g)	1	8	A	39.133	30.682	46.809	5.468	13.974
Total petroleum hydrocarbons (µg/g)	3	8	A	34.37	22.857	45.122	9.054	26.343
Total petroleum hydrocarbons (µg/g)	4	3	A	31.624	26.062	38.69	6.447	20.386
Total petroleum hydrocarbons (µg/g)	2	8	A	31.329	25.743	37.349	3.618	11.549
Total petroleum hydrocarbons (µg/g)	0	8	A	29.86	12.605	53.974	14.451	48.394

Table I-22. Results of 1998 Biologic/Sediment Parameters (Non-Transformed) Using Student-Newman-Keuls Test.

Analyte¹	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
Benzo[a]pyrene Equivalent	4	3	A	3.133	3	3.4	0.231	7.37
Benzo[a]pyrene Equivalent	3	5	A	3.04	2.5	3.8	0.541	17.806
Benzo[a]pyrene Equivalent	2	5	AB	2.26	1.8	2.8	0.422	18.668
Benzo[a]pyrene Equivalent	1	4	AB	2.075	1.4	2.7	0.624	30.064
Benzo[a]pyrene Equivalent	0	8	B	1.413	0.4	2.4	0.792	56.057
TEQ	4	3	A	0.19	0.18	0.21	0.017	9.116
TEQ	3	5	AB	0.182	0.15	0.23	0.033	17.973
TEQ	2	5	ABC	0.138	0.11	0.17	0.026	18.757
TEQ	1	4	BC	0.123	0.08	0.16	0.039	31.528
TEQ	0	8	C	0.084	0.03	0.14	0.045	53.755
Mean Crude Oil Emulsifiers	2	8	A	47.375	0	302	104.672	220.944
Mean Crude Oil Emulsifiers	0	8	A	12.625	0	56	23.561	186.623
Mean Crude Oil Emulsifiers	3	8	A	10.5	0	84	29.698	282.843
Mean Crude Oil Emulsifiers	1	8	A	0	0	0	0	
Mean Crude Oil Emulsifiers	4	3	A	0	0	0	0	
Mean Marine Heterotrophs	0	8	A	1183608.8	8443.997	7870544	2705535	228.584
Mean Marine Heterotrophs	2	8	A	158305.62	93398.383	437014.47	114225.49	72.155
Mean Marine Heterotrophs	4	3	A	141362.47	63498.629	250187.17	97118.92	68.702
Mean Marine Heterotrophs	1	8	A	98441.624	9405.624	305966.03	92817.382	94.287
Mean Marine Heterotrophs	3	8	A	74179.694	54054	113273	18601.417	25.076
Mean % Survival	3	4	A	94.063	91.25	95	1.875	1.993
Mean % Survival	2	1	A	93.75	93.75	93.75		
Mean % Survival	0	2	A	91.25	90	92.5	1.768	1.937

¹ units for parameters are as follows: Benzo[a]pyrene Equivalent (µg/g), TEQ (ng/g), Mean Crude Oil Emulsifiers and Marine Heterotrophs (microorganisms/g sediment)

Table I-23. Results of 1998 Biologic/Sediment Parameters (Total Organic Carbon Transformed) Using Student-Newman-Keuls Test.

Analyte¹	Zone	n	Significantly Different Zones	Mean	Minimum	Maximum	Standard Deviation	Coefficient of Variation (%)
Benzo[a]pyrene Equivalent	3	5	A	3.152	2.813	3.617	0.314	9.974
Benzo[a]pyrene Equivalent	1	4	A	2.976	2.629	3.5	0.372	12.498
Benzo[a]pyrene Equivalent	4	3	A	2.76	2.679	2.89	0.114	4.117
Benzo[a]pyrene Equivalent	2	5	A	2.737	2.143	3.133	0.402	14.703
Benzo[a]pyrene Equivalent	0	8	B	1.64	1.25	2.086	0.338	20.635
TEQ	3	5	A	0.189	0.167	0.213	0.018	9.51
TEQ	1	4	A	0.175	0.155	0.2	0.019	10.762
TEQ	4	3	A	0.167	0.161	0.178	0.01	5.823
TEQ	2	5	A	0.167	0.131	0.193	0.024	14.545
TEQ	0	8	B	0.099	0.064	0.119	0.019	19.424
Mean Crude Oil Emulsifiers	2	8	A	65.067	0	431.429	149.766	230.173
Mean Crude Oil Emulsifiers	0	8	A	22.574	0	95.745	41.901	185.613
Mean Crude Oil Emulsifiers	3	8	A	12.805	0	102.439	36.218	282.843
Mean Crude Oil Emulsifiers	1	8	A	0	0	0	0	
Mean Crude Oil Emulsifiers	4	3	A	0	0	0	0	
Mean Marine Heterotrophs	0	8	A	1522403.5	7095.796	9598224.5	3270940	214.854
Mean Marine Heterotrophs	2	8	A	213624.11	96879.758	740702.52	214256.04	100.296
Mean Marine Heterotrophs	1	8	A	159098.36	20901.387	332571.77	118248.71	74.324
Mean Marine Heterotrophs	4	3	A	126203.48	53964.843	226072.74	89318.928	70.774
Mean Marine Heterotrophs	3	8	A	75773.514	54121.825	107879.05	18679.981	24.652
Mean % Survival	3	4	A	1.327	1.27	1.345	0.037	2.819
Mean % Survival	2	1	A	1.318	1.318	1.318		
Mean % Survival	0	2	A	1.271	1.249	1.293	0.031	2.467

¹ units for parameters are as follows: Benzo[a]pyrene Equivalent (µg/g), TEQ (ng/g), Mean Crude Oil Emulsifiers and Marine Heterotrophs (microorganisms/g sediment)

Table I-24. Between Zone Comparisons for Combined 1997 and 1998 Surface Sediment Metals and Physical Parameters (Non-Transformed) Using GLM/Bonferroni Test.

Analyte	Zone	Different at <= 0.05	Least Square Mean (µg/g)	Standard Deviation (µg/g)
Barium	3	A	890.833	33.941
Barium	2	AB	875.25	48
Barium	1	AB	799.583	48
Barium	0	B	766.729	24
Cadmium	3	A	0.167	0.009
Cadmium	1	AB	0.131	0.013
Cadmium	2	B	0.117	0.013
Cadmium	0	B	0.092	0.006
Iron	3	A	4.543	0.175
Iron	2	A	4.47	0.247
Iron	1	A	4.038	0.247
Iron	0	A	3.958	0.123
Lead	3	A	14.292	0.613
Lead	2	A	14.025	0.867
Lead	1	AB	12.383	0.867
Lead	0	B	11.156	0.434
Manganese	2	A	1048.75	56.313
Manganese	1	AB	973.167	56.313
Manganese	3	AB	904.125	39.819
Manganese	0	B	824.5	28.156
Silver	3	A	0.073	0.008
Silver	1	A	0.071	0.011
Silver	2	A	0.068	0.011
Silver	0	A	0.056	0.006
Thallium	3	A	0.488	0.014
Thallium	2	AB	0.467	0.019
Thallium	0	B	0.413	0.01
Thallium	1	B	0.407	0.019
Tin	3	A	1.78	0.086
Tin	2	AB	1.722	0.121
Tin	1	AB	1.412	0.121
Tin	0	B	1.34	0.061
Zinc	3	A	124.083	5.45
Zinc	2	AB	116.917	7.707
Zinc	1	AB	99.358	7.707
Zinc	0	B	97.446	3.854
Aluminum	2	A	7.754	0.221
Aluminum	3	A	7.628	0.156
Aluminum	1	A	7.514	0.221
Aluminum	0	A	7.363	0.11
Sand	0	A	45.146	5.604

Table I-24. Between Zone Comparisons for Combined 1997 and 1998 Surface Sediment Metals and Physical Parameters (Non-Transformed) Using GLM/Bonferroni Test.

Analyte	Zone	Different at <= 0.05	Least Square Mean (µg/g)	Standard Deviation (µg/g)
Sand	1	AB	29.426	11.208
Sand	2	B	2.593	11.208
Sand	3	B	1.693	7.925
Silt	3	A	61.275	5.97
Silt	2	AB	57.542	8.443
Silt	0	B	33.722	4.221
Silt	1	AB	32.649	8.443
Clay	2	A	39.865	5.251
Clay	1	AB	37.925	5.251
Clay	3	A	37.033	3.713
Clay	0	B	21.132	2.625

Table I-25. Between Zone Comparisons for Combined 1997 and 1998 Surface Sediment Metals and Physical Parameters (Percent Iron Transformed) Using GLM/Bonferroni Test.

Analyte	Zone	Different at ≤ 0.05	Least Square Mean ($\mu\text{g}/\%$)	Standard Deviation ($\mu\text{g}/\%$)
Cadmium	3	A	0.037	0.002
Cadmium	1	AB	0.032	0.003
Cadmium	2	AB	0.026	0.003
Cadmium	0	B	0.024	0.002
Manganese	1	A	240.997	11.77
Manganese	2	AB	234.753	11.77
Manganese	0	AB	210.119	5.885
Manganese	3	B	199.032	8.323
Silver	1	A	0.018	0.002
Silver	3	A	0.016	0.002
Silver	2	A	0.015	0.002
Silver	0	A	0.014	0.001
Tin	3	A	0.392	0.014
Tin	2	AB	0.386	0.02
Tin	1	AB	0.35	0.02
Tin	0	B	0.337	0.01
Vanadium	2	A	33.487	0.789
Vanadium	3	A	33.041	0.558
Vanadium	0	A	32.72	0.394
Vanadium	1	A	31.49	0.789
Zinc	3	A	27.318	0.633
Zinc	2	AB	26.173	0.895
Zinc	1	AB	24.594	0.895
Zinc	0	B	24.534	0.448
Iron	3	A	4.543	0.175
Iron	2	A	4.47	0.247
Iron	1	A	4.038	0.247
Iron	0	A	3.958	0.123
Sand	0	A	0.718	0.065
Sand	1	AB	0.554	0.129
Sand	2	B	0.147	0.129
Sand	3	B	0.118	0.091
Silt	3	A	0.901	0.066
Silt	2	AB	0.863	0.094
Silt	0	AB	0.603	0.047
Silt	1	B	0.598	0.094
Clay	2	A	0.68	0.058
Clay	1	A	0.657	0.058
Clay	3	A	0.652	0.041
Clay	0	B	0.469	0.029

Table I-26. Between Zone Comparisons for Combined 1997 and 1998 Surface Sediment Organic and Biological Parameters (Non-Transformed) Using GLM/Bonferroni Test.

Analyte	Zone	Different at <= 0.05	Least Square Mean	Standard Deviation
Oleanane/Hopane	1	A	0.214	0.016
Oleanane/Hopane	2	AB	0.195	0.016
Oleanane/Hopane	3	AB	0.158	0.011
Oleanane/Hopane	0	B	0.149	0.008
T21/T22	2	A	0.522	0.075
T21/T22	1	A	0.509	0.075
T21/T22	3	A	0.476	0.053
T21/T22	0	B	0.158	0.038
Total PAH (µg/g)	1	A	0.615	0.085
Total PAH (µg/g)	2	A	0.579	0.085
Total PAH (µg/g)	3	A	0.542	0.06
Total PAH (µg/g)	0	B	0.237	0.042
Petrogenic PAH (µg/g)	1	A	0.566	0.072
Petrogenic PAH (µg/g)	2	A	0.528	0.072
Petrogenic PAH (µg/g)	3	A	0.49	0.051
Petrogenic PAH (µg/g)	0	B	0.186	0.036
C3D/C3P	0	A	0.221	0.009
C3D/C3P	2	A	0.189	0.018
C3D/C3P	3	A	0.175	0.013
C3D/C3P	1	A	0.166	0.018
N/P	2	A	1.155	0.081
N/P	3	A	1.118	0.058
N/P	1	A	1.091	0.081
N/P	0	A	0.967	0.041
nC16/(nC15+nC17)	2	A	0.355	0.03
nC16/(nC15+nC17)	1	A	0.338	0.03
nC16/(nC15+nC17)	3	A	0.336	0.021
nC16/(nC15+nC17)	0	A	0.278	0.015
nC15+nC17 (µg/g)	1	A	0.106	0.015
nC15+nC17 (µg/g)	3	A	0.086	0.011
nC15+nC17 (µg/g)	2	AB	0.084	0.015
nC15+nC17 (µg/g)	0	B	0.045	0.008
LALK (µg/g)	1	A	0.758	0.101
LALK (µg/g)	2	AB	0.546	0.101
LALK (µg/g)	3	AB	0.545	0.071
LALK (µg/g)	0	B	0.32	0.051

Benzo[a]pyrene Equivalent (µg/g)	2	A	3.725	0.512
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Table I-26. Between Zone Comparisons for Combined 1997 and 1998 Surface Sediment Organic and Biological Parameters (Non-Transformed) Using GLM/Bonferroni Test.

Analyte	Zone	Different at ≤ 0.05	Least Square Mean	Standard Deviation
Benzo[a]pyrene Equivalent ($\mu\text{g/g}$)	3	AB	3.025	0.512
Benzo[a]pyrene Equivalent ($\mu\text{g/g}$)	1	AB	2.875	0.512
Benzo[a]pyrene Equivivalent ($\mu\text{g/g}$)	0	B	1.525	0.256
Toxicity Equivalent (ng/g)	2	A	0.22	0.037
Toxicity Equivalent (ng/g)	3	AB	0.18	0.037
Toxicity Equivalent (ng/g)	1	AB	0.165	0.037
Toxicity Equivalent (ng/g)	0	B	0.098	0.018

Table I-27. Between Zone Comparisons for Combined 1997 and 1998 Surface Sediment Organic and Biological Parameters (Total Organic Carbon Transformed) Using GLM/Bonferroni Test.

Analyte	Zone	Different at <= 0.05	Least Square Mean	Standard Deviation
Oleanane/Hopane	1	A	0.214	0.016
Oleanane/Hopane	2	AB	0.195	0.016
Oleanane/Hopane	3	AB	0.158	0.011
Oleanane/Hopane	0	B	0.149	0.008
T21/T22	2	A	0.522	0.075
T21/T22	1	A	0.509	0.075
T21/T22	3	A	0.476	0.053
T21/T22	0	B	0.158	0.038
Total PAH (µg/g)	1	A	0.787	0.079
Total PAH (µg/g)	2	A	0.63	0.079
Total PAH (µg/g)	3	A	0.561	0.056
Total PAH (µg/g)	0	B	0.339	0.04
Petrogenic PAH (µg/g)	1	A	0.724	0.075
Petrogenic PAH (µg/g)	2	A	0.574	0.075
Petrogenic PAH (µg/g)	3	A	0.508	0.053
Petrogenic PAH (µg/g)	0	B	0.277	0.037
C2D/C2P	0	A	0.265	0.021
C2D/C2P	1	A	0.189	0.042
C2D/C2P	2	A	0.182	0.042
C2D/C2P	3	A	0.165	0.03
C3D/C3P	0	A	0.221	0.009
C3D/C3P	2	A	0.189	0.018
C3D/C3P	3	A	0.175	0.013
C3D/C3P	1	A	0.166	0.018
N/P	2	A	1.155	0.081
N/P	3	A	1.118	0.058
N/P	1	A	1.091	0.081
N/P	0	A	0.967	0.041
nC16/(nC15+nC17)	2	A	0.355	0.03
nC16/(nC15+nC17)	1	A	0.338	0.03
nC16/(nC15+nC17)	3	A	0.336	0.021
nC16/(nC15+nC17)	0	A	0.278	0.015
nC15+nC17 (µg/g)	1	A	0.135	0.01
nC15+nC17 (µg/g)	2	BC	0.093	0.01
nC15+nC17 (µg/g)	3	B	0.089	0.007
nC15+nC17 (µg/g)	0	C	0.061	0.005

LALK (µg/g)	1	A	0.959	0.094
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Table I-27. Between Zone Comparisons for Combined 1997 and 1998 Surface Sediment Organic and Biological Parameters (Total Organic Carbon Transformed) Using GLM/Bonferroni Test.

Analyte	Zone	Different at <= 0.05	Least Square Mean	Standard Deviation
LALK (µg/g)	2	ABC	0.607	0.094
LALK (µg/g)	3	BC	0.559	0.067
LALK (µg/g)	0	C	0.432	0.047
Benzo[a]pyrene Equivalent (µg/g)	2	A	4.195	0.581
Benzo[a]pyrene Equivalent (µg/g)	1	AB	3.584	0.581
Benzo[a]pyrene Equivalent (µg/g)	3	AB	3.418	0.581
Benzo[a]pyrene Equivalent (µg/g)	0	B	2.244	0.291
Toxicity Equivalent (ng/g)	2	A	0.245	0.051
Toxicity Equivalent (ng/g)	1	A	0.205	0.051
Toxicity Equivalent (ng/g)	3	A	0.203	0.051
Toxicity Equivalent (ng/g)	0	A	0.147	0.025

Table I-28. Between Year Comparisons for Combined 1997 and 1998 Surface Sediment Metals and Physical Parameters (Non-Transformed) Using GLM/Bonferroni Test.

Analyte	Year	Different at ≤ 0.05	Least Square Mean (µg/g)	Standard Deviation (µg/g)
Barium	98	A	846.802	28.142
Barium	97	A	819.396	28.142
Cadmium	98	A	0.128	0.007
Cadmium	97	A	0.126	0.007
Lead	98	A	13.117	0.508
Lead	97	A	12.811	0.508
Manganese	97	A	937.938	33.016
Manganese	98	A	937.333	33.016
Silver	97	A	0.081	0.007
Silver	98	B	0.053	0.007
Thallium	98	A	0.45	0.011
Thallium	97	A	0.438	0.011
Tin	97	A	1.668	0.071
Tin	98	B	1.459	0.071
Zinc	97	A	109.908	4.519
Zinc	98	A	108.994	4.519
Aluminum	98	A	7.765	0.13
Aluminum	97	B	7.365	0.13
Iron	98	A	4.305	0.145
Iron	97	A	4.2	0.145
Sand	98	A	21.103	6.571
Sand	97	A	18.325	6.571
Silt	98	A	54.17	4.95
Silt	97	B	38.425	4.95
Clay	97	A	43.25	3.079
Clay	98	B	24.728	3.079

Table I-29. Between Year Comparisons for Combined 1997 and 1998 Surface Sediment Metals and Physical Parameters (Percent Iron Transformed) Using GLM/Bonferroni Test.

Analyte	Year	Different at ≤ 0.05	Least Square Mean (µg/%)	Standard Deviation (µg/%)
Cadmium	97	A	0.03	0.002
Cadmium	98	A	0.03	0.002
Manganese	97	A	224.259	6.901
Manganese	98	A	218.192	6.901
Silver	97	A	0.019	0.001
Silver	98	B	0.012	0.001
Tin	97	A	0.397	0.012
Tin	98	B	0.336	0.012
Vanadium	98	A	32.948	0.462
Vanadium	97	A	32.422	0.462
Zinc	97	A	26.092	0.525
Zinc	98	A	25.218	0.525
Iron	98	A	4.305	0.145
Iron	97	A	4.2	0.145
Sand	98	A	0.408	0.076
Sand	97	A	0.361	0.076
Silt	98	A	0.824	0.055
Silt	97	B	0.659	0.055
Clay	97	A	0.712	0.034
Clay	98	B	0.516	0.034

Table I-30. Between Year Comparisons for Combined 1997 and 1998 Surface Sediment Organic and Biological Parameters (Non-Transformed) Using GLM/Bonferroni Test.

Analyte	Year	Different at <= 0.05	Least Square Mean	Standard Deviation
Oleanane/Hopane	97	A	0.195	0.009
Oleanane/Hopane	98	B	0.163	0.009
T21/T22	98	A	0.435	0.044
T21/T22	97	A	0.397	0.044
Total PAH (µg/g)	97	A	0.522	0.05
Total PAH (µg/g)	98	A	0.465	0.05
Petrogenic PAH (µg/g)	97	A	0.471	0.042
Petrogenic PAH (µg/g)	98	A	0.414	0.042
C3D/C3P	97	A	0.194	0.011
C3D/C3P	98	A	0.182	0.011
N/P	98	A	1.147	0.048
N/P	97	A	1.019	0.048
nC16/(nC15+nC17)	98	A	0.347	0.018
nC16/(nC15+nC17)	97	A	0.306	0.018
nC15+nC17 (µg/g)	98	A	0.089	0.009
nC15+nC17 (µg/g)	97	A	0.072	0.009
LALK (µg/g)	98	A	0.584	0.059
LALK (µg/g)	97	A	0.501	0.059
Benzo[a]pyrene Equivalent (µg/g)	97	A	3.437	0.326
Benzo[a]pyrene Equivalent (µg/g)	98	B	2.137	0.326
Toxicity Equivalent (ng/g)	97	A	0.203	0.023
Toxicity Equivalent (ng/g)	98	B	0.128	0.023

Table I-31. Between Year Comparisons for Combined 1997 and 1998 Surface Sediment Organic and Biological Parameters (Total Organic Carbon Transformed) Using GLM/Bonferroni Test.

Analyte	Year	Different at ≤ 0.05	Least Square Mean	Standard Deviation
Oleanane/Hopane	97	A	0.195	0.009
Oleanane/Hopane	98	B	0.163	0.009
T21/T22	98	A	0.435	0.044
T21/T22	97	A	0.397	0.044
Total PAH (µg/g)	97	A	0.623	0.046
Total PAH (µg/g)	98	A	0.535	0.046
Petrogenic PAH (µg/g)	97	A	0.563	0.044
Petrogenic PAH (µg/g)	98	A	0.478	0.044
C2D/C2P	98	A	0.202	0.025
C2D/C2P	97	A	0.198	0.025
C3D/C3P	97	A	0.194	0.011
C3D/C3P	98	A	0.182	0.011
N/P	98	A	1.147	0.048
N/P	97	A	1.019	0.048
nC16/(nC15+nC17)	98	A	0.347	0.018
nC16/(nC15+nC17)	97	A	0.306	0.018
nC15+nC17 (µg/g)	98	A	0.101	0.006
nC15+nC17 (µg/g)	97	A	0.087	0.006
LALK (µg/g)	98	A	0.671	0.055
LALK (µg/g)	97	A	0.607	0.055
Benzo[a]pyrene Equivalent (µg/g)	97	A	4.22	0.37
Benzo[a]pyrene Equivalent (µg/g)	98	B	2.501	0.37
Toxicity Equivalent (ng/g)	97	A	0.25	0.032
Toxicity Equivalent (ng/g)	98	B	0.15	0.032

Table I-32. Physical/Chemical/Biological Parameters Measured in Fourteen Station Sediment Data Analysis

Analyte	Type of Data	Value
Toxicity Equivalent	Biological	Response
Benzo[a]pyrene Equivalent	Biological	Response
Antimony	Metal	Concentration
Arsenic	Metal	Concentration
Barium	Metal	Concentration
Beryllium	Metal	Concentration
Cadmium	Metal	Concentration
Chromium	Metal	Concentration
Copper	Metal	Concentration
Lead	Metal	Concentration
Manganese	Metal	Concentration
Mercury	Metal	Concentration
Nickel	Metal	Concentration
Selenium	Metal	Concentration
Silver	Metal	Concentration
Thallium	Metal	Concentration
Tin	Metal	Concentration
Vanadium	Metal	Concentration
Zinc	Metal	Concentration
Aluminum	Metal	Percent
Iron	Metal	Percent
Clay	Physical	Percent
Sand	Physical	Percent
Silt	Physical	Percent
Total Organic Carbon	Physical	Percent
LALK	Organic	Concentration
Petrogenic PAH	Organic	Concentration
Pyrogenic PAH	Organic	Concentration
TALK	Organic	Concentration
Total PAH	Organic	Concentration
Total petroleum hydrocarbons	Organic	Concentration
Total S/T	Organic	Concentration

Table I-33. Correlations Between Biological Parameters and Physical/Chemical Parameters (Non-Transformed) in Fourteen Station Data Analysis of Combined 1997 and 1998 Data.

Biological Parameter	Associated Parameter	r-Square	Pearson's Correlation	Number of samples	P Value
Benzo[a]pyrene Equivalent	Toxicity Equivalent	0.944	0.972	28	0
Benzo[a]pyrene Equivalent	Petrogenic PAH	0.629	0.793	28	0
Benzo[a]pyrene Equivalent	Total PAH	0.627	0.792	28	0
Benzo[a]pyrene Equivalent	Clay	0.626	0.791	28	0
Benzo[a]pyrene Equivalent	Selenium	0.367	0.606	28	0.0006
Benzo[a]pyrene Equivalent	Sand	0.355	-0.596	28	0.0008
Benzo[a]pyrene Equivalent	Pyrogenic PAH	0.294	0.542	28	0.0029
Benzo[a]pyrene Equivalent	Cadmium	0.287	0.536	28	0.0033
Benzo[a]pyrene Equivalent	Manganese	0.262	0.511	28	0.0054
Benzo[a]pyrene Equivalent	Total Organic Carbon	0.25	0.5	28	0.0068
Benzo[a]pyrene Equivalent	LALK	0.227	0.476	28	0.0104
Benzo[a]pyrene Equivalent	Tin	0.158	0.398	28	0.0361
Benzo[a]pyrene Equivalent	Zinc	0.141	0.375	28	0.0493
Benzo[a]pyrene Equivalent	Silver	0.205	0.453	28	0.0156
Toxicity Equivalent	Total PAH	0.59	0.768	28	0
Toxicity Equivalent	Pyrogenic PAH	0.279	0.528	28	0.0039
Toxicity Equivalent	Total Organic Carbon	0.203	0.451	28	0.016
Toxicity Equivalent	Petrogenic PAH	0.59	0.768	28	0
Toxicity Equivalent	Clay	0.488	0.699	28	0
Toxicity Equivalent	Selenium	0.31	0.557	28	0.0021
Toxicity Equivalent	Sand	0.256	-0.506	28	0.006
Toxicity Equivalent	Cadmium	0.228	0.477	28	0.0102
Toxicity Equivalent	Manganese	0.198	0.445	28	0.0177
Toxicity Equivalent	LALK	0.185	0.43	28	0.0224
Toxicity Equivalent	Silver	0.167	0.408	28	0.031

Table I-34. Correlations Between Biological Parameters and Physical/Chemical Parameters (Transformed) in Fourteen Station Data Analysis of Combined 1997 and 1998 Data.

Biological Parameter	Associated Parameter	r-Square	Pearson's Correlation	Number of samples	P Value
Benzo[a]pyrene Equivalent	Toxicity Equivalent	0.86	0.927	28	0
Benzo[a]pyrene Equivalent	Petrogenic PAH	0.499	0.706	28	0
Benzo[a]pyrene Equivalent	Total PAH	0.475	0.689	28	0
Benzo[a]pyrene Equivalent	Clay	0.305	0.552	28	0.0023
Benzo[a]pyrene Equivalent	Nickel	0.172	-0.415	28	0.028
Benzo[a]pyrene Equivalent	Selenium	0.17	0.413	28	0.029
Benzo[a]pyrene Equivalent	Manganese	0.167	0.408	28	0.0311
Benzo[a]pyrene Equivalent	Total S/T	0.153	-0.391	28	0.0395
Benzo[a]pyrene Equivalent	Aluminum	0.168	-0.41	28	0.0301
Toxicity Equivalent	Petrogenic PAH	0.41	0.64	28	0.0002
Toxicity Equivalent	Nickel	0.176	-0.42	28	0.026
Toxicity Equivalent	Chromium	0.159	-0.399	28	0.0356
Toxicity Equivalent	Total PAH	0.397	0.63	28	0.0003

Table I-35. Fish Tissue Parameters Examined for Combined 1997 and 1998 Data and for 1998 Fish Tissue Data.

Independent Variables		Dependent Variables	
Organic Compound	Metal	Biological Measure on Composite	Biological Measure on Individuals
Acenaphthene	Aluminum	Benzo[a]pyrene Equivalent	Gill epithelium
Acenaphthylene	Antimony	Toxicity Equivalent	Gill pillar cells
Anthracene	Arsenic		Gill vascular endothelium
Benzo[a]anthracene	Barium		Heart endothelium
Benzo[a]pyrene	Beryllium		Hepatocytes
Benzo[b]fluoranthene	Cadmium		Kidney tubules
Benzo[e]pyrene	Chromium		Kidney vascular endothelium
Benzo[g,h,i]perylene	Copper		Liver bile duct
Benzo[k]fluoranthene	Iron		Liver vascular endothelium
Biphenyl	Lead		
C1-Chrysenes	Manganese		
C1-Dibenzothiophenes	Mercury		
C1-Fluoranthenes/pyrenes	Nickel		
C1-Fluorenes	Selenium		
C1-Naphthalenes	Silver		
C1-Phenanthrenes/anthracenes	Thallium		
C2-Chrysenes	Tin		
C2-Dibenzothiophenes	Vanadium		
C2-Fluoranthenes/pyrenes	Zinc		
C2-Fluorenes			
C2-Naphthalenes			
C2-Phenanthrenes/anthracenes			
C3-Chrysenes			
C3-Dibenzothiophenes			
C3-Fluoranthenes/pyrenes			
C3-Fluorenes			
C3-Naphthalenes			
C3-Phenanthrenes/anthracenes			
C4-Chrysenes			
C4-Naphthalenes			
C4-Phenanthrenes/anthracenes			
Chrysene			
Dibenzo[a,h]anthracene			
Dibenzothiophene			
Fluoranthene			
Fluorene			
Indeno[1,2,3,-c,d]pyrene			
Naphthalene			
Perylene			
Phenanthrene			
Pyrene			
Total PAH			

Table I-36. Correlations Between Biological Parameters and Tissue Chemical Parameters; All Fish Collected in 1998 Considered.

Parameter	Associated Parameter	Pearson's Correlation n	r-Square	n	P Value
Benzo[a]pyrene equivalent	C2-fluorenes	0.6456514	0.4168657	12	0.0233435
Benzo[a]pyrene equivalent	C1-phenanthrenes/anthracenes	0.6456514	0.4168657	12	0.0233435
Benzo[a]pyrene equivalent	C1-fluorenes	0.6456514	0.4168657	12	0.0233435
Benzo[a]pyrene equivalent	Chromium	0.5892449	0.3472095	12	0.043785
Benzo[a]pyrene equivalent	Toxicity equivalent	0.9977142	0.9954337	12	4.896e-13
Benzo[a]pyrene equivalent	Copper	0.6425595	0.4128828	12	0.0242355
Gill epithelium	Copper	0.4893662	0.2394792	29	0.0070553
Gill epithelium	Cadmium	-0.589258	0.3472248	29	0.0007699
Gill epithelium	C3-fluorenes	0.4683361	0.2193387	29	0.0103975
Gill epithelium	Tin	-0.393923	0.155175	29	0.0344837
Gill epithelium	Thallium	0.4774868	0.2279937	29	0.0088087
Gill epithelium	Zinc	-0.53354	0.2846645	29	0.0028771
Gill epithelium	Total PAH	0.4505643	0.2030082	29	0.0141739
Gill epithelium	Phenanthrene	-0.442087	0.195441	29	0.0163419
Gill epithelium	Fluorene	-0.382318	0.1461669	29	0.0406799
Gill epithelium	Silver	0.4030409	0.162442	29	0.0301686
Gill epithelium	Selenium	-0.440268	0.1938356	29	0.0168413
Gill epithelium	Benzo[g,h,i]perylene	0.4710173	0.2218573	29	0.0099089
Gill epithelium	Gill pillar cells	0.4548931	0.2069277	30	0.0115484
Gill epithelium	Kidney tubules	0.4198224	0.1762509	30	0.0209085
Gill epithelium	Heart endothelium	0.6094058	0.3713755	30	0.0003509
Gill epithelium	Aluminum	-0.471358	0.2221787	29	0.0098482
Gill epithelium	Hepatocytes	0.6421935	0.4124125	30	0.0001303
Gill pillar cells	Copper	0.6007873	0.3609454	29	0.0005686
Gill pillar cells	Total PAH	0.9313774	0.8674639	29	2.303e-13
Gill pillar cells	Zinc	-0.461877	0.2133301	29	0.0116583
Gill pillar cells	Selenium	-0.406865	0.1655392	29	0.0284943
Gill pillar cells	Gill epithelium	0.4548931	0.2069277	30	0.0115484
Gill pillar cells	Manganese	-0.37584	0.1412561	29	0.044507
Gill pillar cells	Kidney tubules	0.7470158	0.5580325	30	0.0000021
Gill pillar cells	Benzo[g,h,i]perylene	0.9343725	0.873052	29	1.283e-13
Heart endothelium	Cadmium	-0.383087	0.1467554	29	0.0402436
Heart endothelium	Gill epithelium	0.6094058	0.3713755	30	0.0003509
Heart endothelium	Thallium	0.5582741	0.31167	29	0.0016483
Heart endothelium	Hepatocytes	0.4864188	0.2366032	30	0.0064194
Hepatocytes	Nickel	-0.576934	0.3328524	29	0.0010516
Hepatocytes	Phenanthrene	-0.521039	0.2714821	29	0.0037535
Hepatocytes	Naphthalene	-0.459858	0.2114693	29	0.0120776
Hepatocytes	Mercury	-0.564452	0.318606	29	0.0014246

Table I-36. Correlations Between Biological Parameters and Tissue Chemical Parameters; All Fish Collected in 1998 Considered.

Parameter	Associated Parameter	Pearson's Correlation n	r-Square	n	P Value
Hepatocytes	Zinc	-0.685205	0.4695062	29	0.0000411
Hepatocytes	Vanadium	-0.529879	0.280772	29	0.0031133
Hepatocytes	Selenium	-0.609686	0.3717165	29	0.0004464
Hepatocytes	Silver	0.5680429	0.3226727	29	0.001307
Hepatocytes	Heart endothelium	0.4864188	0.2366032	30	0.0064194
Hepatocytes	Antimony	0.4307723	0.1855648	29	0.0196568
Hepatocytes	Biphenyl	-0.46184	0.2132966	29	0.0116657
Hepatocytes	Kidney tubules	0.4135983	0.1710635	30	0.0230911
Hepatocytes	Fluorene	-0.52344	0.2739899	29	0.0035694
Hepatocytes	Gill epithelium	0.6421935	0.4124125	30	0.0001303
Hepatocytes	Cadmium	-0.676834	0.4581037	29	0.0000554
Hepatocytes	Dibenzothiophene	-0.413201	0.1707355	29	0.0258868
Kidney tubules	Selenium	-0.48939	0.2395022	29	0.0070522
Kidney tubules	Phenanthrene	-0.452948	0.2051622	29	0.0136093
Kidney tubules	Nickel	-0.411151	0.1690455	29	0.0267082
Kidney tubules	Tin	-0.438319	0.1921235	29	0.0173901
Kidney tubules	Zinc	-0.610474	0.3726791	29	0.0004367
Kidney tubules	Vanadium	-0.459983	0.2115846	29	0.0120512
Kidney tubules	Total PAH	0.8138804	0.6624012	29	7.902e-08
Kidney tubules	Copper	0.5199937	0.2703935	29	0.0038363
Kidney tubules	Cadmium	-0.407751	0.1662612	29	0.0281173
Kidney tubules	Benzo[g,h,i]perylene	0.8416599	0.7083914	29	1.062e-08
Kidney tubules	Gill epithelium	0.4198224	0.1762509	30	0.0209085
Kidney tubules	Mercury	-0.398216	0.1585763	29	0.0323936
Kidney tubules	Hepatocytes	0.4135983	0.1710635	30	0.0230911
Kidney tubules	Gill pillar cells	0.7470158	0.5580325	30	0.0000021
Toxicity equivalent	C2-fluorenes	0.6609483	0.4368526	12	0.0192779
Toxicity equivalent	Chromium	0.5931807	0.3518634	12	0.042051
Toxicity equivalent	Copper	0.651423	0.4243519	12	0.0217427
Toxicity equivalent	Benzo[a]pyrene equivalent	0.9977142	0.9954337	12	4.896e-13
Toxicity equivalent	C1-fluorenes	0.6609483	0.4368526	12	0.0192779
Toxicity equivalent	C1-phenanthrenes/anthracenes	0.6609483	0.4368526	12	0.0192779

Table I-37. Correlations Between Biological Parameters and Tissue Chemical Parameters; Halibut and Pacific Cod Collected in 1998 Considered.

Parameter	Associated Parameter	Pearson's Correlation	r-Square	n	P Value
<i>Halibut Only</i>					
Hepatocytes	Vanadium	-0.784036	0.6147125	12	0.0025415
Kidney tubules	Lead	0.9122031	0.8321145	12	0.0000354
<i>Pacific cod only</i>					
Benzo[a]pyrene equivalent	C2-fluorenes	0.9535782	0.9093113	5	0.0119226
Benzo[a]pyrene equivalent	Chromium	0.8962091	0.8031908	5	0.0395087
Benzo[a]pyrene equivalent	C1-fluorenes	0.9535782	0.9093113	5	0.0119226
Benzo[a]pyrene equivalent	C1-phenanthrenes/anthracenes	0.9535782	0.9093113	5	0.0119226
Benzo[a]pyrene equivalent	Fluoranthene	0.9279786	0.8611443	5	0.0229498
Benzo[a]pyrene equivalent	Thallium	-0.886549	0.78597	5	0.0450829
Benzo[a]pyrene equivalent	Zinc	-0.900943	0.8116976	5	0.0368641
Benzo[a]pyrene equivalent	Fluorene	0.9755077	0.9516152	5	0.0045843
Benzo[a]pyrene equivalent	Phenanthrene	0.9813683	0.9630838	5	0.0030443
Benzo[a]pyrene equivalent	Toxicity equivalent	0.9985616	0.9971253	5	0.0000655
Gill epithelium	C3-fluorenes	0.67136	0.4507242	13	0.0119854
Gill pillar cells	Lead	0.8455504	0.7149555	13	0.0002715
Heart endothelium	Chromium	-0.630366	0.3973616	13	0.020911
Hepatocytes	Zinc	-0.618468	0.382503	13	0.024243
Hepatocytes	Selenium	-0.771361	0.5949976	13	0.0020161
Hepatocytes	Cadmium	-0.585026	0.3422553	13	0.0357064
Hepatocytes	Thallium	-0.618045	0.3819791	13	0.0243685
Kidney tubules	Fluorene	-0.563787	0.3178556	13	0.044778
Toxicity equivalent	C2-fluorenes	0.9479187	0.8985499	5	0.0141558
Toxicity equivalent	C1-phenanthrenes/anthracenes	0.9479187	0.8985499	5	0.0141558
Toxicity equivalent	Chromium	0.8915185	0.7948053	5	0.0421863
Toxicity equivalent	Fluorene	0.9640238	0.929342	5	0.008147
Toxicity equivalent	Fluoranthene	0.9337932	0.8719697	5	0.0202455
Toxicity equivalent	Thallium	-0.880829	0.775859	5	0.0484922
Toxicity equivalent	Zinc	-0.895126	0.8012499	5	0.0401222
Toxicity equivalent	Phenanthrene	0.9798398	0.9600861	5	0.0034258
Toxicity equivalent	C1-fluorenes	0.9479187	0.8985499	5	0.0141558
Toxicity equivalent	Benzo[a]pyrene equivalent	0.9985616	0.9971253	5	0.0000655

Table I-38. Correlations Between Biological Parameters and Tissue Chemical Parameters; All Fish Collected in 1997 and 1998 Considered.

Parameter	Associated Parameter	Pearson's Correlation	r-Square	n	P Value
Benzo[a]pyrene equivalent	Selenium	-0.418935	0.1755069	25	0.0371217
Benzo[a]pyrene equivalent	Gill pillar cells	0.477631	0.2281314	21	0.0285434
Benzo[a]pyrene equivalent	Copper	0.5262861	0.2769771	25	0.006883
Benzo[a]pyrene equivalent	Zinc	-0.429545	0.1845091	25	0.0321201
Benzo[a]pyrene equivalent	Thallium	-0.422528	0.1785303	25	0.0353632
Benzo[a]pyrene equivalent	Silver	0.5484463	0.3007934	25	0.0045303
Benzo[a]pyrene equivalent	Chromium	0.4898901	0.2399923	25	0.0129257
Benzo[a]pyrene equivalent	Toxicity equivalent	0.9980967	0.996197	25	0
Benzo[a]pyrene equivalent	Benzo[g,h,i]perylene	0.5500529	0.3025582	25	0.0043901
Benzo[a]pyrene equivalent	C1-fluorenes	0.6530046	0.426415	25	0.0004021
Benzo[a]pyrene equivalent	Cadmium	-0.416554	0.1735172	25	0.0383252
Benzo[a]pyrene equivalent	C3-fluorenes	0.5499854	0.3024839	25	0.004396
Benzo[a]pyrene equivalent	C2-fluorenes	0.6530046	0.426415	25	0.0004021
Gill epithelium	Biphenyl	-0.394319	0.1554874	39	0.0129927
Gill epithelium	Phenanthrene	-0.341763	0.1168019	39	0.0332167
Gill epithelium	Mercury	-0.321933	0.1036408	39	0.0456494
Gill epithelium	Arsenic	0.3959913	0.1568091	39	0.0125795
Gill epithelium	C3-fluorenes	0.4737555	0.2244443	39	0.0023155
Gill epithelium	Aluminum	-0.486167	0.2363579	39	0.0017017
Gill epithelium	Selenium	-0.464393	0.215661	39	0.0028995
Gill epithelium	Benzo[g,h,i]perylene	0.4736228	0.2243186	39	0.002323
Gill epithelium	Cadmium	-0.609313	0.3712629	39	0.0000384
Gill epithelium	Heart endothelium	0.6094058	0.3713755	30	0.0003509
Gill epithelium	Zinc	-0.526054	0.2767325	39	0.0005827
Gill epithelium	Antimony	0.4147075	0.1719823	39	0.0086658
Gill epithelium	Gill pillar cells	0.4266977	0.1820709	41	0.0054009
Gill epithelium	Naphthalene	-0.404258	0.1634247	39	0.0106971
Gill epithelium	Tin	-0.404705	0.1637858	39	0.0106027
Gill epithelium	Silver	0.4532265	0.2054142	39	0.0037613
Gill epithelium	Copper	0.4640481	0.2153407	39	0.0029233
Gill epithelium	Fluorene	-0.440117	0.1937026	39	0.0050507
Gill epithelium	Total PAH	0.4505643	0.2030082	29	0.0141739
Gill pillar cells	Toxicity equivalent	0.4842713	0.2345187	21	0.0261072
Gill pillar cells	Benzo[a]pyrene equivalent	0.477631	0.2281314	21	0.0285434
Gill pillar cells	Copper	0.4703562	0.2212349	39	0.0025143
Gill pillar cells	Total PAH	0.9313774	0.8674639	29	2.303e-13
Gill pillar cells	Benzo[g,h,i]perylene	0.8609742	0.7412766	39	2.059e-12
Gill pillar cells	Kidney tubules	0.6653445	0.4426833	41	0.0000021
Gill pillar cells	Zinc	-0.401257	0.1610068	39	0.0113508
Gill pillar cells	Manganese	-0.40206	0.1616524	39	0.0111725

Table I-38. Correlations Between Biological Parameters and Tissue Chemical Parameters; All Fish Collected in 1997 and 1998 Considered.

Parameter	Associated Parameter	Pearson's Correlation	r-Square	n	P Value
Gill vascular endothelium	Thallium	0.5008945	0.2508953	39	0.0011629
Gill vascular endothelium	Hepatocytes	0.4447696	0.19782	41	0.003573
Heart endothelium	Hepatocytes	0.4864188	0.2366032	30	0.0064194
Heart endothelium	Gill epithelium	0.6094058	0.3713755	30	0.0003509
Heart endothelium	Cadmium	-0.383087	0.1467554	29	0.0402436
Heart endothelium	Thallium	0.5582741	0.31167	29	0.0016483
Hepatocytes	Liver vascular endothelium	0.4447696	0.19782	41	0.003573
Hepatocytes	Liver bile duct	0.4447696	0.19782	41	0.003573
Hepatocytes	Tin	0.3942352	0.1554214	39	0.0130136
Hepatocytes	Heart endothelium	0.4864188	0.2366032	30	0.0064194
Hepatocytes	Nickel	-0.576934	0.3328524	29	0.0010516
Hepatocytes	Kidney tubules	0.5063309	0.256371	41	0.000731
Hepatocytes	Kidney vascular endothelium	0.3320144	0.1102335	41	0.0339424
Hepatocytes	Acenaphthylene	-0.382927	0.1466329	39	0.0161247
Hepatocytes	Thallium	0.3878662	0.1504402	39	0.0146963
Kidney tubules	Nickel	-0.411151	0.1690455	29	0.0267082
Kidney tubules	Kidney vascular endothelium	0.3202658	0.1025702	41	0.0412109
Kidney tubules	Acenaphthylene	-0.424725	0.1803912	39	0.0070382
Kidney tubules	Total PAH	0.8138804	0.6624012	29	7.902e-08
Kidney tubules	Benzo[g,h,i]perylene	0.5893085	0.3472845	39	0.0000791
Kidney vascular endothelium	Zinc	0.3944591	0.155598	39	0.0129576
Kidney vascular endothelium	Biphenyl	0.3809797	0.1451455	39	0.016719
Kidney vascular endothelium	Fluorene	0.3581605	0.128279	39	0.0251695
Kidney vascular endothelium	Selenium	0.4330536	0.1875354	39	0.0058923
Kidney vascular endothelium	Phenanthrene	0.5892171	0.3471768	39	0.0000793
Kidney vascular endothelium	Tin	0.5635746	0.3176163	39	0.0001871
Kidney vascular endothelium	Mercury	0.5377022	0.2891237	39	0.0004153
Kidney vascular endothelium	Acenaphthylene	-0.340839	0.1161712	39	0.0337266
Kidney vascular endothelium	Cadmium	0.335334	0.1124489	39	0.0368992
Kidney vascular endothelium	Benzo[b]fluoranthene	0.3465872	0.1201227	39	0.0306559
Kidney vascular endothelium	Pyrene	0.3418905	0.1168891	39	0.0331467
Liver bile duct	Thallium	0.5008945	0.2508953	39	0.0011629
Toxicity equivalent	C2-fluorenes	0.6670993	0.4450214	25	0.0002702
Toxicity equivalent	C3-fluorenes	0.5480595	0.3003692	25	0.0045646
Toxicity equivalent	Cadmium	-0.427325	0.1826064	25	0.0331196
Toxicity equivalent	Benzo[a]pyrene equivalent	0.9980967	0.996197	25	0
Toxicity equivalent	Benzo[g,h,i]perylene	0.5480577	0.3003673	25	0.0045648
Toxicity equivalent	C1-fluorenes	0.6670993	0.4450214	25	0.0002702
Toxicity equivalent	Chromium	0.4939112	0.2439483	25	0.0120954
Toxicity equivalent	Silver	0.568576	0.3232787	25	0.0030211

Table I-38. Correlations Between Biological Parameters and Tissue Chemical Parameters; All Fish Collected in 1997 and 1998 Considered.

Parameter	Associated Parameter	Pearson's Correlation	r-Square	n	P Value
Toxicity equivalent	Thallium	-0.416212	0.1732321	25	0.0385007
Toxicity equivalent	Zinc	-0.436325	0.1903798	25	0.0292166
Toxicity equivalent	Copper	0.5361039	0.2874073	25	0.0057384
Toxicity equivalent	Gill pillar cells	0.4842713	0.2345187	21	0.0261072
Toxicity equivalent	Selenium	-0.427315	0.1825984	25	0.0331239

Table I-39. Correlations Between Biological Parameters and Tissue Chemical Parameters; Halibut and Pacific Cod Collected in 1997 and 1998 Considered.

Parameter	Associated Parameter	Pearson's Correlation	r-Square	n	P Value
<i>Halibut Only</i>					
Gill pillar cells	C1-phenanthrenes/anthracenes	0.8409597	0.7072133	20	0.0000034
Gill pillar cells	Phenanthrene	0.5496028	0.3020632	20	0.0120643
Gill pillar cells	Biphenyl	0.5314017	0.2823878	20	0.0159001
Hepatocytes	Kidney tubules	0.855754	0.7323149	20	0.0000015
Hepatocytes	Tin	0.7422454	0.5509282	20	0.0001788
Hepatocytes	Kidney vascular endothelium	0.6796175	0.4618799	20	0.0009802
Kidney tubules	Kidney vascular endothelium	0.7994816	0.6391708	20	0.0000234
Kidney tubules	Toxicity equivalent	-0.687685	0.47291	10	0.0279642
Kidney tubules	Benzo[a]pyrene equivalent	-0.675297	0.4560255	10	0.0321278
Kidney tubules	Tin	0.6009612	0.3611544	20	0.0050732
Kidney tubules	Acenaphthylene	-0.524629	0.2752353	20	0.0175553
Kidney tubules	Phenanthrene	0.473239	0.2239552	20	0.0350751
Kidney tubules	C1-phenanthrenes/anthracenes	0.4463796	0.1992548	20	0.0485064
Kidney vascular endothelium	Benzo[a]pyrene	-0.707989	0.5012488	10	0.0219635
Kidney vascular endothelium	Toxicity equivalent	-0.705756	0.4980916	10	0.0225754
Kidney vascular endothelium	Tin	0.5828432	0.3397062	20	0.0069966
Kidney vascular endothelium	Thallium	0.5386301	0.2901224	20	0.0142742
Kidney vascular endothelium	Acenaphthylene	-0.52618	0.276865	20	0.0171646
Kidney vascular endothelium	Phenanthrene	0.4663247	0.2174588	20	0.0382156
Benzo[a]pyrene equivalent	Acenaphthene	0.8976408	0.805759	13	0.0000314
Benzo[a]pyrene equivalent	Acenaphthylene	0.9671561	0.9353909	13	6.922e-08
Benzo[a]pyrene equivalent	C1-naphthalenes	0.6978029	0.4869289	13	0.0080006
Benzo[a]pyrene equivalent	C2-naphthalenes	0.8398375	0.7053271	13	0.0003277
Benzo[a]pyrene equivalent	Indeno[1,2,3,-c,d]pyrene	0.6503588	0.4229665	13	0.016095
Benzo[a]pyrene equivalent	Kidney tubules	-0.675297	0.4560255	10	0.0321278
Benzo[a]pyrene equivalent	Kidney vascular endothelium	-0.707989	0.5012488	10	0.0219635
Benzo[a]pyrene equivalent	Manganese	0.6371064	0.4059046	13	0.0191817
Benzo[a]pyrene equivalent	Toxicity equivalent	0.9982697	0.9965425	13	6.883e-15
Toxicity equivalent	Acenaphthene	0.8915102	0.7947905	13	0.0000427
Toxicity equivalent	Acenaphthylene	0.9575107	0.9168268	13	0.0000003
Toxicity equivalent	Benzo[a]pyrene equivalent	0.9982697	0.9965425	13	6.883e-15
Toxicity equivalent	C1-naphthalenes	0.7074568	0.5004951	13	0.0068324
Toxicity equivalent	C2-naphthalenes	0.826686	0.6834097	13	0.0004924
Toxicity equivalent	Indeno[1,2,3,-c,d]pyrene	0.6729407	0.4528491	13	0.0117119
Toxicity equivalent	Kidney tubules	-0.687685	0.47291	10	0.0279642
Toxicity equivalent	Kidney vascular endothelium	-0.705756	0.4980916	10	0.0225754
Toxicity equivalent	Manganese	0.6494435	0.4217769	13	0.0162953

Table I-39. Correlations Between Biological Parameters and Tissue Chemical Parameters; Halibut and Pacific Cod Collected in 1997 and 1998 Considered.

Parameter	Associated Parameter	Pearson's Correlation	r-Square	n	P Value
<i>Pacific Cod Only</i>					
Benzo[a]pyrene equivalent	C2-fluorenes	0.9535782	0.9093113	5	0.0119226
Benzo[a]pyrene equivalent	Chromium	0.8962091	0.8031908	5	0.0395087
Benzo[a]pyrene equivalent	C1-phenanthrenes/anthracenes	0.9535782	0.9093113	5	0.0119226
Benzo[a]pyrene equivalent	Toxicity equivalent	0.9985616	0.9971253	5	0.0000655
Benzo[a]pyrene equivalent	C1-fluorenes	0.9535782	0.9093113	5	0.0119226
Benzo[a]pyrene equivalent	Thallium	-0.886549	0.78597	5	0.0450829
Benzo[a]pyrene equivalent	Zinc	-0.900943	0.8116976	5	0.0368641
Benzo[a]pyrene equivalent	Phenanthrene	0.9813683	0.9630838	5	0.0030443
Benzo[a]pyrene equivalent	Fluoranthene	0.9279786	0.8611443	5	0.0229498
Benzo[a]pyrene equivalent	Fluorene	0.9755077	0.9516152	5	0.0045843
Gill epithelium	C3-fluorenes	0.67136	0.4507242	13	0.0119854
Gill pillar cells	Lead	0.8455504	0.7149555	13	0.0002715
Heart endothelium	Chromium	-0.630366	0.3973616	13	0.020911
Hepatocytes	Zinc	-0.618468	0.382503	13	0.024243
Hepatocytes	Selenium	-0.771361	0.5949976	13	0.0020161
Hepatocytes	Thallium	-0.618045	0.3819791	13	0.0243685
Hepatocytes	Cadmium	-0.585026	0.3422553	13	0.0357064
Kidney tubules	Fluorene	-0.563787	0.3178556	13	0.044778
Toxicity equivalent	Chromium	0.8915185	0.7948053	5	0.0421863
Toxicity equivalent	C2-fluorenes	0.9479187	0.8985499	5	0.0141558
Toxicity equivalent	Fluorene	0.9640238	0.929342	5	0.008147
Toxicity equivalent	Fluoranthene	0.9337932	0.8719697	5	0.0202455
Toxicity equivalent	C1-phenanthrenes/anthracenes	0.9479187	0.8985499	5	0.0141558
Toxicity equivalent	Thallium	-0.880829	0.775859	5	0.0484922
Toxicity equivalent	Zinc	-0.895126	0.8012499	5	0.0401222
Toxicity equivalent	C1-fluorenes	0.9479187	0.8985499	5	0.0141558
Toxicity equivalent	Phenanthrene	0.9798398	0.9600861	5	0.0034258

Table I-40. Results of Biological Parameters for 1998 Fish Tissues Using Student-Newman-Keuls Test.

Fish Species	Analyte	Significant at <0.05	Zone	Least Square Mean	Standard Error
<i>Halibut</i>					
	Hepatocytes	A	1	0.25	0.102
	Hepatocytes	A	2	0.0882	0.0857
	Hepatocytes	A	3	0	0.102
	kidney tubules	A	2	0.3309	0.1665
	kidney tubules	A	3	0.125	0.1982
	kidney tubules	A	1	0	0.1982
<i>Pacific Cod</i>					
	Gill epithelium	A	2	1.2407	0.2515
	Gill epithelium	A	3	0.9	0.3374
	Gill epithelium	A	1	0.7333	0.3374
	Gill pillar cells	A	2	0.2222	0.1069
	Gill pillar cells	A	1	0	0.1434
	Gill pillar cells	A	3	0	0.1434
	Heart endothelium	A	3	1.0333	0.3912
	Heart endothelium	A	2	0.8966	0.2814
	Heart endothelium	A	1	0.6875	0.3788
	Hepatocytes	A	1	1.3125	0.259
	Hepatocytes	A	2	1.069	0.1924
	Hepatocytes	A	3	0.7	0.2675
	kidney tubules	A	1	0.6613	0.2114
	kidney tubules	A	3	0.5556	0.2265
	kidney tubules	A	2	0.35	0.1665
<i>Arrow Tooth Flounder</i>					
	kidney tubules	A	3	1.25	0.6489
	kidney tubules	A	2	1.1	0.5804

Table I-41. Results of Chemical Parameters for Combined 1997 and 1998 Halibut Tissues Using Student-Newman-Keuls Test.

Classification	Analyte	Different at <= 0.05	Year	Least Square Mean (µg/g)	Standard Deviation (µg/g)
<i>Year</i>					
	Arsenic	A	97	25.8875	2.8751
	Arsenic	A	98	20.8467	1.878
	Barium	A	97	0.0868	0.0136
	Barium	B	98	0.047	0.0089
	Manganese	A	97	4.0875	0.3677
	Manganese	A	98	3.7667	0.2402
	Thallium	A	97	0.0034	0.0002
	Thallium	B	98	0.0014	0.0002
	Tin	A	97	0.2025	0.0288
	Tin	B	98	0.1065	0.0188
	Phenanthrene	A	97	0.0421	0.005
	Phenanthrene	B	98	0.0104	0.0033
	Benzo[a]pyrene Equivalent	A	98	3.8	0.2449
	Benzo[a]pyrene Equivalent	B	97	1.25	0.1936
	Toxicity Equivalent (ng/g)	A	98	0.2	0.0153
	Toxicity Equivalent (ng/g)	B	97	0.075	0.0121
Classification	Analyte	Different at <= 0.05	Zone	Least Square Mean (µg/g)	Standard Deviation (µg/g)
<i>Zone</i>					
	Arsenic	A	3	24.2167	2.9694
	Arsenic	A	2	22.5175	1.7251
	Barium	A	2	0.0878	0.0081
	Barium	B	3	0.046	0.014
	Manganese	A	2	4.5375	0.2206
	Manganese	B	3	3.3167	0.3798
	Nickel	A	2	2	0.0394
	Nickel	B	3	1.4667	0.0509
	Thallium	A	2	0.0028	0.0001
	Thallium	B	3	0.002	0.0002
	Tin	A	3	0.1555	0.0298
	Tin	A	2	0.1535	0.0173
	Phenanthrene	A	3	0.0307	0.0052
	Phenanthrene	A	2	0.0218	0.003
	Benzo[a]pyrene Equivalent	A	2	3.65	0.1936
	Benzo[a]pyrene Equivalent	B	3	1.4	0.2449
	Toxicity Equivalent (ng/g)	A	2	0.195	0.0121
	Toxicity Equivalent (ng/g)	B	3	0.08	0.0153

Table I-41. Results of Chemical Parameters for Combined 1997 and 1998 Fish Tissues Using Student-Newman-Keuls Test.

Classification	Analyte	Different at ≤ 0.05	Year	Zone	Least Square Mean (µg/g)	Standard Deviation (µg/g)
<i>Year*Zone</i>						
	Arsenic	A	97	2	29.775	2.5716
	Arsenic	AB	98	3	26.4333	2.9694
	Arsenic	AB	97	3	22	5.1431
	Arsenic	B	98	2	15.26	2.3001
	Barium	A	97	2	0.0915	0.0121
	Barium	A	98	2	0.084	0.0109
	Barium	A	97	3	0.082	0.0243
	Barium	A	98	3	0.01	0.014
	Manganese	A	98	2	4.6	0.2942
	Manganese	A	97	2	4.475	0.3289
	Manganese	A	97	3	3.7	0.6578
	Manganese	A	98	3	2.9333	0.3798
	Nickel	A	98	2	2	0.0394
	Nickel	A	98	3	1.4667	0.0509
	Thallium	A	97	2	0.0038	0.0002
	Thallium	A	97	3	0.003	0.0004
	Thallium	A	98	2	0.0018	0.0002
	Thallium	A	98	3	0.001	0.0002
	Tin	A	97	3	0.22	0.0515
	Tin	A	97	2	0.185	0.0258
	Tin	A	98	2	0.122	0.0231
	Tin	A	98	3	0.091	0.0298
	Phenanthrene	A	97	3	0.052	0.0089
	Phenanthrene	A	97	2	0.0322	0.0045
	Phenanthrene	A	98	2	0.0114	0.004
	Phenanthrene	A	98	3	0.0094	0.0052
	Benzo[a]pyrene Equivalent	A	98	2	5.8	0.3464
	Benzo[a]pyrene Equivalent	AB	98	3	1.8	0.3464
	Benzo[a]pyrene Equivalent	BC	97	2	1.5	0.1732
	Benzo[a]pyrene Equivalent	C	97	3	1	0.3464
	Toxicity Equivalent (ng/g)	A	98	2	0.3	0.0216
	Toxicity Equivalent (ng/g)	AB	98	3	0.1	0.0216
	Toxicity Equivalent (ng/g)	BC	97	2	0.09	0.0108
	Toxicity Equivalent (ng/g)	C	97	3	0.06	0.0216

Table I-42. Results of Biological Parameters for Combined 1997 and 1998 Halibut Tissues Using Student-Newman-Keuls Test.

Classification	Analyte	Different at ≤ 0.05	Year	Least Square Mean	Standard Deviation	
Year						
	Hepatocytes	A	97	1.4821	0.2408	
	Hepatocytes	B	98	0.0441	0.1984	
	kidney tubules	A	97	4.4976	0.4176	
	kidney tubules	B	98	0.2279	0.344	
Classification	Analyte	Different at ≤ 0.05	Zone	Least Square Mean	Standard Deviation	
Zone	Hepatocytes	A	3	0.8571	0.2502	
	Hepatocytes	A	2	0.6691	0.1864	
	kidney tubules	A	3	2.4018	0.4339	
	kidney tubules	A	2	2.3238	0.3232	
Classification	Analyte	Different at ≤ 0.05	Year	Zone	Least Square Mean	Standard Deviation
Year*Zone	Hepatocytes	A	97	3	1.7143	0.3977
	Hepatocytes	A	98	2	0.0882	0.2552
	Hepatocytes	A	98	3	0	0.3038
	Hepatocytes	A	97	2	1.25	0.2717
	kidney tubules	A	97	3	4.6786	0.6896
	kidney tubules	A	97	2	4.3167	0.4711
	kidney tubules	A	98	2	0.3309	0.4425
	kidney tubules	A	98	3	0.125	0.5267