Appendix A.

Sediment Grain Size Tables

Appendix A-1. Grain size analysis results by size in mm and phi scale bin

	MM	16	13.5	11.2	9.51	8	6.73	5.66	4.76	4	3.36	2.83	2.38	2	1.68
Sample ID	**Phi Bin**	**-4**	**-3.75**	**-3.5**	**-3.25**	**-3.00**	**-2.75**	**-2.50**	**-2.25**	**-2.00**	**-1.75**	**-1.50**	**-1.25**	**-1.00**	**-0.75**
Sediment Core Samples															
IC-1A	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003413
IC-1A duplicate	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IC-1B	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IC-1C	Bin %	0	0	0	0	0	0	0	0	0	0	0	0.311033	0.069822	0
IC-2A	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IC-2B	Bin %	0	37.815299	0	6.493656	0	0	0	2.281918	0.710905	0.536406	2.133232	0.930837	0.723812	0
IC-2C	Bin %	0	0	0	7.833433	0	0	0	0	0	0.463307	0.85666	0.118513	0.67884	0
IC-3A	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IC-3B	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IC-3C	Bin %	0	0	0	0	0	0	0	0	0.484263	0	0.986876	0.143079	0.803446	0
IC-3D	Bin %	0	0	0	0	4.049761	3.996512	0	2.456042	0.823549	0.213125	0.54257	0.435943	0.406863	0
IC-4A	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IC-4B	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IC-4C	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IC-4D	Bin %	0	0	0	0	0	0	0	0	0	0	0.275299	0	0	0
Surface Sediment Grab Samples															
Grab_1	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0.009733	0
Grab_2	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grab_3	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grab_4	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grab_5	Bin %	0	0	8.195964	3.568259	0	2.016741	0.957295	0.567373	1.957591	0.346922	0.322601	0.98687	0.537798	0
Grab_6	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0.089641	0
Grab_7	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grab_8	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grab_9	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grab_10	Bin %	0	0	14.949041	0	0	4.817423	7.773	1.934484	3.0207	1.751221	2.749772	2.336075	2.413721	0
Grab_11	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grab_12	Bin %	0	0	0	0	0	0	0	0	0	0	0.174714	0.120116	0.043678	0
Grab_13	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grab_14	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grab_14 duplicate	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix A-1. Grain size analysis results by size in mm and phi scale bin

		MM	1.41	1.19	1	0.8409	0.7071	0.5946	0.5	0.4204	0.3536	0.2973	0.25	0.2102	0.1768	0.1487	0.125	0.1051	0.088388
	Sample ID	Phi Bin	-0.50	-0.25	0.00	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50
Sediment Core Samples	IC-1A	Bin %	0.095635	0.068251	0.176946	0.480282	0.572968	0.623523	0.530838	0.41793	0.281849	0.043394	0.121334	0.165149	0.033283	0.105746	0.15251	0.066565	0.086788
	IC-1A duplicate	Bin %	0.000176	0.025796	0.208518	0.412307	0.408867	0.39081	0.511621	0.3835	0.174123	0.166384	0.179712	0.220126	0.185731	0.165954	0.174553	0.208518	0.180572
	IC-1B	Bin %	0	0.088696	0	0.070957	0.496699	0.975659	3.148717	2.98906	0.674091	0.088696	0	0	0	0.053218	0.079827	0.053218	0.088696
	IC-1C	Bin %	0	0	0	1.351035	11.38729	19.10749	37.05695	24.8011	2.798572	0	0	0	0	0	0	0	0
	IC-2A	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	IC-2B	Bin %	0	0	0.974515	1.258748	2.639311	3.532616	7.633699	10.07	5.887693	2.152054	1.055724	1.218143	1.339958	1.055724	0.8527	0.284233	0.365443
	IC-2C	Bin %	0	0	3.44733	7.248233	13.34736	21.12595	22.27506	15.9991	3.624116	0.795538	0	0	0	0	0	0	0
	IC-3A	Bin %	0	0.000682	0.035828	0.116052	0.159474	0.121699	0.158695	0.14429	0.071656	0.133382	0.126177	0.059389	0.094049	0.082755	0.100669	0.082171	0.116636
	IC-3B	Bin %	0	0	0.161301	0.278611	0.777179	1.099782	2.536831	3.57796	2.566158	0.645205	0	0	0.087983	0.395922	0.58655	0.513232	0.395922
	IC-3C	Bin %	0	0	1.405102	1.124081	4.871019	13.95734	21.07652	28.6641	15.73714	3.653264	0.749388	0	0	1.124081	0	0	0.562041
	IC-3D	Bin %	0	0	2.972566	3.810982	4.954277	11.12807	17.68296	21.7988	10.36587	1.905491	0	0	0	0.914636	0	0	0
	IC-4A	Bin %	0	0	0	0	0.553964	2.677494	6.185933	6.92455	7.01688	5.908952	4.893351	5.908952	12.27954	21.235294	10.89463	2.954476	1.569565
	IC-4B	Bin %	0	0	0	0	0	0	0	0	0	0	0	0.940831	4.960746	13.171636	25.31691	22.49442	8.381951
	IC-4C	Bin %	0	0	0	0	0.407855	0.815711	1.15559	3.05892	1.563446	0.883687	0.815711	1.631422	2.175229	4.690337	8.76889	11.02104	9.64356
	IC-4D	Bin %	0	0	0	0	0	0.459832	2.483095	5.60996	9.288615	15.81824	20.50852	18.57723	7.173386	3.770626	3.954559	1.103598	1.103598
Surface Sediment Grab Samples	Grab_1	Bin %	0	0	0	0	0	0	0	9.43423	21.88353	15.17258	13.22738	15.3671	14.491761	5.543828	1.458902	0.778081	0
	Grab_2	Bin %	0	0	0	0	0	0	1.734265	10.1165	21.48562	16.18647	8.767673	8.574976	9.634805	12.525247	6.069927	1.252525	0
	Grab_3	Bin %	0	0	3.827574	0	0	0	1.120266	9.98903	22.49867	16.24385	9.055479	8.121924	8.962124	8.962124	3.734218	0.840199	0
	Grab_4	Bin %	0	0	0	0	0	0	0	4.76722	16.45159	18.50804	12.99302	12.89954	13.647342	9.347494	4.112898	0.841274	0
	Grab_5	Bin %	0	0	1.393514	4.180543	4.877301	8.206252	8.980426	14.7867	19.35437	11.22553	3.328951	1.006427	0	0	0	0	0
	Grab_6	Bin %	0	0	0	0	2.714791	6.515498	14.65987	28.7768	21.62783	6.967963	1.266902	0.723944	1.628874	3.529228	1.266902	0.814437	0
	Grab_7	Bin %	0	0.000118	0.006244	0.012817	0.009202	0.007559	0.024648	0.02859	0.005916	0.002991	0.02925	0.061128	0.084133	0.141647	0.272448	0.463391	0.640861
	Grab_8	Bin %	0	0	0	0	0	0	0	0	0.002954	0.053821	0.125364	0.147023	0.213315	0.368871	0.594001	0.938587	1.253637
	Grab_9	Bin %	0	0	0	0	0	0	0.120864	0.29813	0.209497	0.185325	0.056403	0.112806	0.056403	0.128922	0.193382	0.354971	1.07225
	Grab_10	Bin %	0	0	7.282388	7.970488	5.562139	7.397071	9.059979	10.0921	4.702014	1.376199	0	0	0	0	0.34405	0.573416	0.745441
	Grab_11	Bin %	0	0	0.003062	0.008777	0.015513	0.028372	0.079401	0.08818	0.048376	0.076748	0.117775	0.134105	0.159007	0.173295	0.201872	0.230652	0.230652
	Grab_12	Bin %	0	0	2.412681	0	3.753059	9.717742	19.5025	22.2503	6.768911	1.809511	0	0	0	0	0	0	0
	Grab_13	Bin %	0	0	0	0.001162	0.0362	0.172697	0.365321	0.08336	0.21255	0.195945	0.098305	0.063101	0.03072	0.159745	0.093987	0.00714	0.013783
	Grab_14	Bin %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grab_14 duplicate	Bin %	0	0.000328	0.013132	0.022788	0.043259	0.088836	0.141365	0.10158	0.029354	0.077635	0.092698	0.108148	0.229042	0.296249	0.409418	0.517566	0.529153

Appendix A-1. Grain size analysis results by size in mm and phi scale bin

	MM	0.074325	0.0625	0.052556	0.044194	0.037163	0.03125	0.026278	0.022097	0.018581	0.015625	0.013139	0.011049	0.009291	0.007813	0.00657	0.005524
	Sample ID	**Phi Bin**	**3.75**	**4.00**	**4.25**	**4.50**	**4.75**	**5.00**	**5.25**	**5.50**	**5.75**	**6.00**	**6.25**	**6.50**	**6.75**	**7.00**	**7.25**	**7.50**
Sediment Core Samples	IC-1A	Bin %	0.090158	0.047186	0.036311	0.256224	1.118362	1.956244	2.634339	3.237807	3.716772	4.147841	4.86629	5.642214	6.178655	6.341504	6.197814	5.910435
	IC-1A duplicate	Bin %	0.144028	0.094156	0.04181	0.289605	1.219421	2.059844	2.652317	3.16865	3.638072	4.106892	4.853451	5.628982	6.174545	6.337084	6.193386	5.906334
	IC-1B	Bin %	0.053218	0	0	0.007201	0.328141	1.303449	2.196722	3.117339	3.810081	4.065302	4.439018	5.031495	5.541937	5.778927	5.760697	5.605742
	IC-1C	Bin %	0	0	0	0	0	0.000274	0.014028	0.068893	0.108171	0.109107	0.117523	0.140903	0.164283	0.178311	0.184858	0.186416
	IC-2A	Bin %	0	0	0.005799	0.259933	1.179696	2.069466	2.769286	3.44911	4.14893	4.898736	5.918473	6.788249	7.258127	7.258127	6.89822	6.378354
	IC-2B	Bin %	0.331252	0.104322	0.329966	0.422697	0.391014	0.367831	0.377877	0.379422	0.349285	0.320693	0.328421	0.346194	0.359331	0.359331	0.34774	0.330739
	IC-2C	Bin %	0.618752	0	0	0	0.003292	0.031982	0.059262	0.067257	0.073842	0.073528	0.072901	0.079016	0.087011	0.090931	0.091087	0.089363
	IC-3A	Bin %	0.144676	0.126139	0.506496	1.932822	3.015175	3.768248	4.481945	5.090779	5.463681	5.649412	5.953353	6.13992	6.10079	5.835921	5.38468	4.913882
	IC-3B	Bin %	0.445413	1.185756	3.00062	3.822758	4.027548	4.249405	4.607788	4.752848	4.590722	4.394465	4.454195	4.513926	4.462728	4.283537	3.984884	3.660632
	IC-3C	Bin %	0.655714	0	0	0	0.008804	0.086438	0.159671	0.170476	0.170876	0.155669	0.143263	0.148066	0.161672	0.172476	0.17968	0.185282
	IC-3D	Bin %	0.685977	0	0	0.001411	0.06078	0.220326	0.311495	0.383128	0.436311	0.446079	0.473213	0.536163	0.601284	0.640356	0.653381	0.652295
	IC-4A	Bin %	1.107928	2.031642	0.029073	0.264802	0.424312	0.402311	0.385024	0.377166	0.355951	0.333164	0.34495	0.371666	0.39131	0.39681	0.388953	0.374809
	IC-4B	Bin %	5.817227	3.230797	1.811617	0.751027	0.694916	0.641682	0.651754	0.663264	0.637366	0.617224	0.654631	0.703549	0.733762	0.73664	0.710742	0.673335
	IC-4C	Bin %	11.73567	8.798129	5.94892	2.345322	2.118458	1.878814	1.687098	1.514554	1.3484	1.22698	1.204614	1.207809	1.201418	1.16627	1.102365	1.028874
	IC-4D	Bin %	1.379497	0.0004	0.670463	0.242631	0.395748	0.38554	0.378473	0.379258	0.365125	0.34942	0.366695	0.396533	0.417734	0.42166	0.410667	0.393392
Surface Sediment Grab Samples	Grab_1	Bin %	0	0	0.00079	0.032111	0.11897	0.148449	0.129498	0.116074	0.118706	0.119759	0.120286	0.127129	0.134499	0.136078	0.133709	0.130024
	Grab_2	Bin %	0	0	0.001278	0.050749	0.184012	0.215046	0.170138	0.149693	0.164297	0.170503	0.167583	0.176345	0.187663	0.190219	0.186933	0.181822
	Grab_3	Bin %	0	0	0.001329	0.055797	0.219868	0.301572	0.296922	0.288951	0.299579	0.309543	0.326814	0.352719	0.372647	0.375304	0.36534	0.350727
	Grab_4	Bin %	0	0	0.001286	0.051453	0.193591	0.254691	0.248259	0.248259	0.267554	0.284919	0.311289	0.346019	0.371745	0.37882	0.371745	0.357596
	Grab_5	Bin %	0	0	0	0	0.002882	0.032022	0.073651	0.100229	0.116561	0.121044	0.131931	0.151785	0.171639	0.184768	0.190532	0.192453
	Grab_6	Bin %	0	0.000433	0.029207	0.2704	0.449411	0.441873	0.432452	0.434336	0.425857	0.415493	0.438105	0.47108	0.493692	0.496519	0.482386	0.461659
	Grab_7	Bin %	0.657293	0.450442	0.438702	2.378736	4.189609	4.51603	4.722279	4.882131	4.850152	4.742755	4.936854	5.198406	5.323803	5.245789	5.00342	4.693532
	Grab_8	Bin %	1.253053	1.185816	2.792583	4.63776	4.694894	4.535872	4.580924	4.618449	4.465683	4.315543	4.491742	4.724655	4.826966	4.751501	4.507999	4.21798
	Grab_9	Bin %	4.005479	5.820247	6.78847	6.096696	6.207043	5.949566	5.48059	4.928852	4.395506	3.981703	3.816182	3.724226	3.613879	3.429966	3.19088	2.951794
	Grab_10	Bin %	0.917466	0.6881	0.6881	0	0	0.000163	0.007613	0.034302	0.047732	0.043113	0.042172	0.045851	0.049272	0.05047	0.050213	0.049187
	Grab_11	Bin %	0.19881	0.148228	0.63966	2.261452	3.33809	4.131026	4.806195	5.215216	5.311572	5.301306	5.517491	5.694651	5.714245	5.537493	5.213848	4.84126
	Grab_12	Bin %	0	0.343926	0.585293	0.745801	1.151412	1.42291	1.632258	1.756558	1.789269	1.79254	1.867774	1.929924	1.939737	1.880858	1.766371	1.632258
	Grab_13	Bin %	0.01345	0.024078	0.044927	0.364834	1.583112	2.645076	3.333386	3.913542	4.48466	5.039642	5.739279	6.306272	6.580765	6.522764	6.198939	5.785621
	Grab_14	Bin %	0	0.00078	0.06	0.799994	2.119983	2.929977	3.529972	4.179967	4.789963	5.239959	5.759955	6.199952	6.42995	6.38995	6.129952	5.789955
	Grab_14 duplicate	Bin %	0.498254	0.348962	0.29833	1.545112	2.911035	3.415547	3.871255	4.334302	4.718114	5.012652	5.472725	5.848158	6.031377	5.983226	5.713592	5.357504

Appendix A-1. Grain size analysis results by size in mm and phi scale bin

	MM	0.004645	0.003906	0.003285	0.002762	0.002323	0.001953	0.001642	0.001381	0.001161	0.000983	0.000821	0.000691	0.000581	0.000492	0.00041	0.00035	0.000241	0.00012
	Sample ID	**Phi Bin**	**7.75**	**8.00**	**8.25**	**8.50**	**8.75**	**9.00**	**9.25**	**9.50**	**9.75**	**9.99**	**10.25**	**10.50**	**10.75**	**10.99**	**11.25**	**11.48**	**12.02**	**13.02**
Sediment Core Samples	IC-1A	Bin %	5.354835	4.875869	4.387324	3.822145	3.448552	3.151593	2.92169	2.758841	2.653469	2.433145	2.346931	1.963759	1.590166	1.1112	0.63223	0.14369	0	0
	IC-1A duplicate	Bin %	5.360772	4.891693	4.393686	3.819109	3.445674	3.139377	2.909666	2.746955	2.641671	2.41196	2.33539	1.952539	1.57926	1.100696	0.62213	0.143569	0	0
	IC-1B	Bin %	5.186451	4.821849	4.402558	3.883002	3.536631	3.24495	3.017074	2.853004	2.734508	2.497518	2.406367	2.014421	1.63159	1.130263	0.64717	0.14584	0	0
	IC-1C	Bin %	0.177376	0.167712	0.15462	0.137474	0.126875	0.120641	0.11877	0.121576	0.127811	0.126564	0.13124	0.115965	0.097572	0.07014	0.04021	0.009352	0	0
	IC-2A	Bin %	5.61855	4.958721	4.318886	3.649059	3.199175	2.849265	2.599329	2.419376	2.309404	2.099458	2.019479	1.689564	1.369647	0.949755	0.53986	0.129966	0	0
	IC-2B	Bin %	0.302147	0.278964	0.255009	0.225644	0.207098	0.191643	0.180052	0.170779	0.164597	0.150687	0.145278	0.121322	0.09814	0.068002	0.03864	0.009273	0	0
	IC-2C	Bin %	0.082935	0.077291	0.071177	0.063651	0.059105	0.055499	0.05252	0.050325	0.048758	0.044681	0.043114	0.035902	0.029004	0.020224	0.01145	0.002665	0	0
	IC-3A	Bin %	4.296018	3.805626	3.36423	2.90324	2.618816	2.412848	2.255935	2.148058	2.079408	1.902901	1.844078	1.540059	1.245808	0.863255	0.49049	0.117712	0	0
	IC-3B	Bin %	3.233985	2.9012	2.594014	2.252696	2.039373	1.877247	1.749253	1.655391	1.59566	1.4506	1.390869	1.16048	0.938624	0.648504	0.36692	0.085329	0	0
	IC-3C	Bin %	0.18128	0.178479	0.172877	0.162872	0.160071	0.160071	0.162072	0.166474	0.172476	0.166474	0.168074	0.144864	0.119653	0.084838	0.04842	0.011205	0	0
	IC-3D	Bin %	0.616479	0.585004	0.54376	0.486237	0.444993	0.409177	0.379872	0.355995	0.339714	0.307154	0.29413	0.245289	0.197534	0.137839	0.07815	0.018451	0	0
	IC-4A	Bin %	0.345736	0.322163	0.296233	0.263231	0.241229	0.223157	0.209013	0.198012	0.190155	0.173654	0.167368	0.139866	0.11315	0.078576	0.04479	0.010215	0	0
	IC-4B	Bin %	0.611469	0.561112	0.509317	0.447451	0.405727	0.369759	0.342422	0.319402	0.303576	0.274801	0.261852	0.217251	0.174089	0.120855	0.06906	0.015826	0	0
	IC-4C	Bin %	0.926626	0.846744	0.770058	0.680591	0.623076	0.578342	0.539999	0.514437	0.495266	0.450532	0.434556	0.361065	0.290769	0.201301	0.11503	0.026521	0	0
	IC-4D	Bin %	0.359628	0.332146	0.302307	0.265402	0.23949	0.217504	0.199444	0.184525	0.174318	0.156258	0.149191	0.123279	0.098937	0.069099	0.03926	0.009423	0	0
Surface Sediment Grab Samples	Grab_1	Bin %	0.120549	0.113179	0.104493	0.093175	0.085542	0.078962	0.073961	0.070013	0.067381	0.06159	0.059485	0.050009	0.040534	0.028163	0.01606	0.003685	0	0
	Grab_2	Bin %	0.167583	0.15663	0.144216	0.128151	0.117198	0.108071	0.100404	0.094562	0.090911	0.082879	0.079958	0.066814	0.054035	0.037606	0.02154	0.005111	0	0
	Grab_3	Bin %	0.320171	0.296258	0.269688	0.238468	0.217211	0.199941	0.186656	0.176692	0.170049	0.155436	0.150122	0.125544	0.101631	0.070411	0.03986	0.0093	0	0
	Grab_4	Bin %	0.327367	0.302927	0.275915	0.242471	0.21996	0.201308	0.187159	0.176225	0.168507	0.153715	0.147926	0.123486	0.09969	0.069461	0.03923	0.009004	0	0
	Grab_5	Bin %	0.184127	0.177723	0.167796	0.152105	0.141858	0.132251	0.123926	0.117201	0.112398	0.10183	0.097668	0.081336	0.065645	0.045471	0.02562	0.006084	0	0
	Grab_6	Bin %	0.422088	0.390997	0.358021	0.317508	0.29207	0.271342	0.254383	0.242135	0.233656	0.213871	0.205391	0.171473	0.138498	0.0961	0.05465	0.012248	0	0
	Grab_7	Bin %	4.229029	3.851688	3.484119	3.068182	2.807188	2.614042	2.459723	2.353871	2.286943	2.093797	2.02641	1.697175	1.377284	0.960361	0.54324	0.126067	0	0
	Grab_8	Bin %	3.787819	3.441744	3.105142	2.731169	2.488389	2.301993	2.16264	2.060854	1.987228	1.819714	1.755628	1.465346	1.183751	0.827019	0.46989	0.112678	0	0
	Grab_9	Bin %	2.629947	2.390861	2.170166	1.93108	1.78395	1.664407	1.581647	1.517277	1.480495	1.351756	1.305778	1.094279	0.88278	0.616107	0.34943	0.080002	0	0
	Grab_10	Bin %	0.046022	0.04337	0.040376	0.036441	0.034046	0.032078	0.030539	0.029426	0.028828	0.026689	0.02609	0.02207	0.017964	0.01266	0.00719	0.001711	0	0
	Grab_11	Bin %	4.321759	3.910085	3.518046	3.077104	2.783217	2.538356	2.352317	2.19571	2.088168	1.882637	1.794751	1.491027	1.187139	0.824225	0.46121	0.107921	0	0
	Grab_12	Bin %	1.449079	1.29861	1.154683	0.997673	0.892999	0.811222	0.745801	0.696735	0.664025	0.601875	0.575706	0.480846	0.385985	0.268227	0.15047	0.035982	0	0
	Grab_13	Bin %	5.155645	4.643665	4.131685	3.570889	3.187535	2.892728	2.656503	2.478978	2.350684	2.124459	2.036327	1.69262	1.358564	0.945412	0.53191	0.128028	0	0
	Grab_14	Bin %	5.219959	4.739963	4.239967	3.659971	3.259975	2.909977	2.639979	2.419981	2.269982	2.019984	1.919985	1.579988	1.26999	0.879993	0.5	0.119999	0	0
	Grab_14 duplicate	Bin %	4.8092	4.337853	3.85689	3.308587	2.923809	2.606411	2.356431	2.164409	2.040037	1.82921	1.743529	1.445707	1.157114	0.800601	0.45343	0.106081	0	0

Appendix A-2. Percent composition of core and surface sediment samples.

	Sample ID	% Gravel	% Sand	% Silt	% Clay	% Mud	Gravel/Sand	Sand/Silt	Silt/Clay	Sand/Clay	Sand/Mud	Gravel/Mud
Core Sediment Samples	IC-1A	0	4.163746	62.471515	33.364738	95.836254	0	0.067	1.872	0.125	0.043	0
	IC-1A duplicate	0	4.235455	62.52286	33.241686	95.764545	0	0.068	1.881	0.127	0.044	0
	IC-1B	0	8.860755	56.994352	34.144893	91.139245	0	0.155	1.669	0.26	0.097	0
	IC-1C	0.380856	96.502476	1.617857	1.498812	3.116669	0.004	59.648	1.079	64.386	30.963	0.122
	IC-2A	0	0	69.857777	30.142223	100	N/A	0	2.318	0	0	0
	IC-2B	51.626064	40.756122	5.591651	2.026162	7.617814	1.267	7.289	2.76	20.115	5.35	6.777
	IC-2C	9.950754	88.481477	0.979699	0.58807	1.567769	0.112	90.315	1.666	150.461	56.438	6.347
	IC-3A	0	1.874417	72.338747	25.786836	98.125583	0	0.026	2.805	0.073	0.019	0
	IC-3B	0	15.253803	64.941241	19.804957	84.746197	0	0.235	3.279	0.77	0.18	0
	IC-3C	2.417663	93.579764	2.102132	1.900442	4.002574	0.026	44.517	1.106	49.241	23.38	0.604
	IC-3D	12.924365	76.219641	6.617703	4.238291	10.855994	0.17	11.518	1.561	17.984	7.021	1.191
	IC-4A	0	92.143152	5.508201	2.348647	7.856848	0	16.728	2.345	39.232	11.728	0
	IC-4B	0	84.314518	11.854091	3.831391	15.685482	0	7.113	3.094	22.006	5.375	0
	IC-4C	0	67.165191	26.753268	6.081541	32.834809	0	2.511	4.399	11.044	2.046	0
	IC-4D	0.275299	91.23115	6.265114	2.228438	8.493552	0.003	14.562	2.811	40.94	10.741	0.032
Surface Grab Samples	Grab_1	0.009733	97.357405	1.799811	0.833051	2.632862	0	54.093	2.161	116.869	36.978	0.004
	Grab_2	0	96.348049	2.520494	1.131457	3.651951	0	38.226	2.228	85.154	26.383	0
	Grab_3	0	93.355455	4.533542	2.111003	6.644545	0	20.592	2.148	44.223	14.05	0
	Grab_4	0	93.568419	4.31752	2.114061	6.431581	0	21.672	2.042	44.26	14.548	0
	Grab_5	19.457414	77.340051	1.831347	1.371189	3.202536	0.252	42.231	1.336	56.404	24.15	6.076
	Grab_6	0.089641	90.493461	6.555555	2.861342	9.416897	0.001	13.804	2.291	31.626	9.61	0.01
	Grab_7	0	2.89868	69.202917	27.898403	97.10132	0	0.042	2.481	0.104	0.03	0
	Grab_8	0	6.136443	69.392113	24.471444	93.863557	0	0.088	2.836	0.251	0.065	0
	Grab_9	0	12.61468	69.576163	17.809157	87.38532	0	0.181	3.907	0.708	0.144	0
	Grab_10	41.745436	56.710881	1.19758	0.346103	1.543683	0.736	47.355	3.46	163.855	36.737	27.043
	Grab_11	0	1.942823	71.755349	26.301828	98.057177	0	0.027	2.728	0.074	0.02	0
	Grab_12	0.338507	66.558614	24.640652	8.462227	33.102879	0.005	2.701	2.912	7.865	2.011	0.01
	Grab_13	0	1.571545	68.342131	30.086324	98.428455	0	0.023	2.272	0.052	0.016	0
	Grab_14	0	0.00078	70.309452	29.689768	99.99922	0	0	2.368	0	0	0
	Grab_14 duplicate	0	3.54777	69.659984	26.792246	96.45223	0	0.051	2.6	0.132	0.037	0

Appendix A-3. Interpolated sizes of sediment samples used in graphical statistics

		INTERPOLATED SIZES USED IN GRAPHICAL STATISTICS																	
		D5 Phi	D10 Phi	D16 Phi	D25 Phi	D50 Phi	D75 Phi	D84 Phi	D90 Phi	D95 Phi	D5 mm	D10 mm	D16 mm	D25 mm	D50 mm	D75 mm	D84 mm	D90 mm	D95 mm
Core Sediment Samples	IC-1A	4.711	5.237	5.68	6.196	7.231	8.512	9.221	9.774	10.307	0.0008	0.0011	0.0017	0.0027	0.0067	0.0136	0.0195	0.0265	0.0382
	IC-1A duplicate	1.02	4.977	5.513	6.077	7.24	8.562	9.257	9.798	10.321	0.0008	0.0011	0.0016	0.0026	0.0066	0.0148	0.0219	0.0318	0.4933
	IC-1B	0.496	0.601	0.547	0.673	0.895	1.058	1.149	1.209	1.33	0.3978	0.4325	0.451	0.4803	0.5379	0.6274	0.6844	0.6594	0.7091
	IC-1C	5.145	5.518	5.865	6.262	7.147	8.308	9.014	9.621	10.211	0.0008	0.0013	0.0019	0.0032	0.0071	0.013	0.0172	0.0218	0.0283
	IC-2A	-3.967	-3.934	-3.894	-3.835	-1.493	1.189	1.541	2.642	5.75	0.0186	0.1602	0.3436	0.4386	2.8145	14.2681	14.8689	15.2834	15.6376
	IC-2B	-2.332	-0.123	0.115	0.351	0.701	0.975	1.103	1.197	1.357	0.3903	0.4362	0.4655	0.5087	0.6151	0.7843	0.9232	1.089	5.0359
	IC-2C	4.568	4.935	5.272	5.701	6.751	8.057	8.845	9.511	10.148	0.0009	0.0014	0.0022	0.0038	0.0093	0.0192	0.0259	0.0327	0.0422
	IC-3A	1.012	1.403	4.09	4.685	6.074	7.573	8.385	9.151	9.926	0.001	0.0018	0.003	0.0053	0.0148	0.0389	0.0587	0.378	0.4958
	IC-3B	0.257	0.506	0.658	0.768	1.052	1.273	1.415	1.549	1.943	0.2601	0.3418	0.3749	0.4138	0.4824	0.5873	0.6336	0.7043	0.8371
	IC-3C	-2.937	-1.86	0.008	0.511	0.961	1.247	1.459	5.424	7.677	0.0049	0.0233	0.3637	0.4212	0.5137	0.7016	0.9947	3.6291	7.6578
	IC-3D	0.849	1.023	1.239	1.571	2.469	2.782	2.989	3.724	6.207	0.0135	0.0757	0.126	0.1454	0.1807	0.3366	0.4237	0.492	0.5551
	IC-4A	2.524	2.614	2.722	2.826	3.065	3.492	3.974	5.685	7.503	0.0055	0.0194	0.0636	0.0889	0.1195	0.141	0.1515	0.1633	0.1738
	IC-4B	1.235	2.215	2.708	2.981	3.578	4.448	5.749	6.997	8.365	0.003	0.0078	0.0186	0.0458	0.0837	0.1266	0.1531	0.2154	0.4248
	IC-4C	1.107	1.289	1.455	1.627	1.953	2.317	2.752	3.471	6.223	0.0134	0.0902	0.1484	0.2008	0.2583	0.3237	0.3646	0.4091	0.4641
	IC-4D	0.746	1.26	1.354	1.456	1.818	2.249	2.406	2.518	2.744	0.1493	0.1746	0.1887	0.2104	0.2837	0.3646	0.3913	0.4176	0.5962
Surface Sediment Grab Samples	Grab_1	1.198	1.284	1.316	1.431	1.763	2.464	2.658	2.788	2.996	0.1254	0.1448	0.1585	0.1813	0.2946	0.3709	0.4015	0.4105	0.4359
	Grab_2	1.006	1.354	1.268	1.394	1.694	2.37	2.619	2.828	5.896	0.0168	0.1408	0.1628	0.1935	0.309	0.3805	0.4153	0.3913	0.4979
	Grab_3	1.257	1.386	1.477	1.556	1.948	2.426	2.625	2.831	5.897	0.0168	0.1406	0.1621	0.1861	0.2592	0.3401	0.3593	0.3827	0.4184
	Grab_4	-2.446	-3.374	-2.104	0.25	1.06	1.428	1.56	1.694	1.938	0.261	0.3091	0.3391	0.3717	0.4798	0.8411	4.3003	10.3667	5.4503
	Grab_5	0.616	0.767	0.896	1.012	1.235	1.521	2.377	3.068	6.808	0.0089	0.1193	0.1925	0.3484	0.4249	0.4957	0.5375	0.5875	0.6524
	Grab_6	4.527	4.756	5.088	5.552	6.795	8.209	8.995	9.623	10.214	0.0008	0.0013	0.002	0.0034	0.009	0.0213	0.0294	0.037	0.0434
	Grab_7	3.761	4.32	4.634	5.124	6.5	7.96	8.768	9.455	10.113	0.0009	0.0014	0.0023	0.004	0.011	0.0287	0.0403	0.0501	0.0738
	Grab_8	3.71	3.901	4.132	4.48	5.61	7.316	8.209	9.043	9.874	0.0011	0.0019	0.0034	0.0063	0.0205	0.0448	0.057	0.0669	0.0764
	Grab_9	-2.029	-2.574	-1.536	-2.567	0.032	0.896	1.128	1.295	1.714	0.3049	0.4076	0.4575	0.5376	0.9777	5.9259	2.899	5.9565	4.0811
	Grab_10	4.514	4.869	5.197	5.629	6.756	8.092	8.842	9.483	10.118	0.0009	0.0014	0.0022	0.0037	0.0093	0.0202	0.0273	0.0342	0.0438
	Grab_11	0.294	0.627	0.748	0.888	1.167	5.614	6.815	7.707	8.879	0.0021	0.0048	0.0089	0.0204	0.4452	0.5402	0.5955	0.6473	0.8156
	Grab_12	4.904	5.282	5.648	6.093	7.077	8.318	9.031	9.625	10.208	0.0008	0.0013	0.0019	0.0031	0.0074	0.0146	0.0199	0.0257	0.0334
	Grab_13	4.933	5.287	5.631	6.062	7.066	8.282	8.969	9.563	10.164	0.0009	0.0013	0.002	0.0032	0.0075	0.015	0.0202	0.0256	0.0327
	Grab_14	4.523	4.882	5.276	5.769	6.878	8.116	8.819	9.452	10.098	0.0009	0.0014	0.0022	0.0036	0.0085	0.0183	0.0258	0.0339	0.0435
	Grab_14 duplicate	4.667	5.209	5.666	6.19	7.227	8.503	9.212	9.766	10.302	0.0008	0.0011	0.0017	0.0028	0.0067	0.0137	0.0197	0.027	0.0394

Appendix B.

Sediment Core Descriptions

APPENDIX B
Sediment core descriptions

Core 1

Core 1 was collected in the north-central portion of the agricultural field, approximately 1,150 FT south of the dike and 750 FT west of the northernmost houses along Iverson Road. This core was the most-landward of the five core samples taken.

Core 1 contained silty fine sand with roots and organic materials in the upper 0.3 FT below ground surface (BGS), transitioning into sandy silt with trace organics to a depth of 1.5 FT. A thick layer of clayey silt was present from a depth of 1.5 to 2.05 FT, and was interrupted by a layer of silty sand atop a layer of medium-coarse sand from a depth of 2.05 to 2.85 FT. A layer of sandy silty clay and sandy pebbly silt and clay were present below to a depth of 3.15 FT. As shown in Figure 13, the lower depths of Core 1 were dominated by medium to coarse sand, with much finer silt to clay sizes in the middle and upper elevations. This is trend is termed "fining upwards", indicating lower energy regime after the deposition of the lower sediment. The middle and upper elevations were therefore very likely deposited in a protected water back barrier setting, landward of the prograding spit.

Core 1 was not able to be dated using the Pb-210 analysis because there was no Pb-210 in excess of the background concentration.

Core 2

Core 2 was collected outside of the dike on the protected side of Iverson Spit, approximately 70 FT from the tide gate opening to the northwest. The upper 0.2 FT BGS of Core 2 consisted of sandy silt with organics, with sandy silt and clay from a depth of 0.2—2.3 FT. Sand and silt with abundant organics were present from 2.3—2.55 FT. Silty pebbly sand and pebbly silty sand were present from a depth of 2.55—2.7 FT, transitioning into silty medium sand and pebbly coarse sand from 2.9—3.55 FT. The bottom 0.85 FT of Core 2 was lost, as it was comprised of coarse, sandy material which fell out of the coring cylinder.

Core 2 was dated using the Pb-210 analysis. The oldest detectable Pb-210 was present at a depth of 18 cm (0.6 FT) with an approximate age of 91 years in 2016, having been deposited around 1925.

Core 3

Core 3 was collected from approximately 115 FT southwest of the dike and tide gate, in an area not currently used for agriculture. The uppermost 0.35 FT BGS consisted of sandy silt with abundant organics, and clay sandy silt below to a depth of 1.65 FT. Sandy silt with embedded organics extended from 1.65—2.9 FT, and silty sand with organics was present to a depth of 3.7 FT. Silty coarse sand with organics was present from 3.7—5.15 FT. Silty sand with pebble was present at the deepest extent of the sample, to 6.05 FT.

Core 3 was dated using the Pb-210 analysis. The oldest detectable Pb-210 was present at a depth of 14 cm (0.46 FT) with an approximate age of 79 years in 2016, and would have been deposited around 1937.

Core 4

Core 4 was collected from the tidal flat outside the saltmarsh and spit, near the end of the channel. The upper 0.65 FT of the sample cylinder was found to contain no sediment upon removal. Silty sand with trace organics (wood, shell fragments) was present throughout to a depth of 5.1 FT. The bottom of the core sample slid out during removal from the ground, leaving the last 0.7 FT of the sample cylinder empty.

Core 4 was not able to be dated using Pb-210 analysis because there was no Pb-210 detected in excess of the background concentration.

Core 5

Core 5 was collected at the toe of the 2016 high tide beach on the protected side of Iverson Spit, at the northwestern-most extent of the spit. However, sediment collection could only be conducted at this location to a depth of approximately 1.1 FT. Due to time and expense associated with grain size and Pb-210 analysis, Core 5 was not assessed for these qualities.

Appendix C.

pb-210 Analysis, MyCore Scientific Report Results

Appendix C. MyCore Scientific Report, pb-210 analysis

Core Number	Disk #	Section Top (cm)	of Core Bottom (cm)	% Moisture	Pb-210 (Bq/g)	Precisn 1 STD (%)	Age at top of sectn (year)	CRS Sedimnt Accum Rate (g/m2/yr)	CV in SAR (%)	STD in date (years)
JJ-1	501	0	2	17%	0.017	7.1	There is no Pb-210 in excess of the background concentration			
	502	2	4	19%	0.016	7.4	As a result, this core cannot be dated			
	503	4	6	20%	0.004	22.5				
	504	6	8	23%	0.017	7.3				
	505	8	10	24%	0.024	11.4				
	506	10	12	26%	0.018	6.6				
	507	12	14	26%	0.020	7.9				
	508	14	16	24%	0.016	6.7				
	509	16	18	26%	0.017	6.2				
	510	18	20	86%	0.017	7.3				
	511	20	22	27%	0.017	7.0				
	512	22	24	26%	0.020	6.5				
	513	24	26	26%	0.017	6.8				
	514	26	28	15%	0.014	8.8				
	515	28	30	28%	0.016	7.6				
JJ-2	481	0	2	47%	0.054	4.4	2016.7	1395	32	0
	482	2	4	62%	0.064	4.8	2009	831	25	2
	483	4	6	61%	0.049	5.5	2001	1049	39	6
	484	6	8	46%	0.038	7.1	1993	1452	71	17
	485	8	10	46%	0.042	6.3	1983	795	54	18
	486	10	12	43%	0.021	7.8	1962	NA	NA	NA
	487	12	14	51%	0.029	6.5	1962	1475	184	102
	488	14	16	46%	0.033	6.1	1954	656	104	65
	489	16	18	44%	0.029	5.2	1925	435	169	155
	490	18	20	38%	0.023	5.4			Background	
	491	20	22	44%	0.022	6.9				
	492	22	24	52%	0.014	9.2				
	493	24	26	45%	0.015	7.9				
	494	26	28	41%	0.017	7.1				
	495	28	30	48%	0.027	6.3				
JJ-3	461	0	2	69%	0.214	2.8	2016.7	344	5	0
	462	2	4	60%	0.082	3.4	2003	644	6	1
	463	4	6	65%	0.056	4.1	1981	508	8	3
	464	6	8	60%	0.037	5.0	1963	507	12	7
	465	8	10	40%	0.020	7.7	1937	710	34	27
	466	10	12	37%	0.013	8.1			Background	
	467	12	14	35%	0.012	10.9				
	468	14	16	36%	0.012	10.5				
	469	16	18	38%	0.012	8.2				
	470	18	20	37%	0.012	11.4				
	471	20	22	38%	0.013	9.4				
	472	22	24	36%	0.011	10.6				
	473	24	26	38%	0.011	11.4				
	474	26	28	35%	0.009	12.9				
	475	28	30	37%	0.010	8.5				
JJ-4	521	0	2	15%	0.012	10.0	There is no Pb-210 in excess of the background concentration			
	522	2	4	19%	0.012	7.9	As a result, this core cannot be dated			
	523	4	6	15%	0.010	9.2				
	524	6	8	14%	0.010	11.9				
	525	8	10	15%	0.011	9.6				
	526	10	12	15%	0.013	8.9				
	527	12	14	14%	0.012	6.3				
	528	14	16	53%	0.013	6.8				
	529	16	18	15%	0.010	7.6				
	530	18	20	16%	0.010	7.6				
	531	20	22	17%	0.011	8.0				
	532	22	24	18%	0.010	8.4				
	533	24	26	6%	0.009	7.0				
	534	26	28	18%	0.012	7.4				
	535	28	30	21%	0.011	7.9				

Standard Referenc CLV-1	CV1	Measured	0.693	2.0
	CV2	Measured	0.686	2.0
	CL1	Measured	0.633	2.6
	CL2	Measured	0.648	2.4
	CL3	Measured	0.646	2.6
	CL4	Measured	0.634	2.5
		Accepted	0.670	2.0
Process Blanks	B1		0.0005	57.8
	B2		0.0019	16.3
	B3		0.0011	21.4

Appendix D.

Direct AMS radiocarbon dating report

Report: **CGS-03** 17 October 2016

Customer: 1379
Jonathan Waggoner
Coastal Geological Services, Inc.
1712 Ellis St., Ste 103
Bellingham, WA 98225
USA

Samples submitted for radiocarbon dating have been processed and measured by AMS. The following results were obtained:

DirectAMS code	Submitter ID	Sample type	Fraction of modern		Radiocarbon age	
			pMC	1σ error	BP	1σ error
D-AMS 018439	CC1 - 0.8	wood	104.69	0.33	Modern	
D-AMS 018440	CC1 - 2.0	wood	100.48	0.26	Modern	
D-AMS 018441	CC4 - 2.9	wood	105.61	0.33	Modern	
D-AMS 018442	I2 - 2.8	wood	97.92	0.36	169	30
D-AMS 018443	I3 - 3.2	wood	89.01	0.27	935	24
D-AMS 018444	I3 - 4.25	wood	90.41	0.32	810	28
D-AMS 018445	I3 - 5.2	wood	90.63	0.25	790	22
D-AMS 018446	I4 - 3.6	wood	97.87	0.28	173	23
D-AMS 018447	I4 - 4.5	wood	98.50	0.39	121	32

Results are presented in units of percent modern carbon (pMC) and the uncalibrated radiocarbon age before present (BP). All results have been corrected for isotopic fractionation with an unreported $\delta^{13}C$ value measured on the prepared carbon by the accelerator. The pMC reported requires no further correction for fractionation.

DirectAMS
RADIOCARBON DATING SERVICE
measure more. learn more.

Report: **1379-019543-019548** 12 December 2016

Customer: 1379
Jonathan Waggoner
Coastal Geological Services, Inc.
1712 Ellis St., Ste 103
Bellingham, WA 98225
USA

Samples submitted for radiocarbon dating have been processed and measured by AMS. The following results were obtained:

DirectAMS code	Submitter ID	Sample type	Fraction of modern		Radiocarbon age	
			pMC	1σ error	BP	1σ error
D-AMS 019543	I3-1.6	wood	96.98	0.33	246	27
D-AMS 019544	I3-3.8	wood	90.42	0.42	809	37
D-AMS 019545	I3-4.9	wood	90.24	0.33	825	29
D-AMS 019546	I4-2.0	wood	118.53	0.33	Modern	
D-AMS 019547	I4-3.7	wood	98.37	0.32	132	26
D-AMS 019548	I4-4.8	wood	99.33	0.42	54	34

Results are presented in units of percent modern carbon (pMC) and the uncalibrated radiocarbon age before present (BP). All results have been corrected for isotopic fractionation with an unreported $\delta^{13}C$ value measured on the prepared carbon by the accelerator. The pMC reported requires no further correction for fractionation.

Appendix E.

Groundwater Monitoring Report, Skillings Connolly Inc.