Table S1. Sample data on 200 sets of control factors

No.	Aquifer thick-ness(m)	Grading Coefficient	Marlstone Thickness	Water Per-meability	Termi-nation Pressure	Grouting Quantity	*X*	*Y*
YS1	6.001	2.699	4.996	0.496	452.792	6.175	39425996.73	3713438.74
YS2	6.996	2.648	5.957	0.565	1007.436	4.619	39425987.57	3713408.34
YS3	6.009	2.572	5.139	0.921	6302.712	4.486	39425971.52	3713387.36
YS4	5.014	2.967	3.940	0.648	277.118	5.244	39425970.14	3713346.32
YS5	8.001	2.438	6.986	0.627	312.844	5.047	39425969.29	3713325.51
YS6	9.994	2.141	7.984	7.260	651.562	4.009	39425989.00	3713270.77
YS7	5.010	1.996	5.043	5.635	1087.497	4.991	39425988.34	3713218.98
YS8	6.001	2.062	5.986	6.506	592.364	4.900	39425988.56	3713168.31
YS9	9.989	2.125	9.916	6.429	422.912	4.281	39425947.55	3713300.66
YS10	8.012	2.009	8.094	2.127	601.188	4.529	39425948.46	3713250.33
YS11	8.003	2.084	8.008	6.033	474.649	4.430	39425946.99	3713189.37
YS12	5.992	2.630	5.811	6.900	2200.364	5.556	39425980.03	3712943.21
YS13	5.001	2.491	4.956	5.970	980.654	5.209	39425981.27	3712856.01
YS14	6.001	1.982	5.015	6.433	1580.318	4.399	39425979.71	3712806.36
YS15	7.999	2.327	7.926	3.417	2910.450	5.630	39425939.34	3712954.91
YS16	6.003	5.237	0.150	2.848	418.894	4.360	39425941.82	3712869.41
YS17	8.997	2.265	8.897	4.094	5484.103	4.884	39425937.86	3712818.19
YS18	6.002	2.762	5.687	2.913	1517.761	4.464	39426000.53	3713348.54
YS19	7.998	2.012	7.977	3.364	2376.983	4.597	39425985.06	3713083.10
YS20	5.006	1.982	5.014	3.413	1942.352	4.186	39425979.78	3712998.19
YS21	4.014	2.090	4.084	3.356	2447.279	4.338	39425945.72	3713095.62
YS22	5.002	1.974	5.023	3.271	3101.845	4.305	39425942.87	3713006.89
YS23	6.990	2.791	6.640	4.648	1064.394	4.275	39425966.78	3713382.83
YS24	14.524	2.023	14.456	1.439	447.848	5.981	39425939.00	3713219.00
YS25	8.252	2.107	8.080	1.743	559.482	5.934	39425957.00	3713106.00
YS26	8.786	2.494	6.959	1.945	396.782	5.949	39425962.96	3713329.58
YS27	2.707	4.837	0.045	1.025	305.521	10.961	39425954.88	3712910.47
YS28	7.050	4.453	0.267	3.568	231.905	5.956	39425949.00	3713363.27
YS29	5.750	3.308	0.484	1.151	557.732	5.876	39425990.00	3713351.00
YS30	8.541	2.060	8.587	1.997	452.136	5.903	39425954.00	3713295.00
YS31	4.005	3.033	2.159	1.038	168.102	6.458	39425937.31	3713151.09
YS32	6.744	4.712	1.092	1.794	164.887	9.934	39425937.00	3712895.00
YS33	3.054	3.911	0.124	1.211	664.581	10.876	39425976.66	3712925.28
YS34	7.300	0.044	0.004	0.134	2.432	0.002	39425639.21	3712544.36
YS35	5.641	3.930	0.005	8.285	2.518	0.003	39426011.95	3712471.01
YS36	11.739	3.955	0.000	0.105	0.000	0.000	39426155.41	3712156.92
YS37	7.650	3.000	0.001	1.998	0.000	0.001	39426292.69	3711856.19
YS38	4.960	0.705	4.635	0.825	215.642	1.430	39425590.86	3713305.50

No.	Aquifer thick-ness(m)	Grading Coefficient	Marlstone Thickness	Water Per-meability	Termi-nation Pressure	Grouting Quantity	*X*	*Y*
YS39	11.329	2.977	0.018	3.892	2.390	0.017	39426087.23	3713436.30
YS40	13.193	2.986	0.013	0.363	3.413	0.010	39426071.14	3713013.98
YS41	11.067	3.743	0.005	2.769	47.276	0.011	39426483.29	3712264.09
YS42	7.507	3.424	4.134	3.354	528.546	5.368	39425896.73	3713388.74
YS43	8.136	3.304	4.919	3.694	345.279	5.326	39425887.57	3713358.34
YS44	8.502	2.979	6.078	3.555	323.230	5.149	39425871.52	3713337.36
YS45	9.196	2.588	7.846	3.202	359.758	5.059	39425870.14	3713296.32
YS46	9.452	2.452	8.522	2.754	402.512	5.092	39425869.29	3713275.51
YS47	10.229	2.339	9.839	1.754	487.879	5.470	39425889.00	3713220.77
YS48	7.106	2.666	6.339	1.532	712.205	5.655	39425888.34	3713168.98
YS49	4.864	2.579	4.269	1.576	1521.011	5.384	39425888.56	3713118.31
YS50	9.040	2.370	8.324	2.104	502.775	5.084	39425847.55	3713250.66
YS51	8.214	2.387	7.686	1.538	724.407	5.261	39425848.46	3713200.33
YS52	6.088	2.434	5.582	1.349	1307.311	5.238	39425846.99	3713139.37
YS53	7.587	3.488	4.252	1.988	2285.515	6.468	39425880.03	3712893.21
YS54	8.422	2.520	6.535	3.217	4078.369	4.535	39425881.27	3712806.01
YS55	8.084	2.051	6.205	3.916	3720.768	3.771	39425879.71	3712756.36
YS56	7.387	2.813	4.992	1.808	2680.378	5.657	39425839.34	3712904.91
YS57	8.074	2.511	5.661	2.527	3461.514	4.548	39425841.82	3712819.41
YS58	7.990	2.064	5.633	3.059	3428.379	3.762	39425837.86	3712768.19
YS59	9.534	2.552	8.280	3.958	339.005	5.022	39425900.53	3713298.54
YS60	5.089	2.148	4.995	2.373	2849.311	4.842	39425885.06	3713033.10
YS61	7.026	2.704	5.461	2.112	2600.274	6.160	39425879.78	3712948.19
YS62	5.335	2.194	5.012	1.822	2489.891	4.944	39425845.72	3713045.62
YS63	6.731	2.490	5.322	1.829	2682.389	5.557	39425842.87	3712956.89
YS64	8.543	2.903	6.297	3.465	327.003	5.108	39425866.78	3713332.83
YS65	7.039	2.391	6.524	1.361	1003.590	5.209	39425839.00	3713169.00
YS66	5.109	2.215	4.868	1.902	2464.618	4.933	39425857.00	3713056.00
YS67	9.279	2.474	8.253	2.765	400.900	5.064	39425862.96	3713279.58
YS68	7.899	3.025	5.078	2.175	3014.745	5.352	39425854.88	3712860.47
YS69	8.624	2.656	6.972	3.032	357.758	4.974	39425849.00	3713313.27
YS70	9.390	2.618	7.968	3.726	336.006	5.065	39425890.00	3713301.00
YS71	9.201	2.366	8.552	2.044	507.667	5.147	39425854.00	3713245.00
YS72	5.451	2.293	5.079	1.468	1826.978	5.022	39425837.31	3713101.09
YS73	7.913	2.687	5.335	2.203	3189.940	4.901	39425837.00	3712845.00
YS74	7.788	3.451	4.452	2.133	2580.855	5.961	39425876.66	3712875.28
YS75	7.053	0.179	0.080	0.107	81.417	0.162	39425600.21	3712494.36
YS76	6.770	2.131	0.226	3.486	190.443	0.031	39425811.95	3712421.01
YS77	9.827	3.618	0.158	0.742	70.900	0.150	39426055.41	3712106.92

No.	Aquifer thick-ness(m)	Grading Coefficient	Marlstone Thickness	Water Per-meability	Termi-nation Pressure	Grouting Quantity	*X*	*Y*
YS78	7.697	2.996	0.100	1.390	48.000	0.111	39426192.69	3711806.19
YS79	5.231	0.870	4.910	0.820	431.054	1.913	39425610.86	3713255.50
YS80	7.584	3.340	4.362	3.318	477.174	5.310	39425887.23	3713386.30
YS81	6.462	2.071	5.115	1.318	2463.328	4.672	39425771.14	3712963.98
YS82	11.505	3.814	0.029	1.631	24.990	0.006	39426183.29	3712214.09
YS83	6.242	1.638	5.348	1.498	310.567	3.133	39425696.73	3713338.74
YS84	6.157	1.527	5.451	1.367	380.769	3.033	39425687.57	3713308.34
YS85	5.951	1.376	5.389	1.212	427.209	2.817	39425671.52	3713287.36
YS86	5.916	1.345	5.466	1.082	583.084	2.895	39425670.14	3713246.32
YS87	5.883	1.336	5.466	1.015	674.874	2.943	39425669.29	3713225.51
YS88	5.952	1.482	5.533	0.944	996.042	3.392	39425689.00	3713170.77
YS89	5.820	1.488	5.314	0.849	1300.616	3.511	39425688.34	3713118.98
YS90	5.811	1.504	5.109	0.815	1593.084	3.611	39425688.56	3713068.31
YS91	5.634	1.179	5.252	0.852	751.679	2.699	39425647.55	3713200.66
YS92	5.618	1.212	5.166	0.748	1010.035	2.892	39425648.46	3713150.33
YS93	5.640	1.237	4.974	0.661	1319.905	3.053	39425646.99	3713089.37
YS94	6.849	1.350	4.221	0.969	2146.201	3.107	39425680.03	3712843.21
YS95	7.111	1.092	3.525	1.144	1924.296	2.397	39425681.27	3712756.01
YS96	7.163	0.902	2.907	1.174	1620.303	1.888	39425679.71	3712706.36
YS97	6.578	1.110	3.983	0.671	1876.563	2.751	39425639.34	3712854.91
YS98	6.887	0.901	3.317	0.759	1699.165	2.191	39425641.82	3712769.41
YS99	6.981	0.706	2.709	0.721	1418.273	1.717	39425637.86	3712718.19
YS100	6.302	1.580	5.775	1.246	612.325	3.355	39425700.53	3713248.54
YS101	6.109	1.510	4.818	0.815	1958.162	3.638	39425685.06	3712983.10
YS102	6.575	1.444	4.491	0.872	2126.798	3.400	39425679.78	3712898.19
YS103	5.919	1.263	4.659	0.622	1709.383	3.170	39425645.72	3712995.62
YS104	6.350	1.210	4.291	0.647	1888.188	3.010	39425642.87	3712906.89
YS105	5.890	1.334	5.359	1.172	436.000	2.750	39425666.78	3713282.83
YS106	5.569	1.169	5.016	0.664	1143.066	2.868	39425639.00	3713119.00
YS107	5.912	1.331	4.752	0.673	1730.693	3.301	39425657.00	3713006.00
YS108	5.817	1.288	5.406	0.997	645.237	2.834	39425662.96	3713229.58
YS109	6.833	1.102	3.791	0.830	1918.645	2.624	39425654.88	3712810.47
YS110	5.668	1.180	5.239	1.024	478.854	2.511	39425649.00	3713263.27
YS111	6.170	1.501	5.661	1.199	590.257	3.190	39425690.00	3713251.00
YS112	5.691	1.228	5.301	0.865	793.550	2.815	39425654.00	3713195.00
YS113	5.684	1.196	4.798	0.597	1457.912	3.015	39425637.31	3713051.09
YS114	6.789	0.951	3.518	0.705	1754.827	2.348	39425637.00	3712795.00
YS115	6.901	1.282	4.080	0.978	2102.843	2.946	39425676.66	3712825.28
YS116	7.009	0.944	0.028	1.370	16.883	0.120	39425689.21	3712444.36

No.	Aquifer thick-ness(m)	Grading Coefficient	Marlstone Thickness	Water Per-meability	Termi-nation Pressure	Grouting Quantity	*X*	*Y*
YS117	7.923	3.847	0.150	5.632	87.903	0.092	39426061.95	3712371.01
YS118	10.709	3.533	0.020	0.803	0.000	0.021	39426205.41	3712056.92
YS119	8.072	2.849	0.110	2.036	0.000	0.094	39426342.69	3711756.19
YS120	5.572	1.127	5.199	0.836	713.761	2.581	39425640.86	3713205.50
YS121	10.470	2.470	1.989	5.007	432.608	0.818	39426137.23	3713336.30
YS122	9.857	2.758	0.875	3.845	50.103	2.028	39426121.14	3712913.98
YS123	7.233	2.104	0.410	1.080	216.755	0.462	39426533.29	3712164.09
YS124	6.507	1.918	5.253	1.753	270.719	3.514	39425725.73	3713373.74
YS125	6.488	1.806	5.461	1.652	319.668	3.423	39425716.57	3713343.34
YS126	6.316	1.649	5.485	1.490	355.276	3.212	39425700.52	3713322.36
YS127	6.320	1.593	5.682	1.358	481.044	3.261	39425699.14	3713281.32
YS128	6.292	1.570	5.733	1.278	559.657	3.293	39425698.29	3713260.51
YS129	6.374	1.686	5.918	1.164	840.019	3.712	39425718.00	3713205.77
YS130	6.091	1.673	5.663	1.010	1153.500	3.815	39425717.34	3713153.98
YS131	5.892	1.674	5.376	0.946	1489.841	3.905	39425717.56	3713103.31
YS132	5.981	1.392	5.536	1.080	639.733	3.025	39425676.55	3713235.66
YS133	5.892	1.399	5.483	0.936	892.147	3.188	39425677.46	3713185.33
YS134	5.767	1.406	5.265	0.810	1231.691	3.338	39425675.99	3713124.37
YS135	6.844	1.627	4.607	1.096	2337.620	3.650	39425709.03	3712878.21
YS136	7.200	1.404	4.139	1.358	2289.491	2.988	39425710.27	3712791.01
YS137	7.259	1.212	3.640	1.478	2063.048	2.471	39425708.71	3712741.36
YS138	6.562	1.357	4.379	0.814	2062.467	3.233	39425668.34	3712889.91
YS139	6.939	1.185	3.877	0.968	2019.206	2.729	39425670.82	3712804.41
YS140	7.046	0.994	3.361	1.002	1803.783	2.253	39425666.86	3712753.19
YS141	6.758	1.829	5.998	1.564	493.713	3.706	39425729.53	3713283.54
YS142	5.997	1.676	5.040	0.941	1966.547	3.971	39425714.06	3713018.10
YS143	6.498	1.670	4.787	0.991	2235.862	3.864	39425708.78	3712933.19
YS144	5.868	1.433	4.919	0.751	1717.845	3.495	39425674.72	3713030.62
YS145	6.291	1.423	4.612	0.776	2002.586	3.435	39425671.87	3712941.89
YS146	6.258	1.605	5.472	1.446	362.668	3.146	39425695.78	3713317.83
YS147	5.757	1.342	5.317	0.829	1042.468	3.149	39425668.00	3713154.00
YS148	5.863	1.498	5.003	0.801	1722.485	3.618	39425686.00	3713041.00
YS149	6.211	1.524	5.658	1.257	536.694	3.187	39425691.96	3713264.58
YS150	6.861	1.382	4.265	0.993	2174.895	3.163	39425683.88	3712845.47
YS151	6.034	1.439	5.409	1.280	399.998	2.899	39425678.00	3713298.27
YS152	6.602	1.752	5.871	1.503	480.022	3.549	39425719.00	3713286.00
YS153	6.048	1.440	5.600	1.093	675.208	3.139	39425683.00	3713230.00
YS154	5.722	1.360	5.069	0.734	1409.805	3.303	39425666.31	3713086.09
YS155	6.823	1.224	4.024	0.888	2032.942	2.871	39425666.00	3712830.00

No.	Aquifer thick-ness(m)	Grading Coefficient	Marlstone Thickness	Water Per-meability	Termi-nation Pressure	Grouting Quantity	*X*	*Y*
YS156	6.919	1.571	4.509	1.117	2328.996	3.503	39425705.66	3712860.28
YS157	7.020	1.038	0.272	1.804	203.441	0.089	39425718.21	3712479.36
YS158	7.942	3.850	0.049	6.281	68.444	0.000	39426090.95	3712406.01
YS159	11.308	3.528	0.002	1.018	0.546	0.000	39426234.41	3712091.92
YS160	7.678	2.924	0.193	0.898	99.964	0.225	39426371.69	3711791.19
YS161	6.001	2.699	4.996	0.495	450.977	6.200	39425669.86	3713240.50
YS162	6.997	2.643	5.961	0.564	903.017	4.600	39426166.23	3713371.30
YS163	6.008	2.585	5.125	0.891	6851.987	4.500	39426150.14	3712948.98
YS164	5.013	2.950	3.946	0.639	269.039	5.200	39426562.29	3712199.09
YS165	8.001	2.444	6.988	0.616	304.042	5.000	39425876.73	3713538.74
YS166	9.995	2.147	7.986	7.265	650.008	4.000	39425867.57	3713508.34
YS167	5.009	1.997	5.038	5.634	1093.992	5.000	39425851.52	3713487.36
YS168	6.001	2.056	5.987	6.511	591.000	4.900	39425850.14	3713446.32
YS169	9.990	2.113	9.925	6.451	424.073	4.200	39425849.29	3713425.51
YS170	8.010	2.008	8.085	2.123	603.026	4.500	39425869.00	3713370.77
YS171	8.003	2.076	8.007	6.040	476.027	4.400	39425868.34	3713318.98
YS172	5.993	2.567	5.830	6.925	2253.140	5.400	39425868.56	3713268.31
YS173	5.001	2.442	4.960	5.973	982.008	5.200	39425827.55	3713400.66
YS174	6.001	1.984	5.013	6.434	1566.999	4.400	39425828.46	3713350.33
YS175	7.999	2.294	7.933	3.418	2927.027	5.600	39425826.99	3713289.37
YS176	6.002	5.314	0.135	2.847	370.144	4.200	39425860.03	3713043.21
YS177	8.997	2.239	8.907	4.093	5561.985	4.900	39425861.27	3712956.01
YS178	6.002	2.685	5.719	2.924	1575.058	4.400	39425859.71	3712906.36
YS179	7.999	2.011	7.980	3.365	2388.997	4.600	39425819.34	3713054.91
YS180	5.005	1.983	5.012	3.411	1924.987	4.200	39425821.82	3712969.41
YS181	4.013	2.081	4.076	3.361	2484.034	4.300	39425817.86	3712918.19
YS182	5.002	1.977	5.021	3.271	3109.004	4.300	39425880.53	3713448.54
YS183	6.991	2.712	6.676	4.694	520.068	4.200	39425865.06	3713183.10
YS184	14.527	2.021	14.466	1.436	445.983	6.000	39425859.78	3713098.19
YS185	8.254	2.096	8.099	1.734	479.941	6.000	39425825.72	3713195.62
YS186	8.788	2.445	6.963	1.949	405.954	6.000	39425822.87	3713106.89
YS187	2.706	4.853	0.040	1.023	296.965	11.000	39425846.78	3713482.83
YS188	7.050	4.508	0.240	3.306	233.460	6.000	39425819.00	3713319.00
YS189	5.750	3.477	0.436	1.142	477.889	6.000	39425837.00	3713206.00
YS190	8.540	2.054	8.581	1.975	451.913	6.000	39425842.96	3713429.58
YS191	4.004	3.080	2.144	1.028	150.962	6.500	39425834.88	3713010.47
YS192	6.744	4.692	1.093	1.707	150.940	10.000	39425829.00	3713463.27
YS193	3.053	4.020	0.111	1.198	639.888	11.000	39425870.00	3713451.00
YS194	7.300	0.039	0.004	0.134	0.002	0.000	39425834.00	3713395.00

No.	Aquifer thick-ness(m)	Grading Coefficient	Marlstone Thickness	Water Per-meability	Termi-nation Pressure	Grouting Quantity	*X*	*Y*
YS195	5.641	3.937	0.005	8.286	0.003	0.225	39425817.31	3713251.09
YS196	11.739	3.959	0.000	0.104	0.000	6.200	39425817.00	3712995.00
YS197	7.650	3.000	0.001	1.998	0.001	4.600	39425856.66	3713025.28
YS198	4.869	0.635	4.571	0.789	1.287	4.500	394256739.21	3712644.36
YS199	11.329	2.979	0.016	3.893	0.016	5.200	39425891.95	3712571.01
YS200	13.194	2.987	0.012	0.362	0.009	5.000	39426035.41	3712256.92