

Supplementary Material

Article

Geological and Structural Control on Localized Ground Effects within the Heunghae Basin During the Pohang Earthquake (M_w 5.4, 15th November 2017), South Korea

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Figure S1. Google Earth Image showing temporary stations installed by KMA around the epicentral area immediately after the earthquake to measure HVSR ratio and understand the subsoil conditions. The yellow square without number indicates temporary stations without any data (modified from [35]).

Table S1. Recorded PGA at different seismic stations around epicentral area of M_w 5.4 Pohang earthquake (KMA Report (modified from [35])).

Station Name	Site	Latitude	Longitude	Epicentral Distance (Km)	PGA (g)
PHA2	Pohang	36.193	129.371	9.3	0.29
DKJ	Deokjeong-ri	35.947	129.109	29.3	0.035
CSO	Cheongsong	36.392	129.079	39.3	0.045
ADO2	Andong	36.412	129.949	49.1	0.037

Table S2. Detailed liquefaction features mapped during M_w 5.4 Pohang post-earthquake field survey (Our data from the present study combined with [40]).

No. of Data	Latitude	Longitude	Orientation	Type of Ejected Material
1	36.1112	129.3712	N21W	Fine Sand
2	36.11047	129.3705	N31W	Fine Sand
3	36.11024	129.3704	N51E	Fine Sand
4	36.11024	129.3703	N64E	Fine Sand
5	36.11035	129.3703		Fine Sand
6	36.11035	129.3703		Fine Sand
7	36.11033	129.3703	N22W	Fine Sand
8	36.1103	129.3702	N10W	Fine Sand
9	36.11029	129.3703		Fine Sand
10	36.11107	129.3699	N14W	Fine Sand
11	36.11028	129.37		Fine Sand
12	36.11026	129.37		Fine Sand
13	36.10995	129.37	N68E	Fine Sand, Gravel
14	36.10994	129.3699	N48E	Fine Sand, Gravel
15	36.11016	129.3698		Medium Sand to Fine
16	36.10987	129.3697		Fine to Medium Sand Gravel
17	36.10993	129.3697		Medium Sand Gravel
18	36.10982	129.3696		Medium Sand Gravel
19	36.10981	129.3696		Fine Sand
20	36.10974	129.3695	N17W	Fine Sand, Gravel
21	36.10989	129.3695	N64E	Fine Sand
22	36.1098	129.3693		Fine to Medium Sand
23	36.10973	129.3692		Fine to Medium Sand
24	36.10976	129.3692	N14W	Fine to Medium Sand
25	36.10971	129.3692	N16W	Fine to Medium Sand
26	36.10971	129.3692		Fine to Medium Sand
27	36.10959	126.3693		Medium Sand
28	36.10959	129.3693		Medium Sand, Gravel
29	36.10959	129.3692		Medium Sand, Gravel
30	36.10957	129.3692	N36E	Medium Sand, Gravel
31	36.10949	129.3692	N18E	Medium Sand, Gravel
32	36.10947	129.3692	N65E	Fine to Medium Sand
33	36.10946	129.3691		Medium Sand
34	36.10945	129.3691	N76E	Medium Sand with Gravel
35	36.10934	129.3691		Medium Sand with Gravel
36	36.10944	129.3689		Fine to Medium Sand
37	36.10948	129.3689	N52E	Fine to Medium Gravel
38	36.10954	129.3689		Fine Sand
39	36.10952	129.369	N74E	Fine Sand
40	36.10947	129.3689	N56E	Fine Sand

41	36.10939	129.3688		Fine Sand
42	36.10931	129.3687		Fine Sand
43	36.10926	129.3687	N54E	Fine to Medium Sand
44	36.1093	129.3687		Fine to Medium Sand with Gravel
45	36.1093	129.3687	N72E	Fine Sand
46	36.10929	129.3687	N84E	Fine Sand
47	36.10568	129.3691		Fine to Medium Sand
48	36.10963	129.369		Fine Sand
49	36.10944	129.3688	N30E	Fine Sand
50	36.10939	129.3685	N56W	Fine to Medium Sand
51	36.10883	129.368		Medium Sand with Gravel
52	36.10883	129.368		Medium Sand with Gravel
53	38.10896	129.368	N34E	Medium Sand
54	36.109	129.3679		Medium Sand
55	36.10934	129.3685		Medium Sand with Gravel
56	36.10931	129.3685	N54W	Medium Sand
57	36.1093	129.3686		Medium Sand with Gravel
58	36.10927	129.3686		Medium Sand
59	36.1092	129.3688		Medium Sand
60	36.10907	129.3688		Coarse Sand
61	36.10919	129.3687	NS	Medium Sand
62	36.10889	129.3687	N36E	Coarse to Medium Sand with gavel
63	36.10882	129.3686	N38E	Medium Sand with Gravel
64	36.10878	129.3686		Medium Sand
65	36.10896	129.3684		Fine to Medium Sand
66	36.10896	129.3684		Fine to Medium Sand
67	36.10895	129.3684		Fine to Medium Sand
68	36.10882	129.3682		Coarse Sand
69	36.10862	129.3683		Medium Sand
70	36.10854	129.3683		Medium Sand
71	36.10871	129.3679		Medium Sand
72	36.10871	129.3679		Medium Sand
73	36.10871	129.3679		Medium Sand
74	36.10873	129.3679		Medium Sand with Gravel
75	36.10873	129.3679		Medium Sand with Gravel
76	36.10867	129.3678	N40E	Fine Sand
77	36.10862	129.3677	N15E	Fine Sand
78	36.10853	129.3677	N27E	Fine Sand
79	36.10862	129.3677		Fine Sand
80	36.10859	129.3677		Fine Sand
81	36.10852	129.3673		Fine Sand
82	36.10876	129.3678		Fine Sand
83	36.10879	129.3677		Fine Sand
84	36.1088	129.3677	N52W	Fine Sand
85	36.10883	129.3677		Fine Sand
86	36.10888	129.3676	N70W	Fine Sand
87	36.10886	129.3675	N64W	Fine Sand
88	36.10882	129.3675	N10E	Fine Sand
89	36.10885	129.3675	N20W	Fine Sand
90	36.10882	129.3672		Fine Sand
91	36.10886	129.3671		Fine Sand
92	36.10868	129.3671		Fine Sand
93	36.10864	129.3671	N10E	Fine Sand
94	36.10862	129.3671	N20W	Fine Sand
95	36.10862	129.3671		Fine Sand

96	36.10859	129.3671		Fine Sand
97	36.10857	129.3671		Fine Sand
98	36.10857	129.3671		Fine Sand
99	36.10854	129.3671	N44W	Fine Sand
100	36.10852	129.3675	N40W	Fine Sand
101	36.10858	129.3669	N26E	Fine Sand
102	36.10859	129.3667	N70E	Fine Sand
103	36.10859	129.3666	N54W	Fine Sand
104	36.1087	129.3664	N54W	Fine Sand
105	36.10876	129.3663		Fine Sand
106	36.10882	129.3662		Fine Sand
107	36.1092	129.3657		Fine Sand
108	36.10936	129.3658		Fine Sand
109	36.10942	129.3658		Fine Sand
110	36.10954	129.3659		Fine Sand
111	36.10887	129.3657	NS	Fine Sand
112	36.1088	129.3658	N56W	Fine Sand
113	36.10875	129.3658		Fine Sand
114	36.1089	129.366		Fine Sand
115	36.10887	129.366		Fine Sand
116	36.10879	129.3662	N51W	Fine Sand
117	36.10872	129.3663		Fine Sand
118	36.10869	129.3664		Fine Sand
119	36.10866	129.3664	N51W	Fine Sand
120	36.10862	129.3665	N51W	Fine Sand
121	36.10829	129.3664		Fine Sand
122	36.10867	129.3661	N44W	Fine Sand
123	36.10868	129.3662		Fine Sand
124	36.10855	129.3662	N19E	Fine Sand
125	36.10841	129.3672	N77W	Fine Sand
126	36.10839	129.3672		Fine Sand
127	36.10835	129.3672		Fine Sand
128	36.10693	129.3665	N30E	Fine Sand
129	36.10748	129.3667	N26E	Fine Sand
130	36.10741	129.3665		Fine Sand
131	36.10713	129.3662		Fine Sand
132	36.10727	129.3658		Fine to Medium Sand
133	36.10787	129.3662		Fine to Medium Sand
134	36.1081	129.3658		Fine Sand
135	36.11266	129.3728	N21E	Fine Sand
136	36.11379	129.3711		Fine Sand
137	36.11383	129.3711		Fine to Medium Sand
138	36.1138	129.371		Fine to Medium Sand
139	36.11372	129.3707		Fine to Medium Sand with Gravel
140	36.11378	129.3707		Fine to Medium Sand with Gravel
141	36.11402	129.3706	EW	Fine to Medium Sand
142	36.11402	129.3705	EW	Fine Sand
143	36.11395	129.3703	N27W	Fine Sand
144	36.11414	129.3704	N51E	Fine Sand
145	36.11417	129.3702		Fine Sand
146	36.12204	129.3684	N44W	Fine Sand
147	36.12197	129.3686	N24W	Fine Sand
148	36.1219	129.3688		Fine to Medium Sand
149	36.1223	129.3745	N29E	Fine Sand
150	36.12217	129.3741	N35W	Fine to Medium Sand

151	36.11659	129.3537	N30W	Sand
152	36.11663	129.3539	N15W	Sand
153	36.11644	129.3546	N30W	Sand
154	36.11657	129.355	N65W	Sand
155	36.11654	129.3552		Sand
156	36.11654	129.3555		Sand
157	36.11666	129.3554	N80W	Sand
158	36.11674	129.3556	N80W	Sand
159	36.11658	129.3562	N70W	Sand with Gravel
160	36.1169	129.3561	N40W	Sand with Gravel
161	36.1164	129.3562	N70W	Sand with Gravel
162	36.11659	129.3564	N60W	Sand with Gravel
163	36.11694	129.3561	N60W	Sand with Gravel
164	36.11682	129.3565	N65E	Sand with Gravel
165	36.11708	129.3576	N50E	Sand with Gravel
166	36.11611	129.3562	N60W	Sand
167	36.11613	129.3563	N25W	Sand
168	36.11407	129.3537	N60W	Sand
169	36.114	129.3532	N20E	Sand
170	36.11652	129.3615	N05E	Sand
171	36.11597	129.3609	N30E	Sand
172	36.11596	129.361	N55E	Sand
173	36.11583	129.3604	N30E	Sand
174	36.11582	129.3604	N60E	Sand
175	36.11576	129.3599	N55E	Sand
176	36.11629	129.3591	N10W	Sand
177	36.116	129.3572	N40E	Sand
178	36.11482	129.356	N55E	Sand
179	36.11518	129.3606	N10W	Sand
180	36.11526	129.3609	N80W	Sand
181	36.1154	129.361	N25E	Sand
182	36.11555	129.3613	N50W	Sand
183	36.11555	129.3615	N35W	Sand
184	36.11646	129.3666	N20W	Sand
185	36.11672	129.3674		Sand
186	36.11706	129.3676	N35W	Sand
187	36.11624	129.3679	N45W	Sand
188	36.11637	129.3693	N50W	Sand
189	36.11643	129.3695	N75W	Sand
190	36.11643	129.3701	N30W	Sand
191	36.11685	129.3708	N35W	Sand
192	36.11666	129.3711	N40E	Sand
193	36.11682	129.3713	N20W	Sand
194	36.11684	129.3713	N50E	Sand
195	36.11683	129.372	N50E	Sand
196	36.1172	129.3723	N55E	Sand
197	36.11749	129.3713	N45W	Sand
198	36.11762	129.3691	N30E	Sand
199	36.11754	129.3685	N30W	Sand
200	36.11666	129.3629	N80W	Sand
201	36.12037	129.3559	N80W	Sand
202	36.1201	129.3555	N70W	Sand
203	36.12056	129.3564	N60W	Sand
204	36.12068	129.3568	N40W	Sand
205	36.12077	129.3571	N70W	Sand

206	36.12307	129.3569	N40W	Sand
207	36.12109	129.3578	N50W	Sand
208	36.12098	129.3579	N50W	Sand
209	36.12449	129.3569	N55W	Sand
210	36.12502	129.3573	N10W	Sand
211	36.12495	129.3571	N50W	Sand
212	36.12524	129.3571	N50W	Sand
213	36.12542	129.3567	N50W	Sand
214	36.10512	129.3615		Sand
215	36.10513	129.3616		
216	36.10499	129.3619	N30W	Sand
217	36.10313	129.3618	N5W	Sand
218	36.10413	129.3633		Sand
219	36.12666	129.3692	N50W	Sand
220	36.12661	129.3694	N60W	Sand
221	36.12654	129.3672		Sand
222	36.12651	129.3675	N10W	Sand
223	36.0938	129.3475	N50W	Sand
224	36.09436	129.3476	N30E	Sand
225	36.09158	129.3471	N0E	Sand
226	36.09536	129.3478	N50E	Sand
227	36.11267	129.3606	N72E	Sand
228	36.11389	129.3678	N10W	Sand
229	36.11442	129.3678	N20E	Sand
230	36.11433	129.3679	N05W	Sand
231	36.11423	129.368	N05W	Sand
232	36.11468	129.3695	N70W	Sand
233	36.11471	129.3694	N50W	Sand
234	36.12529	129.3437		Gravel with Sand
235	36.1274	129.3452	N15E	Sand
236	36.12533	129.3634		Sand
237	36.12533	129.3634		Sand
238	36.1259	129.3638	N45E	Sand
239	36.1192	129.4056	N10E	Sand
240	36.11893	129.4055		Sand
241	36.14308	129.3953		Sand
242	36.11966	129.3555	N40E	Sand
243	36.11968	129.357	N20E	Sand with Gravel
244	36.1201	129.3577	N80E	Sand with Gravel
245	36.12014	129.3583		Sand with Gravel
246	36.11978	129.3588		Sand with Gravel
247	36.11994	129.3587		Sand with Gravel
248	36.12013	129.3595	N80E	Sand with Gravel
249	36.11901	129.3599	N64W	Sand with Gravel
250	36.11901	129.3597	N10E	Sand with Gravel
251	36.1191	129.3559		Sand with Gravel
252	36.11929	129.3559		Sand with Gravel
253	36.11929	129.3559	N10E	Sand with Gravel
254	36.1189	129.3565		Sand with Gravel
255	36.11909	129.3568	N44W	Sand with Gravel
256	36.11898	129.3572	N20W	Sand with Gravel
257	36.11904	129.3572	N40E	Sand with Gravel
258	36.11934	129.3578	N36W	Sand with Gravel
259	36.11921	129.355		Sand with Gravel
260	36.11921	129.3549	N72E	Sand with Gravel

261	36.11879	129.3548	N68W	Sand with Gravel
262	36.11914	129.3547	N74W	Sand with Gravel
263	36.11926	129.3543	N70E	Sand with Gravel
264	36.1188	129.354	EW	Sand with Gravel
265	36.1189	129.3534	N44E	Sand with Gravel
266	36.11432	129.3565		Sand
267	36.11413	129.3567	N60E	Sand
268	36.11412	129.357	N86E	Sand
269	36.11417	129.3571		Sand
270	36.1141	129.3571	N26W	Sand
271	36.11399	129.3574	N68E	Sand
272	36.11461	129.3582	N05E	Sand
273	36.11492	129.3601		Sand
274	36.11573	129.3661		Sand
275	36.11595	129.3674	N80W	Sand
276	36.11593	129.3676	N16E	Sand
277	36.11536	129.3679	N60E	Sand
278	36.11571	129.3679	N42E	Sand
279	36.11606	129.368		Sand
280	36.11593	129.3684	N23E	Sand
281	36.11591	129.3691	N12W	Sand
282	36.11591	129.3693	N22W	Sand
283	36.1157	129.3695	N19E	Sand
284	36.11592	129.3696	N44W	Sand
285	36.11614	129.3699	N34E	Sand
286	36.11628	129.3703	N60W	Sand
287	36.11607	129.3708	N20E	Sand
288	36.11592	129.3707	N60E	Sand
289	36.11505	129.369	N06W	Sand
290	36.1147	129.3682	N08E	Sand
291	36.11461	129.3681	N48E	Sand
292	36.11497	129.3677	N51E	Sand
293	36.11472	129.3674	N20W	Sand
294	36.11366	129.3579	N56W	Sand
295	36.11368	129.3577	N40W	Sand
296	36.11359	129.3576	N12W	Sand
297	36.1069	129.3663		Sand
298	36.10692	129.3663	N60E	Sand
299	36.10669	129.3661	N82E	Sand
300	36.10694	129.366	N34N	Sand
301	36.10685	129.3658		Sand
302	36.1071	129.3657	N36E	Sand
303	36.10662	129.3653	N46E	Sand
304	36.107	129.3652	N60E	Sand
305	36.10636	129.3639		Sand
306	36.10642	129.3639		Sand
307	36.10655	129.3645	N84E	Sand
308	36.10646	129.3651		Sand
309	36.10624	129.3647	N30E	Sand with mudstone fragment
310	36.10699	129.3646	N76E	Sand
311	36.10638	129.3655	N68E	Sand
312	36.1058	129.3644	N88E	Sand with mudstone fragment
313	36.1057	129.3643	N82W	Sand
314	36.10574	129.3638		Sand with Gravel
315	36.10579	129.3639	N58W	Sand

316	36.10593	129.3637	N38E	Sand
317	36.10655	129.367	N24E	Sand
318	36.10713	129.3673	N21E	Sand
319	36.10804	129.3684	N38E	Sand
320	36.10983	129.3704	N16E	Sand
321	36.1112	129.3727		Sand
322	36.11157	129.3729	N52W	Sand
323	36.11167	129.3733	N78W	Sand
324	36.11159	129.3736	N48W	Sand with mudstone fragment
325	36.11212	129.3736	N15E	Sand with mudstone fragment
326	36.11106	129.3738		Sand
327	36.11064	129.3735	N64W	Sand
328	36.11147	129.3739	N10E	Sand
329	36.11342	129.3689		Sand
330	36.11343	129.369	N64E	Sand
331	36.11344	129.3693	N66W	Sand
332	36.11337	129.3693	EW	Sand
333	36.11347	129.3695	N28E	Sand
334	36.11396	129.3696	N80W	Sand
335	36.11402	129.3698	N08W	Sand
336	36.11431	129.3701	N24W	Sand
337	36.11348	129.3701		Sand with mudstone fragment
338	36.12281	129.3678	N30W	Sand
339	36.12345	129.3734		Sand
340	36.12254	129.3726	NS	Sand
341	36.12192	129.3739	N56E	Sand
342	36.12176	129.3746	N13E	Sand
343	36.12403	129.374	N44W	Sand
344	36.12416	129.3703		Sand
345	36.09753	129.3536	N08E	Sand
346	36.0984	129.3553	N50E	Sand with mudstone fragment
347	36.12048	129.3624	N86W	Sand
348	36.1206	129.3628	N85E	Sand
349	36.12052	129.3637	N65E	Sand with Gravel
350	36.12052	129.3637	N17E	Sand
351	36.12026	129.364	N70W	Sand
352	36.11954	129.3653	N54E	Sand
353	36.11983	129.3646	EW	Sand
354	36.1199	129.3642	N18E	Sand
355	36.11954	129.3636		Sand
356	36.11989	129.3629	N27E	Sand with Gravel
357	36.1184	129.362	NS	Sand with Gravel
358	36.11926	129.3641	NS	Sand
359	36.1189	129.3653	N3W	Sand
360	36.11892	129.3572	N27W	Sand with Gravel
361	36.11596	129.3709		Sand
362	36.11558	129.3716	N7W	Sand
363	36.11497	129.3724	N8W	Sand
364	36.11466	129.3736	N44E	Sand with Gravel
365	36.114	129.3739	N54W	Sand
366	36.11417	129.3733	N17W	Sand
367	36.11416	129.3733	N20E	Sand
368	36.11435	129.3732	N10E	Sand with Gravel
369	36.11404	129.3727	N29W	Sand
370	36.11442	129.3724	N50W	Sand

371	36.11426	129.3724	N35W	Sand
372	36.11474	129.3716	N23W	Sand
373	36.11523	129.3707	N40W	Sand
374	36.11455	129.3703		Sand
375	36.11436	129.3704	N45W	Sand
376	36.11434	129.3713	N42E	Sand
377	36.11415	129.3716	N70E	Sand
378	36.11368	129.3688	N34W	Sand
379	36.11334	129.3686		Sand
380	36.11431	129.3691		Sand
381	36.11088	129.359	N86E	Sand
382	36.10829	129.3628	N70E	Sand
383	36.11165	129.3704	N20E	Sand
384	36.12243	129.3706		Sand
385	36.09595	129.352	N55E	Sand
386	36.09672	129.3523		Sand
387	36.09742	129.3528	N30E	Sand
388	36.1201	129.3541		Sand
389	36.12042	129.3541		Sand
390	36.12012	129.3534		Sand
391	36.12038	129.3528	N50W	Sand
392	36.12056	129.3532		Sand
393	36.12006	129.3521	N75E	Sand
394	36.11924	129.3523		Sand
395	36.11932	129.3517	N45W	Sand
396	36.1195	129.3517		Sand
397	36.11946	129.3516		Sand
398	36.11946	129.3515		Sand
399	36.11941	129.3515		Sand
400	36.11934	129.3512		Sand
401	36.11933	129.3512		Sand
402	36.11934	129.3512	N60W	Sand
403	36.11902	129.351	N80W	Sand
404	36.11904	129.3507	N80W	Sand with Gravel
405	36.11935	129.3506	N15W	Sand with Gravel
406	36.11942	129.3505	N25E	Sand with Gravel
407	36.11948	129.3505	N25W	Sand with Gravel
408	36.11982	129.3503	N25W	Sand with Gravel
409	36.12019	129.3499	N85W	Sand with Gravel
410	36.12058	129.3503	N70E	Sand with Gravel
411	36.12047	129.35		Sand with Gravel
412	36.12053	129.3498	N70E	Sand
413	36.12065	129.3499		Sand
414	36.12122	129.3495	N20W	Silt to Fine Sand
415	36.12125	129.3497	N20W	Sand
416	36.12172	129.3492	N20W	Sand
417	36.12193	129.3497	N20W	Sand
418	36.12187	129.3499	N80W	Sand
419	36.12077	129.3504	N20W	Sand with Gravel
420	36.12116	129.3497	N20W	Sand with Gravel
421	36.12033	129.35		Sand
422	36.12016	129.3501	N20W	Sand with Gravel
423	36.11999	129.3502		Sand
424	36.11835	129.3516	N80W/N40E	Sand with Gravel
425	36.11853	129.3522	W80W	Sand with Gravel

426	36.11835	129.3523	N80W/N20W/N50E	Sand with Gravel
427	36.11829	129.3524	N80W/N50E	Sand with Gravel
428	36.11817	129.3525	N40W	Sand with Gravel
429	36.11825	129.3528	N50W	Sand with Gravel
430	36.1186	129.3533	N70W	Sand with Gravel
431	36.11872	129.3535		Sand with Gravel
432	36.11803	129.3536		Sand with Gravel
433	36.1187	129.354		Sand with Gravel
434	36.11841	129.3545	N80W	Sand with Gravel
435	36.11852	129.3554	N20W	Sand with Gravel
436	36.11826	129.3559	N60E	Sand with Gravel
437	36.11857	129.3565		Sand with Gravel
438	36.1181	129.3576	N20W	Sand with Gravel
439	36.11806	129.3574	N70E	Sand with Gravel
440	36.1182	129.3576	N10E	Silt to Fine Sand
441	36.11839	129.3582	N40E	Sand
442	36.11851	129.3583	N50E	Sand with Gravel
443	36.11874	129.3593		Sand with Gravel
444	36.11844	129.3593		Sand with Gravel
445	36.11812	129.3589	N70E	Sand with Gravel
446	36.11735	129.3577	N70E	Sand with Gravel
447	36.11731	129.3575		Sand with Gravel
448	36.11756	129.3574		Sand with Gravel
449	36.11729	129.357		Sand with Gravel
450	36.11776	129.3568	N20E	Sand with Gravel
451	36.11786	129.3564		Sand with Gravel
452	36.11747	129.3563		Sand with Gravel
453	36.11734	129.3537		Sand with Gravel
454	36.11805	129.3513		Sand with Gravel
455	36.11835	129.3512		Sand with Gravel
456	36.11745	129.3496		Sand with Gravel
457	36.11745	129.3496		Sand with Gravel
458	36.11745	129.3496		Sand with Gravel
459	36.11745	129.3496		Sand with Gravel
460	36.11695	129.351		Sand with Gravel
461	36.11722	129.3511		Sand with Gravel
462	36.11695	129.3516	N40W	Sand with Gravel
463	36.11778	129.3615	N40E/NS	Sand with Gravel
464	36.11744	129.3611	N80E	Sand with Gravel
465	36.1174	129.3609	N80E	Sand with Gravel
466	36.11771	129.3603	N50E	Sand with Gravel
467	36.11759	129.3586	N70E	Sand with Gravel
468	36.11722	129.3586		Sand with Gravel
469	36.11631	129.357	N70W	Sand with Gravel
470	36.11635	129.3589	N20W	Sand with Gravel
471	36.11637	129.359	N40W	Sand with Gravel
472	36.11653	129.3591		Sand with Gravel
473	36.11648	129.3594		Sand with Gravel
474	36.11704	129.3604	N50W	Sand with Gravel
475	36.11705	129.3605	N60E	Sand with Gravel
476	36.11686	129.3611	N70E	Sand with Gravel
477	36.11679	129.3615		Silt to Fine Sand
478	36.11705	129.363	N60W	Sand with Gravel
479	36.11696	129.363	N70E	Silt to Fine Sand
480	36.11692	129.3632		Silt to Fine Sand

481	36.11708	129.3633	N50E	Silt to Fine Sand
482	36.11769	129.3657	N50E	Silt to Fine Sand
483	36.1175	129.3659	NS	Silt to Fine Sand
484	36.11791	129.3659		Silt to Fine Sand
485	36.1179	129.3663	N60W	Silt to Fine Sand
486	36.11793	129.3665	N60W	Silt to Fine Sand
487	36.11749	129.367		Silt to Fine Sand
488	36.11771	129.3671	N30W	Silt to Fine Sand
489	36.11784	129.3673	N40W	Silt to Fine Sand
490	36.118	129.3677	N30W	Silt to Fine Sand
491	36.118	129.3677	N20E	Silt to Fine Sand
492	36.1177	129.3677	N70E	Silt to Fine Sand
493	36.11759	129.368	N40W	Silt to Fine Sand
494	36.11799	129.3687	N60W	Silt to Fine Sand
495	36.1181	129.3687	N30W/N40W	Silt to Fine Sand
496	36.1182	129.3688	EW	Silt to Fine Sand
497	36.11799	129.369	N50W	Silt to Fine Sand
498	36.11854	129.3683	EW	Silt to Fine Sand
499	36.11827	129.3666	N30W	Silt to Fine Sand
500	36.11825	129.3664	N30W	Silt to Fine Sand
501	36.11828	129.3663	N80W	Silt to Fine Sand
502	36.11836	129.3661	N30W	Silt to Fine Sand
503	36.11836	129.3659	N40W	Silt to Fine Sand
504	36.11854	129.3658	N50W	Silt to Fine Sand
505	36.1186	129.3658	EW	Silt to Fine Sand
506	36.11866	129.3658	N40W	Silt to Fine Sand
507	36.11847	129.3656	N60W	Silt to Fine Sand
508	36.11814	129.3655	N40E	Silt to Fine Sand
509	36.11835	129.3655		Silt to Fine Sand
510	36.1224	129.3585	N60W	Sand
511	36.12505	129.3573	N35E	Sand
512	36.12496	129.3571	N20W	Sand
513	36.1249	129.3569	N35E	Sand
514	36.12528	129.3571	N35E	Sand
515	36.1254	129.3567	N40E	Sand
516	36.12318	129.3598	N20E	Sand
517	36.10101	129.3569		Sand
518	36.10163	129.3582	N35E	Sand
519	36.10151	129.358	N40E	Sand
520	36.10139	129.3578	EW	Sand
521	36.10142	129.3578	EW	Sand
522	36.10157	129.3582	N40E	Sand
523	36.12754	129.3678	N60W	Sand
524	36.12726	129.3678	N50W	Sand
525	36.12694	129.3682	N50W	Sand
526	36.12656	129.3681	N75W	Sand
527	36.12587	129.3669		Sand
528	36.12579	129.3667		Sand
529	36.12635	129.3665		Sand
530	36.12658	129.3664	N70W	Sand
531	36.12712	129.3671		Sand
532	36.09417	129.3494		Sand
533	36.09472	129.3492	N40E	Sand
534	36.095	129.35		Sand
535	36.095	129.35	N50E	Sand

536	36.09611	129.3503		Sand
537	36.11794	129.4062	N20E	Fine to Medium Sand
538	36.11373	129.4033	N60W	Silt to Fine Sand
539	36.11373	129.4033		Fine to very Fine Sand
540	36.13009	129.3889	N30E	Silt to Fine Sand
541	23.13007	129.3888	N24E	Silt to Fine Sand
542	36.13003	129.3889	N12W	silt to Fine Sand
543	36.12989	129.3888	N14E	silt to Fine Sand
544	36.13502	129.3642		Silt to Fine Sand
545	36.13511	129.364		Silt to Fine Sand
546	36.13557	129.3643	EW	Silt to Fine Sand
547	36.02726	129.3798	N30E	Sand
548	36.02779	129.3798	N30E	Sand
549	36.02779	129.3798	N40E	Sand
550	36.04292	129.3744	N30E	Sand
551	36.04292	129.3744	N60E	Sand
552	36.04292	129.3744	N70E	Sand
553	36.04618	129.3742	N80W	Sand
554	36.04618	129.3742	N60E	Sand
555	36.04618	129.3742	N40W	Sand
556	36.02779	129.3798	N70W	Sand
557	36.02779	129.3798	N40W	Sand
558	36.04655	129.3738	N50E	Sand
559	36.04655	129.3738	N10W	Sand
560	36.04724	129.3739		Sand
561	36.04716	129.3739	N40E	Sand
562	36.04716	129.3739		Sand
563	36.04606	129.3746		Sand
564	36.12345	129.3466		Sand with Gravel
565	36.12333	129.3468	N75W	Sand with Gravel
566	36.12346	129.347	N55E	Sand with Gravel
567	36.12374	129.3488		Sand with Gravel
568	36.12535	129.3516	N33W	Sand
569	36.11856	129.3457		Sand with Gravel
570	36.11802	129.3463		Sand with Gravel
571	36.11763	129.3473		Sand
572	36.11895	129.3485		Sand with Gravel
573	36.11889	129.3487		Sand with Gravel
574	36.11886	129.3499		Sand with Gravel
575	36.11889	129.3501		Sand with Gravel
576	36.11963	129.3492		Sand with Gravel
577	36.11978	129.3498		Sand with Gravel
578	36.11988	129.3494		Sand with Gravel
579	36.11996	129.3492		Sand with Gravel
580	36.1207	129.3483		Sand with Gravel
581	36.1207	129.3483		Sand with Gravel
582	36.12043	129.3483		Sand with Gravel
583	36.1208	129.3482		Sand with Gravel
584	36.12039	129.3476		Sand with Gravel
585	36.12017	129.3473		Sand with Gravel
586	36.1205	129.3472		Sand with Gravel
587	36.11981	129.3472		Sand with Gravel
588	36.11941	129.3468		Sand with Gravel
589	36.1194	129.3474		Sand with Gravel
590	36.11928	129.3475		Sand with Gravel

591	36.11878	129.3481		Sand with Gravel
592	36.11971	129.3484		Sand with Gravel
593	36.11971	129.3484		Sand with Gravel
594	36.02451	129.244		Sand
595	36.08005	129.3458		Sand
596	36.08572	129.347		Sand
597	36.10326	129.3657	N58E	Sand
598	36.10575	129.3611		Silt to Fine Sand
599	36.10588	129.3613		Sand
600	36.10606	129.3603	N73E	Silt to Fine Sand
601	36.11175	129.3542	NS	Sand