CGW Ref: 240461-LET-001-A
Date: 10 July 2025

Eric Osbourne

Attention: Susan Jones

Dear Eric,

RE: 240461 – 110 Te Moana Road, Waikanae – Response to Geotechnical Requests For Information – Private Plan Change

CGW has received a Request For Information (RFI) from Kāpiti Coast District Council regarding the proposed private plan change at 100 and 110 Te Moana Road.

We have reviewed the geotechnical points raised in the RFI and Tonkin & Taylor's peer review letter dated 4 June 2025 and provide the following responses:

1. Please clarify what is being referred to as the 'proposed building' within Section 8.5 of the geotechnical report.

The reference to the 'proposed building' in Section 8.5 was a typographical error. The intention was to refer to "future development across the site." We confirm the site is underlain by Class A (non-expansive) soils as per AS2870, relevant to any future development consistent with the proposed plan change.

2. Please clarify if the SPT based liquefaction analysis report attached in Appendix E of the CGW geotechnical report is for CPT04 which was completed in April 2025 as part of the CPT04 (DPSH) 3.2 to 8.6 m.

We confirm that the SPT-based liquefaction analysis in Appendix E relates to data collected from CPT04, which was completed in April 2025 using DPSH methods from 3.4 m to 8.6 m depth. This was undertaken to supplement the CPT dataset and provide additional insights on liquefaction potential for the low-lying area. The information is factually correct, albeit, mislabelled as CPT01 in our SPT liquefaction analysis. Please find appended to this letter the updated analysis outputs.

3. In CGW's CPT based liquefaction analysis for the dune area, two of the three analyses predicted liquefaction induced settlement are greater than 100 mm. However, the CGW's report states that "The dune area is not necessarily subject to any risks as per Section 106 of the RMA however, low bearing capacity is a geotechnical aspect that requires consideration". Please comment on expected settlement (total and differential settlement in terms of liquefaction induced free field settlement and seismic shakedown) for the dune area.

We acknowledge that CGW's CPT-based liquefaction analysis for the dune area indicates that two of the three CPTs predict liquefaction-induced total settlements exceeding 100 mm under ULS conditions when assessed for the full depth of the CPT data. However, MBIE recommended Index settlement analysis within the upper 10 m, indicates predicted ULS settlements below 100 mm, consistent with a Technical Category TC2 land performance criteria under the MBIE guidelines. As mentioned in Section 8.2 of our geotechnical report, we have conservatively predicted differential settlements of up to 50 mm following a ULS design level seismic event.

While we recognise that the dune area soils at depth are likely to be susceptible to liquefaction risk, we consider that the level of risk is consistent with TC2 classification, and the area is not considered to present a significant risk under Section 106 of the RMA. We consider that appropriate confirmation through further geotechnical investigation and analysis during the subdivision resource consent stage, along with suitable foundation design, will adequately address liquefaction-related settlements and ensure the area can be developed for residential purposes.

4. It is uncertain whether the geotechnical risks associated with flooding in the low-lying area can be effectively mitigated by the proposed large-scale earthworks (built-up) as additional flood modelling is required to confirm that such works will not lead to unacceptable adverse environmental effects or increased risks from natural hazards. Please comment on any foreseeable adverse environmental effects associated with the proposed earthworks at the site and to the neighbouring properties. If there are any identified adverse environmental effects, please provide comments on potential mitigation options.

We agree that large-scale earthworks may require further flood modelling to confirm potential impacts on neighbouring properties. However, this is a detailed design matter best

addressed at the subdivision consent stage when final development levels and drainage designs are established. From a geotechnical perspective, we do not anticipate adverse effects from the proposed earthworks, but flooding risks should be modelled during detailed design and resource consent.

5. Soft soil/weak ground was encountered in the April 2025 CPT investigation. Please comment on the expected bearing capacity, static and long-term settlement for the proposed future development for the low-lying area with soft soil/weak ground and high groundwater table. Please also assess the viability of the mitigation options proposed and if any adverse environmental effects are associated with the proposed mitigation options.

Soft or weak soils were generally not encountered during site investigation but are anticipated to be present around the wetland margins within the low-lying areas with elevated groundwater. If not mitigated, these may result in static and long-term creep settlements. We expect ultimate bearing capacities of around 200 kPa within natural soils. Mitigation of these "soft" areas can be achieved through subdivision earthworks, including preload surcharging, ground improvement, removal of weak soils, or creating buffer zones. These measures are viable and relatively standard practice for similar marginal soils earmarked for development, and we do not anticipate significant adverse environmental effects if managed during detailed design and subdivision consent.

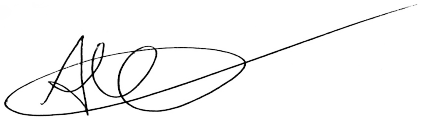
6. The CGW's geotechnical report did not provide comments on the likely foundation options. Please comment on the likely foundation options, possible mitigation measures that may be required for the proposed future development and the viability of those possible mitigation measures.

Likely foundation options include shallow Specific Engineer Designed (SED) TC2-type foundations (likely waffle slabs) for the wider subdivision, with possible shallow ground improvements (e.g., gravel rafts) in low-lying areas. Piled foundations may also be suitable but will need confirmation at the subdivision and building consent stage to ensure the feasibility of the piles are suitably assessed. These mitigation measures are viable, commonly used, and can be confirmed during the subdivision consent and detailed design stages. We do not anticipate adverse environmental effects from these approaches if managed appropriately.

In summary, we consider the current level of geotechnical assessment, as reviewed by Tonkin & Taylor, to be appropriate for the plan change stage. The additional detail sought in the RFI can be more appropriately addressed during the detailed design phases of the subdivision and building consent processes.

Yours faithfully,

Prepared by



Alex McCaw
Senior Engineering Geologist
BSc, PGDip, MEngNZ

Reviewed

Robert Smith
Principal Geotechnical Engineer
CMEngNZ, CPEng, IntPE(NZ) – APEC Engineer

6.1 Appendix A - Updated analysis outputs (corrected name).

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SPT BASED LIQUEFACTION ANALYSIS REPORT

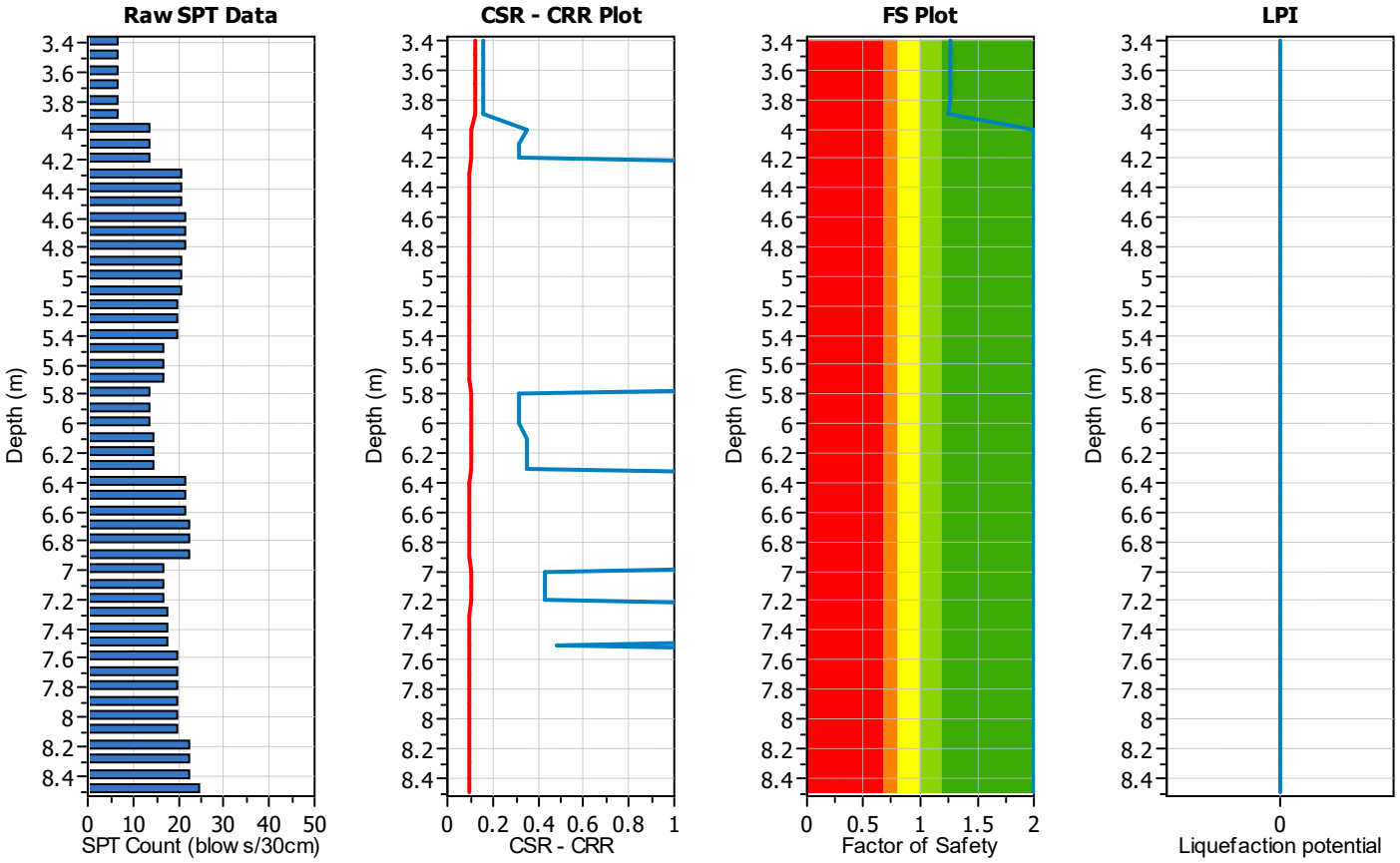
Project title : 240461 - Geotechnical Investigation & Assessment

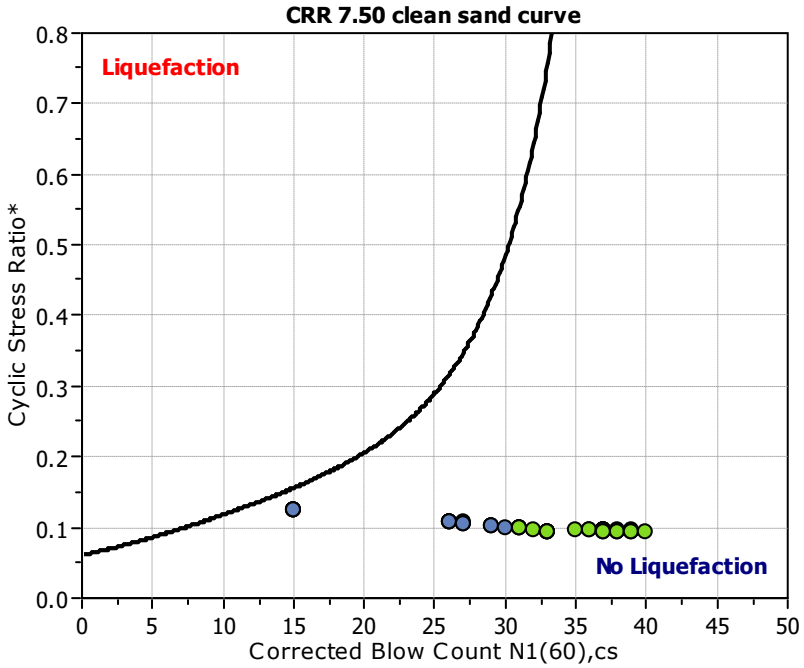
SPT Name: CPT04 SLS

Location : 100-110 Te Moana Road, Waikanae Beach

:: Input parameters and analysis properties ::

Analysis method:	Boulanger & Idriss, 2014	G.W.T. (in-situ):	1.00 m
Fines correction method:	Boulanger & Idriss, 2014	G.W.T. (earthq.):	0.50 m
Sampling method:	Sampler wo liners	Earthquake magnitude M_w:	6.50 m
Borehole diameter:	65mm to 115mm	Peak ground acceleration:	0.13 g
Rod length:	1.00 m	Eq. external load:	0.00 kPa
Hammer energy ratio:	1.33		





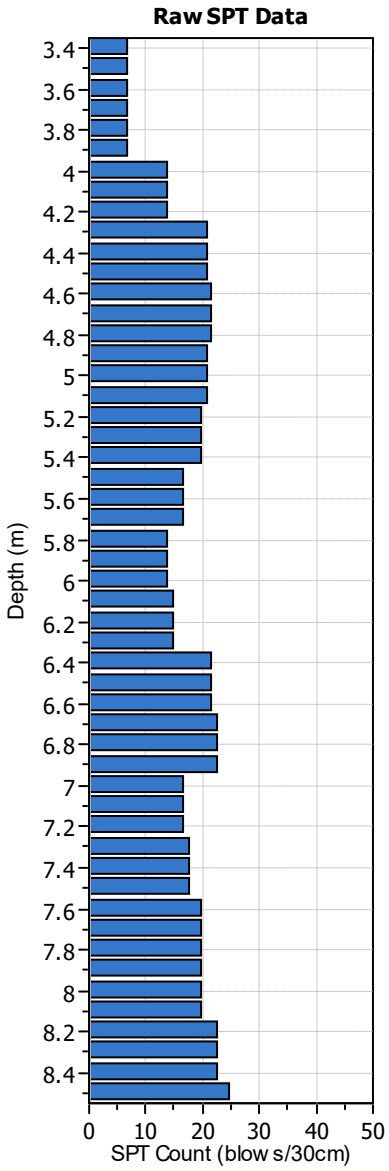
F.S. color scheme

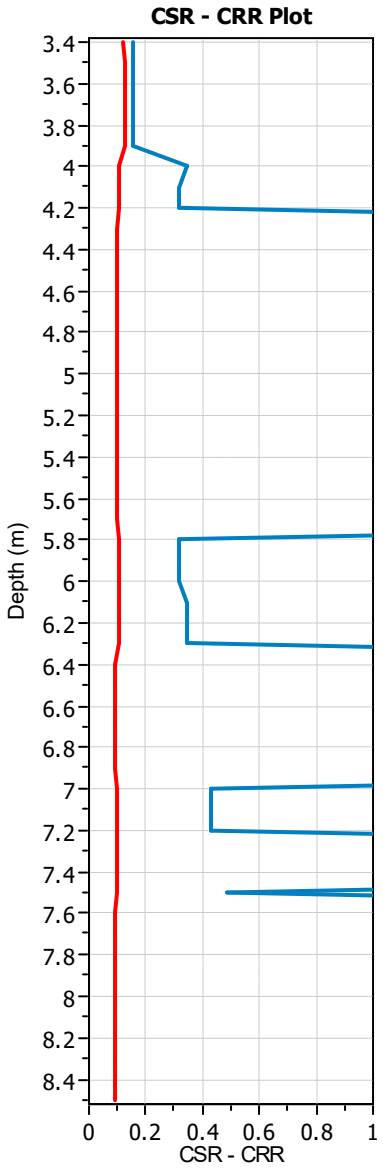
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

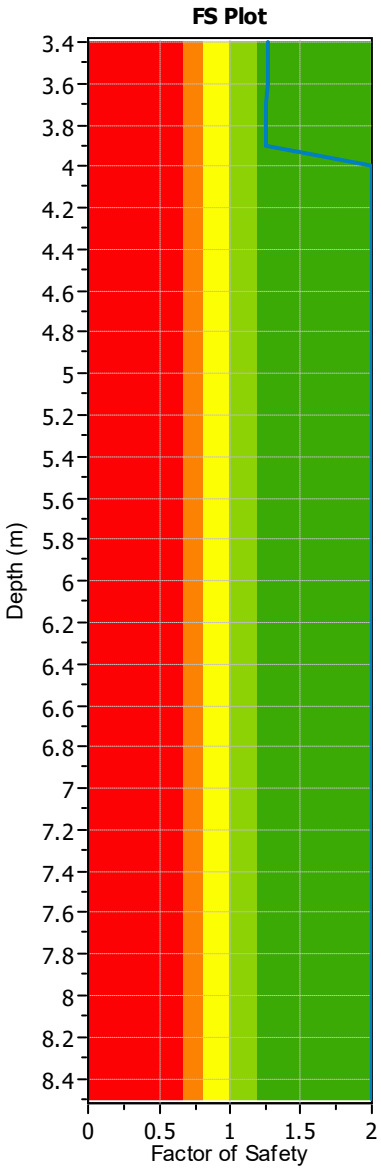
LPI color scheme

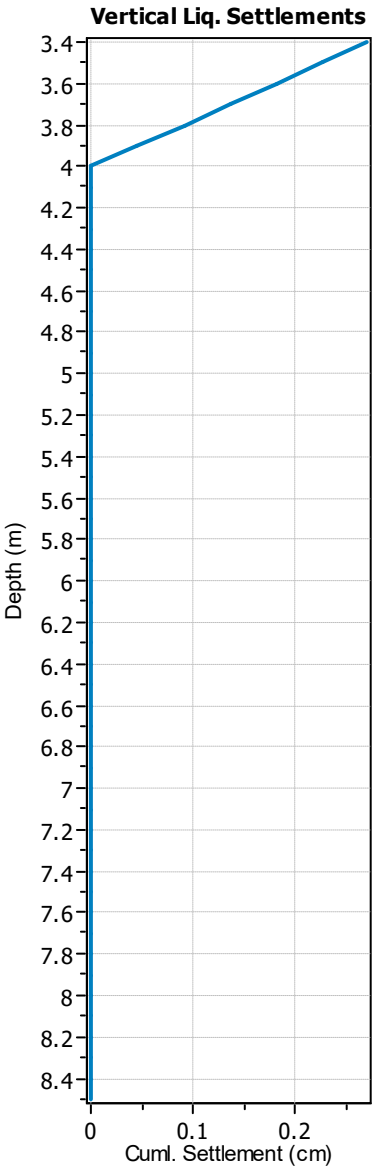
- Very high risk
- High risk
- Low risk

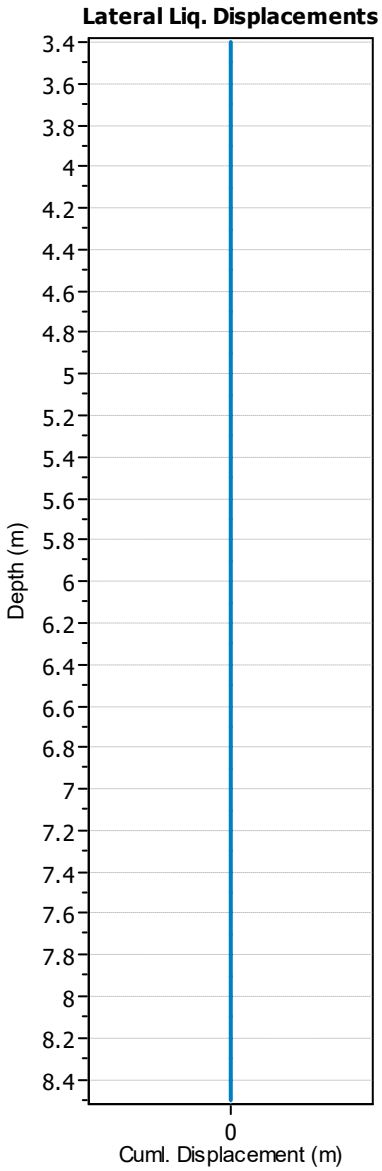
:: Overall Liquefaction Assessment Analysis Plots ::











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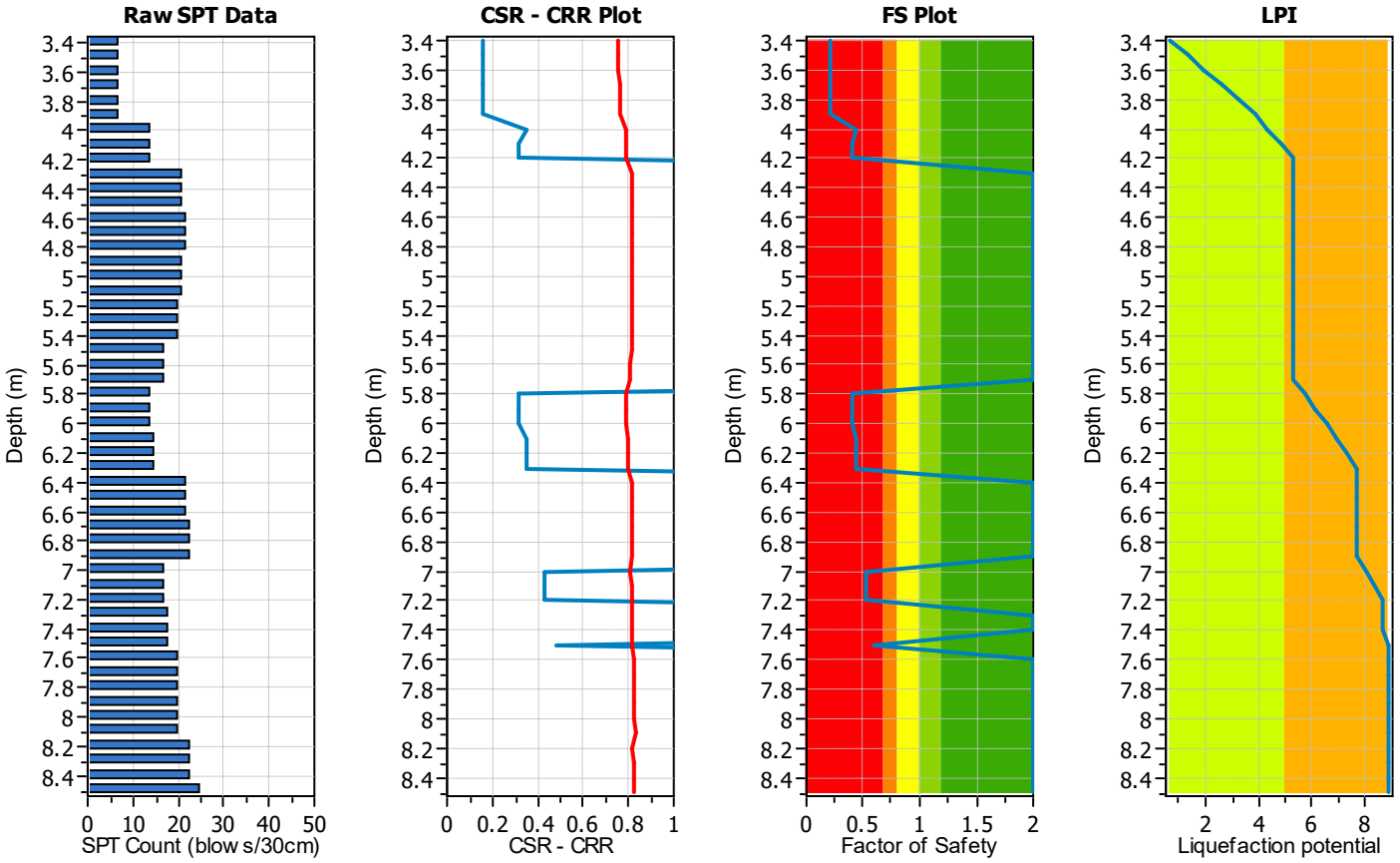

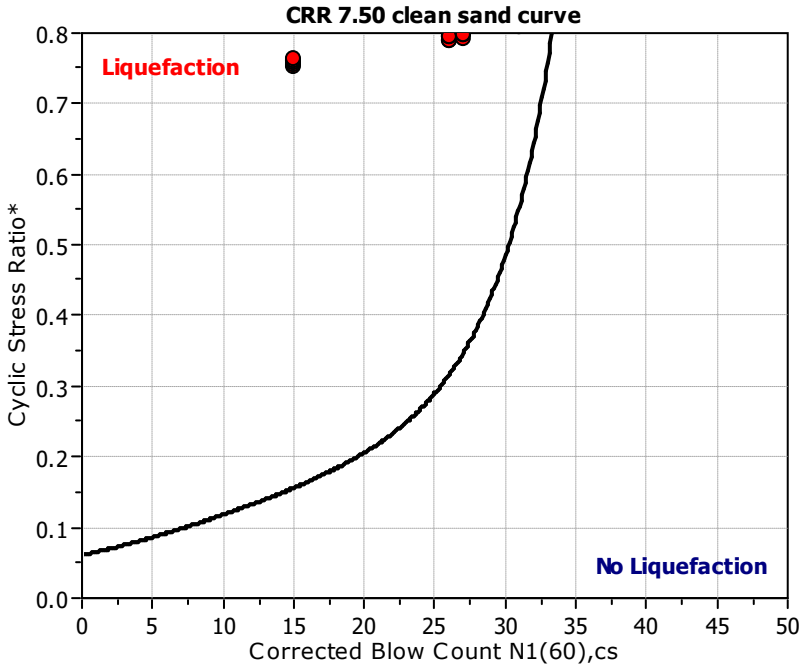

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