

Geophysics Case Studies: River Crossings & Bridges



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Senior Principal

Case studies

- **Lane Cove River Crossing**
- **Bridge Pier Footings on soils**
- **Bridge Pier Footing on rock**



Overwater Drilling is expensive

Difficult Drilling Sites



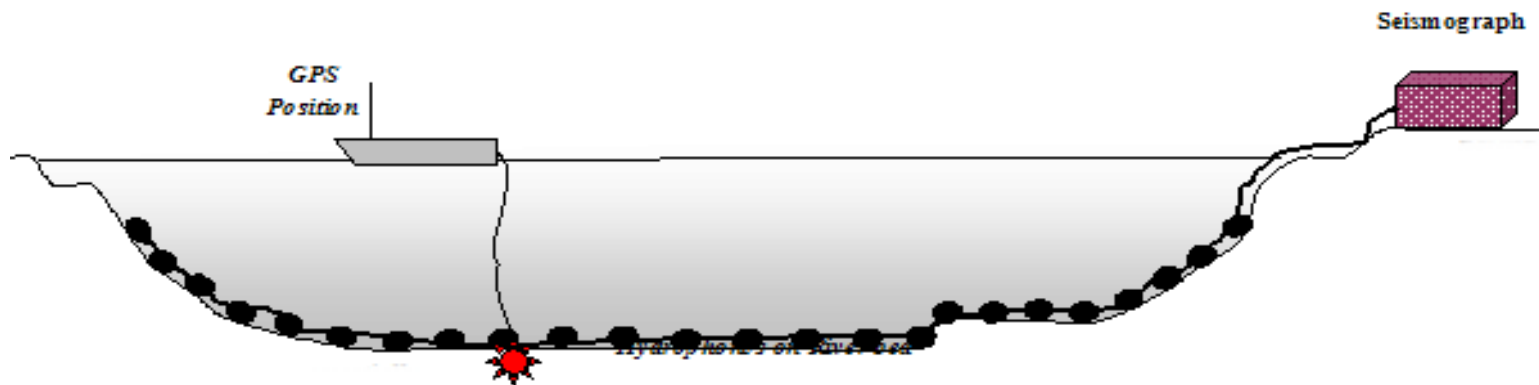
When the tide comes up





River Crossings

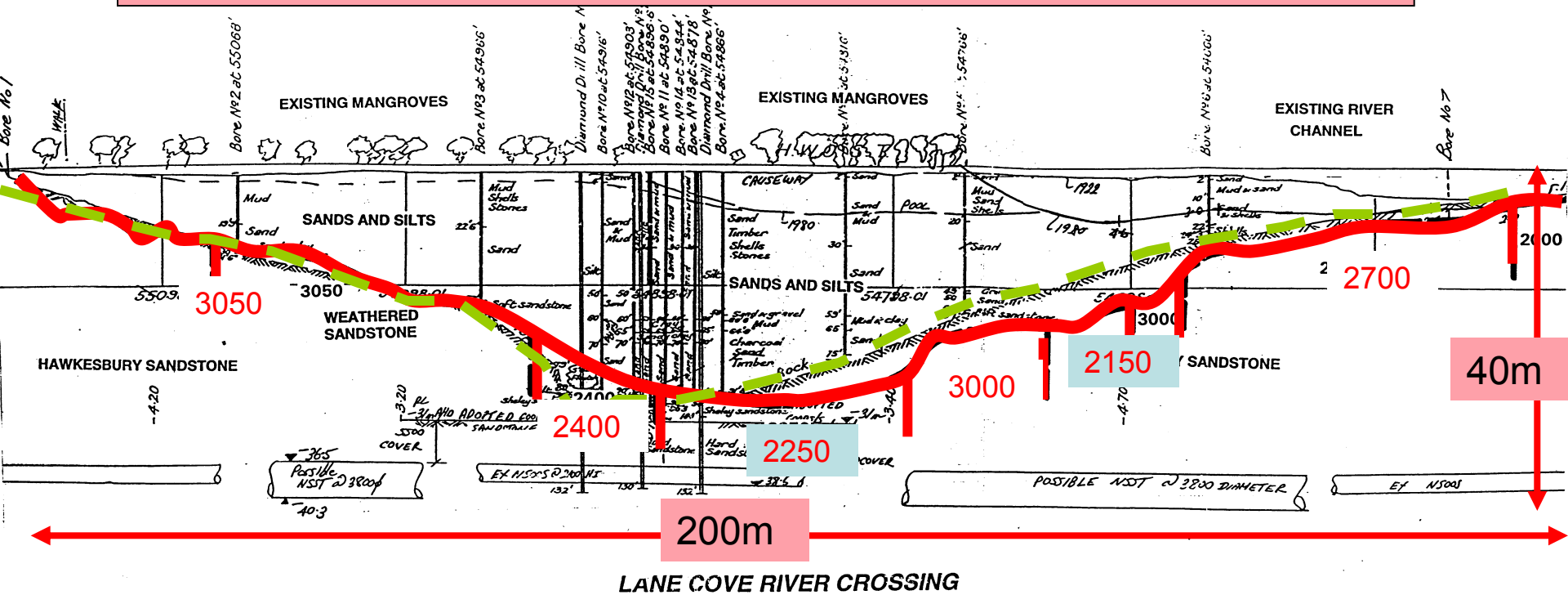
Static USR with enclosed hydrophone array
& airgun sources



WEST

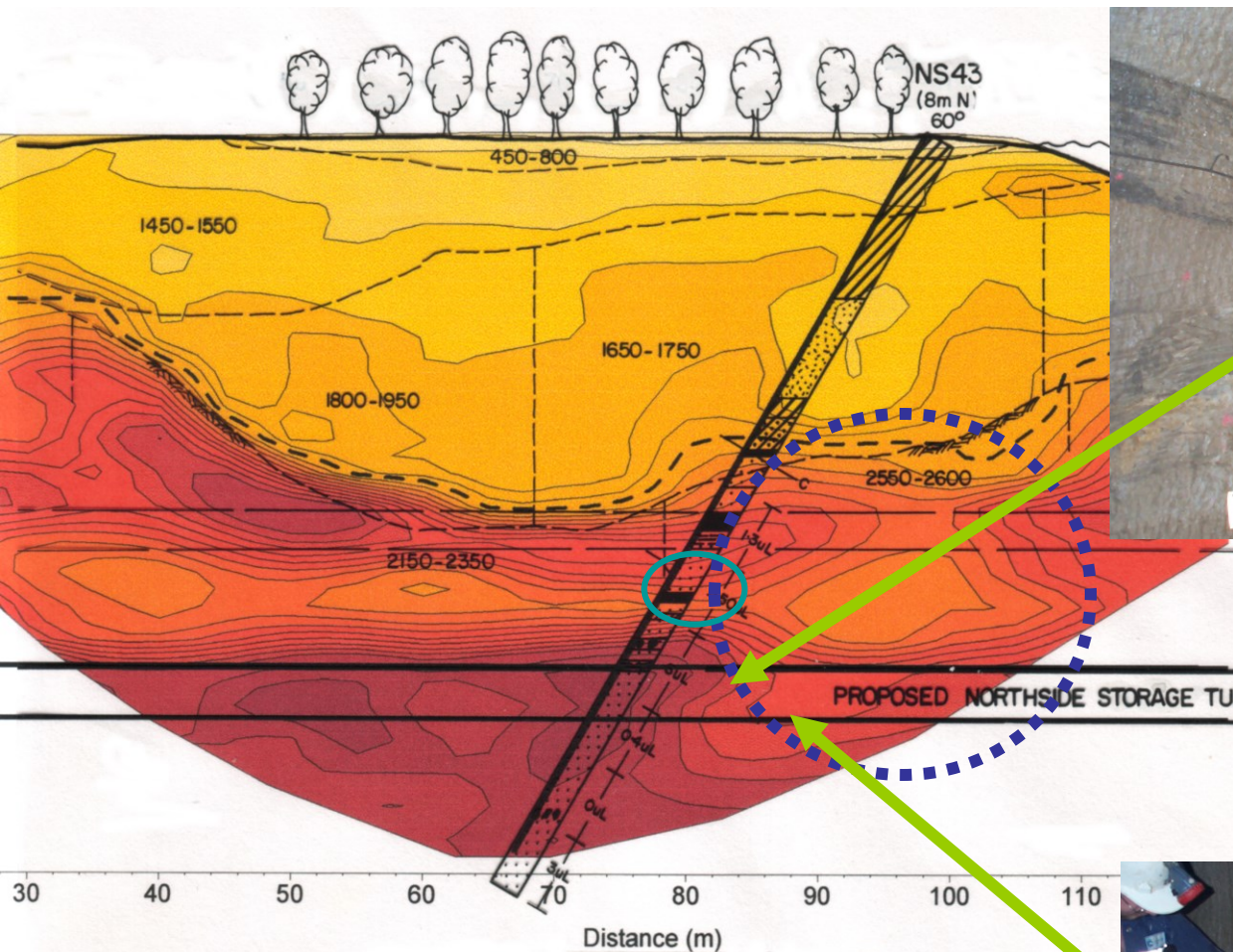
EAST

Comparison of Refraction Interpretation with Old Geological Section



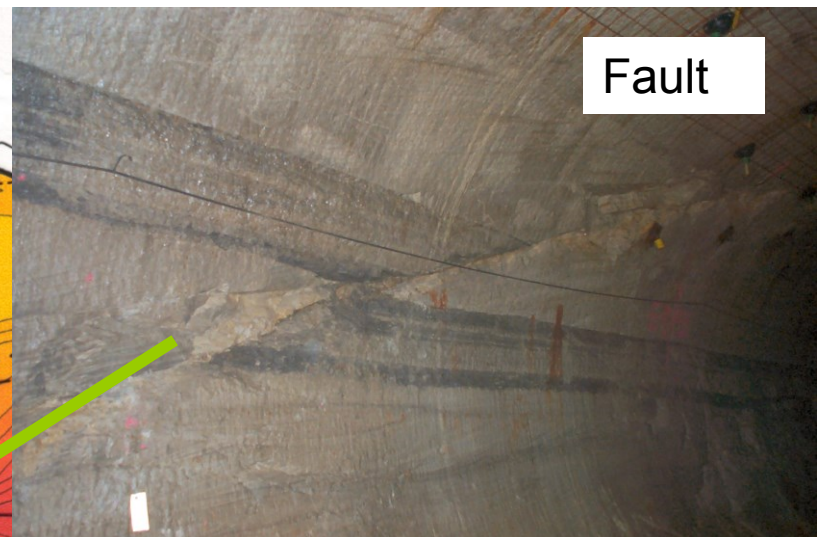
LEGEND
 SEISMIC REFRACTION PROFILE A SHOWING TOP OF INTERPRETED ROCK & SEISMIC VELOCITY (m/s)

Seismic Refraction Section agrees closely with 1930's section from drilling



○ High Permeability Zone




Seismic Velocity (km/s)

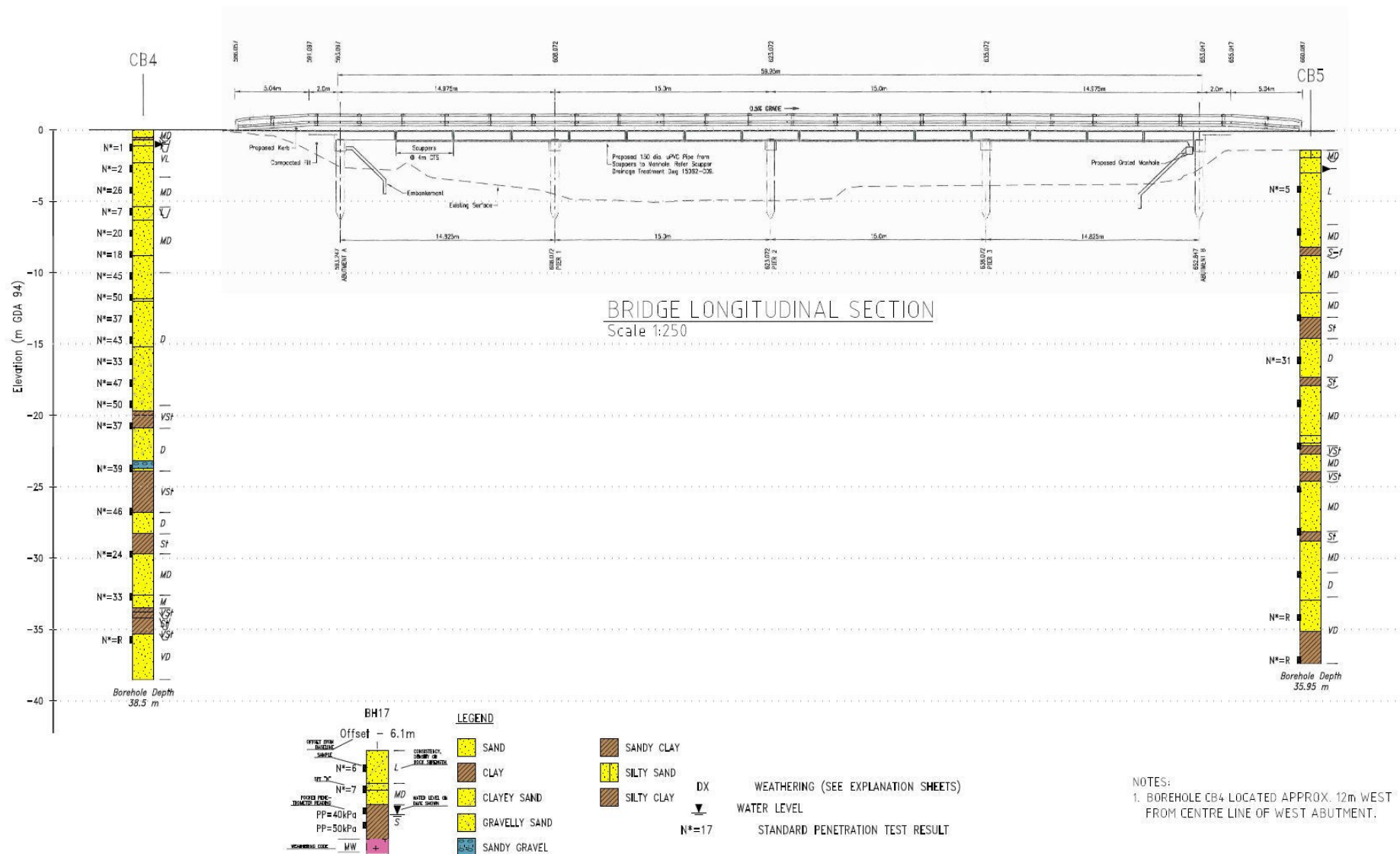


River Crossing Site Plan



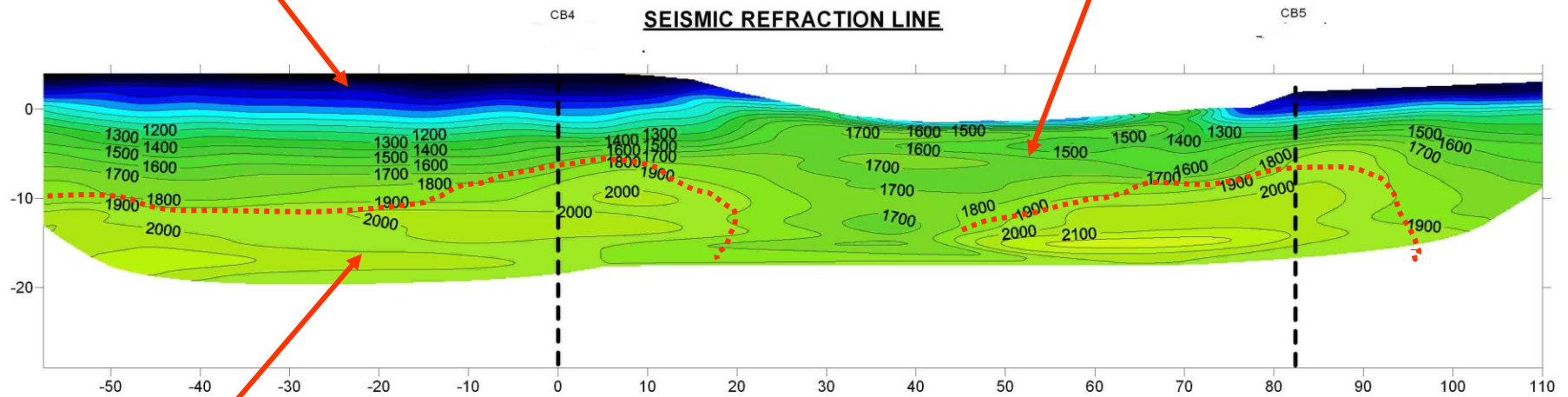
LEGEND

- | | |
|--------------------------------|---|
| Bore Hole CB4 | ⊕ |
| Mangroves |  |
| Rock Fill / Erosion Protection |  |
| Seismic Survey Line 1 |  |



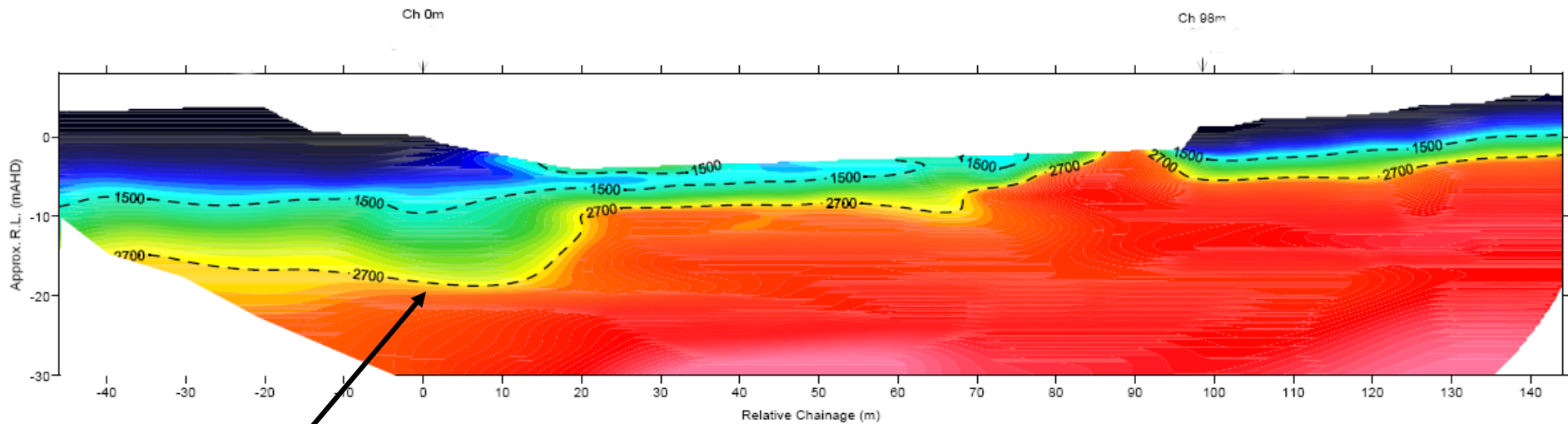
Dry soils

Sandy/silty
soils

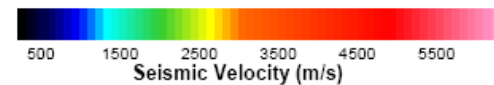




Combined Land & Underwater Seismic Refraction Section



Approximate Rock
Level



Combined Seismic & Borehole Section

