

Geotechnical Considerations

Engineering properties of unconsolidated strata are key factors in siting new facilities and predicting facility performance over time. A well characterized soft zone exists in the Santee Formation beneath SRS. The variably underconsolidated behavior of this zone likely results from partial Formation, dissolution of the Santee mixed а carbonate/clastic layer of Eocene age that underlies SRS at depths ranging from about 100 to 200 ft (30 to 60 m). The Santee Formation exhibits significant mineralogical variation resulting primarily from original depositional environment (nearshore to shallow marine) and, to a lesser extent,



variations in the degree of post-depositional dissolution. The

SRNL Core Repository includes >250 cores that fully penetrate this important formation.

Case Study: SRS Salt Waste Processing Facility

① Performance Category 3 nuclear facility

² Characterization program included CPTs, soil borings, SPT, and crosshole seismic tests to define the extent and thickness of soft zones

3 Integrated multiple datasets to calculate aggregate soft zone thickness beneath proposed facility

Onservative engineering analysis:

- assumed soft zones lose strength (static & dynamic)
- modeled application of full overburden pressures to soft zones
- calculated compression at depth
- propagated compression to surface and computed settlement
- resulted in 8' thick concrete basemat















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