



PEER REVIEW PANEL FOR LANDSLIDE MITIGATION AT THE OCEAN TRAILS GOLF COURSE Rancho Palos Verdes, California

PROJECT DESCRIPTION

The Ocean Trails Golf Course, located on an elevated marine terrace at the tip of the Palos Verdes Peninsula, has had a history of adverse landslide impacts even before it was opened. Three coastal landslides (A, B, and C) had been mapped within the course's footprint during design studies. In 1998, landslide C dramatically reactivated, taking Holes 10 and 11 into the sea. The failure was repaired, and the course rebuilt. However, the failure led to a renewed scrutiny of the current stability of landslides A and B, and their future stability after new expansions to the project were completed, including the Clubhouse expansion, a driving range, and a dozen new homes above landslide A. Over the course of three-plus years, the developer's geotechnical team and the City of Rancho Palos Verdes' geotechnical reviewers were consistently unable to reach concurrence on the geological model that would ultimately underpin the stability analysis and any required mitigation efforts. Principals from three firms: *Earth Consultants International*, *GeoKinetics*, and *AMEC*, were retained jointly by the developer and the City to serve as a Peer Review Panel between the two conflicting geotechnical firms, and attempt to bring their opinions together and allow the project to move forward.



Aerial photo of the Ocean Trails Golf Course.

SOLUTION

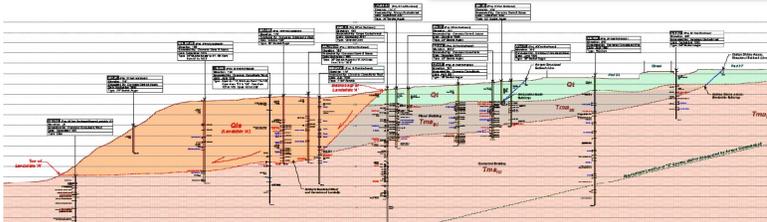
The Panel reviewed the extensive geotechnical documentation that had been created over 20 years of studying the site. The Panel conducted its own field reconnaissance and mapping, including rappelling down the sea cliff to map, measure, and sample the exposed strata. Four additional borings were drilled and cored at key locations where the two interpretations differed to bring hard data to bear on differentiating between them. These borings were installed with groundwater monitoring piezometers and slope movement inclinometers for future monitoring. After all the existing and new data were reviewed and analyzed, the Panel prepared a review report and held several meetings with the two parties to share the results and help them to understand the differences. The work of the Panel ultimately had two cycles, very similar in scope, as both parties continued to disagree, and more work was done on both sides, including more drilling. Although eventually neither side was pleased, portions of the project were allowed to move forward, albeit with a different design.



Core drilling at Ocean Trails (left).



Example of the drilling core collected (right).



Cross-section through Landslide A