

October 25, 2023

File No. 3119-31

SUBJECT: **GEOLOGICAL REVIEW OF SITE CONDITIONS**
709 Paseo Del Mar, Palos Verdes Estates, CA 90274

Dear Mr. Lieberman:

Pursuant to your request, Feffer Geological Consulting is providing this geological review report of site conditions at the referenced site in Palos Verdes Estates. This report is based on a review of public records and information provided by John Peterson, the attorney who handled the litigation that occurred in the early 2000's between the subject site owner, Ms. Torino, against General Telephone and the City of Palos Verdes Estates. Other documents reviewed as part of this geologic evaluation include readily available topographic, geologic, seismic, and fault maps. The purpose of this report is to summarize any previous work, known geologic conditions, and to provide our professional opinion on the stability of the site. This report is not based on any subsurface investigation, and the conclusions drawn are inherently limited in scope due to this reason.

Background Information

The property is located on the south side of Paseo Del Mar in Palos Verdes Estates, California. The property site currently consists of a relatively level pad located above a slope that descends to the west to the ocean. The slope is approximately 200 feet high and has an overall approximate gradient of 1.2:1 (horizontal to vertical) with a steeper upper section that has an approximately 0.5:1 gradient. Figure 1 is an aerial photo with a topographic overlay of the property and surrounding area. Figure 2 is an oblique aerial photograph of the site and vicinity.

Document Review

The City of Palos Verdes Estates Department of Building and Safety records were researched, and no geotechnical documents were found in the City files. The following reports were included in 7 boxes of material that were provided to us by the attorney who handled the litigation.

1983, August 4, Lockwood Singh and Associates, Report of Limited Geotechnical Investigation, Distress to Residence, 709 Paseo Del Mar, Palos Verdes Estates, California

The report prepared by Lockwood Singh and Associates (LSA) was based on drilling of a boring to a depth of 31 feet and site reconnaissance. According to LSA the residence has an addition on the bluff side of the house and a deck located near the top of slope; both the addition and deck showed signs of

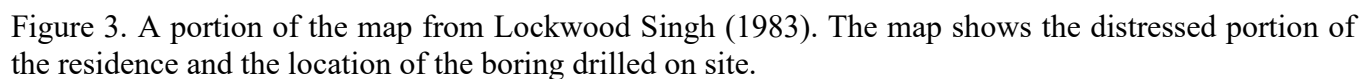
distress that included settlement and tilt. A site plan showing the property and location of the boring is included as Figure 3 and a cross section is included as Figure 4.



Figure 1. Aerial photograph of project site with topographic overlay. The project site is highlighted.



Figure 2. Oblique aerial photograph of project site and vicinity. View to the east.



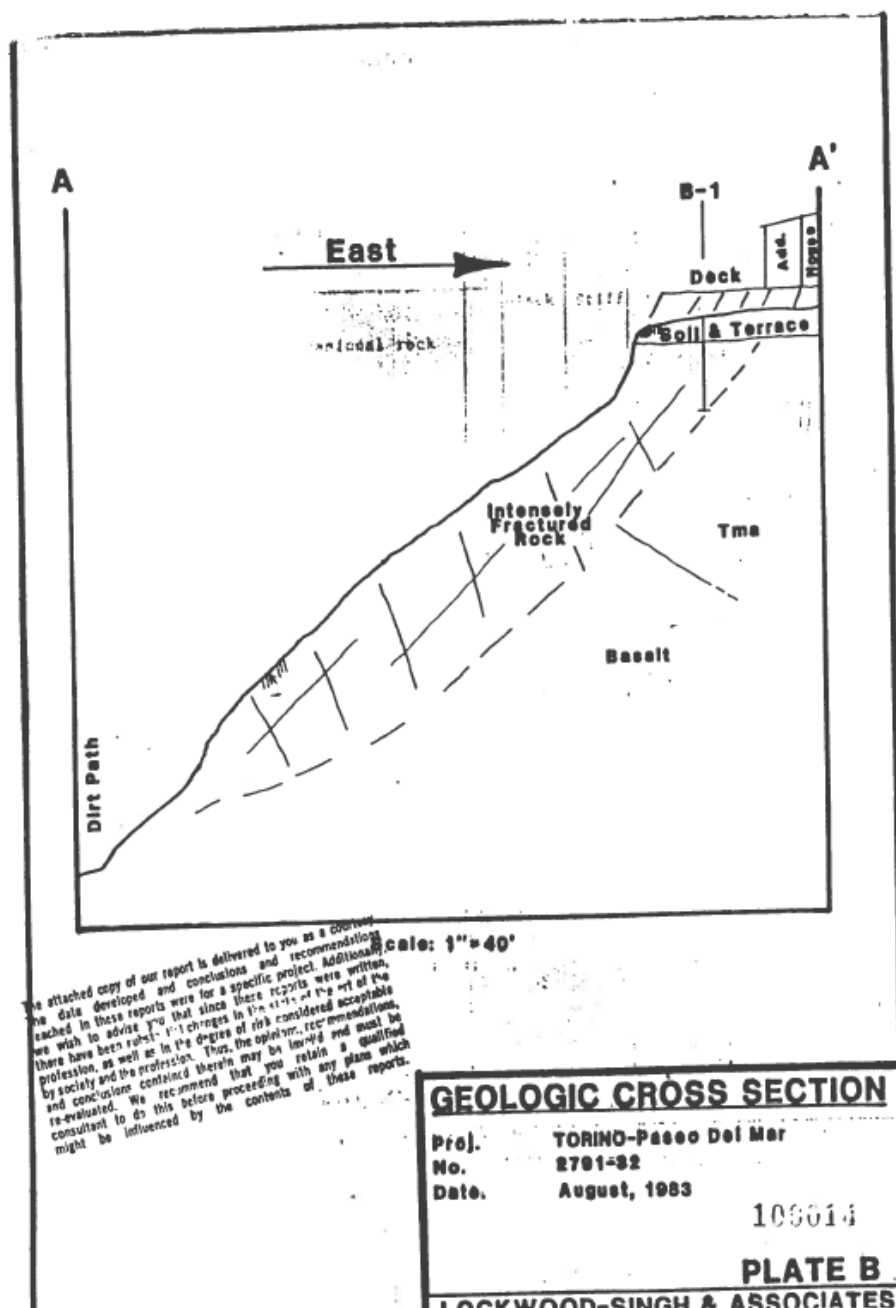


Figure 4. Cross section A-A' from LSA (1983) which illustrates the geology below the western portion of the project site adjacent to the house. The site is underlain by topsoil/marine terrace deposits, sedimentary, and igneous bedrock.

According to LSA, approximately eight feet of topsoil and terrace overlay intensely fractured bedrock that was in turn underlain by sedimentary bedrock of the Monterey Formation above basalt bedrock.

LSA stated that no slide planes or landslide material was observed and recommended that the existing deck be removed and that a new deck along with the house addition be founded on caissons that were a minimum of 2 feet in diameter and 30 feet in depth.

1983, August 10, Lockwood Singh and Associates, Report of Limited Geotechnical Investigation, Distress to Tennis Court, 709 Paseo Del Mar, Palos Verdes Estates, California

LSA issued an additional report regarding distress to the tennis court. According to LSA the portion of the tennis court located 10 to 20 feet from the top of the descending slope had distress consisting of cracks and vertical offset of several inches. Two borings were drilled in the vicinity of the tennis court and landslide affected bedrock to a depth of 30 feet was observed within a boring located closest to the slope. A similar repair recommendation was provided except that LSA recommended that caissons be a minimum of 2.5 feet in diameter, 40 feet deep and that the row of caissons be located entirely along the west side of the deck to a depth of 40 feet. A cross section from the report is included as Figure 5.

1984, February 2, City of Palos Verdes Permit for Deck Repair

1984, February 13 and 16, Field Memos from Lockwood Singh for Observations of Caissons

The February 13 memo stated that caissons were not of sufficient depth but the memo on February 16 stated that "Caissons approved for depth into bedrock, 2 @29.5', 1@ 30' below existing surface"

It appears that two caissons were drilled below the deck that extended 29.5 and 30 feet below the ground surface. No permits or observation memos were observed for piles below the tennis court.

1986, Several City of Palos Verdes Estates Memo's regarding dangerous condition of tennis court, illegal dumping of concrete, and improper drainage between the tennis court and the slope.

According to one of the memos the tennis court was being partially demolished and moved to the east, away from the slope. As stated on a memo dated July 1, 1986, Ms. Torino stated to the building official that "*She had reconstructed the tennis court with grade beams and caissons due to the distress in the old tennis court. These caissons were installed under the direction of Ms. Torino (who is a civil engineer) without the benefit of a City Building Department review.*"

1991, June 13, Permit for new pool on the east side of the house, recommended that the pool be designed for expansive soil.

1991, July 30, Coastline Geotechnical Consultants, Inc., Limited Geotechnical Engineering Investigation, Proposed Retaining Wall, 709 Paseo Del Mar, Palos Verdes Estates, CA

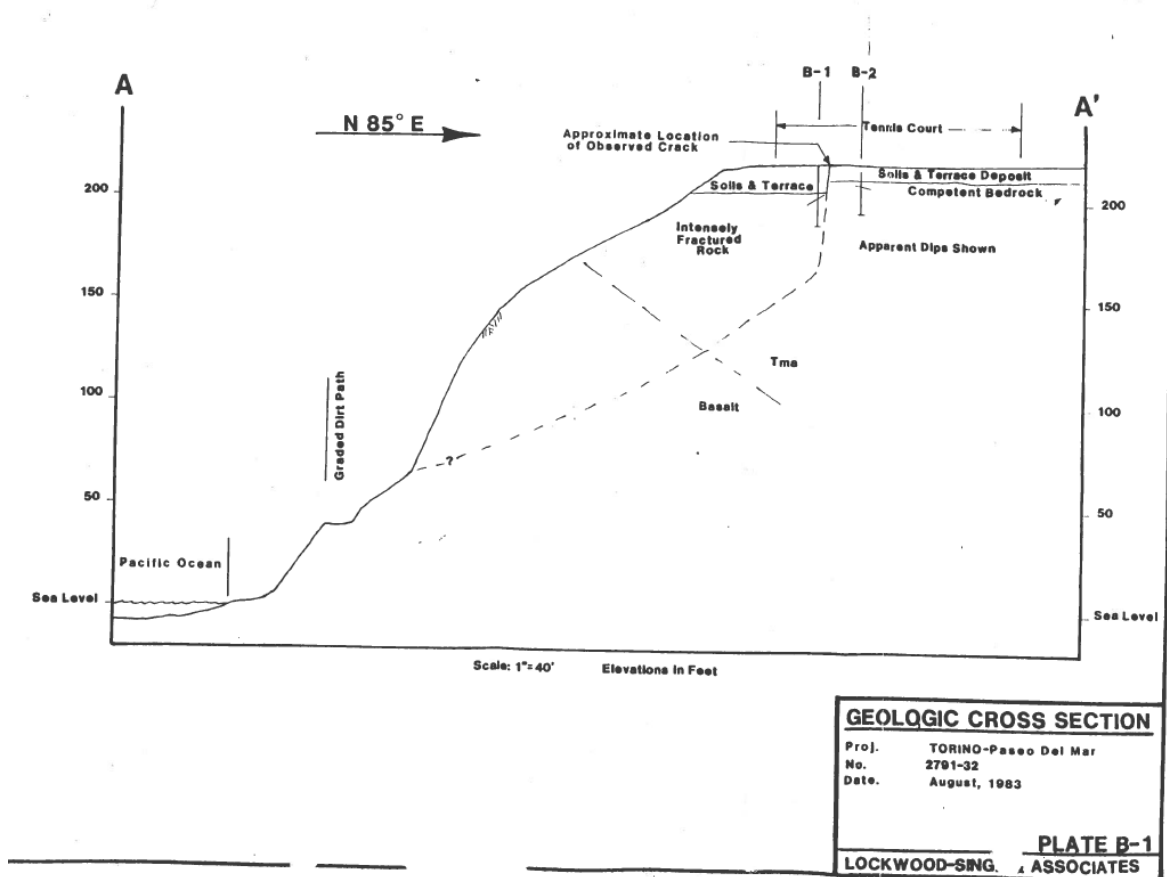


Figure 5. Cross section A-A' from LSA (1983) which illustrates the geology below the tennis court.

The report was prepared for a small retaining wall adjacent to the tennis court. A shallow trench observed about 5 feet of clayey fill and topsoil over terrace deposits. The fill and topsoil were observed to be affected by slope creep.

1991, September 27, City of Palos Verdes Letter

The letter stated that Mr. Torino never fixed the drainage issues and water still flows from the tennis court over the bluff and onto the southerly neighbor's property.

1999, August 19, Ehlers-Johnson ADR Services, Report of Water Damage, 709 Paseo Del Mar, Palos Verdes Estates, CA

The property was reportedly damaged when flooding occurred from a General Telephone (GTE) conduit running from a vault. The flooding caused damage to the southeast corner of the tennis court. This episode appears to have led to litigation from Ms. Torino against the City of Palos Verdes and GTE. The litigation began sometime around 2000 and continued until about 2004.

Litigation

Geotechnically, the plaintiffs were supported by Praad Geotechnical and the defense by GeoKinetics. It appears that the crux of the lawsuit was whether the cut along the slope to create Bluff Cove Trail, the walkway/fireroad that allows access to the beach below, removed support from the hillside and lowered the factor of safety.

A geologic map of the area, included as Figure 6 indicates that slumps and landslide masses are located close to and also on the property.

Several floor level surveys (manometers) were conducted on the home and it appears that both the plaintiffs and the defense determined that a portion of the home was affected by movement of the hillside. Figure 7 is a copy of a manometer survey with a line depicting the extent of deformation into the home prepared by the plaintiffs and Figure 8 is the affected area as determined by the defense. Note that the area affected by the slope movement is further into the home as determined by the plaintiffs than by the defense.

Figures 9 and 10 are cross sections prepared by the defense and plaintiff. The cross sections are similar except that the plaintiffs indicate the underlying landslide material affects more of the house than the defense does.

Figures 11, 12, 13, 14 depict the proposed repair as determined by the plaintiff and defense experts. The plaintiffs recommended that a row of piles be constructed along the top of slope to isolate the pad from the slope, followed by underpinning and rebuilding the portion of the home that was tilted. The defense simply recommended supporting the kitchen area and the exterior deck on piles. None of the recommended work has been performed.

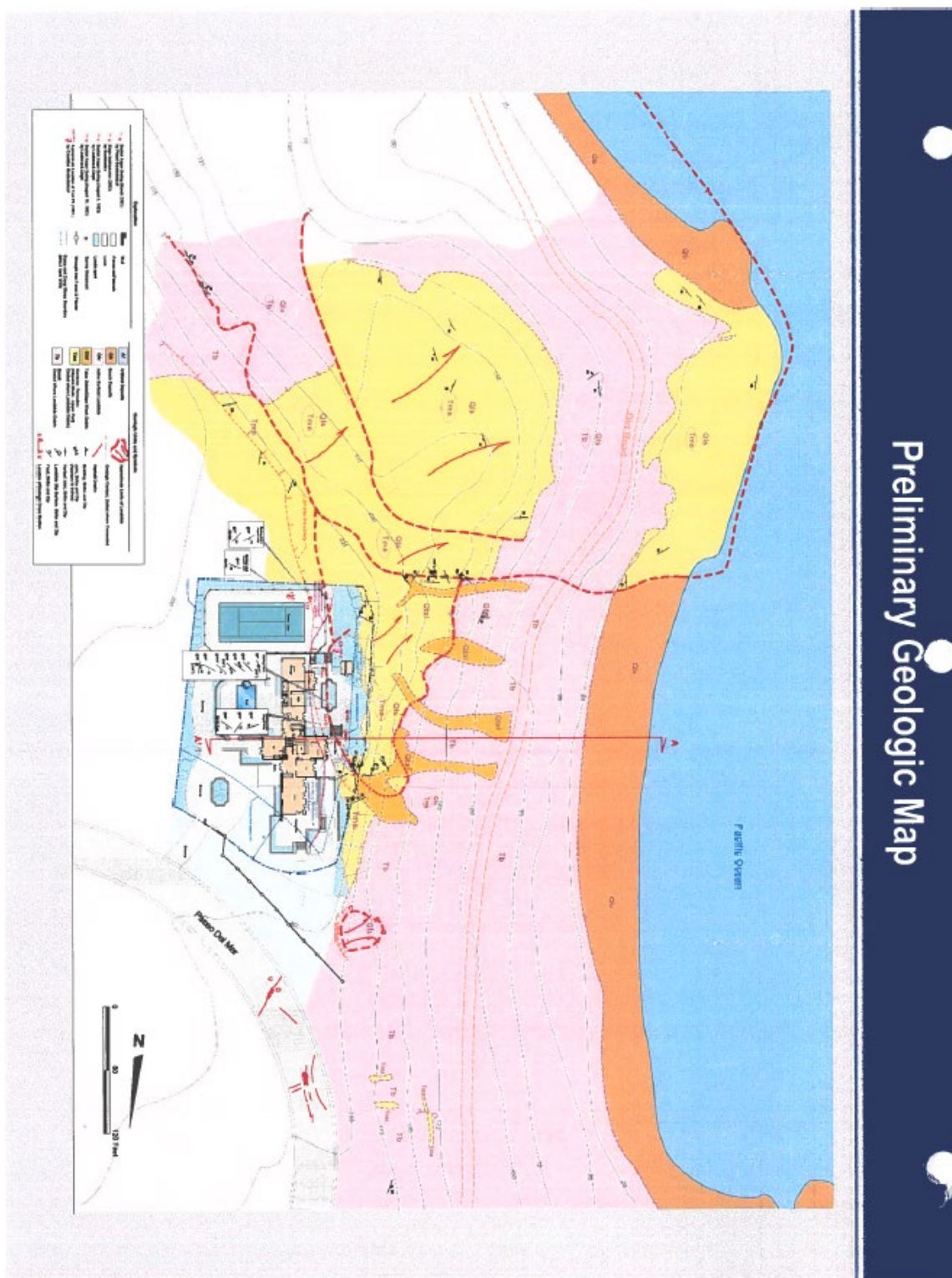


Figure 6. A preliminary geologic map of the area. The yellow area depicts landslides. Note a portion of the slides, as outlined by the red dashed lines, extend onto the building pad.

RESULTS OF FLOOR LEVEL SURVEY

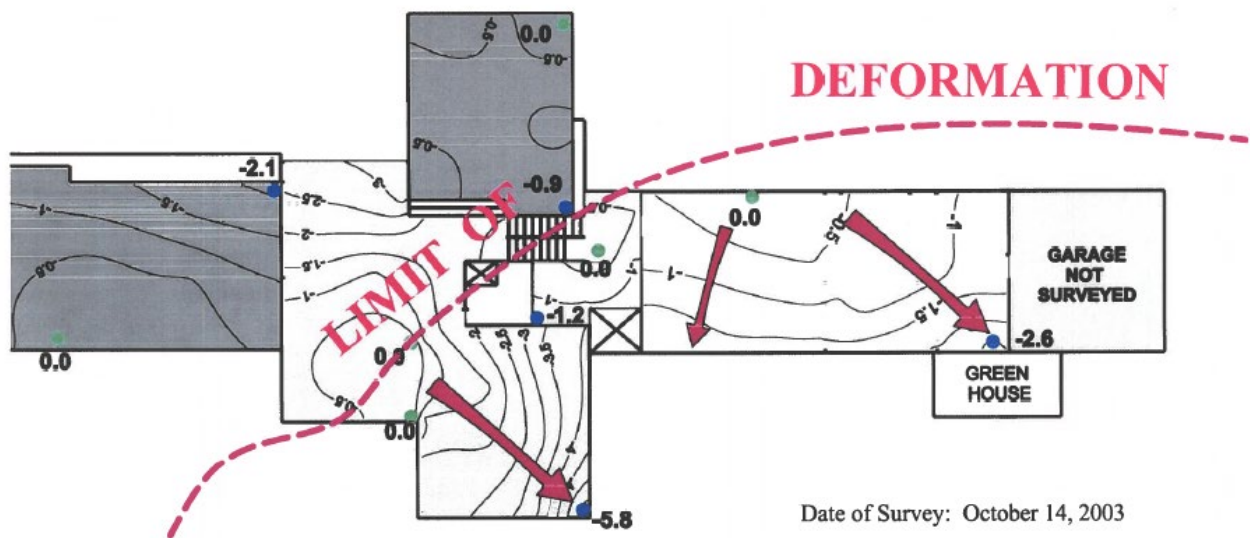


Figure 7. The manometer survey prepared for the Plaintiff. The ocean is located at the bottom of the figure. The red line supposedly depicts the portion of the house that has been affected by slope movement. Arrows depict the direction of tilt from deformation.

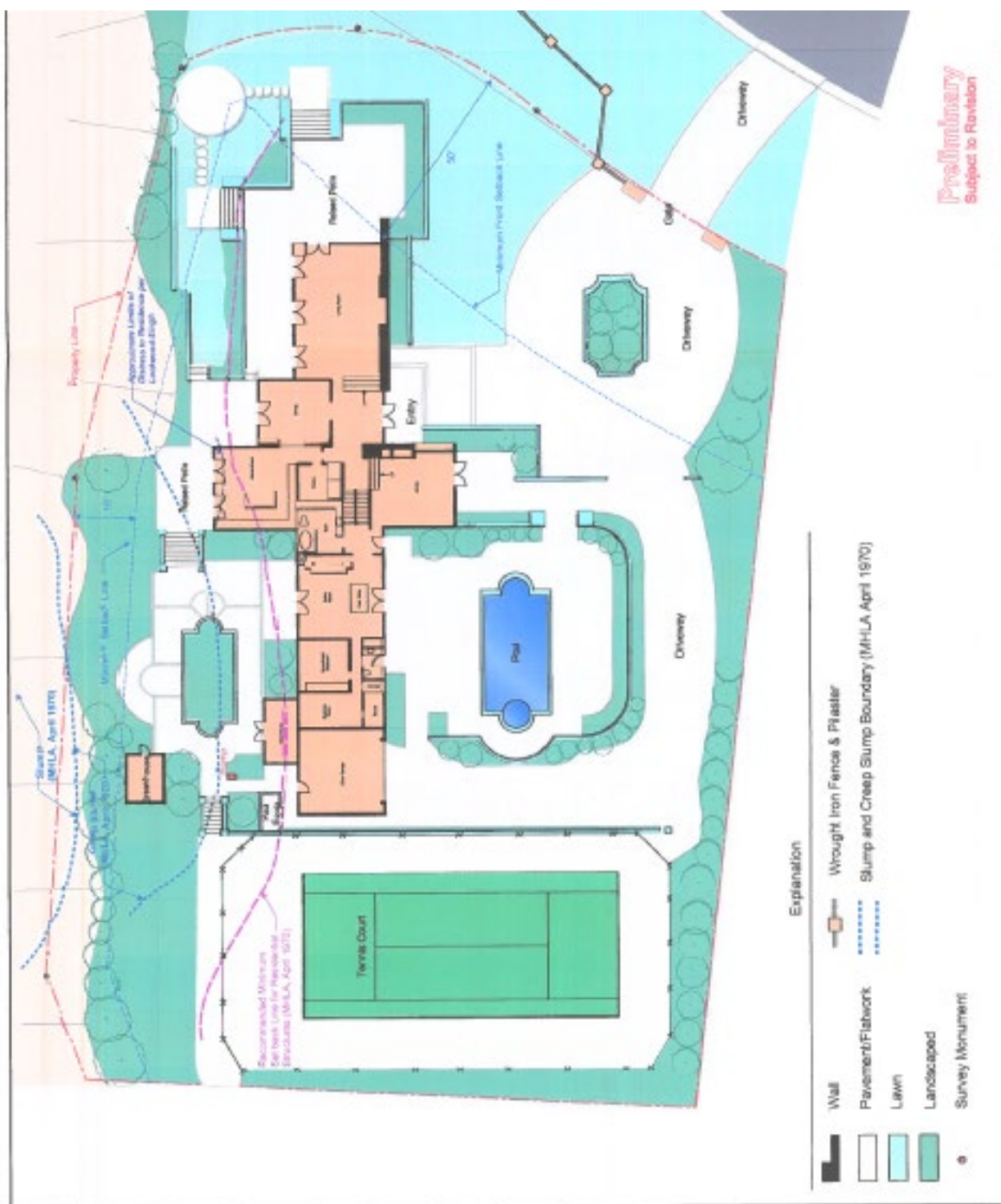


Figure 8. The affected area, as determined by the Defense. The ocean is located to the left of the figure. The purple line supposedly depicts the portion of the house that has been affected by slope movement. Note that it partially extends into the kitchen.

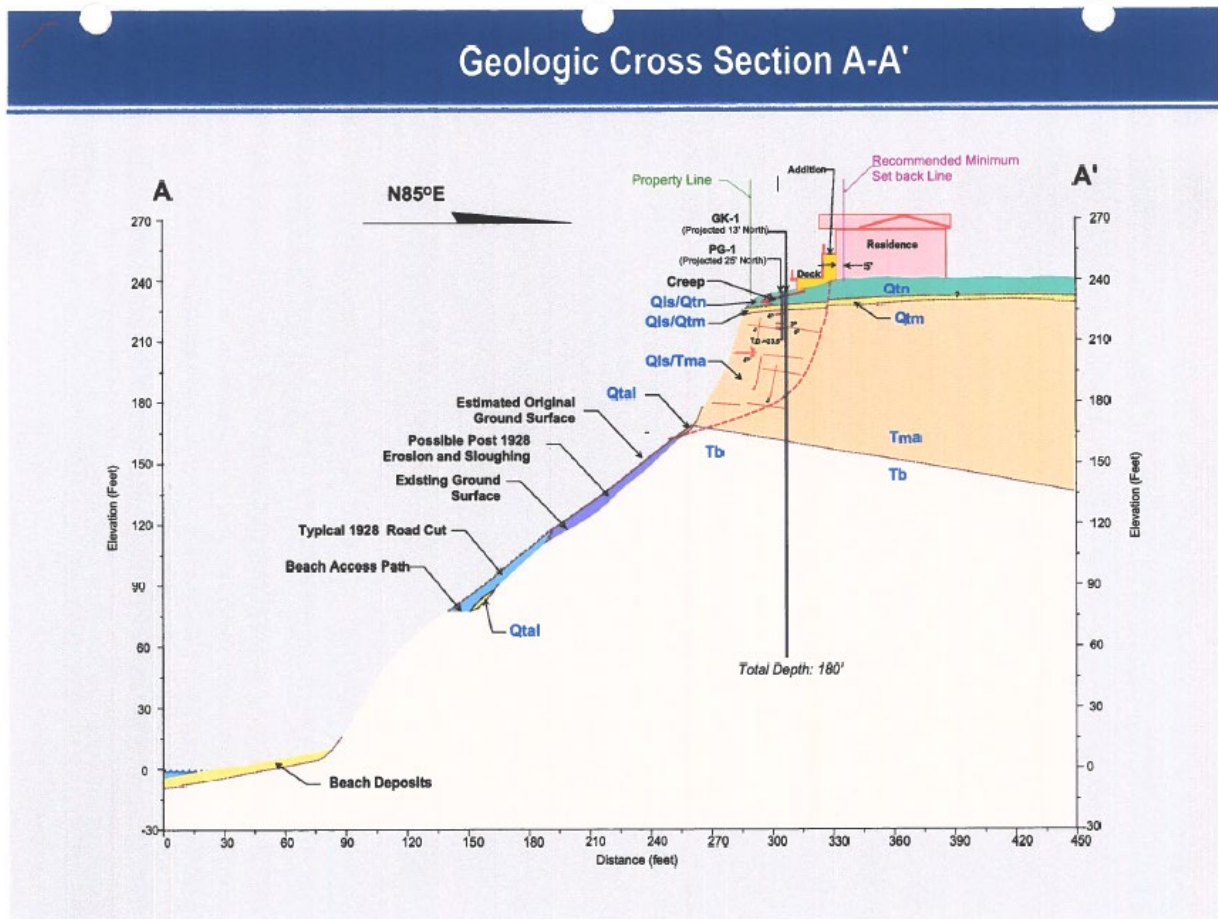


Figure 9. Cross section from the defense showing the landslide (red dashed line) that extends up to the edge of the house.

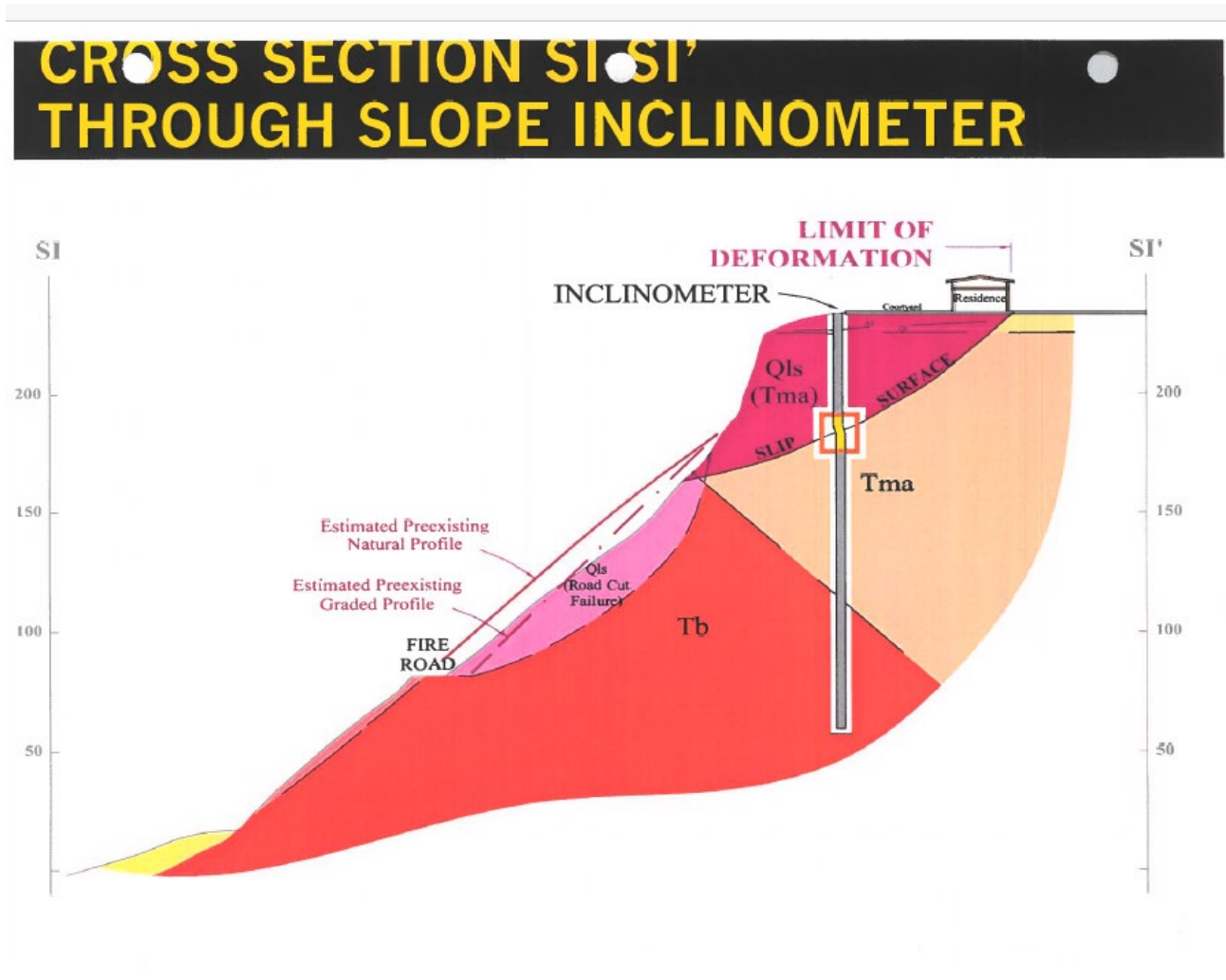


Figure 10. Cross section by Plaintiffs showing that the landslide (Qls material) extends under the home.

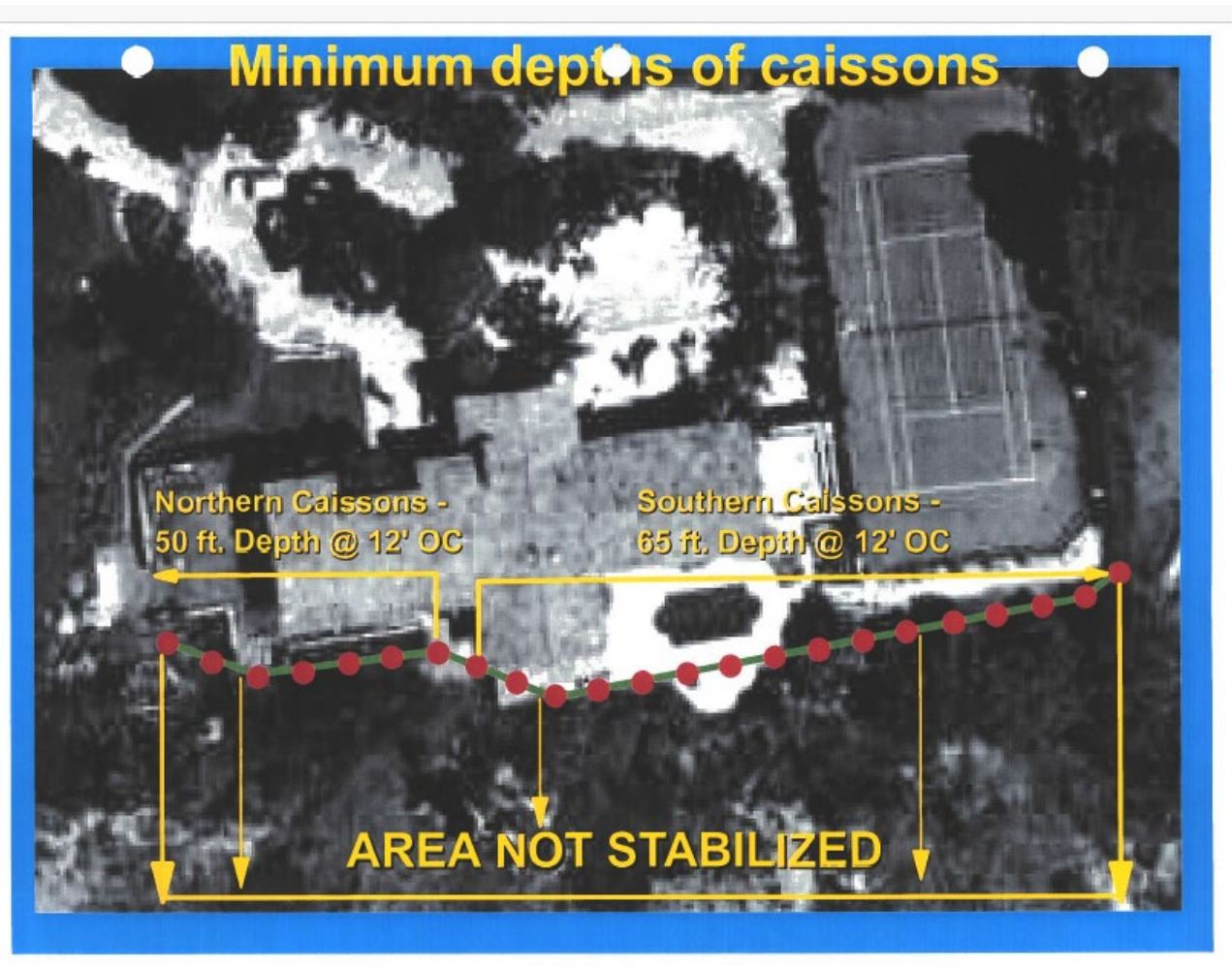


Figure 11. The repair proposed by the Plaintiffs to increase the factor of safety above 1.5 for the home and tennis court. 23 piles were proposed.

Underpinning of residence using caissons and grade beams for releveled

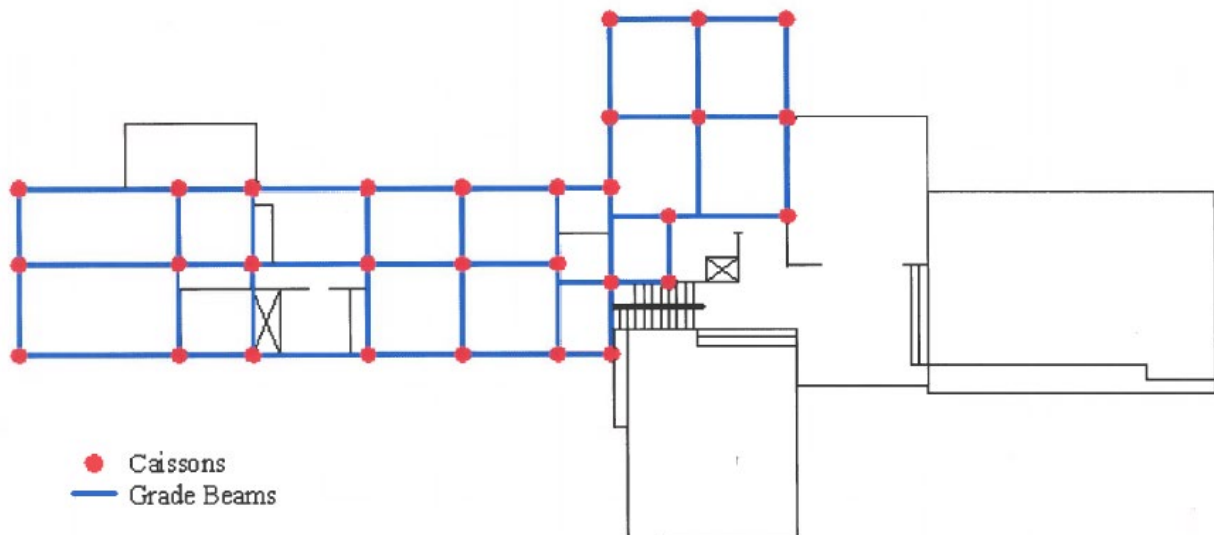


Figure 12. Plan prepared by the Plaintiffs showing the extent of proposed underpinning. The ocean is located to the top of the figure.

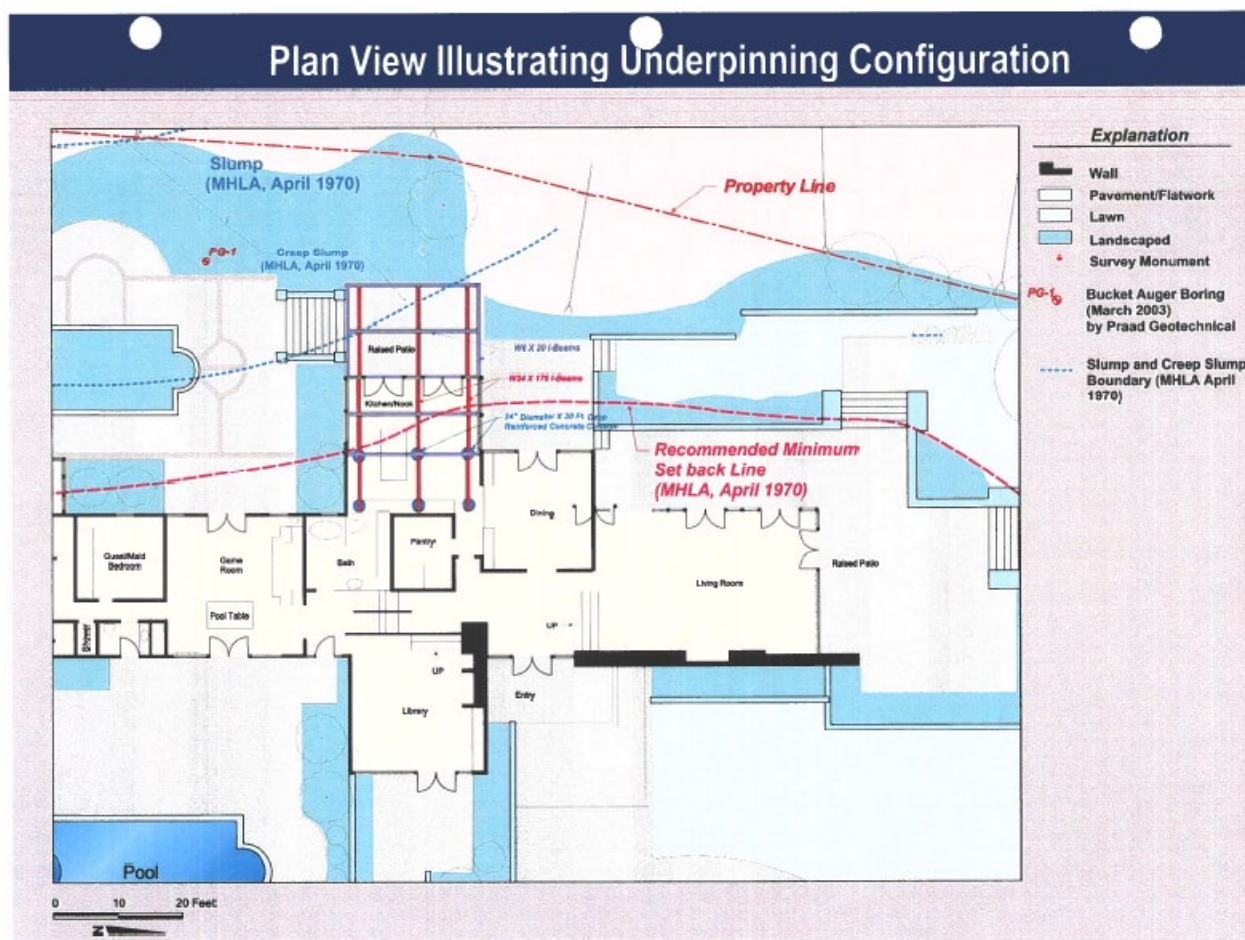


Figure 13. Plan prepared by the Defense showing the extent of proposed underpinning. The ocean is located to the top of the figure.

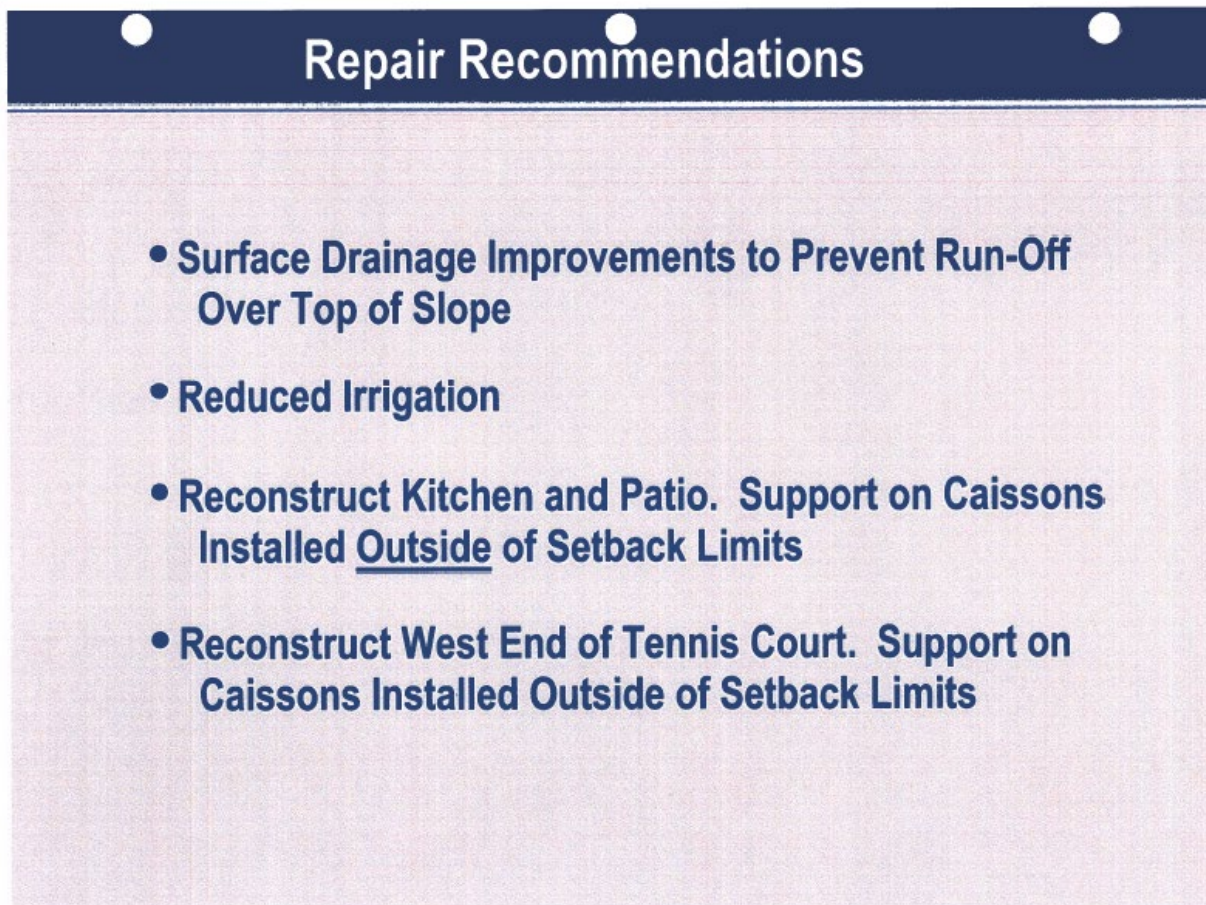


Figure 14. Repair recommendations as outlined by the Defense.

Site Visit

We performed a site visit to view the property on July 26, 2023. Obvious tilt was observed in the kitchen but the remaining portions of the home appeared to be in relatively good condition. Caissons were observed below the rear deck and below the western portion of the tennis court.

Discussion

Based on our review of documents and performance of a site visit, we are providing the following discussion.

- 1) The litigation was related to flooding of the property caused by a utility pipe and for an esoteric argument on whether the cutting of the access road on the slope removed support from the property. The litigation was won by the plaintiffs.
- 2) The slope below the home has a factor of safety of less than 1.5 and below building code requirements.
- 3) Movement of the slope has caused damage to the kitchen area, western portion of the tennis court, and areas to the west of the home. The remaining portion of the home does not appear to be significantly affected.
- 4) The repair called out by both the plaintiffs and the defense was for underpinning a portion of the home. The plaintiffs called for a larger area of repair than the defense.
- 5) The plaintiffs called for piles to be constructed along the top of slope to isolate the pad from movement of the slope and to raise the factor of safety to current building code minimums.
- 6) The existing caissons below the deck and western side of the tennis court are inadequate and not properly designed.

Conclusion

The slope below the home does not have an adequate factor of safety and movement of the slope has damaged the kitchen area of the house (possibly extending into a portion of the diningroom). In order to stabilize the existing building pad, piles would need to be constructed along the top of slope as recommended by the Plaintiffs in order to increase the factor of safety to current code requirements.

Previously, seven 50-foot deep piles and sixteen, 65-foot deep piles were recommended. Assuming these piles are 3 feet in diameter and would cost about \$300 per foot, the total cost would be about \$500,000 including a grade beam. Note that an independent slope stability analysis has not been completed. If a new home were to be constructed it is possible that due to changes in building code requirements that have occurred over the last 20 years since the last slope stability analysis was performed during the litigation, that additional rows of piles may be required. Assume an additional \$500,000 for each additional row of piles.

If the piles were constructed, then the pad would be stabilized. Releveling of the kitchen and possibly the adjacent dining room could proceed at discretion as would fixing of the tennis court. The cost for the reconstruction should be determined by a licensed contractor. The remaining portion of the property is in good condition without significant distress.

It should be noted that a geotechnical investigation would need to be performed to design the pile system and it is our estimate that the cost for the investigation would be on the order of \$50,000 due to the extent of subsurface investigation, laboratory testing, and associated analysis. The report and follow-up responses to the City reviewers would take about a year or so until final approval. Additionally, approval may be needed by the Coastal Commission, and it is our experience that the review process can take years to complete and it is possible that the Coastal Commission may not allow piles to be constructed because it is their intent to allow natural erosion to occur and do not want it to be restricted by improvements. Therefore, the required pile system may not ultimately be approved by the Coastal Commission.

As with all hillside properties, drainage should be assessed by a licensed expert and directed to the street and away from the slope. Under no circumstances should water be allowed to flow over the slope as additional slope movement could occur.

Respectfully submitted,

Joshua R. Feffer
Principal Geologist
Certified Engineering Geologist, C.E.G. 2138
By the State of California Board of
Geologists and Geophysicists