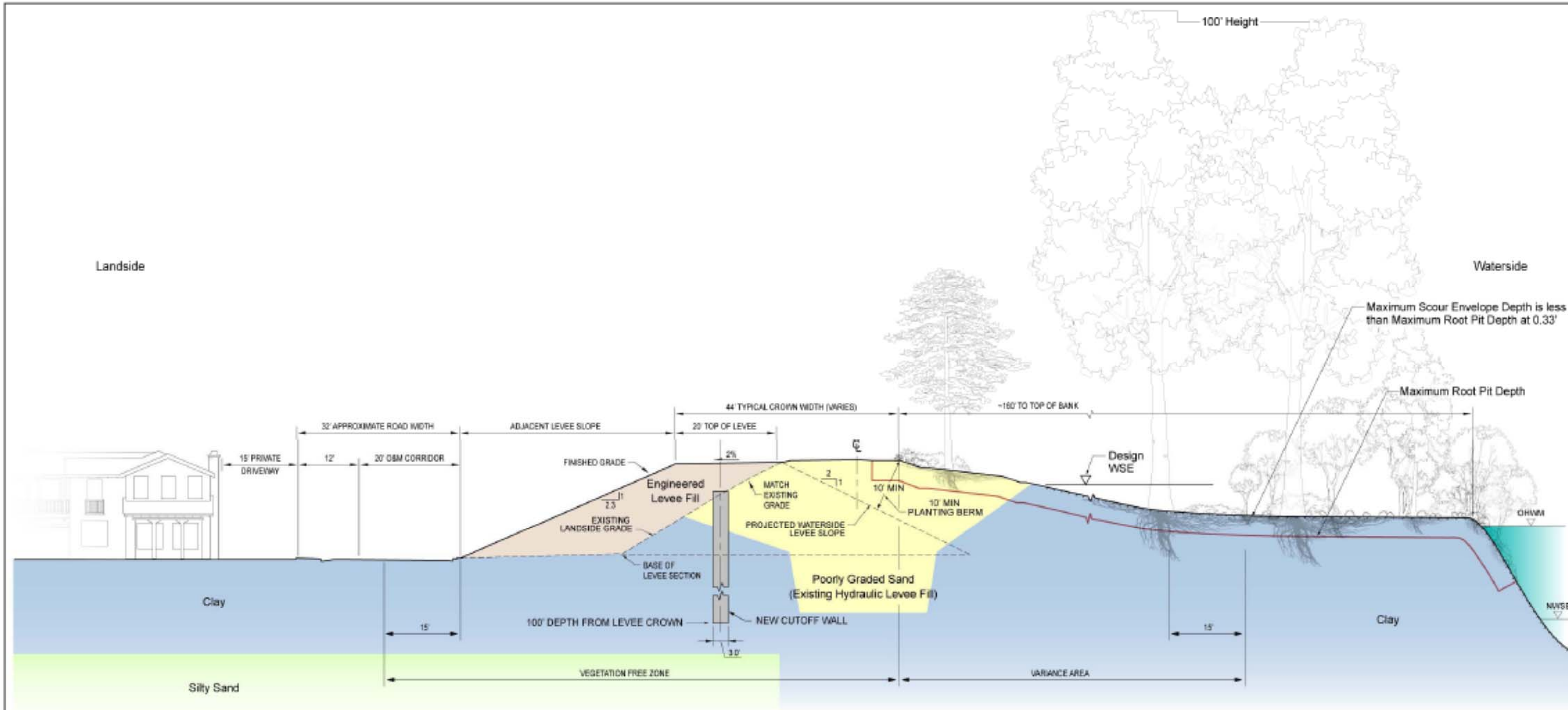

NOTES:

a. Scour depths were computed using the Melville and Colman Bridge Pier Scour Equation (Appendix F) with hydraulics provided by the USACE [redacted] HEC-RAS model.

b. The Maximum Scour Envelope encompasses the potential maximum scour extents if a large tree were to topple anywhere within the vegetation variance zone. Scour dimensions around a single toppled tree are discussed in Appendix F.

c. Due to the dependence of scour on both depth and velocity, scour may be maximized during events with a more frequent occurrence than the 200-year water level. The event which maximizes scour at any elevation at a given levee cross-section may also vary. The Maximum Scour Envelope shown is the composite results of the maximum scour extents for tree toppling on various elevations on the levee cross-section for events which occur at or more frequently than the 200-year event. The ranges of hydraulic conditions are discussed in Appendix F.

d. Velocities were computed as a function of depth assuming a Manning's relationship: $V=(1.49/n)(y^{2/3})(S_f)^{1/2}$ where the Manning's n value and Friction Slope, S_f, were taken directly from the USACE [redacted] HEC-RAS model, and the depth, y, was computed from WSEL and local ground elevation. For this site, the Manning's n was assumed to be 0.035 and the friction slope was assumed to be 0.000001 during the 200-year water level. This approximates a velocity of 0.3 ft/s at the levee toe concurrent with the 200-year water level.

e. 100 foot tall trees depicted represent potential maximum Valley Oak tree height and are not representative of actual field conditions.

f. 8' tap root depicted is representative of the worst case scenario and is unlikely to occur in these site conditions.

[redacted]

Source: Data provided by [redacted]

[redacted] LM 17.0 Typical Levee Cross Section (LM 16.5 to LM 18.6)

Plate [redacted]3 [redacted], 2010)