The Quasi-Normal Scale Elimination (QNSE) model is a new theory of turbulence with stable and weakly unstable stratification. The model explicitly resolves the stratification-induced disparity between the transport processes in the horizontal and vertical directions and accounts for the combined effect of turbulence and waves. The theory predicts various important characteristics of stably stratified flows, such as the dependence of the vertical turbulent Prandtl number on Froude and Richardson numbers, anisotropization of the flow filed, and decay of vertical diffusivity under strong stratification, all in good agreement with computational and observational data. The theory also yields analytical expressions for various 1D and 3D kinetic and potential energy spectra that reflect the effects of waves and anisotropy. The QNSE-based TKE-L turbulence model and surface layer parameterization were implemented in WRF.