On August 9th, 2020, a magnitude 5.1 earthquake struck Sparta, North Carolina, causing over 10 million dollars' worth of damage. It was the largest earthquake in North Carolina in over 100 years and produced surface ruptures - visible cracking. Throughout the Sparta region, tectonic fault surfaces were exposed by the surface ruptures. These fault surfaces display slickenlines, which are grooves that show the direction of fault movement. Tectonic fault surfaces can also be analyzed in order to understand the stresses under which they formed, which is called their stress field. In this study, fault surfaces throughout the Sparta region were identified and analyzed in order to determine their stress fields - if the stress field of a surface is similar to the stress field of the Sparta earthquake, that surface is more likely to slip in the future. Using these data, we showed that many of the tectonic surfaces we found predated the Sparta earthquake and are unlikely to slip in the future and we identified surfaces that are at risk of slipping in the future.