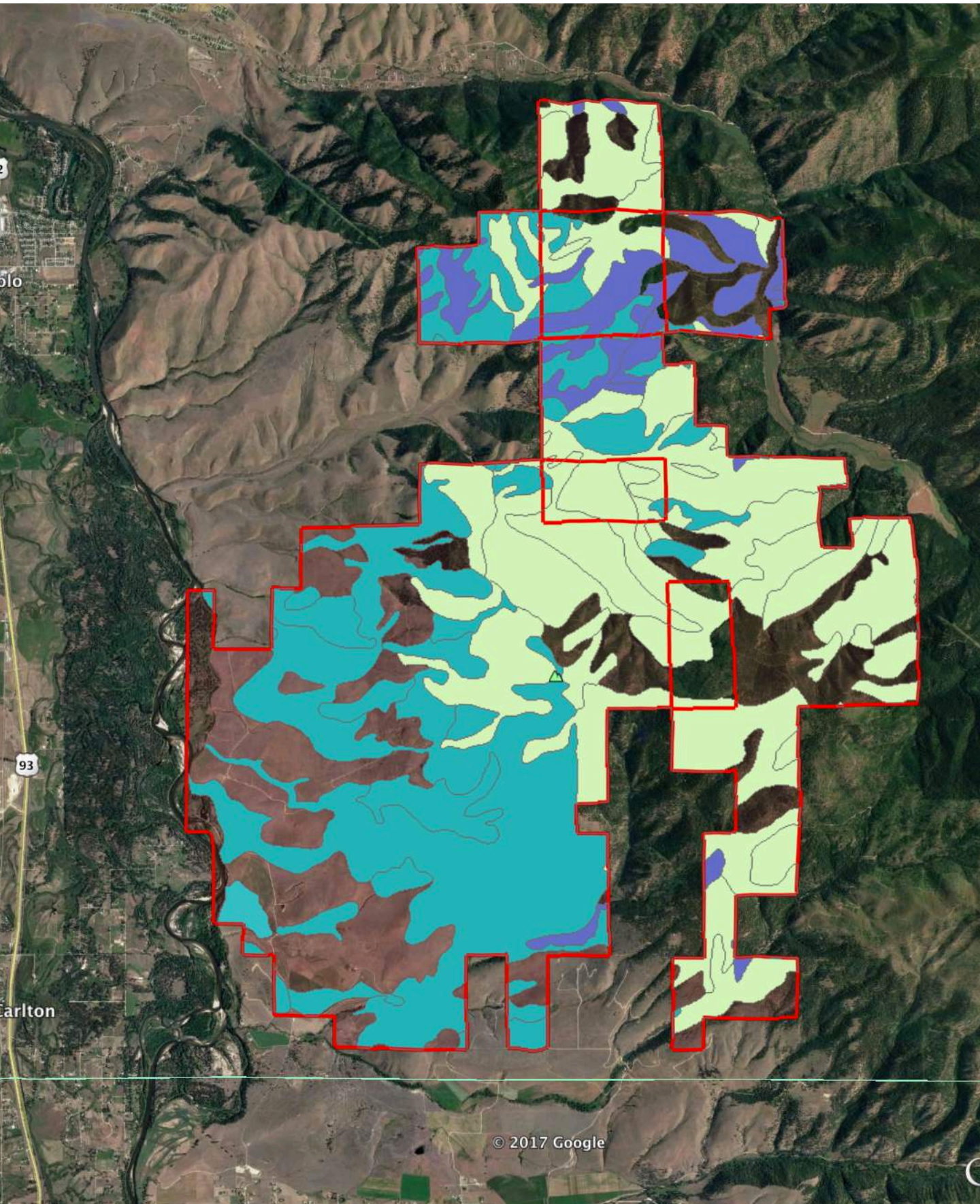
Climate, plants, animals, geology, and time work together to turn bedrock into soil, resulting in a wide variety of soil appearance and function. MPG Ranch contains 33 different soil types. This summer I dug into road cuts to expose and photograph the three most prevalent of these soils: Bigarm, Winkler, and Repp.

Bigarm (teal), the most abundant soil type, occupies 40% of the total land area. Winkler (light green) occupies 35%, Repp (purple) occupies 7%, and other soil types are less than 5% of total land area.



BIGARM SERIES

Throughout the growing season, grass roots grow and die back in the top 12 inches of Bigarm soil. These dead roots infuse the top layer of soil with abundant organic matter resulting in dark brown, fine textured soil.

The grassland foothills and benches of MPG feature Bigarm soil. Bigarm has a thick surface layer that contains plenty of nutrients and organic matter. It reminds me of garden soil. Herbivore pressure, competition, and differences in soil moisture prevent establishment of trees onto this grass and shrub dominated soil.

WINKLER SERIES

Winkler, like most pine forest soils, has surface layers that appear white or grey. As pine needles rain down onto the forest floor and decompose, they release dilute acids. Rainwater carries these acids into the soil washing organic matter and nutrients deeper into the soil profile, leaving behind grey or white layers.

Winkler, our second most common soil type, dominates Baldy's forested slopes. This gravelly, little developed soil lacks distinct layers and rests atop clay, quartz, and volcanic ash parent materials. I encountered abundant rocks and roots digging into Winkler. I also saw many small mammal holes; it seems rocks don't dissuade them from taking advantage of the forage and cover offered by this habitat.

REPP SERIES

Deep and well drained, Repp is our second most common forest soil. Ponderosa pines, Doug fir, and bluebunch wheatgrass grow on this soil. More finely textured than Winkler, Repp also rests atop slightly different parent materials of quartz, silt, or limestone.

Roots and fungi glue mineral particles together in the upper layers of Repp, giving it a blocky appearance. Rainwater easily infiltrates this well formed soil structure, creating habitat for soil animals and microbes.