

## **Overview**

Cooper Lake State Park, South Sulphur Unit, (CLSP) is a fairly new map—actually, two maps, with Coyote Run on the east side of the park and Buggy Whip to the west. With a model map stuck in the middle. This map was made and used for the 2017 Interscholastic Championships. Base map: Greg Lennon, Red Arrow maps Field work: Nancy Bowers (2013-2015), Tom Strat (2016), Stan Darnell (2016-2017), Jim Stevens (2016-2017), Sheila Doyle (2017)

## **Terrain**

CLSP is located in the borderland of the Blackland Prairies and the Oak Forest and Prairies ecoregions of Texas. The land was settled by American pioneers starting in the 1850s and farming activity began to alter the natural landscape. Over time, many of the fields were converted to pasture. Small man-made ponds (or “tanks” in Texas farming lingo) were created to retain water. Berms (or “terraces” in Texas farming lingo – not to be confused with the orienteering terrace feature) were created to stop erosion. The berms are evident today as low undulations (too small to map) that approximate parallel contours on many hillsides. Fences were installed to keep cattle in or out of pastures and fields. As fields were plowed, the fence rows often became low linear ridges that remain today even after the fences have fallen down and the fields have grown over and returned to forest. In many places, the berms and fence rows have influenced runoff patterns and created erosion features in unexpected places. Cooper Lake was created in the mid-1990s and CLSP opened in the late 1990s. The houses were removed and the fields were allowed to go back to nature. Over time, the fences have deteriorated leaving wire on the ground as well as a few wires up where the trees grew around them or where the posts may not have rotted yet. The ruined fences may often be just a wire or two that is a foot or so off the ground. They can be very hard to see in the woods if you are traveling perpendicular to them, but may be followed if you find them. Some, but not all, of them have been flagged for safety. Walking trails were created in the east end and equestrian trails were created in the west end. As the trails are used, ruts are created, which grow into gullies, and new trails are created to replace the old trails. This leads to an intricate gully and watercourse system, including many watercourses that are not normally seen in nature – such as gullies that go down the crest of a spur where an old trail used to be. Since the lake was created, the water level has varied. Most of the park lake shore is bordered by 1- to 6-foot earth banks associated with the shoreline when the lake is full. When the lake level drops, the gradually sloping lake bottom is exposed. As the time of this writing, the lake level is at a moderate level below the earth bank line and with 10 to 50 meters of exposed lake bottom. The large creeks that feed northward into the lake have carved deeply incised, steep-sided gullies. When the lake is high, it extends up the major feeding creeks into the gullies, deep into the park. In the most extreme case, Finley Creek, the gullies are up to two contour lines deep, and the lake extends up a kilometer into the creek.

## **Map**

Although there are a variety of small stones and cobbles, there are no rocks large enough to be mapped as boulders. There are no rock cliffs in the park. However, there are a large variety of erosional landforms, including high earth banks, watercourses, ditches, and gullies. Thus, we used the following standard and non-standard mapping symbology: Years of farming, ranching, and now horseback riding and hiking have formed an intricate system of watercourses. There are so many small ditches (up to 1 meter deep), that using the standard brown dotted map symbol was confusing and impossible to read in areas with dense ditches. Thus, we used the

blue dashed small stream symbol to show a wide range of water courses that can be crossed at speed (for the indicated vegetation). These include shallow reentrants, small ditches, and deeper swales. Abandoned trails that are just ruts through the terrain are shown as brown dotted lines (non-standard symbol). A control clue of “ruined trail” refers to such a brown dotted line abandoned trail. One- to 3- meter gullies that are narrow are shown with the standard brown gully symbol. Depending upon vegetation, they are crossable or else you only have to go upstream or downstream a short way to cross. Some of the deep or wider gullies are shown with earth banks. Where they are most complex, they may be shown with contours or form-lines without hachures. Since there are no rock cliffs, we use the black cliff symbol in a non-standard way to represent an impassable earth bank and the regular brown earth bank for a passable earth bank. The brown earth bank indicates a 1- to 4-meter tall earth bank that orienteers could traverse. Taller (2- to 8-meter) earth banks that are too steep to climb are shown using the black cliff symbol. The earth banks symbolized as black cliffs should be crossed only at designated crossing points. If it hasn’t rained recently, almost all of the watercourses and man-made ponds will be dry, with the exception of the larger creek gullies that have lake water backed up into them. The dry ponds will look like an earth wall with either a depression form line, depression symbol or intermittent marsh symbol. If it has rained recently, many of the watercourses, ponds, depressions, intermittent marshes, and trails may have standing water. The woods include a mix of evergreen eastern red cedar, deciduous post oak, winged elm, bois d’arc, and Texas honey locust, among others. The eastern red bud blooming season starts in March. White, runnable woods are either open with native prairie grasses or a mix of small brush/trees and vines – typically low green briar. Occasionally, mature stands of evergreen cedar may be fast runnable and also shown as white forest. About half of the white runnable forest is similar to what is often called the “Midwestern style” of white runnable forest. By that, we mean good visibility and running, but significant low green briar in many places (not mapped). Gaiters are essential. Lighter green woods are typically oak forest with patches of taller green briar or an excess of small sapling and vines, or large cedar trees with enough low branches still intact to inhibit direct-line navigating. In low wet areas, light green often represents canebrakes. A canebrake is a dense growth of canes that is 1- to 3-meters tall, about the diameter of a pencil and fairly easy to push through, but with very low visibility. (See example below of trail through canebrake.)