



Testing GPS units

The QAPP requires that GPS units be tested at the beginning and end of the field season (QAPP text at bottom of page).

A pre-field season test is also an excellent opportunity to check your GPS handling procedures. Parking lots make good test areas for GPS units, because they can be seen clearly in aerial photographs. Avoid collecting test points up against buildings, as close proximity to buildings (and cliffs) tends to displace GPS readings. In the examples at right the target features were the tip of the herringbone pattern and the tip of the thick parking space line. The latter is shown in detail in the final image.

Use GoogleEarth and zoom in to the parking lot around your home institution. Take note of features which will be easy to identify when you're outside, e.g. markings on the parking lot surface. Then go outside and record GPS points on these features. Pick two features 50-100 m apart, and record 3 points at each, moving between the two points between each recording.

Download the GPS data, and **view it in GoogleEarth**. You can use the Ruler tool in Google Earth to measure the displacement between the point you recorded and the feature in GoogleEarth's imagery. The GPS points should be within 10 m of the features in the image, and the three points saved for each feature should fall within a circle 10 m across (regardless of their position relative to the feature). In other words the diameter of the magenta circle and the length of the green line should be 10 m or less.

Use [this log sheet](#) to record the date, GPS serial number, the maximum separation between points in each group of three points (two measurements), and the maximum distance from a point to the target feature for each point group (two measurements). The log sheet does not need to travel into the field with the GPS.

IMPORTANT: Verify that the saved data contains timestamps (time and date information) for downloaded points. The easiest way is to look at the saved .gpx file in a text editor like notepad. If you're unsure, email the file to tbrown@nrri.umn.edu.

Send completed test materials to one of the project's QA managers: Matt Cooper (mcooper@northland.edu) or Valerie Brady (vbrady@d.umn.edu).

From the QAPP

BC7. Instrument Calibration and Frequency

Recreational GPS accuracy is sufficient for these data. GPS receivers will be tested prior to and after the field season by taking repeated readings at known localities, i.e., benchmarks. During the field season, field crews will be uploading GPS readings nearly daily. At least once per week, GIS personnel will plot GPS points onto aerial photographs of a sampled site and send the image to the field crew to verify that points appear to be reasonably accurate. Accuracy during the field season will also be checked a posteriori by comparing latitude/longitude at easily recognized localities (e.g., road stream crossings) with GPS readings. All tests and results will be logged and the logs kept with the appropriate GPS units.