Global Positioning System Technology for Practice Certification

A. Background

Global Positioning System (GPS) technology has wide application in NRCS business activities, including, but not limited to: general resources inventory, conservation planning, conservation practice certification, engineering design and topographical surveying. The accuracy requirements for positional data vary by activity. Such devices use differential correction signals from the Wide Area Augmentation System (WAAS) or the Nationwide Differential GPS (NDGPS) and can assist in documenting the location and extent of conservation practices when properly used by trained and certified personnel.

B. Requirements and Standards

The following quality of position indicators must be set to the values listed below prior to performing any measurement of position, area, or length of conservation practices:

- **GPS status**: 3 Dimensional
- **Positioning Mode**: Differential GPS
- **Number of Satellites in Solution**: 7 or more
- **Signal Strength of Satellites**: 50% or more
- **Position Dilution of Precision**: 6 or less
- **Age of Differential Correction**: 60 seconds or less
- **Horizontal Accuracy**: 20 feet (6.1 meters) or less

When operating in a challenging environment (canopy closure > 10% and terrain masking >10°) GPS positions should be averaged for 30 seconds.

The position indicators will be recorded in hardcopy in the checkout notes or the attached worksheet prior to using the instrument.

C. Point Position Measurements

GPS can be used for identifying the geographic coordinates of practices represented graphically as points for certification, e.g., watering facility, well, etc.

D. Area Measurements

GPS can be used for measuring practice certification for areas greater than 1 acre. Strict adherence to quality of position standards is recommended for areas less than 2 acres. Use manual survey methods for areas less than one acre.

E. Length Measurements

GPS can be used to measure lengths greater than 100 feet for practice certification. For lengths less than 100 feet use manual survey methods

F. Verification of GPS Data for Practice Certification

All position, area, and length measurements obtained with GPS units for practice certification must be downloaded into a map document for verification of the proper location of the conservation practice or its component(s). GPS position data used for practice certification will be saved in ESRI shapefile format and will be stored in the designated customer's folder. When GPS equipment is used to certify a conservation practice, a map showing the location of conservation practices will be produced and stored in the customer folder, along with a statement documenting the initial GPS settings listed in paragraph B at the time of measurements.

G. GPS Practice Certification Authorization

Only those employees that have received GPS training from the resource engineer (or someone authorized to provide this training) will be allowed to use GPS equipment for certification purposes.

H. Approved GPS Platform

1. The State Conservationist will approve GPS platforms (hardware and software) acceptable for practice certification.
2. Currently approved GPS platforms are:

   Garmin – Map 12
   Garmin – Map 76 or any variation of the Map 76 (Map76GX, Map76SX)
   Garmin – GPS Map 62stc
   Trimble – GEOXT

Alabama NRCS Handheld GPS Worksheet

Landowner Name: _____

Contract Number: _____

Name of GPS User: _____

Type of handheld GPS Used: _____

Date: _____

Practice: _____

Planning ☐ **Checkout ☐** **Quality Control ☐**

Linear distance: _____

Area: _____

GPS Accuracy: _____

Other Notes: _____

_____

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