NOAA Manages the National Spatial Reference System

NOAA Manages the NSRS

NOAA's National Geodetic Survey (NGS) defines, maintains, and provides access to the **National Spatial Reference System (NSRS)**—a consistent coordinate system that defines latitude, longitude, height, scale, gravity, orientation, and shoreline throughout the United States and is designed to meet our nation's economic, social, and environmental needs.

For 200 years, NGS and its predecessor agencies have collaborated with public and private organizations to establish reference stations at precisely determined locations. Traditionally, these locations have been identified by setting a **survey mark**—usually a brass, bronze, or aluminum disk. Locations might also be identified by a deeply driven rod or a prominent object, such as a water tower or church spire. More recently, NGS has fostered a network of **continuously operating reference stations (CORS)** where each CORS includes a highly accurate receiver that continuously collects radio signals broadcast by **Global Navigation Satellite System (GNSS) satellites.**

Components of the NSRS include:

- **geodetic positional coordinates** (latitude, longitude, and ellipsoid and orthometric heights) in the official U.S. datums, currently, the North American Datum of 1983 (NAD 83) and the North American Vertical Datum of 1988 (NAVD 88);
- **geopotential**;
- **acceleration of gravity**;

- **deflection of the vertical**;
- **models, tools, and guidelines**;
- **the official national shoreline**;
- **Global Navigation Satellite System** (GNSS) orbits;
- **orientation, scale, and offset information** relating NAD 83 to international terrestrial reference systems; and
- all necessary information to describe **how these values change over time**.

The reference stations form a network used to accurately position other points of interest. Surveyors, mapping professionals, and others use the NSRS to ensure their positional coordinates are compatible with those determined by others. In this way, when individuals create maps; mark property boundaries; and plan, design, and build roads, bridges, and other structures, everything matches up.

For more information, contact NGS:
geodesy.noaa.gov