

TABLE 2.2 USGA National Mapping Program Standards

**USGA National Map Accuracy Standards**

With a view to the utmost economy and expedition in producing maps which fulfill not only the broad needs for standard or principal maps but also the reasonable particular needs of individual agencies, standards of accuracy for published maps are defined as follows:

1. *Horizontal accuracy.* For maps on publication scales larger than 1:20,000, not more than 10% of the points tested shall be in error by more than  $\frac{1}{500}$  in, measured on the publication scale; for maps on publication scales of 1:20,000 or smaller,  $\frac{1}{500}$  in. These limits of accuracy shall apply in all cases to positions of well-defined points only. Well-defined points are those that are easily visible or recoverable on the ground, such as the following: monuments or markers, such as benchmarks, property boundary monuments; intersections of roads, railroads, etc.; corners of large buildings or structures (or center points of small buildings); etc. In general, what is well defined will be determined by what is plottable on the scale of the map within  $\frac{1}{500}$  in. Thus while the intersection of two road or property lines meeting at right angles would come within a sensible interpretation, identification of the intersection of such lines meeting at an acute angle would obviously not be practicable within  $\frac{1}{500}$  in. Similarly, features not identifiable upon the ground within close limits are not to be considered as test points within the limits quoted, even though their positions may be scaled closely upon the map. In this class would come timberlines, soil boundaries, etc.
2. *Vertical accuracy.* Vertical accuracy, as applied to contour maps on all publication scales, shall be such that not more than 10% of the elevations tested shall be in error by more than one-half the contour interval. In checking elevations taken from the map, the apparent vertical error may be decreased by assuming a horizontal displacement within the permissible horizontal error for a map of that scale.
3. The accuracy of any map may be tested by comparing the positions of points whose locations or elevations are shown upon it with corresponding positions as determined by surveys of a higher accuracy. Tests shall be made by the producing agency, which shall also determine which of its maps are to be tested, and the extent of the testing.
4. Published maps meeting these accuracy requirements shall note this fact on their legends, as follows:
 

“This map complies with National Map Accuracy Standards.”
5. Published maps whose errors exceed those aforesaid shall omit from their legends all mention of standard accuracy.
6. When a published map is a considerable enlargement of a map drawing (manuscript) or of a published map, that fact shall be stated in the legend. For example, “This map is an enlargement of a 1:20,000-scale map drawing,” or “This map is an enlargement of a 1:24,000-scale published map.”
7. To facilitate ready interchange and use of basic information for map construction among all federal map-making agencies, manuscript maps and published maps, wherever economically feasible and consistent with the uses to which the map is to be put, shall conform to latitude and longitude boundaries, being 15 min of latitude and longitude, or 7.5 min, or 3 $\frac{1}{2}$  min in size.

SOURCE: From the United States Geological Survey, <http://rmmcweb.cr.usgs.gov/public/nmpstds/nmas647.html>.

there are a variety of sources for historical aerial photography. Private firms may have generations of aerial photography taken on speculation or on contract. Many communities also have aerial photography collected over years. Some state geological surveys and the USGS also have historic aerial photography available for purchase. The American Society for Testing and Materials (ASTM) has developed the *Standard Guide for Acquisition of File Aerial Photography*