

Geodetic Leveling in the Modernized NSRS

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SUMMARY

Geodetic leveling provides very accurate height differences in local areas. As a relative measurement technique, it requires that starting points have heights that are already known. Traditionally, this requires level line ties to existing bench marks. NGS expects that leveling will continue to have a role in the modernized NSRS. While it will not be used in the definition of the geopotential datum, it will still be applicable for obtaining differential orthometric heights within the datum.

When working in the modernized NSRS, starting heights for leveling will not be sourced from historic coordinates on passive marks, which may be unreliable due to issues of mark stability. Instead, the primary mode of access to the vertical datum will be through GNSS observations in combination with a high-resolution geoid model. GNSS will be used to determine starting orthometric heights on points within the leveling survey. The GNSS points seek to provide absolute positioning, while the leveling provides the local height differences at a higher level of accuracy. NGS intends to build support for this paradigm into its next generation of products and services supporting geodetic work in the modernized NSRS.

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