



United States Department of the Interior
U.S. GEOLOGICAL SURVEY
Reston, Virginia 20192

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Mail Stop 411

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Memorandum

OFFICE OF GROUNDWATER TECHNICAL MEMORANDUM 2017.05

SUBJECT: Policy for Estimating Missing Groundwater Level Record

Purpose and Scope

The current policy regarding estimating groundwater-level data was released in 2005 (Office of Groundwater Technical Memorandum [2005.03](#)) and refers to estimating missing unit-value data (also referred to as instantaneous values) in HYDRA, a data processing component of the former USGS Water Mission Area times-series software, Automated Data Processing System (ADAPS). The policy also states that only measured groundwater levels should be stored in NWIS and published in the Annual Data Report. It is necessary to update the 2005 policy regarding estimating groundwater-level data due to 1) the release of the new time-series data processing system (AQUARIUS), 2) recent efforts to modernize discrete groundwater-level storage, 3) updates to groundwater-level data processing procedures, and 4) the replacement of the Annual Data Report publication.

The scope of this policy covers estimating missing groundwater-level data to fill gaps in the record for a period. The policy does not address estimating water-level data due to uncertainty. The latter generally applies to discrete measurements stored in NWIS, and can be managed using appropriate metadata to indicate site status as well as measurement method, accuracy, and source.

Instantaneous and discrete values are the primary record for a site. In general, it is not critical to have a complete set of instantaneous values in a day for an analysis or to derive a daily-value statistic, but these can be managed by following guidance for determining appropriate time-series data gaps and by following best practices for partial-day, daily-value computations.

Policy

Only measured instantaneous and discrete groundwater levels should be stored in NWIS and be published on the public-facing web portal, NWISWeb.

To take advantage of time-series software (AQUARIUS) estimation tools, the computation of estimated instantaneous water-level values may be done in AQUARIUS as a temporary derived time series from the basic time series for the period needed as long as: 1) the estimated derived series is not published on NWISWeb, 2) the time series is labeled clearly as an estimated time series and flagged as a working data set in AQUARIUS, 3) the time series is deleted from the database after the estimated data are exported and the dataset is no longer needed [estimated data are published with the report data release], and 4) documentation of the method for estimating data is in the final published report.

This memorandum supersedes the Office of Groundwater Technical Memorandum 2005.03.

REFERENCES

Office of Groundwater, 2005, Use of the Program HYDRA to Estimate or Modify Unit Values in ADAPS, Office of Groundwater Technical Memorandum 2005.03

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