



# United States Department of the Interior

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OFFICE OF GROUNDWATER TECHNICAL MEMORANDUM 2012.03  
OFFICE OF SURFACE WATER TECHNICAL MEMORANDUM 2012.03  
OFFICE OF WATER QUALITY TECHNICAL MEMORANDUM 2012.03

Subject: Update of Policy on Review and Publication of Discrete Water Data

## **PURPOSE AND SCOPE**

This memorandum updates the Water Mission Area policy for review and publication of discrete water data. The scope of this policy includes discrete water samples and measurements which have a specific, identifiable time and location. Included are groundwater-level measurements, water-quality measurements, discharge measurements, and instantaneous peak-flow and peak-stage data. The scope of this policy also includes analytical results obtained from a sample collected at a specific place and time. Time-series (continuous) data are not the subject of this memorandum. Review and publication of continuous water data must follow the policy established by *Water Resources Division (WRD) Policy Memorandum No. 2010.02*.

## **POLICY**

The National Water Information System-Web Interface (NWISWeb) is a primary source for public access to U.S. Geological Survey's (USGS) water data. The requirement for dissemination of discrete water data can be met by publication of reviewed and approved data in NWISWeb. The definition of publication herein includes dissemination of data to the public in approved USGS databases (currently NWISWeb).

Because data in approved databases can change over time and be revised, refreshed and/or reloaded for documented reasons, reference to the date of access should always accompany citations or references to data from on-line sources such as NWISWeb (*USGS Publishing Technical Memorandum No. 2009.01*).

For any USGS information product such as a database, there must be a process in place for data review and approval. High standards of accuracy and precision must be maintained in all data collection and analysis procedures. The USGS must provide the best data of known quality to the public as soon after collection as possible. The following are specific guidelines and requirements for discrete surface-water, groundwater, and water-quality data:

## **SPECIFIC GUIDELINES AND REQUIREMENTS**

### Water-Quality Data

This policy is similar to the use of provisional realtime data that are released to NWISWeb immediately, finalized on a schedule, and subsequently refreshed in NWISWeb (*WRD Policy Numbered Memorandum No. 2010.02*). The difference in this policy and that described in *WRD Policy Memorandum No. 2010.02* is that publication of discrete water-quality data in the Annual Data Report (ADR) is not required.

NWISWeb is a primary source for public access to USGS water-quality data collected using approved methods. The USGS requirement for dissemination of discrete water-quality data can be met by publication of reviewed and approved data in NWISWeb. Technical reviews teams evaluate compliance with this policy as an element of triennial Water Science Center (WSC) reviews. For example, the NWIS User Group compiles tables and maps of Data Quality Indicator (DQI status) at <http://phoenix.cr.usgs.gov/usa/dqi/usamap.html>.

Many WSCs and other users refresh NWISWeb on a daily or weekly basis (*Office of Water Quality Technical Memorandum 2007.04*). When a refresh occurs, new data in NWIS with the DQI codes of “S” (data are presumed satisfactory) or “R” (data were reviewed and accepted) are uploaded to NWISWeb. Most data transferred from the National Water Quality Laboratory (NWQL) have a DQI code of “S”, and thus can be made available to the public in NWISWeb on the same day they are received by the Center. However, data in NWIS with DQI codes of “S” (released, presumed satisfactory) or “I” (not disseminated, in review), must be reviewed, approved, and the DQI codes changed to “R” to meet the USGS requirement.

To achieve the efficiencies and benefits of this policy, discrete water-quality data should be reviewed and approved as soon as practicable after measurements have been made in the field or results reported by a laboratory. Data review can be accomplished in a variety of ways. The procedure should be documented in the WSCs Water-Quality Assurance Plan and Data Management Plan. Two options for acceptable data review and approval procedures are presented below.

Option 1. Results are returned from the NWQL, another laboratory, or the field site with a parameter-result DQI code of “S.” “S” coded data should be reviewed and approved as soon as practicable. After review and approval, the DQI codes should be changed as appropriate either to “R” or to “Q” (data were reviewed and rejected). Q-coded data will be removed from NWISWeb at the next refresh. In most cases, data can be reviewed, approved, and published in NWISWeb within days, weeks, or within a few months of sample or measurement collection. These time periods are much shorter than the traditional periods needed for data publication in the ADR.

Option 2. More time may be needed for review and approval than in Option 1 for those samples requiring time consuming laboratory analyses or for groups of related water-quality data that should be withheld from release to NWISWeb until they can be reviewed and approved together. Review and approval can be accomplished either by setting the sample-record analysis-status code to “I” (internal-use only), which will withhold all parameter-result data for that sample record from NWISWeb, or by changing any individual parameter-result DQI to “I” to withhold a particular result from NWISWeb. The review should begin following receipt of all sample data or groups of sample data. This interval should be short enough so that all data can be reviewed and, if approved, released to the public on or before April 1<sup>st</sup> of the following water year.

For both options, after the review period the resulting data in NWISWeb should have a DQI code of “R.” This means that all discrete water quality data in NWISWeb should have a code of “R” no later than and often well before April 1<sup>st</sup> of the year following the water year of sample collection.

#### Surface-Water Data

The USGS requirement for dissemination of discrete surface-water data can be met by publication of reviewed and approved data in NWISWeb, the ADR, or other Director approved report products.

There generally are only two types of published surface-water information that would be classified as discrete data: direct (current meter, acoustic velocimeter, and Acoustic Doppler Current Profiler measurements) and indirect discharge measurements made at streamgages and at sites that are not streamgages; and annual and secondary peaks and high-water mark elevations at streamgages, crest stage gages and miscellaneous sites.

Discrete surface-water data should be reviewed following procedures in the WSC’s Surface-Water Quality Assurance Plan or Data Management Plan before the data are considered approved for publication. Limitations in NWIS and our workflow procedures now preclude full tracking and flagging of discrete surface-water data within NWIS, but standard conventions can be used to ensure that only properly developed data are published. For example, discharge measurements made at streamgages are stored in SiteVisit and are automatically migrated to NWISWeb. Because these measurements are immediately posted on NWISWeb hydrographs, the WSC should

ensure that the data receive timely review. Using the current convention these measurements cannot be formally approved using existing NWIS mechanisms, but they can be *locked* or *unlocked* and now marked as *used* or *unused* in SiteVisit. Only measurements that are *used* should be released to NWISWeb.

Discharge measurements made at miscellaneous sites also should be released through NWISWeb, although they need not share the same urgent treatment as those made at streamgages. A site header first must be established for each miscellaneous site. Thereafter, the data can be entered into the SiteVisit database and made available through NWISWeb following the same protocol as measurements at streamgages.

Annual peak flow and stage data must be made available through the NWIS Peak Flow File (PFF). Once a site header has been established, PKEntry can be used to enter the annual peak information. There is no current method to mark the data as *approved* or *provisional*, but all data entered into PeakFQ should be extracted from the time series that has been approved, hence it will be considered approved once it is in PKEntry.

Secondary annual peaks and stages also can be entered into the PFF via PKEntry. Alternatively, users can extract the information for flow from the Instantaneous Data Archive. The Office of Surface Water (OSW) is developing plans for a redesign of the PFF. Until the anticipated commercial Automatic Data Acquisition and Processing System Automatic Display and Plotting System replacement is implemented, OSW will work on improvements to more efficiently extract the peak flows and reconfigure the PFF so that data can be flagged as provisional or approved.

#### Groundwater Data

Discrete groundwater-level data include but are not limited to periodic manual measurements, calibration measurements collected during a continuous or real time site visit, or measurements collected as part of a water-quality sampling event. All discrete groundwater-level data must be stored in Groundwater Site Inventory (GWSI) (*Office of Groundwater/Office of Water Quality Technical Memorandum No. 2006.01*). The USGS requirement for dissemination of discrete groundwater-level data can be met by publication of reviewed and approved data in NWISWeb, the Annual Data Report, or other Director approved report products.

Currently, there is no data aging capability in GWSI or NWISWeb comparable to that for surface-water and water-quality data. GWSI cannot flag data as provisional. Thus discrete groundwater-level data pushed from GWSI to NWISWeb are considered to be approved records. Because approved groundwater-level data presented on NWISWeb are published records, WSCs must have internal processes in place to ensure that discrete data are reviewed and approved before they are pushed to NWISWeb. These processes should be documented in the WSC's Groundwater Quality Assurance Plan, or Data Management Plan. Specific guidance on the NWIS process for review and approval of discrete groundwater data will be provided when groundwater data aging is fully implemented in GWSI. Discrete groundwater-level data should be reviewed and approved with the same vigilance and frequency as continuous records. The data review period may be established by the WSC, but must allow publication to NWISWeb within 150 days of data collection, similar to the continuous records processing requirement in *WRD Policy Numbered Memorandum No. 2010.02*. In most cases, discrete water-level data can be released to NWISWeb within days, weeks, or within a few months

## REFERENCES

*Office of Groundwater/Office of Water Quality Technical Memorandum No. 2006.01, Storage of Water-Level Data for Ground Water* accessed April 17, 2012 at <http://water.usgs.gov/admin/memo/QW/>

*Office of Water Quality Technical Memorandum 2004.01, Revised Policy for the Approval of U.S.* April 17, 2012 at <http://water.usgs.gov/admin/memo/QW/qw04.01.html>

*Office of Water Quality Technical Memorandum 2007.04, Controlling Flow of Water-Quality Data to NWISWeb,* accessed April 17, 2012 at <http://water.usgs.gov/admin/memo/QW/qw07.04.html>

*Office of Water Quality Technical Memorandum 2008.05, Appropriate Data Storage in the National Water Information System (NWIS),* accessed April 17, 2012 at <http://water.usgs.gov/admin/memo/QW/qw08.05.html>

*WRD Policy Numbered Memorandum No. 2010.02, Continuous Records Processing of all Water Time Series Data,* accessed April 17, 2012 at <http://water.usgs.gov/admin/memo/policy/wrdpolicy10.02.html>

*U.S. Geological Survey Publishing Technical Memorandum No. 2009.01, Reference Format for Online Sources Cited in USGS Information Products,* accessed April 17, 2012 at [http://internal.usgs.gov/publishing/tech\\_memos/pubtechmemo\\_2009\\_01.pdf](http://internal.usgs.gov/publishing/tech_memos/pubtechmemo_2009_01.pdf)

*U.S. Geological Survey Manual 500.24 - Policy for Release of Computer Databases and Computer Programs,* accessed April 17, 2012 at <http://www.usgs.gov/usgs-manual/500/500-24.html>

*U.S. Geological Survey Manual 500.24 - 502.4 - Fundamental Science Practices: Review, Approval, and Release of Information Products,* accessed April 17, 2012 at <http://www.usgs.gov/usgs-manual/500/502-4.html>

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This memorandum does not supersede any other memorandum.