



# National Ground-Water Monitoring Network

Advisory Committee on Water Information—Subcommittee on Ground Water

## National Ground-Water Monitoring Network Cooperative funding agreements to support data providers

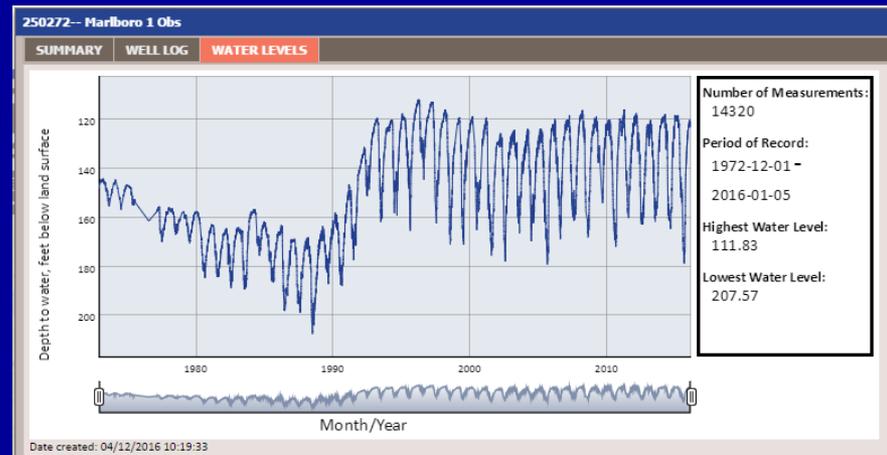
### Proposal preparation

*Daryll Pope, USGS*

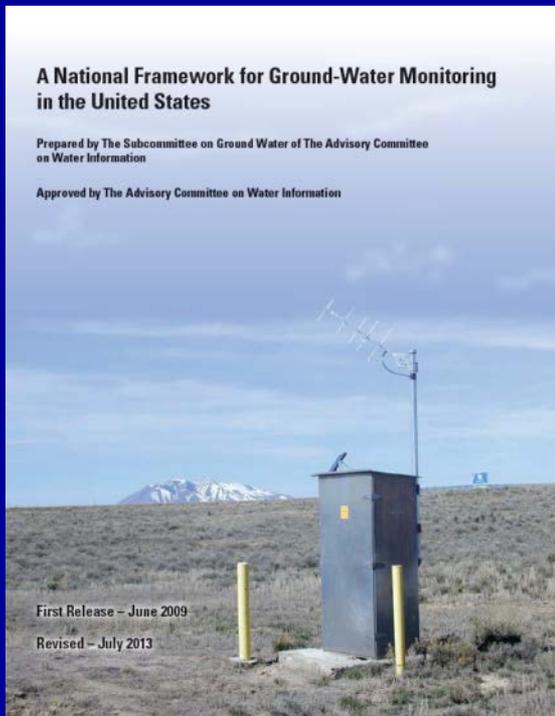


# Outline

- Background on NGWMN
- Cooperative agreements
- Guidance on application package
- Support resources
- Questions



# Background on NGWMN

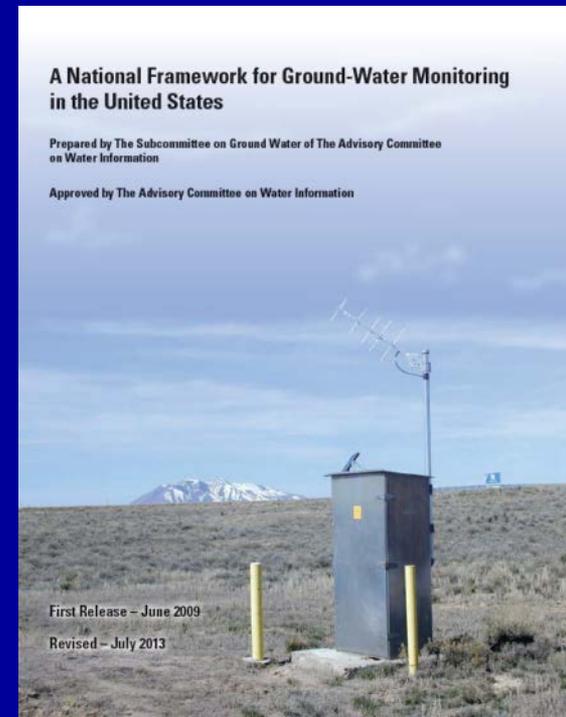


# Subcommittee on Ground Water and the NGWMN

- The Subcommittee on Ground Water (SOGW) is part of the Advisory Committee on Water Information (ACWI)
- The purpose of the Subcommittee is to develop a National Ground-Water Monitoring Network (“NGWMN”)
- The Subcommittee developed the ‘Framework Document’ which contains the network design and requirements
- Approach was tested in 5 pilots and the ‘Framework Document’ was revised based on findings

# Framework Document

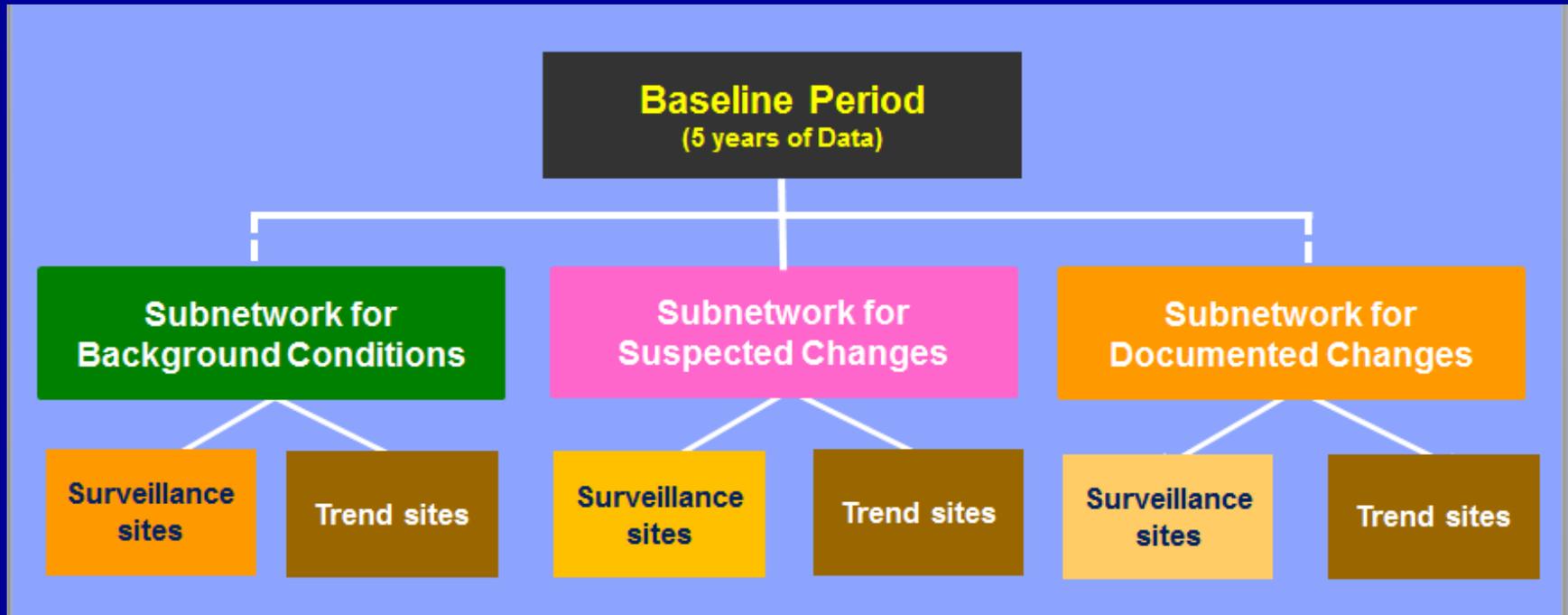
- Design for a collaborative National GW Monitoring Network
- Worked with NGWA, AASG, and GWPC to inventory Federal and State monitoring programs
- Guidance for Field Methods
- Guidance for Minimum Data Elements, Standards, & Management
- Implementation Plan and Recommendations
- Initial version in 2009. Revised in 2013 after pilot phase completed



# NGWMN Design Elements

- Principal and major aquifers
- GW levels and quality, focus on availability
- Priority on sites with long-term data
- Network, not a Warehouse or Master Database
- Willing data providers: State, Federal, Tribes, others
- Sites classified by local experts/data providers, and selected sites become part of the Network
- Data available to all without restriction or cost
- Data provider is the authoritative data source

# Network Design: Subnetworks



“Classified” based on water level or water quality change  
and on frequency of data collection

# NGWMN Data Portal

## National Ground-Water Monitoring Network

The **National Ground-Water Monitoring Network (NGWMN)** is a product of the [Subcommittee on Ground Water](#) of the Federal Advisory Committee on Water Information ([ACWI](#)). The NGWMN is a compilation of selected groundwater monitoring wells from Federal, State, and local groundwater monitoring networks across the nation.

The **NGWMN Data Portal** provides access to groundwater data from multiple, dispersed databases in a web-based mapping application. The portal contains current and historical data including water levels, water quality, lithology, and well construction. The NGWMN is currently in the process of adding new data providers to the Network. Agencies or organizations collecting groundwater data can find out more about becoming a data provider for the Network [here](#).

Funding to support data providers to the National Ground-Water Monitoring Network is provided through **USGS Cooperative Agreements**. Information about any the latest status of the USGS cooperative agreements is available [here](#).

### CURRENT NETWORK:

3967 water-level wells

688 water-quality wells

10 subnetworks

8 contributing agencies

48 states

55 principal aquifers

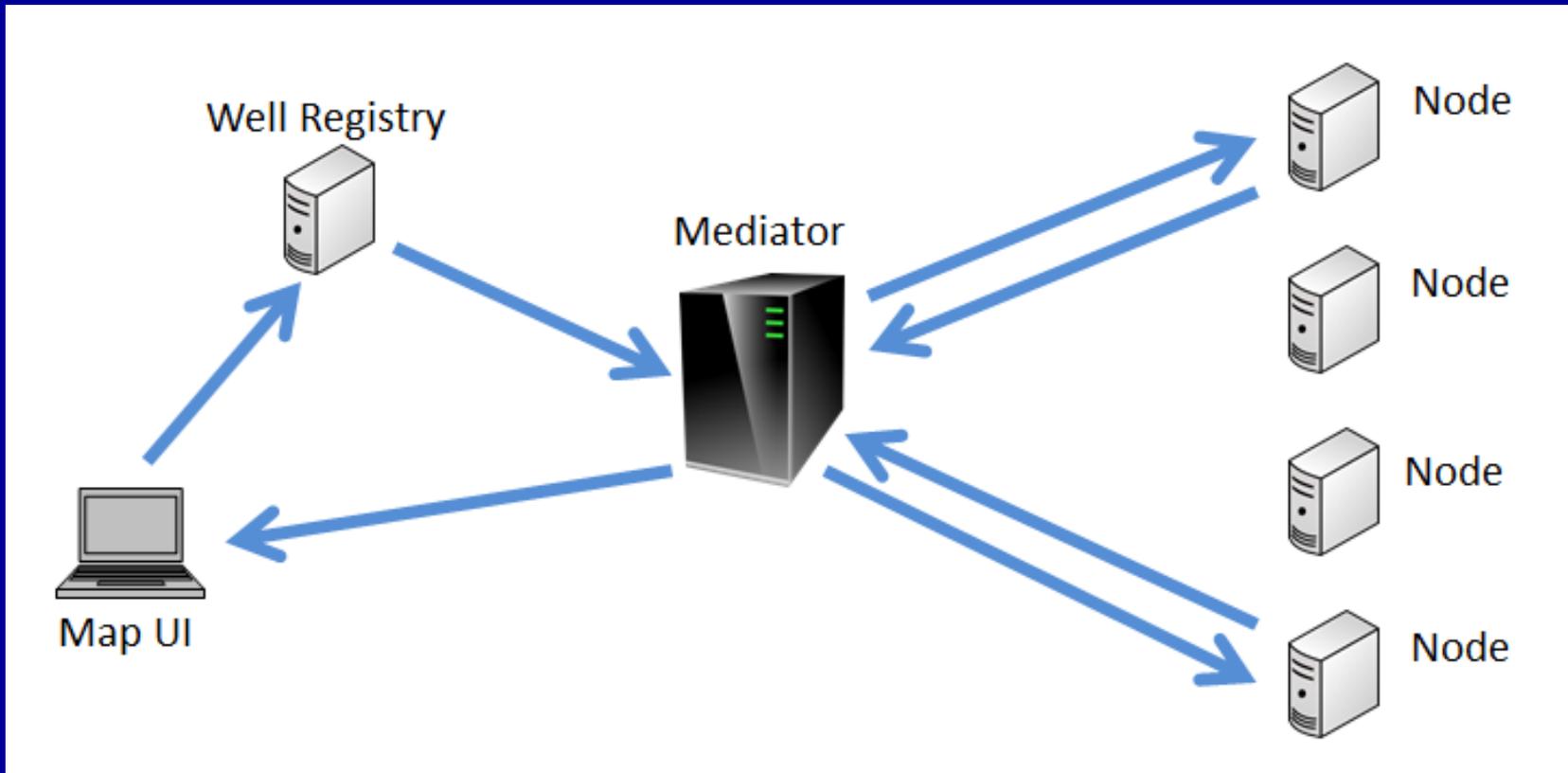
### LEARN about the Network



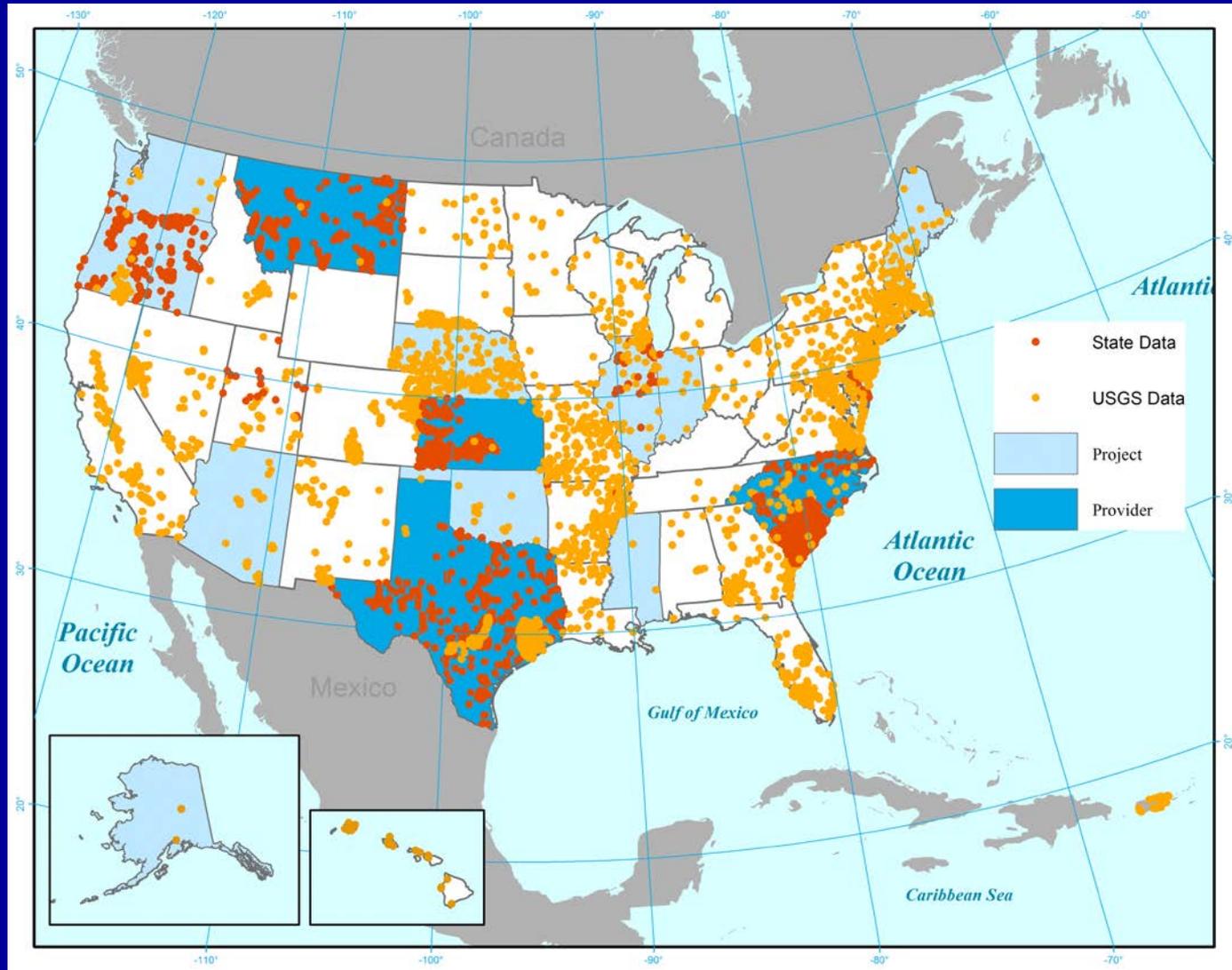
### EXPLORE the Network



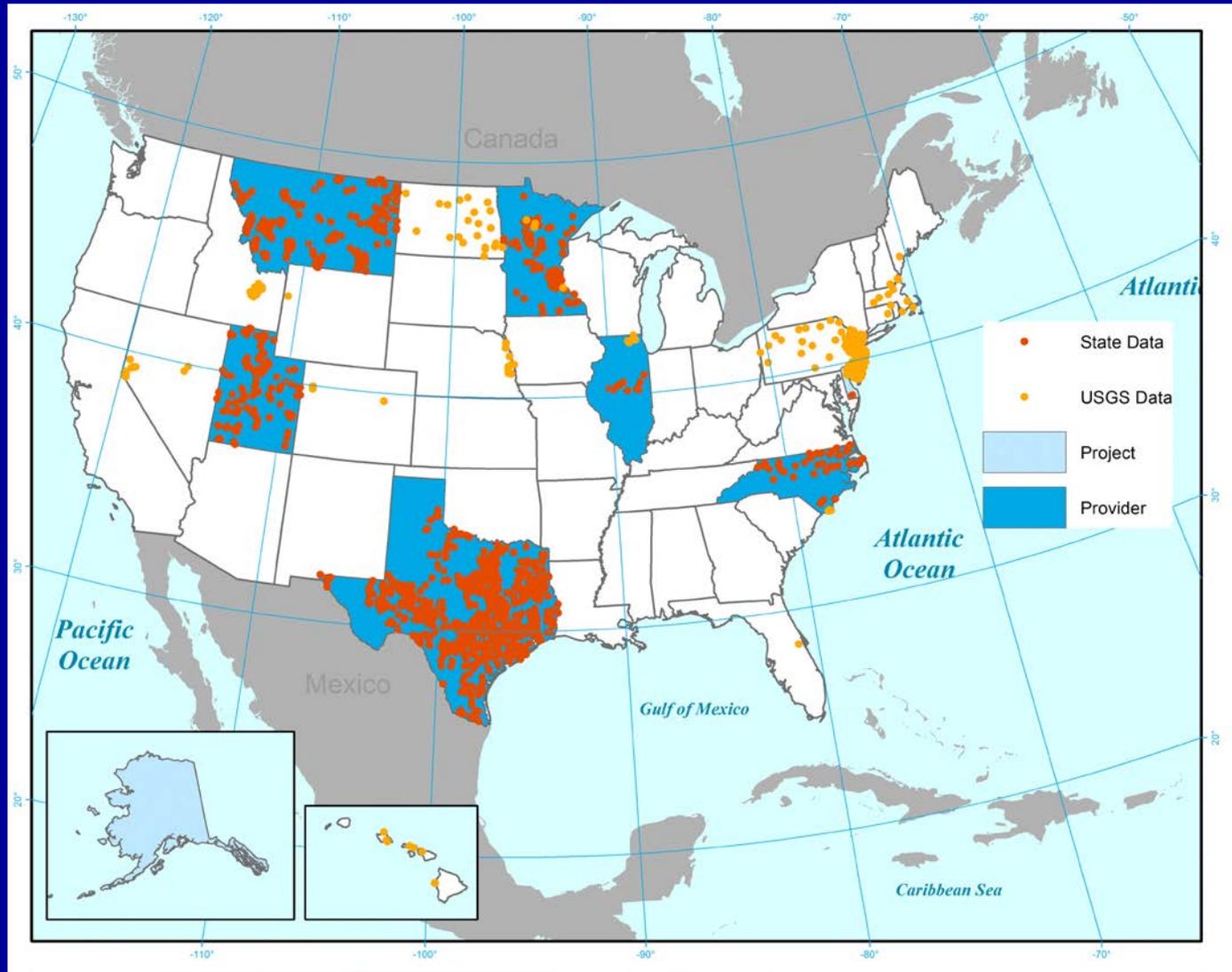
# Network Portal Data Model



# Water-level data



# Water-quality data



# Data Providers

- Data providers are the key to the success of the NGWMN
- Benefits of participating as a data provider
  - Consistent data for shared interstate GW resources
  - Identification of ‘gaps’
  - Opportunity for review of field and data management procedures
  - “Community of Practice”
  - Data Portal provides tools to access data
  - Portal links back to Agencies website
  - Funding available to improve networks
  - Participation in National Network gives your network visibility
  - Participation may provide additional justification for monitoring
- Data can help the NGWMN address regional and national groundwater availability questions

# Authorization and Funding

- **P.L. 111-11 SECURE Water Act 2009**

Required USGS to work with ACWI and State/Local water agencies to:

- (i) Assess the current scope of GW monitoring
- (ii) Develop and carry out a Monitoring Plan for major aquifers
- (iii) Consult and coordinate with the local water resource agencies

- **Funded through Congressional Appropriations**

- Initial Appropriation in Fiscal Year 2015.
- Had increase in NGWMN Appropriation in Fiscal Year 2016.
- Funding for this Program Announcement is dependent on FY 2017 Appropriation. We are proceeding as though it is available.

# Cooperative funding agreements to support NGWMN data providers (CFDA 15.980)

- Funding opportunity available to State or Local groundwater resource agencies
  - Federal agencies, Tribes, institutions, and companies may contribute data, but are not eligible for funding
- Did two rounds of funding in FY 2016. Funded 9 projects in first round and 15 in the second round
- Summaries of funded projects are on NGWMN Cooperative agreements web page
  - [https://cida.usgs.gov/ngwmn/doc/NGWMN\\_FY16\\_ProjectSummary.pdf](https://cida.usgs.gov/ngwmn/doc/NGWMN_FY16_ProjectSummary.pdf)

# Funding Opportunity for 2017

- Application period is open from October 27th, 2016 through January 27th, 2017
- Five objectives are supported (**order changed from last year**)
  1. Support to become a new data provider
  2. Support persistent data service from existing data providers
  3. Filling gaps in information at NGWMN sites
  4. Well Maintenance
  5. Well Drilling
- The last three objectives are available to current data providers or to agencies which plan to complete the new data provider objective in the first year of their project
- Only one funding opportunity is planned this year

# Changes in Program Announcement

- Listed work that cannot be supported
- Clarified that funding cannot be used to contract with the USGS or other Federal agencies
- Order of objectives changed
- Added links to 'Tip Sheets' throughout document
- Added section on cost-share guidelines
- New requirement for a Data-Management Plan (DMP)
- Do not include links to websites in your proposal
- Tables, Data Management Plan, and Negotiated rate agreement do not count towards 25 page limit
- Do not include links to documents as part of proposal (OK in DMP)

# Changes in Program Announcement

- Because of upcoming USGS work in the High Plains, Coastal Lowlands, California Coastal Basins, Colorado Plateaus, and the Cambrian-Ordovician aquifers, proposals with water-levels networks in these aquifers will be given priority
- The New Data Provider objective has been modified to support existing data providers if they need to perform these tasks. For example, adding a new service or selecting and classifying a large number of new sites

# Data Management Plan

- Is now required as part of proposal. Two-page maximum. Does not count toward 25-page limit for proposal.
- Elements of a Data Management Plan
  - Types of data
  - Data and Metadata standards
  - Policies for access and sharing
  - Policies and provisions for re-use, re-distribution
  - Plans for archiving and preservation of access
- Types of data that need to be included
  - Water-level or water-quality data collected by the agency and provided to the NGWMN.
  - Other data collected as part of NGWMN Projects: Site information, well logs, slug tests, land-surface altitude, and latitude/longitude are common types.
  - Historic water-level or water-quality data collect by the agency that will be entered into agency databases so that it is available to the NGWMN.

# What is needed for each element

- Types of data
  - Describe the type of data that are or will be collected. Give the number of sites of each type.
- Data and Metadata standards
  - State that all data collected for the project will be put into agency databases and/or the NGWMN Well Registry according to agency policy. List the databases that the data will be stored in. Describe how the quality of the data will be managed. Describe any data collected that needs to be updated in the NGWMN Well Registry.
- Policies for access and sharing
  - “All data collected for the project will be available through the NGWMN Data Portal without restriction.”
- Policies and provisions for re-use, re-distribution
  - No restrictions on re-use of the data
  - If data is redistributed from the NGWMN, the data provider expects that the source of the data will be acknowledged.
- Plans for archiving and preservation of access
  - Describe how the data will be backed up and archived

## Example NGWMN Data Provider Data Management Plan

### Types of data

Water-level and water-quality data to assess the conditions of the water resources at the Principal aquifer scale are collected. Daily water-level data is collected at 50 wells. Annual water-level data is collected at 100 wells. Water-quality data is collected every three years at 50 wells and 25 springs.

Survey grade GPS equipment will be used to refine both the latitude and longitudes and the land-surface elevations of all Network sites.

Historic water-quality data previously collected by the agency at 30 sites will be entered to the agency database to supplement data that is currently being collected at NGWMN sites.

### Data and metadata standards

All data will be entered into agency databases or the NGWMN Well Registry. The water-level and well construction data will be stored in the agency 'xxx' database. The Lithology data will be stored in the agency 'yyy' database. Both of these are Oracle databases that are maintained by the agency. Water quality data will be upload to the EPA WQX data system. Updated latitude and longitude and land surface altitude data will be stored in the agency 'xxx' database as well as in the NGWMN Well Registry.

### Policies for access and sharing

All data collected for the project will be available through the NGWMN Data Portal without restriction.

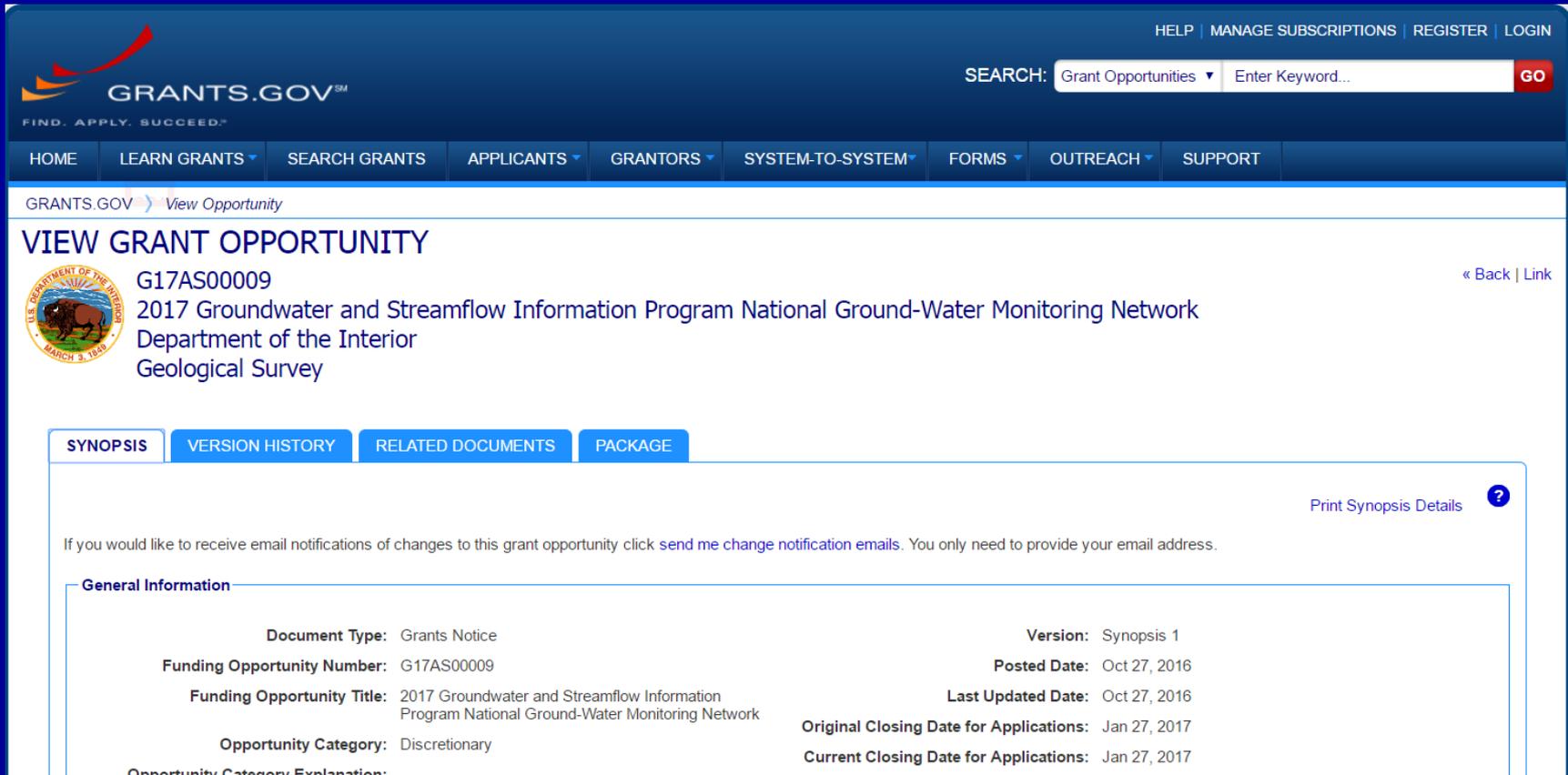
### Policies and provisions for re-use, re-distribution

There will be restriction on the use of the data through the portal. Any data obtained through the portal and redistributed is expected to cite the original source of the data as 'Agency'.

### Plans for archiving and preservation of access

Paper copies of the field forms used to collect both the water-quality and water-level data will be scanned and stored by the agency. This data will be included in our normal weekly system backups. The xxx and yyy databases are also backed up at least weekly.

# Guidance on Application Package



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**G17AS00009**  
2017 Groundwater and Streamflow Information Program National Ground-Water Monitoring Network  
Department of the Interior  
Geological Survey

**SYNOPSIS** | VERSION HISTORY | RELATED DOCUMENTS | PACKAGE

[Print Synopsis Details](#) ?

If you would like to receive email notifications of changes to this grant opportunity click [send me change notification emails](#). You only need to provide your email address.

**General Information**

<b>Document Type:</b> Grants Notice	<b>Version:</b> Synopsis 1
<b>Funding Opportunity Number:</b> G17AS00009	<b>Posted Date:</b> Oct 27, 2016
<b>Funding Opportunity Title:</b> 2017 Groundwater and Streamflow Information Program National Ground-Water Monitoring Network	<b>Last Updated Date:</b> Oct 27, 2016
<b>Opportunity Category:</b> Discretionary	<b>Original Closing Date for Applications:</b> Jan 27, 2017
<b>Opportunity Category Explanation:</b>	<b>Current Closing Date for Applications:</b> Jan 27, 2017

# Application Process

- Applications need to be submitted electronically on Grants.gov under funding opportunity number G17AS00009
- Application needs to be submitted by someone with appropriate authority
- Need to be registered with Grants.gov
- Note that registration of new users can take up to three weeks. Suggest starting this process as soon as possible
- Program Announcement contains details on the Electronic Application Requirement

# Projects

- Projects can be for up to 2 years
- If a new data provider plans to complete the new data provider objective in the first year of the project, they can apply for the other 4 objectives during the 2nd year
- Current data providers can apply for the 'Support persistent data service from existing data providers' objective funding for both years
- Report is required at end of project
- A 50/50 match of USGS funding and in-kind services is suggested, but not required

# Application package

- All Projects
  - Proposal Information Summary
    - Use format shown in Attachment A of Program Announcement
  - Proposal
  - Budget Summary
    - Use format shown in Attachment B of Program Announcement
  - Detailed Budget
- Application must contain information above in a single document that is no longer than 25 pages
- Applicant will submit to Grants.gov along with required Standard Forms SF-424, etc.

# Information required for all proposals

- Background information
  - Description of Agency and purpose of monitoring
  - Description of the Agency's existing monitoring networks
    - Water level
    - Water quality
    - Identification of USGS principal or other major aquifers monitored
  - Describe previous projects with the NGWMN
  - Describe your IT Infrastructure
  - Data Management Plan
- Project Summary
  - Brief description of the project and objectives that will be included
  - Make sure to include tables of all sites listed for work under each objective. The tables do not count towards the page limit.

# Project Description

- For each objective:
  - Work plan
    - Describe work and benefits to NGWMN
    - Identify personnel involved in work
    - Provide a timeline for objective
    - Include table of sites for which the work will be done
  - Budget
    - Total cost to accomplish objective
      - Include overhead
      - List the in-kind services that will be used to match the work if they are not a part of the objective
    - Use format shown in section 11.D
  - Specific requirements for the 5 different objectives vary

# Objective 1: Support to become a new data provider

- Perform work necessary to become a data provider to the NGWMN. Can also be used by existing data providers to add new web services or add a large set of new wells
- Costs should range from \$30,000 to \$60,000 of USGS funds
- Priority for water-level data providers in certain aquifers
- Work plan elements
  - Select and classify sites for the NGWMN
  - Provide required data elements for selected sites.
  - Populate the NGWMN Well Registry with site Network information
  - Connect databases to portal using web services
    - Water Level, Water Quality, Lithology, Well Construction
  - Document field and data management practices
  - Prepare a brief report documenting project

## Objective 2: Support persistent data service from existing data providers

- Perform activities necessary to maintain persistent data services from agency databases to the NGWMN Portal.
- Generally from \$5,000 to \$15,000. Can be up to \$20,000 under special circumstances
- Work plan elements
  - Maintain list of sites in Well Registry
  - Keep site information updated
  - Populate data elements for new sites
  - Maintain web services connection to Portal
  - Routine updates to metadata
  - Describe additional work (special circumstances)
    - Example: update web services because of database changes

# Objective 3: Filling gaps in information at NGWMN sites

- Perform work necessary to fill metadata gaps in the required data elements listed in the NGWMN Framework Document.
- Allowable work
  - Data collection to fill metadata gaps (logging, GPS, sounding)
  - Data entry to fill metadata gaps (entry of lithology from logs)
  - Data entry to fill NGWMN data gaps (entry of historic data)
- Work plan elements
  - Description of the information gap
  - Planned approach to fill the gap
  - Description of field techniques, provide references
  - Include a table of sites
  - Describe plan to quality assure any new data Document gap filling activities in the final report for the project

# Objective 4: Well Maintenance

- Perform maintenance of wells in the NGWMN to ensure that data are of high quality.
- Examples include:
  - Well redevelopment
  - Pumping to maintain connection
  - Well-integrity testing
- Work plan elements
  - Describe the need for the maintenance
  - List the proposed activity at each well
  - Include a table of sites
  - Describe who will be doing the maintenance
  - Describe plan to quality assure any new data
  - Document activities in the final report for the project

Well rehabilitation  
Install surface casing

# Objective 5: Well Drilling

- Install wells to enhance or maintain the NGWMN.
- Preference will be given to projects with direct cost-sharing of the well drilling costs.
- Work plan elements
  - Provide justification for each well
  - Describe proposed drilling methods. Include references
  - Include drilling cost for each proposed well
  - Provide a table of proposed wells
  - If the wells is to be a replacement well for an existing NGWMN site, please list the existing site name and NGWMN number
  - Describe who will be drilling the well
  - Document well drilling activities in the final report for the project

# Budget

- SF 424 budget form
- Budget summary for each year (Attachment B)
- Detailed Budget
  - For each objective
  - Include in-kind services
    - If data collection at network sites is used as match, need to include in budget tables
  - Specify Indirect Cost rate used and include in budgets

Note: a copy of the indirect cost negotiated rate agreement should be attached to the proposal. If no negotiated rate agreement is available, use 10% as indirect cost rate.

# Project Report Requirements

- New data provider projects
  - Summarize work done for the Project
    - Describe networks
    - Site selection approach
    - Site classification approach
    - Describe data collection techniques
    - Describe methods for quality assurance of data
    - Description of web services
    - Analyte list for water-quality sampling
    - List of laboratories
- Existing data providers projects
  - Describe work to provide persistent data service
    - Web service status
    - Planned upgrades in databases that could affect portal
  - Describe any work done for the last 3 objectives
    - Site information gap filling
    - Well Maintenance
    - Well Drilling

# Proposal Evaluation

- Each objective proposed will be evaluated and ranked by the NGWMN Program Board Criteria (each of equal weight)
  1. Relevance.  
How does the work help fill gaps in the NGWMN?
  2. Technical quality of proposal.  
Does the proposal follow the requirements of the Program Announcement and adequately describe the work needed?
  3. Budget.  
Is the cost reasonable relative to the benefit to the Network?
- Objective 2 will consider only the Budget criteria

# Support Resources

## National Ground-Water Monitoring Network

The National Ground-Water Monitoring Network (NGWMN) is a compilation of selected groundwater monitoring wells from Federal, State, and local groundwater monitoring networks across the nation.

The NGWMN is a product of the [Subcommittee on Ground Water](#) of the Federal Advisory Committee on Water Information (ACWI).

The NGWMN Data Portal provides access to groundwater data from multiple, dispersed databases in a web-based mapping application. The portal contains current and historical data including water levels, water quality, lithology, and well construction. The NGWMN is transitioning from a pilot phase into full implementation. In the future we will be adding additional data providers to the network.

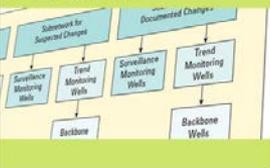
### GET INVOLVED WITH THE NATIONAL GROUND-WATER MONITORING NETWORK!

The network is made up of selected wells from existing monitoring networks across the nation. Agencies providing groundwater data can become data providers for the Network. [Learn about contributing data from you.](#)

[NEW](#) - Information about USGS cooperative agreements to fund data providers is available [here](#).

CURRENT NETWORK:
2940 water-level wells
578 water-quality wells
10 subnetworks
8 contributing agencies
43 states
53 principal aquifers

### LEARN about the Network



### EXPLORE the Network



## National Ground-Water Monitoring Network

The National Ground-Water Monitoring Network (NGWMN) is a compilation of selected wells monitoring groundwater aquifers all around the nation. The NGWMN Data Portal brings groundwater data together in one place to provide users with current and reliable information for the planning, management, and development of groundwater resources.

ABOUT THE NETWORK

THE DATA PORTAL

DATA PROVIDERS

GET INVOLVED

### About the Network

Background | Network Design | Network Status

#### Background

The NGWMN network is sponsored by the Advisory Committee on Water Information's (ACWI) Subcommittee on Ground Water (SOGW) and was established in 2009 with a pilot network.

The goal of the National Ground-Water Monitoring Network (NGWMN) is to provide information needed for planning, management, and development of groundwater supplies to meet current and future water needs and ecosystem requirements. This will be accomplished by aggregating suitable

# Support

- ACWI Subcommittee on Ground Water page  
<http://acwi.gov/sogw/index.html>
- Framework Document  
[http://acwi.gov/sogw/ngwmn\\_framework\\_report\\_july2013.pdf](http://acwi.gov/sogw/ngwmn_framework_report_july2013.pdf)
- NGWMN Web Page  
<http://cida.usgs.gov/ngwmn/>
  - NGWMN Cooperative agreements page  
<http://cida.usgs.gov/ngwmn/cooperativeagreements.jsp>
    - Includes Frequently Asked Questions  
<http://cida.usgs.gov/ngwmn/cooperativeagreementsfaq.jsp>
    - This Presentation  
[http://cida.usgs.gov/ngwmn/doc/NGWMN\\_Round2\\_ProgramAnnouncement.pdf](http://cida.usgs.gov/ngwmn/doc/NGWMN_Round2_ProgramAnnouncement.pdf)

# Tip Sheets

- Created to help data providers with common tasks
- Current tip sheets
  - NGWMN Subnetwork
  - NGWMN Monitoring Categories
  - NGWMN WL Criteria
  - NGWMN WQ Criteria
  - NGWMN Well Registry
  - NGWMN Minimum Data Elements
  - **NGWMN Web services**

<http://cida.usgs.gov/ngwmn/learnmore.jsp>

‘Data Provider’ tab – ‘Resources for New Data Providers’

# SOGW and Data Provider meeting

- The Subcommittee on Ground-Water will be meeting in conjunction with NGWA Groundwater week in Las Vegas from Dec 5-8.
- Current data providers will also be attending.
- Anyone who may be attending the Groundwater Week can participate in these meetings. If you will be there, let me know and I will send you our agenda when it is completed.

- Daryll Pope

[dpope@usgs.gov](mailto:dpope@usgs.gov)

(609) 771-3933

<http://acwi.gov/>

<http://acwi.gov/sogw/index.html>

<http://cida.usgs.gov/ngwmn/>

# Questions