GWPC Annual Forum
October 5-8, 2014
Mike Wireman, USEPA - Retired

A resource at risk!
Presentation Outline

• SOGW History, Background
• Framework and Pilot Results
• NGWMN Portal
• Implementation
Sub-Committee On Groundwater

Sub-Committee of Advisory Committee on Water Information – A DOI Federal Advisory Committee

Primary Purpose:
- Develop Framework for establishment and implementation of a National GW Monitoring Network (“NGWMN”)

Congressional Authorization
- Though still w/o Appropriation
in coordination with the Advisory Committee and State and local water resource agencies—

(i) assess the current scope of groundwater monitoring based on the access, availability, and capability of each monitoring well in existence as of the date of enactment of this Act; and

(ii) develop and carry out a monitoring plan that maximizes coverage for each major aquifer system that is located in the United States; and........
prior to initiating any specific monitoring activities within a State after the date of enactment of this Act, consult and coordinate with the applicable State water resource agency with jurisdiction over the aquifer that is the subject of the monitoring activities, and comply with all applicable laws (including regulations) of the State.
Why do we need a NGWMN?

• 99% of Earth’s Freshwater Reserves
• Base Flow to Surface Waters
• Primary or Sole Source in many rural areas
• As surface water supplies are fully (or over-) allocated, users turn to ground water
• Easily contaminated & slow /expensive to remediate
Why do we need the NGWMN?
Major GW Management Issues

• Energy
  – Underground Injection Control (UIC)
  – Hydraulic fracturing
  – Water supply

• GW SW interaction
  – GWUISW
  – CWA

• Sea level rise & saltwater intrusion

• Sustainability – water supply for all uses

• Drought

• Nutrients

• Land use management
SOGW’s Participation

- ASCE
- GWPC
- ICWP
- AASG
- NGWA
- TCEQ
- USGS
- US EPA
- ASDWA
- WEF
- USDA FS
- ASIWPCA
- ASTM

Subcommittee & Work Groups:
70 people from 54 organizations
<table>
<thead>
<tr>
<th>Month</th>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>2007</td>
<td>SOGW formed by ACWI</td>
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<tr>
<td>February</td>
<td>2009</td>
<td>Framework Document approved</td>
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<tr>
<td>December</td>
<td>2009</td>
<td>Five pilot projects selected</td>
</tr>
<tr>
<td>January</td>
<td>2011</td>
<td>Pilot projects report results</td>
</tr>
<tr>
<td>July</td>
<td>2011</td>
<td>Web portal version 1 public release</td>
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<tr>
<td>September</td>
<td>2011</td>
<td>Pilot project synthesis report</td>
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<tr>
<td>Summer</td>
<td>2013</td>
<td>Framework Document revisions</td>
</tr>
<tr>
<td>Fall</td>
<td>2013</td>
<td>Web portal updated version</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>WQ piloting – 2 States</td>
</tr>
<tr>
<td></td>
<td>2015+</td>
<td>Formal full-scale implementation</td>
</tr>
</tbody>
</table>
1) Introduction
3) Network Goals, Objectives & Management Issues
4) Network Design features and Specifications
5) Common Field Practices to Ensure Compatibility of GW Data
6) Data Standards and Management
7) Network Implementation

A National Framework for Ground-Water Monitoring in the United States

Prepared by
The Subcommittee on Ground Water of the The Advisory Committee on Water Information

Final Version approved by the Advisory Committee on Water Information
June 2009
State GW Monitoring Efforts

Water quality monitoring

Water level monitoring
Network Design

Principal and Major Aquifers
NGWMN Design Elements

- Principal and major aquifers
- GW levels and quality, focus on availability
- Priority on wells/springs with long-term data
- **Network, not a Warehouse or Master Database**
- Not for *specific* science question
- Willing data providers: State, Federal, Tribes, others
- Sites classified by local experts / data providers
- Data available to all without restriction or cost
- Data provider is the authoritative data source
NGWMN Pilot Studies

• Validated Design Concepts
• Evaluated Field Practices and Data Mgt Procedures
• Identified Network Gaps & Costs of Participation

Available at http://acwi.gov/sogw
Pilot Conclusions

• A collaborative NGWMN is feasible.
• Pilot states record data differently and use different database platforms, but most “minimum data elements” are available.
• Incremental costs of incorporating data from existing state monitoring systems are low. Existing monitoring will not fill all data gaps.
• The NGWMN Internet data portal is a key element to the success of a NGWMN
2013 Framework Document

Key Revisions to 2009 Framework Document

- Include key findings from pilot projects
- Baseline monitoring requirements
- Network –well classification
- Density of wells in a given aquifer
- Sampling –monitoring frequencies
- Add chapter on use of statistical methods analyze data
- Appendix –definition of terms

- New, improved network design
- Implementation plan
Network Design

Baseline Monitoring
(5 years of Data)

Subnetwork for Background Conditions
- Surveillance Points (Synoptic wells)
- Trend Points (Backbone wells)

Subnetwork for Suspected or Anticipated Changes
- Surveillance Points (Synoptic wells)
- Trend Points (Backbone wells)

Subnetwork for Known Changes
- Surveillance Points (Synoptic wells)
- Trend Points (Backbone wells)

Special Studies

Monitoring period used to establish conditions upon which future conditions will be compared. Up to 5 years of data are collected to determine the appropriate subnetwork.

Surveillance Points (Synoptic wells): Monitoring point is used to characterize aquifer background conditions; little or no anthropogenic effect.

Trend Points (Backbone wells): Monitoring point is used to characterize an aquifer with suspected or planned anthropogenic effects.

Surveillance Points (Synoptic wells): Monitoring point is used to characterize an aquifer with known anthropogenic effects.

Special studies at a local scale to evaluate ground-water resources at risk.
<table>
<thead>
<tr>
<th>Measurement Type</th>
<th>Aquifer Type</th>
<th>Flow Characteristics</th>
<th>Porous Medium Deep Well</th>
<th>Porous Medium Shallow Well</th>
<th>Fractured Rock All Wells</th>
<th>Karst All Wells</th>
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<tbody>
<tr>
<td><strong>Baseline Measurements:</strong> Standard and extended list as needed</td>
<td>Unconfined</td>
<td>Quarterly to twice per year</td>
<td>Quarterly to twice per year</td>
<td>Quarterly to twice per year</td>
<td>Quarterly to twice per year</td>
<td>Quarterly to twice per year</td>
</tr>
<tr>
<td></td>
<td>Confined</td>
<td>Twice per year</td>
<td>Twice per year</td>
<td>Twice per year</td>
<td>Twice per year</td>
<td>Twice per year</td>
</tr>
<tr>
<td><strong>Surveillance Measurements:</strong> Core analytes</td>
<td>Unconfined</td>
<td>Annual</td>
<td>Annual</td>
<td>Annual</td>
<td>Twice per year</td>
<td>Twice per year</td>
</tr>
<tr>
<td></td>
<td>“low” hydraulic conductivity (&lt;200 ft/d), “low” recharge (&lt;5 in/yr)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>“high” hydraulic conductivity (&gt;200 ft/d), “high” recharge (&gt;5 in/yr)</td>
<td>Annual</td>
<td>Twice per year</td>
<td>Twice per year</td>
<td>Twice per year</td>
<td>Twice per year</td>
</tr>
<tr>
<td></td>
<td>Confined</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
</tr>
<tr>
<td></td>
<td>“low” hydraulic conductivity (&lt;200 ft/d), “low” recharge (&lt;5 in/yr)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>“high” hydraulic conductivity (&gt;200 ft/d), “high” recharge (&gt;5 in/yr)</td>
<td>Every 2 years</td>
<td>Every 2 years</td>
<td>Every 2 years</td>
<td>Every 2 years</td>
<td></td>
</tr>
<tr>
<td><strong>Data made available to the NGWMN</strong></td>
<td>All aquifer types throughout range of hydraulic conductivity</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td></td>
</tr>
<tr>
<td><strong>Surveillance Measurements:</strong> Additional analytes</td>
<td>All aquifer types throughout range of hydraulic conductivity</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td></td>
</tr>
<tr>
<td><strong>Data made available to the NGWMN</strong></td>
<td>All aquifer types throughout range of hydraulic conductivity</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td>Every 5 years</td>
<td></td>
</tr>
</tbody>
</table>
**Recommended minimum water-level measurement frequency**

<table>
<thead>
<tr>
<th>Measurement Type</th>
<th>Aquifer Type</th>
<th>Nearby Long-Term Aquifer Withdrawals</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Very Few Withdrawals</strong></td>
</tr>
<tr>
<td>Baseline Measurements</td>
<td>All aquifer types</td>
<td>Once per month</td>
</tr>
<tr>
<td>Surveillance Measurements</td>
<td>Unconfined &quot;low&quot; hydraulic conductivity (&lt;200 ft/d), &quot;low&quot; recharge (&lt;5 in/yr)</td>
<td>Once per year</td>
</tr>
<tr>
<td></td>
<td>&quot;high&quot; hydraulic conductivity (&gt;200 ft/d), &quot;high&quot; recharge (&gt;5 in/yr)</td>
<td>Once per quarter</td>
</tr>
<tr>
<td>Confined &quot;low&quot; hydraulic conductivity (&lt;200 ft/d), &quot;low&quot; recharge (&lt;5 in/yr)</td>
<td>Once per year</td>
<td>Once per quarter</td>
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<tr>
<td></td>
<td>&quot;high&quot; hydraulic conductivity (&gt;200 ft/d), &quot;high&quot; recharge (&gt;5 in/yr)</td>
<td>Once per quarter</td>
</tr>
<tr>
<td>Data made available to NGWMN</td>
<td>All aquifer types, throughout range of hydraulic conductivity</td>
<td>As stored in local database, but at least annually</td>
</tr>
</tbody>
</table>
Field Practices

• Few absolute requirements—flexible and adaptable.
• Requires documentation of techniques to ensure comparability and assure quality in ground-water measurement and sampling activities.
• Documentation must be available to the user — known provenance
• New technologies will be incorporated as appropriate
Data Standards & Management

• Minimum Data Elements for wells, measurements, and results are established: source agency, location, depth, aquifer, analytical method.....

• NGWMN data must be freely available without restriction via the NGWMN Data Portal

* Methods Board
NETWORK PORTAL

- Translates heterogeneous provider data formats to common, standard formats
- Map-based interface
- Data provider maintains ownership – data user can track source of data
- Display real time (nearly real time) data
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 Groundwater 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.

http://cida.usgs.gov/ngwmn/
Network Implementation:

- Continue development of portal system
- Begin NGWMN with initial group of states
- Increase # of states participating
- Establish management structure
- Seek Federal funding
EPA Lab Support for NGWMN

• Ongoing (Began in FY2014)
  – Utah Pilot – 3 rounds of testing done through EPA Region 8 (Denver)
  – New England Pilot (MA, NH) – First Round planned September 2014 through EPA Region 1 (Boston)

• Future
  – Delaware – Proposed to join in EPA Lab testing through EPA Region 3 (Philadelphia)
  – Have had discussions with NM, NC
# Network Implementation: Recommended Management Structure

Management of the National Ground-Water Monitoring Network (NGWMN)

## Data Providers

[Networks and Individual Sites That Meet NGWMN Criteria]

<table>
<thead>
<tr>
<th>Federal</th>
<th>State</th>
<th>Tribal</th>
<th>Regional</th>
<th>Local</th>
<th>Other</th>
</tr>
</thead>
</table>

### Advisory Committee on Water Information

- **Subcommittee on Ground Water**
  - [Federal Interface]

### U.S. Geological Survey

- **Management and Operations Group**
  - [Day-to-day operations]

### NGWMN Program Board

- [Representatives from Data Providers]
  - [Guidance and Direction]
If funding is approved by Congress (funds are in budgets in House, Senate and Administration)

- SOGW will solicit new data providers and initiate the “National Program Board.”
- National Program Board will begin to identify “backbone” sites and assess “data gaps”.
- USGS will participate in cooperative agreements to help support data providers
- NGWMN portal capabilities will expand with new data providers
- Pilot program for EPA analytical services will expand
- USGS will incorporate remaining USGS water-level sites, and add water-quality sites
Contact Information

• Weblinks:
  – SOGW: www.acwi.gov/sogw
  – Web portal: Contact SOGW Co-Chairs

• SOGW Co-Chairs:
  – Bob Schreiber: schreiberrp@cdmsmith.com
  – Bill Cunningham: wcunning2usgs.gov

• SOGW Executive Secretary:
  → Searching right now for replacement
Thank You!

Mike Wireman

The Alps above Innsbruck
Acknowledgements

• SOGW Members and contributors

• ACWI, NWQMC, & other ACWI groups:
  – Coastal network
  – Ongoing support, guidance, & interaction

• Executive Secretary & admin support
  – NGWA
  – USGS HQ & CIDA

• Many others
The overall goal of the SOGW is to develop and encourage implementation of a nationwide, long-term ground-water quantity and quality monitoring framework that would provide information necessary for the planning, management, and development of ground-water supplies to meet current and future water needs, and ecosystem requirements.
Scope: This national framework for ground-water monitoring and collaboration will be developed to assist in assessments of the quantity of U.S. ground-water reserves, as constrained by ground-water quality.
SOGW Planned Approach

- Determine “current picture” of GW monitoring
- Agree upon network design principles
- Identify field methods and data standards
- Determine approach for compiling data
- Pilot the network design and approach
- Revise as needed per pilot-testing results
- Develop implementation plan
Side Trip – Advice for Open Data Initiative from NGWMN Efforts

• “Walk Before Running”
• Learning from Other Countries
• Inclusive Standards & Procedures
• USGS CIDA – Serving Others beyond USGS
• Pilot-Testing Value
• Data-Owners Retain Data-Ownership
• Web Portal Transferability

Segue to Portal Demo
Illinois-Indiana Example
Methods of Site Selection

- State and County
  - Multiple states
  - One state, multiple counties

- Contributing Agency
  - Illinois Environmental Protection Agency
  - Illinois State Water Survey
  - Minnesota Department of Natural Resources
  - Minnesota Pollution Control Agency
  - Montana Bureau of Mines and Geology
  - Texas Water Development Board
  - U.S. Geological Survey

- Principal Aquifer
  - Aca-Vamoosa aquifer
  - Alluvial aquifers
  - Araroke-Simpson aquifer
  - Basin and Range basin-fill aquifers
  - Biscayne aquifer
  - California Coastal Basin aquifers
  - Cambrian-Ordovician aquifer system
  - Castle Hayne aquifer
  - Central Oklahoma aquifer
  - Central Valley aquifer system
  - Coastal lowlands aquifer system
  - Columbia Plateau basaltic-rock aquifers
Output Options
## Water Quality Data

### National Ground-Water Monitoring Network

#### Water Quality Data Table

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Substance</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>2005-03-26Z</td>
<td>00:00:00</td>
<td>NITROGEN-AMMONIA AS (N)</td>
<td>1.47 MG/L</td>
</tr>
<tr>
<td>2005-08-26Z</td>
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<td>ARSENIC</td>
<td>1.34 UG/L</td>
</tr>
<tr>
<td>2005-08-26Z</td>
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<td>BARILIM</td>
<td>148 UG/L</td>
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<td>2005-08-26Z</td>
<td>00:00:00</td>
<td>CADMIUM</td>
<td>0 &lt; 3 UG/L detection limit</td>
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<td>CHLORIDE</td>
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<tr>
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<td>2010 UG/L</td>
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<td>32800 UG/L</td>
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<tr>
<td>2005-08-26Z</td>
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<td>MANGANESI</td>
<td>29.4 UG/L</td>
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<td>2005-08-26Z</td>
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<td>2005-08-26Z</td>
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<td>NICKEL</td>
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<tr>
<td>2005-08-26Z</td>
<td>00:00:00</td>
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<td>POTASSIUM</td>
<td>1700 UG/L</td>
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<tr>
<td>2005-08-26Z</td>
<td>00:00:00</td>
<td>SODIUM</td>
<td>25000 UG/L</td>
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</tbody>
</table>

### Additional Notes

- **Filter Map Data**: 3732 sites mapped, 2800 water-level network sites.
- **Select for Download**: Available option for data retrieval.
International Coordination

- Placeholder slide for Jessica
- Ground water Interoperability experiment #1
- Groundwater interoperability experiment #2

Segue to GW Quality Pilots
Terms of Reference (TOR)

• Current TOR – develop Framework & NGWMN
• Framework – SOGW key implementation role(s)
• Proposed TOR – allow SOGW to help guide implementation of the NGWMN

• SOGW requests approval of TOR edits submitted to ACWI on August 19, 2014.
Questions/Discussion
A National Framework for Ground Water Monitoring in the United States

GWPC Annual Forum
October 5-8, 2014
Mike Wireman

A Resource at Risk!
Status Report from the Subcommittee on Ground Water

Activities related to the National Ground Water Monitoring Network

Robert Schreiber, Co-Chair, CDM Smith and ASCE
Charles Job, USEPA
Jessica Lucido, USGS
Bill Cunningham, Co-Chair, USGS

Presentation to the Advisory Committee on Water Information, August 20, 2014
Why is There an SOGW?

- Overall: Need to raise visibility of GW
  - Literally Invisible
  - Lacking Public Attention ("GW Floods"?)
  - Often a "2\textsuperscript{nd} Cousin"
  - No GW Sub-Group in ACWI < 2006
  - Difficult & Costly to Characterize
What GW Analysts Need

• Trend-Tracking
• Impacts-Identification
• Analysis & Assessment
• Planning & Management
• Fill Data Gaps

We also need a better acronym than “NGWMN” (please help!)
Pilots Benefitted from:

• Single, consistent dataset for **shared interstate GW resources**
• Data sharing **among state agencies**
• Critical review of procedures:
  – Field data collection
  – Data management
• Raised awareness for GW monitoring
Changes Necessary To:
• accommodate new understandings;
• results of 5 State pilot monitoring projects
• to remove redundancy; make necessary corrections; address concerns of SOGW members

Key Areas In June 2009 Framework Document That Needed Revision:
1. Baseline monitoring – which wells
2. Network / well classification issues
3. Density of wells in given aquifer
Network Design: Various Subnetworks

Baseline Period
(5 years of Data)

Subnetwork for Background Conditions
- Surveillance Points (Synoptic wells)
- Trend Points (Backbone wells)

Subnetwork for Suspected or Anticipated Changes
- Surveillance Points (Synoptic wells)
- Trend Points (Backbone wells)

Subnetwork for Known Changes
- Surveillance Points (Synoptic wells)
- Trend Points (Backbone wells)

Special Studies

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

- Pilot phase followed Framework approval.
- Solicitation yielded 9 statements of interest
- Evaluation team selected 5 pilots to represent different scope/scale/IT
- Volunteer effort with 1-year timeline.
5 State Pilot Projects
Distribution of Monitoring Points Within Aquifer / Aquifer System

How many?

**Distribution - Stratified random sampling within blocks**

**Number of monitoring points**
1. Specify minimum # of points per aquifer
2. Specify # of points based on a prescribed density
• Provides more flexibility re: sampling frequency and well distribution
• Adds Chapter 8 - **Examples of the Use of Statistics in Addressing National Ground Water Monitoring Network Questions**
• Adds appendix with definition of terms
# ESTIMATED COSTS

## State Pilot Project Capital Costs

<table>
<thead>
<tr>
<th></th>
<th>RANGE</th>
<th>AVERAGE</th>
<th>MEDIAN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NEW WELL CAPITAL COSTS</strong></td>
<td>$0 – $3,525,000</td>
<td>$1,355,900</td>
<td>$1,515,000</td>
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<tr>
<td><strong>AVERAGE PER NEW WELL COST</strong></td>
<td>$0-$25,919</td>
<td>$13,668</td>
<td>$9,018</td>
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<tr>
<td><strong>OTHER</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>ONE- TIME &amp; CAPITAL COSTS</strong></td>
<td>$40,059-$190,025</td>
<td>$226,087</td>
<td>$111,600</td>
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<tr>
<td><strong>AVERAGE PER WELL COST</strong></td>
<td>$78-$2,188</td>
<td>$314</td>
<td>$153</td>
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## ESTIMATED COSTS

**State Pilot Project O&M Costs**

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<td><strong>TOTAL</strong></td>
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<td><strong>ANNUAL O&amp;M COSTS</strong></td>
<td>$67,715-</td>
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</tr>
<tr>
<td><strong>ANNUAL O&amp;M COSTS PER TOTAL WELLS</strong></td>
<td>$85-</td>
<td>$1,741</td>
<td>$607</td>
</tr>
<tr>
<td></td>
<td>$4,307</td>
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</tbody>
</table>
Original Network Design

**Unstressed Subnetwork**
(nonpumped or uncontaminated aquifers)

- Baseline Period
  (5 years of data)
  - Surveillance Monitoring Points
    (Synoptic wells)
  - Trend Monitoring Points
    (Backbone wells)

- Special Studies
  (Rare in this network)

**Targeted Subnetwork**
(affected aquifers)

- Baseline Period
  (5 years of data)
  - Surveillance Monitoring Points
    (Synoptic wells)
  - Trend Monitoring Points
    (Backbone wells)

- Special Studies

**EXPLANATION**
- At least 5 years of data are collected to establish background conditions.
- Periodic census of ground-water levels and/or quality (i.e., “mass measurements” for potentiometric surface mapping).
- Fewer wells monitored regularly (i.e., seasonal variability of water levels and/or quality).
- Smaller areas to evaluate ground-water resources at risk of depletion or impairment.
Part 4 of “Why do we need the NGWMN?”
Lack of Consistent Coverage
Network Portal Requirements

• Map-based interface
• Acceptable data download performance
• Translates heterogeneous state data formats to common standard formats
• Data provider maintains ownership. Data User can track source of all data
• Display real-time or nearly real-time data
  • Well characteristics (lithology, construction, aquifer)
  • Spring information
  • Water levels
  • Water quality
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**

**BACKGROUND**

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 groundwater data from local, State, and Federal organizations. A consensus-based framework document (http://acwi.gov/sogw/pubs/tr/) was developed to provide guidance to ensure that the data are comparable and can be included in a nationally consistent network. The framework design focuses on providing information needed to assess the quantity of groundwater reserves as constrained by quality. The scale of the network focuses on Principal and Major Aquifers of the United States.

**NETWORK DESIGN**

**NETWORK STATUS**
NGWMN Pilot Portal

http://cida.usgs.gov/ngwmn/
Network Portal Data Model
THE ROLE OF THE NGWMN IN ADDRESSING GROUND-WATER ASSESSMENT AND MANAGEMENT ISSUES.

Focused on 67 Principle aquifers
Chapter 5: Field Practices

• No strict requirements on specific aspects of individual data-collection programs used by NGWMN data providers

• Requires adequate documentation of techniques to ensure comparability of data and to assure quality in ground-water measurement and sampling activities.

• New technologies will be incorporated into the NGWMN as appropriate.
National Ground Water Monitoring Network Pilot Projects
Water Quality Pilots

• Water quality is an important part of ground-water availability
• Several initial NGWMN pilots included water quality, but limited or absent in others
• US EPA stepped forward to develop new Water Quality Pilots by providing limited analytical services
EPA Regional Laboratories Support

**Basis:**
- Wells selected fit Framework well categories
- Analytes fit Framework criteria
- States may not have analytical capability yet

**Initial Analytical Support to States:**
- For some contaminants, states not ready to analyze
- Providing interim support to during early phases
- Within Regional budgeted resources and capacity
- Enables NGWMN to start and provide states time necessary to arrange permanent analytical support
Program Board Implementation

Balancing Act – Funding Priorities

- Support for existing versus new participants
  How to support for “spin up” costs while maintaining long-term monitoring?
- Add new wells or increase frequency?
- Water levels versus water quality?
- Drilling?
- Innovative methods?
Why do we need the NGWMN?

• **2003 GAO Report**
  – 36 States expect water shortages

• **2005 NGWA/AASG Survey**
  – GW shortages expected in 43 states
  – Calls for cooperative monitoring

• **2006 Heinz Report**
  – GW data inadequate for national reporting