# ODNR: GROUNDWATER OBSERVATION WELL NETWORK

PROGRAM INTRODUCTION

- Groundwater monitoring began in 1938 in response to request for hydrogeological study
- ODNR: Division of Water created in 1949
  - Assumed responsibility to operate and oversee network
- Program reached peak in the 1970's
  - 145 Wells
  - Representing 83 of 88 counties
- As of 2015
  - 139 Wells
  - Representing 61 of 88 counties
  - Co-Op with USGS

Ohio Observation Well Network
Active Wells 2011

Continuous Recorder ●
Periodic Measurement ▲
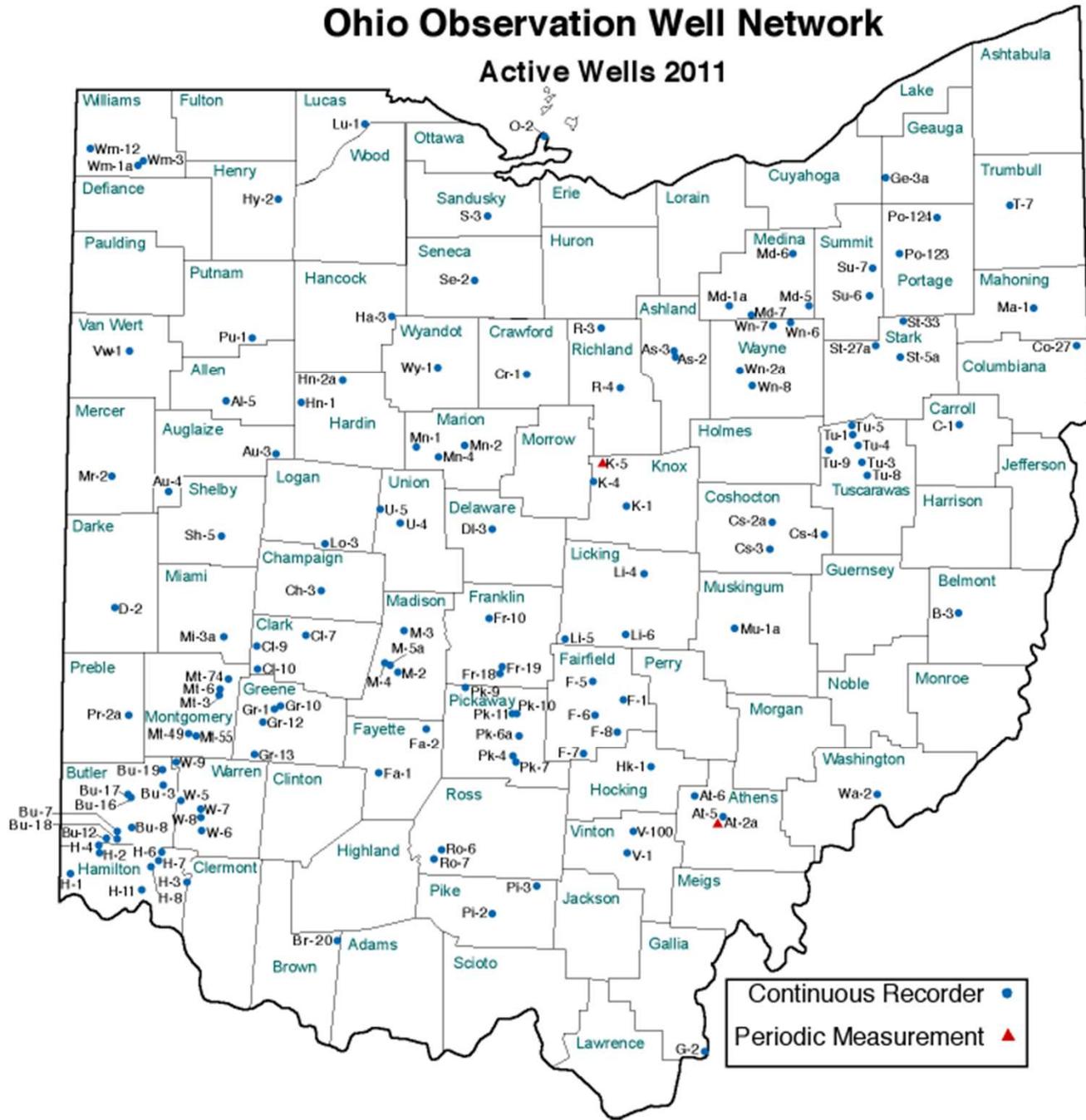
SERVICING THE NETWORK

- Quarterly basis
  - Exceptions: index wells (7), earthquake wells (2)
- Four types of Data loggers
  - Schlumberger Divers
  - Satlink2
  - Sutron SDR
  - Steven's graphical
- Manual Measurements

SERVING THE DATA

- Process data and input into database
  - Make any necessary manipulations
- Update ODNR: Water Inventory website quarterly
  - http://soilandwater.ohiodnr.gov/water-use-planning/water-inventory-levels#OVE
  - Preliminary data for a year
  - Annual review – archive data
- Monthly Water Inventory Report
- Send data to USGS after annual review
- Public access through both ODNR and USGS websites

RECENT CHANGES IN THE NETWORK

- Modernization project with USGS
  - Finished upgrading equipment
  - Replaced equipment housing
- Started installing Solar Panels
  - Installed 13 solar panels
- Upgraded and Improved graphing capabilities on ODNR website
  - Graph to scale
  - Customer friendly
  - Ability to see values for a specific day

UPGRADES

Solar panels

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GRAPHING WITH JAVA SCRIPT
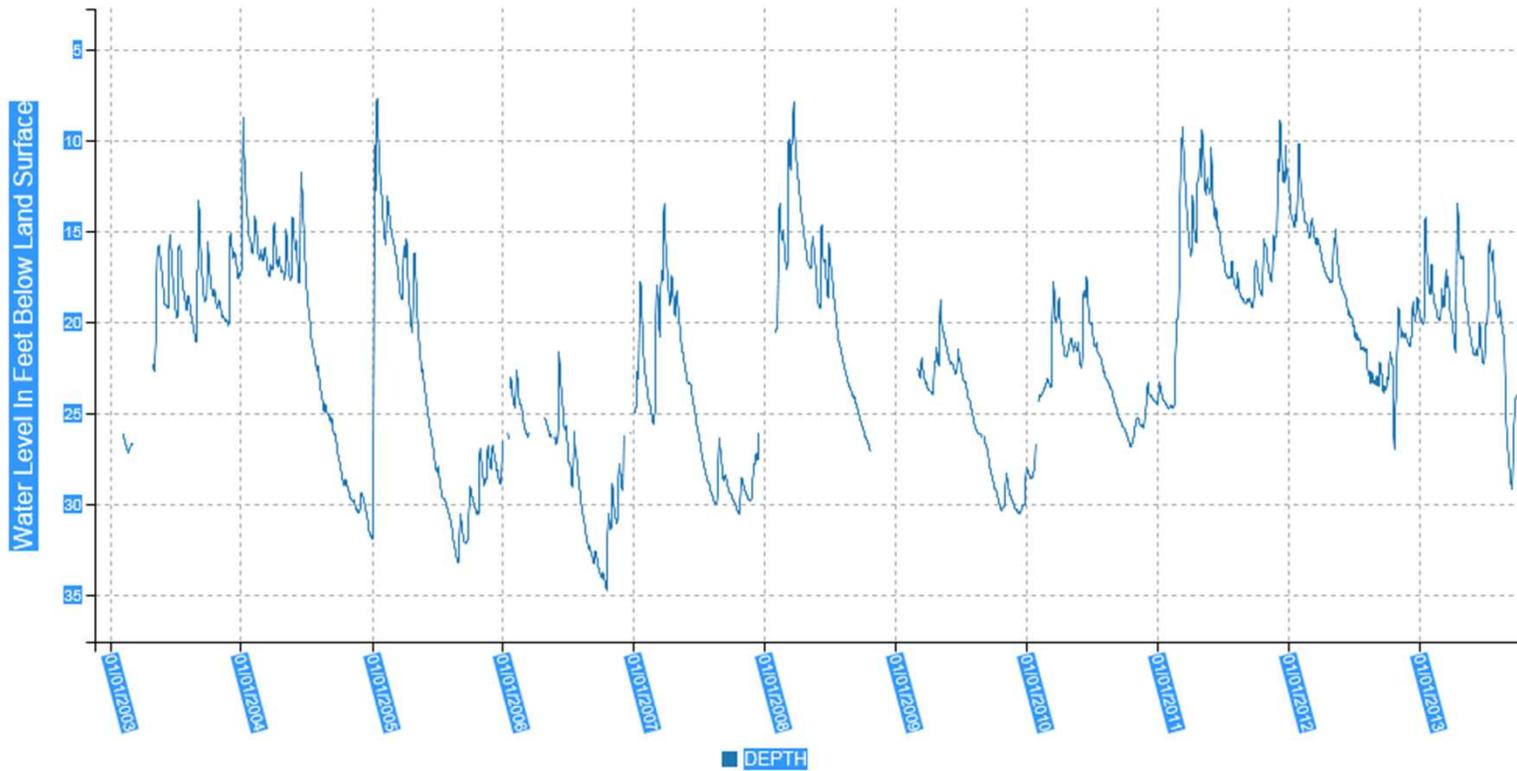
CURRENT TASKS

- Finalize 2014 annual data
  - Send to USGS to add record into database
- Review quarterly data
  - Update water inventory web application
- Send USGS manual measurements and real-time data for their database

UPCOMING PROJECTS

- Install 27 solar panels
  - Secure sites, minimal public access, increased convenience
- Complete upgrade of Ha-3
- Add new well to network
  - Woodville – In Sandusky County
- Turn 4 existing wells into real-time wells
  - Sh-5 and Pr-2a – MCD wells, significant period of record, useful for future planning
    - Install Sutron SatLink2 GOES transmitters to Sh-5, Pr-2a, and Tu-1
  - Tu-1 – ODNR index well
  - Mt-49 – MCD well
    - Install a cell modem and solar panel

PROBLEMS

- Data loggers draining battery
  - Losing too much data
  - Send back to Sutron
  - 1 sent back, 2 need replaced
- Failed solar panel regulators
  - Not charging battery
- Failed transmissions at real-time sites
  - Replace equipment