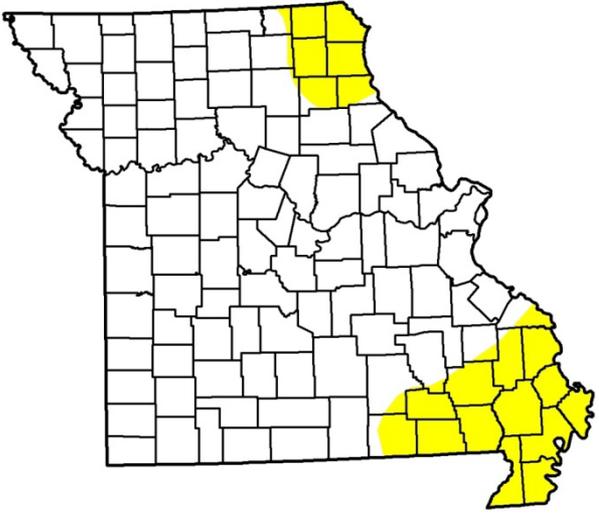


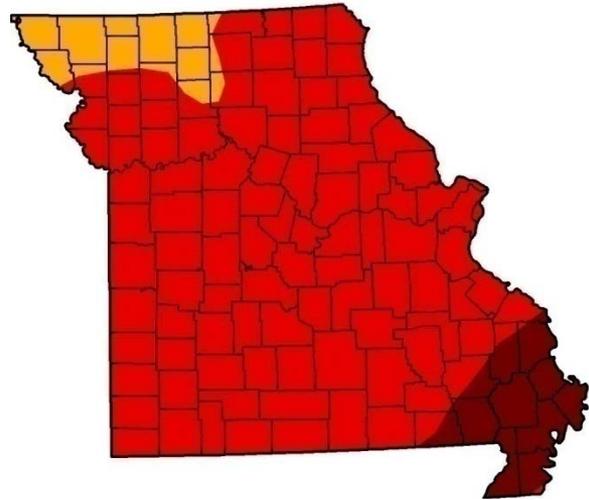
In addition to lack of rainfall, drought rapidly evolved due to additional factors ...

U.S. Drought Monitor, Missouri

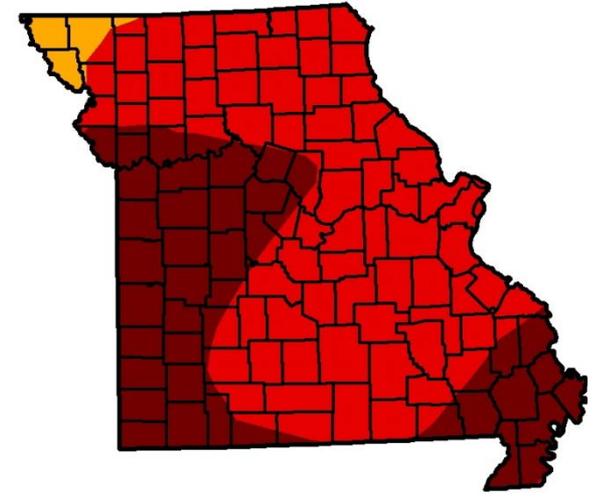
May 1, 2012



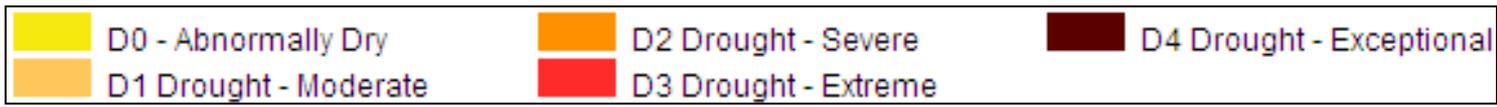
July 31, 2012



Aug 28, 2012



Drought Severity categories:

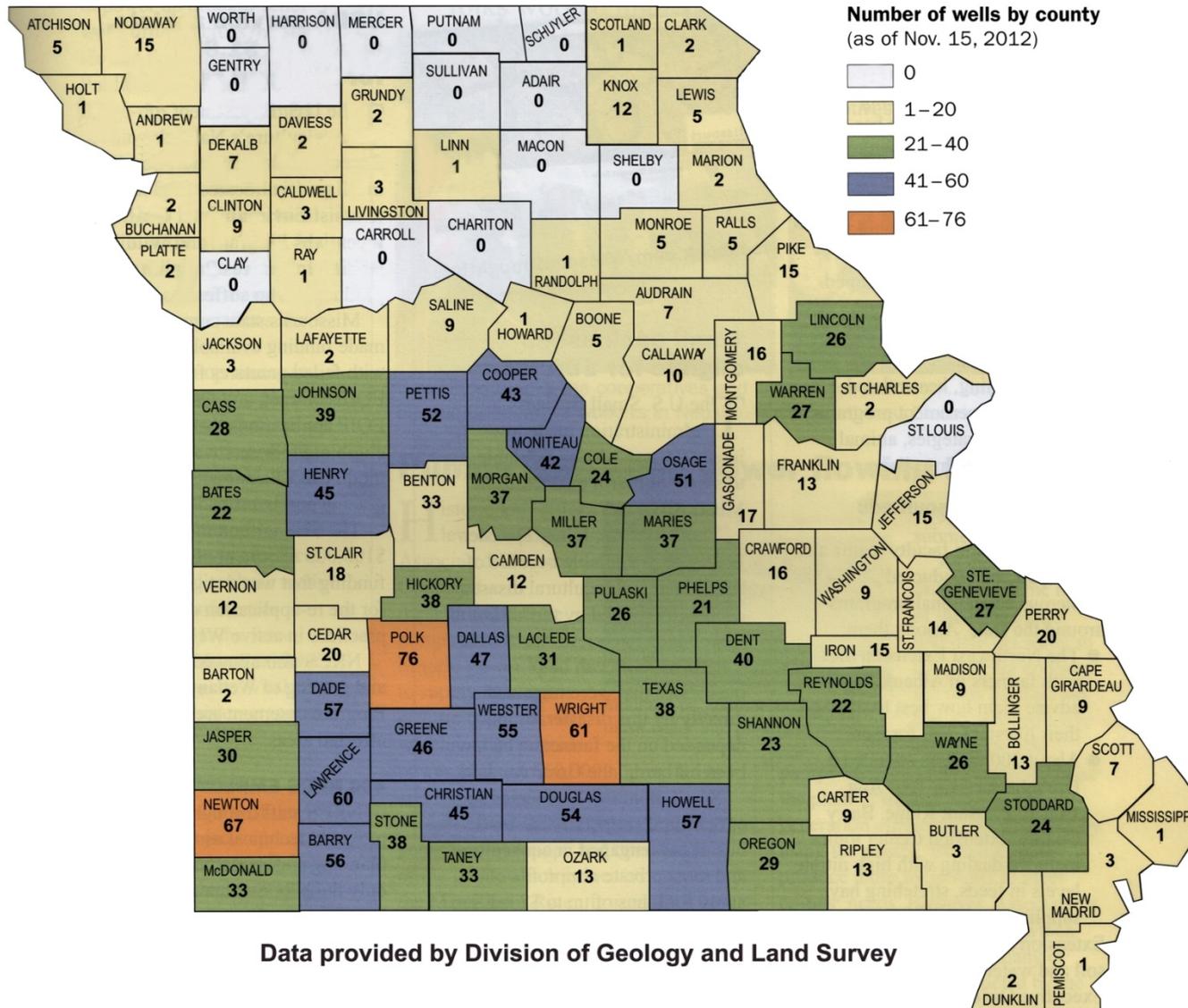


<http://droughtmonitor.unl.edu/>



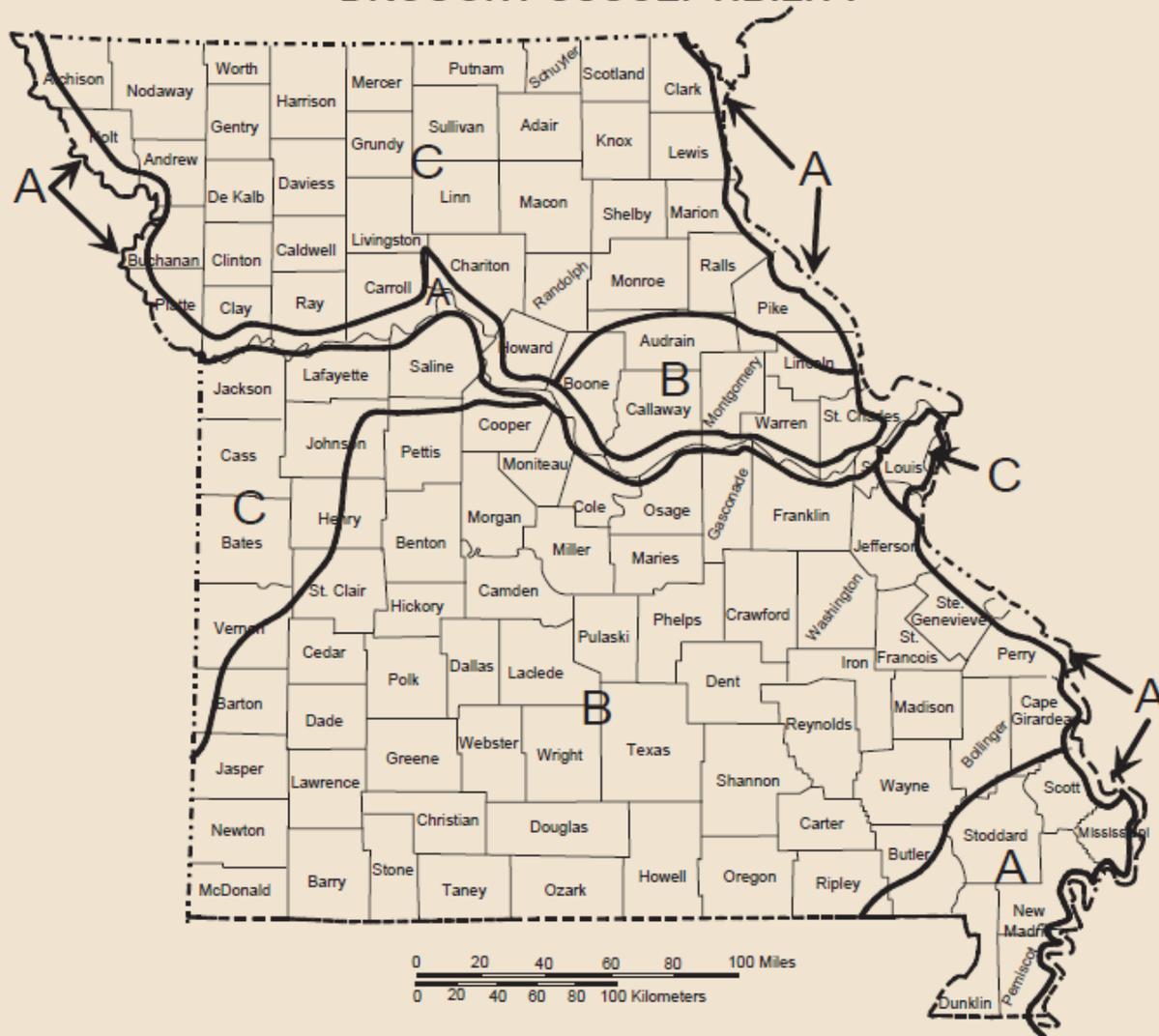
2012 Drought Response

Wells drilled or deepened through cost-share program



Data provided by Division of Geology and Land Survey

DROUGHT SUSCEPTIBILITY



Region A: Slight Susceptibility
Region B: Moderate Susceptibility
Region C: High Susceptibility

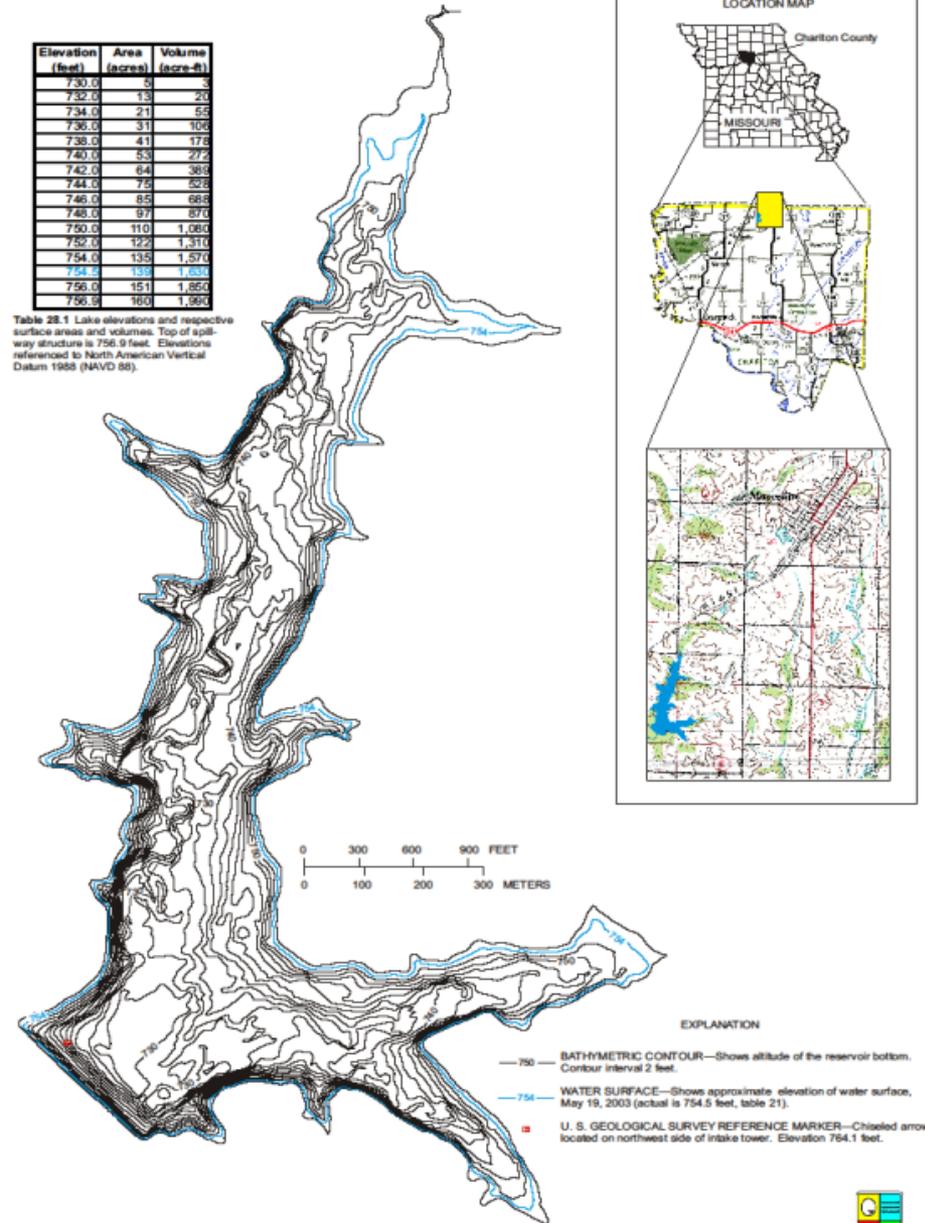
Reservoir Studies

- 40 Reservoirs in northern MO studied
- 1950's drought conditions used to model system capacity under current water demands
- Resulted in development of emergency interconnections and consolidation of smaller systems

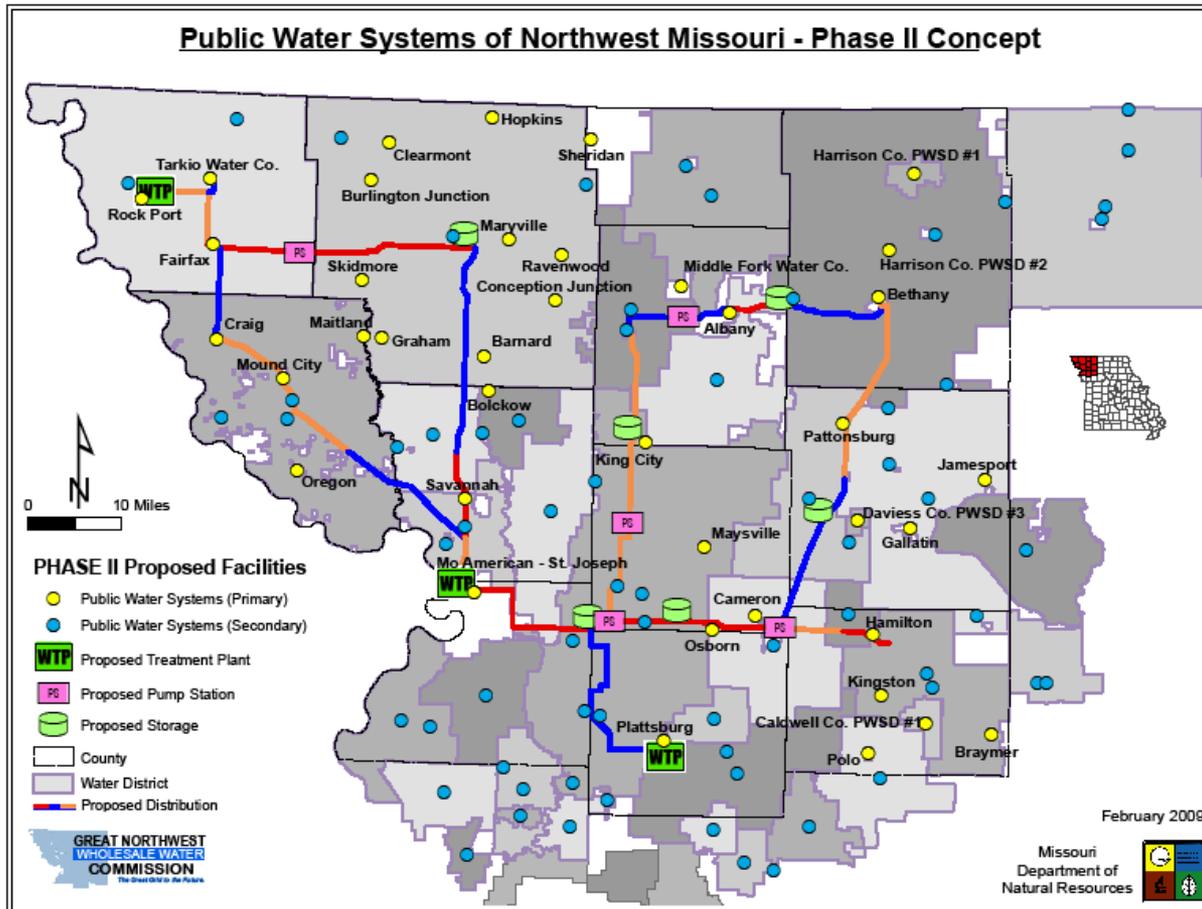
MARCELINE LAKE

Elevation (feet)	Area (acres)	Volume (acre-ft)
730.0	9	3
732.0	13	20
734.0	21	65
736.0	31	106
738.0	41	178
740.0	53	272
742.0	64	369
744.0	75	528
746.0	85	685
748.0	97	873
750.0	110	1,080
752.0	122	1,310
754.0	135	1,570
754.5	137	1,634
756.0	151	1,850
756.9	160	1,990

Table 28.1 Lake elevations and respective surface areas and volumes. Top of spillway structure is 756.9 feet. Elevations referenced to North American Vertical Datum 1988 (NAVD 88).



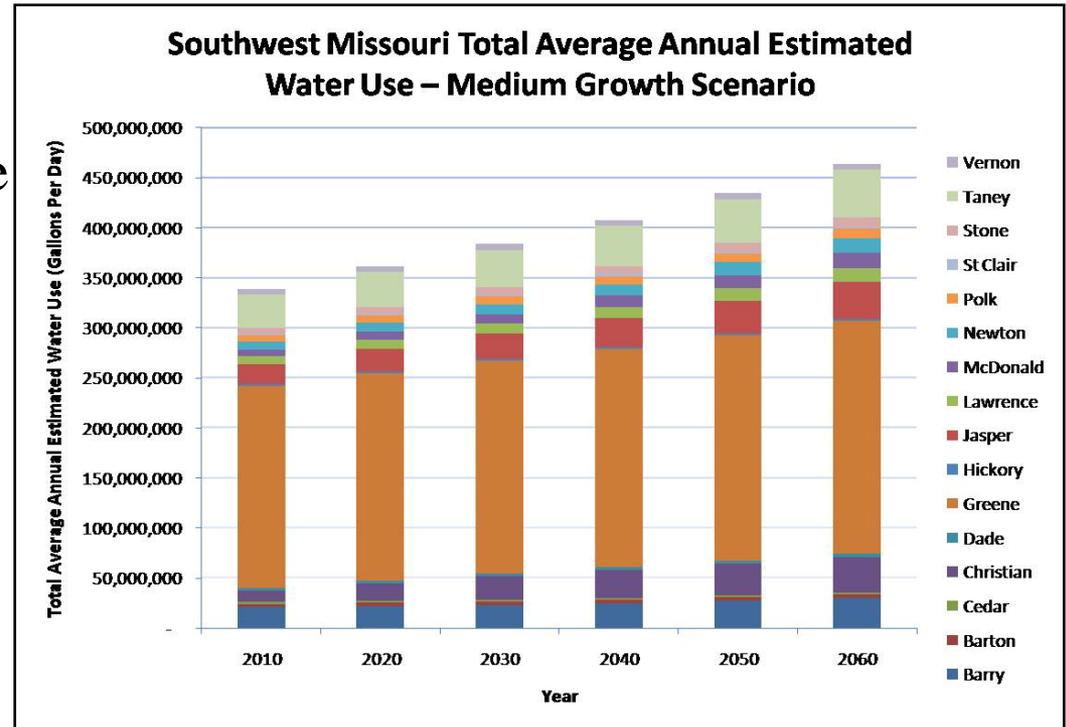
Water Supply and Transmission System – NW MO



- DNR partnering with Great Northwest Wholesale Water Commission and US Corps of Engineers
- Planning focused on a moving water from reliable sources to an underserved population
- 6 study phases completed between 2007 – 2013, most recent is analysis of pipeline from KC/St. Joseph to Cameron

Water Supply Planning (SW MO)

- 2002 regional groundwater limitations identified
- 2003 Tri-State Water Resource Coalition formed
- 2006 USACE study identified 6 water supply alternatives
- 2009 screening study for potential reservoir locations
- 2012 Water Demand Forecast – additional 125 MGD needed by 2060
- 2013 Gap analysis



Mark Twain Lake – Northeast Missouri

- Contract for water 20,000 ac. ft. of water supply storage
- Clarence Cannon WWC currently serves nearly 70,000
- Provides future water supply assurance for portions of NE and Eastern MO



Ongoing Regional Water Supply Development Projects

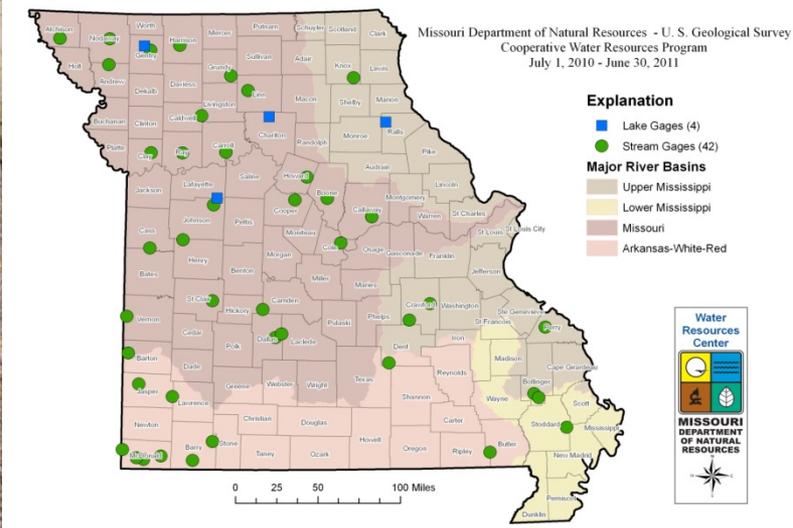


- Little Otter Creek Reservoir – Caldwell County
- East Locust Creek Reservoir – Sullivan County
- Atchison County Wholesale Water Commission (well field)
- Howard County Regional Water Commission (well field)



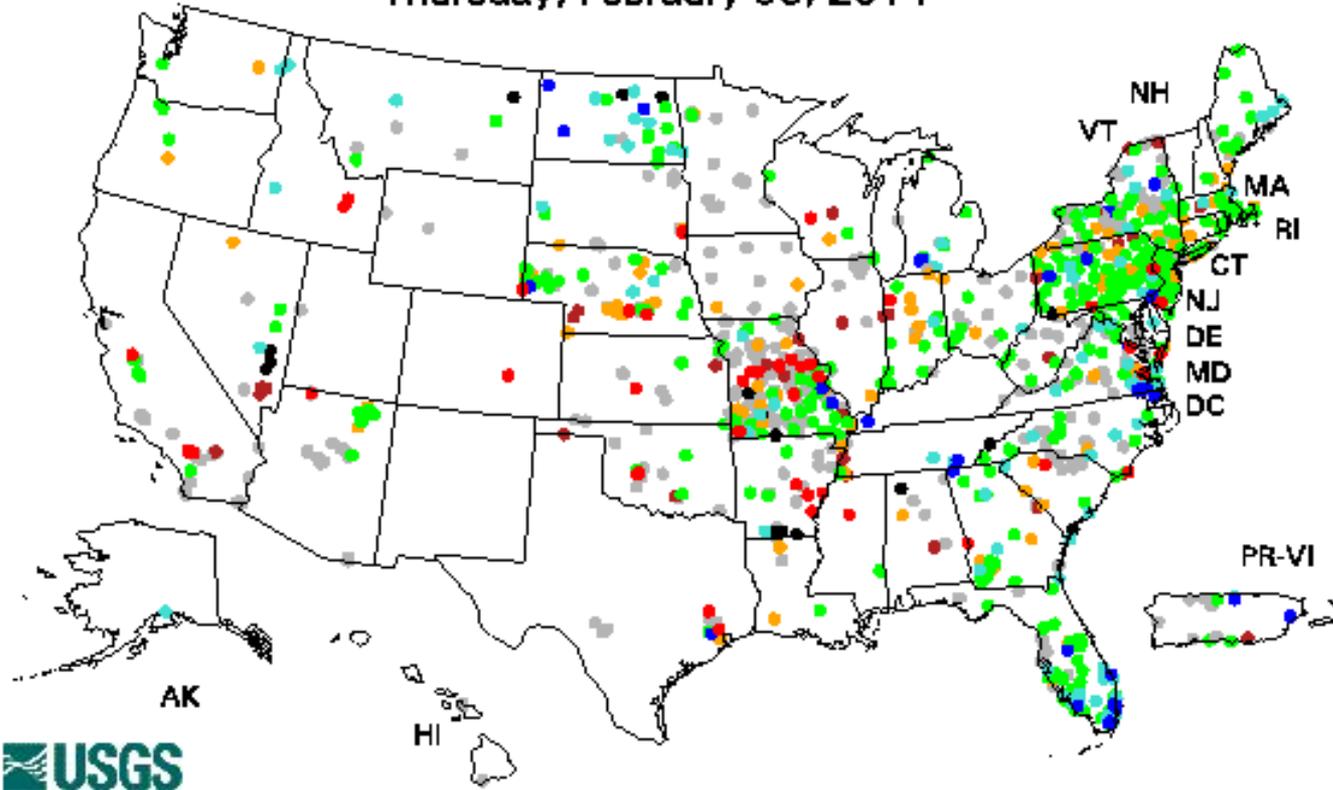
Surface Water Monitoring – 50 gages

- Provide fundamental hydrologic data
- Low flows
- Flood forecasting
- Multi-purpose - recreation
- Water Quality Parameters



Groundwater-Level Observation Well Network

Thursday, February 06, 2014



Current network: 165 wells



Data Collection Platform

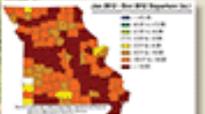
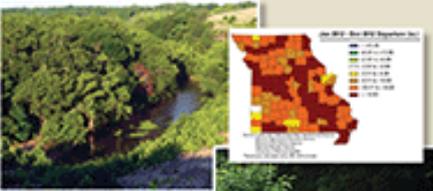


New Planning Tools

USGS
science for a changing world

Prepared in cooperation with the Missouri Department of Natural Resources

Computed Statistics at Streamgages, and Methods for Estimating Low-Flow Frequency Statistics and Development of Regional Regression Equations for Estimating Low-Flow Frequency Statistics at Ungaged Locations in Missouri



Scientific Investigations Report 2013-5090

U.S. Department of the Interior
U.S. Geological Survey

NOAA's National Weather Service
Hydrometeorological Design Studies Center
Precipitation Frequency Data Server (PFDS)

Home Site Map News Organization Search [] NWS All NOAA Go

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: MO

DATA DESCRIPTION

Data type: precipitation depth Units: english Time series type: partial duration

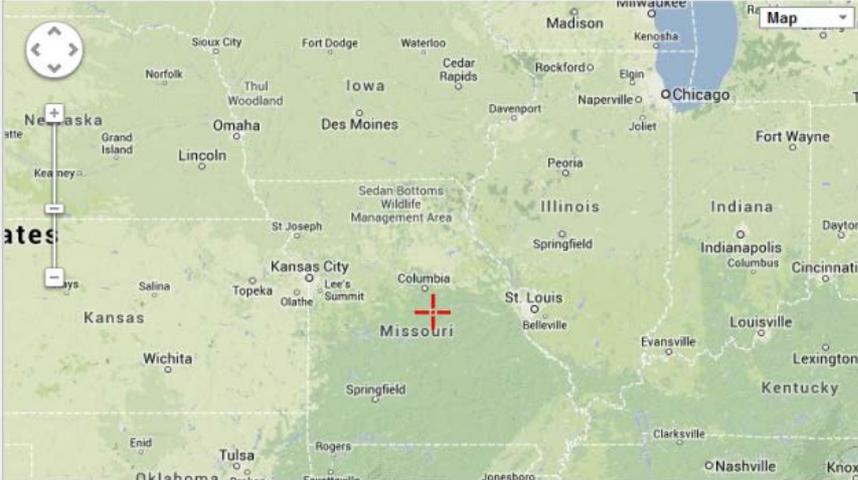
SELECT LOCATION

1. Manually:

a) Enter location (decimal degrees, use "-" for S and W): latitude: [] longitude: [] submit

b) Select station (click here for a list of stations used in frequency analysis for MO): select station []

2. Use map:



a) Select location (move crosshair or double click)

b) Click on station icon (checkbox) show stations on map

LOCATION INFORMATION:
Name: Jefferson City, Missouri, US*
Latitude: 38.5767
Longitude: -92.1733
Elevation: 627 ft*