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Water Use Data: A USGS perspective

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U.S. GEOLOGICAL SURVEY

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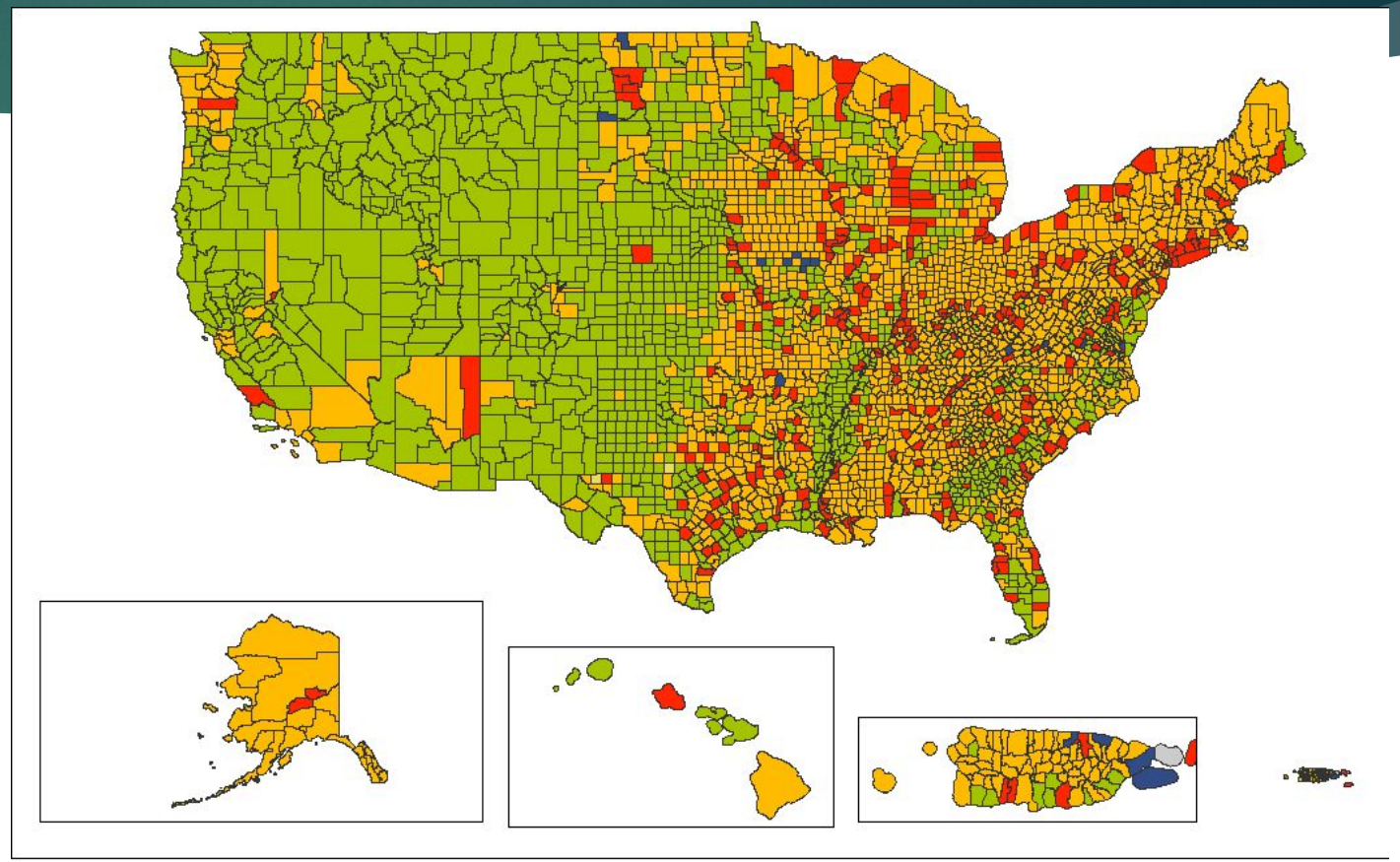
2022 NATIONAL WATER USE DATA WORKSHOP

Largest category of use by county, 2015

- Thermoelectric, irrigation, and public supply
- Fresh and saline
- Groundwater and surface water sources



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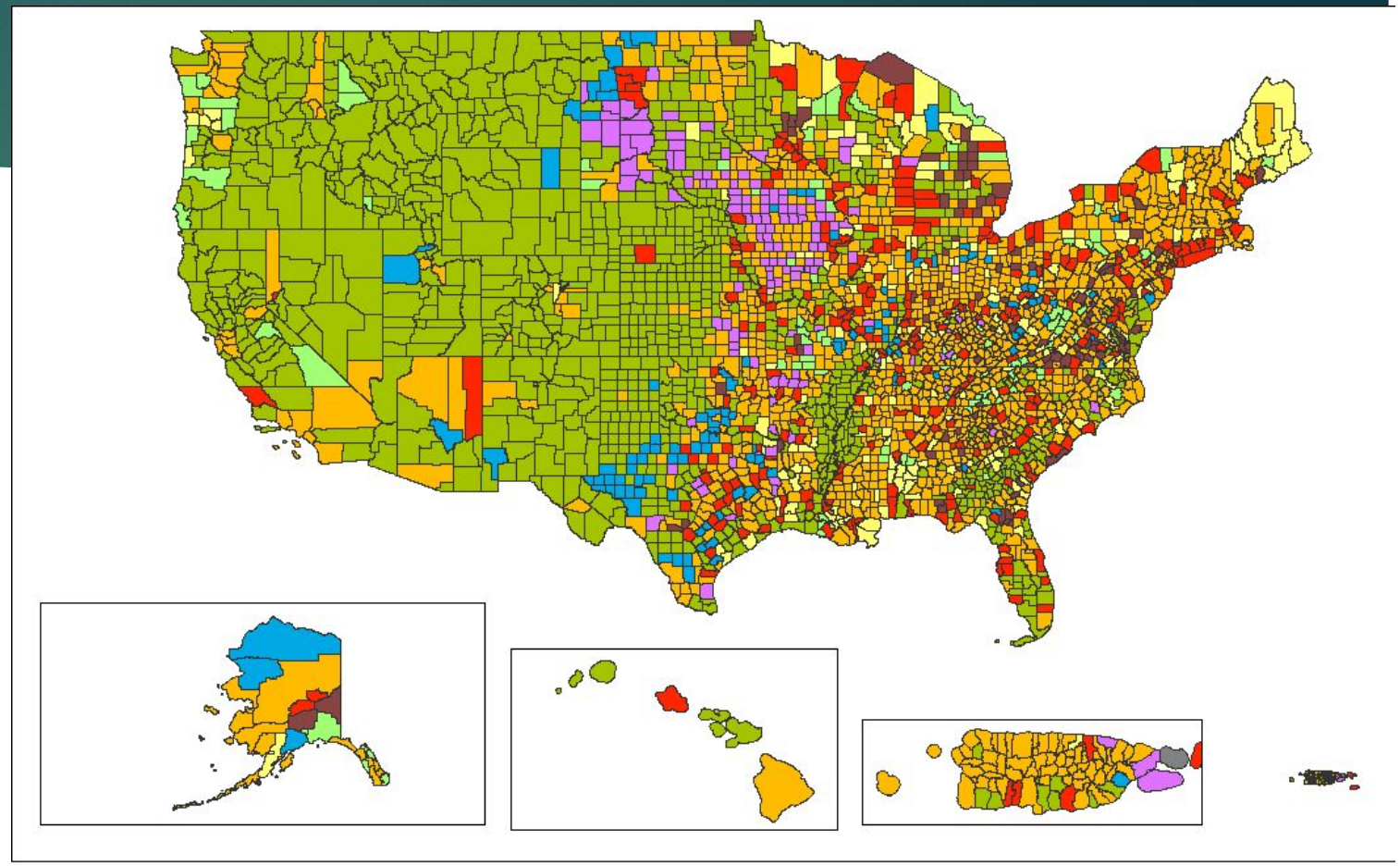
Largest category of use by county, 2015

- All eight USGS water use categories
- Fresh and Saline
- Groundwater and Surface water



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Accessibility and Usability of Water Use Data

Water Use Data Acquisition, Coordination and Storage Project

- Acquire and enter site-specific data into the USGS site-specific water use database
- Develop tools for data entry, review, and reporting of site-specific data
- Acquire data to help estimate livestock, aquaculture, mining, and industrial water use

Water Use Data Management Function

- Provide consistent guidance for water use data acquisition, review, and information sharing (when applicable)
- Continual development of water use data tools

Modernization of USGS water use database

- More stable and modern data system
- Easier data retrieval and access
- Improved spatial data (polygon information)

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Water use information

- Daily facility/system/site-specific (by source)
- Metadata
- Data to understand the timing, location, and quantity of water used
- Data gaps
  - Gap
  - Outliers
  - Reporting differences
- Data transfer more frequently and automated where applicable

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Water Use Data Acquisition and Processing

Recent data efforts focused on consistent data entry, and data review, method codes, and data accuracy.

Created a toolkit for USGS WSCs to more efficiently acquire and review data from state water resource agencies

In the past two years, we have:

Created more than 13,000 water use sites

Added more than 14 million monthly and annual water quantity data values in 20 states

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Issues that affect usability of water use data

- Spatial variability,
- Relating water withdrawals to places of use,
- Data latency
- Censored data
- Limited time period
- Inconsistent or non-unique site names
- Erroneous data values vs. outliers
- Aggregated values vs. site specific vs. permit specific

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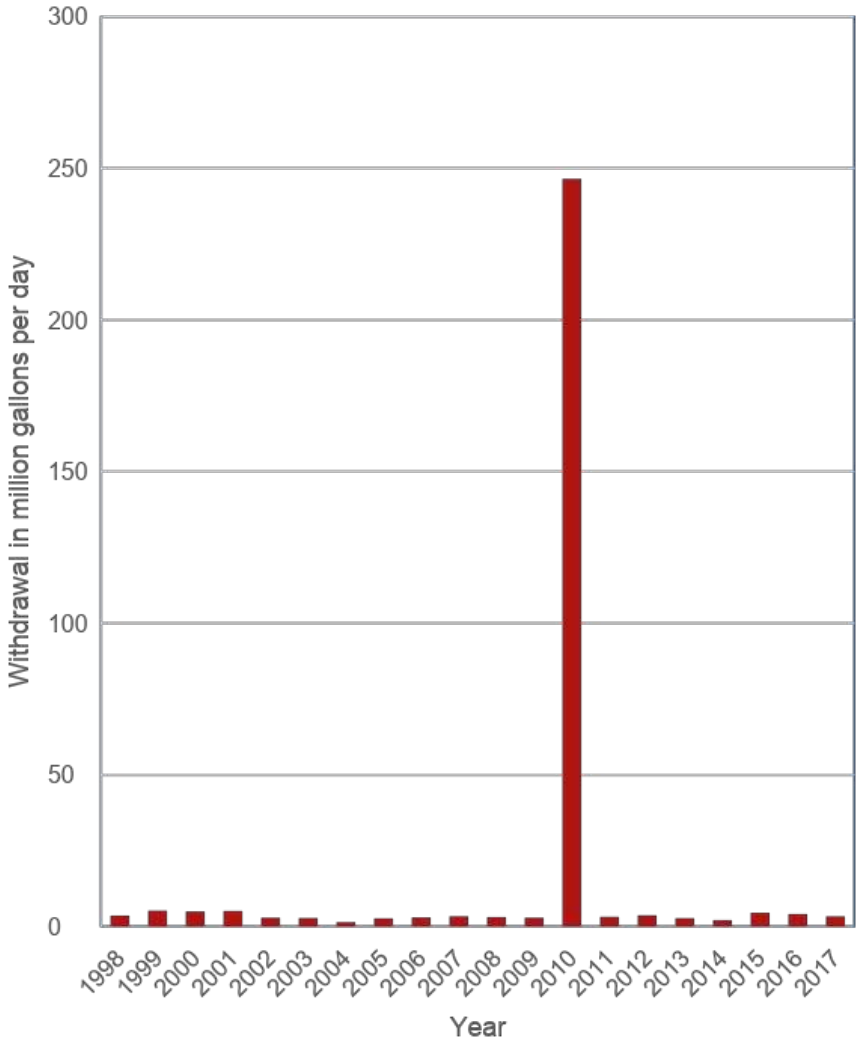
Erroneous data??

- ✔ Data quality?
- ✔ Identifying and correcting data
- ✔ Qualifying data for use in models– variable weighting

Annual site-specific water use

Year	Withdrawal, in Mgal/d
1998	3.598
1999	5.228
2000	4.974
2001	5.134
2002	2.893
2003	2.78
2004	1.425
2005	2.666
2006	2.995
2007	3.363
2008	3.118
2009	2.899
2010	246.481
2011	3.191
2012	3.679
2013	2.725
2014	2.1299
2015	4.522
2016	4.121
2017	3.342



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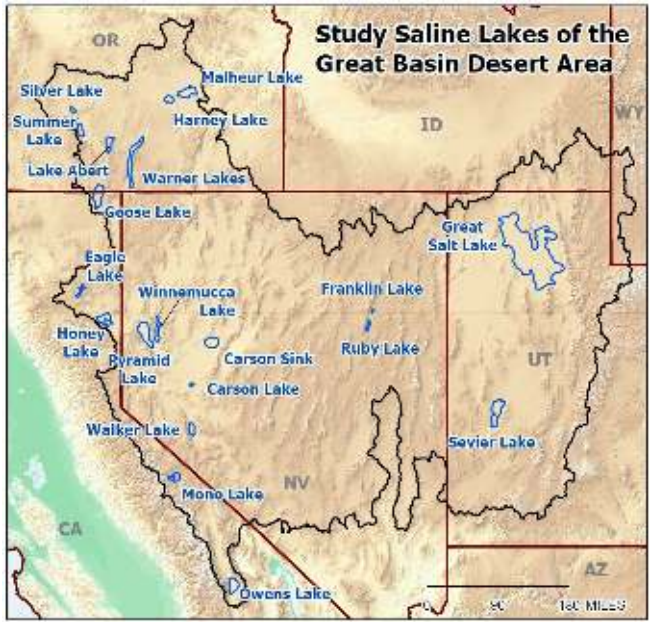
USGS Integrated Water Availability Assessments

Current regional study areas:

- Delaware River Basin
- Upper Colorado River Basin
- Illinois River Basin
- Willamette River Basin

Specialty Topics: Saline Lakes of the Great Basin IWAAs



- How much water is there and how is it used?
- What is the hydrologic vulnerability of the lakes?
- What are the primary resources being utilized by specific species at each saline lake? How are these resources changing over time?
- What are the mechanisms driving change in bird migration?
- How much water is needed to sustain quality habitat for birds now and in the future?

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How can others collaborate?

- Assess completeness of local water use information
- Identify topics needing further discovery
  - National gaps in particular data (deliveries, irrigation system and source type associated with fields)
  - Local needs
  - Water management conservation effectiveness
  - How water use changes during periods of drought?
  - Water quality/ecosystem health impacts from/on water supplies for different uses
  - Evaluate national model at local scales, and evaluate how additional or finer spatial and temporal resolution data impact results

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