



Overview of KY WSC

ITAC Meeting

October 6, 2009

Kentucky Facts

- Statehood in 1792
- 15th State
- 40,411 sq miles – 37 largest
- 7 states touch the state boundary
- State Capital – Frankfort
- Population approximately 4 million

KY State Symbols



KY Water Science Center

- The USGS has collected hydrologic information in KY since 1908, when surface-water gaging data were first collected



Center Demographics - current

- Average age – 46
- Average years of service – 18.5
- 704 years of experience

1-10 years	26%
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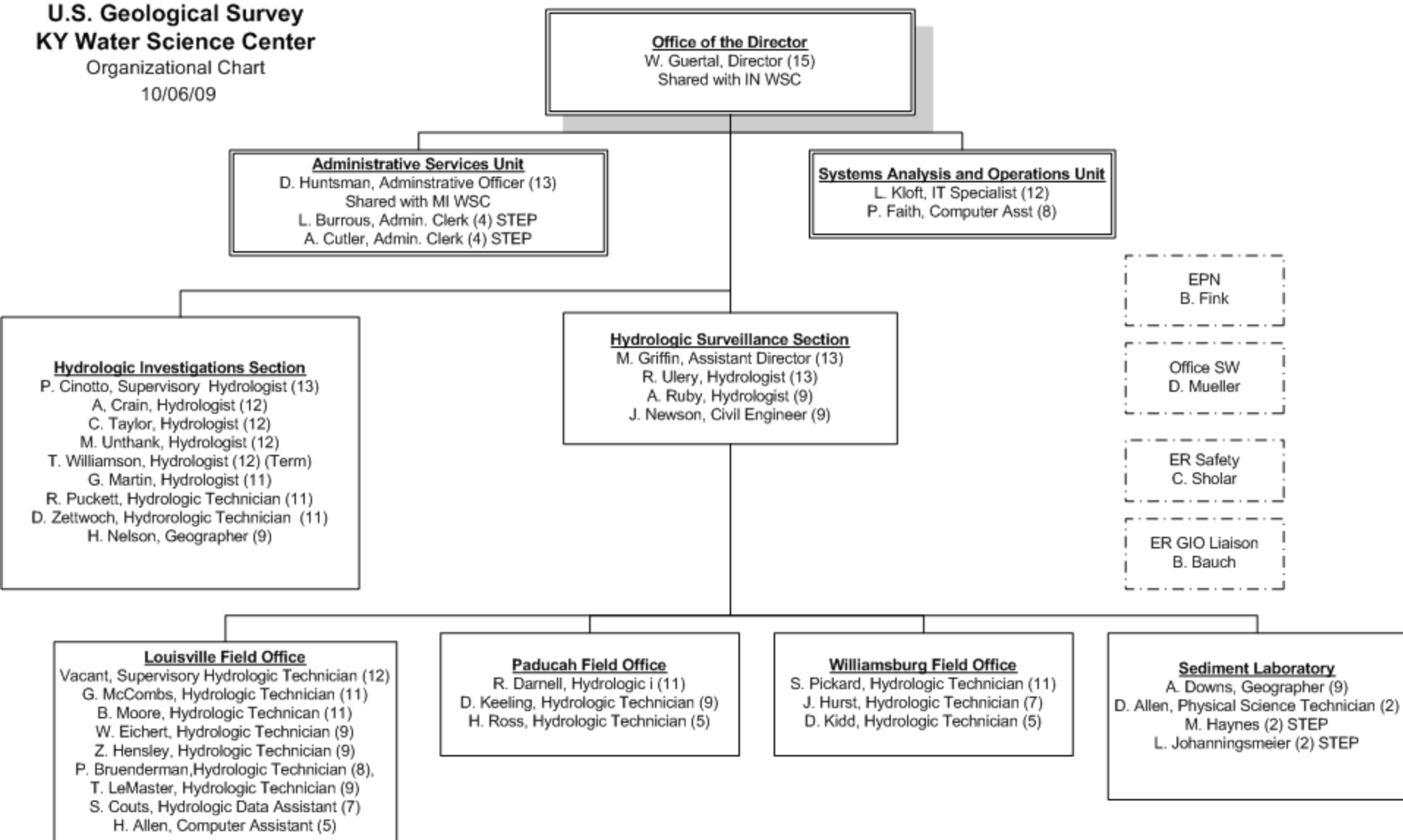
11-20 years	32%
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21 or more years	42%
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U.S. Geological Survey KY Water Science Center

Organizational Chart

10/06/09



Collateral Duty Positions

WQ Specialist – A. Crain
SW Specialist – Vacant

Training Officer – P. Faith
CD Safety Officer – D. Zettwoch

Water Use – A. Downs
GW Specialist – C. Taylor



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Kentucky Water Science Center

Water Resources Program

The mission of the U.S. Geological Survey (USGS) is to serve the Nation by providing reliable, impartial scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

[Hydrologic Data](#)[Studies](#)[Sediment Lab](#)[Publications](#)[Science Center Information](#)[Links](#)

Real-Time Data for Kentucky

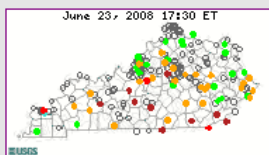
NOTICE: Recently discontinued and threatened USGS streamgages in Kentucky. Click [here](#) for more information.

- [Streamflow](#)
- [Precipitation](#)
- [Ground Water](#)
- [Water Quality](#)

Historical Data

- [Streamflow](#)
- [Ground Water](#)
- [Water Quality](#)
- [Instantaneous Data Archive](#) (period-of-record unit-value data)

Current Water Conditions



- [WaterWatch](#)
- [Flood/High Flow Conditions](#)
- [Drought Conditions](#)

Featured Project

NEW [Abandoned Oil and Gas Wells near Fort Knox](#)

High concentrations of chlorides in the ground water have resulted in the abandonment of several drinking-water supply in the West Point area. Previous investigations by the USGS have identified the probably sources of chlorides to be improperly abandoned natural gas wells. Over time, the casings of abandoned wells may eventually develop leaks and if not properly plugged, can act as a conduit for oil and gas field brines to migrate into shallow fresh water aquifers.

In March 2007, the USGS began an investigation to locate, identify, inventory, and assess as many of the abandoned gas wells in the West Point area as possible. The investigation consisted of data and file reviews, interviews, field visits and verifications, ground-water elevation and chloride measurements, and surface geophysical surveys. The project was undertaken in cooperation with the [U.S. Army Corps of Engineers - Louisville District](#) and the [U.S. Army Installation at Fort Knox](#).



Past Featured Projects

[Maxey Flats Low-Level Radioactive Waste Disposal Site](#)

[Ground-Water Resources Program Karst Hydrology Initiative](#)

Recent Products

NEW [A Compilation of Provisional Karst Geospatial Data for the Interior Low Plateaus Physiographic Region, Central United States](#)

NEW [Annual Water-Data Report for the United States - Water Year 2007](#)

USGS Products and Information

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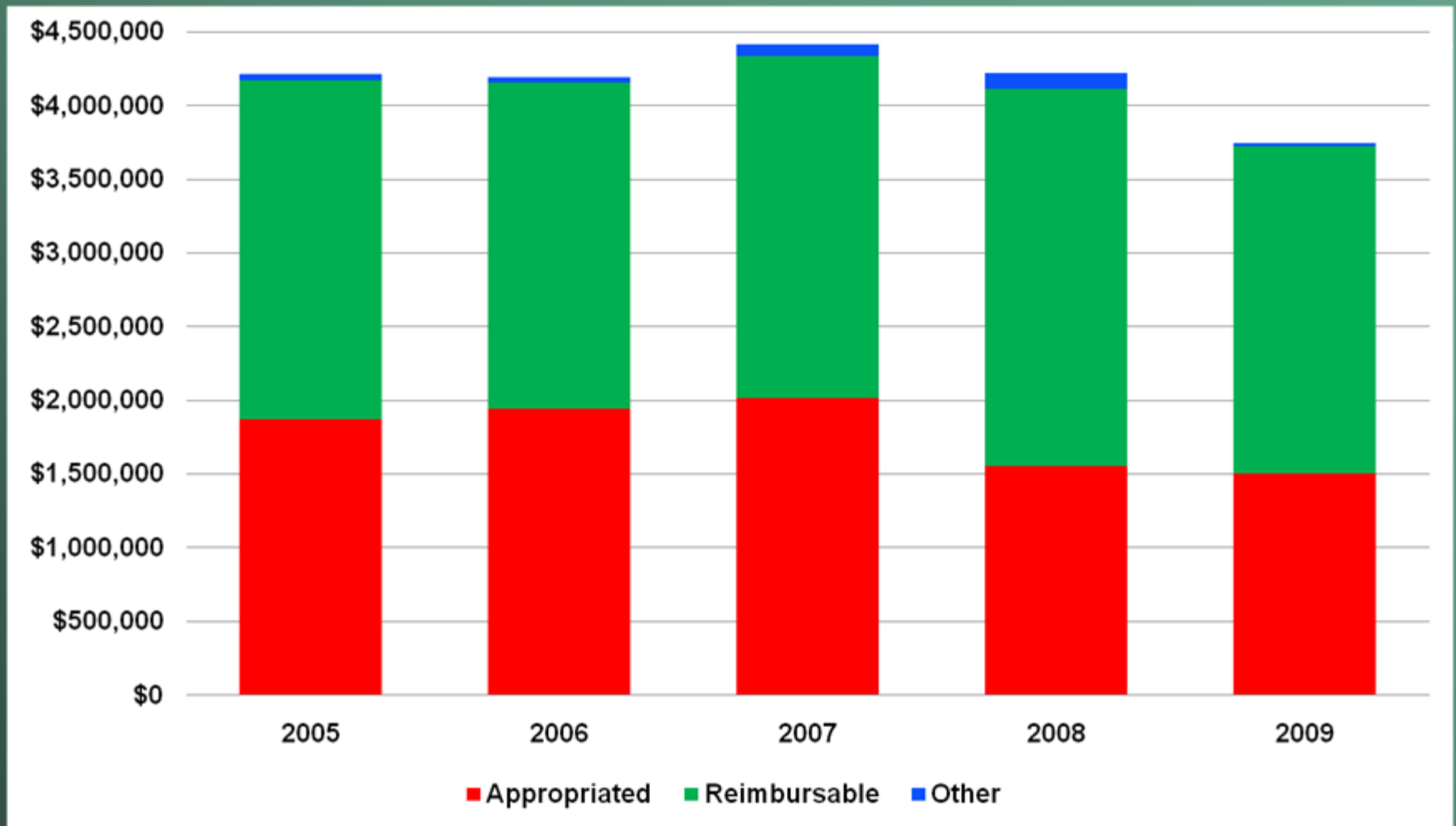
Program Cooperators

KY Science Areas

- Water availability and development of the WATER suite of decision-support tools
 - Coal-ash and slurry pond assessment and monitoring
 - Large River Hydrology Program
 - Emerging contaminants
 - Flood-inundation mapping and tools
 - SPARROW
 - Mountaintop-removal, AML, and mining-related impacts
 - Use of TopModel (WATER) for flood forecasting in small drainage basins
-



Funding Trend



KY Hydrologic Networks

- 180 gaging stations
 - 100% real-time
- 44 water-quality monitors



Hydrologic Surveillance Section Challenges

- Retirements of three Lead Technicians (Office Chiefs) and Sediment Lab Chief in three years
- Introduction of Site Visit, GRSAT, ART, CRP all at the same time
- Tools needed for CRP may not be available
- Costs of new technology
- Challenging economic environment especially at the State (-1.1B) and with local partners

Final Thoughts

- This is a “rising” center – many great possibilities
 - Hardworking, dedicated, and talented staff
 - Opportunities to develop “Centers of Excellence” in a few areas
 - Many opportunities to enhance program development with IN staff
 - Many talents and skills that could help other centers
-



Developing a Water Science Center Commonwealth

Issues with Current Model

- Changes driven by changes in the reimbursable funding program
- Cooperator funding fluctuating significantly from year to year
- Shrinking Federal budgets
- Increasing costs of administration, supervision, and technical support as a % of science funding decreases
- Cooperators concerned with rising costs

Key Issue

- We are struggling with the internal question regarding our own structure and function.
- If we continue to downsize, can a WSC achieve programmatic and economic stability without a loss of identity, connection, and relevance to local and state issues and cooperators?

Challenges

- **Develop a new science and business model that does not harm the traditional alignment of our water discipline with state governments**
- **State agencies are the backbone of the reimbursable program and state cooperators expect to work with scientists in their given state**

Issues and Concerns – why it will not work!

- Employee fear of changes and job security
- Potential for unequal expectations and duplicate skill sets
- Lack of trust between the WSC's – we have never done this before
- Learning curve will be large for some staff
- Increased travel costs
- Cooperator concerns about funds moving “across the border”
- But we have always done it this way!!!

Opportunities

- Increase promotion potential for staff
- More training opportunities
- Better integrated science
- Greater resources for new technologies
- Improve science program quality and program development opportunities
- Increase funding pool
- Chance to try something new!!

Final Thoughts

- The challenge is really about a new way to do “our science” that allows us to build program and expand opportunities to meet our mission and address existing and emerging scientific issues

Service Assessment

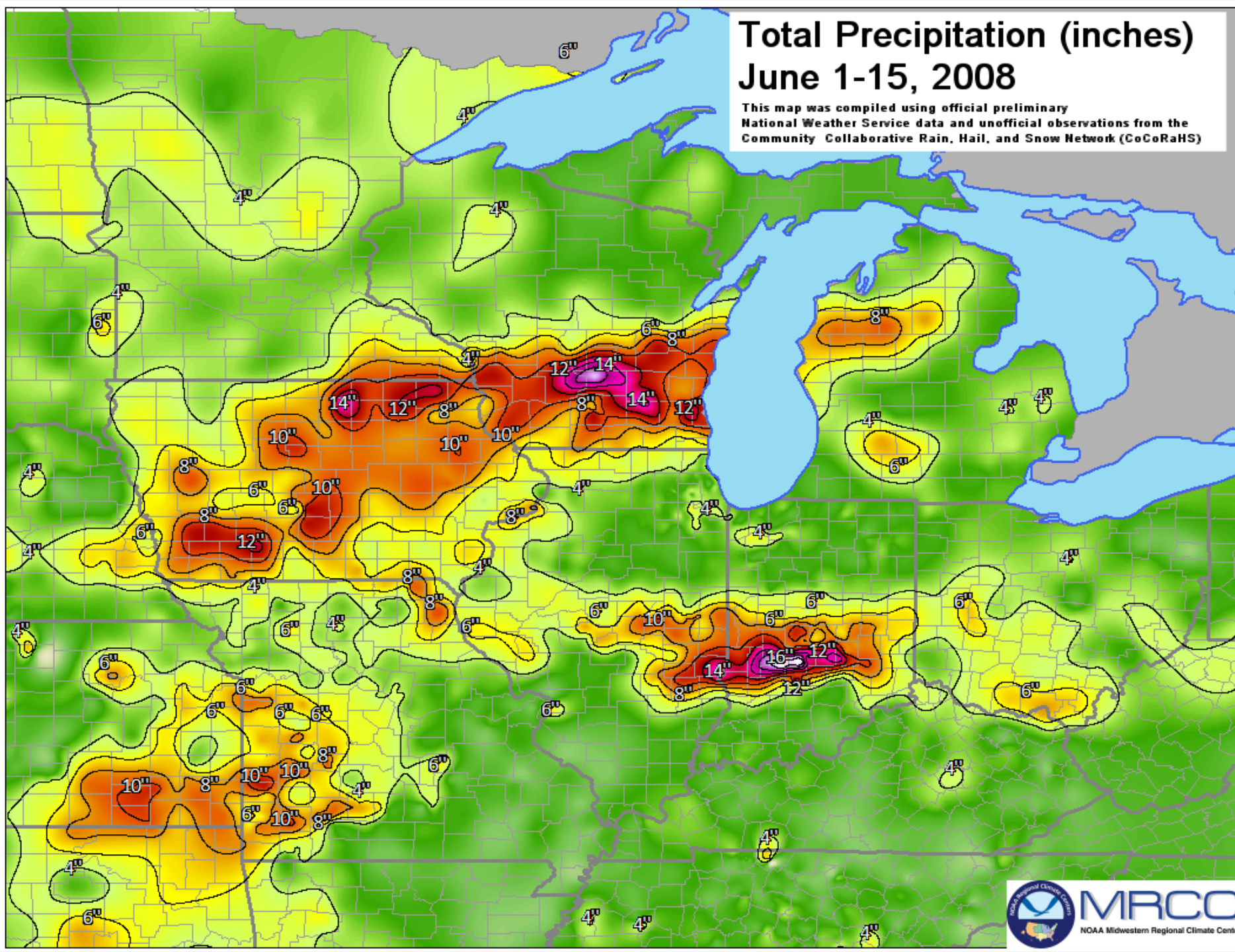
- The NWS relies on the USGS and the USACE to fulfill its flood forecast and warning functions
- This team was tasked with documenting and evaluating the performance and overall effectiveness of the NWS flood forecasting, efficacy of flood warnings, and value of interagency collaboration

Areas of Investigation

- Timeliness, quality, accuracy, and usefulness of river forecasts and warnings
 - Effectiveness of information dissemination and communication of uncertainty and flood risk
 - Opportunities to enhance collaboration among the USGS, USACE, and NSW during significant flood activities
 - Internal/External coordination and collaboration
 - Actions taken by officials and the public in response to products, services, and briefings by the agencies
-

Total Precipitation (inches) June 1-15, 2008

This map was compiled using official preliminary
National Weather Service data and unofficial observations from the
Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS)



MRCC
NOAA Midwestern Regional Climate Center

Cedar Rapids, Iowa, at Crest

Friday, June 13, 2008



How did we do??

- Quality of products and services was high
- Collaboration between agencies was excellent. The use of the internet web applications and access to real-time data enhanced interagency collaboration
- Coordination with partners in the NWS role of providing decision support services was extremely successful

Interagency Collaboration

- Collaboration between agencies is essential during an extreme hydrologic event
- All 3 agencies are involved in the end-to-end forecast process

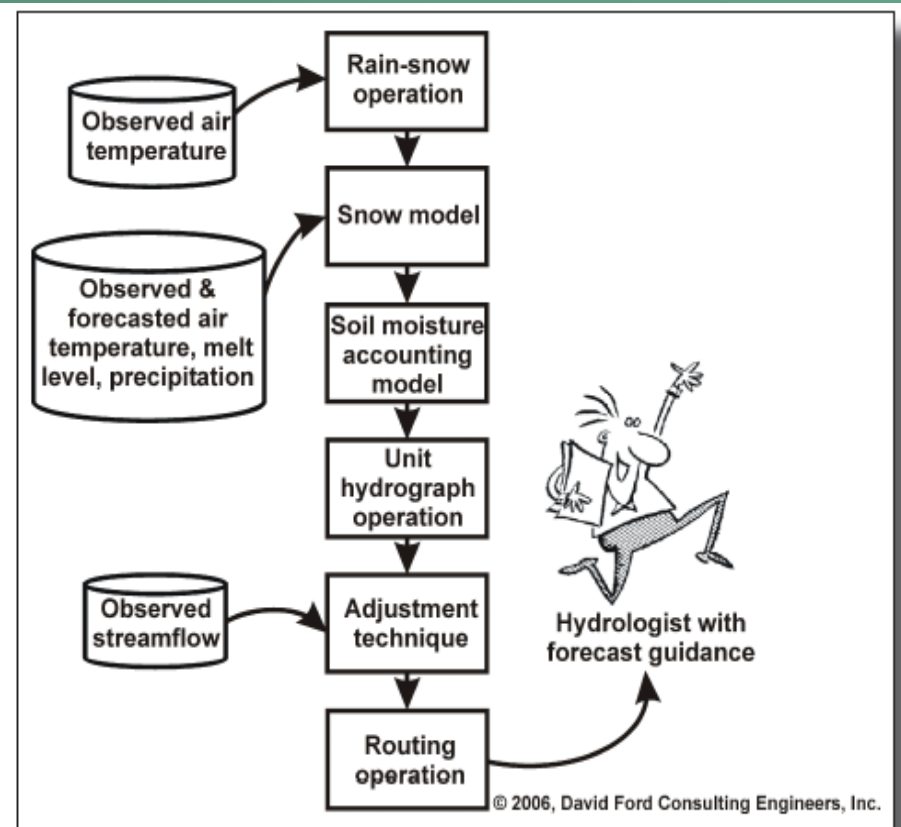


Figure 4. Typical NWSRFS configuration

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How did we do??

- Human factors played a major role in people's responses to warnings and other flood information – additional study is needed
- There is still room for improvement in flood forecasting, communicating forecast information to the public, and getting the public to take action

Integrating Social Science

- Forecasts have a high degree of accuracy in most locations
- Nevertheless, the team heard many times that members of the public suffered preventable losses
- Need to support social science research into how people obtain and respond to our information

Perfect World

- In a perfect world the public would use our information to take appropriate actions to prevent loss of life and/or property
- The fact is people do not respond to warnings and weather information in a simple manner
- People bring significant perceptual and behavioral histories to the decision-making table.

Final Thought

- A whole suite of information – including people's information sources, perceptions, experiences, and emotions relating to weather events – needs to be understood and carefully addressed to maximize the benefits of our information

Questions?

