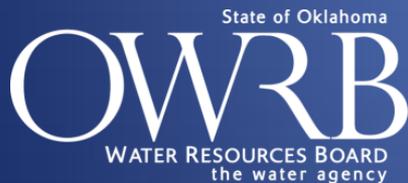




Implementing OCWP Priorities: Supply Reliability through Hydrologic Studies



2012 GOVERNOR'S WATER CONFERENCE

November 13-14, 2012

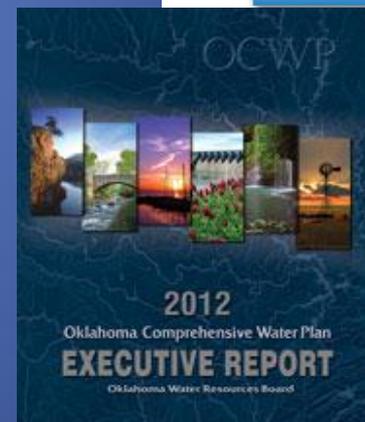


JULIE CUNNINGHAM, CHIEF
PLANNING AND MANAGEMENT DIVISION
OKLAHOMA WATER RESOURCES BOARD

Oklahoma Comprehensive Water Plan

Blend extensive technical analysis and public input to formulate overarching water policy and implementation strategy to guide water management over the next 50-years!

- **Unprecedented technical information/projections**
 - ✓ 13 regional reports, 82 basin demand analysis
 - ✓ 10 tech wrkgroups, over 100 experts, numerous special studies reports
- **Unprecedented public involvement in policy development (OWRRI)**
 - ✓ 53 local/regional mtgs, 2,300 citizens, 30 wrkshops, Oklahoma Academy town hall
- **8 Priority Recommendations**
- **Joint Legislative Committee, over 80 bills introduced!**



OCWP Priority Water Policy Recommendations

Water Quality & Quantity Monitoring— improve decision-making through holistic SW/GW program

Water Project & Infrastructure Funding— meet \$82B need

Regional Planning Groups— statewide water planning to local level

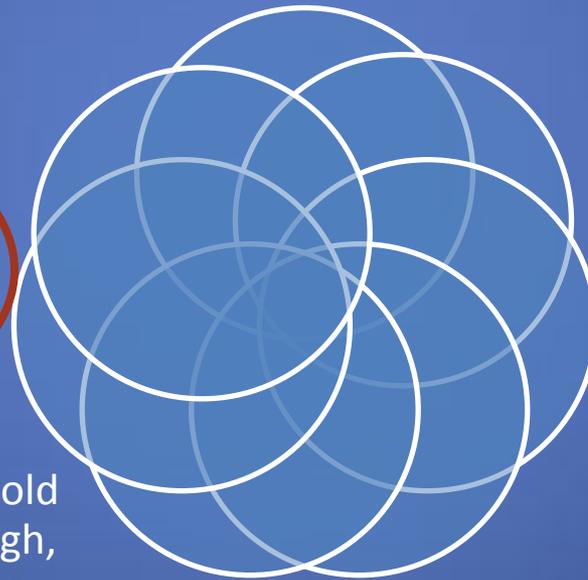
Water Supply Reliability— ensure fair, reliable water allocation through informed decision making & mgmt approach

Excess & Surplus Water— protect local needs while addressing state demand

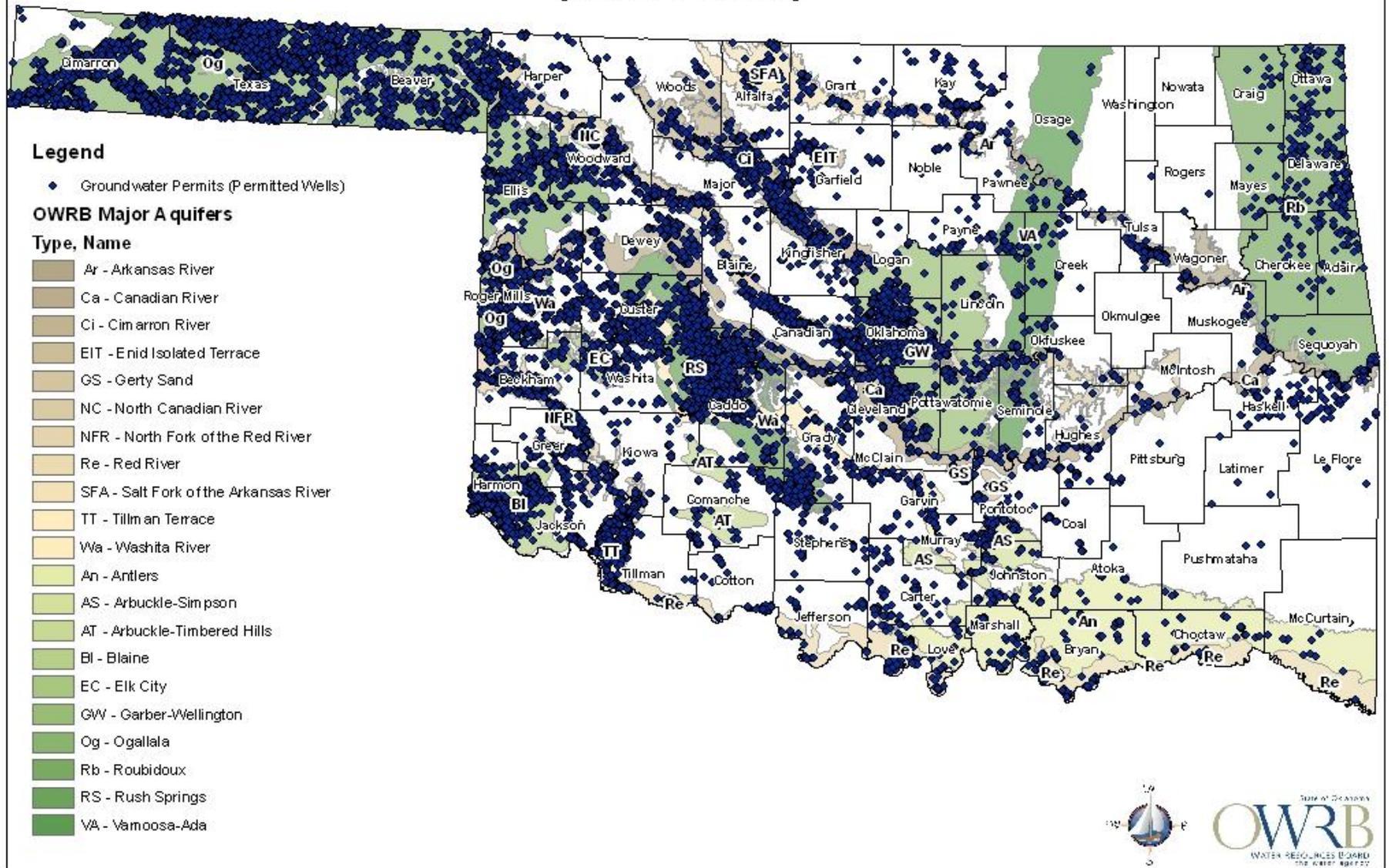
Water Efficiency & Reuse— hold demand to current levels through, incentives, educ., conservation programs

State/Tribal Water Consultation & Resolution— avoid conflict and uncertainty through cooperation

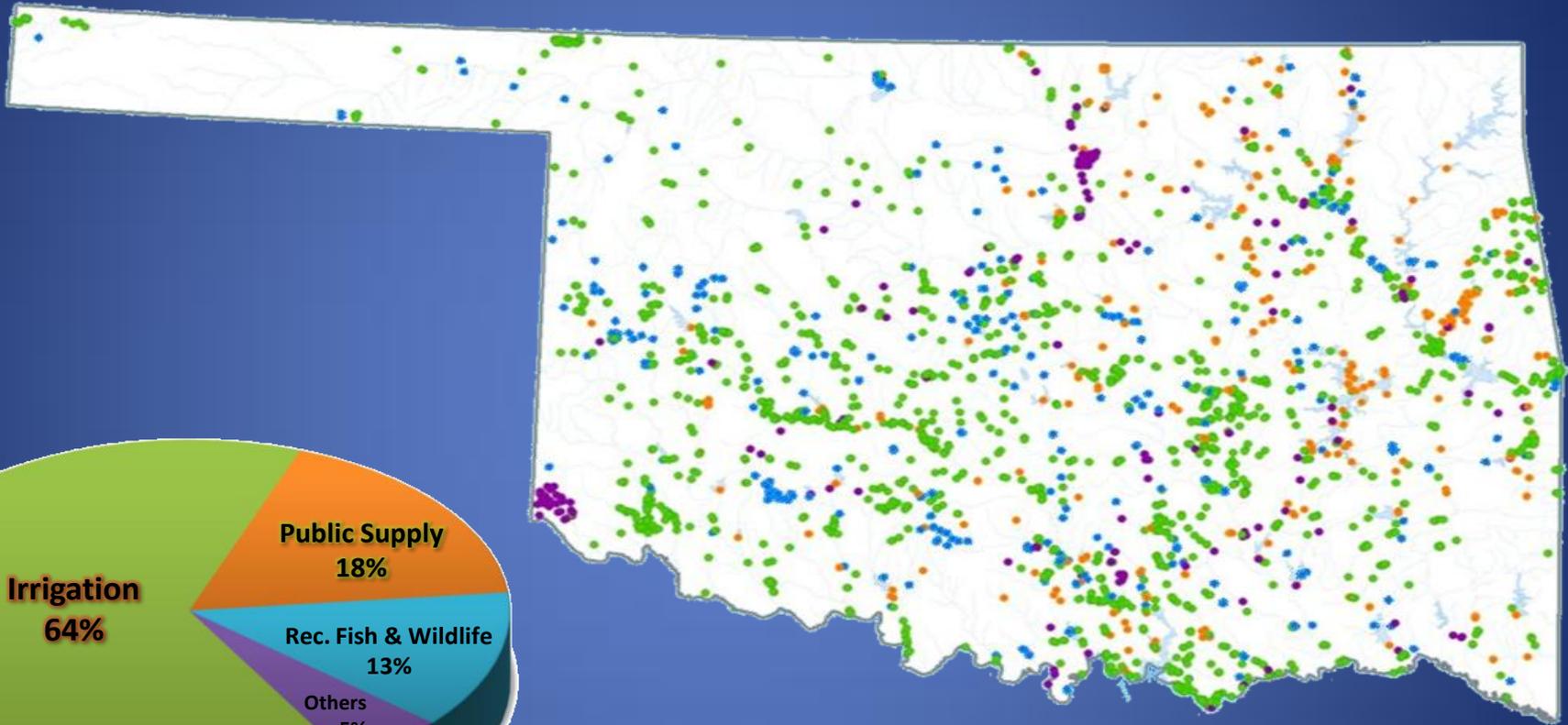
Instream Flows— support non-cons. recreational and local economic interests



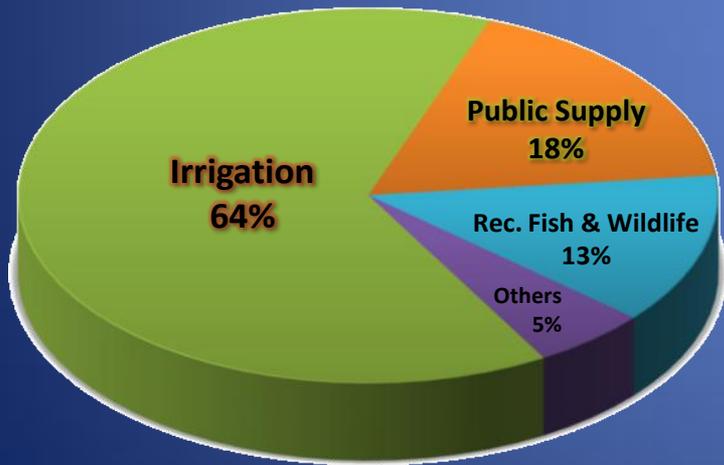
All Long-term Groundwater Permit Locations With Major Aquifers [10,550 Permits]



Active Stream Water Rights



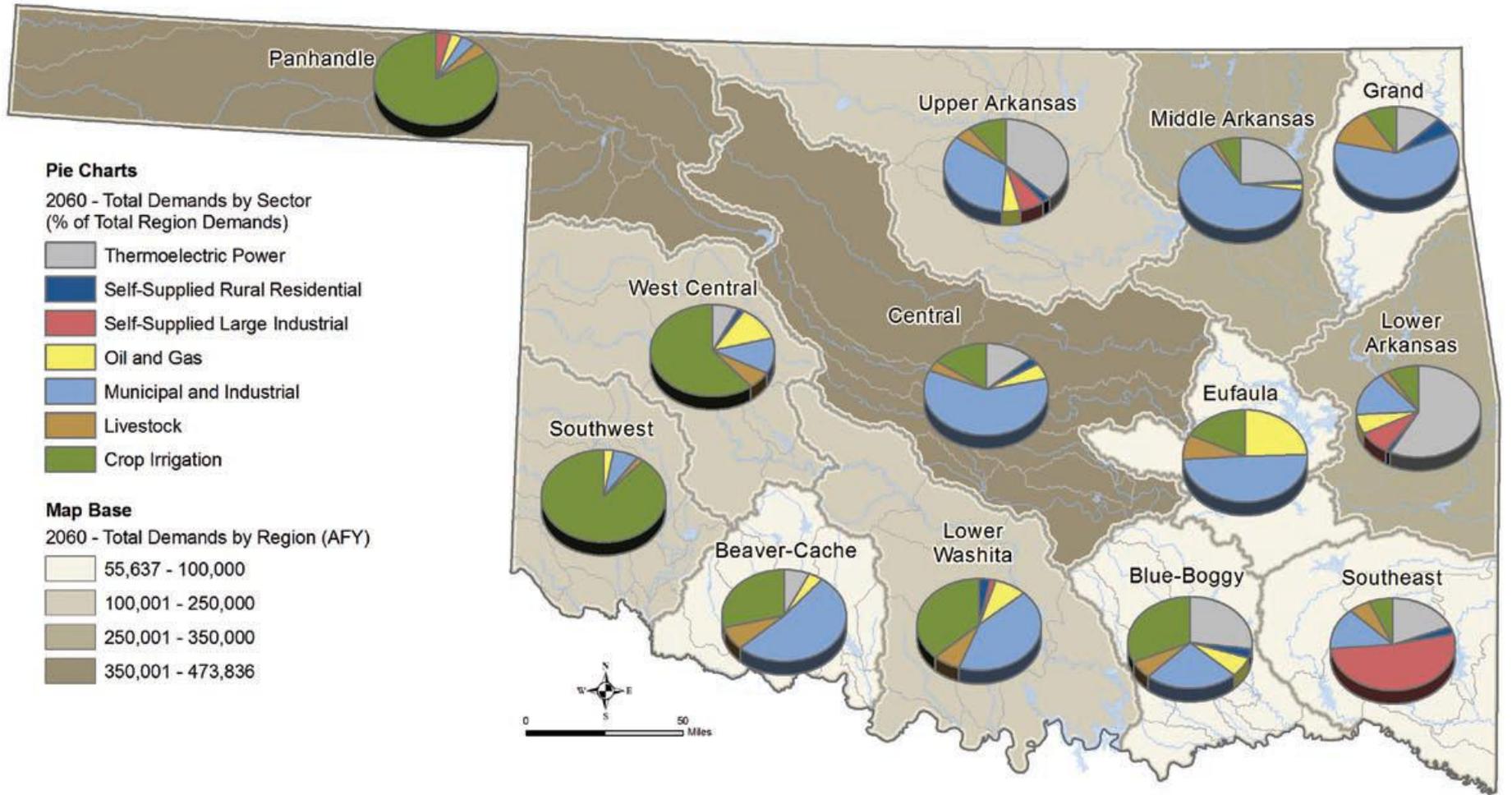
Active Surface Water Rights, 2012



Percentage Active Permits in Oklahoma

2,862
Active Stream Water Rights

2060 Demand Projections



Water Supply Reliability

Sampling of Public Comment...

- Fairness in water rights administration;
- Dependability of water source over long term
- Interstate water issues
- Priority on unstudied stream water and groundwater basins
- Stream water/groundwater interactions
- Need for robust modeling to predict supply/demand impacts;
- “Exurban development” impacts on alluvial GW use
- Improved resource protection
- Prediction of seasonal shortages/water availability
- Informed water management decisions

Reliable Allocation of Water Rights

**Informed
Availability
Analysis**

+

**Responsive Water
Management**

=

**Reliable Water
Supply**

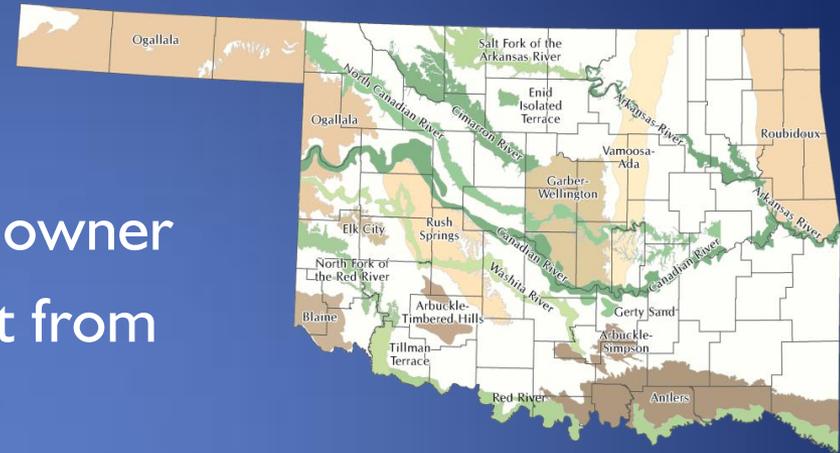
Recommendation—

- Complete all aquifer yield studies to determine groundwater available for appropriation
- Complete all stream water allocation studies to assess location-specific water availability
- Further analyze various water rights management approaches

HB 2928 extended funding for OCWP implementation with Gross Production Tax proceeds through 2016.

Oklahoma Groundwater Law

- Ownership tied to overlying land owner
- Domestic/household uses exempt from permitting
- Use subject to reasonable regulation based on hydrologic study- Maximum Annual Yield



Statutes provide that OWRB...

- Conduct MAY studies and “at minimum” 20-yr updates utilizing specific criteria
- Administer water rights and use reporting, which informs future studies

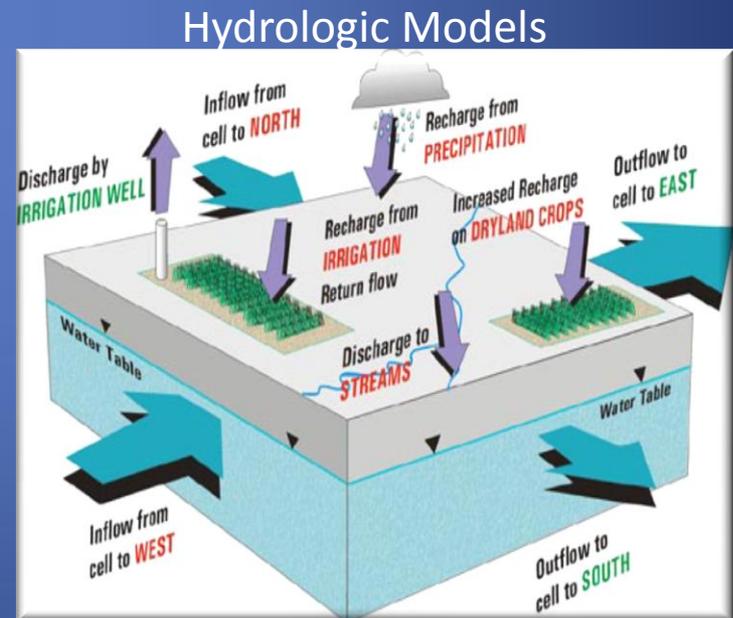
How much water is available?

Max. Annual Yield (MAY) determination by OWRB of **total amount of fresh gw** that can be produced from a basin or subbasin allowing, at a minimum, a **20-year life**.

“Equal Proportionate Share” — per acre share of total available

Specific Criteria:

- Total Land Area Overlying the Basin
- Water in Storage
- Recharge, Discharge, Transmissivity
- Pollution potential
- Present/Foreseeable Future Use
- Geographical Region



Data Collected for Groundwater Studies



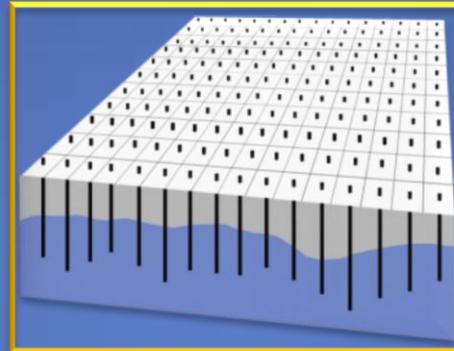
Aquifer Properties



Groundwater Levels

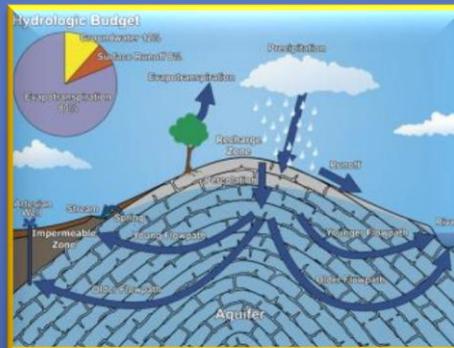


Recharge and discharge



Groundwater Modeling

Hydrologic Budget



**MAY
EPS**

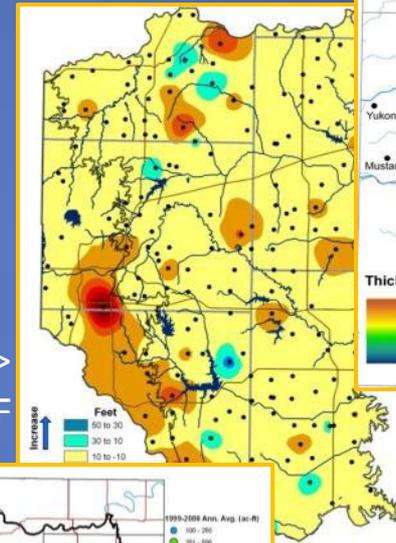
**Temporary permits
become Permanent**

Model Analysis & GIS Mapping Products

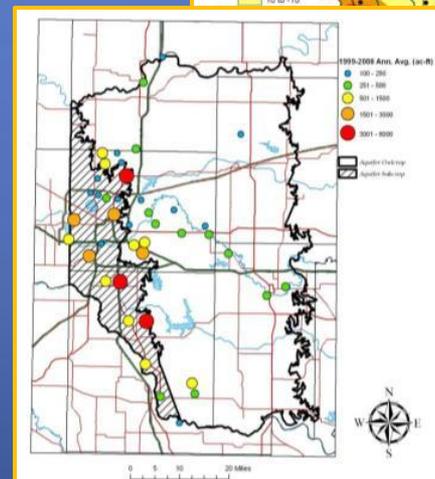
Location-specific analysis

- Offer robust aquifer characterization, opportunity for forecasting and “what-if” assessment
- Well site location
- Contamination flow prediction
- Assessment of potential groundwater/stream water interactions and effects on reservoir yield
- Assessment of drought affects by locations

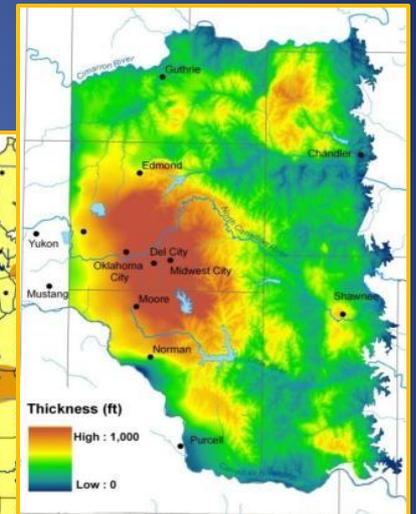
1987-2009
Water-level
Change



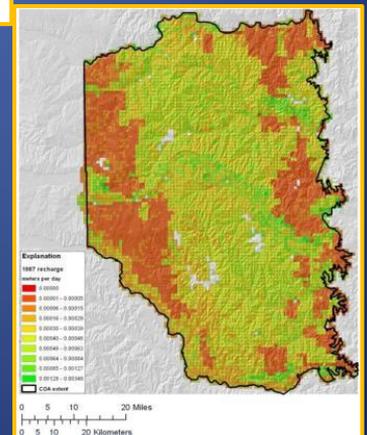
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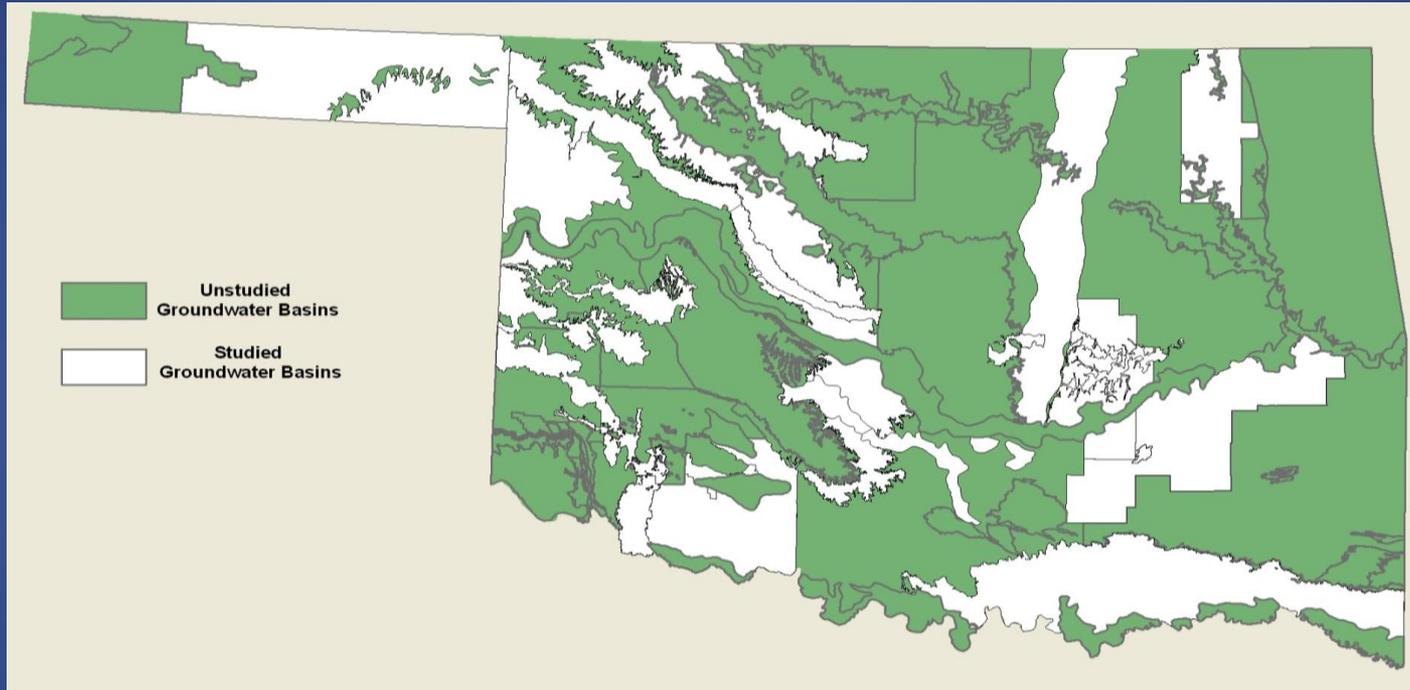
Aquifer Thickness



Recharge
Areas

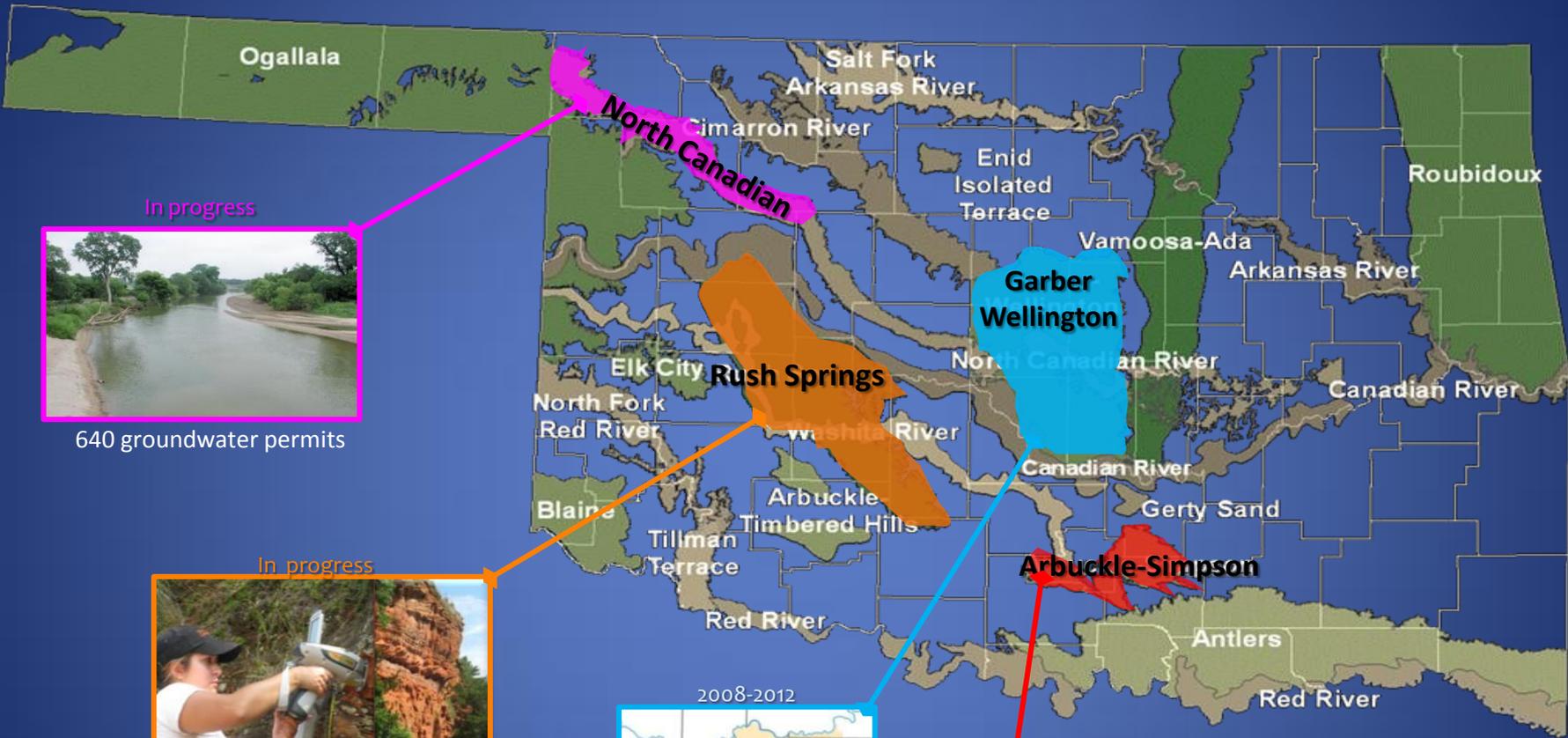


Unstudied Major & Minor Groundwater Basins



- 36 basins unstudied or 20-year updates overdue
- 8 major basins located in OCWP-priority “hot spot” areas
- 10-year study completion schedule

Current Studies/MAY Determination



In progress

640 groundwater permits



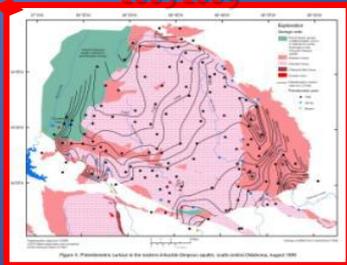
In progress

2,161 groundwater permits



2008-2012

660 groundwater permits

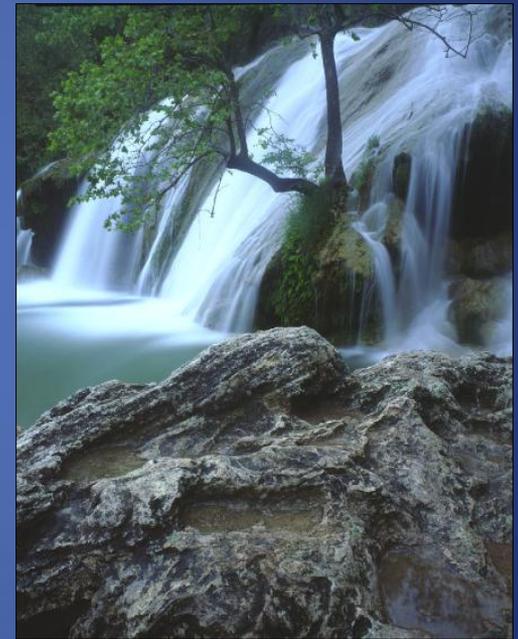


2003-2009

Sole source aquifer (EPA)
59 groundwater permits

Oklahoma Stream Water Law

- Water inside a natural channel, within cut bed and banks, including ponds and lakes
- Stream water **publicly-owned** and **subject to appropriation** by the OWRB
- “Domestic uses” have priority and exempt from permitting
- Seniority by water right date and no priority of use type
- OWRB charged with determining if unappropriated stream water is available prior to permit issuance and addressing interference conflicts after issuance



Stream Water Allocation Models

Location-specific analysis

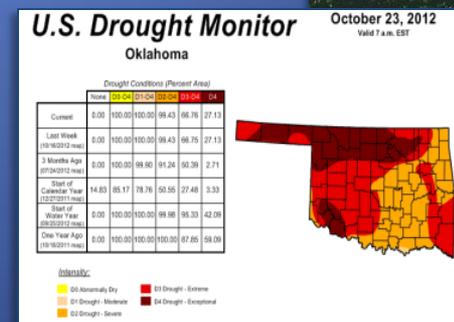
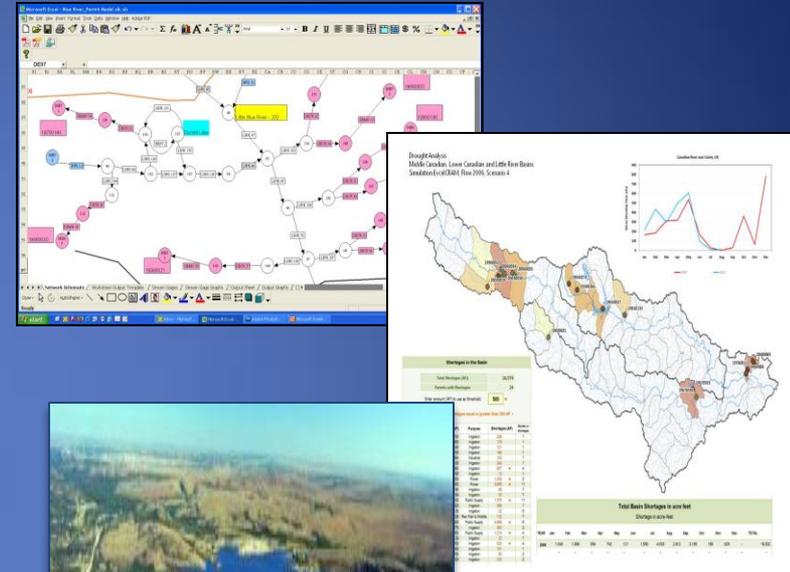
- Surface water availability at any location
- Water reliability on a monthly basis
- Evaluate new permit applications
- Domestic use impacts

Evaluate water policy implications

- Inter/intra basin transfers
- Inter-state Compact
- In-stream flow requirements

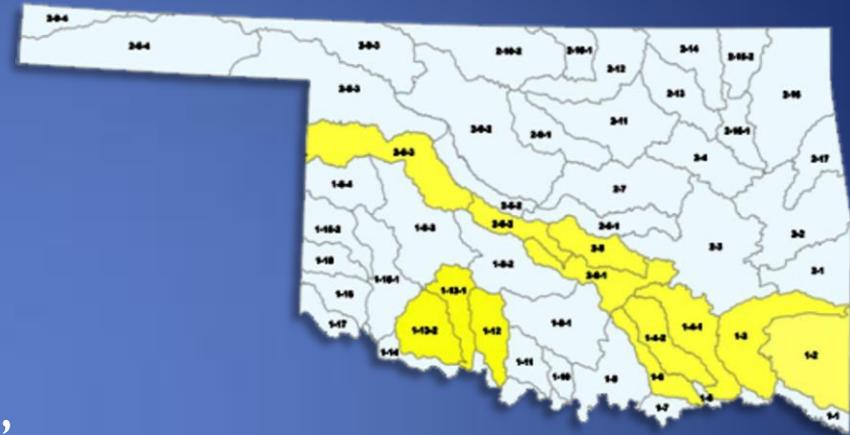
Management during low flows/drought

- Identify potential shortages
- Address claims of interference
- Pre-drought warning



Stream Water Allocation Models

- 9 stream systems completed;
- 42 unstudied
- Future Priorities:
 - Full/mostly allocated systems (e.g., Washita, North Canadian, North Fork/Red)
 - OCWP hot spots, demand growth areas, etc.
 - Public, policymaker, sector need



Modeled Basins



OCWP Hot Spot Basins

Hydrologic Studies Summary

- **Fundamental** for determining water available for allocation
- Local/state **economies** depend upon fair, reliable allocation
- **Scientifically-based** allocation explicitly set out in **Statute**
- Provides policy-makers basis for **forecasting** location-specific shortages in drought and various use conditions

Implementation:

Annual Hydrologic Study Costs (through 2022) \$1,118,325

Unstudied/Overdue 20-Year Groundwater Basin Updates (OWRB/USGS)

Stream Water Hydrologic Studies (OWRB/Private Sector Contractors)

Questions?

State of Oklahoma
OWRB
WATER RESOURCES BOARD
the water agency

Oklahoma COMPREHENSIVE
Water
PLAN

**Julie Cunningham, Division Chief
Planning & Management Division
Oklahoma Water Resources Board
www.owrb.ok.gov**

Goals of the 2012 Oklahoma Comprehensive Water Plan Update

1. Characterize **demands** by water use sector.
2. Identify **reliable supplies** to meet forecasted demands.
3. Perform **technical studies** to evaluate emerging water management issues.
4. Comprehensive **stakeholder engagement** to make recommendations regarding the management of Oklahoma's water resources.
5. Ensure water resources management programs that **create reliability**.
6. Make "**implementable**" **recommendations** based upon technical evaluations and stakeholder input.