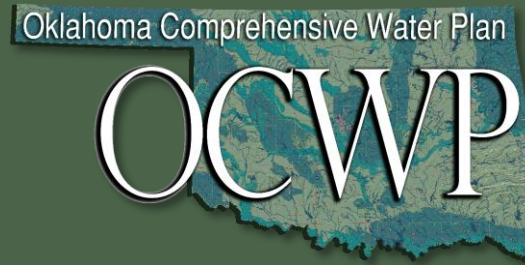


2012 Update of the Oklahoma Comprehensive Water Plan



Water Policy Recommendations

*Joint Legislative Water Committee Meeting
September 21, 2011*

How We Got Here



Agenda 3:

OVERVIEW OF DRAFT SUPPORTING
RECOMMENDATIONS

Draft Priority Water Policy Recommendations for Implementation

Supporting Recommendations & Initiatives

- Nonpoint Source Pollution
- Maximizing & Developing Reservoir Storage
- Water Management & Administration
- Dam Safety & Floodplain Management
- Water Quality Management
- Navigation
- Interstate Water Issues
- Source Water Protection
- Water Emergency/Drought Planning
- Water Supply Augmentation
- Water Related Research
- Agricultural Water Research
- Climate & Weather Impacts on Water Management

Nonpoint Source Pollution

- Generally recognizes that NPS pollution is a major contributor to water quality degradation—but also recognize many excellent programs in place that should/could be enhance with additional funding
- Encouragement of voluntary best management practices to curtail runoff from Agricultural lands, urban stormwater and suburban developments
- OCC (Section 319 programs and Farm Bill Conservation programs – like EQIP) and other appropriate agencies
- Prevention of roadside erosion and its contribution to water quality impairment

Maximizing Reservoir Storage

- Over 2,100 USDA (in partnership with local sponsors and the OCC) flood control structures built over the past 60 years
- They have significant ability to provide additional benefits beyond flood control: water supply, recreation, fish and wildlife
- Dam rehabilitation, raising the dam, providing for greater supply at existing sites and construction of identified sites
- Funding has been declining

Water Management and Administration

- Encourage conservation practices by providing for suspension from cancellation due to non-use if permit holder implementing conservation practices
- Increase field verification activities to ensure compliance with permits
- Investigate methods to equitably and reasonably regulate moderately brackish groundwater use to protect freshwater zones
- Program to address the plugging of thousands of unplugged wells

Dam Safety/Floodplain Management

- OWRB is state's coordinating agency for the National Flood Insurance Program
- Continue to support local floodplain management efforts (such as mapping) and coordination with federal agencies
- Development of a low interest loan program for high-hazard dam owners to achieve compliance with mandated changes
- Calls for funding to perform dam breach inundation mapping and the development of emergency action plans for both NRCS and non-NRCS dams
- Investigate possible methods to discourage development downstream in a dam breach inundation area

Water Quality Management

- Recommendations developed as a product of interagency workgroup
- Recognizes the strides made in WQ improvement across the state, but simultaneously acknowledges we can achieve greater gains
- Calls for continued coordination between state and federal agencies and tribes to work collaboratively for solutions and implementation of programs that provide maximum benefit

Navigation

- McClellan-Kerr navigation system = huge economic engine in the state of Oklahoma; particularly eastern Oklahoma
- 100 industries, 4,000 employees and annual payroll of \$100 million in Oklahoma
- Calls for continued coordination between OWRB and the ODOT Waterways Board

Interstate Water Issues

- Recognizes surface water is a shared resource among several states
- Calls for continued and increased coordination between states to ensure a clean, reliable water supply for all users
- AWRBIAC as an example
- Could work through existing compact commissions

Source Water Protection

- Recognizes that an ounce of prevention is worth a pound of cure
- Calls for increased efforts (through technical assistance) for agencies to help protect source waters:
 - DEQ through their wellhead protection program
 - OCC through surface water protection programs (for example, to protect reservoirs)
 - OWRB through the water quality standards program and identification of vulnerable aquifers

Water Emergency/Drought Planning

- Recognizes the need to update (current agencies lines of authority) and expand the Oklahoma Drought Management Plan
- Expansion should address water emergencies, such as flooding and terrorism, and their potential adverse impacts to water supply
- Calls for training to occur in the Operator Certification Program DEQ offers

Water Supply Augmentation

- In particular, calls for continued investigation of the feasibility and benefits associated with the removal of eastern red cedar and salt cedar.
- 1 acre of cedar trees uses 55,000 gallons/year of water

Draft Priority Water Policy Recommendations for Implementation

Supporting Recommendations & Initiatives

Water-Related Research:

- Advance, coordinate, and prioritize state water research activities.

Agricultural Water Research:

- Agencies and tribal governments should continue to work collaboratively with the agriculture industry to support research, education and extension activities.

Climate & Weather Impacts on Water Management:

- Agencies and tribal governments should continue to collaborate with the Oklahoma Climatological Survey to advance the understanding of climate impacts on water use.

DRAFT PRIORITY RECOMMENDATIONS

Draft Priority Water Policy Recommendations for Implementation

- **Water Quality & Quantity Monitoring**
- **Excess & Surplus Water**
- **Instream (Environmental) Flows**
- **Water Supply Reliability**
- **Water Efficiency & Reuse**
- **Regional Planning Groups**
- **State/Tribal Water Consultation and Resolution**
- **Water Project & Infrastructure Funding**

Agenda 5:

**WATER QUALITY & QUANTITY
MONITORING**

PRIORITY RECOMMENDATION

Water Quality & Quantity Monitoring

Better Data for Improved Decision-Making

DRAFT RECOMMENDATION:

The State Legislature should provide a dedicated source of funding to enable the State of Oklahoma to accurately assess the quality and quantity of its water resources, thereby ensuring improved water quality protection, accurate appropriation and allocation, and long-term collection of data to inform water management decisions. ...Such funding should be directed toward development and maintenance of a permanent statewide water quality and quantity monitoring program(s), specifically allowing for...

Water Quality & Quantity Monitoring

Better Data for Improved Decision-Making

DRAFT RECOMMENDATION:

- *Integration of all state surface and groundwater quality and quantity monitoring programs into one holistic, coordinated effort.*
- *Stable and dedicated appropriations for critical statewide monitoring programs, such as Oklahoma's Cooperative Stream Gaging Program, Beneficial Use Monitoring Program and Nonpoint Source Monitoring Program, as well as other agency efforts to monitor point source, agriculture, mining, and oil and gas impacts.*
- *Creation of an ambient groundwater quality monitoring program.*
- *Full implementation of a statewide program for the collection of biological data to provide a better indication of long-term water quality.*

Water Quality & Quantity Monitoring

Sound water management is predicated on the consistent, long-term collection of “good” data, its availability and interpretation:

- **Water Use/Permitting**
- **Public Health**
- **Pollution Remediation**
- **Flood Forecasting**
- **Drought Preparedness**
- **Planning**

Water Quality & Quantity Monitoring

Existing Programs:

- Numerous federal, state, local and private entities are involved in state water quality and quantity monitoring:

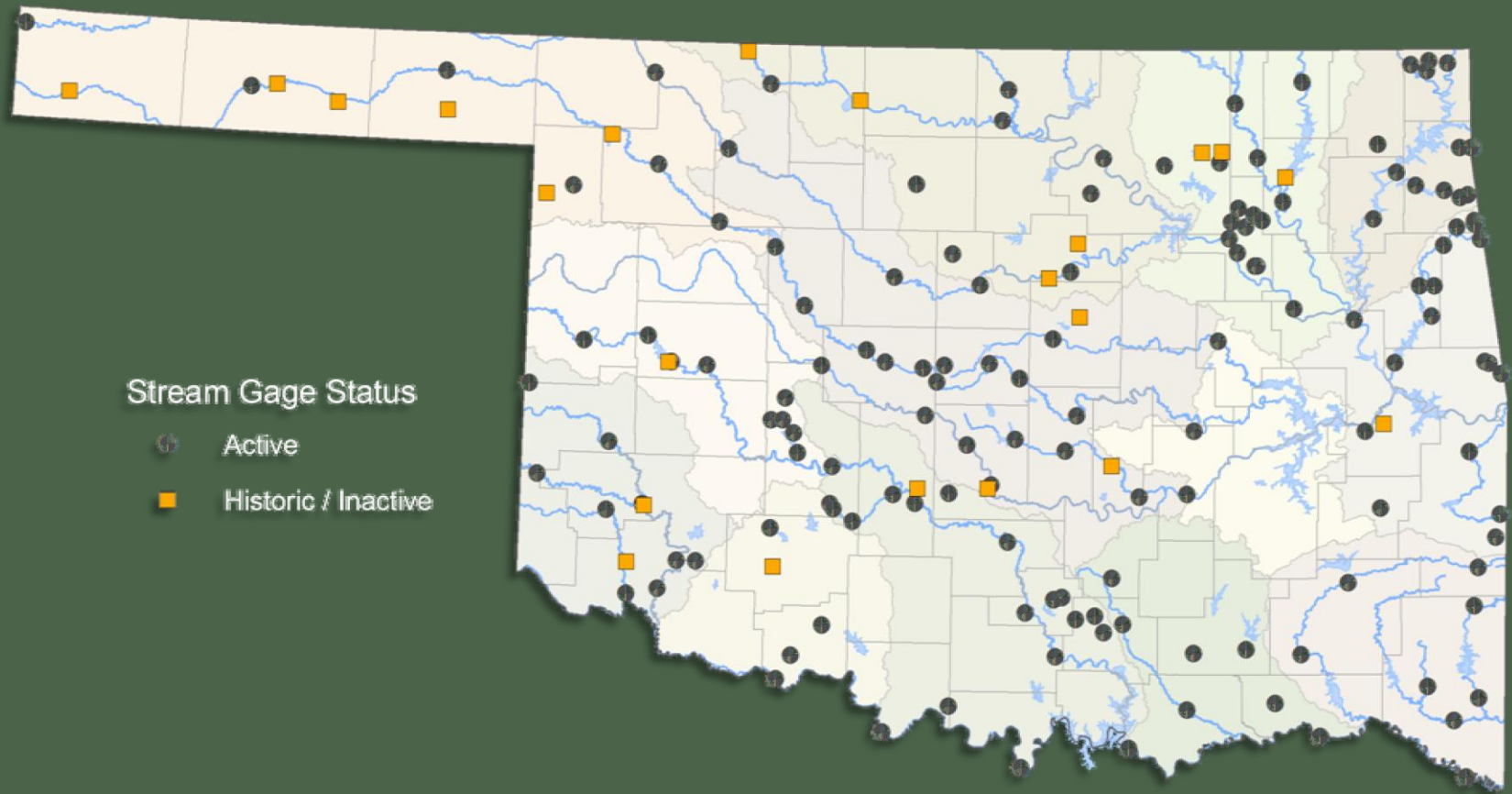
- Conservation Commission
- Dept. of Environmental Quality
- Dept. of Agriculture, Food and Forestry
- Corporation Commission
- Corps of Engineers
- US Geological Survey
- Others

Water Quality & Quantity Monitoring

Cooperative Stream Gaging Program:

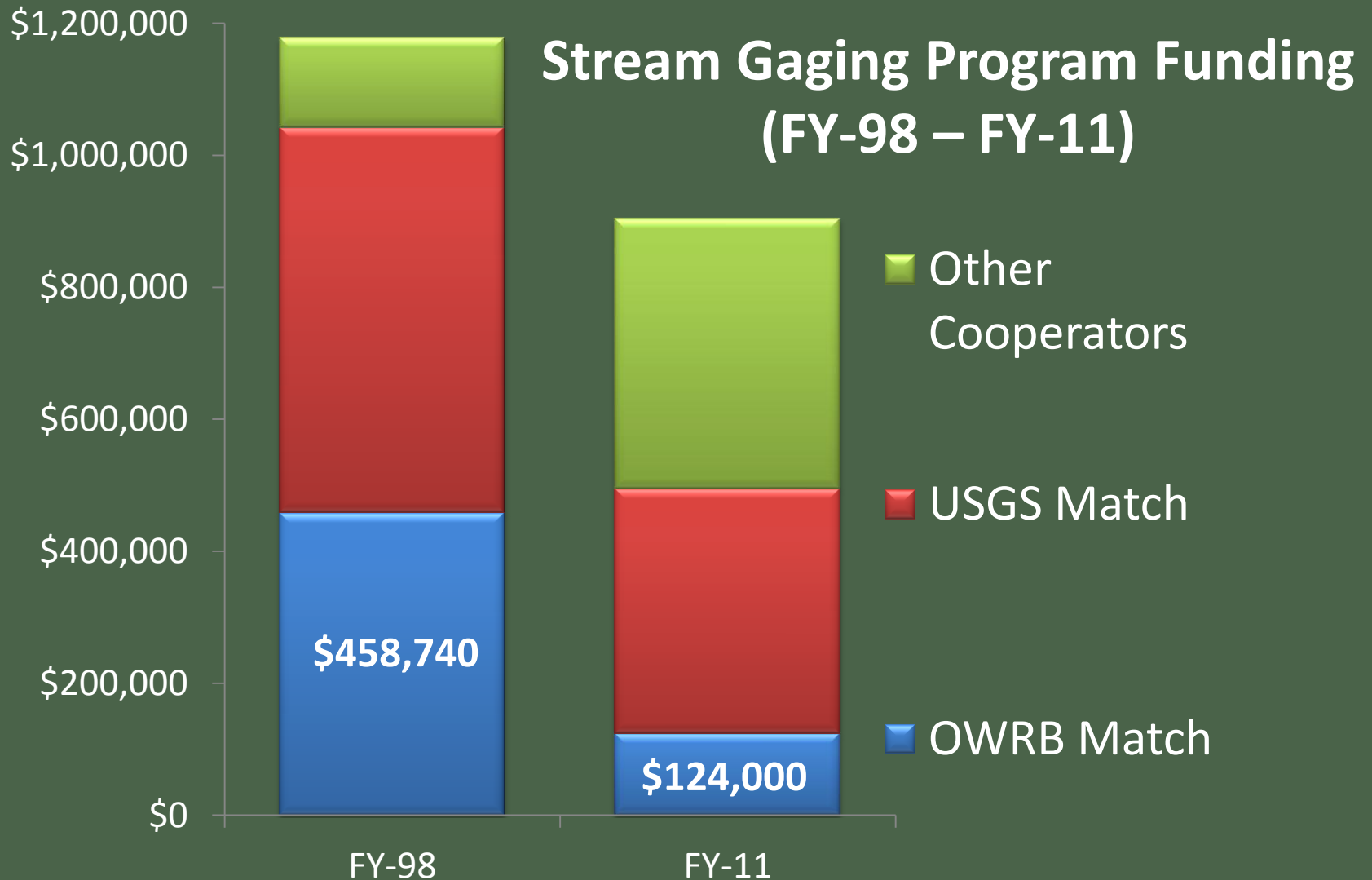
- Established 1939
- Joint effort between the USGS, OWRB and numerous other governmental, private and tribal entities
- Vital for water quality/quantity management, flood forecasting, drought monitoring, etc.
- Sufficient to facilitate broad statewide planning
- Insufficient to facilitate site-specific permitting and more detailed watershed-level planning

Water Quality & Quantity Monitoring



Cooperative Stream Gaging Network
Existing Stream Gages and Status

Water Quality & Quantity Monitoring

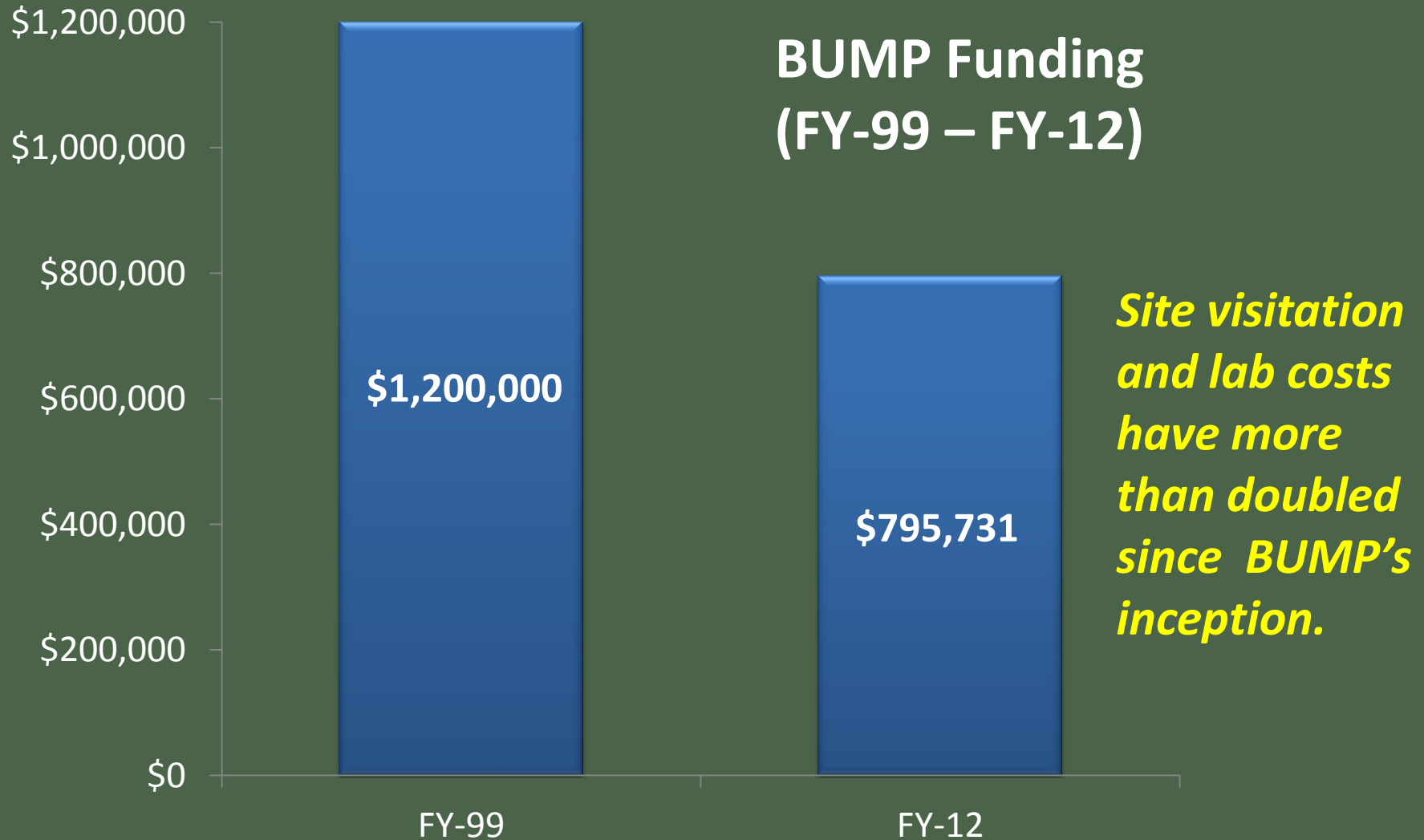


Water Quality & Quantity Monitoring

Surface Water Quality Monitoring Program (BUMP, Probabilistic Sampling, Other Ongoing Programs):

- Statewide, long-term water quality data is crucial to making water management and planning decisions.
- Since 1998, BUMP costs have increased approximately 35% for laboratory analysis, 31% for travel, and 23% for personnel;
 - funding has decreased 34%.

Water Quality & Quantity Monitoring



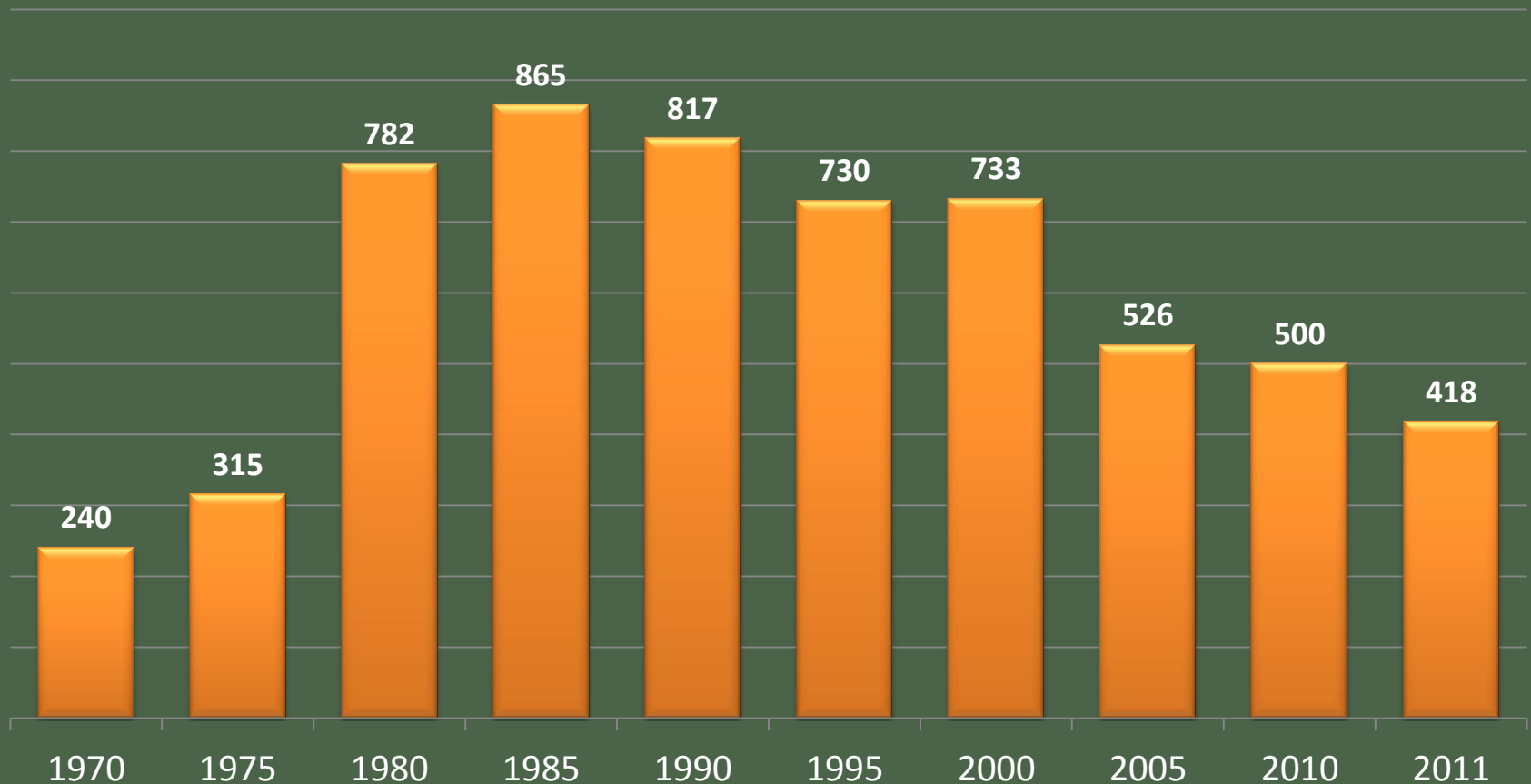
Water Quality & Quantity Monitoring

Groundwater Monitoring and Assessment (Quantity/Quality):

- OWRB annual groundwater level (Mass Measurement) program in existence since the 1950s:
 - no dedicated funding
- Oklahoma currently has no ambient groundwater quality monitoring program:
 - Historical OWRB program (initiated 1986) discontinued in 1992
 - Some groundwater quality data obtained from DEQ

Water Quality & Quantity Monitoring

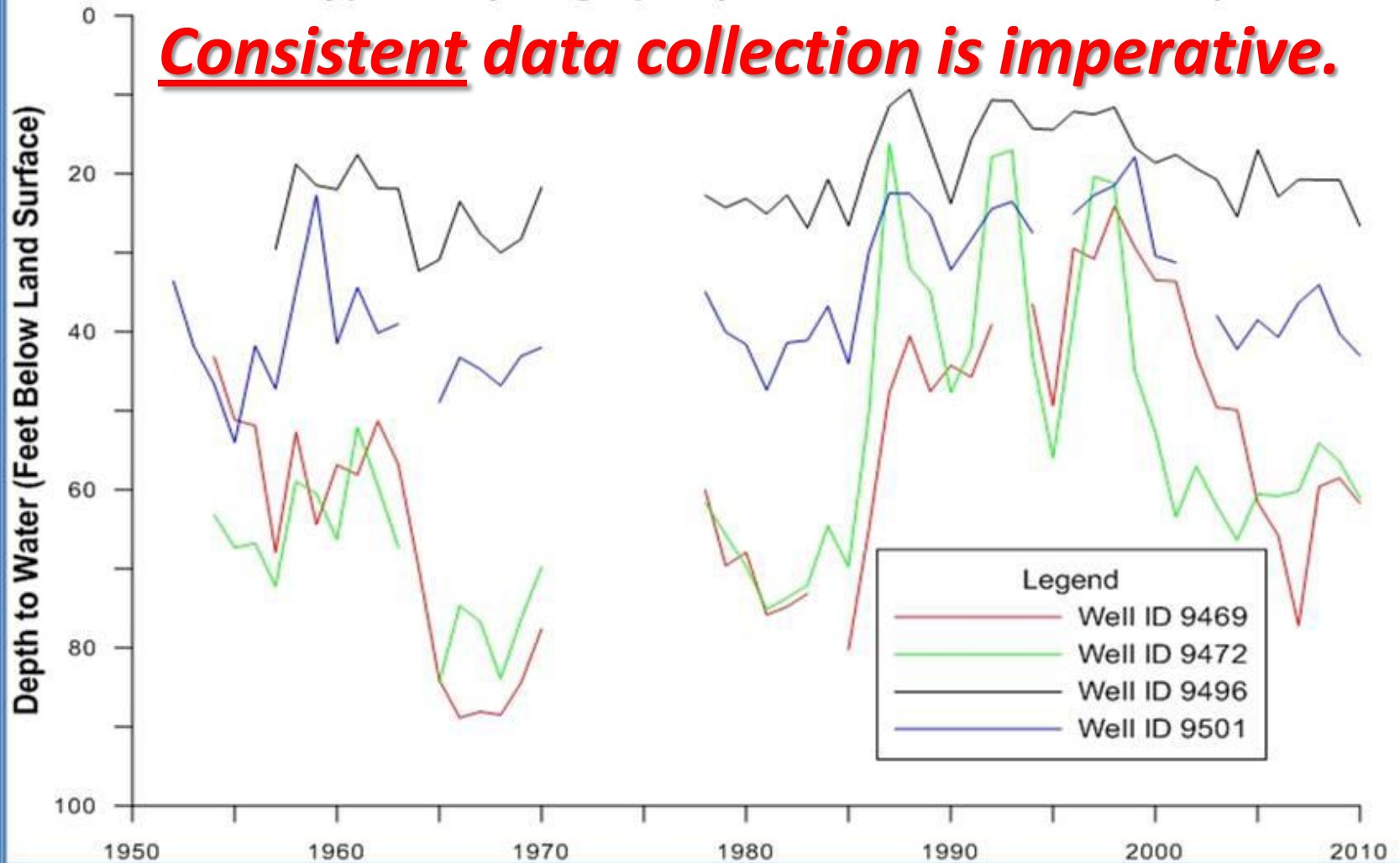
- Mass Measurement (Groundwater) Network Wells



Water Quality & Quantity Monitoring

Blaine Gypsum Hydrographs (Harmon/Jackson Counties)

Consistent data collection is imperative.



Water Quality & Quantity Monitoring

Justification:

- Reliable water management is predicated on the consistent, long-term collection of “good” data, its availability and interpretation:
 - Water Quality Protection & Pollution Remediation
 - Permitting
 - Public Health
 - Pollution Remediation
 - Flood Forecasting
 - Drought Preparedness
 - Planning
- Does a particular swimming area pose a risk to me or my family?
- Where’s the optimum location to drill a water supply well?
- When and where could the next blue-green algae outbreak occur?

Water Quality & Quantity Monitoring

Better Data for Improved Decision-Making

Supported by OCWP Technical Analyses:

- Insufficient streamflow data in some locations reduced confidence in supply/demand assessment.
- Lack of comprehensive data on groundwater quality reduced confidence in water supply assessment.

Water Quality & Quantity Monitoring

Implementation:

	Annual Cost	*Timeline
Surface Water Quality Monitoring:		
– Current Funding	= \$ 800,000	
– Additional Funds Required	= \$ 975,000	2012
Surface Water Quantity Monitoring:		
– Current Funding	= \$ 120,000	
– Additional Funds Required	= \$ 445,000	2012
Groundwater Quality/Quantity Monitoring:		
– Current Funding	= \$ 0	
– Additional Funds Required	= \$ 815,000	2012
Total New Funding Requirement	= \$ 2,235,000	

**Existing program framework in place.*

Agenda 6:

INSTREAM/ENVIRONMENTAL FLOWS
PRIORITY RECOMMENDATION

Instream/Environmental Flows

Recognizing Nonconsumptive Water Needs and Supporting Recreational & Local Economic Interests

DRAFT RECOMMENDATION:

An instream flow program should be established to preserve water quality, protect ecological diversity, and sustain and promote economic development, including benefits associated with tourism, recreation, fishing, and spiritual and cultural heritage. The process developed by the OCWP Instream Flow Workgroup should be implemented and followed to ascertain the suitability and structure of such a program for Oklahoma. The Oklahoma Scenic Rivers Act—as codified in Title 82, Section 1452, of Oklahoma Statutes—already provides for protection of the free-flowing conditions of designated state scenic rivers. The OWRB should seek express authority from the State Legislature prior to promulgating rules to accommodate and protect instream flows elsewhere in the state.

Instream/Environmental Flows

Why Address

Instream Flows?:

- Significant interest in value of non-consumptive uses of water, especially related to recreation & tourism (Oklahoma's 3rd biggest industry):
 - Tourism industry generates more than \$6.1 billion/year.
 - Fish/wildlife-related recreationists spend \$1.3 billion/year
- Associated factors related to ecological integrity, endangered species, interstate compact compliance, etc.
- Consistent with holistic water planning principles and in calculating excess/surplus water.

Instream/Environmental Flows

“Instream Flow” Definitions:

- OCWP/Workgroup:
 - *The amount of water set aside in a stream or river to ensure downstream environmental, social and economic benefits are met.*
- Senate Bill 2 (Texas):
 - *Flow conditions necessary for supporting a sound ecological environment in the river basin.*

Instream/Environmental Flows

Existing Policy:

- Current OWRB rule seeks to protect domestic uses through a set-aside of 6 acre-feet of water/year per 160 acres of land
- OWRB has established a 50 cfs minimum flow requirement in a portion of Barren Fork Creek (established through OSU study)

Instream/Environmental Flows

OCWP Instream Flow Advisory Group:

- 5 meetings between February-December 2010
- Technical analysis of various instream flow methods
- Analysis of regulation and potential implementation
- Review of successful and unsuccessful programs in other states/countries

Members from variety of interests:

OK Water Resources Board

OK Department of Environmental Quality

OK Conservation Commission

OK Department of Agriculture, Food & Forestry

Office of the Secretary of Environment

Bureau of Reclamation

U.S. Army Corps of Engineers

OK Department of Wildlife Conservation

U.S. Geological Survey

U.S. Fish & Wildlife Service

Oklahoma Independent Petroleum Association

Oklahoma Cattlemen's Association

Cherokee Nation

Oklahoma Rural Water Association

Oklahoma Municipal League

Environmental Federation of Oklahoma

Oklahoma Farm Bureau

The Nature Conservancy

Chesapeake Energy Corporation

State Chamber of Commerce

Oklahoma State Parks

Instream/Environmental Flows

Supported by OCWP Technical Analyses:

- Generally recognized the importance of nonconsumptive water uses (recreation, tourism, etc.) to state and local economies.
- Instream and environmental flows specifically investigated by OCWP workgroup.
- Developed water use models that can be used on the local level to incorporate nonconsumptive demands and adjust management schemes accordingly.

Agenda 8:

**WATER CONSERVATION,
EFFICIENCY, RECYCLING & REUSE
PRIORITY RECOMMENDATION**

Water Conservation, Efficiency Recycling & Reuse

Innovative Solutions to Forecasted Water Shortages

DRAFT RECOMMENDATION:

*To address water shortages forecasted in the 2012 Update of the OCWP, as well as avoid the costly development of new supplies, the OWRB should collaborate with various representatives of the state's water use sectors – with particular emphasis on crop irrigation, municipal/industrial, and thermoelectric power – to **incentivize voluntary initiatives that would collectively achieve an aggressive goal of maintaining statewide water use at current levels through 2060.** In its associated evaluation of appropriate programs and policies, the OWRB should identify the optimum financial incentives, as well as recognize the potential for lost water provider revenues resulting from improved conservation.*

Water Conservation, Efficiency Recycling & Reuse

Innovative Solutions to Forecasted Water Shortages

In particular, the OWRB should consider the following:

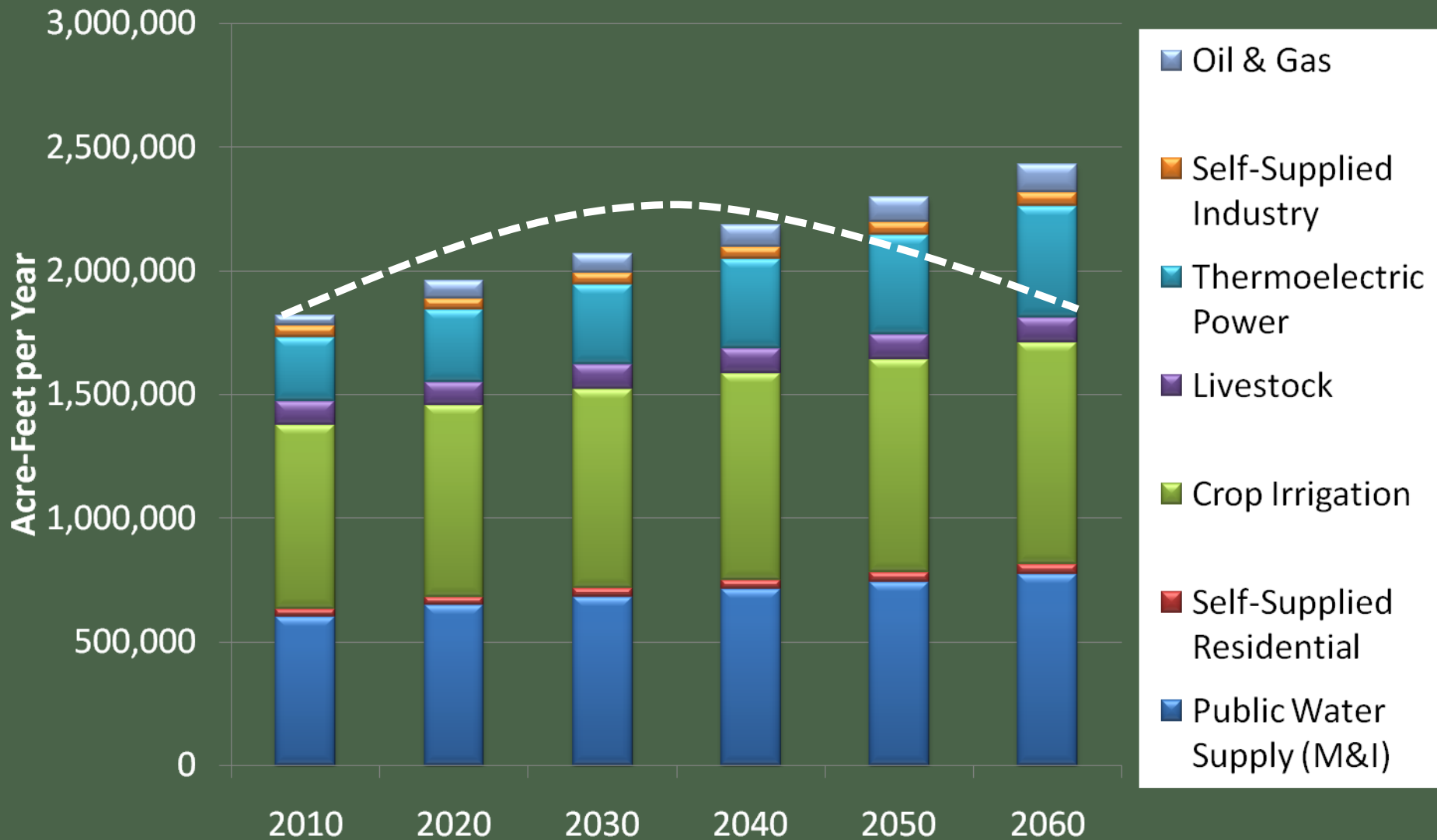
- Implementation of incentives (tax credits, zero-interest loans, cost-share programs, increasing block rate/tiered water pricing mechanisms, etc.) to encourage improved irrigation and farming techniques, efficient (green) infrastructure, retrofitting of water-efficient infrastructure, use of water recycling/reuse systems in new buildings, promotion of “smart” irrigation techniques, control of invasive species, and use of marginal quality waters (including treated gray and waste water).*
- Establishment of education programs that modify and improve consumer water use habits.*
- The applicability of existing or new financial assistance programs that encourage Oklahoma water systems to implement leak detection and repair programs that result in reduced loss and waste of water.*

Important Elements of the Recommendation

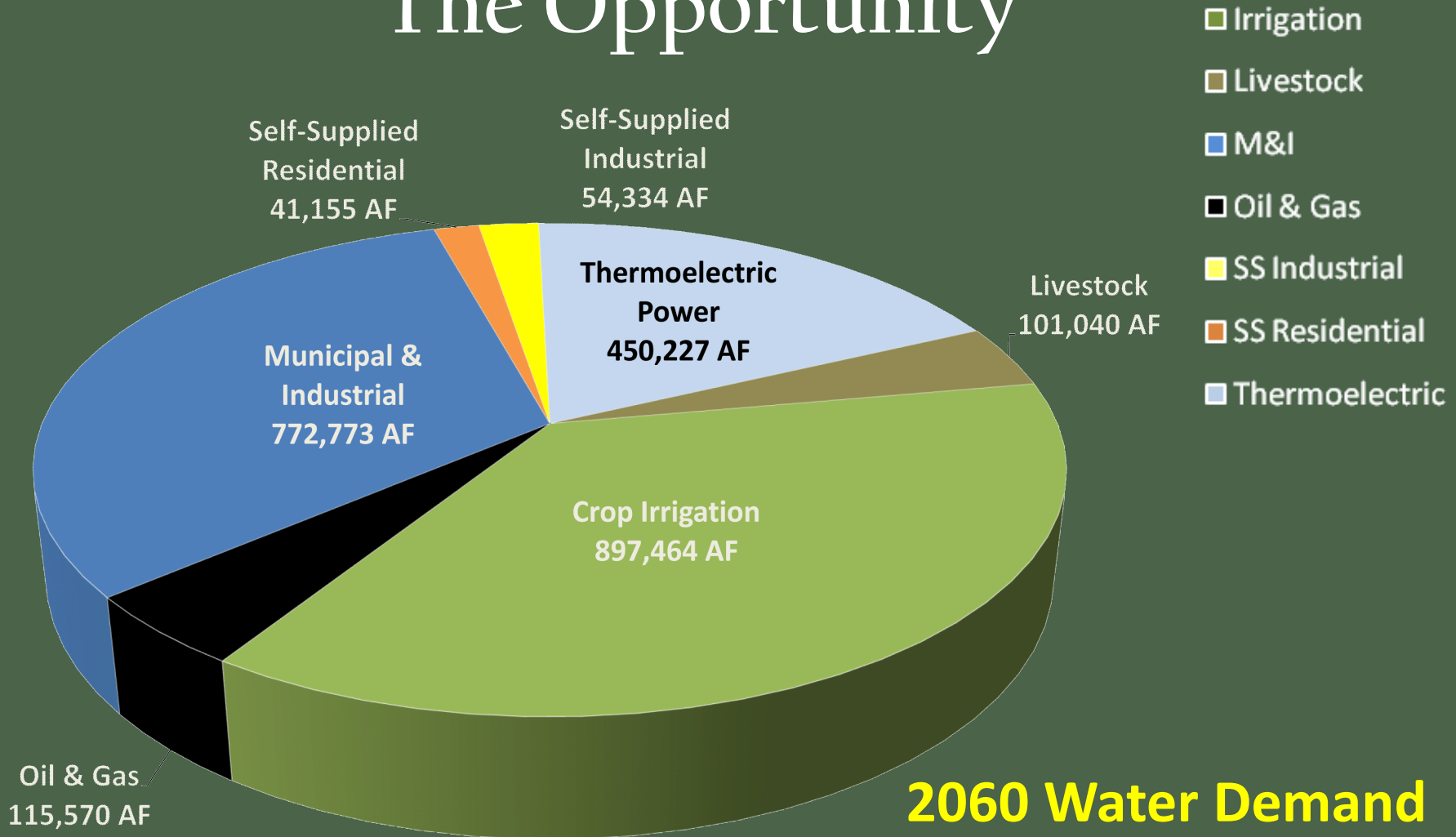
- Reducing forecasted 2060 demand to current levels:
 - By developing programs and policies that are ***voluntary***.
 - By offering ***financial incentives*** to encourage the adoption of practices, the development and employment of technologies, and the use of equipment, fixtures and infrastructure that reduce demand and increase supply.
 - By creating education programs that change consumer behavior and instill an ethic of conservation.

Demand Projections

Characterize the Need for Water



Water Conservation, Efficiency, Recycling & Reuse The Opportunity



2060 Water Demand

What Do We Mean?

- “Water use efficiency” refers to conservation through such things as specific consumer decisions and activities, employing more efficient equipment and technology, and the adoption of voluntary programs and policies.
- “Reuse” is the utilization of either untreated (gray) or treated wastewater instead of freshwater or potable water for appropriate purposes.

Effect on Supply and Demand

- Both affect the supply AND the demand side of water use and management.
- When you reduce demand, you increase supply; when you increase available supply you mitigate the impacts of future demands:
 - Water Efficiency/Conservation both reduces demand and increases available supply
 - Water Reuse typically stretches currently available supplies and reduces need for development of new supplies but does not necessarily reduce demand

How Did the OCWP Explore These Issues?

- **Conservation:**
 - Evaluated various scenarios in the Municipal/Industrial and Crop Irrigation sectors
 - Analysis performed statewide and in all 82 basins
 - Used the information to evaluate effectiveness as an option to reduce shortages
- **Reuse (MQW Workgroup):**
 - Analyzed potential for reuse across the state and proposed where where most feasible
 - Discussed considerations necessary to determine local applicability: regulatory, treatment, suitability for various applications, etc.

OCWP Municipal/Industrial Conservation Analysis

Scenario I (Moderate Level) Considerations:

- **Passive Conservation:** water savings that are the direct result of plumbing codes of the federal Energy Policy Act of 1992 requiring water efficient plumbing fixtures
- **Metering:** installing meters to monitor water loss
- **Tiered Rate Structure:** increasing tiers of cost with increased water use
- **Community Education and Information:** changing fundamental habits

OCWP Municipal/Industrial Conservation Analysis

Scenario II (Substantial Level) Considerations:

- More aggressive implementation of various components of Scenario I
- Analyzed the impact of high efficiency indoor water use regulations beyond that of passive conservation

Fixture	Passive Mandates	High Efficiency Examples
Toilet	1.6 gpf	1.0 gpf
Urinal	1.0 gpf	0.5 gpf
Faucet	2.5 gpm	1.0 gpm
Showerhead	2.5 gpm	2.0 gpm

OCWP Crop Irrigation Conservation Analysis

- Scenario I (Moderate Level)
 - Considered trends in the conversion to higher efficiency irrigation methods in the following categories:
 - Sprinkler (low pressure systems)
 - Surface/Flood (improvements in the infrastructure of the conveyance system)
 - Micro (at or near the surface or root zone)
- Scenario II (Substantial Level)
 - Considered the above plus an analysis of the impact of shifting to less water-intensive crops (e.g., grain sorghum instead of corn, forage crops like alfalfa and pasture grass instead of grain, etc.) beginning in 2015.

OCWP Conservation Analysis

Other Savings

- OCWP Analysis Also Considered Other Savings Associated with Conservation
- Energy:
 - Less energy required to produce water (treatment and delivery)
 - Less energy required to convey and treat wastewater (since less water in system)
 - *Therefore, less water requires less energy*
- Cost/Benefit :
 - Monetary savings associated with having to treat and convey less water and wastewater

OCWP Conservation Analysis Conservation-Associated Cost Savings

- Considered direct operational costs for water (by source) and wastewater treatment and delivery saved due to conservation.
- Took into account electricity, labor, chemical costs, water analysis, regulatory compliance.

	Surface Water	Groundwater	Wastewater	Total Savings
Scenario I	\$26,036,731	\$2,903,100	\$18,510,151	\$47,449,981
Scenario II	\$38,961,078	\$4,344,167	\$23,880,443	\$67,185,689

OCWP Conservation Analysis

Total Water Savings

M&I and Agriculture Statewide Demand Projections & Water Savings for Conservation Scenarios (AFY)

	2010	2020	2030	2040	2050	2060
Baseline	1,377,318	1,455,309	1,523,273	1,587,406	1,642,069	1,711,392
Scenario I	N/A	1,301,816	1,332,781	1,388,603	1,435,807	1,496,643
Scenario II	N/A	1,155,397	1,170,248	1,209,372	1,244,123	1,295,569

OCWP Conservation Analysis

What is the Impact?

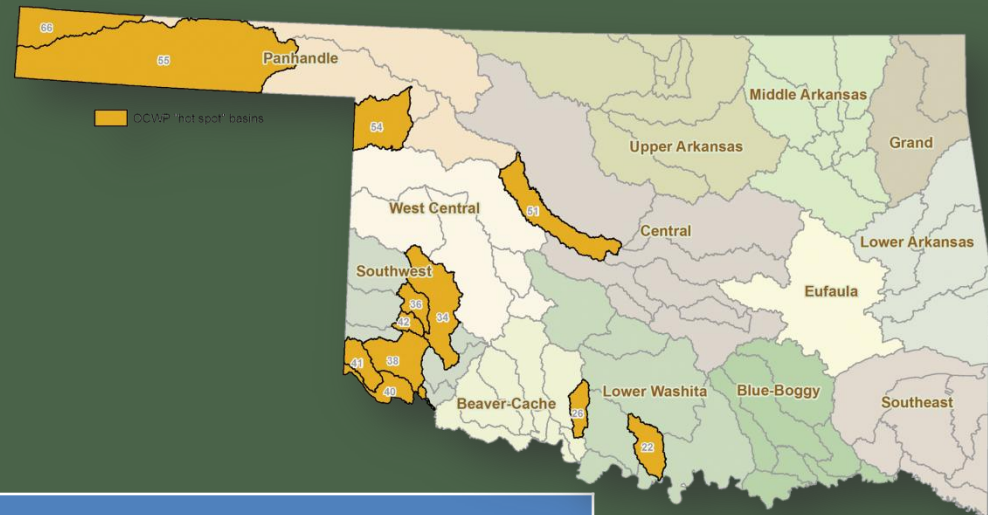
Gaps/Depletions Mitigation Statewide (2060)

Source	Baseline Shortage/Depletion	Total & Percent Reduction from Baseline Shortage/Depletion Amount			
		Moderate Conservation		Substantial Conservation	
SW	75,240 AFY	18,810 AFY	25%	23,980 AFY	32%
AGW	38,980 AFY	12,474 AFY	32%	22,554 AFY	59%
BGW	92,710 AFY	13,906 AFY	15%	73,784 AFY	78%

OCWP Conservation Analysis

What is the Impact?

Gaps/Depletions Mitigation for Hot Spots (2060)



Source	Baseline Shortage/ Depletion	Total & Percent Reduction from Baseline Shortage Amount			
		Moderate Level		Substantial Level	
SW	14,590 AFY	7,440 AFY	51%	8676 AFY	60%
AGW	12,070 AFY	6,036 AFY	50%	9036 AFY	75%
BGW	69,000 AFY	24,080 AFY	35%	61,320 AFY	89%

OCWP Conservation Analysis

Improving the Water Future of Basins

	Reduction in the Number of Basins with Gaps and/or Storage Depletions		
	Surface Water	Alluvial Groundwater	Bedrock Groundwater
Baseline	55	63	34
Scenario I	42	51	26
Scenario II	33	41	23

OCWP Conservation Analysis

Further Benefits of Conservation

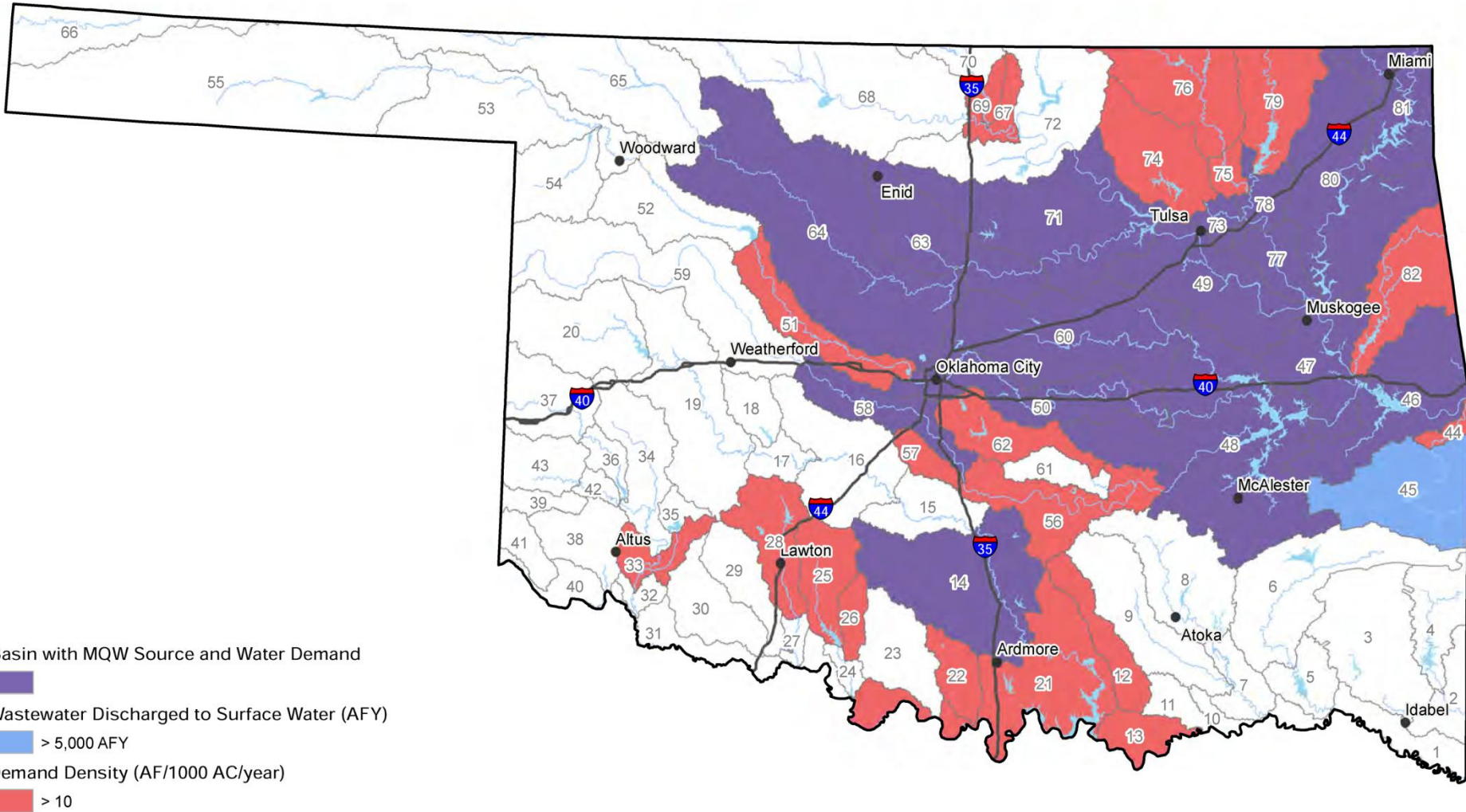
- Reduce Capital Needs for Forecasted Infrastructure Needs:
 - Can stretch supplies and thereby reduce *\$81 billion* need
- Drought Mitigation:
 - Reduces demand
 - Stretches supplies
 - Delays or avoids acute drought restrictions
- More Water for Non-consumptive Uses:
 - Protect Oklahoma's 3rd largest industry – tourism & recreation
 - Equally important to fish & wildlife, both sport industry and ecological protections (e.g., endangered species protection)
 - Can reduce impacts of drought on non-consumptive needs

OCWP Conservation Analysis

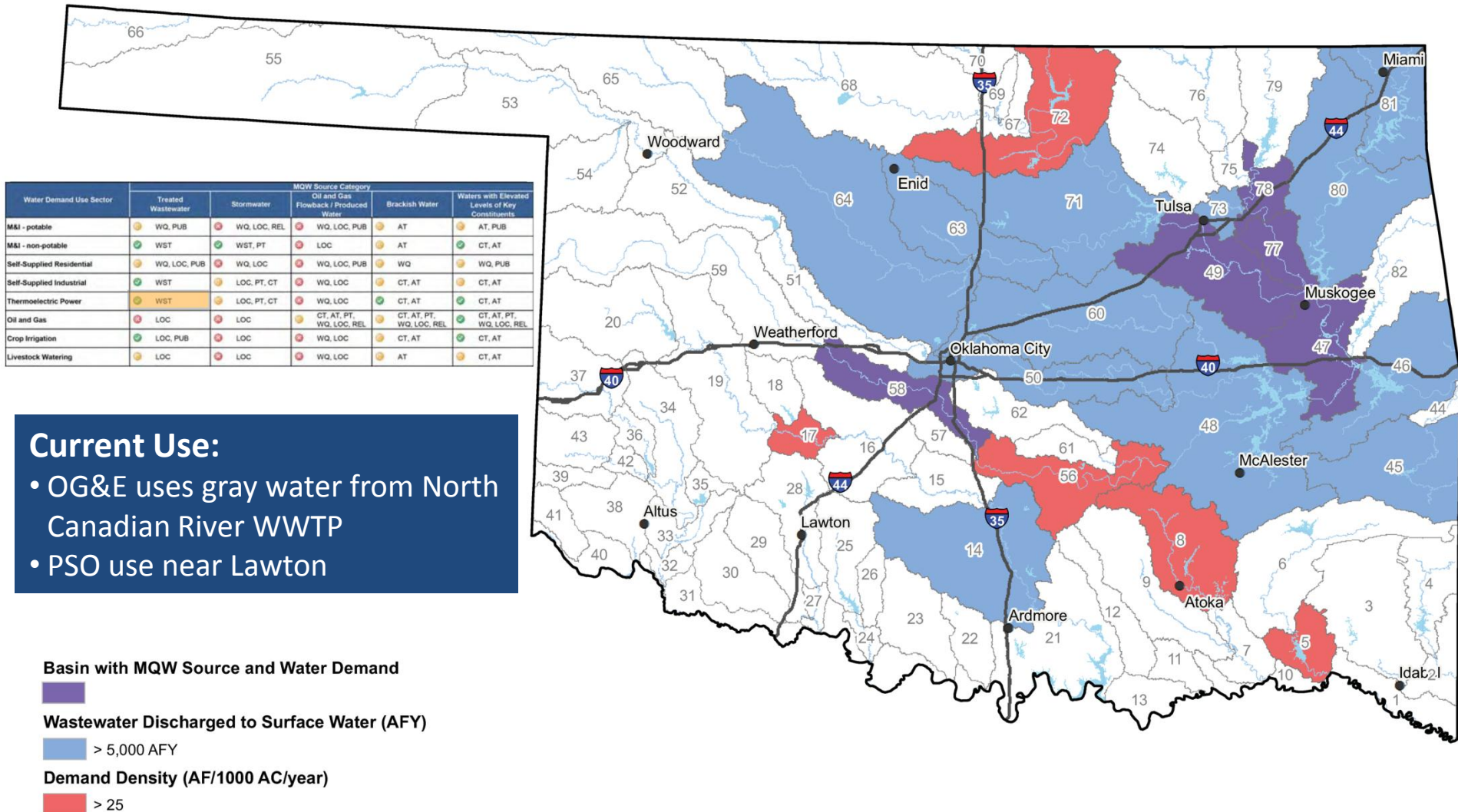
Reuse of Wastewater

- Includes uses for gray water and treated wastewater.
- Gray water uses include subsurface landscape irrigation of non-edible plants, for example.
- Treated Wastewater uses were analyzed by the OCWP Marginal Quality Water Workgroup:
 - Determined it to be a viable source for non-potable uses
 - Matched greatest supply availability with greatest demand
 - M&I landscape irrigation, crop irrigation, and power and industrial use are likely the most cost-effective and viable uses

OCWP Conservation Analysis Treated Wastewater for M&I Use (2060)



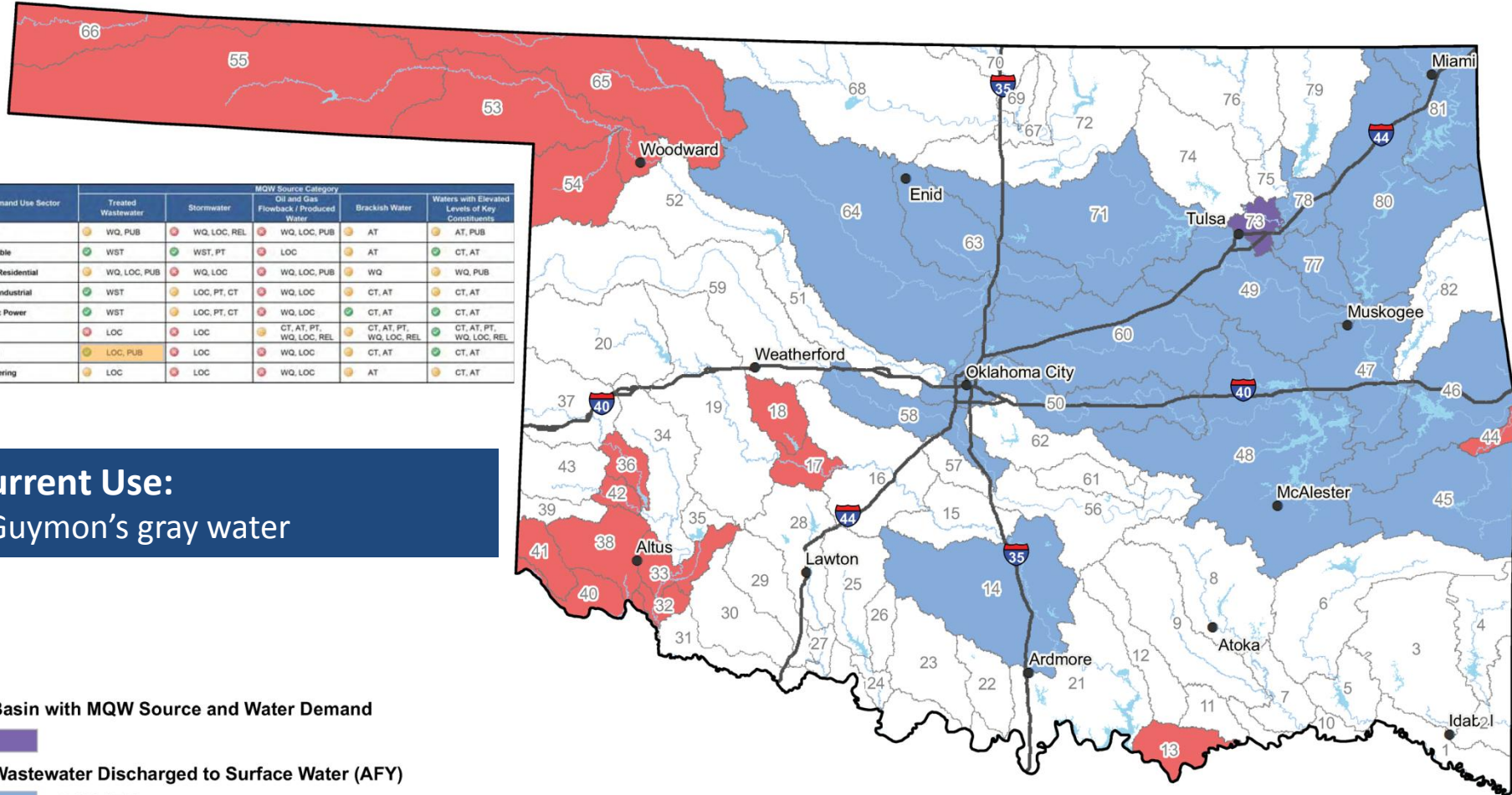
OCWP Conservation Analysis Treated Wastewater for Thermoelectric Power Use (2060)



Current Use:

- OG&E uses gray water from North Canadian River WWTP
- PSO use near Lawton

OCWP Conservation Analysis Treated Wastewater for Crop Irrigation Use (2060)



Water Demand Use Sector	MQW Source Category				
	Treated Wastewater	Stormwater	Oil and Gas Flowback / Produced Water	Brackish Water	Waters with Elevated Levels of Key Constituents
M&I - potable	WQ, PUB	WQ, LOC, REL	WQ, LOC, PUB	AT	AT, PUB
M&I - non-potable	WST	WST, PT	LOC	AT	CT, AT
Self-Supplied Residential	WQ, LOC, PUB	WQ, LOC	WQ, LOC, PUB	WQ	WQ, PUB
Self-Supplied Industrial	WST	LOC, PT, CT	WQ, LOC	CT, AT	CT, AT
Thermoelectric Power	WST	LOC, PT, CT	WQ, LOC	CT, AT	CT, AT
Oil and Gas	LOC	LOC	CT, AT, PT, WQ, LOC, REL	CT, AT, PT, WQ, LOC, REL	CT, AT, PT, WQ, LOC, REL
Crop Irrigation	LOC, PUB	LOC	WQ, LOC	CT, AT	CT, AT
Livestock Watering	LOC	LOC	WQ, LOC	AT	CT, AT

Current Use:

- Guymon's gray water

- Basin with MQW Source and Water Demand**
- Wastewater Discharged to Surface Water (AFY)**
- Demand Density (AF/1000 AC/year)**

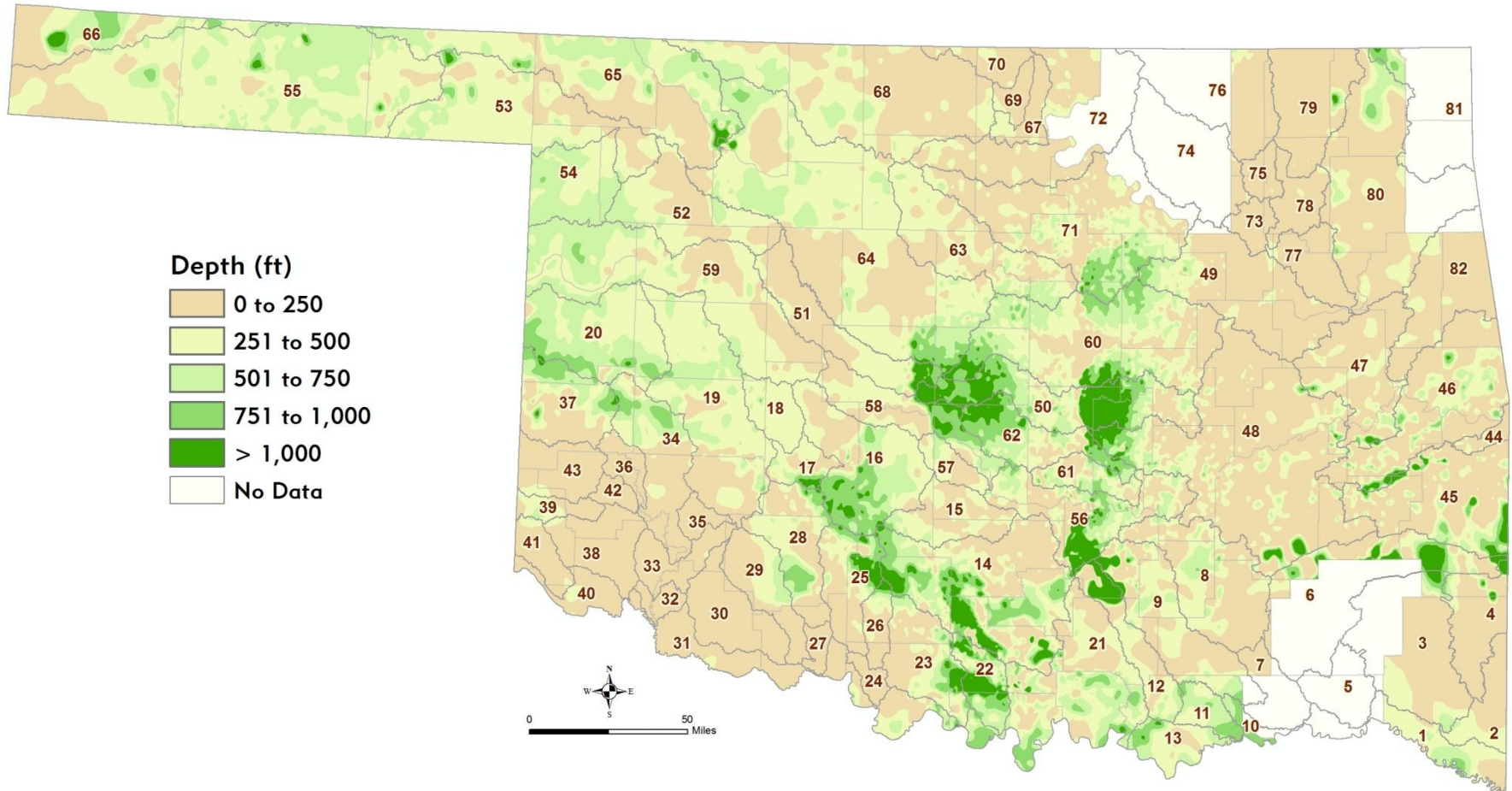


Brackish Groundwater Use

- Potential to be a significant supply source
- Technology is making treatment much more cost-effective
- Could be used to meet potable and non-potable demands
- Potential use for almost any sector with appropriate treatment; good potential for M&I, thermoelectric power and crop irrigation use
- Areas of the state with shallow depth to base of treatable water could be most feasible

OCWP Marginal Quality Water Workgroup

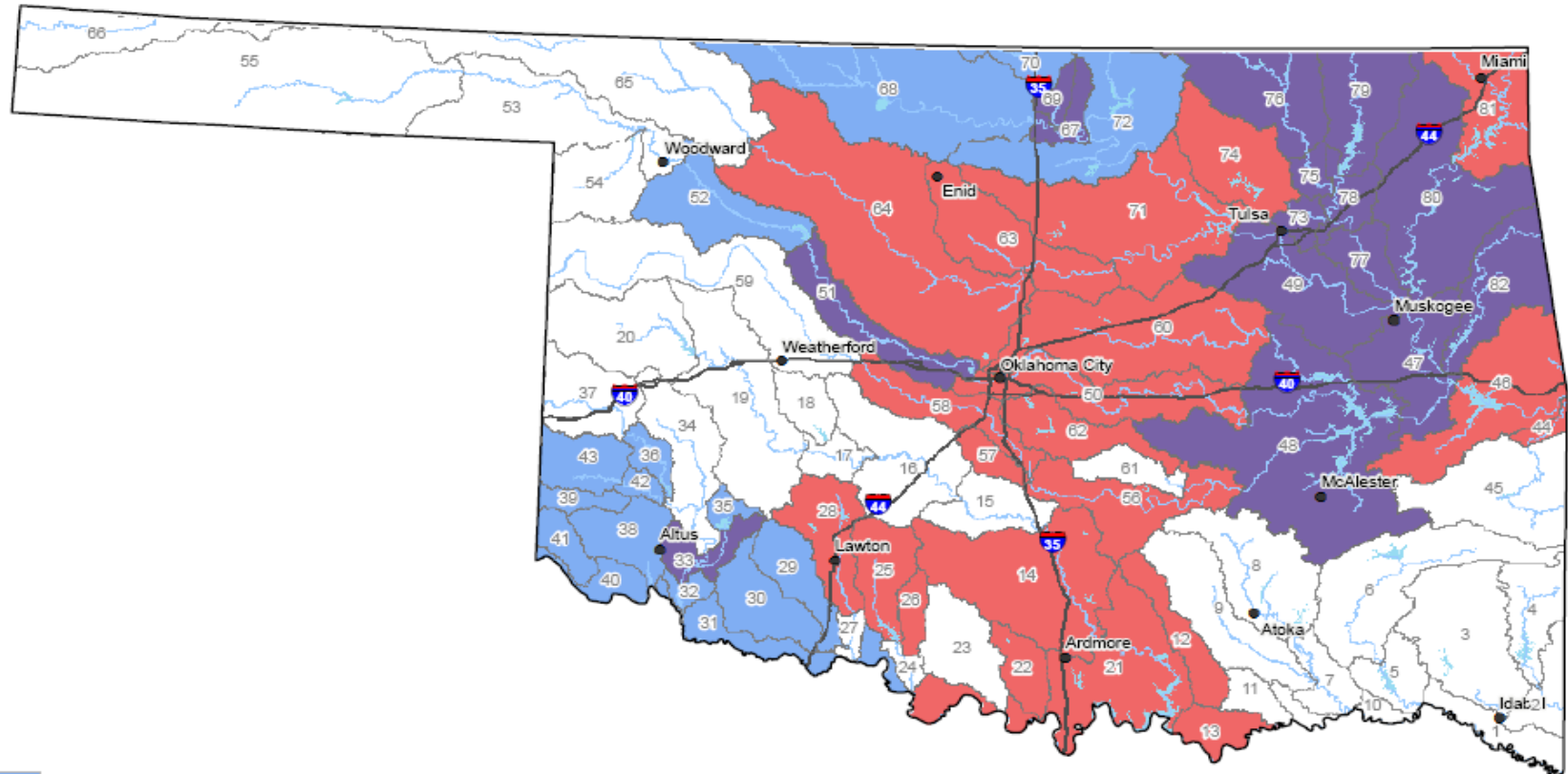
Depth to Treatable Water



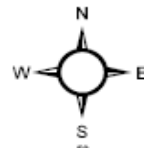
Brackish Groundwater Considerations for Use

- Disposal of residuals
- Required depth of wells
- Location of source relative to demand
- Sustainability of the resource (how much is there?)
- Effluent discharge regulations
- Permitting

OCWP Marginal Quality Water Workgroup Potential Areas for M&I Use of Brackish Groundwater



Shallow Depth to Base of Treatable Water
Demand Density (AF/1000 AC/year)
> 10



0 50 100 Miles



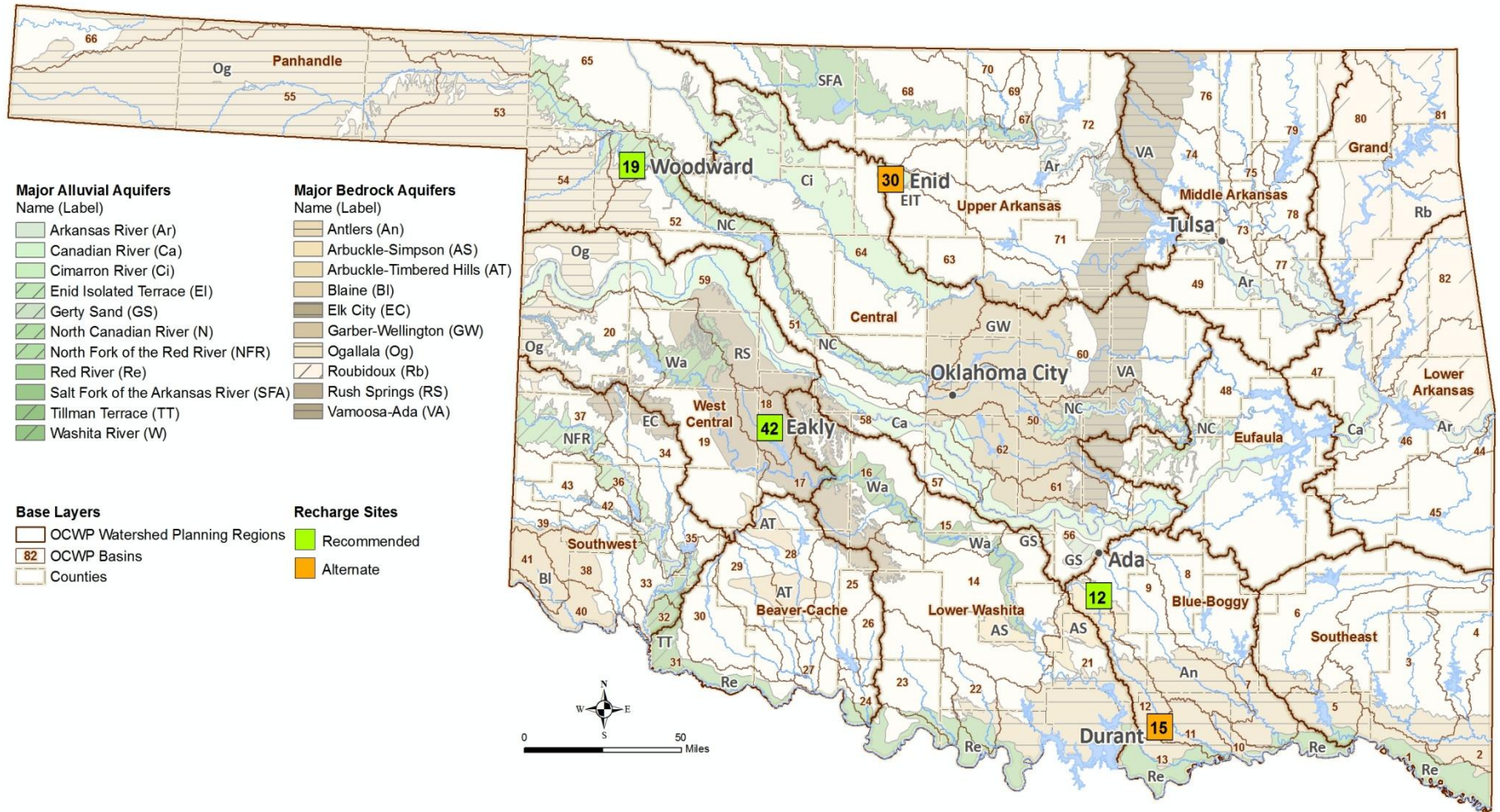
Aquifer Recharge Workgroup

- Goal was to develop and apply criteria to prioritize potential locations throughout Oklahoma where aquifer recharge demonstration projects may be most feasible.
- Phase I: Identification of most suitable area(s) for a pilot project:
 - Screening
 - Detailed analysis
 - Site recommendations

Aquifer Recharge Workgroup Methodology

- Utilized data from a number of sources: USGS, American Water Institute, OCWP, EPA and Reclamation
- Identified 57 candidate sites; 30 sites passed the fatal flaw screen
- 15 sites passed threshold analysis and were subjected to a detailed analysis:
 - 3 sites were identified as primary, 2 as alternatives

Recommended Sites for Pilot Project



How Do We Get There?

- Work with key sectors and data from OCWP to develop the most viable options for Oklahoma.
- In response, develop programs and policies that encourage voluntary conservation activities.
- Provide financial incentives in the form of tax credits, grants, low/zero interest loans, etc., as a part of programs, where applicable.
- Promote and facilitate research that helps develop technologies to achieve conservation savings, such as “smart” irrigation.

Benefits of Water Conservation, Efficiency, Recycling & Reuse

- Increase both non-consumptive/consumptive supply
- Allow for greater economic development with reduced impact on water availability and shortages
- Savings in energy, operational and future infrastructure costs for utilities and ratepayers
- Lower operational costs for irrigators and the opportunity for increased acres in crop production with minimal-to-no net increase in water use
- Business growth opportunities for Oklahoma in the water efficiency technology sector
- Become a national leader in conservation and efficiency

Agenda 9:

**STATE/TRIBAL CONSULTATION &
RESOLUTION**

PRIORITY RECOMMENDATION

State/Tribal Water Consultation & Resolution

Building Cooperation to Avoid Future Conflict & Remove Uncertainties to Water Use

DRAFT RECOMMENDATION:

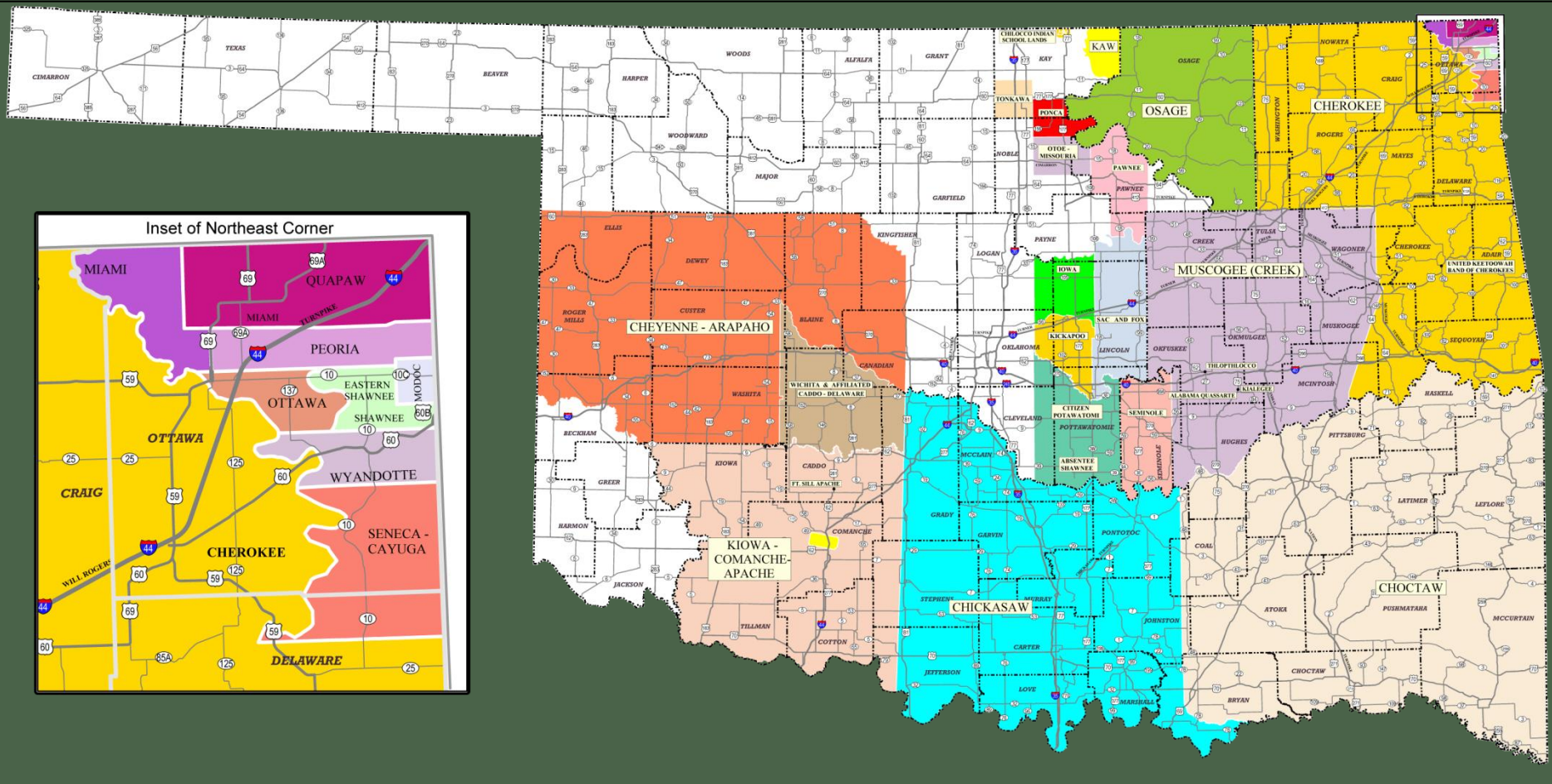
To address uncertainties relating to the possible validity of water rights claims by the Tribal Nations of Oklahoma and to effectively apply the prior appropriation doctrine in the fair apportionment of state waters, the Oklahoma Governor and State Legislature should establish a formal consultation process as outlined in the OCWP Report on Tribal Issues and Concerns.

State/Tribal Water Consultation & Resolution

Why negotiate resolutions?

- Longstanding uncertainty of tribal claims
- Weakens planning efforts
- Need to effectively apply appropriation doctrine
- Need to fairly apportion water
- Avoid costly, protracted litigation
- Amicable resolution, opportunity to recognize State and Tribal sovereignty

State/Tribal Water Consultation & Resolution



Tribal Boundaries

State/Tribal Water Consultation & Resolution

1980 OCWP:

- Recognized Winters, but stated no reservations in Oklahoma and Indian population demand considered

1995 Update:

- Claims, resultant uncertainty:
 - Study forming of permanent committee with inclusive membership to address issues
 - Develop mutually acceptable negotiation system
 - Identify projects warranting cooperative action

State/Tribal Water Consultation & Resolution

Public recommends resolution:

- Professor Robertson:
 - Oct. 2008 independent contract
 - 20 meetings with tribal representatives
 - Issues and concerns discussed
- Tribes recommend negotiation
- Town Hall recommends negotiation
- February 2011 Report recommendations

State/Tribal Water Consultation & Resolution

OCWP Report on Tribal Issues/Concerns:

- Oklahoma Governor and State Legislature should establish a formal consultation process in accord with [this report]:
 - Decide authority to approve process of negotiations
 - Decide authority to conduct negotiations
 - Decide authority to approve negotiated agreement
 - Assemble team to meet with tribal reps on process
 - Appoint team to conduct negotiations
 - Submit negotiated results to State for approval
 - Consider implementation of regular consultation protocols

State/Tribal Water Consultation & Resolution

Justification:

- Resolve longstanding uncertainty over tribal claims.
- Strengthen state planning efforts.
- Allow effective application of appropriation doctrine
- Facilitate the fair apportionment of water
- Avoid costly, protracted litigation
- Opportunity for amicable resolution and recognition of State and Tribal sovereignty.

State/Tribal Water Consultation & Resolution

Supported by OCWP Technical Analyses:

- Recognized in Excess/Surplus Water calculation:
 - "...exclude from consideration for any permit for out-of-basin use... the quantity of water adjudicated or agreed by cooperative agreement or compact to be reserved for Federal or Tribal rights"

State/Tribal Water Consultation & Resolution

Implementation:

- To be established by Oklahoma Governor and State Legislature.
- Cost to be determined by Oklahoma Governor and State Legislature.

Agenda 10:

EXCESS & SURPLUS WATER

PRIORITY RECOMMENDATION

Draft OCWP Priority Water Policy
Recommendations & Implementation
Excess & Surplus Water

DRAFT DEFINITION

DRAFT PROCEDURE

Excess & Surplus Water Background

- 82 O.S. 1086.1 (1974)
 - “The people in water deficient areas benefit by being able to use excess and surplus waters.”
 - “The policy...is to encourage the use of surplus and excess water to the extent that the use thereof is not required by people residing within the area where such water originates.”

Excess & Surplus Water Background

- 82 O.S. 1086.1 (1974):
 - Listed 6 Statutory Principles for the OCWP:
 - “Only excess or surplus water should be utilized outside of the areas of origin and citizens within ...have a prior right to water originating therein to the extent that it may be required for beneficial use therein”
 - “Water use within Oklahoma should be developed to the maximum extent feasible for the benefit of Oklahoma so that out-of-state downstream users will not acquire vested rights therein to the detriment to the citizens of the state.”

Excess & Surplus Water Background

- 82 O.S 1086.2 (1974):
 - Directs the OWRB to prepare a comprehensive state water plan and decennial updates (1992) thereof
 - Additionally requires “shall include a definition of ‘excess and surplus water of this state’ and a recommended procedure for determining ‘excess and surplus water of this state,’ which definition and procedure are to be developed to insure that the area of origin will never be made water deficient.”

Background

1975 Definition

- Submitted as a part of completed Phase I study
- “...that amount which would not result in deprivation of a prior right to water to any inhabitant or property owner within a major drainage system wherein water originates. Methodology as used for study purposes herein considers such prior right to extend for the ensuing 50 years.”

Background

1980 and 1995 Plans

1980 Plan:

- reaffirmed the 1975 definition
- Discussed the concept of “area of origin” and excess and surplus water
- Considered 50 years to be a reasonable planning horizon
- Did not expressly quantify excess/surplus water

1995 Plan:

- Did not propose a new definition/procedure
- Quantified surplus water by region (8 total)

Background

Processing Applications for Out-of-Basin Use

- 82 O.S. 105.12:
 - A.4: “If the application is for the transportation of water for use outside the stream system...the proposed use must not interfere with existing or proposed beneficial uses within the stream system and the needs of the water users therein.”
 - B.1: “...pending applications to use water within the stream system shall first be considered in order to assure that applicants within the stream system shall have all of the water required to adequately supply their beneficial uses.
 - B.2: “The Board shall review the needs within the area of origin every five (5) years to determine whether the water supply is adequate for municipal, industrial, domestic, and other beneficial uses.”

Background

OWRB Rules

- Title 785 Chapter 20 (Definition):
 - ‘excess or surplus water’ shall mean that amount of water which is greater than the present or reasonable foreseeable future water requirements needed to satisfy all beneficial uses within an area of origin

Background

OWRB Rules

- 785:20-5-6 Approval of application for out-of-stream system use:
 - In addition to quoting the aforementioned statutory provisions, it also says:
 - b) “Ongoing studies and information about proposed or potential needs may be used by the Board. Adequacy for future needs of water within the stream system shall be based on reasonably foreseeable prospects for use and for a period of not longer than fifty (50) years from the date of issuance of the permit for use outside the stream system.”

Excess & Surplus Water

Protecting Local Water Needs While Addressing Statewide Demands

The OWRB adopts the following definition and procedure for determining excess and surplus water for inclusion in the OCWP update:

‘Excess and surplus water’ means the projected surface water available for new permits in 2060, less an in-basin reserve amount, for each of the 80 basins as set forth in the 2012 OCWP Watershed Planning Region Reports whose surface water is under OWRB jurisdiction (excepting the Grand Region); provided that nothing in this definition is intended to affect ownership rights to groundwater and that groundwater is not considered excess and surplus water.

DRAFT DEFINITION:

Excess & Surplus Water

Protecting Local Water Needs While Addressing Statewide Demands

DRAFT PROCEDURE:

- 1) *Each of the 80 OCWP watershed planning basins shall be considered an individual stream system wherein water originates (i.e., area of origin) for purposes of appropriation and permitting.*
- 2) *The total annual amount of available stream water for new permits in 2060 is equal to the total Surface Water Permit Availability amount as set forth in the OCWP Watershed Planning Region Reports minus the amount of the annual Anticipated Surface Water Permits in 2060 also set forth in those reports. The in-basin reserve amount is equal to 10% of the total Surface Water Permit Availability amount plus 10% of the annual Anticipated Surface Water Permits in 2060...*

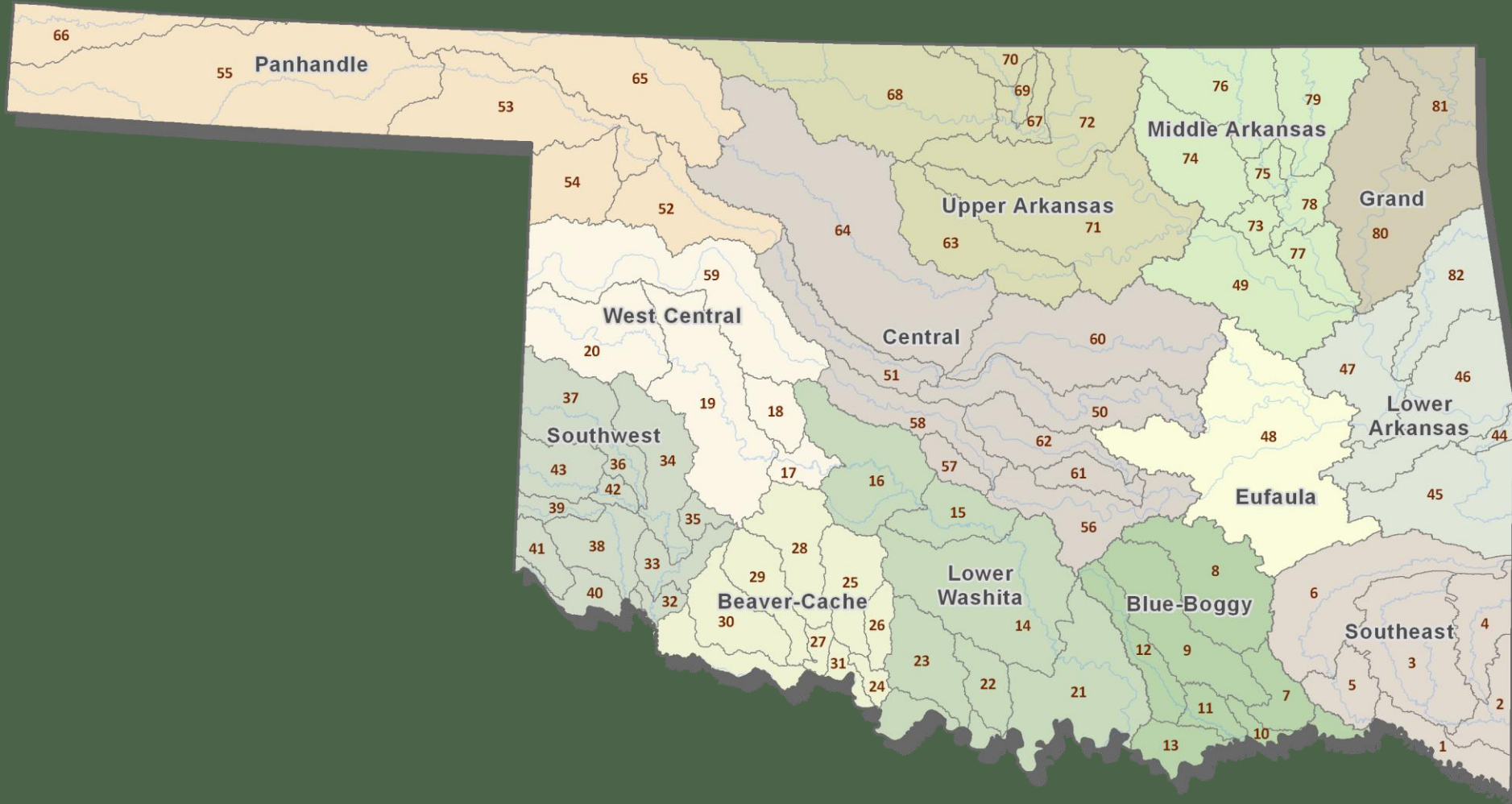
Excess & Surplus Water

Protecting Local Water Needs While Addressing Statewide Demands

DRAFT PROCEDURE:

- 3) *In considering applications for permits to transport and use more than 500 acre-feet of stream water per year outside the stream system wherein the water originates, the Board shall determine whether there is “unappropriated water available in the amount applied for” by considering only the remaining amount of excess and surplus water calculated for the stream system where the point of diversion is proposed, and for stream systems located downstream from this proposed point of diversion, provided this procedure shall not be used to reduce the amount authorized under existing permits and water rights.*
- 4) *The Board will also exclude from consideration for any permit for out-of-basin use:*
 - a) *the quantity of water adjudicated or agreed by cooperative agreement or compact to be reserved for Federal or Tribal rights, and*
 - b) *the quantity of water reserved for instream or recreational flow needs established pursuant to law.*

OCWP Watershed Planning Regions & Basins



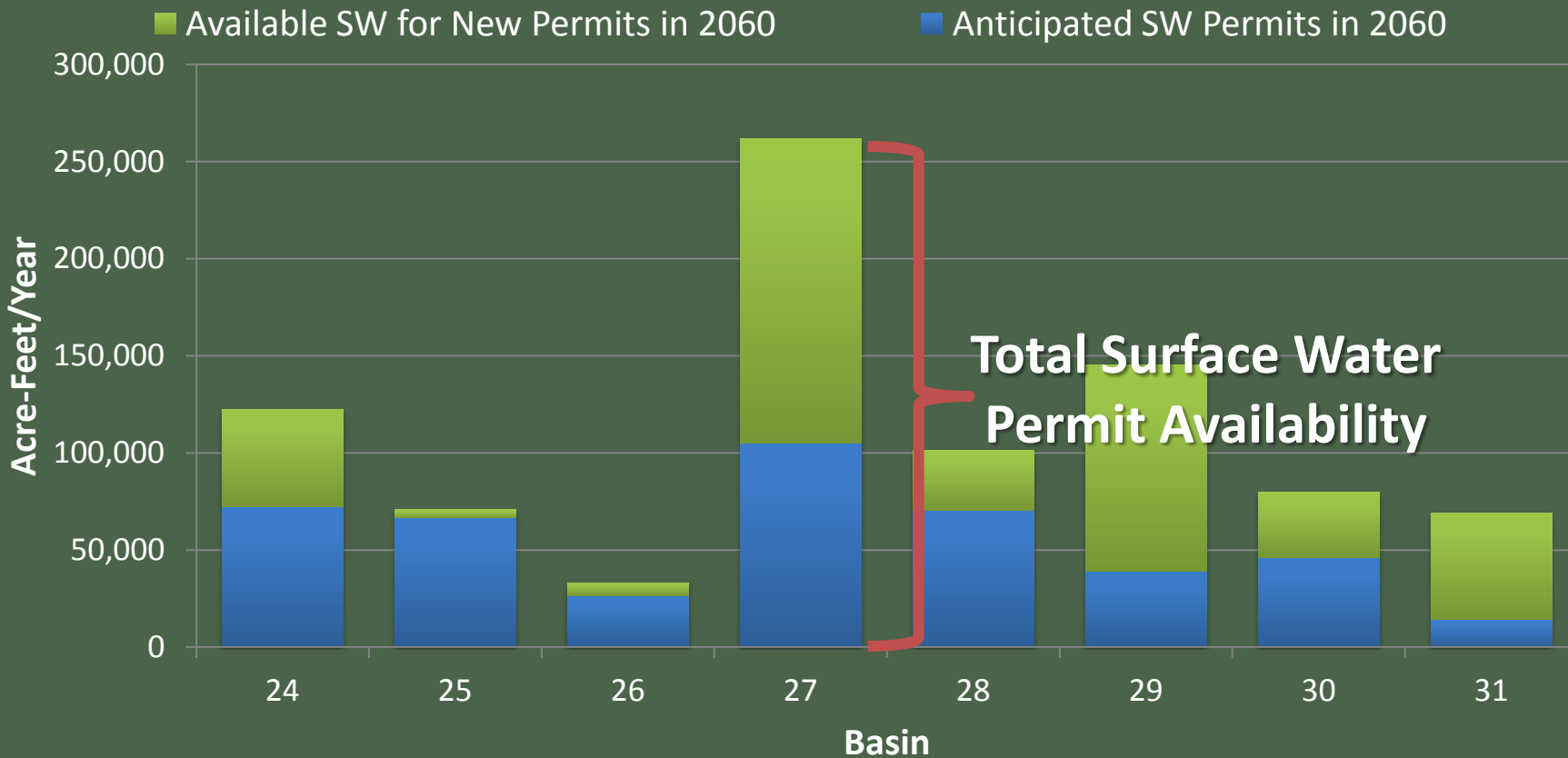
Calculating Surplus Water

Surface Water Permit Availability Beaver-Cache Region

Water Use Permitting in Oklahoma
 Oklahoma's water resources are limited. Therefore, the state has established a permit system to ensure that water is used efficiently and equitably. The permit system is designed to ensure that water is used in a way that is consistent with the state's long-term water needs. The permit system is designed to ensure that water is used in a way that is consistent with the state's long-term water needs.

Permit Availability
 The permit system is designed to ensure that water is used in a way that is consistent with the state's long-term water needs. The permit system is designed to ensure that water is used in a way that is consistent with the state's long-term water needs.

Groundwater Permit Availability
 The permit system is designed to ensure that water is used in a way that is consistent with the state's long-term water needs. The permit system is designed to ensure that water is used in a way that is consistent with the state's long-term water needs.



Permit Availability Components

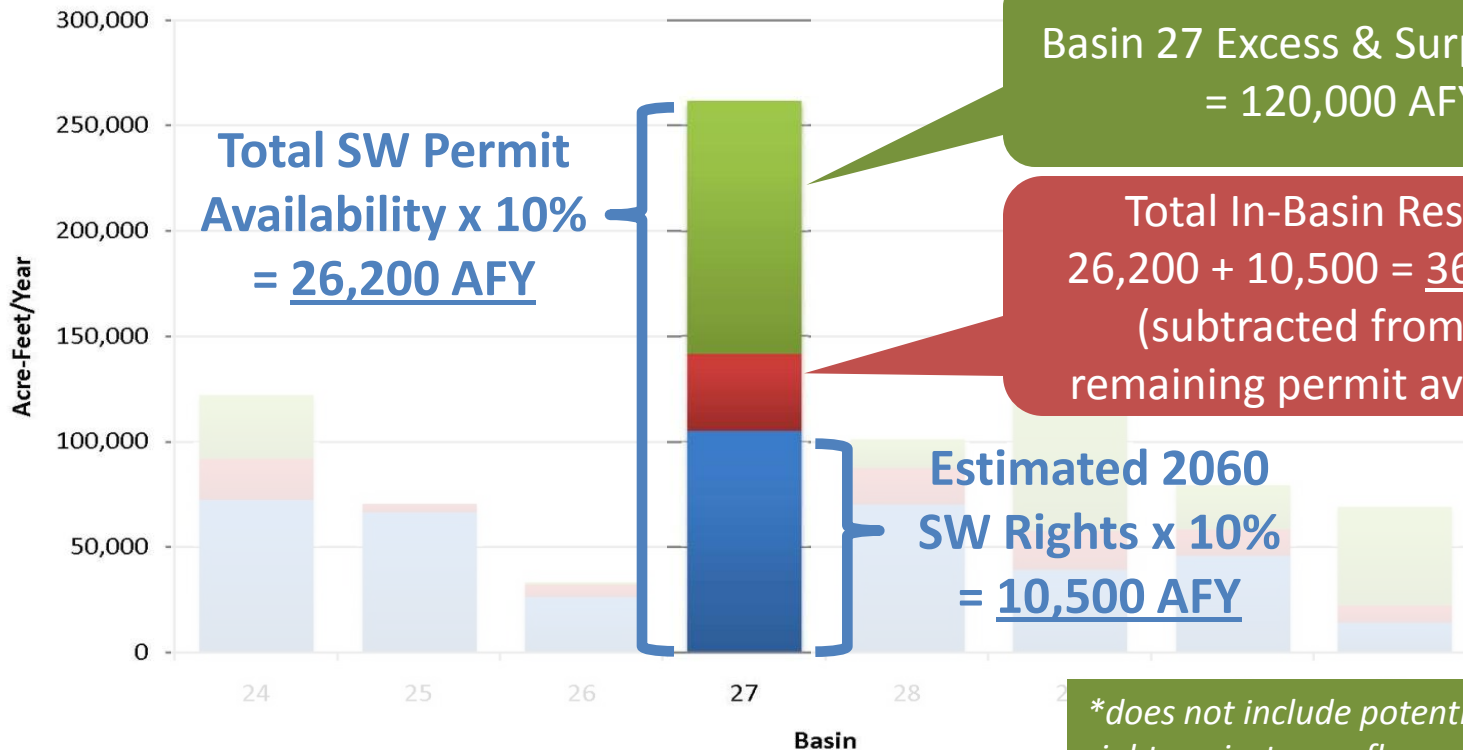
- 1) Y axis of preceding chart = Total surface water availability based upon current permitting protocol
- 2) “Anticipated SW Permits in 2060” includes:
 - Current and future permit needs through 2060 (includes demand growth)
 - Existing out-of-basin transfers
 - Reservoir yield(s)
 - Downstream future permit needs
 - Domestic Use set-aside
 - Compact obligations
- “Available SW for New Permits in 2060” includes:
 - The difference between 1) and 2) above

Example Calculating Surplus Water



DRAFT Provisional Estimated Surface Water Surplus in 2060 for the Beaver-Cache Region

■ Estimated Surplus Supply in 2060
 ■ Supply Reserved for In-Basin Use
 ■ Estimated 2060 Surface Water Rights



**Total SW Permit
Availability x 10%
= 26,200 AFY**

**Basin 27 Excess & Surplus Water
= 120,000 AFY***

**Total In-Basin Reserve =
26,200 + 10,500 = 36,700 AFY
(subtracted from 2060
remaining permit availability)**

**Estimated 2060
SW Rights x 10%
= 10,500 AFY**

**does not include potential federal/Tribal
rights or instream flow requirements*

Excess/Surplus Water Proposed vs. Existing Policy

- Defines area of origin at the 80 basin level
- Balances utilization of water for the benefit of the entire state with protection for the area (basin) of origin:
 - Considers future demands through 2060 plus 10% in-basin reserve amount
 - Considers supply available for in-basin permits and provides a 10% cushion against unforeseen future decreases in availability
 - Protects downstream basin as well as area of origin
- Contemplates potential quantification of instream flows/recreational needs and federal/Tribal rights
- Expressly exempts groundwater

Excess & Surplus Water

Justification:

- Definition and procedure required by OCWP statute to protect areas of origin:
 - Proposed language establishes increased protection.
- Balance regional with statewide water planning considerations.

Excess & Surplus Water

Supported by OCWP Technical Analyses:

- OCWP Excess/Surplus Water Assessment applied draft definition and procedure to supply/demand data collected for individual planning basins (“areas of origin”).

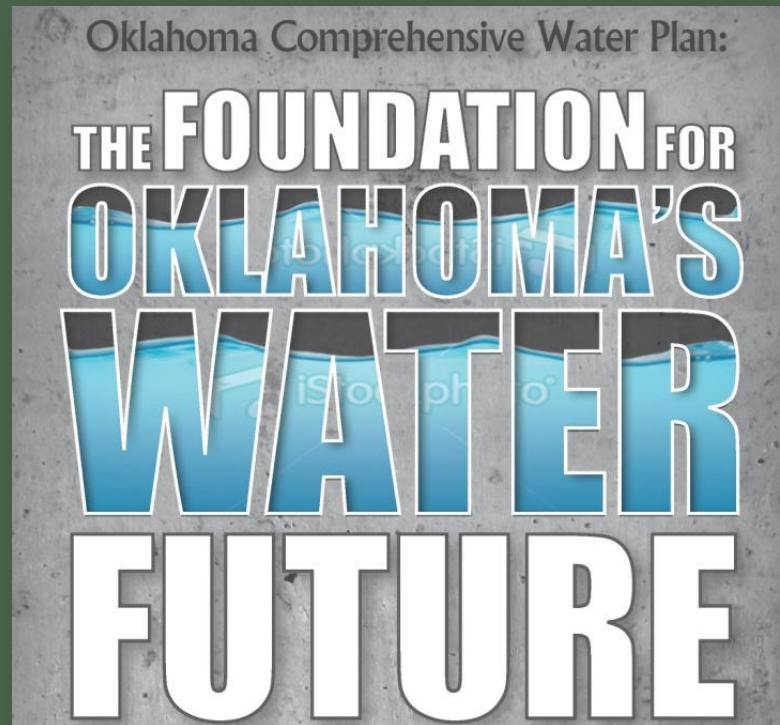
Excess & Surplus Water

Implementation:

- Initial assessment and calculation completed.
- Cost is negligible; utilized data collected through OCWP technical analyses.

Oklahoma Governor's Water Conference & Research Symposium

Embassy Suites Hotel & Conference Center
Norman, OK
October 18-19



2012

Oklahoma Comprehensive Water Plan

OCWP



