2012 Update of the Oklahoma Comprehensive Water Plan

July 12, 2011 Board Meeting

Oklahoma Comprehensive Water Plan



Beaver



Agenda 4.B.

REVIEW & DISCUSSION OF SCHEDULE RELATING TO CONSIDERATION OF DRAFT UPDATE AND POSSIBLE ACTION TO ACCEPT OR REVISE SCHEDULE

Oklahoma Comprehensive Water Plan 2011 OWRB Schedule

June 2011:

- Finalize Schedule
- Discussion on Priorities for Implementation

July 2011:

Further Discussion on Priorities for Implementation

August 2011:

- Finalize ImplementationPriorities
- Presentation of Draft Final Executive Report
- Presentation and Consideration of Regional Reports

September 2011:

- Final Water Board review and public comment on draft OCWP
- Discussion and Possible Action by Board to Request Any Changes

October 2011:

- Formal Water Board consideration and adoption of OCWP
- OCWP unveiled at Water
 Conference



Agenda 4.C.

REVIEW & DISCUSSION OF ADDITIONAL DRAFT WATER POLICY RECOMMENDATIONS

Draft Priority Water Policy Recommendations for Implementation

Monitoring & Studies

Instream/Environmental Flows

State/Tribal Water Consultation & Resolution

Water Management & Supply Reliability: Conjunctive Management & Seasonal Allocation

Excess & Surplus Water

Local & Statewide Water Planning: Regional Planning Groups

Water Project & Infrastructure Financing

Water Management & Supply Reliability

Water allocation and use philosophy and statutes vary greatly from State to State.

Primary Issues:

- Private ownership of water vs. public ownership and allocation— easier for state to administer/enforce, less private control
- 2. Passive vs. Active Water Management— detailed up-front analysis of water availability and associated cost by State vs. over appropriation and back-end management/enforcement
- 3. Utilization vs. conservation for future users

Regardless of management scheme, <u>reliability of water supply at the</u> <u>local level</u> remains a fundamental issue.

Draft OCWP Priority Water Policy Recommendations & Implementation Water Management & Supply Reliability

To address projected statewide and regional increases in consumptive demands for water and effectively administer a water management program that ensures reliable supply for all users, the OWRB should implement the following recommendations, considering regional variations when appropriate:

The OWRB should organize a workgroup of water users, researchers and other experienced professionals to investigate the utility, impacts and appropriateness of transitioning from an average annual to a seasonal stream water allocation program.

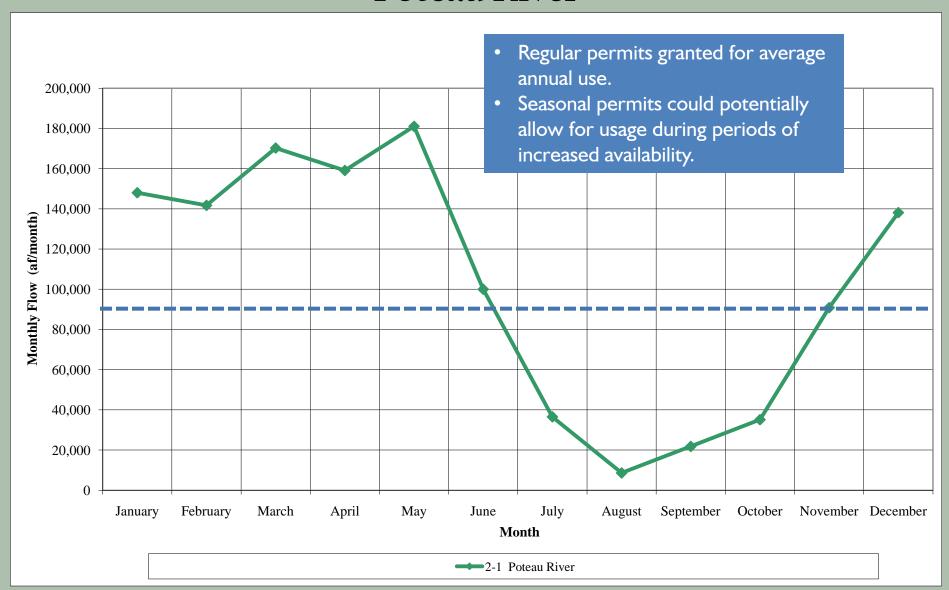
The OWRB should conduct a prioritized comprehensive hydrologic evaluation of groundwater basins across the state to characterize valid groundwater/surface water interactions, as well as commission a stakeholder workgroup to evaluate the suitability of a potential conjunctive management program in Oklahoma.

Water Management & Supply Reliability Seasonal Stream Water Rights Allocation

Oklahoma Stream Water Law:

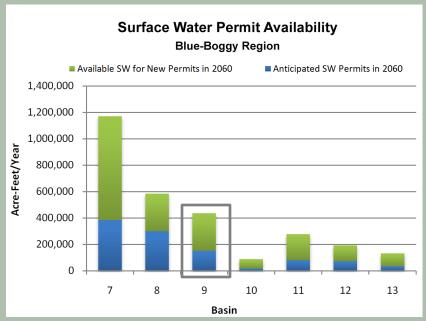
- Stream water considered publicly-owned, subject to appropriation by OWRB
- Provides "first in time, first in right"
- Protects domestic (riparian) users from interference from appropriative users
- Requires OWRB to determine if unappropriated water available

Mean Monthly Streamflow (Period of Record) Poteau River



Seasonal Stream Water Rights Allocation (Addressing Gaps)







Magnitude and Probability of Annual Gaps and Storage Depletions

Blue-Boggy Region, Basin 9

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	Maximum	Maximum Gaps/Storage Depletions			Probability of Gaps/ Storage Depletions		
Planning	Surface Water	Alluvial Groundwater	Bedrock Groundwater	Surface Water	Alluvial Groundwater		
Horizon	AFY			Percent			
2020	370	0	0	16%	0%		
2030	570	30	0	19%	14%		
2040	810	30	0	22%	14%		
2050	1,000	40	0	22%	17%		
2060	1,290	60	0	22%	22%		

Surface Water Gaps by Season (2060 Demands)

Blue-Boggy Region, Basin 9

	Marrian Caral	Madian Can	Duals ability	
	Maximum Gap ¹	Median Gap	Probability	
Months (Season)	AF/month	AF/month	Percent	
Dec-Feb (Winter)	0	0	0%	
Mar-May (Spring)	0	0	0%	
Jun-Aug (Summer)	480	450	17%	
Sep-Nov (Fall)	270	270	14%	

¹ Amount shown represents the largest amount for any one month in the season indicated.

Water Management & Supply Reliability Seasonal Stream Water Rights Allocation

Current Permitting System (Average Annual):

- Less complicated up-front calculations/permit conditions
- Overestimates water actually available during high-demand, low-flow conditions
- Water source unreliable
- Requires more active water right administration (complaints/conflict response and enforcement)

Seasonal System:

- More complicated up-front calculations/permit conditions
- More accurately and efficiently appropriates water
- Greater assurance of availability
- Reduces over-appropriation of water and need for costly enforcement/complaints response

Estimated Enforcement Costs

(calls/complaints, investigations, travel, records, reports, legal)

2006 Drought Interference Complaints = \$47,000

2010 Domestic User Case = \$9,000 (excluding legal)

2011 Drought Interference Complaints (ongoing) = \$60,000-\$100,000

Draft OCWP Priority Water Policy Recommendations & Implementation Water Management & Supply Reliability

To address projected statewide and regional increases in consumptive demands for water and effectively administer a water management program that ensures reliable supply for all users, the OWRB should implement the following recommendations, considering regional variations when appropriate:

The OWRB should organize a workgroup of water users, researchers and other experienced professionals to <u>investigate the utility, impacts and appropriateness</u> of transitioning from an average annual to a seasonal stream water allocation program.

Potential Options:

- Coordinate with in-stream flow advisory committee work
- Allow stakeholders to determine appropriateness based on cost-benefit, spatial considerations, etc.
- Conduct demonstration or pilot study to assess implementation

Draft OCWP Priority Water Policy Recommendations & Implementation Water Management & Supply Reliability

To address projected statewide and regional increases in consumptive demands for water and effectively administer a water management program that <u>ensures reliable supply</u> for all users, the OWRB should implement the following recommendations, considering regional variations when appropriate:

The OWRB should organize a workgroup of water users, researchers and other experienced professionals to <u>investigate the utility, impacts and appropriateness</u> of transitioning from an average annual to a seasonal stream water allocation program.

The OWRB should conduct a prioritized, comprehensive hydrologic evaluation of groundwater basins across the state to characterize groundwater/stream water interactions, as well as COMMISSION A STAKEHOLDER WORKGROUP TO EVALUATE the suitability of a potential conjunctive management program in Oklahoma.

Public Recommendation:

- Comprehensive evaluation of priority stream water and alluvial systems with statewide focus on interactions between local SW and GW and SW maintenance requirements
- Minimum 20-year updates required

OWRB Assessment:

- Significant interactions in certain systems
- Determine applicability and frame policy.
- If conjunctive management is warranted, would require consistent funding for studies and hydrologic model development

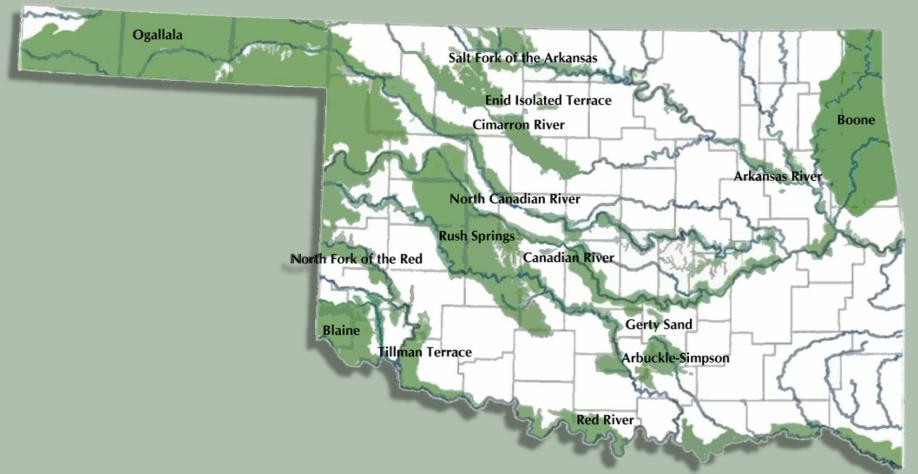
OWRB "Water-Related Research" Recommendation:

Research related to better understanding of the interactions between
 SW and GW in the state's alluvial aquifer and stream systems

- <u>Groundwater/stream water interactions exist</u> and they are complex, challenging, and data-intensive:
 - Where GW discharges to streams = Gaining Stream
 - Where SW recharges aquifer = Losing Stream
- Oklahoma: GW "mining law" allows GW depletion, but also leads to loss of perennial streams in certain areas. (e.g., Ogallala and Beaver River in Texas/Beaver Counties)
- Many states recognize SW/GW interaction and restrict GW development:
 - Kansas: two-threshold system 1) restrictions, 2) closes aquifer to new development
 - Oregon, Washington: GW permits junior to SW
 - Colorado: in alluvium terrace, if analysis over interference threshold, permit application denied
 - Idaho, Montana, New Mexico, Wyoming: recognize and have some form of conjunctive use management to protect stream flow

- Arbuckle Simpson Study:
 - first study to formally assess interactions and establish maximum annual yield (MAY) to protect stream and spring flow.
- Ogallala:
 - limited specific research conducted, established connection....losing perennial streams.
- Other past GW hydrologic studies have shown interactions, however no formal analysis:
 - North Canadian River, Arkansas River sand and gravel deposits that parallel streams
 - Rush Springs, Blaine Gypsum

Groundwater Basins with Known or Potential GW-SW Interactions



Present Situation:

- All stream water permits depend on base flow
 - Example: Oklahoma City holds water rights to Canton Lake supply. However, in times of low base flow, only 50% of water released is lost before it reaches Lake Overholser.
- 81% of public water systems depend upon reservoirs for supply and the majority of reservoirs depend upon base flows from streams for yield

Future Need:

 Identify and quantify interactions across state to make informed management decisions and develop fair management schemes

Options:

- Routinely conduct studies as part of MAY hydrologic studies:
 - Increases MAY study costs approximately 15%
- Priority on alluvium terrace aquifers (unstudied and 20-yr updates, hotspots, etc.) and unstudied bedrock aquifers w/suspected connection

Groundwater Sustainability

- Current law policy = "utilization" (regulated depletion), but conservative estimates
 - Minimum basin life = 20-year simulated pumping of potential
 EPS scenarios
 - Assume 100% development (all lands pumped)
 - Assume 50% of overlying lands dry exc. domestic
- Previous law policy = "conservation"
 - "Critical groundwater areas"
 - Pump only "safe annual yield" = average annual recharge
 - Not feasible to pump Ogallala with these restrictions

Groundwater Sustainability

Possible options under current law:

- I. Issue only "temporary permits" = 2 AF/acre (could inadvertently increase rate of depletion)
- 2. Increase minimum basin life to 50 or 100 yrs. = computer model adjustment would limit MAY and EPS
- 3. Clarify that regular permit issuance = EPS "allocation"
 - I. After MAY update, law says can "increase but not decrease amount allocated"
 - 2. Existing regular permits for original EPS grandfathered
 - 3. Only new regular permits subject to new decreased EPS

Other Options:

- I. Voluntary Conservation
- 2. Mandatory Metering

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

SUGGESTED DEFINITION

SUGGESTED PROCEDURE

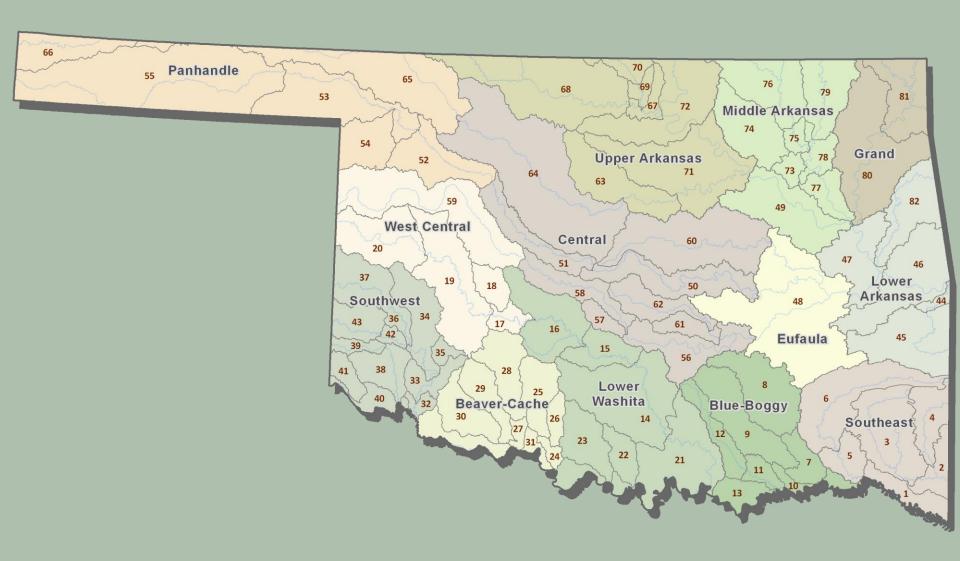
Excess & Surplus Water Background

- 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."

OCWP Watershed Planning Regions & Basins



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 deprival 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 <u>existing or proposed</u> beneficial uses within the stream system and the needs of the water users therein."
- B.I: "...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

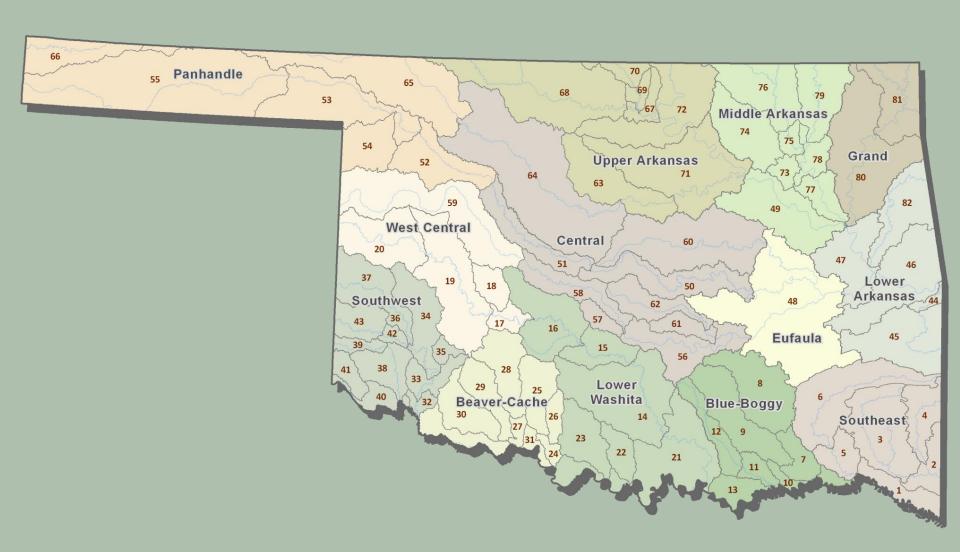
Background OWRB Rules

- 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."

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

"'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 82 basins as set forth in the 2012 OCWP Watershed Planning Region Reports; provided that nothing in this definition is intended to affect ownership rights to groundwater and that groundwater is not considered excess and surplus water."

OCWP Watershed Planning Regions & Basins



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

- 1) 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 amount.
- 2) Each of the 82 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.

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

- In considering individual 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.
- 4) For any permit for out-of-basin use, the Board will also exclude from consideration:
 - (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 requirements established pursuant to law.

Current OCWP Report Data



Surface Water Permit Availability

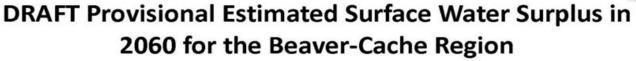
Beaver-Cache Region

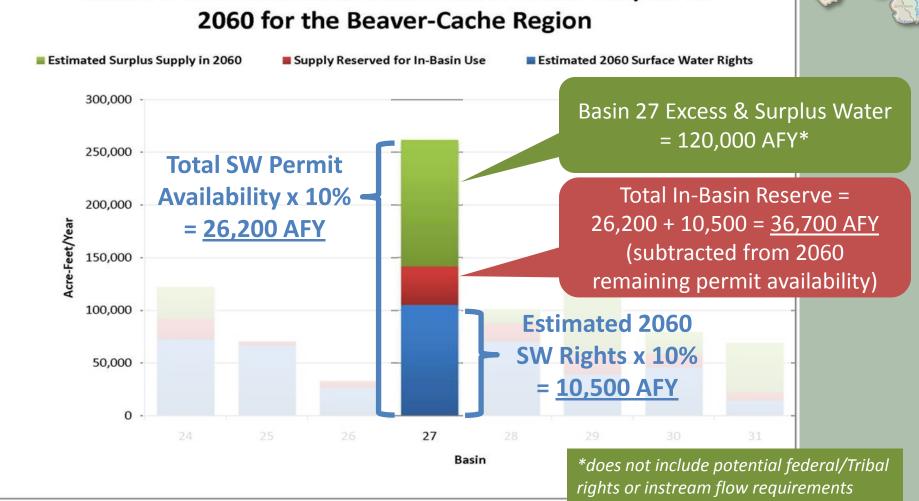


Permit Availability Components

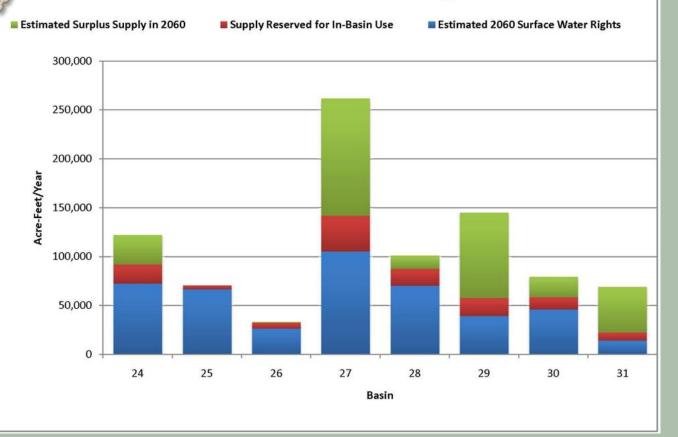
- Y axis of preceding chart = Total surface water availability based upon current permitting protocol
- 2) "Anticipated SW Permits in 2060" includes:
 - Current and future permit needs through 2060 (includes demand growth)
 - Existing out-of-basin transfers
 - Reservoir yield(s)
 - Downstream future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

Example Excess/Surplus Water Beaver-Cache Region



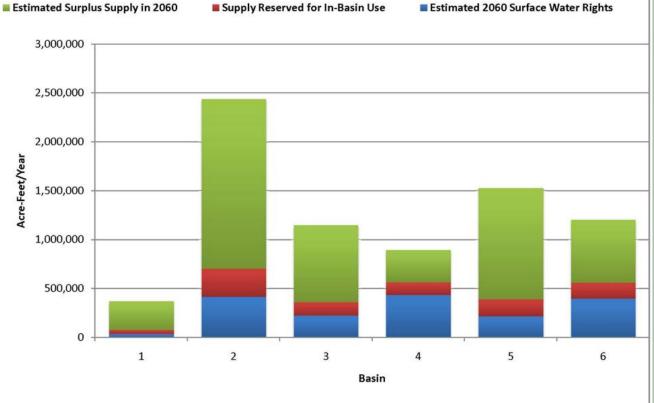




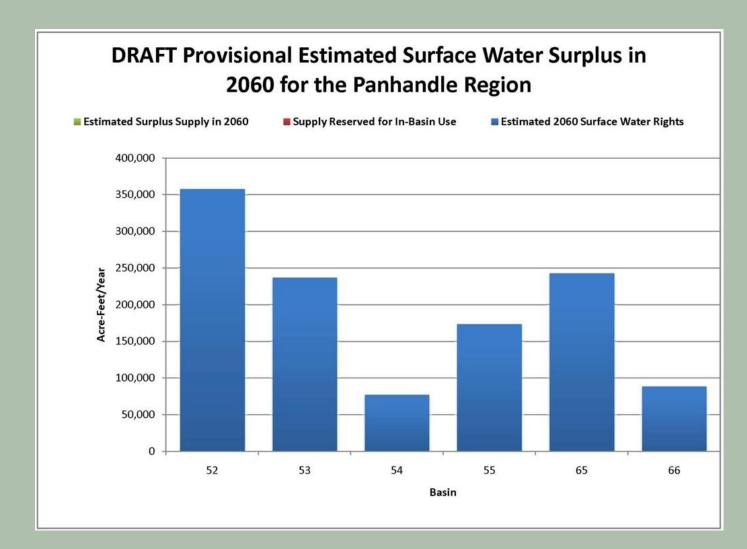




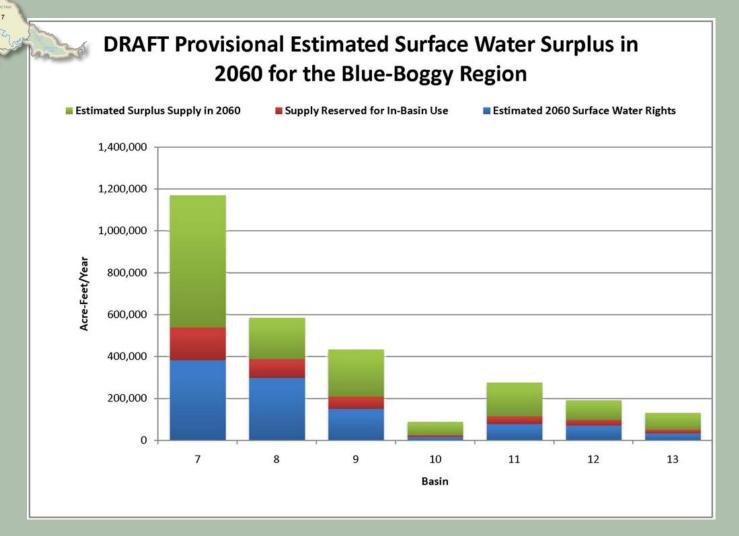


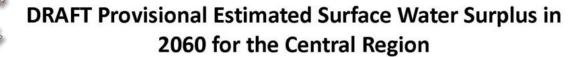


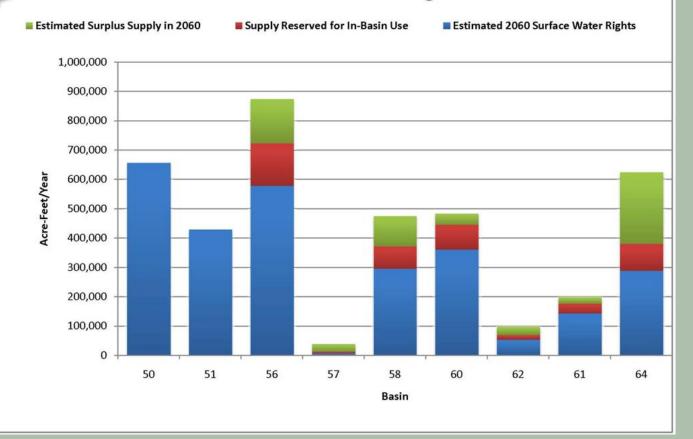






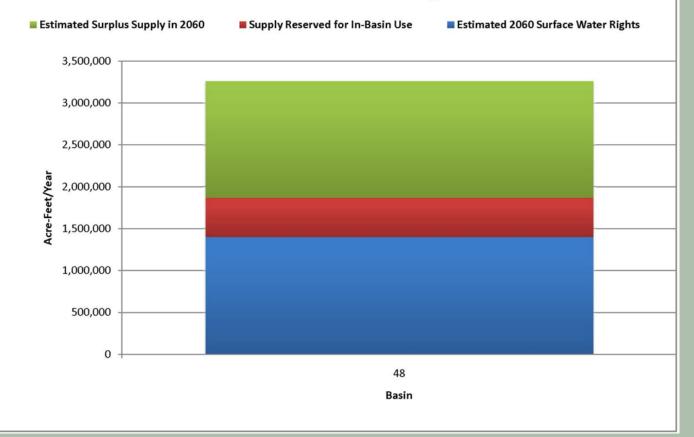




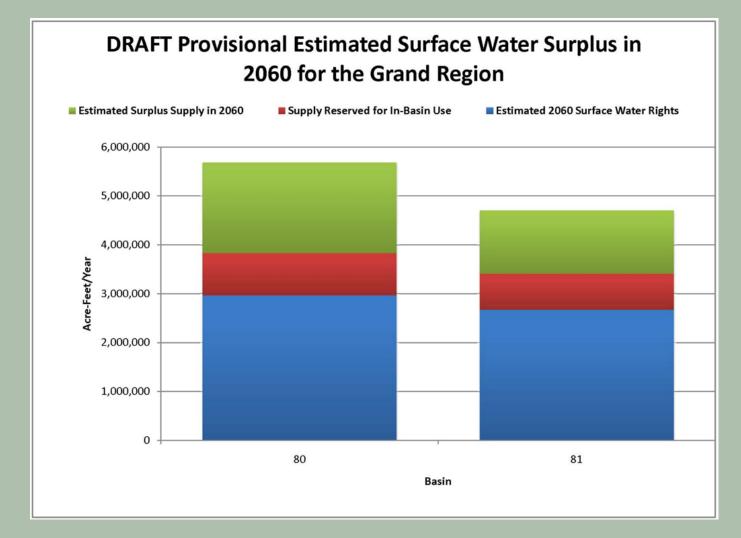




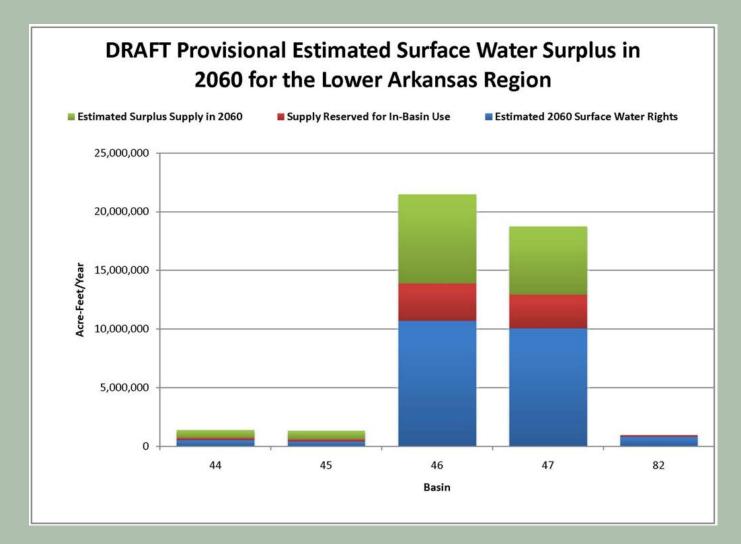


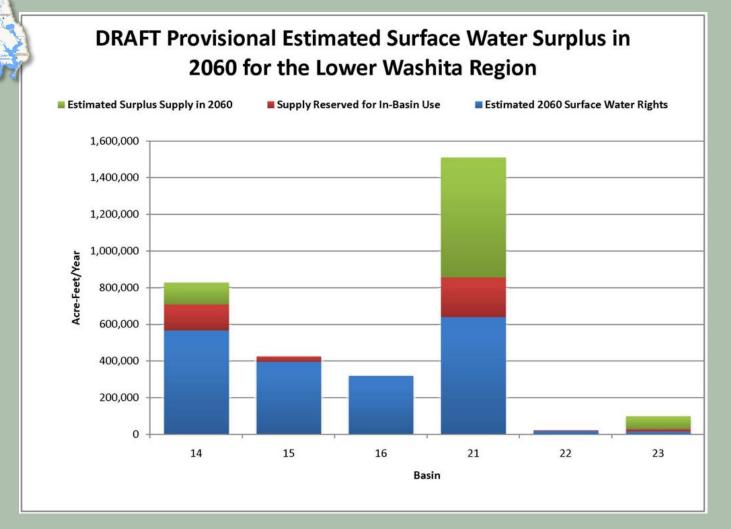




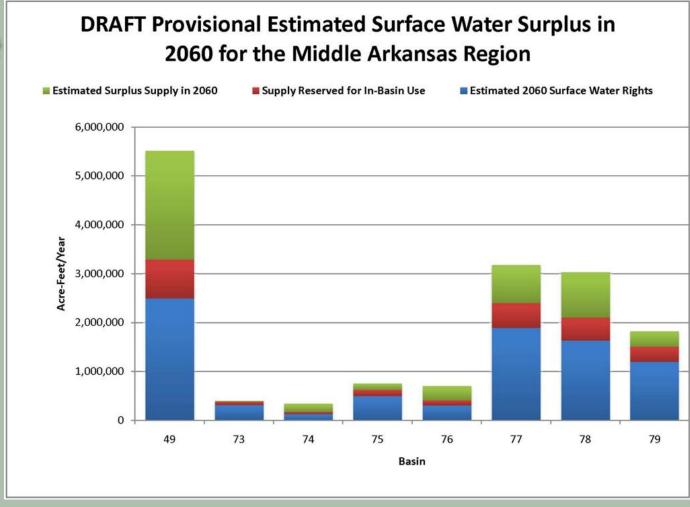




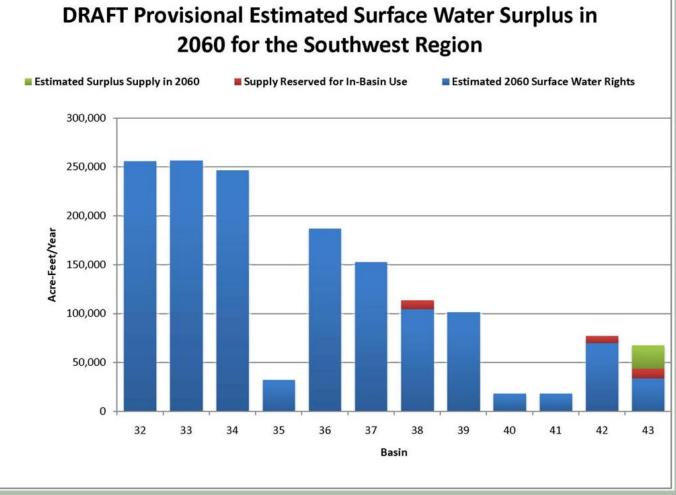


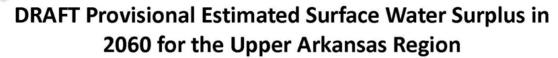


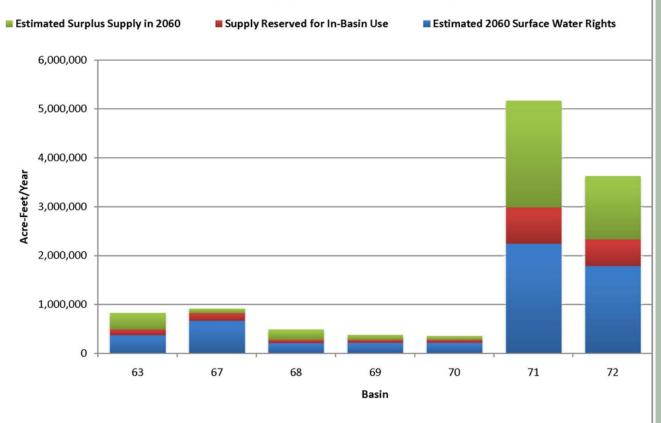






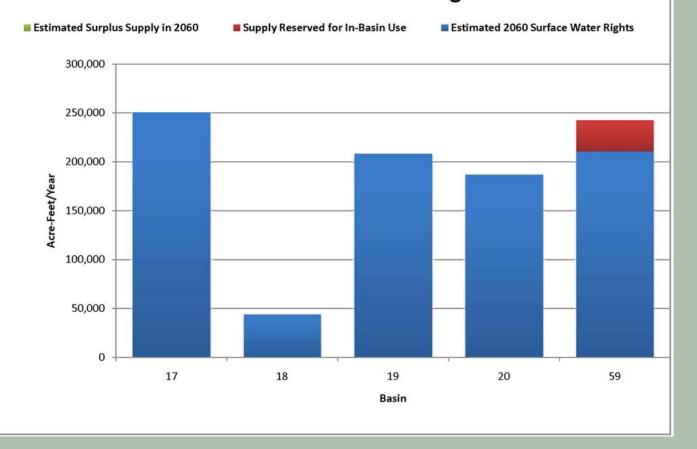








DRAFT Provisional Estimated Surface Water Surplus in 2060 for the West Central Region



Excess/Surplus Water Integral Changes to Existing Policy

- Defines area of origin at the 82 basin level
- Balances utilization of water for the benefit of the entire state with <u>protection</u> 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 establishment of instream flows/recreational needs and federal/Tribal rights
- Expressly exempts groundwater

Draft OCWP Priority Water Policy Recommendations & Implementation

Regional Planning Groups

The OWRB should form a workgroup to investigate and make appropriate recommendations to the State Legislature related to the creation of at least thirteen Regional Planning Groups to assist in planning and implementing OCWP initiatives at the regional level. These regional groups should consist of local stakeholders, as well as appropriate agency representatives, charged with developing regional water plans in a manner consistent with the OCWP and its implementation priorities. Such plans could include the identification of specific projects, studies, programs, research and other evaluations specific to addressing the needs and issues identified by Regional Planning Group participants. The State Legislature should establish regular appropriations to the OWRB to coordinate the activities of these groups.

Regional Planning Groups Important Elements of Recommendation

- Calls for formation of a workgroup to develop the Regional Planning Group concept
- Proposes broad functions:
 - Development of regional water plans
 - Activities focused on OCWP Implementation
 - Seeks consistency with the 2012 OCWP
 - Representation from variety of stakeholders
 - Seeks multi-agency participation
 - Calls for OWRB to be coordinating agency
 - Does not propose regulatory authority
 - Requests funding to support these functions

Why Form Regional Planning Groups?

- Included in 9 OCWP Recommendations (6 from Public):
 - The State Legislature should enact legislation to create thirteen Regional Advisory
 Groups charged with identifying local water resource issues and developing action
 plans and recommendations for implementation by the OWRB. [Public Rec]
- Facilitates OCWP implementation and establishes excellent groundwork for next decennial OCWP update
- Recognizes unique regional characteristics and needs:
 - Reflects national trend in watershed-based planning (EPA, Corps, Reclamation)
- Prioritization of regional issues through regional water plans
- Establishes feedback mechanism between OWRB/stakeholders
- Local outreach on water issues
- Approximately 65% of states have similar groups

Colorado



Basin Roundtables:

- Origins in 2003 through SWSI; formalized in 2005
- 9 Roundtables (based on 8 major river basins and Denver metro area)
- Membership:
 - 10 at-large members representing major water use sectors
 - 4 non-voting members (from outside basin)
 - Agency liaisons (federal and state)
 - CWDB member from the basin

Colorado Basin Roundtables

- Purpose and Mission:
 - Facilitate discussions on water issues and encourage locally driven collaborative solutions.
 - Each Roundtable is required to develop a basin-wide water needs assessment consisting of four parts:
 - I. Consumptive water needs (municipal, industrial and agricultural);
 - 2. Nonconsumptive water needs (environmental and recreational);
 - 3. Available water supplies (surface and groundwater) and an analysis of unappropriated waters; and
 - 4. Proposed projects or methods to meet identified water needs and achieve water supply sustainability

Colorado Basin Roundtables

Type of Authority:

- Advisory/technical input.
- Informal influence on policy making—they don't set policy, but can provide input.
- Relationship to Agency:
 - Overseen by the CWCB
- Funding:
 - \$10 million annually allocated to basin/statewide accounts
 - Managed by the CWCB

Texas



Regional Water Planning Groups:

- -Established in 1997 (Senate Bill I)
- 16 Groups based primarily on political boundaries
- -Membership:
 - Appointed by TWDB
 - Representation from II major water use interests (at a minimum)
 - Balance within each region may be different

Texas Regional Water Planning Groups

Purpose and Mission:

- Each RWPG is responsible for preparing and adopting a regional water plan for their area that meets the 50-year future needs of every water user group:
 - includes policy recommendations with public input component
- TWDB financial assistance for water supply projects provided only to projects that meet identified needs consistent with approved regional water plans
- The Texas Commission on Environmental Quality may not issue a water right permit for municipal purposes unless it is consistent with an approved regional water plan
- Plans updated every 5 years

Texas Regional Water Planning Groups

- Type of Authority:
 - Regional Plans carry weight, but must be approved by TWDB
 - Do not perform regulatory functions
 - Policy input through regional plans
- Relationship to Agency:
 - Overseen by TWDB
- Funding:
 - Approximately \$16 million every 5 years
 - TWDB passes funding down and regions contract for work (in the form of grants)

Kansas



Basin Advisory Committees:

- -Established in 1985
- 12 Committees based on major river basins
- -Membership:
 - 7 core membership categories represented
 - 2-4 members representing particular needs and interests of the basin

Kansas Basin Advisory Committees

Purpose and Mission:

- Provide insight and advice on water issues to the Kansas Water Authority and serve as a forum for community involvement
- Collaboration among stakeholders
- Provide feedback on water issues to the KWA,
 which may be elevated to the Legislature

Kansas Basin Advisory Committees

Type of Authority:

 Advisory only on matters of policy and funding of planning studies

Relationship to Agency:

- Overseen by the Kansas Water Office
- Agenda for meetings set by the KWO

Funding:

- Approximately \$20 million annually for KWO planning studies
- KWO/KWA sets spending priorities, BACs provide input
- KWO can pay miscellaneous travel expenses for members

Oklahoma Regional Planning Groups Positives and Negatives

Positives:

- Allows for "bottom up" planning
- Provides for regular, formal engagement on issues
- Recognizes regional characteristics and needs
- Collaboration providing for increased appreciation of unique stakeholder interests
- Sounding board for state agency policy matters
- Excellent educational/outreach forum for agencies

Potential Negatives:

- Expectations must be clear or there will be disparity among regions
- Must be central coordination to ensure consistency among regions and effective operation
- Funding mechanisms must be fair or risk the creation of the "haves" and "have nots"

Oklahoma Regional Planning Groups

Implementation & Estimated Costs:

- Colorado = \$10,000,000/year
- Texas = \$3,200,000/year (\$16 million/5 years)
- Kansas = \$20,000,000/year
- Oklahoma = \$2,000,000/year:
 - Based upon Texas in similarity of scope
 - Could be satisfied in part through
 leveraging state resources for federal dollars