

2025 **OCWP**
Oklahoma Comprehensive Water Plan

Water Management Strategy Assessment

March 2026 / FINAL



OKLAHOMA
Water Resources Board



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Abbreviations

AF	acre-feet
AFY	acre-feet per year
AGW	alluvial groundwater
BGW	bedrock groundwater
Carollo	Carollo Engineers
CI	irrigated cropland
LS	livestock production
MBI	Michael Baker International
mgd	million gallons per day
mg/L	milligrams per liter
N/A	Not Applicable
OCWP	Oklahoma Comprehensive Water Plan
OWRB	Oklahoma Water Resources Board
PS	public supply
SSI	self-supplied domestic
TDS	total dissolved solids
USACE	United States Army Corps of Engineers
WMS	Water Management Strategy(ies)

EXECUTIVE SUMMARY

This report, prepared by Carollo Engineers (Carollo) in partnership with the Oklahoma Water Resources Board (OWRB), United States Army Corps of Engineers (USACE), and Michael Baker International (MBI), presents a comprehensive evaluation and comparison of Water Management Strategies (WMS) under consideration for the 2025 Oklahoma Comprehensive Water Plan (OCWP). Carollo's work is built upon foundational evaluations and data provided by MBI. The primary objective of this evaluation was to assess the efficacy (via a scoring system) of various WMS at mitigating anticipated water demand shortages forecasted in the state's 82 OCWP Planning Basins through 2075. This report details the inputs and algorithms used for the evaluation and summarizes results by basin.

The assessment considered seven high-level categories of WMS.

- **Demand Management:** Reducing water demands through conservation and drought management for non-agriculture uses
- **Agriculture Options:** Water conservation and efficiency tools for irrigated cropland and livestock production
- **Water Transfers:** Obtaining water resources from external suppliers or regions
- **Increase Reliance on Surface Water:** Developing or utilizing above-ground water resources
- **Increase Reliance on Groundwater:** Developing or utilizing underground water resources
- **Stormwater Capture and Use:** Collecting and beneficially using post-precipitation runoff
- **Reuse:** Reclaiming and treating water for beneficial purposes

The evaluation methodology involved a three-step process: (1) Assessing the projected water supply shortage magnitude, (2) scoring each independent WMS by basin, and (3) calculating a combined total score. The magnitude of the demand shortage by supply source (surface water, alluvial groundwater, and bedrock groundwater) in 2075 was the initial step. Effectiveness scores were then determined for each WMS for each basin, with a focus on identifying the most effective strategies for basins with water supply shortages greater than 20 percent of 2075 demand. The scoring resulted in narratives such as "Effective at Meeting Future Demands," "Potentially Effective with Local Variability," "Partially Effective – Shortages Remain," and "May Increase Shortages – Use with Other Strategies" for each WMS in each basin. For basins with shortages exceeding 20 percent, a more detailed evaluation was conducted for certain WMS categories, considering factors specific to those categories like surface water availability, brackishness water quality, return-to-sewer flows, precipitation, and proximity and availability of supplies in nearby basins. Scores were then combined to determine the final score.

The analysis was conducted at the basin level, and while the categories and scoring are generalized, specific projects for individual water users will be needed. This basin-level identification does not supersede local planning, and site-specific conditions may lead to exceptions in the viability of WMS categories.

Table ES.1 provides a summary of effectiveness scores for each WMS, summed from the basin results. Demand Management and Agriculture Options are effective in more than half the basins and partially effective in all others. Increase Reliance on Surface Water is an effective strategy for 44 basins (54 percent). Increase Reliance on Groundwater is an effective strategy for slightly less than half of the basins (39 basins or 48 percent). Of the non-traditional strategies, Water Transfers is effective in 20 basins with projected shortages larger than 20 percent and potentially effective for an additional 15 basins. Stormwater Capture and Use is effective to potentially effective for 16 basins. Reuse is effective or potentially effective for 13 basins and could be partially effective for 18 basins. These results highlight the potential and need for advancement of conservation, agriculture programs, and non-traditional water supply sources to meet the future needs of water supply in Oklahoma. Funding and programs around these non-traditional sources are needed to support water supply users.

Section 3 of this report presents the final water management scores for each WMS by basin, organized by region. Appendices A through E provide detailed information on shortage magnitude scoring and the specific scoring criteria for Increased Reliance on Surface Water, Reuse, Stormwater Capture and Use, and Water Transfers, respectively. This information is intended to inform OWRB and the state's water users in planning for programs, policies, and funding to address future water supply needs.

Table ES.1 WMS Effectiveness Scores Summary

Effectiveness Score	Demand Management	Agriculture Options	Increase Reliance on In-Basin Surface Water	Increase Reliance on In-Basin Groundwater	Stormwater Capture and Use	Reuse	Water Transfers
Effective at Meeting Future Demands	47 (57%)	47 (57%)	46 (56%)	39 (48%)	2 (2%)	11 (13%)	18 (22%)
Potentially Effective with Local Variability	0	0	N/A	N/A	12 (15%)	1 (1%)	15 (18%)
Effective When Paired with Demand Management/ Agriculture Options	N/A	N/A	15 (18%)	8 (10%)	N/A	N/A	N/A
Partially Effective – Shortages Remain	35 (43%)	35 (43%)	N/A	N/A	1 (1%)	17 (21%)	0
Ineffectively Effective at Meeting Future Demands	0	0	17 (21%)	1 (1%)	20 (24%)	6 (7%)	2 (2%)
No Shortage or Needs Met by Other Strategies	0	0	N/A	N/A	47 (57%)	47 (57%)	47 (57%)
May Increase Shortages – Use with Other Strategies	N/A	N/A	4 (5%)	34 (41%)	N/A	N/A	N/A

Notes:
N/A - Not Applicable, means that the effectiveness score does not apply to that water management strategy.

SECTION 1 INTRODUCTION

OWRB is a nine-member, governor-appointed board, that serves as the state's water resources planning and development agency. To fulfill its mission of managing, protecting, and improving the state's water resources to meet long-term water supply, quality, flood mitigation, and infrastructure needs, the OWRB coordinates a decadal update of its OCWP and manages the recommended initiatives, studies, and projects for its 13 Planning Regions.

OWRB engaged Carollo, in partnership with the USACE and its consultant MBI, to conduct a comprehensive evaluation and comparison of WMS under consideration for the 2025 OCWP, with the objective of assessing (via a scoring system) their efficacy in mitigating anticipated water shortages forecasted in the state's 82 OCWP Planning Basins. Carollo's work was built upon foundational evaluations and data sources provided by MBI. This report reflects the inputs and algorithms that determined those conclusions and summarizes results by basin.

1.1 Water Management Strategy Overview

After assessing water demands, available supplies, and shortages by basin to 2075, WMS were identified that could potentially meet shortages or otherwise be implemented to manage water resources. Surface water shortages, or gaps, are defined as periods when demand exceeds physical surface water supplies. Similarly, groundwater shortages or depletions are defined as periods when demand exceeds projected recharge amount (physical supply).

Some of the WMS focus on managing water demand, while others include developing new water supplies or shifting demands to be supplied by alternative sources. The feasibility of numerous alternative (or non-traditional) WMS has advanced in the last several decades, with viable alternatives being developed across the United States, and especially in the arid West. Examples of alternative supplies include potable and non-potable water reuse, treatment of brackish sources, and stormwater capture and use.

Because these alternative/non-traditional WMS can have a range of costs and implementation challenges, only areas with projected water supply shortages would be likely to consider or implement them. Water users in basins that do not have projected shortages are likely to continue to utilize existing supplies to meet demands. Many utilities, regardless of the extent or presence of supply challenges, turn to Demand Management as a best management practice. For basins where minor shortages are projected and where shortages would be experienced periodically during times of low streamflow, additional Demand Management could be relied upon to close the shortage. Similarly, groundwater shortages that are small in magnitude could be mitigated with Demand Management, and both cases of minor surface water or groundwater shortage on agriculture users could be mitigated with Agriculture Options. However, in basins where there are limited supplies and projected shortages of significant magnitude, alternative WMS are necessary.

Information on the types of strategies needed and the geographic locations of each viable strategy is powerful for OWRB and the state's water users to inform planning for programs, policies, and funding. While the categories and scoring are generalized at the basin level, specific projects for a discrete water user or group of users will be needed. This assessment does not identify any specific projects for water users. Further, water users should also consult local conditions and resources to determine water supply needs and effective potential solutions. This basin-level identification does not supersede local planning, and it is expected that there will be local exceptions to the viability (or non-viability) of each category of WMS due to site-specific and project-specific conditions.

The following seven categories of WMS were scored to assess their effectiveness within each of the state's 82 OCWP Planning Basins.

Demand Management: Demand Management refers to the potential to reduce water demands and alleviate gaps or depletions by implementing conservation or drought management measures. It is a vitally important tool that can be implemented either temporarily or permanently to decrease demand. This strategy is specific to non-agriculture uses. Examples include water utility-driven conservation programs, industrial conservation, water loss control, and drought management measures.

Agriculture Options: Agriculture Options are water conservation and efficiency tools specifically for the irrigated cropland (CI) and livestock production (LS) sectors. Examples include irrigation system improvements, soil moisture probes, meters, electrified pumps, operational changes, growing less water intensive crops, reuse of tailwater, and using municipal recycled water for agriculture purposes.

Water Transfers: Water Transfers describe the strategy of obtaining either surface or groundwater resources from sources or suppliers in another basin and conveying the supply to where it is needed. Examples include water purchases, imports (inter-basin transfers), water provider collaboration, interconnections, and regionalization.

Increase Reliance on Surface Water: Surface water is any water resource found above ground, such as a lake, river, reservoir, or stream. There are various means of increasing surface water resources, but the applicability is highly dependent upon location. Examples of Increased Reliance on Surface Water include constructing new reservoirs, conveying or allocating water from existing reservoirs, expanding existing reservoirs, treating brackish surface water to suitable standards, and diverting additional stream water from within the basin.

Increase Reliance on Groundwater: Groundwater refers to any water resource that is found underground in saturated zones. Site-specific information on the suitability of aquifers for supply should be considered. Examples of Increased Reliance on Groundwater include drilling additional wells, treating brackish groundwater to suitable standards, and developing managed aquifer recharge and recovery wells from within the basin.

Stormwater Capture and Use: Stormwater Capture and Use refers to collecting and beneficially using water that does not infiltrate after a precipitation event. Large volumes can be generated in urban settings where impervious cover (pavement, buildings) is typical. Most municipalities have infrastructure in place to divert stormwater to nearby bodies of water. However, this water could potentially be stored, treated, and used for potable or non-potable uses.

Reuse: Water Reuse refers to reclaiming water from various sources and then treating and utilizing it again for beneficial purposes (e.g., irrigation, potable water supply, groundwater recharge, etc.). The most common source of reclaimed water is treated municipal wastewater, but industrial facilities can also recycle water. Examples include non-potable reuse (e.g., landscape irrigation, industrial uses), indirect potable reuse (discharging highly treated recycled water into an environmental buffer prior to it being recaptured for use as a water supply), direct potable reuse (purified recycled water used to augment potable water in a public water system).

SECTION 2 EVALUATION METHODOLOGY

Effectiveness scores were determined for each WMS for each basin using a four-step process.

1. Assessment of the projected water supply shortage magnitude
2. Assignment of an intermediate effectiveness score
3. Scoring of each independent WMS by basin
4. Combined final score

Each step is covered in greater detail in the sections that follow. The general approach was to define critical shortage thresholds, assign an effectiveness score, then identify whether WMS is effective for basins with water supply shortages greater than 20 percent of 2075 demand. Exceptions are noted.

2.1 Shortage Magnitude Assessment

The scoring process began by assessing the magnitude of the demand shortage by supply source in 2075. Aligned with the shortage analysis, three traditional sources of supply were considered: surface water, alluvial groundwater (AGW), and bedrock groundwater (BGW). Based on a hydrologic dry year for surface water and AGW and recharge rate for BGW, the shortage and corresponding thresholds were set at:

- **No Shortage:** Estimated 2075 shortage is less than 1 percent of 2075 demand (where shortage of 1 percent or less were assumed to be within the range of accuracy of the modeling).
- **No Significant Shortage:** Estimated 2075 shortage is less than 5 percent of 2075 demand.
- **Shortage Met with Demand Management:** Estimated 2075 shortage is less than 20 percent of 2075 demand.
- **Shortage Needing Mitigation:** Shortage needs mitigation strategies beyond Demand Management if the estimated 2075 shortage is more than 20 percent of 2075 demand.

Through a systematic process, each traditional supply source (e.g., surface water, AGW, BGW) was scored per the above criteria for each basin. For any basin with an AGW or BGW depletion or surface water gap, it was assumed that existing Demand Management practices would be able to reduce demand by 20 percent during extreme drought or other supply emergency conditions. Appendix A – Shortage Magnitude Scoring provides results of the shortage magnitude assessment by basin and source.

2.2 Intermediate Effectiveness Identification

Results of the shortage magnitude assessment were analyzed to provide an intermediate effectiveness score for each WMS by basin. Tables 1, 2, and 3 provide the matrix of assumptions for scoring the surface water gaps, AGW depletions, and BGW depletions, respectively, to identify the effectiveness of Demand Management, the supply source, and the alternate/non-traditional WMS. Essentially, these assumptions provide a mapping for an intermediate score and indicate which basins need to have WMS further analyzed. The algorithms and data inputs for determining the final scores are described in Section 2.3.

Note that one exception to this process was made for surface water assessments. Regardless of the shortage magnitude, if surface water is neither legal nor physically available for use, then surface water was scored lower, as explained in Section 2.3.1.

Table 1 Intermediate Effectiveness Matrix for Surface Water Gap Threshold to WMS

Shortage Threshold	Narrative	No. of Basins (Out of 82 total)	Demand Management	Agriculture Options	Water Transfers	Reliance on Surface Water ⁽¹⁾	Reliance on Groundwater	Stormwater Capture and Use	Reuse
No Shortage	No shortage is projected	37	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
No Significant Shortage	No significant shortage if estimated 2075 maximum shortage is less than 5% of 2075 demand	20	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Shortage Met with Demand Management	Shortage can be mitigated with Demand Management if the estimated 2075 maximum shortage is less than 20% of 2075 demand	24	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	Effective When Paired with Demand Management/ Agriculture Options	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Shortage Needing Mitigation	Shortage needs mitigation strategies beyond Demand Management if the estimated 2075 maximum shortage is more than 20% of 2075 demand	1	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Some Strategy Needed; Determine Unique Score by Basin	May Increase Shortages – Use with Other Strategies	Some Strategy Needed; Determine Unique Score by Basin	Some Strategy Needed; Determine Unique Score by Basin	Some Strategy Needed; Determine Unique Score by Basin

Notes:

(1) For basins with neither physical nor legal availability for additional reliance on in-basin surface water, the WMS was scored as "Ineffective at Meeting Future Demands," regardless of the magnitude of the shortage, and other strategies were evaluated. This exception applied to only one basin.

Table 2 Intermediate Effectiveness Matrix for Alluvial Groundwater Depletion Threshold to WMS

Shortage Threshold	Narrative	No. of Basins (Out of 82 total)	Demand Management	Agriculture Options	Water Transfers	Reliance on Surface Water	Reliance on Groundwater	Stormwater Capture and Use	Reuse
No Shortage	No shortage is projected	55	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
No Significant Shortage	No significant shortage if estimated 2075 maximum shortage is less than 5% of 2075 demand	7	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Shortage Met with Demand Management	Shortage can be mitigated with Demand Management if the estimated 2075 maximum shortage is less than 20% of 2075 demand	14	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective When Paired with Demand Management/ Agriculture Options	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Shortage Needing Mitigation	Shortage needs mitigation strategies beyond Demand Management if the estimated 2075 maximum shortage is more than 20% of 2075 demand	6	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Some Strategy Needed; Determine Unique Score by Basin	Some Strategy Needed; Determine Unique Score by Basin	May Increase Shortages – Use with Other Strategies	Some Strategy Needed; Determine Unique Score by Basin	Some Strategy Needed; Determine Unique Score by Basin

Table 3 Intermediate Effectiveness Matrix for Bedrock Groundwater Depletion Threshold to WMS

Shortage Threshold	Narrative	No. of Basins (Out of 82 total)	Demand Management	Agriculture Options	Water Transfers	Reliance on Surface Water	Reliance on Groundwater	Stormwater Capture and Use	Reuse
No Shortage	No shortage is projected	36	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
No Significant Shortage	No significant shortage if estimated 2075 maximum shortage is less than 5% of 2075 demand	13	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Shortage Met with Demand Management	Shortage can be mitigated with Demand Management if the estimated 2075 maximum shortage is less than 20% of 2075 demand	2	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective When Paired with Demand Management/ Agriculture Options	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Shortage Needing Mitigation	Shortage needs mitigation strategies beyond Demand Management if the estimated 2075 maximum shortage is more than 20% of 2075 demand	31	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Some Strategy Needed; Determine Unique Score by Basin	Some Strategy Needed; Determine Unique Score by Basin	May Increase Shortages – Use with Other Strategies	Some Strategy Needed; Determine Unique Score by Basin	Some Strategy Needed; Determine Unique Score by Basin

2.3 Unique WMS Score Calculations

For each basin with a projected shortage that exceeds 20 percent of 2075 demand, the scores for the WMS with an interim effectiveness score of "Some Strategy Needed; Determine Unique Score by Basin" was evaluated per the criteria and data described in the subsections that follow. Also, for Demand Management and Agriculture Options, these subsections describe how scores were combined.

2.3.1 Increase Reliance on In-Basin Surface Water

The surface water score incorporates two components: (1) physical and legal availability and (2) suitability due to brackish concentrations. This category includes only in-basin surface water. The transfer of surface water from other basins is included in Water Transfers (Section 2.3.7).

- **Availability:** This metric is based on both physical and legal availability. Physical availability is determined based on whether the historical basin outflow is larger than the sum of source gaps. Legal availability is defined by whether the sum of source gaps is less than the estimated water available for appropriation. This criterion is scored as yes or no, indicating whether supply is both legally and physically available, as both are required for the surface water supply to be effective at mitigating shortages. Regardless of the size of the surface water shortage, for any basin with neither legal nor physical surface water availability, the Increased Reliance on Surface Water was scored as "Ineffective at Meeting Future Demands."
- **Suitability:** The brackish score is based on concentration in milligrams/liter (mg/L) of total dissolved solids (TDS), as reported in the Marginal Quality Water Issues and Recommendations Report from the 2012 OCWP (Table 2-6)¹. The following criteria were used to score brackish water if present.
 - If the reported TDS is less than 500 mg/L, it is scored as "Typically Effective."
 - If the reported TDS is between 500 mg/L and 1,000 mg/L, it is scored as "Potentially Effective."
 - If the reported TDS is above 1,000 mg/L, it is scored as "Partially Effective."

Appendix B – Surface Water Scores for Basins with Projected 2075 Supply Gaps Needing Other Strategies provides the data and scoring for Increased Reliance on Surface Water for those basins with gaps greater than 20 percent of 2075 demand were assessed.

2.3.2 Increase Reliance on In-Basin Groundwater

Each of the 82 OCWP Planning Basins have some amount of groundwater projected to be used in 2075. Thus, the shortage (depletion) magnitude scores provide the assessment needed to determine the effectiveness of further Reliance on Groundwater. The Increased Reliance on Groundwater final score is determined by assessing the maximum score from the intermediate AGW and BGW scores, as defined by the effectiveness matrix. See Tables 2 and 3 and Appendix A.

2.3.3 Demand Management

The final Demand Management score is determined by assessing the minimum intermediate score from the surface water, AGW, and BGW scores, as defined by the effectiveness matrices. See Tables 1, 2, and 3 and Appendix A. As a result, Demand Management is scored as either "Effective at Meeting Future Demands" for projected shortages less than 20 percent of 2075 demand or "Partially Effective – Shortages Remain" for projected shortages greater than 20 percent of 2075 demand.

¹ [OCWP Marginal Quality Water Issues and Recommendations](#)

2.3.4 Agriculture Options

The final score for Agriculture Options is determined by assessing the minimum intermediate score from the surface water, AGW, and BGW scores, as defined by the effectiveness matrices. See Tables 1, 2, and 3 and Appendix A. As a result, Agriculture Options was scored as either "Effective at Meeting Future Demands" for projected shortages less than 20 percent of 2075 demand or "Partially Effective – Shortages Remain" for projected shortages greater than 20 percent of 2075 demand.

2.3.5 Reuse

If projected shortages in a basin are less than 20 percent of 2075 demand, the final score for Reuse is determined by assessing the minimum intermediate score from the surface water, AGW, and BGW scores, as defined by the effectiveness matrices. See Tables 1, 2, and 3 and Appendix A.

For each basin with a projected shortage greater than 20 percent of 2075 demand, Reuse was scored as either "Effective at Meeting Future Demands," "Potentially Effective with Local Variability," "Partially Effective – Shortages Remain," or "Ineffective at Meeting Future Demands" per the steps and criteria that follow.

1. Criteria were established to first estimate whether the basin will have sufficient return-to-sewer flows available for reuse in 2075. The 2075 Public Supply (PS) and Self-Supplied Industrial (SSI) demand projections were the basis of the evaluation, as these sectors traditionally produce return flows that can be treated and reused for various potable and non-potable purposes. A 60 percent return-to-sewer rate (from total demands) was assumed as a general planning value across the state. A minimum criterion of 0.1 million gallons per day (mgd) was established for viability of Reuse WMS, assuming that very small quantities of return flow would not be cost-effective for developing water reuse treatment and conveyance facilities. Thus, for each basin evaluated, if 60 percent of the sum of PS and SSI demands in 2075 exceeds 115 acre-feet (AF) (0.1 mgd), the criterion was determined to be met and Reuse was initially scored as "Effective at Meeting Future Demands."
2. As a second step, the percentage of reuseable water available was compared to the projected 2075 supply source shortage. As some basins have relatively large shortages but can have relatively small PS and SSI demands (and thus return flows), this criterion determines how effective Reuse can be as a strategy to alleviate the shortage. The percentage of supply source to PS and SSI supply source was calculated. The result was scaled, with 70 percent or greater scored "Effective at Meeting Future Demands," between 40 and 70 percent "Potentially Effective with Local Variability," and less than 40 percent "Partially Effective – Shortages Remain." An illustration of why this is an important criterion follows:

Consider a basin where groundwater is essentially the sole source of supply for meeting water needs. If the large majority of use is agriculture in nature, and significant groundwater depletions are projected due to agriculture withdrawals, Reuse would be scored as only "Partially Effective – Shortages Remain" in mitigating the shortage, as Reuse could be used to supply PS and/or SSI demands but would not be effective or available for largescale agriculture use.

3. A third criterion was established to consider whether the shortage in supply (either surface water, AGW, or BGW) is related to the source that supplies in-basin PS and SSI demands. If it is not, then alleviating the shortage with Reuse may be possible, but would require more coordination and infrastructure and will be more site specific. In this event, Reuse was scored as "Potentially Effective with Local Variability." An illustration of why this is an important criterion follows:

Consider a basin where a depletion is projected in BGW, and only agriculture users rely upon BGW, while PS and SSI users exclusively use surface water. While it is possible for water from PS or SSI return flows to be treated and supplied to agriculture users, thereby reducing the demand for BGW

and its associated depletion, these types of reuse projects are site-specific and require agriculture uses to be in relatively close proximity to water reclamation facilities. Thus, the score for Reuse in that particular basin would be scored as "Potentially Effective with Local Variability."

The minimum score for each of these three criteria was calculated as the final score. Results are presented in Appendix C – Reuse Scores for Basins with Projected 2075 Supply Shortages Greater than 20% of 2075 Demand.

2.3.6 Stormwater Capture and Use

If projected shortages in a basin are less than 20 percent of 2075 demand, the final score for the Stormwater Capture and Use WMS is determined by assessing the minimum intermediate score from the surface water, AGW, and BGW scores, as defined by the effectiveness matrices. See Tables 1, 2, and 3 and Appendix A.

For each basin with a projected shortage greater than 20 percent of 2075 demand, Stormwater Capture and Use was scored either "Effective at Meeting Future Demands," "Potentially Effective with Local Variability," "Partially Effective – Shortages Remain," or "Ineffective at Meeting Future Demands" per the steps and criteria that follow.

- **Precipitation:** A raw precipitation score was assigned based on historical annual precipitation (inches), where annual precipitation 20 inches and below is scored as "Ineffective at Meeting Future Demands," 21 to 34 inches scored as "Potentially Effective with Local Variability," and 35 inches or more scored as "Effective at Meeting Future Demands."
- **PS Demand:** PS demand within a basin was used as a proxy to indicate urban settings and the presence of infrastructure in place to capture and divert stormwater. If the 2075 PS demand for all sources is below 1,000 acre-feet per year (AFY), it was scored as "Ineffective at Meeting Future Demands," if demand is between 1,000 AF and 4,000 AF, it was scored as "Potentially Effective with Local Variability," and basins with PS demand above 4,000 AF were scored as "Effective at Meeting Future Demands."
- **PS/SSI Shortage:** A third criterion was established to consider whether the shortage in supply (either surface water, AGW, or BGW) is related to the source that supplies in-basin PS and SSI demands. If it is not, then alleviating the shortage with Stormwater Capture and Use may be possible but would require more coordination and infrastructure and will be more site specific. An illustration of why this is an important criterion follows:

Consider a basin where a depletion is projected in BGW, and only agriculture users rely upon BGW while PS and SSI users rely exclusively on surface water. While it is possible for stormwater to be treated and supplied to agriculture users, thereby reducing the demand for BGW and its associated depletion, these types of projects are site-specific and require agriculture uses to be in relatively close proximity to stormwater discharge locations, and/or would require significant storage. Thus, the score for Stormwater Capture and Use in that particular basin would be scored as "Potentially Effective with Local Variability."

The minimum score for each of these three criteria was calculated as the final score. Results are presented in Appendix D – Stormwater Capture and Use Scores for Basins with Projected 2075 Supply Shortages Greater than 20% of 2075 Demand.

2.3.7 Water Transfers

If projected shortages in a basin are less than 20 percent of 2075 demand, the final score for the Water Transfers WMS is determined by assessing the minimum intermediate score from the surface water, AGW, and BGW scores, as defined by the effectiveness matrices. See Tables 1, 2, and 3 and Appendix A.

For each basin with a projected shortage greater than 20 percent of 2075 demand, Water Transfers was scored either "Effective at Meeting Future Demands," "Potentially Effective with Local Variability," "Partially Effective – Shortages Remain," or "Ineffective at Meeting Future Demands" per the steps and criteria that follow.

- The analysis began by identifying all basins whose centroid is 100 miles or less from the centroid of the basin with a projected 2075 shortage greater than 20 percent of 2075 demand. This subset of data was analyzed to determine whether each of the nearby basins has physical and legal surface water available for transfer, as well as physical and legal groundwater available for transfer. The analysis also considered the magnitude of the shortage in the basin and whether it would be large enough to undertake an interbasin transfer to meet the need.
- Interim scores were calculated for both surface water and groundwater transfers separately, then combined for a final score.

2.3.7.1 Surface Water Transfer Score

The interim surface water transfer score is determined uniquely for each nearby basin (within 100 miles) and then rolled up to assess results for all nearby basins following these steps and criteria. Appendix E – Water Transfers Scoring Criteria for Nearby Basin Surface Water and Groundwater Transfers provides a table of these thresholds for reference.

- If there is a projected 2075 surface water gap in the nearby basin, then for that basin, it is scored as "Ineffective at Meeting Future Demands."
- If there is no projected 2075 surface water gap in the nearby basin but surface water is not legally available to transfer in the nearby basin, then it is scored as "Ineffective at Meeting Future Demands."
- If there is no projected 2075 surface water gap in the nearby basin and surface water is both physically and legally available to transfer, then the following scoring criteria were applied:
 - Score the total basin shortages across all sources to determine if the magnitude of the projected shortage is large enough to warrant an inter-basin transfer, where 1 is assigned to small shortages and 5 is assigned to the largest shortages.
 - Score the distance (in miles) to the available potential transfer supply, where 1 is the furthest distance (up to 100 miles) and 5 is the nearest (less than 20 miles).
 - Distance and shortage magnitude scores were combined as follows:
 - If the basin shortage magnitude has a score of 1 (shortage less than 1,000 AFY) and the nearby basin distance scores a 2 or 3 (mid-range distance between 40 and 60 miles away), the combined score is "Ineffective at Meeting Future Demands" for that nearby basin.
 - If the basin shortage magnitude has a score of 2 (shortage between 1,000 and 10,000 AFY) and the distance scores a 2 or 3 (mid-range distance between 40 and 60 miles away), or if the basin scores a 1 (shortage is less than 1,000 AFY) and the distance scores a 4 or 5 (nearest distance less than 20 miles away), the combined score is "Potentially Effective with Local Variability."
 - For any basin shortage magnitude with a score of 3 or higher (shortage above 10,000 AFY), the combined score is "Effective at Meeting Future Demands" regardless of distance.
- Then, for each basin with a projected 2075 shortage greater than 20 percent of 2075 demand, the best score from all nearby basins was assumed.

2.3.7.2 Groundwater Transfer Score

The interim groundwater transfer score is determined uniquely for each nearby basin (within 100 miles) and then rolled up to assess results for all nearby basins following these steps and criteria. Appendix E provides a table of these thresholds for reference.

- If there is a projected 2075 groundwater depletion in the nearby basin, then for that basin, it is scored as "Ineffective at Meeting Future Demands."
- If there is no projected 2075 depletion in the nearby basin but groundwater is not legally available to transfer in the nearby basin, then it is scored as "Ineffective at Meeting Future Demands." Note, all basins have groundwater legally available, and none were triggered by the criteria.
- If there is no projected 2075 depletion in the nearby basin and groundwater is physically and legally available to transfer, then the following scoring criteria were applied:
 - Score the total basin shortage across all sources to determine if the magnitude of the projected shortage is large enough to warrant an inter-basin transfer, where 1 is assigned to small shortages and 5 is assigned to the largest shortages.
 - Score the distance (in miles) to the available potential transfer supply, where 1 is the furthest distance (up to 100 miles) and 5 is the nearest (less than 20 miles).
 - Distance and depletion magnitude scores were combined as follows. Note that the groundwater interim scores were purposely lower compared to surface water transfers due to the more complicated and less traditional transfer of groundwater across large distances:
 - If the basin shortage magnitude has a score of 1 (shortage less than 1,000 AFY) and the nearby basin distance scores a 2 or 3 (mid-range distance between 40 and 60 miles away), the combined score is "Ineffective at Meeting Future Demands" for that nearby basin.
 - If the basin shortage magnitude has a score of 2 (shortage between 1,000 and 10,000 AFY) and the distance scores a 2 or 3 (mid-range distance between 40 and 60 miles away), or if the basin scores a 1 (shortage is less than 1,000 AF) and the distance scores a 4 or 5 (nearest distance less than 20 miles away), the combined score is "Potentially Effective with Local Variability."
 - For any basin shortage magnitude with a score of 3 or higher (shortage above 10,000 AFY), the combined score is "Effective at Meeting Future Demands" regardless of distance.
- Then, for each basin with a projected 2075 shortage greater than 20 percent of 2075 demand, the best score from all nearby basins was used.

2.3.7.3 Combined Transfer Score

Once the viability of surface water transfers and groundwater transfers was analyzed for each basin with a projected 2075 shortage greater than 20 percent of 2075 demand, scores were combined by selecting the maximum (best) resulting score. Results for the basins with projected shortages are provided in Appendix E.

2.4 Combined Final Score

At the conclusion of steps 1 through 3, each WMS was scored with one of the following effectiveness narratives for its potential in addressing the projected water shortage in the subject basin. The lowest possible score was selected. Note that more specific ratings are offered for increased reliance on groundwater and surface water, as those sources are currently the primary source of supply for all basins. Thus, these WMS scores reflect the gap analysis for those two traditional sources.

- **Effective at Meeting Future Demands:** Strategy is expected to meet projected water needs. For Demand Management and Agriculture Options, 2075 shortages are under 20 percent of demand.
- **Potentially Effective with Local Variability:** Strategy may address some future shortages, but effectiveness varies across basins.
- **Effective When Paired with Demand Management/Agriculture Options:** Can reduce smaller shortages when combined with Demand Management and/or Agriculture Options.
- **Partially Effective – Shortages Remain:** Strategy meets part of future demand, but 2075 shortages exceed 20 percent for Demand Management and Agriculture Options.
- **Ineffective at Meeting Future Demands:** Strategy is unlikely to reduce projected shortages.
- **No Shortage or Needs Met by Other Strategies:** Basin has no projected 2075 shortage; existing or traditional WMS are sufficient.
- **May Increase Shortages – Use with Other Strategies:** Strategy could worsen shortages and requires additional WMS to meet future needs.

SECTION 3 FINAL WATER MANAGEMENT SCORES BY BASIN

Table 4 provides a summary of effectiveness scores for each WMS, summed from basin results. Demand Management and Agriculture Options are effective in more than half the basins and partially effective in all others. Increase Reliance on Surface Water is an effective strategy for 36 basins (44 percent). Increase Reliance on Groundwater is an effective strategy for slightly less than half of basins (39 basins or 48 percent). Of the non-traditional strategies, Water Transfers is effective in 20 basins with projected shortages larger than 20 percent and potentially effective for an additional 15 basins. Stormwater Capture and Use is effective to potentially effective for 16 basins. Reuse is effective or potentially effective for 12 basins and could be partially effective for 19 basins. These results highlight the potential and need for advancement of conservation, agriculture programs, and non-traditional water supply sources to meet the future needs of water supply in Oklahoma. Funding and programs around these non-traditional sources are needed to support water supply users.

Tables 5 through 18 present the final scores for each WMS by basin, organized by region. The need and effectiveness of WMS are unique to each basin and align with the types of water resources available, and the projected challenges in future water supply.

Table 4 Statewide Summary of Effectiveness Scores by WMS⁽¹⁾

Effectiveness Score	Demand Management	Agriculture Options	Increase Reliance on In-Basin Surface Water	Increase Reliance on In-Basin Groundwater	Stormwater Capture and Use	Reuse	Water Transfers
Effective at Meeting Future Demands	47 (57%)	47 (57%)	46 (56%)	39 (48%)	2 (2%)	11 (13%)	18 (22%)
Potentially Effective with Local Variability	0	0	N/A	N/A	12 (15%)	1 (1%)	15 (18%)
Effective When Paired with Demand Management/ Agriculture Options	N/A	N/A	15 (18%)	8 (10%)	N/A	N/A	N/A
Partially Effective – Shortages Remain	35 (43%)	35 (43%)	N/A	N/A	1 (1%)	17 (21%)	0
Ineffective at Meeting Future Demands	0	0	17 (21%)	1 (1%)	20 (24%)	6 (7%)	2 (2%)
No Shortage or Needs Met by Other Strategies	0	0	N/A	N/A	47 (57%)	47 (57%)	47 (57%)
May Increase Shortages – Use with Other Strategies	N/A	N/A	4 (5%)	34 (41%)	N/A	N/A	N/A

Notes:

(1) N/A - Not Applicable, means that effectiveness score does not apply to that water management strategy.

Table 5 Southeast Region

WMS Tier 1 Category	Demand Sectors	Basin 1	Basin 2	Basin 3	Basin 4	Basin 5	Basin 6
Demand Management	PS, SSI, OG, TE	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Agriculture Options	CI, LS	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Surface Water	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective When Paired with Demand Management/ Agriculture Options	Effective When Paired with Demand Management/ Agriculture Options	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Stormwater Capture and Use	PS, SSI	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Reuse	PS, SSI	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Water Transfers	All	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies

Table 6 Blue-Boggy Region

WMS Tier 1 Category	Demand Sectors	Basin 7	Basin 8	Basin 9	Basin 10	Basin 11	Basin 12	Basin 13
Demand Management	PS, SSI, OG, TE	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Agriculture Options	CI, LS	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Surface Water	All	May Increase Shortages – Use with Other Strategies	Effective When Paired with Demand Management/ Agriculture Options	Effective When Paired with Demand Management/ Agriculture Options	Effective When Paired with Demand Management/ Agriculture Options	Effective at Meeting Future Demands	Effective When Paired with Demand Management/ Agriculture Options	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective When Paired with Demand Management/ Agriculture Options
Stormwater Capture and Use	PS, SSI	Ineffective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Reuse	PS, SSI	Ineffective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Water Transfers	All	Potentially Effective with Local Variability	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies

Table 7 Lower Washita Region

WMS Tier 1 Category	Demand Sectors	Basin 14	Basin 15	Basin 16	Basin 21	Basin 22	Basin 23
Demand Management	PS, SSI, OG, TE	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Effective at Meeting Future Demands
Agriculture Options	CI, LS	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Effective at Meeting Future Demands
Increase Reliance on In-Basin Surface Water	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	May Increase Shortages – Use with Other Strategies	Effective at Meeting Future Demands
Stormwater Capture and Use	PS, SSI	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Potentially Effective with Local Variability	No Shortage or Needs Met by Other Strategies
Reuse	PS, SSI	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies
Water Transfers	All	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Potentially Effective with Local Variability	No Shortage or Needs Met by Other Strategies

Table 8 West Central Region

WMS Tier 1 Category	Demand Sectors	Basin 17	Basin 18	Basin 19	Basin 20	Basin 59
Demand Management	PS, SSI, OG, TE	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain
Agriculture Options	CI, LS	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain
Increase Reliance on In-Basin Surface Water	All	Effective at Meeting Future Demands	Ineffective at Meeting Future Demands	May Increase Shortages – Use with Other Strategies	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	Effective When Paired with Demand Management/ Agriculture Options	Effective When Paired with Demand Management/ Agriculture Options	May Increase Shortages – Use with Other Strategies
Stormwater Capture and Use	PS, SSI	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Potentially Effective with Local Variability
Reuse	PS, SSI	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Partially Effective – Shortages Remain
Water Transfers	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands

Table 9 Beaver-Cashe Region

WMS Tier 1 Category	Demand Sectors	Basin 24	Basin 25	Basin 26	Basin 27	Basin 28	Basin 29	Basin 30	Basin 31
Demand Management	PS, SSI, OG, TE	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain
Agriculture Options	CI, LS	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain
Increase Reliance on In-Basin Surface Water	All	Effective at Meeting Future Demands	Effective When Paired with Demand Management/ Agriculture Options	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	Ineffective at Meeting Future Demands	Effective at Meeting Future Demands	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	Effective at Meeting Future Demands	Effective at Meeting Future Demands	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies
Stormwater Capture and Use	PS, SSI	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands
Reuse	PS, SSI	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	Ineffective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Water Transfers	All	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Potentially Effective with Local Variability	Potentially Effective with Local Variability	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Potentially Effective with Local Variability	Potentially Effective with Local Variability

Table 10 Grand Region

WMS Tier 1 Category	Demand Sectors	Basin 80	Basin 81
Demand Management	PS, SSI, OG, TE	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Agriculture Options	CI, LS	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Surface Water	All	Effective When Paired with Demand Management/Agriculture Options	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Stormwater Capture and Use	PS, SSI	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Reuse	PS, SSI	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Water Transfers	All	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies

Table 11 Lower Arkansas Region

WMS Tier 1 Category	Demand Sectors	Basin 44	Basin 45	Basin 46	Basin 47	Basin 82
Demand Management	PS, SSI, OG, TE	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Agriculture Options	CI, LS	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Surface Water	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	Effective at Meeting Future Demands	May Increase Shortages – Use with Other Strategies	Effective When Paired with Demand Management/ Agriculture Options	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Stormwater Capture and Use	PS, SSI	No Shortage or Needs Met by Other Strategies	Partially Effective – Shortages Remain	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Reuse	PS, SSI	No Shortage or Needs Met by Other Strategies	Potentially Effective with Local Variability	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Water Transfers	All	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies

Table 12 Eufaula Region

WMS Tier 1 Category	Demand Sectors	Basin 48
Demand Management	PS, SSI, OG, TE	Effective at Meeting Future Demands
Agriculture Options	CI, LS	Effective at Meeting Future Demands
Increase Reliance on In-Basin Surface Water	All	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	Effective When Paired with Demand Management/Agriculture Options
Stormwater Capture and Use	PS, SSI	No Shortage or Needs Met by Other Strategies
Reuse	PS, SSI	No Shortage or Needs Met by Other Strategies
Water Transfers	All	No Shortage or Needs Met by Other Strategies

Table 13 Middle Arkansas Region

WMS Tier 1 Category	Demand Sectors	Basin 49	Basin 73	Basin 74	Basin 75	Basin 76	Basin 77	Basin 78	Basin 79
Demand Management	PS, SSI, OG, TE	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Agriculture Options	CI, LS	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Surface Water	All	Effective When Paired with Demand Management/ Agriculture Options	Ineffective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Stormwater Capture and Use	PS, SSI	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Reuse	PS, SSI	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Water Transfers	All	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies

Table 14 Central Region

WMS Tier 1 Category	Demand Sectors	Basin 50	Basin 51	Basin 56	Basin 57	Basin 58	Basin 60	Basin 61	Basin 62	Basin 64
Demand Management	PS, SSI, OG, TE	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Agriculture Options	CI, LS	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Surface Water	All	Effective When Paired with Demand Management/ Agriculture Options	Ineffective at Meeting Future Demands	Effective at Meeting Future Demands	Effective When Paired with Demand Management/ Agriculture Options	Effective at Meeting Future Demands	Effective When Paired with Demand Management/ Agriculture Options	Effective at Meeting Future Demands	Effective When Paired with Demand Management/ Agriculture Options	Effective When Paired with Demand Management/ Agriculture Options
Increase Reliance on In-Basin Groundwater	All	Effective When Paired with Demand Management/ Agriculture Options	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	Effective When Paired with Demand Management/ Agriculture Options	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Stormwater Capture and Use	PS, SSI	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	Potentially Effective with Local Variability	Potentially Effective with Local Variability	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Reuse	PS, SSI	No Shortage or Needs Met by Other Strategies	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies
Water Transfers	All	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies

Table 15 Upper Arkansas Region

WMS Tier 1 Category	Demand Sectors	Basin 63	Basin 67	Basin 68	Basin 69	Basin 70	Basin 71	Basin 72
Demand Management	PS, SSI, OG, TE	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Partially Effective – Shortages Remain
Agriculture Options	CI, LS	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Partially Effective – Shortages Remain
Increase Reliance on In-Basin Surface Water	All	Effective When Paired with Demand Management/ Agriculture Options	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	May Increase Shortages – Use with Other Strategies	Effective When Paired with Demand Management/ Agriculture Options	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	Effective at Meeting Future Demands	May Increase Shortages – Use with Other Strategies
Stormwater Capture and Use	PS, SSI	Potentially Effective with Local Variability	Potentially Effective with Local Variability	Potentially Effective with Local Variability	Potentially Effective with Local Variability	Ineffective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands
Reuse	PS, SSI	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Ineffective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands
Water Transfers	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Potentially Effective with Local Variability	Potentially Effective with Local Variability	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands

Table 16 Northwest Region

WMS Tier 1 Category	Demand Sectors	Basin 52	Basin 53	Basin 54	Basin 55	Basin 65	Basin 66
Demand Management	PS, SSI, OG, TE	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain
Agriculture Options	CI, LS	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain
Increase Reliance on In-Basin Surface Water	All	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies
Stormwater Capture and Use	PS, SSI	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands
Reuse	PS, SSI	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Ineffective at Meeting Future Demands
Water Transfers	All	Effective at Meeting Future Demands	Potentially Effective with Local Variability	Effective at Meeting Future Demands	Ineffective at Meeting Future Demands	Potentially Effective with Local Variability	Ineffective at Meeting Future Demands

Table 17 Southwest Region (1 of 2)

WMS Tier 1 Category	Demand Sectors	32	33	34	35	36	37
Demand Management	PS, SSI, OG, TE	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain
Agriculture Options	CI, LS	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain
Increase Reliance on In-Basin Surface Water	All	Effective at Meeting Future Demands	Effective at Meeting Future Demands	May Increase Shortages – Use with Other Strategies	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	Effective When Paired with Demand Management/ Agriculture Options	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies
Stormwater Capture and Use	PS, SSI	Ineffective at Meeting Future Demands	Potentially Effective with Local Variability	No Shortage or Needs Met by Other Strategies	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Potentially Effective with Local Variability
Reuse	PS, SSI	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	No Shortage or Needs Met by Other Strategies	Ineffective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain
Water Transfers	All	Potentially Effective with Local Variability	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	Potentially Effective with Local Variability	Potentially Effective with Local Variability	Effective at Meeting Future Demands

Table 18 Southwest Region (2 of 2)

WMS Tier 1 Category	Demand Sectors	38	39	40	41	42	43
Demand Management	PS, SSI, OG, TE	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain
Agriculture Options	CI, LS	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain	Partially Effective – Shortages Remain
Increase Reliance on In-Basin Surface Water	All	Ineffective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands	Ineffective at Meeting Future Demands	Effective at Meeting Future Demands	Effective at Meeting Future Demands
Increase Reliance on In-Basin Groundwater	All	May Increase Shortages – Use with Other Strategies	Effective at Meeting Future Demands	Effective at Meeting Future Demands	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies	May Increase Shortages – Use with Other Strategies
Stormwater Capture and Use	PS, SSI	Potentially Effective with Local Variability	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands
Reuse	PS, SSI	Partially Effective – Shortages Remain	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Partially Effective – Shortages Remain	Effective at Meeting Future Demands	Ineffective at Meeting Future Demands
Water Transfers	All	Effective at Meeting Future Demands	No Shortage or Needs Met by Other Strategies	No Shortage or Needs Met by Other Strategies	Effective at Meeting Future Demands	Potentially Effective with Local Variability	Potentially Effective with Local Variability



APPENDIX A **SHORTAGE MAGNITUDE SCORING**

OCWP BASIN	BASIN ID	OCWP NAME	REGION	2075 Surface Water Demands	2075 Surface Water Gap	Surface Water Gap as % of Demands	Surface Water Gap Threshold	2075 BGW Demands	2075 BGW Depletion	2075 BGW Depletion as % of Demands	BGW Gap Threshold	2075 AGW Demands	2075 AGW Gap	2075 AGW Gap as % of Demands	AGW Gap Threshold
1	10100	Red River Mainstem (To Kiamichi River)	Southeast	56,380	2,660	4.70%	No Significant Gap	2,810	30	1.10%	No Significant Gap	4,220	-	0.00%	No Gap
2	10201	Little River (McCurtain County) - 1	Southeast	2,400	60	2.50%	No Significant Gap	100	-	0.00%	No Gap	50	-	0.00%	No Gap
3	10202	Little River (McCurtain County) - 2	Southeast	6,040	330	5.50%	Gap Met with Demand Management	280	-	0.00%	No Gap	-	-	0.00%	No Gap
4	10203	Little River (McCurtain County) - 3	Southeast	1,190	60	5.00%	Gap Met with Demand Management	160	130	81.30%	No Significant Gap	-	-	0.00%	No Gap
5	10301	Kiamichi River - 1	Southeast	1,800	-	0.00%	No Gap	660	-	0.00%	No Gap	70	-	0.00%	No Gap
6	10302	Kiamichi River - 2	Southeast	1,760	10	0.60%	No Gap	220	-	0.00%	No Gap	-	-	0.00%	No Gap
7	10411	Muddy Boggy River - 1	Blue-Boggy	780	160	20.50%	Gap Needing Mitigation	200	-	0.00%	No Gap	20	-	0.00%	No Gap
8	10412	Muddy Boggy River - 2	Blue-Boggy	7,290	380	5.20%	Gap Met with Demand Management	830	-	0.00%	No Gap	30	-	0.00%	No Gap
9	10420	Clear Boggy Creek	Blue-Boggy	2,800	400	14.30%	Gap Met with Demand Management	1,750	10	0.60%	No Gap	-	-	0.00%	No Gap
10	10500	Red River Mainstem (To Blue River)	Blue-Boggy	1,430	270	18.90%	Gap Met with Demand Management	570	-	0.00%	No Gap	460	-	0.00%	No Gap
11	10601	Blue River - 1	Blue-Boggy	1,060	-	0.00%	No Gap	420	-	0.00%	No Gap	-	-	0.00%	No Gap
12	10602	Blue River - 2	Blue-Boggy	9,350	670	7.20%	Gap Met with Demand Management	1,500	10	0.70%	No Gap	-	-	0.00%	No Gap
13	10700	Red River Mainstem (To Washita)	Blue-Boggy	18,100	-	0.00%	No Gap	1,710	210	12.30%	Gap Met with Demand Management	2,410	-	0.00%	No Gap
14	10810	Lower Washita	Lower Washita	17,190	-	0.00%	No Gap	4,520	40	0.90%	No Gap	2,510	-	0.00%	No Gap
15	10821	Middle Washita - 1	Lower Washita	1,270	-	0.00%	No Gap	850	30	3.50%	No Significant Gap	1,190	-	0.00%	No Gap
16	10822	Middle Washita - 2	Lower Washita	4,690	-	0.00%	No Gap	10,240	10	0.10%	No Gap	660	-	0.00%	No Gap
17	10831	Upper Washita - 1	West Central	3,060	-	0.00%	No Gap	8,120	1,830	22.50%	Gap Needing Mitigation	140	-	0.00%	No Gap
18	10832	Upper Washita - 2	West Central	700	-	0.00%	No Gap	43,700	30,510	69.80%	Gap Needing Mitigation	-	-	0.00%	No Gap
19	10833	Upper Washita - 3	West Central	10,000	600	6.00%	Gap Met with Demand Management	17,670	130	0.70%	No Gap	2,930	270	9.20%	Gap Met with Demand Management
20	10840	Washita Headwaters	West Central	2,230	80	3.60%	No Significant Gap	4,840	30	0.60%	No Gap	4,580	530	11.60%	Gap Met with Demand Management
21	10900	Red River Mainstem (To Walnut Bayou)	Lower Washita	11,050	-	0.00%	No Gap	3,260	20	0.60%	No Gap	1,170	-	0.00%	No Gap
22	11000	Walnut Bayou	Lower Washita	3,930	60	1.50%	No Significant Gap	1,040	10	1.00%	No Significant Gap	50	10	20.00%	Gap Needing Mitigation
23	11100	Mud Creek	Lower Washita	880	-	0.00%	No Gap	480	10	2.10%	No Significant Gap	-	-	0.00%	No Gap
24	11201	Beaver Creek - 1	Beaver-Cache	260	-	0.00%	No Gap	-	-	0.00%	No Gap	140	-	0.00%	No Gap
25	11202	Beaver Creek - 2	Beaver-Cache	3,690	290	7.90%	Gap Met with Demand Management	1,130	-	0.00%	No Gap	40	-	0.00%	No Gap
26	11203	Beaver Creek - 3	Beaver-Cache	620	-	0.00%	No Gap	350	350	100.00%	Gap Needing Mitigation	-	-	0.00%	No Gap
27	11311	Cache Creek - 1	Beaver-Cache	230	-	0.00%	No Gap	60	60	100.00%	Gap Needing Mitigation	-	-	0.00%	No Gap
28	11312	Cache Creek - 2	Beaver-Cache	15,230	-	0.00%	No Gap	1,360	-	0.00%	No Gap	410	-	0.00%	No Gap

OCWP BASIN	BASIN ID	OCWP NAME	REGION	2075 Surface Water Demands	2075 Surface Water Gap	Surface Water Gap as % of Demands	Surface Water Gap Threshold	2075 BGW Demands	2075 BGW Depletion	2075 BGW Depletion as % of Demands	BGW Gap Threshold	2075 AGW Demands	2075 AGW Gap	2075 AGW Gap as % of Demands	AGW Gap Threshold
29	11321	Deep Red Creek And West Cache Creek - 1	Beaver-Cache	1,780	-	0.00%	No Gap	170	-	0.00%	No Gap	260	-	0.00%	No Gap
30	11322	Deep Red Creek And West Cache Creek - 2	Beaver-Cache	3,050	-	0.00%	No Gap	290	290	100.00%	Gap Needing Mitigation	730	-	0.00%	No Gap
31	11400	Red River Mainstem (To North Fork of Red)	Beaver-Cache	1,170	-	0.00%	No Gap	310	310	100.00%	Gap Needing Mitigation	11,260	-	0.00%	No Gap
32	11511	Lower North Fork Red River - 1	Southwest	290	-	0.00%	No Gap	290	290	100.00%	Gap Needing Mitigation	19,300	50	0.30%	No Gap
33	11512	Lower North Fork Red River - 2	Southwest	17,320	-	0.00%	No Gap	2,550	2,550	100.00%	Gap Needing Mitigation	15,800	-	0.00%	No Gap
34	11513	Lower North Fork Red River - 3	Southwest	3,960	300	7.60%	Gap Met with Demand Management	4,610	10	0.20%	No Gap	2,820	160	5.70%	Gap Met with Demand Management
35	11514	Lower North Fork Red River - 4	Southwest	140	-	0.00%	No Gap	220	220	100.00%	Gap Needing Mitigation	-	-	0.00%	No Gap
36	11521	Upper North Fork Red River - 1	Southwest	150	10	6.70%	Gap Met with Demand Management	290	290	100.00%	Gap Needing Mitigation	8,380	500	6.00%	Gap Met with Demand Management
37	11522	Upper North Fork Red River - 2	Southwest	1,270	10	0.80%	No Gap	8,980	4,320	48.10%	Gap Needing Mitigation	16,090	660	4.10%	No Significant Gap
38	11601	Salt Fork Red River - 1	Southwest	63,150	790	1.30%	No Significant Gap	12,430	6,450	51.90%	Gap Needing Mitigation	6,460	40	0.60%	No Gap
39	11602	Salt Fork Red River - 2	Southwest	110	-	0.00%	No Gap	240	-	0.00%	No Gap	2,770	90	3.20%	No Significant Gap
40	11701	Prairie Dog Town Fork Red River - 1	Southwest	1,640	-	0.00%	No Gap	3,160	90	2.80%	No Significant Gap	1,340	-	0.00%	No Gap
41	11702	Prairie Dog Town Fork Red River - 2	Southwest	530	-	0.00%	No Gap	48,630	38,970	80.10%	Gap Needing Mitigation	3,090	80	2.60%	No Significant Gap
42	11801	Elm Fork Red River - 1	Southwest	50	-	0.00%	No Gap	400	400	100.00%	Gap Needing Mitigation	4,770	60	1.30%	No Significant Gap
43	11802	Elm Fork Red River - 2	Southwest	240	-	0.00%	No Gap	150	150	100.00%	Gap Needing Mitigation	600	-	0.00%	No Gap
44	20101	Poteau River - 1	Lower Arkansas	4,710	-	0.00%	No Gap	40	-	0.00%	No Gap	-	-	0.00%	No Gap
45	20102	Poteau River - 2	Lower Arkansas	10,580	-	0.00%	No Gap	1,830	1,830	100.00%	Gap Needing Mitigation	-	-	0.00%	No Gap
46	20201	Lower Arkansas River - 1	Lower Arkansas	17,270	420	2.40%	No Significant Gap	3,930	20	0.50%	No Gap	5,480	580	10.60%	Gap Met with Demand Management
47	20202	Lower Arkansas River - 2	Lower Arkansas	52,080	640	1.20%	No Significant Gap	980	-	0.00%	No Gap	3,430	20	0.60%	No Gap
48	20300	Canadian River (To North Canadian River)	Eufaula	15,500	500	3.20%	No Significant Gap	1,880	-	0.00%	No Gap	2,120	220	10.40%	Gap Met with Demand Management
49	20400	Middle Arkansas River	Middle Arkansas	131,680	9,630	7.30%	Gap Met with Demand Management	120	-	0.00%	No Gap	2,110	-	0.00%	No Gap
50	20510	Lower North Canadian River	Central	87,840	11,380	13.00%	Gap Met with Demand Management	12,770	130	1.00%	No Significant Gap	3,100	310	10.00%	Gap Met with Demand Management

OCWP BASIN	BASIN ID	OCWP NAME	REGION	2075 Surface Water Demands	2075 Surface Water Gap	Surface Water Gap as % of Demands	Surface Water Gap Threshold	2075 BGW Demands	2075 BGW Depletion	2075 BGW Depletion as % of Demands	BGW Gap Threshold	2075 AGW Demands	2075 AGW Gap	2075 AGW Gap as % of Demands	AGW Gap Threshold
51	20520	Middle North Canadian River	Central	7,240	830	11.50%	Gap Met with Demand Management	2,910	2,390	82.10%	Gap Needing Mitigation	15,520	6,960	44.80%	Gap Needing Mitigation
52	20531	Upper North Canadian River - 1	Panhandle	750	10	1.30%	No Significant Gap	5,130	3,190	62.20%	Gap Needing Mitigation	10,020	730	7.30%	Gap Met with Demand Management
53	20532	Upper North Canadian River - 2	Panhandle	730	-	0.00%	No Gap	52,180	44,620	85.50%	Gap Needing Mitigation	20,020	2,150	10.70%	Gap Met with Demand Management
54	20533	Upper North Canadian River - 3	Panhandle	460	-	0.00%	No Gap	15,910	10,610	66.70%	Gap Needing Mitigation	100	-	0.00%	No Gap
55	20540	North Canadian Headwaters	Panhandle	260	10	3.80%	No Significant Gap	451,470	429,750	95.20%	Gap Needing Mitigation	-	-	0.00%	No Gap
56	20611	Lower Canadian River - 1	Central	6,010	270	4.50%	No Significant Gap	1,210	-	0.00%	No Gap	4,150	850	20.50%	Gap Needing Mitigation
57	20612	Lower Canadian River - 2	Central	630	110	17.50%	Gap Met with Demand Management	1,560	1,560	100.00%	Gap Needing Mitigation	670	60	9.00%	Gap Met with Demand Management
58	20620	Middle Canadian River	Central	16,660	690	4.10%	No Significant Gap	14,770	1,750	11.80%	Gap Met with Demand Management	14,770	770	5.20%	Gap Met with Demand Management
59	20630	Upper Canadian River	West Central	6,590	630	9.60%	Gap Met with Demand Management	42,570	14,870	34.90%	Gap Needing Mitigation	6,350	1,830	28.80%	Gap Needing Mitigation
60	20700	Deep Fork River	Central	67,140	8,020	11.90%	Gap Met with Demand Management	15,600	180	1.20%	No Significant Gap	-	-	0.00%	No Gap
61	20801	Little River - 1	Central	660	20	3.00%	No Significant Gap	1,150	10	0.90%	No Gap	-	-	0.00%	No Gap
62	20802	Little River - 2	Central	25,810	2,390	9.30%	Gap Met with Demand Management	6,790	70	1.00%	No Significant Gap	-	-	0.00%	No Gap
63	20910	Lower Cimarron River	Upper Arkansas	10,930	810	7.40%	Gap Met with Demand Management	3,250	10	0.30%	No Gap	3,450	820	23.80%	Gap Needing Mitigation
64	20920	Middle Cimarron River	Central	41,880	4,590	11.00%	Gap Met with Demand Management	15,660	4,860	31.00%	Gap Needing Mitigation	68,930	14,250	20.70%	Gap Needing Mitigation
65	20930	Upper Cimarron River	Panhandle	11,270	1,050	9.30%	Gap Met with Demand Management	48,200	45,880	95.20%	Gap Needing Mitigation	13,260	1,720	13.00%	Gap Met with Demand Management
66	20940	Cimarron Headwaters	Panhandle	2,590	100	3.90%	No Significant Gap	20,520	18,450	89.90%	Gap Needing Mitigation	-	-	0.00%	No Gap
67	21011	Lower Salt Fork Arkansas River - 1	Upper Arkansas	980	-	0.00%	No Gap	3,480	3,480	100.00%	Gap Needing Mitigation	5,060	60	1.20%	No Significant Gap
68	21020	Upper Salt Fork Arkansas River	Upper Arkansas	1,750	-	0.00%	No Gap	3,620	3,620	100.00%	Gap Needing Mitigation	8,970	540	6.00%	Gap Met with Demand Management
69	21012	Lower Salt Fork Arkansas River - 2	Upper Arkansas	1,280	60	4.70%	No Significant Gap	280	280	100.00%	Gap Needing Mitigation	840	10	1.20%	No Significant Gap
70	21013	Lower Salt Fork Arkansas River - 3	Upper Arkansas	2,440	210	8.60%	Gap Met with Demand Management	710	710	100.00%	Gap Needing Mitigation	710	110	15.50%	Gap Met with Demand Management
71	21100	Arkansas River - Cimarron Rivers to Keystone Lake	Upper Arkansas	16,300	900	5.50%	Gap Met with Demand Management	7,040	60	0.90%	No Gap	1,150	20	1.70%	No Significant Gap
72	21200	Arkansas River Mainstem (To Kansas State Line)	Upper Arkansas	6,470	-	0.00%	No Gap	3,410	1,280	37.50%	Gap Needing Mitigation	4,380	-	0.00%	No Gap

OCWP BASIN	BASIN ID	OCWP NAME	REGION	2075 Surface Water Demands	2075 Surface Water Gap	Surface Water Gap as % of Demands	Surface Water Gap Threshold	2075 BGW Demands	2075 BGW Depletion	2075 BGW Depletion as % of Demands	BGW Gap Threshold	2075 AGW Demands	2075 AGW Gap	2075 AGW Gap as % of Demands	AGW Gap Threshold
73	21301	Bird Creek - 1	Middle Arkansas	56,720	5,360	9.40%	Gap Met with Demand Management	210	210	100.00%	No Significant Gap	-	-	0.00%	No Gap
74	21302	Bird Creek - 2	Middle Arkansas	6,990	220	3.10%	No Significant Gap	860	-	0.00%	No Gap	-	-	0.00%	No Gap
75	21401	Caney River - 1	Middle Arkansas	6,270	130	2.10%	No Significant Gap	150	150	100.00%	No Significant Gap	-	-	0.00%	No Gap
76	21402	Caney River - 2	Middle Arkansas	5,540	120	2.20%	No Significant Gap	700	-	0.00%	No Gap	-	-	0.00%	No Gap
77	21511	Verdigris River (To Oologah Dam) - 1	Middle Arkansas	22,630	550	2.40%	No Significant Gap	-	-	0.00%	No Gap	300	-	0.00%	No Gap
78	21512	Verdigris River (To Oologah Dam) - 2	Middle Arkansas	21,560	550	2.60%	No Significant Gap	340	340	100.00%	No Significant Gap	-	-	0.00%	No Gap
79	21520	Verdigris River (To Kansas State Line)	Middle Arkansas	2,480	-	0.00%	No Gap	380	-	0.00%	No Gap	-	-	0.00%	No Gap
80	21601	Grand (Neosho) River - 1	Grand	16,340	1,750	10.70%	Gap Met with Demand Management	2,130	10	0.50%	No Gap	20	-	0.00%	No Gap
81	21602	Grand (Neosho) River - 2	Grand	2,250	-	0.00%	No Gap	4,460	20	0.40%	No Gap	-	-	0.00%	No Gap
82	21700	Illinois River	Lower Arkansas	4,460	-	0.00%	No Gap	1,400	20	1.40%	No Significant Gap	-	-	0.00%	No Gap

APPENDIX B

SURFACE WATER SCORES FOR BASINS WITH PROJECTED 2075 SUPPLY GAPS NEEDING OTHER STRATEGIES

No.	Basin ID	Basin Name	Region Name	Estimated Water Available for Appropriation with 2075 demands included (AFY)	Basin Outflow MIN	Basin Outflow 10th Percentile	Basin Outflow > Gap	Available Appropriations > Gap	Legally and Physically Available?	Brackish TDS	Brackish Score	Combined Score	Note
1	10100	Red River Mainstem (To Kiamichi River)	Southeast	2,379,400	1,551,206	3,021,472	Yes	Yes	Yes	596	Potentially effective	Potentially Effective with Local Variability	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS exceeds secondary drinking water standards but is not considered brackish.
7	10411	Muddy Boggy River - 1	Blue-Boggy	260,200	172,007	512,413	Yes	Yes	Yes	218	Typically effective	Potentially Effective with Local Variability	Seasonal surface water gap projected by 2075. Storage scored as an effective strategy to alleviate gap.
13	10700	Red River Mainstem (To Washita)	Blue-Boggy	2,053,000	634,874	1,256,704	Yes	Yes	Yes	-	Typically effective	Potentially Effective with Local Variability	Seasonal surface water gap projected by 2075. Storage scored as an effective strategy to alleviate gap.
17	10831	Upper Washita - 1	West Central	136,200	52,310	79,718	Yes	Yes	Yes	1,190	Partially effective	Partially Effective - Shortages Remain	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS exceeds 1000 mg/L and is considered brackish.
18	10832	Upper Washita - 2	West Central	20,000	1,672	2,307	No	No	No	-	Typically effective	Ineffective at Meeting Future Demands	Surface water is not physically nor legally available for appropriation to meet the gap.
22	11000	Walnut Bayou	Lower Washita	92,600	5,075	18,707	Yes	Yes	Yes	392	Typically effective	Effective at Meeting Future Demands	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS does not exceed secondary drinking water limits.
26	11203	Beaver Creek - 3	Beaver-Cache	52,800	6,764	13,300	Yes	Yes	Yes	442	Typically effective	Effective at Meeting Future Demands	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS does not exceed secondary drinking water limits.
27	11311	Cache Creek - 1	Beaver-Cache	174,100	47,477	99,735	Yes	Yes	Yes	401	Typically effective	Effective at Meeting Future Demands	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS does not exceed secondary drinking water limits.
30	11322	Deep Red Creek And West Cache Creek - 2	Beaver-Cache	63,700	4,108	24,332	Yes	Yes	Yes	-	Typically effective	Effective at Meeting Future Demands	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS does not exceed secondary drinking water limits.
31	11400	Red River Mainstem (To North Fork of Red)	Beaver-Cache	406,600	143,765	372,726	Yes	Yes	Yes	4,250	Partially effective	Partially Effective - Shortages Remain	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS exceeds 1000 mg/L and is considered brackish.
32	11511	Lower North Fork Red River - 1	Southwest	75,800	15,882	63,208	Yes	Yes	Yes	-	Typically effective	Effective at Meeting Future Demands	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS does not exceed secondary drinking water limits.

No.	Basin ID	Basin Name	Region Name	Estimated Water Available for Appropriation with 2075 demands included (AFY)	Basin Outflow MIN	Basin Outflow 10th Percentile	Basin Outflow > Gap	Available Appropriations > Gap	Legally and Physically Available?	Brackish TDS	Brackish Score	Combined Score	Note
33	11512	Lower North Fork Red River - 2	Southwest	62,700	15,553	61,446	Yes	Yes	Yes	-	Typically effective	Effective at Meeting Future Demands	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS does not exceed secondary drinking water limits.
35	11514	Lower North Fork Red River - 4	Southwest	500	29	86	No	Yes	No	444	Typically effective	Ineffective at Meeting Future Demands	Surface water is legally available for appropriation but not physically available to meet the gap.
36	11521	Upper North Fork Red River - 1	Southwest	-	54	70	No	No	No	1,695	Partially effective	Ineffective at Meeting Future Demands	Surface water is not physically nor legally available for appropriation to meet the gap.
37	11522	Upper North Fork Red River - 2	Southwest	35,300	2,454	13,456	No	Yes	No	1,575	Partially effective	Ineffective at Meeting Future Demands	Surface water is legally available for appropriation but not physically available to meet the gap.
38	11601	Salt Fork Red River - 1	Southwest	63,300	2,585	32,001	No	Yes	No	2,895	Partially effective	Ineffective at Meeting Future Demands	Surface water is legally available for appropriation but not physically available to meet the gap.
41	11702	Prairie Dog Town Fork Red River - 2	Southwest	10,600	139	887	No	No	No	-	Typically effective	Ineffective at Meeting Future Demands	Surface water is not physically nor legally available for appropriation to meet the gap.
42	11801	Elm Fork Red River - 1	Southwest	31,100	7,397	21,563	Yes	Yes	Yes	11	Typically effective	Effective at Meeting Future Demands	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS does not exceed secondary drinking water limits.
43	11802	Elm Fork Red River - 2	Southwest	25,300	6,290	18,267	Yes	Yes	Yes	21,600	Partially effective	Partially Effective - Shortages Remain	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS exceeds 1000 mg/L and is considered brackish.
45	20102	Poteau River - 2	Lower Arkansas	1,120,900	328,679	600,231	Yes	Yes	Yes	71	Typically effective	Effective at Meeting Future Demands	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS does not exceed secondary drinking water limits.
51	20520	Middle North Canadian River	Central	-	960	1,241	No	No	No	852	Potentially effective	Ineffective at Meeting Future Demands	Surface water is not physically nor legally available for appropriation to meet the gap.
52	20531	Upper North Canadian River - 1	Panhandle	-	2,551	23,715	No	No	No	1,030	Partially effective	Ineffective at Meeting Future Demands	Surface water is not physically nor legally available for appropriation to meet the gap.

No.	Basin ID	Basin Name	Region Name	Estimated Water Available for Appropriation with 2075 demands included (AFY)	Basin Outflow MIN	Basin Outflow 10th Percentile	Basin Outflow > Gap	Available Appropriations > Gap	Legally and Physically Available?	Brackish TDS	Brackish Score	Combined Score	Note
53	20532	Upper North Canadian River - 2	Panhandle	-	4,526	13,237	No	No	No	912	Potentially effective	Ineffective at Meeting Future Demands	Surface water is not physically nor legally available for appropriation to meet the gap.
54	20533	Upper North Canadian River - 3	Panhandle	1,200	835	4,111	No	No	No	583	Potentially effective	Ineffective at Meeting Future Demands	Surface water is not physically nor legally available for appropriation to meet the gap.
55	20540	North Canadian Headwaters	Panhandle	-	1,415	1,616	No	No	No	307	Typically effective	Ineffective at Meeting Future Demands	Surface water is not physically nor legally available for appropriation to meet the gap.
56	20611	Lower Canadian River - 1	Central	630,200	58,465	254,342	Yes	Yes	Yes	647	Potentially effective	Potentially Effective with Local Variability	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS exceeds secondary drinking water standards but is not considered brackish.
57	20612	Lower Canadian River - 2	Central	41,700	2,242	11,649	Yes	Yes	Yes	357	Typically effective	Effective at Meeting Future Demands	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS does not exceed secondary drinking water limits.
59	20630	Upper Canadian River	West Central	64,200	7,558	44,467	No	Yes	No	1,215	Partially effective	Ineffective at Meeting Future Demands	Surface water is legally available for appropriation but not physically available to meet the gap.
63	20910	Lower Cimarron River	Upper Arkansas	631,100	29,332	207,119	Yes	Yes	Yes	999	Potentially effective	Potentially Effective with Local Variability	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS exceeds secondary drinking water standards but is not considered brackish.
64	20920	Middle Cimarron River	Central	370,300	18,768	175,480	No	Yes	No	4,838	Partially effective	Ineffective at Meeting Future Demands	Surface water is legally available for appropriation but not physically available to meet the gap.
65	20930	Upper Cimarron River	Panhandle	20,200	2,704	35,820	No	No	No	2,600	Partially effective	Ineffective at Meeting Future Demands	Surface water is not physically nor legally available for appropriation to meet the gap.
66	20940	Cimarron Headwaters	Panhandle	-	53	53	No	No	No	1,610	Partially effective	Ineffective at Meeting Future Demands	Surface water is not physically nor legally available for appropriation to meet the gap.
67	21011	Lower Salt Fork Arkansas River - 1	Upper Arkansas	649,200	21,611	172,876	Yes	Yes	Yes	1,349	Partially effective	Partially Effective - Shortages Remain	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS exceeds 1000 mg/L and is considered brackish.

No.	Basin ID	Basin Name	Region Name	Estimated Water Available for Appropriation with 2075 demands included (AFY)	Basin Outflow MIN	Basin Outflow 10th Percentile	Basin Outflow > Gap	Available Appropriations > Gap	Legally and Physically Available?	Brackish TDS	Brackish Score	Combined Score	Note
68	21020	Upper Salt Fork Arkansas River	Upper Arkansas	410,200	7,253	87,074	Yes	Yes	Yes	484	Typically effective	Effective at Meeting Future Demands	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS does not exceed secondary drinking water limits.
69	21012	Lower Salt Fork Arkansas River - 2	Upper Arkansas	139,500	10,952	68,719	Yes	Yes	Yes	2,620	Partially effective	Partially Effective - Shortages Remain	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS exceeds 1000 mg/L and is considered brackish.
70	21013	Lower Salt Fork Arkansas River - 3	Upper Arkansas	68,500	9,165	58,643	Yes	Yes	Yes	1,560	Partially effective	Partially Effective - Shortages Remain	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS exceeds 1000 mg/L and is considered brackish.
72	21200	Arkansas River Mainstem (To Kansas State Line)	Upper Arkansas	914,900	130,811	605,496	Yes	Yes	Yes	561	Potentially effective	Potentially Effective with Local Variability	Surface water is both legally and physically available to alleviate the projected gap in 2075. TDS exceeds secondary drinking water standards but is not considered brackish.

APPENDIX C

REUSE SCORES FOR BASINS WITH PROJECTED 2075 SUPPLY SHORTAGES GREATER THAN 20% OF 2075 DEMAND

No.	Basin ID	Basin Name	Region Name	M&I and SSI SW 2075	M&I and SSI BGW 2075	M&I and SSI AGW 2075	60% of M&I + SSI Demand	Potential Project Volume Score (>0.Likely ineffective mgd [>Likely ineffectiveLikely ineffective5 AFY])	Is the Gap an M&I Supply Source?	Percent of Gap	Percent of Gap Narrative Score (thresholds = 70% or more; Typically effective0 to 70%, less than Typically effective0%)	Combined Minimum Score
1	10100	Red River Mainstem (To Kiamichi River)	Southeast	51,531	1,289	1,934	32,852	Typically Effective	N	100%	Typically Effective	Potentially Effective with Local Variability
7	10411	Muddy Boggy River - 1	Blue-Boggy	-	8	1	5	Likely Ineffective	N	3%	Partially Effective	Ineffective at Meeting Future Demands
13	10700	Red River Mainstem (To Washita)	Blue-Boggy	2,680	156	220	1,834	Typically Effective	N	100%	Typically Effective	Potentially Effective with Local Variability
17	10831	Upper Washita - 1	West Central	547	196	3	448	Typically Effective	Y	24%	Partially Effective	Partially Effective - Shortages Remain
18	10832	Upper Washita - 2	West Central	165	156	-	193	Typically Effective	Y	1%	Partially Effective	Partially Effective - Shortages Remain
22	11000	Walnut Bayou	Lower Washita	3,651	184	9	2,307	Typically Effective	Y	100%	Typically Effective	Effective at Meeting Future Demands
26	11203	Beaver Creek - 3	Beaver-Cache	406	111	-	310	Typically Effective	Y	89%	Typically Effective	Effective at Meeting Future Demands
27	11311	Cache Creek - 1	Beaver-Cache	34	20	-	32	Likely Ineffective	Y	53%	Potentially Effective	Ineffective at Meeting Future Demands
30	11322	Deep Red Creek And West Cache Creek - 2	Beaver-Cache	639	21	53	428	Typically Effective	Y	100%	Typically Effective	Effective at Meeting Future Demands
31	11400	Red River Mainstem (To North Fork of Red)	Beaver-Cache	710	3	94	484	Typically Effective	Y	100%	Typically Effective	Effective at Meeting Future Demands
32	11511	Lower North Fork Red River - 1	Southwest	211	0	24	141	Typically Effective	Y	41%	Partially Effective	Partially Effective - Shortages Remain
33	11512	Lower North Fork Red River - 2	Southwest	2,141	25	157	1,395	Typically Effective	Y	55%	Partially Effective	Partially Effective - Shortages Remain
35	11514	Lower North Fork Red River - 4	Southwest	34	-	-	20	Likely Ineffective	N	9%	Partially Effective	Ineffective at Meeting Future Demands
36	11521	Upper North Fork Red River - 1	Southwest	-	8	216	134	Typically Effective	Y	17%	Partially Effective	Partially Effective - Shortages Remain
37	11522	Upper North Fork Red River - 2	Southwest	121	985	1,764	1,722	Typically Effective	Y	35%	Partially Effective	Partially Effective - Shortages Remain

No.	Basin ID	Basin Name	Region Name	M&I and SSI SW 2075	M&I and SSI BGW 2075	M&I and SSI AGW 2075	60% of M&I + SSI Demand	Potential Project Volume Score (>0.Likely ineffective mgd [>Likely ineffectiveLikely ineffective5 AFY])	Is the Gap an M&I Supply Source?	Percent of Gap	Percent of Gap Narrative Score (thresholds = 70% or more; Typically effective0 to 70%, less than Typically effective0%)	Combined Minimum Score
38	11601	Salt Fork Red River - 1	Southwest	989	303	157	870	Typically Effective	Y	12%	Partially Effective	Partially Effective - Shortages Remain
41	11702	Prairie Dog Town Fork Red River - 2	Southwest	-	426	27	272	Typically Effective	Y	1%	Partially Effective	Partially Effective - Shortages Remain
42	11801	Elm Fork Red River - 1	Southwest	-	68	819	532	Typically Effective	Y	100%	Typically Effective	Effective at Meeting Future Demands
43	11802	Elm Fork Red River - 2	Southwest	-	1	2	2	Likely Ineffective	Y	1%	Partially Effective	Ineffective at Meeting Future Demands
45	20102	Poteau River - 2	Lower Arkansas	6,967	-	-	4,180	Typically Effective	N	100%	Typically Effective	Potentially Effective with Local Variability
51	20520	Middle North Canadian River	Central	2,758	717	3,829	4,382	Typically Effective	Y	43%	Partially Effective	Partially Effective - Shortages Remain
52	20531	Upper North Canadian River - 1	Panhandle	-	297	580	526	Typically Effective	Y	13%	Partially Effective	Partially Effective - Shortages Remain
53	20532	Upper North Canadian River - 2	Panhandle	-	6,344	2,435	5,267	Typically Effective	Y	11%	Partially Effective	Partially Effective - Shortages Remain
54	20533	Upper North Canadian River - 3	Panhandle	-	444	3	268	Typically Effective	Y	3%	Partially Effective	Partially Effective - Shortages Remain
55	20540	North Canadian Headwaters	Panhandle	-	5,210	-	3,126	Typically Effective	Y	1%	Partially Effective	Partially Effective - Shortages Remain
56	20611	Lower Canadian River - 1	Central	2,635	279	955	2,321	Typically Effective	Y	100%	Typically Effective	Effective at Meeting Future Demands
57	20612	Lower Canadian River - 2	Central	90	831	356	766	Typically Effective	Y	44%	Partially Effective	Partially Effective - Shortages Remain
59	20630	Upper Canadian River	West Central	3,261	2,041	304	3,364	Typically Effective	Y	19%	Partially Effective	Partially Effective - Shortages Remain
63	20910	Lower Cimarron River	Upper Arkansas	9,618	695	736	6,630	Typically Effective	Y	100%	Typically Effective	Effective at Meeting Future Demands
64	20920	Middle Cimarron River	Central	29,612	2,520	11,096	25,937	Typically Effective	Y	100%	Typically Effective	Effective at Meeting Future Demands
65	20930	Upper Cimarron River	Panhandle	-	900	247	688	Typically Effective	Y	1%	Partially Effective	Partially Effective - Shortages Remain

No.	Basin ID	Basin Name	Region Name	M&I and SSI SW 2075	M&I and SSI BGW 2075	M&I and SSI AGW 2075	60% of M&I + SSI Demand	Potential Project Volume Score (>0.Likely ineffective mgd [$>$ Likely ineffectiveLikely ineffective5 AFY])	Is the Gap an M&I Supply Source?	Percent of Gap	Percent of Gap Narrative Score (thresholds = 70% or more; Typically effective0 to 70%, less than Typically effective0%)	Combined Minimum Score
66	20940	Cimarron Headwaters	Panhandle	-	-	-	-	Likely Ineffective	N	0%	Partially Effective	Ineffective at Meeting Future Demands
67	21011	Lower Salt Fork Arkansas River - 1	Upper Arkansas	839	2,038	2,965	3,505	Typically Effective	Y	99%	Typically Effective	Effective at Meeting Future Demands
68	21020	Upper Salt Fork Arkansas River	Upper Arkansas	9	1,149	2,850	2,405	Typically Effective	Y	58%	Partially Effective	Partially Effective - Shortages Remain
69	21012	Lower Salt Fork Arkansas River - 2	Upper Arkansas	220	258	774	752	Typically Effective	Y	100%	Typically Effective	Effective at Meeting Future Demands
70	21013	Lower Salt Fork Arkansas River - 3	Upper Arkansas	15	35	35	51	Likely Ineffective	Y	5%	Partially Effective	Ineffective at Meeting Future Demands
72	21200	Arkansas River Mainstem (To Kansas State Line)	Upper Arkansas	1,083	2,115	2,719	3,550	Typically Effective	Y	100%	Typically Effective	Effective at Meeting Future Demands

APPENDIX D

STORMWATER CAPTURE AND USE SCORES FOR BASINS WITH PROJECTED 2075 SUPPLY SHORTAGES GREATER THAN 20% OF 2075 DEMAND

No.	Basin ID	Basin Name	Region Name	Historical Precipitation (inches)	Precipitation Raw Score	2075 M&I	Urban Score (Based on M&I Demand)	2075 M&I & SSI Demand	Is the Gap an M&I or SSI Supply Source?	Combined Score
1	10100	Red River Mainstem (To Kiamichi River)	Southeast	49	Typically Effective	3,233	Potentially Effective	54,754	N	Partially Effective - Shortages Remain
7	10411	Muddy Boggy River - 1	Blue-Boggy	49	Typically Effective	8	Likely Ineffective	8	N	Ineffective at Meeting Future Demands
13	10700	Red River Mainstem (To Washita)	Blue-Boggy	38	Typically Effective	3,056	Potentially Effective	3,056	N	Partially Effective - Shortages Remain
17	10831	Upper Washita - 1	West Central	29	Potentially Effective	747	Likely Ineffective	747	Y	Ineffective at Meeting Future Demands
18	10832	Upper Washita - 2	West Central	29	Potentially Effective	321	Likely Ineffective	321	Y	Ineffective at Meeting Future Demands
22	11000	Walnut Bayou	Lower Washita	38	Typically Effective	3,844	Potentially Effective	3,844	Y	Potentially Effective with Local Variability
26	11203	Beaver Creek - 3	Beaver-Cache	38	Typically Effective	517	Likely Ineffective	517	Y	Ineffective at Meeting Future Demands
27	11311	Cache Creek - 1	Beaver-Cache	29	Potentially Effective	54	Likely Ineffective	54	Y	Ineffective at Meeting Future Demands
30	11322	Deep Red Creek And West Cache Creek - 2	Beaver-Cache	29	Potentially Effective	714	Likely Ineffective	714	Y	Ineffective at Meeting Future Demands
31	11400	Red River Mainstem (To North Fork of Red)	Beaver-Cache	29	Potentially Effective	806	Likely Ineffective	806	Y	Ineffective at Meeting Future Demands
32	11511	Lower North Fork Red River - 1	Southwest	29	Potentially Effective	236	Likely Ineffective	236	Y	Ineffective at Meeting Future Demands
33	11512	Lower North Fork Red River - 2	Southwest	29	Potentially Effective	2,324	Potentially Effective	2,324	Y	Potentially Effective with Local Variability
35	11514	Lower North Fork Red River - 4	Southwest	29	Potentially Effective	34	Likely Ineffective	34	N	Ineffective at Meeting Future Demands

No.	Basin ID	Basin Name	Region Name	Historical Precipitation (inches)	Precipitation Raw Score	2075 M&I	Urban Score (Based on M&I Demand)	2075 M&I & SSI Demand	Is the Gap an M&I or SSI Supply Source?	Combined Score
36	11521	Upper North Fork Red River - 1	Southwest	29	Potentially Effective	224	Likely Ineffective	224	Y	Ineffective at Meeting Future Demands
37	11522	Upper North Fork Red River - 2	Southwest	28	Potentially Effective	2,870	Potentially Effective	2,870	Y	Potentially Effective with Local Variability
38	11601	Salt Fork Red River - 1	Southwest	29	Potentially Effective	1,381	Potentially Effective	1,449	Y	Potentially Effective with Local Variability
41	11702	Prairie Dog Town Fork Red River - 2	Southwest	29	Potentially Effective	453	Likely Ineffective	453	Y	Ineffective at Meeting Future Demands
42	11801	Elm Fork Red River - 1	Southwest	29	Potentially Effective	887	Likely Ineffective	887	Y	Ineffective at Meeting Future Demands
43	11802	Elm Fork Red River - 2	Southwest	29	Potentially Effective	3	Likely Ineffective	3	Y	Ineffective at Meeting Future Demands
45	20102	Poteau River - 2	Lower Arkansas	49	Typically Effective	6,967	Typically Effective	6,967	N	Partially Effective - Shortages Remain
51	20520	Middle North Canadian River	Central	36	Typically Effective	7,303	Typically Effective	7,303	Y	Effective at Meeting Future Demands
52	20531	Upper North Canadian River - 1	Panhandle	20	Likely Ineffective	877	Likely Ineffective	877	Y	Ineffective at Meeting Future Demands
53	20532	Upper North Canadian River - 2	Panhandle	20	Likely Ineffective	8,779	Typically Effective	8,779	Y	Ineffective at Meeting Future Demands
54	20533	Upper North Canadian River - 3	Panhandle	20	Likely Ineffective	447	Likely Ineffective	447	Y	Ineffective at Meeting Future Demands
55	20540	North Canadian Headwaters	Panhandle	20	Likely Ineffective	2,491	Potentially Effective	5,210	Y	Ineffective at Meeting Future Demands
56	20611	Lower Canadian River - 1	Central	38	Typically Effective	3,588	Potentially Effective	3,868	Y	Potentially Effective with Local Variability

No.	Basin ID	Basin Name	Region Name	Historical Precipitation (inches)	Precipitation Raw Score	2075 M&I	Urban Score (Based on M&I Demand)	2075 M&I & SSI Demand	Is the Gap an M&I or SSI Supply Source?	Combined Score
57	20612	Lower Canadian River - 2	Central	36	Typically Effective	1,277	Potentially Effective	1,277	Y	Potentially Effective with Local Variability
59	20630	Upper Canadian River	West Central	28	Potentially Effective	5,606	Typically Effective	5,606	Y	Potentially Effective with Local Variability
63	20910	Lower Cimarron River	Upper Arkansas	30	Potentially Effective	11,049	Typically Effective	11,049	Y	Potentially Effective with Local Variability
64	20920	Middle Cimarron River	Central	30	Potentially Effective	43,228	Typically Effective	43,228	Y	Potentially Effective with Local Variability
65	20930	Upper Cimarron River	Panhandle	20	Likely Ineffective	1,147	Potentially Effective	1,147	Y	Ineffective at Meeting Future Demands
66	20940	Cimarron Headwaters	Panhandle	20	Likely Ineffective	0	Likely Ineffective	0	N	Ineffective at Meeting Future Demands
67	21011	Lower Salt Fork Arkansas River - 1	Upper Arkansas	30	Potentially Effective	3,021	Potentially Effective	5,842	Y	Potentially Effective with Local Variability
68	21020	Upper Salt Fork Arkansas River	Upper Arkansas	30	Potentially Effective	4,008	Typically Effective	4,008	Y	Potentially Effective with Local Variability
69	21012	Lower Salt Fork Arkansas River - 2	Upper Arkansas	30	Potentially Effective	1,253	Potentially Effective	1,253	Y	Potentially Effective with Local Variability
70	21013	Lower Salt Fork Arkansas River - 3	Upper Arkansas	30	Potentially Effective	85	Likely Ineffective	85	Y	Ineffective at Meeting Future Demands
72	21200	Arkansas River Mainstem (To Kansas State Line)	Upper Arkansas	41	Typically Effective	5,170	Typically Effective	5,917	Y	Effective at Meeting Future Demands

APPENDIX E

WATER TRANSFERS SCORING CRITERIA FOR NEARBY BASIN SURFACE WATER AND GROUNDWATER TRANSFERS

Water Transfers Scoring Criteria for Nearby Basin Surface Water

Basin with Needs Shortage		Nearby Basin with Supply's Distance		Combined Shortage Score: Size (first number) and Distance (second number)	Surface Water Score	Groundwater Score
Size (AF)	Score	Distance (mile)	Score			
Less than 1,000	1	Less than 20	5	12, 13	Ineffective at Meeting Future Demands	Ineffective at Meeting Future Demands
1,000-10,000	2	20-40	4	14, 15, 22, 23	Potentially Effective	Partially Effective – Shortages Remain
10,000-20,000	3	40-60	3	24, 25, 32, 33, 34, 42, 43, 45, 52, 53, 54	Effective at Meeting Future Demands	Potentially Effective
20,000-40,000	4	60-100 ⁽¹⁾	2			
40,000 or more	5					

Notes:

(1) The analysis did not consider basins located more than 100 miles away.

No.	Basin ID	Basin Name	Region Name	Surface Water Transfer Score	GW Transfer Score	Combined Transfer Score
7	10411	Muddy Boggy River - 1	Blue-Boggy	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
17	10831	Upper Washita - 1	West Central	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
18	10832	Upper Washita - 2	West Central	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
22	11000	Walnut Bayou	Lower Washita	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
26	11203	Beaver Creek - 3	Beaver-Cache	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
27	11311	Cache Creek - 1	Beaver-Cache	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
30	11322	Deep Red Creek And West Cache Creek - 2	Beaver-Cache	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
31	11400	Red River Mainstem (To North Fork of Red)	Beaver-Cache	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
32	11511	Lower North Fork Red River - 1	Southwest	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
33	11512	Lower North Fork Red River - 2	Southwest	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
35	11514	Lower North Fork Red River - 4	Southwest	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
36	11521	Upper North Fork Red River - 1	Southwest	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
37	11522	Upper North Fork Red River - 2	Southwest	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
38	11601	Salt Fork Red River - 1	Southwest	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
41	11702	Prairie Dog Town Fork Red River - 2	Southwest	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
42	11801	Elm Fork Red River - 1	Southwest	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
43	11802	Elm Fork Red River - 2	Southwest	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
45	20102	Poteau River - 2	Lower Arkansas	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
51	20520	Middle North Canadian River	Central	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
52	20531	Upper North Canadian River - 1	Panhandle	Typically Effective	Partially Effective	Effective at Meeting Future Demands

No.	Basin ID	Basin Name	Region Name	Surface Water Transfer Score	GW Transfer Score	Combined Transfer Score
53	20532	Upper North Canadian River - 2	Panhandle	Likely Ineffective	Potentially Effective	Potentially Effective with Local Variability
54	20533	Upper North Canadian River - 3	Panhandle	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
55	20540	North Canadian Headwaters	Panhandle	Likely Ineffective	Screened Out	Ineffective at Meeting Future Demands
56	20611	Lower Canadian River - 1	Central	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
57	20612	Lower Canadian River - 2	Central	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
59	20630	Upper Canadian River	West Central	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
63	20910	Lower Cimarron River	Upper Arkansas	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
64	20920	Middle Cimarron River	Central	Typically Effective	Potentially Effective	Effective at Meeting Future Demands
65	20930	Upper Cimarron River	Panhandle	Likely Ineffective	Potentially Effective	Potentially Effective with Local Variability
66	20940	Cimarron Headwaters	Panhandle	Likely Ineffective	Screened Out	Ineffective at Meeting Future Demands
67	21011	Lower Salt Fork Arkansas River - 1	Upper Arkansas	Typically Effective	Partially Effective	Effective at Meeting Future Demands
68	21020	Upper Salt Fork Arkansas River	Upper Arkansas	Typically Effective	Partially Effective	Effective at Meeting Future Demands
69	21012	Lower Salt Fork Arkansas River - 2	Upper Arkansas	Potentially Effective	Likely Ineffective	Potentially Effective with Local Variability
70	21013	Lower Salt Fork Arkansas River - 3	Upper Arkansas	Potentially Effective	Partially Effective	Potentially Effective with Local Variability
72	21200	Arkansas River Mainstem (To Kansas State Line)	Upper Arkansas	Typically Effective	Potentially Effective	Effective at Meeting Future Demands