

Marais des Cygnes River Basin Management Categories

MANAGEMENT CATEGORIES

The following categories include issues identified in the [Marais des Cygnes basin](#) plan as items that require attention in addition to the basin priority issues. These issues are addressed within the following management categories:

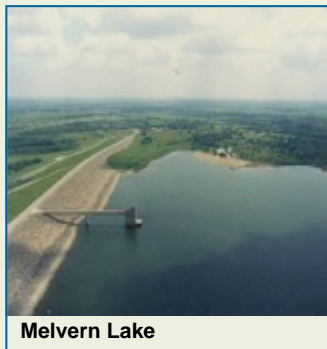
- Water Management
- Water Conservation
- Public Water Supply
- Water Quality
- Wetland and Riparian Management
- Flood Management
- Water-Based Recreation

These categories correspond to the *Kansas Water Plan, Volume II*. That contains new policy issues and the existing policy and statutory framework that relate to the management categories.

ISSUE: WATER MANAGEMENT

See the [Water Supply Management and Conservation](#) priority issue in the Marais des Cygnes basin section.

The mainstem of the Marais des Cygnes and Marmaton rivers and three federal reservoirs are the major sources of water supply in the basin. There are also four State Multipurpose Small Lakes that provide public water supply and alluvial deposits along streams provide a minor source of ground water in the basin. All the major streams in the basin are restricted to new appropriations for the period of July 1 through September 30. There are two sites in the basin where minimum desirable streamflows (MDS) have been set: Ottawa and La Cygne.



Applicable Kansas Water Plan Objectives

- Achieve sustainable yield management of Kansas surface and ground water sources outside of the Ogallala High Plains aquifer and areas specifically exempt by regulation. Sustainable yield management would be a goal that sets water management criteria to ensure long term trends in water use will move as close as possible to stable ground water levels and maintenance of sufficient streamflows.
- Meet minimum desirable streamflow at a frequency

no less than the historical achievement for the individual sites at time of enactment.

Applicable Programs

The following programs help to meet the objectives in the Water Management (quantity) category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Department of Agriculture-Division of Water Resources: Water Appropriation Program
- Kansas Geological Survey and Kansas Department of Agriculture, Division of Water Resources: Water Well Measurement
- USDA-Natural Resource Conservation Service: Environmental Quality Incentive Program
- Kansas Water Office: Water Marketing Program
- Kansas Water Office: Water Assurance Program

ISSUE: WATER CONSERVATION

Water conservation is essential for the effective management of water resources in the basin to assure that a sufficient, long-term, supply of water is available for beneficial uses. Conservation is defined as a careful preservation and protection of something, especially the planned management of a natural resource, to prevent exploitation or destruction. Water conservation is a part of maintaining a long-term water supply for Kansas.

Water conservation activities apply to all uses: irrigation, municipal, industrial, etc, and from all sources. Industrial water supply (53%) accounts for the majority of water used in the basin followed by municipal supply (27%), irrigation (11%) and recreation (7 percent). Stock water, domestic and other uses make up the balance of water [use in the basin](#) (2006).

Water use conservation plans are required when: a) purchasing water from the state Water Marketing Program, b) participating in the Water Assurance District Program, c) sponsoring or purchasing the public water supply portion of a Multipurpose Small Lakes Program project, d) transferring water under the Water Transfers Act and e) applying for a loan from the Public Water Supply Loan Fund. There are sixty-one [public water suppliers](#) in the Marais des Cygnes basin with an approved municipal conservation plan.

Water conservation plans include drought stage triggers that are the signals that a water shortage or other conditions indicative of drought have reached certain stages

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or levels. They act as the signal to begin implementation of actions appropriate to the stage. Triggers may be related to supply conditions or demand levels. A given stage should have more than one trigger to confirm that conditions are worsening. Appropriate conservation practices in the areas of education, management and regulation should be listed under each stage. Delay in action may lead to a major disruption of the water supply system at a later time.

Most water utilities consider water as a commodity and encourage the use of water by their customers by striving to keep rates low. The availability of plentiful, inexpensive water is often promoted by communities to attract new growth. More recently, some communities have adopted rate structures that result in higher unit cost with increased use. This is one form of demand management.

The four basic types of water rate structures used by public water suppliers in Kansas are described as flat rate, decreasing block rate, uniform block rate and increasing block rate. Utilities with a flat rate charge each customer a fixed amount per month regardless of the amount of water used. With a decreasing block rate, the unit cost of water decreases as usage increases. The unit cost of water is the same for all levels of usage with a uniform block rate. With an increasing block rate, the unit cost of water rises as usage increases.

The type of rate structure can affect water usage as measured in gallons per capita per day (gpcpd). Systems with flat rates tend to use considerably more water per capita than systems that meter customer use. The other three types of rate structures, in which cost depends on amount of water used, have a less dramatic effect on gpcpd. Decreasing block rates are assumed to discourage conservation because customers are charged lower rates for high-volume usage. Increasing block rates are considered an effective way to promote conservation among high-volume users while keeping the cost of moderate use affordable. However, the rate structure does not appear to influence usage by individual customers as much as the total monthly water cost and the geographic area in which they live.

Applicable Kansas Water Plan Objectives

- All non-domestic points of diversion meeting predetermined criteria will be metered, gaged, or otherwise measured.
- Conservation plans will be required for water rights meeting priority criteria under K.S.A. 82a-733 if it is

determined that such a plan would result in significant water management improvement.

Applicable Programs

The following programs help to meet the objectives in the Water Conservation category. For more information on the programs and associated policies, see the [Programs Manual](#).

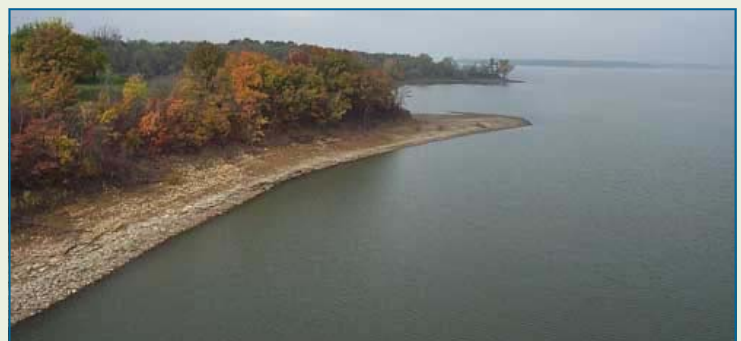
- Kansas Department of Agriculture-Division of Water Resources: Water Appropriation Program
- Kansas State University Research and Extension: Water Conservation and Management Program
- Kansas Water Office: Water Conservation Program
- Kansas Department of Health and Environment: Kansas Public Water Supply Loan Fund
- USDA-Farm Services Agency: Conservation Reserve Program

ISSUE: PUBLIC WATER SUPPLY

See also, [Surface Water Management and Conservation](#) priority issue in the Marais des Cygnes basin section.

The primary approach to addressing public water supply issues in the basin focuses on ensuring that there are adequate supplies of [surface](#) and ground water within the basin to meet future water demands, reducing the number of public water supply systems that are vulnerable to drought and ensuring that systems have the technical, financial and managerial capacity to meet future needs for water quality and quantity.

There are 84 [public water suppliers](#) in the basin, including 31 rural water districts. There are currently two public wholesale water supply districts in the basin. Surface water is the primary source for most public water supplies, accounting for over 97% of the total [water use](#). There are four State Multipurpose Small Lakes in the basin that serve public water suppliers. The Marais des



Pomona Reservoir

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Cygnés Water Assurance District is also active in the basin. The U.S. Army Corps of Engineers (Corps) operates Melvern, Pomona and Hillsdale lakes in coordination with the state to meet Water Assurance District member needs during periods of low flow.



Hillsdale Reservoir.

Water usage in gpcd is calculated for each water system in the state from reported data on water use and [population](#) served. Average gpcd figures for large, medium and small water suppliers are calculated in eight regions of the state based on similar geographic areas. The Marais des Cygnes basin is located in regions 7 and 8. Average gpcd usage for large, medium and small suppliers is, 148, 107 and 96 respectively in region 7. Average gpcd in region 8 is 130, 102 and 84 for large, medium and small suppliers. These figures serve as a reference to indicate if individual suppliers are above or below average usage for the region.

Reducing unaccounted for water is a focus of water conservation efforts in the Marais des Cygnes basin. Unaccounted for water includes any unmetered uses plus water loss in the distribution system. Technical assistance is available through the Kansas Water Office (KWO) for systems with more than 30% unaccounted for water. High amounts of unaccounted for water may result from water line breaks, under registering customers, unmetered uses, faulty metering or inaccurate accounting. The statewide average percentage of unaccounted for water use in 2006 was 14%. Management of unaccounted for water is a fundamental tool in providing adequate water supply.

Drought vulnerable water supplies are those systems most likely to be first impacted by drought

due to basic source, distribution system or treatment capacity limitations; or that rely on a single well as a water supply source. Drought vulnerable water supplies were surveyed by the Kansas Department of Health and Environment (KDHE) and KWO in 2003 and 2006. While the number of public water supplies considered drought vulnerable increased between the two surveys, issues causing supplies to be listed as vulnerable in 2003 have been corrected with one exception (Table 1). The KDHE Capacity Development Program has been beneficial in reducing drought vulnerability throughout the state as communities assess their systems and identify areas in need of improvement.

Capacity development is the process of water systems acquiring and maintaining adequate technical, financial and managerial (TFM) capabilities to assist them in providing safe drinking water. The capacity development provisions in the Safe Drinking Water Act provide a framework for the state and public water supply systems to work together to help ensure that systems acquire and maintain the TFM capacity needed to meet the public health protection objectives.

The KDHE surveyed the TFM capability of public water suppliers in 2002, 2005 and 2008. The surveys provided information for a ranking system of high, medium and low for targeting the need for capacity development assistance. In the Marais des Cygnes basin, the number of systems rated high for the need of capacity development decreased from 10 to 4 between 2002 and 2005 reports (2008 results pending).

Table 1.			
Drought Vulnerable Public Water Supplies			
Supplier name	County	New to list	Limitation
Baldwin City	Douglas	yes	contractual, treatment capacity
Bourbon RWD 02C	Bourbon	yes	distribution system
Fontana	Miami	no	basic source, single well
Franklin RWD 01	Franklin	yes	contractual
Fulton	Bourbon	yes	unknown
Linn RWD 02	Linn	yes	basic source
Louisburg	Miami	yes	treatment capacity
Osage RWD 02	Osage	yes	basic source, distribution system
Pleasanton	Linn	yes	basic source
Uniontown	Bourbon	yes	unknown
Wellsville	Franklin	yes	distribution system

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Applicable Kansas Water Plan Objectives

- Ensure that sufficient surface water storage is available to meet projected year 2040 public water supply needs for areas of Kansas with current or potential access to surface water storage.
- Less than five percent of public water suppliers will be drought vulnerable.
- Reduce the number of public water suppliers with excessive “unaccounted for” water by first targeting those with 30% or more “unaccounted for” water.
- Ensure that all public water suppliers have the technical, financial and managerial capability to meet their needs and to meet Safe Drinking Water Act requirements.

Applicable Programs

The following programs help to meet the objectives in the Public Water Supply category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Department of Agriculture-Division of Water Resources: Water Appropriation Program
- Kansas Department of Health and Environment: Public Water Supply Program
- Kansas Water Office: State Water Planning Program
- Kansas Water Office: Water Conservation Program



Richmond City Lake. Photo courtesy KGS.

ISSUE: WATER QUALITY

Water quality is addressed through a combination of restoration and protection efforts using both voluntary, incentive-based approaches and regulatory programs. See the [Watershed Restoration and Protection basin](#)

[priority issue](#) for a discussion of current issues concerning water quality.

Applicable Kansas Water Plan Objectives

- Reduce the average concentration of bacteria, biochemical oxygen demand, solids, metals, nutrients, pesticides and sediment that adversely affect the water quality of Kansas lakes and streams.
- Ensure that water quality conditions are maintained at a level equal to or better than year 2000 conditions.
- Reduce the average concentration of dissolved solids, metals, nitrates, pesticides and volatile organic chemicals that adversely affect the water quality of Kansas ground water.
- Maintain, enhance, or restore priority wetlands and riparian areas.
- Nutrient reduction goals will be included in all Watershed Restoration and Protection Strategy (WRAPS) projects within the basin.
- All public water suppliers will complete and implement a source water protection plan.

Applicable Programs

The following programs help to meet the objectives in the Water Quality category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Department of Health and Environment: Watershed Management Section/WRAPS
- Kansas Department of Health and Environment: Watershed Planning Section/TMDL Program
- Kansas Department of Health and Environment: State Water Plan Program (Contamination Remediation)
- Kansas Corporation Commission: Conservation Division Programs
- Kansas Department of Health and Environment: Local Environmental Protection Program
- State Conservation Commission: Nonpoint Source Pollution Control Program
- State Conservation Commission: Water Resources Cost-Share Program

ISSUE: WETLAND AND RIPARIAN MANAGEMENT

The primary approach to wetland and riparian management in the basin focuses on providing technical and financial assistance to landowners to protect and restore these resources in priority watersheds through the imple-

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mentation of best management practices (BMPs). See the [Watershed Restoration and Protection basin priority issue](#) for a discussion of current activities concerning wetland and riparian area protection.

Applicable Kansas Water Plan Objective

- Maintain, enhance or restore priority wetlands and riparian areas.

Applicable Programs

The following programs help to meet the objective in the Wetland and Riparian Management category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Forest Service: Forest Stewardship Program and Conservation Tree Planting Program
- State Conservation Commission: Riparian and Wetland Protection Program
- Kansas Water Office: State Water Planning Program
- Kansas Department of Wildlife and Parks: State Parks and Wildlife Areas Planning and Development
- Kansas Department of Wildlife and Parks: Wildlife Habitat Improvement Program
- State Conservation Commission: Kansas Water Quality Buffer Initiative

ISSUE: FLOOD MANAGEMENT

The primary approach to flood management in the basin focuses on floodplain management through community participation in the National Flood Insurance Program (NFIP) and reduction of rural flood damages through construction of watershed dams in organized watershed districts.

See the [Comprehensive Flood Assessment priority issue](#) for a discussion of current activities concerning flood management.

Applicable Kansas Water Plan Objective

- Reduce the vulnerability to damage from floods within identified priority communities or areas.

Applicable Programs

The following programs help to meet the objectives in the Flood Management category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Department of Agriculture-Division of Water Resources: Water Structures Program/Floodplain Management
- State Conservation Commission: Watershed Dam Construction Program
- State Conservation Commission: Watershed Planning Assistance Program
- Kansas Division of Emergency Management: Hazard Mitigation Grants Program
- FEMA: National Flood Insurance Program

ISSUE: WATER-BASED RECREATION

The rivers, streams and lakes of Kansas represent valuable recreational resources. Consideration of the economic contribution of water-based recreation is addressed in the [Water-Based Recreation Management Category](#). Even though the Marais des Cygnes basin has a wide variety and relatively high number of public water recreation sites, there is a demand for more water based-recreation facilities to meet the needs of the population.

The Marais des Cygnes River and its tributaries are not among the three rivers in the state legally accessible for public recreation. However, a portion of the river as it passes through the Marais des Cygnes state wildlife area and federal refuge is publicly owned. The approach to enhancing opportunities for recreation in the basin is to improve access to the federal reservoirs, community lakes and other water bodies that are available for public use.

Applicable Kansas Water Plan Objective

- Increase public recreational opportunities at Kansas lakes and streams.

Applicable Programs

The following programs help to meet the objectives in the Water-Based Recreation category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Department of Wildlife and Parks: Rivers and Stream Access
- Kansas Department of Wildlife and Parks: Community Fisheries Assistance Program
- Kansas Water Office: State Water Planning Program

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ISSUES FOR FUTURE ACTION

- Regional Public Water Supply Coordination
- Cellulosic Bioenergy Development