

# LOWER ARKANSAS RIVER BASIN TOTAL MAXIMUM DAILY LOAD

**Water Body: Slate Creek W.A.**  
**Water Quality Impairment: Siltation**

## 1. INTRODUCTION AND PROBLEM IDENTIFICATION

**Subbasin:** Middle Arkansas-Slate

**County:** Sumner

**HUC 8:** 11030013

**HUC 11 (HUC 14):** 020 (060)

**Drainage Area:** Approximately 8.9 square miles.

**Conservation Pool:** Area = 26 acres, Maximum Depth = 0.3 meter

**Designated Uses:** Secondary Contact Recreation; Expected Aquatic Life Support; Food Procurement, Groundwater Recharge

**1998 303d Listing:** Table 4 - Water Quality Limited Lakes

**Impaired Use:** Aquatic Life Support

**Water Quality Standard:** Suspended solids - Narrative: Suspended solids added to surface waters by artificial sources shall not interfere with the behavior, reproduction, physical habitat or other factor related to the survival and propagation of aquatic or semi-aquatic or terrestrial wildlife. (KAR 28-16-28e(c)(2)(D)).

## 2. CURRENT WATER QUALITY CONDITION AND DESIRED ENDPOINT

**Monitoring Sites:** Station 014201 in Slate Creek W.A..

**Period of Record Used:** Three surveys during 1997-1999

**Current Condition:** Suspended solids concentrations at Slate Creek W.A. average 150.8 mg/l, with a range of 50.0 to 327.0 mg/l. It is generally desired to maintain total suspended solid concentrations below 100 mg/l.

In the previous surveys of the wetland, erosion, gullying, and channeling were observed. The movement of sediment was noticeable. One main, unnamed stream segment flows into Slate Creek W.A. Some sediment is trapped in a pond and a wetland in a tributary segment that flows into that unnamed stream. Though, these traps do not catch all the sediment in the watershed.

### **Interim Endpoints of Water Quality (Implied Load Capacity) at Slate Creek W.A. over 2005 - 2009:**

Ten percent or less of the samples taken from the wetland exceed 100 mg/l over 2005-2009. This TMDL endpoint meets water quality standards as measured and determined by Kansas Water Quality Assessment protocols. These assessment protocols are similar to those used to cite the stream segments in this watershed as impaired on the Kansas 1998 Section 303d list.

Seasonal variation in the endpoint is not established by this TMDL. This endpoint can be reached as a result of expected reductions in loading from the various sources in the watershed resulting from implementation of corrective actions and Best Management Practices, as directed by this TMDL. Achievement of the endpoints indicates loads are within the loading capacity of the stream, water quality standards are attained and full support of the designated uses of the stream has been restored, therefore the narrative water quality standard pertaining to suspended solids would be attained.

### **3. SOURCE INVENTORY AND ASSESSMENT**

**Land Use:** The cause of high concentrations of total suspended solids is most likely due to cropland. Soil from exposed land runs off into the wetland, increasing the concentration of total suspended solids. Within the watershed, the land is predominantly used for cropland (72%) and grassland (28%). More woodland and grassland are needed around the stream to prevent erosion.

**Background Levels:** Background levels of total suspended solids come from geological sources. Sediment becomes suspended during high flow events as soil along the banks is eroded.

### **4. ALLOCATION OF POLLUTANT REDUCTION RESPONSIBILITY**

More detailed assessment of sources and confirmation of the siltation impairment must be completed before detailed allocations can be made. The general inventory of sources within the drainage does provide some guidance as to areas of load reduction.

**Point Sources:** A current Wasteload Allocation of zero is established by this TMDL because of the lack of point sources in the watershed. Should future point sources be proposed in the watershed and discharge into the impaired segments, the current wasteload allocation will be revised by adjusting current load allocations to account for the presence and impact of these new point source dischargers.

**Nonpoint Sources:** Siltation loading comes predominantly from nonpoint source pollution. The Load Allocation is total suspended solid concentrations not to exceed 90 mg/L.

**Defined Margin of Safety:** Because there will not be a traditional load allocation made for total suspended solids, the margin of safety will be framed around the desired endpoints of the total suspended solids standard. Therefore, evaluation of achieving the endpoints should use values

set 10% less (10 mg/L) than the applicable criteria to mark full support of the aquatic life designated use of the lake in this watershed.

**State Water Plan Implementation Priority:** Because a more detailed source assessment and evaluation of the siltation impairment are needed, this TMDL will be a Medium Priority for implementation

**Unified Watershed Assessment Priority Ranking:** This watershed lies within the Middle Arkansas-Slate subbasin (HUC 8: 11030013) with a priority ranking of 6 (High Priority for restoration).

**Priority HUC 11s:** The wetland is within HUC 11 (020).

## 5. IMPLEMENTATION

### Desired Implementation Activities

Agricultural best management practices may allow full use support to take place in Slate Creek W.A. Some of the recommended agricultural practices are as follows:

1. Maintain conservation tillage and contour farming to minimize cropland erosion.
2. Install grass buffer strips along streams.
3. Reduce activities within riparian areas.

### Implementation Programs Guidance

#### **Nonpoint Source Pollution Technical Assistance - KDHE**

- a. Support Section 319 demonstration projects for reduction of sediment runoff from agricultural activities as well as nutrient management.
- b. Provide technical assistance on practices geared to establishment of vegetative buffer strips.

#### **Water Resource Cost Share Program - SCC**

- a. Apply conservation farming practices, including terraces and waterways, sediment control basins, and constructed wetlands.

#### **Nonpoint Source Pollution Control Program - SCC**

- a. Provide sediment control practices to minimize erosion and sediment and nutrient transport.

#### **Riparian Protection Program - SCC**

- a. Establish or reestablish natural riparian systems, including vegetative filter strips and streambank vegetation.
- b. Develop riparian restoration projects.

**Buffer Initiative Program - SCC**

- a. Install grass buffer strips near streams.
- b. Leverage Conservation Reserve Enhancement Program to hold riparian land out of production.

**Extension Outreach and Technical Assistance - Kansas State University**

- a. Educate agricultural producers on sediment, nutrient, and pasture management.
- b. Provide technical assistance on buffer strip design and minimizing cropland runoff.

**Time Frame for Implementation:** Pollutant reduction practices should be installed within the wetland drainage after the year 2005.

**Targeted Participants:** Primary participants for implementation will be agricultural producers within the drainage of the lake. Initial work in 2005 should include local assessments by conservation district personnel and county extension agents to locate within the lake drainage:

- 1. Total row crop acreage
- 2. Cultivation alongside lake

**Milestone for 2005:** The year 2005 marks the midpoint of the ten-year implementation window for the watershed. At that point in time, sampled data from Slate Creek W.A. should indicate evidence of reduced siltation in the conservation pool elevations relative to the conditions seen over 1997-1999.

**Delivery Agents:** The primary delivery agents for program participation will be the conservation districts for programs of the State Conservation Commission and the Natural Resources Conservation Service. Producer outreach and awareness will be delivered by Kansas State Extension.

**Reasonable Assurances:**

**Authorities:** The following authorities may be used to direct activities in the watershed to reduce pollutants.

- 1. K.S.A. 65-171d empowers the Secretary of KDHE to prevent water pollution and to protect the beneficial uses of the waters of the state through required treatment of sewage and established water quality standards and to require permits by persons having a potential to discharge pollutants into the waters of the state.
- 2. K.S.A. 2-1915 empowers the State Conservation Commission to develop programs to assist the protection, conservation and management of soil and water resources in the state, including riparian areas.

3. K.S.A. 75-5657 empowers the State Conservation Commission to provide financial assistance for local project work plans developed to control nonpoint source pollution.
4. K.S.A. 82a-901, et seq. empowers the Kansas Water Office to develop a state water plan directing the protection and maintenance of surface water quality for the waters of the state.
5. K.S.A. 82a-951 creates the State Water Plan Fund to finance the implementation of the Kansas Water Plan.
6. The Kansas Water Plan and the Lower Arkansas Basin Plan provide the guidance to state agencies to coordinate programs intent on protecting water quality and to target those programs to geographic areas of the state for high priority in implementation.

**Funding:** The State Water Plan Fund annually generates \$16-18 million and is the primary funding mechanism for implementing water quality protection and pollutant reduction activities in the state through the Kansas Water Plan. The state water planning process, overseen by the Kansas Water Office, coordinates and directs programs and funding toward watersheds and water resources of highest priority. Typically, the state allocates at least 50% of the fund to programs supporting water quality protection. This watershed and its TMDL are a Medium Priority consideration.

**Effectiveness:** Sediment control has been proven effective through conservation tillage, contour farming and use of grass waterways and buffer strips. The key to success will be widespread utilization of conservation farming within the watersheds cited in this TMDL.

## 6. MONITORING

KDHE will collect total suspended solids samples from Slate Creek W.A. in 2000, as a part of an EPA grant project. Further sampling and evaluation should occur once in 2005 and once between 2005 and 2010.

## 7. FEEDBACK

**Public Meetings:** Public meetings to discuss TMDLs in the Lower Arkansas Basin were held March 9 in Wichita, April 26 in Wichita and Hutchinson, and April 27 in Arkansas City and Medicine Lodge. An active Internet Web site was established at <http://www.kdhe.state.ks.us/tmdl/> to convey information to the public on the general establishment of TMDLs and specific TMDLs for the Lower Arkansas Basin.

**Public Hearing:** A Public Hearing on the TMDLs of the Lower Arkansas Basin was held in Wichita on June 1, 2000.

**Basin Advisory Committee:** The Lower Arkansas Basin Advisory Committee met to discuss the TMDLs in the basin on September 27, November 8, 1999; January 13, 2000; March 9, 2000;

**Discussion with Interest Groups:** Meetings to discuss TMDLs with interest groups include:

Agriculture: January 12, February 2 and 29, 2000

Environmental: March 9, 2000

Conservation Districts: November 22, 1999

Industry: December 15, 1999, January 13, February 9 and 22, 2000

Local Environmental Protection Groups: September 30, November 2, December 16, 1999

**Milestone Evaluation:** In 2005, evaluation will be made as to the degree of impairment which has occurred within the drainage and current condition of Slate Creek W.A. Subsequent decisions will be made regarding implementation approach and follow up of additional implementation.

**Consideration for 303d Delisting:** Slate Creek W.A. will be evaluated for delisting under Section 303d, based on the monitoring data over the period 2005-2009. Therefore, the decision for delisting will come about in the preparation of the 2010 303d list. Should modifications be made to the applicable nutrient criterion during the ten-year implementation period, consideration for delisting, desired endpoints of this TMDL and implementation activities may be adjusted accordingly.

**Incorporation into Continuing Planning Process, Water Quality Management Plan and the Kansas Water Planning Process:** Under the current version of the Continuing Planning Process, the next anticipated revision will come in 2002 which will emphasize revision of the Water Quality Management Plan. At that time, incorporation of this TMDL will be made into both documents. Recommendations of this TMDL will be considered in Kansas Water Plan implementation decisions under the State Water Planning Process after Fiscal Year 2004.

Approved November 13, 2000.