

# LOWER ARKANSAS RIVER BASIN TOTAL MAXIMUM DAILY LOAD

**Waterbody: Wellington Old City Lake**  
**Water Quality Impairment: Selenium**

## 1. INTRODUCTION AND PROBLEM IDENTIFICATION

**Subbasin:** Chikaskia

**County:** Sumner

**HUC 8:** 11060005

**HUC 11 (HUC 14):** 030 (040)

**Drainage Area:** Approximately 49.3 mi<sup>2</sup>

**Conservation Pool:** Area = 325 acres, Maximum Depth = 5 meters

**Designated Uses:** Primary Contact Recreation; Expected Aquatic Life Support; Food Procurement; Drinking Water; Industrial Water Supply

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

**Impaired Use:** Expected Aquatic Life

**Water Quality Standard:** 5 ug/liter for Chronic Aquatic Life (KAR 28-16-28e(c)(2)(F)(ii))

In stream segments where background concentrations of naturally occurring substances, including chlorides, sulfates and selenium, exceed the water quality criteria listed in Table 1a of KAR 28-16-28e(d), at ambient flow, the existing water quality shall be maintained, and the newly established numeric criteria shall be the background concentration, as defined in KAR 28-16-28b(e). Background concentrations shall be established using the methods outlined in the "Kansas implementation procedures: surface water," dated June 1, 1999... (KAR 28-16-28e(b)(9)).

## 2. CURRENT WATER QUALITY CONDITION AND DESIRED ENDPOINT

**Monitoring Sites:** Station 042201 in Wellington Old City Lake

**Period of Record Used:** Four surveys during 1985-1997

**Current Condition:** The selenium concentration in Wellington Old City Lake has varied over time. In August 1993, the lake had notably elevated selenium concentrations; the sampling average was 41.5 ug/L. All other sample years averaged less than 1.5 ug/L. Total monthly precipitation at Wellington (Station 148670) for May 1993 was 12.26 inches; the largest recorded total at Wellington since June 1957.

## **Interim Endpoints of Water Quality (Implied Load Capacity) at Wellington Old City Lake over 2005 - 2009:**

Reduce the amount of selenium bearing sediment that enters the lake, such that selenium concentrations are maintained below 5 ug/L.

This endpoints will be reached as a result of expected, though unspecified, 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 indicate loads are within the loading capacity of the lake, water quality standards are attained, and full support of the designated uses of the stream has been restored.

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

**NPDES:** There are no NPDES permitted dischargers within the watershed.

**Land Use:** Most of the watershed is cropland (72.5% of the area), grassland (26% of the area) or woodland (1.5% of the area). Most of the grassland is located in the lower portion of the watershed and on the steeper slopes within the drainage area. Both the off-season grazing density and growing season grazing density are low-average when compared to the rest of the Lower Arkansas River Basin.

**Background Levels:** Some selenium loading may be associated with background levels, especially where geologic formations naturally high in selenium contribute groundwater to baseflow. The lack of baseflow to the lake probably limits this method of loading under normal climatic conditions.

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

More detailed assessment of sources and confirmation of the selenium concentrations in the lake must be completed before specific 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:** Based on the assessment of sources and the relationship of excursions to runoff conditions, non-point sources are seen as a significant cause of water quality violations. Background levels are not significant as a cause of the problem. Implementation of non-point source pollution control practices should be taken within the watershed. It appears selenium loading occurs when large run off events cause less protected soils and stream banks, weathered

from parent material high in selenium, to be washed into Wellington Old City Lake. The Load Allocation within the lake is selenium concentrations not to exceed 4.5 ug/L.

**Defined Margin of Safety:** Because there will not be a traditional load allocation made for selenium, the margin of safety will be framed around the desired endpoints of the applicable water quality standards. Therefore, evaluation of achieving the endpoints should use values set 10% less (0.5 ug/L) than the applicable criteria (from 5.0 ug/L to 4.5 ug/L) to mark full support of the aquatic life designated use of the lake in this watershed.

**State Water Plan Implementation Priority:** Because the selenium impairment is partially due to natural sources, this TMDL will be a Low Priority for implementation.

**Unified Watershed Assessment Priority Ranking:** This watershed lies within the Chikaskia River Subbasin (HUC 8: 11060005) with a priority ranking of 30 (Medium Priority for restoration work).

**Priority HUC 11s:** The lake is located in HUC 11 (030).

## 5. IMPLEMENTATION

### Desired Implementation Activities

The primary means to improve water quality in Wellington City Lake is to remove the accumulated silt. Removal of the accumulated materials in the old lake would enhance its value as a sediment pool for the new lake immediately downstream. In addition to in-lake work, there is abundant opportunity to reduce nutrient/silt inputs from this largely agricultural watershed. If work was to be undertaken for removal of silt from the lake, such Best Management Practices in the watershed would become mandatory to protect the investment.

### Implementation Programs Guidance

Until the 2005 assessment of the continuation of monitoring is made, no further direction can be made to those implementation programs. Should assessment indicate impairment, program guidance would most likely be as follows.

#### **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:** Continued monitoring over the years 2001-2005.

**Targeted Participants:** No targets until 2005 assessment.

**Milestone for 2005:** The year 2005 marks the mid-point of the ten year implementation window for the watershed. At that point in time, additional monitoring data from Wellington Old City Lake will be re-examined to confirm the impaired status of the lake and the suggested background concentration. Should the case of impairment remain, source assessment, allocation and implementation activities will ensue.

**Delivery Agents:** Depending upon confirmation of impairment and assessment of probable sources, 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.

**Reasonable Assurances**

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

1. K.S.A. 65-164 and 165 empowers the Secretary of KDHE to regulate the discharge of sewage into the waters of the state.
2. 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.

3. K.A.R. 28-16-69 to -71 implements water quality protection by KDHE through the establishment and administration of critical water quality management areas on a watershed basis.
4. 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.
5. K.S.A. 75-5657 empowers the State Conservation Commission to provide financial assistance for local project work plans developed to control non-point source pollution.
6. 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.
7. K.S.A. 82a-951 creates the State Water Plan Fund to finance the implementation of the Kansas Water Plan.
8. The *Kansas Water Plan* and the Kansas-Lower Republican 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 is a Low Priority consideration.

**Effectiveness:** Selenium loads can be reduced through improvements to erosion control and bank stabilization within the watershed. Minimal control can be exerted on natural contributions to loading.

## 6. MONITORING

Additional data, to establish source loading, would be of value prior to 2006. Further sampling and evaluation should occur once before 2006.

## 7. FEEDBACK

**Public Meetings:** Public meetings to discuss TMDLs in the Lower Arkansas Basin were held March 9, 2000 and April 26-27, 2000 in Wichita, Hutchinson, 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 will be 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 Wellington Old City Lake. Subsequent decisions will be made regarding implementation approach and follow up of additional implementation.

**Consideration for 303(d) Delisting:** Wellington Old City Lake will be evaluated for delisting under Section 303(d), based on the monitoring data over the period 2005-2009. Therefore, the decision for delisting will come about in the preparation of the 2010 303(d) 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.