

# NEOSHO BASIN TOTAL MAXIMUM DAILY LOAD

**Waterbody: Cow Creek**  
**Water Quality Impairment: Chlordane**

## 1. INTRODUCTION AND PROBLEM IDENTIFICATION

**Subbasin:** Spring

**County:** Cherokee and Crawford

**HUC 8:** 11070207

**HUC 11 (HUC 14s):** 150 (010, 020, 030, 040, 060)

**Drainage Area:** 239.8 square miles

**Main Stem Segments:** WQLS: 16; starting near the state line in Northeast Cherokee county and traveling upstream to east-central Crawford county (**Figure 1**).

**Tributary Segments:** WQLS: East Cow Creek (24)  
First Cow Creek (27)  
Non-WQLS: Long Branch (21)  
Taylor Branch (25)  
Brush Creek (26)  
Clear Creek (28)

**Designated Uses:** Special Aquatic Life Support, Primary Contact Recreation; Domestic Water Supply; Food Procurement; Ground Water Recharge; Industrial Water Supply Use; Irrigation Use; Livestock Watering Use for Main Stem Segment.

Special Aquatic Life Support and Secondary Contact Recreation on East Cow and First Cow Creek.

**1998 303(d) Listing:** Table 1 - Predominant Non-point Source and Point Source Impacts

**Impaired Use:** Food Procurement.

**Water Quality Standard:** 0.00048 ug/l (KAR 28-16-28e(c)(4)(A))

Surrogate used for Food Procurement WQS of 0.02 mg/kg (Fish Consumption Advisory Level) - Substances that can bioaccumulate in the tissues of edible aquatic or semiaquatic life or wildlife through bioconcentration or biomagnification shall be limited in surface waters to concentrations that result in no harm to human consumers of these tissues. (KAR 28-16-28e(c)(4)(B))

## 2. CURRENT WATER QUALITY CONDITION AND DESIRED ENDPOINT

Level of Support for Designated Use under 1998 303(d): Not Supporting Food Procurement

Monitoring Sites: Fish tissue samples were collected on Cow Creek near Lawton.

Period of Record Used: 1990-2001

# Cow Creek Watershed Chlordane TMDL HUC and Stream Segment Map

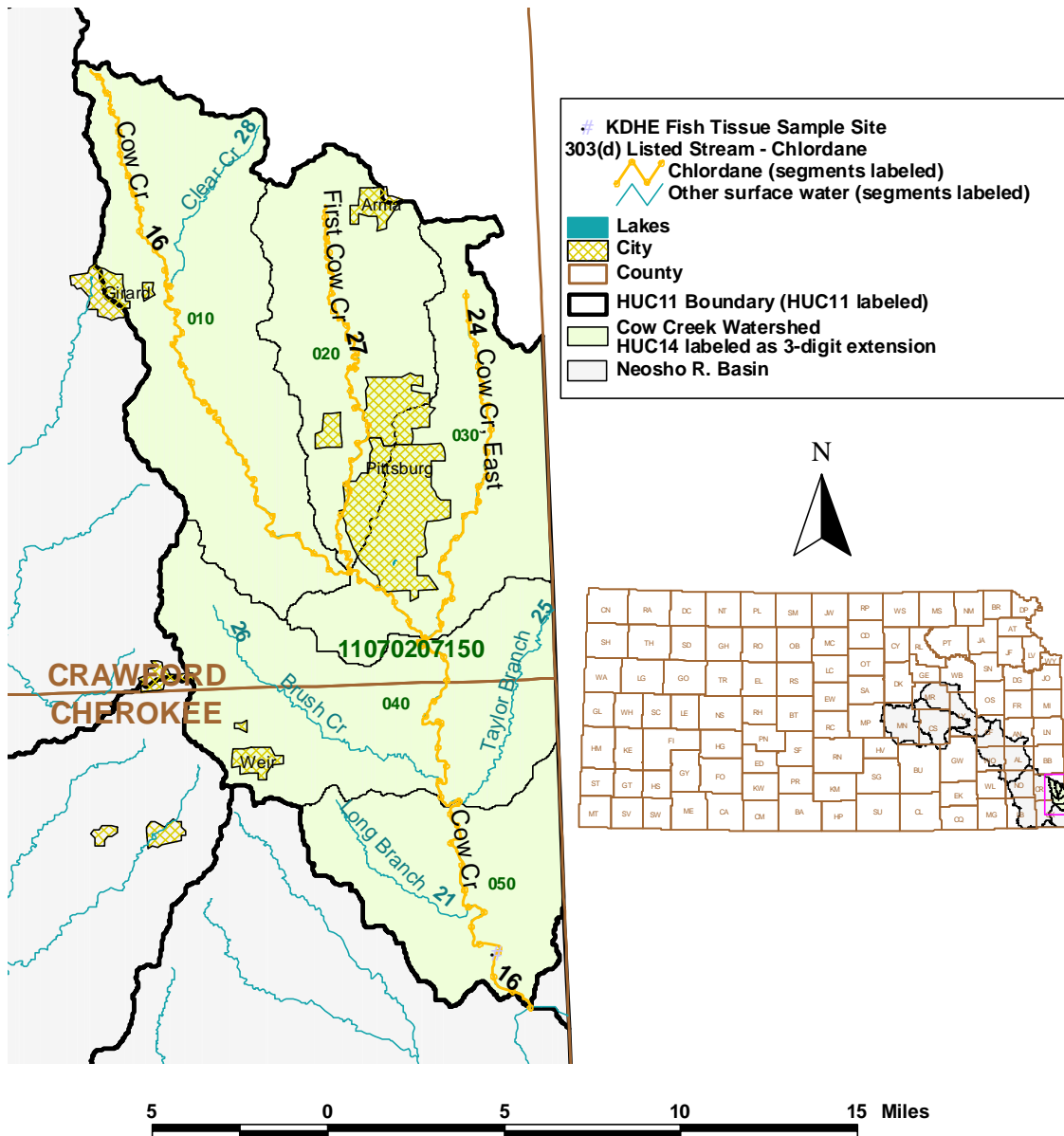
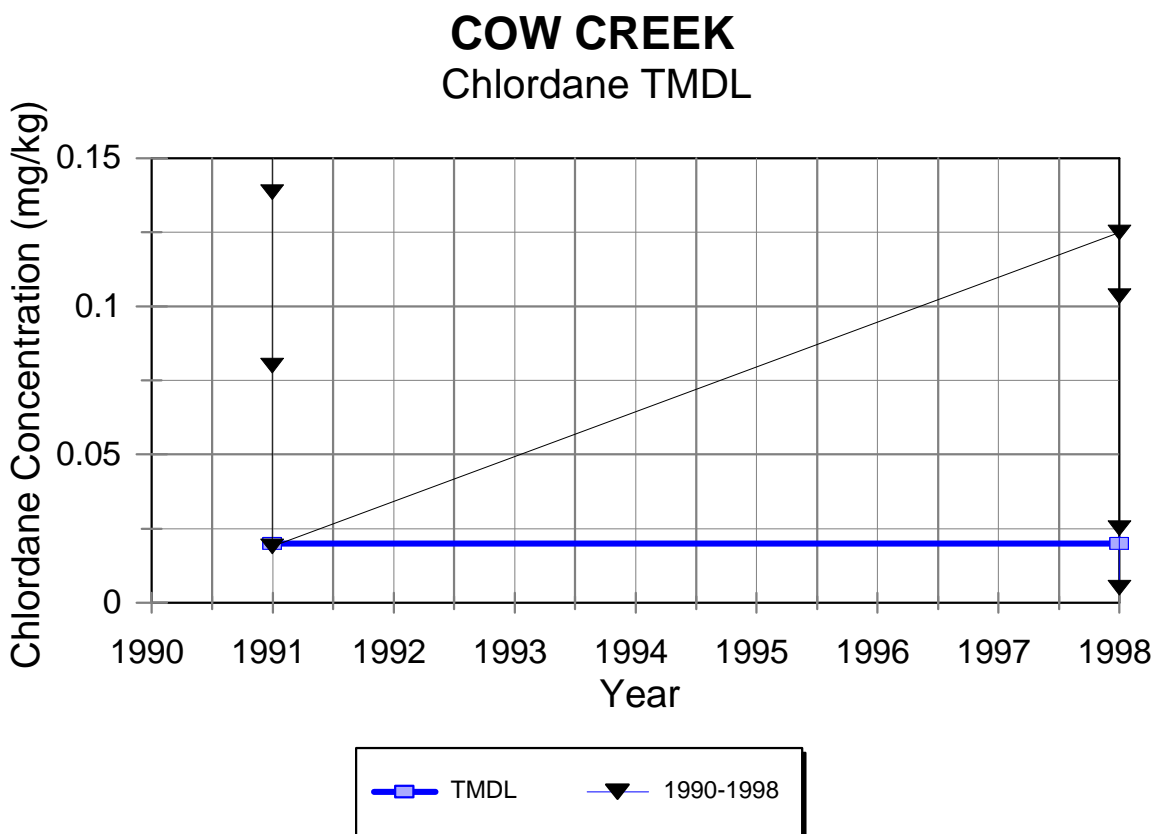


Figure 1

**Current Condition:** The fish tissue monitoring and survey program was implemented to analyze fish tissue samples for chlordane in order to define water body segments impacted by contamination and provide long term monitoring on segments with past or present fish consumption advisories. Bottom feeding fishes such as carp are sampled because of their feeding or dwelling preferences near the bottom of the water column where chlordane remains in the sediments. Fish tissue samples were collected in 1990-2001 (**Figure 2**).

The plot of samples from the Cow Creek near Lawton indicates a stable concentration over time. The average concentration of chlordane in fish tissue was 0.081425 mg/kg in Cow Creek near Lawton.



**Figure 2**

**Desired Endpoints of Water Quality in Cow Creek near Lawton over 2006 - 2010:**

Fish tissue concentrations will gradually decline as chlordane is purged or degraded in the river sediments during high flows. Given the suspended status of chlordane use nationwide, the endpoint delineating sufficient water quality to fully support the designated use will be average fish tissue concentrations below 0.02 mg/kg, leading to removal of fish consumption advisories. There is no seasonal variation associated with this TMDL.

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

The original source of chlordane has been runoff, particularly from urban areas where widespread termite eradication occurred around homes in the 1970's- 1980's. Chlordane is very persistent in the environment, yet very insoluble in water. Samples taken from water bodies rarely contain chlordane. The chlordane is attached to sediments which allow for transportation to streams and rivers and accumulation in the bed sediments. Chlordane was banned (all uses) in 1988. No additional loading should occur.

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

**Point Sources:** As the product is banned, there will be no discharge of chlordane into the river via wastewater treatment plants. Therefore, the Wasteload Allocation established under this TMDL is zero.

**Non-Point Sources:** With the banning of the product, there will be no application of chlordane anywhere it might be discharged under runoff conditions and enter the river. Therefore, the Load Allocation established under this TMDL is zero.

**Margin of Safety:** In order to ensure there is no threat of chlordane levels impairing the food procurement use of the river, fish advisories will remain in place until all samples taken from fish tissue have concentrations below 0.02 mg/kg for three consecutive years.

**State Water Plan Implementation Priority:** Because no additional loading is expected this TMDL will be a Low Priority for implementation.

**Unified Watershed Assessment Priority Ranking:** This watershed lies within the Spring Subbasin (11070207) with a priority of 15 (High Priority for restoration work).

**Priority HUC 11s:** Pending additional monitoring and assessment, no priority subwatersheds are identified.

### **5. IMPLEMENTATION**

#### **Desired Implementation Activities**

1. Maintain fish consumption advisories.

#### **Implementation Programs Guidance**

KDHE will continue to assess trends of fish tissue samples through 2007.

**Time Frame for Implementation:** Continued monitoring over the years from 2002 to 2007.

**Targeted Participants:** None.

**Milestone for 2007:** The year 2007 marks the midpoint of the ten-year implementation window for the watershed. At that point in time, additional monitoring data from fish tissue samples will be reexamined to confirm the impaired status of the river.

**Delivery Agents:** None.

### **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.S.A. 2-2439 empowers the Secretary of Agriculture to oversee pesticide management, registration and use in the state.

**Funding:** The State Water Plan Fund annually generates \$16-18 million and is the primary funding mechanism for implementing water quality protection and pollution 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 TMDL is a Low Priority consideration and should not receive funding.

**Effectiveness:** The substance is banned from use; continued flushing flows in the river will purge chlordane from bed sediments.

## **6. MONITORING**

KDHE will continue to collect fish tissue samples in Cow Creek near Lawton. At least three consecutive years of sampling should occur between 2002-2007. Based on that sampling, the status of 303(d) listing will be evaluated in 2008.

## **7. FEEDBACK**

**Public Meetings:** Public meetings to discuss TMDLs in the Neosho Basin were held January 9, 2002 in Burlington and March 4, 2002 in Council Grove. 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 Neosho Basin.

**Public Hearing:** Public Hearings on the TMDLs of the Neosho Basin were held in Burlington and Parsons on June 3, 2002.

**Basin Advisory Committee:** The Neosho Basin Advisory Committee met to discuss the TMDLs in the basin on October 2, 2001, January 9 and March 4, 2002.

**Milestone Evaluation:** In 2007, evaluation will be made as to the degree of implementation which has occurred within the watershed and current condition of Cow Creek. Subsequent decisions will be made regarding the implementation approach and follow up of additional implementation in the watershed.

**Consideration for 303(d) Delisting:** The creek will be evaluated for delisting under Section 303(d), based on the monitoring data over the period 2007-2011. Therefore, the decision for delisting will come about in the preparation of the 2012 303(d) list. Should modifications be made to the applicable water quality criteria 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 2003 which will emphasize implementation of TMDLs. 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 for Fiscal Years 2003-2007.