



*City of Lawrence*  
UTILITIES

## **Water Conservation Plan**

# Water Conservation Plan for the City of Lawrence

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## INTRODUCTION

The City of Lawrence depends on three water sources to provide enough potable water to its residents. Those include the Clinton Reservoir, the Kansas River, and alluvial wells. At this time, the City is able to treat 37 million gallons per day (MGD).

In order to help sustain a long-term water supply, the City has joined the Kansas River Water Assurance District. The district contracted for water storage in the reservoirs along the Kansas River. Membership in the district allows us to buy rights to a portion of the water stored in state reservoirs for our use in time of drought.

As per the state requirements for water assurance district members (K.S.A. 82a-733a), Lawrence prepared this plan. The City used the "2007 Kansas Municipal Water Conservation Plan Guidelines" sent out by the Kansas Water Office in August 2007.

The plan includes two sections as required by the Kansas Water Office guidelines:

- Long-Term Conservation Plan
- Drought Contingency Plan

The City of Lawrence believes that our Water Conservation Plan adds a major step in giving our customers a dependable water supply in future years.

## WATER CONSERVATION PLAN

The main goal of this plan includes making long-term water conservation plans (Long-Term Water Use Section) and short-term water emergency plans (Drought/Emergency Contingency Section). The City hopes to assure our customers of a water supply to meet their needs. The wise use of water also may limit or postpone expansion of the water system. The plan also will help to conserve the limited water resources of the State.

## LONG-TERM WATER USE

### WATER USE GOALS

The City used 108 gallons per person per day (GPCD) in 2008. This GPCD figure included:

- a) water sold to customers;
- b) water used for free public services (parks, cemeteries, swimming pools, etc.); and
- c) water lost by leaks in the water system.

The GPCD figure does not include water for industries that use over 200,000 gallons per year. According to Figure 1, shown in the [Kansas Municipal Water Use 2008 Publication](#), we are located in Region 8. From this publication, we determined that our City GPCD water use was 108, which was 12 percent below the region average of 123 GPCD during 2008. The City sets a water use goal not to exceed 128 GPCD based on the region average of the last five years (2004 thru 2008). We anticipate reaching this goal by following the specific actions outlined in our plan.

### WATER PRACTICES

This section of the plan describes the education, management and regulation efforts related to the long-term conservation of water in the City. Practices followed to save water are listed and their status.

#### **Education:**

The City water bills show the total number of gallons of water used during the billing period and the amount of the bill. The bill includes water saving tips at least once each year. The local media receives information on saving water at least once each year and encourages school district to become involved in water conservation programs in schools.

The City of Lawrence has implemented the following practices as recommended in the area of education:

- Water bills will show the amount of water used in gallons and the cost of the water.
- Water bills will show the amount of water used in gallons during this billing period and the number of gallons used last year during the same billing period.

- Water conservation tips will be provided with the monthly water bills during the summer months.
- Water conservation articles or issues will be provided or discussed each month during the summer by the local news media.
- Educational opportunities will be identified and used to educate children on water conservation and water quality topics.
- Make available information on water conserving landscape practices through publications, local news media, web site or other appropriate means.
- Meet with the 25 largest water users, to discuss water conservation, at least biannually.

**Management:**

Water meters measure all water supplies and water pumped to the water system. Any new supply will have its own meter. City staff reads these meters daily and check the meters for accuracy on an annual basis or whenever the Water Plant Manager deems it necessary.

All customers have water meters. Those meters are checked for accuracy and repaired or replaced based on the finding. They may be tested upon request from the customer or on a regular schedule based on the meter size. City staff reads each customer's meter monthly and mail a monthly water bill to each.

Leaks from the City's system are repaired when leaks are detected or reported. Pressure is checked on a daily basis.

Monthly charges for water service to all customers follow Chapter 19, Article 3, Section 19-312 of the Lawrence Code. Sewer rates are also based on the current rate model and located in Chapter 19, Article 3, Section 19-314.

The City of Lawrence has implemented the following practices as recommended in the area of management:

- All source water will have meters installed and the meters will be repaired or replaced within two weeks when malfunctions occur.
- Meters for source water will be tested for accuracy at least once every year. Each meter will be repaired or replaced if its test measurements are not within American Water Works Association (AWWA) standards.
- Meters will be installed at all residential service connections and at all other service connections whose annual water use may exceed 300,000 gallons, including separate meters for municipally operated irrigation systems, which irrigate more than one acre of turf.
- Meters at each individual service connection will be replaced on a regular basis, per City of Lawrence Water Meter Replacement Program, if they are one inch or less. Meters between one and a half inches and less than six inches will be replaced per City of Lawrence Water Meter Replacement Program. Meters six inches and above will be tested on at least an annual basis and replaced per City of Lawrence Water Meter Replacement Program. Each meter will be repaired or replaced if its test measurements are not within industry standards (such as AWWA standards). (See Attachment 1 for details on the City of Lawrence Water Meter Replacement Program.)

- All meters for source water will be read at least on a monthly basis and meters at individual service connections will be read at least once every two months.
- A reading will be taken at each source water meter at the same time that meters for individual service connections are read.
- The Department of Utilities will implement a water management review, which will result in a specified change in water management practices or implementation of a leak detection and repair program or plan, whenever the amount of unsold water (amount of water provided free for public service, used for treatment purposes, water loss, etc.) exceeds 20 percent of the total source water for a four month time period.
- Water sales will be based on the amount of water used.

**Regulation:**

On a normal basis, the City does not have any water regulations in effect. The City does have a water emergency ordinance which provides for regulatory controls during periods of drought or water emergencies. These regulations are outlined in the Drought/Emergency Contingency section of this plan. The City maintains an ordinance to assist in saving water during a supply emergency.

Lawrence has a plumbing code, which requires use of water saving units in all new and remodeled construction. Most new homes and/or remodeling projects include the use of water saving toilets and faucets. The City of Lawrence has implemented the following practices as recommended in the area of regulation:

- All new or renovated construction will install toilets that use 1.6 gallons per flush or less and low flow showerheads that use 2.5 gallons per minute or less.

## **DROUGHT/EMERGENCY CONTINGENCY**

The City of Lawrence addresses any short-term water shortage through stages based on severity with triggers, goals and actions. Each stage is stricter than the stage before since water supply has declined. With a Kansas Water Office declaration of drought condition on Clinton Reservoir, Lawrence will coordinate with the Kansas Water Office and the Kansas River Water Assurance District to closely monitor the drought condition impacts on both water sources and respond accordingly. The City Manager is authorized by ordinance to implement the needed measures.

### **STAGE 1: WATER WATCH**

#### **Triggers:**

This stage is triggered by any one of the following conditions:

1. The City storage has fallen below 85 percent (or 5.7 million gallons) capacity and does not recover overnight (no net gain).
2. Demand for one day is over 28 million gallons per day (mgd).

#### **Goals:**

The goals of this stage are to make the public aware of water supply conditions and maintain the water supply system.

#### **Education Actions:**

1. Make occasional news releases to the local media describing present conditions and the water supply outlook for the coming season.
2. Make public the prior month's summary of rainfall, temperature, water levels and storage at the start of each month.

#### **Management Actions:**

1. Clean and flush wells to maintain them at their most efficient condition.
2. Repair leaks upon detection or notification.
3. Monitor the City's use of water and curtail activities such as hydrant flushing and other water uses that are not critical to the system.
4. Contact large water users, such as the City's Parks and Recreation Department, University of Kansas, Haskell University, and local golf courses to request a voluntary decrease in usage.
5. Curtail City water usage, including use of fountains, watering of City grounds and vehicle washing.

#### **Regulation Actions:**

1. Ask the public to curtail some outdoor water use and to make wise use of indoor water, i.e. wash full loads, take short showers, do not let faucets run, etc.

## **STAGE 2: WATER WARNING**

### **Triggers:**

This stage is triggered by any one of the following conditions:

1. The City storage has fallen below 70 percent capacity (or 4.7 million gallon) and does not recover overnight (no net gain).
2. Treatment plant operations are at 80 percent capacity (or 30 mgd) or more for three consecutive days.
3. Demand for one day is over 33 million gallons per day (mgd).

### **Goals:**

The goals of this stage are to reduce peak demands by 20% and to reduce overall weekly consumption by 10%.

### **Education Actions:**

1. Make weekly news releases to the local media describing present conditions and the water supply outlook for the coming week.
2. Make public the prior week summaries of rainfall, temperature, water levels and storage each Thursday.
3. Place inserts in each water bill outlining tips on saving water indoors and outdoors.
4. Provide water conservation articles to the local newspaper.

### **Management Actions:**

1. Monitor water supplies daily.
2. Repair leaks upon notification or detection.
3. Reduce pumping at wells decrease drawdown and to maintain water levels over well screens.

### **Regulation Actions:**

1. Impose an odd/even lawn watering system for all water customers. Residents with odd-numbered addresses will water on odd days; even addresses will water on even days.
2. Restrict outdoor water use, including lawn watering and car washing to before 10:00 am and after 9 pm.
3. Restrict golf courses watering to tees and greens after sunset.
4. Allow refilling of swimming pools one day a week after sunset.
5. Consider excess water use charges for usage of water over the amount used in the winter.

### **STAGE 3: WATER EMERGENCY**

This stage is triggered by any one of the following conditions:

1. The City storage has fallen below 50 percent capacity (or 3.4 million gallon) and does not recover overnight (no net gain).
2. Treatment plant operations are at 90 percent capacity or more for 3 consecutive days.
3. Demand for one day is over 37.0 million gallons per day (mgd).

#### **Goals:**

The goals of this stage are to reduce peak demands by 50% and to reduce overall weekly consumption by 25%.

#### **Education Actions:**

1. Make daily news releases to the local media describing present conditions and the water supply outlook for the next day.
2. Make prior days summaries of rainfall, temperature, water levels and storage each day.
3. Hold public meetings to discuss the emergency, the status of the City water supply and further actions, which need to be taken.

#### **Management Actions:**

1. Monitor water supplies daily.
2. Repair leaks upon detection or notification.
3. Reduce pumping at wells to decrease drawdown and to maintain water levels over well screens.
4. Seek additional emergency supplies from other users, the state or the federal government.

#### **Regulation Actions:**

1. Ban outdoor water use.
2. Prohibit waste of water.

## **PLAN REVISION, MONITORING & EVALUATION**

The City of Lawrence reviews monthly totals for water production, sales, water provided free, and “unaccounted for water.” Problems noted during the monthly review will be solved as soon as possible.

This plan will be reviewed in April each year and on a more frequent basis during drought or other water shortage conditions. If the gallons per person per day (GPCD) goals for the prior year are not met, the City will review the data collected from prior year and evaluate the status and effectiveness of the conservation practices in the plan. The City will provide a status report to the Kansas Water Office, including any added practices that may be needed to meet the goals of the City.

Attachment 1.

**City of Lawrence  
Water Meter Replacement Program**

The City of Lawrence is responsible for installing and maintaining the water meters for over 32,000 customers. The water meters vary in size from 5/8" to 12". Proper maintenance of the water distribution system includes replacement of water meters. Replacement of water meters insures the accurate recording of water usage. Water meters will be replaced prior to the point where the water meters begin to under record consumption. Ideally, water meters will be replaced at the time when the cost of the water meter is more than offset by the additional revenue generated by the improved accuracy in recording consumption. The replacement procedures are summarized below.

**Basis for Water Meter Replacement Program**

In preparing the water meter replacement program, the City of Lawrence consulted AWWA publications, water meter manufacturer recommendations, and field testing of water meter. AWWA publications recommend water replacement schedules in the range of 10 to 15 years for residential water meters of 1" and smaller. This AWWA publication data is based on studies conducted in the 1990's. Current water meter manufacturer recommendations for residential meter replacement are based on the volume of 1.5 to 2 million gallons. Limited field testing of residential water meters indicate inaccuracies begin above 2 million gallons.

For water meters 1 1/2" and larger, the AWWA does not specify a time frame for water meter replacement but recommends 10% to 20% of the system be replaced annually for non residential water meters. With current water meter technology, water meters are expected to operate accurately for over 10 years. Manufacturers recommend annual testing of large water meters.

**Water Meter Replacement Program**

The water meter replacement program consists of the following two replacement strategies:

1. For water meters 1" and smaller, water meters will be replaced when the volume registered through the water meter exceeds 2 million gallons or age of the water meter reaches 20 years.
2. For water meters 1 1/2" or larger, water meters will be replaced when the age of the water meter reaches 15 years.
3. For water meters 6" or larger or for rural water districts, water meters will be tested annually for accuracy. If testing indicates accuracies outside of the AWWA recommendations, the water meters will be calibrated and re-tested. Upon re-testing, if the testing still indicates inaccuracy, the water meter will be replaced.

**Responsibilities**

For water meters 1" and smaller, the Finance Department's Meter Service Representatives and Utilities Department Field Service Crews replace water meters meeting the criteria listed in No. 1 above. For water meters 1 1/2" and larger, Utilities Department Field Service Crews test and replace water meters meeting the criteria listed in No. 2 and 3 above.