

**MUNICIPAL WATER
CONSERVATION PLAN
FOR THE
CITY OF LARNED**

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INTRODUCTION

The City of Larned has undertaken a number of steps to ensure a dependable water supply for our customers during the past 25 years. The city is utilizing 6 wells and pumping into a 500,000 gallon tower. The 6 wells provided the City of Larned 320,457,000 gallons of water for its 4,554 residents in 1999. The wells are permitted by the Division of Water Resources under file numbers PN-01, 2,872, and 26,461. Active service connections include 1,811 residential, 262 commercial and 3 industrial. The city is planning on several improvements to the system.

The City water supply, water treatment and distribution system have ample capacity to meet current customers demands and future projected demands for several years, except during drought periods. The City of Larned believes that the Municipal Water Conservation Plan represents an additional major step in ensuring the customers of a dependable water supply in future years.

MUNICIPAL WATER CONSERVATION PLAN

The primary objectives of the Water Conservation Plan for the City of Larned are to develop long-term water conservation plans (Long-Term Water Use Efficiency Section) and short-term water emergency plans (Drought/Emergency Contingency Section) to assure the City customers of an adequate water supply to meet their needs. The efficient use of water also has the beneficial effect of limiting or postponing water distribution system expansion and thus limiting or postponing the resultant increases in costs, in addition to conserving the limited water resources of the State of Kansas.

LONG-TERM WATER USE EFFICIENCY

WATER USE CONSERVATION GOALS

The City of Larned used 193 gallons per person per day (GPCD) in 1999. This GPCD figure included:

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

However, the GPCD figure does not include municipally supplied water for industries that use over 200,000 gallons per year. According to Figure 1, shown in the 1999 Kansas Municipalities Water Use Publication, the City is located in Region 5. From this publication it was determined that the City GPCD water use was 193. The city's five year average use was 145 GPCD, which is the region average of 145 GPCD among cities in Region 5 during 1999. The City desires to set a water use conservation goal for usage not to exceed 148 GPCD based on the regional average of the last five years (1995 thru 1999). Our City anticipates not exceeding this goal by carrying out the specific actions that are outlined in our plan.

WATER CONSERVATION PRACTICES

This subsection of the plan summarizes the current education, management and regulation efforts that relate to the long-term conservation of water in the City. Specific practices that will be undertaken to conserve water are listed and a target date to begin each practice is also shown.

Education

The City water bills show the total number of gallons of water used during the billing period and the amount of the bill. Water conservation tips are not normally provided with the water bills. The City has not provided information on water conservation to the local news media on a regular basis and has not encouraged the Board of Education and teachers to become involved in water conservation presentations in schools.

The City has chosen the following conservation practices and target dates for the Education Component of the Long-Term Water Use Efficiency Section of our Water Conservation Plan.

Education Conservation Practices to be Taken Target Date

1. Water bills will show the amount of water used in gallons and the cost of the water. In place
2. 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. 1-1-2002
3. Water conservation tips will be provided to the media in the summer months. 1-6-01

Management

The City of Larned has water meters registering in gallons on each of our raw water intake pumps. These meters are generally read on a daily basis. The accuracy of the meters and the pumping rates of the pumps are tested periodically, but not on a regular schedule.

Water meters have been installed for all residential/commercial customers, and water provided free of charge to the Public Golf Course and to the City government buildings and grounds are also metered. Customer meters are scheduled for an accuracy check and possible repair or replacement upon receiving a request to do so from the customer. Approximately 10% of all service meters are replaced each year.

The City of Larned reads each customer's water meter each month and mails a monthly water bill to each customer. Customer water meters are generally read from the 1st to the 15th of the month; however, the meter reader sometimes deviates from the scheduled time period.

Water leaks from the City public water distribution systems are repaired when customers report significant leaks from the water mains. Water pressure is not checked unless customers complain that their water pressure is too low.

The water rate structure for the City is directed by Ordinance No. 1091. The minimum monthly water bill is \$10.00 for residential customers, which allows each customer to use up to 5,000 gallons of water each month. All water use in excess of 5,000 gallons is charged at \$1.00 per 1,000 gallons.

The City of Larned realizes that much greater emphasis must be placed on obtaining accurate measurement of water use at our raw water intake and at customer meters and that a water use records system must be developed that can be used to more effectively and efficiently manage the City public water distribution system. Hence, the City of Larned has chosen the following conservation practices and target dates for the Management component of the Long-Term Water Use Efficiency Section of our Water Conservation Plan.

Management Conservation Practices to be Taken Target Date

1. All raw water intakes will have meters installed and the meters will be repaired or replaced within two weeks when malfunctions occur. In place
2. Meters at raw water intakes will be tested for accuracy at least once every three years. Each meter will be repaired or replaced if its test measurements are not within two percent of the actual volume of water passing through the meter. In place
3. 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. In place
4. Meters at each individual service connection will be replaced or tested for accuracy on a regular basis, at least once every 10 years, if they are one inch or less. Meters between one inch and six inches will be tested for accuracy at least once every five years and meters six inches and above will be tested on at least an annual basis. Each meter will be repaired or replaced if its test measurements are not within three percent of the actual volume of water passing through the meter. In place
5. All raw water intakes will be read at least on a monthly basis and meters at individual service connections will be read at least once every two months. In place
6. A reading will be taken at each raw water intake meter at the same time that meters for individual service connections are read. In place
7. The water utility 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 raw water intake for a four month time period. In place
8. Water sales will be based on the amount of water used. In place
9. A water rate structure designed to curb excessive use of water will be evaluated. In place
10. Develop and implement an irrigation management program for irrigated grounds. In place

Regulation

The City of Larned does not have any water conservation regulations in effect at the present time.

Regulation Actions to be Taken Target Date

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

DROUGHT/EMERGENCY CONTINGENCY

The City of Larned addresses its short-term water shortage problems through a series of stages based on conditions of supply and demand with accompanying triggers, goals and actions. Each stage is more stringent in water use than the previous stage since water supply conditions are more deteriorated. The City Manager or designated official, is authorized by ordinance to implement the appropriate conservation 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 capacity,
2. Groundwater levels have fallen five feet below the normal seasonal level.
3. Demand for one day is in excess of 1.3 million gallons per day (mgd).

Goals

The goals of this stage are to heighten awareness of the public on water conditions and to maintain the integrity of the water supply system.

Education Actions

1. The City will make occasional news releases to the local media describing present conditions and indicating the water supply outlook for the upcoming season.
2. Previous months summaries of precipitation, temperature, water levels and storage will be made public at the beginning of each month.

Management Actions

1. The City wells will be cleaned and flushed to maintain them at their most efficient condition.
2. Leaks will be repaired within 48 hours of detection.
3. System pressure will be maintained below 80 pounds per square inch.
4. The City will monitor its use of water and will curtail activities such as hydrant flushing and street cleaning.

Regulation Actions

The public will be asked to curtail some outdoor water use and to make efficient use of indoor water, i.e. wash full loads, take short showers, don't 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.
2. Groundwater levels have fallen ten feet below the normal seasonal level.
3. Pumping lowers water levels to within ten feet of the top of the well screens.
4. Demand for one day is in excess of 1.5 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. The City will make weekly news releases to the local media describing present conditions and indicating the water supply outlook for the upcoming week.
2. Previous week summaries of precipitation, temperature, water levels and storage will be made public each Thursday.
3. The City will place inserts in each customer's water bill outlining tips on conserving water indoors and outdoors.
4. Water conservation articles will be provided to the local newspaper.

Management Actions

1. The City water supplies will be monitored daily.
2. Leaks will be repaired within 24 hours of detection.
3. System pressure will be maintained between 67-75 pounds per square inch.
4. Standby wells will be prepared for contingency operation.
5. Pumpage at wells will be reduced to decrease drawdown and to maintain water levels over well screens.
6. The City will curtail its water usage, including operation of fountains, watering of City grounds and washing of vehicles.

Regulation Actions

1. An odd/even lawn watering system will be imposed on City residents. Residents with odd-numbered addresses will water on odd days, even addresses will water on even days.
2. Outdoor water use, including lawn watering and car washing will be restricted to before 10:00 am and after 9:00 pm.

3. Golf courses will restrict watering to tees and greens after sunset.
4. Refilling of swimming pools will be allowed one day a week after sunset.
5. Excess water use charges for usage of water over the amount used in the winter will be imposed.
6. Waste of water will be prohibited.

STAGE 3: WATER EMERGENCY

Triggers

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

1. The City storage has fallen below 50 percent capacity.
2. Groundwater levels have fallen fifteen feet below the normal seasonal level.
3. Pumping lowers water levels to within five feet of the top of the well screens.
4. Demand for one day is in excess of 1.7 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. The City will make daily news releases to the local media describing present conditions and indicating the water supply outlook for the next day.
2. Previous days summaries of precipitation, temperature, water levels and storage will be made available to the public each day.
3. The City will 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. The City water supplies will be monitored daily.
2. Leaks will be repaired within 24 hours of detection.
3. System pressure will be maintained at 60 pounds per square inch.
4. Standby wells will be activated for contingency operation.
5. Pumpage at wells will be reduced to decrease drawdown and to maintain water levels over well screens.
6. The City will seek additional emergency supplies from other users, the state or the federal government.

Regulation Actions

1. Outdoor water use will be banned.
2. Waste of water will be prohibited.

PLAN REVISION, MONITORING & EVALUATION

The City of Larned will establish a monthly management practice of reviewing monthly totals for water production, residential/commercial sales, water provided free-of-charge, and "unaccounted for water". Problems noted during the monthly review will be solved as soon as possible.

The City of Larned Municipal Water Conservation Plan will be reviewed during the month of April each year and on a more frequent basis during drought or other water shortage conditions. If the water conservation GPCD goals for the previous year are not met, then the City will review the data collected from the previous year in relationship to the status and effectiveness of the conservation practices that are outlined in our plan and will provide a status report to the Kansas Water Office which will also include any additional water conservation practices that may need to be taken in order for the City to achieve and maintain its water use conservation GPCD goals.