WATER CONSERVATION PLAN

FOR THE

CITY OF RUSSELL, KANSAS

Approved by the Governing Body of the City of Russell, Kansas,
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IMPORTANCE OF WATER CONSERVATION

Historically, water conservation measures have been invoked only during drought or other emergency water shortages. However, as Kansas water supplies continue to diminish, this view of water conservation is changing. Like many other public water suppliers, the City of Russell is looking to water conservation to manage limited resources and to help avert water and wastewater system expansions, which results in significant savings in capital and operating costs. Ultimately, water conservation must be a shared responsibility between the City and all its water customers.

INTRODUCTION

The City of Russell obtains raw water from groundwater (Pfiefer wells) and surface water (Big Creek).

The original water supply for our City was obtained from Fossil Lake and the Smoky Hill River South of Russell. When the Smoky Hill River became too high in chlorides, the Kansas Department of Health & Environment mandated a change from this location for a water supply. The City installed a pumping station and a 12" pipeline at Big Creek, 7.5 miles southwest of Russell. In 2006 the 12" pipeline was replaced with a 16" pipeline. This supply is still in use today.

In 1954, Russell received an appropriated water right in Cedar Bluff Reservoir of 2,000 acre-feet with 2, 700 acre-feet of water storage, of which a portion may be used to supplement the water flow in the Smoky Hill River. The City has vested water rights in the Smoky Hill River and installed a diversion dam and a pumping station with an 18" pipeline to the Pfiefer area. This supplied us with water when Big Creek is in short supply.

In 1970, Russell constructed nine wells in the Smoky Hill River valley near our Pfiefer pumping station. In 1980, 21 miles of 18" pipe was laid to the water treatment plant in Russell. This action has conserved many millions of gallons of water over the years and remains in service today. In 2015 an investment of an existing irrigation well was put into municipal use, which became our tenth producing well.

In 1998, the City of Russell completed the construction of a Pre-sedimentation basin and a 750,000-gallon underground reservoir. These additions kept the City within State Safe Water Drinking regulations and provided the City with additional water storage.

The City operates two water treatment facilities that provide for partial water softening of groundwater and surface water sources and filtration and disinfection as required to meet current federal and state drinking water standards. The original water treatment plant, constructed in 1936, was designed to treat surface and groundwater. Construction was completed in 2008 of a new electro-dialysis reversal treatment plant designed to treat groundwater. The current conjunctive use of surface water and groundwater as sources of water supply allows the City some redundancy for our supply source.

Management of our water resources includes resource development, efficient management of existing resources, and conservation to ensure sufficient water supply is available now and in the future for the beneficial uses of our customers.

The City of Russell believes that our municipal water conservation plan represents an additional major step in ensuring our customers a dependable water supply in future years. The plan includes a water use conservation goal, a long-term water use efficiency plan, a drought/emergency response plan, and provisions for monitoring, evaluating, and revising the plan.

MUNICIPAL WATER CONSERVATION PLAN

The City of Russell's code established voluntary and mandatory water conservation procedures. The primary objectives of the Water Conservation Plan for the City of Russell are: to assist in carrying out the purpose of the Code; to promote and develop long-term water conservation plans (Long-Term Water Use Efficiency Sections); and short-term water emergency plans (Drought/Emergency Response Section); and to assure 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 additional water system expansion, thus limiting or postponing the resultant increase 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 Russell used 145 gallons per capita per day (GCPD) in 2017. This GPCD figure includes:

a) water sold to residential/commercial/industrial customers;
b) water distributed for free public services (fire protection, street cleaning, parks, cemeteries, swimming pool etc.); and
c) unaccounted for water, such as water lost by leaks in the water distribution system.

According to Figure 1, shown in the 2017 Kansas Municipalities Water Use Publication, our City is located in Region 6ML (Medium-Large). The City desires to set a water use conservation goal for usage not to exceed 135 GPCD based on the regional average of the last five reported years (2013 thru 2017).

The City used 79 gallons per capita per day when extracting industrial usage during the same period.

WATER CONSERVATION PRACTICES

The City's conservation practices include actions that will reduce overall demand for water, diminish water usage at peak demand time, improve efficiency in water use, and reduce water losses. This section of the plan summarizes the current and proposed education, management, and regulation efforts that relate to the long-term conservation of water in the City of Russell. Specific practices that will be undertaken to conserve water are listed and a target date to begin each practice is also shown.

Education

The following is a list of current and proposed water use efficiency education practices:

1. The City water bills show the number of gallons of water used during the billing period and the cost of water.

2. Water conservation tips are provided on the back of the full sheet water bills, on the City website, local radio advertising and at the City Building.

3. Information is provided to the general public on water conserving practices through publications, radio advertising and community events such as the annual Home Show.

4. The Board of Education and teachers have become involved in water conservation through classroom lectures and incentives for children to conduct home checks

5. Water conservation and xeriscaping classes will be offered to the public through a partnership between the City and outside entities.
   Target Date: May 2024

Management

The following is a list of current and proposed water use efficiency management practices:

1. All raw water intakes have meters installed and the meters are repaired or replaced within 24 hours. Raw water meters are tested for accuracy at least once every three years. Each meter is repaired or replaced if its test measurements are not within two percent of the actual volume of water passing through the meter.

2. All raw water meters and individual service connections are read at least on a monthly basis.

3. The City conducts a monthly water management review, which may 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 exceeds 20 percent of the total raw water diverted for a four-month period.

4. Water sales are based on the amount of water used.

5. Meters are installed at all residential service connections and at all other service connections, including separate meters for municipally owned irrigation systems.

6. Meters at each individual service connection (one inch or less) are replaced on a regular basis, at least once every 15 to 20 years.

7. The current water rate structure, adopted in 2014, is an excess use rate where the unit price for water increases after a specific volume consumed is exceeded. .

8. A random sampling of residential meters will be tested for accuracy at least annually. 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.

9. A water conservation rebate program for high efficiency/low flow toilets for residences was implemented in 2013.

10. A free low-flow shower head program was implemented in 2012 to replace old high-water usage shower heads.

11. All manual read meters were replaced with automated water meters / automated meter read system in 2014 to improve efficiency and water accountability.

Regulation

The following is a list of current and proposed water use efficiency regulations practices:

1. Adopted 2018 International Building Codes which require all new or renovated construction use toilets that use 1.6 gallons per flush or less and low-flow shower heads that use 2.5 gallons per minute or less.

2. An ordinance was adopted in 2007 which prohibits the waste of water.

3. Adopted an ordinance restricting outdoor watering between 10 a.m. and 9 p.m. daily.

DROUGHT / EMERGENCY RESPONSE

The Drought/Emergency Response applies to all persons, customers, and property served by the City of Russell. All entities that purchase water from the City of Russell will be required to follow the same reductions in water use as the City of Russell.

The City of Russell 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 water shortage may be the results of a drought or a system failure. A drought may deplete the available water supplies or place stress on the City's ability to deliver water. A system failure could occur that would threaten the City's ability to deliver water to the entire service area.

The declaration of the beginning and end of a water watch, water warning or water emergency shall be effective as provided in the Code of the City of Russell, Kansas. The Governing Body is authorized by ordinance to implement the appropriate conservation measures. A copy of the Water Conservation Ordinance is included in Appendix A and will be supplemented and changed as that Code is amended.

STAGE 1: WATER WATCH

Triggers

This stage may be triggered by any one, or combination of, the following conditions:

1. Finished water production levels are at 75 percent capacity or more for three consecutive days.

2. Pumping of the Pfeifer wells lowers water levels to within fifteen (15) feet of the top of the well's screens, for three or more wells.

3. Emergency conditions related to repairs or water quality.

Goals

The goals of this stage are to heighten awareness of the public on water conditions, to maintain the integrity of the water supply system, and to ask for voluntary reductions in the water use to avoid having to implement mandatory restrictions.

Education Actions

The City will make occasional news releases to the local media describing the present conditions and indicating the water supply outlook for the upcoming season.

Management Actions
Leak repairs will begin within 8 hours of detection.
The City will monitor its use of water and will curtail activities such as hydrant flushing and street cleaning, including watering of City grounds and washing of vehicles.

Regulation Actions

1. Outdoor watering of lawns, trees, shrubs and plants is permitted only before 10 a.m. and after 9 p.m.

2. 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.

3. Any other action deemed appropriate by the City Manager.

Requirements for Termination of WATER WATCH
The WATER WATCH will be terminated following consideration of the following information:

- Have finished water production levels been below 75 percent operating capacity for three consecutive days?
- Have the Pfeifer well's water levels raised above fifteen (15) feet of the top of the well's screens? Are there any emergency conditions related to repairs or water quality?
- What is the current and projected length of the drought?
- What is the short- and long-range precipitation forecast?

The City will continue to promote wise outdoor watering throughout the summer months.

STAGE 2: WATER WARNING

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

1. Finished water production levels are at 90 percent capacity or more for three consecutive days.

2. Pumping of the Pfeifer wells lowers water levels to within ten (10) feet of the top of the well's screens, for three or more wells.

3. Big Creek ceases to flow over the low head dam at the Big Creek Pump station.

4. Emergency conditions related to repairs or water quality.

Goals
The goals of this stage are to reduce overall weekly consumption by 15% and to decrease the impact on the sources of supply.

Education Actions

1. The city staff will inform the mayor and city council on water usage, water production and well levels bi-weekly.
2. The City will make weekly news releases to the local and social media describing the present conditions and indicating the water supply outlook for the upcoming week.

3. Water conservation information will be included on the back of utility bills.

Management Actions

1. The City's water supplies will be monitored weekly.

2. Leak repairs will begin within 6 hours of detection.

3. Activities such as hydrant flushing and street cleaning, including watering of City grounds and washing of vehicles will be extremely limited.

Regulation Actions

1. Outdoor watering for residential and public grounds is prohibited except for one day per calendar week on that property's sanitation pickup day. Watering on your sanitation pick up day is permitted only before 10 a.m. and after 9 p.m. Trees, shrubs and plants held for sale by commercial and retail sellers may be watered.

2. Refilling of private swimming pools will be allowed one day a week after sunset.

3. Waste of water is prohibited.

4. Home outdoor washing of vehicles will be restricted to once per week on Saturdays only.

5. Industrial and commercial users shall not water their lawns or non-commercial trees, shrubs and plants, except for one day per calendar week on that property's sanitation pickup day. Watering on your sanitation pick up day is permitted only before 10 a.m. and after 9 p.m.. If such customer has multiple sanitation pickup days in a week then outdoor watering shall be permitted on only the first sanitation pickup day of the week for such customer.

6. Industrial customers will be notified and required to limit monthly consumptions to 85% based on a prior 5-year average for the month in question.

7. Any other action deemed appropriate by the City Manager.

Requirements for Termination of WATER WARNING

The WATER WARNING will be terminated following consideration of the following information:

- Finished water production levels have been below 90 percent operating capacity for three consecutive days.
- Big Creek begins to flow over the low head dam at the Big Creek Pump station for more than ten (10) consecutive days.
- Are there any emergency conditions related to repairs or water quality?
- What is the current and projected length of the drought?
- What is the short- and long-range precipitation forecast?
- What are the future and current releases from Cedar Bluff Reservoir?

Upon termination of a WATER WARNING, a WATER WATCH becomes operative.

STAGE 3: WATER EMERGENCY

Triggers

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

1. Finished water production levels are at 100 percent capacity for three consecutive days.

2. Pumping of the Pfeifer wells lowers water levels to within eight (8) feet of the top of the well's screens, for three or more wells.

3. Big Creek ceases to flow at the Big Creek Pump station for more than thirty (30) consecutive days.

4. Emergency conditions related to repairs or water quality.

Goals

The goals of this stage are to reduce overall weekly consumption by 25% and to decrease the impact on the sources of supply.

Education Actions

1. The city staff will inform the mayor and city council on water usage, water production and well levels bi-weekly.

2. The City will make weekly news releases to the local and social media describing the present conditions and indicating the water supply outlook for the upcoming week.

3. Water conservation information will be included on the back of utility bills.

Management Actions

1. The City's water storage will be monitored daily.

2. The City's Pfiefer well field draw down levels will be monitored weekly.

3. Leak repairs will begin within 4 hours of detection.

4. Street cleaning and washing of city vehicles will be eliminated. City grounds will be watered with effluent water only during evening and nighttime hours.

Regulation Actions

1. Waste of Water is prohibited. This shall include permitting water to escape down a gutter, ditch, or other surface drain, and also failure to repair a controllable leak of water due to defective plumbing;

2. Outdoor watering of private and public grounds is prohibited, to include, but not be limited to, gardens, lawns, trees, shrubs, water gardens, plants, parks, golf courses and playing fields except the watering of trees, shrubs and plants maintained by a commercial grower on his or her commercial premises.

3. Filling or refilling residential above and/or below ground swimming pools is prohibited.

4. Washing of motor vehicles, boats and trailers on residential or public property is prohibited.

5. Washing of motor vehicles, boats and trailers on commercial or industrial property is prohibited except for commercial or industrial vehicles used in the operation of such business and washed as an ordinary and common practice in the operation of business, and except for the washing of vehicles at commercial truck and/or car washes.

6. Washing of the exterior of any building or structure on any grounds is prohibited.

7. Industrial users of water will be notified and are required to limit monthly consumptions to 75% based on a prior 5-year average for the month in question. City staff will provide each large industrial user with that user's monthly target for water use.

8. Any other action deemed appropriate by the City Manager

Requirements for Termination of WATER EMERGENCY

The WATER WARNING will be terminated following consideration of the following information:

- Finished water production levels have been below 100 percent operating capacity for three consecutive days.
- Big Creek begins to flow, and we are able to intake, at the Big Creek Pump station for more than fourteen (14) consecutive days.
- Are there any emergency conditions related to repairs or water quality?
- What is the current and projected length of the drought?
- What is the short- and long-range precipitation forecast?
- What are the future and current releases from Cedar Bluff Reservoir?

Upon termination of a WATER EMERGENCY, a WATER WARNING becomes operative.

PLAN REVISION, MONITORING, AND EVALUATION

The City of Russell reviews monthly totals for water productions, residential sales, commercial sales, water used for line flushing and fire protection, and water lost through system leaks. Problems noted during the monthly review will be solved as soon as possible.

The City of Russell Municipal Water Conservation plan will be reviewed annually and frequently during drought or other water shortage conditions. When the City does not meet the water conservation GPCD goals for the previous year, 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 City Council and the Division of Water Resources, which will also include any additional water conservation practices necessary for the City to achieve and maintain its water use conservation GPCD goals.