

City of Bonner Springs Water Supply & Treatment Plant Project

KS SRF Application Public Hearing

Appendix H: Water Conservation Plan

**CITY OF BONNER SPRINGS
Governing Body Policy**

Type Policy	Governing Body
Policy #	GB-13-02

Subject	Adoption of Water Conservation Plan
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Date Adopted	October 28, 2013
Prepared By	City Clerk
Approved By	Governing Body
Purpose	To adopt the City of Bonner Springs Water Conservation Policy to comply with Kansas Department of Health and Environment Requirements.

The Governing Body hereby adopts the attached City of Bonner Springs Water Conservation Plan in compliance with the Kansas Department of Health and Environment requirements. The plan provides an innovative approach to water conservation that includes:

- Community Effort
- Goals of Conservation
- City's Blueprint for Success
- Water Conservation in Action
- Management
- Regulations
- Monitor, Evaluate and Revision
- Drought Response: Stage 1 – Water Watch, Stage 2 – Water Warning and Stage 3 – Water Emergency



This is the Water Conservation Program for the City of Bonner Springs, KS. This program is designed to be innovative in its approach to water conservation for the City of Bonner Springs, KS. This program is divided into four sections:

1. **CITIZEN INNOVATION:** This section details how the City will engage citizen participation in innovative water conservation practices.
2. **BUSINESS INNOVATION:** This section details how the City will engage business participation in innovative water conservation practices.
3. **EDUCATION INNOVATION:** This section details how the City will promote innovative education outreach in water conservation.
4. **CITY INNOVATION:** This section details how the City will implement innovations to promote water conservation

Community Effort

Water conservation is gaining popularity as municipalities struggle with growing demands for water usage. For some people, water conservation does not seem to be a necessary inconvenience. They look around their communities and see rivers and lakes. They see communities dealing with flooding. They turn on the tap and get all the water they can use. What they don't see is how their use of water now could affect the availability and cost of water in the future. Acting today, even minor steps, can help create lasting solutions to a looming water crisis.

As stewards of the environment, every day choices can provide the impact that is felt in generations. Just as one drop of water can create a flood, one choice to conserve can prevent the water shortage of tomorrow.

Water conservation requires a community effort if it is to be successful. Residents need to be aware of how they use water just as businesses need to be aware of their water usage. The City needs to provide the public with the tools and information necessary to make informed choices regarding water usage.

Each section of this will provide practices targeted to promote and encourage water conservation. Not all of the practices available to communities for water conservation will be practical here, but many can be applied with relative ease. It is the community that needs to act and this plan is critical to that action.

This plan will also provide a blueprint for Action Items that the City can do to achieve the goals outlined in this plan.

Goals of Conservation

The goal of a comprehensive water conservation plan is to increase awareness of water usage issues, promote reductions in overall water usage, reduce the infrastructure costs associated with acquiring new sources of water, and promoting a healthier and cleaner environment.

Working together, citizens, government, and businesses can achieve all of these goals. Working together can provide everyone with water for today as well as water for tomorrow.

The City of Bonner Springs used 136 gallons per person per day (GPCD) in 2011. This GPCD figure included:

1. water sold to residential/commercial customers;
2. water distributed for free public services
3. water lost by leaks in the water distribution system or water that is inaccurately metered. (*Un-Accounted*)

The City of Bonner Springs is located in Region 8. According to Figure 1 below:

Figure 1
Water Use History-City of Bonner Springs, KS
 Region 8

YEAR	GPCD	REG. AVG.	% DIFF.	% UA
2007	147	98	50%	23
2008	155	92	68%	22
2009	141	89	58%	26
2010	144	93	55%	27
2011	136	94	45%	27
AVG.	148	95	56%	25

source: 2011 Kansas Municipalities Water Use Publication
% UA is the percentage of water that is unaccounted for (water loss)

Bonner Springs used 136 GPCD in 2011 as compared to the Region 8 average 94. This is 45% higher than the region in 2011 and places Bonner Springs in the high GPCD category. The efforts of this water conservation plan will be directed at reducing the overall GPCD for Bonner Springs to better align it with the Region. The City desires to set a water use conservation goal to reduce usage by 20% (109 GPCD). Our City anticipates not exceeding this goal by carrying out the specific actions that are outlined in our conservation plan. This water conservation plan also reflects the City’s commitment to providing a clean, healthy, and sustainable environment for the citizens of the community.

Your Water

The sources of drinking water (both tap water and bottled water) included rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Our drinking water comes from 5 Ground Water Wells located in the Kansas River alluvial aquifer, 75-80 feet deep, just north of the Kansas River. These wells were initially drilled in 1951 and two (2) have been completely rebuilt in 2011 and 2012, including new casings and pumps. The well water is filtered naturally within this aquifer then is chemically treated and filtered again at the Bonner Springs Utilities (BSU) Water Treatment Plant. The water is treated to remove contaminants such as iron and manganese and a disinfectant (chlorine) is added to protect against microbial contaminants. Some of our drinking water is supplied from Kansas City Board of Public Utilities (BPU) through a Consecutive Connection (CC). The water we purchase from BPU is drawn from the Missouri River watershed. This water is collected and filtered through horizontal collector wells in an aquifer below the Missouri River. BPU filters and treats this water similar to Bonner Springs, including the disinfection process. BSU and BPU perform multiple daily tests of treated water to insure that our water is safe to drink.

The city also has a two (2) 1,000,000 gallon ground level storage tanks to store water. The city's water supply and distribution system have ample capacity to meet current customer demands and future projected demands for several years, except during drought and emergency periods. The City of Bonner Springs believes that our Comprehensive Water Conservation Plan represents an additional major step in ensuring our customers of a dependable water supply in future years.

The city is also a member of the Kansas River Water Assurance District (KRWAD) which was formed to insure adequate water flow in the Kansas River to provide water to the residents of northeast Kansas. KRWAD works together with the Kansas Water Office and the Corps of Engineers to maintain water storage levels in upstream surface water storage reservoirs, Tuttle Creek, Milford and Perry. These lakes (reservoirs) provide the assurance that our City and others such as Topeka, Lawrence, DeSoto and others east of Junction City can depend on a water supply for our residents. As mentioned above, Bonner Springs uses well water that is pumped from the Kansas River alluvial aquifer which is fed by the Kansas River.



Only Tap Water DeliversSM

City's Blueprint for Success

This blueprint for the City's conservation plan will provide direction to the City staff in order to show that the City is committed to realizing sound water practices. The main goal of the City's water conservation plan is to reduce its GPCD by 20% (to 109 GPCD) from 2011 level by 2015. The City believes that by initiating these steps, we can not only achieve that goal, but create a program that values conservation in our community.

1. CITIZEN INNOVATION

- a. Provide citizens with information on daily water conservation steps.
- b. Provide citizens with incentives to replace older, less efficient fixtures and plumbing with newer, more efficient products.
- c. Develop programs that help citizens use less water.
- d. Develop programs that help citizens have cleaner, healthier water.
- e. Partner with interest groups such as MARC, State Conservation Commission, County Conservation Commissions, etc. to develop citizen outreach programs around water conservation.
- f. Develop programs with citizens to help offset the costs of infrastructure upgrades to meet future demands.

2. BUSINESS INNOVATION

- a. Provide businesses with information on daily water conservation steps.
- b. Provide businesses with incentive to replace older, less efficient fixtures and plumbing with newer, more efficient products.
- c. Develop programs that help business use less water.
- d. Develop programs that promote business participation in cleaner water initiatives.
- e. Partner with interest groups such as MARC, State Conservation Commission, County Conservation Commissions, etc. to develop business outreach programs around water conservation.
- f. Develop programs with businesses to help offset the costs of infrastructure upgrades to meet future demands.

3. EDUCATION INNOVATION

- a. Offer educational information such as brochures, pamphlets, and other tools to help educate public on water usage and water conservation.

- b. Develop outreach programs for schools to help children become aware of and involved with water issues.
- c. Public outreach programs that can utilize community events such as Drinking Water Week, World Water Day and Tiblow Days, to engage the public in water conservation issues.
- d. Partner with Rural Conservation District, County Conservation Commissions, and State Conservation Commissions on programs that can better inform public on water conservation methods and efforts.
- e. Partner of the Environmental Protection Agency's WaterSense program.

4. CITY INNOVATION

- a. Focus efforts to find and mitigate leaks.
- b. Develop initiatives to promote effective water usage.
- c. Ensure that water meters are reporting use accurately.
- d. Ensure that water usage is accounted for.
- e. Provide information on water conservation techniques.
- f. Promote water conservation in all areas of City and City programs.
- g. Develop strategies to curb excessive water usage practices.
- h. Promote partnerships with County Conservation agencies and non-profit agencies to develop conservation programs.
- i. Develop public resources for conservation practices.
- j. Engage education officials in water conservation programs.
- k. Monitor water conservation programs and update as needed.



Water Conservation In Action

The water conservation plan is a management tool. The plan addresses the goals and objectives of the public water supply system as well as the overall well-being of the citizens of Bonner Springs.

The City of Bonner Springs realizes that in order to achieve our conservation goals and objectives, actions must be taken that will move the City forward. The City has chosen the following water conservation practices. These

practices are listed with a focus as well as a target date for implementation of the action item. Once implemented, the City will maintain the activity as we promote water conservation.

<p align="center"><u>WATER CONSERVATION PRACTICES TO BE TAKEN</u></p>	<p align="center"><u>FOCUS</u> Citizen (C); Business (B); Education (E); and/or City (U)</p>	<p align="center"><u>Target Date</u></p>
<p>1. All source water will have meters installed and the meters will be repaired or replaced within 2 weeks</p>	<p align="center">C, B, U</p>	<p align="center">Implemented</p>
<p>2. Meters for source water 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 industry standards (AWWA standards)</p>	<p align="center">C, B, U</p>	<p align="center">Implemented</p>
<p>3. Meters at each individual service connection will be replaced or tested for accuracy every 10-12 years, per industry standards (AWWA standards), 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 industry standards (AWWA standards)</p>	<p align="center">C, B, U</p>	<p align="center">Implemented</p>
<p>4. All meters for source water will be read at least on a monthly basis and meters at individual service connections will be read monthly.</p>	<p align="center">C, B, U</p>	<p align="center">Implemented</p>
<p>5. Water sales will be based on the amount of water used</p>	<p align="center">C, B, U</p>	<p align="center">Implemented</p>
<p>6. A water rate structure designed to curb excessive use of water will be evaluated</p>	<p align="center">C, B, U</p>	<p align="center">2014</p>
<p>7. Develop and implement a program to incorporate water conservation landscape principles into future landscape development projects, including renovation of existing landscapes.</p>	<p align="center">C, B, E, U</p>	<p align="center">2014</p>
<p>8. Water bills to show the amount of water used in gallons and the cost of the water</p>	<p align="center">E, U</p>	<p align="center">Implemented</p>
<p>9. Water bills will show the amount of water used in gallons used this billing period and the number of gallons used last billing period</p>	<p align="center">E, U</p>	<p align="center">Implemented</p>
<p>10. Seasonally appropriate water conservation tips/information will be posted on the City's website.</p>	<p align="center">E, U</p>	<p align="center">Implemented</p>
<p>11. Water conservation articles or issues will be provided or discussed each summer on our webpage.</p>	<p align="center">E, U</p>	<p align="center">Implemented</p>
<p>12. Teachers will be encouraged to become involved in water conservation through classroom lectures and programs.</p>	<p align="center">E, U</p>	<p align="center">2015</p>

13. Make available information on water conserving landscape practices through our website, publications, local news media, seminars, or other appropriate means.	E, U	Implemented
14. Provide information on lawn watering needs on a regular basis during the summer months	E, U	2014
15. Have a booth/kiosk at Tiblow Days and other City events to provide water conservation information to the public	C, E, U	Implemented
16. Provide a rebate to all water customers who purchase and install low-flow fixtures	C, B, U	2015
17. Develop a water conservation award to be given annually by the Mayor	C, B, U	2015
18. Become a partner in the EPA's WaterSense Program	E, U	Implemented
19. Develop water conservation learning stations along the City's trail system to help educate the public on water conservation.	E, U	2015
20. Develop an Adopt a Stream program to promote conservation/clean water	C, B, E, U	2015
21. Implement a leak detection and rehabilitation system that completely surveys the entire system every one to three years	C, B, U	Implemented
22. This plan and conservation activities will be re-evaluated on an annual basis to ensure relevance and progress of action items	C, B, E, U	Implemented
23. Meters will be installed at all service connections including separate meters for municipally operated irrigation systems.	C, B, U	Implemented
24. 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 use, used for treatment or distribution purposes, water loss, etc.) exceeds 20 percent of the total source water for a four month period.	U	2013

Management

The City of Bonner Springs has water meters on all water supplies and water pumped to the distribution system. Any new supply will have an individual meter on each source of supply. These meters are read weekly.

Water meters were installed for all residential/commercial customers by 1985; the only water provided free of charge is to the Fire Department for filling the pumper trucks; however, this water is metered. Customer meters are scheduled for an accuracy check and possible repair or replacement upon receiving a request to do so from the customer.

The City of Bonner Springs reads each customer's water meter and mails a monthly water bill to each customer every month. Customer water meters are generally read on the same date each month; however, the meter reader sometimes deviates from the scheduled time period.

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

The water rate structure for the City was passed on December 10, 2012, with an effective date of April 1, 2013. The minimum monthly water bill is \$12.23 for residential customers, using a typical 5/8" water meter. Water use is charged at \$5.30 per 1,000 gallons. The wastewater rate for all residential customers is \$13.30 for the monthly service fee plus and \$5.07 per 1,000 gallons of water usage based on the winter average using December – March usage.

Regulations

The City of Bonner Springs has an approved water conservation regulation in effect to enforce fines and or penalties on persons or businesses that violate Water Emergencies. Because of our ability to supply water during normal periods, regulatory controls on water use are included only in the Drought Response section of this plan and water drought/emergency ordinance where they constitute the primary means for conserving water during a supply shortage.

Bonner Springs does have a plumbing code, but has not felt the need to incorporate mandatory use of water conservation units in the plumbing code. The enforcement of any regulations to require use of any water conservation plumbing measures on existing homes would be very difficult. Most new homes and/or remodeling projects include the use of water conservation toilets and faucets.

Monitoring, Evaluation, and Revision

The Monitoring, Evaluation, and Revision section of this plan sets the schedule for reviewing the status of the system and determining when the plan needs to be revised.

Monitor the System

Once the water conservation plan is implemented, water production and metered distribution should be monitored and reviewed periodically. This process will either confirm that the system is operating well, or raise a flag that something needs attention.

Bonner Springs Utilities Department reviews the monthly totals for water production, water sold, water provided free of charge, and water lost through system leaks. If the review shows that more water appears to have been sold than was produced for a single month, it may be an indication that one or more of the master meters have malfunctioned and needs to be repaired or replaced. A review that shows a much higher than expected amount of unaccounted for water could be the result of an error in reading the master meter; a bookkeeping error; an indication that an excessive amount of water is being used for free public services; or a significant leak has developed on one of the main distribution lines and needs to be repaired as soon as possible.

Evaluate the Effectiveness of the Plan

Bonner Springs Utilities staff reviews water use records annually and evaluate whether its water conservation goal(s) are being met. If the annual goal(s) are not met a review of the long-term efficiency practices are conducted to answer the following questions:

1. Are the long-term practices fully implemented?
2. Is more time needed for the practices to take full effect?
3. Should the practices be modified or additional practices be implemented?
4. Should the water conservation goal(s) be revised?

Plan Revision

Water conservation plans need to be revised or updated for various reasons. There could be a change in demographics or technology that requires revision. Information and facts need to be updated regularly in order to be useful to citizens. Changes in water sources or changes in the availability of water may require an update to the conservation plan. The City will revise the plan and notify the Division of Natural Resources whenever the need arises to ensure that it is effective in meeting its goals and objectives.

DROUGHT RESPONSE

The City of Bonner Springs 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 is authorized by ordinance to implement the appropriate conservation measures.

STAGE 1: WATER WATCH

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.

Triggers

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

1. The City's storage has fallen below 85 percent capacity, and will not recover over a 10-day period;
2. Groundwater levels have fallen 10 feet below the normal season level;
3. Demand for one day is in excess of 2.0 million gallons;
4. The Kansas Water Office has issued a Stage 1 Water Watch;
5. BPU has issued a Stage 1 Water Watch

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. Water-saving tips will be included in billings to water utility customers.

Management Actions

1. The City wells will be cleaned and monitored to maintain them at their most efficient condition.
2. Leaks will be repaired within 72 hours of detection.
3. The City will monitor its use of water and will curtail activities such as hydrant flushing and street cleaning.

Public Outreach/Impact

1. 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

Goals

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

Triggers

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

1. The City's storage capacity has fallen below 70 percent, and will not recover over a 10-day period;
2. Treatment plant operations are at 100 percent capacity or more for three consecutive days and purchased water volumes are exceeding one – million gallons per day;
3. Pumping lowers water level to within 5 feet below the top pump;
4. Groundwater levels have fallen 15 feet below normal seasonal level;
5. Demand for one day is in excess of 2.25 million gallons;
6. The Kansas Water Office has issued a Stage 2 Water Warning;
7. BPU has issued a Stage 2 Water Warning.

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. Water conservation articles will be provided to the local newspaper.
3. Water-saving tips will be posted on the City's webpage.

Management Actions

1. The City water supply will be monitored daily;
2. Leaks will be repaired within 48 hours of detection;
3. Well pumping rates will be reduced to decrease drawdown and to maintain water levels over the top of the pump;
4. The City will curtail its water usage, including operation of fountains, watering of City grounds and washing of vehicles;
5. Reserve supplies, such as standby well fields, will be prepared for use;
6. The City will contact the Department of Water Resources for permission to require private well owners to comply with the City's drought response regulations as authorized under K.S.A. 82a-733(i).

Public Outreach/Impact (not covered by City regulations)

1. An odd/even lawn watering system will be implemented on City residents. Residents will 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 should be restricted to before 10:00 am and after 9:00 pm;
3. Golf courses shall restrict watering to tees and greens after sunset;
4. Refilling of swimming pools only allowed one day a week after sunset;
5. Outdoor watering using hand-held hose or sprinkler only;

STAGE 3: WATER EMERGENCY

Goals

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

Triggers

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

1. The City's storage has fallen below 50 percent capacity for 5 consecutive days;
2. Treatment plant operations are at 100 percent capacity or more for ten consecutive days and purchased water volumes are exceeding one-million gallons per day;
3. Pumping lowers water level to within 1 feet of the top of the pump;
4. Groundwater levels have fallen 15 feet below the normal seasonal level;
5. Demand for one day is in excess of 2.5 million gallons.
6. The Kansas Water Office has issued a Stage 3 Water Emergency;
7. Emergency conditions related to repairs or water quality.

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. The City will hold public meetings to discuss the emergency, the status of the City water supply and further actions which may 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. Well pumping rates will be reduced to decrease drawdown and to maintain water levels over the top of the pumps;
4. The City will seek additional emergency supplies from other users, the state or the federal government.

Public Outreach/Impact

1. Outdoor water use will be banned;
2. Waste of water will be prohibited;
3. Excess water use charges for usage of water over the amount used in the winter will be considered;
4. Enforcement of Water Emergency regulation Article 15-503.