

# NOTICE

This scan only represents the application as filed. The information contained herein meets the requirements of K.A.R. 5-3-1 or K.A.R. 5-5-1, and has been found acceptable for filing in the office of the Chief Engineer. The application should not be considered to be a complete application as per K.A.R. 5-3-1b or K.A.R. 5-5-2a.

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# THE STATE OF KANSAS



**KANSAS DEPARTMENT OF AGRICULTURE**  
Mike Beam, Secretary of Agriculture

**DIVISION OF WATER RESOURCES**  
Earl D. Lewis Jr., Chief Engineer

**50719**

File Number \_\_\_\_\_  
This item to be completed by the Division of Water Resources.

## APPLICATION FOR PERMIT TO APPROPRIATE WATER FOR BENEFICIAL USE

Filing Fee Must Accompany the Application  
(Please refer to Fee Schedule attached to this application form.)

To the Chief Engineer of the Division of Water Resources, Kansas Department of Agriculture,  
1320 Research Park Drive, Manhattan, Kansas 66502:

1. Name of Applicant (Please Print): City of Bonner Springs  
Address: P.O. Box 38  
City: Bonner Springs State KANSAS Zip Code 66012  
Telephone Number: (913) 441-1961

2. The source of water is:  surface water in \_\_\_\_\_ (stream)  
OR  groundwater in Kansas River Basin (drainage basin)

Certain streams in Kansas have minimum target flows established by law or may be subject to administration when water is released from storage for use by water assurance district members. If your application is subject to these regulations on the date we receive your application, you will be sent the appropriate form to complete and return to the Division of Water Resources.

3. The maximum quantity of water desired is 1,129 acre-feet OR 368 Million gallons per calendar year, to be diverted at a maximum rate of 700 gallons per minute OR \_\_\_\_\_ cubic feet per second.

Once your application has been assigned a priority, the requested maximum rate of diversion and maximum requested quantity of water under that priority number can **NOT** be increased. Please be certain your requested maximum rate of diversion and maximum quantity of water are appropriate and reasonable for your proposed project and are in agreement with the Division of Water Resources' requirements.

4. The water is intended to be appropriated for (Check use intended):  
(a)  Artificial Recharge (b)  Irrigation (c)  Recreational (d)  Water Power  
(e)  Industrial (f)  Municipal (g)  Stockwatering (h)  Sediment Control  
(i)  Domestic (j)  Dewatering (k)  Hydraulic Dredging (l)  Fire Protection  
(m)  Thermal Exchange (n)  Contamination Remediation

YOU **MUST** COMPLETE AND ATTACH ADDITIONAL DIVISION OF WATER RESOURCES FORM(S) PROVIDING INFORMATION TO SUBSTANTIATE YOUR REQUEST FOR THE AMOUNT OF WATER FOR THE INTENDED USE REFERENCED ABOVE.

For Office Use Only:  
F.O. 1 GMD Meets K.A.R. 5-3-1  YES /  NO Use MUN Source  G /  S County WY By RRP Date 2/9/22  
Code RE3 Fee \$ 480 TR # PY00037637 Receipt Date 2/9/2022 Check # CC

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5. The location of the proposed wells, pump sites or other works for diversion of water is:

**Note:** For the application to be accepted, the point of diversion location must be described to at least a 10 acre tract, unless you specifically request a 60 day period of time in which to locate the site within a specifically described, minimal legal quarter section of land.

(A) One in the SW quarter of the NE quarter of the SW quarter of Section 28, more particularly described as being near a point 1330 feet North and 3380 feet West of the Southeast corner of said section, in Township 11 South, Range 23 East, Wyandotte County, Kansas.

(B) One in the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of Section \_\_\_\_\_, more particularly described as being near a point \_\_\_\_\_ feet North and \_\_\_\_\_ feet West of the Southeast corner of said section, in Township \_\_\_\_\_ South, Range \_\_\_\_\_ East/West (circle one), \_\_\_\_\_ County, Kansas.

(C) One in the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of Section \_\_\_\_\_, more particularly described as being near a point \_\_\_\_\_ feet North and \_\_\_\_\_ feet West of the Southeast corner of said section, in Township \_\_\_\_\_ South, Range \_\_\_\_\_ East/West (circle one), \_\_\_\_\_ County, Kansas.

(D) One in the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of Section \_\_\_\_\_, more particularly described as being near a point \_\_\_\_\_ feet North and \_\_\_\_\_ feet West of the Southeast corner of said section, in Township \_\_\_\_\_ South, Range \_\_\_\_\_ East/West (circle one), \_\_\_\_\_ County, Kansas.

If the source of supply is groundwater, a separate application shall be filed for each proposed well or battery of wells, except that a single application may include up to four wells within a circle with a quarter (1/4) mile radius in the same local source of supply which do not exceed a maximum diversion rate of 20 gallons per minute per well.

A battery of wells is defined as two or more wells connected to a common pump by a manifold; or not more than four wells in the same local source of supply within a 300 foot radius circle which are being operated by pumps not to exceed a total maximum diversion rate of 800 gallons per minute and which supply water to a common distribution system.

6. The owner of the point of diversion, if other than the applicant is (please print):

\_\_\_\_\_  
(name, address and telephone number)

\_\_\_\_\_  
(name, address and telephone number)

You must provide evidence of legal access to, or control of, the point of diversion from the landowner or the landowner's authorized representative. Provide a copy of a recorded deed, lease, easement or other document with this application. In lieu thereof, you may sign the following sworn statement:

I have legal access to, or control of, the point of diversion described in this application from the landowner or the landowner's authorized representative. I declare under penalty of perjury that the foregoing is true and correct.

Executed on February 9, 2022   
Applicant's Signature

The applicant must provide the required information or signature irrespective of whether they are the landowner.  
Failure to complete this portion of the application will cause it to be unacceptable for filing and the application will be returned to the applicant.

7. The proposed project for diversion of water will consist of one groundwater well  
(number of wells, pumps or dams, etc.)

and will be completed (by) 12/31/2022  
(Month/Day/Year - each was or will be completed)

8. The first actual application of water for the proposed beneficial use was or is estimated to be 5/1/2022  
(Mo/Day/Year)

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- 9. Will pesticide, fertilizer, or other foreign substance be injected into the water pumped from the diversion works?  
 Yes    No   If "yes", a check valve shall be required.

All chemigation safety requirements must be met including a chemigation permit and reporting requirements.

- 10. If you are planning to impound water, please contact the Division of Water Resources for assistance, prior to submitting the application. Please attach a reservoir area capacity table and inform us of the total acres of surface drainage area above the reservoir.

Have you also made an application for a permit for construction of this dam and reservoir with the Division of Water Resources?    Yes    No

- If yes, show the Water Structures permit number here \_\_\_\_\_
- If no, explain here why a Water Structures permit is not required \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- 11. The application must be supplemented by a U.S.G.S. topographic map, aerial photograph or a detailed plat showing the following information. On the topographic map, aerial photograph, or plat, identify the center of the section, the section lines or the section corners and show the appropriate section, township and range numbers. Also, please show the following information:

- (a) The location of the proposed point(s) of diversion (wells, stream-bank installations, dams, or other diversion works) should be plotted as described in Paragraph No. 5 of the application, showing the North-South distance and the East-West distance from a section line or southeast corner of section.
- (b) If the application is for groundwater, please show the location of any existing water wells of any kind within ½ mile of the proposed well or wells. Identify each existing well as to its use and furnish the name and mailing address of the property owner or owners. If there are no wells within ½ mile, please advise us.
- (c) If the application is for surface water, the names and addresses of the landowner(s) ½ mile downstream and ½ mile upstream from your property lines must be shown.
- (d) The location of the proposed place of use should be shown by crosshatching on the topographic map, aerial photograph or plat.
- (e) Show the location of the pipelines, canals, reservoirs or other facilities for conveying water from the point of diversion to the place of use.

A 7.5 minute U.S.G.S. topographic map may be obtained by providing the section, township and range numbers to: Kansas Geological Survey, 1930 Constant, Campus West, University of Kansas, Lawrence, Kansas 66047.

- 12. List any application, appropriation of water, water right, or vested right file number that covers the same diversion points or any of the same place of use described in this application. Also list any other recent modifications made to existing permits or water rights in conjunction with the filing of this application.

Application is for proposed new Well #7 located near the center of the existing wellfield

Will form a complete overlap in place of use with WY-025, 34102, 34103, 34104, 34105 & 34106

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13. Furnish the following well information if the proposed appropriation is for the use of groundwater. If the well has not been completed, give information obtained from test holes, if available.

Information below is from:     Test holes     Well as completed     Drillers log attached

Well location as shown in paragraph No.	(A)	(B)	(C)	(D)
Date Drilled	_____	_____	_____	_____
Total depth of well	_____	_____	_____	_____
Depth to water bearing formation	_____	_____	_____	_____
Depth to static water level	_____	_____	_____	_____
Depth to bottom of pump intake pipe	_____	_____	_____	_____

14. The relationship of the applicant to the proposed place where the water will be used is that of Agent of municipal utility  
(owner, tenant, agent or otherwise)

15. The owner(s) of the property where the water is used, if other than the applicant, is (please print):  
Will form a complete overlap in place of use with WY-025, 34102, 34103, 34104, 34105 & 34106  
(name, address and telephone number)  
\_\_\_\_\_  
(name, address and telephone number)

16. The undersigned states that the information set forth above is true to the best of his/her knowledge and that this application is submitted in good faith.

Dated at Bonney Springs, Kansas, this 9 day of February, 2022.  
(month) (year)

  
\_\_\_\_\_  
(Applicant Signature)

By \_\_\_\_\_  
(Agent or Officer Signature)

\_\_\_\_\_  
(Agent or Officer - Please Print)

Assisted by \_\_\_\_\_ Date: \_\_\_\_\_  
(office/title)

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## FEE SCHEDULE

1. The fee for an application for a permit to appropriate water for beneficial use, except for domestic use, shall be (see paragraph No. 2 below if requesting storage):

ACRE-FEET	FEE
0-100	\$200.00
101-320	\$300.00
More than 320	\$300.00 plus \$20.00 for each additional 100 acre-feet or any part thereof.

2. The fee for an application in which storage is requested, except for domestic use, shall be:

ACRE-FEET	FEE
0-250	\$200.00
More than 250	\$200.00 plus \$20.00 for each additional 250 acre-feet of storage or any part thereof.

Note: If an application requests both direct use *and* storage, the fee charged shall be as determined under No. 1 or No. 2 above, whichever is greater, but not both fees.

3. The fee for an application for a permit to appropriate water for water power or dewatering purposes shall be \$100.00 plus \$200.00 for each 100 cubic feet per second, or part thereof, of the diversion rate requested.

Note: The applicant shall notify the Chief Engineer and pay the statutorily required field inspection fee of \$400.00 when construction of the works for diversion has been completed, except that for applications filed on or after July 1, 2009, for works constructed for sediment control use and for evaporation from a groundwater pit for industrial use shall be accompanied by a field inspection fee of \$200.00.

### MAKE CHECKS PAYABLE TO THE KANSAS DEPARTMENT OF AGRICULTURE

### ATTENTION

A Water Conservation Plan may be required per K.S.A. 82a-733. A statement that your application for permit to appropriate water may be subject to the minimum desirable streamflow requirements per K.S.A. 82a-703a, b, and c may also be required from you. After the Division of Water Resources has had the opportunity to review your application, you will be notified whether or not you will need to submit a Water Conservation Plan. You also may be required to install a water flow meter or water stage measuring device on your diversion works prior to diverting water. There may be other special conditions or Groundwater Management District regulations that you will need to comply with if this application is approved.

### CONVERSION FACTORS

1 acre-foot equals 325,851 gallons

1 million gallons equal 3.07 acre-feet



Applicant's Name  
(Please Print)



**MUNICIPAL (PUBLIC WATER SUPPLY) APPLICATION  
SUPPLEMENTAL INFORMATION SHEET**

Application File Number  
\_\_\_\_\_  
(assigned by DWR)

**SECTION 1: PRESENT WATER USE SUMMARY (IF NO PREVIOUS MUNICIPAL WATER USE HAS BEEN UTILIZED, PROCEED TO SECTION 3)  
NOTE: WORKSHEET FOR WATER PUMPED, PURCHASED, AND SOLD BY YOUR WATER DISTRIBUTION SYSTEM.**

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Raw Water Diverted Under Your Rights	Water Purchased From All Sources	Water Sold to Other Public Water Suppliers	Water Sold to Your Industrial, Stock, and Bulk Customers	Water Sold to Your Residential and Commercial Customers	Other Metered Water	Remaining Water Used (See Below Explanation)
252,757 MG	34,456 MG	0	19,216 MG	256,154 MG	8,421 MG	3,4 MG
<b>TOTAL WATER = Columns 1 + 2</b>						<b>UNACCOUNTED FOR WATER</b>
<b>ACCOUNTED FOR WATER = Columns 3 + 4 + 5 + 6</b>						<b>UNACCOUNTED FOR WATER</b>

**UNACCOUNTED FOR WATER = TOTAL WATER - ACCOUNTED FOR WATER**

- Column 1: The amount of raw water diverted from all of your points of diversion.
- Column 2: The amount of water purchased wholesale from all other public water supply systems or the Kansas Water Office.
- Column 3: The amount of water sold wholesale to all other public water supply systems.
- Column 4: The amount of water sold retail to all industrial, pasture, stockwater, feedlot, and bulk water service connections. Include the amount of water sold to all farmsteads using at least 200,000 gallons of water per year.
- Column 5: The amount of water sold retail to your residential and commercial customers and to industries and farmsteads using less than 200,000 gallons of water per year.
- Column 6: The amount of water used that is metered at individual service connections and supplied free, such as for public service, treatment processes, and connections receiving free water.
- Column 7: The amount of remaining water used. The gallons reported in this column are found by adding the numbers in Columns 1 and 2 and subtracting the numbers in Columns 3, 4, 5, and 6.

**UNACCOUNTED FOR WATER**

Use the following to calculate your distribution system's Unaccounted For Water:

Start with the amount in Column 1 and add the amount in Column 2, then subtract the amounts in Columns 3, 4, 5, and 6 leaving an amount of water representing your unaccounted for water to enter in Column 7.

Use the following to calculate the percent Unaccounted For Water versus the Total Water of your system:

$$\text{Percent Unaccounted For Water} = \frac{\text{Unaccounted For Water}}{\text{Total Water (Columns 1,2)}} \times 100$$

If this number exceeds 20%, please explain the large amount of unaccounted for water and describe any steps being taken to reduce it.

**SECTION 2: PAST WATER USE  
COMPLETE THE FOLLOWING TABLE FROM YOUR PAST WATER USE RECORDS.**

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
	Raw Water Diverted Under Your Rights	Water Purchased From All Sources	Water Sold to Other Public Water Suppliers	Water Sold to Your Industrial, Stock, and Bulk Customers	Water Sold to Your Residential and Commercial Customers	Other Metered Water	Remaining Water Used (See Above Explanation)
20 years ago	455.3 MG	6.7 MG	130.5 MG	15.17 MG	227.2 MG	17.4 MG	71.7 MG
15 years ago	401.9 MG	69,198 MG	79.35 MG	22.04 MG	211.68 MG	29.28 MG	129 MG
10 years ago	401.6 MG	58.5 MG	0.0 MG	20.4 MG	221.5 MG	45.1 MG	56.1 MG
5 years ago	276.6 MG	31 MG	0.0 MG	19.8 MG	209.1 MG	26.8 MG	51.9 MG
<b>TOTAL WATER = Columns 1 + 2</b>						<b>ACCOUNTED FOR WATER = Columns 3 + 4 + 5 + 6</b>	
						<b>UNACCOUNTED FOR WATER</b>	

**SECTION 3: PROJECTED FUTURE WATER NEEDS**  
**PLEASE COMPLETE THE FOLLOWING TABLE SHOWING YOUR FUTURE WATER REQUIREMENTS FOR THE NEXT 20 YEARS:**

	Column 1 Raw Water Diverted Under Your Rights	Column 2 Water Purchased From All Sources	Column 3 Water Sold to Other Public Water Suppliers	Column 4 Water Sold to Your Industrial, Stock, and Bulk Customers	Column 5 Water Sold to Your Residential and Commercial Customers	Column 6 Other Metered Water	Column 7 Remaining Water Used (See Explanation on other side)
Year 5							
Year 10							
Year 15							
Year 20							
<b>TOTAL WATER = Columns 1 + 2</b>							<b>UNACCOUNTED FOR WATER</b>
<b>ACCOUNTED FOR WATER = Columns 3 + 4 + 5 + 6</b>							

**SECTION 4: POPULATION AND SERVICE CONNECTIONS**  
**ESTIMATE THE NUMBER OF PERSONS DIRECTLY SERVED BY YOUR WATER DISTRIBUTION SYSTEM**

**PAST POPULATION - PROVIDE INFORMATION BELOW:**  
**(CENSUS BUREAU INFORMATION)**

LAST 20 YEARS	POPULATION
20 years ago	6593
15 years ago	6915
10 years ago	7100
5 years ago	7300
Last Year	7500

**PROJECTED FUTURE POPULATION**  
**ESTIMATE FUTURE POPULATION AND SUBSTANTIATE NUMBERS ON SEPARATE ATTACHMENTS**

NEXT 20 YEARS	POPULATION
Year 5	8300
Year 10	8723
Year 15	9167
Year 20	9636

**Provide number of current active service connections:**

2550 Residential 6 Industrial  
 271 Commercial 0 Pasture/Stockwater/Feedlot  
 Other (specify) \_\_\_\_\_  
 Total 2827

**SECTION 5: PRESENT GALLONS PER PERSON PER DAY**  
**CALCULATE YOUR GALLONS PER PERSON PER DAY**

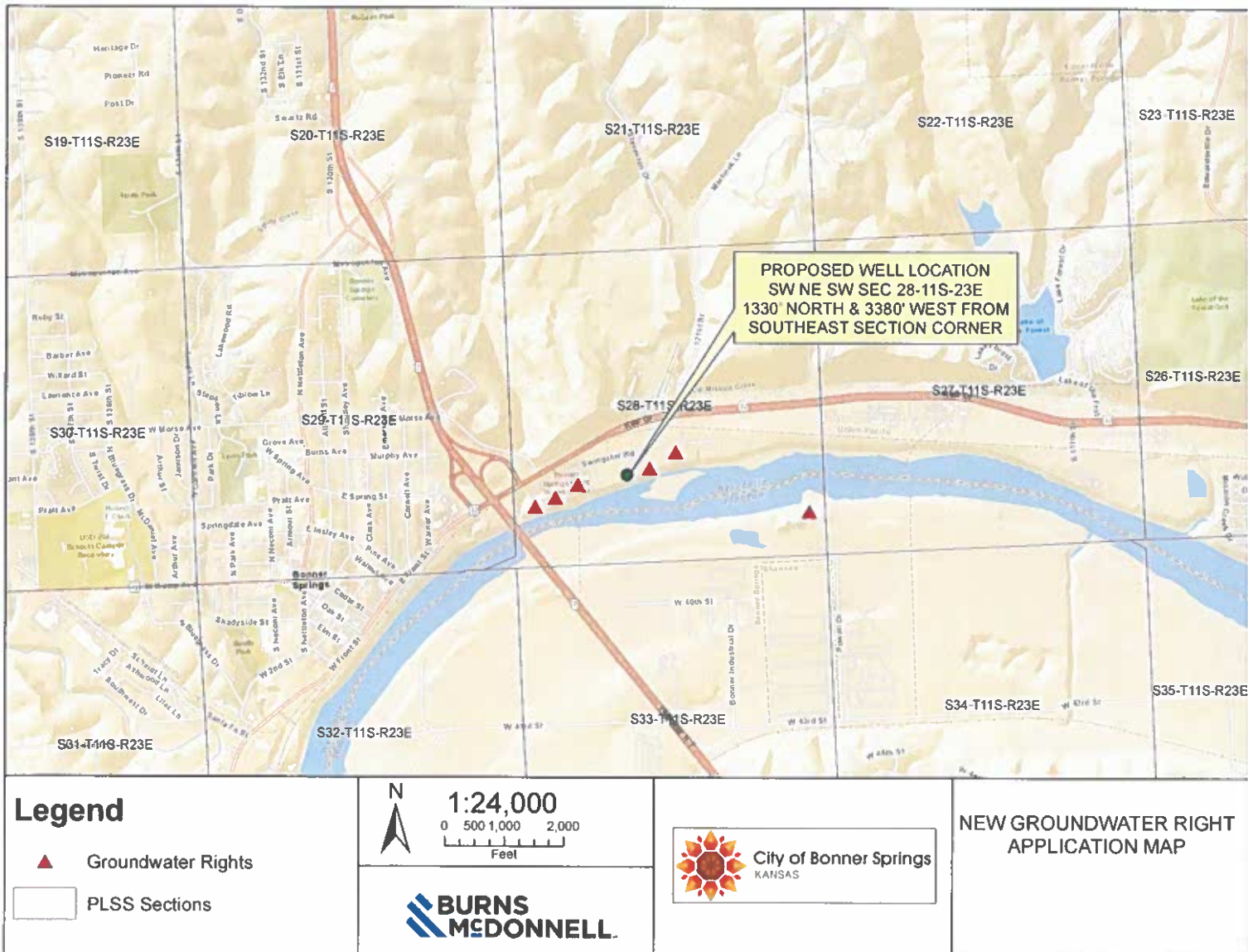
Water in Columns 5, 6, and 7 ÷ Population × 365 Days/Year = Gallons per Person per Day

267.97 MG ÷ 7500 ÷ 365 Days/Year = 98 GALLONS PER PERSON PER DAY.  
 Amount of water in Columns 5, 6, and 7 of Section 4 ÷ Population from Last Year of Section 4

**SECTION 6: AREA TO BE SERVED**

Describe the area to be served or provide the legal description of the location where the water is to be used including any other city of water supply system (i.e. Rural Water District):  
 Will form a complete overlap in place of use with existing water rights





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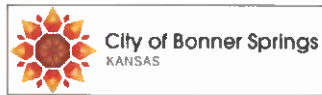
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**Legend**

- ▲ Groundwater Rights
- PLSS Sections



GROUNDWATER WELLS  
WITHIN 1/2 MILE OF PROPOSED  
WELL LOCATION

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ATTACHMENT

CITY OF BONNER SPRINGS  
WATER SYSTEM MASTER PLAN 2019  
SECTION 3 - HISTORICAL AND PROJECTED  
WATER DEMAND

### 3. HISTORICAL AND PROJECTED WATER DEMAND

While projecting future growth and water demands is not a straightforward process, it is an essential step in analyzing future supply needs and sizing related system infrastructure. To do this historical growth trends and water usage records for Bonner Springs were evaluated, as was similar data for other communities in the region. In addition, growth and water use projections from earlier studies were considered. This data was then used to project water demands through the year 2060, a 40-year projection.

#### 3.1. Historical Population Growth

Using US Census information, a review was done of the Bonner Springs population and related growth for the past 30 years. From 1990 to 2000, the population saw a slight drop annually of approximately 0.43%. However, for the next 10 years the growth turned around and during that period the population grew by about 1.0% a year. This growth has continued to the present with variations of 0.20% to about 1.4% or a seven-year average of 0.7% annually.

A chart showing the historical population and number of services and a growth rate of 0.8% for both is shown below in Figure 3-1. This illustrates that despite some variation and down years the trend for both population and the number of water services in Bonner Springs for the past 20 years has been in favor of growth between 0.7 and 0.9%.

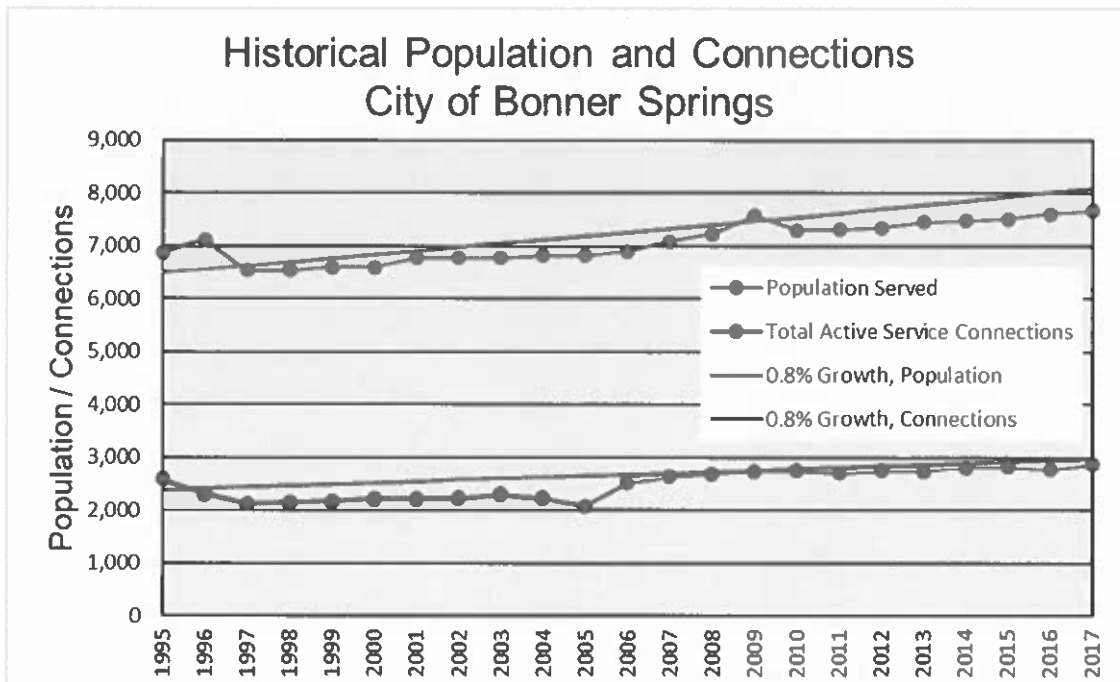


Figure 3-1: Historical Population and Connections

Given the variation in annual growth it is difficult to project future growth, however given the most recent trends it seems reasonable to anticipate growth continuing at a rate similar to that of the previous 15-20 years. As the local economy and housing markets strengthen and Bonner Springs capitalizes on new development opportunities a continued moderate growth rate of 1.0% annually is anticipated. This rate of growth is used to determine future population estimates and resulting water use projections and in design considerations and sizing of new infrastructure.

A tabulation of historical and projected populations and related annual growth rates are shown below. Based on consistent growth of 1.0% annually, in about 20 years the population is estimated to be nearly 9,600 and in 40 years to be about 11,800.



Table 3-1: Historical and Projected Population and Growth Rates

<b>Population Projection City of Bonner Springs</b>				
<b>Year</b>	<b>City Population</b>	<b>Growth Rate Annually</b>	<b>Projected City Population</b>	<b>Projected Growth Rate Annually</b>
1990	6880			
2000	6,593	-0.43%		
2010	7,300	1.02%		
2011	7,314	0.19%		
2012	7,346	0.44%		
2013	7,450	1.42%		
2014	7,480	0.40%		
2015	7,509	0.39%		
2016	7,606	1.29%		
2017	7,665	0.78%		
2000-2017		0.89%		
2010-2017		0.70%		
2020			7,897	1.00%
2025			8,300	1.00%
2030			8,723	1.00%
2040			9,636	1.00%
2050			10,644	1.00%
2060			11,758	1.00%

### 3.2. Historical Water Use Data

Tabulated and summarized below, in Table 3-2, is water use data and information provided by City staff, showing yearly water produced at the City treatment plant and water purchased from BPU. The peak water use occurred in 2010 with the lowest recorded water use occurring in 2015.

As a percentage of the total water use the amount purchased from BPU has been between 10 and 19% with on average of about 12-13 percent. There does not appear to be a correlation in the total amount of water used annually and the percent of water purchased from BPU. It is likely that other factors such as peak water use or repairs of well and treatment equipment have a greater impact on the amount purchased from BPU. A table showing the annual water produced at the City's treatment plant and the amount purchased from BPU is provided below.



Table 3-2: Water Produced and Water Sold

Current Water Production and Purchase City of Bonner Springs				
Year	Water Produced and Purchased			
	Well Water	Water Purchased BPU	Total Water Use (mg)	Percent Purchased
2010	401.6	58.5	460.1	13%
2011	352.6	51.8	404.4	13%
2012	352.5	57.7	410.2	14%
2013	322.5	75.9	398.4	19%
2014	286.2	49.6	335.7	15%
2015	276.6	31.0	307.6	10%
2016	291.2	34.4	325.6	11%
2017	306.4	37.7	344.1	11%
Average	323.7	49.6	373.3	13%
2014-2017	290.1	38.1	328.2	12%

### 3.3. Historical Metered Water Sales

The City meters water usage at each connection within the system and tracks sales by industrial and bulk users as well as residential and commercial use. Residential and commercial use peaked in 2012; a dryer than normal year with less than average rainfall across the region. Otherwise residential and commercial sales have been relatively consistent. Noteworthy is the 2013 water sales. The sales to the rural water district was discontinued. Water use projections do not anticipate the sales to this entity to be restored. Industrial and bulk water sales increased by 17% over a 7-year period or about 2.3% annually.

A tabulation of metered water sales is provided below in Table 3-3.

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Water Master Plan

Table 3-3: Water Metered Sales and Use

Current Water Metered Sales and Use City of Bonner Springs						
Year	Metered Sales and Water Use					% Water Loss %
	PWS Water (mg)	Industrial & Bulk (mg)	Residential & Comm. (mg)	Other Use (mg)	Total (mg)	
2010	56.5	20.4	221.5	45.1	343.4	25%
2011	22.8	19.4	225.1	29.6	297.0	27%
2012	35.3	19.9	245.7	26.0	327.0	20%
2013	25.5	19.3	227.4	33.0	305.2	23%
2014	0.0	22.7	212.7	28.9	264.2	21%
2015	0.0	19.8	209.1	26.8	255.7	17%
2016	0.0	23.1	218.5	15.5	257.1	21%
2017	0.0	23.9	213.4	18.0	255.4	26%
Average 2014-2017	17.5	21.1	221.7	27.9	288.1	23%
	0.0	22.4	213.4	22.3	258.1	21%
		17.3%	Industrial growth from 2011 to 2016			

### 3.3.1. Unaccounted for Water Use

A comparison of the volume of water sold with the water produced and purchased indicates a water loss on average of approximately 21% to 23% per year. Unaccounted for water use reflects water loss due to backwashing of filters, unmetered users, fighting fires, flushing mains and hydrants, system leaks and repairs. Water loss greater than 10-15% is usually considered higher than normal. The 2015 Kansas Municipal Water Use Report (USGS and KDWR) indicates the State average for unaccounted water use was 15%.

Efforts have been undertaken by the City to reduce unaccounted for water use by better metering at the wells and treatment plant. Items the City may want to target in the future, include regular replacement of residential meters, adding meters to any unmetered connections, a leak detection program, and improvements within the distribution system to replace older water mains. These efforts, in combination would reduce water losses.

### 3.3.2. Water Use by Person and Service Connection

Using population estimates from 2010 to the present, the average water use per person per day, (gpcd) is calculated (see Table 3-4 below). The average for the 2010-2017 study period is approximately 105 gallons per capita per day. This compares with 108 gallons per capita per day water use noted in the previous Master Plan (see Section 3.3 of 2006 Master Plan). See Appendix C for the relevant excerpts. Note this only includes residential, commercial, and unaccounted for water use not industrial or bulk water sales. In the past four years this number has been lower, within in a range of 92 to 99 gallons per capita per day.

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Water Master Plan

The 2015 Kansas Municipal Water Use Report indicates that for medium size utilities (500-999 users) within Region 8 (eastern region of Kansas) the average gallons per capita per day (gpcd) water use was 85 gallons in 2015 and the average for the past five years was 90 gpcd. Similarly, this number includes residential and commercial use along with unaccounted for water use but does not include industrial and sales to bulk users and other suppliers so is a consistent comparison.

While the water use by person is slightly higher than other similar sized water systems within the region, it likely reflects the larger commercial water in Bonner Springs along the I-70 interchange and during high profile annual events such as the Renaissance Festival and large public concerts. For this reason, this trend will likely continue.

The slight decline in per person water use the past four years is likely due to a combination of factors some of which may include the following; (1) better conservation and use of water by residents, (2) higher than average rainfall, cooler weather, and less lawn watering, (3) better system metering and (4) rate increases or other economic factors that suppress water use. Note that per person per day water use peaked in 2012 at 115 gpcpd, a dryer than normal year for most communities within the Kansas City area.

Table 3-4: Average Water Use by Person and Service Connection

Average Water Use by Person and Service Connection City of Bonner Springs						
Year	Total Avg. Day Use (1) (mgd)	Avg. Day Residential & Comm Use (1) (mgd)	Population Served	Avg. GPCPD Use (2) gal./day	Active Services	Avg. Day Water Use per Service Gallons
2010	1.261	0.813	7,300	111.4	2,753	295
2011	1.108	0.840	7,314	114.8	2,707	310
2012	1.124	0.845	7,346	115.0	2,759	306
2013	1.092	0.813	7,450	109.2	2,741	297
2014	0.920	0.740	7,480	99.0	2,813	263
2015	0.843	0.689	7,509	91.8	2,822	244
2016	0.892	0.758	7,606	99.7	2,780	273
2017	0.943	0.736	7,665	96.0	2,872	256
Average	1.023	0.779		104.6		281
	Average Hourly Flow per Service in 24 hours, (gpm)					0.19
	Peak Hourly Flow per Service in 24 hours, (gpm)					0.78
<b>Note:</b>						
1) Includes historical water loss which on average (2010-2017) is 23%.						
2) (GPCPD) –Gallons Per Capita Per Day						

The combined total average day for the past seven years (2010 to 2017) has been nearly one million gallons per day. This figure includes water loss and also includes water sales to the PWS which ended in 2013. If these sales are not included, the average day for the seven-year period, is slightly less at 0.96 million gallons.

### 3.4. Projected Growth and Water Use

For the purposes of this study, water use projections for residential and commercial growth will be based on the projected population growth. Growth in population is the recommended standard for long term projections and seems to better account for short term factors such as weather and growth spurts due to economic changes and the capacity of developers and builders. Growth in the number of meters as graphed and noted earlier in the study also reflects and is similar to the population growth rate of 0.8%.

Data for peak day water use was not available from the City. Where historical data is unavailable, guidelines recommend for larger communities a factor of 1.5 to 2.0 as the ratio of the maximum day to average day flow. A maximum day to average day factor of 1.5 was used in the previous Master Plan (see 3.3 Population Based Projections, excerpts included in Appendix C). This factor is commonly used in other systems throughout the region. Therefore, a peaking factor of 1.50 is recommended for future maximum water use projections in this study.

The parameters used to estimate future water use and system modeling for Bonner Springs is summarized below.

- Population growth rate of 1.0% annually.
- Water use rate of 115 gallons per person per day. Reflects continued high commercial and public events water use.
- Peak to average day ratio of 1.5
- Average day use to peak hourly factor of 4.0.
- Water loss of 23%.
- Industrial and bulk user growth of 2.31% annually.

A tabulation of the current and projected water use for the City of Bonner Springs is provided in Table 3-5.

Table 3-5: Historical and Projected Water Use

Projected Average day and Peak Water Use City of Bonner Springs					
Year	Population Served	Avg. Day Residential Use (mgd)	Industrial, Bulk, & Other Use (4) (mgd)	Combined Avg. Day Use (mgd)	Peak Day Water Use (3) (mgd)
2017	7,665	0.881	0.173	1.055	1.582
2020	7,897	0.908	0.173	1.081	1.622
2025	8,300	0.955	0.194	1.149	1.723
2030	8,723	1.003	0.218	1.221	1.831
2040	9,636	1.108	0.273	1.381	2.072
2050	10,644	1.224	0.343	1.568	2.351
2060	11,758	1.352	0.432	1.784	2.676

**Note:**

- 1) Per Capita per Day Water use with water Loss is 115 gallons.
- 2) (PCPD) --Per Capita Per Day
- 3) Peak day to Average day Ratio is 1.5.
- 4) Industrial and Other Use increases by 15% every 5 years assuming new industry in town.
- 5) Includes historical water loss which on average (2010-2017) is 23%.

A graph depicting the current and projected water use for the City of Bonner Springs is provided in Figure 3-2.

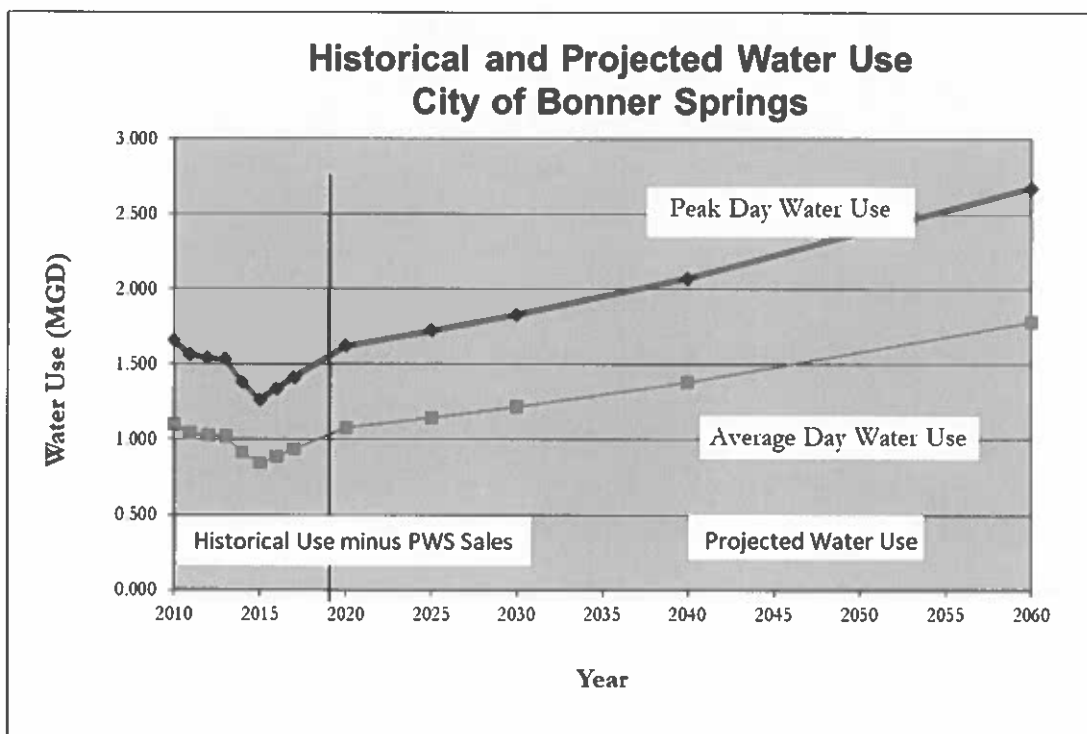
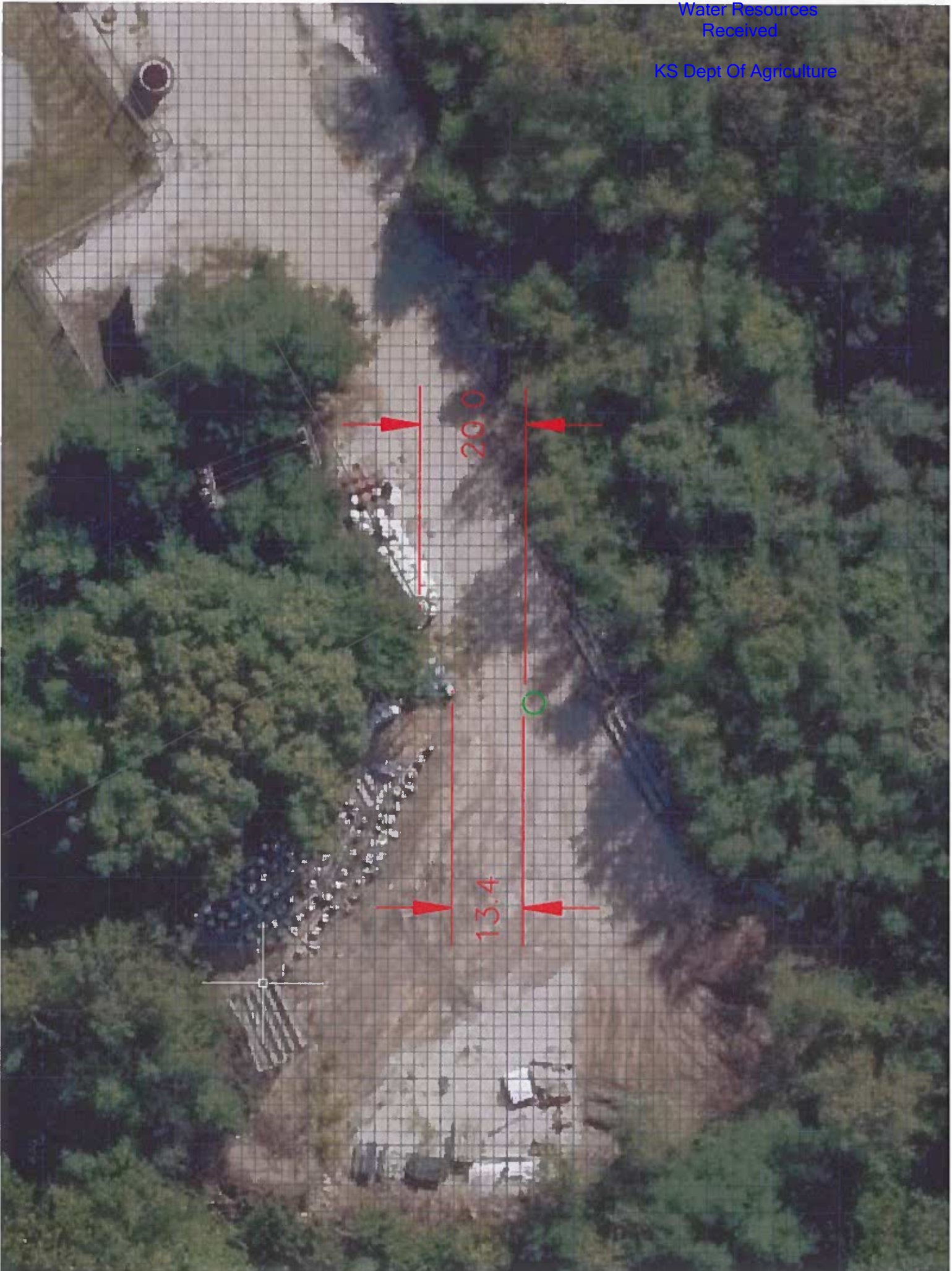





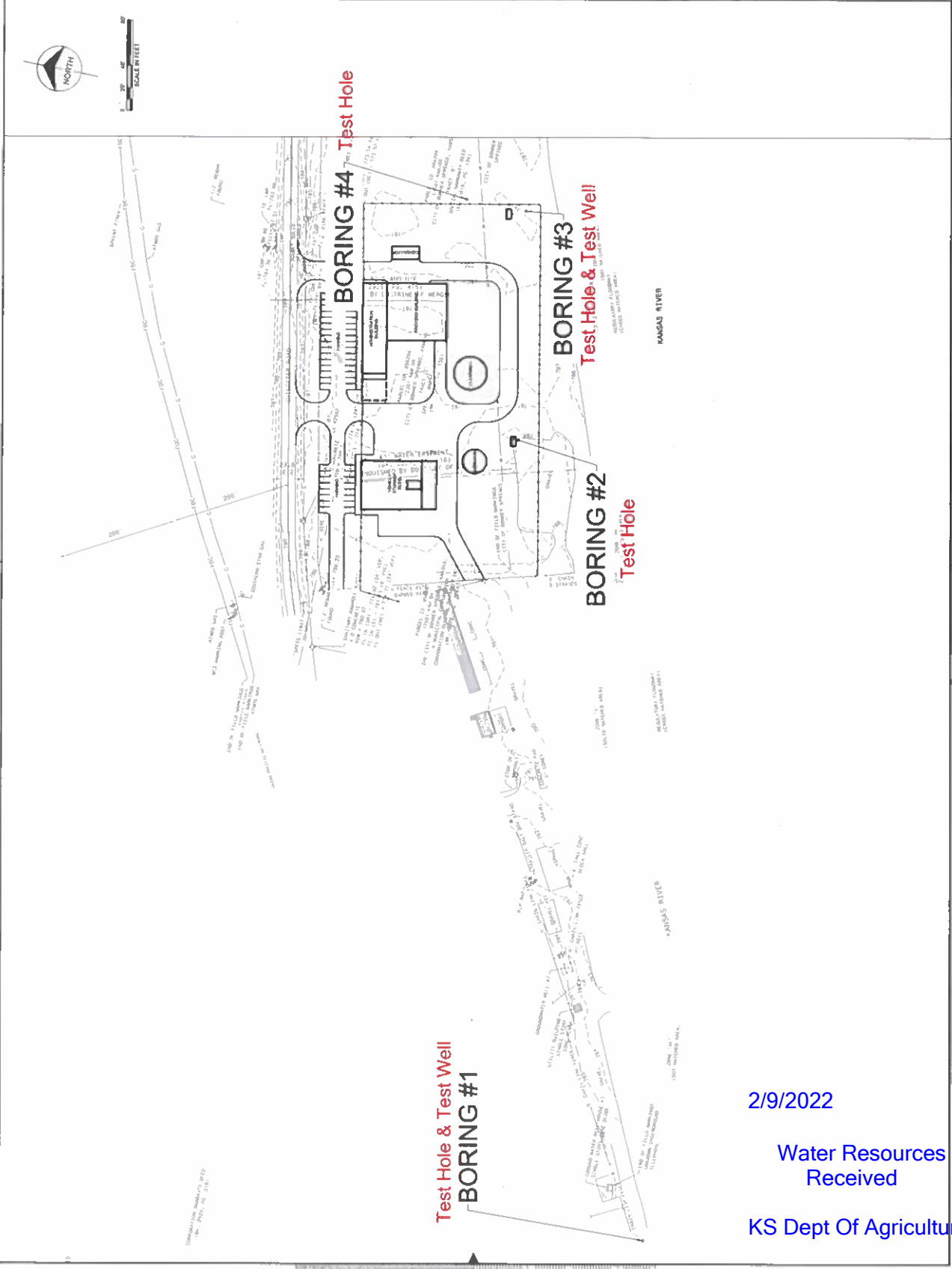
Figure 3-2: Historical and Projected Water Use







no.	date	by	description
<b>PRELIMINARY - NOT FOR CONSTRUCTION</b>			
 <b>BURNS &amp; McDONNELL</b> 3400 WARD PARKWAY OVERLAND PARK, MO 64114 816-333-3400 Burns & McDonnell Engineering Co., Inc. LICENSE NO. E06			
 <b>CAS CONSTRUCTORS LLC</b> <small>AN EQUAL OPPORTUNITY AFFIRMATIVE ACTION FIRM</small>			
DATE	DESIGNED	CHECKED	
JANUARY 2, 2022	C. JONES		
DESIGNED	T. SMITH		
 <b>City of Bonning Springs</b> <small>Missouri</small>			
Wyandotte County, Kansas <b>WATER TREATMENT PLANT DESIGN</b> BORING LOCATIONS			
PROJECT	138337	6090262	
DRAWING	<b>C001</b>		REV.
SHEET	C001		of 1 SHEETS



2/9/2022  
 Water Resources  
 Received  
 KS Dept Of Agriculture



February 8, 2022

Earl Lewis  
Chief Engineer  
Kansas Division of Water Resources  
1320 Research Park Drive  
Manhattan, KS 66502

Re: City of Bonner Springs - Application for additional municipal well and groundwater rights

Dear Mr. Lewis:

The City of Bonner Springs (City) is currently in the process of upgrading water supply facilities which will include drilling of new supply wells and the design and construction of a new water treatment facility. In combination the well installations and water treatment plant upgrades will create a continued reliable water supply for existing and future customers.

The existing water supply for the City consists of five water supply wells authorized by water rights WY-25, 34102, 34103, 34104, 34105, and 34106. To secure additional water supply, the City has filed a change in point of diversion application to re-drill Well #3 (replacement Well #8) authorized by water right 34105 which recently collapsed. The City also plans to drill a new well (Well #7) to be authorized by the enclosed application.

Supporting documents for the enclosed application include the standard new application form, municipal use supplemental sheet, proposed well location map, a map of surrounding well owners within the same source of supply, and additional details on projected water demands. It is our understanding that the standard non-domestic well spacing regulations for this area would typically require ¼ mile between authorized wells, however as the enclosed maps illustrate, the City is the owner of all non-domestic wells within the ¼ mile radius and supports a waiver of this well spacing regulation.

We look forward to coordinating with the Division of Water Resources on the enclosed application.

Sincerely,

Daniel Clement  
Senior Hydrogeologist

2/9/2022

Water Resources  
Received

DWC/dwc

cc: Chuck Staples, Municipal Utility Manager, City of Bonner Springs

KS Dept Of Agriculture

**DATA ENTRY SYSTEM ID NUMBER SHEET**

FILE NUMBER 50719

APPLICANT PERSON ID & SEQ #	89284	PDIV ID WELL #7	BATTERY ID
1572			

LANDOWNER PERSON ID & SEQ #	4424	PUSE ID 32393
1572	12224	33297
	13027	
	16920	
	32188	

WATER USE CORRESPONDENT PERSON ID & SEQ #
1572