

# Maintenance of the Kansas Geological Survey's Data Services to the National Groundwater Monitoring Network and Establishment of a Trend Well Network in the Kansas River Alluvial Aquifer

June 14, 2019

---

Funded by the  
U.S. Geological Survey-Grant G17AC00170  
07/01/2017 to 06/30/2019



Submitted by:  
Brownie Wilson  
[bwilson@kgs.ku.edu](mailto:bwilson@kgs.ku.edu)

Kansas Geological Survey, Geohydrology Section  
University of Kansas, 1930 Constant Avenue,  
Lawrence, KS 66047  
785-864-3965

---

Kansas Geological Survey Open-File Report 2019-17

GEOHYDROLOGY

**KU** KANSAS  
GEOLOGICAL  
SURVEY  
The University of Kansas

**Maintenance of the Kansas Geological Survey's Data Services  
to the National Groundwater Monitoring Network and Establishment  
of a Trend Well Network in the Kansas River Alluvial Aquifer**

**June 14, 2019**

**Funded by the  
U.S. Geological Survey- Grant G17AC00170  
07/01/2017 to 06/30/2019**

**Kansas Geological Survey Open-File Report 2019-17**

**Submitted by:**

**Brownie Wilson  
[bwilson@kgs.ku.edu](mailto:bwilson@kgs.ku.edu)**

**Kansas Geological Survey, Geohydrology Section  
University of Kansas, 1930 Constant Avenue,  
Lawrence, KS 66047  
785-864-3965**

### Disclaimer

The Kansas Geological Survey does not guarantee this document to be free from errors or inaccuracies and disclaims any responsibility or liability for interpretations based on data used in the production of this document or decisions based thereon. The views and conclusions contained in this document are those of the author and should not be interpreted as representing the opinions or policies of the U.S. Geological Survey. Mention of trade names or commercial products does not constitute their endorsement by the U.S. Geological Survey.

**TABLE OF CONTENTS**

**Introduction** ..... 1  
**Existing Kansas NGWMN Well Sites** ..... 1  
**Existing Kansas NGWMN Data Streams**..... 4  
**Kansas 2018 and 2019 Updates to the NGWMN** ..... 5  
**Future Developments** ..... 9  
**Acknowledgments** ..... 9  
**References** ..... 10  
**Appendix A: Kansas River Alluvial Aquifer Wells—Water Well Completion  
Records and Electrical Conductivity Profiles** ..... 11

## **Introduction**

The National Ground-water Monitoring Network (NGWMN) is an effort led by the U.S. Geological Survey (USGS) to establish a network of selected monitoring wells across the country to facilitate the planning and management of groundwater resources. The NGWMN serves as a single data portal that retrieves, in real time, construction, lithology, depth-to-water measurements, and water-quality data that are maintained and served to the portal from a variety of participating local, state, and federal sources. The NGWMN can be accessed at the following URL: <http://cida.usgs.gov/ngwmn/>.

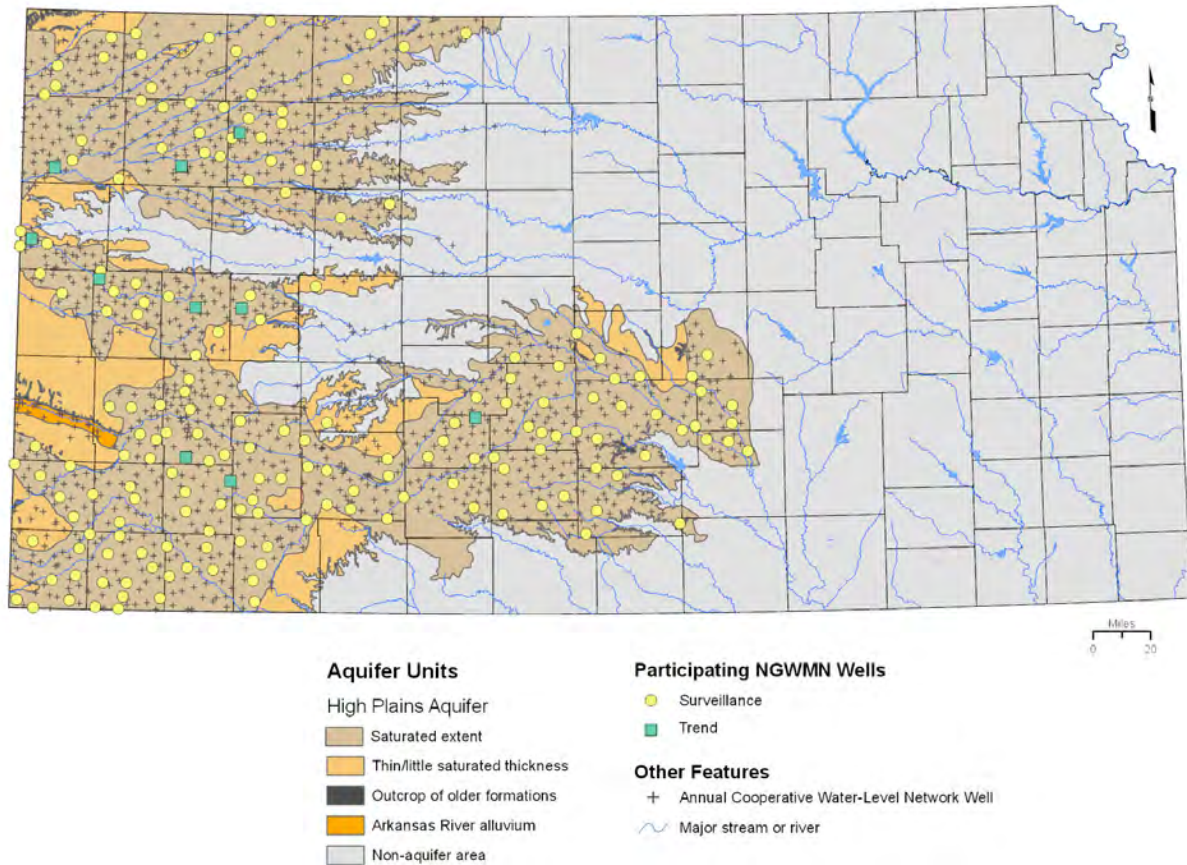
In 2016, the USGS provided funding support through Cooperative Agreement G16AC00017 to the Kansas Geological Survey (KGS) to become a data provider to the NGWMN. The project period started January 1, 2016, and ended December 31, 2016. Under this agreement, the KGS evaluated monitoring sites for inclusion in the NGWMN, worked with USGS staff to populate the data portal with monitoring well sites that met a set of minimum data standards, and then developed a series of web services that allowed the NGWMN real-time data access to the state's well construction, lithology, and depth-to-water measurements records.

In 2017, the USGS provided funding support to the KGS through Cooperative Agreement G16AC00363 to maintain persistent data services to the NGWMN. This includes preserving existing web services and applying routine updates to existing network sites, which includes removing well sites that are no longer viable and uploading replacement and new well site locations. The project period started October 10, 2016, and ended September 30, 2017.

In 2018, the KGS was awarded funding from the USGS under Cooperative Agreement G17AC00170 to update the Kansas portion of the well registry, maintain the persistent data services to the NGWMN, and install a network of trend wells in the Kansas River alluvial aquifer, a stream valley in Kansas with major population growth and economic activity that lacks an active water-level observation network at the state level. This two-year project started July 1, 2017, and was completed June 4, 2019. This report serves as the final technical report for the project.

## **Existing Kansas NGWMN Well Sites**

The NGWMN started serving Kansas-based groundwater data in September 2016 from 133 surveillance wells- those that are measured annually during the winter months- and 4 trend wells, which are true observation wells that record water levels in real time throughout the year and across seasons (Wilson, 2016). In 2017, a total of 8 wells were removed either because down-hole access was blocked, the well was plugged, or the site had incomplete or missing lithology; an additional 50 wells sites- 6 trend and 44 surveillance- were reviewed and added to the NGWMN (Wilson, 2017). All of these well sites are part of the larger Kansas Cooperative Water-Level Network (fig. 1), a collection of approximately 1,400 wells measured annually by the KGS in cooperation with the Kansas Department of Agriculture, Division of Water Resources (Miller et al., 1998).



**Figure 1.** Kansas Cooperative Water-Level Network and participating 2017 High Plains aquifer NGWMN sites.

The vast majority of measurements take place in the month of January, typically in irrigation wells using steel or electric tapes, which have precisions down to hundredths of a foot. Customized software developed by the KGS combined with global positioning systems are used to ensure the same wells are measured each year and to conduct on-site data validations of depth-to-water measurements. The KGS further identifies 7% of the wells, randomly selected each year, to be re-measured by a second person within 24 hours of the initial visit. Referred to as “QA” wells, these extra measurements serve to provide quality assurance of the collected data. Additional statistical and GIS reviews are conducted later on the entire data set to identify abnormal or anomalous measurements. If necessary, well sites are re-measured the same day or within a month, depending on the circumstances.

The Kansas Cooperative Network also consists of a growing collection of continuously monitored wells. Referred to as “index wells,” these sites are equipped with pressure transducers that record water levels every hour and, through the use of telemetry systems, provide real-time access to water-level data throughout the year (Butler et al., 2018). Index wells are also manually measured throughout the calendar year, typically every three to four months.

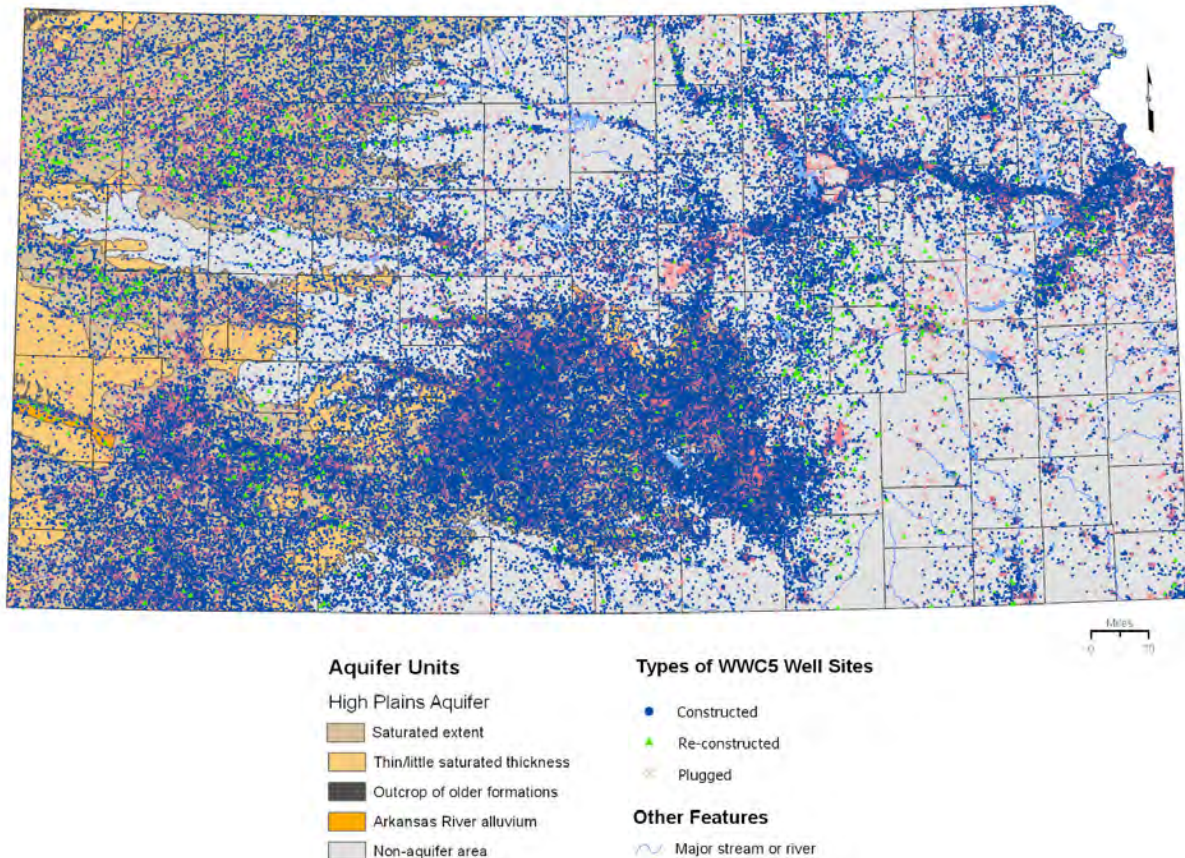


Depth-to-water measurements are stored in an Oracle-based enterprise-level relational database (RDMS) called the Water Information Storage and Retrieval Database (WIZARD). WIZARD evolved from the U.S. Geological Survey's Ground Water Site Inventory in the mid-1990s (Hausberger et al., 1998) and today represents the largest repository of depth-to-water measurements in Kansas. Measured well sites are used to track temporal changes in water table elevations and estimates of water availability. WIZARD currently consists of more than 57,000 well sites with more than 630,000 water-level measurements. Data can be accessed at the following URL:

<http://www.kgs.ku.edu/Magellan/WaterLevels/index.html>

A key feature to the NGWMN data framework is that participating wells must have associated construction and lithology descriptions. In Kansas, this information can be obtained from the Water Well Completion Records Database (WWC5). Since the mid-1970s, water well drilling companies have been required to provide location, type, use, casing, lithology, and other information to the Kansas Department of Health and Environment any time a well is constructed, re-constructed, or plugged. The KGS stores more than 277,000 WWC5 records (fig. 2) in an Oracle RDMS and serves these data to the public through the following URL:

<http://www.kgs.ku.edu/Magellan/WaterWell/index.html>



**Figure 2.** WWC5 well sites.

## Existing Kansas NGWMN Data Streams

Data are streamed to the NGWMN through a series of web services, standardized protocols by which data are transmitted and shared across the internet. The Kansas web services were developed as a single Adobe ColdFusion component, stored on a replicated computer cluster that distributes workloads between two Apache web servers. The ColdFusion component has four methods, one representing each service (e.g., water levels, lithology, screens, and casings), supports REST protocol, and returns XML-formatted web documents.

Each of the four methods provided under the Kansas web service is called using a URL-based variable along with a list of one or more site IDs for NGWMN wells. A list of the methods for an example well/site number is shown below.

- Water Levels Method
  - <http://maps.kgs.ku.edu/geohydro/wizard/services/data.cfc?method=WaterLevels&sites=371237100455301>
- Lithology Method
  - <http://maps.kgs.ku.edu/geohydro/wizard/services/data.cfc?method=Lithology&sites=371237100455301>
- Casing Method
  - <http://maps.kgs.ku.edu/geohydro/wizard/services/data.cfc?method=Casing&sites=371237100455301>
- Screens Method
  - <http://maps.kgs.ku.edu/geohydro/wizard/services/data.cfc?method=Screens&sites=371237100455301>

A more descriptions of each process can be found in the report “Establishing Kansas as a Data Provider to the National Groundwater Monitoring Network” (Wilson, 2016).



## Kansas 2018 and 2019 Updates to the NGWMN

At the conclusion of the 2018 and 2019 water-level collection campaigns and subsequent data review and follow-up, the KGS assessed the participating NGWMN wells to make sure the sites were still measurable and to determine whether the annual change in the water table was representative of aquifer conditions for given areas. Table 1 lists wells that were dropped from the NGWMN data portal, the reason for removal, and whether the well was replaced. All of these actions occurred after the 2018 measurement runs.

No wells were identified for removal after the 2019 season; however, the display option for trend well 391244101501901 was turned off in the NGWMN data portal. This leaves the well in the data registry but effectively removes the site from public queries through the NGWMN interface. A review of the continuously collected water levels indicate the well had a poor hydraulic connection to the aquifer caused by fine-grained sediments filling the sump and screens. The well was redeveloped in the fall of 2018, which re-established the hydraulic connection between the well and aquifer. The site will be monitored and visited throughout the summer and fall of 2019. If water levels continue to reflect appropriate responses to barometric pressure and pumping, the well's display option will be turned back on within the NGWMN data portal.

<b>Site Number</b>	<b>Legal Description</b>	<b>Reason for Removal</b>
395518099104001	01S 16W 31CBB	Dry well. No replacement.
374924100325901	26S 30W 01ABC	Spotty tape. Replaced with 375309100291401.
371252101084201	32S 35W 32DCD	Fear of breaking tape in well. No replacement.
391244101501901	10S 41W 01DAA 01	Poor hydraulic connection. Under further evaluation.

Additional wells from the Kansas Cooperative Water-Level Network were reviewed for inclusion in the NGWMN to enhance distribution and increase the number of wells involved in the program. Sites were selected based on their spatial distribution relative to current participating wells along with the minimum data standards of an established annual measurement history of at least five years and the availability of WWC5 driller logs containing construction, screening, and lithology information.

Fourteen wells within the High Plains aquifer region of Kansas were selected and classified as surveillance wells based on their annual measurement frequencies (Table 2). All of these sites are located in areas that have active groundwater pumping (Fross et al., 2012; Whittemore et al., 2016) and therefore have been designated as part of the "Documented Changes" subnetwork of the NGWMN.

<b>Table 2</b>				
<b>Kansas High Plains Aquifer Wells Added in 2018 and 2019 To the NGWMN Data Portal</b>				
<b>Site Number</b>	<b>Legal Description</b>	<b>Well Depth</b>	<b>Local Aquifer</b>	<b>Replaced Well</b>
391516101144801	09S 35W 20DCA 01	187	Ogallala Formation	
391622101311101	09S 38W 13BCC 01	166	Ogallala Formation	
383152101395101	17S 39W 31DAB 01	188	Ogallala Formation	
382202098391202	19S 12W 28DBC 02	35	Pleistocene Pliocene Series	
381649097443602	20S 04W 27DBD 01	126	Pleistocene Pliocene Series	
380057098264301	23S 10W 29DCA 01	88	Quaternary System	
375536100465502	24S 32W 36ABC 01	258	Ogallala Formation	
375309100291401	25S 29W 10DDC 01	295	Ogallala Formation	374924100325901
374111098464801	27S 13W 19A 01	202	Quaternary System	
374141099240301	27S 19W 16DBD 01	185	Quaternary System	
370910100422701	33S 31W 28BBC 01	540	Ogallala Formation	
370434100405203	34S 31W 22BDD 03	215	Ogallala Formation	
370710100530001	34S 33W 02CBA 01	622	Ogallala Formation	
370033100534202	35S 33W 15ABC 02	441	Ogallala Formation	

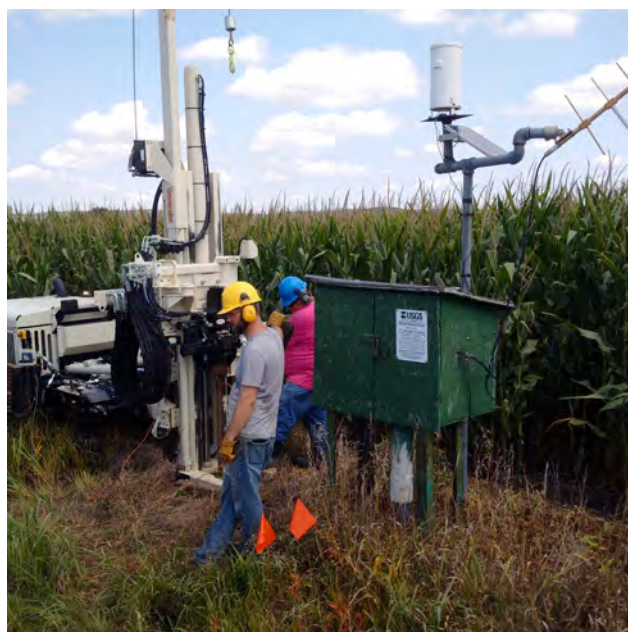
A second objective of this project was the completion of a trend well network in the Kansas River alluvial aquifer. Located in the northeast portion of the state, the river and its hydraulically connected alluvial aquifer are the primary sources of water for the region. Long-term, historic water-level monitoring is sparse and currently, no organized groundwater monitoring network encompasses the entire extent of the aquifer.

After the notification of award for this contract, which calls for the installation of five continuous water-level recording trend wells in the Kansas River alluvial aquifer, the KGS unexpectedly received additional funds from the Kansas Legislature to study and monitor groundwater resources in the Kansas River alluvium. Together, the USGS NGWMN and state contracts were used to install a total of 10 trend wells in the valley.

Well sites were chosen based on a relatively uniform distribution up and down the Kansas River valley. In addition, the KGS tried to select sites that are near existing USGS stream gages and that supplemented or replaced historically measured wells that were still in existence but determined to be unmeasurable or questionable in terms of their connection to the aquifer. Table 3 lists the site number, other identification number, legal description, well depth, the site number of the replaced observation well, and the nearest USGS stream gaging station (when applicable).

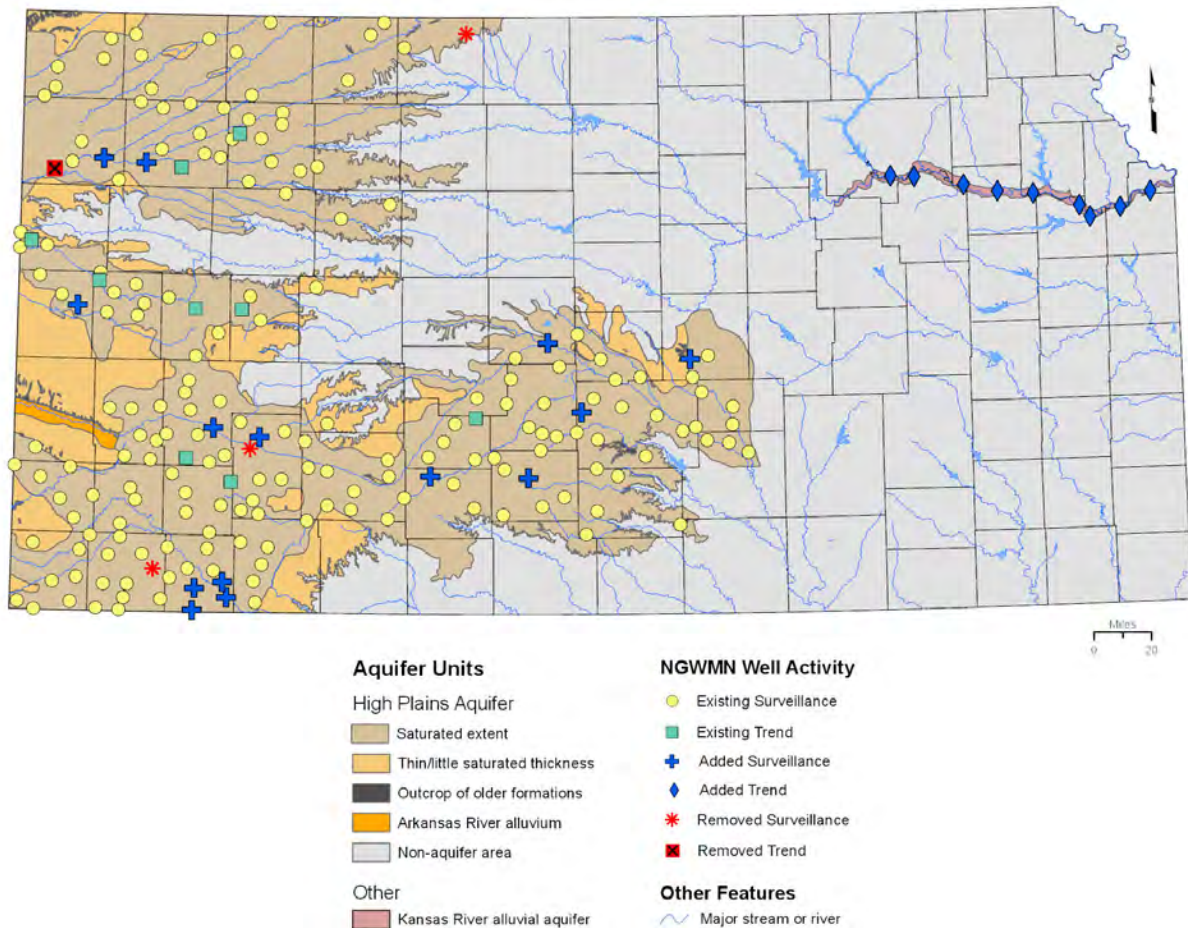
Table 3 Kansas River Alluvial Aquifer Trend Wells					
Site Number	Other ID	Legal Description	Well Depth	Replaced Observation Well	Gaging Station
390843096381401	RL01	10S 07E 34BAA	50	None	None
391053096260901	RL02	10S 09E 17BDD	37	391055096261701	None
391027096165701	WB01	10S 10E 15DDC	37	391029096171301	06887500
390735095575601	SN01	11S 13E 04AAD	46.5	390731095575801	None
390519095445302	SN02	11S 15E 16DCA	64.2	390519095445301	06888990
390418095310801	JF01	11S 17E 27BBB	43	390407095310901	None
390024095224001	DG01	12S 20E 17CCBC	66.5	390006095132301	06891080
385624095093702	DG02	13S 20E 11BAA	70	385624095093701	None
385908094574001	LV01	12S 22E 27BBA	65	None	06892350
390332094455103	WY01	11S 24E 29DDC	65	390319094460802	06892518

The KGS used its Geoprobe direct-push rig to install the Kansas River alluvial observation wells, which are 2 inches in diameter. The first well was installed in August 2017 (fig. 3) followed by installation of the rest of the network during the summer and fall of 2018. Electrical conductivity (EC) profiles, taken with direct-push logging tools, were used to determine subsurface lithology and the screening intervals (see Appendix A of this report). Each well was equipped with a pressure transducer and data telemetry unit to record and transmit hourly water levels. KGS professionally licensed geologists and scientific staff members completed site investigations, landowner contacts, EC profiling, and well drilling and installation.



**Figure 3.** KGS staff operating the Geoprobe direct-push rig to install trend well DG01 (site number 390024095224001). DG01 replaced a USGS well (site number 390006095132301). The green box housing and well in the photo is the USGS well before the equipment was removed and the well plugged.

As of the date of this report, a total of 210 wells are being served from the KGS to the NGWMN system; of those, 192 are surveillance wells and 18 are trend wells (fig. 4). Of the 10 newly installed Kansas River alluvial aquifer wells, only RL1, site number 390843096381401, has not yet been included in the data registry. The KGS has been working with vendors to explore different telemetry options to use with this well and others in the future. Once equipped, the well will be included in the NGWMN.



**Figure 4.** Status and 2018–2019 update activities to KGS-based NGWMN wells.

Finally, some small adjustments to the Kansas NGWMN web services were made during this project period. At the request of the USGS, the “Lithology” and “WaterLevels” methods of the Kansas NGWMN web service were slightly modified to better clarify units of measures related to lithologic descriptions and accuracy of water-level measurements. In addition, the KGS web services were updated to include the computed daily average depth to water for the newly established trend well network in the Kansas River alluvial aquifer and a pressure transducer in well 373925100395301, one of the first trend wells included in the NGWMN, was replaced

## **Future Developments**

The KGS has entered into a fourth grant and cooperative agreement with the USGS. This two-year project, slated to start July 15, 2019, will work to continue to maintain the Kansas-based web services to the NGWMN, making any needed changes and well additions after the Kansas Cooperative Network measurements are made in the winters of 2020 and 2021. In addition, this new project will load all appropriate Kansas Cooperative Water-Level Network wells into the NGWMN to support the USGS High Plains aquifer water-level study. The third objective of this project will be to provide funds to redevelop four trend wells that have been in operation for more than a decade to assure continued quality hydraulic connections to the High Plains aquifer.

## **Acknowledgments**

The author acknowledges and is grateful for the funding and project support of the USGS, specifically Daryll Pope and Candice Hopkins for their assistance, counsel, and review of this project; Keith Hunsinger for his guidance on web service development; Dana Adkins-Heljeson for all his data efforts, especially taking WWC5 forms from images to database-accessible records; and Julie Tollefson, KGS editor who reviewed this final report.

## References

Butler, J. J., Jr., Whittemore, D. O., Reboulet, E., Knobbe, S., Wilson, B. B., and Bohling, G. C., 2018, High Plains Aquifer Index Well Program: 2017 Annual Report: Kansas Geological Survey Open-File Report 2018-17, 60 p.

Fross, D., Sophocleous, M., Wilson, B. B., and Butler, J. J., Jr., 2012, Kansas High Plains Aquifer Atlas: Kansas Geological Survey, [http://www.kgs.ku.edu/HighPlains/HPA\\_Atlas/index.html](http://www.kgs.ku.edu/HighPlains/HPA_Atlas/index.html).

Hausberger, G., Davis, J., Miller, R., Look, K., Adkins-Heljeson, D., Ross, G., Bennet, B., Schloss, J., and Bohling, G., 1998, WISARD: Water Information Storage and Retrieval Database: Kansas Geological Survey Open-File Report 1998-13, 42 p.

Miller, R. D., Buchanan, R. C., and Brosius, L., 1998, Measuring water levels in Kansas: Kansas Geological Survey Public Information Circular 12, 4 p.

Whittemore, D. O., Butler, J. J., Jr., and Wilson, B. B., 2016, Assessing the major drivers of water level declines: New insights into the future of heavily stressed aquifers: *Hydrological Science Journal*, v. 61, no. 1, p. 134–145, doi: 10.1080/02626667.2014.959958.

Wilson, B. B., 2016, Establishing Kansas as a data provider to the National Ground-water Monitoring Network: Kansas Geological Survey Open-File Report 2016-28, 12 p.

Wilson, B. B., 2017, Maintenance of the Kansas Geological Survey's data services to the National Groundwater Monitoring Network of water levels over the Kansas High Plains aquifer: Kansas Geological Survey Open-File Report 2017-49, 8 p.



# Appendix A- Kansas River Alluvial Aquifer Wells-Water Well Completion Records and Electrical Conductivity Profiles.

390843096381401, RL01

http://www.kgs.ku.edu/Hydro/WWC5/E/10S7/522405.pdf

**WATER WELL RECORD Form WWC-5** Division of Water Resources App. No. \_\_\_\_\_ Well ID **KAW-RL01**

Original Record  Correction  Change in Well Use

**1 LOCATION OF WATER WELL:** County: Riley Section Number: 34 Township Number: T 10 S Range Number: R 7 E

**2 WELL OWNER:** Last Name: Lawrence First: Lawrence Street or Rural Address where well is located: 3800 S. 20th St, Manhattan, KS

Business: Kansas Geological Survey Address: University of Kansas City: Lawrence State: KS ZIP: 66047

**3 LOCATE WELL WITH "X" IN SECTION BOX:**

N			
NW	X	NE	
W			E
	SW	SE	
S			

**4 DEPTH OF COMPLETED WELL:** 50 ft. Depth(s) Groundwater Encountered: 1) \_\_\_\_\_ ft. 2) \_\_\_\_\_ ft. 3) \_\_\_\_\_ ft. or 4)  Dry Well

WELL'S STATIC WATER LEVEL: 24 ft.  below land surface, measured on (mo-day-yr): 07-18-18  above land surface, measured on (mo-day-yr): \_\_\_\_\_

Pump test data: Well water was \_\_\_\_\_ ft. after \_\_\_\_\_ hours pumping \_\_\_\_\_ gpm. Well water was \_\_\_\_\_ ft. after \_\_\_\_\_ hours pumping \_\_\_\_\_ gpm.

Estimated Yield: \_\_\_\_\_ gpm. Bore Hole Diameter: 3.25 in. to 50 ft. and \_\_\_\_\_ in. to \_\_\_\_\_ ft.

**5 Latitude:** 39.145327 (decimal degrees) **Longitude:** -96.837193 (decimal degrees)

Horizontal Datum:  WGS 84  NAD 83  NAD 27

Source for Latitude/Longitude:  GPS (omit make/model): \_\_\_\_\_ (WAAS enabled?  Yes  No)  Land Survey  Topographic Map  Online Mapper: Google Earth Pro

**6 Elevation:** 1037 ft.  Ground Level  TOC

Source:  Land Survey  GPS  Topographic Map  Other: State Lidar Data

**7 WELL WATER TO BE USED AS:**

1. Domestic:  Household  Lawn & Garden  Livestock  Irrigation  Feedlot  Industrial

2.  Public Water Supply: well ID \_\_\_\_\_ 10.  Oil Field Water Supply: lease \_\_\_\_\_

3.  Dewatering: how many wells? \_\_\_\_\_ 11. Test Hole: well ID \_\_\_\_\_  Cased  Uncased  Geotechnical

4.  Aquifer Recharge: well ID \_\_\_\_\_ 12. Geothermal: how many bores? \_\_\_\_\_ a)  Closed Loop  Horizontal  Vertical b)  Open Loop  Surface Discharge  Inj. of Water

5.  Monitoring: well ID KAW-RL01 13.  Other (specify): \_\_\_\_\_

6.  Environmental Remediation: well ID \_\_\_\_\_

7.  Air Sparge  Soil Vapor Extraction  Recovery  Injection

8.  Recovery  Injection

Was a chemical/bacteriological sample submitted to KDHE?  Yes  No If yes, date sample was submitted: \_\_\_\_\_

Water well disinfected?  Yes  No

**8 TYPE OF CASING USED:**  Steel  PVC  Other \_\_\_\_\_ CASING JOINTS:  Glued  Clamped  Welded  Threaded

Casing diameter: 2 in. to 50 ft. Diameter \_\_\_\_\_ in. to \_\_\_\_\_ ft. Diameter \_\_\_\_\_ in. to \_\_\_\_\_ ft. Diameter \_\_\_\_\_ in. to \_\_\_\_\_ ft.

Casing height above land surface: 36 in. Weight 0.669 lb/ft. Wall thickness or gauge No. Sch 40

TYPE OF SCREEN OR PERFORATION MATERIAL:  Steel  Stainless Steel  Fiberglass  PVC  Other (Specify) \_\_\_\_\_

Brass  Galvanized Steel  Concrete tile  None used (open hole)

SCREEN OR PERFORATION OPENINGS ARE:  Continuous Slot  Mill Slot  Gauge Wrapped  Torch Cut  Drilled Holes  Other (Specify) \_\_\_\_\_

Louvered Shorter  Key Punched  Wire Wrapped  Saw Cut  None (Open Hole)

SCREEN-PERFORATED INTERVALS: From 45 ft. to 50 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

GRAVEL PACK INTERVALS: From 20 ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

**9 GROUT MATERIAL:**  Neat cement  Cement grout  Bentonite  Other \_\_\_\_\_

Grout intervals: From 0 ft. to 20 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

Nearest source of possible contamination:  Septic Tank  Lateral Lines  Pit Privy  Livestock Pens  Insecticide Storage  Sewer Lines  Cess Pool  Sewage Lagoon  Fuel Storage  Abandoned Water Well  Waterright Sewer Lines  Seepage Pit  Feedyard  Fertilizer Storage  Oil Well/Oil Well

Other (Specify) \_\_\_\_\_

Direction from well: Southwest Distance from well: 1500 ft.

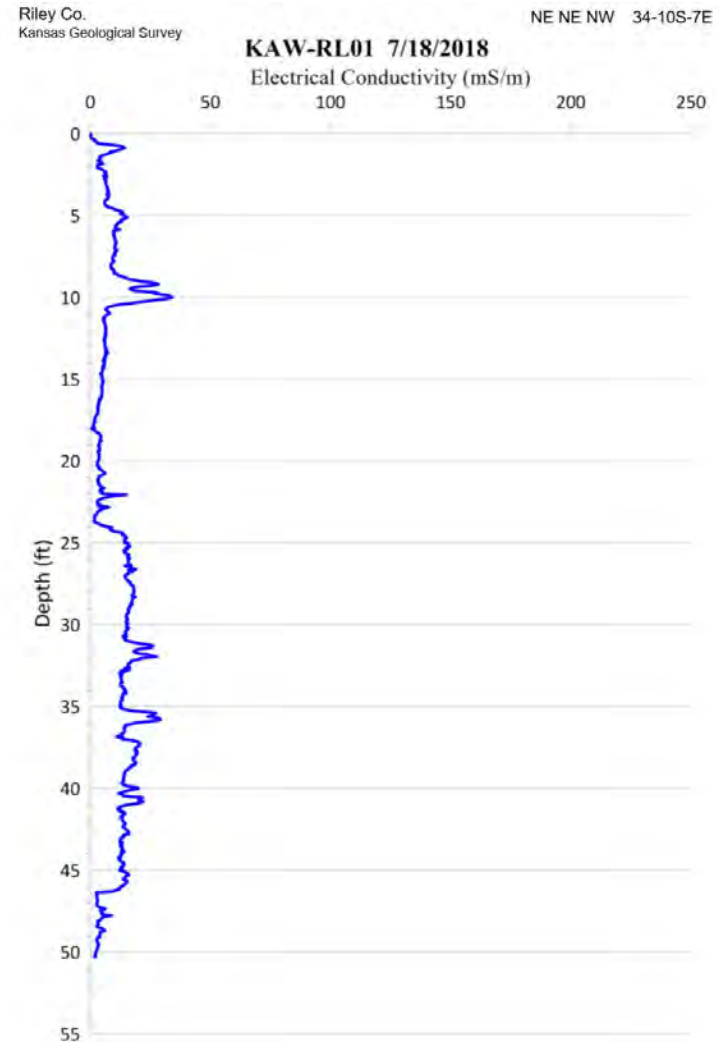
**10 LITHOLOGIC LOG:**

FROM	TO	LITHO LOG (cont.) or PLUGGING INTERVALS
0	5	Soils
5	8.5	Sand
8.5	10.5	Silt
10.5	20	Sand
20	45	Sand with Minor Silt lenses
45	50.25	Sand
50.25		Bedrock - Refusal (Limestone)

Notes: See Attached Electrical Conductivity Log

**11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION:** This water well was  constructed,  reconstructed, or  plugged under my jurisdiction and was completed on (mo-day-year) 05-15-2018, ... and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. \_\_\_\_\_ This Water Well Record was completed on (mo-day-year) 05-22-2018 under the business name of Kansas Geological Survey. Signature \_\_\_\_\_

Mail 1) when copy along with a fee of \$3.00 for each constructed well to: Kansas Department of Health and Environment, Bureau of Water, GW 15 Section, 1000 SW Jackson St., State 610, Topeka, Kansas 66612-1167. Mail one to Water Well Owners and return one for your records. Telephone: 785-396-5571. Visit us at [www.kdhe.ks.gov/water/index.html](http://www.kdhe.ks.gov/water/index.html) KSA 82a-1212 Revised 7/10/2015



391053096260901, RL02

http://www.kgs.ku.edu/Hydro/WWC5/E/10S9/515527.pdf

KAW-RL02 5/15/2018

**WATER WELL RECORD Form WWC-5** Division of Water Resources App. No. \_\_\_\_\_ Well ID **KAW-RL02**

Original Record  Correction  Change in Well Use

**1 LOCATION OF WATER WELL:** Fraction Section Number Township Number Range Number  
 County: Riley SE 1/4 SE 1/4 SE 1/4 NW 1/4 17 T 10 S R 9 E W

**2 WELL OWNER:** Last Name: \_\_\_\_\_ First: \_\_\_\_\_ Street or Rural Address where well is located (if unknown, distance and direction from nearest town or intersection): If at owner's address, check here:   
 Business: **Kansas Geological Survey** Address: **University of Kansas** **4400 River Rd**  
 Address: **1930 Constant Ave** City: **Lawrence** State: **KS** ZIP: **66047**

**3 LOCATE WELL WITH "X" IN SECTION BOX:** N, S, E, W, NE, SE, SW, NW

**4 DEPTH OF COMPLETED WELL:** 37 ft.  
 Depth(s) Groundwater Encountered: 1) \_\_\_\_\_ ft. 2) \_\_\_\_\_ ft. 3) \_\_\_\_\_ ft. or 4)  Dry Well  
**WELL'S STATIC WATER LEVEL:** 20.23 ft.  
 below land surface, measured on (mo-day-yr) 05-15-18  
 above land surface, measured on (mo-day-yr) \_\_\_\_\_  
 Pump test data: Well water was \_\_\_\_\_ ft. after \_\_\_\_\_ hours pumping \_\_\_\_\_ gpm  
 Well water was \_\_\_\_\_ ft. after \_\_\_\_\_ hours pumping \_\_\_\_\_ gpm  
 Estimated Yield: \_\_\_\_\_ gpm  
 Bore Hole Diameter: 3.25 in. to 37 ft. and \_\_\_\_\_ in. to \_\_\_\_\_ ft.

**5 Latitude:** 39.181389 (decimal degrees)  
**Longitude:** -96.435834 (decimal degrees)  
 Horizontal Datum:  WGS 84  NAD 83  NAD 27  
 Source for Latitude/Longitude:  GPS (unit make/model): \_\_\_\_\_ (WAAS enabled?  Yes  No)  
 Land Survey  Topographic Map  Online Mapper: **Google Earth Pro**

**6 Elevation:** 998 ft.  Ground Level  TOC  
 Source:  Land Survey  GPS  Topographic Map  Other **Google Earth Pro**

**7 WELL WATER TO BE USED AS:**  
 1. Domestic:  Household  Lawn & Garden  Livestock  Irrigation  Feedlot  Industrial  
 2. Public Water Supply: well ID \_\_\_\_\_  
 3. Dewatering: how many wells? \_\_\_\_\_  
 4. Aquifer Recharge: well ID \_\_\_\_\_  
 5. Monitoring: well ID **KAW-RL02**  
 6. Environmental Remediation: well ID \_\_\_\_\_  
 7. Air Sparge  Soil Vapor Extraction  Recovery  Injection  
 8. Oil Field Water Supply: lease \_\_\_\_\_  
 9. Test Hole: well ID \_\_\_\_\_  
 10. Cased  Uncased  Geotechnical  
 11. Geothermal: how many bores? \_\_\_\_\_  
 12. a) Closed Loop  Horizontal  Vertical b) Open Loop  Surface Discharge  Inj. of Water  
 13. Other (specify): \_\_\_\_\_

Was a chemical/bacteriological sample submitted to KDHE?  Yes  No If yes, date sample was submitted: \_\_\_\_\_  
 Water well disinfected?  Yes  No

**8 TYPE OF CASING USED:**  Steel  PVC  Other \_\_\_\_\_ CASING JOINTS:  Glued  Clamped  Welded  Threaded  
 Casing diameter: 2 in. to 37 ft. Diameter: \_\_\_\_\_ in. to \_\_\_\_\_ ft. Weight: 0.698 lbs./ft. Wall thickness or gauge No. Sch 40  
 Casing height above land surface: 36 in. Weight: \_\_\_\_\_ lbs./ft. Wall thickness or gauge No. Sch 40  
**TYPE OF SCREEN OR PERFORATION MATERIAL:**  Steel  Stainless Steel  Fiberglass  PVC  Other (Specify) \_\_\_\_\_  
 Brass  Galvanized Steel  Concrete tile  None used (open hole)

**SCREEN OR PERFORATION OPENINGS ARE:**  Continuous Slot  Mill Slot  Gauge Wrapped  Torch Cut  Drilled Holes  Other (Specify) \_\_\_\_\_  
 Louvered Shutter  Key Punched  Wire Wrapped  Saw Cut  None (Open Hole)

**SCREEN-PERFORATED INTERVALS:** From 27 ft. to 37 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
**GRAVEL PACK INTERVALS:** From 20 ft. to 37 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

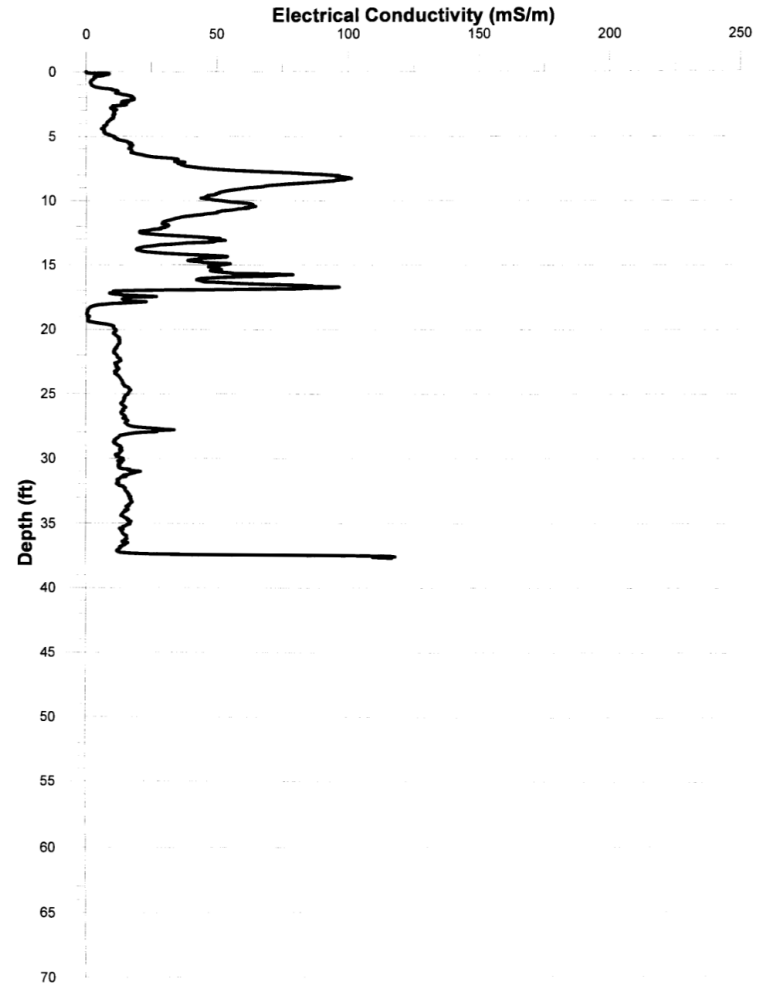
**9 GROUT MATERIAL:**  Neat cement  Cement grout  Bentonite  Other \_\_\_\_\_  
 Grout Intervals: From 0 ft. to 20 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

**Nearest source of possible contamination:**  
 Septic Tank  Lateral Lines  Pit Privy  Livestock Pens  Insecticide Storage  
 Sewer Lines  Cess Pool  Sewage Lagoon  Fuel Storage  Abandoned Water Well  
 Watertight Sewer Lines  Seepage Pit  Feedyard  Fertilizer Storage  Oil Well/Gas Well  
 Other (Specify) \_\_\_\_\_

Direction from well? **North** Distance from well? **350** ft.

10 FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO. LOG (cont.) or PLUGGING INTERVALS
0	6	Sandy Soil			
6	17	Silty Clay			
17	18	Silt			
18	27.5	Sands			
27.5	28	Silt			
28	37.2	Sand			
37.2		Shale - Refusal			Notes: See Attached Electrical Conductivity Log

**11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION:** This water well was  constructed,  reconstructed, or  plugged under my jurisdiction and was completed on (mo-day-year) 05-15-2018, and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. \_\_\_\_\_ This Water Well Record was completed on (mo-day-year) 05-22-2018 under the business name of **Kansas Geological Survey**.  
 Mail 1 white copy along with a fee of \$5.00 for each constructed well to: Kansas Department of Health and Environment, Bureau of Water, GWTS Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367. Mail one to Water Well Owner and retain one for your records. Telephone 785-296-5524. Visit us at <http://www.kdheks.gov/waterwell/index.html> KSA 82a-1212 Revised 7/10/2015



391027096165701, WB01

http://www.kgs.ku.edu/Hydro/WWC5/E/10S10/515529.pdf

KAW-WB01 5/10/2018

**WATER WELL RECORD Form WWC-5** Division of Water Resources App. No.          Well ID **KAW-WB01**

Original Record  Correction  Change in Well Use

**1 LOCATION OF WATER WELL:** County: Wabaunsee Fraction SW 1/4 SE 1/4 SE 1/4 Section Number 15 Township Number T 10 S Range Number R 10 E

**2 WELL OWNER:** Last Name: Kansas Geological Survey Street or Rural Address where well is located: 800 feet East of the intersection of River Rd and W Boundary Rd on North side of road  
 Business: University of Kansas Address: 1930 Constant Ave City: Lawrence State: KS ZIP: 66047

**3 LOCATE WELL WITH "X" IN SECTION BOX:** 

**4 DEPTH OF COMPLETED WELL:** Depth(s) Groundwater Encountered: 1) 37 ft. 2)          ft. 3)          ft. or 4)  Dry Well  
 WELL'S STATIC WATER LEVEL: 23 ft.  below land surface, measured on (mo-day-yr) 05-10-18  
 above land surface, measured on (mo-day-yr)          ft.  
 Pump test data: Well water was          ft. after          hours pumping          gpm  
 Well water was          ft. after          hours pumping          gpm  
 Estimated Yield:          gpm  
 Bore Hole Diameter: 3.25 in. to 37 ft. and          in. to          ft.

**5 Latitude:** 39.174223 (decimal degrees) **Longitude:** -96.282814 (decimal degrees)  
 Horizontal Datum:  WGS 84  NAD 83  NAD 27  
 Source for Latitude/Longitude:  
 GPS (unit make/model):          (WAAS enabled?  Yes  No)  
 Land Survey  Topographic Map  
 Online Mapper: Google Earth Pro

**6 Elevation:** 972 ft.  Ground Level  TOC  
 Source:  Land Survey  GPS  Topographic Map  
 Other: Google Earth Pro

**7 WELL WATER TO BE USED AS:**  
 1.  Domestic 5.  Public Water Supply: well ID          10.  Oil Field Water Supply: lease           
 2.  Household 6.  Dewatering: how many wells?          11. Test Hole: well ID           
 3.  Lawn & Garden 7.  Aquifer Recharge: well ID          12. Geothermal: how many bores?           
      Livestock 8.  Monitoring: well ID KAW-WB01 13.  Cased  Uncased  Geotechnical  
 4.  Irrigation 9. Environmental Remediation: well ID          a) Closed Loop  Horizontal  Vertical  
 5.  Feedlot  Air Sparge  Soil Vapor Extraction b) Open Loop  Surface Discharge  Inj. of Water  
 6.  Industrial  Recovery  Injection 13.  Other (specify):         

Was a chemical/bacteriological sample submitted to KDHE?  Yes  No If yes, date sample was submitted:           
 Water well disinfected?  Yes  No

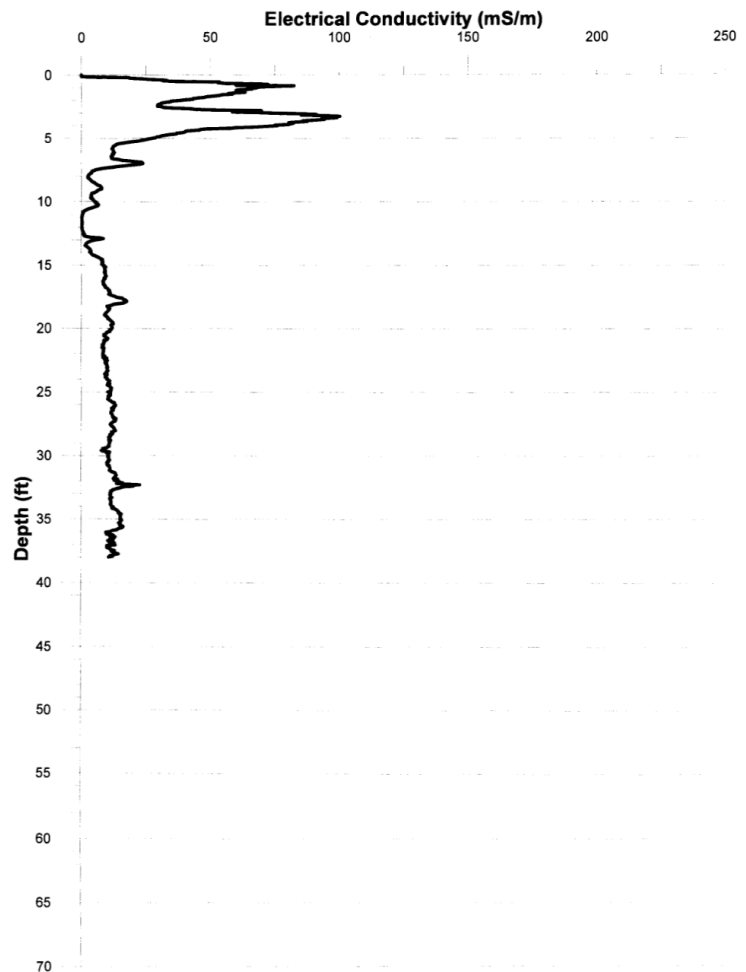
**8 TYPE OF CASING USED:**  Steel  PVC  Other          CASING JOINTS:  Glued  Clamped  Welded  Threaded  
 Casing diameter: 37 in. to 37 ft. Diameter          in. to          ft. Diameter          in. to          ft.  
 Casing height above land surface: 36 in. Weight 0.998 lbs./ft. Wall thickness or gauge No. Sch 40  
 TYPE OF SCREEN OR PERFORATION MATERIAL:  
 Steel  Stainless Steel  Fiberglass  PVC  
 Brass  Galvanized Steel  Concrete tile  None used (open hole)  Other (Specify)           
 SCREEN OR PERFORATION OPENINGS ARE:  
 Continuous Slot  Mill Slot  Gauze Wrapped  Torch Cut  Drilled Holes  Other (Specify)           
 Louvered Shutter  Key Punched  Wire Wrapped  Saw Cut  None (Open Hole)  
 SCREEN-PERFORATED INTERVALS: From 22 ft. to 37 ft. From          ft. to          ft. From          ft. to          ft.  
 GRAVEL PACK INTERVALS: From 16.5 ft. to 37 ft. From          ft. to          ft. From          ft. to          ft.

**9 GROUT MATERIAL:**  Neat cement  Cement grout  Bentonite  Other           
 Grout Intervals: From 0 ft. to 16.5 ft. From          ft. to          ft. From          ft. to          ft.  
 Nearest source of possible contamination:  
 Septic Tank  Lateral Lines  Pit Privy  Livestock Pens  Insecticide Storage  
 Sewer Lines  Cess Pool  Sewage Lagoon  Fuel Storage  Abandoned Water Well  
 Watertight Sewer Lines  Seepage Pit  Feedyard  Fertilizer Storage  Oil Well/Gas Well  
 Other (Specify) Creek Distance from well? 400 ft.  
 Direction from well? South

FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO. LOG (cont.) or PLUGGING INTERVALS
0	7	Soils			
7	36	Sands			

Notes: See Attached Electrical Conductivity Log

**11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION:** This water well was  constructed,  reconstructed, or  plugged under my jurisdiction and was completed on (mo-day-year) 05-10-2018 and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No.          This Water Well Record was completed on (mo-day-year) 05-22-2018 under the business name of Kansas Geological Survey  
 Mail 1 white copy along with a fee of \$5.00 for each constructed well to: Kansas Department of Health and Environment, Bureau of Water, GWS Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367. Mail one to Water Well Owner and retain one for your records. Telephone: 785-296-5524. Visit us at <http://www.kdheks.gov/waterwell/index.html> KSA 82a-1212 Revised 7/10/2015



390735095575601, SN01

http://www.kgs.ku.edu/Hydro/WWC5/E/11S13/515528.pdf

**WATER WELL RECORD Form WWC-5** Division of Water Resources App. No. \_\_\_\_\_ Well ID **KAW-SN01**

Original Record  Correction  Change in Well Use

**1 LOCATION OF WATER WELL:** County: **Shawnee** Fraction: \_\_\_\_\_ Section Number: **4** Township Number: **T 11 S** Range Number: **R 13 E**

**2 WELL OWNER:** Last Name: \_\_\_\_\_ First: \_\_\_\_\_ Street or Rural Address where well is located: \_\_\_\_\_  
 Business: **Kansas Geological Survey** Address: **University of Kansas** City: **Lawrence** State: **KS** ZIP: **66047**

**3 LOCATE WELL WITH "X" IN SECTION BOX:**

**4 DEPTH OF COMPLETED WELL:** ...**46.5**... ft. Depth(s) Groundwater Encountered: 1) ..... ft. 2) ..... ft. 3) ..... ft. or 4)  Dry Well  
**WELL'S STATIC WATER LEVEL:** .....**18.4**... ft.  below land surface, measured on (mo-day-yr) **05-18-18**  above land surface, measured on (mo-day-yr) ..... ft.  
 Pump test data: Well water was ..... ft. after ..... hours pumping ..... gpm. Well water was ..... ft. after ..... hours pumping ..... gpm.  
 Estimated Yield: ..... gpm. Bore Hole Diameter: **3.25** in. to **46.5** ft. and ..... in. to ..... ft.

**5 Latitude:** .....**39.126524**..... (decimal degrees) **Longitude:** .....**-95.965556**..... (decimal degrees)  
 Horizontal Datum:  WGS 84  NAD 83  NAD 27  
 Source for Latitude/Longitude:  GPS (unit make/model: ..... (WAAS enabled?  Yes  No)  Land Survey  Topographic Map  Online Mapper: **Google Earth Pro**  Other: **Google Earth Pro**

**6 Elevation:** **929** ..... ft.  Ground Level  TOC  
 Source:  Land Survey  GPS  Topographic Map  Other: **Google Earth Pro**

**7 WELL WATER TO BE USED AS:**  
 1. Domestic:  Household  Lawn & Garden  Livestock  Irrigation  Feedlot  Industrial  Public Water Supply: well ID .....  Deswating: how many wells? .....  Aquifer Recharge: well ID .....  Monitoring: well ID **KAW-SN01**  Environmental Remediation: well ID .....  Air Sparge  Soil Vapor Extraction  Recovery  Injection  Oil Field Water Supply: lease .....  Test Hole: well ID .....  Cased  Uncased  Geotechnical  Geothermal: how many bores? ..... a) Closed Loop  Horizontal  Vertical b) Open Loop  Surface Discharge  Inj. of Water  Other (specify): .....

Was a chemical/bacteriological sample submitted to KDHE?  Yes  No If yes, date sample was submitted: .....

Water well disinfected?  Yes  No

**8 TYPE OF CASING USED:**  Steel  PVC  Other ..... CASING JOINTS:  Gued  Clamped  Welded  Threaded  
 Casing diameter: **2** in. to **46.5** ft. Diameter: ..... in. to ..... ft. Wall thickness or gauge No. **Sch. 40**  
 Casing height above land surface: ..... in. Weight: **0.698** lbs./ft. Wall thickness or gauge No. **Sch. 40**  
 TYPE OF SCREEN OR PERFORATION MATERIAL:  Steel  Stainless Steel  Fiberglass  PVC  Other (Specify) .....  
 Brass  Galvanized Steel  Concrete tile  None used (open hole)  
 SCREEN OR PERFORATION OPENINGS ARE:  Continuous Slot  Mill Slot  Gauze Wrapped  Torch Cut  Drilled Holes  Other (Specify) .....  
 Louvered Shutter  Key Punched  Wire Wrapped  Saw Cut  None (Open Hole)  
 SCREEN-PERFORATED INTERVALS: From **36.5** ft. to **46.5** ft. From ..... ft. to ..... ft. From ..... ft. to ..... ft.  
 GRAVEL PACK INTERVALS: From **20** ft. to **46.5** ft. From ..... ft. to ..... ft. From ..... ft. to ..... ft.

**9 GROUT MATERIAL:**  Neat cement  Cement grout  Bentonite  Other .....  
 Grout Intervals: From **0** ft. to **20** ft. From ..... ft. to ..... ft.

Nearest source of possible contamination:  
 Septic Tank  Lateral Lines  Pit Privy  Livestock Pens  Insecticide Storage  
 Sewer Lines  Cess Pool  Sewage Lagoon  Fuel Storage  Abandoned Water Well  
 Watertight Sewer Lines  Seepage Pit  Feedyard  Fertilizer Storage  Oil Well/Gas Well  
 Other (Specify) **Pond** Distance from well? **350** ..... ft.

Direction from well? **Southwest**

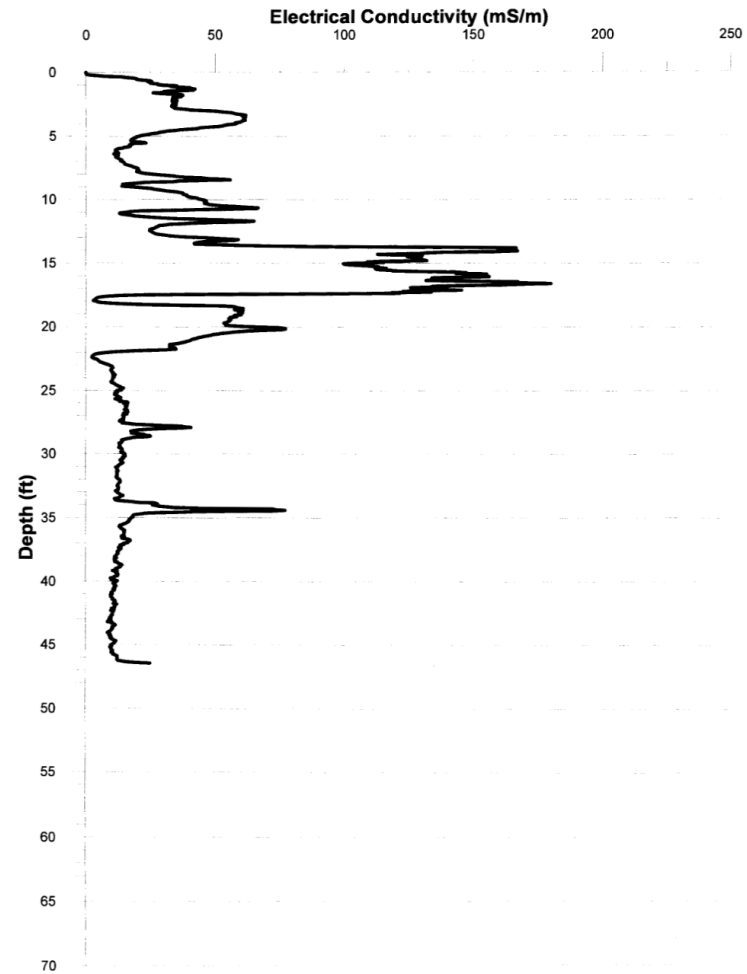
10 FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO. LOG (cont.) or PLUGGING INTERVALS
0	5	Soils			
5	8	Sands			
8	13.5	Silty Sands			
13.5	17.5	Clay			
17.5	18.3	Sands			
18.3	21.9	Silty Sands			
21.9	46.5	Sands with silty lenses			
46.5		Bedrock - Refusal			

Notes: See Attached Electrical Conductivity Log

**11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION:** This water well was  constructed,  reconstructed, or  plugged under my jurisdiction and was completed on (mo-day-year) **05-18-2018** ... and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. .... This Water Well Record was completed on (mo-day-year) **05-22-2018** ... under the business name of **Kansas Geological Survey** .....

Mail 1 white copy along with a fee of \$5.00 for each constructed well to: Kansas Department of Health and Environment, Bureau of Water, GWTS Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367. Mail one to Water Well Owner and retain one for your records. Telephone 785-296-5824. Visit us at <http://www.kdheks.gov/waterwell/index.html> KSA 82a-1212 Revised 7/10/2015

KAW-SN01 5/16/2018



390519095445302, SN02

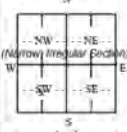
http://www.kgs.ku.edu/Hydro/WWC5/E/11S15/522406.pdf

**WATER WELL RECORD Form WWC-5** Division of Water Resources App. No. \_\_\_\_\_ Well ID **KAW-SN02**

Original Record  Correction  Change in Well Use

**1 LOCATION OF WATER WELL:** Fraction \_\_\_\_\_ Section Number **16** Township Number **T 11 S** Range Number **R 15 E** W  
 County: **Shawnee**

**2 WELL OWNER:** Last Name: \_\_\_\_\_ First: \_\_\_\_\_ Street or Rural Address where well is located: (if unknown, distance and direction from nearest town or intersection); If at owner's address, check here:   
 Business: **Kansas Geological Survey** Address: **University of Kansas** Address: **1930 Constant Ave** City: **Lawrence** State: **KS** ZIP: **66047** 260 Feet South of NW 24th St on West side of NW Menoken Rd

**3 LOCATE WELL WITH "N" IN SECTION BOX:** 

**4 DEPTH OF COMPLETED WELL:** 64.2 ft. Depth(s) Groundwater Encountered: 1) \_\_\_\_\_ ft. 2) \_\_\_\_\_ ft. 3) \_\_\_\_\_ ft. or 4)  Dry Well  
**WELL'S STATIC WATER LEVEL:** 39.15 ft.  below land surface, measured on (mo-day-yr) 10/18/18  above land surface, measured on (mo-day-yr) \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
 Pump test date: Well water was \_\_\_\_\_ ft. after \_\_\_\_\_ hours pumping. Well water was \_\_\_\_\_ ft. after \_\_\_\_\_ hours pumping. Estimated Yield: \_\_\_\_\_ gpm. Bore Hole Diameter: 8.25 in. to 64.5 ft. and \_\_\_\_\_ in. to \_\_\_\_\_ ft.

**5 Latitude:** 39.0889763 (decimal degrees) **Longitude:** -95.7484669 (decimal degrees) **Horizontal Datum:**  WGS 84  NAD 83  NAD 27  
 Source for Latitude/Longitude:  GPS (unit make/model: \_\_\_\_\_) (WAAS enabled?  Yes  No)  Land Survey  Topographic Map  Online Mapper: **Google Earth Pro**

**6 Elevation:** 898 ft.  Ground Level  TOC **Source:**  Land Survey  GPS  Topographic Map  Other: **Google Earth Pro**

**7 WELL WATER TO BE USED AS:** 1. Domestic  2. Irrigation  3. Fertilizer  4. Industrial  5. Public Water Supply: well ID \_\_\_\_\_ 6. Dewatering: how many wells? \_\_\_\_\_ 7. Aquifer Recharge: well ID \_\_\_\_\_ 8. Monitoring: well ID **KAW-SN02** 9. Environmental Remediation: well ID \_\_\_\_\_  Air Sparging  Soil Vapor Extraction  Recovery  Injection 10. Oil Field Water Supply: lease \_\_\_\_\_ 11. Test Hole: well ID \_\_\_\_\_  Cased  Uncased  Geotechnical 12. Geothermal: how many bores? \_\_\_\_\_ a) Closed Loop  Horizontal  Vertical b) Open Loop  Surface Discharge  Inj. of Water 13. Other (specify): \_\_\_\_\_

Was a chemical/bacteriological sample submitted to KDHE?  Yes  No If yes, date sample was submitted: \_\_\_\_\_  
 Water well disinfected?  Yes  No

**8 TYPE OF CASING USED:**  Steel  PVC  Other \_\_\_\_\_ CASING JOINTS:  Girth  Clamped  Welded  Threaded  
 Casing diameter: 2 in. to 64.2 ft. Diameter \_\_\_\_\_ in. to \_\_\_\_\_ ft. Casing height above land surface: 36 in. Weight: 0.698 lbs./ft. Wall thickness or gauge No. **Sch 40**  
 TYPE OF SCREEN OR PERFORATION MATERIAL:  Steel  Stainless Steel  Fiberglass  PVC  Other (Specify) \_\_\_\_\_  
 Brass  Galvanized Steel  Concrete tile  None used (open hole)

SCREEN OR PERFORATION OPENINGS ARE:  Continuous Slot  Mill Slot  Gauze Wrapped  Torch Cut  Drilled Holes  Other (Specify) \_\_\_\_\_  
 Looped Slotted  Key Punched  Wire Wrapped  Saw Cut  None (Open Hole)

SCREEN-PERFORATED INTERVALS: From 44 ft. to 64 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
 GRAVEL PACK INTERVALS: From 33 ft. to 64 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

**9 GROUT MATERIAL:**  Neat cement  Cement grout  Bentonite  Other \_\_\_\_\_  
 Grout intervals: From 0 ft. to 33 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
 Nearest source of possible contamination:  Septic Tank  Lateral Lines  Pit Privy  Livestock Pens  Insecticide Storage  Sewer Lines  Cess Pool  Sewage Lagoon  Fuel Storage  Abandoned Water Well  Watertight Sewer Lines  Seepage Pit  Feedyard  Fertilizer Storage  Oil Well/Gas Well  Other (Specify) \_\_\_\_\_  
 Direction from well? **North** Distance from well? **20** ft.

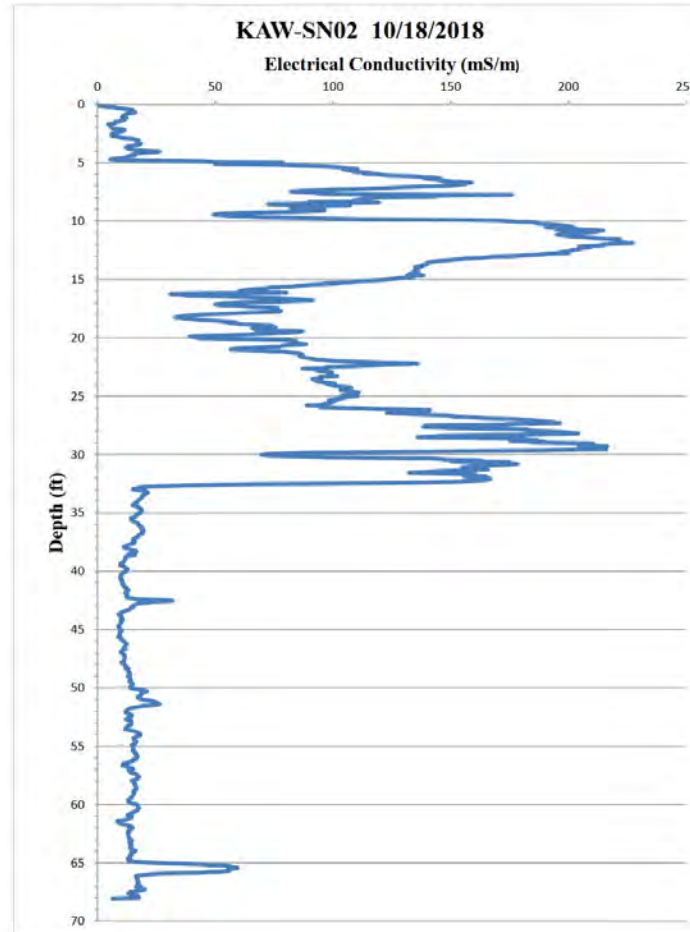
ID FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO LOG (cont.) or PLUGGING INTERVALS
0.0	5.0	Soils			
5.0	15.5	Heavy Clay with Streaks of Silt			
15.5	28.0	Silty Clay			
28.0	32.5	Heavy Clay with Streaks of Silt			
32.5	65.0	Sand & Gravel			
65.0	66.0	Silty Sand Lens			
66.0	68.0	Sand			

Notes: See Attached Electrical Conductivity Log  
 Replaces Well 390519095445301

**11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION:** This water well was  constructed,  reconstructed, or  plugged under my jurisdiction and was completed on (mo-day-year) **10/18/2018**, and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. \_\_\_\_\_ This Water Well Record was completed on (mo-day-year) **10/19/2018** under the business name of **Kansas Geological Survey**. Signature \_\_\_\_\_  
 Mail 1 water copy along with a fee of \$3.00 for each constructed well to: Kansas Department of Health and Environment, Bureau of Water, GWTS Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1187. Mail one to Water Well Owner and return one for your records. Telephone 785-296-5324. Visit us at <http://www.kdhe.ks.gov/waterwell/index.html> KSA 82a-1212 Revised 7/10/2015

Shawnee Co.  
 Kansas Geological Survey

S2 SW 16-11-15E



390418095310801, JF01

http://www.kgs.ku.edu/Hydro/WWC5/E/11S17/515525.pdf

**WATER WELL RECORD Form WWC-5** Division of Water Resources App. No. \_\_\_\_\_ Well ID **KAW-JF01**

Original Record  Correction  Change in Well Use

**1 LOCATION OF WATER WELL:** Fraction NW 1/4 NW 1/4 NW 1/4 Section Number 27 Township Number T 11 S Range Number R 17 E W  
 County: Jefferson

**2 WELL OWNER:** Last Name: \_\_\_\_\_ First: \_\_\_\_\_  
 Business: Kansas Geological Survey  
 Address: University of Kansas  
 Address: 1930 Constant Ave  
 City: Lawrence State: KS ZIP: 66047  
 Street or Rural Address where well is located (if unknown, distance and direction from nearest town or intersection): If at owner's address, check here:   
 50 feet East of the intersection of Decatur Rd and 17th St, South side of road

**3 LOCATE WELL WITH "X" IN SECTION BOX:**  
 N  

X			

 W E  
 S  
 1 mile

**4 DEPTH OF COMPLETED WELL:** 43 ft.  
 Depth(s) Groundwater Encountered: 1) \_\_\_\_\_ ft.  
 2) \_\_\_\_\_ ft. 3) \_\_\_\_\_ ft. or 4)  Dry Well  
**WELL'S STATIC WATER LEVEL:** 67 ft.  
 below land surface, measured on (mo-day-yr) 05-14-18  
 above land surface, measured on (mo-day-yr) \_\_\_\_\_  
 Pump test data: Well water was \_\_\_\_\_ ft.  
 after \_\_\_\_\_ hours pumping \_\_\_\_\_ gpm  
 Well water was \_\_\_\_\_ ft.  
 after \_\_\_\_\_ hours pumping \_\_\_\_\_ gpm  
 Estimated Yield: \_\_\_\_\_ gpm  
 Bore Hole Diameter: 3.25 in. to 4.7 in. and \_\_\_\_\_ in. to \_\_\_\_\_ in.

**5 Latitude:** 39.071666 (decimal degrees)  
**Longitude:** -95.518797 (decimal degrees)  
 Horizontal Datum:  WGS 84  NAD 83  NAD 27  
 Source for Latitude/Longitude:  
 GPS (unit make/model: \_\_\_\_\_)  
 (WAAS enabled?  Yes  No)  
 Land Survey  Topographic Map  
 Online Mapper: Google Earth Pro

**6 Elevation:** 862 ft.  Ground Level  TOC  
 Source:  Land Survey  GPS  Topographic Map  
 Other: Google Earth Pro

**7 WELL WATER TO BE USED AS:**  
 1. Domestic:  Household  Lawn & Garden  Livestock  
 2. Irrigation  Feculent  Air Sparge  Industrial  
 5.  Public Water Supply: well ID \_\_\_\_\_  
 6.  Dewatering: how many wells? \_\_\_\_\_  
 7.  Aquifer Recharge: well ID \_\_\_\_\_  
 8.  Monitoring: well ID KAW-JF01  
 9. Environmental Remediation: well ID \_\_\_\_\_  
 Air Sparge  Soil Vapor Extraction  Recovery  Injection  
 10.  Oil Field Water Supply: lease \_\_\_\_\_  
 11. Test Hole: well ID \_\_\_\_\_  
 Cased  Uncased  Geotechnical  
 12. Geothermal: how many bores? \_\_\_\_\_  
 a)  Closed Loop  Horizontal  Vertical  
 b)  Open Loop  Surface Discharge  Inj. of Water  
 13.  Other (specify): \_\_\_\_\_

Was a chemical/bacteriological sample submitted to KDHE?  Yes  No If yes, date sample was submitted: \_\_\_\_\_  
 Water well disinfected?  Yes  No

**8 TYPE OF CASING USED:**  Steel  PVC  Other \_\_\_\_\_ CASING JOINTS:  Glued  Clamped  Welded  Threaded  
 Casing diameter: 2 in. to 4.3 in. Diameter \_\_\_\_\_ in. to \_\_\_\_\_ in. Diameter \_\_\_\_\_ in. to \_\_\_\_\_ in.  
 Casing height above land surface: 36 in. Weight: 0.698 lbs./ft. Wall thickness or gauge No. Sch. 40  
**TYPE OF SCREEN OR PERFORATION MATERIAL:**  
 Steel  Stainless Steel  Fiberglass  PVC  Other (Specify) \_\_\_\_\_  
 Brass  Galvanized Steel  Concrete tile  None used (open hole)  
**SCREEN OR PERFORATION OPENINGS ARE:**  
 Continuous Slot  Mill Slot  Gauze Wrapped  Torch Cut  Drilled Holes  Other (Specify) \_\_\_\_\_  
 Louvered Shutter  Key Punched  Wire Wrapped  Saw Cut  None (Open Hole)  
**SCREEN-PERFORATED INTERVALS:** From 33 ft. to 43 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
**GRAVEL PACK INTERVALS:** From 23 ft. to 43 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

**9 GROUT MATERIAL:**  Neat cement  Cement grout  Bentonite  Other \_\_\_\_\_  
 Grout Intervals: From 0 ft. to 23 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

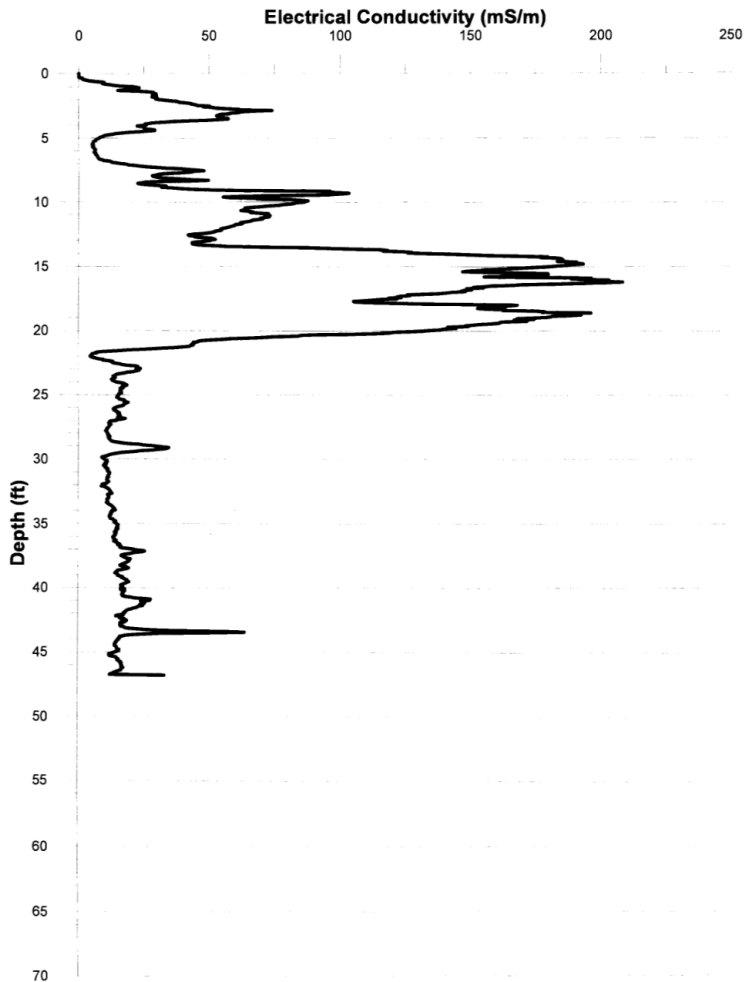
**Nearest source of possible contamination:**  
 Septic Tank  Lateral Lines  Pit Privy  Livestock Pens  Insecticide Storage  
 Sewer Lines  Cess Pool  Sewage Lagoon  Fuel Storage  Abandoned Water Well  
 Watertight Sewer Lines  Seepage Pit  Feedyard  Fertilizer Storage  Oil Well/Gas Well  
 Other (Specify) \_\_\_\_\_  
 Direction from well? \_\_\_\_\_ Distance from well? 1600 ft.

10 FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO. LOG (cont.) or PLUGGING INTERVALS
0	4	Soils	46.65		Bedrock - Refusal
4	7	Sands			
7	13	Silts & Sands			
13	20.5	Clay			
20.5	28.5	Sands			
28.5	29.5	Silt Lens			
29.5	43	Sands			
43	44	Silt Lens			
44	46.65	Sands			

Notes: See Attached Electrical Conductivity Log

**11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION:** This water well was  constructed,  reconstructed, or  plugged under my jurisdiction and was completed on (mo-day-year) 05-14-2018, and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. \_\_\_\_\_ This Water Well Record was completed on (mo-day-year) 05-22-2018 under the business name of Kansas Geological Survey. \_\_\_\_\_  
 Mail 1 white copy along with a fee of \$5.00 for each constructed well to: Kansas Department of Health and Environment, Bureau of Water, GWTS Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367. Mail one to Water Well Owner and retain one for your records. Telephone 785-296-5524. Visit us at <http://www.kdheks.gov/waterwell/index.html> KSA 82a-1212 Revised 7/10/2015

KAW-JF01 5/14/2018





390024095224001, DG01

http://www.kgs.ku.edu/Hydro/WWC5/E/12S20/511959.pdf

**WATER WELL RECORD Form WWC-5** Division of Water Resources App. No.  Well ID **KAW-DG01**

Original Record  Correction  Change in Well Use

**1 LOCATION OF WATER WELL:** County: Douglas Fraction SW 1/4 NW 1/4 SW 1/4 SE 1/4 Section Number 17 Township Number T 12 S Range Number R 20 E W

**2 WELL OWNER:** Last Name: First: Street or Rural Address where well is located (if unknown, distance and direction from nearest town or intersection): If at owner's address, check here:   
 Business: Kansas Geological Survey Address: University of Kansas E 1500 Road, 675 feet North of intersection with US Highway 40  
 Address: 1930 Constant Ave City: Lawrence, KS State: KS ZIP: 66047 Lawrence, KS

**3 LOCATE WELL WITH "X" IN SECTION BOX:** N  
 W E  
 S E  
 S

**4 DEPTH OF COMPLETED WELL:** 66.5 ft.  
 Depth(s) Groundwater Encountered: 1) ..... ft.  
 2) ..... ft. 3) ..... ft. or 4)  Dry Well  
 WELL'S STATIC WATER LEVEL: 19.3 ft.  
 below land surface, measured on (mo-day-yr) 08-15-17  
 above land surface, measured on (mo-day-yr) .....  
 Pump test data: Well water was ..... ft. after ..... hours pumping ..... gpm  
 Well water was ..... ft. after ..... hours pumping ..... gpm  
 Estimated Yield: ..... gpm  
 Bore Hole Diameter: 3.25 in. to 66.5 ft. and ..... in. to ..... ft.

**5 Latitude:** 39.002397 (decimal degrees)  
**Longitude:** 95.223993 (decimal degrees)  
 Horizontal Datum:  WGS 84  NAD 83  NAD 27  
 Source for Latitude/Longitude:  
 GPS (unit make/model: .....)  
 (WAAS enabled?  Yes  No)  
 Land Survey  Topographic Map  
 Online Mapper: Google Earth Pro

**6 Elevation:** 833 ft.  Ground Level  TOC  
 Source:  Land Survey  GPS  Topographic Map  
 Other Google Earth Pro

**7 WELL WATER TO BE USED AS:**  
 1. Domestic:  Household  Lawn & Garden  Livestock  
 2. Irrigation  Feedlot  Industrial  
 3. Public Water Supply: well ID .....  
 4. Dewatering: how many wells? .....  
 5. Aquifer Recharge: well ID .....  
 6. Monitoring: well ID **KAW-DG01**  
 7. Environmental Remediation: well ID .....  
 8. Air Sparge  Soil Vapor Extraction  Recovery  Injection  
 9. Oil Field Water Supply: lease .....  
 10. Test Hole: well ID .....  
 11. Cased  Uncased  Geotechnical  
 12. Geothermal: how many bores? .....  
 a) Closed Loop  Horizontal  Vertical  
 b) Open Loop  Surface Discharge  Inj. of Water  
 13. Other (specify) .....

Was a chemical/bacteriological sample submitted to KDHE?  Yes  No If yes, date sample was submitted: .....

Water well disinfected?  Yes  No

**8 TYPE OF CASING USED:**  Steel  PVC  Other ..... CASING JOINTS:  Glued  Clamped  Welded  Threaded  
 Casing diameter: 2 in. to 66.5 ft. Diameter in. to ..... ft. Diameter in. to ..... ft.  
 Casing height above land surface: 37.4 in. Weight: 0.698 lbs./ft. Wall thickness or gauge No. Sch 40  
 TYPE OF SCREEN OR PERFORATION MATERIAL:  
 Steel  Stainless Steel  Fiberglass  PVC  Other (Specify) .....  
 Brass  Galvanized Steel  Concrete tile  None used (open hole)  
 SCREEN OR PERFORATION OPENINGS ARE:  
 Continuous Slot  Mill Slot  Gauze Wrapped  Torch Cut  Drilled Holes  Other (Specify) .....  
 Louvered Shutter  Key Punched  Wire Wrapped  Saw Cut  None (Open Hole)  
 SCREEN-PERFORATED INTERVALS: From 46.5 ft. to 66.5 ft. From ..... ft. to ..... ft. From ..... ft. to ..... ft.  
 GRAVEL PACK INTERVALS: From 30 ft. to 66.5 ft. From ..... ft. to ..... ft. From ..... ft. to ..... ft.

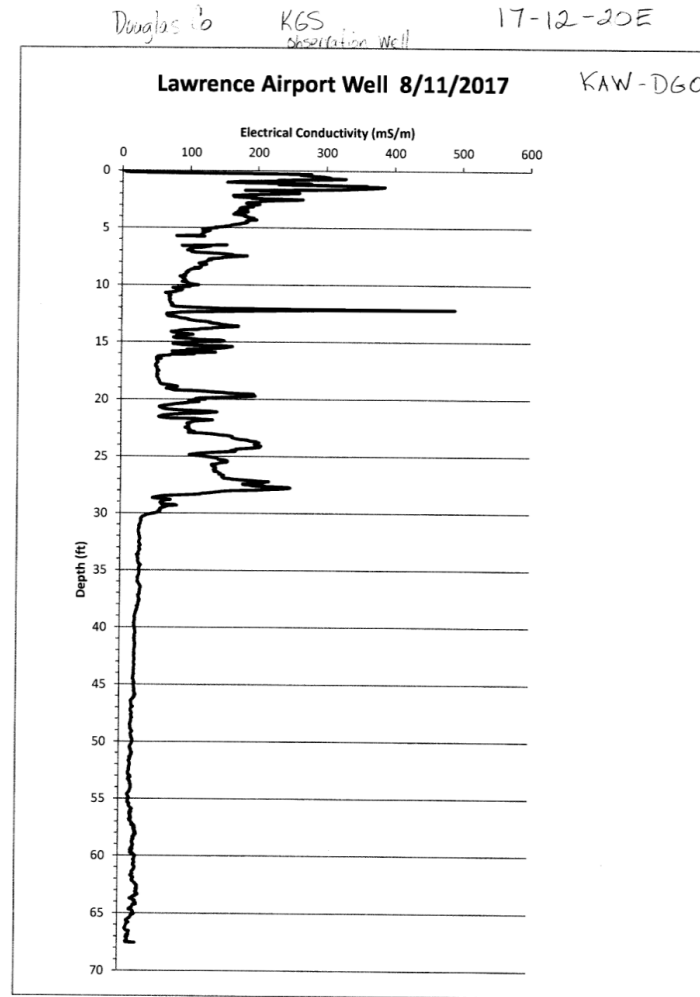
**9 GROUT MATERIAL:**  Neat cement  Cement grout  Bentonite  Other .....  
 Grout Intervals: From 0 ft. to 30 ft. From ..... ft. to ..... ft. From ..... ft. to ..... ft.  
 Nearest source of possible contamination:  
 Septic Tank  Lateral Lines  Pit Privy  Livestock Pens  Insecticide Storage  
 Sewer Lines  Cess Pool  Sewage Lagoon  Fuel Storage  Abandoned Water Well  
 Watertight Sewer Lines  Seepage Pit  Feedyard  Fertilizer Storage  Oil Well/Gas Well  
 Other (Specify) ..... Distance from well? ..... ft.

FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO. LOG (cont.) or PLUGGING INTERVALS
0	3	Soils			
3	16	Clays & Silts			
16	19	Silt			
19	30	Clays & Silts			
30	67.5	Sands			

Notes: See Attached Electrical Conductivity Log  
 Replaces USGS Well 390006095132301

**11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION:** This water well was  constructed,  reconstructed, or  plugged under my jurisdiction and was completed on (mo-day-year) 08/11/2017, and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. .... This Water Well Record was completed on (mo-day-year) 08/22/2017, under the business name of **Kansas Geological Survey**. Signature .....

Mail 1 white copy along with a fee of \$5.00 for each constructed well to: Kansas Department of Health and Environment, Bureau of Water, GWTS Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367. Mail one to Water Well Owner and retain one for your records. Telephone: 785-296-5524. Visit us at <http://www.kdheks.gov/waterwell/index.html> KSA 82a-1212 Revised 7/10/2015



385624095093702, DG02

http://www.kgs.ku.edu/Hydro/WWC5/E/13S20/522411.pdf

**WATER WELL RECORD Form WWC-5** Division of Water Resources App. No. \_\_\_\_\_ Well ID **KAW-DG02**

Original Record  Correction  Change in Well Use

**1 LOCATION OF WATER WELL:** County: Douglas Fraction: \_\_\_\_\_ Section Number: 11 Township Number: T 13 S Range Number: R 20  E  W

**2 WELL OWNER:** Last Name: \_\_\_\_\_ First: \_\_\_\_\_ Street or Rural Address where well is located (if unknown, distance and direction from nearest town or intersection): If at owner's address, check here:  100 feet south of intersection of N 1400 RD and E 1850 Rd

Business: Kansas Geological Survey Address: University of Kansas 1930 Constant Ave City: Lawrence State: KS ZIP: 66047

**3 LOCATE WELL WITH "X" IN SECTION BOX:** N \_\_\_\_\_ E \_\_\_\_\_ S \_\_\_\_\_ W \_\_\_\_\_

**4 DEPTH OF COMPLETED WELL:** 1) \_\_\_\_\_ ft. 2) \_\_\_\_\_ ft. 3) \_\_\_\_\_ ft. or 4)  Dry Well WELL'S STATIC WATER LEVEL: 27.01 ft.  below land surface, measured on (mo-day-yr): 7/29/18  above land surface, measured on (mo-day-yr): \_\_\_\_\_ Pump test data: Well water was \_\_\_\_\_ ft. after \_\_\_\_\_ hours pumping \_\_\_\_\_ gpm Well water was \_\_\_\_\_ ft. after \_\_\_\_\_ hours pumping \_\_\_\_\_ gpm Estimated Yield: \_\_\_\_\_ gpm Bore Hole Diameter: 3.25 in. to 70 ft. and \_\_\_\_\_ in. to \_\_\_\_\_ ft.

**5 Latitude:** 38.942311 (decimal degrees) **Longitude:** -95.158268 (decimal degrees) Horizontal Datum:  NGS 84  NAD 83  NAD 27 Source for Latitude/Longitude:  Land Survey  Topographic Map  GPS (unit make/model): \_\_\_\_\_ (WAAS enabled?  Yes  No)  Online Mapper: Google Earth Pro

**6 Elevation:** 818 ft.  Ground Level  TOC Source:  Land Survey  GPS  Topographic Map  Other Google Earth Pro

**7 WELL WATER TO BE USED AS:** 1. Domestic:  Household  Lawn & Garden  Livestock 2. Irrigation 3. Feedlot 4. Industrial 5.  Public Water Supply: well ID \_\_\_\_\_ 6.  Dewatering: how many wells? \_\_\_\_\_ 7.  Aquifer Recharge: well ID \_\_\_\_\_ 8.  Monitoring: well ID KAW-DG02 9. Environmental Remediation: well ID \_\_\_\_\_  Air Sparge  Soil Vapor Extraction  Recovery  Injection 10.  Oil Field Water Supply: lease \_\_\_\_\_ 11. Test Hole: well ID \_\_\_\_\_  Cased  Uncased  Geotechnical 12. Geothermal: how many bores? a) Closed Loop  Horizontal  Vertical b) Open Loop  Surface Discharge  Inj. of Water 13. Other (specify): \_\_\_\_\_

Was a chemical/bacteriological sample submitted to KDHE?  Yes  No If yes, date sample was submitted: \_\_\_\_\_

Water well disinfected?  Yes  No

**8 TYPE OF CASING USED:**  Steel  PVC  Other \_\_\_\_\_ CASING JOINTS:  Glued  Clamped  Welded  Threaded Casing diameter: 2 in. to 70 ft. Diameter \_\_\_\_\_ in. to \_\_\_\_\_ ft. Diameter \_\_\_\_\_ in. to \_\_\_\_\_ ft. Casing height above land surface: 36 in. Weight: 0.698 lbs./ft. Wall thickness or gauge No. Sch 40

**TYPE OF SCREEN OR PERFORATION MATERIAL:**  Steel  Stainless Steel  Fiberglass  PVC  Brass  Galvanized Steel  Concrete tile  None used (open hole)  Other (Specify) \_\_\_\_\_

**SCREEN OR PERFORATION OPENINGS ARE:**  Continuous Slot  Mill Slot  Gauge Wrapped  Torch Cut  Drilled Holes  Other (Specify) \_\_\_\_\_  Louvered Shutter  Key Punched  Wire Wrapped  Saw Cut  None (Open Hole)

**SCREEN-PERFORATED INTERVALS:** From 55 ft. to 70 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. **GRAVEL PACK INTERVALS:** From 34 ft. to 70 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

**9 GROUT MATERIAL:**  Neat cement  Cement grout  Bentonite  Other \_\_\_\_\_ Grout Intervals: From 0 ft. to 34 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

**Nearest source of possible contamination:**  Septic Tank  Lateral Lines  Pit Privy  Livestock Pens  Insecticide Storage  Sewer Lines  Cess Pool  Sewage Lagoon  Fuel Storage  Abandoned Water Well  Watertight Sewer Lines  Scepage Pit  Feedyard  Fertilizer Storage  Oil Well/Gas Well  Other (Specify) \_\_\_\_\_

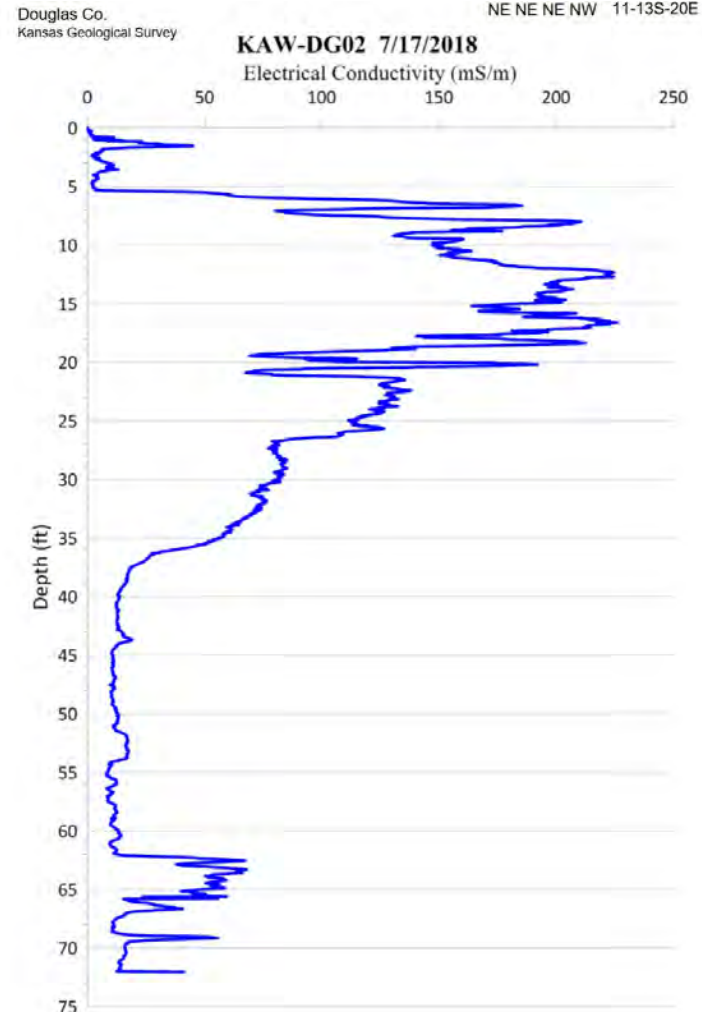
Direction from well? Northwest Distance from well? 300 ft.

10 FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO. LOG (cont.) or PLUGGING INTERVALS
0.0	5.5	Soils			
5.5	21.0	Heavy Clay with Streaks of Silt			
21.0	27.0	Clay with Silt			
27.0	37.0	Silt with Sand, Fining Upwards			
37.0	62.0	Sand & Gravel			
62.0	72.0	Sand & Gravel with Silts			

Notes: See Attached Electrical Conductivity Log  
Replaces Well 385624095093701

**11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION:** This water well was  constructed,  reconstructed, or  plugged under my jurisdiction and was completed on (mo-day-year) 7/17/18, and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. \_\_\_\_\_ This Water Well Record was completed on (mo-day-year) 7/27/18, under the business name of Kansas Geological Survey. Signature \_\_\_\_\_

Mail 1 white copy along with a fee of \$3.00 for each constructed well to: Kansas Department of Health and Environment, Bureau of Water, GWIS Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367 Mail one to Water Well Owner and retain one for your records. Telephone 785-296-5524. Visit us at <http://www.kdheks.gov/waterwell/index.html> KSA 82a-1212 Revised 7/10/2015



385908094574001, LV01

http://www.kgs.ku.edu/Hydro/WWC5/E/12S22/515526.pdf

**WATER WELL RECORD Form WWC-5** Division of Water Resources App. No. \_\_\_\_\_ Well ID **KAW-LV01**

Original Record  Correction  Change in Well Use

**1 LOCATION OF WATER WELL:** County: Leavenworth Fraction NW ¼ NE ¼ NW ¼ SW ¼ Section Number 27 Township Number T 12 S Range Number R 22 E 1 W

**2 WELL OWNER:** Last Name: First: Street or Rural Address where well is located (if unknown, distance and direction from nearest town or intersection): If at owner's address, check here:   
 Business: Kansas Geological Survey Address: University of Kansas 7909 Wyandotte St, De Soto, KS 66018  
 Address: 1930 Constant Ave City: Lawrence State: KS ZIP: 66047

**3 LOCATE WELL WITH "X" IN SECTION BOX:**  
 N  
 W X E  
 S  
 1/4 mile

**4 DEPTH OF COMPLETED WELL:** 65 ft. Depth(s) Groundwater Encountered: 1) \_\_\_\_\_ ft. 2) \_\_\_\_\_ ft. 3) \_\_\_\_\_ ft. or 4)  Dry Well  
 WELL'S STATIC WATER LEVEL: 16.6 ft.  below land surface, measured on (mo-day-yr) 05-08-18  
 above land surface, measured on (mo-day-yr) \_\_\_\_\_  
 Pump test data: Well water was \_\_\_\_\_ gpm after \_\_\_\_\_ hours pumping  
 Well water was \_\_\_\_\_ gpm after \_\_\_\_\_ hours pumping  
 Estimated Yield: \_\_\_\_\_ gpm  
 Bore Hole Diameter: 3.25 in. to 65 ft. and \_\_\_\_\_ in. to \_\_\_\_\_ ft.

**5 Latitude:** 38.985578 (decimal degrees)  
**Longitude:** -94.961118 (decimal degrees)  
 Horizontal Datum:  WGS 84  NAD 83  NAD 27  
 Source for Latitude/Longitude:  GPS (unit make/model: \_\_\_\_\_) (WAAS enabled?  Yes  No)  
 Land Survey  Topographic Map  Online Mapper: Google Earth Pro

**6 Elevation:** 788 ft.  Ground Level  TOC  
 Source:  Land Survey  GPS  Topographic Map  Other: Google Earth Pro

**7 WELL WATER TO BE USED AS:**  
 1. Domestic:  Household  Lawn & Garden  Livestock  Irrigation  Feedlot  Industrial  
 2. Public Water Supply: well ID \_\_\_\_\_  
 3. Dewatering: how many wells? \_\_\_\_\_  
 4. Aquifer Recharge: well ID \_\_\_\_\_  
 5. Monitoring: well ID **KAW-LV01**  
 6. Environmental Remediation: well ID \_\_\_\_\_  
 Air Sparge  Soil Vapor Extraction  Recovery  Injection  
 7. Oil Field Water Supply: lease \_\_\_\_\_  
 8. Test Hole: well ID \_\_\_\_\_  
 Cased  Uncased  Geotechnical  
 9. Geothermal: how many bores? \_\_\_\_\_  
 a) Closed Loop  Horizontal  Vertical  
 b) Open Loop  Surface Discharge  Inj. of Water  
 10. Other (specify): \_\_\_\_\_

Was a chemical/bacteriological sample submitted to KDHE?  Yes  No If yes, date sample was submitted: \_\_\_\_\_  
 Water well disinfected?  Yes  No

**8 TYPE OF CASING USED:**  Steel  PVC  Other \_\_\_\_\_ CASING JOINTS:  Glued  Clamped  Welded  Threaded  
 Casing diameter: \_\_\_\_\_ in. to \_\_\_\_\_ ft. Diameter \_\_\_\_\_ in. to \_\_\_\_\_ ft. Diameter \_\_\_\_\_ in. to \_\_\_\_\_ ft.  
 Casing height above land surface: \_\_\_\_\_ in. Weight: 0.698 lbs./ft. Wall thickness or gauge No. Sch. 40  
 TYPE OF SCREEN OR PERFORATION MATERIAL:  Steel  Stainless Steel  Fiberglass  PVC  Other (Specify) \_\_\_\_\_  
 Brass  Galvanized Steel  Concrete tile  None used (open hole)  
 SCREEN OR PERFORATION OPENINGS ARE:  
 Continuous Slot  Mill Slot  Gauze Wrapped  Torch Cut  Drilled Holes  Other (Specify) \_\_\_\_\_  
 Louvered Shutter  Key Punched  Wire Wrapped  Saw Cut  None (Open Hole)  
 SCREEN-PERFORATED INTERVALS: From .45 ft. to 65 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
 GRAVEL PACK INTERVALS: From .25 ft. to 65 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

**9 GROUT MATERIAL:**  Neat cement  Cement grout  Bentonite  Other \_\_\_\_\_  
 Grout Intervals: From 0 ft. to .25 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
 Nearest source of possible contamination:  
 Septic Tank  Lateral Lines  Pit Privy  Livestock Pens  Insecticide Storage  
 Sewer Lines  Cess Pool  Sewage Lagoon  Fuel Storage  Abandoned Water Well  
 Watertight Sewer Lines  Seepage Pit  Feedyard  Fertilizer Storage  Oil Well/Gas Well  
 Other (Specify) \_\_\_\_\_  
 Direction from well? SE Distance from well? .100 ft.

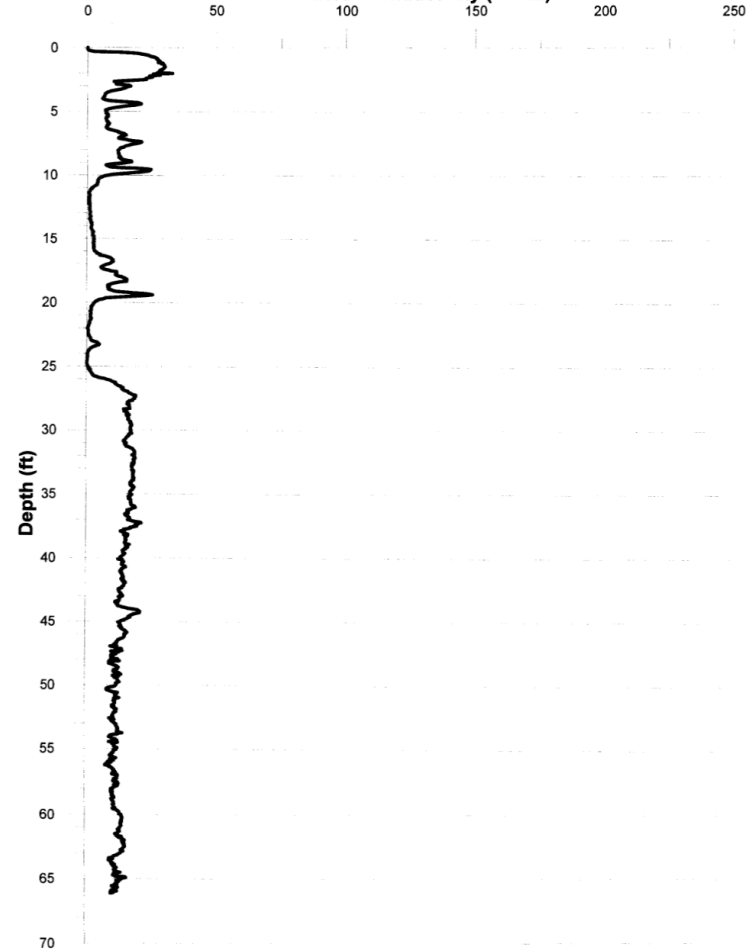
10 FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO. LOG (cont.) or PLUGGING INTERVALS
0	2.5	Soil			
2.5	10	Silty Sand			
10	16	Sand			
16	20	Silty Sand			
20	26	Sand			
26	66.1	Sands			

Notes: See Attached Electrical Conductivity Log

**11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION:** This water well was  constructed,  reconstructed, or  plugged under my jurisdiction and was completed on (mo-day-year) 05-08-2018, and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. \_\_\_\_\_ This Water Well Record was completed on (mo-day-year) 05-21-2018 under the business name of Kansas Geological Survey.  
 Mail 1 white copy along with a fee of \$5.00 for each constructed well to: Kansas Department of Health and Environment, Bureau of Water, GWTS Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367. Mail one to Water Well Owner and retain one for your records. Telephone 785-296-5524. Visit us at <http://www.kdheks.gov/waterwell/index.html> KSA 82a-1212 Revised 7/10/2015

KAW-LV01 5/8/2018

Electrical Conductivity (mS/m)



390332094455103, WY01

http://www.kgs.ku.edu/Hydro/WWC5/E/11S24/515530.pdf

KAW-WY01 5/9/2018

**WATER WELL RECORD Form WWC-5** Division of Water Resources App. No. \_\_\_\_\_ Well ID **KAW-WY01**

Original Record  Correction  Change in Well Use

**1 LOCATION OF WATER WELL:** County: **Wyandotte** Fraction: \_\_\_\_\_ Section Number: **29** Township Number: **T 11 S** Range Number: **R 24 E**

**2 WELL OWNER:** Last Name: \_\_\_\_\_ First: \_\_\_\_\_ Street or Rural Address where well is located (if unknown, distance and direction from nearest town or intersection): If at owner's address, check here:   
 Business: **Kansas Geological Survey** Address: **University of Kansas** **1300 feet SE on gravel drive off S 78 St, 1900 feet SE of Douglas Ave and S 78 St**  
 Address: **1930 Constant Ave** City: **Lawrence** State: **KS** ZIP: **66047**

**3 LOCATE WELL WITH "X" IN SECTION BOX:** 

**4 DEPTH OF COMPLETED WELL:** ..... **65** ..... ft.  
 Depth(s) Groundwater Encountered: 1) ..... ft.  
 2) ..... ft. 3) ..... ft. or 4)  Dry Well  
**WELL'S STATIC WATER LEVEL:** ..... **45.2** ..... ft.  
 below land surface, measured on (mo-day-yr) ..... **05-09-18** .....  
 above land surface, measured on (mo-day-yr) .....  
 Pump test data: Well water was ..... ft. after ..... hours pumping ..... gpm  
 Well water was ..... ft. after ..... hours pumping ..... gpm  
 Estimated Yield: ..... gpm  
 Bore Hole Diameter: **3.25** in. to **65** ft. and ..... in. to ..... ft.

**5 Latitude:** ..... **39.058812** ..... (decimal degrees)  
**Longitude:** ..... **-94.764252** ..... (decimal degrees)  
 Horizontal Datum:  WGS 84  NAD 83  NAD 27  
 Source for Latitude/Longitude:  GPS (unit make/model: .....)  
 WAAS enabled?  Yes  No  
 Land Survey  Topographic Map  
 Online Mapper: **Google Earth Pro**

**6 Elevation:** ..... **769** ..... ft.  Ground Level  TOC  
 Source:  Land Survey  GPS  Topographic Map  
 Other: **Google Earth Pro**

**7 WELL WATER TO BE USED AS:**  
 1. Domestic  Household  Lawn & Garden  Livestock  Irrigation  Feedlot  Industrial  
 2.  Public Water Supply: well ID .....  
 3.  Dewatering: how many wells? .....  
 4.  Aquifer Recharge: well ID .....  
 5.  Monitoring: well ID ..... **KAW-WY01** .....  
 6.  Environmental Remediation: well ID .....  
 7.  Air Sparge  Soil Vapor Extraction  Recovery  Injection  
 8.  Oil Field Water Supply: lease .....  
 9.  Test Hole: well ID .....  
 10.  Cased  Uncased  Geotechnical  
 11.  Geothermal: how many bores?  
 a) Closed Loop  Horizontal  Vertical  
 b) Open Loop  Surface Discharge  Inj. of Water  
 12.  Other (specify): .....

Was a chemical/bacteriological sample submitted to KDHE?  Yes  No If yes, date sample was submitted: .....

Water well disinfected?  Yes  No

**8 TYPE OF CASING USED:**  Steel  PVC  Other ..... CASING JOINTS:  Glued  Clamped  Welded  Threaded  
 Casing diameter: **2** in. to **65** ft. Diameter in. to ..... ft. Diameter in. to ..... ft. Diameter in. to ..... ft.  
 Casing height above land surface: **36** in. Weight: **0.688** lbs./ft. Wall thickness or gauge No. **Sch 40** .....

TYPE OF SCREEN OR PERFORATION MATERIAL:  
 Steel  Stainless Steel  Fiberglass  PVC  
 Brass  Galvanized Steel  Concrete tile  None used (open hole)  Other (Specify) .....

SCREEN OR PERFORATION OPENINGS ARE:  
 Continuous Slot  Mill Slot  Gauze Wrapped  Torch Cut  Drilled Holes  Other (Specify) .....  
 Louvered Shutter  Key Punched  Wire Wrapped  Saw Cut  None (Open Hole)

SCREEN-PERFORATED INTERVALS: From **50** ft. to **65** ft. From ..... ft. to ..... ft. From ..... ft. to ..... ft.  
 GRAVEL PACK INTERVALS: From **41** ft. to **65** ft. From ..... ft. to ..... ft. From ..... ft. to ..... ft.

**9 GROUT MATERIAL:**  Neat cement  Cement grout  Bentonite  Other .....  
 Grout intervals: From ..... ft. to **41** ft. From ..... ft. to ..... ft. From ..... ft. to ..... ft.

Nearest source of possible contamination:  
 Septic Tank  Lateral Lines  Pit Privy  Livestock Pens  Insecticide Storage  
 Sewer Lines  Cess Pool  Sewage Lagoon  Fuel Storage  Abandoned Water Well  
 Watertight Sewer Lines  Seepage Pit  Feedyard  Fertilizer Storage  Oil Well/Gas Well  
 Other (Specify) **Kansas River** Distance from well? **500** ft.

10 FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO. LOG (cont.) or PLUGGING INTERVALS
0	4.5	Soils			
4.5	12	Sands			
12	16	Silt & Clay			
16	29.5	Sand			
29.5	33	Clay with Sand Streaks			
33	37.5	Sand			
37.5	38.5	Silty Lens			
38.5	67.9	Sand			

**11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION:** This water well was  constructed,  reconstructed, or  plugged under my jurisdiction and was completed on (mo-day-yr) **05-09-2018**, and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. .... This Water Well Record was completed on (mo-day-yr) **05-21-2018** under the business name of **Kansas Geological Survey** Signature: \_\_\_\_\_

Mail 1 white copy along with a fee of \$5.00 for each constructed well to: Kansas Department of Health and Environment, Bureau of Water, GWTS Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367. Mail one to Water Well Owner and retain one for your records. Telephone 785-296-5524. Visit us at <http://www.kdheks.gov/waterwell/index.html> KSA 82a-1212 Revised 7/10/2015

