





**KANSAS DEPARTMENT OF AGRICULTURE**  
**Division of Water Resources**  
**M E M O R A N D U M**

**TO:** Files

**DATE:** December 14, 2020

**FROM:** Doug Schemm

**RE:** Applications, File Nos. 50,369; 50,370;  
50,371; 50,372; 50,373; 50,374; 50,375;  
50,376; 50,377; and 50,378

The City of Arkansas City (City) has filed the referenced applications to appropriate additional groundwater from existing wells located adjacent to the Arkansas River. The points of diversion include 10 municipal supply wells, which are part of the City's current well field, and are authorized under Vested Water Right, CL-5 and Water Right, File No. 10,084. The wells are all located in Section 26, Township 34 South, Range 3 East, in Cowley County. The applications were signed by a representative of the applicant, stating they have access to the points of diversion. Note that these new applications were initially filed requesting surface water from the Arkansas River as the source, and this filing was based on guidance from the Division of Water Resources, as detailed below. However, after further review they have been modified to groundwater source applications.

**BACKGROUND**

The City's consultant Burns & McDonnell (BMcD), assembled a comprehensive review of area surface water and groundwater resources (see report entitled "Water Rights Investigation Review & Recommendations – Arkansas City, KS". The report noted the following:

- The alluvial aquifer in this area is fully appropriated and no new groundwater appropriations would be allowed per K.A.R. 5-3-11.
- New appropriations and wells extended beyond 2-Miles from wellfield would require exploration of locations where municipal wells are projected to have limited well yield or water quality concerns.
- Examination of historic water levels and pumping records indicates that the existing wellfield has had sustainable groundwater withdrawals despite the City approaching full use of existing water rights.
- Examination of historic water levels shows that there is a significant hydraulic connection between flow in the adjacent Arkansas River and groundwater levels in the alluvial aquifer.
- Surface water diversions from the Arkansas River at the City's wellfield are not currently administered under DWR's Minimum Desirable Streamflow program (i.e. located downstream of river gages).

Based on the lack of availability for new groundwater appropriations within the existing wellfield and the anticipated challenges of developing wells outside of the existing wellfield, (BMcD) and the City approached DWR to consider alternatives. During preliminary discussions with DWR the significant hydraulic connection between the Arkansas River and the City's wellfield was identified as a possible avenue for additional water rights like the process used to calculate allowable appropriations in the Missouri River Alluvium. To support this concept, DWR indicated that the hydraulic connection between the City's wells and the adjacent Arkansas River would need to be further quantified.

To quantify the relationship between pumping stress, the aquifer, and the adjacent Arkansas River, the City performed additional research that included a 72-hour pump test, installation of six observation wells equipped with data loggers and transducers, and sand point wells to log water level fluctuations in the river and riverbed. The City's northern most well in the wellfield (Well No. 4) was utilized as the pumping well based on proximity to the Arkansas River and a maximized distance to other City wells operating to the south. To establish accurate estimates of local aquifer parameters, the City initiated a 72-hour aquifer pump test utilizing Well No. 4 discharging at an average rate of 570 GPM throughout the test. BMcD estimated that the local transmissivity of the aquifer is 269,000 gallons per day per foot (gpd/ft), with a storage coefficient of 0.29.

The Jenkins method indicates that 64 percent of the water produced from Well No. 4 (by volume) would be sourced from induced infiltration of surface water from the Arkansas River. By comparison, the Glover Balmer equation indicates that 85 percent of the water produced (by rate) is being sourced from induced infiltration of surface water from the Arkansas River. The Jenkins method conservatively estimates that Well No. 4 sources 64 percent of produced water from induced infiltration of surface water from the Arkansas River. This same hydraulic connection between the Arkansas River and the alluvial aquifer is observed throughout the City's wellfield, therefore the same approach to calculate ratios of groundwater to induced infiltration can be applied to other wells in the wellfield. An **average of 62%** of the water produced from the wellfield should be sourced from induced infiltration. These calculations indicate that if the City pumped 3,324 MGY from the existing wellfield, 1,264 MGY would be sourced from groundwater, and 2,060 MGY would be sourced from induced infiltration of river water.

Based on subsequent discussions with the applicant, and internal DWR review, it was determined that the new applications should request surface water as their source of supply, not groundwater. This approach was due to the desire to respect K.A.R. 5-3-11 and not waive safe yield. It is DWR's current practice that the full authorized quantity of an alluvial groundwater well is considered in our safe yield analysis. The water right is not lessened based on a majority being surface water. The applicant determined the quantity of the pumped water that would be surface water versus groundwater. For example, if an individual well has pumped 30 million gallons, then 18.6 million gallons (62%) is induced surface water, and 11.4 million gallons (38%) is groundwater that must be accounted for under the senior water rights File No. CL-05, and Water Right No. 10,084.

Therefore, the applicant calculated quantities for the pending applications based on rate, running non-stop, and the percentage of surface water. For example, the quantity for File No. 50,369 was determined as follows:  $625 \text{ gpm} \times 60 \text{ mins/hr} \times 24 \text{ hrs} \times 365 \text{ days} \times 0.62 = 203.67 \text{ million gallons}$ .

After further detailed review of the applications by DWR staff, it was determined that due to the calculated ratio the senior water rights could potentially exceed their authorized quantity at some wells, or not be able to pump all their authorized quantity at other wells. In addition, there would be no ability to administer the junior water rights, if necessary, because the wells have been determined to always have a surface water component when they are operating. Therefore, after additional discussion with the City and their consultant it was agreed that these applications would be converted from surface water to groundwater source, and DWR would waive safe yield regulations.

Any waiver of a regulation requires an explanation of the circumstances that make the waiver unique and reasonable. In this case they are as follows:

- There are no other permitted groundwater rights within two miles of the City's current well field. Therefore, allowing increased groundwater appropriation will not affect other users.
- The geographic location of the well field (approximately 10 miles from the state line), limits further development of the alluvial aquifer within the state of Kansas (i.e. there are no downstream cities, no IRR uses, etc.).
- Establishing these as groundwater rights would allow us to administer these junior water rights if necessary.
- Waiving safe yield is not "precedent setting". We have previously waived safe yield for specific reasons, including alluvial municipal rights supported by water assurance districts. Especially when a large portion of the total water diverted is surface water.

- The applicant’s consultant has provided extensive, detailed hydrologic modeling to show they would not impair existing water rights. Any other alluvial aquifer user requesting a waiver of safe yield would have to provide similar modeling data.
- The Arkansas River in this area of the state has significant flow, with a flow of 60 cubic feet per second exceeded 99% of the time.

As noted above, the City currently supplies water to customers from a wellfield located west of the City, authorized by Vested Water Right, File No. CL-05, and Water Right No. 10,084. The 10 wells are completed in the Arkansas River alluvium, and are currently authorized a total annual quantity of 1,264 Million Gallons per Year (MGY) or 3,880 Acre-Feet (AF), with a maximum withdrawal rate of 6,000 gallons per minute (GPM). Note that the City also has a surface water right, File No. 27,679 that is authorized 290.263 million gallons directly from the Walnut River, however this source is stated to be a “stand by source” and has not been used in many years. The City is constructing a new Reverse Osmosis Groundwater Treatment Plant (ROWTP), and during the design phase of the ROWTP a review of the City’s existing raw water supply was completed. The review of existing raw water supplies identified that during recent dry years (2012), the City’s raw water use has been as high as 1,100 MGY or 3,400 AF. The treatment process at the new ROWTP will result in an increase of 15% to 25% on raw water demand to produce the same amount of finished treated water. When peak needs, and the losses to treatment processes at the ROWTP are combined, the City is projected to need raw water in excess of current water rights in the very near future.

The applicant submitted a Demand Projection Table that has estimated water needs out to 2060. Population increases from 12,300 to 15,016, an increase of 2,716, and the table also shows significant industrial growth. Total water need increases from 1,469 million gallons to 3,425 million gallons, almost three times the City’s currently authorized quantity of water. The new applications are requesting a combined total quantity of 2,370.719 million gallons, which when added to the current quantity of 1,264 million gallons would provide the City with 3,634.719 million gallons. This is only slightly above the 40-year projection, and allowing for some additional growth, is a reasonable quantity. Therefore, these applications will be all additional water (i.e. no limitations on quantity). A summary of the water rights and pending applications is included in the table below.

Well Number	CL-5 (MGY)	10084* (MGY)	Authorized Qty with limitations to senior file	GPM	Pending Applications
1	53	119.578	119.578	625	203.67
2	45	117.464	117.464	695	226.481
3	39	176.668	176.668	820	267.215
4	40	163.306	163.306	610	198.782
5	55	198.839	198.839	870	283.509
6	65	205.631	205.631	800	260.698
7	53	75.686	128.686	590	192.264
8	58	171.556	171.556	1080	351.942
9		138.067	138.067	625	203.67
10		114.474	114.474	560	182.488
	408	1481.269	1534.269	7275	2370.719

\*Certificate for File # 10,084 says limited to 1,264 mgy @ 6,000 gpm when operated simultaneously under this right.

City of Arkansas City

File Nos. 50,369; 50,370; 50,371; 50,372; 50,373; 50,374; 50,375;  
50,376; 50,377; and 50,378

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CURRENT AUTHORIZED: 1,264 MGY (3,879 AF) @ 6,000 gpm

PROJECTED NEEDS (40 YEARS): 3,425 MGY (10,511 AF) @ 7,275 gpm (2,161 million gallons of additional water)

A review of the WWC-5 shows that nearby wells are sourcing the bedrock aquifer, not the alluvial aquifer, and there are only a few domestic wells that would potentially be within one-half mile. In addition, since this is the City's existing well field, all nearby well owners would certainly be aware of the location of the City's wells and their current usage. No concerns of impairment have been expressed during the over 50 years that these wells have been operating. In addition, as discussed above the majority of the water withdrawn from the wells is induced surface water inflow. Therefore, there is no need to notify any nearby well owners who are producing from a different aquifer, and would not be impacted in any way by the City's increased withdrawal of water.

In accordance with K.S.A. 82a-706c, the Chief Engineer retains full authority to require any water user to install meters, gages, or other measuring devices, which devices he or she or his or her agents may read at any time. Water flowmeter requirements are further described in K.A.R. 5-1-4 through K.A.R. 5-1-12. If any chemical or foreign substance is injected into the water pumped under these permits, check valves will also need to be installed.

Jeff Lanterman, Water Commissioner of the Stafford Field Office, recommended approval of the referenced applications in a December 4, 2020 electronic mail. Based on the above discussion, the applications are approvable with a waiver of safe yield, there are unique conditions that make the waiver acceptable, the total requested quantity is reasonable and justified, approval will allow the applicant to provide adequate water for the new treatment plant, and approval of the applications will not impair senior water rights nor prejudicially or unreasonably affect the public interest, it is recommended that the referenced applications be approved.

Douglas W. Schemm  
Environmental Scientist  
Topeka Field Office

Kansas Department of Agriculture  
 Division of Water Resources  
**WAIVER REQUEST & WAIVER RULE WORKSHEET**

File Numbers: **50,369; 50,370; 50,371; 50,372; 50,373; 50,374;**  
**50,375; 50,376; 50,377; and 50,378**

FO: 2 GMD: 0       

**WAIVER REQUEST:**

UMW	Date Requested	Rule ID	Applies	Rule Type	Rule Subtype
<b>MUN</b>	<b>12/14/2020</b>	<b>53</b>	<b>Statewide</b>	<b>Safe Yield</b>	<b>Yield of Unconfined Groundwater Exceeded</b>
Rule Number	Date Granted	Date Denied	Justification:	The applicant is requesting additional water from an existing municipal well field. The applicant has provided extensive modeling to show the no impairment will occur and that 62% of the pumped water is surface water induced from the Arkansas River. There are no other permitted water rights in this area, and the geographic location of the well field (approximately 10 miles from the state line), limits further development of the alluvial aquifer within the state of Kansas (i.e. there are no downstream cities, no IRR uses, etc.).	
<b>K.A.R. 5-3-11</b>	<b>4/7/2021</b>				

**WAIVER RULE:**

Rule ID	Applicability	Type	Subtype	Rule Number	Date Active	Date Inactive

Date Prepared 12/14/2020 By dws

Date Entered 4/20/2021 By LMoody

THE STATE OF KANSAS



KANSAS DEPARTMENT OF AGRICULTURE  
Mike Beam, Secretary of Agriculture

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

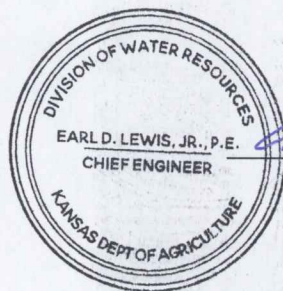
WAIVER OF REGULATION  
K.A.R. 5-3-11 Safe Yield


Date: April 7, 2021.

Re: Applications, File Nos. 50,369; 50,370; 50,371; 50,372; 50,373; 50,374; 50,375; 50,376;  
50,377; and 50,378

1. That these applications are proposing to divert additional groundwater from ten wells located within an existing municipal well field, currently authorized under Vested Water Right, File No. CL-05 and Water Right, File No. 10,084. The source of water is the Arkansas River alluvium.
2. That the applications do not meet safe yield criteria as set forth in K.A.R. 5-3-11. The applicant's senior files are the only water rights within the area of consideration, and they have fully appropriated the alluvial aquifer.
3. That the applicant's consultant has provided extensive hydrologic modeling to show that approval of the applications would not impair existing water rights. In addition, the modeling data shows that 62% of the water diverted from the existing well field is induced surface water from the Arkansas River.
4. That waiving safe yield is consistent with other municipal water rights producing from alluvial aquifers, when a significant portion of the total water diverted is surface water.
5. That the Arkansas River in this area of the state has significant flow, with a flow of 60 cubic feet per second exceeded 99% of the time.
6. That the geographic location of the well field (approximately 10 miles from the state line), limits further development of the alluvial aquifer within the state of Kansas (i.e. there are no downstream cities, no IRR uses, etc.). Therefore, allowing increased groundwater appropriation will not affect other users.
7. That the waiver will not prejudicially or unreasonably affect the public interest, and no senior rights will be impaired by the proposed use.

Comments:



  
Earl D. Lewis Jr., P.E.  
Chief Engineer  
Division of Water Resources  
Kansas Department of Agriculture



THE STATE OF KANSAS



KANSAS DEPARTMENT OF AGRICULTURE  
Mike Beam, Secretary of Agriculture

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

APPROVAL OF APPLICATION  
and  
PERMIT TO PROCEED

(This Is Not a Certificate of Appropriation)

This is to certify that I have examined Application, **File No. 50,376** of the applicant

CITY OF ARKANSAS CITY  
Attn: ENVIRONMENTAL SERVICES SUPERINTENDENT  
2929 N. 2<sup>ND</sup> STREET  
ARKANSAS CITY KS 67005

for a permit to appropriate water for beneficial use, together with the maps, plans and other submitted data, and that the application is hereby approved and the applicant is hereby authorized, subject to vested rights and prior appropriations, to proceed with the construction of the proposed diversion works (except those dams and stream obstructions regulated by K.S.A. 82a-301 through 305a, as amended), and to proceed with all steps necessary for the application of the water to the approved and proposed beneficial use and otherwise perfect the proposed appropriation subject to the following terms, conditions and limitations:

1. That the priority date assigned to such application is **April 2, 2020**.
2. That the water sought to be appropriated shall be used for municipal use within the City of Arkansas City, Kansas and immediate vicinity; and within the boundaries of Rural Water District (RWD) No. 4, Sumner County, Kansas.
3. That the authorized source from which the appropriation shall be made is groundwater, to be withdrawn by means of one (1) well located in Lot 5 of Section 26, more particularly described as being near a point 1,245 feet North and 2,010 feet West of the Southeast corner of said section, in Township 34 South, Range 3 East, Cowley County, Kansas, located substantially as shown on the topographic map accompanying the application.
4. That the appropriation sought shall be limited to a maximum diversion rate not in excess of **1,080 gallons per minute (2.41 c.f.s.)** and to a quantity not to exceed **351.942 million gallons** (1,080.07 acre-feet) of water for any calendar year.
5. That installation of works for diversion of water shall be completed on or before **December 31, 2022** or within any authorized extension thereof. The applicant shall notify the Chief Engineer and pay the statutorily required field inspection fee of \$400.00 when construction of the works has been completed. Failure to timely submit the notice and the fee will result in revocation of the permit. Any request for an extension of time shall be submitted prior to the expiration of the deadline and shall be accompanied by the required statutory fee of \$100.00.
6. That the proposed appropriation shall be perfected by the actual application of water to the proposed beneficial use on or before **December 31, 2041** or any authorized extension thereof. Any request for an extension of time shall be submitted prior to the expiration of the deadline and shall be accompanied by the required statutory fee of \$100.00.

7. That the applicant shall not be deemed to have acquired a water appropriation for a quantity in excess of the amount approved herein nor in excess of the amount found by the Chief Engineer to have been actually used for the approved purpose during one calendar year subsequent to approval of the application and within the time specified for perfection or any authorized extension thereof.

8. That the use of water herein authorized shall not be made so as to impair any use under existing water rights nor prejudicially and unreasonably affect the public interest.

9. That the right of the appropriator shall relate to a specific quantity of water and such right must allow for a reasonable raising or lowering of the static water level and for the reasonable increase or decrease of the streamflow at the appropriator's point of diversion.

10. That this permit does not constitute authority under K.S.A. 82a-301 through 305a to construct any dam or other obstruction; nor does it grant any right-of-way, or authorize entry upon or injury to, public or private property.

11. That all diversion works constructed under the authority of this permit into which any type of chemical or other foreign substance will be injected into the water pumped from the diversion works shall be equipped with an in-line, automatic quick-closing, check valve capable of preventing pollution of the source of the water supply. The type of valve installed shall meet specifications adopted by the Chief Engineer and shall be maintained in an operating condition satisfactory to the Chief Engineer.

12. That an acceptable water flow meter shall be installed and maintained on the diversion works authorized by this permit in accordance with Kansas Administrative Regulations 5-1-4 through 5-1-12 adopted by the Chief Engineer. This water flow meter shall be used to provide an accurate quantity of water diverted as required for the annual water use report (including the meter reading at the beginning and end of the report year).

13. That the applicant shall maintain accurate and complete records from which the quantity of water diverted during each calendar year may be readily determined and the applicant shall file an annual water use report with the Chief Engineer by March 1 following the end of each calendar year. Failure to file the annual water use report by the due date shall cause the applicant to be subject to a civil penalty.

14. That no water user shall engage in nor allow the waste of any water diverted under the authority of this permit.

15. That failure without cause to comply with provisions of the permit and its terms, conditions and limitations will result in the forfeiture of the priority date, revocation of the permit and dismissal of the application.

16. That the permit holder shall submit a progress report to the office of the Chief Engineer by March 1, following the tenth full calendar year after the permit was issued. The progress report must be submitted on a form prescribed by the Chief Engineer, and shall compare annual water use projected in the original application with the actual annual water use for the prior 10 years. The progress report must document compliance with the approved conservation plan, contain sufficient details to determine the extent of perfection of the water right during the previous ten years, and demonstrate how the water right, in association with other water rights, meets the municipal use need.

17. That the right to appropriate water under authority of this permit is subject to any minimum desirable streamflow requirements identified and established pursuant to K.S.A. 82a-703c for the source of supply to which this water right applies.

Ordered this 7<sup>th</sup> day of April, 2021, in Manhattan, Riley County, Kansas.



*Earl D. Lewis Jr.*

Earl D. Lewis Jr., P.E.  
Chief Engineer  
Division of Water Resources  
Kansas Department of Agriculture

State of Kansas )  
County of Riley ) SS

The foregoing instrument was acknowledged before me this 7<sup>th</sup> day of April, 2021, by Earl D. Lewis Jr., P.E., Chief Engineer, Division of Water Resources, Kansas Department of Agriculture.



*Ashlee Freeman*  
Notary Public

1320 Research Park Drive  
Manhattan, KS 66502  
785-564-6700  
www.agriculture.ks.gov



900 SW Jackson, Room 456  
Topeka, KS 66612  
785-296-3556

Mike Beam, Secretary

Laura Kelly, Governor

April 13, 2021

CITY OF ARKANSAS CITY  
Attn: ENVIRONMENTAL SERVICES SUPERINTENDENT  
2929 N 2ND ST  
ARKANSAS CITY KS 67005

RE: Appropriation of Water, File Nos. 50,369; 50,370;  
50,371; 50,372; 50,373; 50,374; 50,375; 50,376; 50,377; and 50,378

Dear Sir or Madam:

Enclosed are permits authorizing you to proceed with construction of the proposed diversion works and to appropriate water for beneficial use as set forth in these permits. Your attention is directed to the enclosures and to the terms, conditions, limitations, and requirements specified in these permits.

Notices must be filed on the enclosed forms once the diversion works have been completed. Failure to complete the diversion works within the time allowed, or within any authorized extension of time thereof, will result in dismissal of these permits. If you need an extension of time, you must request it before the deadline for completion set forth in the permits. Any request for an extension of time must be accompanied by the statutorily required fee, which is currently \$100.00 per file number.

Acceptable water flowmeters must be installed on the diversion works authorized by these permits prior to using water. Annual water use reports must be filed with the Chief Engineer by March 1, following the end of each calendar year. If complete annual water use reports are not received by the deadline, then a fine may be assessed and all water use under such permit or right may be suspended. Reports submitted in paper form will be assessed a \$20 per file number paper filing fee. In order to avoid this filing fee, you may submit your reports online at [www.kswaterusereport.org](http://www.kswaterusereport.org).

The approvals of your applications constitute permits to appropriate water. It does not give authority to construct any dam or other stream obstruction regulated by K.S.A. 82a-301 through 305a. It does not give authority to access any right-of-way or authorize trespassing upon or injury to public or private property. It may also be necessary for you to comply with other local, state or federal requirements.

Enclosed is an informational sheet that sets forth the procedure to obtain Certificates of Appropriation which will establish the extent of your perfected water rights. Additional information and applicable forms may be found on our website at [agriculture.ks.gov/divisions-programs/dwr](http://agriculture.ks.gov/divisions-programs/dwr). If you have any questions or need assistance with any of these requirements, please contact our office at 785-564-6640 or your local Stafford Field Office at 620-234-5311. If you call, please reference the file number so we can help you more efficiently.

Sincerely,

Kristen A. Baum  
New Applications and Changes Supervisor  
Division of Water Resources

KAB:dws  
Enclosure(s)

pc: Stafford Field Office

**RIGHT TO A HEARING AND TO ADMINISTRATIVE REVIEW**

If you are aggrieved by this Order, then pursuant to K.S.A. 82a-1901, you may:

- 1) request an evidentiary hearing before the Chief Engineer, or
- 2) request administrative review by the Secretary of Agriculture.

Failure to request an evidentiary hearing before the Chief Engineer does not preclude your right to administrative review by the Secretary.

To obtain an evidentiary hearing before the Chief Engineer, a written request for hearing must be filed within 15 days after service of this Order as provided in K.S.A. 77-531 (**i.e., within a total of 18 days after this Order was mailed to you**), with: Kansas Department of Agriculture, Attn: Legal Section, 1320 Research Park Drive, Manhattan, Kansas 66502, FAX (785) 564-6777.

If you do not file a request for an evidentiary hearing before the Chief Engineer, you may petition for administrative review of the Order by the Secretary of Agriculture. A petition for review shall be in writing and state the basis for requesting administrative review. The request for hearing may be denied if the request fails to clearly establish factual or legal issues for review. See K.S.A. 77-527. The petition must be filed within 30 days after service of this Order as provided in K.S.A. 77-531 (**i.e., within a total of 33 days after this Order was mailed to you**), and be filed with: Secretary of Agriculture, Attn: Legal Division, Kansas Department of Agriculture, 1320 Research Park Drive, Manhattan, Kansas 66502, FAX (785) 564-6777.

If neither a request for an evidentiary hearing nor a petition for administrative review is filed as set forth above, then this Order shall be effective and become a final agency action as defined in K.S.A. 77-607(b). Failure to timely request either an evidentiary hearing or administrative review may preclude further judicial review under the Kansas Judicial Review Act.

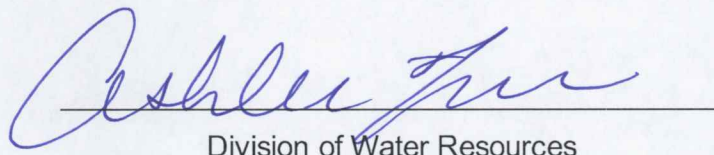
**CERTIFICATE OF SERVICE**

On this 13 day of April, 2021, I hereby certify that the foregoing Approval of Application and Permit to Proceed, File No. 50,376, dated 7 April, 2021, was mailed postage prepaid, first class, US mail to the following:

CITY OF ARKANSAS CITY  
Attn: ENVIRONMENTAL SERVICES SUPERINTENDENT  
2929 N 2<sup>ND</sup> STREET  
ARKANSAS CITY KS 67005

With photocopies to:

Stafford Field Office



Division of Water Resources