

Kansas Department of Agriculture
Division of Water Resources
PERMIT NEW APPLICATION WORKSHEET

| | | | |
|-------------------------------------|---|----------------------------------|-------------------------|
| 1. File Number: 51054 | 2. Status Change Date: 12/18/2023 | 3. Field Office: 4 | 4. GMD: 3 |
|-------------------------------------|---|----------------------------------|-------------------------|

5. Status: Approved Denied by DWR/GMD Dismiss by Request/Failure to Return

6. Enclosures: Check Valve N of C Form Water Tube Driller Copy Meter

| | |
|---|---|
| <p>7a. Applicant(s) New to system <input type="checkbox"/></p> <p style="text-align: right;">Person ID 69048 Add Seq# _____</p> <p>VAUGHN NASH 13546 18 RD CIMARRON, KS 67835</p> | <p>7c. Landowner(s) New to system <input type="checkbox"/></p> <p style="text-align: right;">Person ID _____ Add Seq# _____</p> |
| <p>7b. Landowner(s) New to system <input type="checkbox"/></p> <p style="text-align: right;">Person ID _____ Add Seq# _____</p> <p>7a</p> | <p>7d. Misc. New to system <input type="checkbox"/></p> <p style="text-align: right;">Person ID _____ Add Seq# _____</p> |

| | |
|---|--|
| <p>8. WUR Correspondent New to system <input type="checkbox"/></p> <p>Overlap File (s) WUC Agree <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>7a</p> <p style="text-align: right;">Person ID _____ Add Seq# _____ Notarized WUC Form <input type="checkbox"/></p> | <p>9. Use of Water: Changing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Groundwater <input type="checkbox"/> Surface Water</p> <p><input checked="" type="checkbox"/> IRR <input type="checkbox"/> REC <input type="checkbox"/> DEW <input type="checkbox"/> MUN</p> <p><input type="checkbox"/> STK <input type="checkbox"/> SED <input type="checkbox"/> DOM <input type="checkbox"/> CON</p> <p><input type="checkbox"/> HYD DRG <input type="checkbox"/> WTR PWR <input type="checkbox"/> ART RECHRG</p> <p><input type="checkbox"/> IND SIC: _____ <input type="checkbox"/> OTHER: _____</p> |
|---|--|

10. Completion Date: ~~12/31/2024~~ 11. Perfection Date: ~~12/31/2028~~ 12. Exp Date: _____

13. Conservation Plan Required? Yes No Date Required: _____ Date Approved: _____ Date to Comply: _____

14. Water Level Measuring Device? Yes No Date to Comply: _____ Date WLMD Installed: _____

Date Prepared: 9/27/2023 By: AM
Date Reviewed: 9/28/2023 By: KAK
Date Entered: **12/20/2023** By:
KAnderson

File No. **51054** 15. Formation Code: **340** Drainage Basin: **BUCKNER CREEK** County: **GY** Special Use: Stream:

| 16. Points of Diversion | | | | | | | | | | 17. Rate and Quantity | | | | | |
|-------------------------|--------------|-----------------|------|-----------|-----------|------------|------------|----------|-------------|-----------------------|------------|-------------|------------|-------------|------------------|
| MOD | DEL | ENT | PDIV | Qualifier | S | T | R | ID | 'N | 'W | Authorized | | Additional | | |
| | | | | | | | | | | | Rate gpm | Quantity af | Rate gpm | Quantity af | Overlap PD Files |
| CHK | 90402 | NW SE NW | | | 12 | 24S | 27W | 1 | 3947 | 3810 | 600 | 335 | 600 | 335 | NONE |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

18. Storage: Rate _____ NF Quantity _____ ac/ft Additional Rate _____ NF Additional Quantity _____ ac/ft

19. Limitation: _____ af/yr at _____ gpm (_____ cfs) when combined with file number(s) _____
 Limitation: _____ af/yr at _____ gpm (_____ cfs) when combined with file number(s) _____

20. Meter Required? Yes No To be installed by **12/31/2024** Date Acceptable Meter Installed _____

| 21. Place of Use | | | | | | | | | | NE¼ | | | | | | | | NW¼ | | | | SW¼ | | | | SE¼ | | | | Total | Owner | Chg? | Overlap Files |
|------------------|--------------|-----------|---------------|----------|---|---|----|------|-----------|-----------|------|-----------|-----------|-----------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------------|-----------|----------|-------------|------|---------------|
| MOD | DEL | ENT | PUSE | S | T | R | ID | NE ¼ | NW ¼ | SW ¼ | SE ¼ | NE ¼ | NW ¼ | SW ¼ | SE ¼ | NE ¼ | NW ¼ | SW ¼ | SE ¼ | NE ¼ | NW ¼ | SW ¼ | SE ¼ | NE ¼ | NW ¼ | SW ¼ | SE ¼ | | | | | | |
| CHK | 71433 | 12 | 24S27W | 1 | | | | | 31 | 31 | | 31 | 31 | 31 | 31 | | | | | | | | | | | | | 186 | 7a | N | NONE | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Comments: **CONFINED DAKOTA – MEETS SY**

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

TO: Files

DATE: September 27, 2023

FROM: Austin McColloch

RE: Application, File No. 51,054

Vaughn Nash has filed the above referenced application proposing to appropriate 335 acre-feet of groundwater per calendar year at a diversion rate not to exceed 600 gallons per minute for irrigation use from one well. The proposed point of diversion is located in the Northwest Quarter (NW¹/₄) of Section 12, Township 24 South, Range 27 West, in Gray County, Kansas. The proposed source of supply is the confined Dakota aquifer. The applicant has signed stating they have legal access to the point of diversion.

The applicant and division did not identify any wells of any kind within two miles of the proposed point of diversion that is sourcing the confined Dakota, and review of arials and the WWC5 database confirms that. There are no other wells within a half-mile of the proposed point of diversion. Therefore, no nearby letters are required and the minimum domestic well spacing of ½ miles for confined Dakota aquifer is met. Due to no non-domestic wells sourcing confined Dakota aquifer within 2 miles of the proposed point of diversion and greater than 5 miles from contact point, K.A.R. 5-4-4, minimum well spacing is met.

The proposed place of use will consist of 186 acres located in the North half of Section 12, in Township 24 South, Range 27 West, Gray County. The requested quantity of 335 acre-feet for a total of 1.80 AF/acre. There are no other water rights that cover the proposed place of use.

Further hydrologic testing may be required for certain Dakota applications moving forward. The below are calculations for future reference on processing confined Dakota:

Based on area well logs, and well log information provided by the applicant, the source of water appears to be the confined Dakota aquifer system per K.A.R. 5-1-1(r) "Confined Dakota aquifer system" means that portion of the Dakota aquifer system overlain by a confining layer resulting in the aquifer normally being under greater than atmospheric pressure. The test hole log provided by the applicant, shows a shale/clay unit extending from 110 feet to 270 feet ground surface, where the first sandstone aquifer is encountered. Static water level was not provided on the test hole log, however in most cases clearly above the top of the aquifer. Per K.A.R. 5-3-14. Availability of water for appropriation - safe yield; confined groundwater aquifers. (a) Each application to appropriate water from a confined aquifer shall be processed on a case by case basis so that the safe yield of the source of water supply is not exceeded. (b) Until a specific regulation is adopted by the chief engineer for the confined source of water supply, the analysis shall be made using the best information reasonably available to the chief engineer.

No specific safe yield regulation has been adopted by the chief engineer for the confined Dakota aquifer system, although it is likely that the confined Dakota aquifer system would receive significantly less recharge than a near-surface, unconfined aquifer. Therefore, in order to better represent the potential recharge to this confined aquifer, it was determined that the saturated thickness of the aquifer and the thickness of the confining unit are critical factors. Limited saturated thickness with a significant confining unit would get less recharge (0.3 times the "standard" K.A.R. 5-3-11 value), while significant saturated thickness with a limited confining unit would get more recharge (0.5 times the "standard" K.A.R. 5-3-11 value). The test hole log shows 328 feet of saturated thickness and 160 feet of confining unit (shale/clay). Dividing the saturated thickness by the confining unit thickness (328/160) results in a factor of 2.05. A factor greater than 2 gets 0.5 times the "normal" recharge. The K.A.R. 5-3-11 safe yield recharge value was determined to be 1.0 inches. Multiplying 1.0 inches x 0.5 results in a recharge of 0.5 inches. The area of consideration was determined to be 8,042 acres. Therefore, 8,042 acres x 0.5 inches x 100% recharge available / 12 provides a safe yield of 335.1 acre-feet. Existing appropriations total 0 acre-feet, leaving 335.1 acre-feet available, and the application requesting 335 acre-feet meets safe yield.

In addition, as noted there is limited development of water rights withdrawing water from the Dakota aquifer system in this immediate area (no other water right in the two-mile circle).

A condition will be placed on the permit that the applicant shall set surface casing through any shallow groundwater aquifers, and shall cause the wells under this appropriation to be constructed so that the source of supply will be restricted to withdrawal of water from the confined Dakota aquifer system below a depth of 270 feet below ground surface, thereby precluding withdrawal of water from any overlying water-bearing strata and ensure that an adequate seal is placed between the confined Dakota aquifer system, and all overlying water-bearing strata so as to prevent any movement of water between formations.

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 this permit, a check valve will also need to be installed.

Jason Norquest, Assistant Manager of Southwest Kansas Groundwater Management District No. 3, recommended approval of the application in a letter dated September 27, 2023.

IN an email dated ?, 2023, Mike Meyer, Water Commissioner, Garden City Field Office, gave a recommendation that the new application should be approved.

Based on the above discussion, the area is open to new appropriations for this source of supply, the application meets well spacing criteria, and the approval of the application will not impair senior water rights nor prejudicially or unreasonably affect the public interest. Therefore, it is recommended that the referenced application be approved.



Austin McColloch
Assistant Water Commissioner
Garden City Field Office

CONFINED DAKOTA AQUIFER SYSTEM SAFE YIELD EVALUATION

FILE NUMBER: **51,054**

| <u>Safe Yield Calculation</u> | | | |
|--|------------|---|------------|
| Thickness of Saturated Aquifer (in feet) | divided by | Thickness of Confining Unit (in feet) | = A Factor |
| 328 | | 160 | = 2.05 |
| If Factor < 1 | | Multiply Normal Recharge by 0.3 to get Confined Aquifer Recharge (in inches) | |
| If Factor is between 1 and 2 | | Multiply Normal Recharge by 0.4 to get Confined Aquifer Recharge (in inches) | |
| If Factor > 2 | | Multiply Normal Recharge by 0.5 to get Confined Aquifer Recharge (in inches) | |
| Normal Recharge (per 5-3-11) = 1 inches | | 1 inches x 0.5 = 0.5 inches of recharge | |
| Area of consideration = | 8042 acres | | |
| Annual Recharge = | 0.5 inches | | |
| Percent Recharge = | 1 100% | | |
| Confined Dakota Aquifer Safe Yield = | | 335.083 acre-feet | |

This would provide more recharge to a well that has a thinner confining unit and greater saturated thickness (i.e. a higher factor score).

Further review indicates that saturated thickness of the aquifer and thickness of confining unit are the 2 key variables that would most likely influence well production and recharge, respectively. Therefore, a weighted system was designed to account for this by dividing the saturated thickness by the thickness of the confining unit. The less confining unit you have the higher the recharge potential and the greater the saturated thickness the better production you will get from the well. This ratio provides a factor which can be used to evaluate the percentage of safe yield to consider as reasonable. Saturated thickness is pertinent to safe yield since per definition it is "long-term sustainable yield of the source".

From: Meyer, Mike [KDA]
Sent: Wed 9/27/2023 3:54 PM
To: McColloch, Austin [KDA]
Subject: RE: Recommendation New App File No. 50154

I recommend approval, double check your page 2, paragraph 2 of "400 feet" if that is correct or not.
Thanks!

mike

From: McColloch, Austin [KDA] <Austin.McColloch@ks.gov>
Sent: Wednesday, September 27, 2023 2:47 PM
To: Meyer, Mike [KDA] <Mike.Meyer@ks.gov>
Subject: Recommendation New App File No. 50154

Mike,

Attached is my draft memo along with the GMD recommendation. This is a confined Dakota well proposal – test hole log included. Let me know if you have any questions.

Thanks,

Austin McColloch
Garden City Field Office
Ph: (620) 276-2901

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. 51,054** of the applicant

**VAUGHN NASH
13546 18 RD
CIMARRON KS 67835**

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 **June 13, 2023**.
2. That the water sought to be appropriated shall be used for irrigation use on land described in the application, as follows:

| Sec. Twp. Range | NE¼ | | | | NW¼ | | | | SW¼ | | | | SE¼ | | | | TOTAL |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| | NE¼ | NW¼ | SW¼ | SE¼ | NE¼ | NW¼ | SW¼ | SE¼ | NE¼ | NW¼ | SW¼ | SE¼ | NE¼ | NW¼ | SW¼ | SE¼ | |
| 12 - 24S - 27W | | 31 | 31 | | 31 | 31 | 31 | 31 | | | | | | | | | 186 |

3. That the authorized source from which the appropriation shall be made is groundwater from the Confined Dakota Aquifer, to be withdrawn by means of one (1) well located in the Northwest Quarter of the Southeast Quarter of the Northwest Quarter (NW¼ SE¼ NW¼) of Section 12, more particularly described as being near a point 3,947 feet North and 3,810 feet West of the Southeast corner of said section, in Township 24 South, Range 27 East, Gray 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 **600 gallons per minute (1.33 c.f.s.)** and to a quantity not to exceed **335 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, 2025**, 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, 2029, 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 all wells with a diversion rate of 100 gallons per minute or more drilled under the authority of this permit shall have a tube or other device installed in a manner acceptable to, and in accordance with specifications adopted by, the Chief Engineer. This tube or device shall be suitable for making water level measurements and shall be maintained in a condition satisfactory to the Chief Engineer.

13. That an acceptable water flow meter shall be installed and maintained on the diversion works authorized by this permit in accordance with the 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).

14. 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.

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

16. 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.

