

5/9/2024
KJN

Needs stream name*
Will need applicant to sign MDS form*



THE STATE OF KANSAS

WATER RESOURCES RECEIVED
MAY 08 2024
15:07
KS Dept. of Agriculture
DIVISION OF WATER RESOURCES
Earl D. Lewis Jr., Chief Engineer

KANSAS DEPARTMENT OF AGRICULTURE
Mike Beam, Secretary of Agriculture

51237

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

APPLICATION FOR PERMIT TO
APPROPRIATE WATER FOR BENEFICIAL USE

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

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

1. Name of Applicant (Please Print): KKR Holdings Chetopa, LLC (Dan Smith) (email: dsmith@watco.com)
Address: 660 E Hwy 47
City: Franklin State KS Zip Code 66753
Telephone Number: (620) 687-1163 **(NEOSHO BASIN)**

2. The source of water is: surface water in overland flow runoff from contributing drainage area
(stream)
OR groundwater in _____
(drainage basin)

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

3. The maximum quantity of water desired is 43 acre-feet OR _____ gallons per calendar year,
to be diverted at a maximum rate of NF gallons per minute OR _____ cubic feet per second.

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

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

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

For Office Use Only:
F.O. 1 GMD - Meets K.A.R. 5-3-1 (YES/NO) Use REC Source G/S County CK By KJN Date 5/9/24
Code REG Fee \$ 200 TR # _____ Receipt Date 5-8-24 Check # 1015

MAY 08 2024

File No. _____

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

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

(A) One in the _____ quarter of the NE quarter of the SE quarter of Section 36, more particularly described as being near a point 2,360 feet North and 1,040 feet West of the Southeast corner of said section, in Township 36 South, Range 21 East, Cherokee County, Kansas.

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

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

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

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

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

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

(name, address and telephone number)

(name, address and telephone number)

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

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

Executed on MAY 2, 20 24


Applicant's Signature

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

7. The proposed project for diversion of water will consist of one (1) wetland cell with a water control structure and will be completed (by) following approval
(number of wells, pumps or dams, etc.)
(Month/Day/Year - each was or will be completed)

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

T36S DOES NOT
EXIST KJN 5/9/24

34

MAY 08 2024

File No. _____

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

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

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

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

- If yes, show the Water Structures permit number here Floodplain fill permit pending
- If no, explain here why a Water Structures permit is not required _____

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

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

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

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

MAY 08 2024

File No. _____

KS Dept. of Agriculture

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

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

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

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

15. The owner(s) of the property where the water is used, if other than the applicant, is (please print):

(name, address and telephone number)

(name, address and telephone number)

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

Dated at 9:00 A.M., Kansas, this 2nd day of MAY, 2024
(month) (year)



(Applicant Signature)

By _____
(Agent or Officer Signature)

(Agent or Officer - Please Print)

Assisted by Brian Severin, P.E. Eocene Environmental Group Date: 4/25/2024
(office/title)

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FEE SCHEDULE

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

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

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

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

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

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

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

MAKE CHECKS PAYABLE TO THE KANSAS DEPARTMENT OF AGRICULTURE

ATTENTION

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

CONVERSION FACTORS

1 acre-foot equals 325,851 gallons

1 million gallons equal 3.07 acre-feet

MAY 08 2024

**RECREATIONAL USE
SUPPLEMENTAL SHEET**

KS Dept. of Agriculture

File No. _____

Name of Applicant (Please Print): KKR Holdings Chetopa, LLC (Dan Smith)

1. Please indicate type of recreational use (boating, fishing, swimming, etc.): Constructed low level wetland dike to seasonally impound shallow water for wildlife use.

2. Please summarize how the water will be used and justify the quantity of water requested: Constructed wetland storage plus net evaporation at the auxiliary spillway elevation of Dike 1 = 43 acre-feet. The installed water control structure will release runoff and stored water back into the Neosho River floodplain.

3. Please complete the following table showing estimated future water requirements:

ESTIMATED FUTURE WATER DIVERTED/STORED	
NEXT 5 YEARS	WATER TO BE DIVERTED (ACRE-FEET OR GALLONS)
Year 1	43 acre-feet
Year 2	43 acre-feet
Year 3	43 acre-feet
Year 4	43 acre-feet
Year 5	43 acre-feet

Please attach any additional information, tables, or curves showing past, present and estimated future water requirements to substantiate the amount of water requested.

4. Please designate the legal description of the location where the water is to be used by providing the fractional part of the Section, Township and Range.

SE 1/4 Sec 36, T-34S; R-21E (see plan sheets)

You may attach any additional information you believe will assist in informing the Division of the need for your request.

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KKR Holdings Chetopa, LLC Boone Lake

Wetland Development (New Construction)

April 30, 2024

Prepared By:

Brian W. Severin, P.E.

Director of Technical Services

bseverin@eocene.com

785.207.0201



Design Report

Project Information

- Name: KKR Holdings Chetopa, LLC – Boone Lake
- Practice: Wetland Development
- Legal: SE ¼ Section 36, Township 34 South; Range 21 East
- Location: Cherokee County, Kansas

Project Description

The project is located along Short Creek and Neosho River. The wetland development includes one wetland cell with a water control structure. The dike structure is new construction. The low-level dike will provide additional water storage and create diverse topography within the degraded wetland area. The dike will increase water storage capacity and maintain hydrology at times throughout the year. The project will not hydraulically affect adjacent landowners, as the permanent pool will be confined to the landowner's property.

Design

The Dike 1 wetland cell has an approximate drainage area of 175 acres. The contributing hydrology into the wetland cell is direct rainfall, overland flow runoff, and seasonal flood events. The low-level dike is expected to overtop during flood events. The structure is designed with a minimum profile to reduce damage during these events. Average annual rainfall and seasonal flooding is expected to maintain wetland hydrology in the cell at most times throughout the year. The wetland cell will not be supplemented with pumped surface water.

Permitting and Permissions

The following permits will be required for construction and operation activities. Pertinent information for the permits has been supplied on the permit applications.

- Kansas Department of Agriculture, Division of Water Resources: DWR 1-100 Water Appropriation for Beneficial Use (Storage)
- Kansas Department of Agriculture, Division of Water Resources: DWR 2-200 Floodplain Fill

Construction Safety

Before any investigation or construction activity, the excavator is responsible for calling Kansas One-Call at 800-344-7233 (800-DIG-SAFE) or 811.

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Survey

The project survey was completed by Scott Williams, ModernAg, Inc. An OPUS corrected, permanent benchmark set by Sustainable Environmental Consultants on an neighboring property was used to set project benchmarks. All survey data was collected in latitude and longitude coordinates. All survey points were adjusted to the OPUS corrected benchmark to ensure an accurate elevation for permitting purposes. LiDAR topographic data was compared to the survey data and elevation corrected for planning and design use.

Appendix

The attached Appendix includes Plan Sheets, Construction Specifications, KDA-DAR Report, and Permit Documentation.



Project: KKR Holdings Chetopa, LLC – Boone Lake

Practice: Wetland Development

Location: SE 1/4 Sec 36, T-34S; R-21E

Cherokee County, Kansas

Index to Drawings

Sheet No.	Description
1	Cover Sheet
2	Location Map and Table of Quantities
3	Orthographic Plan Map
4	Topographic Plan View and Storage Table
5	Dike 1 Profile and Cross Sections
6	Base Flood Analysis
7	Base Flood Analysis

Brian W. Severin, P.E. April 2024
Designed by Date



Approved by Date

Before any investigation or construction activity, the excavator is responsible for calling Kansas One-Call at 800-344-7233 (800-DIG-SAFE) or 811

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The approximate project location is 1.5 miles east of Chetopa, Kansas.

Table of Quantities			
Item	Unit	Design Quantity	As-Built Quantity
Dike 1 (New Construction)			
Earthfill	cu yd	100	
Water Control Structure			
Inline Water Control Structure, 3' tall	each	1	
Pipe, 12-inch dia. SDR 35	lin ft	70	
Bar Guard, 12-inch dia.	each	1	
Rat Guard, 12-inch dia.	each	1	
Pipe Anchor (Assembly)	each	1	

Project Location & Adjacent Landowners

- 1) KKR Holdings Chetopa, LLC
660 E Highway 47
Franklin, Kansas 66735
- 2) Chubb, Kristy Lynn
Attn: Scott Burcham
305 Rhododendron Dr
Chapel Hill, North Carolina 27517
- 3) Odom, Billye Lynne
1350 Glennview
El Dorado, Kansas 67042
- 4) Jackson, Jerry W & Linda L
1431 Rex Ave, Apt 81
Joplin, Missouri 64801
- 5) Graybill Fam LTD Partnership
1487 Childress Ferry Rd
Blountville, Tennessee 37617
- 6) Moden, Gary W Moden, Nita J Trust
9258 Cottonwood Canyon Dr
Lenexa, Kansas 66219
- 7) Polly's Family Farm LLC
23059 Golden Rd
Linwood, Kansas 66052
- 8) Aaron Ray Conard & Alicia Nichole Conard
Rev Trust DTD 11/2/22
8042 SW 122nd Ter
Chetopa, Kansas 67336
- 9) Arrowhead Acres, LLC
PO Box 638
Euless, Texas 76039

Points of Diversion

- A) Water Control Structure - Storage

Date 04/24
Designed: B. Severin
Drawn: B. Severin
Checked: M. Miller
Approved: B. Severin

KKR Holdings Chetopa, LLC - Boone Lake
Wetland Development
SE 1/4 Sec 36, T-34S; R-21E
Cherokee County, Kansas





Benchmark Table				
Benchmark	Northing	Easting	Survey Elevation	Description
BM1	0.00	0.00	788.90	Top of rebar, south side of pipeline marker Latitude 37:02:27.60 N; Longitude 95:03:15.14 W
BM2	-448.42	0.16	788.52	Top of rebar, between signs on east side of road

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Orthographic Plan Map

Sheet 3 of 7

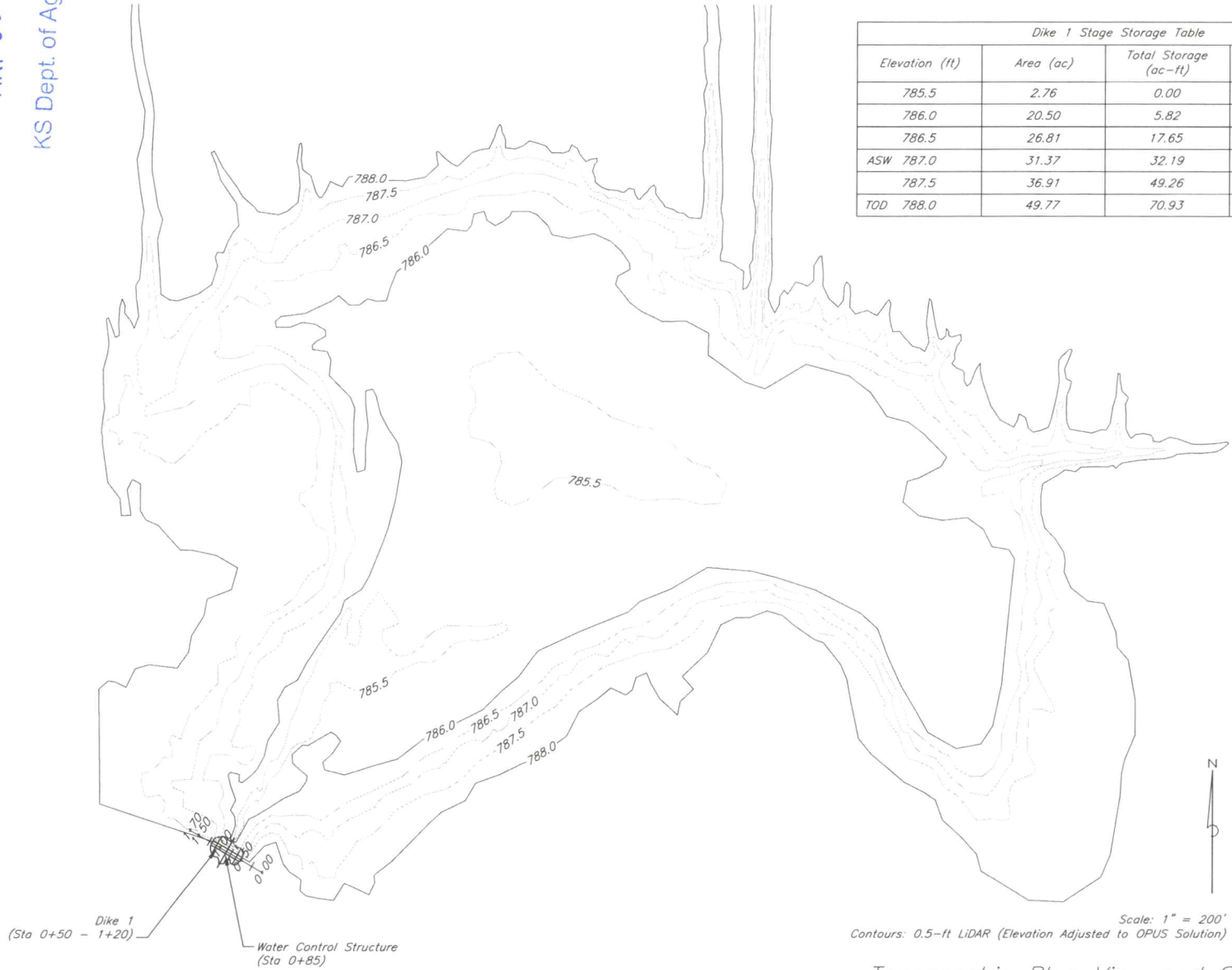


KKR Holdings Chetopa, LLC – Boone Lake
Wetland Development
SE 1/4 Sec 36, T-34S; R-21E
Cherokee County, Kansas

Designed	<u>B Severin</u>	Date	<u>04/24</u>
Drawn	<u>B Severin</u>		<u>04/24</u>
Checked	<u>M Miller</u>		<u>04/24</u>
Approved	<u>B Severin</u>		<u>04/24</u>

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Dike 1 Stage Storage Table

Elevation (ft)	Area (ac)	Total Storage (ac-ft)	Total Storage + Net Evaporation (ac-ft)
785.5	2.76	0.00	0.00
786.0	20.50	5.82	12.65
786.5	26.81	17.65	26.58
ASW 787.0	31.37	32.19	42.65
787.5	36.91	49.26	61.56
TOD 788.0	49.77	70.93	87.52

Scale: 1" = 200'
Contours: 0.5-ft LiDAR (Elevation Adjusted to OPUS Solution)

Topographic Plan View and Storage Table

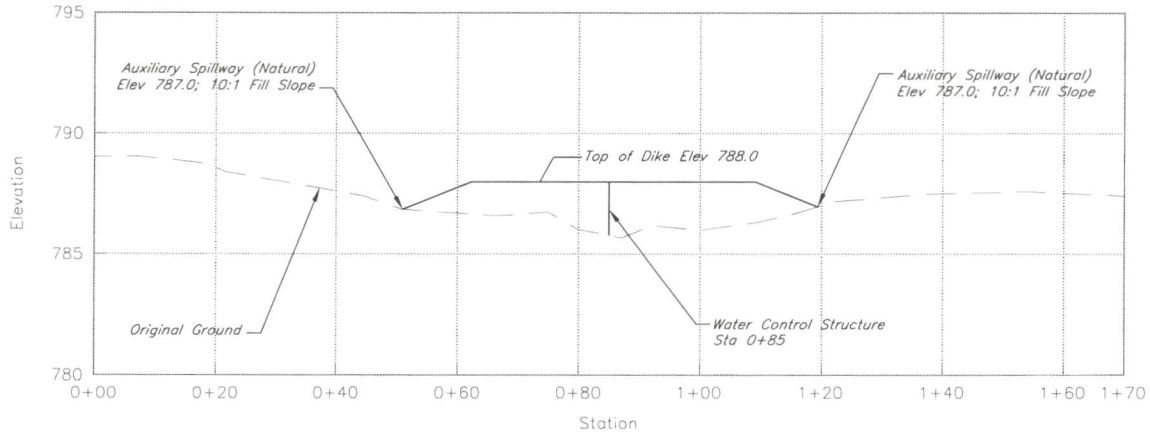
Date	04/24
Designed	B. Severin
Drawn	B. Severin
Checked	M. Miller
Approved	B. Severin

KKR Holdings Chetopa, LLC - Boone Lake
Wetland Development
SE 1/4 Sec 36, T-34S; R-21E
Cherokee County, Kansas

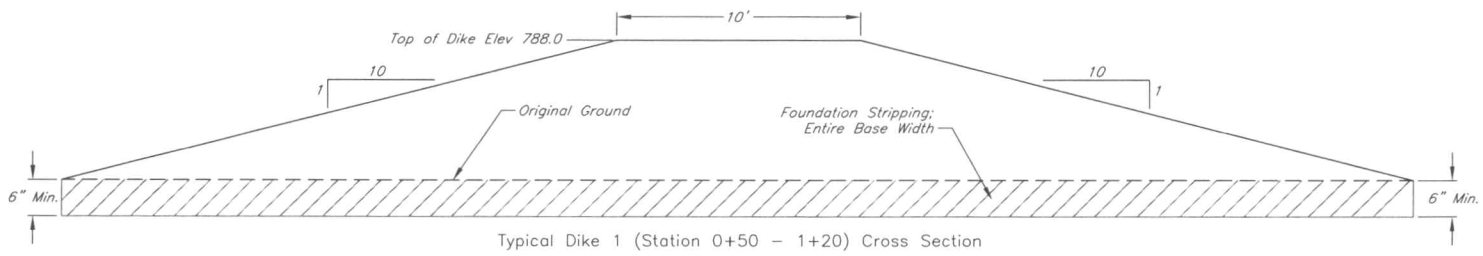


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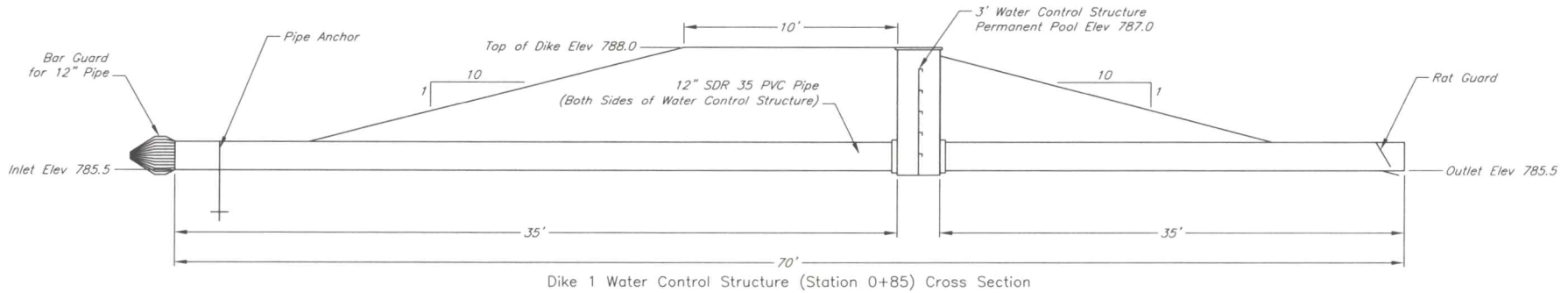
KS Dept. of Agriculture



Profile View of Dike 1



Typical Dike 1 (Station 0+50 - 1+20) Cross Section



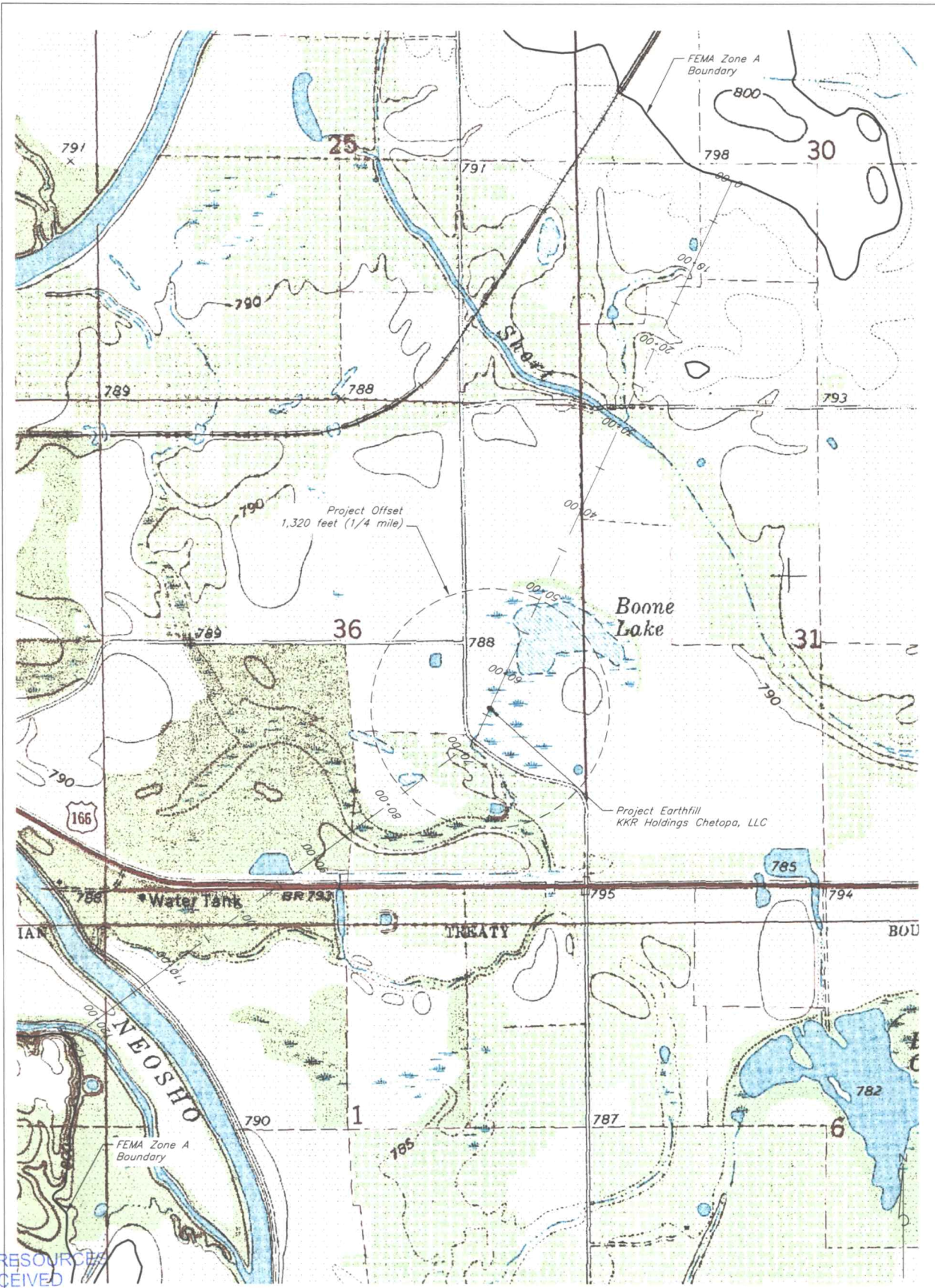
Dike 1 Water Control Structure (Station 0+85) Cross Section

Dike 1 Profile and Cross Sections

Designed	B. Severin	Date	04/24
Drawn	B. Severin		04/24
Checked	M. Miller		04/24
Approved	B. Severin		04/24

KKR Holdings, Chetopa, LLC - Boone Lake
Wetland Development
SE 1/4 Sec 36, T-34S; R-21E
Cherokee County, Kansas





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Wetland Development
SE 1/4 Sec 36, T-34S; R-21E
Cherokee County, Kansas



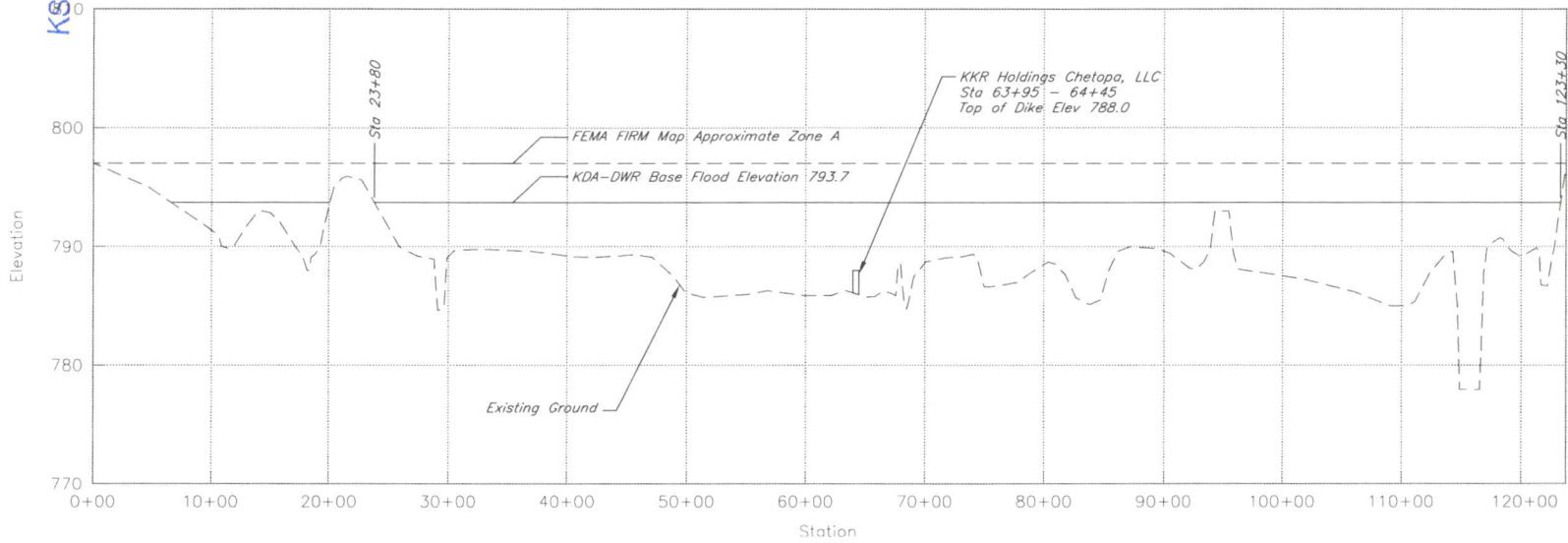
Orthographic Plan Map

	Designed	Date
	B Severin	04/24
	B Severin	04/24
	M Miller	04/24
	B Severin	04/24

Sheet 6 of 7

MAY 08 2024

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Profile View of FEMA Zone A

References:

Existing ground and channels: LiDAR Topographic Data and the U.S. Geological Survey (USGS) 7.5 minute quadrangle map

Base Flood Elevation Determination: William Pace, KDA – Division of Water Resources

FEMA Zone A Floodplain: National Flood Insurance Program, Flood Insurance Rate Map (FIRM) Map Number FM20021C0275, Unincorporated areas of Cherokee County, KS (11/19/2008)

No DWR permitted floodplain fills are located within 1/4 mile of the dike location. Therefore, a geometric base flood analysis was completed.

KDA-DWR base flood elevation = 793.7
 Base flood section area = 58,900 sq. ft.
 Top width of base flood section = 9,950 ft
 Maximum earthfill area below base flood elevation = 100 sq. ft.

Earthfill will increase base flood area by 0%
 Earthfill will increase base flood elevation by 0.01 ft.

Base Flood Analysis Completed By: Brian W Severin Date: 4/29/24

Date	04/24
Designed	B Severin
Drawn	B Severin
Checked	M Miller
Approved	B Severin

KKR Holdings Chetopa, LLC – Boone Lake
 Wetland Development
 SE 1/4 Sec 36, T-34S; R-21E
 Cherokee County, Kansas



Construction Specifications

1. Scope

The work shall consist of all construction operations and furnishing all materials as required by the drawings and specifications for the complete installation of the works. All work shall be conducted in a skillful and workmanlike manner. The completed job shall present a workmanlike appearance.

2. Location

The location of each component of the wetland development shall be as specified on the drawings, described in the construction specifications, or as staked in the field.

3. Site Preparation

Construction Area – The construction area shall be cleared of all trees, logs, roots, brush, boulders, sod, and rubbish. Cleared soil material with minimal amounts of vegetation may be stockpiled and used to topsoil the dikes. Material with excessive amounts of vegetation shall be spoiled.

4. Excavation

To the extent it is suitable, excavated material shall be used as earthfill material.

Foundation Stripping – A minimum stripping of six inches of topsoil shall be excavated over the entire base width of the earthfill.

Borrow – The location and extent of the borrow shall be within the wetland cell storage area. The borrow area shall be stripped of any objectionable material before placing in the earthfill.

5. Earthfill

All earthfill materials shall be obtained from the required excavations and designated borrow areas. Earthfill materials shall be free of sod, roots, frozen soil, large stones, and other objectionable material. Earthfill material shall not be placed until required foundation preparation has been completed.

Dike earthfill shall be clay material with minimal silt. The placement shall be started at the lowest point in the foundation and brought up in horizontal layers. The depth of each lift of earthfill before compaction shall not exceed 9 inches. The dike fill shall be machine compacted by the controlled movement of hauling and spreading equipment. Every point of each lift surface shall be traversed by not less than one tread track of the equipment. Stockpiled topsoil shall be placed on the outer portions of the structure. Topsoil shall not be less than 6 inches or more than 2 feet thick.

The completed work shall conform to the lines, grades, and elevations shown on the drawings. Finished slopes shall be as specified or flatter.

MAY 08 2024

KS Dept. of Agriculture

6. Water Control Structure

A pre-manufactured, Agri-Drain inline water control structure shall be installed to control the water level of the wetland cells. Reference the plan sheets for water control structure size.

Smooth plastic pipe and fittings shall be extruded from polyvinyl chloride (PVC) compounds and shall conform to ASTM D-2241 or ASTM D-3034. The standard dimension ratio (SDR) of the pipe shall be less than or equal to that shown in the plans. Plastic (PVC) pipe manufactured under other ASTM or AWWA specifications may be accepted if: 1) PVC materials conform to ASTM D-1784, Class 12454-B or 12454-C; 2) joints at fittings and pipe sections are gasketed and watertight; and 3) the pipe material is approved by the inspector prior to installation.

The pipe and water control structure shall be installed coinciding with the dike fill lifts. Backfill material shall be a loose, friable, cohesive soil, free from clods, grass, weeds, straw, or other organic matter.

7. Vegetation

The dike and denuded construction areas shall be seeded to permanent grass vegetation immediately following construction. Seeding specifications shall be provided prior to construction.

8. Measurement

Unless otherwise specified, measurement shall be to the units shown in the table of quantities and/or drawings.

KDA – Division of Water Resources (DWR) Report

Direct Diversion

A direct diversion or pumping site is not planned for this wetland development. Therefore, a DWR Water Appropriation for Beneficial Use (Direct Diversion) permit is not required.

Surface Water Storage

The Potential Net Evaporation (Annual Average Evaporation minus Annual Normal Precipitation) for the project location is 4 inches. The net storage for Dike 1 was analyzed from the auxiliary spillway. A water control structure will be used in the dike to maintain freeboard and manage the water level within the wetland cell. The Total Storage + Net Evaporation for the wetland cell is greater than 15 ac-ft. Therefore, a DWR Water Appropriation for Beneficial Use (Storage) permit will be required.

Dike 1 Stage Storage Table

Elevation (ft)	Area (ac)	Total Storage (ac-ft)	Total Storage + Net Evaporation (ac-ft)
785.5	2.76	0.00	0.00
786.0	20.50	5.82	12.65
786.5	26.81	17.65	26.58
787.0 (Auxiliary Spillway)	31.37	32.19	42.65
787.5	36.91	49.26	61.56
788.0 (Top of Dike)	49.77	70.93	87.52

Base Flood Analysis

The project is located within the FEMA Zone A flood boundary of the Neosho River. Therefore, a floodplain fill permit will be required. DWR confirmed there are no permitted projects within ¼ mile from the proposed dike. Therefore, a geometric base flood analysis was completed to determine the increase in base flood area and flood elevation. The elevation of the existing ground and channels was approximated from LiDAR topographic data and the U.S. Geological Survey (USGS) 7.5-minute quadrangle map. The Base Flood Elevation (BFE) for the project location was determined by William Pace, KDA-DWR. The base flood (FEMA Zone A, 100-yr floodplain) was approximated from the FEMA FIRM data (Map Number FM20021C0275, Unincorporated areas of Cherokee County, KS) The proposed dike will increase the base flood area by 0% and the base flood elevation by 0.01 feet. See Base Flood Analysis plan sheets for further detail.