Conversion of Irrigation Canal to Pipe on the South Side Ditch

Prepared for: US Bureau of Reclamation
WaterSMART – Water and Energy Efficiency Grants for FY 2024

Applicant: Southwest Kansas Groundwater Management District No. 3

Contact: Mr. Trevor Ahring, Civil Engineer
Southwest Kansas Groundwater Management District No. 3
2009 E Spruce St.
Garden City, KS 67846

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Executive Summary

Application Date: February 22, 2024

Applicant Name: Southwest Kansas Groundwater Management District No. 3

Nearest City: Lakin

County: Kearny

State: Kansas

Southwest Kansas Groundwater Management District No. 3 (GMD3) is applying for a Bureau of Reclamation (Reclamation) WaterSMART Water and Energy Efficiency grant to replace 59,100 ft of open canal laterals with more direct piping. GMD3 is a Category A applicant. GMD3 is a water-related district, located in all or parts of Hamilton, Kearny, Finney, Gray, Ford, Stanton, Grant, Haskell, Morton, Stevens, Seward, and Meade Counties, Kansas, that conducts local activities in water planning, policy development, and use and supply evaluation. The irrigation ditch system in southwest Kansas addressed by this project is perpetually water-short, leaving association dues-paying water right holders without access to a reliable surface water supply. This project will improve the efficiency of the South Side Ditch system by converting open canal to closed pipe. This will eliminate infiltration and evaporation losses and reduce the spread of uranium contamination into the underlying High Plains/Ogallala Aquifer. GMD3 is seeking $500,000 from Reclamation for this project. The total project cost is $1 million.

This project will take 18 months to complete. The estimated completion date is May 2026. This project is not located on a Federal facility.

Project Location

The project is located in Kearny County, Kansas, just to the south of the City of Lakin. See Figure 1 for a map of the project area, including laterals to be replaced and proposed piping locations The center of the project area is latitude 37°54’N and longitude 101°14’W. Figure 2 is a photograph of the diversion works at Lateral C.

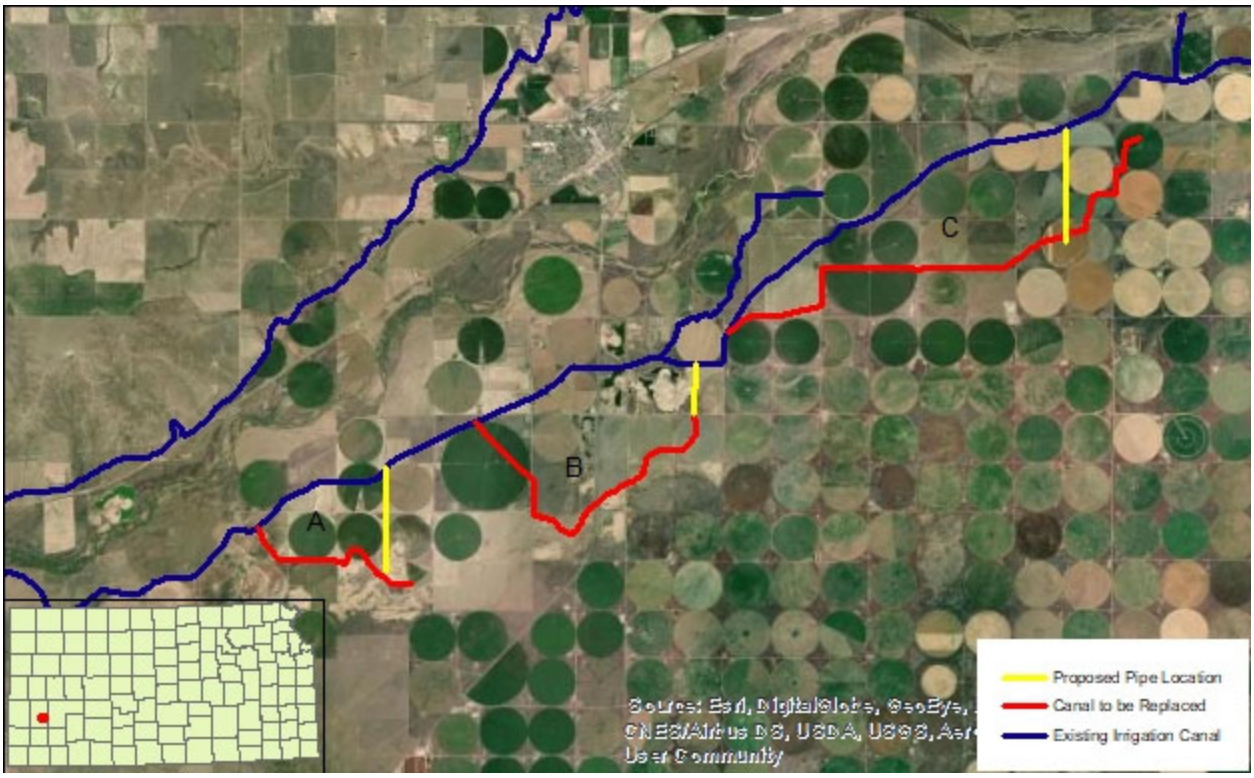

Figure 1. Project map. Irrigation laterals to be replaced are red. Proposed pipe locations are yellow.

Figure 2. Current diversion works at Lateral C.

Project Description

GMD3 was formed in 1976 under the State of Kansas's GMD Act (K.S.A. 82a-1020), which grants the right of a locally formed district, acting through their governing body politic and corporate, to determine their destiny regarding water use and conduct the affairs of groundwater management as a public agency for that purpose using an adopted management program to advise other public jurisdictions in matters of water supply and use. GMD3 has an interest in this project because it will reduce withdrawal from the Ogallala Aquifer and will also reduce infiltration of poor-quality water from the Arkansas River, improving the local water quality.

The South Side Ditch diverts water from the Arkansas River near Lakin. It is owned and operated by the South Side Ditch Association. The canal is 16.8 miles long and includes 15.8 miles of laterals. It has surface water rights to deliver 20,000 acre-feet (AF) of water to its membership. All current water uses under these water rights are for agricultural irrigation. Major crops include corn, wheat, alfalfa, and sorghum. Flows in the river are rarely sufficient to meet water use demand, since the Arkansas River flows intermittently at the point of diversion. Over the past 10 years, the South Side Ditch has diverted, on average, 5,157 AF of irrigation water. Due to the inability to consistently meet irrigation demand with surface water flow, members of the South Side Ditch Association supplement unused surface water rights with pumping from the underlying Ogallala Aquifer. Therefore, any water reaching irrigated fields through the surface water canal can be considered water that does not need to be pumped out of the Ogallala Aquifer, a critical and diminishing water resource for most of western Kansas.

Table 1 lists average losses recorded from United States Geological Survey (USGS) data in the Arkansas River flow between the Kendall and Deerfield gages. This data was calculated by Spronk Water Engineers as part of a Reclamation-funded System Optimization Review completed in 2014. The portion of the ditch to be lined is over the Arkansas alluvium between Kendall and Deerfield, so losses in cfs/mile should be similar. Note that the system historically shows gains in water for the 0-5 cfs range. This is due to the low flow rate and rain events adding water to the system. A loss estimate of 0.2 cfs/mile was used for this project. It should also be noted that this table is intended to represent a wet system. Based on observations in the field, it is estimated that it takes about 1 day per lateral mile to wet the system and deliver water to the field. 100% of flow is infiltrated into the ground during this period.

The proposed project will replace three irrigation laterals with closed pipe. The laterals are labeled A, B, and C on Figure 1 on page 4. These laterals deliver water to 850 acres of irrigated ground. Over the past 10 years, the average amount of water diverted at the headgate was about 40 cfs. Of the years where diversions occurred, there was an average of 94 days with flow greater than 3 cfs. The ditch laterals are operated to provide 4.5 cfs to the end of lateral A, 4.7 cfs to the end of lateral B, and 5.0 cfs to the end of lateral C. Accounting for channel losses, the diversion at lateral A must be 4.9 cfs, the diversion at lateral B must be 5.4 cfs, and the diversion at lateral C must be 6.1 cfs to deliver the desired flow rates to the fields.

Table 1. Summertime flow losses in the Arkansas River between Kendall and Deerfield

Flow Range, cfs	Avg Flow at Kendall, cfs	Avg Flow at Deerfield, cfs	Stream Loss, cfs/mile
0-5	2.2	3.4	0.0
5-10	7.7	3.6	0.2
10-20	15.0	10.7	0.2
20-30	25.3	5.3	0.7
30-40	35.4	4.7	1.1
40-50	45.3	6.7	1.4
50-60	55.8	12.0	1.6
60-70	65.4	25.3	1.5
70-80	75.2	24.5	1.9
80-90	85.7	37.3	1.8
90-100	95.3	44.6	1.9
100-150	122.5	62.9	2.2
150-200	174.7	96.5	2.9
200-250	223.6	125.5	3.6
250-300	273.0	156.8	4.3
300-350	322.6	205.9	4.3

The water in the Arkansas River is of poor quality due to diminished stream flows, underlying geology, and irrigation return flows. The Colorado Department of Health and Environment Water Quality Control Commission has identified John Martin Reservoir and the Arkansas River on their list of impaired waters due to selenium and uranium contamination. The Kansas Department of Health and Environment has identified the Arkansas River within the project area as impaired waters due to gross alpha (bundled with uranium), fluoride, total suspended solids, boron, selenium, and sulfate. Infiltration of this water into the Ogallala Aquifer has degraded the quality of readily available drinking water for the cities of Lakin, Deerfield, Holcomb, and Garden City, KS. Lakin has recently been required to install a nano-filtration facility and deep wastewater disposal well to provide a safe drinking water supply, at a cost of roughly $6 million. By converting inefficient laterals on the South Side Ditch to pipe, this project will both reduce the amount of poor-quality water infiltrating into the Ogallala Aquifer and reduce the amount of water being pumped out of it. This will improve the quality of drinking water for the people living in the vicinity of the project.

GMD3 will work with the South Side Ditch Association to accept bids from contractors to perform the work. Cost estimates for piping and installation used in this proposal are based on estimates provided by EBH Engineering.

Evaluation Criteria

Evaluation Criteria A – Quantifiable Water Savings

1) Describe the amount of estimated water savings.

This project will save an estimated 543.4 AF of water per year by eliminating infiltration losses in three irrigation ditch laterals.

2) Describe current losses.

Irrigation laterals are labeled A, B, and C on Figure 1 on page 4, with lateral A being the westernmost lateral and lateral C being the easternmost lateral. Losses were estimated based on a loss of 0.2 cfs/mile, determined from losses in the nearby river channel at similar flow rates described in Table 1 on page 6. Additional losses were calculated based on observed times required to wet the system, where no flows reach targeted fields and 100% of flow is lost to infiltration. An estimate of 1 day/mi to wet the system was used. Losses for each lateral were calculated as follows:

Lateral A

$Diversion = 4.9\ cfs = 423{,}360\ cfd$
$Flow\ Loss = 0.2\ cfs/mi = 17{,}280\ cfd/mi$
$Length = 2.0\ miles$
$Time\ to\ wet\ system = 1\frac{day}{mi}\ x\ 2.0\ mi = 2.0\ days$
$Infiltration\ Loss = 423{,}360\ cfd\ x\ 2.0\ days + 17{,}280\ \frac{\text{cfd}}{mi} x 2.0\ mi\ x\ 94\ days =$
$4{,}095{,}360\ ft^3 = \mathbf{94.0\ AF}$

Lateral B

$Diversion = 5.4\ cfs = 466{,}560\ cfd$
$Flow\ Loss = 0.2\ cfs/mi = 17{,}280\ cfd/mi$
$Length = 3.6\ miles$
$Time\ to\ wet\ system = 1\frac{day}{mi}\ x\ 3.6\ mi = 3.6\ days$
$Infiltration\ Loss = 466{,}560\ cfd\ x\ 3.6\ days + 17{,}280\ \frac{cfd}{mi}\ x\ 3.6\ mi\ x\ 94\ days =$
$7{,}527{,}168\ ft^3 = \mathbf{172.8\ AF}$

Lateral C

$Diversion = 6.1\ cfs = 527{,}040\ cfd$
$Flow\ Loss = 0.2\ cfs/mi = 17{,}280\ cfd/mi$
$Length = 5.6\ mi$

$$Time\ to\ wet\ system\ =\ 1\frac{day}{mi}\ x\ 5.6\ mi = 5.6\ days$$

$$Infiltration\ Loss\ =\ 527{,}040\ cfd\ x\ 5.6\ days + 17{,}280\ \frac{cfd}{mi}\ x\ 5.6\ mi\ x\ 94\ days = 12{,}047{,}616\ ft^3 = \mathbf{276.6\ AF}$$

$$\boldsymbol{Average\ Annual\ Water\ Loss} = 94.0\ AF + 172.8\ AF + 276.6\ AF = \mathbf{543.4\ AF}$$

3) Describe the support/documentation of estimated water savings.

This project will eliminate the calculated water losses by delivering water through closed PVC pipe. All water delivered will be immediately applied to the field for irrigation use. The time to wet the system estimate of 1 day/mi was determined from interviews with end users who divert water through irrigation laterals A, B, and C. The flow loss estimate of 0.2 cfs/mi was based on data in the flow range of 5-10 cfs in Table 1. The values in Table 1 were calculated by Spronk Water Engineers as part of a System Optimization Review funded by a grant from Reclamation in 2014. The full System Optimization Review can be found at https://www.gmd3.org/wp-content/uploads/2017/07/SOR_Report_September_Final.pdf. Information on Table 1 is located on page C-1 of the review. Note that on this table, flows increased in the 0-5 cfs range. This is due to the occasional rainfall creating measurable flow during periods of no flow.

4) a. How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

Estimated water savings are based on PVC pipe eliminating infiltration and the assumption that existing ditch laterals have similar infiltration rates to the nearby Arkansas River channel at similar flow rates. See above for relevant calculations and supporting data.

b. How have average annual canal seepage losses been determined? Have ponding and/or inflow/outflow tests been conducted to determine seepage rates under varying conditions? If so, please provide an explanation of the methods used to calculate seepage losses. All estimates should be supported with multiple sets of data/measurements from representative sections of canals.

Annual canal seepage losses were determined based on an analysis of decades of observed streamflow data in the nearby Arkansas River and record of flow losses between gages at varying flow rates. It is assumed that the South Side Ditch will have similar infiltration rates as the river channel at similar flow rates.

c. What are the expected post-project seepage/leakage losses and how were these estimates determined?

This project will utilize PVC pipe to deliver water to the field. This method will have no transit loss. Less water will need to be diverted from the main canal and water users will receive their water in a more timely fashion.

d. What are the anticipated annual transit loss reductions in terms of acre-feet per mile for the overall project and for each section of canal included in the project?

The overall project will save 543.4 AF of water. This amounts to 48.5 AF per mile for the overall project. Lateral A will save 47.0 AF per mile. Lateral B will save 48.0 AF per mile. Lateral C will save 49.4 AF per mile.

e. How will actual canal loss seepage reductions be verified?

This project will not have canal seepage losses because PVC pipe does not allow for seepage loss. There is some small potential for losses at the distribution pit. These losses will be quantified by metering the water piped out of the main stem of the South Side Ditch and metering the water that is pumped out of the distribution pit. It is estimated that losses will be very small.

f. Include a detailed description of the materials being used.

This project will utilize 13,320 linear feet of 12" PVC pipe. There will be 6 waterline connections and 3 lined distribution pits constructed to quickly move water from the main canal of the South Side Ditch to fields that currently have water delivered through much longer irrigation laterals. Water delivered to distribution pits will immediately be pumped to neighboring fields to eliminate potential evaporation loss.

Evaluation Criteria B – Renewable Energy

Subcriterion B.2 – Increasing Energy Efficiency in Water Management

Describe any energy efficiencies that are expected to result from implementation of the water conservation or water efficiency project.

A surface water pit supplies approximately four times the pumping rate as a groundwater well near the project area. Water can be pumped at about 1,900 gpm (114,000 gal/hr) from a surface water pit, while consuming about 400 ft^3 of natural gas per hour. This amounts to 400 ft^3 of natural gas being consumed to produce 114,000 gallons of surface water, or about 1,140 ft^3 of natural gas being consumed to produce 1 acre-foot of water.

Pumping groundwater consumes about 850 ft^3 of natural gas per hour, and produces about 475 gallons of water per minute (28,500 gal/hr). This amounts to 850 ft^3 of natural gas being consumed to produce 28,500 gallons of groundwater, or about 9,170 ft^3 of natural gas consumed to produce 1 acre-foot of water.

It is estimated that this project will increase the amount of surface water available to the field by 543.4 AF per year through reduced seepage losses. By replacing current groundwater pumping with surface water pumping, annual energy savings will be as follows:

$$(9{,}710 - 1{,}140)\frac{ft^3\ Natural\ Gas}{AF\ Water} x543.4\ AF\ Water = 4{,}656{,}938\ ft^3\ Natural\ Gas$$

This amounts to 1,364,949 kWh per year.

This energy savings will reduce greenhouse gas emissions by approximately **954 metric tons** of CO_2 per year, based on the following EPA emission factor found at: https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references.

$$6.99\ x\ 10^{-4}\ metric\ tons\ CO2/kWh$$

This energy savings estimate is based on groundwater pumping supplementing infiltration losses originating from the point of diversion.

Evaluation Criteria C – Other Project Benefits

Resilience and Sustainability Benefits. Will the project address a specific water and/or energy sustainability concern?

This project is in an area that frequently experiences severe drought and water scarcity. The Arkansas River flows intermittently near the headgate of the South Side Ditch. Kansas has water stored upstream in John Martin Reservoir and typically calls for water during the summer months when it is available. There are six irrigation ditches in Kansas that share the called water on rotation, so in dry years, it is possible for some ditches to receive no water. This project will improve resilience and sustainability by reducing the amount of water that needs to be diverted from the main stem of the South Side Ditch to meet flow demands at the fields. This increases the amount of water available to other users in the ditch service area and increases the likelihood and amount of water returned from the end of the ditch to the Arkansas River.

This area experienced D4 exceptional drought as recently as April 2023. See Figure 3 for the drought monitor on April 25, 2023. The area received little rainfall throughout 2022 and the drought was eventually broken by timely rains through the summer of 2023. The area receives low rainfall in normal years, and in severe drought can receive less than 10 inches of precipitation. Local water users need a reliable water supply to mitigate the effects of these droughts.

This project will improve the efficiency of the South Side Ditch, increasing the amount of water available for diversion for other surface water users in southwest Kansas. It will help to mitigate the effects of drought and improve water reliability. The opportunity to make more water available to users in the South Side Ditch service area and along other ditches will help to provide some flexibility to local decision makers who determine when the ditches must resort to strict rotation of water use and when the water supply is sufficient for all ditches to share it.

Conserved water will offset groundwater pumping and may increase return flows to the Arkansas River, allowing downstream water users to have more water to divert at their headgate. Return

flows to the river will improve ecological health of the river system and help to address frequent water shortages among surface water users in the area.

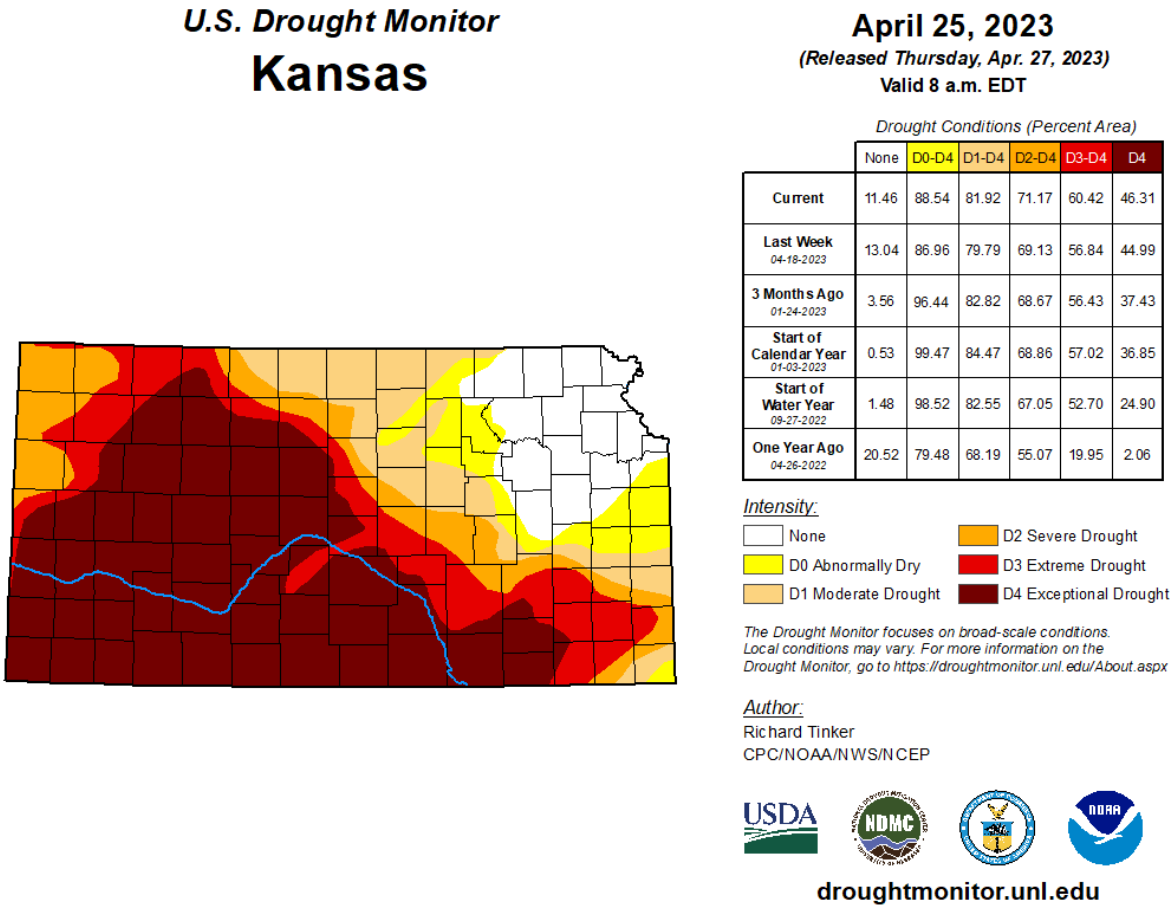

Figure 3. Drought Monitor, April 25, 2023.

Ecological Benefits

This project will benefit riparian species during years when there is sufficient water to return flow to the Arkansas River. This project will allow 543.4 AF of water that is currently being diverted to remain in the main stem of the South Side Ditch. This will increase the frequency of return flows to the river and increase the quantity of water returned. The Kansas Department of Wildlife and Parks lists the following threatened and endangered riparian species within or immediately downstream of the project area: flathead chub, least tern, piping plover, snowing plover, black-footed ferret, and plains minnow.

Climate Change

This project will help local water users improve drought resiliency by increasing the efficiency of their water delivery systems. It reduces the amount of water that needs to be diverted to meet

irrigation demands of end users and reduces groundwater use in an area with large annual groundwater declines.

The project will reduce CO_2 emissions by 954 metric tons per year by replacing groundwater withdrawals from hundreds of feet below ground with efficient pumping out of lined pits at the surface.

Evaluation Criterion D – Disadvantaged Communities, Insular Areas, and Tribal Benefits

All of Kearny County, Kansas is listed as a disadvantaged community on the White House Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool. The water quality within the upper portion of the Arkansas River in Kansas is very poor due largely to diminished stream flows, underlying geology of irrigated fields upstream, and other uses. The Kansas Department of Health and Environment (KDHE) has identified this stretch of river as impaired due to gross alpha (bundled with uranium), fluoride, total suspended solids, boron, selenium, and sulfate.

The contamination of the Arkansas River basin, especially the high levels of salinity and uranium, is diminishing the usefulness of the water, and in some instances, is creating problems that must be addressed at great cost to local stakeholders.

This project will reduce infiltration of water diverted from the Arkansas River. This benefits water users near the project area by improving water quality. Research has shown that irrigated crops absorb uranium in their root systems, so delivering water to the field in a more efficient manner will reduce the overall quantity of uranium entering the underlying aquifer (Whittemore 2016).

Evaluation Criterion E – Complementing On-Farm Irrigation Improvements

GMD3 is currently in the process of putting together a contract agreement with the Natural Resources Conservation Service (NRCS) to develop a watershed-based plan (WBP) under the National Water Quality Initiative (NWQI) program. The focus of the plan will be improving water quality in the region through improved soil health practices and infrastructure improvements like this proposed project. Upon development of the WBP, an NWQI implementation grant will be sought to provide additional funding to local water users to improve farm practices and mitigate poor water quality.

The state of Kansas has recently been awarded a Regional Conservation Partnership Program (RCPP) grant from NRCS to implement efficient irrigation technology and provide technical assistance to water users. This $25 million grant will greatly expand the funding capacity of the Environmental Quality Incentives Program (EQIP) and other NRCS programs to provide irrigators cost share for technologies such as soil moisture probes, drop nozzles, drip irrigation, etc.

This project complements the ongoing work of NRCS by improving water use efficiency in an area with insufficient water and poor water quality. The WBP produced through NWQI funding

will include a plan for lining canals and/or piping water near wells that provide drinking water. The RCPP program will provide funding to water users to improve irrigation efficiency. The farmers affected by this project are likely to utilize NRCS funds to further improve the efficiency of the center pivot irrigation that this project will deliver water to. One of the affected farmers serves on the board of the local Upper Arkansas River Watershed Group and will provide significant feedback to GMD3 through the forum that the watershed group provides in creating the WBP. See Figure 4 for a map of the South Side Ditch service area.

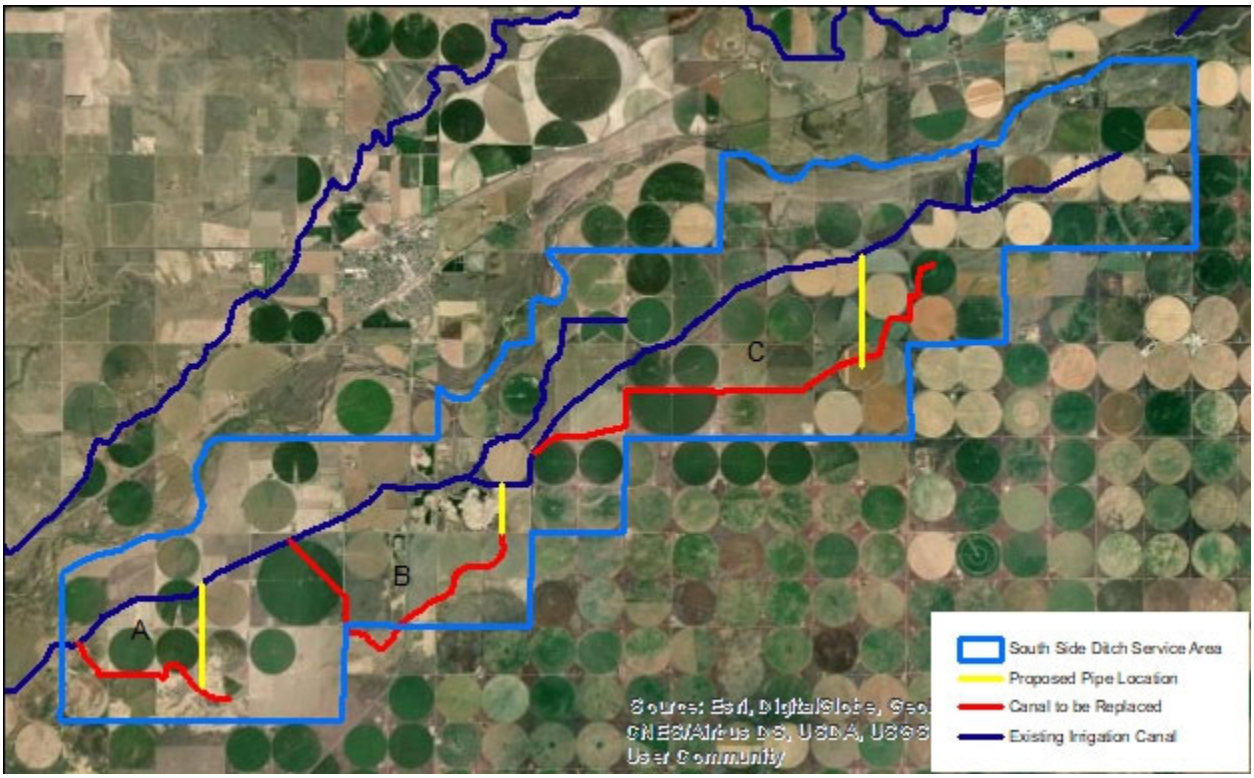

Figure 4. Service area of the South Side Ditch.

Evaluation Criterion F – Readiness to Proceed

Upon completion of a contract with Reclamation to move forward with this project, GMD3 and the South Side Ditch Association will immediately put the project out for bid. The lowest bid from a qualified contractor that is within the project budget will be selected.

Reclamation will complete a NEPA review, and any required permits will be obtained while the project is out for bid. A 404 permit from the US Army Corps of Engineers (USACE) may be required to complete the project. USACE will be contacted to verify if they require any permitting. KDHE and the Kansas Department of Agriculture, Division of Water Resources (DWR) will also be contacted to determine if any permitting is required from them.

Construction will take place during the non-growing season, when water is not being diverted through the South Side Ditch, and when earth-disturbing activity will have minimal impact on farms. Construction will take approximately 5 months. See Table 2 for the project schedule.

Table 2. Project schedule.

Task Number/Name			Quarter					
			Q1	Q2	Q3	Q4	Q5	Q6
Task 1	**NEPA Review and Permit Acquisition**							
	1.1	NEPA review	x					
	1.2	Acquire permits	x					
Task 2	**Project Construction**							
	2.1	Put project out for bid	x					
	2.2	Select contractor		x				
	2.3	Install 12” PVC pipe at project location				x	x	
Task 3	**Performance Measures**							
	3.1	Evaluate performance efficiency of the project						x
Task 3	**Progress Reports**							
	3.1	Semi-annual reports to Reclamation		x		x		x

Evaluation Criterion G – Collaboration

This project is a collaborative effort between GMD3 and the South Side Ditch Association. The project has received a letter of support from the Upper Arkansas River Watershed Group. The board of this group is made up of a diverse group of stakeholders, including representation from environmental groups, groundwater irrigators, surface water irrigators, conservationists, municipalities, and stock water users.

GMD3 is seeking matching funding through the Build Kansas Fund, a fund put in place to allow Kansans to seize the opportunities provided by the Bipartisan Infrastructure Law. A successful project will demonstrate that such funds are useful and will likely encourage other water users to pursue similar projects.

Evaluation Criterion H – Nexus to Reclamation

The project area is located within the area of a recently completed Reclamation-funded project to create water use comparison reports for irrigators in southwest Kansas under a Drought Response grant, and also within the area of another Reclamation project to create a watershed group along the upper Arkansas River to address issues within the basin. The City of Garden City is working under a Reclamation grant for water reuse immediately downstream of the project area.

GMD3 has worked with Reclamation on other past projects within the project area, including a System Optimization Review to determine priority projects for ditch companies along the Arkansas River within GMD3, a Plan of Study under the Basin Study program to identify a path forward for local stakeholders in Kansas and Colorado to work together to address water quality concerns within the Arkansas River basin, a Viability Analysis for Water Supply Alternatives for Hamilton, Kearny, and Finney Counties, Kansas to determine best strategy for Kansas communities affected by poor water quality in the Arkansas River, and a Water and Energy

Efficiency grant to upgrade the headgate infrastructure and line a portion of the Farmers Ditch system, located near the city of Deerfield, KS within the project area.

This project is located within the Arkansas River Basin. This basin is home to the Trinidad Reservoir and Fryingpan Arkansas Project, including Pueblo Reservoir and the Arkansas Valley Conduit, all of which are Reclamation projects.

Performance Measures

The performance of the project will be measured by metering diversions and metering the water applied to the field. It is assumed that there will be no evaporation or infiltration loss in the PVC pipe. Water sent to diversion ponds will be immediately used, but there may be a slight amount of evaporation. The metering will allow for the quantification of overall project efficiency.

Environmental and Cultural Resources Compliance

Will the proposed project impact the surrounding environment? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

The project will create dust during construction. All diversion works will be buried after construction with no long-term adverse effects to the environment. Local riparian habitat will benefit from any additional return flow to the Arkansas River that results from this project.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

The Fish and Wildlife services lists the Plains Spotted Skunk, the Tricolored Bat, the Monarch Butterfly, the Lesser Prairie Chicken, and the Sprague's Pipit as resolved taxon, proposed endangered, candidate, and species under review in the project area. These species will not be affected by the proposed project outside of the brief construction period. Kansas Wildlife Parks and Tourism will be contacted to determine if anything needs to be done during construction to mitigate potential short-term habitat loss.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.

There are not wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States." The Arkansas River falls under CWA jurisdiction, but this project makes no changes to the diversion works on the Arkansas River. All construction will be to deliver water from the South Side Ditch to the field.

When was the water delivery system constructed?

The South Side Ditch was constructed in the 1800s.

Will the proposed project result in any modification of or effects to, individual features of an irrigation system? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

This project will replace open canal with buried PVC pipe. The open canal to be replaced was originally constructed centuries ago.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

No buildings, structures, or features in the irrigation district are listed or eligible for listing on the National Register of Historic Places.

Are there any known archeological sites in the proposed project area?

There are no known archeological sites in the proposed project area.

Will the proposed project have a disproportionate and adverse impact on any communities with environmental justice concerns?

The proposed project will not have a disproportionate and adverse impact on any communities with environmental justice concerns.

Will the proposed project limit access to, and ceremonial use of, Indian sacred sites or result in other impacts on Tribal lands?

The proposed project will not limit access to, and ceremonial use of, Indian sacred sites or result in other impacts on Tribal lands.

Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

The proposed project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area.

Required Permits or Approvals

It is not anticipated that this project will require a USACE 404 Permit, but USACE will be contacted to verify. KDHE and DWR will be contacted to determine if any permitting is required at the state level.

Overlap or Duplication of Effort Statement

There is no known overlap between the proposed project and any other active or anticipated proposals or projects in terms of activities, costs, or commitment of key personnel. This project does not in any way duplicate any proposal or project that has been or will be submitted for funding consideration to any other potential funding source.

Conflict of Interest Disclosure Statement

There is no actual or potential conflict of interest with this project.

Certification Regarding Lobbying

See attached SF-424 form.

UPPER ARKANSAS WATERSHED GROUP

President: Abe Lollar
Vice President: Fred Jones
Secretary: Gina Gigot
Treasurer: Hugh Brownlee

February 13, 2024

Bureau of Reclamation
Water Resources and Planning Office
Attn: Mr. Josh German
Mail Code: 86-63000
P.O. Box 25007
Denver, CO 80225-0007

Dear Mr. German,

On behalf of the Upper Arkansas River Watershed Group (UARWG), I would like to express our support for the proposal being submitted by Southwest Kansas Groundwater Management District 3 under the WaterSMART Water and Energy Efficiency Grants opportunity entitled "Conversion of Irrigation Canal to Pipe on the South Side Ditch."

This project will address inefficiencies with surface water deliveries that create issues in delivering water to customers. It will reduce the amount of water that needs to be diverted from the main stem of the South Side Ditch while delivering the amount of water required to the field in a timelier fashion.

The proposed project will benefit Southside Ditch Irrigation Association. Members of this association have been active in helping to form the Upper Arkansas River Watershed Group and have demonstrated a commitment to improving the watershed.

Sincerely,

Abe Lollar, President
Upper Arkansas River Watershed Group

Budget Proposal

GMD3 is seeking $500,000 from the Bureau of Reclamation WaterSMART Energy and Efficiency Grants program. The total project cost is $1,000,000. See Table 1 for a detailed project budget.

Table 1. Summary of Non-Federal and Federal Funding Sources

FUNDING SOURCES	Amount
Non-Federal Entities	
1. GMD3	$500,000.00
Non-Federal Subtotal	**$500,000.00**
Other Federal Entities	
None	$0
Other Federal Subtotal	**$0**
REQUESTED RECLAMATION FUNDING	**$500,000.00**

Table 2. Detailed Project Budget

BUDGET ITEM DESCRIPTION	**COMPUTATION**		**Quantity Type**	**TOTAL COST**
	$/Unit	**Quantity**		
MATERIALS AND SUPPLIES				
Mobilization	1	L.S.	$60,000.00	$60,000.00
12” PVC Pipe	13,320	L.F.	$65.00	$865,800.00
Waterline Connection	6	Each	$2,500.00	$15,000.00
Pit Construction	6	Each	$7,366.67	$44,200.00
Flow Meters	2	Each	$6,000.00	$12,000.00
OTHER				
NEPA Review	1	Each	$3,000.00	$3,000.00
TOTAL DIRECT COSTS				**$1,000,000.00**

Mobilization covers the cost of moving construction equipment to the project site. Pipe costs include the cost of the pipe and installation. The NEPA review is an environmental review that will be completed by Reclamation.

Budget Narrative

The budget is broken down into cost of materials. Bids will go out to contractors to complete the work. The budget provided is an estimate of total cost using the best available information on the cost of material to complete the project.

Materials and Supplies

Construction will require a mobilization cost of $60,000. Estimated cost of PVC pipe was provided by EBH Engineering, a local firm who designs a lot of the municipal water supply systems in the area. The cost estimate of $65 per linear foot includes installation. The project will require water line connections at each end of three pipes. Estimated cost of each water line connection is $2,500. The budget allows a total of $44,200 for construction of head stabilization

ponds to divert water from the South Side Ditch and distribution pits to distribute water to end users. The budget allows for the purchase of two flow meters to track the overall performance of the project.

Other

The budget allows $3,000 for Reclamation to conduct a NEPA review. This review is required as this is an earth-disturbing activity. No work on the ground will commence until completion of the NEPA review.