Kansas Water Authority Meeting  
Northwest Tech College, 1209 Harrison Street  
Goodland, Kansas  
Sept. 3-4, 2019  
Agenda

**Tuesday, September 3, 2019; 1:00 PM to 4:00 PM**

<table>
<thead>
<tr>
<th>Time (MT)</th>
<th>Agenda Item</th>
<th>Presenter</th>
<th>KWA Advice</th>
<th>KWA Decision</th>
<th>Page No.</th>
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</thead>
<tbody>
<tr>
<td>1:00 p.m.</td>
<td>Call to Order/Introductions</td>
<td>Connie Owen</td>
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<tr>
<td>1:15 p.m.</td>
<td>Research Coordination Work Group</td>
<td>Cara Hendricks</td>
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<td></td>
<td>Research Projects Update</td>
<td>Cara Hendricks</td>
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<td></td>
<td>Arbuckle presentation</td>
<td>KGS</td>
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<tr>
<td>2:00 p.m.</td>
<td>RAC Membership Discussion</td>
<td>Bobbi Luttjohann</td>
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<tr>
<td>2:45 p.m.</td>
<td>Budget Overview</td>
<td>Cara Hendricks</td>
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<td></td>
<td>SWPF Discussion – KWO, KDHE, KDA/DOC</td>
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<tr>
<td>4:00 p.m.</td>
<td>Adjourn*</td>
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*Little Jerusalem tour sponsored by Northwest Kansas Technical College and TNC following meeting adjournment.*

**Wednesday, September 4, 2019; 8:00 AM to 12:00 PM**

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<tr>
<th>Time (MT)</th>
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<th>Presenter</th>
<th>KWA Advice</th>
<th>KWA Decision</th>
<th>Page No.</th>
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<tbody>
<tr>
<td>8:00 a.m.</td>
<td>Call to Order</td>
<td>Connie Owen</td>
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<tr>
<td>8:05 a.m.</td>
<td>Approval of Meeting Minutes</td>
<td>Connie Owen</td>
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<td>April 18, 2019 Meeting</td>
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<td>8:15 a.m.</td>
<td>KWA PWS Committee</td>
<td>Dennis Schwartz</td>
<td>Nathan Westrup</td>
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<td></td>
<td>PWS Comprehensive Capital Development Plan</td>
<td>Nathan Westrup</td>
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<td>City of Lawrence Water Marketing Contract</td>
<td>Nathan Westrup</td>
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<td>Access District Request to Negotiate Purchase</td>
<td>Nathan Westrup</td>
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<td>8:45 a.m.</td>
<td>Water Vision / Water Plan</td>
<td>Bobbi Luttjohann</td>
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<td>Reports/Updates from RAC Feedback</td>
<td>Bobbi Luttjohann</td>
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<td>9:00 a.m.</td>
<td>GMD #4 Presentation</td>
<td>Shannon Kenyon</td>
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<td>KWO/KWA Operations</td>
<td>Cara Hendricks</td>
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<td>Kansas River Reservoirs Flood &amp; Sediment Study</td>
<td>Cara Hendricks</td>
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<td>Equus Beds Chloride Plume Project</td>
<td>Cara Hendricks</td>
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<td>Lower Missouri Flooding Corps PAS Agreement</td>
<td>Nathan Westrup</td>
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<td>FEMA HHPD Rehabilitation Grant</td>
<td>Bobbi Luttjohann</td>
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<td>RAC Discussion/Action</td>
<td>Bobbi Luttjohann</td>
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<td>New RAC Membership Appointments</td>
<td>Bobbi Luttjohann</td>
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<td>RAC Messages to KWA</td>
<td>Bobbi Luttjohann</td>
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<td>10:30 a.m.</td>
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<td>FY 2021 SWPF Budget Discussion</td>
<td>Jackie Craine</td>
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<td>11:30 a.m.</td>
<td>Director’s Report</td>
<td>Earl Lewis</td>
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<td>11:50 a.m.</td>
<td>New Business</td>
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<td>12:00 p.m.</td>
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*Upcoming Meeting: December 19, 2019 (Location TBD)*
As previously presented and discussed by the Kansas Water Authority (KWA), a research coordination workgroup has continued to meet to identify priorities for research needed to support implementation of the Vision. No action is being sought at this time.

**Current Projects Update**
Efforts focused on the specific areas of research previously identified by the group have continued, which include streambank stabilization effectiveness, irrigation technologies and crop genetic research, and harmful algal blooms. Updates on efforts regarding FY2019 funding were presented and appropriated funding for FY2020 and agency requests for FY2021 were discussed.

Projects utilizing FY2020 appropriated funding are encompassed within two main SWPF items: Reservoir & Water Quality Research and Crop & Livestock Research. Current projects within the Reservoir & Water Quality Research include: Reservoir Bathymetric Surveys, Kansas River Alluvial Well Network and Modeling, Effectiveness of Streambank Stabilization in Reducing Sediment Yields, Harmful Algal Blooms (HABs), and Real-Time Flood Mapping. Within the Crop & Livestock Research section, projects include: Drop XL Sorghum and Industrial Hemp Research.

The workgroup identified FY2021 projects, which are expected to be similar to FY2020 identified projects.

**Arbuckle Study**
The Kansas Geological Study (KGS) will present information regarding the Arbuckle formation and proposed 5-year study to the KWA at the meeting on September 3, 2019 in Goodland, KS. A summary of the study as provided by the KGS is attached.

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*No action is needed at this time. Information is provided for discussion purposes only.*
Arbuckle Study and Discovery Effort—Determine Sustainability for Kansas
Kansas Geological Survey
Dave Newell, Shelby Peterie, Rick Miller, and Rolfe Mandel

Overview
The Arbuckle Group (Arbuckle), which is a succession of Late Cambrian and Ordovician sedimentary rocks, is heavily relied upon by a range of industries and municipalities in Kansas for fluid-waste disposal, oil production, and fresh water. Responsible use of the Arbuckle as a deep disposal interval requires accurate, unbiased, and consistent evaluation, characterization, and control. Recent elevated rates of fluid deposited in the Arbuckle have been associated with, and the likely catalyst for, the significant increase in seismicity in south-central Kansas since 2013. Two different State agencies oversee disposal allotments and practices for a diverse group of industries relying on the Arbuckle.

Historical disposal of fluids in the Arbuckle has been at sustainable to moderate rates of pore space depletion until sometime during the last decade when disposal volumes in some areas increased by an order of magnitude. This dramatic change in disposed fluid volumes has affected static fluid levels and formation pressures in the Arbuckle. Elevating fluid volumes within a finite pore space by injection decreases the storage capacity and therefore life expectancy of the disposal receptacle and increases pore pressure on deeper, connected rock formations. Limited well bore measurements suggest currently permitted disposal volumes/rates have exceeded the capacity of the interval to naturally drain/discharge. This positive fluid balance continues to reduce available pore space (although at a slower rate than under pre-2015 permitted disposal rates), and in some areas of Kansas industry users may have as little as three years of Arbuckle disposal space remaining.

Future resource conservation and capacity of the Arbuckle disposal zone is critical for both the energy industry and industrial/municipal facilities in Kansas that dispose wastewater deep into the Arbuckle Formation. Therefore, the primary objective of this study will be to characterize the Arbuckle sufficiently in troubling areas to provide stakeholders (industry, policy makers, regulators, and local governments) with the tools and insights necessary to appropriately manage the Arbuckle to insure it becomes a long-term, sustainable resource for all users. Initial efforts will be in two approximately ten-county areas where the Arbuckle is experiencing the heaviest pore space demands/depletion and is estimated to have the shortest life expectancy as a storage receptacle. A key byproduct of this study will be data and analysis that increases awareness of the need and the information necessary to establish uniform industry practices intended to extend the Arbuckle’s usable life and protect it as a permanent industry disposal repository without adversely affecting groundwater, natural seismicity, or its economic viability for industrial users.
Generalized Study Plan

Identification of both critical and non-critical areas for fluid disposal within the state is a goal of the study, with an objective being the identification of areas susceptible to future overfill or are already at critical states and associated contamination of shallow potable aquifers and tools to help policy makers extend the life of this resource.

Efforts will focus on three major products:

1. Correlation of 3-D seismic data with thoroughly sampled boreholes that penetrate the Arbuckle so as to study consistency of rock properties and transfer faults interpreted on 3-D seismic data to geologic maps of the Arbuckle and top of basement.

Lateral and vertical permeability variations in the Arbuckle must be observed and studied to better understand movement of formation water in the Arbuckle. Cansler and Carr (2002) discussed the presence of seismically detectable “cockpit terrane” in the Arbuckle on the Central Kansas Uplift as a product of karstification, which impeded or localized movement of formation water. In other localities, this type of subsurface terrane is not present, thus implying more free, long-range, and radial movement of subsurface formation and disposal waters. Examination of 3-D seismic surveys in select localities in Kansas is proposed where earthquake seismicity is high or pore space low to better determine possible inhibition to lateral and intraformational (vertical) movement of water in the Arbuckle. As well, faults will be mapped on 3-D seismic data and transferred to geologic maps along with recorded earthquake epicenters. Cooperation with private industry is necessary for donation/purchasing and subsequent analysis of proprietary seismic surveys for this phase of research. Supplemental analysis of surficial joints on outcrop correlated to spatial and temporal trends in seismicity as it relates to fault orientation and active segments also need to be examined for their possible relationship to directional permeability.

2. Study fluid volume and SFL to establish percolation rates and associated sustainable injection volumes for given well densities based on locations within the Central Kansas Uplift and south-central Kansas.

Selected areas, such as recently determined seismically active areas on the Central Kansas Uplift and south-central Kansas need to be studied in the context of exactly what part of the Arbuckle is being accessed for fluid disposal and how much fluid is being put into it, both currently and in the recent past. For the Central Kansas Uplift area, extant records for both salt-water disposal wells and enhanced oil recovery wells need to be examined for understanding where fluids are moving in the Arbuckle. Cooperation of oil-field operators and sharing of their drilling, completion, workover, and injection-volume records would represent significant value-added to this process. In south-central Kansas, injection rates and SFLs corrected for density need to be gathered with regional flow models in order to establish the range of rates for formation drainage.
3. Measure SFL and bottomhole pressure to calculate density and establish freshwater equivalent fluid levels.

A more detailed picture of the Arbuckle piezometric surface (i.e., the spatial distribution of static fluid levels) for both saline and fresh-water normalized) is needed to identify regions where fluid rise could dangerously affect surficial freshwater. The rate Arbuckle static fluid levels are rising also needs to be better determined in areas remote to Class-I wells, which is our principal source of current information. A program needs to be initiated for measuring subsurface pressure and static fluid levels in strategically located Class-II wells. Water density can be backed out of the pressure and fluid-level measurements, and this information will allow better modeling of water movement in the Arbuckle in the future, as well as lead to a better understanding of fluid dispersal of effluent in the immediate vicinity of the disposal wells. The ultimate outcomes of this supplementary research on disposal-well fluid will a) flag “potential danger zones” where there is a tangible risk for contamination of shallow aquifers, b) allow insight in mapping zones where the minimum safe rate of injection correlates with no significant rise in static fluid levels, and c) better determine the rate and direction of movement of formation and disposal fluids within the Arbuckle.

This Arbuckle study will require a multi-year effort with research products routinely delivered from year 1 while final products intended for direct application by stakeholders will emerge over the last couple years of the program.

**Deliverables** (all products are geographically limited to data available and obtainable)

**Year #1**
- Locations of 120 wells of opportunity
- Locations of areas with highest interest for seismic data
- Completed well sampling lists
- Status of seismic investigations
- Contamination concern areas

**Year #2**
- Progress maps with partial raw data entry—working maps

**Year #3**
- Progress maps with raw data entry near completion—draft maps

**Year #4**
- Arbuckle map—enhanced faults, irregular zones (karst, fractures, etc.)
  - Layers will include: structure, rock properties (well logs)

**Year #5**
- Arbuckle fluid flow rate and gradient map
- Arbuckle SFL relative to potable water supplies map
Generalized Budget

Year #1  ($826,000)
- Salaries (nonpermanent employees) $210,000
- Data Acquisition 40 wells (bottom hole pressure, SFL, chemistry) $500,000
- Travel to data collection $12,000
- Data Purchase (3-D seismic) $100,000
- Supplies (computer software, general) $4,000

Year #2  ($826,000)
- Salaries (nonpermanent employees) $210,000
- Data Acquisition 40 wells (bottom hole pressure, SFL, chemistry) $500,000
- Travel to data collection $12,000
- Data Purchase (3-D seismic) $100,000
- Supplies (computer software, general) $4,000

Year #3  ($826,000)
- Salaries (nonpermanent employees) $210,000
- Data Acquisition 40 wells (bottom hole pressure, SFL, chemistry) $500,000
- Travel to data collection $12,000
- Data Purchase (3-D seismic) $100,000
- Supplies (computer software, general) $4,000

Year #4  ($214,000)
- Salaries (nonpermanent employees) $210,000
- Supplies (computer software, general, report prep) $4,000

Year #5  ($214,000)
- Salaries (nonpermanent employees) $210,000
- Supplies (computer software, general, report prep) $4,000

5 Year Total  ($2,906,000)

A membership drive for Regional Advisory Committee (RAC) membership positions with term expirations of June 30, 2019, as well as vacant positions, took place beginning last spring. Ninety-five applications for RAC membership were received covering all 14 of the RACs.

Other information of note from the 2019 membership drive includes:
• 28 current RAC members with 2019 term expirations did not express interest in continuing on as members for an additional term

• 39 RAC positions are currently vacant:

[cc] denotes a core category as designated by the Memorandum of Internal Policy-RAC

<table>
<thead>
<tr>
<th>RAC</th>
<th>Vacant Position 1</th>
<th>Vacant Position 2</th>
<th>Vacant Position 3</th>
<th>Vacant Position 4</th>
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<td>Cimarron RAC</td>
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<td>Public Water Supply (cc)</td>
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The KWA will meet on September 3, 2019 in Goodland to review applicants for RAC membership. Applicant recommendations will be made by the KWA as a whole. Copies of the applications received will be provided electronically to members of the KWA by separate email.

The KWO recommends the KWA consider and accept the recommendations made by the KWA as a whole on September 3, 2019 and appoint those RAC applicants recommended.
In accordance with the FY2021 KWA State Water Plan Fund (SWPF) Budget Process approved at the April KWA meeting, the Kansas Water Office has continued efforts to obtain and compile agency funding requests for FY2021 SWPF projects/programs. Beginning in June, KWO staff provided the RACs with the draft funding recommendations discussed with the Budget Committee members in April and solicited feedback from the RACs. The Research Coordination Group was also convened in June to provide its research funding recommendations to the KWA.

Enclosed for the KWA’s review and consideration regarding the SWPF FY2021 Budget requests and development of the final budget recommendations are the following:

- Attachment A – SWPF FY2020 Final Appropriation
- Attachment B – State Water Plan Fund FY2021 Agency Requests with RAC Input
- Attachment C – SWPF FY2021 Research Funding Requests
- Attachment D – SWPF FY2021 Project Sheets
- Attachment E – RAC Budget Input Comments Summary and Memos
- Attachment F – FY2021 KWA SWPF Budget Process

Also, included as Attachment G are two letters from Groundwater Management District #3 dated July 22, 2019 and August 21, 2019, along with the associated attachments regarding SWPF FY2021 funding requests from the GMD#3 that have been submitted directly to the KWA and KWO for consideration.

The KWA will meet on September 3rd and 4th, 2019 in Goodland to review the budget requests and to develop the final KWA FY2021 SWPF budget recommendations that will be submitted as part of the administration budget process in September. Budget recommendations will be made by the KWA as a whole.

The KWO recommends the KWA consider and accept the final FY2021 SWPF budget recommendations made by the KWA as a whole at the September KWA meeting for submittal as part of the administration budget process in September 2019.
### EXPENDITURES

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<tr>
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<th>FY2020 Appropriated</th>
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<td><strong>SUBTOTAL--KDA</strong></td>
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<td>Bathymetric Study</td>
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<th>FY2020 Appropriated</th>
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| State Employee Pay Plan            | $ 37,935       |                        |                     |

<p>| Total State Water Plan Expenditures | $ 11,262,979 | $ 16,479,773            | $ 16,422,415         |</p>
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<th>REVENUE</th>
<th>FY2018 Actuals</th>
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<td>Fertilizer Registration Fees</td>
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## KDHE - Environment

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<th>FY2021 Request</th>
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<th>RAC Input</th>
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<td>Harmful Algae Bloom Pilot</td>
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### KDHE SUBTOTAL  $3,200,422  $3,653,131  $452,709

## Department of Agriculture

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<td>$1,000,000</td>
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### KDA SUBTOTAL  $9,824,087  $15,224,087  $5,400,000

## Kansas Water Office

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<th>Description</th>
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<th>FY2021 Request</th>
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### KDA SUBTOTAL  $9,824,087  $15,224,087  $5,400,000
## Kansas Water Office - cont.

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<td>KDWPT ANS Study</td>
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**KWO SUBTOTAL** $3,333,130 $10,019,400 $6,686,270

**SWPF TOTAL** $16,384,480 $28,923,459 $12,538,979

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### RAC Recommendations

- = Agrees with Funding Level
+ = Recommends Additional Funding
* = Comment Provided
## State Water Plan Fund FY2021 Research Funding Recommendations

<table>
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<tr>
<th>Agency/Program</th>
<th>FY2019 Appropriations</th>
<th>FY2020 Final Appropriations</th>
<th>FY2020 Research Recommendations</th>
<th>FY2021 Agency Requests</th>
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<td>Kansas River Alluvial Well Network and Modeling</td>
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<td>Crop &amp; Livestock Research**</td>
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*Reservoir Surveys & Water Quality Research item for FY2020 includes 1) bathymetric surveys, 2) HAB research & sediment coring related to HABs in reservoirs, 3) Streambank Stabilization effectiveness research, and 4) support of Kansas River Alluvial Well Network & Modeling.

**Crop & Livestock Research item for FY2020 includes Sorghum & Hemp Research.
SWPF Project Sheets for FY2021 Agency Funding Requests

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TMDL INITIATIVES 3 - 6
NONPOINT SOURCE PROGRAM 7
HARMFUL ALGAE BLOOM PILOT 8 - 9
WATERSHED RESTORATION & PROTECTION STRATEGY (WRAPS) 10 - 11
DRINKING WATER PROTECTION 12 - 13

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SUBBASIN WATER RESOURCES MANAGEMENT 14
WATER RESOURCES Cost SHARE & IRRIGATION TECHNOLOGY 15 - 16
NON-POINT SOURCE POLLUTION ASSISTANCE 17
AID TO CONSERVATION DISTRICTS 18
WATERSHED DAM CONSTRUCTION 19 - 20
WATER QUALITY BUFFER INITIATIVE 21
RIPARIAN AND WETLAND PROGRAM 22
WATER CONSERVATION PROGRAM: CREP & WTAP 23 - 24
CROP & LIVESTOCK RESEARCH 25
STREAMBANK STABILIZATION 26 - 27
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WATER STRUCTURES PROFESSIONAL ENGINEER 29
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REAL-TIME WATER MANAGEMENT - TELEMETRY 31
WATER SUPPLY RESTORATION PROGRAM 32
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DWR APPLICATIONS SPECIALIST 34
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MOU STORAGE OPERATIONS & MAINTENANCE 37
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KDWPT ANS STUDY - Draft 59
Program Objective
The KDHE Orphan Sites Program (OSP) uses State Water Plan (SWP) funding for the evaluation, monitoring, and remediation of contaminated soil and groundwater sites when the responsible party is unknown or is unable to undertake the necessary action. The OSP was developed with the specific objective of providing a mechanism to address contaminated sites which fall outside the parameters of other clean-up programs. These sites, referred to as orphan sites, generally do not have federal or state funding sources available for complete investigation and cleanup activities or performing long-term operations and maintenance actions. The program is designed to address contaminated sites that have no responsible party in a timely manner to protect human health and the environment.

Program Activities
The OSP conducts cleanup and monitoring activities at 133 contaminated orphan sites.

KDHE also uses SWP to meet its funding requirements for the federal Superfund Program (Superfund). The Environmental Protection Agency (EPA) is the lead agency at most Superfund sites in Kansas. The Superfund sites are orphaned sites that require state match because the remedial action is funded with EPA Superfund money. The federal Superfund law requires states to provide a 10 percent cost match for the remedial action and the state must take over the long-term operation and maintenance of those remedial systems after they have been determined to be operational and functional.

For example, KDHE is responsible for the long-term operations and maintenance actions performed at the Ace Services site in Colby and the Cherokee County Superfund site. The Ace Services Superfund site in Colby includes operation of a groundwater treatment system where the chromium contaminated water is treated and returned to beneficial use to the city’s public water supply system. The Cherokee County Superfund site operation and maintenance includes filling and capping newly-opened mine shafts and maintenance of protective soil repository covers. These actions reduce human and biota exposure to heavy metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, zinc) contaminants.

Recent Success
OSP activities in FY2019 resulted in seven (7) investigations implemented at contaminated sites, two (2) remedial actions started, and one remedial design started. The Bruce Mining and Smelting site is being remediated by excavation and encapsulation of lead contaminated smelter waste. The Gilmore-Tatge site is being remediated by excavation and disposal of PCE contaminated soils. A remedial design for the Leavenworth and Choctaw South Site was initiated during the fiscal year. Furthermore, the OSP provided a change out of spent granular activated carbon media to ensure effective whole house treatment for water from a private domestic drinking water well in Pratt.

Program Budget
OSP activities in FY2021 will vary depending on the progress in FY2020, but KDHE anticipates the continuance of soil and groundwater investigations for identifying risk at contaminated sites, installation of surface and groundwater monitoring well networks, completion of remedial designs and implementation and oversight of remedial actions to address contamination impacting surface water and groundwater. The budget includes all cost for contractual, state match, salaries,
Contamination Remediation

administrative and overhead, etc. Contractual for project-specific costs is approximately $837,000.

- $1,088,301 in FY 2021

**Additional Funding Resources**
Superfund match of 10 percent of the remedial action cost is required for Federal Superfund Sites using federal appropriation funds. Total amount depends on the project progress each year.

**Vision Implementation Total Needs**
An additional $1.0 to 1.5 million is needed to complete investigation work on currently inventoried sites. Once investigation work is complete additional funding will be needed to conduct remediation activities on the sites.

**Consequences of not funding**
- Continued contamination of soil, groundwater, and surface water resources
- Potential human health threat from groundwater in contaminated areas
Program Objectives
The KDHE Watershed Planning, Monitoring, and Assessment Section in the Bureau of Water utilizes State Water Plan (SWP) funding to supplement staff and activities associated with a variety of programs administered by the section.

The purpose of the Watershed Planning, Monitoring, and Assessment Section is as follows:

- Implements sections 303(c), 303(d), 303(e), 305(b), and 604(b) of the Clean Water Act.
- Identifies and prioritizes impaired streams, lakes, and wetlands and develops Total Maximum Daily Loads for high priority waterbodies.
- Develops statewide surface water quality standards.
- Provides information on the chemical, physical, and biological characteristics of streams, publicly owned lakes and wetlands in Kansas.
- Tracks environmental contaminant levels in fish and other aquatic life and issues fish consumption advisories.
- Monitors water quality conditions in streams and publicly owned lakes and wetlands throughout Kansas and performs special water pollution investigations in cooperation with KDHE district offices and other governmental agencies.
- Performs compliance monitoring at NPDES permitted facilities to determine the status of compliance with discharge permit requirements.
- Maintains and updates the Kansas Surface Water Register identifying classified streams and lakes along with designated use status and use attainability analysis status.
- Develops the biennial Kansas Integrated Water Quality Assessment Report (305(b) and 303(d)).
- Administers the Harmful Algal Bloom response program and issues public health advisories.

The section administers a robust monitoring and assessment program to track trends and conditions in surface waters to achieve the objective of the Kansas Water Plan and maintain state primacy for administration of federal water quality programs. The section has primary responsibility for surface water chemical and biological monitoring and assessment, the 303(d) and TMDL programs, as well as the water quality standards program. Section 303(d) of the Clean Water Act requires states to identify all water bodies where state water quality standards are not being met. Every two years, the Watershed Planning, Monitoring, and Assessment Section prepares and submits the list of impaired waters to the Environmental Protection Agency (EPA) for approval, utilizing water quality data associated with the KDHE targeted stream, biological and lake monitoring networks. The waters listed in the Section 303(d) list require a Total Maximum Daily Load (TMDL). The list is submitted as part of an Integrated Report that also describes the general status and trends in water quality of Kansas water quality, extrapolated from random probabilistic stream survey sites, consistent with national protocols under Section 305b.

The TMDL sets a limit for the maximum amount of a contaminant that a water body can receive and still meet the water quality standard. TMDLs are developed consistent with Kansas’ TMDL Prioritization Framework, which focuses on stream phosphorus and nitrate impairments over 2012 – 2022. Approved TMDLs initiate the process for the impaired water body to be addressed through TMDL implementation. A variety of local, state, and federal programs utilize the 303(d) list and the list of waters covered by a TMDL to establish watershed restoration, protection, and funding priorities along with a variety of abatement measures to apply to contributing pollutant sources.
Watershed Planning, Monitoring, and Assessment: TMDL Initiatives

Statutory Authority
♦ Section 303(c), 303(d), 303(e), 305(b), and 604(b) of the Clean Water Act
♦ K.S.A. 82a-901, State Water Plan Resources Planning Act
♦ K.A.R. 28-16-28b through 28-16-28f, Surface Water Quality Standards
♦ K.S.A. 65-164 and 165; empowers the Secretary of KDHE to regulate the discharge of sewage into the water of the state
♦ K.S.A. 65-171d empowers the Secretary of KDHE to prevent water pollution and to protect the beneficial uses of the waters of the state through required treatment of sewage and established water quality standards and to require permits by persons having a potential to discharge pollutants into the waters of the state.
♦ Section 401(a) of the Clean Water Act; 40 CFR 124.53, KDHE must certify in writing, that effluent from discharging facilities will not result in violations of Kansas surface water quality standards.

Program Activities
KDHE completed 16 nutrient oriented TMDLs for watersheds located in the Lower Arkansas and Smoky Hill-Saline Basins throughout FY19. In accord with the Kansas TMDL Vision Strategy, emphasizing stream phosphorus impairments and other nutrient issues as the targets for TMDL development between 2014-2022, total phosphorus TMDLs in the Kansas-Lower Republican and Lower Arkansas River Basins will be developed during FY20.

Every two years, the Watershed Planning, Monitoring, and Assessment Section in the Bureau of Water prepares and submits the list of impaired waters to the Environmental Protection Agency for approval. On April 13, 2018, KDHE received EPA approval of the 2018 Integrated Report, which contains the 2018 303(d) list of impaired waters and general 305(b) assessment of waters for the State of Kansas. The submittal of the Integrated Report to EPA meets the water quality reporting requirements contained in sections 303(d), 305(b), and 314(a) of the federal Clean Water Act, and was one of the first Integrated Reports to be approved in the nation for the 2018 cycle. The 2020 Integrated Report will be prepared in FY20.

Kansas has an extensive surface water quality monitoring network consisting of 328 active ambient stream chemistry monitoring sites spanning all the major river basins. Of these, there are 160 core sites currently visited quarterly every year, whereas the remaining 168 sites are monitored using a four-year rotational approach. The biological network of monitoring sites includes 222 monitoring sites with samples taken from 40-70 core stations annually. Fish tissue samples normally are obtained each year from 40 water bodies across the state, which include 17 long term lake monitoring sites. Water quality information currently is obtained from 120 lakes and wetlands, which includes all 24 federal reservoirs. Probabilistic stream monitoring of approximately 50 random sites across the state each year began in 2006. The HAB Response Program has evaluated and issued public health advisories for blue-green algae blooms on 26 lakes in 2017, 32 lakes in 2018, and 28 thus far in 2019.

Collaborative and supplemental monitoring has occurred with USGS to assist KDHE with special investigations and monitoring efforts. Ongoing support for two gaging stations on the Arkansas and Little Arkansas Rivers has been maintained over 2005-2018, as well as continued support for a water quality station located on the Arkansas River at the Colorado Stateline. Studies have been undertaken to assess nitrate impairments on Indian Creek in Johnson County, sediment oxygen demand on a number of east Kansas streams, including the Kansas River, and evaluation of the pervasive blue-green algae bloom on Milford. USGS previously assessed the areal extent of the bloom while KU modeled the hydrodynamics of the lake to predict movement of the bloom depending upon wind direction and reservoir release rates. KBS additionally was contracted in FY19 to assess nutrients in the lake sediment and water column of Milford Lake. Initial support was offered for USGS algal
Watershed Planning, Monitoring, and Assessment: TMDL Initiatives

Sampling in the Kansas River during FY18. Currently USGS is contracted to maintain a continuous water quality sensor in Milford Lake near the causeway along with the collection of discrete samples to validate existing models. USGS will additionally collect discrete samples of the Milford outflow to characterize water quality in FY20. Other recent contractual services involved blue-green analysis of cell counts and algal toxins, presence of organic pollutants in fish tissue and discharge of ammonia from small town lagoons. New studies and efforts will continue to focus on nutrients, HAB mitigation efforts and Milford Lake if funding allows.

Water Quality Standards (WQS) were approved by EPA on May 7, 2018 for approval of the 2013 ammonia criteria and ammonia multiple discharger variance (MDV). The ammonia MDV alleviates substantial economic and social impacts resulting from compliance with the 2013 ammonia criteria for small Kansas municipalities that operate wastewater lagoon systems. KDHE completed the economic eligibility analysis during the WQS review for the initial list of facilities in the approval of the MDV register, listing the initial list of facilities that are approved as part of the MDV process. During FY21, efforts will focus on drafting WQS revisions associated with priority objectives identified during FY20.

KDHE conducts ongoing water quality certification review of the potential impact on the water quality of the receiving surface water from any permitted discharging facility prior to the issuance of the next five-year permit to discharge. Approximately 1,040 municipal, industrial, commercial, and federal facilities in Kansas are authorized by KDHE to release treated effluent to the waters of the state.

Recent Success
The Environmental Protection Agency issued Kansas one of the first two approvals in the country for the 2018 list of impaired waters in FY18. In FY17, EPA approved 82 site-specific chlorophyll-α criteria (< 10 µg/L) for lakes and reservoirs with active or reserve domestic water supply use, established for the protection of the domestic water supply.

EPA approved the following TMDLs from FY18 through FY20 to date:

**Kansas Lower Republican River Basin**
- Upper Kansas River – Total Phosphorus, approved 11/8/2017
- Middle Kansas River – Total Phosphorus, approved 11/8/2017
- Lower Kansas River – Total Phosphorus, approved 12/15/2017
- Shunganuga Creek – Total Phosphorus, approved 1/16/2018
- Stranger Creek – Total Phosphorus, approved 4/4/2018
- Crooked Creek – Total Phosphorus, approved 4/4/2018

**Lower Arkansas River Basin**
- Arkansas River from Hutchison to Wichita – Total Phosphorus, approved 12/27/2018
- Little Arkansas River at Wichita – Total Phosphorus, approved 2/8/2019
- Arkansas River from Wichita to Arkansas City – Total Phosphorus, approved 2/8/2019
- Arkansas River at Derby – Nitrate, approved 2/8/2019

**Smoky Hill- Saline Basin**
- Mud Creek – Total Phosphorus, approved 4/10/2019
- Sharps Creek – Total Phosphorus, approved 4/5/2019
- Smoky Hill River – Total Phosphorus, approved 7/8/2019
- Smoky Hill River – Nitrate, approved 7/12/2019
- Mulberry Creek and the Saline River – Total Phosphorus, approved 4/29/2019
Watershed Planning, Monitoring, and Assessment: TMDL Initiatives

NPDES permits within watersheds with recently approved phosphorus TMDLs with assigned wasteload allocations will be updated as the permits are renewed to reflect the necessary implementation requirements outlined in the TMDL, an important initial action to achieve long term phosphorus load reductions and water quality improvement. Among mechanical dischargers, there were 32 wastewater plants in 2017 and 35 in 2018 that were reducing nutrients to meet the goals of the Kansas Nutrient Reduction Plan, where Total Nitrogen is <10 mg/L and/or Total Phosphorus is < 1mg/L.

The Watershed Planning, Monitoring and Assessment Section completed approximately 220 NPDES water quality review certifications in FY19. The section completed the entry of the Kansas 2018 impaired waters database into the national Assessment Total Maximum Daily Load Tracking and Implementation System (ATTAINS), which provides users quick access to the status of waters at the site-specific waterbody, state, and nation levels via the USEPA website How’s My Waterway.

Program Budget: State Water Plan TMDL Budget

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<th>Expenditures</th>
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<th>FY2021 Budget</th>
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Consequences of not funding

There are significant economic and regulatory concerns if the monitoring and TMDL programs are not funded. Kansas has lead responsibility for identifying and ranking in priority the impaired waters requiring TMDLs, and establishing such TMDLs, pursuant to Section 303 of the Clean Water Act. Kansas has previously been under a Court Decree as a result of a complaint filed by the Kansas Natural Resource Council and the Sierra Club against EPA, associated with enforcing Section 303(d) of the Clean Water Act and establishing TMDLs in Kansas. Data obtained from the respective monitoring programs are essential to the assessment of water quality for listing impairments and TMDL development purposes. Local economies benefit immensely from water quality that meets the appropriate designated uses for waterbodies within their respective watersheds, impacting source water treatment costs, property values, recreation, irrigation and capital outlay costs to mention a few. Local economies additionally benefit from the TMDL program through a variety of supplemental cost share and low interest loan programs that utilize TMDLs to prioritize other funding opportunities to capitalize on projects and practices that result in water quality improvements. TMDLs are adaptively implemented with the collaboration of local communities and stakeholders, in an effort to achieve water quality standards and protect their local aquatic resources. Inadequate funding would compromise the Harmful Algal Bloom Response Program, in which case significant costs may be deferred to the local lake managers or communities that seek assistance with technical response activities. The posting of public health advisories for lakes affected by HAB events may be delayed or prolonged if the resources are unavailable to perform initial and follow up response activities. Local economies may suffer significantly if lakes are under advisory longer than necessary. Additionally, the agency or community managing the lake may need to assume response monitoring responsibilities to ensure public health risk is mitigated. A comprehensive list of consequences would require significant effort to assess the legal, economic, and environmental impacts associated with the state’s failure to implement sections within the Clean Water Act. Though it is clearly understood that there would be significant impacts associated with neglecting to implement responsibilities associated with the achievement of water quality standards and the attainment of the designated uses of surface waters, jeopardizing our role to protect and improve the health and environment of all Kansans.
Nonpoint Source Program

Program Objectives
The KDHE Watershed Management Section implements the Kansas NPS Management Plan through several programs:

- Local Environmental Protection Program
- Local Water Quality Protection
- Information and Education Program
- CWA Section 401 Water Quality Certification
- Drinking Water Protection
- Kansas Water Pollution Control Revolving Fund for NPS
- Local Conservation Lending Program
- CWA Section 319 NPS Program/KS WRAPS Program

Program Activities
The Kansas NPS Management Strategy embodies a two-pronged approach for addressing NPS pollution consisting of a Base NPS Component and a Targeted NPS Component. The base component consists of a statewide interagency infrastructure to address nonpoint source pollution issues through locally administered plans and programs including Local Environmental Protection, Information, Education, and Technical Assistance, and existing plan and program integration. Targeting of NPS practices to priority issues has been a concept promoted through both the current Kansas NPS Pollution Management Plan and the Kansas Water Plan. Targeting can address both restoration and protection efforts. The WRAPS Program targets Best Management Practices (BMPs) for watershed restoration activities in impaired watersheds designated as high priority for implementation through Total Maximum Daily Loads (TMDLs) and water bodies listed as impaired on KDHE’s 303(d) List of Impaired Waters.

Program Budget
$303,208 in SFY 21

Additional Funding Resources
The required match for program in KDHE’s watershed Management Section is, on average, $1,900,000 annually. Match is provided by a combination of funds including SGF and SWP, and grant sub-awardees. About $175,000 in SWP Funds is used as match for this program on an annual basis. The majority of the Kansas WRAPS Program match is derived through local Kansas landowners contributing to the overall cost of individual BMPs implemented on their farming and ranching operations.

Total Needs for Implementation

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<th>Section Programs</th>
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<td>Local Water Quality Protection Program</td>
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<td>CWA Section 401 Water Quality Certification</td>
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<td>Total Revenue Needs</td>
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Consequences of not funding
Many of our programs provide technical assistance to Kansas counties, watershed groups and citizens regarding nonpoint sources of pollution. Without funding, the programs would have to reduce the amount technical and financial assistance available to local groups and therefore have diminished success and load reduction accomplishments and ultimately water quality improvements.
**Program Objectives**
Investigate and demonstrate in-lake treatment options to reduce the frequency and duration of Harmful Algal Blooms. The objective is to assess the effectiveness of such treatment options at minimizing the impact of Harmful Algae Blooms in public Kansas Lakes. Approximately $250,000 of the requested $450,000 would be used to expand upon current initiatives with algaecide treatment demonstrations in public lakes experiencing varying degrees of a bloom and of varying sizes to determine the best candidate lakes where this treatment would be effective. The primary objective and focus of the efforts are on Milford and Marion Reservoirs, but other public lakes in Kansas will be considered if appropriate to vary the scale of the demonstration. The goal is to evaluate the best mitigation practices throughout the United States and develop preferred long-term options for Milford and Marion Reservoirs, along with appropriate recommendations public lakes of varying sizes and scale. The remaining $200,000 would be utilized for the implementation of such identified strategies which may include rough fish removal, sonar, superoxide, phosphorus harvesting, phosphorus binding, and targeted lake treatments.

**PROGRAM ACTIVITIES**
**Recent Success**
To date, in-lake treatment to reduce the frequency or duration of HABs in Kansas has been limited. Below is a summary of in-state efforts to date:

- Three rough fish demonstrations have been conducted, one at Marion Reservoir and two at Milford Reservoir. This involved removing of ground bottom feeding fish which can stir up sediment, thereby releasing nutrients and feeding the algae. The results have been mixed, but there are indications that this has been a good complimentary activity as other states have demonstrated success and Milford Reservoir did not experience any blooms in 2018 or to date in 2019.
- KDHE and the Corps of Engineers have explored and implemented pool level management at Milford Reservoir. Anecdotally this has been viewed as a successful option at reducing the duration of blooms since there were no blooms observed at Milford in 2018. A longer draw down plan was negotiated through Memorial Day weekend for 2019, however significant wet weather lead to extremely high levels in Milford and most other reservoirs in Kansas.
- The Kansas Department of Wildlife Parks and Tourism (KDWPT) has demonstrated alum at Veteran’s Lake. This effort was successful at reducing phosphorous levels from approximately 250 mg/L to 70 mg/L.
- KDHE has funded two floating wetland projects, one at Lake Meade and one at Lake Shawnee. Lake Meade had positive samples depicting significant nutrient uptake, however the study was impacted by drought. The Lake Shawnee project was inconclusive, but did prove that scale is essential in demonstrating success for this type of treatment.
- KDHE sampled Central Park Lake extensively in 2018 as part of a study on Ultrasonic sonar in-lake mitigation at Central Park Lake in Topeka. The lake remained on advisory status throughout most of the sampling season but the technology demonstrated that cyanobacteria cells were impacted. The installed unit has been operating with more success in 2019, however KDHE would be interested in testing a larger unit that provides more coverage.
- KDHE solicited a Request for Proposal for Harmful Algal Bloom Reduction in November of 2018 for four work modules to be conducted in Milford and Marion Reservoirs, which consisted of obtaining bids for planting vegetation to absorb nutrients, hydrogen-peroxide based algaecide treatment, install and operation of large ultrasonic unit, and a feasibility study detailing the costs and effectiveness of a phosphorus binding application for Marion Reservoir. Bids were successfully negotiated and awarded for
the algaecide applications and the feasibility study in May of 2019, whereas no bids were received for the other two work modules.

- Due to high water levels in 2019 in both Milford and Marion Reservoirs, preventative algaecide treatments were deemed unaffordable and ill advised.
- The Milford Gathering Pond located near the outlet of Milford Reservoir experienced a significant bloom in the summer of 2019, KDHE initiated the piloting of spot treatment in late July with the treatment of approximately half of the lake with a liquid hydrogen peroxide based algaecide applied by the KDHE contractor. Post-treatment sampling concluded the product significantly decreased the cyanobacteria cell counts in the treated area, but the duration of effectiveness was brief as the cyanobacteria levels elevated within a week. KDHE is continuing to work on this project and may pursue a whole lake treatment since this lake recirculates water from the untreated portion as a result of the operations at the neighboring fish hatchery.

**Program Budget:**
- $450,000 SFY 2020
- $450,000 SFY 2021

**Additional Funding Resources**
The department administers the Clean Water Act Section 319 program, the WRAPS program, Non-point Source Program and the Total Maximum Daily Load program. The latter three are funded by the SWPF and have intended purposes. That being said, no resources could be targeted for in-lake demonstrations and studies. Additionally, the department has a Water Program Management Fee Fund, which again has intended purposes, but limited resources may be utilized for in-lake treatment demonstrations. All funding options could also be used as match for other grant opportunities.

**Vision Implementation Total Needs**
The Vision is appropriately focused on implementation of Best Management Practices within targeted watersheds to abate nutrients before they enter a given water body. This proposal is directly linked to treatment of existing HABs, but does not stop or prevent the root cause. Rather, this effort is aimed at addressing the frequency and duration of the effect and researching successful in-lake mitigation options for Kansas.

**Consequences of not funding**
HABs would continue at their natural maximum duration and maximum frequency without disruption of anthropogenic efforts. This could extend the timeframe in which beaches and lakes are closed, maximize impact to the aquatic communities and increase the risk of microcystin exceeding EPA health advisories for both recreation and drinking water.

While investment in watershed treatment continues to be the long-term solution to reducing HABs; near term reduction in nutrient loading is fleeting, given the size of most reservoir watersheds. Thus, some method of mitigating the impacts of developing HABs in the lake is needed to address public demand for action and restoring recreation use. The effectiveness of certain methods of treatment is marginal and that knowledge prevents choosing those methods with low return on investment.
Program Objectives
The Kansas Watershed Restoration and Protection (WRAPS) Program contributes to the Kansas NPS Management Plan through the implementation of a voluntary targeted watershed-based program funded by CWA 319 and State Water Plan Funds. This program is unique because it works to seek citizen and stakeholder input and participation on watershed management and protection issues. This approach involves:
- Identifying watershed protection and restoration needs
- Establishing watershed protection and restoration goals
- Developing 9 Element Plans to achieve established goals
- Implementing fully developed plans

Program Activities
The Kansas NPS Management Strategy embodies a two-pronged approach for addressing NPS pollution consisting of a Base NPS Component and a Targeted NPS Component. The base component consists of a statewide interagency infrastructure to address nonpoint source pollution issues through locally administered plans and programs including Local Environmental Protection, Information, Education, and Technical Assistance, and existing plan and program integration. Targeting of NPS practices to priority issues has been a concept promoted through both the current Kansas NPS Pollution Management Plan and the Kansas Water Plan. Targeting can address both restoration and protection efforts.

The WRAPS Program targets Best Management Practices (BMPs) for watershed restoration activities in impaired watersheds designated as high priority for implementation through Total Maximum Daily Loads (TMDLs) and water bodies listed as impaired on KDHE’s 303(d) List of Impaired Waters. This targeted approach results in pollutant load reductions and ultimately restoration of impaired waterbodies. In FY 2019 WRAPS Project funding along with implementation from additional state and federal partners led to the reduction of 408,080 lbs. of nitrogen, 214,393 lbs. of phosphorus and 150,680 tons of sediment into Kansas rivers, streams and lakes.

Program Budget
- $730,884 in SFY 21

Additional Funding Resources
Annual investments in the WRAPS Program total approximately $3.6 million (M). Of this amount, about $0.85M is derived from State Water Plan funds and $2.8M from CWA section 319 funds. Additional funds for Best Management Practices come from programs administered by the Kansas Department of Agriculture’s Division of Conservation as well as the Federal Farm Bill administered by the United States Department of Agriculture. The required match for the KS WRAPS Program is, on average, $1,900,000 annually. Match is provided by a combination of funds including SGF and SWP, and grant sub-awardees. About $175,000 in SWP Funds is used as match for this program on an annual basis. The majority of the Kansas WRAPS Program match is derived through local Kansas landowners contributing to the overall cost of individual BMPs implemented on their farming and ranching operations.

Total Needs for Implementation
Currently there are 36 KS WRAPS watershed plans that include costs associated with BMP implementation, technical assistance, additional project coordination and education. If plan expenses are totaled for all WRAPS Projects and extended through the length (years) of each watershed plan, the total amount needed to address the water quality impairments identified in WRAPS plans is approximately $624,844,203.00. The average length of a WRAPS Watershed...
Plan is 30 years which equates to a funding need of approximately $20,828,140.00 per year. Existing funding from the State Water Plan Fund and EPA Clean Water Act Section 319 allow for about $2,500,000 per year.

Consequences of not funding
Current 9 Element Plans collectively serve and protect 45% of the state’s total land surface (24,576,154 acres). This includes most watersheds draining into large federal reservoirs. KDHE 9 Element Watershed Plans identify and outline priority areas for BMP implementation as well as needed pollutant load reduction amounts for improved water quality and removal waterbodies from KDHE’s 303(d) List of Impaired Waters. Without funding, the WRAPS Program would have to reduce the amount technical and financial assistance available to local groups and therefore have diminished success and load reduction accomplishments and ultimately water quality improvement.
**Program Objectives**

Drinking Water Protection (DWP) – The program has two components, the first is to insure all Kansas communities have a source of clean, healthy, affordable drinking water by planning and implementing strategies to prevent and mitigate contamination. Public Water Supplies (PWS) systems that show trends in increased nitrate or have occasionally violated the maximum contaminant level will be the focus of the DWP program. The second is focused on analyzing the impacts of naturally-occurring minerals on water used for human consumption from Private Water Wells (PWW) in some Kansas regions. Study areas would be identified, and projects developed to potentially invite homeowners within a study area to provide voluntary water well samples. The samples would be analyzed for select parameters related to the study, and through partnership with the Kansas Geological Survey (KGS) used to evaluate the results as part of a longer-term study.

**Program Activities**

The program methods used to implement the PWS component of the DWP program include:
- Conduct an assessment
- Develop a DWP plan with a strategy and goals
- Administer funding to communities to implement the DWP plan

The program methods used to implement the PWW component of the DWP program include:
- Identifying areas of concern
- Developing study area, sampling parameters, and sampling protocol
- Analyzing study results and determine whether a larger study is necessary

**Program Budget**

The investigation needs of each PWS vary depending on currently available data and monitoring and assessment needs. KDHE will contract with technical services providers to investigate the source water area. The average cost of an investigation ranges from $20,000 to $120,000. The results of the investigations will determine strategies for the PWS to implement in the Drinking Water Protection (DWP) plan. The plans will be unique to the PWS’s needs but will all be developed up specific goals, action steps, and milestones. Investigation and planning resources will be partially provided to PWS through existing Safe Drinking Water act resources. Additional resources will be necessary to implement best management practices, feasibly $300,000-$400,000 per community.

For PWW, study area development, monitoring and analyzing private water well samples will vary depending on the contaminants identified, the size of the study area and capacity of laboratories available to analyze samples. KDHE will contract with technical services providers to investigate the source water area. The average cost of completing a study through KDHE ranges from $100,000 to $150,000. Additional funding will be necessary to develop a longer-term study through partnership with KGS.

- $350,000 in SFY 2020
- $800,000 in SFY 2021

**Additional Funding Resources**

The KDHE drinking water revolving loan fund set-asides may also be used to supplement initial planning activities through contracts with third party technical assistance providers for PWS system assistance.
Vision Implementation Total Needs

The PWS component of the DWP program is a conceptual program and is currently in the pilot phase. Current estimates of total funding needs may be subject to change as we continue to develop the program. There are currently approximately 200 PWS systems that show trends in increased nitrate or have occasionally violated the maximum contaminant level, and, as stated previously, will be the focus of the DWP program.

As discussed above in the Program Budget, $2,000,000 per year can address approximately 4 PWS systems, so the DWP program would need $2 million per year for 50 years, totaling $100 million to effectively assess, plan and implement improved nitrate conditions in source water.

Additionally, as discussed above for PWW, $300,000 per year could conduct one regional private water well study. There are potentially multiple studies over the course of 10 years.

Consequences of not funding

The cost to PWS systems that decide to comply with regulations through nitrate removal technology can average approximately $2,500,000 per PWS for initial construction. If each of the trending 200 PWS requires a $2.5 million upgrade to become compliant with regulations, it would cost $500,000,000 for initial construction, not including yearly operation and maintenance costs. Many small communities do not have the funds to implement this kind of construction. Local economies benefit immensely from drinking water that meets regulations within their respective watersheds, impacting source water treatment costs, property values, growth and business establishment, and even cropland and livestock irrigation. For the PWW community, the consequences of not funding could include individual well owners and users being unaware of potentially harmful naturally occurring contaminants in their household water supply.

The PWS component of the DWP program is a conceptual program and is currently in the pilot phase. Current estimates of total funding needs may be subject to change as we continue to develop the program. There are currently approximately 200 PWS systems that show trends in increased nitrate or have occasionally violated the maximum contaminant level, and, as stated previously, will be the focus of the DWP program. As discussed above in the Program Budget, $2,000,000 per year can address approximately 4 PWS systems, so the DWP program would need $2 million per year for 50 years, totaling $100 million to effectively assess, plan and implement improved nitrate conditions in source water.
Program Objectives
The basin management program works to improve enhanced basin-level water management through the gathering and analysis of water right and hydrologic data, and the development of decision support products to help state and local stakeholders make sound water management decisions.

Program Activities
- In FY2019 staff conducted thousands of field visits to conduct measurements of water levels, streamflows, water meter checks, and place of use verifications.
- In FY2019 staff developed a number GIS-based maps in support of the development of Local Enhanced Management Areas (LEMAS – K.S.A. 82a-1041), and Water Conservation Areas (WCAs – K.S.A. 82a-745).

Recent Success
- In FY2019 staff conducted over 2,000 groundwater measurements, over 300 water right impairment monitoring measurements, and over 600 water meter compliance checks.
- In FY2019 staff developed a number GIS-based maps in support of the development of Local Enhanced Management Areas (LEMAS – K.S.A. 82a-1041), and Water Conservation Areas (WCAs – K.S.A. 82a-745).
- The agency’s water rights information system (WRIS) database is being updated and transitioned to a new platform saving the state thousands of dollars per year. Staff were integrated into the project team to ensure that critical functionality is maintained and accuracy and accessibility of water rights data is enhanced.

Program Budget
- $608,949 in FY 2021
Water Resources Cost-Share

Program Objectives

- Provides financial assistance to landowners for the establishment of conservation practices in the form of cost-share contracts.
- Goals are to prevent soil erosion and reduce sedimentation, nutrient and pesticide runoff, and fecal coliform bacteria in targeted public water supply reservoirs and to increase irrigation efficiency through irrigation technology initiatives.
- Appropriated funds are broken down into sub-categories and allocated to county conservation districts for program implementation, i.e.:
  - District Needs Allocation - these funds generally address sedimentation, erosion, nutrient, pesticide, and bacteria loading, and water conservation within the county. The local conservation district determines eligibility and top resource concerns.
  - Water Quality Allocation - in partnership with KDHE, funds are directed to high priority watersheds for the restoration and protection of water quality. Only practices directly affecting water quality are eligible.
  - Irrigation Technology – special initiatives targeting the adoption of irrigation technology practices such as automated soil moisture probes and automated telemetry systems.
  - A small percentage of funds are also utilized for emerging conservation research and demonstration projects, and upgrades to DOC’s Cost-Share Information Management System, CSIMS - a computer financial operations program to afford excellent business accountability for cost-share contracting with conservation districts and other entities.

Program Activities

- Some of the most common Water Resources Program cost-share practices are Terraces and Waterways, Ponds, Pasture and Rangeland Planting, Filter Strips, Cross Fencing, Water Wells and Pumping Plants. Irrigation technology practices such as automated soil moisture probes, mobile drip irrigation systems and remote monitoring systems are offered through special initiatives implemented by DOC during the last year.

Program Budget

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<tr>
<th></th>
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<th>2021 Requested</th>
</tr>
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<td>$2,448,370 Water Resources + $100,000 Irrigation Technology</td>
<td>$2,948,289 Water Resources + $200,000 Irrigation Technology</td>
</tr>
</tbody>
</table>

- DOC is legislatively authorized to use 6% of the WR program funds for supporting all division administrative and operating expenses such as capital outlay, engineering, programming, travel, etc.
- Future irrigation technology funds could be appropriated directly to DOC utilizing a separate fund and budget unit if authorized by the Kansas Legislature (similar to Streambank Stabilization funding).

Additional Funding sources

No federal monies are directly contributed to the Water Resources fund, however, Water Resources funds are often used as match in grant applications or to be leveraged with contributions from other partners to accomplish significantly large projects beyond the funding scope of any one entity – for example, CIG, RCPP, and other public / private projects.
Recent Success

- From 2004 to 2017:
  - 476,707 acres protected
  - 2,597,392 tons of soil saved

- From 2013 to 2017:
  - In the past 3 years, special erosion & sediment control projects to address TMDLs:
    - 2,312 acres protected
    - 18,078 tons of soil saved

- In 2019:
  - Cost-share approved for 42 automated soil moisture probes located in authorized Water Conservation Areas.
Program Objectives

- Provides financial assistance to landowners for the establishment of conservation practices.
- Goals are for water quality protection and restoration in watersheds with TMDL’s, information and education for adults and youth, and other water quality issues identified by the state water planning process.
- Appropriated funds are broken down into sub-categories and allocated to county conservation districts for implementation, including:
  - Funds for Best Management Practices to address bacteria loading, nutrients and low dissolved oxygen in streams and sedimentation above federal public water supply reservoirs.
  - Water Quality Allocation - in partnership with KDHE, funds are directed to high priority watersheds for the restoration and protection of water quality. Only practices directly affecting water quality are eligible.

Program Activities

- Some of the more common practices include abandoned well plugging, ponds, pasture and rangeland planting, onsite waste systems, cross fencing, livestock waste management and nutrient management.
  - In FY2016: Funds for 14 employees providing technical assistance to conservation districts in high workload NRCS management units for program implementation. Current funding partners include NRCS, Kansas Department of Wildlife, Parks & Tourism, Kansas Department of Health & Environment, and Kansas Association of Conservation Districts.
  - Funds for information and education to conservation districts are targeted to no-till education for field days and registration costs for landowners that are first time attendees to the “No-till on the Plains” conference.

Program Budget

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
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<tbody>
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<td>$1,860,023</td>
</tr>
<tr>
<td>2021 Requested</td>
<td>$2,157,836</td>
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</table>

Additional Funding Resources

- DOC, KDHE and KWO are partnering in a unified streambank protection construction process – in FY2020, KWO is contributing $50,000, KDHE is contributing $50,000 of EPA funds, DOC is contributing $50,000 of NPS funds to these projects.
- No federal monies are directly contributed to the Non-Point Source Assistance fund, however, Non-Point Source Assistance funds are often used as match in grant applications or to be leveraged with contributions from other partners to accomplish significantly large projects beyond the funding scope of any one entity— for example, CIG, RCPP, and other public / private projects.
- DOC is matching significant amounts of federal NRCS funds for the conservation technician program and other special positions (over $1.5M per year), and there are also partnership contributions from KDHE (using EPA funds), KDWPT and the Kansas Association of Conservation Districts to fund and administer the Conservation Technician program.

Recent Success

- From 2004-2017:
  - 18,415 Acres Protected
  - 116,807 Tons of Soil Saved
State Aid to Conservation Districts

Program Objectives

- State Aid provides matching funds (up to $25,000 per district) to conservation districts. State Aid provides financial match incentives for county commissions to partner in support of conservation related activities.
- These funds assist 105 county conservation districts to effectively deliver local, state, and federal natural resource programs as prescribed under Conservation District Law.
  - In 2010, the Legislature changed the state match from $10,000 per county to $25,000.
  - DOC is not able to meet the county match due to recent state budget allocations. $2,625,000 is needed to fully meet the State Aid match requirement authorized under K.S.A. 2-1907c when the counties are fully funding up to $25,000 each.
  - For 2020, the Legislature provided an additional $100,000 enhancement to the requested amount to fund State Aid at $2,192,637.

Program Activities

- State Aid allows conservation districts to:
  - hire administrative and technical staff.
  - implement state financial assistance programs at the local level.
  - carry out information and education programs promoting conservation.
  - provide assistance to USDA-NRCS, meet Local Operation Agreements and serve producers.

Program Budget

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<th></th>
<th>2019 Actual</th>
<th>2020 Appropriated</th>
<th>2021 Requested</th>
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<td></td>
<td>$2,092,637</td>
<td>$2,192,637</td>
<td>$2,492,637</td>
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</table>

Additional Funding Resources

- Local county commissions help to support conservation districts. Some counties contribute much more than the $25,000 match expected from State Aid to help their districts and landowners to develop even more effective programs.
- USDA-NRCS provides office space, computer and technical support to conservation districts in return for clerical support at local service centers where producers can access technical and financial assistance.

Recent Success

- Conservation districts are the grassroots foundation of partnerships and efforts to facilitate landowner needs and establish beneficial practices on the ground – a conservation movement since 1937.
- Information and education reaches all ages through field days, school visits and contests.
- Conservation district board members influence producers and landowners through local networking and workshops / demonstration projects.
- The local five member board governs each conservation district. Board members are elected officials who serve without pay. The 525 board members donate nearly 50,000 hours of voluntary service per year establishing local priorities, setting policy, and administering programs to conserve natural resources and protect water quantity and water quality.
Program Objectives

- The program provides financial assistance to organized watershed districts, drainage districts and other special purpose districts for the preservation and protection of the state’s land and water resources.
- Watershed dam construction and rehabilitation in Kansas is driven by increasing demands of both flood control and sediment reduction above federal reservoirs which have water supply components.
- For several years, there had been few requests for construction of new structures due to restrictive federal mitigation requirements, though DOC has been successful to aid by providing a third-party easement holder status.
- 23% of the state of Kansas is covered by watershed districts, as shown below:

![Active Watershed Districts in Kansas](image)

- In FY2019, DOC provided cost-share assistance on one new flood control structure for the Marmaton WJD No. 102, and rehabilitation of seven other existing structures in six watershed districts (Delaware WJD No. 10, Upper Little Ark WJD No. 95, Pony Creek WJD No. 78, Salt Creek WJD No. 104, Pawnee WJD No. 81 and Vermillion Creek WJD No. 70, Revised).
- In FY2020, DOC received cost-share applications amounting to $710,000 for rehabilitation of 11 existing flood control dams. The FY2020 appropriation was $550,000 which will fully fund seven of those.
- For FY2021, sponsors which are known to be working on new construction applications with the US Army Corps of Engineers will alone amount to at least $480,000 of state cost-share funding requests, in addition to other rehabilitation requests annually received on a regular basis.

Program Budget

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<thead>
<tr>
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<th>2019 Actual</th>
<th>2020 Appropriated</th>
<th>2021 Requested</th>
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<td>2019 Actual</td>
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<td>$550,000</td>
<td>$1,450,000</td>
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- At least 30% of the total costs (engineering and construction) are paid by local sponsors (watershed districts) – maximum state cost-share assistance cannot exceed $120,000 per structure and per district.
• In general, a new site construction would cost more than $400,000, while rehabilitation varies between $50,000 and $200,000.
• No federal funds are used in this program.

Recent Success

• New construction:
  o Since FY 2012, the state cost-shared on the construction of 11 new sites. Construction of new flood control dams has slowed because of the costly 404 permit mitigation.
• Rehabilitation:
  o Since FY 2012, the state cost-shared on the rehabilitation of 62 existing flood control dams. Most of the program funding was used to rehab existing old structures.
• Inundation Mapping:
  o Since FY 2012, the state has cost-shared on breach mapping of 17 flood control dams.

Consequences of Not Funding

• Watershed structures – silent protectors – are known to have shown mitigation of flooding and drought. Watershed dams are large structures which can pose serious hazards to human and animal life, land, personal property and infrastructure if not properly maintained and rehabilitated when necessary. Not funding cost-share would create hardship on sponsors to afford costly repairs of aging structures and or new construction of flood control structures in appropriate places that would limit the amount of sediment that could effectively be trapped upstream of multiple purpose public reservoirs and lakes.
Kansas Water Quality Buffer Initiative

Program Objectives
- Improve water quality by establishing more vegetative filter strips and riparian forest buffers along streams.
- The KWQBI is an incentive program complimenting the federal Conservation Reserve Program (CRP).
- The KWQBI also provides property tax incentives for landowners enrolling buffers along stream corridors.
- The eligible areas include all high priority TMDL and federal drinking water reservoir watersheds in the state.

Program Activities
- Between 1998 and 2018, DOC entered into 10-15 year contracts as extra incentive compensation to encourage landowners to enroll more acres in the federal CRP initiative to enhance water quality.
- The KWQBI is no longer taking new applications as of July 1, 2018 - but DOC will still be paying on existing landowner contracts for 13 more years. Efforts to consolidate these payments are underway.
- The KWQBI was converted to a similar but new Sediment & Nutrient Reduction project (SNRP) under DOC’s Riparian and Wetland Protection Program in FY2018.
- The SNRP offers landowners an enhanced list of conservation practices and provides a one-time, upfront signing incentive payment – a significant improvement over the KWQBI.

Program Budget

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<th>Year</th>
<th>Amount</th>
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<tbody>
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<tr>
<td>2021 Requested</td>
<td>$200,000</td>
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</table>

Additional Funding Resources
- Supplemental payments offered under the KWQBI match 30 or 50 percent of the federal CRP payment, based on the type of vegetation planted (CP21 – Grass Filter Strip, or CP22 – Riparian Forest Buffer), where the soil rental prices are not high enough for landowners to enroll for CRP payment rates alone.
- The current amount of federal funds matched by the Kansas Water Quality Buffer Initiative in FY2020 and FY2021 will be approximately $331,515 per year (from $110,505 of state funds).

Recent Success
- Overall, there have been a total of over 14,000 acres enrolled in the WQBI since 1998.
- In FY2019, DOC made payments on 886 contracts totaling 4,950 enrolled acres.
- Conservation buffers slow water runoff, trap sediment, and enhance infiltration within the buffer.
- Buffers also trap fertilizers, pesticides, pathogens, and heavy metals, and they help trap snow and cut down on blowing soil in areas with strong winds.
- In addition, they protect livestock and wildlife from harsh weather and buildings from wind damage. If properly installed and maintained, they have the capacity to remove up to 50 percent or more of nutrients and pesticides, remove up to 60 percent or more of certain pathogens, and remove up to 75 percent or more of sediment.
- Conservation buffers reduce noise and odor. They are a source of food, nesting cover, and shelter for many wildlife species. Buffers also provide connecting corridors that enable wildlife to move safely from one habitat area to another.
Riparian and Wetland Program

Program Objectives

- The goal of the Riparian and Wetland Protection Program (RWPP) is to protect, enhance, and restore riparian areas, wetlands, and associated habitats by providing technical, educational, and financial assistance to landowners and the public in general.
- Streambank protection projects are one solution to reducing sediment loads above reservoirs, and DOC continues to support streambank protection projects in the priority watersheds of Tuttle Creek, Cottonwood River and Delaware River in association with RWPP planning and implementation.
- Through collaboration with the Kansas Department of Health and Environment, the Kansas Water Office, the Kansas Forest Service and local WRAPS groups, DOC has developed a consistent, efficient inter-agency process for funding and implementation of these multiple-benefit, reservoir protection projects.
- DOC continues to support a wetlands related mission regarding these vulnerable natural resources with both landowner cost-share and grant awards promoting I&E activities with a new emphasis on High Plains playas.
- The Kansas Water Quality Buffer Initiative which had been operating since 1999 was effectively suspended and replaced in FY2018 as a “Sediment & Nutrient Reduction Initiative” (SNRI) under the Riparian and Wetland Protection Program. This project is similar to the former buffer initiative but features a one-time state, up-front signing incentive payment and also provides a larger suite of available conservation practices in targeted areas – a significant improvement for landowners.

Program Activities

- In FY 2019, DOC facilitated agreements through the Kansas Forest Service for plant materials and associated supplies, and services of professional forestry vendors to ensure viable, successful buffer projects.
- DOC also entered into an agreement with Ducks Unlimited to provide $120,000 in landowner cost-share and project restoration technical assistance to improve wetland habitat on public and private lands.

Program Budget

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<tr>
<th>2019 Actual</th>
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*In FY2018, $281,312 was transferred from the unspent FY2017 appropriation of the Water Supply Restoration program to fund the new SNRI project under the Riparian and Wetland Protection Program. Since FY2019, these funds have been targeted to be allocated in the new SNRI.

Recent Success

- From 2004 through 2017:
  - Acres of wetland created, restored, or enhanced: (majority of acres were created): 1,185 acres
  - Total acres protected by wetland practices: 2,683 acres
  - Length of streambank stabilization projects: 127,280 feet (or about 24 miles)
  - Total acres protected by streambank stabilization projects: 960 acres
  - Length of streambank planted to trees / vegetation: 67,515 feet - 12.8 miles
  - Acres of streambank planted to trees / vegetation: 114.6 acres
  - Playa lakes are unique, sensitive wetland ecosystems in central and western Kansas with the capability to facilitate groundwater recharge.
Upper Arkansas CREP

Program Objectives

- The Conservation Reserve Enhancement Program (CREP) is designed to permanently retire water rights in the Upper Arkansas River basin, a 10 county project area in western Kansas, while also providing other related benefits such as soil conservation, water quality protection, energy savings and wildlife habitat enhancement.
  - CREP is a federal-state program authorized by USDA; there are many partnering organizations cooperating to implement the project goals and to meet the state’s financial match requirements.
  - The project was initiated in 2007 to re-invest monetary proceeds from the KS v. CO lawsuit in a way which could provide permanent water conservation and return economic benefits to the region which suffered impacts from water shortages caused by violations of the interstate water compact.
  - A landowner agrees to enroll in continuous CRP, permanently retire related irrigation water rights and plant a permanent cover (e.g. prairie grass or wildlife habitat mixture) on the contracted land.
  - The landowner receives a 14-15 year irrigated rental rate from the Farm Service Agency (FSA) and a one-time, sign–up incentive payment from DOC - plus other federal cost-share for implementation.

Program Activities

- Enrollment is ongoing and annual producer interest is highly variable – both significantly influenced by crop prices, land values, local hydrology, weather, family and other major business factors in irrigation farming.
- The Kansas Department of Agriculture is seeking guidance and approval from USDA for including the Rattlesnake Creek basin in the current project area or as a new project. New 2019 Farm Bill rules will apply.

Program Budget

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<thead>
<tr>
<th></th>
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<th>2021 Requested</th>
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<td>$302,046</td>
<td>**$699,745</td>
</tr>
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</table>

- *A transfer of $162,972 was legislatively authorized and transferred from the FY2019 Water Resources fund to pay for enrollment offers that were in excess of the total amount available last year.
- **$400,000 of the FY2021 request is specifically designated for the Rattlesnake Creek basin project.

Additional Funding Resources

- Federal funds pay for approximately 80% of the program costs. The State of Kansas must provide a 10% match in direct cash contributions and a 10% match of indirect financial contributions / services as a requirement of the MOA with USDA. So far, DOC has provided $1,607,586 in direct cash contributions as incentive payments on 22,800 enrolled acres with 46,919 acre-feet of permanently retired water rights.
- To date, $13,405,631 from state, local and private expenditures has been made in support of the project to match an estimated total of $43,476,799 in federal costs.

Vision Implementation Total Needs

- The current approved project size in the Upper Ark basin is 28,950 acres - and 6,150 acres are still available for enrollment.
- Pumping reduction needs of the Rattlesnake Creek basin area in “Zone D” are estimated to be at least 4,400 acre-feet per year, and another 15,000 acre-feet per year from “Zone A” is desirable for long term balancing of the basin water budget.
WTAP

Program Objectives

- Purpose of the Water Right Transition Assistance Program (WTAP) is to reduce “Historic Consumptive Water Use” (HCWU) in targeted areas by permanently retiring irrigation water rights with incentive-based cost-share.
- WTAP is intended to help restore aquifers and recover stream flows in critically depleted target areas.
  - WTAP is a state driven program that works cooperatively with DWR and GMDs – and is designed to dove-tail with federal programs such as EQIP which can help offset the total costs of retirements.
  - The project was initiated in 2007 with two project target areas – Rattlesnake Creek basin and Prairie Dog Creek basin. Six additional “High Priority Areas” in Groundwater Management District #4 were approved as a third project target area by the Chief Engineer in 2008.
  - Compensation is determined by both 1) a fixed, flat rate per acre-feet of HCWU established annually (currently $2,000 per acre-feet of HCWU); and 2) a bid price submitted by the owner.
  - Selection of successful WTAP bids is based on ranking criteria which consider factors such as total distance from beneficial streams and water tables, and relative priorities of water rights being retired.
  - Unlike CREP, “partial” water rights can be retired, and the land can be immediately dryland farmed or irrigated from another water right if all necessary reductions in HCWU are approved by DWR.
- Based on results of the first five year pilot project, WTAP was extended for ten years until June 30, 2022.

Program Activities

- Since the beginning, enrollment has been very sporadic depending on state funding availability. Only one application in each year of FY2014, FY2015 and FY2016 was able to be approved. There was not enough money in FY2010, FY2013, FY2017, FY2018 or FY2019 to conduct an enrollment. In FY2009-2012, $2.8 M was spent to retire 2,213 acre-feet of HCWU, mostly in GMD No. 4 with a small amount in Rattlesnake Creek basin.
- To date, a total of $3,600,409 of state money has been spent on 25 enrollments which retired 2,549 acre-feet of HCWU. $981,393 of federal and local dollars has been matched to state WTAP grants since 2007.
- The Kansas Department of Agriculture is seeking funding for a new proposed target area in Wichita and Greeley counties which is intended to address aquifer declines and municipal water supply shortages.

Program Budget

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<th>Year</th>
<th>Amount</th>
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<td>$0</td>
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<tr>
<td>2021 Requested</td>
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</table>

- The FY2021 request is specifically designated for the proposed Wichita / Greeley counties project.

Additional Funding Resources

- WTAP allows for contributions from local sources (i.e. GMDs) and other extraordinary ones (i.e. NGOs) to help offset costs and to pay for bids in excess of the state allowable limit.

Vision Implementation Total Needs

- WTAP currently has a legislative budget limitation of $1.5 M per year.
  - WTAP can be an effective tool if limited to a small geographic target area.
  - In order to remain viable, more non-state contributions must be integrated into the state cost-share in order to attract interest.
  - Otherwise, the current state cap of $2,000 per acre-foot of HCWU will need to be raised in order to meet the going price point of water rights in the current / future market place.
Program Objective
Continued coordination, support and implementation of data collection, analysis and research aimed at the
development and increased adoption of water efficient crops, including research on industrial hemp production
in Kansas, and developing and increasing utilization of new forages and feed grains for livestock production. A
portion of these activities stem from the state-wide research coordination effort that has been underway with
representatives of K-State Research and Extension, Kansas State University, Kansas Department of Agriculture and
the Kansas Water Office (KWO).

Program Activities
• Sorghum research is being conducted through a partnership with the Collaborative Sorghum Investment
Program (CSIP) and Kansas State University. The CSIP is a producer and University (K-State) partnership
platform leveraging partner resources and building high performing research teams with field level
deliverables. A diverse cropping system including sorghum, wheat, corn, soybean, and other crops gives
farmers water-efficient management opportunities within and across seasons.
• Public-private investment in sorghum can address existing technology gaps and generate enhanced
sorghums for Kansas. Funding provided in FY 2019 and FY 2020 is being used within this program to
evaluate sorghum and its potential as a lower water use crop. Funding is necessary over a multi-year
period to bring alternative varieties to market.
• Current sorghum research includes the DropXL Sorghum program, which encompasses trait technology
for water-optimized sorghum in Kansas.
• In FY 2019 and FY 2020, funding was also provided for industrial hemp research in Kansas. Efforts in FY
2019 included working through the legal/permitting process for research participants/partners, with
plans to expand research activities in FY 2020.

Program Budget
• $350,000 appropriated in FY 2020
• $350,000 requested in FY 2021

Additional Funding Resources
Public-private partnerships continue to be developed to leverage funding for associated research, as well as
opportunities for federal funding/grant options.

Consequences of not funding
Continued research in the areas of less water-intensive crop varieties and the utilization of new forages and feed
grains for livestock production that promote water-efficiency and management are critical to the long-term availability
and sustainability of the state’s water resources.
Program Objective

Since the late 1990s, several state agencies have been working to reduce the amount of sediment entering our federal reservoirs. This has been accomplished by working with landowners to implement streambank protection projects. Watershed assessments have shown that streambanks are a major sediment contributor to the reservoirs. It is well known that erosion and sedimentation are natural occurrences in our watersheds and waterways. However, alterations to our watersheds have led to an increase in erosion and sedimentation which in turn leads to reduced reservoir storage capacity. This loss in storage capacity is a vital concern as we are relying more and more on the water in our federal reservoirs for both current and future use. In October 2013, Governor Brownback issued a call to action to his administration to develop a 50-Year Vision for the Future of Water in Kansas stating, “Water and the Kansas economy are directly linked. Water is a finite resource and without further planning and action we will no longer be able to meet our state’s current needs, let alone growth.”

Proposed Activities

- Streambank stabilization efforts continue to be concentrated in these priority Kansas watersheds above Federal reservoirs: Big Blue/Little Blue Rivers above Tuttle Creek Lake; Delaware River above Perry Lake; and Neosho/Cottonwood Rivers above John Redmond Reservoir.
- In FY19, the Kansas Legislature appropriated $500,000 for streambank stabilization projects. This funding is being utilized for the implementation of multiple sites in all three of the priority watersheds.
Streambank Stabilization

- Sites for implementation have been prioritized based on the highest estimated sediment yield and proximity to the downstream reservoir.
- Landowner agreements for construction and maintenance of the project, as well as the installation and maintenance of a riparian buffer will be obtained as part of the project.
- Contract with the Kansas Forest Service to oversee the enrollment, planting and maintenance of adjacent crop field or pasture acres into a riparian forest buffer program is a requirement of a completed project.

Recent Success
- In 2018, awarded construction contracts for the stabilization of 13 streambank sites and initiated designs for 12 new sites.
- The construction of approximately 13 streambank sites is anticipated to be completed in 2019.

Program Budget

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<th>Year</th>
<th>Amount</th>
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<tr>
<td>2021 Requested</td>
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Additional Funding Resources
- KDA, Division of Conservation
- Kansas Water Pollution Control Revolving Loan Fund (KDHE)
- Environmental Protection Agency 319 Program
- Kansas State Water Plan Fund
- John Redmond Dredging Bond Authority Funds
- Kansas Water Office Water Marketing Funds

Total Needs for Implementation
Based on KWO’s current assessment information, the following table indicates the total estimated streambank implementation needs within each of the priority watersheds.

<table>
<thead>
<tr>
<th>Priority Watershed</th>
<th>Sites Previously Addressed</th>
<th>Total Sites Remaining to be Addressed</th>
<th>Total Estimated Need*</th>
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<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Est. Bank Length (linear feet)</td>
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<td>John Redmond Reservoir Watershed</td>
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<td>Perry Lake Watershed</td>
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</tbody>
</table>

*The estimated bank length is based on the assessment information. Actual project lengths and costs may vary from those included in the above table based on design plans and final site construction.

Consequences of not funding
- Continued reservoir sedimentation at or above current rates, or worse than current rates; consequential loss of reservoir storage capacity.
Objective
Water conservation areas (WCAs) were created by the 2015 Legislature to provide a simple, streamlined and flexible tool that allows any water right owner or group of owners the opportunity to develop a management plan to reduce withdrawals to extend the usable life of the Ogallala-High Plains Aquifer. The WCA tool was a direct outgrowth of the Vision and the goal to provide more ways for water users to manage and conserve the resource.

Despite the considerable amount of work associated with each plan, KDA-DWR charges no fee to help water users develop and implement their WCA management plans.

As of August 2019, there are 51 WCAs saving over 10,000 acre-feet of water per year. Each plan is specific to each water user’s situation and its complexities. Plans can take anywhere from a few weeks to several months to complete. KDA-DWR proposes to add another water conservation specialist position to expedite the development and approval of future WCA plans.

There are currently two water conservation specialists working out of the Garden City field office and one working out of the Stockton field office. These positions were added by the secretary of agriculture and temporarily funded in anticipation of securing state water plan funds to carry out the high-priority Water Vision goal of using the WCA tool to conserve and extend the life of the Ogallala-High Plains Aquifer.

Proposed Activities
Two water conservation specialist positions will be located in KDA-DWR’s Garden City field office and one in the Stockton Field office. Each position will work directly with water users to develop WCA plans to optimize the amount of long-term business-sustainable water savings and ensuring that any flexibility allowed by the WCA does not harm any other water rights.

Program Budget
- $300,000 in FY 2021

Additional Funding Resources
- None

Vision Implementation Total Needs
- $300,000 per year for three permanent positions

Consequences of not funding
Without permanent funding for these positions, WCA work will be deferred and delayed because of the amount of work required to develop thorough management plans. Delay has caused some potential WCA participants to lose interest, at least temporarily. Delay in developing and implementing a WCA simply delays water savings.
Program Objectives

Additional engineer in the Kansas Department of Agriculture – Division of Water Resources (DWR) Stafford or Parsons Field office to review water structures plans and perform inspections of water structures, channel changes and stream obstructions. The position would benefit Kansans by reducing travel time and thus increasing timeliness and efficiency of responding to complaints and issuing permits.

DWR Proposed Activities

The position would do professional engineering work, involving specialized activities of water resources engineering. The activities include independent review of complex engineering calculations and construction documents for dams, channel changes, stream obstructions, floodplain fills and levees in order to process water structure permits. The work includes field inspections of construction and completed projects, safety inspections, resolution of conflicts, and communication with landowners, contractors and other engineers. The position would ensure that succession in staff is appropriately and responsibly planned for.

Recent Success

In 2013 the American Society of Civil Engineers (ASCE) rated Kansas’ dam infrastructure a D- citing increasing age and lack of funding for regulation and maintenance as the reason for the poor grade and encouraged significant steps be made in terms of funding for oversight of the infrastructure. With no additional staffing or funding, the latest draft ASCE report card rating is a C. Water structures staff has prioritized safety inspections and developing Emergency Action Plans (EAPs) for significant and high hazard structures. Efficiency for permitting has also been reduced to a processing time of 34 days for water structures and complaint resolution in 25 days.

Program Budget

- $100,000 for Year 1 – FY2021

Additional Funding Resources

- none

Vision Implementation Total Needs

The new position funded by this enhancement would continue as permanent staff at a cost of $80,000 per year.

Consequences of not funding

At current staffing levels, Kansas does a good job of protecting citizen’s property and life, but without additional staff resources, Kansans risk loss of property and life due to a water structure failure. Additionally, citizens may experience delays in the permitting process thus missing opportunities to construct in a timely and efficient manner.
Program Objectives

Additional interstate water engineer position within Kansas Department of Agriculture – Division of Water Resources (DWR) in Garden City to monitor Colorado’s compliance with the CO-KS Arkansas River compact. Colorado has a staff of over 25 to manage the Arkansas River basin in Colorado. Kansas has two. It would be beneficial to Kansas water users to have more capacity to monitor Colorado actions in the basin.

DWR Proposed Activities

Monitor Colorado water laws, rules & regulations, on-ground management activities, and court decrees to ensure Kansas’ interests in the Arkansas River are protected. Help to compile the Colorado water use records and other information needed to operate the hydrologic-institutional groundwater model that determines Colorado’s compliance with the compact. Interact with federal agencies on operations of their projects, proposed changes to those operations, and compact related issues. Assist with distributing Kansas’ water by coordinating water releases from John Martin Reservoir in Colorado. It takes years to learn this job. This position would also ensure that succession in staff is appropriately and responsibly planned for.

Recent Success

Colorado has been in compliance with the compact for the last 10 years. As part of their plan to comply with the compact and continue to irrigate, Colorado has chosen to forgo using river water to irrigate some lands in the basin in order to pump groundwater. This dried-up acreage has been inspected by Kansas since 2001. Each year, some tracts of land are disqualified after inspection which reduces Colorado’s compliance balance. Colorado water management information is regularly inspected by Kansas; errors are found and corrected before the information is used in the hydrologic-institutional model that determines Colorado’s compliance with the compact.

Program Budget

- $100,000 for Year 1 – FY2021

Additional Funding Resources

- None

Vision Implementation Total Needs

The new position funded by this enhancement would continue as permanent staff at a cost of $80,000 per year.

Consequences of not funding

At current staffing levels, Kansas does a good job of protecting its interests in the river, but without additional staff resources, Kansas risks missing opportunities to scrutinize a greater number of water transactions in Colorado and to monitor and influence Colorado water policy to strengthen Kansas’ position.
Program Objectives

Approximately 20 telemetry installations. Telemetry allows for remote observation of water right operations to increase management opportunities, study the effects of groundwater pumping on local aquifers and on neighboring wells in near-real time, and enhance water right protection in certain situations.

KDA Proposed Activities

In consultation with the Kansas Geological Survey, purchase and install about 20 telemetry units with a varying mix of water level transducers to measure the water level in the aquifer, and flow rate loggers to measure the pumping rate at the well. The telemetry units would transmit the data recorded from the water level transducers and the rate loggers to a website where the well owner and Kansas Department of Agriculture (KDA) would have access to the data.

Recent Success

KDA Division of Water Resources (KDA-DWR) currently has about 20 telemetry units, all of which have served well beyond their design lives and are in various states of repair. These units have been key to studying and understanding complex well-to-well and aquifer interactions mostly in the central and western part of the state. The data collected from these units has been used to verify and augment other regular water level measurements and to develop reports on groundwater impairment.

Program Budget

- $125,000 for Year 1 – FY2021

Additional Funding Resources

- None

Vision Implementation Total Needs

- $30,000 per year to purchase approximately 4 units per year, maintain existing units, and pay for the telemetry service – the communications and data hosting service to retrieve and access the remote data.

Consequences of not funding

If this project is not funded, Kansas will miss an opportunity give producers a very powerful tool with which to monitor not only their water use, but the health of the local aquifer that they depend on in near-real time. KDA-DWR and other agencies and institutions will also miss the opportunity to gain a wealth of knowledge about how different parts of the aquifer respond to pumping which would enhance the ability to develop site-specific and effective management strategies.
Program Objectives

- Public water supply sponsors are provided financial assistance to restore community water supply systems.
- Water Supply Restoration is a voluntary, incentive-based program applicable where appropriate watershed restoration and protection plans are planned or are already in place.
- The program budget is financed through the State Water Plan Fund from the Clean Drinking Water Fee Fund.

Program Activities

- Santa Fe Lake in the City of Augusta has been declared unsafe and does not meet state dam safety standards.
- $465,000 is requested to make the needed repairs and to restore the lake as a safe, viable public water supply.
- As a sponsor, the City of Augusta will bear the remaining total balance of repair costs, more than $500,000.

Program Budget

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019 Actual</td>
<td>$0</td>
</tr>
<tr>
<td>2020 Appropriated</td>
<td>$0</td>
</tr>
<tr>
<td>2021 Requested</td>
<td>$465,000</td>
</tr>
</tbody>
</table>

- No federal funds are used in this program.
- Match sources are typically rural water districts or municipalities needing drinking water improvements.

Recent Success

- Mission Lake (Kansas RAC): total cost was $6.6 Million – state cost-share was $2.6 Million.
- Washington County RWD No. 1 (Kansas RAC): total cost was +$1 Million - state cost-share was $862,069.
- Augusta Lake (Equus-Walnut RAC): total cost was $2.1 million - state cost-share was $1 million.
- Osage City Reservoir (Marais des Cygnes RAC): total cost was $3.3 million - state cost-share was $1.1 Million.
- Ellsworth County RWD No. 1 (Smoky Hill-Saline RAC): total cost was $600,000 - state cost share was $235,000.

Example project work:

- The Osage City Reservoir site involved both dam and spillway rehabilitation and reservoir storage restoration. The City of Osage City was responsible for the dam and the spillway rehabilitation (cost approximately $2.17 million), the state funded the dredge of the lake which amounted to $1.13 million appropriated over three fiscal years (2013-2015). Approximately 100,000 cubic yards of sediment was removed. The Osage City Reservoir now provides a reliable secondary water supply source to the Osage City community and their wholesale water supply customers (Reading, Harveyville, Burlingame, OS CO RWD Nos. 6 and 7). The project was completed in June, 2015.
- The Ellsworth County RWD No.1 site involved both upgrade / replacement of the raw water intake and extension of the intake screen and manifold from the shore into deeper water of Kanopolis Lake. The Ellsworth County RWD No.1 draws approximately 1 MGD from the reservoir, and the service area includes 1,500 rural water meters and nine other public water supplies (seven towns and two rural water districts) for a population of about 8,300 people. The sponsor paid for $365,000 of repair costs; the state cost-share for the upgrade was $235,000. The project was completed in February, 2017.
Objective
Water conservation areas (WCAs) were created by the 2015 Legislature to provide a simple, streamlined and flexible tool that allows any water right owner or group of owners the opportunity to develop a management plan to reduce withdrawals to extend the usable life of the Ogallala-High Plains Aquifer. The WCA tool was a direct outgrowth of the Vision and the goal to provide more ways for water users to manage and conserve the resource.

Despite the considerable amount of work associated with each plan, KDA-DWR charges no fee to help water users develop and implement their WCA management plans.

As of August 2019, there are 51 WCAs saving over 10,000 acre-feet of water per year. Each plan is specific to each water user’s situation and its complexities. Plans can take anywhere from a few weeks to several months to complete. KDA-DWR proposes to add a water conservation manager position to supervise the water conservation specialist positions to expedite the development and approval of future WCA plans.

Proposed Activities
The water conservation manager will be located in KDA-DWR’s Manhattan headquarters and will work directly with water users to develop WCA plans to optimize the amount of long-term business-sustainable water savings and ensuring that any flexibility allowed by the WCA does not harm any other water rights. The position will prioritize and evaluate the work of the water conservation specialists, work with water users to develop WCA plans, and ensure that rules and norms are being applied consistently when appropriate and that new ideas to maximize the benefit of the WCA tool to producers and to the resource are being shared with water users and water managers.

Program Budget
- $125,000 in FY 2021

Additional Funding Resources
- None

Vision Implementation Total Needs
The new position funded by this enhancement would continue as permanent staff at a cost of $125,000 per year.

Consequences of not funding
At current staffing levels, requests for WCAs are often delayed because of the amount of work required to develop a complete and thorough management plan. Delay has caused some potential WCA participants to lose interest, at least temporarily, and delay in developing and implementing a WCA simply delays water savings.
Program Objective
KDA-DWR is heavily invested in information technology (IT) solutions that provide timely, accurate, and effective service to our customers in the public and in other state and federal agencies. We rely on our water rights information database, water structures database, Docuware for our official repository of records, and various digital interfaces with other agencies to collect and disseminate data. Our best successes with these tools have come from focusing KDA internal IT staff on development and maintenance of these expert computer-based systems.

There are heavy demands on the current KDA IT staff from other KDA programs as well as from DWR. There is enough IT work in DWR to employ a full-time applications programmer. We propose to fund an IT position to be dedicated to maintaining and enhancing DWR’s expert computer systems.

Proposed Activities
The new position would report to the chief information officer of KDA, but would be dedicated to developing, maintaining and enhancing DWR’s expert computer systems.

Program Budget
• $85,000
Program Objectives
To digitize and electronically archive official water rights information to enhance its accessibility to the public and to make the information even more secure against loss by deterioration or catastrophic event such as fire or flood.

Issue
The Kansas Department of Agriculture Division of Water Resources is responsible to maintain the official repository for real property rights in water use for the approximately 40,000 water rights in the state. The vast majority of these water rights exist as paper documents in file cabinets distributed among the four KDA-DWR field offices in Topeka, Stockton, Garden City, and Stafford. Most of these water right files are also available in the Manhattan headquarters as microfiche copies of the paper files. As the paper and microfiche copies age, information is being lost. KDA-DWR has been scanning new water right information since about 2014, but has not had the resources to make a full transition to digital file keeping.

Plan for Success
KDA-DWR proposes to add temporary staff dedicated to file scanning and archiving in each of the field offices to move the paper files to digital and into the agency’s document management system. Each field office would also need a high-quality scanner to execute the project. The process would take approximately three years to complete. Each document of each file will be checked by DWR field office management to ensure accuracy and completeness.

Cost
We estimate that each temporary worker would work 999 hours per year at $12 per hour in each of the four field offices and that each scanner would cost about $1,500

Program Budget
• $150,000 in FY 2021
Assessment and Evaluation

Program Objective
The Assessment and Evaluation funding line is used to contract for a variety of data collection and studies. The overall objective of the program is to provide the water planning and vision process with the background information necessary to make decisions and improve implementation.

KWO Program Activities
The Assessment and Evaluation (A&E) funding line started in 1998 and has received some level of funding consistently since 2001. During the 1990’s, and partially into the early 2000’s, many individual studies were identified by appropriation within the SWPF. Nearly all Kansas Water Office study funds had been rolled into the A&E funding line by FY 2006. By combining these funding activities, the agency can be more responsive to study needs and changing priorities.

<table>
<thead>
<tr>
<th>Project</th>
<th>Contractor / Cooperator</th>
<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended Sediment Monitoring</td>
<td>U.S. Geological Survey</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>High Plains Index Wells</td>
<td>Kansas Geological Survey</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>High Plains Model Maintenance</td>
<td>Kansas Geological Survey</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>KBID Buried Lateral Evaluation</td>
<td>Kansas Geological Survey</td>
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<tr>
<td>Missouri Region GW Inventory</td>
<td>Kansas Geological Survey</td>
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<td>X</td>
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<tr>
<td>Produced Water Pilot Test Project</td>
<td>Bureau of Reclamation</td>
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<tr>
<td>Kansas River Basin WS Study</td>
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</tr>
<tr>
<td>KS River Sediment Transport Model/PAS</td>
<td>U.S. Corp of Engineers</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Kansas River Water Quality Monitoring</td>
<td>U.S. Geological Survey</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Republican River Water Quality Monitoring</td>
<td>U.S. Geological Survey</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Recent Success
Each of the studies completed has a different set of objectives. Some examples of accomplishments have been:

- Studies completed under the Assessment and Evaluation program have improved water management in our reservoirs through OASIS surface water modeling.
- Our understanding of the Ogallala Aquifer and the amount of water remaining has been improved through ground water modeling and the High Plains Index Well efforts.
- Funding has provided cost-share for participating GMDs to contract with KGS for GW model updates/enhancements.

Program Budget
- $700,000 appropriated in FY 2020
- $700,000 requested in FY 2021

Additional Funding Resources
Some of the projects are cost shared or matched to federal funds, enhancing the state’s ability to leverage federal funding.

Consequences of not funding
Lack of progress made in various areas including water management, water conservation, new technologies, and water quality improvements.
Program Objective
All of the contracts for state owned storage in the Corps of Engineers reservoirs used for water supply require the payment of a proportional amount of the operation and maintenance costs associated with the storage that is in service. Under the provisions of a 1985 memorandum of understanding (MOU) between the state and the Corps of Engineers, storage that had been reallocated from water quality to water supply could be purchased at the original cost of construction and original interest rates, a significant savings. Under the MOU provisions, the state was required to make a lump sum payment for the principal and interest, which requires a continuing operation and maintenance obligation on that storage. The 1993 legislature directed the KWA to aggressively acquire all storage made available under the MOU, even though some of the storage in the following reservoirs was not immediately needed by either the Water Marketing or Water Assurance program customers: Council Grove, Elk City, Marion, Melvern, Pomona, and Tuttle Creek. In addition, the State Water Plan Fund is used to pay the operation and maintenance costs of water storage space in Cedar Bluff Reservoir, which is used for recreational purposes as well as artificial recharge of the Smoky Hill alluvium downstream from the reservoir. The storage was split into joint use and a pool used for artificial recharge below the reservoir. KWO is obligated to pay a share of the operation and maintenance.

KWO Program Activities
The KWO continues to utilize MOU Storage Operations & Maintenance funds, within the State Water Plan Fund, to pay the annual operation and maintenance costs of water storage space in following reservoirs in accordance with the associated water storage purchase agreements between the state of Kansas and the Corps of Engineers. The funding request is based on the anticipated costs communicated to the KWO by the Corps of Engineers for the noted fiscal year. Invoices are submitted to the KWO annually for payment.

- Council Grove
- Elk City
- Marion
- Melvern
- Pomona
- Tuttle Creek
- Cedar Bluff

Program Budget
- $410,000 appropriated in FY 2020
- $480,100 requested in FY 2021

Program Accomplishments
Payment to the Corps of Engineers for the state’s contractual operation and maintenance obligation ensures water storage space is available to meet future growth.

Additional Funding Resources
None.

Consequences of not funding
The state would be unable to meet its contractual obligations to the Corps of Engineers for payment of operation and maintenance costs associated with state-owned water storage within the associated reservoirs.
**Program Objective**
Support the continuous monitoring of streamflows on key streams and rivers in Kansas. The information serves multiple purposes, public and private entities, and the general public.

The Kansas Water Office contracts with the U.S. Geological Survey to operate a network of streamgages in Kansas that have been collecting data for more than 100 years. These streamflow stations and reservoir level stations continue to provide real time data for streamflow and lake conditions. These data are used in making operational decisions regarding water rights; minimum desirable streamflows; flood monitoring; reservoir management; and water quality monitoring and analysis. In addition, this information is used to help operate the Water Marketing and Water Assurance Programs.

**Program Activities**
Contracted with USGS to operate 63 continuous record stations (including 3 reservoir stations and 3 ground-water monitoring wells) at locations across the state and provide access to USGS data through the Internet.

**Recent Success**
Streamgages provide near real-time information about stream and river conditions across the state of Kansas. This information is used on a daily basis by numerous local, state and federal agencies and research entities to plan, protect and conserve water resources.

**Program Budget**
- $423,130 appropriated in FY 2020
- $430,000 requested in FY 2021

**Additional Funding Resources**
The Kansas Water Office, in partnership with USGS, contributes money to the cost of operations of the streamgages. Other federal, state and local agencies contribute cooperative funding as do some private entities. There are a number of gages that are fully supported by the USGS and cooperatively by other entities.

**Consequences of not funding**
Operation of the streamgaging sites included in the contract between the state and USGS would cease and the vital flow data collected at these sites would be unavailable.
Program Objective
The Technical Assistance to Water Users program, which began in 1992, provides on-site technical assistance to municipalities (cities and rural water districts). The intent of the program is to improve the operations and maintenance of public water supply systems (PWS), as well as water conservation planning and emergency response, through on-site assistance.

Per K.S.A. 82a-2101, not less than 15% of the Clean Drinking Water Fee shall be used for technical assistance to water users to aid such systems in conforming to responsible management practices and complying with regulations of the United States environmental protection agency and rules and regulations of the department of health and environment. The FY 2021 budget request represents 15% of the anticipated Clean Drinking Water Fee to be collected by the state.

Program Activities
The Kansas Water Office is charged by statute to provide technical assistance for water users required to adopt and implement conservation plans and practices (K.S.A. 82a-733 et seq.). On-site technical assistance is provided by contract with the Kansas Rural Water Association. Assistance is available to PWS personnel on operations, maintenance, finance, management, regulatory requirements, water quality and public health concerns and/or other critical issues. Assistance is prioritized based on severity of the problem and as time and resources permit. All technical assistance activities are logged and reimbursed on a time and expenses basis.

Recent Success
On-site technical assistance is highly valued by PWS personnel, especially those that work part-time for a small system. The program is very efficient, given the distances between PWS, especially in western Kansas. Technicians live and work in different areas of the state, and they sometimes know more about a particular system than the current operators. Many questions are fulfilled with a phone call. On-site visits are coordinated to maximize the time spent with PWS personnel and minimize the number of hours traveled.

FY2018:
- On-site Technical Assistance:
  - 2,660 hours on-site
  - 1,158 hours traveled
  - 170 water loss surveys conducted
  - 328.6 million gallons of loss located (on an annual basis)

Program Budget
- $325,000 appropriated in FY 2020
- $425,000 requested in FY 2021

Additional Funding Resources
None.

Consequences of not funding
The state will be unable to provide much needed local technical assistance to public water suppliers throughout the state.
Program Objectives
To implement an education plan that builds upon existing efforts and leads to the development of new statewide programs that focus on water resources. Water resource education should begin at the kindergarten level, develop into secondary education, prepare students to go into the workforce in a water related field at the university level, and continue to provide information to the general public and key stakeholders in our state. The ultimate goal is to raise awareness of water issues within the state and increase the knowledge of those working within water-related careers.

KWO Proposed Activities
The activities proposed within in this section are identified in the Education Public Outreach Supplement of the Vision for the Future of Water Supply in Kansas. This education supplement, and the included action items, were created and approved through public meetings involving any and all state and federal entities that found value in participating in drafting this supplement, as well as members of varying education sectors.

- Implement and enhance the already created statewide marketing campaign
- Establish and promote a brand recognizable centralized website
- Collect and incorporate information about the state’s water resources on the website and create a clearinghouse for resource libraries on the website
- Continue to create opportunities to encourage collaboration between organizations currently involved in water education for youth with the following activities
  - Hold a statewide Summit on Water Education for educators and educational organizations to share best practices, resources, curriculum and services
  - Develop a grant program for new and existing water education organizations to provide professional development, curriculum and resources which build on statewide messaging efforts.
  - Begin evaluation of higher education institutions current academic offerings and identify water-related courses and curriculum and partner in water programs within universities
  - Establish the “Top 3” water conservation measures for each Regional Planning Area for household, agriculture and industrial/municipal water use. Implementation cost to help RACs promote in their Region
  - Coordinate regional/topical workshops to facilitate development of partnerships between higher education and business and industry. Partnerships will analyze existing academic degree programs leading to water-related careers
  - Develop a grant-sponsored internship/mentorship program in water-related careers, sponsored across water agencies.
    - Employ university or high school student interns at various statewide locations in water-related careers from policy to technical work
    - Conduct week long mentorship programs for high school students in at various state wide locations in water-related careers from policy to technical work.
Recent Success

- The marketing firm Walz Tetrick initiated the Statewide Marketing Campaign
  - Created campaign and marketing slogan “Kansas Runs on Water”
  - Began discussion for formulation of a statewide website
- Communication began with KACEE and KSU to pursue joint grant funding to implement water education programs and accomplish Vision Education Goals
- Position description created for the Community Outreach Specialist position

Program Budget

- $100,000 appropriated in FY 2019
- $100,000 appropriated in FY 2020
- $250,000 requested for FY 2021

Additional Funding Resources

- Partnering State Agencies: KDA, KDHE, KDWP&T, and KWO
- Private Business Funding

Total Needs for Implementation

- $500,000 annually

Consequences of not funding

Inability to implement water resource education-related activities and initiatives recommended within Education Public Outreach Supplement of the Vision. Water resource knowledge will not improve, water-related career development opportunities will not be increased, and marketing campaign & website development will be incomplete. Knowledge regarding the value of water in Kansas will not be elevated to appropriate levels, leading to waste and decline of water as a valuable resource and lead to water deficits in some regions and economic decline in various areas within the state.
Program Objective
Continued coordination, support and implementation of reservoir-related data collection, analysis and research of sediment and HABs, research related to sediment-reducing practices such as streambank stabilization projects, as well as the continuation of the Kansas River Alluvial Index Well Network and the associated stream aquifer model. A portion of these activities stem from the state-wide research coordination effort that has been underway with representatives of K-State Research and Extension, Kansas Geological Survey, Kansas Biological Survey, the University of Kansas, U.S. Geological Survey, Kansas Department of Agriculture, Kansas Department of Health and Environment and the Kansas Water Office (KWO).

Proposed Activities
- Completion of reservoir bathymetry surveys on a rotating basis to determine storage volume changes due to sedimentation. This information is necessary for the KWO’s continued operation of the agency’s PWS Programs, which provide long-term contracts and for reservoir water supply storage to municipal and industrial customers, as well as support reservoir operations for water assurance district members.
- Selection of reservoirs for bathymetric surveys will be determined by the Kansas Water Office, and will be largely based on the current priorities and the existing rotational schedule.
- Collection and analysis of sediment cores taken from Kansas reservoirs on a rotating basis. The cores serve as a direct measure of infill thickness and a layered timeline of sedimentation and harmful algal bloom (HAB) events.
- KGS continues to lead a multi-year study evaluating current and proposed streambank stabilization (SBS) projects to help determine SBS effectiveness at reducing erosion and associated sedimentation, and help to inform adaptive management strategies for enhancing project efficiency.
- Continued installation of index wells at key locations in the alluvium along the Kansas River, and continued development of a stream-aquifer model of the Kansas River alluvial aquifer from Junction City to the junction with the Missouri River.
- KBS worked closely with KWO and KDEM during the May 2019 flood event to provide timely and regularly updated time-specific projected maximum inundation events. It was determined that a stand-alone tool that KDEM and other agencies could use to model scenarios on-the-fly would greatly enhance the state’s ability to address future flooding events. KBS plans to continue efforts to develop a portable, stand-alone flood mapping tool to analyze flood inundation scenarios at various locations for different flow scenarios/events.

Recent Success
- In 2019, the KGS has continued to collaborate with KBS, KWO, USGS and the Corps of Engineers to collect data and baseline survey information at current and proposed streambank stabilization project sites. Additionally, the USGS has enhanced suspended sediment monitoring at gages below implemented and planned SBS sites.
- A bathymetric survey was completed of John Redmond Reservoir, Coffey County, in 2007 and 2014 to evaluate changes in preparation of the dredging initiative in 2016. New bathymetric surveys at multiple lakes are planned to be completed in 2019.
- The Kansas Water Office and Kansas Geological Survey (KGS) have maintained a continued partnership to develop, monitor, and expand the High Plains Index Well Network.
- In 2018, sediment cores were collected from Milford Lake and analyzed for nutrients, and cyanobacteria pigments, and in 2019, cores were collected from Marion Lake and Keith Sebelius Lake and analyzed.
Program Budget
- $350,000 appropriated in FY 2020
- $350,000 requested in FY 2021

Additional Funding Resources
There is a potential for federal funding/grant options for some program activities. Other potential sources of funding include the USGS, U.S. Army Corps of Engineers, KWRI, U.S. EP, NSF and public water supply users.

Consequences of not funding
- Insufficient data regarding reservoir storage volumes impedes the state’s ability to determine the available yield associated with state-owned water supply storage and associated customer contracts. Updated surveys are crucial to long-term planning for water supply storage purposes, as well as for evaluating current sedimentation rates at individual reservoirs to determine priority areas for sediment-reducing watershed practices.
- Without HAB research to try to determine how to eliminate or reduce the occurrence of blooms, the incidence of HABs will continue at their natural maximum duration and maximum frequency without disruption of anthropogenic efforts. This could extend the timeframe in which beaches and lakes are closed, maximize impact to the aquatic communities and increase the risk of microcystin exceeding EPA health advisories for both recreation and drinking water.
- The state continues to implement streambank stabilization projects aimed at reducing erosion at highly eroded streambank sites above federal reservoirs. Research is necessary in order to quantify the long-term effectiveness of these projects at reducing sedimentation into the reservoirs, as well as to develop adaptive management strategies to increase their efficiency and success.
- The Kansas River corridor is a major growth corridor in the state. Currently, the river is a gaining stream, which means the alluvium contributes to base flow. Lack of understanding of the complex interaction of the river and the alluvium could lead to reduction in flows to meet targets, increases in need for reservoir releases to meet targets and hence more impact on the water in storage, leading to more shortages for not only irrigation and fish and wildlife purposes, but municipal and industrial demands as well.
- As demonstrated during the 2019 flood event, the development of a stand-alone flood mapping tool to analyze areas of inundation based on varying flow conditions would greatly enhance the state’s ability to address future flooding events.
Program Objective

Continued development and enhancement of demonstration farms that allow the installation and testing of the latest irrigation technologies and soil moisture management, as well as the opportunity to evaluate the effectiveness of conservation practice implementation in reducing sediment and nutrient runoff on a whole field scale.

KWO Program Activities

- Provide continued support for existing Water Technology Farms
- Collaborate with partners on development of additional Water Technology Farms for water conservation purposes
- Collaborate with partners on development of a new type of Water Technology Farm where land management scenarios are evaluated for impacts to water quality conditions

Recent Success

- In addition to the original three Water Technology Farm projects developed in the 2016 growing season, three additional Water Technology Farm projects were put in place for the 2017 growing season to further enhance irrigation efficiency technology evaluation in western Kansas. One of the projects included in 2017, was a partnership with the Northwest Kansas Technical College’s newly developed Precision Agriculture program, allowing students to incorporate workforce development into the project.
- Four new Water Technology Farms projects were developed for the 2018 growing season, which were located in Ford, Wichita, Harvey, and Sedgwick Counties.
- For the 2019 growing season, five Water Technology Farms were developed. These new farms included Homeland Farms in Greeley Co., Loess Hills Farms in Doniphan Co., R&E Goering Farm in McPherson Co., Shelly Hoobler Farm in Sumner Co., and American Warrior Farm in Harper County. Many of these projects were included in the 2019 Water Technology Farm Field Days that continue to be held to showcase the technology and management scenarios put into action on the Water Technology Farms.
- Planning efforts continue in support of water quality technology farm establishment in the Neosho Regional Planning Area to evaluate sediment and nutrient runoff under various cropland management scenarios.
Program Budget
- $75,000 in FY 2019
- $75,000 in FY 2020
- $250,000 requested in FY 2021

Additional Funding Resources
Water Technology Farms success can be attributed to the current public-private partnerships for cash and in-kind contributions from over 100 agencies and project partners. Additional partnerships will be likely in the future.

Consequences of not funding
Lack of progress made informing irrigators on improved technology and management scenarios yielding conservation of critical groundwater resources.
Continued establishment and maintenance of Water Technology Farms, along with incorporating Water Quality Technology Farms, will not be possible, allowing further decline of water quantity and water quality.
Watershed Conservation Practice Implementation

Program Objective
To protect water supply storage and improve water quality in reservoirs across Kansas that provide water to municipal and industrial customers through implementation of watershed best management practices (BMPs) within priority reservoir watersheds. BMPs are individual or a combination of practices that are determined to be the most effective and practicable (including technological, economic, and institutional considerations) means of controlling point and non-point sources of pollution at levels compatible with resource and economic goals. BMPs which can be utilized to reduce sediment and nutrient runoff in watersheds above water supply sources in Kansas include but are not limited to terraces, grassed waterways, cover crops and buffer strips. Water storage is being diminished over time due to reservoir sedimentation and water quality is being impacted by nutrient runoff, potentially resulting in harmful algae blooms, taste and odor issues with drinking water, and impacts to recreation in Kansas.

KWO Proposed Concepts and Activities
- Provide financial assistance to producers within targeted watersheds to implement conservation practices which reduce sediment runoff.
- Coordinate with KDA-DOC, KDHE, and RAC representatives on delivery of program to producers within eligible watersheds
- Projects to be implemented with Watershed Conservation Practice Implementation funding will be designed to meet Natural Resources Conservation Service (NRCS) specifications and/or guidelines.
- Engage with project partners to evaluate the FY 2019 & 2020 Kansas Reservoir Protection Initiative and make modifications to improve the overall effectiveness and efficiency of the program for FY 2021.
- Applications within eligible watersheds for FY 2021 funding will be accepted on or before July 1, 2020, pending program funding availability.

Recent Success
- Kansas Reservoir Protection Initiative developed to support utilization of $900,000 in FY 2019 and $700,000 in FY 2020. Four reservoir watersheds targeted with FY 2019 & 2020 funding for watershed conservation practice implementation include Fall River, John Redmond, Kanopolis, and Tuttle Creek.
- FY 2019 & 2020 funding utilized for reducing sediment runoff from entering waterways and ultimately reservoirs in previously mentioned reservoir watersheds.
- Estimated sediment reduction as field scale based on applications approved for funding:
  - FY 2019: Over 33,000 tons
  - FY 2020: Nearly 29,000 tons
- All $900,000 in FY 2019 funding allocated during initial sign up period in 2018.
- Applications submitted during initial FY 2020 signup period during June and July of 2019 recently reviewed and all $700,000 in project funding for FY 2020 has been allocated.

Program Budget
- $900,000 appropriated in FY 2019
- $700,000 appropriated in FY 2020
- $1,800,000 requested in FY 2021
Watershed Conservation Practice Implementation

Additional Funding Resources
- Natural Resource Conservation Service (NRCS)
- Environmental Protection Agency (EPA) 319 Program
- Farm Service Agency (FSA)

Total Needs for Implementation
Total implementation needs noted within WRAPS Watershed Plans in excess of $500,000,000.

Consequences of not funding
- Continued nutrient and sediment runoff & soil erosion at current or worse rates.
- Continued reservoir sedimentation at or above current sedimentation rates.
- Continued nutrient loading for reservoirs with a history harmful algal blooms.
Program Objective
Chloride contamination within the Equus Beds Aquifer resulting from previous oil field production has resulted in areas of groundwater which is unsuitable for most uses. Remediation of areas of high chloride concentrations within the Equus Beds would help generate an additional water supply source as well as help protect and prolong the useable lifespan of groundwater wells around areas of chloride contamination.

KWO Program Activities
- Collaborate with KDHE to evaluate proposals, within the Equus Beds Aquifer, that remediate the Burrton chloride plume impacting groundwater within the region as well as the City of Wichita’s groundwater well field.
- Assist in securing additional funding for pilot project through the WaterSMART program, local water users, or other sources of funding as they become known.
- Key Dates and Deliverables
  - July 26 - Finalize work request and send to consultants
  - August 23 - Bids due from consultants (30 days)
  - November 29 – Evaluation and proposal of remedial alternatives due (3 months)

Program Budget
- $50,000 in FY 2019
- $50,000 in FY 2020
- $100,000 requested in FY 2021

Potential Additional Funding Resources
- U.S. Bureau of Reclamation WaterSMART Program
- City of Wichita
- Groundwater Management District #2

Total Needs for Implementation
Successful implementation of this project will provide a better understanding of what type of treatment technology is necessary for a full-scale remediation project and estimated total costs. Total project costs for a full-scale remediation project could exceed $50,000,000.

Consequences of not funding
Continued movement of the Burrton chloride plume within the Equus Beds Aquifer towards the east-southeast, leading to impacts with the City of Wichita’s groundwater well field as well as other regional groundwater users.
Program Objectives

The Regional Conservation Partnership Program (RCPP) is a Natural Resources Conservation Service (NRCS) initiative which encourages partners to join in efforts with producers to increase the restoration and sustainable use of soil, water, wildlife and related natural resources on regional or watershed scales. Through the program, NRCS and partners help producers install and maintain conservation activities in selected project areas through existing NRCS conservation programs. Partners leverage RCPP funding in project areas and report on the benefits achieved. The Kansas Water Office (KWO), serving as the Lead Partner, submitted a project proposal which was approved by NRCS to establish a RCPP project to address water quality concerns in the Milford Lake watershed.

Nutrient runoff within the Milford Lake watershed in Kansas is a source of nutrient loading contributing to aquatic conditions which promote formation of harmful algal blooms (HABs) within Milford Lake. This RCPP project will look to implement conservation practices within the Milford Lake watershed to decrease nutrient runoff, thus decreasing the introduction of new nutrient loading contributing to the formation of HABs in Milford Lake. Additional benefits from project implementation include decreased sediment runoff from entering Milford Lake watershed surface waters, improvements to fish and wildlife habitat, and improved plant productivity.

KWO Proposed Activities

- Leverage project partner resources with NRCS technical and financial resources to enhance watershed conservation practice implementation within project area
- Work with project partners to hold producer-focused meetings within project area to increase awareness on resources available to assist with conservation practice implementation
- Work with project partners to increase technical assistance within watershed to promote and design conservation practices which meet NRCS specifications

Recent Success

KWO has been working since January 2018 to coordinate project activities in association with the Milford Lake Watershed RCPP Project. The first application period for producers within the project area to sign up for financial assistance for conservation practice implementation took place from late 2018 into March 2019. KWO is currently working with NRCS to determine which applications which went to full contract status during Year 1 and which of those applications were for core practices which are eligible for additional financial assistance.

Program Budget

- $200,000 appropriated each year for FY 2018-2020 ($600,000 total)
- $200,000 requested in FY 2021
  - Future request of $200,000 in addition to FY 2021 budget request needed to fulfill KWO’s total match contribution of $1,000,000 for entire duration of project.
An additional $400,000 in funding for KWO in support of this project would provide the entire $1,000,000 contribution targeted by KWO for the duration of the project. $200,000 of this remaining $400,000 is being requested in FY 2021. Availability of these funds helps provide additional producer financial assistance on top of the NRCS payment to be provided through the Environmental Quality Incentives Program (EQIP) on core practices deemed to provide efficient nutrient reductions within project area. NRCS has committed to providing $2.88 million in financial and technical assistance within the project, with the overall partner contribution being over $3 million.

Additional Funding Resources

Project partners in addition to KWO will provide over either direct financial or in-kind support to the project. Current project partners include (in alphabetical order):

- Acorns Resort
- City of Lawrence
- City of Olathe
- City of Topeka
- City of Wakefield
- Clay County Economic Development Group
- Clay County, KS
- Cloud County Economic Development
- EcoPractices (Sustainability Partners)
- Flagstop Resort & RV Park
- Friends of the Kaw
- Johnson County WaterOne
- Kansas Alliance for Wetlands and Streams
- Kansas Biological Survey
- Kansas Corn Growers Association
- Kansas Department of Agriculture- Division of Conservation
- Kansas Department of Health and Environment
- Kansas Department of Wildlife, Parks and Tourism
- Kansas Farm Bureau
- Kansas Forest Service
- Kansas Soybean Commission
- National Sorghum Producers
- Riley County Conservation District
- Sustainable Environmental Consultants
- The Nature Conservancy
- Thunderbird Marina & Resort
- Washington County Conservation District
- Westar Energy

Total Needs for Implementation

Over $27,000,000 is the estimated financial amount needed to implement the Milford Lake Watershed Restoration and Protection Strategy (WRAPS) watershed plan developed to address impaired waters within the Lower Republican Basin in Kansas.

Consequences of not funding

- Continued nutrient and sediment runoff contributing to degraded water quality conditions including the formation of HABs on Milford Lake.
- Missed opportunity to fully leverage SWPF financial resources with local, private and federal government funding to support conservation practice implementation within the Milford Lake watershed.
- Financial resources would not be available to fully ensure eligible producers could receive additional financial assistance for core practices associated with project.
Program Objective

The Kansas Water Office, in partnership with the Corps of Engineers, will implement a Water Injection Dredging (WID) demonstration project at Tuttle Creek Lake to promote sustainable long-term reservoir sediment management. WID is a process in which large volumes of water are injected at low pressure into the sediment bed near the bottom of the reservoir through the use of pumps and a series of nozzles located on a horizontal pipe positioned above the sediment bed. The injected water effectively fluidizes the sediment creating a ‘density current’ that allows the sediment to flow by gravity to deeper areas. In the case of Tuttle Creek Lake, the proposed WID demonstration project would be aimed at moving the sediment toward the existing low level outlet in the dam, and monitoring the flow of the density current through the outlet during controlled discharges.

The goal of the project is to demonstrate successful application of WID technology at Tuttle Creek Lake, with the ultimate goal of sustaining long-term use of Tuttle Creek Lake, and potentially other Kansas reservoirs, for all of its authorized purposes. The reservoir continues to lose capacity due to sedimentation at an accelerated rate. Recent estimates from the Kansas Water Office indicate that approximately 46% of Tuttle Creek Lake’s original storage capacity has been lost due to sedimentation. Tuttle Creek Lake is a vital resource within the Kansas River Basin. The continued loss of capacity and impending impact to the authorized purposes is a major concern for the State of Kansas. Successful demonstration of WID technology at Tuttle Creek Lake will help to advance other innovative methods aimed at extending the life of reservoir storage in Kansas, including the use of WID with hydrosuction or other sustainable sediment management techniques.

KWO Proposed Concepts and Activities

- The proposed demonstration project includes the following major components:
  1) Construction of a WID prototype;
  2) Demonstration of the WID prototype at Tuttle Creek Lake at different elevations and flow discharges
  3) Monitoring and evaluation of both the operational and environmental results
- Prior to the demonstration, an implementation plan, including monitoring and communications/outreach strategies, will be developed. The KWO is currently engaged with the Corps, agency partners and stakeholders within the basin to discuss the project and begin developing the monitoring plan and strategies for measuring project success.
- KWO will continue its partnership with the Corps of Engineers and the Corps’ Engineer Research and Development Center (ERDC) to provide technical and financial resources for ongoing research, onsite field data collection, lab studies and numerical analysis to move forward with implementation of the WID demonstration project at Tuttle Creek Lake.

Recent Success

- KWO continues to support the Corps and ERDC with ongoing WID study.
- Through a Planning Assistance to States (PAS) agreement, KWO continues to provide cash and in-kind contributions, while leveraging federal funding. State contributions include technical services and support for field data collection, model development, testing and analysis necessary to move forward with the WID demonstration.
• Work completed by the state in support of the WID study includes:
  o Collection of sediment cores and surface sediment samples at Tuttle Creek Lake and delivery
to ERDC facility for sediment property analysis and fluidization testing.
  o Collection and analysis of velocity current transects at selected locations within the reservoir.
  o Water quality sampling and analysis of sediment samples taken from Tuttle Creek Lake to
move forward with the WID demonstration.
• Ongoing work and efforts planned to be completed in 2019 by the state in support of the WID study include:
  o Development of a Kansas River sediment transport model, currently being refined and
calibrated by the Corps.
  o Continued development of a monitoring plan for the WID demonstration project and
expansion of baseline condition monitoring at the Big Blue River below Tuttle Creek Lake.
  o Completion of cross section surveys downstream of Tuttle Creek Lake pre- and post- flood
storage releases in 2019 to assess sedimentation impacts.
  o Completion of a partial lake multi-beam bathymetric survey to increase resolution of the
reservoir bed in the area of the anticipated WID demonstration project.
  o Collection of sediment cores and water samples at Tuttle Creek Lake and delivery to ERDC for
elutriate testing.

Program Budget

• $1,500,000 requested in FY 2021

Additional Funding Resources

• Corps of Engineers
  o Kansas River Flows Sediment Study PAS Agreement
  o Kansas River Sediment Studies PAS Agreement
  o FY2020 PAS Proposal –
    Kansas River Reservoirs Sediment Management Study
  o FY2020 RSM Proposal -
    Water Injection Dredging (WID) Demonstration Project at Tuttle Creek Lake: Year 1
  o FY2020 WRRDA 7001 Proposal -
    Tuttle Creek Lake Water Injection Dredging (WID) Demonstration Project

Total Needs for Implementation

Based on the proposed scope, the total needs for the WID demonstration project at Tuttle Creek Lake is $1,500,000. Upon completion of the demonstration project, additional needs for further analysis of the WID, and potential application of additional reservoir sediment management strategies with WID (hydrosuction) may be identified.

Consequences of not funding

• Continued loss of reservoir storage capacity and impending impact to
  Tuttle Creek Lake’s authorized purposes, including water supply.
Program Objective

The Kansas Water Office (KWO) operates the Water Marketing Program, the Water Assurance Program, Lower Smoky Hill Access District and the public water supply component of the Multipurpose Small Lakes Program as part of its overall Public Water Supply Program. The State of Kansas owns water supply storage in 14 reservoirs throughout the state and maintains water supply contracts with municipal and industrial users.

The State is obligated to fully pay the costs associated with the water supply storage assigned to all of the Public Water Supply Programs in accordance with the terms and conditions of the water supply storage purchase contracts between the state and the Corps of Engineers. These contracts typically give the state 50 years to pay the costs associated with the purchase of all of the contracted storage. Amortization schedules are included in each contract. In five reservoirs, (Big Hill, Clinton, Hillsdale, Milford and Perry) the state has been able to delay payment until additional storage is needed and the storage is called into service. Once the storage is called into service, an immediate amortization payment is made on the principal and interest, and the operation and maintenance costs associated with the additional storage would be incurred in the following year. This storage that is not in service is referred to as Future Use storage.

In 2017, the KWO developed the Public Water Supply Program Comprehensive Capital Development (CCDP) Plan in order to account for all revenue and expenses related to the State’s public water supply storage. The plan includes a strategy to call-in and pay for the Future Use water supply storage in three of the five above-referenced reservoirs based on projected water marketing program revenues and storage call-in schedules of the associated reservoirs. However, the unfunded liability associated with the Future Use storage in Milford and Perry reservoirs is not currently addressed in the CCDP. Current projections indicate that the full demand for the future use storage in these two reservoirs is beyond the end of the contract period. Due to the time gap created between the obligated call-in of this future use storage and the need for the storage based on projected customer demands, there is a need to develop a funding strategy for this specific liability.

In addition to the time gap mentioned above, there is also a potential to reallocate a portion of the future use water supply storage in Milford and Perry to a water quality pool. Typically, Corps of Engineers reservoirs with state-owned storage have a designated water quality pool to support minimum releases; however, there is currently no designated water quality pool in either Perry or Milford. Ownership and associated costs for water quality pools remains with the Corps of Engineers. Under a 1985 MOU between the state and the Corps of Engineers, releases from the water quality pool, above minimum releases, are jointly managed by the two entities. Drought simulations of the Kansas River/Reservoir system model indicate that releases from future use storage in Perry and Milford are required in order to maintain downstream flow targets. The reallocation of a portion of the future use storage in Milford and Perry to water quality storage would reduce the state’s financial obligation associated with the current future use storage while continuing to meet in-stream flow requirements for Kansas River users.

KWO Proposed Concepts and Activities

- In order to lessen the overall unfunded liability related to the state’s water supply storage contracts with the Corps of Engineers, a portion of the future use storage in Milford and Perry will be called in to service and the state will begin payment of the associated P&I and O&M.
Payment for the called-in storage is required to be made on an annual basis until the end date of the contracts (2034 for Milford Lake, 2041 for Perry Lake), at which time the state is obligated to call in and pay for any remaining future use storage per the original contractual agreement.

KWO continues to work with the Corps to evaluate the feasibility of the reallocation of a portion of the future use storage in Milford Lake and Perry Lake to water quality, reducing the total future use storage required to be paid for by the state.

In addition to reducing overall program debt, calling in future use storage will secure the available storage for the water supply to support long-term water supply needs within the basin.

Accomplishing the reallocation of storage and calling into service the remainder of the Future Use Storage will eliminate the ability of the Corps of Engineers to use Milford Lake for Missouri River navigation releases.

Recent Success

The 2017 CCDP (as referenced above) proposes to utilize a portion of the marketing revenue from water sales to pay down the debt associated with the state’s water supply storage, and established a debt paydown schedule.

In 2018, marketing revenue was utilized to pay off the remaining principal and interest associated with the original purchase agreement for John Redmond Reservoir and Elk City Reservoir. In 2019, pay off was made on Council Grove Lake, and payment on Big Hill Reservoir is planned to be made later in 2019, in accordance with the debt paydown schedule in the CCDP.

A pool rise to reallocate storage from flood control to water supply and water quality was accomplished at John Redmond in 2013.

Program Budget

- $2,358,300 requested in FY 2021
- Annual payment required through 2034 (Milford) and 2041 (Perry)

Additional Funding Resource

The Kansas River Water Assurance District (KRWAD) is currently evaluating its long-term water storage needs, and current models indicate the potential for the district to require additional assurance storage prior to 2034. Additional storage purchase in Milford and/or Perry by KRWAD would reduce the amount of future use storage and the associated state unfunded liability. It is anticipated that the KRWAD would ultimately purchase storage that is currently Future Use Storage and called into service under this plan. That purchase would be after the expiration of the repayment time period under the state’s contract with the Corps. K.S.A. 82a-1349 (4) requires that when that purchase happens that the funds should be for “payment and reimbursement to the state water plan fund for water supply storage space previously paid for with revenue from the state water plan fund. . . .”

Consequences of not funding

The unfunded liability associated with the future use storage in Milford and Perry reservoirs is not currently addressed in the CCDP. Current projections indicate that the demand for the future use storage in these two reservoirs may be beyond the end of the contract period. Due to the time gap created between the obligated call-in of this future use storage and the need for the storage based on projected customer demands, there is a need to develop a funding strategy for this specific liability. Not funding the purchase of storage at Milford and Perry now, nor seeking reallocation of storage to water quality pool, will result in a balloon payment in 2034 of $37.9 million (Milford) and in 2041 of $49.3 million (Perry).
Arbuckle Study

Arbuckle Study and Discovery Effort—Determine Sustainability for Kansas
Kansas Geological Survey
Dave Newell, Shelby Peterie, Rick Miller, and Rolfe Mandel

Overview
The Arbuckle Group (Arbuckle), which is a succession of Late Cambrian and Ordovician sedimentary rocks, is heavily relied upon by a range of industries and municipalities in Kansas for fluid-waste disposal, oil production, and fresh water. Responsible use of the Arbuckle as a deep disposal interval requires accurate, unbiased, and consistent evaluation, characterization, and control. Recent elevated rates of fluid deposited in the Arbuckle have been associated with, and the likely catalyst for, the significant increase in seismicity in south-central Kansas since 2013. Two different State agencies oversee disposal allotments and practices for a diverse group of industries relying on the Arbuckle.

Historical disposal of fluids in the Arbuckle has been at sustainable to moderate rates of pore space depletion until sometime during the last decade when disposal volumes in some areas increased by an order of magnitude. This dramatic change in disposed fluid volumes has affected static fluid levels and formation pressures in the Arbuckle. Elevating fluid volumes within a finite pore space by injection decreases the storage capacity and therefore life expectancy of the disposal receptacle and increases pore pressure on deeper, connected rock formations. Limited well bore measurements suggest currently permitted disposal volumes/rates have exceeded the capacity of the interval to naturally drain/discharge. This positive fluid balance continues to reduce available pore space (although at a slower rate than under pre-2015 permitted disposal rates), and in some areas of Kansas industry users may have as little as three years of Arbuckle disposal space remaining.

Future resource conservation and capacity of the Arbuckle disposal zone is critical for both the energy industry and industrial/municipal facilities in Kansas that dispose wastewater deep into the Arbuckle Formation. Therefore, the primary objective of this study will be to characterize the Arbuckle sufficiently in troubling areas to provide stakeholders (industry, policy makers, regulators, and local governments) with the tools and insights necessary to appropriately manage the Arbuckle to insure it becomes a long-term, sustainable resource for all users. Initial efforts will be in two approximately ten-county areas where the Arbuckle is experiencing the heaviest pore space demands/depletion and is estimated to have the shortest life expectancy as a storage receptacle. A key byproduct of this study will be data and analysis that increases awareness of the need and the information necessary to establish uniform industry practices intended to extend the Arbuckle’s usable life and protect it as a permanent industry disposal repository without adversely affecting groundwater, natural seismicity, or its economic viability for industrial users.

Generalized Study Plan
Identification of both critical and non-critical areas for fluid disposal within the state is a goal of the study, with an objective being the identification of areas susceptible to future overfill or are already at critical states and associated contamination of shallow potable aquifers and tools to help policy makers extend the life of this resource.

Efforts will focus on three major products:
1. Correlation of 3-D seismic data with thoroughly sampled boreholes that penetrate the Arbuckle so as to study consistency of rock properties and transfer faults interpreted on 3-D seismic data to geologic maps of the Arbuckle and top of basement.
Lateral and vertical permeability variations in the Arbuckle must be observed and studied to better understand movement of formation water in the Arbuckle. Cansler and Carr (2002) discussed the presence of seismically detectable “cockpit terrane” in the Arbuckle on the Central Kansas Uplift as a product of karstification, which impeded or localized movement of formation water. In other localities, this type of subsurface terrane is not present, thus implying more free, long-range, and radial movement of subsurface formation and disposal waters. Examination of 3-D seismic surveys in select localities in Kansas is proposed where earthquake seismicity is high or pore space low to better determine possible inhibition to lateral and intraformational (vertical) movement of water in the Arbuckle. As well, faults will be mapped on 3-D seismic data and transferred to geologic maps along with recorded earthquake epicenters. Cooperation with private industry is necessary for donation/purchasing and subsequent analysis of proprietary seismic surveys for this phase of research. Supplemental analysis of surficial joints on outcrop correlated to spatial and temporal trends in seismicity as it relates to fault orientation and active segments also need to be examined for their possible relationship to directional permeability.

2. Study fluid volume and SFL to establish percolation rates and associated sustainable injection volumes for given well densities based on locations within the Central Kansas Uplift and south-central Kansas.

Selected areas, such as recently determined seismically active areas on the Central Kansas Uplift and south-central Kansas need to be studied in the context of exactly what part of the Arbuckle is being accessed for fluid disposal and how much fluid is being put into it, both currently and in the recent past. For the Central Kansas Uplift area, extant records for both salt-water disposal wells and enhanced oil recovery wells need to be examined for understanding where fluids are moving in the Arbuckle. Cooperation of oil-field operators and sharing of their drilling, completion, workover, and injection-volume records would represent significant value-added to this process. In south-central Kansas, injection rates and SFLs corrected for density need to be gathered with regional flow models in order to establish the range of rates for formation drainage.

3. Measure SFL and bottomhole pressure to calculate density and establish freshwater equivalent fluid levels.

A more detailed picture of the Arbuckle piezometric surface (i.e., the spatial distribution of static fluid levels) for both saline and fresh-water normalized) is needed to identify regions where fluid rise could dangerously affect surficial freshwater. The rate Arbuckle static fluid levels are rising also needs to be better determined in areas remote to Class-I wells, which is our principal source of current information. A program needs to be initiated for measuring subsurface pressure and static fluid levels in strategically located Class-II wells. Water density can be backed out of the pressure and fluid-level measurements, and this information will allow better modeling of water movement in the Arbuckle in the future, as well as lead to a better understanding of fluid dispersal of effluent in the immediate vicinity of the disposal wells. The ultimate outcomes of this supplementary research on disposal-well fluid will a) flag “potential danger zones” where there is a tangible risk for contamination of shallow aquifers, b) allow insight in mapping zones where the minimum safe rate of injection correlates with no significant rise in static fluid levels, and c) better determine the rate and direction of movement of formation and disposal fluids within the Arbuckle. This Arbuckle study will require a multi-year effort with research products routinely delivered from year 1 while final products intended for direct application by stakeholders will emerge over the last couple years of the program.

**Deliverables** (all products are geographically limited to data available and obtainable)

*Year #1*
- Locations of 120 wells of opportunity
- Locations of areas with highest interest for seismic data
- Completed well sampling lists
- Status of seismic investigations
Contamination concern areas

Year #2
Progress maps with partial raw data entry—working maps

Year #3
Progress maps with raw data entry near completion—draft maps

Year #4
Arbuckle map—enhanced faults, irregular zones (karst, fractures, etc.)
Layers will include: structure, rock properties (well logs)

Year #5
Arbuckle fluid flow rate and gradient map
Arbuckle SFL relative to potable water supplies map

Generalized Budget

Year #1 ($826,000)
- Salaries (nonpermanent employees) $210,000
- Data Acquisition 40 wells (bottom hole pressure, SFL, chemistry) $500,000
- Travel to data collection $12,000
- Data Purchase (3-D seismic) $100,000
- Supplies (computer software, general) $4,000

Year #2 ($826,000)
- Salaries (nonpermanent employees) $210,000
- Data Acquisition 40 wells (bottom hole pressure, SFL, chemistry) $500,000
- Travel to data collection $12,000
- Data Purchase (3-D seismic) $100,000
- Supplies (computer software, general) $4,000

Year #3 ($826,000)
- Salaries (nonpermanent employees) $210,000
- Data Acquisition 40 wells (bottom hole pressure, SFL, chemistry) $500,000
- Travel to data collection $12,000
- Data Purchase (3-D seismic) $100,000
- Supplies (computer software, general) $4,000

Year #4 ($214,000)
- Salaries (nonpermanent employees) $210,000
- Supplies (computer software, general, report prep) $4,000

Year #5 ($214,000)
- Salaries (nonpermanent employees) $210,000
- Supplies (computer software, general, report prep) $4,000

5 Year Total  ($2,906,000)

Aquatic Nuisance Species Study

Program Objective

In 2011 the Kansas Water Authority (KWA) approved the Aquatic Nuisance Species (ANS) Management Policy for incorporation into the Kansas Water Plan (KWP). At that time budget requests were not approved, however the Kansas Department of Wildlife, Parks, and Tourism (KDWPT) has worked diligently to prevent the spread of ANS, specifically Zebra mussels. The KDWPT ANS program works to reduce the transfer and spread of ANS throughout the waters of Kansas. The KDWPT actively works with anglers and other recreational lake users to educate and assist them with how to monitor and clean boats, trailers, anchors, and anything else that comes in contact with the water and remove any plants or animals from equipment used in the lakes as not to transfer ANS to other waterbodies.

KWO Program Activities

- Provide education to anglers, recreational lake users, and the general public on how to remove and reduce transfer of ANS
- Conduct boat inspections at recreational lakes open to the public
- Enforce ANS statutes and import rules
- Detect, monitor, and possibly eradicate ANS
- Conduct risk assessment analysis on boater movement and identify high risk waters
- Analyze how ANS affects in-lake users, including municipalities that draw water from infested waters

Program Budget

- $350,000 requested in FY 2021

Additional Funding Resources

Kansas Department of Wildlife, Parks, and Tourism program and license fees

Consequences of not funding

ANS will continue to spread and create costly problems for recreational lake users and municipalities, which will pass costs onto customers. The spread of ANS will also affect local economies that depend on local lakes to bring income into smaller communities surrounding the recreational lakes. ANS can also have a detrimental affect on water quality and native species.

Status of Zebra Mussels in Kansas

[Map showing the status of Zebra Mussels in Kansas]
## State Water Plan Fund FY2021 RAC Budget Input Comments

<table>
<thead>
<tr>
<th>RAC</th>
<th>Additional Requests</th>
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<tbody>
<tr>
<td>Great Bend Prairie</td>
<td>Increase the funding under water management by $25,000 to provide GMD5 partial funding to update, calibrate and make a run of the GMD5 model, noting this contributes directly to the sustainability goal.</td>
</tr>
<tr>
<td>Marais des Cygnes</td>
<td>Request funding to be considered for the Aquatic Nuisance Species (ANS) Program within the KDWP&amp;T. The funding should support public education about ANS, as well as resources to allow the KDWP&amp;T staff to conduct boat checks at recreational lakes and engage with lake users. There was no discussion and unanimous approval was given.</td>
</tr>
<tr>
<td>Missouri</td>
<td>Funding for a Resiliency Study of Public Water Supply Systems and assistance to implement.</td>
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<td>Missouri</td>
<td>Additional funding for cover crops</td>
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<tr>
<td>Red Hills</td>
<td>Continued support for produced water pilot project within region</td>
</tr>
<tr>
<td>Red Hills</td>
<td>Funds for lake project noted within Regional Goal #2</td>
</tr>
<tr>
<td>Smoky Hill-Saline</td>
<td>RAC concurs with the proposed state water plan budget and encourages KWA to seek full restoration of the State Water Plan Fund as well as develop resources to respond to unforeseen disasters.</td>
</tr>
<tr>
<td>Upper Arkansas</td>
<td>The Upper Arkansas RAC requests a funding line to be established for new sources of supply for the region. As groundwater supplies continue to decline there is concern about the future of irrigated agriculture as the basis of the region’s economy. Obtaining new sources of supply is the highest priority for this region, and it is important to fund in order to accomplish and carry out the goals and action plan of the Upper Arkansas RAC.</td>
</tr>
<tr>
<td>Upper Republican</td>
<td>RAC supports the proposed budget and would like to highlight a need for additional funding for Western Kansas.</td>
</tr>
<tr>
<td>Verdigris</td>
<td>Assessment and Evaluation to optimize reservoir operations using Forecast Informed Reservoir Operations (FIRO) and structures that improve efficiencies during dry periods.</td>
</tr>
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### RAC INDEX

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<td>Upper Smoky Hill</td>
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<tr>
<td>VER</td>
<td>Verdigris</td>
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</tbody>
</table>
MEMO

DATE: June 13, 2019
TO: Kansas Water Authority Budget Committee
FROM: Alexandra Geisler
RE: Cimarron RAC Input on KWA Budget Recommendation Development Process

On June 13, 2019, the Cimarron Regional Advisory Committee (RAC) met in Sublette. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The following recommendations were taken by the RAC at the meeting and formalized after being sent out to all the RAC members for approval to deliver to the KWA Budget Committee:

“The Cimarron RAC supports the proposed budget and would like to highlight the following line items as priorities that are important to fund in order to accomplish and carryout the goals and action plan of the CM RAC. These items include Water Vision Education (KWO), Real-Time Water Management – Telemetry (KDA), Water Conservation Specialists (KDA), Irrigation Technology (KDA), Assessment & Evaluation (KWO) with an emphasis on monitoring and modeling through KGS, and Water Technology Farms (KWO) with the request that a portion of those funds go towards improving data evaluation. The Cimarron RAC would also like funding to be reserved and available for the implementation of RAC Action Items.”
On June 5, 2019, the Equus-Walnut Regional Advisory Committee (RAC) met in Wichita. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. Following a lengthy budget discussion, the committee elected to make their recommendations by tele-conference weeks later. The following action was taken by the RAC by tele-conference, on June 27, 2019, to formalize their budget input recommendations to deliver to the KWA Budget Committee:

A motion was made by Steve Hieger and seconded by Joe Pajor to send the following Budget Recommendation Message to the KWA:

The Equus-Walnut RAC has identified the following to be the top priority activities in their planning region.

- Burtron chloride remediation
- Watershed District repairs
- Technology Farms
- Improved watershed practices
- Water Injection Dredging / Reservior sedimentation
On June 4, 2019, the Great Bend Prairie Regional Advisory Committee (RAC) met in Saint John, Kansas. Among the agenda items at the meeting was discussion of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The RAC took four actions at the meeting to formalize their budget input recommendations to deliver to the KWA Budget Committee:

Motion 1 was made by Keith Miller and seconded by Orrin Feril to send the following Budget Recommendation Message to the KWA:

“The Great Bend Prairie RAC recommends the addition of at least another $200,000 to the research line for research of less water intensive crops as alternative crops and livestock feed.”

Discussion clarified what was included in specific budget lines and potential projects being considered for research. Unanimous approval was given.

Motion 2 was made by Keith Miller and seconded by Jay Dill to send the following Budget Recommendation Message to the KWA:

“The Great Bend Prairie RAC recommends KWA increase the funding under water management by $25,000 to provide GMD5 partial funding to update, calibrate and make a run of the GMD5 model, noting this contributes directly to the sustainability goal.”

Approval was given to Budget Motion 2 with Orrin Feril abstaining from the vote.

Motion 3 was made by Orrin Feril and seconded by tom Turner to send the following Budget Recommendation Message to the KWA:

“The Great Bend Prairie RAC recommends the legislature increase funding to encourage conservation programs by expanding existing priority areas for CREP and WTAP and support the KDA SFY21 funding requests related to these programs.”

No additional discussion occurred. Unanimous approval was given.

Motion 4 was made by Jeremiah Hobbs and seconded by Jay Dill to send the following Budget Recommendation Message to the KWA:

“The Great Bend Prairie RAC recommends to increase of funds allocated to watershed dam construction by at least $200,000.”

No additional discussion occurred. Unanimous approval was given.
On June 24, 2019, the Kansas Regional Advisory Committee (RAC) met in Holton. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The following action was taken by the RAC at the meeting to formalize their budget input recommendations to deliver to the KWA Budget Committee:

A motion was unanimously adopted to send the following Budget Recommendation Message to the KWA:

“We feel these items are necessary, are the highest priorities for our RAC, and will be beneficial to the water resources of the state as well as the people who reside in the Kansas Region:

• Conservation BMPs in watersheds to reduce sedimentation and improve water quality
• Purchase of storage in Reservoirs (with the suggestion that an appeal be made to obtain a lump-sum payment for half or more of the cost, from the arrearage in the State Water Plan Fund now approaching $80 million)
• Continued funding of experimental Water Injection Dredging (WID)”

There was consensus that the budget information needs to be out to the RACs earlier to allow time for review.
MEMO

DATE: June 5, 2019
TO: Kansas Water Authority Budget Committee
FROM: Bobbi Luttjohann
RE: Marais des Cygnes RAC Input on KWA Budget Recommendation Development Process

On June 5, 2019, the Marais des Cygnes Regional Advisory Committee (RAC) met in Ottawa. Among the agenda items at the meeting were discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The following action was taken by the RAC at the meeting to formalize their budget input recommendations to deliver to the KWA Budget Committee:

A motion was made by Dan Riney (PWS) and seconded by Ron Brown (Conservation/Environment) to send the following Budget Recommendation Message to the KWA:

“The Marais des Cygnes RAC supports the proposed budget and would like to highlight the following line items as priorities that are important to fund in order to accomplish and carryout the goals and actions plans of the MdC RAC. These items include Non-Point Source Pollution (KDA), WRAPS Program (KDHE), Water Resource Cost Share (KDA), Aid to Conservation Districts (KDA), and TMDL Initiatives (KDHE). The MdC RAC would also like funding to be considered for the Aquatic Nuisance Species (ANS) Program within the KDWP&T. The funding should support public education about ANS, as well as resources to allow the KDWP&T staff to conduct boat checks at recreational lakes and engage with lake users.”

There was no discussion and unanimous approval was given.
MEMO

DATE:    July 1, 2019
TO:      Kansas Water Authority Budget Committee
FROM:    Kirk Tjelmeland
RE:      Missouri RAC Input on KWA Budget
          Recommendation Development Process

900 SW Jackson Street, Suite 404
Topeka, KS  66612
Phone: (785) 296-3185
Fax: (785) 296-0878
www.kwo.ks.gov

On June 27, 2019, the Missouri Regional Advisory Committee (RAC) met in Atchison. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The following action was taken by the RAC at the meeting to formalize their budget input recommendations to deliver to the KWA Budget Committee:

The following Budget Recommendations are submitted to the KWA:

“We feel these items are necessary and will be beneficial to the water resources of the state as well as the Missouri Region:

- Funding a Resiliency Study of Public Water Supply Systems and assistance to implement
- Funding Construction of New Small Watershed Dams
- Additional funding for Cover Crops and Streambank Stabilization Projects
- Increased Aid for Conservation Districts
- Increased funding for KDHE and KDA-DOC cost share programs, in particular WRAPS and Water Resource Cost Share
- Additional funding for Technology Farms
- Increased funding for Stream Gages in the Region”

There was consensus that progress on the Statewide Education Plan has been disappointing and very costly up to this point. The consolidation of education materials in one location is a necessity for materials to reach students, the website has to be completed soon.
On June 7, 2019, the Neosho Regional Advisory Committee (RAC) met in Emporia. Among the agenda items at the meeting were discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The following action was taken by the RAC at the meeting to formalize their budget input recommendations to deliver to the KWA Budget Committee:

A motion was made by Jeff Cantrell (PWS) and seconded by Wes Fleming (Industry/Commerce) to send the following Budget Recommendation Message to the KWA:

“The Neosho RAC supports the proposed budget and would like to highlight the following priorities that are important to fund in order to accomplish and carryout the goals and action plans of the Neosho RAC. These items include BMP Implementation (KWO), Streambank Stabilization (KDA), Non-Point Source Pollution (KDA), WRAPS Program (KDHE), Water Vision Education (KWO), Water Technology Farms (KWO), Water Injection Dredging (KWO), Streamgaging (KWO), and Riparian and Wetland (KDA).”

There was no discussion and unanimous approval was given.
On June 28, 2019, the Red Hills Regional Advisory Committee (RAC) met in Medicine Lodge but did not have a quorum. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process.

The consensus of the RAC members present was to indicate Red Hills region interests for budgeting to include conservation practices through DOC, streamgaging for improved understanding of the region’s baseflow, continued support of the produced water pilot study and funds to move the lake project forward.

No additional comments were received from RAC members following their review of the concensus statement.
On June 20, 2019, the Smoky Hill-Saline Regional Advisory Committee (RAC) met in Salina. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The following action was taken by the RAC at the meeting to formalize their budget input recommendations to deliver to the KWA Budget Committee:

A motion was made by Brad Shogren and seconded by Dan Baffa to send the following Budget Recommendation Message to the KWA:

“The Smoky Hill-Saline RAC concurs with the proposed state water plan budget and encourages KWA to seek full restoration of the State Water Plan Fund as well as develop resources to respond to unforeseen disasters.”

There was no additional discussion and unanimous approval was given.
On July 2, 2019, the Solomon-Republican Regional Advisory Committee (RAC) met in Downs. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. There was not a quorum present at the meeting, however the entire RAC was given the opportunity to comment on the memo after it was drafted. The following action was taken by the RAC members present at the meeting to formalize their budget input recommendations to deliver to the KWA Budget Committee:

The following Budget Recommendations are submitted to the KWA:

“We support these budget items knowing they are necessary and will benefit to the water resources of the state as well as the Solomon-Republican Region:

- Continued funding of Vision Education Strategy
- Continued funding of the Milford Lake Watershed RCPP
- Continued funding of the Harmful Algae Bloom Pilot
- Continued funding of Non-Point Source Pollution
- Continued funding of Water Resource Cost Share
- Increased funding for Streambank Stabilization”
On June 13, 2019, the Upper Arkansas Regional Advisory Committee (RAC) met in Sublette. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The following recommendations were taken by the RAC at the meeting and formalized after being sent out to all the RAC members for approval to deliver to the KWA Budget Committee:

“The Upper Arkansas RAC requests a funding line to be established for new sources of supply for the region. As groundwater supplies continue to decline there is concern about the future of irrigated agriculture as the basis of the region’s economy. Obtaining new sources of supply is the highest priority for this region, and is important to fund in order to accomplish and carryout the goals and action plan of the Upper Arkansas RAC.”
On June 5, 2019, the Upper Republican Regional Advisory Committee (RAC) met in Wallace. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The following recommendations were taken by the RAC at the meeting and formalized after being sent out to all the RAC members for approval to deliver to the KWA Budget Committee:

“The Upper Republican RAC supports the proposed budget and would like to highlight a need for additional funding for Western Kansas. The RAC identified the following line items as priorities that are important to fund in order to accomplish and carryout the goals and action plan of the UR RAC. These items include Water Conservation Specialist (KDA), Real-Time Water Management – Telemetry (KDA), Interstate Water Issues Program (KDA), Irrigation Technology (KDA), Contamination Remediation (KDHE), and Drinking Water Protection (KDHE).”
On June 5, 2019, the Upper Smoky Hill Regional Advisory Committee (RAC) met in Wallace. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The following recommendations were taken by the RAC at the meeting and formalized after being sent out to all the RAC members for approval to deliver to the KWA Budget Committee:

“The Upper Smoky Hill RAC supports the proposed budget and would like to highlight the following line items as priorities that are important to fund in order to accomplish and carryout the goals and action plan of the USH RAC. These items include Water Transition Assistance Program (KDA), Water Conservation Specialists (KDA), Water Conservation Manager (KDA), Water Technology Farms (KWO), and Irrigation Technology (KDA). The USH RAC would also like to support funding for Crop and Livestock Research (KDA) with the recommendation to include research on Sorghum and Water Tank Overflow Recycling Systems for Feedlots.”
On June 4, 2019, the Verdigris Regional Advisory Committee (RAC) met in Coffeyville. Among the agenda items at the meeting was discussions of budget recommendations to pass along from the RAC to the Kansas Water Authority (KWA) Budget Committee for their consideration during the SFY 2021 budget recommendation development process. The following action was taken by the RAC at the meeting to formalize their budget input recommendations to deliver to the KWA Budget Committee:

A motion was made by John Ditmore and seconded by Doug Blex to send the following Budget Recommendation Message to the KWA:

The Verdigris RAC has identified the following to be the top priority activities in their planning region.

- Sediment Management through WID and BMPs
- Assessment and Evaluation to optimize reservoir operations using Forecast Informed Reservoir Operations (FIRO) and structures that improve efficiencies during dry periods.
- Stream gaging
- Watershed dam repairs and construction
- Aid to conservation districts

The Verdigris RAC also shows support for funding positions related to Vision implementation.
# FY2021 KWA SWPF Budget Process

## April
- KWA finalizes budget process
- KWA sets appropriation target
  - Fees only
  - SGF/EDIF restoration (or part thereof)
  - Pursuing BRFTF recommendation funding or other funding alternatives
- Guidance on priorities / areas of funding

## May
- Agencies develop funding requests
  - Vision or RAC Goal Action Items identified
- Agencies convene to develop recommendations to KWA Budget Committee

## May-June
- Research Coordination Group meets to develop research funding recommendations
- Recommendations provided to agencies and KWA Budget Committee

## June
- KWA Budget Committee meets to develop draft recommendations

## June-July
- RAC’s review budget recommendations and suggest changes if necessary

## July-August
- KWA Budget Committee finalizes recommendations to full Authority
- Full KWA acts on recommendations

## September
- KWA SWPF budget recommendations are submitted as part of administration budget process
July 22, 2019

Earl Lewis, Director
Kansas Water Office
900 SW Jackson Street, Suite 404
Topeka, Kansas 66612

RE: State Water Plan FY2021 Budget;
GMD3 Planning and Project requests

Dear Director Lewis, Chairwoman Owen and Kansas Water Authority members,

The Southwest Kansas Groundwater Management District (GMD3) has a number of management program activities that include State Water Planning Coordination (p. 73, most recent draft update posted at GMD3.org). This letter is submitted per K.S.A. 82a-903 to advise you of Water Planning and funding needs of the state and for southwest Kansas in FY2021.

GMD3 Water Planning Coordination occurs through work of our Board’s Renewable Supplies Committee that is comprised of members who are water right owners, surface water system operators, interstate compact representatives, and groundwater reservoir users. Through this committee, GMD3 prioritizes planning and project activities for management program purposes. We request KWO and the Kansas Water Authority consider state support for the priorities adopted by the GMD3 Board. We believe these projects align with the long-range goals and objectives set forth in K.S.A. 82a-927 and respectfully request that you consider them within your role of state water planning and coordinating that state plan with national and local planning.

There are 13 projects and funding requests identified for FY2021 on the attached spreadsheet using the format of the draft Water Office budget and State Water Plan Fund (SWPF) Consensus Revenue Estimating Group for anticipated SGF and other revenues expected to be paid to the state. These projects include seeking collaborations with people in sister states provided per K.S.A. 82a-931 for state coordination with local and national agency planning.

Additional SWPF messages from GMD3 include the following:

1. Concern continues over the apparent use of the SWPF to secure state replacement FTE’s. More review may be appropriate on what is agency administrative FTE’s vs. SWPF FTE’s implementing the activities identified in the public process of an adopted Kansas Water Plan.
K.S.A. 82a-951 provides “... Such moneys shall be used only for the establishment and implementation of water-related projects or programs, and related technical assistance, and shall not be used for: (1) Replacing full time equivalent positions of any state agency; or (2) recreational projects which do not meet one or more of the long-range goals, objectives and considerations set forth in the state water resource planning act.”

2. Concern and need continues for long view planning and budgeting under the Water Planning Act and the GMD Act. This is necessary activity for leadership to consider the future of Kansas water and the future of the GMD3 area. The K.S.A. 82a-920 requirement may best be applied to all SWPF activities for Kansas.

“K.S.A. 82a-920 [Planning act]; projected costs of water management projects. The office shall maintain in continuous process and revision tentative projected costs of water management projects for the coming years covering a total period of not less than 25 years, which projected costs the office shall submit with its annual budget request... include all items for which payment is expected to be made from state funds and anticipated revenues expected to be paid to the state”

In recent years GMD3 (and possibly other) agency planning and program project requests have seemingly evaporated, and with very little process documentation or explanation.

3. In the activities and funding to meet the long-range goals and objectives set forth in K.S.A. 82a-927, please be aware that the 1993 GMD3 Board Resolution 93-10 (attached for reference) recommends a 1/10th of a cent statewide sales tax. This was consistent with the outcome of the 2017 Blue-Ribbon Taskforce 24 years later. The Board maintains this resolution and seeks through these FY2021 requests to encourage a broader set of strategies and local-state-federal partnerships “to consider the alternative plans, programs and projects in the interest of effective water resource management, conservation and development” per K.S.A. 82a-907(h).

Additional information is available from our Executive Director, Mark Rude. We are happy to answer your questions and participate in KWA adoption and KWO implementation activity. Thank you for your leadership to engage and uphold the ideals of the State Water Planning Act and for your energy and interest in planning for the water resource services for Kansas benefiting generations of people all across our home state.

Sincerely,

Bret Rooney, Board President

Attachments: FY2021 GMD3 Local Agency Funding Requests spreadsheet
Resolution 93-10 of the SW Kansas GMD
<table>
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<tr>
<th>Funding Agency</th>
<th>Description</th>
<th>Action category</th>
<th>FY2021 Request</th>
<th>Explanation and Justification</th>
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<tbody>
<tr>
<td>4 KWO</td>
<td>Basin Study grant with Reclamation, Multi-year and multi-state partner cooperative.</td>
<td>Response - Water Management &amp; Water Quality</td>
<td>$ 300,000</td>
<td>This Reclamation multi-state Basin Study partnership is a commitment of collaboration and does not involve exchange of cash. Contaminated water is exacerbating the scarcity of water that is clean enough for human and agricultural use in some flows of the Upper Ark basin in Colorado and Kansas, and changes in climate and use efficiencies may worsen the problem. Near 100% of the contaminated flows are applied on fields or percolate down into SW Kansas aquifers. The Basin Study requires Colorado participation, and will build on the prior Basin Plan of Study completed for the Upper Ark River basin in Kansas and Colorado below John Martin Reservoir in 2015 in keeping with 2019 session SR1729 and HR6018. Basin Studies are collaborative studies, cost-shared with non-Federal partners to evaluate the impacts of climate change and help ensure sustainable usable water supply by identifying strategies to address imbalances in water supply and demands. The Basin Study will be a technical assessment and will not make statements of policy or future commitments by Reclamation or its cost-share partners.</td>
</tr>
<tr>
<td>4 KWO</td>
<td>Establish Interstate Water Management Fund</td>
<td>Planning - Statewide Response for Water Management</td>
<td>$ 200,000</td>
<td>Follow-up to January 22, 2018 and October 11, 2018 letters from GMD3 board. There are recognized interstate water management questions all across Kansas. Some pop up with little prior notice and agencies must scrounge for funding resources. The lack of sufficient funds preserved for interstate water management support unnecessarily places Kansas at significant disadvantage and in a subordinate role in interstate questions of future water supply significance. Good information to support good interstate communications promotes good working partnerships with sister states. A dedicated funding source outside regular agency budget process is needed to preserve future source water for Kansas and enable informed interstate water discussions that may affect renewable supplies to Kansas for all time. GMD3 has observed several recent examples.</td>
</tr>
<tr>
<td>4 KWO</td>
<td>KGS Hydrology Model Update for Southwest Kansas and Graphic Interface tools</td>
<td>Planning - Water Management &amp; Public Education</td>
<td>$ 150,000</td>
<td>GMD3 groundwater model and tools update by KGS is scheduled for 2020. The Existing model must be updated as it significantly overestimates supply, and better techniques for the update are available. Nearly half of the groundwater pumped each year in Kansas occurs in SW Kansas. The present Ogallala - High Plains Aquifer Assessment program is significantly underfunded to allow KWO, KGS, GMD3 and other partners to take on this task together with the needed index well drilling and measurement for vertical formations connectivity data. Also, the state may partner for funding under grant opportunities like the Reclamation WaterSMART Funding Opportunity Announcement (FOA) to support applied science activities that help inform water management decisions. The 50/50 cost share amount will be used to update the GMD3 area groundwater model in 2020 with consideration and evaluation of GMD3 well constraints, to define adjacent areas of the IGUCA having tributary underflow affecting supply within a 25-year prospective evaluation period, and to develop a web-based graphical user interface (GUI) to allow local and state staff members and other interested parties to run the developed GMD3 groundwater flow model to test the impact of user-specified modifications to pumping. A crucial part of the model update will be the establishment of Dakota index wells to measure vertical gradient between aquifer members of the High Plains Aquifer, which are costs not included here and will be additional expense.</td>
</tr>
<tr>
<td>4 KWO</td>
<td>Arkansas River diversion in Finney County for Enhanced Water Management</td>
<td>Response - Water Management</td>
<td>$ 150,000</td>
<td>The state owned Arkansas River bank in Finney County has a hole in it. A solution project is required. Assistance may be possible through Reclamation WaterSMART grant funding to restore the bank and construct a diversion structure at the mouth of the reservoir formed at the breach in the river bank to allow the river to flow naturally downstream. GMD3 submitted a past Reclamation grant proposal that was unsuccessful. The project would restore an important source of groundwater recharge to many users now suffering declining well capacities from declines in water levels of the Ogallala Aquifer near the river channel. Drone footage can be viewed at: <a href="https://www.youtube.com/watch?v=1fme_ZTApkQ">https://www.youtube.com/watch?v=1fme_ZTApkQ</a></td>
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### State Water Plan Fund Request (SWPF/SGF/EDIF)

**FY2021 GMD3 Local Agency Funding Requests (District area covering parts of 12 counties contributes approx. 11.25% of SWPF revenue annually)**

<table>
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<tr>
<th>Funding Agency</th>
<th>Description</th>
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<th>FY2021 Request</th>
<th>Explanation and Justification</th>
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</thead>
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<tr>
<td>4 KWO</td>
<td>Water Marketing Strategies development - Multi-year and multi-state partner coop.</td>
<td>Planning - Additional Supply &amp; Water Conservation</td>
<td>$400,000</td>
<td>Water Scarcity in the west is raising prices and increasing the level of regulation and competition among stakeholders for access to water. A three year Reclamation grant cooperative initiative is proposed to encourage in-state and interstate partners to study and develop water marketing alternatives. SSHA HB2059 compromise language from KDA passed the senate and went to conference committee where it was allowed to die in favor of KWA review and recommendation, which produced a recommended interstate study. The proposed cooperative agreement with Reclamation and other partners is to provide the Kansas Water Planning and Vision update process with a look at possible water management and marketing strategies that improve implementation of the Vision for additional future supply. Through the WaterSMART Water Marketing Strategy Grants, Reclamation provides assistance to states, tribes, and local governments to conduct planning activities to develop water marketing strategies that establish or expand water markets or water marketing activities between willing participants, in compliance with state and Federal laws. The proposal can include floodwater collection and transfer to available storage and interstate transfer to western states partners, provide added yield for Kansas storage capacity and help address the Upper Ark Basin water concern of 2019 session SR1729 and HB6018.</td>
</tr>
<tr>
<td>3 KWO</td>
<td>Reimbursement to GMD3 for Interstate Water Supply Protection quick response</td>
<td>Response - Water Management &amp; Water Conservation</td>
<td>$55,459</td>
<td>GMD3 is seeking partner recognition and reimbursement for quick response interstate water resource protection efforts, including engineering evaluation and legal assistance to oppose new 7000 acre-foot per year development now permitted by Colorado upstream of GMD3 and the Kansas Stateline, and for Stateline groundwater gage construction and installation cost of the KGS for realtime river valley data on interstate supply into Kansas. The lack of established legal recourse and available data today for interstate water concerns may not be the best answer to Kansas leadership and the future of Kansas water planning and funding. GMD3 is happy to provide additional information and Records, US Forest Service land use permits, contracts, and studies are available. Video of an October day 2018 while KGS and GMD3 install the Cimarron Stateline groundwater gage showing the meager depleting water resources is posted at: <a href="https://youtu.be/0OViALtEdOw">https://youtu.be/0OViALtEdOw</a></td>
</tr>
<tr>
<td>3 KWO</td>
<td>KSU study proposed to evaluate future value to the Kansas economy in marketing excess surface water to meet future Kansas water groundwater storage needs and for western US water marketing partners</td>
<td>Planning - Additional Supply &amp; Water Conservation</td>
<td>$300,000</td>
<td>VISION - STATEWIDE PHASE III Study as referenced in January 2018 letter from GMD3 board. Identify suitable areas and ability to transfer water to areas of need and available Kansas aquifer storage space for water transfer replenishment opportunities. Develop interconnected water storage computer model for all eastern Kansas basins with federal water supply reservoirs. Update mid 1980s Kansas Water Office plan to interconnect reservoirs across multiple basins to move water to higher demand and increase overall yield, managemen and marketing. A task force review of current policy and needs is requested as presented at the April 2019 KWA meeting by the Upper Ark RAC. An appropriate path for study continues as a Kansas Water Plan priority need.</td>
</tr>
<tr>
<td>3 KWO</td>
<td>Streamgaging/Groundwater gage - should be state rather than GMD3</td>
<td>Response - Water Management &amp; Water Quality</td>
<td>$12,735</td>
<td>A Colorado USGS cooperator has been lost (Colorado Lower Ark Water Conservancy District) and a new cooperator funding source is needed for the continuous USGS COOP water quality monitoring below John Martin Reservoir and hand measurement data collected at Lamar and Granada above the Stateline. Cost would be $12,135 annually (ARCA Funding recommended). The annual cooperative cost share for the three sites is $10,955 at JMR, and $590 each for the other two sites, for a total cooperative need of $12,135. The Ark River water quality resolutions passed by both houses of the Kansas legislature last year(SR1729 and HR6018) requested that folks on both sides of the Stateline work together on the contaminated water issues of the basin. The proposed data loss will take all concerned in the opposite direction of the resolutions, if not funded. Also, Stateline continuous groundwater gage and water quality data collection at the GMD3/KGS site in the Cimarron River alluvium under a federal permit to GMD3 on the USFS National Grassland, Morton County has an annual maintenance cost of about $600 annually.</td>
</tr>
<tr>
<td>2 KWO</td>
<td>Update Kansas NPS priorities to include Upper Arkansas basin contamination.</td>
<td>Response - Water Quality &amp; Water Conservation</td>
<td>$25,000</td>
<td>In response to legislative action in HR6018 &amp; SR1729, update the priority watersheds to include the Upper Ark uranium contamination problem as a priority surface water and groundwater watershed of the Kansas legislature (contaminated surface water into groundwater storage). It is unclear what funding would be needed to accomplish this priority watershed update.</td>
</tr>
<tr>
<td>2 KWO</td>
<td>Ark River CREP continued</td>
<td>Commitment - Water Conservation</td>
<td>$200,000</td>
<td>Continue state support for the required state cash to the Upper Ark CREP originally funded from quantified damages of SW Kansas water users from Colorado Ark River Compact violations that depleted the leading renewable water supply for the area.</td>
</tr>
</tbody>
</table>
**State Water Plan Fund Request (SWPF/SGF/EDIF)**  
FY2021 GMD3 Local Agency Funding Requests (District area covering parts of 12 counties contributes approx. 11.25% of SWPF revenue annually)

### Southwest Kansas Groundwater Management District Number Three

<table>
<thead>
<tr>
<th>Funding Agency</th>
<th>Description</th>
<th>Action category</th>
<th>FY2021 Request</th>
<th>Explanation and Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 KWO</td>
<td>Aid to Conservation Districts in GMD3</td>
<td>Commitment - Conservation</td>
<td>$228,572</td>
<td>To maintain and enhance conservation district operations by addressing annual inflationary costs for county conservation districts in the GMD area. This enhancement provides opportunities for matching by county governments as per K.S.A. 2-1907b in the GMD3 area as one source of return of SWPF fees back to the area of origin.</td>
</tr>
<tr>
<td>1 KWO</td>
<td>Waters Leaving the State study</td>
<td>Planning - Water Conservation &amp; Additional Supply</td>
<td>$200,000</td>
<td>Water leaves Kansas annually at an estimated amount of more than eight times the groundwater used annually in Kansas on average. The 2016 Legislative Session HB 2059 proposed additions to the Kansas Water Appropriations Act appropriations process to create a path not currently available for proposing management of waters otherwise lost to the state. The bill with KDA compromise language is still needed, even though it passed the Senate and was allowed to die in conference committee in favor of Water Authority study. The Water Authority accepted a three part proposal from a special study team and included $200,000 in its FY 2019 recommendations to the Governor and Legislature. But, the study team may no longer be available as proposed. The need remains to move Water Planning forward to create the appropriation path. A task force review of current policy and needs is requested as presented at the April 2019 KWA meeting by the Upper Ark RAC. An appropriate path for study continues as a Kansas Water Plan priority need. This work may be combined as appropriate with the Water Marketing Assistance Grant proposal to Reclamation listed as high priority by the GMD3 Renewable Supplies Committee and board.</td>
</tr>
<tr>
<td>1 KWO</td>
<td>Master Water Manager Pilot Program with GMD3</td>
<td>Planning - Water Management</td>
<td>$100,000</td>
<td>The Master Water Manager program pilot project will be an extension of ongoing demonstration programs and will be designed to take the demonstration process to the next step by facilitating the adoption of proven best management practices by significantly reducing the learning curve for water managers. Master Water Manager participants will learn how to manage water use using conservation practices with tools and strategies accessible immediately, making conservation solutions practical. Lectures, problem solving and in-field, hands-on applications will be used during teaching, and the length of the program will give participants time to reflect on what they learn and build a network amongst themselves to rely on when implementing best practices in their operations. This is to be patterned from the North Texas Master Irrigator program spoken about at the Ogallala Water Summit that took place April 2018 in Garden City.</td>
</tr>
</tbody>
</table>

**GMD3 SUBTOTAL** | $2,321,766 |
RESOLUTION 93-10

OF THE

SOUTHWEST KANSAS GROUNDWATER MANAGEMENT DISTRICT

WHEREAS, the Board of Directors of the Southwest Kansas Groundwater Management District has been and continues to be supportive of the Kansas Water Authority in maintaining a State Water Plan Fund and the benefits of projects and programs derived therefrom; and

WHEREAS, the Board of Directors of the Southwest Kansas Groundwater Management District is also supportive of the efforts of the Kansas Water Authority to finance an acquisition of water supply storage in several Kansas reservoirs from the United States Army Corps of Engineers for the general benefit of the citizens of the State; and

WHEREAS, the Board of Directors of the Southwest Kansas Groundwater Management District does not support the suspension of State Water Plan funding for present and anticipated water-related planning and development projects in deference to the acquisitions of additional Federal reservoir water supply storage, then

THEREFORE, be it resolved by the Board of Directors of the Southwest Kansas Groundwater Management District that support of a proposed $.001 (1/10 cent) general statewide sales tax for financing of the aforementioned acquisition of water supply storage be endorsed, and

THEREFORE, that said endorsement be hereby evidenced by instrument of this resolution, and

FURTHER, that a recommendation to provide the implementation of the stated general statewide financing sales tax mechanism be forwarded to the Kansas Water Authority as of this day.

Adopted this 8th day of September, 1993.

Thomas R. Bogner, President

Michael J. Friesen, Secretary
GMD3 RS Committee Memorandum

To: Earl Lewis, Interim Director, Kansas Water Office

From: Southwest Kansas Groundwater Management District Number 3 (GMD3)

Subject: Upper Arkansas River interstate water user needs assessment.

Date: August 21, 2019

Immediate need for interstate water management study funding.

GMD3 Renewable Supplies (RS) Committee met on August 19, 2019 to review the results of the GMD3 hosted Water Vision Kansas Upper Ark Interstate Water Supply public meeting December 28, 2018 and the ongoing efforts by Colorado to gain authorization of a new 40,000 acre-foot Colorado water users storage account in the unused capacity of John Martin Reservoir. This is ultimately an ARCA issue requiring agreement from each state. An immediate need has been identified for a review study of Kansas water user needs supporting the Kansas ARCA team activity. Given the current work of the ARCA Special Engineering Committee on the Colorado initiative to authorize the new account, a Kansas support study is now a priority request for immediate funding.

Colorado has a draft study funded by the state and conducted by a local sponsoring district to inform their efforts to authorize the account. Kansas is lacking a like study to inform those interstate discussions. GMD3 is requesting state funding for the needed Kansas water user study in support of current interstate discussion activities. Spronk Water Engineers is a long-standing contractor for Kansas and for GMD3 on such matters and is appropriate for the evaluation. Some preliminary work is needed to provide an agreed set of water user needs for the contractor and to develop a scope of work. A budget agreeable by GMD3 and the contractor is estimated at $25,000.

GMD3 has both surface water and groundwater user interests represented on the board that work to develop improved management tools and activities for the Ark River Basin in Kansas. A number of activities and concerns have already been identified in the new draft GMD3 management program document with help from the Ark River Litigation Funds Advisory Committee for the Western Water Conservation Projects Fund. Program needs relating to interstate water but not necessarily this study include:

- Improve conjunctive management of available surface water and groundwater.
- Mitigate contaminated river flows and the effects on district usable groundwater storage.
- Work on the Kansas legislative call to complete a federal Basin Study involving both states.
- Formalize spill event and high flow administration with minimum pre-compact priority flow standards at Garden City and Dodge City USGS gages.
- GMD3 well pumping augmentation planning from available river flows.
- New sources for major transfers of available water supply into the basin benefiting both states.
- Protect against depletions of historical Ark basin groundwater lateral flows into Southwest Kansas.
PUBLIC MEETING
ARKANSAS RIVER
INTERSTATE WATER RESOURCES AND COMPACT

9:00 to 11 AM, Wednesday, November 28, 2018
The Southwest Kansas Groundwater Management District No. 3 (GMD3) is hosting a public meeting on Arkansas River Interstate Water Resources and related interstate compact on Wednesday, November 28, 2018 at the Clarion Inn located at 1911 E Kansas Ave in Garden City. This meeting is to inform and connect stakeholders with management program, policy makers and those involved with advising and making interstate water decisions.

Presentations will be made by: the Kansas Geological Survey; the Chief Engineer, Div. of Water Resources, KS Department of Agriculture; and the Southwest Kansas GMD3. Additional comments may be provided by the Kansas compact commissioners, a representative of the Upper Ark Regional Advisory Committee, and others. For more information, contact Mark Rude, Executive Director, Southwest Kansas Groundwater Management District, mrude@gmd3.org.

Southwest Kansas Groundwater Management District No. 3
2009 E. Spruce St.
Garden City, KS, 67846
620-275-7147

Information on the status of local water resource

 Hydrology and water quality of the river area

 Management activity of available water supply

 Interstate river basin compact elements

 Improvements to enjoy interstate water resources
Minutes

April 18, 2019  
KANSAS WATER AUTHORITY  
Abilene, Kansas  
Regular Meeting

CALL TO ORDER:  Chairman Gary Harshberger called the April 18, 2019 Kansas Water Authority meeting to order at 10:02 a.m. at the Civic Center, Abilene, KS

VOTING MEMBERS PRESENT:  Gary Harshberger; chairman; John Bailey; Mark Fischer; Greg Graff; Calvin Kissick; Karma Mason; Ted Nighswonger; Lynn Wobker;

EX-OFFICIO MEMBERS PRESENT:  Patty Clark; Earl Lewis; David Barfield; Rolfe Mandel; Dan Devlin; Brad Loveless; Rob Reschke; Ed Martinko; Leo Henning

VOTING MEMBERS ABSENT:  Mike Armstrong, Alan King, Randy Hayzlett

EX-OFFICIO MEMBERS ABSENT:  Shari Feist Albrecht, Mike Beam

APPROVAL OF MINUTES:  
Motion No. 04-19-01  It was moved by Karma Mason and seconded by Mark Fischer the January 31, 2019 Minutes for the Regular Meeting of the Kansas Water Authority be approved as presented. Motion carried with no dissenting votes. Information found on page 1 of meeting materials.

KWA/PWS Committee:  
City of Lawrence Draft Contract Discussion  Cara Hendricks presented.

KWA/PWS Committee:  
Marketing Rate CY2020

Motion No. 04-19-02  It was moved by John Bailey and seconded by Lynn Wobker to set the CY 2020 Water Marketing variable rate at $0.418/1000 gallons. Motion carried with no dissenting votes. Information found on page 3 of meeting materials.
KWA/PWS Committee:
Access District Updates

Nate Westrup and Kirk Tjelmeland presented.

KWA/RAC Operations Committee:
Membership & RAC Message to the KWA

Motion No. 04-19-03

It was moved by Greg Graff and seconded by Calvin Kissick to approve the proposed RAC membership action for the Upper Arkansas RAC.

Motion carried with no dissenting votes. Information found on page 5 of meeting materials.

KWA/RAC Operations Committee:
2019 RAC Membership Timeline

Matt Unruh provided an update. Information found on page 5 of meeting materials.

KWA/RAC Operations Committee:
Upper Ark Message

Fred Jones provided a message.

Central Kansas Water Bank Assoc. Evaluation Update:

Matt Unruh provided an update.

Water Technology Farms:
2018 Data Report

Armando Zarco provided an update. More information found in attached presentation.

HAB Update:

Trevor Flynn presented. More information found in attached presentation.

Potential PFCs Regulation and Contamination:

Leo Henning presented on behalf of the KDHE. More information found in attached presentation.
Legislative & Budget Update
2020 Budget Process

Karma Mason gave an update. Information found on page 6 of meeting materials.

Water Vision/ Water Plan:

Earl Lewis presented. Information found on page 9 of meeting materials.

Overview of USGS Activities Nationally and in Kansas:

Andy Ziegler presented. Information found in attached presentation.

KWO/KWA Operations- Cooperative Agreements:

USGS Streamgaging Agreement
USGS KS River Water Quality Monitoring Agreement
USGS Neosho River Sediment Monitoring Agreement
USGS Big Blue R. WQ/Sed. Monitoring Agreement
USGS Clay Center WQ/Sed. Monitoring Agreement
Corps Planning Assistance to States (PAS)

Motion No. 04-19-04

It was moved by Dennis Schwartz and seconded by Mark Fischer to give approval to the Director to enter into agreements with the U.S. Geological Survey for the Streamgaging Network, Kansas River Water Quality Monitoring, Neosho River Sediment Monitoring, Monitoring on the Republican River at Clay Center above Milford Lake, Monitoring on the Kansas River below Tuttle Creek Lake, and with the Corps of Engineers for the Kansas River Sediment Management/WID Study.

Motion carried with no dissenting votes. More information found on page 12 of meeting materials

Federal Updates:

Kansas River Basin Study Update

Cara Hendricks provided an update. Information found on page 15 of meeting materials.

Federal Updates:

WOTUS Update

Leo Henning provided an update. Information found on page 16 of meeting materials.

Director’s Report:

Presented by Earl Lewis: discussion of Missouri River flooding (more information in attached presentation), upcoming Missouri
RAC meeting, Kansas Runs on Water campaign support from Governor

Leo Henning- provided an update on the Nutrient Management Plan

David Barfield- provided information regarding wateruse, the Hays/Russel R9 Ranch change applications, Wichita ASR, the GMD5 LEMA, and WCAs

Rolfe Mandel (KGS)- announced Ed Martinko’s retirement from the Kansas Biological Survey

**New Business:**

N/A

**Adjournment**

The KWA adjourned at 3:04 p.m.

Meeting Materials/presentations referenced are also online under 2019 KWA Previous Meeting Materials.
**MEMO**

DATE: August 23, 2019  
TO: Kansas Water Authority  
FROM: Dennis Schwartz, Chair, Public Water Supply Committee  
Nathan Westrup  
RE: Public Water Supply Committee Update  

**Items Proposed for Action:**
- Consider approval of City of Lawrence water marketing contract
- Consider approval of the Access District’s request to negotiate additional storage purchase

**Items for Information:**
- 2020 Comprehensive Capital Development Plan Draft/Update
- City of Council Grove contract negotiation status

**City of Lawrence, Water Marketing Contract No. 19-1**
- Contract terms:
  - Single, 40-year contract (through 2059)
  - 5,021 MGY
    - Quantity based on revised request to include City of Baldwin and Douglas Co. RWDs No. 1, 2, 4, and 6 (entities currently holding individual Water Marketing Program contracts)
    - Quantity fully commits the available yield of Clinton in 2059
  - Standard contract, with additions to Article 6
    - Similar language to that provided in HAWC contract at Hillsdale
    - Identifies entities opting to go under Lawrence to account for quantity in contract
    - Subject entities with existing Water Marketing Contracts will need to terminate their contracts prior to December 30, 2019 utilizing the “Mutual Rescission and Cancellation” form as attached.
      - Proposed termination of these contracts will be brought to the KWA for approval in December
      - Should any of the subject entities chose not to request termination, the authorized quantity of their contract will be subtracted from Lawrence’s contract (19-1)

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*Based on the PWS Committee action taken on August 23, 2019, the PWS Committee recommends that the KWA approve Water Marketing Contract No. 19-1, as drafted.*

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**Lower Smoky Hill Water Supply Access District**

*“82a-2311. Same; negotiations of contracts.* If any member of the district requests an opportunity to renegotiate any existing contracts for the purchase of water supply, as described in K.S.A. 82a-1301 *et seq.*, and amendments thereto, the Kansas water authority and the Kansas water office shall conduct such negotiations on a timely basis and on the provisions for which negotiations are requested.”

- Pursuant to Contract Between the Kansas Water Office and the Lower Smoky Hill Water Supply Access District – For Water Supply Access, the District has submitted a written request (July 1, 2019) to (re)negotiate for purchase of additional storage in Kanopolis Lake
  - The Access District wishes to purchase an additional 700 acre-feet of irrigation storage space, approximately 1.5% of conservation pool
  - Expansion of irrigation storage
    - Provide for better drought tolerance further into the future
    - Additional acreage to be irrigated
The PWS Committee took action to recommend that the Director be authorized to proceed with negotiations for the purchase of additional irrigation storage space in Kanopolis Lake.

2020 Public Water Supply Program Comprehensive Capital Development Plan (CCDP) Update
The CCDP includes several components that require further refinement and updating. These include adjustments to O&M costs based on updates provided by the Corps of Engineers, forecasted water use projections based on actual reported use, and other program changes. KWO staff presented portions of the draft 2020 CCDP at the August PWS Committee for preliminary discussion. KWO will discuss progress on adjustments at the December meeting and a complete updated 2020 CCDP is anticipated to be provided to the PWS Committee at the spring 2020 meeting for review and recommendation.

City of Council Grove Contract Negotiation Status
KWO staff plan to request additional information from the City regarding projected demands, infrastructure, and plans for use of a new contract in combination with their existing contract (WPC 93-4). KWO is also refining full Cottonwood / Neosho system needs and operations in the model. The City’s primary source, Council Grove City Lake, is being evaluated for drought resilience as part of this analysis.

This item is for informational purposes only. No Kansas Water Authority action is necessary at this time.
MUTUAL RESCISSION AND CANCELLATION OF
WATER PURCHASE CONTRACT NO. [XX-X]

This contract to rescind and cancel is executed and entered into this __ day of ___ 2019, by and between the State of Kansas ("State") as represented by the Kansas Water Office ("KWO"), and [Entity Name] ("Purchaser"). The parties mutually intend to rescind and cancel Water Purchase Contract No. XX-X, which was approved by the Kansas Water Authority ("KWA") on [Insert Date].

The parties agree:

1. That the Director of the KWO is authorized by K.S.A. 74-2615, as amended, and by K.S.A. 82a-1305, as amended, to negotiate contracts for the sale of water;
2. That Purchaser is a wholesale customer of the State;
3. That the parties entered into Contract No. XX-X;
4. That Contract No. 19-1, which was entered between State and City of Lawrence, contains the following language in Article 16 providing that Purchaser/[Entity Name] intends “to allow expiration of their water purchase contracts effective December 30, 2019 or seek that the Authority approve termination of their existing water purchase contracts effective December 30, 2019”; and
5. That the KWA approved the cancellation of Contract No. XX-X on [Insert Date];
6. That K.S.A. 82a-1316, as amended, authorizes the rescission and cancellation of the Water Purchase Contract.

Therefore, the parties mutually agree that Contract No. XX-X is hereinafter rescinded and cancelled effective December 30, 2019, and all foregoing responsibilities and obligations of the parties under said contract shall be discharged as of said date, and the parties owe no further duties to one another under Contract No. XX-X.
By execution of this contract, each of the undersigned agree to be bound by the agreement, this ___ day of ____________, 2019.

Kansas Water Office

By: ____________________________
Printed Name: ____________________
Title: ____________________________

[Entity Name]

By: ____________________________
Printed Name: ____________________
Title: ____________________________
At the April 18, 2019 KWA meeting in Abilene, an overview of the process that has been initiated to help measure the implementation progress of the Long-Term Vision for the Future of Water Supply in Kansas, and its incorporation into the Kansas Water Plan, was presented. As we move through this process to measure the progress of identifying new water resource issues, updating and developing new Regional Goals and Actions Plans, and incorporating these items into the Kansas Water Plan, we have received preliminary comments from the Regional Advisory Committees (RACs), as they begin to discuss the goal and action plan progress.

Many of these comments expressed interest in continuing to pursue the current goals and action plans, however there were suggestions to change some of goals and action plans to better identify the work that needs to be done within each region. Some of the discussion centered on the addition of water quality goals and action plans, which was not the focus of the original goal setting process. No formal recommendations or messages were made to the KWA at the RAC meetings, as the RACs are waiting to hear from the public in each Region before recommending new goals and/or action plans.

Beginning in October and continuing into the new year, public meetings will be held in each of the 14 Regions to gather public input on the current Regional Goals and Actions Plans. One or more meetings will be held in each Region, presenting the progress of Regional Goals and Action Plans, the State of the Resource for each Region, as well as statewide issues and conditions. The public meetings will be held in an open house format, allowing for public comment at the meeting, as well as electronically. The RACs will be a part of the process of attending meetings, gathering comments, and presenting regional issues.

The comments and information gathered from the public meetings will be compiled by the KWO and presented to each of the 14 RACs at their spring meetings. After reviewing the compiled public comments, the RACs will then make recommendations to the KWA concerning their Regional Goals and Actions Plans. These recommendations will be presented to the KWA at future meetings for review and to allow for feedback that will then be taken back to each of the RACs.

Additional information on this process will be shared with the full KWA at future meetings.

This is for informational purposes only. No Kansas Water Authority action is necessary at this time.
This is an update to the ongoing Kansas River Reservoirs Flood and Sediment Study (additional background on next page). The Federal Cost Share Agreement (FCSA) for the study was executed on March 25, 2019. Since that time, the Kansas Water Office (KWO) and the Kansas Department of Wildlife, Parks and Tourism (KDWPT), the non-federal co-sponsors of the study, have been working with the Corps to develop a Project Management Plan (PMP), which includes a communications plan. The PMP is currently going through the Corps’ internal review process, with continued input from the KWO and KDWPT, and will be finalized in September.

Additionally, the KWO, KDWPT, and Corps have identified individuals for the Advisory Committee and solidified those positions. The committee will provide critical feedback on study planning and implementation. The first committee meeting was held on Monday, August 26, and will occur quarterly during the study. Members of the Advisory Committee are listed below:

- Ty Arneson - Thunderbird Marina
- Kent Askren - Kansas Farm Bureau
- Rex Buchanan - Kansas Geological Survey
- Darci Meese - WaterOne
- Heidi Mehl - The Nature Conservancy
- Susan Metzger - Kansas State University
- Erik Sartorius - League of Kansas Municipalities
- Greg Wilson - Kansas River WAD No. 1

The next step in the study process is the development of the Shared Vision Statement (SVS). The purpose of the SVS is to define the overall Shared Vision for the watershed, water, and related resources as developed by partners involved in the Watershed Study and to present the coordinated study framework and associated activities that clearly support the Shared Vision. Discussions regarding the SVS have already been initiated and will continue in the coming weeks.

No action is needed at this time. Information is provided for discussion purposes only.
Kansas River Reservoirs Flood and Sediment Study Background

The Federal Cost Share Agreement (FCSA) for the “Kansas River Reservoirs Flood and Sediment Study” was executed on March 25, 2019, and the Kansas Water Office (KWO) provided the initial cash payment of $25,000 to initiate work on the study. The Kansas Department of Wildlife, Parks and Tourism (KDWPT) was added as co-sponsor of the study prior to its execution. The study is planned to be completed over 3-5 years, with total funding of $3 million and a required 25% non-federal sponsor cost share of $750,000. Scoping discussions for the project are ongoing, but sediment management, reservoir operations, and flood risk management have been identified as the three primary focus areas. Further explanation of the study process is provided below, including the general Corps six-step watershed planning process, study milestones, and overall anticipated study progression.

- Six-Step Watershed Planning Process
  - Identify Problems and Opportunities
  - Inventory and Forecasting
  - Identify and Screen Measures
  - Formulate Initial Array of Strategies
  - Refine Initial Array and Evaluate Focused Array of Strategies
  - Strategy Comparison and Selection

- Study Milestones
  - Shared Vision Milestone
  - Recommendations Milestone
  - Final Watershed Plan

- Anticipated Study Progression
  - Draft PMP Development (to include goals, objectives, and shared vision statement and a communications plan)
  - Initial Round of Stakeholder Coordination and Public Outreach Meetings
  - Initial Baseline and Existing Conditions
  - Identify Conceptual Measures/Alternatives
  - Screen Conceptual Measures/Alternative
  - Preparation of Study Summary Document
  - Shared Vision Milestone Meeting
  - Recommendations Milestone Phase
  - Final Watershed Plan Milestone Phase
Groundwater in the vicinity of Burrton, Kansas continues to be impacted by elevated chloride concentrations, primarily caused by historic oil field operations in the region dating back to the 1930’s. The plume of high chloride groundwater is expanding and migrating southeast in the Equus Beds Aquifer, threatening to impact a larger area of the aquifer which is used for municipal, industrial, and agricultural water supplies.

In FY2018 and FY2019, SWPF funds in the amount of $50,000 annually were appropriated to the Kansas Water Office to investigate the options for remediating the groundwater plume and for the development of a remediation plan. On July 22, 2019, the Kansas Water Office, with the assistance of Kansas Department of Health and Environment’s groundwater remediation team, released a Work Request for the evaluation of remediation alternatives of the Burton chloride plume, with bids due to be submitted from interested consultants by August 23, 2019. Final deliverables associated with the Work Request will be due by the selected contractor on November 29, 2019. As part of the scope of the Work Request, all available data, information and previous studies associated with the plume have been referenced and made available to potential bidders.

In addition to an evaluation of remedial alternatives and recommended corrective action, the request includes the development and submittal of detailed information on costs per phase, rather than one large sum for the total project. This information will enable the State of Kansas to make an informed resource management decision and to develop strategic partnerships to address the issue.

This is being provided for informational purposes only. No Kansas Water Authority action is necessary at this time.
MEMO

DATE: August 26, 2019
TO: Kansas Water Authority
FROM: Earl Lewis, P.E.; Nathan Westrup
RE: Missouri River Flooding, 4-States Effort

900 SW Jackson Street, Suite 404
Topeka, KS 66612
Phone: (785) 296-3185
Fax: (785) 296-0878
www.kwo.org

Flood Risk Management Study for the Lower Missouri River Basin, KS, MO, IA, NE

As a result of extensive flooding experienced this year within the Lower Missouri River basin the Governors of Kansas, Missouri, Iowa, and Nebraska have charged state officials with the task of developing a comprehensive assessment and recovery plan. The KWO and representatives from the three other states have met with the Corps of Engineers and determined that the most appropriate first step would be to make use of available Public Assistance to States (PAS) funds. At this point, study costs have not yet been determined.

The Lower Missouri River extends from Sioux City, Iowa to St. Louis, Missouri. The lower river drains thousands of square miles of rural and urbanized areas, and contains numerous Federal and nonfederal projects that provide varying levels of flood protection. The basin has experienced 4 of the 6 highest runoff years in the period of record in the last decade: 2010 (6th highest), 2011 (highest), 2018 (4th highest) and 2019 (2nd highest - projected). Recent flooding has caused extensive damage and loss of life.

The purpose of this study is to develop measures to lessen flood risk, vulnerability, damages and improve resilience for the future. This study will focus on both near term (6 months) and longer-term (2 to 3 years) priorities, as agreed to among the four sponsoring states and the US Army Corps of Engineers (Corps).

The four states of the lower basin area are planning to organize themselves through a Memorandum of Understanding, and will cooperate, partner, and share costs of the study with the Corps. For this important study, the Corps will also internally organize themselves to involve the appropriate experts, program managers, and policy level representatives from the Omaha and Kansas City Districts, and Portland Division, and their national headquarters, as needed.

The Kansas Water Office recommends approval to enter into a cooperative multi-state Public Assistance to States agreement with the U.S. Army Corps of Engineers for the Flood Risk Management Study for the Lower Missouri River Basin, KS, MO, IA, NE.
In July, 2019 the Kansas Water Office (KWO), in partnership with the Kansas Department of Agriculture (KDA) – Water Structures Program and the Division of Conservation, applied for the FY19 High Hazard Potential Dams (HHPD) Rehabilitation Grant, Funding Opportunity Number DHS-19-MT-041-00-01 from the Federal Emergency Management Agency (FEMA). Total program funding was set at $10,000,000.00, with an award ceiling of $1,250,000.00.

The purpose of the HHPD Grant is to make available funds to provide technical, planning, design, and construction assistance in the form of grants to non-Federal governmental organizations or nonprofit organizations for rehabilitation of eligible high hazard potential dams. For a dam to be considered eligible for this grant the dam must be a non-federal dam located in a state with a state dam safety program, classified as high hazard potential by the state dam safety agency, have an approved emergency action plan, and pose an unacceptable risk to the public. For FY19, the HHPD will provide assistance to planning and other pre-construction activities to assist applicants to meet program requirements such as addressing all dam risk in Hazard Mitigation Plans and Environmental and Historic Preservation (EHP) compliance. The KWO is currently working with the KDA and the Kansas Department of Emergency Management (KDEM) to ensure all grant requirements are met through the entirety of the grant process such as participating in the National Flood Insurance Program and ensuring that the County Mitigation Plans are updated.

Upon submittal of the grant, two eligible dam owners (subapplicants) were a part of this grant request. The two dams included in the grant were McPherson County State Lake Dam and Lake Sherwood Dam. The total amount of the request was $113,165.00, with $51,415.00 and $61,750.00 requested respectively from the subapplicants. The amount requested is 65% of the subapplicants total engineering and planning costs, as per grant requirements the subapplicants must cost-share 35% of the project. Also, funds requested for this phase of the grant process can only be used to fund engineering and planning costs, as in upcoming fiscal years, additional grant funds may be made available for construction of the projects.

In recent discussions with FEMA, the KWO was informed that based on the award formula that FEMA uses, which integrates the number of total applicants and the number of eligible dams per state, the KWO is unofficially being awarded $409,297.00. This award amount will still need to be presented by FEMA to the U.S. Congress for final approval. If final approval is received, the $409,297.00 will be allocated to the KWO for use on eligible dams.

Official and final grant award notification will begin in September 2019, allowing three years to utilize funds. The KWO will have 60 days from official grant award notification to revise the workplan to show how grant funds will be utilized. If grant funds are received, the KWO will again work with the KDA – Water Structures Program and the Division of Conservation to revise this workplan to appropriately distribute funds.

The Kansas Water Office recommends KWA give approval to the Director to enter into an agreement with the Federal Emergency Management Agency (FEMA) to receive and utilize High Hazard Potential Dams Rehabilitation Grant funds.