

KANSAS WATER AUTHORITY ANNUAL REPORT

TO THE GOVERNOR & LEGISLATURE

2021



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Governor Laura Kelly and Members of the 2021 Kansas Legislature

Letter from the Chair

On behalf of the Kansas Water Authority (KWA), it is my pleasure to present our 2021 Annual Report to the Governor and Legislature. This report is presented to you in keeping with the responsibilities of the KWA to advise the Governor and Legislature on Kansas water policy matters and to share the priorities identified by the KWA relative to the expenditure of the State Water Plan Fund (SWPF).



This report is presented to you in keeping with the responsibilities of the KWA to advise the Governor and Legislature on Kansas water policy matters and to share the priorities identified by the KWA relative to the expenditure of the State Water Plan Fund.

The year 2020 challenged all of us with the impacts of the global COVID-19 pandemic. Our daily lives changed dramatically, many experienced terrible financial situations and far too many suffered the loss of loved ones as a result of this virus. In so many ways, we simply had to adjust to a new reality. As tough as it has been, we have found ways to keep going through adaptability, innovation, and resiliency.

It is no wonder that the theme of the 2020 Governor's Conference on the Future of Water in Kansas highlighted these same three qualities: adaptability, innovation and resiliency. Kansas faces tremendous challenges in securing a reliable, safe water supply for its residents: conserving and extending the usable life of the High Plains-Ogallala Aquifer; securing and protecting our reservoirs; reducing pollution of Kansas waters; and reducing our vulnerability to extreme events. The good news is that there is real promise for addressing these problems. Innovative technologies and adaptive practices are demonstrating that we can move toward resiliency. The KWA urges the Governor and Legislature to invest in the programs and projects that will supply our water needs now and into the future.

To this end, the KWA recognizes and appreciates the 2020 Kansas Legislature's demonstrated commitment to make progress on these priorities, through partially restoring the \$6 million State General Fund (SGF) and \$2 million Economic Development Initiatives Fund (EDIF) demand transfers to the SWPF. Although those enhancements fell victim to the impacts of COVID-19, the Legislature had clearly demonstrated that protecting water is a priority. The KWA continues to urge the Governor and Legislature to fully fund the \$8 million combined statutory SGF and EDIF demand transfers.

This KWA Annual Report provides details in support of recommended additional enhancements for State Fiscal Year (SFY) 2022, as well as updates of how SFY 2021 SWPF resources were utilized.

In developing the FY 2022 SWPF budget recommendations, the KWA was once again fortunate to receive valuable input from each of the 14 Regional Advisory Committees (RACs) covering all areas of Kansas. The RACs provide valuable local insight into water resource issues impacting their respective regions, and advice on implementing the Vision and Kansas Water Plan (KWP). This input is extremely valuable to the KWA regarding water policy discussions, including the process of updating the KWP.

The Kansas Water Authority looks forward to working with you during the 2021 Legislative Session on the water resource priorities identified within this report and working to continue to make progress toward a reliable water future for Kansas.

Sincerely,



Connie Owen, Chair
Kansas Water Authority

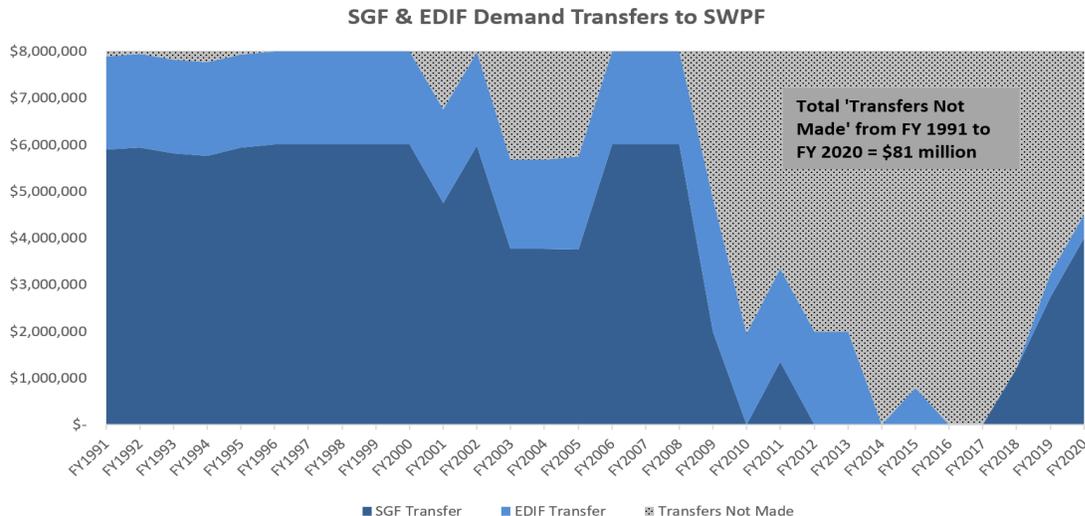
State Water Plan Fund Recommendations

In 1989, the SWPF (K.S.A. 82a-951) was created and is used for establishing and implementing water-related programs or projects identified in the Kansas Water Plan. Revenue for the SWPF is received from fees assessed to municipal, industrial and agricultural water-related users and includes a demand transfer (statutory) from the SGF (\$6,000,000) and EDIF (\$2,000,000) as shown in the table below.

State Water Plan Fund Revenue Estimate

| SWPF - Revenue Estimates | FY 2020 Actuals | FY 2021 Estimates | FY 2022 Recommendation |
|---|-----------------|-------------------|------------------------|
| Beginning Balance | \$ 4,137,409 | \$ 5,233,008 | \$ 416,614 |
| Transfers and Adjustments | | | |
| State General Fund Transfer | \$ 4,005,632 | \$ 4,005,632 | \$ 6,000,000 |
| Economic Development Fund Transfer | \$ 500,000 | \$ 500,000 | \$ 2,000,000 |
| Release of Prior Year Encumbrance | \$ 512,612 | | |
| Other Service Charges | \$ 49,449 | \$ 51,482 | \$ 51,482 |
| Transfers to SGF - John Redmond Bond | \$ (1,260,426) | \$ (1,260,426) | \$ (1,260,426) |
| SUBTOTAL--Adjustments | \$ 3,807,267 | \$ 3,296,688 | \$ 6,791,056 |
| Revenue Receipts | | | |
| Municipal Water Fees (3 cents/1,000 gal) | \$ 2,938,321 | \$ 3,305,836 | \$ 3,174,791 |
| Clean Drinking Water Fee Fund (3 cents/1,000 gal) | \$ 2,615,325 | \$ 2,800,000 | \$ 2,830,876 |
| Industrial Water Fees (3 cents/1,000 gal) | \$ 840,200 | \$ 930,000 | \$ 916,874 |
| Stock Water Fees (3 cents/1,000 gal) | \$ 369,103 | \$ 350,000 | \$ 384,120 |
| Pesticide Registration Fees (\$100/Registration) | \$ 1,306,432 | \$ 1,390,000 | \$ 1,362,734 |
| Fertilizer Registration Fees (\$1.40/ton) | \$ 4,077,059 | \$ 3,638,611 | \$ 3,781,386 |
| Pollution Fines and Penalties (Est.) | \$ 171,981 | \$ 230,000 | \$ 200,000 |
| Sand Royalties (\$0.15/ton) | \$ 13,148 | \$ 30,000 | \$ 30,000 |
| SUBTOTAL--Receipts | \$ 12,331,569 | \$ 12,674,447 | \$ 12,680,781 |
| Total Available | \$ 20,276,244 | \$ 21,204,143 | \$ 19,888,450 |
| Less: Expenditures | \$ 15,043,236 | \$ 20,787,529 | \$ 19,883,606 |
| Ending Balance | \$ 5,233,008 | \$ 416,614 | \$ 4,844 |

The fee structure that supports the SWPF has remained virtually unchanged since the fund has been in place. Sand Royalty Receipts were added to the funding stream in FY1996 and the Clean Drinking Water Fee began in FY2008.



The above chart represents the historical SGF and EDIF transfers to the SWPF. As shown, FY2008 was the most recent year the full \$8,000,000 statutory demand transfers from these two funds were made.

State Water Plan Fund Expenditure Recommendations

| Agency/Program | FY 2020 Actuals | FY 2021 Adjusted* | FY 2022 KWA Recommendation |
|--|----------------------|----------------------|----------------------------|
| Department of Health and Environment | | | |
| Contamination Remediation | \$ 1,086,242 | \$ 1,090,339 | \$ 1,088,301 |
| Nonpoint Source Program | \$ 262,932 | \$ 406,156 | \$ 303,208 |
| TMDL Initiatives | \$ 231,541 | \$ 340,068 | \$ 280,738 |
| Harmful Algae Bloom Pilot | \$ 194,369 | \$ 1,148,760 | \$ 150,000 |
| Watershed Restoration/Protection (WRAPS) | \$ 819,654 | \$ 752,127 | \$ 1,000,000 |
| Drinking Water Protection Program | \$ 350,000 | \$ 350,000 | \$ 800,000 |
| SUBTOTAL--KDHE | \$ 2,944,738 | \$ 4,087,450 | \$ 3,622,247 |
| Department of Agriculture | | | |
| Interstate Water Issues | \$ 372,397 | \$ 701,783 | \$ 490,007 |
| Subbasin Water Resources Management | \$ 521,404 | \$ 865,493 | \$ 608,949 |
| Water Use | \$ 78,539 | \$ 136,839 | \$ 72,600 |
| Water Resources Cost Share | \$ 2,388,553 | \$ 2,631,243 | \$ 2,248,289 |
| Nonpoint Source Pollution Asst. | \$ 2,024,990 | \$ 2,131,892 | \$ 1,857,836 |
| Aid to Conservation Districts | \$ 2,192,637 | \$ 2,192,637 | \$ 1,973,373 |
| Watershed Dam Construction | \$ 550,000 | \$ 550,000 | \$ 1,000,000 |
| Water Quality Buffer Initiative | \$ 85,062 | \$ 529,454 | \$ 100,000 |
| Riparian and Wetland Program | \$ 51,725 | \$ 582,295 | \$ 54,024 |
| Water Transition Assistance Program/CREP | \$ 311,080 | \$ 460,334 | \$ 627,046 |
| Irrigation Technology | \$ 81,316 | \$ 151,224 | \$ 200,000 |
| Crop and Livestock Research | \$ 350,000 | \$ 350,000 | \$ 250,000 |
| Streambank Stabilization | \$ 179,300 | \$ 1,320,700 | \$ 1,044,264 |
| SUBTOTAL--KDA | \$ 9,187,003 | \$ 12,603,892 | \$ 10,526,388 |
| Kansas Water Office | | | |
| Assessment and Evaluation | \$ 751,100 | \$ 599,177 | \$ 858,919 |
| Flood Response Study | \$ - | \$ 100,000 | \$ - |
| MOU - Storage Operations & Maintenance | \$ 448,893 | \$ 586,452 | \$ 526,081 |
| Stream Gaging | \$ 413,580 | \$ 413,580 | \$ 423,130 |
| Technical Assistance to Water Users | \$ 331,828 | \$ 341,391 | \$ 325,000 |
| Vision Education Strategy | \$ 100,000 | \$ 100,000 | \$ 125,000 |
| Reservoir and Water Quality Research | \$ 247,696 | \$ 402,304 | \$ 350,000 |
| Water Technology Farms | \$ 70,875 | \$ 79,125 | \$ 200,000 |
| Watershed Conservation Practice Imp (KRPI) | \$ 479,823 | \$ 820,177 | \$ 1,000,000 |
| Equus Beds Chloride Plume Project | \$ 40,859 | \$ 9,140 | \$ - |
| Milford Lake Watershed RCPP | \$ - | \$ 400,000 | \$ 200,000 |
| Water Injection Dredging (WID) | \$ - | \$ 150,000 | \$ 1,500,000 |
| Arbuckle Study | \$ - | \$ 68,000 | \$ 150,000 |
| SUBTOTAL--KWO | \$ 2,884,654 | \$ 4,069,346 | \$ 5,658,130 |
| Kansas Dept. of Wildlife, Parks & Tourism | | | |
| Aquatic Nuisance Species (ANS) Program | \$ - | \$ - | \$ 50,000 |
| University of Kansas--Geological Survey | | | |
| | \$ 26,841 | \$ 26,841 | \$ 26,841 |
| Total State Water Plan Expenditures | \$ 15,043,236 | \$ 20,787,529 | \$ 19,883,606 |

*The "FY2021 Adjusted" represents the adjusted FY2021 agency budgets, which include FY2020 carry forward amounts and also reflect the July 2020 Governor's allotments.

Summary of Request for SGF/EDIF Transfer Restoration

The KWA reviewed the agency and RAC requests on recommended projects for the SGF/EDIF transfers in FY 2022 and supports restoration of the full \$8 million SGF/EDIF demand transfer to the SWPF.

The table to the right shows the additional SGF/EDIF restoration request for the indicated program that is an increase from FY 2021.

The KWA will continue to focus funding on priority projects that are in the Vision, KWA and RAC goals/action plans and the Kansas Water Plan. Page 3 of this report contains the KWA total SWPF recommendations for FY 2022.

| KWA SWPF Recommendations* | Agency | FY 2022 KWA Add'l Requests |
|---|--------|----------------------------|
| Watershed Restoration/Protection (WRAPS) (pg. 14) | KDHE | \$ 269,116 |
| Drinking Water Protection Program (pg. 16) | KDHE | \$ 150,000 |
| Watershed Dam Construction (pg. 11) | KDA | \$ 450,000 |
| Water Transition Assistance Program/CREP (pg. 8) | KDA | \$ 225,000 |
| Streambank Stabilization (pg. 10) | KDA | \$ 250,000 |
| Assessment and Evaluation (pg. 8, 12, 17, 19, 24) | KWO | \$ 200,000 |
| Water Technology Farms (pg. 7) | KWO | \$ 100,000 |
| Watershed Conservation Practice Imp (KRPI) (pg. 11) | KWO | \$ 500,000 |
| Water Injection Dredging (WID) (pg. 10) | KWO | \$ 1,375,000 |
| Arbuckle Study (pg. 19) | KWO | \$ 150,000 |
| Total FY 2022 KWA Additional Requests | | \$ 3,669,116 |

*In addition to the above requests, the KWA's base funding request included \$50,000 to support the Aquatic Nuisance Species (ANS) Program within the Kansas Department of Wildlife, Parks & Tourism (KDWP). Information regarding this program is included on pg. 20 of this report.

Kansas Water Plan 5-Year Update *Incorporation of Vision & Updated RAC Goals and Action Plans*

The Kansas Water Office is currently in the process of completing a 5-year update to the Kansas Water Plan (KWP). The update includes incorporation of the 'Long Term Vision for the Future of Water Supply in Kansas', as well as updated goals and action plans from the 14 RACs.

The updated KWP will include strategies to address ongoing and emerging water resource issues of the state, including focused efforts on groundwater declines, decreasing reservoir water supply storage lost to sedimentation, and statewide water quality issues.

In 2020, KWO staff continued efforts to solicit input from the RACs and other stakeholders, groups and organizations as the updated plan continues to be developed.



Anticipated for completion in early 2021, the updated Kansas Water Plan will serve as the state's primary tool to address current water resource issues and to plan for future needs.

The updated KWP includes the following Guiding Principle sections:

- Conserving & Extending the High Plains Aquifer
- Securing, Protecting and Restoring our Kansas Reservoirs
- Improving our State's Water Quality
- Reducing our Vulnerability to Extreme Events
- Increasing Awareness of Kansas Water Resources

KWA Performance-Based Budget Task Force 2020 Kansas Water Plan Budget Guidelines

Recognizing the purpose of the SWPF is to implement the KWP, and the adoption of performance based budgeting by the state in recent years, the KWA adopted a set of budget guidelines in January 2020. The guidelines, consisting of eight guiding principles, were utilized by the KWA Budget Committee in 2020 to develop the KWA FY 2022 SWPF budget recommendations.

In FY 2020, the KWO worked with the other agencies to categorize the SWP-funded programs into the major water resource issues they are primarily addressing (see table below) in order to determine priorities and to evaluate measures of success.

With limited resources, the KWA continues efforts to balance the competing needs and requests for the SWPF, and to identify which programs and practices will provide the biggest return on investment. As indicated in the table below, many of the programs address multiple issues. The KWO continues to work with the other agencies to refine the categories and programs.

“Water Plan Funds should be allocated to maximize accomplishing the goals and objectives established by the Kansas Statutes, the Kansas Water Authority and the Regional Advisory Committees.”

- Kansas Water Plan Budget Guidelines
KWA 1/29/2020

KWA SWPF Budget Recommendations by Category

| Category | Program Name | Agency | FY2022 KWA Total Recommendations |
|---|--|-----------|----------------------------------|
| Groundwater Initiatives | Water TAP/CREP | KDA | \$ 627,046 |
| | Irrigation Technology | KDA | \$ 200,000 |
| | Crop and Livestock Research | KDA | \$ 250,000 |
| | Water Technology Farms | KWO | \$ 200,000 |
| Groundwater Initiatives & Water Quality | Interstate Water Issues | KDA | \$ 490,007 |
| | Subbasin Water Resources Management | KDA | \$ 608,949 |
| | Water Use | KDA | \$ 72,600 |
| GW Initiatives, WQ & Res. Water Supply & Sed. | Vision Education Strategy | KWO | \$ 125,000 |
| | Assessment and Evaluation | KWO | \$ 858,919 |
| Water Quality | Contamination Remediation | KDHE | \$ 1,088,301 |
| | Nonpoint Source Program | KDHE | \$ 303,208 |
| | TMDL Initiatives | KDHE | \$ 280,738 |
| | Harmful Algae Bloom Pilot | KDHE | \$ 150,000 |
| | Watershed Restoration/Protection | KDHE | \$ 1,000,000 |
| | Drinking Water Protection Program | KDHE | \$ 800,000 |
| | Nonpoint Source Pollution Assistance | KDA | \$ 1,857,836 |
| | Technical Assistance to Water Users | KWO | \$ 325,000 |
| | Equus Beds Chloride Plume Project | KWO | \$ - |
| | Milford Lake Watershed RCPP | KWO | \$ 200,000 |
| | Arbuckle Study | KWO | \$ 150,000 |
| Aquatic Nuisance Species Program | KDWPT | \$ 50,000 | |
| Water Quality/Res. Water Supply & Sedimentation | Aid to Conservation Districts | KDA | \$ 1,973,373 |
| | Riparian and Wetland Program | KDA | \$ 54,024 |
| | Stream Gaging | KWO | \$ 423,130 |
| | Reservoir and Water Quality Research | KWO | \$ 350,000 |
| | Water Quality Buffer Initiative | KDA | \$ 100,000 |
| | Water Resources Cost Share | KDA | \$ 2,248,289 |
| Reservoir Water Supply & Sedimentation | Watershed Dam Construction | KDA | \$ 1,000,000 |
| | Streambank Stabilization | KDA | \$ 1,044,264 |
| | MOU - Storage Operations & Maintenance | KWO | \$ 526,081 |
| | Watershed Conservation Practice Imp | KWO | \$ 1,000,000 |
| | Water Injection Dredging (WID) | KWO | \$ 1,500,000 |

Ogallala Aquifer Initiatives

Water Conservation Areas/Local Enhanced Management Areas

Subbasin Water Resources Management (KDA) - FY 2022 Request - \$608,949 (No increase from FY 2021)

Water Use (KDA); FY 2022 Request - \$72,600 (No increase from FY 2021)

Water Conservation Areas

WCAs are a simple, streamlined and flexible tool that allow any water right owner or group of owners the opportunity to voluntarily develop a management plan to reduce withdrawals in an effort to extend the usable life of the Ogallala-High Plains Aquifer.

WCAs allow flexibilities that are not available to water right owners outside of a WCA.

Flexibilities include elements such as:

- Multi-year water right allocations
- Moving allocations between enrolled water rights
- Allowing for new uses of water



2020 Ogallala Aquifer Initiatives Accomplishments

53

Water Conservation Areas

WCAs with 86,625 total enrolled acres. To date the planned savings is more than 11,900 AF/Yr.

39%

Local Enhanced Management Areas

Reductions by the SD-6 LEMA from historical water use. There are currently two approved LEMAs in the state of Kansas.

Local Enhanced Management Areas

Sheridan County 6 (SD-6), was the first approved LEMA in Kansas. After initially meeting a water conservation goal of 20%, they almost doubled it, reducing withdrawals by 39%.

Ground Water Management District (GMD) No. 4 has since developed another LEMA, which regulates nearly their entire district.

The success of GMD No. 4's execution of LEMAs has motivated other GMDs to look towards implementing them into their regions as well.

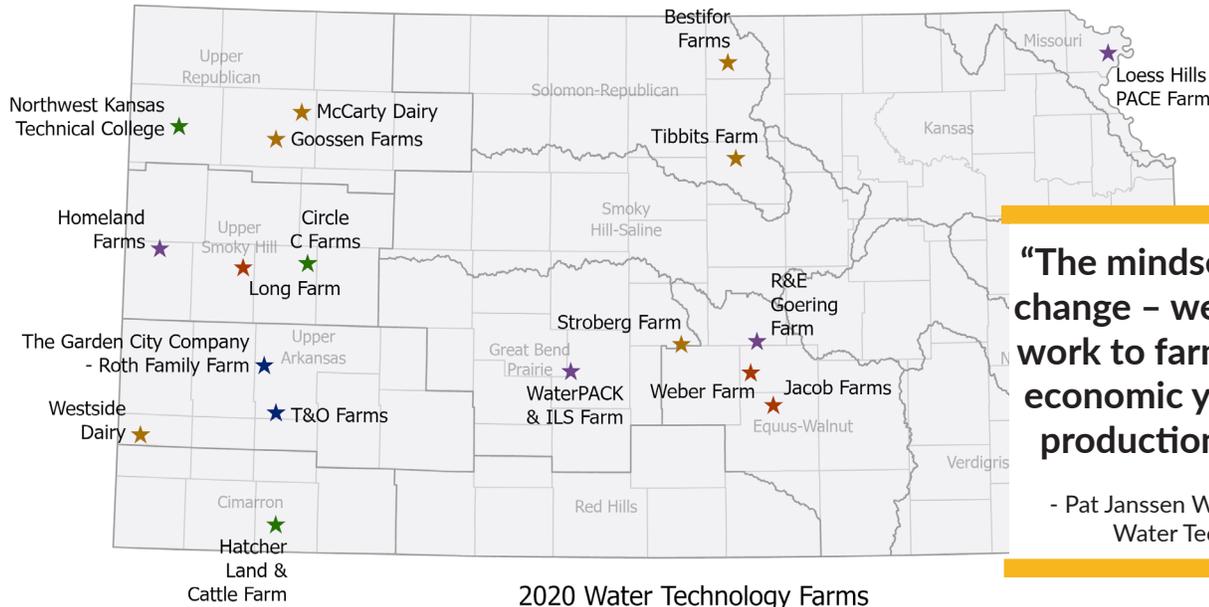
In 2020, GMD No. 1 filed a request to initiate proceedings for a Wichita County LEMA. The proposed LEMA plan calls for reductions in water use in those areas of Wichita County within GMD No. 1. As of December 2020, the LEMA is in the process of completing the second required public hearing. After the final hearing the Chief Engineer will issue an "Order of Decision" within 120 days.



Ogallala Aquifer Initiatives

KWO Water Technology Farms - FY 2022 Request \$200,000 (↑ \$125,000 from FY 2021)

Water Technology Farms continue to showcase the latest in irrigation technology, field-scale research, and water conservation efforts. These farms are public-private partnerships that began in 2016 and continue to demonstrate producers can reduce water use and input costs, while increasing overall profitability.



“The mindset has to change – we need to work to farm for the economic yield, not production yield.”

- Pat Janssen WaterPACK/ILS Water Technology Farm

KDA Irrigation Technology - FY 2022 Request \$200,000 (↑ \$100,000 from FY 2021)

As groundwater declines continue to impact aquifer conditions and surrounding hydrology, producers are becoming more interested in implementing innovative tools to improve irrigation water management.

This funding is used to improve irrigation efficiency and reduce water use by providing cost-share assistance to landowners for irrigation technology.



2020 Ogallala Aquifer Initiatives Accomplishments

17 **Water Technology Farms**
Total farms enrolled to expand the concept to additional areas of Kansas. More than 100 sponsors and partners working together to save water and increase overall net profit.

5K+ **Irrigation Technology**
Acres were improved with the FY 2020 funding through irrigation management.

The Irrigation Technology program is currently focused on the Rattlesnake Creek Sub-basin to address the Water Right Impairment of the USFWS on Quivira National Wildlife Refuge.

Additional focus areas include WCAs and LEMAs throughout western Kansas.

Ogallala Aquifer Initiatives

KDA Water Transition Assistance Program/Conservation Reserve Enhancement Program

FY 2022 Request: \$627,046 (↑ \$225,000 from base request)

The purpose of the Water 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. Priority areas are targeted and approved by the KDA-DOC, with recommendations from GMDs in applicable areas.

WTAP differs from the Conservation Reserve Enhancement Program (CREP) in that:

- The funding mechanism is solely state-driven
- Partial water rights can be retired
- Dryland farming is allowed

Funding will be utilized to support a new targeted area in Wichita and Greeley counties which is intended to address aquifer declines and municipal water supply shortages.

The 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. A landowner is compensated for agreeing 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.

CREP is a federal and state partnership where 80% of the costs are paid by USDA. The KDA is currently working with USDA and other partners on expansion of CREP into the Rattlesnake Creek Sub-basin.



Index Well Network & Modeling

Funded through KWO Assessment and Evaluation Program

The KWO and KGS have a continued partnership to develop, monitor, and expand the High Plains Index Well Network. The overall objective of the index well program is to better understand groundwater conditions on regional and local scales. Index wells are used to calibrate annual water level measurements to aid in aquifer evaluation and management. The network now consists of 20 wells with real-time data access from the KGS website.

KWO's Assessment and Evaluation program continues to provide funding for these efforts, utilized in conjunction with funds from participating GMDs to contract with KGS for groundwater model updates and enhancements.

Earlier this year, the KGS completed a model for GMD No. 2 and is currently working on a model for GMD No. 4.



2020 Ogallala Aquifer Initiatives Accomplishments

25

Water Transition Assistance Program

Enrollments to date which retired 2,549 acre-feet of HCWU with a total of \$3,600,409 of state money spent.

+\$1.6 Million

Conservation Reserve Enhancement Program

In direct cash contributions as incentive payments on 22,800 enrolled acres with 46,919 acre-feet of permanently retired water rights.

20

Index Well Network & Modeling

Total wells operational. Commencement of real-time monitoring in GMDs No. 2 and 3 as well a completed GMD No. 2 model.

Reservoir Water Supply & Sediment Management

KWO Bathymetric Survey Program

Funded through KWO Reservoir and Water Quality Research Program

Kansas reservoirs are being filled with sediment, some at a faster rate than others, reducing the amount of water available for water supply, flood control, and recreational benefits to the citizens and industries of the state. The KWO is working to increase data collection and future reservoir volume estimates, while looking into new initiatives to extend the usable lifetimes of our reservoirs.

In 2019, the KWO launched the Bathymetry and Storage Evaluation (BaSE) program to increase the frequency of bathymetric data collection for Kansas water supply reservoirs/lakes. These underwater surveys estimate water depth and topography to determine how much sediment has accumulated on the bottom of the reservoir.

The BaSE program will allow KWO to work towards completing bathymetric surveys on a five-year rotation on multiple reservoirs, to gain a better understanding of reservoir conditions and sedimentation rates impacting future water supply planning.

Funding received in 2019 and 2020 has allowed the KWO to measure impacts to reservoir water supplies after the record 2019 flooding, allowing for updated water supply projections and improving future water supply planning.

KWO has been working to update bathymetric surveys at reservoirs within the Kansas River Basin in collaboration with the federal government for the current Kansas River Reservoirs Flood and Sediment study.



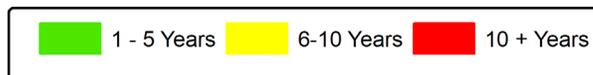
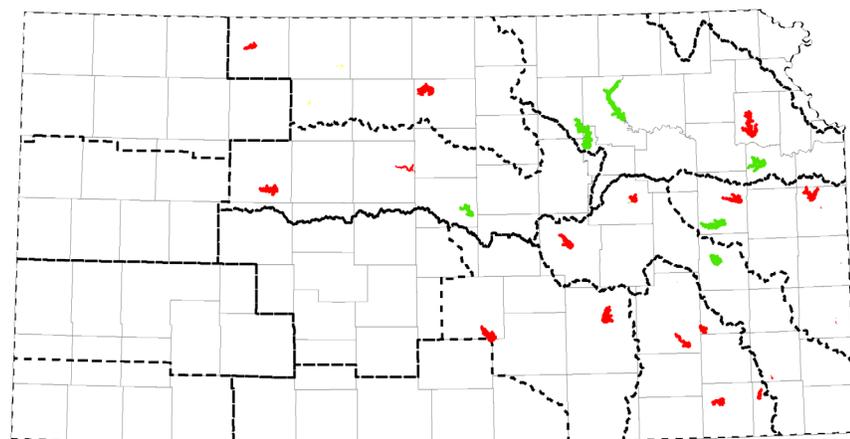
2020 Reservoir Water Supply & Sediment Management Accomplishments

2

KWO Bathymetric Survey Program

Surveys at Milford and Tuttle Creek reservoirs were completed in 2020, providing data on reservoir conditions following the record flooding of 2019.

Years since last reservoir survey



Reservoir Water Supply & Sediment Management

KWO Water Injection Dredging - FY 2022 Request: \$1,500,000 (↑ \$1,375,000 from FY 2021)

Sediment filling valuable reservoir storage is a significant problem throughout Kansas. Recent estimates from the KWO indicate that approximately 48% of Tuttle Creek Lake's original storage capacity has been lost due to sedimentation.

In response to this issue, the KWO has been working with the U.S. Army Corps of Engineers (USACE) Kansas City District and the USACE Engineer Research and Development Center (ERDC) to pursue a WID (Water Injection Dredging) demonstration at Tuttle Creek Lake.

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 discharge
3. Monitoring and evaluation of both the operational and environmental results



The demonstration would evaluate if injecting water into the reservoir bed to resuspend sediment and allowing it to be discharged downstream through the low-level outlet, using WID, is a viable means of sustaining long-term use and water storage at Tuttle Creek Lake and other reservoirs.

KDA Streambank Stabilization

FY 2022 Request \$1,044,264 (↑ \$250,000 from FY 2021)

Streambank stabilization continues to be a key component in the reduction of sediment entering our water supply reservoirs. The KDHE, KDA-DOC and KWO coordinate efforts, resources and pooled funding to accomplish streambank protection aimed at reducing erosion in priority watersheds.

Streambank Stabilization efforts continue to be concentrated in three priority Kansas watersheds above Federal reservoirs:

- Tuttle Creek Lake
- Perry Lake
- John Redmond Reservoir

Tuttle Creek Lake is a vital resource within the Kansas River Basin, and its continued loss of capacity and impending impact to the authorized purposes is a major concern for Kansas.

2020 Reservoir Water Supply & Sediment Management Accomplishments

1

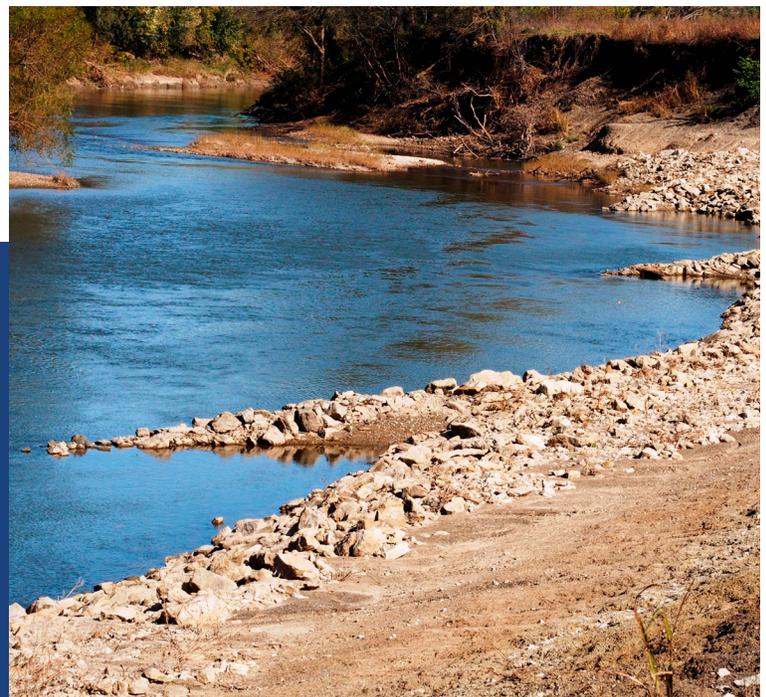
Water Injection Dredging

Agreement for Planning Assistance to States (PAS) between USACE and KWO continues ongoing research, data collection, lab studies and numerical analysis to support WID demonstration.

12

Streambank Stabilization

Sites under construction or completed this year. These sites were contributing a total 55,244 tons of sediment/year prior to stabilization.



Reservoir Water Supply & Sediment Management

KWO Watershed Conservation Practice Implementation

FY 2022 Request \$1,000,000

(↑ \$1,375,000 from FY 2021)

Water storage is being diminished over time due to reservoir sedimentation. Water quality is also being impacted in both streams and reservoirs by nutrient runoff, potentially resulting in harmful algae blooms, taste and odor issues with drinking water, and impacts to recreation in Kansas.

To help address these concerns, watershed conservation practice implementation within priority watersheds above key reservoirs can be a conservation-related tool to protect water supply storage and improve water quality through the reduction of sediment and nutrient runoff.

Currently, these funds provide financial assistance to producers in targeted areas for sediment-reducing practices through the Kansas Reservoir Protection Initiative (KRPI).



Common types of practices to reduce sediment and nutrient runoff include:

- cover crops
- grassed waterways
- buffer strips

KDA Watershed Dam Construction

FY 2022 - Request \$1,000,000

(↑ \$450,000 from FY 2021)

This 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.

In past years, there have been few requests for construction of new structures due to restrictive federal mitigation requirements.

For FY 2021, the KDA-DOC received cost-share applications amounting to \$1.9 million for rehabilitation of 23 existing flood control dams. The FY 2021 appropriation was \$550,000, which would cover approximately 29% of the total cost-share requests.

2020 Reservoir Water Supply & Sediment Management Accomplishments

20K+

Watershed Conservation Practice Implementation

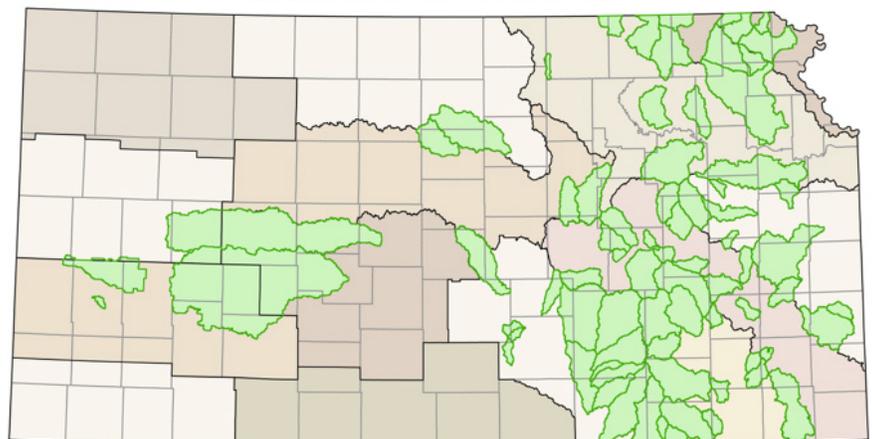
acres benefitted from sediment-reducing practices with FY 2020 funding

23%

Watershed Dam Construction

of the state is covered by watershed districts. Since FY 2012, the state cost-shared on construction of 11 new sites. Since FY 2012, the state cost-shared on rehabilitation of 62 existing flood control dams.

Active Watershed Districts in Kansas



Reservoir Water Supply & Sediment Management KWO Unfunded Liability & Capital Development Plan Update

In 2020, marketing revenue was utilized to pay off the remaining liability associated with the state’s water storage purchase contract at Marion Reservoir.

In 2021, revenue is planned to pay off the remaining liability associated with Clinton Reservoir, as well as a portion of the remaining liability associated with Hillsdale Reservoir.

The KWO operates the Kansas Water Marketing, Water Assurance and Access District programs as part of its Public Water Supply Program.

Pursuant to K.S.A. 82a-1308, the KWO has continued to update and publish the Water Marketing Capital Development and Storage Maintenance Plan. The purpose of this plan is to provide for the long-term planning of future Water Marketing Program needs, including acquisition of all the water supply storage under federal contracts, potential new storage development, protection and restoration of the storage owned by the State.

Kansas has contracts with the USACE for purchase of water supply storage in 14 reservoirs.

- 12 of the reservoirs have storage currently committed to, and being paid for by, the customers of the Water Marketing Program.
- 8 of the reservoirs have storage that has been sold to Assurance Districts for district members.
- 5 of the reservoirs have Future Use Storage that has been purchased by the state, but has not yet been called into service.

The major expenditures of the program include payment of principal and interest on the purchase of the storage from the USACE, as well as payment of a portion of the annual operation and maintenance (O&M) costs for projects completed by the USACE at the associated reservoirs.

2020 Reservoir Water Supply & Sediment Management Accomplishments

14

PWS Capital Development Plan

Reservoirs supported by KWO’s Public Water Supply Program in which a portion of the water supply storage has been purchased by the state.

In 2017, the Public Water Supply Comprehensive Capital Development Plan (CCDP) was developed. The 2017 CCDP included an update to the variable marketing rate structure with a projected annual increase, in lieu of the previous flattened rate. Revenue generated in the near term is planned to be utilized to pay down a portion of the program debt, which helps to alleviate the large increase in annual program payments necessary to pay for Future Use Storage.

Unfunded Liability - Future Use Storage

Future Use Reservoir Storage is considered storage that is not currently in service. Some of the water supply contracts between the USACE and the KWO allow the State to defer payments on the storage until the storage is needed. The USACE retains ownership of Future Use Storage until the State calls it into service. There are currently five reservoirs containing Future Use Storage: Big Hill, Clinton, Hillsdale, Milford and Perry.

The table indicates the Future Use Storage amounts in all state-owned reservoirs, based on 2020 conditions and capacity, and the estimated costs to call in all Future Use Storage in these reservoirs in 2020.

| Lake | Big Hill | Clinton | Hillsdale | Milford | Perry |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|
| 2020 Water Supply Storage (AF) | 22,148 | 93,077 | 58,931 | 357,240 | 188,309 |
| 2020 Water Supply Storage In-Service (AF) | 7,929 | 55,869 | 18,663 | 121,033 | 31,391 |
| 2020 Water Supply- Future Use (AF) | 14,219 | 37,208 | 40,268 | 236,207 | 156,918 |
| Percent Future Use | 64% | 40% | 68% | 66% | 83% |
| Year Contract Payment Complete | 2029 | 2027 | 2030 | 2034 | 2041 |
| 2020 Cost of Future Use Storage (Est.) | \$13,702,777 | \$7,768,943 | \$48,149,954 | \$25,683,339 | \$25,482,715 |
| Interest Rate | 4.01% | 3.50% | 4.01% | 2.63% | 3.05% |
| Annual Principal and Interest Payment | \$1,625,233 | \$1,092,051 | \$5,287,687 | \$2,040,833 | \$1,558,868 |
| Additional Annual O&M Payment (Est.) | \$336,388 | \$110,725 | \$246,180 | \$198,425 | \$474,141 |
| Total Additional Annual Payment (Est.) | \$1,961,621 | \$1,202,776 | \$5,533,867 | \$2,239,258 | \$2,033,009 |

Reservoir Water Supply & Sediment Management *KWO Unfunded Liability & Capital Development Plan Update*

The 2017 CCDP includes a schedule to call all of the remaining Future Use Storage in Clinton, Hillsdale and Big Hill reservoirs into service by the end of their respective contract terms; 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 2020, the KWO has continued work to update the CCDP, primarily to account for changes to marketing contracts and revised projected O&M costs as provided by USACE, as well as evaluating debt refinancing options.

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, USACE reservoirs with state-owned storage have a designated water quality pool to support downstream flow targets and water quality standards; 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 USACE.

Under a 1985 MOU between the State and the USACE, releases from the water quality pool 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.

As part of the Kansas River Reservoirs Flood and Sediment Study (with funding from KWO's Assessment and Evaluation Program) the KWO has, and will continue to, work with USACE to evaluate the potential reallocation of a portion of the Future Use Storage in Milford and Perry. Additionally, the KWO has been working with the Kansas Water Assurance District as it continues to evaluate its long-term storage needs from these two reservoirs.



Water Quality Initiatives

KWO Milford Lake Watershed Regional Conservation Partnership Program FY 2022 Request \$200,000 (No increase from FY 2021)

Through the Milford Lake RCPP, technical and financial assistance are available to agriculture producers to improve nutrient management which benefits watershed health.

The Milford Lake Watershed RCPP is a collaborative effort to improve water quality in Milford Lake and upstream. The program is a result of a \$2.88 million award through the NRCS which is used in collaboration with nearly \$3 million in partner contributions to improve water quality conditions in the watershed.



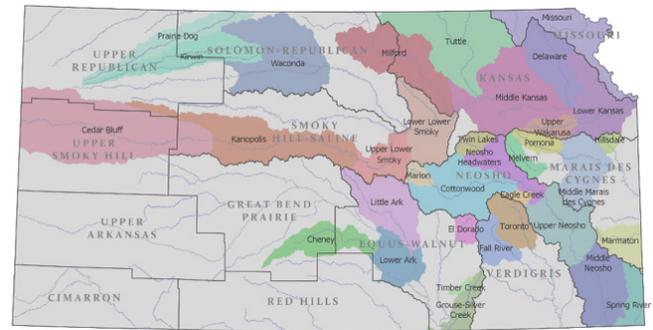
The focus of the program is on the Kansas portion of the watershed within the Lower Republican Basin in Clay, Cloud, Geary, Dickinson, Jewell, Mitchell, Republic, Riley, and Washington counties.

Nutrient runoff within the Milford Lake watershed in Kansas is a source of nutrient loading that contributes to aquatic conditions which promote formation of HABs within Milford Lake. This RCPP project through NRCS implements best management practices within the watershed to decrease nutrient runoff, thus decreasing the introduction of new nutrient loading, which helps prevent the formation of HABs in Milford Lake.

KDHE Watershed Restoration and Protection Strategy (WRAPS) FY 2022 Request \$1,000,000 (↑ \$269,116 from FY 2021)

The WRAPS Program contributes to the Kansas Nutrient Program Management Plan through the implementation of a voluntary targeted watershed-based program funded by Clean Water Act 319 and SWP Funds.

This program seeks citizen and stakeholder input and participation on watershed management and protection issues by identifying watershed protection and restoration needs, establishing watershed protection and restoration goals, developing 9-Element Watershed Plans to achieve established goals, and implementing fully developed plans.



The WRAPS Program targets Best Management Practices for watershed restoration activities in impaired watersheds designated as high priority for implementation through Total Maximum Daily Loads.

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 to improve water quality and remove waterbodies from KDHE's 303(d) List of Impaired Waters.

2020 Water Quality Initiatives Accomplishments

\$1.23

Milford RCPP

Million dollars in total NRCS contractual obligation through FY2020 for planned & completed practices across more than 4,700 acres.

\$730K

WRAPS

Project funding along with other local & federal funding was utilized in 2020 to support implementation of the WRAPS program in 2020.

Water Quality Initiatives

KDHE Harmful Algal Bloom Pilot Project - FY 2022 Request \$150,000 (No increase from FY 2021)

HABs can produce potent toxins that may cause human and animal illness or even death. The HAB mitigation pilot project investigates and demonstrates in-lake treatment options to reduce the frequency and duration of these blooms. The objective is to assess the effectiveness of such treatment options at minimizing the impact of HABs in public Kansas lakes.

Most of the \$450,000 appropriation is to be contracted for investigation of algae blooms, evaluation of certain treatment options, such as Phoslock, nanobubbler technology or peroxide application, and treatment of emerging blooms on a variety of reservoirs in the state, with an emphasis on Marion and Milford Lakes. Other public lakes in Kansas will be considered if appropriate to assess the scale of the demonstrations and if transferable to other lakes.

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 for public lakes of varying sizes and scale.

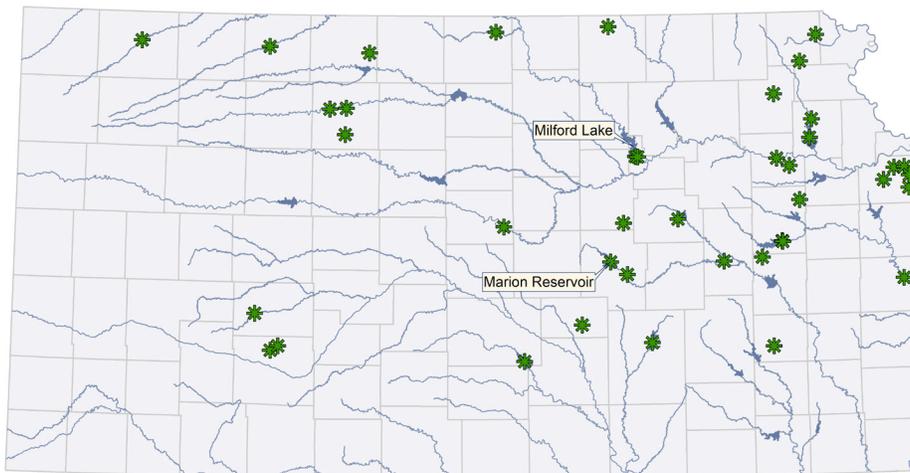


In 2020, 45 waterbodies/zones within the state of Kansas had Harmful Algal Bloom (HAB) advisories.

2020 Water Quality Initiatives Accomplishments

2 Harmful Algal Bloom Pilot Project
Lakes in Kansas, Milford Lake and Marion Reservoir are receiving in-lake treatment technologies as part of HAB Pilot Project.

Public Lakes Confirmed with Harmful Blue-Green Algal Blooms (HAB) in 2020



* Confirmed 2020 HAB locations

Water Quality Initiatives

KDHE Drinking Water Protection Program - FY 2022 Request \$800,000 (↑ \$450,000 from FY 2021)

The Drinking Water Protection Program has two components.

- Ensure all Kansas communities have a clean, healthy, affordable drinking water source by planning and implementing strategies to prevent and mitigate contamination.
- Analyzing the impacts of naturally-occurring minerals on water used for human consumption from private water wells in some Kansas regions.

The investigation needs of each Public Water Supply vary depending on current monitoring capability and assessment needs. KDHE contracts with technical service providers to investigate the source water area. The average cost of an investigation ranges from \$20,000 to \$120,000. Investigation results will determine strategies and plans unique to the PWS needs. The average cost of completing a study ranges from \$100,000 to \$150,000. Additional funding will be necessary to develop a longer-term study through partnership with KGS.



KDHE Contamination Remediation - FY 2022 Request \$1,088,301 (No increase from FY 2021)

The Orphan Sites Program (OSP) in KDHE's Bureau of Environmental Remediation uses money from the SWP for the assessment and remediation of contaminated sites where the responsible party is unknown or unable to undertake the necessary cleanup action. The purpose of this program is to protect human health while protecting the environment from the effects of hazardous chemicals or pollutants to soil, sediment, groundwater, surface water, or other natural resources of the state by eliminating exposure to hazardous chemicals or pollutants. Sites which pose the most serious threat to the public and the environment are remediated. There are currently 133 orphaned sites in the program.

KDA Water Resources Cost-Share FY 2022 Request \$2,248,289 (No increase from FY 2021)

This program is administered by KDA-DOC and provides financial assistance to landowners for the establishment of conservation practices in the form of cost-share contracts. The primary goals are to prevent soil erosion, reduce sedimentation, reduce nutrients, pesticides, and fecal coliform bacteria in targeted public water supply reservoirs as well as increase irrigation efficiency through irrigation technology initiatives.

Some of the most common 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 the DOC.

2020 Water Quality Initiatives Accomplishments

200

Drinking Water Protection Program
Current PWS systems that show trends in increased nitrate or have occasionally violated the maximum contaminant level, and are a current focus of program.

10

Contamination Remediation
Assessments, investigations or remediation occurred at contaminated sites.

90

Water Resources Cost-Share
Automated soil moisture probes approved for cost-share located in authorized Water Conservation Areas and the Rattlesnake Creek Priority Areas in the last two years.

The funding appropriated in FY2021 and requested in FY2022 will continue to be utilized to implement practices aimed at reducing sedimentation and protecting and restoring water quality, in conjunction with the additional funds requested as part of the Irrigation Technology Initiative aimed at water conservation.

Water Quality Initiatives

KWO Equus Beds Chloride Plume Project

Groundwater in the Burrton area of western Harvey County continues to be impacted by elevated chloride concentrations, primarily caused by historic oil field operations in the region dating back to the 1930s. 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.

There was collaboration with KDHE on framework development for a pilot treatment project within the Equus Beds Aquifer to remediate the plume. Burns & McDonnell presented a final report in 2020 to demonstrate the most cost-effective way to utilize contaminated groundwater in the region, while protecting existing freshwater resources. Local engagement is taking place to find next steps utilizing the report recommendations.

Additional monitoring wells are currently being installed by the KCC and will be maintained by GMD No. 2.

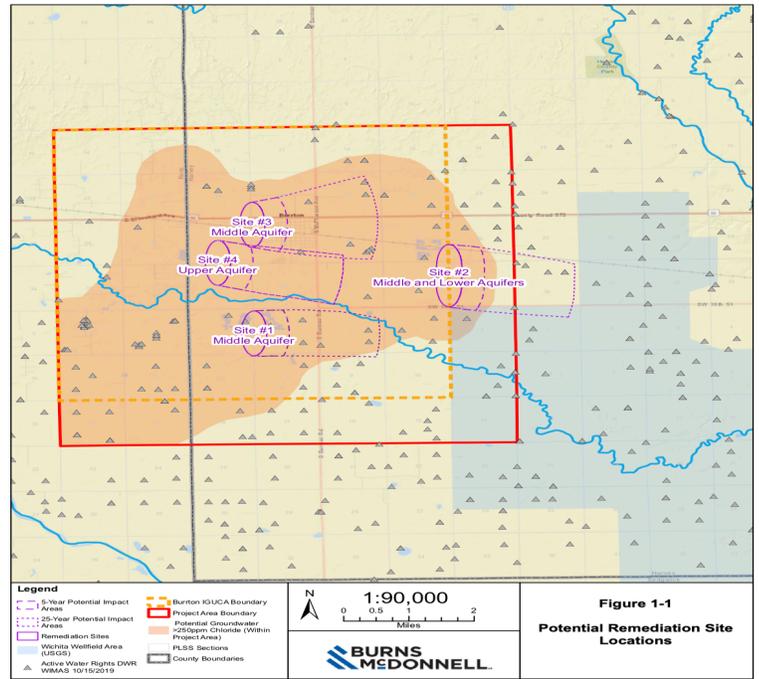


Figure 1-1
Potential Remediation Site Locations

KWO Produced Water Pilot Project

A Bureau of Reclamation WaterSMART grant was secured to help fund a project to address the growing concern over produced oil field water. In partnership with Fisk/Neptune, KU and the Kansas Water Office, equipment is being developed to treat produced water which usually has high salinity and contains dissolved oil and mineral elements.

The project site near Hardtner in Barber County has a deep disposal well in an area with salinity concentrations over 120,000 ppm, one of the highest areas in Kansas.

This treated water also has the potential for use in irrigation or stock water when treated to a set standard. There will be a 60-day period during which the equipment will be operated and evaluated, after which a final report will be issued.

A sample collected at the site in August of 2016 had chlorides at 120,000 ppm and boron at 17 ppm. These values need to be reduced to 250 ppm and 4 ppm, respectively, to meet stockwater requirements. The opportunity to use some of these residuals for other purposes will be evaluated as part of the project.

2020 Water Quality Initiatives Accomplishments

4

Equus Beds Chloride Plume Project

Potential remediation sites were identified in the 2020 final report. 78 domestic wells and water rights will be impacted by the Equus Bed Chloride Plume if not remediated.

1

Produced Water Pilot Project

Partner is constructing a piece of equipment that has the potential to impact the oil and gas industry, changing produced oil field water into potable water at the rate of 3,000 barrels/day.

Water Quality Initiatives

KDA Non-Point Source Pollution Assistance - FY 2022 Request \$1,857,836 (No increase from FY 2021)

This program is administered through the KDA-DOC and provides financial assistance to landowners for the establishment of conservation practices.

The primary goals are 1) water quality protection and restoration in watersheds with TDMLs, 2) information and education for adults and youth, and 3) other water quality issues.

Similar to the Water Resources Cost-Share program, appropriated funds are broken down into sub-categories and allocated to county conservation districts for program implementation. A portion of the funds are utilized for practices to address bacteria loading, nutrients, low dissolved oxygen in streams and sedimentation above federal public water supply reservoirs. In partnership with KDHE, funds are also directed to high priority watersheds for the restoration and protection of water quality.



2020 Water Quality Initiatives Accomplishments

22,664

Non-Point Source Pollution Assistance

Acres have been protected and 143,762 tons of soil saved to date.

105

State Aid to Conservation Districts

County conservation districts were assisted by funds to effectively deliver local, state, and federal natural resource programs as prescribed under Conservation District Law.

Some of the practices implemented through the Non-Point Source Pollution Assistance Program include :

- Abandoned-well plugging
- Ponds
- Pasture and rangeland planting
- On site waste systems
- Cross fencing
- Livestock waste management
- Nutrient management plans

KDA State Aid to Conservation Districts - FY 2022 Request \$1,973,373 (No increase from FY 2021)

The State Aid program provides matching funds (up to \$25,000 per district) to conservation districts. It also 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.

Program funding continues to be utilized by conservation districts to facilitate landowner needs and establish beneficial practices on the ground, as well as to provide information and education reaching all ages through field days, school visits and contests.



Water Quality Initiatives

KWO Arbuckle Study - FY 2022 Request \$150,000 (↑ \$82,000 from FY 2020/FY 2021)

In 2019, the KGS presented information regarding the risks associated with the use of injection and storage wells in southern and south-central Kansas within the Arbuckle formation, and requested funding for a study to collect data necessary to address those risks. In FY 2020, \$68,000 in SWPF was appropriated late in the 2020 legislative session to initiate discussions and scoping of the Arbuckle Study.

In 2020, the KGS put together a proposal for measuring fluid levels at 4 well locations. Their methodologies will be implemented then evaluated for feasibility of a broader monitoring network. Contract scope (start date of January 2021) focuses on determining the accuracy and functionality of various measurement techniques for future, routine acquisition of time-lapse data across an Arbuckle monitoring network. Very little is known about the mechanics and available storage within the Arbuckle formation. An expansion of this project would allow for development of a monitoring network capable of answering some of the basic questions in areas of high priority. Obtained data and analysis would provide guidance on appropriate actions needed to protect this valuable resource and its economic benefit to Kansans.

The Governor requested the KWA to convene a group to address the Arbuckle Study, and to appoint the KWO to lead the study group. This group has made south-central Kansas the primary focus area and fluid levels the focus topic.

Upper Arkansas Mineralization Study Funded through KWO Assessment and Evaluation Program

More than 20 years ago, the KGS collected data on the declining quality of groundwater in the Arkansas River region due to naturally occurring sources.

The KWO along with the KDHE and KDA is working with the KGS and Southwest KS Groundwater Management District No. 3 in a two-year study to collect current data on areas adjacent to the river and surface irrigation canals in Hamilton, Kearny, Finney, Gray, and Ford counties in response to a legislative resolution passed in 2019.

To update data, a study area was identified and the State of Kansas provided the opportunity for domestic well owners in that area who use their wells for drinking water purposes to have their water tested for free.

About 250 owners took advantage of the voluntary sampling opportunity and letters were sent back with laboratory results. Study test results will be provided to the well owner and also used in the broader study to determine overall regional groundwater quality.

2020 Water Quality Initiatives Accomplishments

8

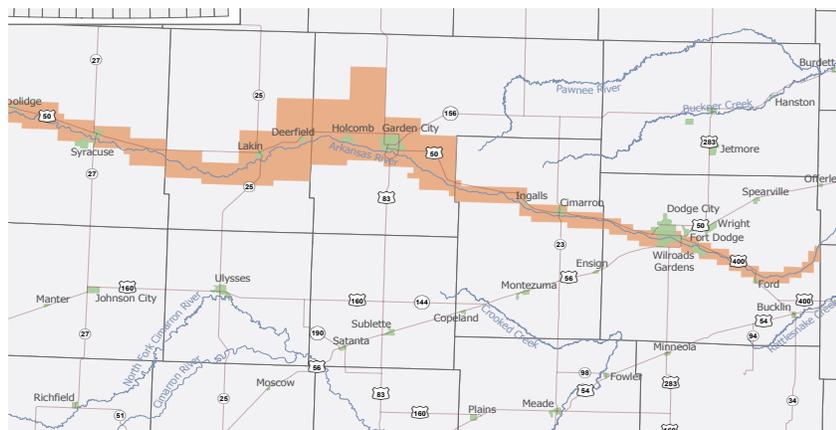
Arbuckle Study

County study area that will have a proposal from KGS for analysis of critical fluid data, assimilation of geologic, geophysical, & hydrological data significant to the Arbuckle.

250

Upper Ark Mineralization Study

Owners took advantage of the voluntary sampling opportunity. A midterm progress report was presented with water-quality maps and discussion of changes.



Water Quality Initiatives

KDHE Total Maximum Daily Load Program - FY 2022 Request \$280,738 (No increase from FY 2021)

The Clean Water Act requires states to identify all water bodies where state water quality standards are not being met. Every two years, a list of impaired waters is submitted to the 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 TMDL. The TMDL sets a limit for the maximum amount of a contaminant that a water body can receive and still meet standards. TMDLs are developed consistent with Kansas' TMDL Prioritization Framework, which focuses on stream phosphorus and nitrate impairments and addresses the impaired water bodies. A variety of local, state, and federal programs utilize the 303(d) list and TMDLs to establish watershed restoration, protection, and funding priorities to address contributing pollutant sources.



KDHE, in 2020, met its TMDL Vision commitments to EPA for 2012-2022, covering 25% of Kansas with a nutrient (nitrate or phosphorus) TMDL. Kansas commitments were to have 392 stream segments or lakes have TMDLs established by 2022. KDHE has established TMDLs for 490 segments or lakes with another 41 poised for approval.

2020 Water Quality Initiatives Accomplishments

490

TMDL Initiatives

Segments or lakes in Kansas have established TMDLs, with another 41 poised for approval.

KDWPT Aquatic Nuisance Species Program - FY 2022 Request \$50,000

ANS are non-native species that threaten the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters.

ANS can diminish food supplies and degrade habitat for other species; reduce numbers and variety of desirable fish; reduce fishing, boating, and other recreational activities; lower property values and decrease quality of municipal water sources; foul water lines; clog intakes; burn out pumps; damage power generating facilities; and decrease water system efficiency, as well as increase the risk of flooding due to overcrowded biomass and clogging of lake outlets.



In 2005, the Kansas ANS Management Plan was created and established within KDWPT. SWP funding for FY 2022 will allow the ANS program to expand watercraft inspection and decontamination activities, which will help prevent ANS introductions into currently uninfested waterbodies.

Some goals of the ANS Management Plan include: prevent introductions of ANS to Kansas; prevent dispersal of established populations of ANS into uninfested waters in Kansas; eradicate or minimize the adverse ecological, economic, social, and public health effects of ANS in an environmentally sound manner; educate all aquatic users of ANS risks and how to reduce the harmful impacts.

Statewide Water Issues

Quivira/Rattlesnake Creek

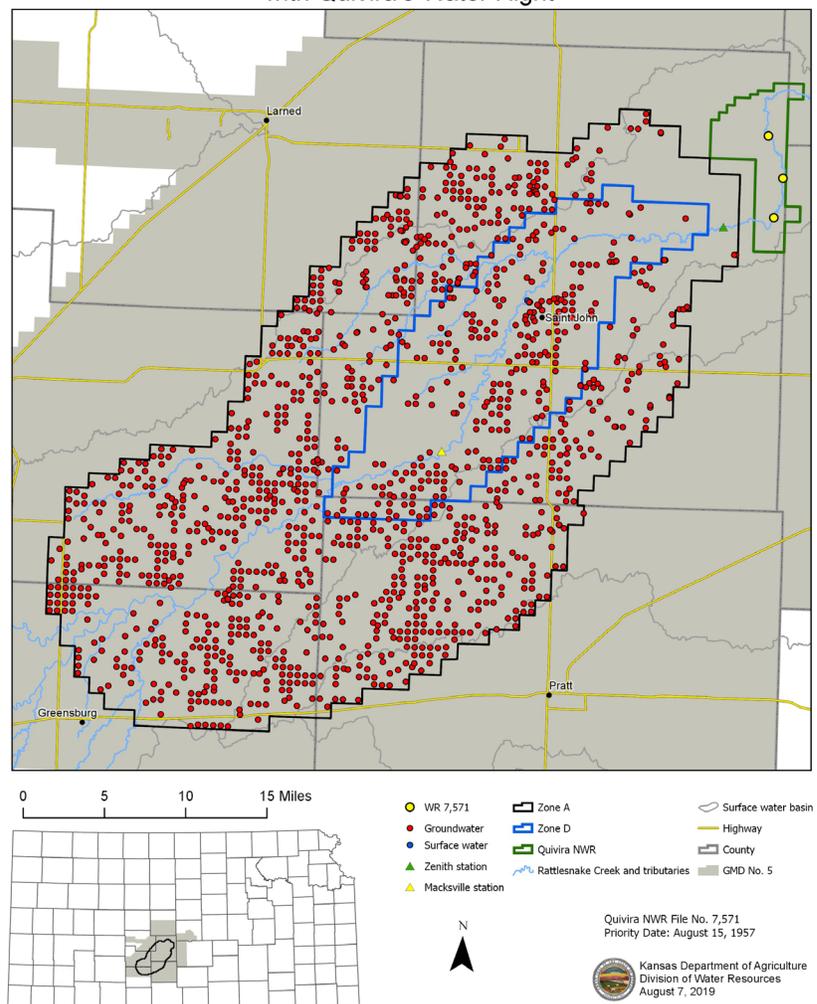
For decades, the USFWS expressed concern that its senior water right on Rattlesnake Creek in the Quivira NWR, a wetland of international significance and part of the central U.S. flyway, was being impaired by junior water right groundwater pumping. The USFWS water right for Quivira NWR has a priority that dates back to 1957 and allows it to divert up to 14,632 acre-feet per year at a maximum rate of 300 cfs. After decades of voluntary efforts to resolve those concerns were unsatisfactory, the USFWS filed an impairment complaint with KDA-DWR in April 2013 with an investigation of the alleged impairment beginning thereafter.

In 2016, KDA-DWR found that junior groundwater pumping impaired the USFWS from exercising its senior water right for Quivira NWR. From 2016 through July 2019, KDA worked with Big Bend GMD No. 5 to find a solution to the Quivira NWR impairment that would minimize the adverse effect on the region's economy, focusing those efforts on the development of a LEMA. During that time, no water administration occurred.

The USFWS and GMD No. 5 agreed, after examining relevant data and hydrologic modeling, that the development and implementation of an augmentation well field will be the primary mechanism in addressing the Service's Complaint. GMD No. 5 applied for a grant to assist in paying for the augmentation. They also agreed that the development of a water rights purchase program, a water rights movement program, and a program to incentivize the removal of end guns within the district may be pursued to adjust the amount of water augmented for the refuge by the well-field.

In December 2020, \$725,000 in funding was also awarded through the NRCS Watershed Protection and Flood Prevention Program (WPFPP) for the development of a watershed plan covering the Rattlesnake Creek Basin as one of the steps necessary for GMD5 to begin fulfilling the terms of their agreement with the USFWS. Included is feasibility study and preliminary engineering to potentially implement an augmentation project.

Points of Diversion under Junior Water Rights Found to be Interfering with Quivira's Water Right



Statewide Water Issues

Hays/Russell – R9 Ranch Water Transfer

The City of Hays purchased the R9 Ranch near Kinsley, KS, later selling an interest to the City of Russell. The cities have a cumulative water right authorization for irrigation use of approximately 7,700 acre-feet with a calculated consumptive use of 6,750 acre-feet, which could be requested to convert to municipal use.

Hays and Russell began the process to request permission to convert the water rights to municipal purposes and transfer the water. Based on a modeling analysis with the change application process, they have agreed to limit the quantity which could be diverted from those wells for municipal use to a 4,800 acre-feet average over 10 years, an amount considered to be sustainable on an annual basis.

In 2019, following consideration of comments from local individuals and entities, including the local groundwater management district, the Chief Engineer of the KDA-DWR contingently approved the change applications submitted by Hays and Russell to convert the R9 Ranch irrigation rights to municipal use for the cities. In May 2019, the Water Protection Association of Central Kansas (WaterPACK) filed a request for judicial review of the contingent approval of the change application in Edwards County District Court where a legal ruling is still pending.



Wichita Aquifer Storage and Recovery (ASR)

The City of Wichita currently operates an ASR project which allows for the diversion of water from the Little Arkansas River during high flow periods, treatment of the diverted water to drinking water standards, then injection of the treated water into the Equus Beds Aquifer for later recovery and use. Through this process, the city accumulates recharge credits with KDA-DWR allowing Wichita to subsequently withdraw this additional water from the Equus Beds Aquifer beyond their native water rights. With the recent recovery of the Equus Beds Aquifer in the Wichita wellfield area to near pre-development conditions, recharge activities are being hampered by limited space within the aquifer, leading to the development of a proposal by Wichita for a new way to develop recharge credits.



In March 2018, Wichita submitted to KDA-DWR a proposal for modifications to the conditions associated with Wichita's existing Phase II ASR permits. The request included lower minimum index levels used to determine when Wichita can withdraw accumulated recharge credits, as well as authorization of new credits. Credits would be accumulated during times of limited aquifer recharge capacity, where Wichita would receive recharge credits for treating surface water diverted at its ASR Project on the Little Arkansas River and sent directly to Wichita, offset by reduced Equus Bed Aquifer use. Public hearings took place in 2018, 2019 and 2020, and are on-going.

Statewide Water Issues

Republican River Update

After decades of legal conflict, arising from violations of the Republican River Compact, Kansas received settlement funds from the both Nebraska and Colorado to resolve any disputes over past use of water. Funds are being used to implement water conservation projects, water use efficiency upgrades, water management plans by water right holders, and cost-share programs in the Republican River Basin.



Republican River Water Conservation Project – Nebraska Fund \$3.5 million

To enhance benefits through the full reach of the Lower Republican River, an Ad Hoc Board of Directors was selected to explore the concept of a Lower Republican Water Supply Access District to address irrigation water shortages further downstream during drought. The desire of the Board is to establish permanent storage in Harlan County Lake for timely release and delivery of water downstream and outside the boundaries of the Kansas Bostwick Irrigation District (KBID). This could provide much needed drought tolerance to 107 junior water right holders.

KBID is in the process of converting portions of their remaining open irrigation canals to a buried pipe system. As of FY 2020, KBID has completed four installments of the canal project, which included a total of 11.98 miles of open irrigation canals eliminated. The first four installments have saved approximately 2,455 acre-feet of water annually. During FY 2021, KBID has moved to the fifth installment, converting the 1.3 R – Ridge Canal to a buried pipe system, eliminating 3.05 miles of open canal.

Republican River Water Conservation Project – Colorado Fund \$2 million

To date, approximately \$260,000 has been allocated for irrigation technology cost-share in the South Fork Republican River Basin. In October 2020, \$500,000 was sent to the Cheyenne Co. Conservation District for projects supporting improved water use efficiency and water conservation in the South Fork Basin.

Kansas-Colorado Arkansas River Compact Update

One main feature of the Kansas-Colorado Arkansas River Compact (Compact) is that Kansas and Colorado share the benefits of John Martin Reservoir (JMR), on the Arkansas River about 60 miles upstream of the state line. Kansas has two JMR accounts that can be called upon to satisfy the surface water irrigation demands by six irrigation ditches in southwest Kansas.

Drought conditions in the Arkansas River Basin in both Colorado and southwest Kansas creates heavy demand on storage in JMR for the irrigation season. With drought conditions forecast to continue, it is anticipated surface water supplies will be limited, including water stored in JMR, resulting in greater demand and impact on groundwater supplies.

The Arkansas River Compact Administration had its annual meeting in December. Federal agencies and local water districts provided operation updates and current and future projects. Water quality, an issue not historically addressed by the Compact, has been identified by both states as a priority. It is important to both states they work together to address the impact of the poor river water quality.

The Compact's Special Engineering Committee are reviewing Colorado's request for a new multi-user account. One of the proposed purposes is to facilitate irrigation improvements in Colorado that have potential to benefit water quality. The states have also been working on resolution of long-standing Compact issues that could further benefit Kansas' supply.

Statewide Water Issues

Missouri River Coordination

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 non-federal projects that provide varying levels of flood protection. In 2019, the Missouri River set a new record of flow in the Lower Missouri River Basin.



As a result of the record-setting flooding experienced in 2019, the states of Kansas, Iowa, Nebraska and Missouri joined forces to begin the task of developing a comprehensive plan to evaluate solutions to lessen flood risk in the Lower Missouri River Basin. A large part of this effort involves input from local citizens who have been repeatedly impacted by flooding.

The four states are currently participating together in the Lower Missouri Basin Flood Risk and Resiliency Study with the U.S. Corps of Engineers. The overall purpose of the study is to cooperatively address flooding issues along the Lower Missouri River. In 2020, a portion of KWO's Assessment and Evaluation funding was utilized to support initial study funding. It is anticipated that the study will be completed over 3 years, with total funding of \$3 million and a required 50% non-federal/sponsor cost share.

Flood Response Study

The 2019 Special Committee on Flooding recommended funding for a basin-by-basin evaluation of flood risks in Kansas. In 2020, \$100,000 in funding from KWO's Assessment and Evaluation Program was appropriated for a Flood Response Study. In FY 2021, the KWO is working to leverage federal resources to complete a flood study in the Neosho region. The goal of the study is to identify areas of recurring flooding, determine economic loss, and identify potential mitigation projects that can lessen future flood damage.

In FY 2020, a portion of KWO's Reservoir & Water Quality Research was utilized for the development of a standalone flood inundation mapping tool which will allow for real-time estimation of flooding and potential impacts, with additional funding in FY 2021 planned to support these ongoing efforts.

General Mills/KDHE/Cheney Lake Watershed Initiative

General Mills, with the help of KDHE, the Cheney Lake Watershed Incorporated and the Ecosystem Services Market Consortium, selected the 650,000-acre Cheney Reservoir region as the location to implement new technologies and management strategies to improve soil health, reduce nutrient runoff all while increasing yields.

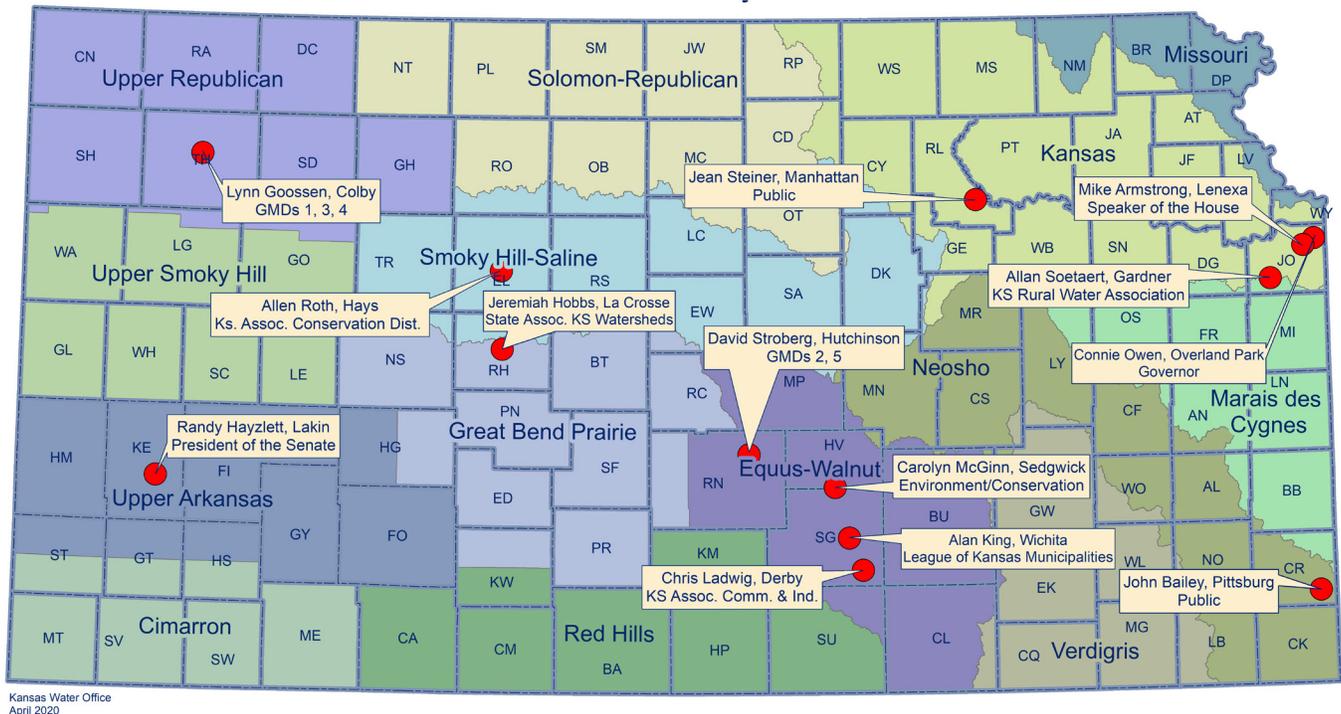


The project involves 24 farmers in five counties; Kiowa, Reno, Pratt, Kingman and Stafford. Water from the reservoir where the runoff from these farms goes is used by residents of Wichita.

These efforts are being driven by the end customers who are looking for companies, producers, and communities who do their part to conserve and protect our natural resources.

General Mills' focus has made a shift to how to restore and enhance the function of agriculture ecosystems, which has led the company to encourage farmers to implement regenerative agriculture practices.

Kansas Water Authority Membership Map



Kansas Water Authority Ex Officio Members

| | | | |
|--|--|--|---|
| Earl Lewis Division of Water Resources KS Dept. of Agriculture | Dr. Ernie Minton Ag Experiment Station KS State University | Andrew Lyon Division of Conservation KS Dept. of Agriculture | Rolfe Mandel KS Geological Survey |
| Brad Loveless KS Dept. of Wildlife, Parks & Tourism | David Toland KS Dept. of Commerce | Sara Baer KS Biological Survey | Leo Henning KS Dept. of Health & Environment |
| Mike Beam KS Dept. of Agriculture | KS Water Office | Susan Duffy KS Corporation Commission | |

The Kansas Water Authority (KWA) consists of 13 voting members who are appointed by the Governor or Legislative Leadership. State agency directors serve as ex-officio members. KWA is statutorily within and part of the Kansas Water Office (KWO). The KWA is responsible for advising the Governor, Legislature and Director of the KWO on water policy issues and for approving the Kansas Water Plan, federal contracts, administration and regulations proposed by the KWO. The KWA provides the leadership to ensure that water policies and programs address the needs of all Kansans.

Kansans act on a shared commitment to have the water resources necessary to support the state's social, economic and natural resource needs for current and future generations.

- The Long Term Vision for the Future of Water Supply in Kansas

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