

**Request for Rattlesnake Creek LEMA Submitted to the  
Chief Engineer, Kansas Department of Agriculture, Division of Water Resources**

XXXX XX, 2018

Overview and Goal Expression

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In an effort to address Rattlesnake Creek streamflow concerns, groundwater depletions and their impact on Rattlesnake Creek, and to provide a remedy to the Quivira National Wildlife Refuge (“the Refuge”) impairment complaint in Big Bend Groundwater Management District #5 (“the District”), the District Board of Directors proposes the following plan be submitted via the Local Enhanced Management Area (“LEMA”) process per K.S.A. 82a-1041 for an area designated in Attachment 1.

The goal of the LEMA is to address conditions which require regulation in the public interest regarding streamflow depletion within an area of enhanced management (Attachment 1) and to provide streamflow augmentation to the Rattlesnake Creek stream channel. The LEMA is intended to reduce the hydrologic stress from irrigation operations on the aquifer and the interrelated stream systems, while restoring the supply to prior uses on the stream system. The particular objectives are to reduce water-use in the LEMA area to a degree that will temper the growth of future streamflow depletion, and to restore the useful supply to diversion points on the upper reaches of Rattlesnake Creek.

This LEMA shall be initiated as of XXXX XX, 2018. The proposed LEMA shall include all points of diversion within the LEMA boundaries.

The LEMA will combine the efforts of several parties to create a holistic approach to stabilizing the use of water in and around the Rattlesnake Creek subbasin. The District is seeking partner agencies at the state and federal levels in addition to working with both public and private organizations to bring all available resources together into a unified plan.

1) Background

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The District has, for the past forty (40) years, striven to fulfill the following mission statement:

*“Big Bend Groundwater Management District #5 was organized through the efforts of concerned citizens to conserve, promote, and manage groundwater resources so that quality and quantity of that resource will be maintained for present and future needs. The Groundwater Management laws (K.S.A. 82a-1020-1035) establish the right of local landowners and water users to determine their own destiny with respect to the use of groundwater within the basic law of the State of Kansas”*

In the years leading up to the establishment of the District, the local landowners made a large investment to construct and operate wells for irrigation, stockwater, industrial and other types of beneficial use. The District’s management programs and subsequent regulations have greatly limited the groundwater development in many areas of the District.

In the District's first management program approved June 6, 1976, the Board of Directors recognized the unique nature of the local area and implemented guidelines to protect and conserve the Great Bend Prairie aquifer. These included strict monitoring of water use with flow meters, well spacing requirements, discouragement of waste of water and encouragement of the re-used water sources. In the 1979 district management program, the Board of Directors implemented a safe yield policy and maximum reasonable quantity for irrigation to limit the development even further. The District further solidified the safe yield for the area through the promulgation of K.A.R. 5-25-4 in 1980. By revising K.A.R. 5-25-4 in 1984, the Board of Directors further limited the safe yield policy to 3,000 acre-feet ("AF") in a two-mile radius. The District formally closed to new appropriations on December 17, 1998 through another revision to K.A.R. 5-25-4. As a result of these management objectives and regulations, the water level declines have been limited. In severely dry years, the District does experience declines in the local Great Bend Prairie aquifer. However in years of average to above average precipitation, the District recharges quickly.

In 1993, the Rattlesnake Creek Partnership ("Partnership") was formed to develop and implement solutions to water resource concerns within the subbasin. The Partnership was comprised of the District, Water Protection Association of Central Kansas ("Water PACK"), Kansas Department of Agriculture – Division of Water Resources, and United States Fish and Wildlife Service. In 2000, the Partnership developed the Rattlesnake Creek Management Program ("program") following several years of hydrologic study and public outreach. The program utilized new management tools (end gun removal, water banking, augmentation, multi-year flex accounts, etc.), education outreach program, and enhanced compliance and enforcement to achieve the established goals. Several of these programs were voluntary/incentive based tools that were not available at the beginning of the program. In fact, some of the programs did not get significant participation until after 2012. As a result, not every conservation goal outlined in the program was met at the end of the program in 2012.

In 1999, a task force was established to study the viability of water banking in Kansas. The task force determined that water banking could be a powerful incentive-based tool for conservation that will result in water being put to its most economic and beneficial use. However, there was no mechanism in Kansas statutes that would allow their establishment in Kansas. In 2001, K.S.A. 82a-761 *et seq.* was adopted by the legislature. K.S.A. 82a-765 requires that each chartered water bank will result in a savings of 10% or more in the total amount of groundwater consumed for a representative past period. In 2005, the Central Kansas Water Bank Association ("Association") became the first chartered water bank in the state. While the Association covers the same geographic boundaries, has the same staff, and utilizes the same monitoring network as the District, the Association is governed by a separate board of directors and funded entirely through its own administrative fees. The Association has undergone several changes since its inception in 2005, but still offers the same services to the water users of the region. The Association offers area water users with two programs for the flexible use of the water resource. The first program is for the transfer of a portion of the historical water use of a water right(s) to other areas within the same subbasin. The second program allows a portion of unused water to be preserved for future use at the same location. These programs have gained in popularity and giving water users added water use flexibility while conserving water.

In 2008, the District, with technical assistance and peer review from the Partnership, contracted with Balleau Groundwater Inc. to develop a high-resolution hydrologic model of the District (Balleau Groundwater, Inc., 2010). This hydrologic model is designed to have seven layers representing unique geologic formations below the ground surface. One of the primary reasons for multiple layers is to be able to track the movement of water between these layers. This is especially important for the area surrounding the Refuge, where the tracking of poor quality water will be important. The model has been the primary tool utilized by KDA-DWR and other stakeholders to evaluate the effects of groundwater pumping and surface drainage within the subbasin. However, the majority of the work conducted by KDA-DWR to date has been done using an alternative version of the model which flattens the seven layers into a single layer. When evaluating water movement, specifically lower quality water, the seven-layer model is the only option available that can conduct this analysis properly.

On April 8, 2013, the Service officially filed an impairment claim on the Rattlesnake Creek against junior appropriators within the subbasin. The Service stated that junior appropriators were reducing the flows in the Rattlesnake Creek such that their use prevented the Service from exercising Water Right File No. 7,571. Following this filing, the Chief Engineer and KDA-DWR staff began investigating the hydrologic effects of junior pumping on the subbasin. The District's hydrologic model was used to conduct this investigation in addition to further discussions with Service staff regarding water management at the Refuge. In July 2016, the Chief Engineer published the final report detailing the investigation (Barfield, 2016).

Since 2016, the District has submitted proposals to the Service in an effort to settle the impairment through agreement (Big Bend Groundwater Management District No. 5, 2016) (Big Bend Groundwater Management District No. 5, 2017). These proposals have been declined. The District remains committed to working to resolve the impairment utilizing the most current science and the most effective tools and programs available.

## 2) Reduce Hydrologic Stress and Augment Depleted Flows

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- a. The District will work with water right holders and users to enhance the water use efficiency for all types of use within the LEMA boundary including, but is not limited to, irrigation, municipal, stockwater, recreation, domestic, and industrial uses. As an indicator of the amount of reduction in stress on the hydrologic system, the LEMA program is designed to benefit the stream at Zenith gage by cutting the projected growth in future depletion by half. The associated amount of reduction in water use has been estimated by modeling at 23,000 AFY, but implementation of the reduction may be adjusted due to climate variability.
- i. Irrigation Use: This will be achieved by requiring the removal of any nozzle at the end of the center pivot system that has a larger bore diameter than the previous nozzle on the center pivot system, commonly referred to as end guns. Effective December 31, 2018, all of these types of end guns will be removed to prevent the wetting of the acres beyond the end of the center pivot system.

District staff has compiled a database of the end guns within the LEMA boundary. These locations are indicated in Attachment 2. As of January 2015, the District

determined that there were 1306 end guns installed on center pivot systems within the LEMA boundary. The District has worked hard to estimate the water savings that will result by removing end guns. The District estimates a savings of 19,000 AFY. Modeling suggests that this amount of reduction in pumping will lessen the growth of future depletion at Zenith. Additional management action to reduce water use will also be needed. The model suggests that another 4,000 AFY of water use needs to be curtailed in the focused area 5 to 10 miles around St John (Attachment 3), to attain a halving of future depletion trends at Zenith gage.

In addition to the removal of end guns on center pivot systems, the use of other technologies that increase the efficiency of water use will be promoted. Such technologies include, but not limited to, mobile drip irrigation, soil moisture probes, telemetry monitoring, and variable rate irrigation. The District will work with state and federal agencies to provide attractive cost shares for the implementation of technologies that conserve water.

Water technology farms are a good way to showcase these technologies to nearby producers. Through these farms, producers can see how the implementation of new technologies can save water while maintaining or improving the economic viability of the area. Through the LEMA, the District will work to promote the establishment of additional technology farms within the LEMA boundary.

- ii. Municipal Use: According to the U.S. Geological Survey, (Lanning-Rush & Restrepo-Osorio, 2017) the average gallons per capita per day (gpcd) for public water suppliers (PWS) in Kansas is 114 gpcd over the past 5 years. There are seven PWS within the LEMA boundary:

<b>Public Water Supplier</b>	<b>GPCD (2011-2015)</b>	<b>UFW (2011-2015)</b>
<b>Belpre</b>	152	21 %
<b>Greensburg</b>	283	11 %
<b>Haviland</b>	152	8 %
<b>Macksville</b>	123	12 %
<b>Mullinville</b>	203	15 %
<b>Stafford</b>	124	12 %
<b>St John</b>	140	20 %

The U.S. Geological Survey study also calculated the percent unaccounted for water (UFW) for each PWS. The gpcd and ufw are listed above.

The Great Bend Prairie Regional Advisory Committee (“the RAC”) has a goal to attain less than 20% water loss by 2025. The RAC’s goals go on to reach less than 10% water loss by 2045. The District will work with the RAC and each municipality to reduce the gpcd and ufw. This will involve educational outreach to schools and public service groups.

- iii. Stockwater Use: There are thirteen feedlots within the LEMA area. The District will work with each facility, KDA–DWR, and KLA to improve the efficiency of water delivery where feasible through existing tools available. Some of these tools are the utilization of thermostatically controlled tanks vs continuous flow water tanks and the implementation of water reuse systems. The water savings will be on a case by case basis.
- iv. Recreation Use: There are 31 water rights within the LEMA area for recreation use. The District intends to work with each to ensure the water being utilized for this use is put to beneficial use when appropriate for the area in which they are diverting water.

The District will work with state agencies to ensure that water rights with existing conservation plans are brought up-to-date to promote more efficient methods of operations that are specific to the needs of each water right.
- v. Industrial Use: There are 26 water rights for industrial use within the LEMA area. These uses will be reviewed to determine if where water efficiencies can be gained. Encourage the use of lower quality water where feasible as a replacement for high quality water.

### 3) LEMA Operation

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#### a. End-Gun Program

Reducing the stress from pumping will entail taking action to curtail some of that use. A few dozen pre-1957 priority operators can be excluded from the end gun curtailment program unless they elect voluntarily to participate. An additional 4,000 AFY of water use will be curtailed in the area of focused impact on the stream in the vicinity of St John (Attachment 3). The reduction in water use in this area will be achieved through the implementation of several secondary objectives that include but are not limited to: 1) permanent retirement of water rights through the expansion of the Conservation Reserve Enhancement Program (“CREP”) and the Water Transition Assistance Program (“WTAP”), 2) permanent purchase and retirement of water rights by the District, 3) permanent movement of water from hydrologically sensitive areas to lesser sensitive areas, or 4) temporary water leases through the Association.

The response to the LEMA program, expressed as lesser growth of depletion at Zenith gage and at the diversion points of Quivira NWR will be seen slowly during the LEMA period. It is not practical to measure that response at the gage, due to the other factors (weather and a myriad of variables in streamflow other than irrigation) that affect the baseline in the absence of the LEMA program. The success of this aspect of the program will be evaluated by examining water-use reports over 5-year periods.

#### b. Augmentation Program

In 2014, Governor Sam Brownback signed into law a provision specific to the Rattlesnake Creek subbasin to “allow augmentation for the replacement in time, location

and quantity of the unlawful diversion, if such replacement is available and offered voluntarily.” This legislation had overwhelming supporting testimony from several groups from across the State that resulted in unanimous action from the Kansas legislature to approve this bill. The concept of augmentation is to utilize the aquifer underground as a reservoir to supply water to the stream in times of shortage.

Augmentation will be implemented from a to-be-constructed wellfield designed for up to 15 cfs (cubic feet per second) capacity. Based on the analysis conducted by Balleau Groundwater Inc. (“BGW”), the intent of augmentation is to provide an additional tool to enhance the unique habitat the Refuge provides for various endangered species. The ability to utilize underground water in times of need further protects “the biological integrity, diversity and environmental health of the Refuge.” The area surrounding the Refuge has been underdeveloped for large-scale irrigation historically due to the water quality in the upper zones of the aquifer. However, this area does have a substantial quantity of water that can be appropriated in a sustainable manner. The sources supporting the augmentation wellfield have been examined in a water-accounting model as was done in the impairment analysis. The yield is supported by induced capture of evapotranspiration from adjacent water-logged soils and wetland vegetation, in addition to sources captured from formerly-rejected recharge by making space available in the aquifer. Rattlesnake Creek is to be augmented by waters that are now lost to the atmosphere, bypassed as storm runoff in Peace Creek, or discharged as brackish baseflow to the east. This further supports the concept of augmentation as a remedy for the impairment at the Refuge.

According to the various augmentation studies conducted within this subbasin, there are several key factors that need to be addressed. These include, but are not limited to: wellfield location, wellfield capacity, pumping rate, delivery rate, water quality, delivery frequency, and delivery location. The District has analyzed augmentation for each factor. The timeframe in which the augmentation well field will be implemented is outlined in Attachment 4.

i. Location

A wellfield south of the Refuge has been identified as an optimal location for the foreseeable future. The precise locations of this wellfield have not been finalized as further studies will be needed to determine water availability and quality. However, a conceptual augmentation system is shown in Attachment 5. The water table in this area is stable enough to support augmentation. The large-scale development for irrigation and other practices has been limited due to the natural water quality in the area. The water quality in the upper zones of the aquifer is very similar to the water quality already feeding the Little Salt Marsh. The conceptual wellfield is thought to overlie areas that can safely yield higher quantities of freshwater without risk of up-coning of poor quality water. Further site specific test drilling will be required to ensure proper placement of wells in a way to protect the upper zone of the aquifer from degradation. The multi-layer aquifer model simulates shallow fresh-water ingress to the wells at a higher rate and volume, dominating and diluting any smaller upward migration from saline sources. Observation wells will be installed to provide additional locations to test water quality and verify water table elevations, and eventual trends of water quality. The concept is to

use a location in T23S, R10W south of Peace Creek and west of Salt Marsh Road. Wells will be sited with screen lengths and depths to access the yield and quality of water suited to the Refuge requirement as presented, or the range of 3,000 to 9,000  $\mu\text{S}/\text{cm}$  in terms of specific conductance.

ii. Diversion & Delivery Rate

The District will pay the cost to develop, construct, and operate a 15 cfs wellfield south of the Refuge. Based on conversations with the Chief Engineer, we have determined that up to 15 cfs is an appropriate max flow rate/instantaneous capacity. Water will then be delivered directly to the Rattlesnake Creek channel immediately upstream of the Refuge. The discharge released to the stream is intended to make up the diversions required to serve the Refuge water right file # 7571 of 1957 priority date. Depletion of the stream will be relieved to the extent that the end gun program slows the future growth of effects on the stream. That effect is not expected to fully reverse trends or to provide a complete offset of future depletion; thus the augmentation wells will serve to deliver flow sufficient to meet the objective for serviceable supply on this reach of Rattlesnake Creek. Water lines will be installed in a manner that will minimize any disturbance to surface lands and utilize already authorized right of ways where possible to get access to the creek channel. This delivery location complies with the statutory requirement of K.S.A. 82a-706b (a)(2) to allow augmentation as a remedy. It is assumed that an NPDES permit will be applied for and approved due to the similarity of ground and surface-water quality in the area. Kansas Surface Water Quality Standards recognize the chloride content of Rattlesnake Creek above Little Salt Marsh being 1400 mg/l.

iii. Real-Time Operation

The hands-on operation of the augmentation wellfield does not hinge on knowing the magnitude of effects from the end gun program. The wellfield will deliver a make-up flow to the stream depending on conditions of streamflow and diversion requirement as observed. Diversion requirements are given by the Refuge and applied with practical considerations in the Chief Engineer impairment analysis and subsequently. The peak 15 cfs wellfield has the ability to serve those requirements. Calculations and diversion reports suggest that about one-third of the time augmentation will not be needed, one-third of the time the 15 cfs will be needed, and a wellfield release of 5 or 6 cfs will characterize the middle third of days. The Refuge is understood to have operable storage capacity to accommodate at least a week's volume if the deliveries over or under perform for a few cfs for a few days. The District proposes that the delivery rate be set weekly in coordination with Refuge requests and DWR staff review of conditions on the stream. Rain, high flows or bypass of the Refuge diversions would warrant shut-down of augmentation delivery, then restoration when those conditions pass. The Refuge reports about 25 cfs as the peak month average diversion rate. If that is the current diversion capacity on the Refuge, then augmentation can be shut down at higher flows. The Refuge and District will need to coordinate such factors. As confidence in standard practice is realized, the initial hands-on control of discharge might be handed over from The District to DWR or Refuge staff.

iv. Annual Water Quantity

The augmentation well field will release an adequate volume of suitable groundwater delivered to the creek channel for use by the Refuge to meet the management objectives for maintaining forage and habitat. The water provided will be measured for rate and quality at the point it is placed in the creek channel. The capacity of the wellfield exceeds the 5,000 AFY amount suggested to relieve the impairment, in most years, of the Service's water right at the Refuge in the Chief Engineer's final impairment report. In the Chief Engineer's final impairment report, the analysis conducted was retroactive and reviewed any impairment that may have occurred prior to the Refuge's claim of impairment in 2013. Based on a prospective analysis by BGW that looks at years after the 2013 claim of impairment, augmentation pumping is sustainable, effective, and does not degrade the quality of water the Refuge requires. The authority for such water will be processed in the same manner as any other water right with KDA-DWR. This evaluation by KDA-DWR will further ensure that there will not be an increase in permitted consumptive use in the area. The new appropriative water right will be considered non-consumptive as the quantity authorized will be combined and limited to the authorized quantity already appropriated under Water Right File No. 7571. In no calendar year will the combined quantity diverted from the augmentation well fields and the surface diversions at the Refuge exceed 14,632 AF.

v. Water Quality

The quality of this water would fall within the specified range (3,000 to 9,000  $\mu\text{S}/\text{cm}$ ) presented by the Service. The water quality can be managed based on the requirements of Refuge staff by providing more or less fresh water from redundant capacity of wells with varying water quality. As stated before, the water quality in the aquifer surrounding the Refuge is to the source of the baseflow water quality utilized in Little Salt Marsh. As a result, the water quality at the Refuge will not be altered in suitability for use through the implementation of the augmentation plan. Coordination with Kansas Department of Health and Environment will be crucial in this process to ensure the water quality of the Rattlesnake Creek stream channel is maintained throughout this project.

vi. Drought

In times of severe drought, as defined by the Palmer Drought Severity Index of -3.0 or less, augmentation will continue to be provided to those water management structures defined in the Service's water conservation plan as adopted in October 2000. The following is the implementation plan for initializing the Drought Contingency Plan per the October 2000 water conservation plan:

1. *If the mean daily January flow at Zenith gage (Rattlesnake Creek near Zenith) is less than 25 cfs, the Refuge will anticipate that a drought year may occur.*
2. *A review will be made in July using the Palmer Drought Severity Index to determine if drought conditions exist. Palmer Drought Severity Index in Region 8 of Kansas is -3.0 or lower, most diversions to the north of Pools 14A and 14B will cease, and water will be primarily concentrated in Pools 5, 7, 10A, 10B, 11, 14A, and 14B.*
3. *Diversions from the Little Salt Marsh (Pool 5) will continue to be made until it is determined that wildlife habitat in the Little Salt Marsh is being detrimentally affected to the point that it offsets the benefits of putting it in another unit, at*

*which time all diversions out of the Little Salt Marsh will cease.*

4. *Water will primarily be maintained in Pools 5, 7, 10A, 10B, 11, 14A, and 14B, unless sufficient precipitation occurs to raise the Palmer Drought Severity Index to greater than -1.0 or streamflow recovers to the point where it becomes possible to fill units to the north of the designated units.*

Augmentation shall not occur in times of bypass flow or times of release from storage in Little Salt Marsh. The augmentation water must be put to a concurrent beneficial use or held in storage for later beneficial use.

#### 4) Central Kansas Water Bank Association

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- a. The District is fortunate to have the only functioning water bank in the state of Kansas. This provides a unique opportunity to allow for additional flexibility in the water use of the area while implementing real water conservation. In the early years (2005-2010), there was little participation in the Association due to restrictive rules, uninformed public, and confusing methodologies. The Association has addressed these issues through public outreach meetings and amendments to statute, rules, and policies governing water bank activity. In recent years there have been significant advances in the participation from area water users. It is anticipated that this growth will continue in coming years. The Association is beginning another evaluation required by statute by an independent panel of experts in water law, economics, geology, and hydrology. The District intends to work with the Association to update the programs to promote the movement of water away from highly sensitive areas within the Rattlesnake Creek subbasin.
- b. The review process will take time to be completed. As a result, it is difficult to estimate the outcome of the review in addition to the timeliness of the updates.
- c. The District has partnered with The Nature Conservancy (“TNC”) to pursue funding to incentivize the transfers of water out of areas of concern. The intent of this funding is to provide added financial incentive to water users in priority areas to deposit water into the Association for use outside of these priority areas. By providing financial incentive it is believed that this will further promote these transfers and provide added water conservation for areas of high impact to the stream channel.

#### 5) Violations

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- a. The LEMA order of designation shall serve as initial notice of the creation of the LEMA and its terms and conditions to all water right owners within the Rattlesnake Creek LEMA area on its effective date.
- b. Upon the District learning of an alleged violation, District staff will provide DWR with the information the District believes shows the alleged violation. DWR, under its discretion, may investigate and impose restrictions and fines as described below or allowed by law.

- c. In the event that the District or DWR determine that a water user is operating the a center pivot system with a functional end gun installed, DWR will address these violations as follows:
  - i. operation of the end gun within the first six months of the LEMA plan will result in notification of the offense to the landowner;
  - ii. operation of the end gun following the first six months of the LEMA plan will result in an automatic one-year suspension of the water right and a \$1,000 fine for every day of operation up to a maximum of \$10,000.
- d. DWR will address violations of the authorized quantities as follows:
  - i. exceeding any total allocation quantity of less than 4 AF within the allocation period will result in a \$1,000 fine for every day the allocation was exceeded;
  - ii. exceeding any total allocation quantity of 4 AF or more within the allocation period will result in an automatic two-year suspension of the water right and a \$1,000 fine for every day the allocation was exceeded up to a maximum of \$10,000.
- e. In addition to other authorized enforcement procedures, if the District Board finds by a preponderance of evidence of watering of unauthorized acres, waste of water, meter tampering, removing the meter while pumping, or any other overt act designed to alter the metered quantity as described in K.A.R. 5-14-10 occurred, then the District Board will make a recommendation to the Chief Engineer that a written order be issued which states:
  - i. the nature of the violation;
  - ii. the factual basis for the violation; and
  - iii. that the water right is suspended for 5 years.

## 6) Meters

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- a. All water right owners shall be responsible for ensuring their water flow meters are in compliance with state and local law(s). In addition to maintaining compliance and reporting water usage annually from each point of diversion, all water right owners shall install and maintain an alternative method of determining the time that the well is operating. This information must be sufficient to be used to determine operating time in the event of a meter failure. Should the alternative method fail or be determined inaccurate the well shall be assumed to have pumped its full annual authorized quantity for the year in question. Well owners/operators are encouraged to give the details of the alternative method in advance to District staff in order to insure that the data is sufficient.
- b. Any water right owner or authorized designee who finds a flow meter that is inoperable or inaccurate shall within 48 hours contact the district office concerning the matter and provide the following information:
  - i. water right file number;
  - ii. legal description of the well;
  - iii. date the problem was discovered;

- iv. flow meter model, make, registering units and serial number;
  - v. the meter reading on the date discovered;
  - vi. description of the problem;
  - vii. what alternative method is going to be used to track the quantity of water diverted while the inoperable or inaccurate meter is being repaired/replaced;
  - viii. the projected date that the meter will be repaired or replaced; and
  - ix. Any other information requested by the District staff or Board regarding the inoperable or inaccurate flow meter.
- c. Whenever an inoperable or inaccurate meter is repaired or replaced, the owner or authorized designee shall submit form DWR 1-560 Water Flowmeter Repair/Replacement Report to the district within seven days.
  - d. This metering protocol shall be a specific annual review issue and if discovered to be ineffective, specific adjustments shall be recommended to the chief engineer by the advisory committee.

## 7) Advisory Committee

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- a. The Rattlesnake Creek LEMA Advisory Committee shall be appointed and maintained by the District board consisting of 7 members as follows: one (1) District staff; one (1) District Board Member; one (1) representative of the Division of Water Resources, Kansas Department of Agriculture as designated by the Chief Engineer; and the balance being stakeholders from within the Rattlesnake Creek LEMA area. One of the Rattlesnake Creek LEMA members shall chair the committee whose direction shall be set to further organize and meet annually to consider:
  - i. water use data;
  - ii. water table information;
  - iii. economic data as is available;
  - iv. compliance and enforcement issues;
  - v. any new and preferable enhanced management authorities become available;
  - vi. other items deemed pertinent to the advisory committee.

The reduction in pumping in Zone D (4,000 AFY) and the overall LEMA (23,000 AFY) will be evaluated for years 2020-2024. The 5-year accumulated reported-use targets are in the range of XXX,XXX AF and XXX,XXX AF respectively in the two areas. The reduction in pumping is to reduce future depletions at Zenith gage. The future years of water-use report performance will be adjusted for evapotranspiration and precipitation by a correlation to pumping as has been found by KDA-DWR. The correlation is strong but has a remaining uncertainty in the 5-year averages of about 3 percent of pumping, thus the 5-year pumping target to be derived by correlation to evapotranspiration and precipitation, will have statistical leeway of +or- XXXXXX AFY before backstops or credits are administered for the next period.

## 8) LEMA Order Reviews

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- a. The LEMA will be evaluated twice in the first ten (10) years, which would allow the parties to revisit the terms and evaluate its efficacy after a meaningful period of observation.
- b. In addition to the annual status reviews per Section 7, the Rattlesnake Creek LEMA Advisory Committee shall also conduct a more formal LEMA Order review every five years within the term of the LEMA. The first of these reviews shall be for the years 2020-2024. Review items will focus on economic impacts to the LEMA area and the local public interest. Water level data may be reviewed by the committee.
- c. The committee, in conjunction with KDA–DWR and the District, shall also produce a report following each formal review to the chief engineer and the District board which contains specific recommendations regarding future LEMA actions. All recommendations shall be supported by reports, data, testimonials, affidavits or other information of record.

#### 9) Alternative Corrective Controls

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- a. The LEMA Order review identified in Section 8 shall be conducted in a manner to determine if further revisions to the order are necessary at that time. The committee, in conjunction with KDA–DWR and the District, shall review:
  - i. The reports and imagery of end gun acres reduced will be examined alongside the model results for the volume saved. The 4,000 AFY of reduced water use near St John will also be included in the 23,000 AFY reduction of LEMA-wide water use. If the program is considered successful, no modified controls will be necessary. If considered ineffective, then the options in b. below will be implemented.
  - ii. The implementation of Section 3 will be reviewed to determine the effect augmentation has on the immediate area surrounding the well field. The goal for augmentation implementation is a fully-operational peak 15 cfs well field and delivery system to the Rattlesnake Creek stream channel. If the wellfield has not been completed to deliver water, then the options in c. below will be implemented.
- b. If the goals are not met before the LEMA Order review, the following corrective controls will be implemented in 2025.
  - i. For the period 2025-2029, the water right allocations shall be adjusted as follows [to be finalized upon further discussion with stakeholders. Items under consideration, but not limited to, Priority and Stream Response]:
    - 1. water rights located within the area designated as having greater than XX% stream response at the Zenith gage station and with priority date after August 15, 1957 and on or before April 12, 1984 shall have the annual appropriations reduced by XX% for the five-year period;
    - 2. water rights located within the area designated as having greater than XX% stream response at the Zenith gage station and with priority date after April 12, 1984 shall have the annual appropriations reduced by XX% for the five-year period;

3. water rights located within the area designated as having less than XX% stream response at the Zenith gage station and with priority date after August 15, 1957 and on or before April 12, 1984 shall have the annual appropriations reduced by XX% for the five-year period;
  4. water rights located within the area designated as having less than XX% stream response at the Zenith gage station and with priority date after April 12, 1984 shall have the annual appropriations reduced by XX% for the five-year period.
- c. To be determined in discussions with KDA-DWR.

#### 10) Impairment Complaints

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- a. While this program is being undertaken, the District stakeholders request that any impairment complaint filed in the district while this management plan is in effect, which is based upon either water supply issues or a regional decline impairment cause, be received by the Chief Engineer, and be investigated by the Chief Engineer with consideration to the on-going Local Enhanced Management Area activities.

#### 11) Water Level Monitoring

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- a. The District maintains a routine water level measurement network throughout the Rattlesnake Creek subbasin area. This monitoring will continue throughout the term of the LEMA plan. In addition to the existing network, the District will install observation wells as necessary to monitor the impact of the augmentation well field. These measurements will be a part of the existing WIZARD database curated by the Kansas Geological Survey.

#### 12) Water Quality Monitoring

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- a. The District has been monitoring the surface water quality along the Rattlesnake Creek channel for several years. This monitoring will continue throughout the term of the LEMA plan no less than on a quarterly basis. The observation wells that will be installed around the augmentation well field will be sampled routinely to enhance the understanding of the water quality in this area. Coordination with Kansas Department of Health and Environment will be crucial in this process to ensure the water quality of the Rattlesnake Creek stream channel is maintained throughout this project.

#### 13) Coordination

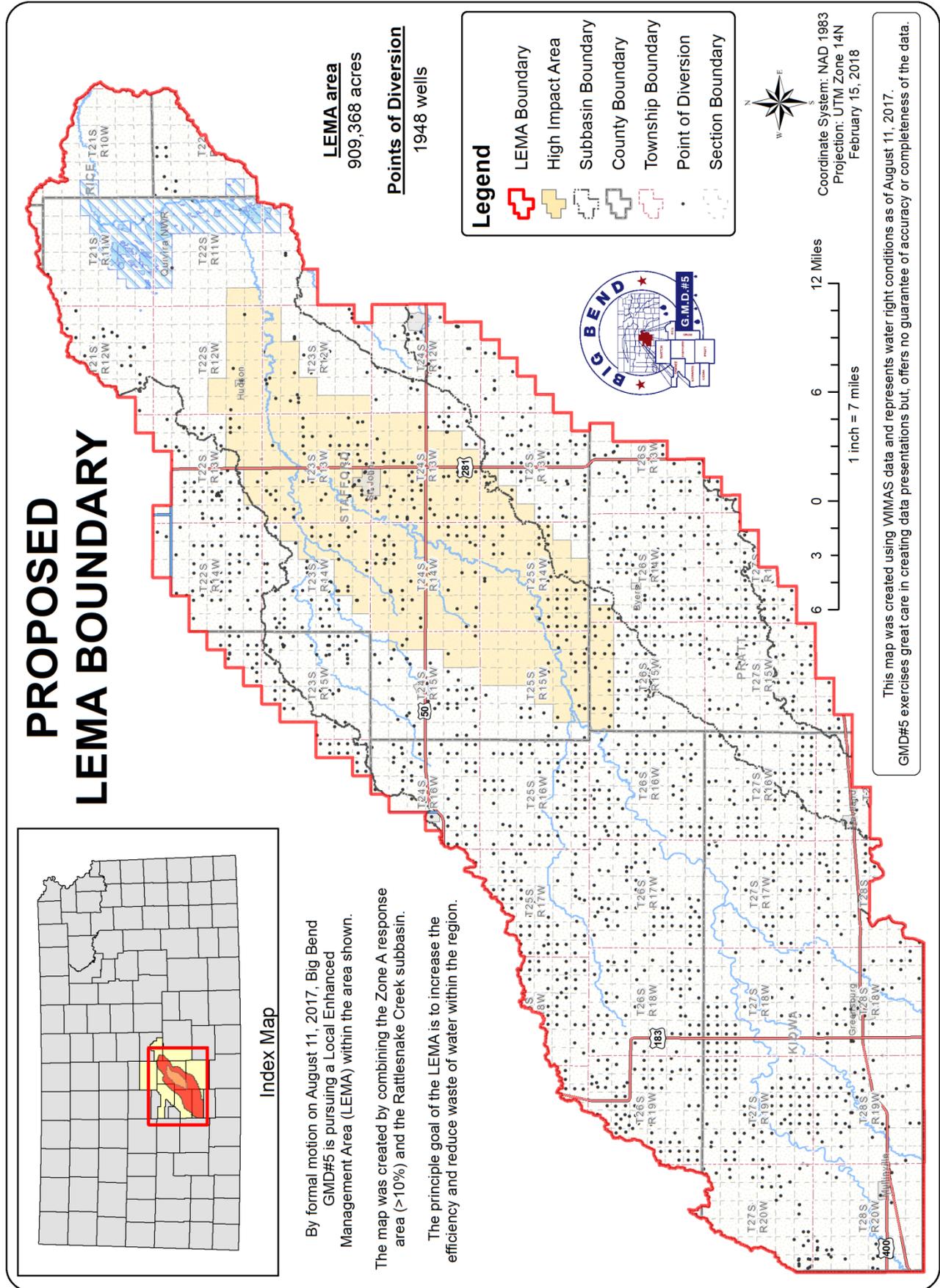
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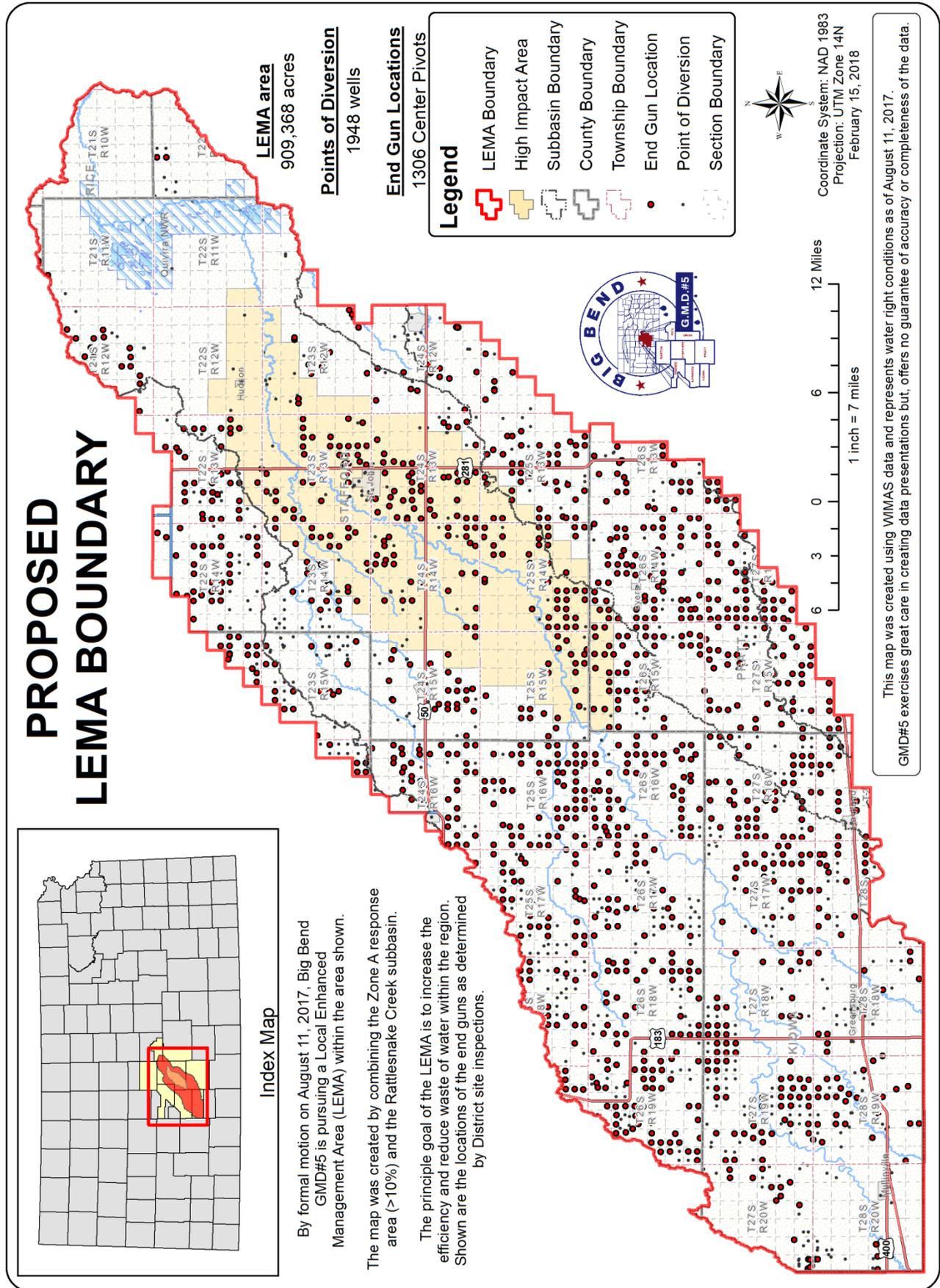
- a. The District stakeholders and the Board of Directors expect reasonable coordination between the Chief Engineer's office and the District board on at least the following efforts:
  - i. Development of the LEMA Order resulting from the LEMA process;
  - ii. Compliance and enforcement of the Rattlesnake Creek LEMA order;
  - iii. Annual reporting of water usage and evaluation of progress toward overall LEMA goals.

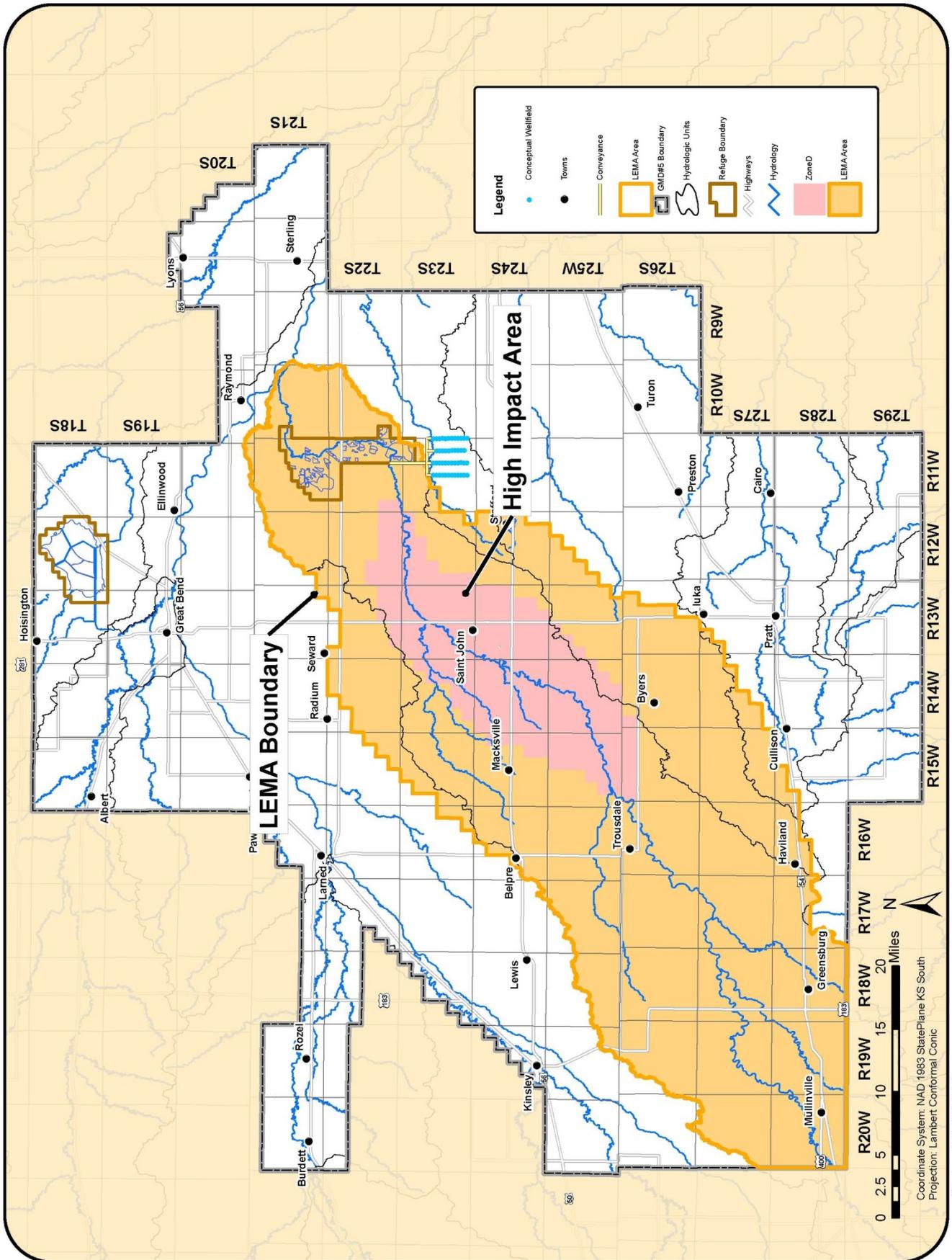
## References

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DRAFT







Attachment 4

The augmentation well field implementation schedule is being refined currently.

