



# Resolving the Quivira NWR Impairment

Big Bend Groundwater Management District No. 5

January 2019

Big Bend Groundwater Management District No. 5 (“District”) continues to be an advocate for utilizing the most accurate science available to guide decision-making in the region. For nearly three decades, the District has actively strived to assist in providing sustainable water resources for Quivira National Wildlife Refuge (“Refuge”). Throughout this time, the District has focused significant financial and technical resources toward investigating the surface/groundwater relationship in and around the Rattlesnake Creek region.

In 2008, the District, with technical assistance and peer review from Kansas Department of Agriculture – Division of Water Resources (“KDA–DWR”), Water Protection Association of Central Kansas (“Water PACK”), and United States Fish and Wildlife Service (“Service”), contracted with Balleau Groundwater Inc. to develop a high-resolution hydrologic model of the District. This hydrologic model (“BBGMDMOD”) is designed to have seven layers representing unique geologic formations below the ground surface. One of the reasons for having a hydrologic model with multiple layers is to be able to track the water movement between the layers. BBGMDMOD has been the primary tool utilized by KDA–DWR and other stakeholders to evaluate the effects of groundwater pumping and surface drainage throughout the District. BBGMDMOD is the most comprehensive and scientific tool available to determine the proper course of action for long-term sustainability of water resources throughout this region.

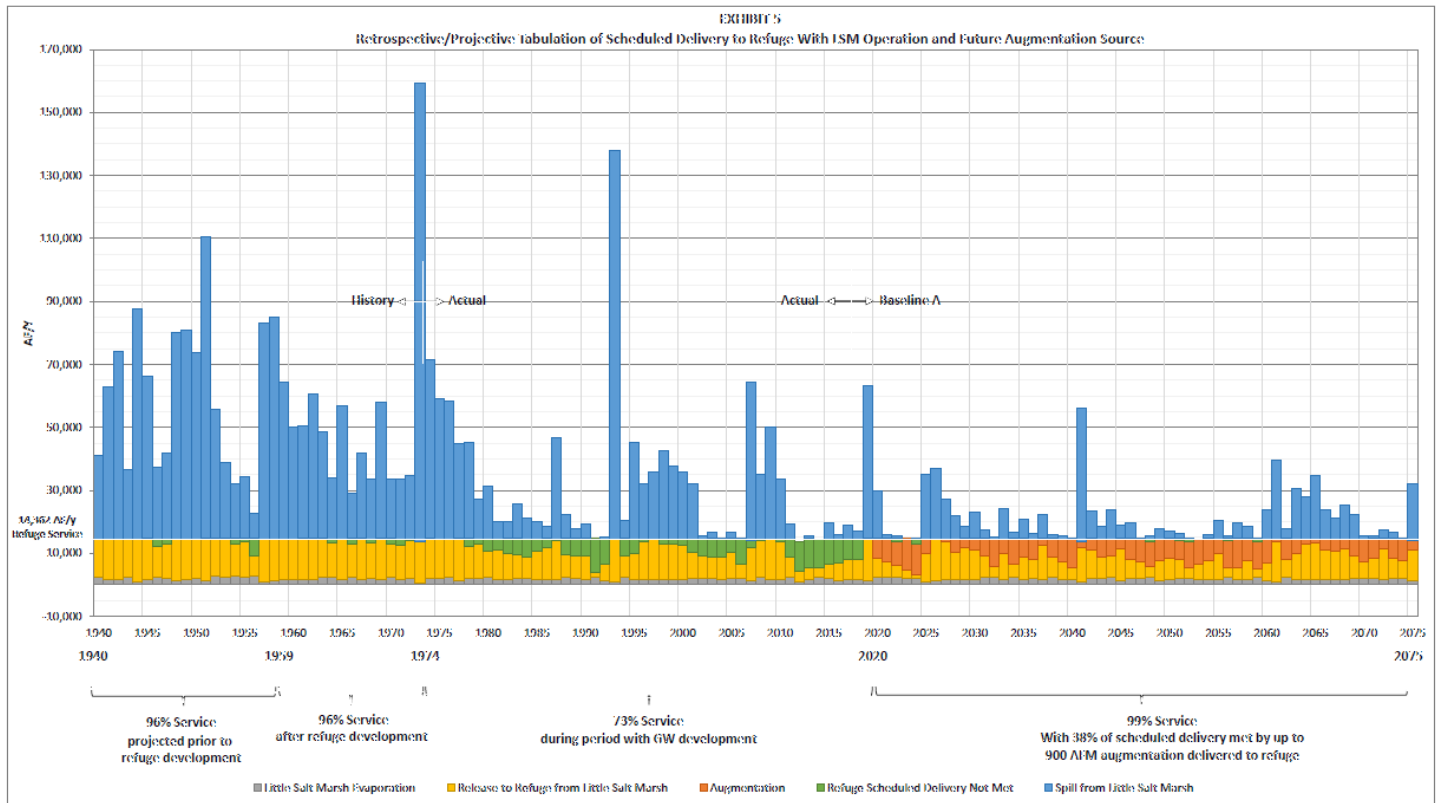
## **Does the District support augmentation?**

Yes, the concept of augmenting streamflow with pumped groundwater has been an agreed-upon objective in the Rattlesnake Creek region for nearly two decades. As such, there have been several studies conducted by various agencies that have identified several factors that need to be addressed for a successful augmentation project. These factors 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. As a result, in 2016 and 2017 the District formally offered two augmentation projects directly to the Service as a remedy to the 2013 impairment complaint. Despite these proposals being declined by the Service, the District remains committed to working to resolve the impairment complaint utilizing the most current science, effective tools, and programs available.

## **Why does the District believe that augmentation alone solves the problem?**

Based on the analysis conducted by Balleau Groundwater Inc. (“BGW”), the intent of augmentation is to provide an additional water source 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 a significant quantity of water that can be appropriated in a sustainable manner. The sources supporting the augmentation wellfield have been examined in BBGMDMOD as was done in the impairment analysis. The augmentation wellfield 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 complaint at the Refuge.



The Exhibit 5 above shows how prior to the Service's establishment of the Refuge (1959) and prior to the groundwater development in the area, the Service only ever had access to 96% of its demand met. However, the LEMA plan with its various components, primarily streamflow augmentation, improves the Service's ability to meet its water needs more frequently than before the Refuge was established in the 1950's.

### Why isn't there a LEMA plan to remedy the impairment?

The District has worked since 2017 to develop a LEMA plan that provides an impairment complaint remedy that is based on the best data available, including BBGMDMOD data, economic impact data and expert hydrology recommendations. In December 2018, the District approved a LEMA plan to be reviewed by the Chief Engineer. A week later, the Chief Engineer responded with a letter stating the LEMA plan was deficient in three of the six statutory requirements for a complete LEMA plan. The District is compiling a response to this letter and is reviewing the LEMA plan to ensure that it meets all statutory requirements per K.S.A. 82a-1041.

### Won't removing end guns save water?

Contrary to KDA-DWR's recent analysis, the District continues to contend that removal of end guns will result in a water savings. The removal of end guns from a center pivot system will result in less acreage being wetted through the application of pumped water. The irrigated crops in this region are supplemental irrigated. The crops will not consume any further water than is currently applied. If a water user without an end gun were to apply extra inches per acre, the crop would not consume any further water than they did previously with an end gun. Therefore, the water would be rejected from the crop as runoff or infiltration beyond the root zone. As a result, the extra water pumped would be returned to the hydrologic cycle to be reused in the future. The removal of end guns results in a reduced amount of consumed water because there would be less crops consuming that irrigated water. The water users

in this area have no benefit in pre-watering crops as the soil profile is primarily sandy and does not have the same holding capacity as ground further west in the state.

**If we have to reduce pumping who decides who gets cut and how much?**

The District does not share with KDA–DWR the desire to cut water users back in order to satisfy the Quivira NWR impairment complaint. The analyses conducted by Balleau Groundwater Inc. indicate that the effect of KDA–DWR’s suggested water use reductions would reduce the streamflow augmentation requirement of approximately 1.5–3.0 cfs. The majority of the effect would be to send water east undiverted and unused by Quivira NWR and would not help the impairment. The water use reduction is not a critical component, as shown by the minor boost to the Service’s water right, and in fact would be a major detriment to the economic use of water in the region.

**How would allocations by water right be set in a LEMA or IGUCA?**

The District agrees with KDA–DWR’s response stating that “there are many ways to set allocations…” but contend that doing so “fairly and equitably” is much more difficult. The District has explored many options for determining how such a mechanism might be implemented, but when reviewing the Balleau Groundwater Inc analysis, the District concluded there were none that were fair and equitable. We are dealing with the livelihood of our neighbors and what is considered to be “fair and equitable” by KDA–DWR does not fit with the reality of this region.

According to scientific analyses conducted by the District, Kansas Geological Survey, United States Geological Survey, and others, the District is one of the most sustainable areas in the state. The issue is not if there is enough water, but rather the timing of the delivery of that water (i.e. streamflow augmentation).

**Where can you go for more information?**

The District maintains a webpage dedicated to the background and current activity regarding the Quivira NWR impairment complaint and LEMA development at <https://gmd5.org/proposed-rsc-lemma>. Feedback and comments can be submitted directly from that webpage or by contacting Orrin Feril, District manager, at [oferil@gmd5.org](mailto:oferil@gmd5.org) or 620-234-5352.