United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mountain-Prairie Region

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Orrin Feril
Big Bend GMD #5
125 South Main Street
Stafford, Kansas 67578

Dear Mr. Feril:

The U.S. Fish and Wildlife Service (Service) appreciates the Big Bend Groundwater Management District No. 5 (GMD #5) providing the "Second Stakeholder Proposal in Connection with USFWS Impairment Complaint" for the Quivira National Wildlife Refuge (Refuge), received on February 15, 2017. The proposals we received from GMD #5 do not provide sufficient quantity to remedy impairment, risk introducing poor quality water, and do not provide a sustainable remedy over the long term. The current body of research for the Rattlesnake Creek basin raises serious questions about the viability of GMD #5's proposal.

The Service has determined that both Option 1 and Option 2 as described in the most recent proposal do not adequately address impairment as detailed in the Chief Engineer's impairment report and therefore cannot be accepted as legally viable remedies. We provide detailed feedback as an attachment with this letter regarding the reasons the proposed options are not viable and also provide recommendations to address our concerns. The Service looks forward to working with the Chief Engineer and GMD #5 to formulate a remedy. However, the direction of any future proposals must address concerns about water quantity and quality and include a plan for curtailment of junior appropriators.

Sincerely,

Will Meeks
Assistant Regional Director

cc:
David Barfield, P.E., Chief Engineer, Kansas Department of Agriculture
Jeff Lanterman, Water Commissioner
Lynn Preheim, Attorney, GMD #5

Attachment
Additional Information in Response to the Second Stakeholder Proposal in Connection with USFWS Impairment Complaint at the Quivira National Wildlife Refuge
March 22, 2017

1. Water Quantity – Neither of the proposed remedies provide a sufficient quantity of water to remedy impairment.

The Chief Engineer's final impairment report states that "groundwater reductions and/or augmentation will be needed to increase available streamflow at the Refuge by 3,000-5,000 acre-feet (ac-ft) on a regular basis"(Barfield, 2016). As the Chief Engineer found, "[u]pstream, junior groundwater pumping within the Basin is and has been significantly reducing water availability at the Refuge on the order of 30,000-60,000 acre-feet per year over the recent record" (Barfield, 2016). In the Service's view, the solution to remedying impairment must include curtailment of junior appropriators. The Service believes that neither of the options proposed by GMD#5 will satisfy the 3,000-5,000 acre-foot regular impairment determined by Chief Barfield. Option 1 provides a maximum of only 2,500 ac-ft. In addition, pumping near the Refuge boundary also has the potential to cause additional impairment of Refuge wetlands, seeps, or natural springs in the vicinity of wells.

Option 2 does stipulate the provision of 5,000 ac-ft of augmentation water at an undisclosed location west of the Refuge along the Rattlesnake Creek channel. However, the proposal also states that the amount of augmentation will be measured at the point it is placed in the creek channel, and "…the Service will be at the mercy of the inherence conveyance losses associated with passing the water along the Rattlesnake Creek channel…" Modeling by the Kansas Division of Water Resources (KDWR; presented November 4, 2015) indicates augmentation wells located one mile from the Rattlesnake Creek channel will result in the stream recapturing approximately 10 – 15% of the augmented water through conveyance loss and cumulatively 40 – 50% through delayed recharge to the aquifer. Therefore, the opinion of the Service is that Option 2 would not provide enough water to remedy impairment on a regular basis. Further, if the wells are located near the Refuge boundary, this option also could potentially cause additional impairment of Refuge wetlands in the vicinity of wells.

Based on this information, both options fail to comply with K.S.A 82a-706b (a)(2) in the amount required by the Chief Engineer's final impairment report as neither replaces the regularly impaired amount of water *in place* or *in quantity* where the water could be used for beneficial use on the Refuge, and therefore would not remedy impairment. Further, the Service cannot agree to a proposal that would cause further impairment that is not acknowledged, nor remedied. In order to ensure that the Service receives the full benefit of the water to which it is legally entitled under its senior water right, significant changes to GMD#5's proposal are needed.

2. Water Quality – Augmentation wells are located where poor quality water may be produced.

The Kansas Department of Health and Environment has designated both the Big Salt Marsh and Little Salt Marsh on the Refuge as "outstanding national resource waters" (Kansas Department of Health and Environment, 2013). The Antidegradation Policy for the State of Kansas provides Tier 3 protection with this designation and states that "…any activities that would permanently lower water quality of these surface waters is forbidden" (Kansas Department of Health and Environment, 2001).

The proposal indicates that both Option 1 and Option 2 would involve siting augmentation wells near the east or west boundary of the Refuge, respectively. The aquifer underneath and adjacent to the Refuge has been documented as saline (Kansas Geological Survey (KGS) Publication 94-28 c and 92-44) and, based on the general locations of wells proposed in both options, less than 60 feet of freshwater is available for pumping (see Figure 1 below). Although Option 2 offers assurances that there are confining layers present that will prevent upconing of salt water, past monitoring conducted approximately 8 miles northwest of the Refuge (Siefkes site; KGS Publication 94-28c) indicated that the potentiometric surface of deep brackish to saline water exceeds that of the upper freshwater aquifer with minimal pumping and led to poor water quality being produced. Based on monitoring data at this site, KGS Publication 2000-60 (2001) states "These observations indicate that even in places where a clay lens occurs, separation between the freshwater aquifer and the deep aquifer is not complete, and measures need to be taken to avoid dangerous increases of salinity in the fresh groundwater resource." Further, the site monitored has more freshwater available than areas closer to the Refuge and is indicative of the salinization risk to the upper aquifer that is posed by wells located within the mineral intrusion zone.

Based on this information, the opinion of the Service is that augmentation wells sited in the general locations identified in both Option 1 and Option 2 have a high chance of producing poor quality water that would not satisfy K.S.A 82a-706b (a)(2). If this were to occur, the potential exists to introduce lower quality water than what is present in Rattlesnake Creek, which may violate state water quality requirements for wetlands with Tier 3 protections. Additionally, continued upconing of salt water may result in irreversible salinization of the aquifer and would jeopardize the ability of augmentation to meet its intended purpose. Salt water intrusion would also unacceptably impact Refuge resources. Therefore, the Service cannot accept either Option 1 or Option 2 as proposed.

3. Quivira Water Right No. 7571 – Acceptance of Option 1 or Option 2 may place the Service's water right at risk.

The most recent proposal states: "In no way does the current proposal of augmentation reduce or negatively affect the Service's certified water right. In any given year, the Service is entitled to divert up to 14,632 AF from the Rattlesnake (less any augmentation that occurs)." We disagree, for the reasons explained further below. Because the current proposal does not fully replace the regularly impaired amount of water *in place* or *in quantity*, our view is that it unacceptably impinges on the Service's senior water right.

Suggested Proposal Improvements

The two options submitted by GMD #5 are not satisfactory remedies based on the conditions that we provided prior to the development of this most recent proposal. The Service encourages development of a remedy that incorporates the current body of research available for the Rattlesnake Creek Basin and consideration of all available options for achieving a long-term, sustainable solution. To assist in that effort, the Service offers the following guidance and comments:

1. The Service acknowledges that K.S.A 82a-706b (a)(2) allows augmentation in the Rattlesnake Creek Basin for replacement in time, location, and quantity of unlawful diversions. However, other options also are available, including reductions in groundwater pumping that the Service considers a more viable, sustainable solution. Therefore, we encourage GMD #5 to create a Local Enhanced Management Area (LEMA) to remedy impairment.

   Although the GMD #5 proposal cites information from WaterPACK that indicates a large economic impact would result from water use reductions, research conducted in the nearby Walnut Creek Basin (Golden and Leatherman, 2011) suggests the impacts may be less severe in some cases. The Service recognizes that environmental conditions in the Walnut Creek Basin differ from those in the Rattlesnake Creek Basin and that the extent of impacts would vary depending on provisions incorporated in a LEMA. However, the former Kansas Assistant Attorney General referenced this study in an article regarding the impact of Intensive Groundwater Use Control Areas (IGUCA) and LEMAs on local economies. An excerpt follows:

   > *"Through both the IGUCA process and the LEMA process, these achievements in reducing groundwater pumping raise an obvious question: haven't they imposed serious economic losses on the affected irrigators? The surprising answer is no. A 2011 study by two Kansas State University economists found that the reductions in groundwater pumping mandated by the Walnut Creek IGUCA produced little or no economic losses after the first several years. Once groundwater pumpers adjusted their cropping to the lower levels, their net returns were virtually the same, if not higher in some cases, than before the IGUCA was imposed. A similar study related to the Sheridan-6 LEMA in 2011-12 found that a 20% reduction in pumping would have no economic effect on the bottom line of groundwater pumpers; and leading irrigators believe that the reductions will actually improve the economic outlook for their farms, by reducing input costs and extending available water supplies." (Griggs, 2014)*

2. If GMD #5 remains committed to a remedy that includes augmentation, the Service:

   a. Considers augmentation wells outside the mineral intrusion zone (Figure 2) as the only suitable location to minimize the risk of providing water of insufficient quality during droughts, when the greatest demand is placed on the aquifer. This view is supported by the Kansas Water Office report (2006) that stated "Should the augmentation strategy be implemented, the Kansas Water Office recommends the use of freshwater sources for augmentation…"

   b. Will require any proposal that includes augmentation near the refuge to be confirmed by research conducted by qualified personnel that (i) ensures well locations and operations

(e.g., pumping capacity and rates) will provide long-term water of equal or better quality than currently occurs and (ii) evaluates potential additional injury to Refuge wetlands caused by pumping and, if injury occurs, appropriate remedies.

c. Has determined that no infrastructure (pumps, pipes, etc.) will be placed on Refuge property as part of augmentation. The Service consulted with the Region 6 Management Team and conducted informal consultations with the Service's Kansas Ecological Services Field Office (Service program responsible for reviewing project design and approving many of the permits that would be required) and these consultations led the Service to this conclusion. The rationale behind this decision is as follows:
    i. Any proposed infrastructure to be placed on the Refuge would have to go through the National Environmental Policy Act (NEPA) review process, an Endangered Species Act (ESA) consultation, and a Refuge compatibility determination. This would entail significant review before the project could begin. Moreover, given the uncertainties and potential significant impacts associated with your proposal, it is unclear that we would be able to approve it as proposed. We believe that outcome would more likely be avoided by siting the infrastructure elsewhere.
    ii. There is a large risk of introducing invasive species with any large scale construction project.
    iii. Causing upconing of saline water from the deep aquifer and introducing it into the Refuges is an unacceptable risk the Refuge does not support. The Service will not promote intense groundwater pumping within the mineral intrusion zone.
    iv. We believe that eventually, the Service will end up owning this infrastructure and having to maintain it into the future.

d. Would like clarity on how the basin will be reopened for new wells and how augmentation water will be found legally available. Kansas Administrative Regulation 5-25-4 closed the basin to new appropriations filed after December 17, 1998.

3. The most recent proposal contains the following terms that the Service cannot agree to when a suitable remedy is developed:

    a. Section 2 (Administration) of the current proposal stipulates terms for implementation of the Service's Water Conservation Plan and Drought Resiliency Plan that was adopted in October of 2000 by KDWR. Since this plan was submitted, the Service has finalized a Comprehensive Conservation Plan (CCP) in 2013 to address water management. Moreover, the KDWR has concluded their impairment investigation in 2016 addressing water availability. This Water Conservation Plan was submitted before the knowledge of how impairment is affecting the Service's water right and many of the stipulations are no longer suitable. The Service will work with the Chief Engineer to take appropriate actions. We request that future proposals remove this reference.

    b. Section 2 (Administration) of the current proposal contains a subsection entitled "Term Period" that recommends the initial term agreement of any agreed upon remedy would be 30 years to allow a "meaningful period of observation", but also states "there may be a need to evaluate the effectiveness of the plan within the term of the agreement." It is the opinion of the Service that a satisfactory remedy must be based on sound science that

minimizes the risk of inadequate performance prior to implementation. Although we agree that monitoring will be required to facilitate adaptive management of a suitable remedy, the 30-year timeframe is too long and the Service cannot agree to it.

4. The proposal contains references to the Great Bend Regional Advisory Committee (RAC). Though the Service supports the RAC's goals of obtaining sustainability and long-lasting water management adjustment, the Service cannot rely on the RAC to remedy impairment due to the voluntary nature of the conservation programs and the extended timeline for implementation.

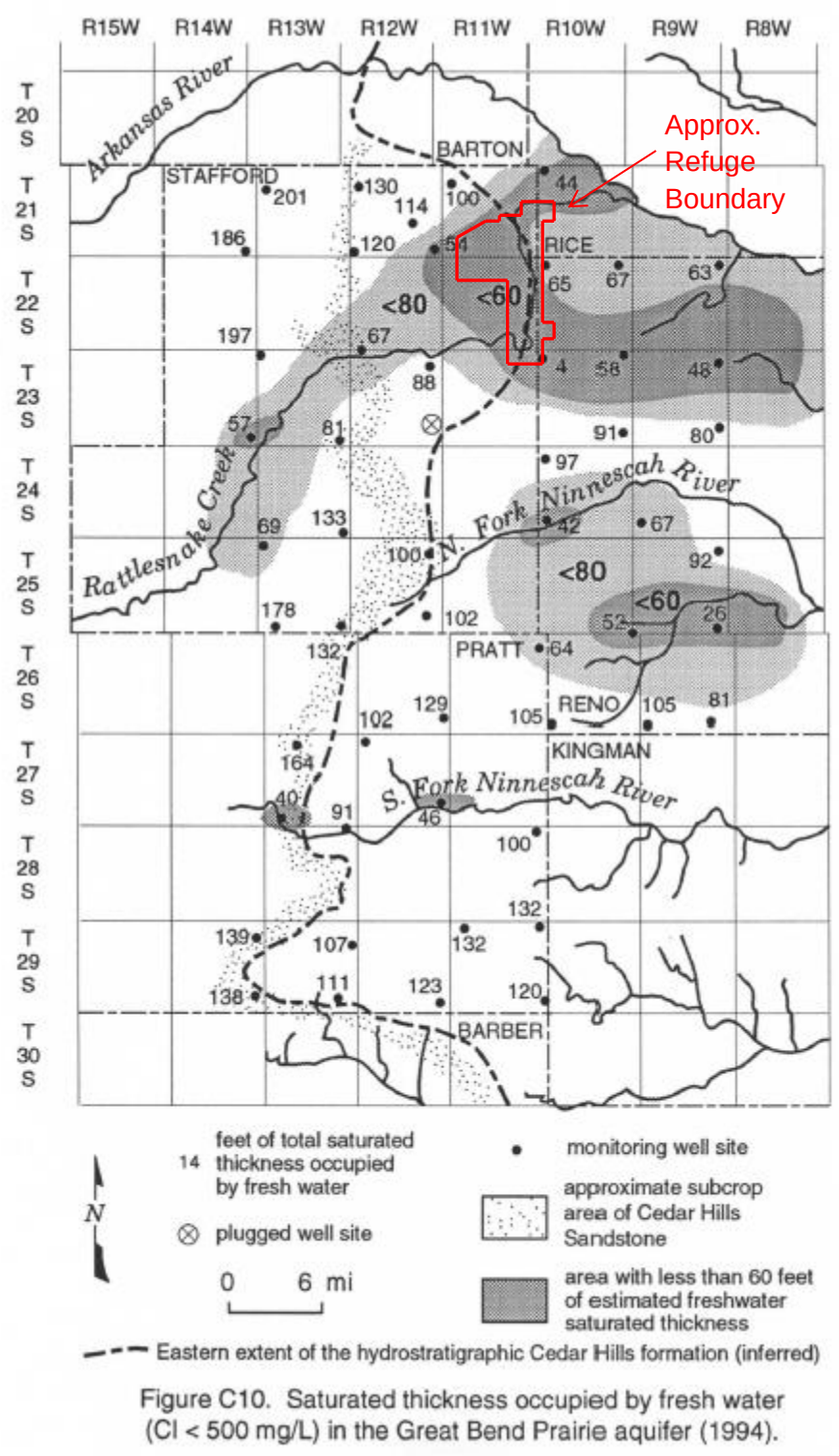

Figure C10. Saturated thickness occupied by fresh water (Cl < 500 mg/L) in the Great Bend Prairie aquifer (1994).

Figure 1: Map from Kansas Geological Survey Open File Report 94-28c showing the amount of freshwater available near the Refuge.

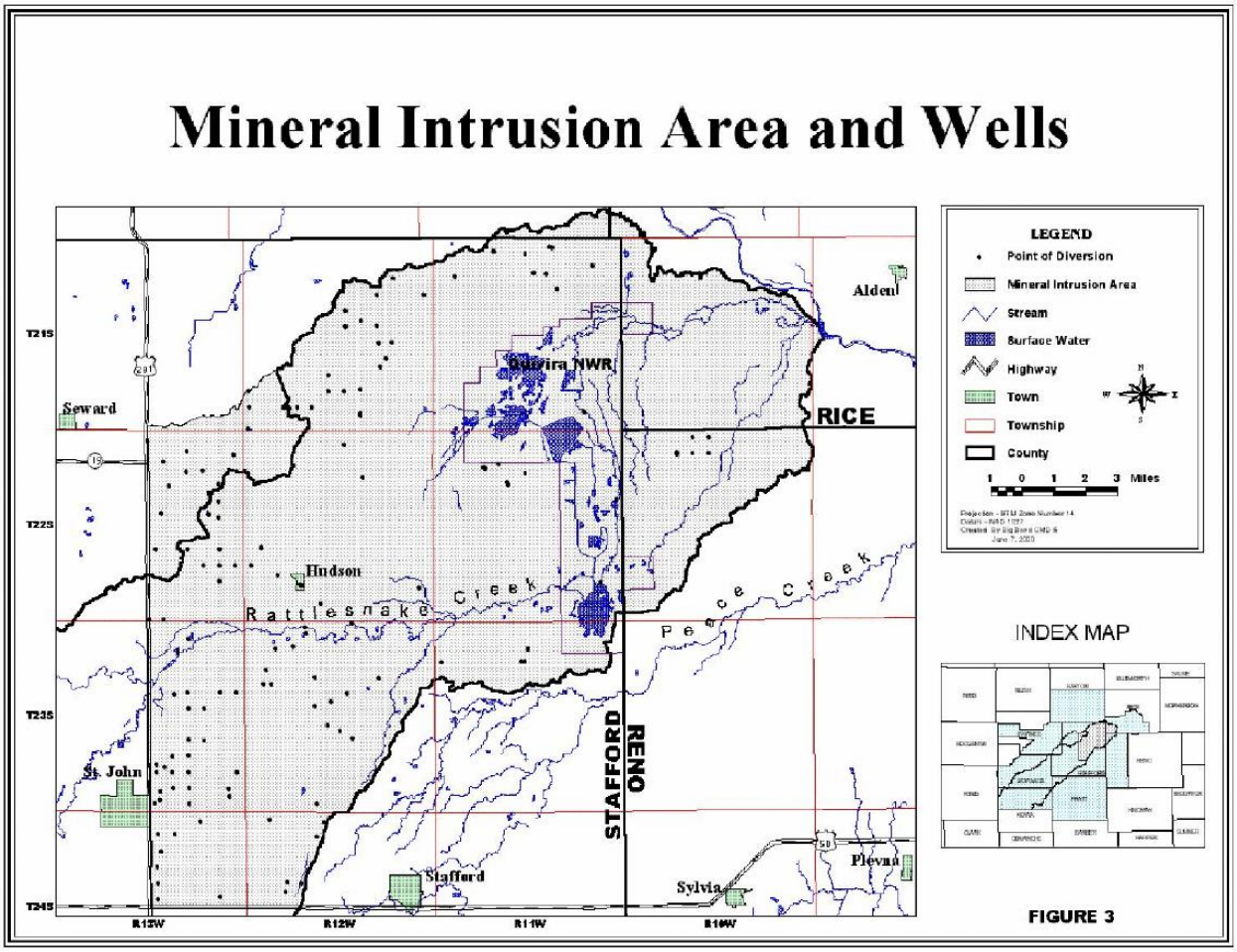

Figure 2: Map from Rattlesnake Creek Management Program Proposal (KDWR, 2000) showing the location of the mineral intrusion area.

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