Supplemental response to comments on initial report for the Quivira Impairment Investigation

June 10, 2016

Many comments on the first draft of the initial impairment report have been addressed in the second draft of the report. Comments that were not addressed in the second draft are addressed, either generally or specifically, below.

How much of the certified amount in 1987 was from runoff vs. baseflow?

We don't know how much runoff there was in 1987 or what portion of the Refuge's water supply came from runoff. However, the GMD5 groundwater model shows that in 1987, junior groundwater pumping reduced streamflow by 38,000 AF. While runoff may have been the source of a portion of the supply in 1987, it would have been available as baseflow without junior pumping effects.

Perfection year of 1987 set a record for max daily discharge at Zenith; 8th wettest on record.

See Report, Section 4

There is no legal justification for including evaporation in the certified amount as the water was diverted in previous years. The certificate should have been limited to 10,129.7 AF.

See Report, Section 4

There is no justification for granting extensions of time to perfect to 1987.

See Report, Section 4

As evaporation and storage in Little Salt Marsh (LSM) is part of certificate amount, shouldn't the beginning number for the diversions in the impairment analysis be 10,130 AF? Should the water available to the Refuge be limited to 10,130 AF?

See Report, Section 7

During many periods of alleged impairment, the Service did not use all of the water available. There appear to be times when Refuge was full but a shortage is shown (e.g.1995, 2004, 2005).

The impairment analysis considered all water available during the Service-defined management periods to meet the scheduled needs, even if not diverted. See Report, Section 7, which notes storage was not considered in our analysis and there may have been times, such as 1995 and others, when impairment may have been less to the degree that the Refuge's limited storage would mitigate such shortages.

DWR past statements evidence that every surface water right holder should expect shortages and thus not expect to have available their full authorized quantity every year. Why did DWR's analysis not consider this, applying a reasonableness standard of some sort, allowing for shortages?

See Report, Section 4. While it is true that a water right does not provide any guarantee that water will be available in every year, and in fact water may not be available in periods when there is a high

need for the water, the KWAA does ensure that a water right is entitled to protection from junior appropriators. DWR's statements were in observance of the shortages that result from natural hydrologic cycles and not meant to limit the expectation that senior water right holders are entitled to protection from junior appropriators.

Groundwater levels are not in decline in the upper basin; water levels are stable from Macksville downstream.

See Report, Figure 5, which shows the variation in groundwater level changes in the basin and over time. The groundwater model estimates stream-aquifer interactions, including the effects of well pumping on streamflow. The model demonstrates that groundwater pumping is significantly reducing streamflow at the Refuge (see Figure 11 of the report). In this system it does not take significant water level declines to intercept recharge destined for the stream. Water levels have declined from pre-development conditions, producing stream depletions that have and are occurring, and as demonstrated by the Model, will continue to increase over time.

Has the accuracy of the Service's records relied upon for the certificate been verified?

During a supplemental field inspection, of which the report is included in the online electronic water right file, field office staff compared the results of the use of the Clausen Rule with a DWR Pygmy flow measurement. The results showed an acceptable level of accuracy for measuring use at the Refuge with the Clausen Rule.

In reviewing reported diversion records, it is difficult to align them with the Service's reports on the percent of storage filled at various times.

Annually DWR has sent its standard water use report for surface water users which includes a section for reporting reservoir percent full. The report format presents some ambiguities to Refuge staff because it is not clear whether the storage referenced is all of the storage on Refuge or just LSM. It appears that Refuge managers over the years have reported reservoir storage values inconsistently. DWR will develop more specific and clear reporting requirements for the Refuge.

Most water rights do not need their full authorized quantity every year? Has the Service demonstrated that it needs its full authorized quantity in every year, as DWR's analysis seeks to accomplish?

See Report, Section 4. Water rights are certified on the maximum year of record, that is, the maximum amount of water put to beneficial use in a calendar year. For most water rights, average use is lower than the maximum authorized. For various reasons, some water rights are not fully perfected, meaning that during the perfection period, the maximum potential water use was not achieved, resulting in a "short" water right that can be expected to be fully used in most years. There is a clear record of the Service's objections to the draft certificate. The Service argued that junior pumping had diminished its water supply during the perfection period, preventing it from using enough water to meet its full needs. From this perspective, the Refuge's water right can be considered "short," and it is reasonable to expect that it could use its full water right in most years.

The entire impairment claim is based on a schedule recently submitted by the Service. Why did DWR accept Scenario 3 in Attachment 5 rather than Scenario 1?

See Report, Section 7. The Service has been claiming impairment for several decades. Groundwater modeling shows that the Refuge's supply has been substantially reduced over those decades. In light of this, the use of the historical record, as in Scenario 1, is unjustified and inappropriate.

How does the KWAA's language requiring an appropriator to allow for a reasonable increase or decrease in static water level and for a reasonable increase and decrease of streamflow at the appropriator's point of diversion relate to this investigation esp. in light of the relative equilibrium of regional groundwater levels? How is such reasonable increase or decrease in streamflow defined?

The language cited in the question is from the section of law governing approval of applications to appropriate water. However, even if we were to apply this standard in the context of the present impairment claim of the Service, the investigation has shown that a substantial amount of water that should have been available for diversion by the Service has been diverted by junior appropriators, beyond what could be considered reasonable. As the Service has the right pursuant to its senior water right to divert these flows, and are being prevented from doing so, we do not believe this statutory provision impacts our analysis

If wells are shut down, would it not be a futile call?

See Report, Section 6. KDA-DWR's modeling work demonstrates a direct link between groundwater pumping and water availability to the Refuge and that administration of junior appropriators would result in significant increases to available flows, increasing from a gain of 2 cubic feet per second after one year to over 10 cubic feet per second after three years. See Report, Modeling Appendix, Figure A12.

There was inadequate time to comment on the draft report.

The time frame for developing the report included time to obtain records from the Service, to perform groundwater modeling and report those modeling findings to basin stakeholders (provided December 2014), developing the impairment analysis and drafting the initial report. The time provided for review of the initial report was well beyond that required by regulation, and additional time for review is provided for the second draft. We believe the time frames for review are sufficient for this stage of the impairment investigation.

The impairment claim is based on a water schedule that the Refuge claims they need, without proof that they need it at the specific times listed on the schedule. There is no analysis of the reasonableness of the Service's schedule vs. their historic use and available streamflow.

See Report Section 4 and Section 7. The U.S. Fish & Wildlife Service is staffed with professionals who have training and experience in managing wildlife habitat and they are, therefore, best qualified to know the timing of the Refuge's needs. The Refuge's recent comprehensive review evidences thoughtful consideration of their water needs, including timing, which we have determined to be reliable.

The water right was perfected with groundwater depletion already in place.

This is true and the Service objected to the draft certificate based on that fact. The record is clear that the Service's water right was restricted to what was actually used from the available water supply, despite the Service's objections that more could have been perfected had those junior groundwater depletions not been in place.

Why does your impairment analysis show impairment in the year certified?

See Report, Section 7.

Model runs should be confirmed by Balleau.

See GMD 5 letter of comment that confirms this has been done. The only technical concern expressed by Balleau related to the modeling was addressed. See Report, Section 5 and Appendix.

Starting head conditions are not steady.

See Report, Section 5 and Appendix.

The single-layer model impacts are 2.4 to 5% different that the 7-layer model impacts. They recommend the 7-layer model be used for final calculations and conclusions.

We believe the accuracy of the one-layer model was sufficient for this impairment investigation.

Metering of water entering, exiting and diverted on the Refuge is inadequate. The Service's water use report does not include filling and evaporation from LSM. The certificate should be amended to split this use off or the Service should be found in violation of permit for failure to report this use.

We believe additional reporting should be required in the future for water administration purposes including estimates for evaporation and storage change at LSM. While we continue to work with the Refuge on improving data, esp. in light of potential future needs related to water administration, DWR believes the available records are sufficient for this investigation and it is not necessary to await refined data to craft solutions.

Do the seasonal needs used in the impairment analysis represent past management?

No; but they represent the Service's current management and thus are appropriate for this analysis.

Given that there are times of excess flows, the use of Refuge storage may facilitate the effective use of augmentation.

See Report, Section 7.

Has the consumptive use of water increased on the Refuge as a result of its changing management contrary to the chief engineer's requirements? The gage at Raymond should be restored to determine water leaving the Refuge.

See Report, Section 4. Consumptive use is typically a downstream concern; we don't see anyone affected downstream. It is unclear whether downstream measurement will be needed. This will be examined as specific actions to address the impairment are finalized.

Has the wetland restoration project including re-contouring increased the demand for water?

Our understanding is that re-contouring is done to allow for more efficient use of water.

How does the Service's operations compare with requirements of conservation plan of the mid-1990s?

Conservation planning of the period required certain water right holders to develop a conservation plan and a plan for implementation. The Service complied with these requirements.

Is the Service's water need estimate of 2015 in conflict with their year 2000 water operations plan? Does the current management strategy shift away from a plan that works in concert with water availability? Is the Service operating as efficiently as possible, holding water in units as long as possible? Do they allow units to dry in the summer when water is insufficient?

KDA-DWR is obligated to make sure that the Refuge is not wasting water and putting water to its intended use within the conditions of its water right. The Service has recently conducted a comprehensive review of its operations and updated its plan for operation. KDA-DWR has no evidence that the Refuge is wasting water or deviating from the terms and limitations of its water right.

Pursuant to the Service's year 2000 operations plan, is the use of Big Salt Marsh still an important part of its operation?

Big Salt Marsh is a natural depression that receives water from local runoff and groundwater upwelling and on occasions from diversions from the Rattlesnake via the Service's diversion works. Use from local runoff and groundwater upwelling is not considered use under Water Right File No. 7571. Use via the Refuge's distribution works is considered use under File No. 7571.

Clearing of trees and brush along the creek will reduce riparian impact, benefiting the Refuge.

These actions could lead to improved water supply conditions and could therefore help to reduce the frequency and magnitude of future impairment.

Streamflow has declined for many other reasons besides groundwater pumping: farming practices, trees, federal programs, etc.

While conservation practices do reduce streamflows by making more water available for crop use and recharge, the impairment determined by our analysis is caused by junior groundwater pumping as determined by the groundwater model.

All parties need to work toward solutions that will not negatively impact economies and quality of life. Basin stakeholders wish to develop a plan that avoids severe cutback to pumping that will devastate the local economy. We would like to explore augmentation, use of incentive-based programs, etc.

Local solutions are strongly encouraged and KDA-DWR stands ready to assist stakeholders in developing such solutions, but the law must be upheld. Tools available to local water users include augmentation, development of one or more local enhanced management areas (LEMAs), development of one or more water conservation areas (WCAs), and water right retirement, among others. To the extent local solutions are not available, tools available to the chief engineer include strict priority administration or the initiation of intensive groundwater use control area (IGUCA) proceedings.

Augmentation should be the preferred option to resolve the impairment. Augmentation needs to be modeled. Augmentation strategies should be evaluated including the consideration of trigger using the Palmer Drought Index.

Augmentation can be considered if the Basin stakeholders develop a plan. KDA-DWR is available to assist with the development and evaluation of an augmentation plan, but the law is clear that augmentation can only be voluntarily implemented and cannot be ordered by the state.

Reductions in allocations should not be a consideration due to the devastating effect on the economy of the area.

The basin has a variety of water management tools available and an opportunity to offer solutions to remedy the impairment.

Will out-of-basin groundwater pumping that affects the Refuge be administrated the same as in-basin?

This will be determined in the remedies phase of this investigation.

We encourage KDA-DWR to fully restore water flow in Rattlesnake Creek to provide sufficient flows to Quivira National Wildlife Refuge.

The impairment analysis quantifies the degree of impairment caused by upstream junior groundwater pumping. As mentioned above, the Refuge's water right does not guarantee water availability, but the Refuge is entitled to protection from junior appropriators.

The Refuge is a wetland of international significance, critical to migratory birds and Kansas wildlife heritage. KDA-DWR has been remiss in allowing junior users to impair its use for these decades.

KDA-DWR, along with the U.S. FWS, GMD5 and WaterPACK worked for many years to seek a solution to the Service's concerns. Now that the Service has claimed water right impairment, we have performed this impairment investigation and will work through the process to its conclusion.

The Service has complained for decades that its water right has been impaired and has patiently worked with the Rattlesnake Creek Partnership in its attempt to reduce groundwater pumping. Those efforts were unsuccessful. The Service should not be asked to continue to be injured due to junior groundwater pumping impacts.

While the Service has worked for many years with the Basin seeking a solution to its concerns, we must work through our process that was initiated with the Service's claim of water right impairment. We are working to ensure we are taking necessary and appropriate action to address these concerns.

We do not support the use of groundwater pumping (augmentation) to remedy this impairment as it will further deplete the groundwater and streamflows of the area and adversely affect streams, wetlands and other ecological values associated with the Refuge and other areas of the Basin. Augmentation could also lead to a reduction in water quality into the Refuge.

During the 2015 legislative session, state statutes were amended to allow the chief engineer to consider augmentation, if voluntarily offered, as a remedy for impairment. That said, any augmentation plan that is developed must consider the additional stream depletions created from the augmentation pumping. If an augmentation plan is offered, KDA-DWR will evaluate the augmentation pumping effects on streamflow with the GMD5 groundwater model.

While portions of the basin are significantly developed and experiencing water level declines, other parts of the basin and level are much less developed and are not seeing such declines. The Basin has been closed to new appropriation since 1998. To allow for augmentation supplies, either existing water rights will have to be changed to augmentation use or the GMD and chief engineer would have to agree to open the district to new water appropriations for this purpose. This would only be done if it is in an area that can sustain this use. For augmentation to be approved as a remedy for impairment, the quality of the water would have to meet the Refuge's needs as well as any applicable laws, rules, and regulations governing water quality in Kansas.

Like Cheyenne Bottoms, an Intensive Groundwater Use Control Area (IGUCA) should be established to make the appropriate cuts in pumping while allowing the level of irrigation use allowable without impairment to the Refuge's right.

The specific remedy for any impairment found in the final impairment report will be determined in the next phase of this process. First, basin stakeholders will be provided with an opportunity to develop a plan to remedy the impairment. If no plan is offered or the plan is inadequate, the IGUCA process is one alternative to address any remaining impairment.