# MEMORANDUM

TO: Water Right File 85-15795

FROM: Daniel Nelson – Analyst 3

DATE: October 29, 2019

SUBJECT: Licensing Review of Water Right 85-15795

The field exam for this right was performed by Certified Field Examiner Necia Maiani of Welch/Cromer Engineers / Surveyors.

## History and Overlap:

This permit was originally filed to cover the diversion rate from an existing well that was originally authorized under water right license 85-7028. Water right 85-7028 was not claimed in the Snake River Basin Adjudication (SRBA), and decreed as disallowed as an unclaimed water right. Due to this oversight, the City of Culdesac (City) filed this permit. Water right 85-7028 was only for one well, but the application was amended to include both wells. Even though the application was amended to include both wells, the diversion rate requested in this permit was just the capacity of the Lower Well (Well #1) or 0.39 cfs.

The Upper Well (Well #2) was licensed under water right 85-7087 at a diversion rate of 0.27 cfs. On March 19, 2019 water right transfer number 82944 was approved to include both wells on water right 85-7087. With this permit and the existing water right 85-7087 the combined authorized diversion rate that can be approved is 0.66 cfs.

It should be noted that Ms. Maiani, found through SCADA records from the City that the two wells when diverted together produce a total of 0.71 cfs. The wells for this system should be controlled to ensure that the authorized diversion rate is not exceeded.

## Field Report Acceptability:

The field report submitted by Ms. Maiani appears to be very well done. The measurements provided from the owner's flow meters, which in the photos look to be properly installed and regularly calibrated. The system diagram and place of use maps also appear to be in order.

The field report states that the system was measured at a flow rate of 0.71 cfs. With this permit and the existing water right, this system is only authorized to divert 0.66 cfs. Ms. Maiani provided an analysis of the City's system and determined the City needed a Peak Hourly Demand (PHD) would require a rate of 0.69 cfs. I performed an analysis of the system using Ms. Maiani's information and found that the PHD for this system should be between 0.53 cfs and 1.07 cfs. Please see the attached worksheet for the information required. The process that Ms. Maiani used to attain the 0.69 cfs is deemed acceptable in the Department's Administrative Processing Memorandum #74 for RAFN water rights. Therefore, Ms. Maiani's recommendation of 0.69 cfs for the PHD is acceptable. This allows me to recommend the full amount requested in the permit of 0.39 cfs.

As stated earlier, both wells were measured at a combined diversion rate of 0.71 cfs. With the 0.27 cfs diversion rate from the existing right and the 0.39 cfs I can recommend for this permit, the total combined diversion rate is limited to 0.66 cfs. Therefore, the diversion rate will need to be controlled on one of the two wells to ensure that the 0.66 cfs diversion rate is not exceeded. From the photos supplied by Ms. Maiani, both wells have controlling works, so either well can be cut back to ensure the diversion rate is not exceed.

The place of use supplied in the field report didn't match the place of use that currently exists in the database. The place of use in the data base appears to be more accurate, and includes places of use that are not in the map provided by Ms. Maiani. Therefore, I am going to use the place of use in the database.

## **Conditions:**

Conditions 01M, 124, 180, F06, and 004 will be carried forward to licensing. All other conditions will be removed at licensing.





1		High					1.1.2			
	Low MDD	MDD			Low PHD	High PHD	Low 1	Low 2	High 1	High 2
MDD	Ratio	Ratio	Low ADD	High ADD	Ratio	Ratio	PHD	PHD	PHD	PHD
0.71	1.50	3.00	0.47	0.24	2.25	4.50	1.07	0.53	2.13	1.07

City of Culdesac Peak Demand Calculations for Permit 85-75795

Recommended Peak Hour Demand (PHD) = 0.69 cfs Reported Average Daily Demand (ADD) = 0.23 cfs

### Estimated PHD = 0.53 cfs TO 1.07 cfs

Determining the actual peak instantaneous diversion rate for municipal system is difficult at best. The certified water right examiner, Necia Maiani, recommended a diversion rate of 0.69 cfs based on the Peak Hourly Demand (PHD). Ms. Maiani calculated the PHD by multiplying the Average Daily Demand (ADD) of 0.23 cfs by a peaking factor of 3. Ms. Maiani provided documentation showing that ADD was calculated from records taken in their SCADA system from 2013 to 2018. This practice is discussed in the Reasonably Anticipated Needs Administrative Memorandum as a valid way of determining the PHD.

Ms. Maiani provided documentation in her field report for this permit that a maximum flow Rate for the two wells was measured at 0.71 cfs. The maximum flow rate measured was used in my calculations above for the Maximum Daily Demand (MDD). According to the general estimations of ratios between the MDD and the PHD found on page 13 of the Reasonably Anticipated Needs Administrative Memo, you can calculate the PHD from the MDD by using a set of ratios that convert the MDD to the ADD and then back to the PHD. The ADD actually measured by the SCADA system and supplied by Ms. Maiani was 0.23 cfs, which is actually lower than the estimated values estimated in the above calculations. Ms. Maiani recommended PHD of 0.69 cfs is within the estimated PHD above. I believe Ms. Maiani's recommended PHD is well within the standards set forth in he Reasonably Anticipated Needs Administrative Memorandum. The combined diversion rates of the existing right and the diversion rate authorized by this permit are below the PHD calculated by Ms. Maiani, so it does appear as though the full diversion rate of 0.39 cfs can be recommended for this permit.

	Water		
	Right		
Water	Diversion		
Right	Rate in cfs		
85-7087	0.27		
TOTAL	0.27		
85-15795	0.39		
TOTAL	0.66		

There is only one existing water right for the City of Culdesac, and it is limited to a diversion rate of 0.27 cfs from both wells. This permit was limited to a maximum diversion rate of 0.39 cfs, which is below the measured capacity of the two wells and the estimated PHD of the two wells. It should also be noted that there is an Snake River Basin Adjudication (SRBA) late claim (85-15794) that was filed for domestic use from the well in Section 13, but it hasn't been recommended at this time. This SRBA claim doesn't really match the domestic definition of Idaho Code §42-111, so I am not sure if this claim can or will be recommended. Regardless of any future recommendations for the SRBA claim, the SRBA Claim cannot be considered in these calculations until it has been decreed by the SRBA court.