Memorandum

To: Bill Tyner
From: Brenna Mefford and Erin Wilson
Date: 7/22/2019
Re: ArkDSS Task 2.5 - Errant Data Points Submittal

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Wilson Water Group (WWG) reviewed diversion records stored in HydroBase for the Arkansas basin as part of ArkDSS Task 2.5.

- Daily diversions and diversion coding records from 1950 to 2017 were visually reviewed. Errant data points and corrections were identified and documented.
- Reservoir storage data were reviewed during the Task 2.6 reservoir operations review. Errant and missing data points were identified and corrections recommended. Additional content data were collected from reservoir owners and formatted for inclusion in HydroBase.
- Kelley Thompson and Bill Tyner identified errant data points during his review of diversion records in the H-I Model area; these are also included in the spreadsheet.

WWG discussed the approach with Division 2 prior to developing the attached spreadsheet (ArkDSS_Task2.5_ErrantDiversionRecords.xlsx) to help facilitate the final review. The goal was for Division 2 to approve the process so they could have confidence in performing a "cursory review" only instead of re-investigating the over 4,000 individual errant records. In addition, WWG discussed the spreadsheet format and information required to easily update HydroBase with John Rodgers and Dick Stenzel at DWR.The spreadsheet includes a **ReadMe tab** describing the process and information stored in each of the four tabs.

WWG_ErrantPoints tab . Each errant data point identified for Task 2.5 includes the WDID, date, Diversion Code (DivClass), current value, suggested value, the value the day before and after, the typical maximum diversion record for the DivClass, a classification code, and comment field. The day before, day after and maximum diversion record are provided to help support the suggested new value. Errant data points were classified by the classification code as either "Typo" or "Carried". A "Typo" errant data point is a clearly erroneous diversion record that could be carried for multiple days or even through the growing season. The majority of "Typo" errant data points often have a misplaced decimal. A "Carried" data point is a reasonable diversion record that was incorrectly carried through the winter and into the next growing season. For errant data points that were carried over multiple days, the day before and day after the errant data began are included to justify the recommendation. The typical maximum diversion record is provided to help further justify the recommendation. The Comment field provides additional supporting information. All data in this tab are daily records in cfs.

DWR_ErrantPoints tab. This information is reformatted errant records identified by Kelley Thompson and Bill Tyner for diversions within the H-I Model area. Each errant data point identified includes the WDID, date, Diversion Code (DivClass), current value, suggested value,

and comment field. This tab does not include records before and after the errant data point; however the comment field provides information that supports the recommendation. All data in this tab are daily records in cfs.

Task2.6_ErrantPoints tab. Errant reservoir data were also identified during Task 2.6 Reservoir task. Each errant reservoir data point identified includes the WDID, date, Reservoir Code, current value, suggested value, units, and comment field. Units are required for each data point, as errant storage values, storage levels, and diversions to storage have all been identified. Most of the issues identified are similar to diversion records, where typos occurred as the data were entered and field books were used as the basis for the change. Data were identified from field books that have not previously been included in HydroBase. Unlike the effort for errant diversion records, some of the data issues are based on the reservoir inflow-outflow "mass balance". The Comment field provides additional supporting information.

Task2.6_BatchPoints tab. Additional reservoir data were collected from reservoir owners and operators during the Task 2.5 Reservoir task. In addition, periods of data from the DWR Field Books were missing from HydroBase. This tab contains external data file names containing groups of missing or errant data points for inclusion in HydroBase. Each group of errant data points includes the WDID, data type, period start, period end, current value issue, external data source, external source file name, and comment. The data were either received from another entity (e.g., Reclamation) or was digitized from Water Commissioner Field Notebooks. The data were saved in data value files (.dv) , compiled into a zip folder (Task2.5_DV_Files.zip) and submitted with this memo. The files only include the data needed to be entered into or replaced in HydroBase.

The following table summarizes the suggested corrections to data points by Water District. As shown, there are 4,065 diversion records that are identified as "errant" or coded incorrectly. In addition, there are 12 files containing groups of data points that missing in HydroBase.

Water District	Number of Diversion Records
10	64
11	853
12	834
13	188
14	485
15	25
16	239
17	1146
18	2
19	105
67	98
68	0
79	26
Total	**4065**