**Republican River Compact Accounting (RRCA): 2015 Non-Federal Reservoir (NFR) Evaporation Procedures**

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**2015 Procedures Overview**

In late 2012, NDNR’s Dam Safety Division invested significant resources in updating the dams database within the Republican River Basin using the best readily available data, including aerial imagery, Light Detection and Ranging (LiDAR) data, and more than 50 field surveys of reservoirs.

Each year and on a rotating basis (by Basin) the NDNR Dam Safety Division utilizes aerial imagery and field investigations to update their database. Updates may include additions or removals to the database as the result of new or removed dams, dam breaches, etc.

Since the 2013 NFR evaluation, the NDNR has been able to estimate evaporation using the presumptive average annual surface area described in Appendix C of the RRCA accounting procedures and reporting requirements. As such, this is the method that NDNR implements for reservoirs with a storage capacity of less than 200 AF. For reservoirs with a storage capacity of 200 AF or greater, NDNR uses field observations to estimate the average annual surface area. The results of field observations and area representations that were used for NFR calculations in 2015 are listed in Table 1.

**2015 Data Package Description**

The data package for the 2015 RRCA NFR evaporation assessment includes the following files:

1. **NFR2015.gdb\NFR2015** -a GIS layer containing dam points for 2015 non-federal reservoirs 15 AF or greater (407 features).

2. **2015NFR\_EvapBySubbasin**-A table summarizing total evaporation by Republican subbasin.

3. **USBRData2015 (folder)-**contains Excel spreadsheets of federal reservoir pan evaporation and precipitation measurements obtained by the Bureau of Reclamation.

3. **2015FederalReservoirEvapCalcs.xlsx**-A table showing precipitation and pan evaporation measurements for Federal Reservoirs used in NFR analysis, and calculated evaporation.

4**. 2015NRFprocedures.docx**-this document, which outlines procedures and summarizes field observations.

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| **Dam ID** | **Dam Name** | **Right ID** | **Field investigation results** | **Area representation used for NFR analysis** |
| 270 | Ohmstede Dam | 1784 | Dry | Reservoir is dry |
| 322 | Wellfleet Dam | 1209 | Full | Reservoir is full and has been getting water from the N-CORPE augmentation project, augmentation flow was shut stopped the week of the compliance visit |
| 611 | Rock Creek Dam | 955 | Full | Reservoir has been receiving water from the Rock Creek augmentation project, augmentation was stopped earlier in 2015. Drawdown is closed and water flowing in drop inlet |
| 709 | Imperial Dam | 1036 | Dry | Original outlet works have significant erosion issues on the left side lowering storage capacity |
| 1328 | Ziebell Dam | 12489 | Partially Full | Considered to be 18% full based on digitization of imagery |
| 1355 | Whaley Reynolds Dam # 1 | 12528 | Dry | Reservoir is dry |
| 1467 | Hayes Center Special Use Dam | 1132 | Full | Water is barely flowing over the auxiliary spillway and is flowing through the drop inlet |
| 3699 | Dam #676 | 12322 | Full | Water is flowing through drop inlet at right end of dam and flowing over auxiliary spillway on left end of dam |

Table 1: Summary of field investigation results for reservoirs 200 AF or greater, and area reservoir representations used in the 2015 NFR analysis.