**Republican River Compact Accounting (RRCA): 2014 Non-Federal Reservoir (NFR) Evaporation Procedures**

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**2014 Procedures Overview**

In late 2012, NDNR’s dam safety section 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.

As a result of the 2012 effort, information pertinent to the NFR evaporation assessment, such as normal surface area, normal storage, and whether a dam had been removed or had breached became readily available for all reservoirs with a capacity of 15 AF or greater. In addition, dam purpose was queried to remove livestock waste ponds. This greatly improved dataset resulted in a 2014 list of 442 dams that were used in the 2014 NFR evaporation assessment for RRCA accounting.

With this newly available data, it became possible 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 was the method that NDNR implemented for reservoirs with a storage capacity of less than 200 AF. For reservoirs with a storage capacity of 200 AF or greater, NDNR used field observations to estimate the average annual surface area. The results of field observations and area representations that were used for NFR calculations are listed in table 1.

**2013 Data Package Description**

The data package for the 2013 RRCA NFR evaporation assessment includes the following files:

1. **NFR2014.gdb\NFR2014**-a GIS layer containing dam points for 2013 non-federal reservoirs 15 AF or greater (442 features).

2. **2014NFR\_EvapBySubbasin**-A table summarizing total evaporation by Republican subbasin.

3. **BureauData2014 (folder)-**contains Excel spreadsheets of federal reservoir pan evaporation and precipitation measurements obtained by the Bureau of Reclamation.

3. **2014FederalReservoirEvapCalcs.xlsx**-A table showing precipitation and pan evaporation measurements for Federal Reservoirs used in NFR analysis, and calculated evaporation.

4. **2014nfrProcedures.docx**-this procedures document.

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| **DamID** | **Dam Name** | **Right ID** | **Field investigation results** | **Area representation used for NFR analysis** |
| 270 | Ohmstede Dam | 1784 | Fluctuated between partially full and dry | Considered to be 17% full based digitization of 2014 imagery |
| 322 | Wellfleet Dam | 1209 | Full both in Spring and Fall | Full at principle spillway |
| 611 | Rock Creek Dam | 955 | Full both in Spring and Fall | Full at principle spillway |
| 709 | Imperial Dam | 1036 | Dry both in Spring and Fall | No water |
| 1328 | Ziebell Dam | 12489 | Fluctuated between partially full and dry | Considered to be 24% full based on digitization of 2014 imagery |
| 1355 | Whaley Reynolds Dam # 1 | 12528 | Dry both in Spring and Fall | No water |
| 1467 | Hayes Center Special Use Dam | 1132 | Full both in Spring and Fall | Full at principle spillway |
| 3699 | Dam #676 | 12322 | Full both in Spring and Fall | Full at principle spillway |

Table 1: Summary of field investigation results for reservoirs 200 AF or greater, and area reservoir representations used in the 2014 NFR analysis.