



USGS STAGE DATA IN THE REFUGE USED IN SETTLEMENT AGREEMENT REPORTING

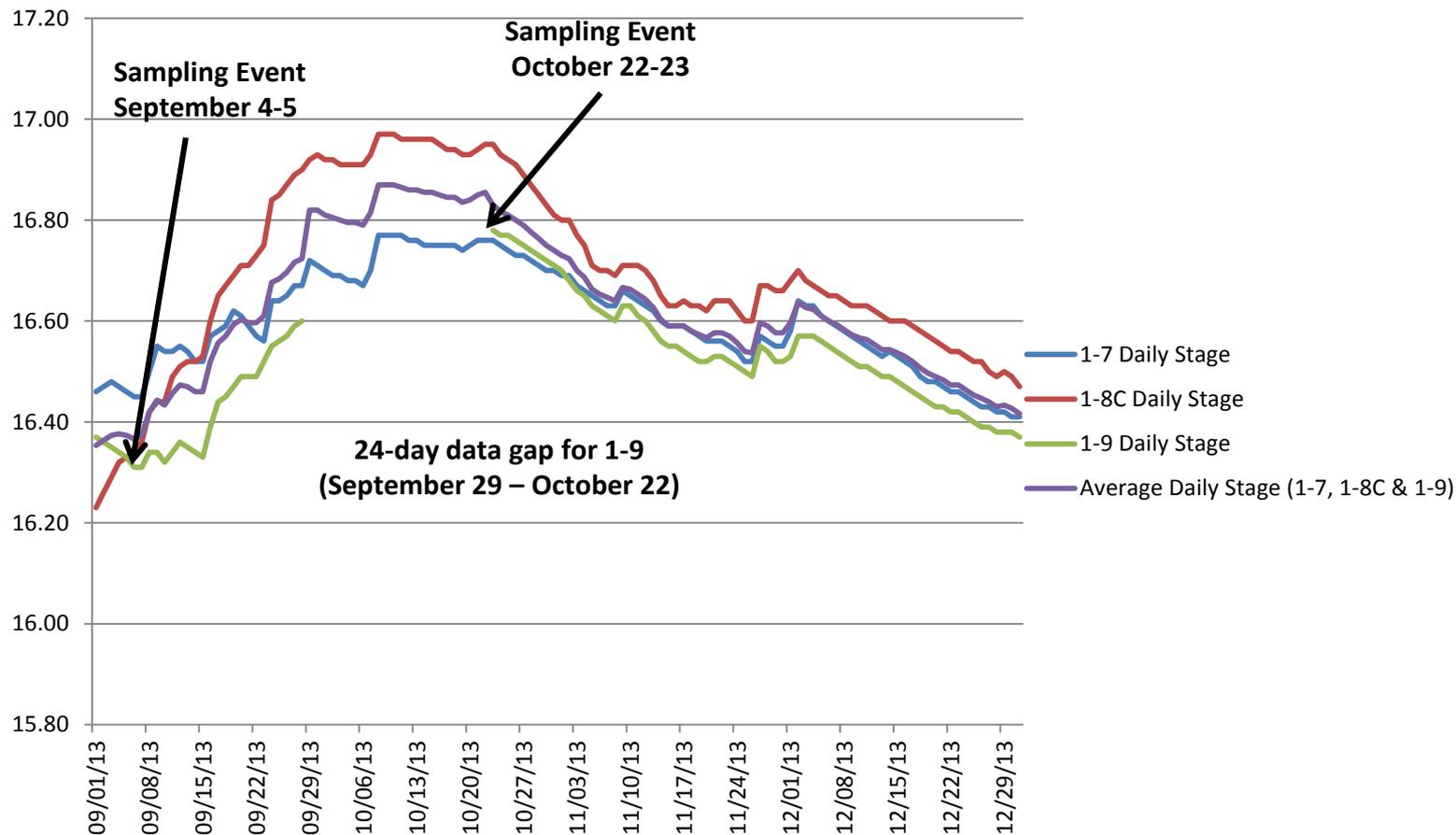
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Missing Stage Data at WCA-1 Station 1-9



1-9 stage on October 23, 2013 was used to calculate mean stage for 2-day sampling event

Estimation of WCA-1 Average Daily Stage for October 2013 Sampling Event

Station	Day 1 (10/22/2013)	Day 2 (10/23/2013)	Average Daily Stage (ft NGVD 29)
1-7	16.76	16.76	16.76
1-8C	16.95	16.95	16.95
1-9	16.78*	16.78	16.78*
Average	16.83*	16.83	16.83*

**Missing 1-9 stage on Day 1 (October 22, 2014) was estimated to be the same as Day 2 (October 23, 2014) for average 2-day sampling event stage of 16.83 ft NGVD 29.*

District SOP 201 – QA/QC of Stage Data

If stage data are missing, attempt to fill data gaps by one of the following methods:

1. Estimate from an alternate measurement (DBKey) at same site provided a relationship exists between the primary and alternate
2. Perform linear interpolation if ≤ 7 day gap and no rainfall
3. *Treat as missing data if >7 days and no nearby station*
4. Estimate by linear regression with nearby stations (EDEN sites?) if relationship exists

Missing Stage Data at WCA-1

- WCA-1 compliance is based on average stage for 1-7, 1-8C and 1-9 for 2-day sampling event
 - Evaluate missing data per District SOP 201
 - Data gap >7 days
 - No alternate site available
 - No relationship with nearby stations
- ***Discussion: When District SOP prevents estimation of missing data, USGS and USACE support is needed. Otherwise, monthly Refuge (WCA-1) limit can not be determined.***

Thank You

