

WRID, Lyon County and Bowman Protestants

EXHIBIT

198

Report of Marc Van Camp entitled “Rebuttal Report to Exhibits Describing a Draft Accounting Protocol to Ensure Delivery of Water to Walker Lake”
dated June 7, 2013

Rebuttal Report to Exhibits Describing a Draft Accounting Protocol to Ensure Delivery of Water to Walker Lake



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I. EXECUTIVE SUMMARY

The National Fish and Wildlife Foundation (NFWF) and the Walker River Paiute Tribe (WRPT) have entered into a Memorandum of Understanding (MOU) and submitted the following set of identical Exhibits which describe a draft Program Water Conveyance Accounting Protocol (draft Protocol):

- NFWF Exhibit 111 and its associated Exhibit 1
- WRPT Exhibit 354 and its associated Exhibit 1

In addition to the above, the Bureau of Indian Affairs (BIA) has submitted BIA Exhibits 251 through 256. These are a series of Microsoft Excel spreadsheets developed to implement the draft Protocol (Exhibit 1 to both NFWF Exhibit 111 and WRPT Exhibit 354).

Pursuant to the Walker River Decree and the 1953 Rules and Regulations, the Federal Watermaster has the duty to properly apportion and distribute the waters of the Walker River. Any accounting protocol for water rights recognized by the Walker River Decree, including water rights changed as allowed by the Decree, must be an extension of and consistent with this duty.

In my opinion, an accounting protocol should allow for a changed water right to meet its new purpose of use at its new place of use without conflicting with existing water rights, including those of the WRPT. NFWF and WRPT have provided an example draft Protocol as to how to address transit losses and gains which pursuant to the MOU (NFWF Exhibit 111 and WRPT Exhibit 354) is intended to and requires further and continued effort, in collaboration with the Federal Watermaster, to meet their goals. The MOU properly identifies the need for the draft Protocol to account for water approved for change under NFWF Application 80700 (Program Water) from Yerington Weir to Walker Lake.

It is my opinion the draft Protocol does not support protection of the Program Water by the Watermaster and does not protect existing and recognized water rights for the following reasons:

1. The Program Water may take excessive or inappropriate losses under this draft Protocol. Losses are excessive or inappropriate because:
 - a. Program Water is first used to make up any shortages occurring to the 1859 water right at Wabuska held by the United States for the benefit of the WRPT.
 - b. The daily difference between flows at two gages is not a good estimate of transit (transportation) losses.

- c. Program Water takes evaporative losses while in and passing through Weber Reservoir.
2. There is no separate accounting for different categories of water rights downstream of Wabuska. Although the importance and need to differentiate between Nevada Department of Wildlife's (NDOW) Certificate 10860 and Program Water is not clear, the draft Protocol needs to be able to account for that right and future recognized rights, if any.

The remainder of this report provides additional detail and support for these opinions. It also describes features that should be present in an appropriate accounting protocol.

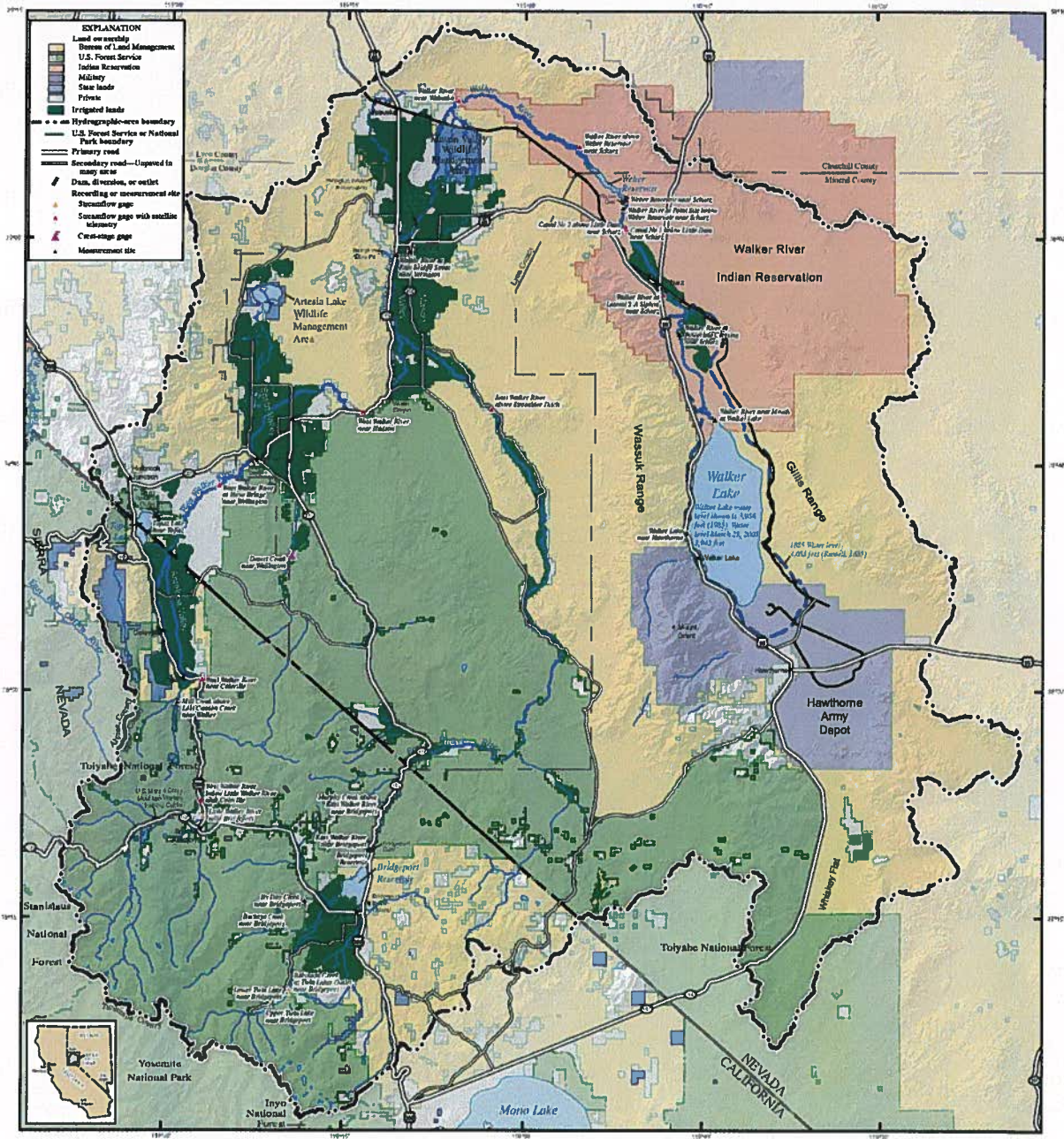
II. FEATURES OF THE WALKER RIVER BETWEEN YERINGTON WEIR AND WALKER LAKE

This report focuses on the lower portion of the Walker Basin, downstream of the Yerington Weir to Walker Lake (see Figure 1).

The Yerington Weir is located in the Walker River in the Mason Valley, approximately 2.5 miles downstream from where Highway 95 crosses the Walker River. The Yerington Weir facilitates the diversions into the West Hyland Ditch and other ditches. Return flows from lands irrigated from the West Hyland Ditch may enter the Walker River via the Wabuska Drain upstream of the Wabuska gage. Downstream of the Yerington Weir and approximately 2,000 feet upstream of the Wabuska gage is the point of diversion for a 1916 priority water right held by John David Stanley and Marylyse Reed Stanley.

Downstream from the Wabuska gage the Walker River travels through a portion of the Walker River Indian Reservation to Weber Reservoir. Willows grow along this section as the river meanders through grass-covered meadows. Beaver dams back up flows effecting losses and travel times. Losses in this river reach are high mostly due to evapotranspiration from riparian vegetation (Lopes and Allander, 2009a). The average irrigation season losses are about 19% pursuant to WRPT Exhibit 355.

Pursuant to Walker River Irrigation District (WRID) Exhibit 181, Weber Reservoir was practically completed in 1935, with an original storage capacity of 13,000 acre-feet. It is primarily used for storing water for irrigation on Walker River Indian Reservation. Depending on storage, the reservoir has a surface area of up to 945 acres (bathymetry as used in BIA Exhibit 251) with high evaporative losses estimated at 5 feet per year in WRPT Exhibit 355 and 4.2 feet per year (Lopes and Allander, 2009a).



Base from U.S. Geological Survey digital data 1:100,000 1979-1985.
 Universal Transverse Mercator projection, Zone 11
 Shaded Relief Base from National Elevation Database.
 Sun illumination from northwest at 45 degree above horizon



Landownership base from Bureau of Land Management, 1998 for Nevada and the California Spatial Information Library, 1990 for California. Walker River Indian Reservation from U.S. Geological Survey 1986. Hawthorne Army Depot from U.S. Army Corp of Engineers 2002. Irrigated lands from GAP Analysis 1969-1977 and California Department of Water Resources, 2001. Russek, I.C., 1985. Geologic history of Lake Lahontan—A Cretaceous Lake in northwestern Nevada. U.S. Geological Survey Monograph 11, 208 p.

SELECTED FEATURES OF THE WALKER RIVER BASIN, CALIFORNIA AND NEVADA
 2003

Figure 1. Map Showing Selected Features of the Walker River Basin (Source: USGS Website)

Downstream of Weber Reservoir and just upstream of Little Dam, irrigation water under the United States 1859 priority water right for the benefit of the WRPT is diverted at Canal No. 1 and Canal No. 2. Since data on releases from Weber Reservoir were not available, losses in this section of the river were not estimated separately in WRPT Exhibit 355. However, WRPT Exhibit 355 estimates the average total loss between Wabuska and Little Dam at 30.7%.

Most of the WRPT irrigated fields are adjacent to the Walker River downstream of Little Dam. This section of the river also supports groves of cottonwood and significant riparian vegetation (Lopes and Allander, 2009b).

III. LOWER WALKER RIVER SURFACE WATER RIGHTS

Water rights within the Walker River Basin, and the authority for governing their control and use, were described in WRID Exhibit 196.

1. Decreed Natural Flow Rights

Currently, the only decreed natural flow water right below the Wabuska gage is held by the United States for the benefit of the WRPT, and has the earliest priority (most senior) right of 1859 for 26.25 cubic feet per second (cfs) for use on 2,100 acres (WRPT's 1859 water right). The irrigation season for this water right is 180 days within the period March 1 to October 31. The decreed diversion rate is 1.25 cfs per 100 acres. Pursuant to the 1953 Rules and Regulations (WRID Exhibit 156) the flow available for this right is currently measured and monitored at the United States Geological Survey (USGS) Walker River gage near Wabuska (No. 10301500).

NFWF Application 80700, the subject of this hearing, requests to change the place and manner of use for a portion of decreed natural flow rights. NFWF Application 80700 requests changes to allow water originally authorized for irrigation of lands from the West Hyland Ditch to flow in the Walker River from the existing point of diversion, the Yerington Weir, for wildlife purposes with the primary purpose of restoring and maintaining Walker Lake.

2. Certificated Surface Water Rights

The State of Nevada, Department of Wildlife (previously Department of Fish and Game) holds Certificate 10860 with a priority of September 17, 1970 for 795.2 cfs, not to exceed 575,870 acre-feet per year. The place of use of this right is described as "Walker Lake downstream from Schurz, Nevada, where the water is used to help maintain the lake at a stable level to support public use for recreation and improve water quality and quantity to sustain and help prevent loss of the fishery in Walker Lake."

3. Claimed Surface Water Rights

In litigation pending in the United States District Court for the District of Nevada, the United States and the WRPT seek recognition of a right to store water in Weber Reservoir for use on lands of the Walker River Indian Reservation, and of a Federal reserved water right to use water on lands added to the Reservation in 1936. The claim for the storage right also seeks to include the right for evaporation and seepage. These claimed rights are alleged to be in addition to the 26.25 cfs water right awarded to the United States for the benefit of the WRPT by the Walker River Decree with a priority of 1859. See WRID Exhibits 181 and 182.

The United States is also seeking recognition of a number of other claims to Federally Reserved Water from the Walker River or its tributaries. Some of these claims are from the upper Walker River Basin, some from the lower basin, and some are from perennial streams around Walker Lake.

IV. DRAFT PROTOCOL

1. Description

NFWF and the WRPT have entered into a MOU to create a Water Conveyance Accounting Framework. As of the initial evidentiary exchange, they had not reached agreement on this framework.

NFWF Exhibit 111 and WRPT Exhibit 354 are the MOU and its contained Exhibit 1, a draft Protocol. This draft Protocol is a proposal for accounting for Program Water (such as that considered under NFWF Application 80700) from Yerington Weir to below Little Dam. This draft Protocol is based on proportionate sharing of gains and losses. Protocols based on incremental sharing will have different gains and losses for Program Water. There is mention that adjustments would be needed to reflect points of non-diversion upstream of Yerington Weir, but no equations for these gains or losses are provided. If additional changes to water rights acquired by NFWF upstream of the Yerington Weir are approved, this draft Protocol would need to be revised to account for losses to Yerington Weir.

The draft Protocol estimates Walker River gains and losses daily between Yerington Weir, Miller Lane gage, Wabuska gage, Cow Camp gage, Weber Reservoir, and Little Dam. These gains and/or losses are highly variable due to both measurement uncertainty and travel time for flow of water between gages. The draft Protocol includes alternative equations depending on what gaged data is available. Required gages for the draft Protocol include:

- USGS 10301120 Walker Rv at Miller Lane nr Yerington (may be substituted for a future Yerington Weir gage)
- USGS 10301500 Walker Rv nr Wabuska
- USGS 10301600 Walker Rv abv Weber Res nr Schurz (referred to as Cow Camp)
- USGS 10301700 Weber Reservoir nr Schurz (elevation and storage)
- USGS 10301755 Canal No 1 blw Little Dam nr Schurz
- USGS 10301742 Canal No 2 abv Little Dam nr Schurz
- USGS 10301745 Walker Rv abv Little Dam nr Schurz

Possible future gages discussed in the draft Protocol include:

- Walker Rv at Yerington Weir
- Wabuska Drain – this drain has occasionally been measured by USGS field measurements. Data is available on the USGS website as gage #10301495.
- Perk/Joggles Slough – this drain has occasionally been measured by USGS field measurements. Data is available on the USGS website as gage #10301290.
- Below Weber Reservoir – Reservoir outflow has occasionally been measured by USGS field measurements. Data is available on the USGS website as gage #10301720.

BIA Exhibits 251 through 256 provide a Microsoft Excel spreadsheet accounting system that implements this draft Protocol. This system requires daily manual entry of gaged data, river priorities, Program Water at Yerington Weir, and Weber Reservoir operations in order to calculate the previous day's accounting.

The draft Protocol proposes to calculate the difference between gaged flows each day and estimate flow at non-gaged locations. This draft Protocol refers to the difference between gaged flows in the river as “transit gains or losses.” The draft Protocol estimates flow at non-gaged locations by multiplying this “gain or loss” rate per mile times the distance between the non-gaged location and the closest gage.

2. Opinions

Opinion 1: Program Water would take excessive or inappropriate losses

I have provided three reasons why the draft Protocol may cause Program Water to take excessive or inappropriate losses:

- A. The draft Protocol uses Program Water to make up for in-exact river operations. Historically, the Walker River flow at Wabuska gage is occasionally less than 26.25 cfs even when the Watermaster has declared priority greater than 1859. Or conversely, the flow at the Wabuska gage is at times greater than 26.25 cfs even though the river is not in full priority. The draft Protocol requires that the WRPT 26.25 cfs right be met at Wabuska before any water is accounted to Program Water. This would cause Program Water to be charged for “underages” at Wabuska. These occurrences will not be a result of NFWF Application 80700 and therefore, it is not reasonable to account for flow in this manner.
- B. The daily difference between flow at two gages is not a good estimate of transportation losses, due to gage inaccuracies, travel time, and different physical channel conditions at various flows.

Gage Inaccuracies

There is always some inaccuracy associated with recorded flows at a gage. The USGS rates the accuracy of streamflow records as Excellent, Good, Fair, or Poor. In an Excellent record, 95% of the daily discharges are within 5% of the true value. For a Good record, 95% of the daily discharges are within 10% of the true value. For a Fair gage, 95% of the daily discharges are within 15% of the true value. And a Poor gage has accuracy less than Fair (Berris, 2012).

Travel Time

Peak flows occur later in time as water flows downstream. This lag is commonly referred to as “travel time” and varies depending on the steepness and the flow in the river. Figure 2 compares Walker River flows from October 24, 2010 through November 7, 2010. In this example, the travel time between the Miller Lane gage and the Wabuska gage 10.2 miles downstream is approximately 12 hours. The travel time between the Wabuska gage and the Cow Camp gage 13.5 miles downstream is approximately 18 hours. As identified in the draft Protocol, this travel time has not been incorporated but should be considered.

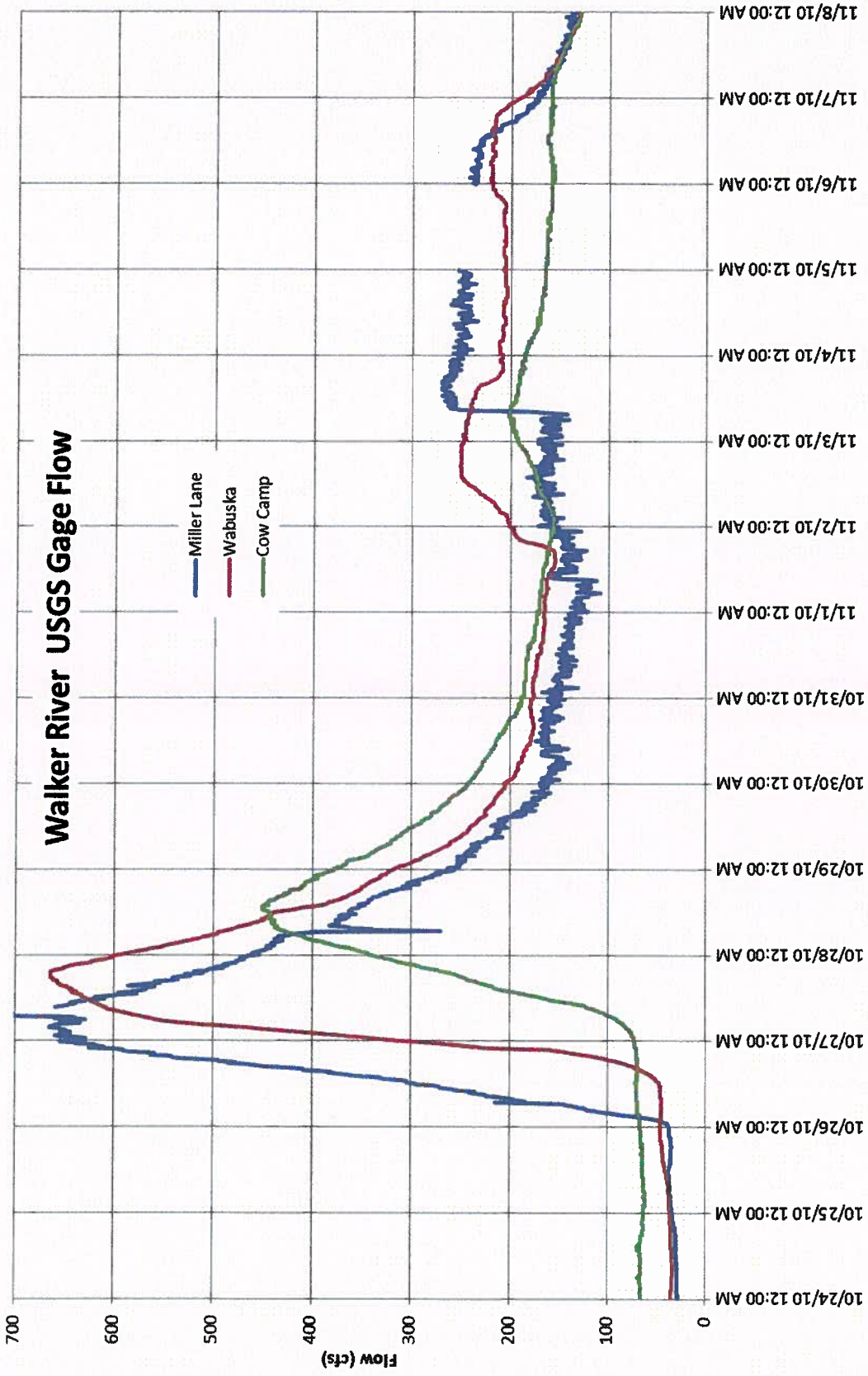


Figure 2. Travel Time on the Lower Walker River

Example of draft Protocol for 2011 and 2012

Figure 3 shows percent difference (consistent with the draft Protocol) in USGS measured flow between the Miller Lane and the Wabuska gage, and between Wabuska gage and Cow Camp for March through October of 2011. In June 2011, river flows were high and the flows at Wabuska were less than the flows at Miller Lane (possibly due to the river being over its banks or not all flow being recorded by the gages). Under the draft Protocol this would cause large losses (approximately 30%) to accrue to Program Water. During times of high flows, losses to Program Water should be minimal and not as high as calculated by the draft Protocol for June 2011. Later in the summer from late July through October, Wabuska flows were higher than flows at Miller Lane (possibly due in part to overbank waters returning to the river). This would result in the draft Protocol adding to or increasing the Program Water. The use of transit gains to account or adjust for gage inaccuracies, travel time, and previous losses is one approach. However, the idea that Program Water can increase as it moves downstream is counterintuitive because Program Water is not causing an increase in river accretions by its presence in the river.

Table 1 below provides an example of how the draft Protocol, consistent with BIA Exhibit 251, would calculate losses to Program Water on June 26, 2011 when all water rights covered under NFWF Application 80700 were in priority. For the purpose of this example, I have assumed the Program Water at Yerington Weir to be 3.99 cfs (51.5 % X 7.745 cfs).

	USGS Daily Flow (cfs)	Equation	Calculated Program Water (cfs)
Yerington Weir			3.99
Miller Lane Gage	2230		
Wabuska Gage	1670	2, 5(a), and 6(a)	2.82
Cow Camp Gage	1280		
Weber Inflow		9	2.1
Percent Loss in Program Water			47%

Table 1. June 26, 2011 Example per Draft Protocol

Figure 4 shows the percent difference (consistent with the draft Protocol) in USGS measured flow between the Miller Lane and the Wabuska gage, and between the Wabuska gage and the Cow Camp gage for March through October of 2012. In May 2012, flows were much lower than in 2011, but there was enough natural flow to serve all of the rights under NFWF Application 80700. In May 2012, flow at the Wabuska

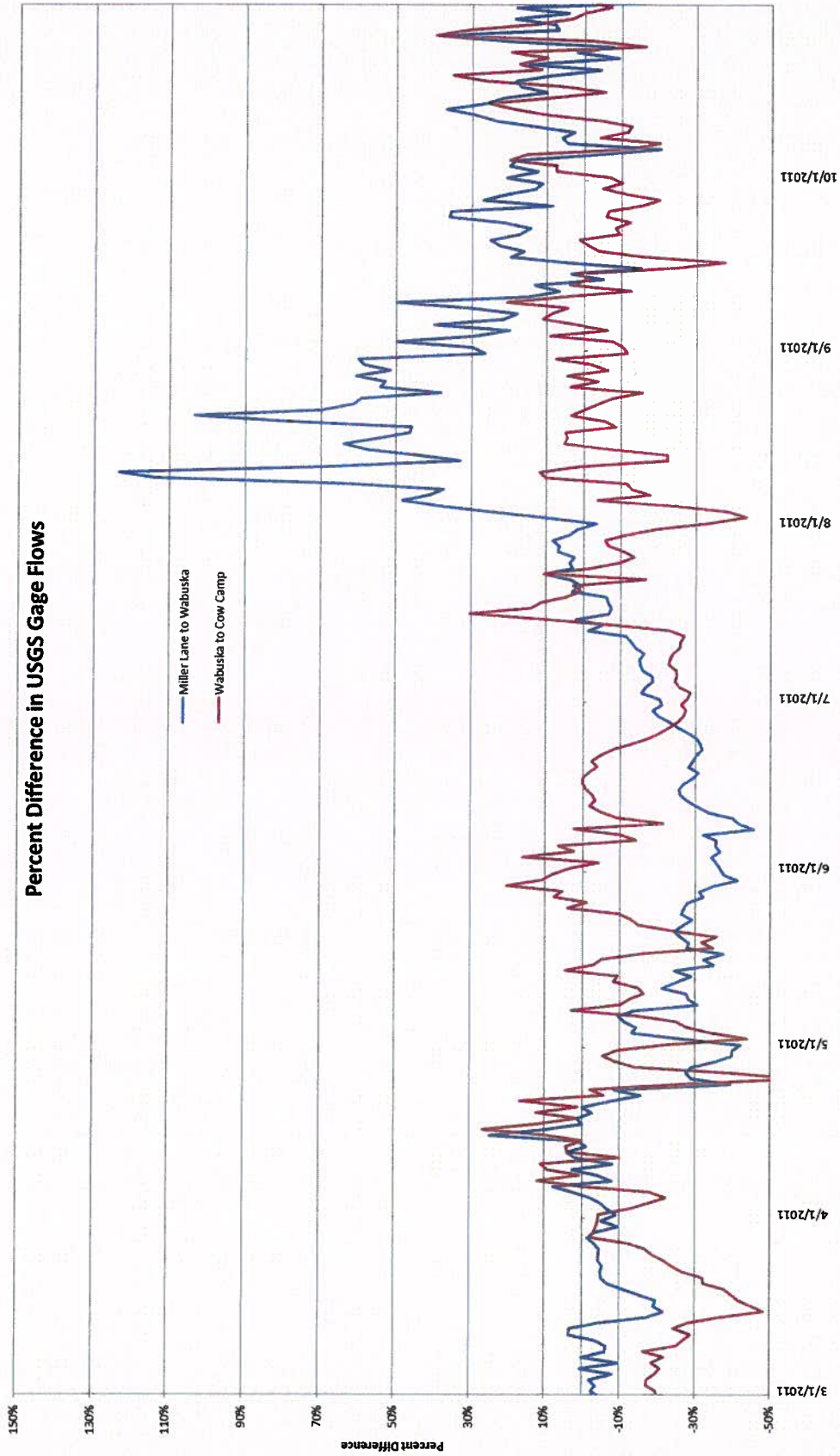


Figure 3. Percent Difference in USGS Gage Flows - 2011

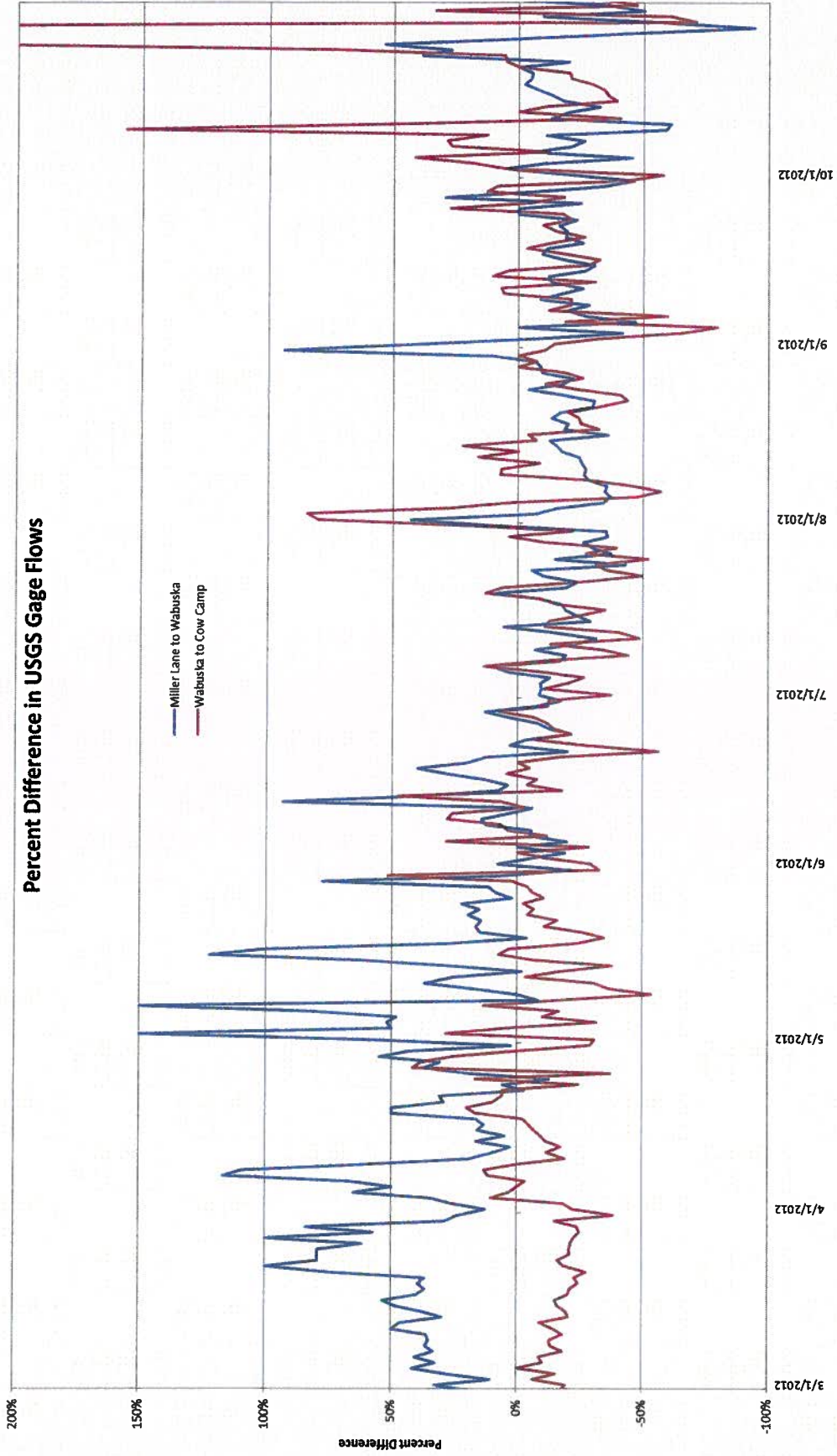


Figure 4. Percent Difference in USGS Gage Flows - 2012

gage was often larger than flow at the Miller Lane gage. Later in the season, the flow at Wabuska is lower than the flow at Miller Lane.

Table 2 is an example of how the draft Protocol, consistent with BIA Exhibit 251, would calculate Program Water for May 20, 2012. For purpose of this example I have assumed the Program Water at Yerington Weir to be 3.99 cfs (51.5% X 7.745 cfs). The USGS flow at Miller Lane was 54 cfs, the flow at Wabuska was 62 cfs. Since flow at Wabuska was higher than at Miller Lane, the draft Protocol would assign a 5% loss between Yerington and Wabuska. The river was losing water from Wabuska to Cow Camp. The draft Protocol would apply this loss rate to the entire reach from Wabuska to the inflow to Weber Reservoir leaving 2.7 cfs of Program Water flowing into Weber. In this example, Program Water would take a 32% loss from Yerington Weir to Weber Reservoir.

	USGS Daily Flow (cfs)	Equation	Calculated Program Water (cfs)
Yerington Weir			3.99
Miller Lane Gage	54		
Wabuska Gage	62	2, 5(b), and 6(b)	3.79
Cow Camp Gage	46		
Weber Inflow		9	2.7
Percent Loss in Program Water			32%

Table 2. May 20, 2012 Example per Draft Protocol

Based on this review of 2011 and 2012, two years with very different hydrology, different types of problems with the draft Protocol are shown. In a wet year like 2011, the draft Protocol would cause large losses to Program Water when flows at the Miller Lane gage are significantly greater than at the Wabuska gage. In a dry year like 2012, the draft Protocol would cause large swings in the amount of Program Water because of highly variable percent difference in gage flows. The draft Protocol explains the highly variable difference in gaged flows as bank storage. But this dry year variability is not all due to bank storage, it is also likely due to travel time and gage inaccuracy. In either case, the draft Protocol is not accurately calculating transit losses.

- C. Given the present uncertainty relative to the existence of a water right to store water in Weber Reservoir, the scope of that right and its priority, the appropriate loss to Program Water through Weber Reservoir is unclear. The draft Protocol causes Program Water in Weber Reservoir to take evaporative losses in proportion to the total storage in Weber Reservoir. Absent the reservoir, Program Water would flow directly through this reach and not be charged these evaporative losses. Currently there is no

recognized water right for Weber Reservoir, so Program Water should not be charged evaporation. Or, if a water right for Weber Reservoir is approved, evaporation and seepage may be allocated under this new water right (WRID Exhibit 181).

Opinion 2: There is no separate accounting of other uses of water

The draft Protocol contains two accounts, one for Program Water (water from NFWF transfers) and one for Non-Program Water which includes water to all other water rights. The draft Protocol does not have separate accounts for the WRPT 1859 water right or the NDOW Certificate 10860. This does not allow for accounting to ensure that NDOW water is delivered to Walker Lake. Separate accounting will be more important once there is a determination relative to the United States and the WRPT's claimed surface water rights identified above. This increased level of importance is due to the priority dates of the claims possibly being junior to Program Water but perhaps senior to the NDOW Certificate 10860.

V. FEATURES OF AN APPROPRIATE PROTOCOL

The MOU recognizes there is a need to "continue to negotiate, in collaboration with the Federal Watermaster, USGS, BIA and other relevant persons and entities, regarding potential alternative accounting frameworks to attempt to reach a Program Water conveyance framework that meets the shared purposes and goals of the Parties as described in this MOU." It is my understanding it is the responsibility of the Court and Watermaster to identify the administration necessary to ensure the apportionment and distribution of the waters of the Walker River in accordance with the Decree as modified by approved changes to water rights. The following are suggestions for an accounting framework which may assist in meeting that responsibility.

1. Administered by Watermaster throughout its new place of use

The Walker River Decree describes the Watermaster "who shall be charged with the duty of apportioning and distributing the waters of the Walker River, its forks and tributaries in the State of Nevada and in the State of California, including water for storage and stored water, in accordance with the provisions of this decree." Also, through the 1953 Rules and Regulations the Court recognizes the authority for the distribution of the waters of the Walker River system. Pertinent to this report, Division No. 1 is defined as "That area on the Main Walker River consisting of the Schurz Indian Reservation, and extending from Walker Lake to the Weber Dam." Because of this authority, it is appropriate the changes approved pursuant to NFWF Application 80700 continue to be administered by the Watermaster along with administration of all existing and recognized water rights, and water rights which may be recognized in the future.

2. Separate accounting of each category of water rights

With the approval of the change of the consumptive use portion of NFWF Application 80700 water rights, there will be three recognized categories of Walker River surface water rights which must be accounted for downstream of the Wabuska gage. These are the 1859 WRPT water right for irrigation, the NFWF Application 80700 water rights for instream flow to Walker Lake, and NDOW's Certificate 10860 for use at Walker Lake. The claims for additional water rights will likely be decided in the future and may or may not result in additional water rights. Any accounting protocol will need to enforce the terms of each water right separately and ensure the appropriate water is available at the pertinent place of use. The level or need to account separately for the different categories of water rights downstream of Wabuska may depend on the final outcome relative to these claims.

3. There should be equitable distribution of transportation losses

A different methodology as compared to daily difference between flow at two gages should be considered to account for transportation losses. Longer evaluation periods give more accurate estimates such as the estimates in WRPT Exhibit 355. Estimates based on a longer period could then be applied daily to the Program Water. For example, the analysis in WRPT Exhibit 355 could be expanded to develop a table for Wabuska to Little Dam losses for each month of the irrigation season and based on percent exceedence of natural flow for a year. For instance, July of a dry year (70% exceedence) will have a different percent loss than July of a wet year (30% exceedence). This percent loss could then be applied to Program Water determined to be at the Wabuska gage on a daily basis. A separate study would be needed to estimate losses between each point of non-diversion and the Wabuska gage.

Another method for consideration would be to apply losses incrementally. Under this method a changed water right would only be charged losses caused by its additional flow.

4. Program Water should be distributed and treated by the Watermaster like all other water rights

Although the changes proposed pursuant to NFWF Application 80700, and likely similar future changes, are a change from the historical use, they should not change the goals and objectives for equitably distributing all available water for diversion from the Walker River. The changes pursuant to NFWF Application 80700 should not be responsible for system operations which they do not cause (such as "underages" at Wabuska gage) nor benefit from natural occurrences (such as accretions) that have and will continue to occur with or without the changes requested pursuant to NFWF Application 80700.

5. Ability to expand system for future water right changes, future recognized rights, and future improvement

NFWF Application 80700 is the first of a number of water right changes proposed by NFWF. The Walker Basin Restoration Program Progress Report for 2010 – 2011 lists 31.072 cfs of Natural Flow Decree water rights that were purchased from six different sellers during the Program's first two years (NFWF, 2012). The accounting protocol should be developed to allow for expansion to include:

- i. Additional decreed rights with their place of use transferred to Walker Lake
- ii. Resolution of "claimed rights" for Weber Reservoir, Added Lands, and other Federal Reserved Claims of the United States

Finally, there should be recognition that an accounting system will not be perfect or ideal upon initiation. Time, effort, and experience will be needed to test and improve upon the accounting system.

VII. REFERENCES

- Berris, Steve, 2012, Accuracy of U.S. Geological Survey Streamflow Data, accessed at http://www.nfwf.org/wb/walkerwatergroupdocs/presentation_accuracy_of_usgs_streamflow_data_april_19_2012.pdf
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