Minutes of NPBRT Meeting: 12-17-13

USFS Conf. Room (3-5 PM) 100 Main Street, Walden, CO

Members/Liaisons Present

*Mike Allnutt
Deb Alpe
Mike Alpe
*Jimmer Baller
Jason Brey
*Kent Crowder
*Blaine Evans
*Scott Fischer
*Tom Hackleman
*John Rich
*Barbara Vasquez
*Carl Trick II
*Rick Wyatt
*Ty Wattenberg

Members/Liaisons Absent

Paula Belcher
*James Carothers
Pete Conovitz
Debbi Heeney
*Mike Honholz
*Randy Miller
Ann Timberman
Hunter Townsend

Others Present

Greg Johnson (Wilson Water Group)
Philip Andersen
Dick Andersen
Erin Light
Matt Schuler
Jodi Bickel, Headwater Ventures

I. Agenda Review

The agenda was accepted as published.

II. Approval of Roundtable Minutes: Nov.12, 2013 Meeting

Two small corrections were offered for the minutes of the November 12 meeting. They were approved as amended. Final minutes were distributed electronically after the meeting.

III. North Platte Basin Implementation Plan- Work Session-Review of the North Platte Decision Support System and How It's Used to Calculate Crop Consumptive Use and Agricultural Shortages – Greg Johnson, Wilson Water Group

Greg reported that the new CWCB assignee to the NPBRT is now Craig Godbout. He could not attend today because of illness. So Greg passed out copies of the IBCC one-pager discussed in the IBCC update below along with the IBCC New Supply Work Plan.

Greg's presentation on the North Platte Decision Support System (NPDSS) and data derived from it will be included with these minutes. The NPDSS is a modeling tool. Greg gave an outline of his presentation which included:

-Tools and initial analysis
-Agricultural use affects on stream flow (Modeled)
-Graphs of the crop use and shortages by month for 8 sub-basins of the North Platte (Modeled)
-Irrigation shortage categories (Modeled)

<u>-Initial Modeled Storage Analysis</u>

Discussion of the Model: Most of the modeling presented was derived from the State Consumptive Use (CU) Model. Historic climate data was based on the Walden Climate Station

with corrections for elevation. None of the modeling inputs have been enhanced yet with the data coming from the new (last 3-4years) climate stations set up in North Park by Nolan Doesken's project. The irrigated acreage is based on data from the years 2001, 1987, 1976 and 1956 (more recent coverages were not available at the time of the report). The potential ET was calculated with the Blaney-Criddle Model. Blaine asked if the ET was different for the different grasses, which have changed substantially in the past 20 years in this basin. Greg said it was input as 'pasture grass' and wasn't sure about the assumption on the particular mixture of varieties. Jimmer asked if the crop coefficient was assumed to be 0.83. Greg didn't know but will find out and let us know. He commented that he's rather new to using the model, and that having Kara or Erin from Wilson Water Group come up to a future meeting would help answer many of our more detailed questions. Greg showed the season beginning/ending dates for determination of potential crop consumptive use by perennial crops is triggered when the average monthly temp reaches/drops below 42 degrees F. Kent asked if that temperature could be used to define the date at which one could put water to beneficial use for growing high mountain grass? Greg said the date at which the irrigation season begins for each year depends on decrees and was Erin Light's call. The model uses inputs for calculated efficiency of delivery of water to the field, crop consumptive use, and soil storage from a given diversion to a particular acreage. For flood irrigation, the maximum application efficiency for water use was set in the model at 60%, but the actual values used in the North Platte basin model range from 38% to 41%. The model uses a basin-wide soil reservoir of ~35k AF for the North Platte basin.

The heart of Greg's presentation was captured in the basin and sub-basin graphs of irrigation crop use of water from the diversion versus from the soil reservoir. For each of the eight sub-basins (Lower North Platte, North Platte Mainstem, Canadian, Michigan, Illinois, Grizzly, Little Grizzly and North Fork), four graphs were displayed. Three of the graphs for each sub-basin displayed the crop water requirement (dotted line) versus the water used for irrigation from diversions (solid dark green bar) and water used by the crops from the soil reservoir (stacked bar-light green) by month. The top left is the average modeled output 1975-2008. The bottom left represents a wet year (1995) and the bottom right represents a dry year (2002). The forth graph in the upper right displays two lines representing the wet versus dry year irrigation-limited crop use of water. Although the absolute values as well as the extent of the shortages differ by sub-basin, the message was consistent: the model shows that the crop need is greater than the water delivered by diversion and/or soil reservoir. Tom Hackleman asked what preset is used in the model for soil moisture (storage) at the start of the season? This must vary considerably from year to year. Greg said there's a 'switch' in the model for winter precipitation. It's turned off, with a preset at 50%. After the meeting, Greg provided a copy of the Oct. 2012 report published by CWCB entitled Historical Crop Consumptive Use Analysis-North Platte River Basin (attached with these minutes as NorthPlatteRiverCrop_CU_Oct2012.pdf). Answers to Tom's question are found in that report on page 10 and are reproduced below:

- Soil moisture consideration – The soil moisture switch was set to "1" indicating the analysis should include soil moisture accounting.
- Initial soil moisture information – The initial soil moisture was set to 50 percent of the capacity for each structure.
- Winter carry-over precipitation percent – The winter carry-over precipitation defines the amount of

non-irrigation season precipitation that is available for storage in the soil moisture reservoir. Winter carry-over precipitation was not used for this scenario; set to zero.

From the graphs Greg produced from the modeling output, one is left with the question: "What causes the shortages and what water is actually available in the sub-basins?". Carl commented that the irrigation practices in the Basin divert more water than the grass needs in the early season, so he didn't understand the 'shortages'. In explanation, Greg gave approximate values for the entire basin based on the model which set us up for the next discussion on water availability:

> ~200k AF crop needs (Irrigation Water Required)
> ~400k AF headgate diversions
> ~100k AF crop consumption of diverted water
> ~ 25k AF crop consumption from soil storage
> ~ 275k AF diverted water that is not consumed by crops

Greg showed a graph that suggested the full crop irrigation requirement (CIR) averaged from 1975-2006 is 34% higher than the diversions and suggested that many shortages may be due to irrigation practices.

Potential shortage categories might include some driven by irrigation practices such as:

- Dry up prior to haying
- Headgate/ditch capacity limitations
- irrigation 'habit' mimics dry-year pattern
- events competing for time to irrigate (Rodeo, County Fair)

Basin level analysis is too coarse a tool to determine reasons for shortages, and he suggested next steps might be sub-basin analysis. Such an analysis may also provide insight into best possible sub-basins for additional storage. Greg showed a table of the 14 reservoirs included in the model, which represents a total storage of 30,603AF with 18,106AF of that storage representing irrigation use. The modeled total storage by year shows considerable variation, with the high years coming after a dry year when reservoirs were drawn down, but did not show any overages (above the legal limit of 17,000AF/year for irrigation). Greg noted again that this is model output and that Erin Light would be speaking to the actual storage later in this meeting.

Barbara commented that this presentation had been very useful, but it's focus was entirely on irrigation and crop consumptive use. She asked for complementary graphs to be produced from the modeling to show the stream flows in each sub-basin along side the total diversions, crop use, soil storage and return flows so we get the complete picture of water use in the systems. Such information will be important as we consider BIP projects for non-consumptive values as well as additional diversions for irrigation and/or storage projects. Greg said he'd produce those graphs soon.

Ty had several questions/comments. First, he suggested that Greg simplify his description for the ET model to the 'modified Blaney-Criddle'. Second, he suggested that the graphs Greg showed us prove the late season benefit of irrigation. He asked how the soil storage was modeled…how was it treated once the level fell below the root zone (~3.5ft) and what was the

lag time for return flow to the streams? Is it the same as they are using in the new Ag transfer models? Greg didn't know details about the agricultural transfer models but stated that due to data limitations, only one pattern was used for the North Platte which assumed 85% of the soil reservoir was returned to the stream within 1 month.

Kent asked Greg how we might best use this modeling data to inform decisions. Can we determine where there might be excess available for additional storage? Greg suggested that modeling in sub-basins where there are small shortages (based on the model) might be the best place to start, along with an analysis of water availability.

John Rich complained that modeling bothered him. The uncertainty in a model left him wondering whether it was a good basis for decision-making. Greg gave examples where the model has been proven to be very close to actual, and Kent commented that the NPDSS may be one of the best ground-truthed models in the state. Ty said it's not perfect, but it's close and give us direction.

BIP Coordination Meeting Report- Greg Johnson & Rick Wyatt

The first coordination meeting ran for 6 hours with attendance at ~45 people. Greg commented that the 4 statewide coordination meetings were not in the initial scope of the Wilson Water Group contract with the North Platte to develop the BIP.

The goal of these meetings is to coordinate the BIP framework across the state in order to make the basin roundtable input to the Colorado Water Plan as efficient and useful as possible. The BIP Guidance document was augmented with a timetable. It's expected that each basin will present their draft plan to the CWCB at their July meeting and the actual BIP due date is now July 31, 2014. The focus of this first coordination meeting was the Goals and Measurable Objectives. It was recognized that each basin is different, but the guidance included examples of how the BIP might be constructed. The measureable part is the most difficult. Greg said that the State had a contract with CDM and The Nature Conservancy as a subcontractor, to work on the non-consumptive side of the BIP structure. They were attempting to overlay each basin's NC attributes with the NC projects and arrive at some kind of 'sufficiency index' to measure how well the projects meet the attribute needs. This is a first attempt at defining a non-consumptive gap. We already have statewide assessments of the M&I gaps and, as we did today, Basins are working on the agricultural gaps.

At the meeting the CWCB also released a new definition of M&I IPP's (no new definitions released for agricultural or non-consumptive IPP's):

M&I IPP Definition:

1. The project or method has a project or method proponent.
2. When the proponent is a retail water provider, the project or method is being used to meet the water supply needs of its customers by 2050.
3. When the project proponent is a wholesale water provider, at least one retail water provider must express interest in writing and plan on using the project or method to meet the water supply needs of its customers by 2050.

4. The project or method must have at least preliminary planning, design, conditional or absolute water rights, rights of way, and/or negotiations captured in writing with local governments which the water project could effect.
5. The water supply needs must be identified and included in the Basin Implementation Plans and/or SWSI documents.

IV. *Potential Projects in North Platte Basin-* *Pete Conovitz & David Graf, Regional Water Specialists, Colorado Parks & Wildlife*

David introduced himself. This was his first meeting with NPBRT. With the consolidation of Parks and Wildlife into one organization, management is in discussion about whether Pete (who could not attend this meeting) or David will be our primary liaison. An inventory of CPWs water resources and potential planned projects is being developed as input to the State Water Plan. David hoped that by next meeting a North Platte Basin project list would be available as input to the NP BIP.

V. CWCB/IBCC Update –

IBCC: John Rich/Mike Allnutt

John passed out a 4 page document from CWCB entitled "Basin Roundtable Feedback Opportunity to the Interbasin Compact Committee". Quoting from the document: *The IBCC is inviting feedback on preliminary language for three "new supply topics": risk management, sequencing of strategies and the relationship between agricultural transfers and new supply. Deadline for feedback is Feb. 7. IBCC will discuss any feedback at the Feb 18 IBCC meeting.*

CWCB: Ty Wattenberg Copies of potential legislation were distributed: *Colorado Water Efficiency-A legislative proposal for wise water use* and a Senate Bill *Limit use of Ag water for lawn irrigation*. In the interests of time, Ty deferred comments on CWCB business until next meeting.

VII. Old Business - None

VIII. New Business - None

IX. Dates for the next meeting

Date for the next meetings: February 25 (3-5p.m.).
Reminder: the Statewide Water Summit will be held on March 6 in Denver.

IX. Meeting Adjourned