

WRWC Meeting Minutes
April 10, 2020

- This was a virtual meeting, so attendance was not taken

Surface Water Prediction Tool RFP – Ryan Santo

- The working group (Ryan Santo, Keri York, Chris Johnson, Cooper Brossy, Bill Hazen, Kelly West, Greg Loomis, Kevin Lakey) interviewed two candidates for the RFP, Balance Hydrologics and Kendra Kaiser from Boise State University
- Both proposals submitted a cost estimate at \$12,500
- The working group selected Kendra Kaiser and BSU because of their familiarity with irrigation districts, Idaho water issues, and Rob Van Kirk's work
- Kendra is also familiar with the WRV groundwater flow model, and will look at the inputs and/or outputs as potential data sources for this predictive modeling tool
- The contract will be directly with Trout Unlimited because TU is the recipient of the BOR grant, and WRLT is a subrecipient; should be finalized during the first week of May
- The next WRWC meeting will be focused on this tool and will introduce Kendra to the group
- Kevin and Ryan have been compiling data for the model development, including shutoff dates, diversion rates
- The model will have predictions for stream flows at four stream gauge locations and curtailment dates for water right priority dates within a two-week window
- Most folks agreed that knowing this information within a two-week window would be okay; 7-10 days would be better
- Better to know the predictions earlier in the year (prior to April)

South Valley and Galena Groundwater Districts Management Plan – Justin Stevenson

- Background – in 1991, the Big Wood groundwater management plan was established and placed a moratorium on new agricultural wells; before then, there was not much oversight on new wells
- In 2013, IDWR began to implement conjunctive management of ground and surface water in the Big Wood basin; two groundwater districts were formed
- There have been two delivery calls on groundwater rights in the Galena and South Valley groundwater districts by senior surface water right holders
- Those calls have been dismissed, but there is still a need for better administration of water in the Big Wood basin
- Last year, the director of IDWR indicated that the callers and the groundwater districts should attempt to develop a management plan that all parties agree upon
- The groundwater districts developed a plan and submitted it to IDWR, but IDWR wanted more detail and support from the callers
- Hydrologists contracted for the groundwater districts and the callers have been meeting throughout the fall and winter to develop metrics for the management plan
- The management plan includes water conservation, enforcement, recharge, measuring and monitoring to stabilize the aquifer
- A couple of groundwater model recharge scenarios have been run using the model
- The hydrologists will meet again in April and then take the results back to respective boards

- Pat McMahon indicated that there have been many iterations of the management plan, and that the metrics have been created by the hydrologists; the predictive tool will be useful
- Cooper Brossy stated that the Big and Little Wood water users seek a plan that will stabilize and improve reliability for senior water right holders

Surface Water Predictions 2020 – Keri York, Ryan Santo, Kevin Lakey (presentation attached)

- At 4 Snotel Sites in the Big and Little Wood, lowest ever recorded February precipitation
- April percent of median snowpack was higher than March for Big Wood (77%), Little Wood (69%), but Camas (62%) was lower than March
- Snow water equivalent and precipitation for the Big and Little Wood are below median, but have come up from March (see graphs in presentation)
- NOAA predicted colder temperatures and more precipitation in April than average for our area
- The April SWSI (surface water supply index) indicates that agricultural water shortages are likely for the Big and Little Wood basins, and the most similar water years are 2007 and 2008
- The projected 50% exceedance level volumes (KAF) are all lower (20% - 50%) than 30-yr average; so there is a 50% likelihood that volumes will be 20% - 50% the average
- The 50% exceedance volumes are:
 - Little Wood ab High Five ~ 36 KAF
 - Little Wood nr Carey ~ 37 KAF
 - Big Wood at Hailey ~ 130 KAF
 - Big Wood above Magic ~ 48 KAF
 - Camas Creek at Blaine ~ 15 KAF
- Reservoir levels are good from previous year carryover; the volume is approx. double last year, and close to levels in 2017 and 2018; in May 2019 levels reached close to 2017 and 2018 – not likely this year
 - Carl Pendleton commented that, although Magic Reservoir has adequate carryover, that does not ensure enough water for a full season of irrigation for users. In May – September, 230 KAF is adequate supply. 150 KAF only amounts to 90 days of storage, and they are not expecting much additional water throughout the spring. This would result in approximately 30 days short of a full irrigation season.
- Little Wood carryover levels are similar to 2018, and carryover was similar to 2018 and 2019
- According to similar SWSI years, below are predicted cut off dates. Book priority dates including more water right priority dates are in the presentation
 - Big Wood similar SWSI water year is 2007
 - Big Wood above Magic 3/24/1883: 7/17/2007
 - Big Wood above Magic 10/14/1884: 7/2/2007
 - Big Wood above Magic 6/1/1886: 6/26/2007
 - Little Wood similar SWSI water year is 2008
 - Little Wood 3/24/1883: 10/1/2008 (not shut off)
 - Little Wood 10/14/1884: 8/28/2008
 - Little Wood 6/1/1886: 8/18/2008
- Ryan – do you want to call Bob Simpson and get his take on Little Wood reservoir levels and the season, given the predictions for runoff (similar to the info that Carl provided)

NOAA Remote Sensing Tools and Available Data – Bill Hazen

- Bill has been researching available online remote sensing data that can provide additional information related to snowpack and surface water availability
- The first website uses snowcourses and snotel sites to calculate surface water equivalent data (SWE) compared to last year (results for the Big and Little Wood are attached)
- For the Big Wood basin total, this year's SWE is 73% of the median value, and last year's SWE was 153% of the median
- For the Little Wood basin total, this year's SWE is 69% of the median value, and last year's SWE was 161% of the median
- For the Little Wood basin total, this year's SWE is 62% of the median value, and last year's SWE was 175% of the median

https://www.nrcs.usda.gov/wps/portal/wcc/home/snowClimateMonitoring/snowpack!/ut/p/z1/rZLLUuMwEEV_xSy0tNV-TKzMzmRqIIQpiiQQok1KII-aiSQjKTH8PflAEkJRhXZS3e5zW7cXxQ-YKnyULXNCK7b39y2d7AiZZfFNBtdA5gnczm4X2c0PSC_-AN78F8AHpwBMT9ffY4opV653Hd4OnAdcK1crh6DTskZglR4CpqqA74VkrG6kVsJp11SLoGRWqKBijgWm7rVxduzWc1HhbVw2LC6zNEzjnIRZzqbhIJU8rPKGJw2DSc6rN_cn7NHTw21GnpfME1JckhUsLmZZBsV0lq-vVzksruJPBOvJm-AEZOtN5h-bTPHmKOoB3yltpI9s9cU_uAR89VIKfg3E38dHWvisxnyeHH74hrA8t93r8nXPCIWmpMXU1E1tahMdjH_unOvtTwQIhmGIPDJShuvoYCsWtfqloHG9L_DoQz_29DrPNQhWBymZeV6-khDMfyE4_82t22W7BBKI-qp5j9ppO872HgZ38k6S9Dn8tyTDuun2R7khtjg7ewFLeYgw/dz/d5/L2dBISevZ0FBIS9nQSEh/

The screenshot shows a web browser window displaying the USDA Snowpack website. The page title is "Snowpack" and the URL is "nrcs.usda.gov/wps/portal/wcc/home/snowClimateMonitoring/snowpack!/ut/p/z1/rZLLUuMwEEV_xSy0tNV-TKzMzmRqIIQpiiQQok1KII-aiSQjKTH8PflAEkJRhXZS3e5zW7cXxQ-YKnyULXNCK7b39y2d7AiZZfFNBtdA5gnczm4X2c0PSC_-AN78F8AHpwBMT9ffY4opV653Hd4OnAdcK1crh6DTskZglR4CpqqA74VkrG6kVsJp11SLoGRWqKBijgWm7rVxduzWc1HhbVw2LC6zNEzjnIRZzqbhIJU8rPKGJw2DSc6rN_cn7NHTw21GnpfME1JckhUsLmZZBsV0lq-vVzksruJPBOvJm-AEZOtN5h-bTPHmKOoB3yltpI9s9cU_uAR89VIKfg3E38dHWvisxnyeHH74hrA8t93r8nXPCIWmpMXU1E1tahMdjH_unOvtTwQIhmGIPDJShuvoYCsWtfqloHG9L_DoQz_29DrPNQhWBymZeV6-khDMfyE4_82t22W7BBKI-qp5j9ppO872HgZ38k6S9Dn8tyTDuun2R7khtjg7ewFLeYgw/dz/d5/L2dBISevZ0FBIS9nQSEh/".

The main content area is titled "Basin Data Reports" and includes the instruction "Select State, Report Type, Calendar Year, and Publication Date." Below this, there are four dropdown menus: "State" (set to "Idaho"), "Report Type" (set to "Snowpack"), "Calendar Year" (set to "2020"), and "Publication Date" (set to "April 1"). A "Submit" button is located to the right of the "Publication Date" dropdown.

Two red arrows point to the "State" and "Report Type" dropdowns. The arrow pointing to "State" is labeled "Help: New Precipitation". The arrow pointing to "Report Type" is labeled "Old Report Comparison".

- The second website can create reports for individual snotel sites

<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/id/snow/?cid=stelprdb1244382>

The screenshot shows a web browser window with the URL <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/id/snow/?cid=stelprdb1244382>. The page header includes the USDA logo, "Natural Resources Conservation Service Idaho", and "United States Department of Agriculture". Navigation links include "Topics", "Programs", "Newsroom", and "Contact Us". A search bar and "Stay Connected" social media icons are also present.

The main content area is titled "Idaho Monthly Snowpack Data Tables - Snow Courses & SNOTEL". It contains a "Snow Survey" sidebar with "Snow Survey Products" and "Water Supply Products". The main text explains that a snow course is a permanent measurement site. Below this, there are three report generation sections:

- Report Generator Snow Course Data Tables**
 - Active Idaho Snow Courses - Period of Record Monthly Data:** A dropdown menu shows "MULDOON--(1953)" and a "Create Report" button.
 - Discontinued Idaho Snow Courses - Period of Record Monthly Data:** A dropdown menu shows "Select Snow Course" and a "Create Report" button.
- Report Generator Monthly SNOTEL Data Tables**
 - Active Idaho SNOTEL sites - Period of Record 1st of Month Snow Water and Snow Depth* Data:** A dropdown menu shows "GALENA" and a "Create Report" button. A red arrow points to this section.
 - A note below states: "*Snow depth data is left blank when no data are available. Snow depth sensors are not used at every SNOTEL or may have been installed mid-way through period."
- Text Format Idaho and Wyoming Monthly SNOTEL Data Tables**

The above link provides access to back-estimated snow pillow data for Idaho and Wyoming SNOTEL sites that replaced a snow course. These data are not available from the Report Generator reports. The back-estimated data are a more reliable way to compare recent years to the pre-SNOTEL era. Data were estimated by

- If you scroll through the table, you can again compare this year's data to previous years on a monthly basis

United States Department of Agriculture
NRCS Natural Resources Conservation Service
 National Water and Climate Center

Report Generator 2.0

View Station Information

Create/Modify Report | View Report | Report Details

Output Format | Layout | Units | Time Period | Fit Table To Screen

Galena (489)
Idaho SNOTEL Site - 7470 ft
Reporting Frequency: Semimonthly; Date Range: Period of Record

(As of: Fri Apr 17 07:06:45 GMT-08:00 2020)
 Provisional data, subject to revision

Water Year	Jan 1st Half				Feb 1st Half				Mar 1st Half			
	Snow Water Equivalent Collection Date Start of Month Values	Snow Depth (in) Start of Month Values	Snow Water Equivalent (in) Start of Month Values	Snow Water Equivalent % of Normal (1981-2010)	Snow Water Equivalent Collection Date Start of Month Values	Snow Depth (in) Start of Month Values	Snow Water Equivalent (in) Start of Month Values	Snow Water Equivalent % of Normal (1981-2010)	Snow Water Equivalent Collection Date Start of Month Values	Snow Depth (in) Start of Month Values	Snow Water Equivalent (in) Start of Month Values	
1983	Jan 01		11.6	157	Feb 01		14.7	131	Mar 01		20.	
1984	Jan 01		11.1	150	Feb 01		12.0	107	Mar 01		14.	
1985	Jan 01		11.4	154	Feb 01		11.7	104	Mar 01		14.	
1986	Jan 01		6.5	88	Feb 01		11.4	102	Mar 01		21.	
1987	Jan 01		3.2	43	Feb 01		6.6	59	Mar 01		7.	
1988	Jan 01		5.2	70	Feb 01		8.0	71	Mar 01		10.	
1989	Jan 01		7.9	107	Feb 01		11.5	103	Mar 01		13.	
1990	Jan 01		2.8	38	Feb 01		8.2	73	Mar 01		10.	
1991	Jan 01		3.7	50	Feb 01		4.9	44	Mar 01		5.	
1992	Jan 01		7.0	95	Feb 01		7.7	69	Mar 01		10.	
1993	Jan 01		8.0	108	Feb 01		12.7	113	Mar 01		16.	
1994	Jan 01		3.6	49	Feb 01		5.8	52	Mar 01		9.	
1995	Jan 01		8.4	114	Feb 01		15.8	141	Mar 01		18.	
1996	Jan 01		9.6	130	Feb 01		14.8	132	Mar 01		18.	
1997	Jan 01		21.5	291	Feb 01		26.4	236	Mar 01		27.	
1998	Jan 01		3.3	45	Feb 01		9.9	88	Mar 01		13.	
1999	Jan 01		9.5	128	Feb 01		13.8	123	Mar 01		21.	
2000	Jan 01		4.3	58	Feb 01		9.5	85	Mar 01		13.	
2001	Jan 01		5.0	68	Feb 01		6.3	56	Mar 01		7.	
2002	Jan 01		7.9	107	Feb 01		11.2	100	Mar 01		13.	
2003	Jan 01		9.1	123	Feb 01		12.2	109	Mar 01		14.	
2004	Jan 01		8.6	116	Feb 01		11.4	102	Mar 01		15.	
2005	Jan 01		7.3	99	Feb 01		9.3	83	Mar 01		9.	
2006	Jan 01	62	12.4	168	Feb 01	73	18.2	163	Mar 01	79	22.	
2007	Jan 01	37	7.8	105	Feb 01	35	8.9	79	Mar 01	52	12.	
2008	Jan 01	33	7.2	97	Feb 01	62	13.4	120	Mar 01	49	15.	
2009	Jan 01	36	6.5	88	Feb 01	33	8.8	79	Mar 01	43	10.	
2010	Jan 01	20	4.1	55	Feb 01	31	6.9	62	Mar 01	30	7.	
2011	Jan 01	41	8.6	116	Feb 01	39	10.1	90	Mar 01	43	12.	
2012	Jan 01	33	5.5	74	Feb 01	47	10.1	90	Mar 01	57	12.	
2013	Jan 01	46	11.8	159	Feb 01	47	13.1	117	Mar 01	47	13.	
2014	Jan 01	21	4.2	57	Feb 01	34	6.5	58	Mar 01	50	12.	
2015	Jan 01	40	8.8	119	Feb 01	39	10.6	95	Mar 01	43	13.	
2016	Jan 01	41	8.7	117	Feb 01	38	10.5	94	Mar 01	44	13.	
2017	Jan 01	36	7.2	97	Feb 01	51	13.0	116	Mar 01	47	14.	
2018	Jan 01	25	6.4	86	Feb 01	35	9.2	82	Mar 01	42	12.	
2019	Jan 01	22	4.5	61	Feb 01	32	7.8	70	Mar 01	75	16.	
2020	Jan 01	18	4.5	61	Feb 01	32	8.2	73	Mar 01	31	9.	

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- The third website can create map layers of precipitation data, and you can choose different timeframes or variables to view

<https://app.climateengine.org/climateEngine>

The screenshot displays the Climate Engine web application interface. The browser address bar shows the URL <https://app.climateengine.org/climateEngine>. The page features a navigation menu with 'MENU' and 'Map' options, and a 'Climate Engine' logo. The main content area is divided into a configuration panel on the left and a map on the right. The configuration panel includes sections for 'Variable', 'Processing', and 'Time Period', each with a 'GET MAP LAYER' button. The 'Variable' section is set to 'Climate/Hydrology', 'METDATA/gridMET', 'Precipitation (PPT)', and 'millimeters' with a '4000 m (1/24-deg)' resolution. The 'Processing' section is set to 'Total' and 'Values'. The 'Time Period' section shows a 'Period of Record' from 1979-01-01 to 2020-04-13, a 'Season' of 'Last 15 Days of Data', and 'Start Date: 2020-03-30' and 'End Date: 2020-04-13'. The map on the right is titled 'Precipitation (gridMET)' and shows a color-coded precipitation map of Idaho with a scale from 0.0 to 150 mm. Red arrows point to the 'Type', 'Dataset', 'Variable', 'Season', and 'GET MAP LAYER' buttons in the configuration panel.