

# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday June 9, 2023



Most croplands throughout the watershed had ¼ to ½ inch of rain this week but it was highly variable with some sites getting a little more or less. Crop water use was about **1 inch for many crops** and will be about the same next week. Subsoil moisture is good in most fields due to rainfall and low crop water use. Surface soils have dried out unless they have been irrigated or had extra rainfall. Crops are growing well but are still set back slightly by the late start of the growing season and cooler than normal weather. The snowpack is exhausted and stream flows are now predicted to be below average for the rest of the season. Please send us your ideas or questions about these reports and anything you would like to hear about related to irrigation, soil health, water quality, or other subjects. We will respond and share them with everyone.

### WEATHER - SHOWERS AND THUNDERSTORMS

Rainfall was variable across Blackfoot croplands this week with many sites having ¼ to ½ in while others had very little. A few luck spots had ¾ inch or more. The forecast next week is for more showers and thunderstorms which likely means variable rainfall again with more rain during thunderstorms. Temperatures will again see **highs in the 70s and lows in the 40s and 50s**. The 30-day day forecast predicts above average rainfall and temperatures. The 90-day forecast predicts above average temperatures and average rainfall.



*Your own rain gauge is your best source of rainfall information.*

### CROP WATER USE - HIGHER NEXT WEEK AS CROPS GET TALLER

Crop water use was again below average this last week due to cool, cloudy weather. **It was about 1 inch for most crops** and will increase only slightly next week with rainfall and moderate temperatures predicted.

<b>WATER USE IN INCHES</b>	<b>LAST 7 DAYS</b>	<b>NEXT 7 DAYS TOTAL<sup>1</sup></b>	<b>NEXT 7 DAYS DAILY AVE<sup>2</sup></b>	<b>SEASON TOTAL<sup>3</sup></b>
HAY CROPS	1.0	1.1	.16	4.6
PASTURE	0.9	1.0	.14	4.4
SPRING GRAINS	0.8	1.0	.14	2.4
WINTER WHEAT	1.1	1.3	.19	5.1
LAWNS	1.0	1.1	.16	4.9

<sup>1</sup>Expected water use over the next week (range if weather becomes cooler or hotter than expected)

<sup>2</sup>Expected average daily water use over the next week (compare this with your soil moisture content)

<sup>3</sup>Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but since include April

The table on Page 1 provides a quick summary of crop water use this last week and an estimate for next week. The table and chart below summarize the entire irrigation season and compare it with average, hot and cool conditions so you can plan ahead. This table and chart will be updated weekly all season.

**BLACKFOOT 2023 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE** (INCHES OF WATER)

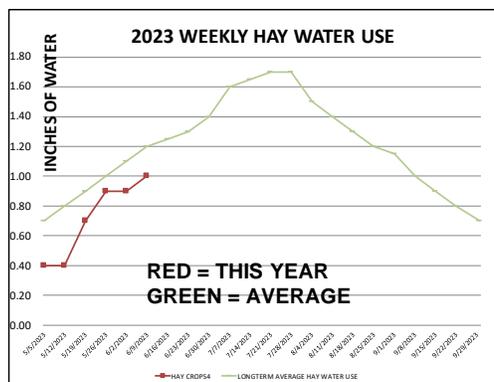
WEEK ENDING	RAIN <sup>1</sup>	2023 WEEKLY POTENTIAL CROP WATER USE <sup>2</sup>						AVERAGE WEEKLY CROP WATER USE <sup>3</sup>		
	RAIN	HAY CROPS <sup>4</sup>	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
5/5/2023	0.10	0.40	0.40	0.00	0.00	0.50	0.40	0.70	1.00	0.40
5/12/2023	1.50	0.40	0.50	0.20	0.00	0.60	0.50	0.80	1.10	0.60
5/19/2023	0.25	0.70	0.70	0.30	0.00	0.80	0.80	0.90	1.20	0.70
5/26/2023	0.75	0.90	0.80	0.50	0.30	1.00	1.00	1.00	1.30	0.70
6/2/2023	0.25	0.90	0.80	0.60	0.40	1.00	0.90	1.10	1.50	0.80
6/9/2023	0.25	1.00	0.90	0.80	0.60	1.10	1.00	1.20	1.70	0.80
6/16/2023								1.25	1.90	0.90
6/23/2023								1.30	2.00	1.00
6/30/2023								1.40	2.00	1.00
7/7/2023								1.60	2.10	1.10
7/14/2023								1.65	2.20	1.10
7/21/2023								1.70	2.20	1.10
7/28/2023								1.70	2.20	1.10
8/4/2023								1.50	2.20	1.00
8/11/2023								1.40	2.20	1.00
8/18/2023								1.30	2.00	0.90
8/25/2023								1.20	1.80	0.90
9/1/2023								1.15	1.60	0.70
9/8/2023								1.00	1.40	0.60
9/15/2023								0.90	1.40	0.50
9/22/2023								0.80	1.20	0.50
9/30/2023								0.70	1.00	0.40
<b>TOTAL</b>	<b>3.10</b>	<b>4.55</b>	<b>4.35</b>	<b>2.40</b>	<b>1.30</b>	<b>5.25</b>	<b>4.85</b>	<b>26.25</b>	<b>37.20</b>	<b>17.80</b>

<sup>1</sup> Average across watershed (50-80% gets to the crop depending on irrigation method, weather, evaporation from crop and soil surfaces)

<sup>2</sup> This years potential water use by healthy crops that are well-fertilized and irrigated, disease and insect-free. Varies across watershed.

<sup>3</sup> Longterm average water use for each crop each week based on long-term historic data.

<sup>4</sup> Hay Crop water use drops from these figures approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.



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## SOIL MOISTURE GOOD IN MANY FIELDS

It hasn't been hard to keep soil moisture levels high this season due to cool weather, rain and low crop water use. Subsoil moisture has remained high in most fields since crops use moisture in the surface first. Surface soils have dried significantly on warmer days but have been replenished somewhat by rainfall and irrigation. Most sites did not have enough rain this week to completely replenish crop water use (unless they had more than 1 inch). Only 50-80% of rain actually gets into the soil and small rain amounts completely evaporate from soil and crop surfaces (less than 2/10 inch under recent weather conditions).



Soil near 100% of its water holding forms a ball when squeezed and leaves the hand moist. Water is visible on the surface of the soil and the hand as a dark stain or shiny surface.



Soil near 50% of its water holding capacity may form a weak ball but leaves little moisture on the hand. Soil at 25% or less of its water holding capacity does not form a ball when squeezed. It feels and looks dry. If sandy or loamy, it crumbles easily, if high in clay it forms a hard lump. Call, text or email anytime if you have questions about evaluating your soil moisture content and irrigation options.

## WEEKLY TIPS

### SNOWPACK AND WATER SUPPLY

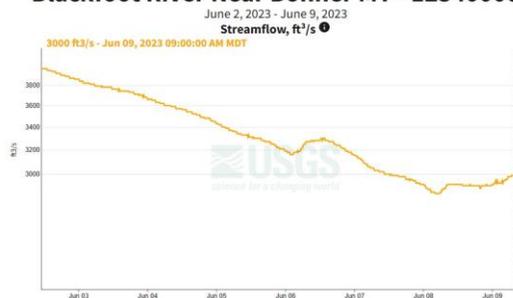
The NRCS website lists our Blackfoot watershed snowpack as 0% of average today, down from 45% last week. The 0% figure suggests that the Snowtel sites have melted out completely. Reservoir storage is still good. Blackfoot river flows are now predicted to be below average for the rest of this season unless there is a whole lot of rain.



### STREAMFLOW

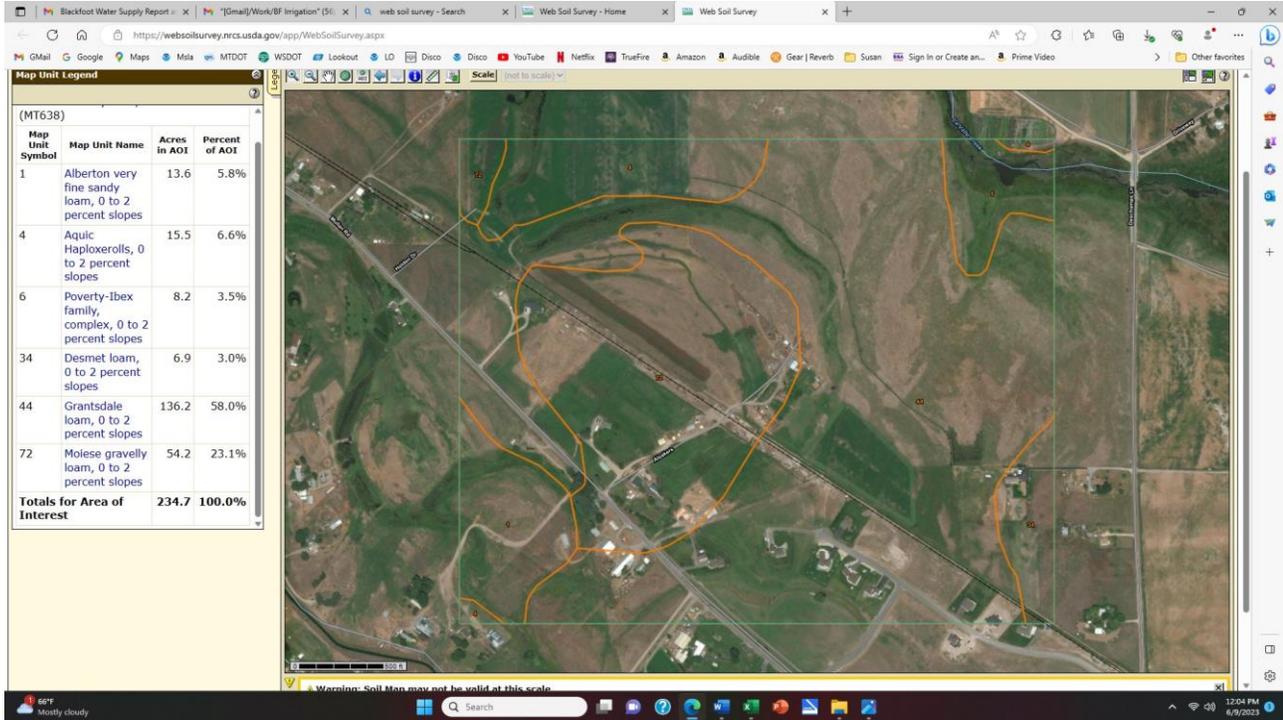
The Blackfoot river flow at Bonner continued to drop this week and is still below average at **3,050 CFS**. The average for this date is 5,620 CFS. The highest flow on this date was 17,000 CFS in 2011 while the lowest flow on this date was 1,320 CFS in 1987. Flow peaked this year on May 7 at 10,400 CFS. Weather predictions for the next 30 days are for above average temperatures and rainfall. The 90 day prediction is for above average temperatures and average rainfall so flows are likely to continue falling unless there is a lot more rain.

#### Blackfoot River Near Bonner MT - 12340000



# USE WEB SOIL SURVEY FOR ANOTHER VIEW OF YOUR SOIL

**Web Soil Survey** is the online source of soil information from the National Cooperative Soil Survey Program of the NRCS. It is free of charge and available to view online or download. You can even import this information for use in other programs like Google Earth. It's important to realize how soil surveys are completed and how accurate (or inaccurate) they may be at specific sites. Soil surveys are considered general planning tools to give you an idea of what soils are present but are not a substitute for personal experience and detailed observations across individual fields. Soil survey maps, and descriptions provide a start to understanding your soils but no one can know your soils as well as you do. Web Soil Survey provides maps and a wide variety of soil properties and ratings for various uses.



Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
1	Alberton very fine sandy loam, 0 to 2 percent slopes	Very limited	Alberton (85%)	Rapid water movement (1.00) Seepage (1.00)	13.6	5.8%
			Grantsdale (5%)	Seepage (1.00) Rapid water movement (0.69) Low water holding capacity (0.07)		
			Moisee (5%)	Seepage (1.00) Low water holding capacity (0.93) Rapid water movement (0.69)		
4	Aquic Haploxerolls, 0 to 2 percent slopes	Not rated	Aquic Haploxerolls (85%)		15.5	6.6%
			Well drained soils (5%) Poorly drained soils (5%)			
6	Poverty-Ibex family, complex, 0 to 2 percent slopes	Very limited	Poverty (55%)	Rapid water movement (1.00) Depth to saturated zone (1.00) Seepage (1.00) Low water holding capacity (1.00)	8.2	3.5%
			Ibex (45%)	Depth to saturated zone (1.00) Seepage (1.00) Rapid water movement (0.80) Low water holding capacity (0.27)		
34	Desmet loam, 0 to 2 percent slopes	Not rated	Desmet (85%)		6.9	3.0%

Here is a useful guide: [Using Web Soil Survey to Learn Your Land's Potential – Soil for Water](#)

For further information contact Clancy Jandreau, Blackfoot Challenge Water Steward, 406-304-5423 or Barry Dutton, Professional Soil Scientist, 406-240-7798 [barry@landandwaterconsulting.net](mailto:barry@landandwaterconsulting.net)

## THE BLACKFOOT WATERSHED IRRIGATION SEASON IN BRIEF

This is a summary of general activities and recommendations for the whole season (more detail in the irrigation guide).

### APRIL – GET READY AND PLAN YOUR IRRIGATION STRATEGY!

- Get your irrigation system ready – perform maintenance and test system.
- Evaluate soil moisture conditions and weather predictions then plan for irrigation and drought if needed.



### MAY – CHECK SOIL MOISTURE & BE READY FOR UNUSUAL HEAT OR COLD!

- Check the soil moisture content at the start of growing season and fill up the soil to its water holding capacity during early irrigations (2-4 inches).
- Watch for dry soil conditions, especially with new plantings and apply water to ensure good germination and emergence.
- Irrigate deeply at least once early in the season to promote deep root growth.
- Apply 2-5 inches of irrigation to hay and pasture crops in May depending on weather. Apply 0-2 inches to spring grains and new plantings as needed based on weather and growth. Apply extra water to fill up the soil (2-4 in).

### JUNE – THIS IS THE TIME TO MAKE YOUR BIGGEST EFFORT SO POUR IT ON!

- Apply 6-8 inches of irrigation in June to hay and pasture crops and winter wheat depending on weather. Apply 5-8 inches to spring grains and new plantings as needed based on weather and growth.
- Consider irrigating deeply to fill up soil root zone and promote deep root growth.
- Be sure small grains are irrigated well during their critical periods of boot, bloom and early heading.



### JULY – POUR IT ON UNTIL HARVEST AND RETURN QUICKLY

- Apply 1 - 2 ½ inches of irrigation per week in July to all crops - depending on weather.
- Cutting is a critical stress period for hay crops, especially alfalfa so irrigate deeply to fill up the root zone before cutting then get back across the field quickly after cutting. Crop water use declines when hay is cut so this is a good opportunity to fill up the soil again. Irrigate at least once after cutting. Small grains harvested for seed are usually irrigated up to the milk to soft dough stage but be sure soil moisture remains to prevent kernel shriveling. Small grains for forage are often harvested earlier when plants are less dry and seeds soft.

### AUGUST- KEEP IRRIGATING SMALL GRAINS UNTIL KERNELS MATURE, BE DROUGHT AWARE!

- Apply 1 - 2 inches of irrigation per week in August to hay and pasture crops for full production depending on weather. Irrigate new plantings as needed.
- Many folks irrigate for pasture following their one hay cutting. Irrigate according to how much pasture you seek and with consideration for other water needs in the watershed, especially in drought years.
- Reduce river withdrawals by rotating systems and reducing the amount of irrigation at one time. Stop irrigating if you can.



### SEPTEMBER – APPLY AS NEEDED/AVAILABLE & GET READY FOR SPRING!

- Apply ½ - 1 ½ inches of irrigation per week in September to hay and pasture crops for full production depending on weather. Irrigate new plantings as needed. Prepare the system for winter and an early start next spring.