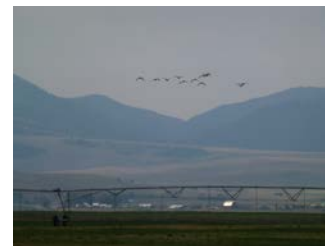


# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday September 30, 2022



We had little rain but some pleasant temperatures this week as we look towards the end of the irrigation season. It looks like seasonal temperatures and mostly sunny skies to start off October. Blackfoot stream flows dropped then stabilized this week just below 600 CFS. Crop water use dropped to low levels and soil moisture fell ½ inch or less this week. **Crop water use for the 2022 season (April 1 - September 30) was 30 inches for hay crops - the highest we have seen in the 13 years of this program and continuing an upward trend.** This of course was due to hot, dry weather during the main growing season. The good news is that more crop water use can turn into more crop production which is exactly what many irrigators saw this year. Read more about it in our *annual irrigation report* which we will email to you soon.

### WEEKEND SHOWERS THEN BACK TO SUNNY AND WARM

There was little or no rain on croplands throughout the watershed this week and warm temperatures. There will be scattered rain this weekend then it will be sunny and warm going into October. The 30-day forecast says average rainfall and above average temperatures. The 90-day forecast says above average rainfall and average temperatures.

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

### CROP WATER USE: 2022 HAS THE HIGHEST IN LAST 13 YEARS

Crop water use was about average this week at ½ inch for hay crops (see chart below). This is the end of our reporting period for the year although permanent crops including hay and pasture will continue to use small amounts of water and drying out the soil until they go dormant with cold weather. **Total crop water use for the 2022 season was the highest in our 13 year program.**

<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>
<b>HAY CROPS</b>	<b>0.5</b>			<b>30.0</b>
<b>PASTURE</b>	<b>0.3</b>			<b>24.5</b>
<b>SPRING GRAINS</b>	<b>0.0</b>			<b>21.8</b>
<b>WINTER WHEAT</b>	<b>0.0</b>			<b>15.3</b>
<b>LAWNS</b>	<b>0.5</b>			<b>28.4</b>

<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

### SOIL MOISTURE - SLOWLY DECREASING WITH PERMANENT CROPS

Soil moisture loss to hay and pasture crops was low this week at ½ inch or less. Soil moisture will continue to drop slightly until fall rain and winter snow add significant amounts of water to the soil which usually doesn't occur until the late – winter melt. Those who still have irrigation water available can effectively recharge soil moisture since crops are using less and lower temperatures mean more goes into the soil and less evaporates from crop and soil surfaces. However, please continue to be mindful of low streamflows and irrigate conservatively.

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.

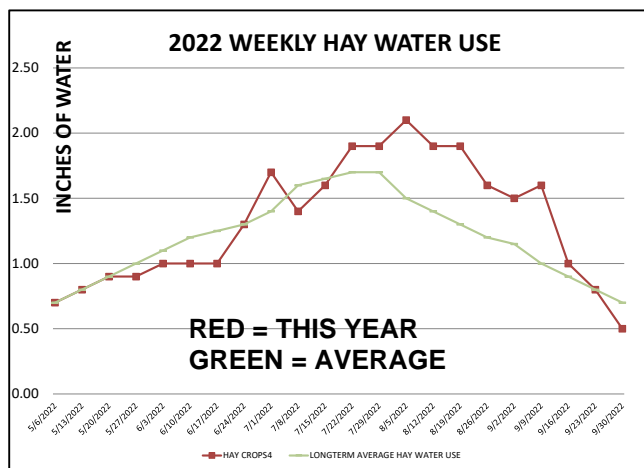
<b>BLACKFOOT 2022 GROWING SEASON WEEKLY RAINFALL &amp; CROP WATER USE</b> (INCHES OF WATER)										
WEEK ENDING	RAIN <sup>1</sup>	2022 WEEKLY POTENTIAL CROP WATER USE <sup>2</sup>						AVERAGE WEEKLY CROP WATER USE <sup>3</sup>		
	RAIN	HAY CROPS <sup>4</sup>	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	1.25	1.00	1.00	0.00	0.00	1.00	1.00			
5/6/2022	0.25	0.70	0.60	0.10	0.00	0.80	0.80	0.70	1.00	0.40
5/13/2022	0.01	0.80	0.70	0.20	0.00	0.90	0.90	0.80	1.10	0.60
5/20/2022	0.10	0.90	0.80	0.40	0.20	1.00	0.90	0.90	1.20	0.70
5/27/2022	0.20	0.90	0.80	0.70	0.50	1.00	0.90	1.00	1.30	0.70
6/3/2022	0.10	1.00	0.80	0.80	0.60	1.10	0.90	1.10	1.50	0.80
6/10/2022	0.50	1.00	0.80	0.90	0.70	1.10	0.90	1.20	1.70	0.80
6/17/2022	0.75	1.00	0.80	1.10	0.90	1.10	0.90	1.25	1.90	0.90
6/24/2022	1.00	1.30	1.10	1.30	1.20	1.30	1.20	1.30	2.00	1.00
7/1/2022	0.01	1.70	1.40	1.60	1.70	1.70	1.60	1.40	2.00	1.00
7/8/2022	0.75	1.40	1.20	1.60	1.60	1.50	1.30	1.60	2.10	1.10
7/15/2022	0.01	1.60	1.30	1.70	1.70	1.30	1.50	1.65	2.20	1.10
7/22/2022	0.01	1.90	1.60	2.10	2.10	1.00	1.80	1.70	2.20	1.10
7/29/2022	0.01	1.90	1.60	2.20	2.20	0.50	1.80	1.70	2.20	1.10
8/5/2022	0.01	2.10	1.70	2.40	2.40	0.00	2.00	1.50	2.20	1.00
8/12/2022	0.01	1.90	1.60	1.90	2.00	0.00	1.80	1.40	2.20	1.00
8/19/2022	0.01	1.90	1.50	1.50	1.80	0.00	1.80	1.30	2.00	0.90
8/26/2022	0.25	1.60	1.30	0.80	1.20	0.00	1.60	1.20	1.80	0.90
9/2/2022	0.10	1.50	1.10	0.20	0.80	0.00	1.30	1.15	1.60	0.70
9/9/2022	0.01	1.60	1.20	0.00	0.20	0.00	1.40	1.00	1.40	0.60
9/16/2022	0.20	1.00	0.80	0.00	0.00	0.00	0.90	0.90	1.40	0.50
9/23/2022	1.00	0.80	0.50	0.00	0.00	0.00	0.70	0.80	1.20	0.50
9/30/2022	0.10	0.50	0.30	0.00	0.00	0.00	0.50	0.70	1.00	0.40
<b>TOTAL</b>	<b>5.39</b>	<b>30.00</b>	<b>24.50</b>	<b>21.50</b>	<b>21.80</b>	<b>15.30</b>	<b>28.40</b>	<b>26.25</b>	<b>37.20</b>	<b>17.80</b>

<sup>1</sup> Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-April,May and Sept, 0.15-June and August, 0.2-July)  
(This rainfall figure is an average across all Blackfoot croplands - use your own rain gauge for better accuracy)

<sup>2</sup> **This years** maximum water use by healthy crops that are well-fertilized and irrigated, disease and insect-free. Will vary slightly across the drainage.

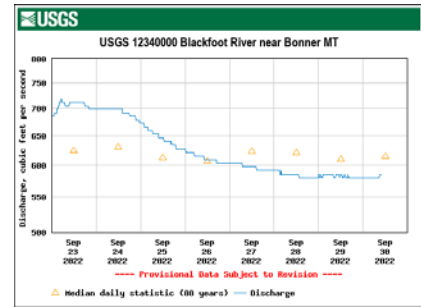
<sup>3</sup> **Longterm average** water use for each crop each week based on long-term historic data.

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



## RIVER FLOWS DECREASE THEN STABILIZE

The Blackfoot river flow at Bonner decreased from about 700 CFS to under 600 CFS with little rainfall this week and stabilized the past few days. Today flow is **585 CFS** (average for this date is 632 CFS). 1965 saw the highest flow at 1,200 CFS while the lowest flow was 375 CFS in 1994. Thanks to everyone who implemented their drought plans. Your efforts have really helped in recent weeks!



## WINTER READING AND VIEWING

In response to some recent conversations, here are ideas for winter reading related to irrigation, water and how great it is to live, recreate and irrigate in the Blackfoot watershed.

**Cadillac Desert by Marc Reisner** is the classic summary of water development in the western US and is also available as an audiobook. In addition to the book, there is a 4-part adaptation on YouTube (just search for Cadillac Desert).

**Conquest of the Land Through 7000 years by Dr. W. C. Lowdermilk** documents a fascinating history of how man has basically degraded the soils everywhere civilizations developed to the point they collapsed and that we are lucky to have less used and abused landscapes to hopefully preserve. It's available online at: [Conquest of the Land Through 7,000 Years \(usda.gov\)](https://www.usda.gov/conservation/conquest-of-the-land-through-7000-years)

**Your Water Footprint by Stephen Leahy** is a lighter and surprising look at water use and how much it takes to produce the things we use everyday (240 gallons per cell phone, 2 gallons per almond, 634 gallons per cheeseburger).

**Elixir: A History of Water and Humankind by Brian Fagan** is a 7000 year summary of water use across the world and US.

**The Big Thirst: The Secret Life and Turbulent Future of Water by Charles Fishman** is another look at the history and future of water.

**Google and YouTube** searches for irrigation, water management and your other favorite topics offer a world of information and entertainment.

## TELL US WHAT YOU THINK!

I'll be writing up my annual report in the next week and would like to hear what you think about irrigation, about this weekly report, or about other things we should be talking about or other ways to do it. What I will talk about includes:

- A summary of weather and crop water use for another dry year
- The drought response plan and how its working
- A summary of this year compared over the short and long terms

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- BE DROUGHT AWARE, REDUCE IRRIGATION DURING DROUGHT

- 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 to help streamflows.



### SEPTEMBER – APPLY AS NEEDED & AVAILABLE & PREP FOR WINTER!

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