

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

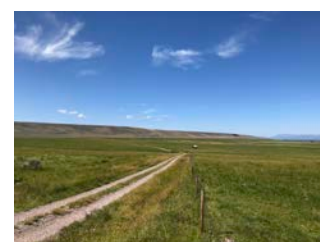
Friday June 24, 2022



Blackfoot watershed croplands had ½ to 1½ inches of rain this week then warm, sunny skies. Next week will have little rain with highs in the 70s and 80s and lows in the 40s and 50s. Crops are erupting with dramatic growth that you can actually hear in some fields. This looks like a year that hay harvest will be delayed a week or two to maximize yields. Soil moisture fell slightly this week or remained steady in most fields while those that were irrigated had an increase. Crop water use will surpass rainfall next week drying soils in fields not irrigated. Streamflows peaked last week and the remaining snowpack is going fast.

WEATHER - WARM SUNNY DAYS

Most Blackfoot croplands had ½ to 1½ inches of rain this last week with a few spots getting more from isolated thunderstorms. Little rain will fall next week except in rare and scattered thunderstorms. High temperatures will be in the 70s and 80s with lows in the 40s and 50s. The 30-day forecast says above average rainfall and below average temperatures. The 90-day forecast says the opposite - below average rainfall and above average temperatures.



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

CROP WATER USE - BELOW AVERAGE AGAIN WITH COOL TEMPS

Crop water use rose to average for this time of year after being below average for a month. Next week crop water use should be slightly above average due to warm, sunny weather. Most crops will use about 1 ½ inches of soil moisture next week (see chart below).

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	1.3	1.6	.23	8.6
PASTURE	1.1	1.3	.19	7.4
SPRING GRAINS	1.3	1.7	.24	5.5
WINTER WHEAT	1.3	1.7	.24	9.3
LAWNS	1.2	1.5	.21	8.4

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

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

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

SOIL MOISTURE - DROPPING ABOUT 1½ INCHES NEXT WEEK

Soil moisture remained fairly constant this week since crop water use was similar to rainfall in many fields. Soil moisture increase where rainfall was over an inch and in those fields irrigated. Soil moisture will drop about 1½ inches next week unless irrigated so continue to check your soil moisture and refill with at least as much as the weekly crop water use. The next few weeks are the best time to “**MAKE HAY**” so pour it on while water is available and crops are growing fast.

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 2022 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

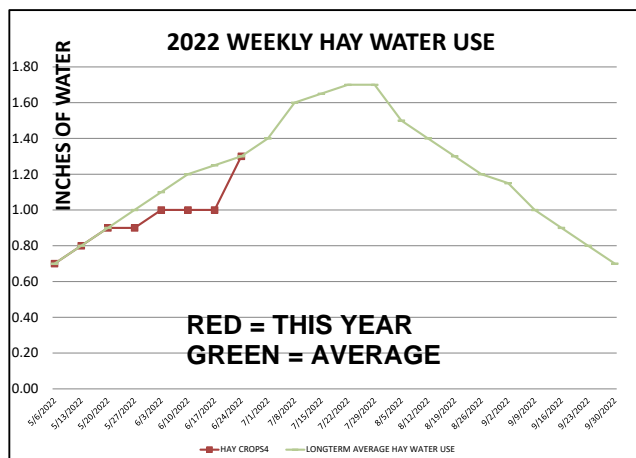
WEEK ENDING	RAIN ¹	2022 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	1.25	1.00	1.00	0.00	0.00	1.00	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								1.40	2.00	1.00
7/8/2022								1.60	2.10	1.10
7/15/2022								1.65	2.20	1.10
7/22/2022								1.70	2.20	1.10
7/29/2022								1.70	2.00	1.10
8/5/2022								1.50	1.80	1.00
8/12/2022								1.40	1.70	1.00
8/19/2022								1.30	1.60	0.90
8/26/2022								1.20	1.40	0.90
9/2/2022								1.15	1.40	0.70
9/9/2022								1.00	1.30	0.60
9/16/2022								0.90	1.20	0.50
9/23/2022								0.80	1.10	0.50
9/30/2022								0.70	1.00	0.40
TOTAL	2.91	8.60	7.40	5.50	4.10	9.30	8.40	26.25	34.70	17.80

¹ 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)

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

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

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



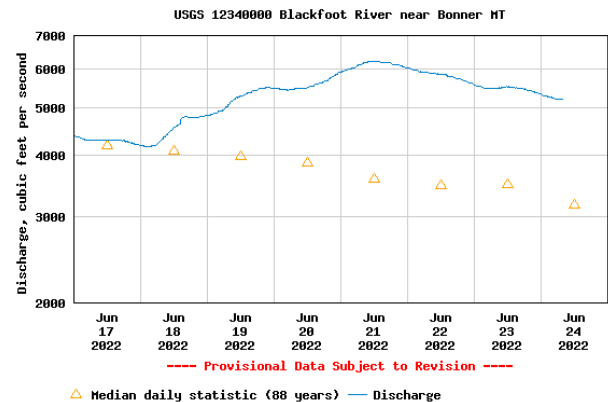
SNOWPACK AND WATER SUPPLY

The NRCS website lists our Blackfoot watershed snowpack today as **15,000% of average?!** I don't know what to make of this except that there are gremlins in their system. I think the current snowpack is still above average as it has been for weeks. However, it still can't amount to much more runoff this season and Blackfoot river flows are still predicted to be about normal for the rest of the growing season.



STREAMFLOW

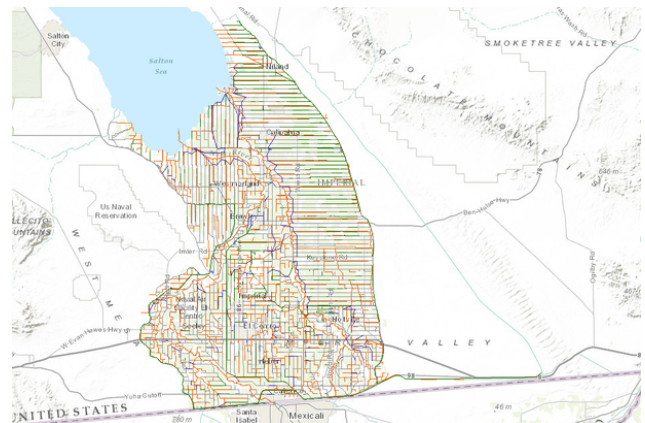
The Blackfoot river flow at Bonner increased to over 6,000 CFS on Tuesday before dropping back to **5,210 CFS** today. This is above average for this date (3,880 CFS). 1899 saw the highest flow at 12,500 CFS while the lowest flow was 803 CFS in 1977. Blackfoot river flows are still predicted to be about normal for the rest of this season. You can get the current Blackfoot flow anytime at: [USGS Current Conditions for USGS 12340000 Blackfoot River near Bonner MT.](https://www.waterdata.usgs.gov/nwis/rt/15/06/17/18/19/20/21/22/23/24)



PUMP TESTS are available this year in late June and early July while systems are still running. This can get your system operating at its peak while using the least power = **better crops and lower electric bills**. We are very lucky to have John Heffernan doing the testing with his decades of experience helping irrigators understand their systems and what options are for improvements. Contact Jennifer if you are interested.

THE IMPERIAL IRRIGATION DISTRICT - HINTS FOR OUR FUTURE?

The Imperial Irrigation District is the largest in the country covering almost 500,000 acres in southern California between the Salton Sea and the Mexican Border. It is one of the most productive agricultural areas in the world and we all eat produce from here. I became aware of the IID while conducting a soil survey of the Chocolate Mountain Bombing Range on the eastern border of the district and from Marc Reisners classic book *Cadillac Desert*. Every irrigator and water manager should read this book or at least view the 4-part series on YouTube [Cadillac Desert - 1. Mulhollands Dream \(1 of 9\) - YouTube](https://www.youtube.com/watch?v=1j8k8k8k8k8).



Since agriculture is the largest user of water, attention is focused on making irrigation more efficient and using this conserved water elsewhere. The Imperial Irrigation District continues to be a leader in this effort and provides a model for what local irrigators can expect in their future. The district is on tract to conserve almost 500,000 acre-feet of water a year by 2026. These efforts include the largest agriculture-to-urban water transfer in the nation.

The Metropolitan Water District is the largest municipal water organization in the country serving southwest California including Los Angeles and San Diego. In 1988 the MWD began paying for water conservation practices in the Imperial Irrigation District that generate over 100,000 acre-feet of water each year. The MWD then uses this conserved water in urban areas but agrees not to ever claim a water right for it. This program provides a large income for the district in perpetuity. The methods for conserving water include: • *Reservoirs* • *Canal lining projects* • *Lateral interceptors* • *12-hour deliveries* • *Non-leak gates* • *Irrigation management* • *System automation*.

The district saved another 67,700 acre-feet of water each year by lining the All American Canal which moves water from the Colorado River to the District. This saves 67,700 acre-feet of seepage but a new proposal is to cover the canal with solar panels to reduce evaporation and generate energy.

A fallow program saves 150,000 ace-feet each year by letting farms fallow fields temporarily without giving up their water allocation permanently. Some of this water is used to restore the Salton Sea which suffers from increasing salinity and toxicity as well as shrinking size. Dust storms from dried up portions of the lakebed create toxic clouds that reduce visibility and impact the health of surrounding communities. The decline of the Sea also is harming bird life.

Each farm is given an annual water budget based on crop types, soils and other factors. This water budget program allows farm-to-farm transfers so irrigators that have extra water can temporarily transfer it to neighbors that need more.

Additional system conservation measures will produce over 100,000 acre-feet of savings by 2026. These measures include major integrated information management systems • communication upgrades • installation of automated headings • tailwater recovery • monitoring of system operational discharge • a pilot delivery measurement project on two zanjero runs that will be scaled up district-wide • notebook computers for zanjeros (ditch riders) • reservoirs and intertie improvements.

Additional on-farm conservation measures will produce 200,000 acre-feet of savings by 2026. These measures include irrigation scheduling, improved water controls, conversion to drip and sprinkler irrigation and others. Farmers are paid \$285/acre foot for water delivery reductions.

The Salton Sea was created when irrigation headgates on the Colorado River failed in 1905 and for 2 years huge flows filled up part of the Imperial Valley which is below sea level. The lake is half again as large as Flathead Lake. At its peak it supported extensive recreation and commercial fishing and it is still an important habitat for millions of migratory birds. Increasing salinity, toxic dust and other problems ended fishing and recreation. Its decline created a variety of environmental hazards that are the focus of current restoration efforts.



The **Blackfoot Watershed** is likely to see similar conservation programs in the future as water needs increase downstream. Cities, dam operators, irrigation districts and other water users will likely fund similar conservation efforts for Blackfoot irrigators and provide a new significant income stream for our watershed. Our water rights will only increase in value in the future.

For further information contact [Jennifer Schoonen, Blackfoot Challenge Water Steward, 406-360-6445](#) 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.