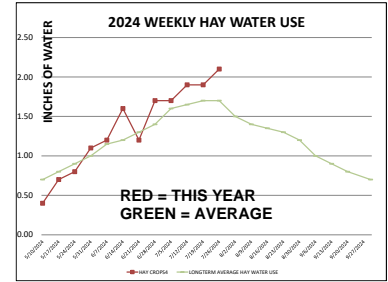


BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday July 26, 2024



Last week was again HOT with only a little rain. Next week will be slightly cooler with little or no rain. Crops used more water last week than ever before according to the Deer Lodge Agrimet weather station and our own 15 years of records. **The highest single-day crop water use ever recorded at the Deer Lodge station was on July 25 – ½ inch in one day for alfalfa hay and spring grains.** Next week mature crops will use only slightly less water. **Blackfoot River flows dropped below 500 CFS this week, the earliest in the 24-year history of our drought plan.** Temperatures still exceed trigger levels and FWP has continued **Hoot Owl Restrictions**. Flows may get some help as irrigators shut off for haying and drought plans are implemented. Please send us any ideas or questions to include with these reports. We will respond and share them with everyone.

WEATHER: HOT AND DRY AGAIN!

It was HOT this last week and it will be almost as HOT next week. We had a small rainstorm of about ¼ inch across much of the watershed but next week has only a potential thunderstorm one day in the forecast. High temps next week will be the 80s and 90s and lows in the 40s. Cut hay will be quick to cure. The 30-day and 90-day forecasts still predict **below average rainfall and above average temperatures.**



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

CROP WATER USE - HIGHEST EVER!

This was the 5th week of above-average crop water use due to very high temperatures (graphs on page 1 & 2). The Deer Lodge Agrimet station and our own program data show the highest weekly and daily crop water use ever. **Most crops used over 2 inches of water this week. Both alfalfa hay and small grains used ½ inch in one day (July 25).** Remember that hay water use is reduced from its potential (below) by 2/3 the first week after cutting and 1/3 the second week. Despite a low snowpack, we had some well-timed rains and cool temperatures early in the season and first hay cuttings are looking very good.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	2.1	1.9	.27	16.6
PASTURE	1.8	1.6	.23	14.6
SPRING GRAINS	2.5	2.1	.30	13.6
WINTER WHEAT	1.8	1.5	.21	17.9
LAWNS	2.0	1.8	.26	16.7

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

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 2024 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

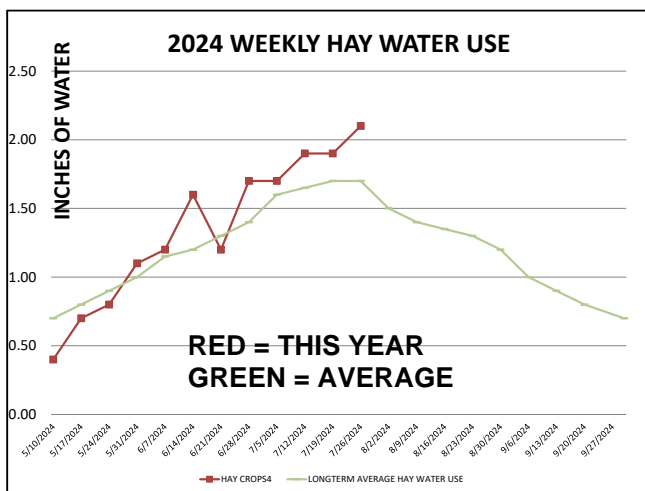
WEEK ENDING	RAIN ¹	2024 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	0.50	0.25	0.25			0.25	0.25			
5/10/2024	0.50	0.40	0.50			0.50	0.60	0.70	1.00	0.40
5/17/2024	0.10	0.70	0.80			1.00	1.00	0.80	1.10	0.60
5/24/2024	1.00	0.80	0.80	0.30	0.20	0.90	0.90	0.90	1.20	0.70
5/31/2024	0.50	1.10	0.90	0.50	0.40	1.20	1.20	1.00	1.30	0.70
6/7/2024	0.10	1.20	1.00	0.70	0.50	1.30	1.20	1.15	1.50	0.80
6/14/2024	0.01	1.60	1.40	1.10	0.90	1.70	1.50	1.20	1.70	0.80
6/21/2024	0.25	1.20	1.10	1.00	0.90	1.30	1.20	1.30	1.90	0.90
6/28/2024	0.10	1.70	1.40	1.60	1.40	1.80	1.60	1.40	2.00	1.00
7/5/2024	0.01	1.70	1.40	1.70	1.70	1.90	1.60	1.60	2.10	1.10
7/12/2024	0.01	1.90	1.60	2.10	2.10	2.10	1.80	1.65	2.20	1.10
7/19/2024	0.00	1.90	1.60	2.10	2.10	2.10	1.80	1.70	2.20	1.10
7/26/2024	0.25	2.10	1.80	2.50	2.50	1.80	2.00	1.70	2.20	1.10
8/2/2024								1.50	2.20	1.00
8/9/2024								1.40	2.20	1.00
8/16/2024								1.35	2.00	0.90
8/23/2024								1.30	2.00	0.90
8/30/2024								1.20	1.80	0.90
9/6/2024								1.00	1.40	0.60
9/13/2024								0.90	1.40	0.50
9/20/2024								0.80	1.20	0.50
9/30/2024								0.70	1.00	0.40
TOTAL	2.83	16.55	14.55	13.60	12.70	17.85	16.65	25.25	35.60	17.00

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

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

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

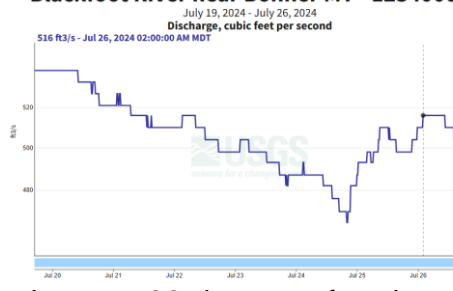
⁴ Hay Crop water use drops from these figures approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.



STREAMFLOWS VERY LOW & STILL FALLING

Blackfoot River flows continued a sharp downward trend this week then came up for a day before dropping again. The temporary boost upward was likely caused by a combination of factors including a small rain event, a power outage which shut down pumps, and systems shut off for haying. Today the flow at Bonner is 504 CFS compared to an average of 1160 CFS for this date. The highest flow on this date was 3,450 CFS in 1899 while the lowest was 444 CFS in 1988. Weather predictions for the next 30 days are for above average temperatures and rainfall so streamflows will continue well below average.

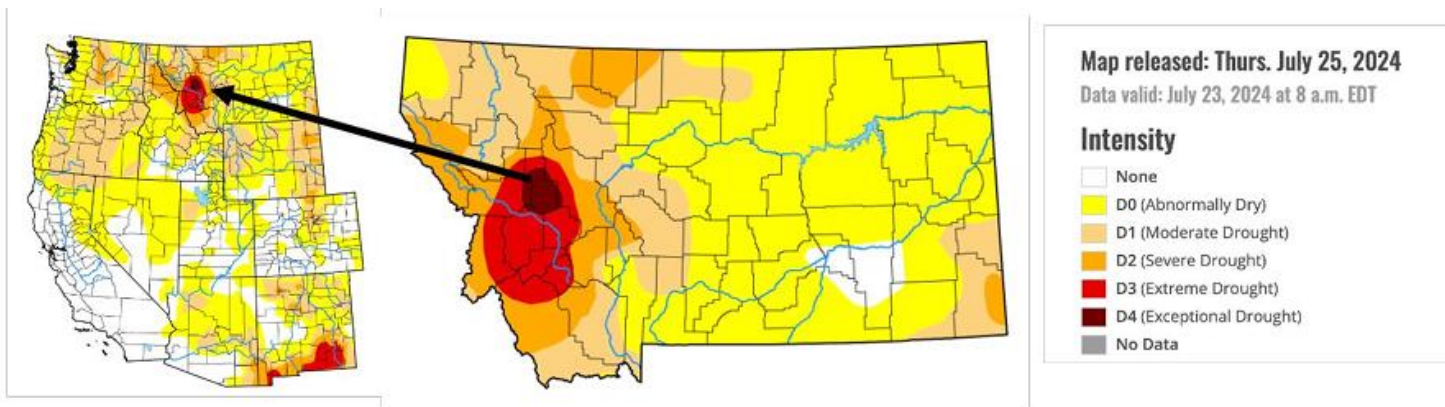
Blackfoot River near Bonner MT - 12340000



STREAMFLOWS AND WATER TEMPS TRIGGER DROUGHT ACTIONS

This year is the earliest in our 24-year history that we hit the drought plan trigger level of 500 CFS. This beat the previous record from 2015 by 18 days. Irrigators with drought plans have been directed to implement their plans and prepare for even lower flows soon. FWP has begun issuing notices to all junior irrigators and Hoot Owl restrictions go into effect today on the Blackfoot River below the Cedar Meadow Fishing Access Site. When the river level drops below 500 CFS all junior water right holders in the watershed are issued call letters telling them to cease irrigation unless they have an approved trade with a senior right. Contact Clancy Jandreau (Blackfoot Challenge water steward) for more information on drought plans, restrictions and options.

The Blackfoot watershed is the only place in the west that the U.S. Drought Monitor now lists as in **EXCEPTIONAL DROUGHT (D4)**.



YOU CAN HELP!

Irrigators have the greatest potential of all water users to help maintain streamflows. Those that can are asked to cease all irrigation. Hopefully a good first cutting of hay and the maturing of annual crops will help offset the loss in further production this year. If you do continue to irrigate, consider reducing the area irrigated at one time. Remember that only a small amount of any water applied during this hot weather results in production due to evaporation loss from crop and soil surfaces. The D4 Drought Classification may facilitate some economic help for affected irrigators. We will try to let you know the details of this assistance.

For further information contact Clancy Jandreau, Blackfoot Challenge Water Steward, 406-304-5423 or Barry Dutton, Soil Scientist, 406-240-7798 barry@landandwaterconsulting.net

THE BLACKFOOT DRAINAGE 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, streamflows and drought conditions.
- 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 drainage, 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.