



Montana Fish, Wildlife & Parks

Memo To: Interested Parties
From: Andy Brummond
Date: October 15, 2008
Subject: 2008-Year End Drought Update

General/Statewide

The October 7th version of the U.S. Drought Monitor shows an improvement in drought conditions over the past two months. Abnormally dry conditions are now found in southwestern Montana and along the northern tier while moderate to extreme drought conditions remain present along the North Dakota border. Current conditions are vastly improved when compared to last year at this time when nearly the entire state was gripped by drought conditions ranging from abnormally dry to extreme. The Monitor can be accessed at <http://www.drought.unl.edu/dm/monitor.html>. The graphic is prepared using a variety of drought indices, and is updated approximately weekly. The October 2nd U.S. *Seasonal Drought Outlook Through December 2008* predicts that where drought conditions exist along the North Dakota border conditions will improve. None of Montana is expected to see drought conditions worsen. (see http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html).

Review of precipitation for the 12-month period through September 2008 shows most of the state at 90 to 110 percent of average precipitation with the only exceptions being the western and northeastern climate divisions at 70 to 90 percent of normal. A graphic of this period can be found at <http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?ave12> Over the short-term conditions during September were drier in the western and central (50-70%) and north-central, south-central and southwestern (70-90%) areas and equal or better across northeastern and southeastern (90-110%) areas. See <http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?ave01>

Another useful graphic is located at http://www.cpc.ncep.noaa.gov/cgi-bin/anom_realtime.sh. This graphic is on a national basis, but is updated daily and displays running 30-day (or 90-day) departure from normal precipitation statistics. From the link, choose the bottom-most entry in the column (for most recent date) in either column. The result is four graphics, with “% departure from normal precip” in the lower left.

Updated daily accumulated mountain precipitation and snow water equivalent information can be viewed in tabular form, by basin, and locations within these basins, by accessing: http://www.wcc.nrcs.usda.gov/cgibin/past_up.pl - choose “Montana”, enter the month, date, and year, and it will generate the list. The following table contains a comparison of total mountain precipitation for the 2007 and 2008 water years. The water year runs from October of the preceding year through September of year listed.

The percentages of total mountain precipitation for the 2008 water year ranged from 93 percent up to 115 percent. Compared to 2007 mountain precipitation substantially improved in nearly all river basins.

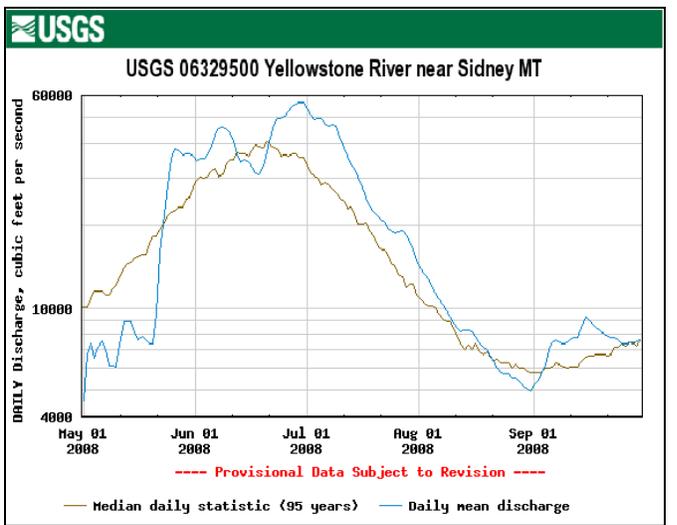
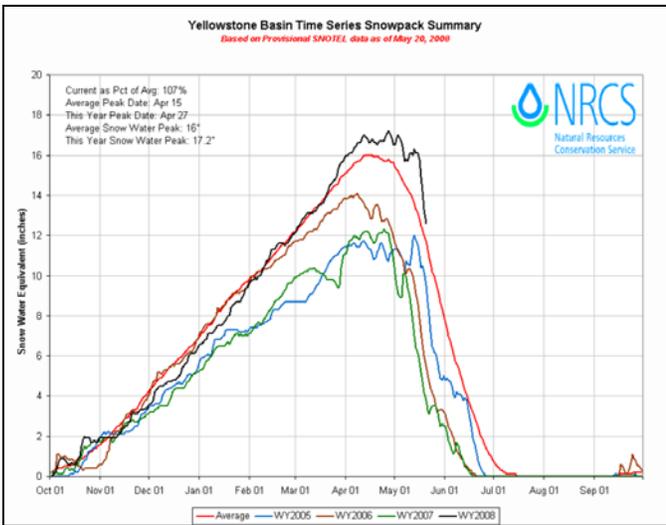
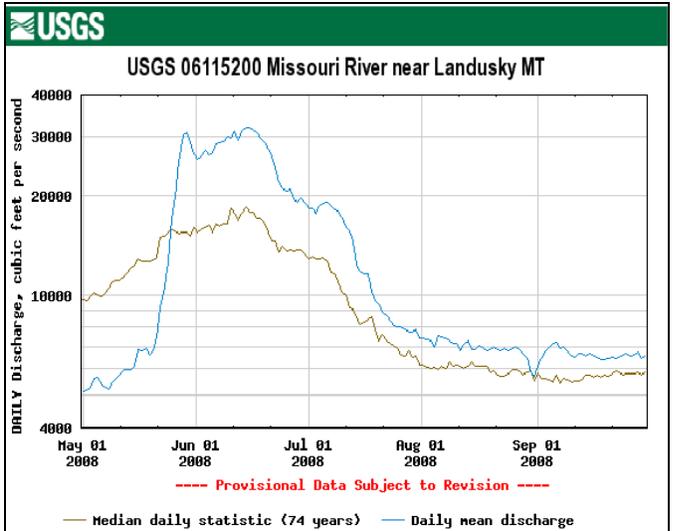
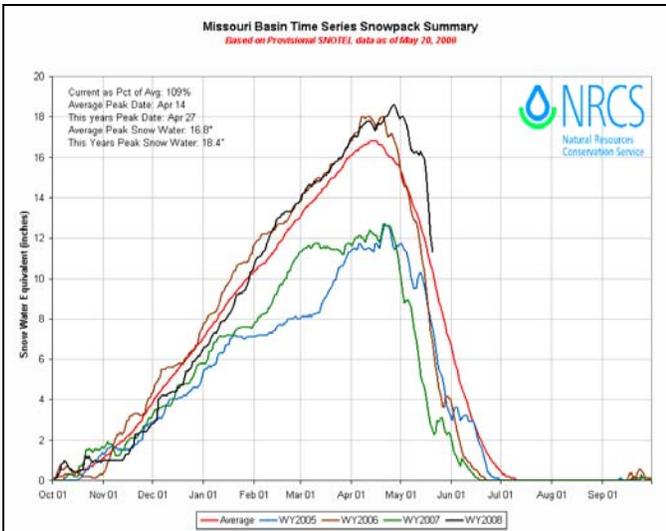
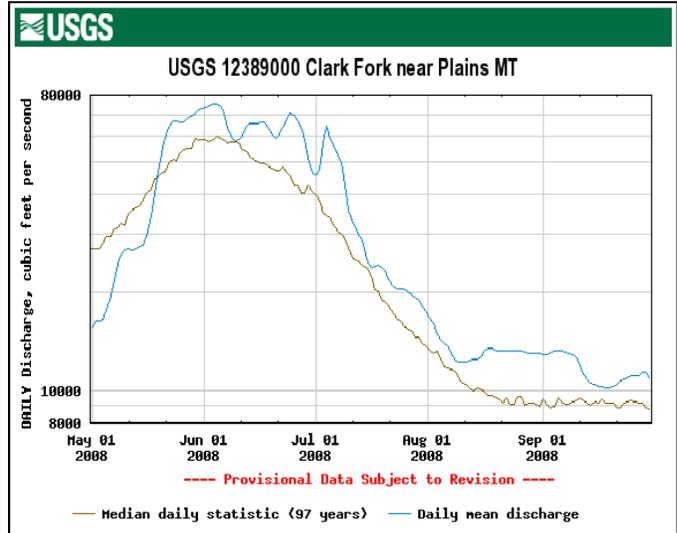
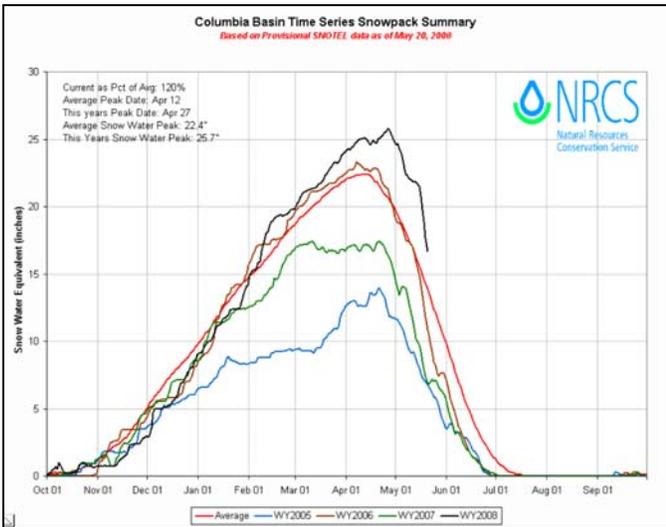
Basin	Total Precipitation (% of avg.), 2007 WY	Total Precipitation (% of avg.), 2008 WY
Kootenai	100	101
Flathead	92	101
Upper Clark Fork	92	99
Bitterroot	92	107
Lower Clark Fork	91	94
Jefferson	87	99
Madison	78	100
Gallatin	76	97
Missouri Headwaters	82	93

Hdw. Missouri Mainstem	86	96
Smith, Judith, Musselshell	93	114
Sun, Teton, Marias	78	102
Missouri Mainstem	90	98
St. Mary, Milk	100	102
Upper Yellowstone	84	98
Wind (WY)	84	102
Shoshone (WY)	87	104
Bighorn (WY)	88	106
Tongue (WY)	110	115
Powder (WY)	89	111
Lower Yellowstone	91	106

The statewide graphic showing stream flow conditions compared to long-term averages is located at <http://mt.waterdata.usgs.gov/nwis/rt>. As of October 14, 2008 the vast majority of stations are reporting stream flows in normal or above ranges. Notable exceptions include the Madison River below Hebgen Reservoir, the Beaverhead River downstream of Clark Canyon Reservoir and the Kootenai River below Libby Dam all report stream flow less than the 10th percentile. An uncontrolled release due to infrastructure failure from Hebgen Reservoir during September lowered reservoir levels considerably leading to well below normal releases in order to maintain lake levels. Clark Canyon Reservoir continues to struggle to store sufficient amounts of water in the spring to allow for winter releases above minimum levels of approximately 35 cfs. Data for specific USGS gauges is available at: <http://mt.waterdata.usgs.gov/nwis/current?type=flow>.

With few exceptions above normal snowpack conditions across Montana and northern Wyoming led to above normal stream flow in most streams and rivers. The following pairs of charts provide comparisons of mountain snowpack and stream flow for Montana's major river basins. The charts on the left compare average snowpack conditions in red with those for water years 2005 through 2008. The 2008 data (shown in black) is through May 20th.

In the Columbia River basin for Montana west of the Divide, stream flow in the Clark Fork River near Plains remained above normal from mid-May through the end of September driven by the above normal snowpack that melted later than normal. In the Missouri River basin stream flow was substantially above normal from late May through mid-July leading to improved albeit still low water levels in Fort Peck Lake. This above normal water yield was in particular driven by very higher water along the Rocky Mountain Front in the Sun and Marias River basins. Stream flow in the Yellowstone River basin peaked later than normal and well above average. However lack of precipitation driving stream recharge down and increasing irrigation demand led to below average stream flow by late August that has since recovered to above normal.



The Surface Water Supply Index map for October considers soil moisture, precipitation, snow pack, and reservoir storage, according to seasonal relevance. As shown at:

<http://nris.state.mt.us/wis/SWSInteractive/SWSI-App.asp?month=10&year=2008>

SWSI indices have declined over the past few months but remain substantially better than this time last year. 19 basins are showing wet or surplus water conditions. The uncontrolled release from Hebgen Reservoir during September and the resulting loss of storage drove values into the extremely dry range in the Madison River basin and the Missouri River basin above Canyon Ferry Reservoir. The Judith River basin is also showing extremely dry conditions caused by abnormally low storage levels in Ackley Lake due to construction activities. The SWSI values can be found by clicking on **REPORT** at the bottom center of the map.

The Montana Drought Monitoring website is located at <http://nris.state.mt.us/drought/>. Committee members and website administrators welcome suggestions for postings and site organization. Montana's Official Drought Website is at <http://drought.mt.gov/>

FWP Drought Response

Based on snowpack and forecasted streamflow conditions FWP determined that no water right call warning letters would be sent water users with junior priority water rights. While in some isolated instances stream flow did ultimately drop below FWP instream water right levels, by and large stream flow did remain above FWP instream water right levels.

No drought fishing restrictions and closures were imposed in 2008. There are presently no fire-related closures or restrictions on FWP administered lands. Fire restrictions and other drought and fire related information can be found on FWP's drought website at: <http://fwp.mt.gov/news/drought/default.html>

FWP Regional Reports

In the past FWP has reported largely on drought impacts related to fisheries. In an effort to better understand how drought is impacting wildlife and recreational opportunities, each of the seven FWP Regions is being asked to supply information with regard to how drought is impacting wildlife and recreation as well as the fish. The following questions, categorized by division, were asked of each FWP Region. Some questions are seasonal in nature and are not relevant at this time.

Wildlife

Where are drought conditions affecting wildlife populations? (For example, note mild or harsh winters' impact on populations, or weather-related disease issues.)

Where are drought conditions causing wildlife to move from normal range to agricultural lands or urban areas?

Where are game damage hunts in place or planned to mitigate impacts to agriculture due to wildlife being displaced by drought conditions?

Where are changes in place, or being considered to grazing, recreation, hunting or other activities on WMAs in response to drought/fire conditions?

Parks

Where are drought/fire conditions causing state parks and fishing access sites to be closed or use restricted?

Where are low lake or water levels hindering or preventing recreational activities at state parks or fishing access sites?

Where are low stream flows not allowing or restricting recreational use of rivers?

Fisheries

Where are fish winterkills being reported in lakes or ponds due to low water levels or other drought conditions?

Where are fish summerkills been reported in lakes or ponds due to low water levels, high water temperatures or other drought conditions?

Where are streams or rivers closed to angling or have fishing restrictions due to low stream flows and /or high water temperature?

Where are drought conditions affecting fish populations? (For example, note where population trends can be explained by drought-impacted flow and temperature conditions.)

Where have low reservoir levels impacted fish populations in important flat-water fisheries? (For example, note where fishing regulation will be lifted to increase the harvest of stocked fish populations in waters impacted by low water levels and rising temperatures.)

Where are low reservoir levels impacting angling opportunities?

Enforcement

Where are drought/fire conditions causing landowners to close land to hunting and fishing?

Where are fire restrictions causing changes in the number of hunters in the field?

Region 1 – Kalispell

Northwest Montana had basically an average water year. However, a cool wet spring built snowpacks into May and delayed runoff. The delayed snowmelt put pressure on wintering wildlife and resulted in reduced whitetail deer fawn and elk calf counts in a band along the Montana/Idaho border. It appears Frank Lake near Eureka also had a partial fish kill.

The delayed snowmelt resulted in a prolonged runoff until nearly July. Flathead Lake, Hungry Horse Reservoir and Lake Koocanusa all refilled. Ashley Lake showed the highest summer water levels in nearly a decade. High mountain snowpacks lingered into August and high moisture levels produced high quality forage for deer and elk. The moisture also produced abundant berry crops such as huckleberries and good feed conditions resulted in a very low number of conflicts with bears.

There were no summer drought angling restrictions due to low flows or high water temperatures and no recreational restrictions. Several fishing regulation changes were proposed to deal with drought impacts. The bull trout catch and release season on the South Fork Flathead River was proposed to shorten two weeks, from August 15 to July 31, because low flows and high temperatures tend to concentrate migrating bull trout at tributary mouths where they are vulnerable to overfishing and high temperatures result in high catch and release mortality. Likewise, population estimates show a marked increase in brown trout and a decrease in rainbow trout in the Thompson River, which has been hit hard by drought. Brown trout are more tolerant of elevated water temperatures and less likely to be caught in low water conditions. It was proposed to lift length limits on brown trout and go to catch and release for rainbow trout in an attempt to rebalance the fishery. Bull trout redd (spawning bed) counts have now started and it appears there are adequate stream flows to allow them to access spawning areas.

Region 2 – Missoula

Drought has not substantially impacted west-central Montana. Releases of stored water from Painted Rocks Reservoir on the West Fork Bitterroot River again supported flow in the Bitterroot River. Stream flow in the Bitterroot River at Bell Crossing near Victor remained generally well above the 400 cfs minimum target.

Region 3 – Bozeman

No Report

Region 4 – Great Falls

No Report

Region 5 – Billings

While winter precipitation lagged behind normal in some portions of Region 5, most mountain ranges realized average or above average snowpack during the winter of 2008. Spring precipitation/temperatures lagged behind average through the spring, but significant late May/early June precipitation events provided welcome relief to that situation. Mountain snowmelt was delayed as a result of these cold temperatures. As snowmelt occurred throughout the summer, flows were maintained at average or slightly above-average levels.

The Musselshell River system had below average snowpack, but with the addition of significant precipitation in late May/early June, that system was sustained throughout the summer with average flows. The Musselshell River system and reservoirs in the Martinsdale/Harlowton vicinity realized water shortages early last spring, however both Martinsdale Reservoir and Deadman's Basin Reservoir both filled to above expected levels as a result of the excellent early summer precipitation. The Yellowstone River maintained average or slightly above-average flows throughout the summer/fall period.

The Bighorn River system benefited from above-average snowpack, even though runoff was delayed as a result of a cool spring temperatures. There was a serious reductions in flows to the Bighorn River during early May during the critical spawning/brood rearing period. Flows were restored after runoff began, but some damage to the fishery likely occurred as a result of that flow reduction. With the commencement of warmer temperatures and the significant May-June storm and snowmelt, runoff into Yellowtail resulted in a full pool. Significant releases from Yellowtail were necessary to prevent lake levels from going too far into the flood pool. Currently the reservoir is holding at .2 foot below full, and inflows equal releases.

The lack of an early growing season precipitation/temperatures that has characterized the last few years may stress upland birds during the nesting/brood rearing periods, but wetter conditions may mitigate that situation somewhat as vegetative growth came on strong during the mid-June period. March and April were cold and dry, thus delaying the usual "greenup" that occurs in late March/early April. The late summer/early spring period realized a serious bluetongue outbreak that affected white-tailed deer and antelope primarily. Antelope and whitetailed deer fawn production was lackluster during recent summer surveys. There is a mule/whitetailed deer damage hunt presently ongoing near Absarokee.

Fire restrictions were in place in Region 5 beginning in late July. Those did not progress beyond Stage 1, and were lifted after significant wetting rains during early September.

Region 6 – Glasgow

In Region 6 this spring-summer dry conditions negatively affected pheasant and waterfowl production. However, it does not appear to have effected other upland game birds to any great degree. Drought has not influenced wildlife movement so far this year, beyond normal movements. Any damage hunts or management seasons will be put in place to attempt to control burgeoning deer and elk populations.

The counties that make-up the northeast corner of the state, Sheridan, Roosevelt and Daniels Counties, were the driest region the state during the months of July, August and first week of September. In August other 'hi-line' counties followed with dry conditions ... Valley, Phillips, Blaine and Hill Counties. Given these dry/drought conditions, on July 15th Sheridan, Roosevelt and Daniels County went into a Stage I Fire Restriction. The first week of August Valley and Phillips Counties went into Stage I, followed by Blaine and Hill Counties in mid-August. Due to some moisture and cooler temperatures, all counties in Region 6 were out of Stage I Fire Restrictions by mid-September.

Stage I Fire Restrictions in Region 6 impacted the following State Parks and Fishing Access Sites (FAS):

Brush Lake State Park	Whitetail Reservoir FAS	Lewis & Clark FAS
School Trust FAS	Duck Creek FAS	Glasgow Base Pond FAS
Bjornberg Bridge FAS	Faber Reservoir FAS	Bear Paw Lake FAS
Fresno Tailwater FAS		

For the 7th consecutive year, the low water levels on Fort Peck Lake have put the 'main' boat ramps at Duck Creek and Rock Creek FAS out of water. Low reservoir levels at Fort Peck have plagued anglers for the past several years by limiting the amount of boat ramps available for use. However, the drought subsided during the summer of 2008 due to better than average snowpack and abundant spring precipitation in the western portion of the state. As a result, anglers were able to gain access through the Fourchette boat ramp that had been relatively inoperable the last couple of years. Crooked Creek, McGuire Creek, and Nelson Creek are still inoperable due to low lake elevations. Due to a lower release of water flow from the Fort Peck Dam, at the end of September, the boat ramp at Culbertson Bridge FAS was unusable.

Grasshopper, Floyd Flynn and Anderson Reservoirs experienced winterkills due to low water levels. Grasshopper was restocked this spring but both Floyd Flynn and Anderson Reservoirs, which have good water levels now but need to be restocked with fish. Dry Fork Reservoir is almost completely dry. While fish are still present they will not survive the winter. Fishing limits were lifted in June.

Region 7 – Miles City

Wildlife populations seem to be using their traditional home ranges. Typically big game populations use alfalfa fields and newly germinated winter wheat in the fall as the native range is dormant and dry. One elk game damage hunt on an alfalfa seeded CRP has occurred. Haystack fencing supply requests are normal in volume.

Restrictions on campfires at Myers Bridge Fishing Access Site in Treasure County are in place. No other drought or fire related closures or restrictions presently in place Region 7.

Hell Creek State Park has two boat ramps that remain unusable due to continued low water levels in Fort Peck Reservoir in spite of an eight-foot rise in water levels over 2007 when none of the three ramps in the Park were usable for launching of trailered boats. Other ongoing problem associated with reduced reservoir levels is the forced abandonment of the surface water system that provided "quality" potable

water for park patrons and staff. A well was drilled several years ago that yields sufficient water to meet park patron and staff needs. However, the well water is of marginal quality, staining shower stall walls, corroding fixtures and generally increasing facility maintenance needs and causing public complaint. There were numerous areas along the Yellowstone River in Region 7 where low river levels in late July through mid-August prevented safe passage of motorized boats. These areas were fewer in number and the duration of restricted passage was much reduced over previous years.

Spring precipitation combined with average to above average snow pack runoff resulted in positive conditions along the Yellowstone, Tongue and Powder Rivers during the summer of 2008. All three river systems were able to sustain above average flows throughout the summer with both the Tongue and Powder Rivers maintaining connectivity with the Yellowstone River through the month of August. This is the first year in 10 years that the Powder River did not dry up in its lower reaches and loose connectivity with the Yellowstone River.

Fish passage in the Tongue River around the T&Y Diversion dam was monitored this year beginning in April and proceeding through October. As expected a variety of species from the Yellowstone River were found passing through the Muggli fish passage throughout the course of the summer. Numbers of fish and diversity of species were highest during the period of increased flows in the spring months of the year. Passage of fish decreased during the summer months with stable flows. The increased flows in the Tongue and Yellowstone systems helped move fish to, and over the fish passage channel. Species previously undocumented above the T&Y diversion dam were documented up to the SH diversion, 45 miles above the T&Y structure. Larval stages of these same species were sampled above the diversion proving that additional spawning and rearing habitats had been secured with the implementation of the Muggli passage channel.

Yellowstone river flows remained above average for most of the summer creating a healthy riparian zone. Preliminary sampling of fish populations indicate a positive response to these increased flows. Minnow species appear to be very abundant due to the increased amount and utilization of backwater spawning and rearing habitats. These small fish provide forage and are the foundation of the fish population in the Yellowstone. It is expected that other species further up the trophic scale will be advantaged by the sustained flows in the Yellowstone River during 2008. Future sampling efforts will tell.

Paddlefish recruitment in the Yellowstone and lower Missouri has been very poor for the past 10 years as drought conditions have impacted the shallow reservoir habitats needed to provide nursery cover and food sources to raise the juvenile fish. Sustained flows from the Yellowstone increased these needed habitats in Lake Sacagawea this spring resulting in historic high catches of juvenile paddlefish. This strong year class is drastically needed to sustain a sport harvest fishery and will hopefully recruit to the population.

The positive impacts of the 2008 flow regime on the rivers of SE Montana was not carried over into the prairie ponds of the region. These important fisheries were again hit hard by dry conditions in 2008. The past 10 years of dry conditions and minimal or localized precipitation events have left many of these ponds very low or dry. Most of these fisheries have been decimated by these harsh conditions. Localized rain events have recharged some of these systems and have been re-stocked with fish from FWP hatcheries. Once re-stocked, the productivity of these systems is amazing, resulting in fast growth rates and great fishing opportunities. These successes are relatively few in the region. Many of these ponds have been dry for so many years that even a good precipitation event is not saturating or recharging the reservoir's ground water and the captured water is not retained. What is needed is good levels of precipitation from snow melt across the prairie region.