

Pacific Northwest Region Water Supply Update September 12, 2012

The long, hot, and dry summer for the PN Region is beginning to wind up and transition toward fall. Field crops are beginning to be harvested, and the fruit harvest is in full swing. Irrigation demands will taper down as crops come off, days are shorter, and temperatures cool. The dry pattern, however, is still well locked into place with no pattern change forecast for the next 2 weeks and possibly beyond. Water supplies fared well in the PN Region in 2012, especially when compared to the rest of the country. Reservoirs were able to meet the heavy irrigation demands and adequate (or better) supplies were available in all basins. A few individual basins, notably the Upper Snake, will see moderately low reservoir carryover levels going into next winter, although not nearly as low as has occurred historically. However, early indications are that an El Nino is likely to develop for the coming winter, increasing the chances for a warmer and dryer winter in the Pacific Northwest. Water supplies will be managed conservatively to help mitigate any drought impacts should they begin to materialize.

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Jan. to Date Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | n/a | 113 | 119 | 59 | 100% |
| Flathead/Hungry Horse (MT) | n/a | 119 | 123 | 95 | n/a |
| Crooked (OR) | n/a | 90 | 58 | 62 | n/a |
| Boise (ID) | n/a | 107 | 107 | 54 | n/a |
| Payette (ID) | n/a | 100 | 108 | 59 | n/a |
| Upper Snake (ID) | n/a | 91 | 86 | 32 | n/a |
| Columbia Basin (Columbia R at the Dalles) | n/a | 107 | 119 | n/a | n/a |

Pacific Northwest Region Water Supply Update August 8, 2012

Like everywhere else in the west, the PN Region is in the middle of a long, hot, and dry summer. Temperatures have been in the triple digits way too regularly, and no relief is on the horizon yet. Unlike the rest of the west, however, the PN Region was well positioned to handle this weather thanks to abundant water supplies in most basins from adequate snowpacks last winter and a wet spring. Even those basins that had below average runoff are in good shape due to reservoir carryover from last year. Heavy irrigation demand is being met by the reservoirs, and carryover at the end of the season will be low in many basins, especially those in the southern tier of the Region. The full target of flow augmentation water for downstream ESA listed anadromous fish will be provided this year.

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Jan. to Date Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | n/a | 112 | 119 | 85 | 100% |
| Flathead/Hungry Horse (MT) | n/a | 113 | 124 | 98 | n/a |
| Crooked (OR) | n/a | 90 | 58 | 75 | n/a |
| Boise (ID) | n/a | 104 | 108 | 75 | n/a |
| Payette (ID) | n/a | 98 | 109 | 78 | n/a |
| Upper Snake (ID) | n/a | 88 | 86 | 51 | n/a |
| Columbia Basin (Columbia R at the Dalles) | n/a | 105 | 121 | n/a | n/a |

Pacific Northwest Region Water Supply Update July 18, 2012

The PN Region has been fortunate to escape the drought that grips the rest of the west, with abundant water supplies in most basins, especially in the northern tier basins such as the Yakima, Flathead, and upper Columbia River above Grand Coulee. Heavy rain in June, along with melting of deep high elevation snowpack, led to a prolonged period of high inflows and near flood conditions in the Upper Columbia. Summer is now in full swing with hot temps, dry weather, and heavy irrigation demands being met by the reservoirs. Even those basins that had below average runoff are in good shape due to reservoir carryover from last year. The Upper Snake basin missed out on the wet spring and saw heavy early season irrigation demands; while supplies are adequate for this season, carryover at the end of the season will be very low. Carryover elsewhere should be near average. The full target of flow augmentation water for downstream ESA listed anadromous fish will be provided this year.

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Jan. to Date Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | n/a | 111 | 119 | 99 | 100% |
| Flathead/Hungry Horse (MT) | n/a | 115 | 125 | 99 | n/a |
| Crooked (OR) | n/a | 92 | 58 | 81 | n/a |
| Boise (ID) | n/a | 105 | 109 | 88 | n/a |
| Payette (ID) | n/a | 99 | 110 | 91 | n/a |
| Upper Snake (ID) | n/a | 89 | 87 | 65 | n/a |
| Columbia Basin (Columbia R at the Dalles) | n/a | 106 | 121 | n/a | n/a |

Pacific Northwest Region Water Supply Update June 20, 2012

The PN Region is having a great water year, despite a fairly wild rollercoaster ride that included periods of about everything: drought, flood, too hot, too cold, unexpected early peak flows, unexpected late peaks...2012 has certainly been dynamic. There were periods of substantial flood threat in various basins, yet no serious flooding occurred thanks to reservoir flood control operations and cooperative weather. Hungry Horse Reservoir is the only remaining project facing flood control operations, mostly due to a wet June in the basin that has already seen 200% of its average monthly rainfall, with 10 days still to go. High outflows are causing gas saturation conditions immediately downstream, but no flooding is anticipated at this time. All reservoirs filled or nearly filled this year and water supplies will be adequate. Or to quote Chris Lynch, Yakima Project: "The lakes are full, the sky is blue, the river is rolling, life is good."

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Jan. to Date Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | n/a | 111 | 113 | 100 | 100% |
| Flathead/Hungry Horse (MT) | n/a | 118 | 119 | 99 | n/a |
| Crooked (OR) | n/a | 90 | 59 | 91 | n/a |
| Boise (ID) | n/a | 107 | 114 | 98 | n/a |
| Payette (ID) | n/a | 101 | 116 | 99 | n/a |
| Upper Snake (ID) | n/a | 90 | 95 | 85 | n/a |
| Columbia Basin (Columbia R at the Dalles) | n/a | 106 | 110 | n/a | n/a |

Pacific Northwest Region Water Supply Update May 9, 2012

The second half of April continued the wild roller coaster ride for the Pacific Northwest. Record or near record temperatures throughout the entire region were immediately followed by a heavy rain event, focused primarily on Idaho. Flood control operations on the Yakima, Flathead, Boise, and Payette basins prevented significant flood damages, holding downstream channels to near flood stage but with no real damages reported. These are some of the earliest spring runoff peaks in decades and signal a runoff pattern that is about 3 weeks early. Flood control releases continue in these basins, along with Grand Coulee on the Columbia, to evacuate or maintain space to handle a second round of snowmelt runoff as the region warms back up over the next two weeks. Dry weather is forecast, and barring any surprises, the reservoirs should be well positioned to handle this second, but lower, round of inflow.

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Forecasted Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | 134 | 111 | 119 | 87 | 100% |
| Flathead/Hungry Horse (MT) | 109 | 110 | 105 | 82 | n/a |
| Crooked (OR) | n/a | 90 | 60 | 99 | n/a |
| Boise (ID) | 86 | 110 | 90 | 87 | n/a |
| Payette (ID) | 96 | 104 | 95 | 85 | n/a |
| Upper Snake (ID) | 61 | 91 | 79 | 88 | n/a |
| Columbia Basin (Columbia R at the Dalles) | 109 | 105 | 118 | n/a | n/a |

Pacific Northwest Region Water Supply Update

April 18, 2012

March was a whopper month for precip in the Pacific Northwest, with most basins receiving between 150% to 200% of average, and most of that falling in the second half of the month. A wet second half of the month has been a trend since January. April 1 snowpacks improved by over 20% from their March 1 values in some basins, notably in the Yakima and the Payette basins. Runoff forecasts reflect the (now) near normal conditions; the exceptions are the Upper Snake, which missed some of the abundant precip and lags slightly at 85%, and the Yakima which leads the pack with a robust 120% forecast. All reservoirs will fill or nearly fill, and no shortages will occur in 2012. Flood control operations to draft or maintain space are underway at Grand Coulee, Hungry Horse, Yakima, Boise, Payette, and in the Upper Snake; no significant flooding is anticipated at this point.

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Forecasted Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | 136 | 109 | 120 | 78 | 100% |
| Flathead/Hungry Horse (MT) | 106 | 107 | 104 | 78 | n/a |
| Crooked (OR) | 91 | 97 | 62 | 99 | n/a |
| Boise (ID) | 90 | 107 | 96 | 77 | n/a |
| Payette (ID) | 97 | 99 | 97 | 75 | n/a |
| Upper Snake (ID) | 77 | 91 | 85 | 84 | n/a |
| Columbia Basin (Columbia R at the Dalles) | 112 | 103 | 112 | n/a | n/a |

Pacific Northwest Region Water Supply Update March 8, 2012

Fortunately, February turned from dry to wet in the second half for the Pacific Northwest, producing particularly good snowfall in northern tier basins such as the Yakima and Flathead, which now hold average or better snowpacks. Precipitation in the Snake River basin was sufficient to reverse the declining trend and maintain snowpacks in the 75% to 85% range, although the headwaters of the Snake in Wyoming did better and are now approaching near average. In stark contrast, central and eastern Oregon, along with the southernmost basins in Idaho, continue to miss out on the storms, and most water supply forecasts have dropped below 50% of average. The good news is high reservoir carryover storage from last year will blunt the risk of any water supply shortages in these basins. Elsewhere, some flood control releases have begun in the upper Snake and Boise basins to maintain space for the upcoming spring runoff; this is more of a reflection of the high reservoir carryover storage rather than a need to make deep drafts. The weather forecast calls for a return to wet weather over the next 2 weeks.

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Forecasted Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | 108 | 95 | 104 | 75 | 100% |
| Flathead/Hungry Horse (MT) | 98 | 99 | 95 | 81 | n/a |
| Crooked (OR) | 75 | 72 | 48 | 70 | n/a |
| Boise (ID) | 86 | 94 | 95 | 73 | n/a |
| Payette (ID) | 78 | 79 | 85 | 69 | n/a |
| Upper Snake (ID) | 92 | 95 | 96 | 80 | n/a |
| Columbia Basin (Columbia R at the Dalles) | 94 | 91 | 97 | n/a | n/a |

Pacific Northwest Region Water Supply Update

February 8, 2012

The dry winter in the Pacific Northwest took a dramatic turn in the second half of January, as an unusually strong storm cycle impacted the region and dropped impressive amounts of snow. Snowpack in most basins recovered by 20 to 30 percentage points or more, and in a few cases caught back up to average. However, the return to a dry pattern was equally abrupt as another strong ridge of high pressure has taken over and snowpacks begin losing ground again. The February runoff forecasts reflect the improvements over January, but with roughly 40% of the winter left there is still a wide range of potential outcomes. The high pressure is forecast to begin breaking down next week, and hopefully a wetter pattern will return. Above average carryover storage from 2011 means the PN Region can sustain a dryer year without any expected water shortages.

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Forecasted Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | 97 | 89 | 96 | 69 | n/a |
| Flathead/Hungry Horse (MT) | 84 | 91 | 97 | 84 | n/a |
| Crooked (OR) | 67 | 84 | 63 | 64 | n/a |
| Boise (ID) | 85 | 95 | 92 | 69 | n/a |
| Payette (ID) | 78 | 79 | 87 | 69 | n/a |
| Upper Snake (ID) | 84 | 90 | 93 | 76 | n/a |
| Columbia Basin (Columbia R at the Dalles) | 84 | 88 | 92 | n/a | n/a |

Pacific Northwest Region Water Supply Update

January 11, 2012

The first runoff forecasts for 2012 reflect the below average hydrologic conditions throughout the entire PN Region. The Region has been very dry since the beginning of December, and as we approach the halfway point of the snow accumulation season, snowpacks are typically running in the 60 to 70% of average range, with the northern tier basins doing slightly better, but central and eastern Oregon basins doing much worse. Climatic forecasts based on “La Nina” conditions have consistently called for a wetter than average winter, but an entrenched dome of high pressure has thus far been a spoiler. And while La Nina increases the probability of average or wetter conditions, dry years can still be expected to occur in roughly 1 out of 5 of these type years. There is an indication the current dry pattern will begin to break down next week, and a wet second half of winter and/or spring can still erase the current deficits. Above average carryover storage from 2011 also means the PN Region can sustain a dryer year without any expected water shortages.

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Forecasted Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | 81 | 80 | 93 | 65 | n/a |
| Flathead/Hungry Horse (MT) | 65 | 83 | 92 | 87 | n/a |
| Crooked (OR) | 38 | 61 | 59 | 60 | n/a |
| Boise (ID) | 60 | 78 | 78 | 63 | n/a |
| Payette (ID) | 58 | 66 | 79 | 67 | n/a |
| Upper Snake (ID) | 66 | 77 | 86 | 71 | n/a |
| Columbia Basin (Columbia R at the Dalles) | n/a | 83 | 84 | n/a | n/a |

Pacific Northwest Region Water Supply Update

November 16, 2011

Water Year 2012 is off to a fairly typical start in the Pacific Northwest, with variable conditions throughout the region. It is still too early to pick up on discernable trends, but the weather patterns are shifting as we transition into the winter snow accumulation season. Enough moisture has fallen in October and November to provide a wet soil profile going into winter, and the first substantial snow storm of the season is impacting the region this week. Streamflows remain above average across the region, an indication of the strong carryover of flows from the wetter than average water year of 2011. Reservoir storage levels are at above average levels and will likely require flood control discharges later this winter to provide enough storage for winter precipitation events and to prepare for the spring season. Climatic forecasts are indicating that “La Nina” conditions have returned in the Pacific which tends towards greater than average fall and winter precipitation for the Northwest. Reclamation reservoirs are well positioned to respond to whatever hydrologic outcome that occurs.

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Forecasted Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | n/a | 77 | Avg. or above | 57 | n/a |
| Flathead/Hungry Horse (MT) | n/a | 122 | Avg. or above | 92 | n/a |
| Crooked (OR) | n/a | 52 | Avg. or above | 61 | n/a |
| Boise (ID) | n/a | 119 | Avg. or above | 56 | n/a |
| Payette (ID) | n/a | 81 | Avg. or above | 65 | n/a |
| Upper Snake (ID) | n/a | 114 | Avg. or above | 65 | n/a |
| Columbia Basin (Columbia R at the Dalles) | n/a | 91 | Avg. or above | n/a | n/a |

Pacific Northwest Region Water Supply Update

October 18, 2011

Water Year 2012 is only 18 days old and has been off to a wet start in the Pacific Northwest. Multiple wet systems have moved through the region in the last three weeks with ample amounts of precipitation causing most stations to be at above average levels for October. Snow accumulation has occurred only at the highest elevations and will serve as a wet base when the snow begins accumulating in earnest. Streamflows remain above average across the region, an indication of the strong carryover of flows from the wetter than average water year of 2011. The main issue at this time in the water year for the Pacific Northwest is the high levels of carryover in most of the major reservoirs. Reservoir storage levels are at well above average levels and will likely require flood control discharges later this winter to provide enough storage for winter precipitation events and to prepare for the spring season. Climatic forecasts are indicating that “La Nina” conditions have returned in the Pacific which tends towards greater than average fall and winter precipitation for the Northwest. It is still very early in the water year so conditions can change, but so far the 2012 season is shaping up to be a year with above average runoff.

| | Snowpack % of avg. | Water Year Precipitation % of avg. | Forecasted Runoff % of avg. | Reservoir Storage % full | Allocations |
|---|-------------------------------|---|--|---|--------------------|
| Yakima (WA) | n/a | Above | Avg. or above | 55 | n/a |
| Flathead/Hungry Horse (MT) | n/a | Above | Avg. or above | 93 | n/a |
| Crooked (OR) | n/a | Above | Avg. or above | 62 | n/a |
| Boise (ID) | n/a | Above | Avg. or above | 54 | n/a |
| Payette (ID) | n/a | Above | Avg. or above | 65 | n/a |
| Upper Snake (ID) | n/a | Above | Avg. or above | 65 | n/a |
| Columbia Basin (Columbia R at the Dalles) | n/a | Above | Avg. or above | n/a | n/a |