Approved by CITT

2024 Mid-April Water Year Type Categorization – Presented for Informational Purposes

To: Parties to the CSKT-MT Compact

From: CSKT-MT Compact Implementation Technical Team

Date: April 30, 2024

Re: 2024 Mid-April Water Year Type Categorization

Background

The Compact Implementation Technical Team (CITT) is tasked with developing or commissioning development of water management planning tools to support Flathead Indian Irrigation Project (FIIP) Water Management and Adaptive Management per Appendix 3.5, 3.e of the CSKT-MT Compact. Appendices referenced in this document are attached to the CSKT-Montana Compact, unless otherwise specified. This document provides a categorization of water year type pursuant to the intent of both the water management coordination schedule in Appendix 3.5 and the procedures outlined in Appendix 3.7 for determination of wet, normal, and dry years.

Because water allocations including minimum enforceable instream flows (MEFs), target instream flows (TIFs), river diversion allowances (RDAs) are not enforceable at this time, this document was prepared for informational purposes and to meet the CITT's responsibility to provide water management planning.

Water Year Type Projection

Water Year Type

Referred to as Hydrological Condition in Appendix 3.7, this is the CITT determination of wet, normal, and dry year for the Jocko, Mission, and Little Bitterroot Areas based on indicator gage data.

This mid-April 2024 water year type categorization was made using data from the National Resources Conservation Service (NRCS) streamflow forecast for April 1, 2024 and the exceedance probability tables in Appendix 3.7. Appendix A of this document contains a reproduction of the relevant section of the April 1, 2024 NRCS forecast. The water year categorization below includes the five gages listed in Appendix 3.7 that have an associated NRCS forecast. In future years, CITT may expand its forecasting capabilities to include gages not listed in the NRCS forecast.

The reference period of 1983-2002 was used to define volumetric wet, normal, and dry year determinations, as outlined in Appendix 3.7. Data from this reference period was used for the five gaging sites to determine the threshold of wet (<20% exceedance level), normal (20% - 80% exceedance) and dry (>80% exceedance) years as shown on the right side of Table 1. The left side of Table 1 shows the NRCS forecast for the 70th, 50th, and 30th percentile exceedance values of the gages listed in Appendix 3.7. The % Median column shows a comparison of the forecast to the 30-year median. In this report, the 50th percentile exceedance value is used to determine water year type.

Table 1: April 2024 Water Year and NRCS Streamflow Forecast[1]								
	April NRCS Streamflow Forecast, April- July 2024					Site-Specific Water Year Thresholds		
Area	Gage Site	70% Exceedance	50% Exceedance	30% Exceedance	% of 30 yr Median	Dry Year	Normal Year	Wet Year
Jocko	South Fork Jocko near Arlee	22,000	25,000	29,000	71%	<24,000	24,000 - 36,000	>36,000
Mission	Mission Creek near St. Ignatius	23,000	25,000	27,000	96%	<21,100	21,100 - 29,000	>29,000
	South Crow Creek near Ronan	8,600	9,300	10,500	91%	<7,700	7,700 - 11,800	>11,800
	Hellroaring Creek	3,200	3,500	4,000	85%	<3,350	3,350-4,750	>4,750
Little Bitterroot	Mill Creek above Bassoo Creek near Niarada	2,100	2,600	3,100	55%	<2,200	2,200 - 4,900	>4,900
[1]all values are in acre feet		Dry	Normal	Wet				

Jocko Area

The 50% exceedance level (25,000 acre feet) for the South Fork Jocko River forecast is within the range defined as a **Normal Year**. Although the volumetric (acre feet) forecast indicates a normal year, the percent median projection is at 71%. Additionally, the SNOTEL data for the North Fork Jocko station indicates a Snow Water Equivalent (SWE) value of 67% of median as of April 4, 2024. Given the below average snowpack conditions, the CITT recommends that water managers should be prepared for changing conditions and to be prepared for a transition to a Dry Year for Jocko Valley water supply planning.

Mission Area

The 50% exceedance level for the Mission Creek (25,000 acre feet) and South Crow Creek forecast (9,300 acre feet) are within the range defined as a **Normal Year**. These projections are indicative of the 96% (Mission Creek) and 91% (South Crow) percent median volumetric water supply forecasts across the period of record. NRCS added Hellroaring Creek to its suite of streamflow forecasts in 2024. The 50% exceedance level for the Hellroaring Creek forecast (3,500 acre feet) also indicates a volumetric supply within the **Normal Year** category (85% median). Although these forecasts categorize the water supply as normal, SNOTEL data for the Flathead Basin (74% median) suggest that water managers should anticipate conditions that are drier than usual.

Little Bitterroot Area

The 50% exceedance level for the Mill Creek forecast point (2,600 acre feet) is within the low end of the range defined as a Normal Year; however, because the volumetric streamflow projection is representative of 55% of the median streamflow supply, and because the nearby Blacktail Mountain SNOTEL gage indicates 53% of median snowpack (as of 4/4/24), the CITT recommends that water managers prepare for a transition to a water supply that falls within the range of a **Dry Year**.

Considerations and Limitations

- This water year type categorization was prepared using individual NRCS Forecast Points and may not be representative of entire geographic areas within the Flathead Reservation. The CITT is

currently working with the NRCS to develop two additional forecast points which are anticipated for Water Year 2025 (North Crow Creek; Agency Creek).

- NRCS Forecasts for the April-July time period were selected in favor of forecasts for the April-September forecasts as longer-term streamflow forecasts tend to have lower predictive accuracy. This approach is also consistent with the hydrologic condition procedures outlined in Appendix 3.7.
- Water supply is highly dynamic and is susceptible to sudden changes triggered by fluctuations in snowpack, temperature, and precipitation. The FIIP Project Operator and other interested parties should continually monitor snowpack, weather, and appropriate forecasts to inform real-time water management activities.
- At this time, this categorization is presented for informational purposes. Specific management decisions should be based on additional information, the most current forecast data, experience, and professional judgement.
- The CITT intends to gradually increase the frequency of these water year type categorizations as we near the full implementation of the MEF, RDA, and other enforceable flow rates.

Appendix A – NRCS Streamflow Forecast Summary: April 1, 2024

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Streamflow Forecast Summary: April 1, 2024
(Medians based On 1991-2020 reference period)

Flathead	Forecast Period	Forecast Exceedance Probabilities For Risk Assessment: Chance that actual volume will exceed forecast — 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Median (KAF)
NF Flathead R nr Columbia Falls								
	APR-JUL	1110	1240	1340	87%	1430	1590	1540
	APR-SEP	1250	1380	1490	88%	1600	1750	1700
Swan R nr Bigfork								
	APR-JUL	335	375	415	79%	450	505	525
	APR-SEP	365	415	450	77%	480	540	585
Flathead R at Columbia Falls[2]								
	APR-JUL	3370	3710	3980	82%	4240	4640	4870
	APR-SEP	3710	4110	4370	81%	4670	5130	5400
Flathead Lake Inflow[1,2]								
	APR-JUL	3370	4230	4620	81%	5010	5870	5670
	APR-SEP	3640	4630	5080	81%	5530	6520	6310
Mission Ck nr St. Ignatius								
	APR-JUL	21	23	25	96%	27	30	26
	APR-SEP	24	27	29	94%	32	36	31
MF Flathead R nr West Glacier								
	APR-JUL	1040	1140	1220	83%	1290	1400	1470
	APR-SEP	1150	1260	1350	83%	1450	1570	1620
SF Jocko R nr Arlee								
	APR-JUL	17.4	22	25	71%	29	36	35
	APR-SEP	19.3	24	28	72%	32	40	39
Hellroaring Creek ab Reservoir nr Polson								
	APR-JUL	2.7	3.2	3.5	85%	4	4.7	4.1
	APR-SEP	3.6	4.1	4.5	87%	5	5.6	5.2
South Crow Ck nr Ronan								
	APR-JUL	7.8	8.6	9.3	91%	10.5	11.8	10.2
	APR-SEP	8.3	9.5	10.6	92%	11.7	13.8	11.5
Mill Ck ab Bassoo ck nr Niarada								
	APR-JUL	1.57	2.1	2.6	55%	3.1	3.9	4.7
	APR-SEP	1.77	2.3	2.8	57%	3.3	4.2	4.9
Sf Flathead R nr Hungry Horse								
	APR-JUL	795	875	945	77%	1010	1090	1230
	APR-SEP	875	970	1030	80%	1100	1190	1290
Hungry Horse Reservoir Inflow[1,2]								
	APR-JUL	1100	1380	1510	82%	1640	1920	1850
	APR-SEP	1180	1480	1620	83%	1760	2060	1960

1) 90% And 10% exceedance probabilities are actually 95% And 5%
2) Forecasts are For unimpaired flows. Actual flow will be dependent On management of upstream reservoirs And diversions