

COMPARISON OF EXISTING AND PROPOSED HYDROLOGIC INDEX

EXISTING DECISION 1610 HYDROLOGIC INDEX

For the purposes of the requirements in this term, the following definitions apply:

- 1) Dry water supply conditions exist when cumulative Inflow to Lake Pillsbury beginning on October 1 of each year is less than:
 - 8,000 acre-feet as of January 1
 - 39,200 acre-feet as of February 1
 - 65,700 acre-feet as of March 1
 - 114,500 acre-feet as of April 1
 - 145,600 acre-feet as of May 1
 - 160,000 acre-feet as of June 1
- 2) Critical water supply conditions exist when cumulative inflow to Lake Pillsbury beginning on October 1 of each year is less than:
 - 4,000 acre-feet as of January 1
 - 20,000 acre-feet as of February 1
 - 45,000 acre-feet as of March 1
 - 50,000 acre-feet as of April 1
 - 70,000 acre-feet as of May 1
 - 75,000 acre-feet as of June 1
- 3) Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.
- 4) The water supply condition designation for the months of July through December shall be the same as the designation for the previous June. Water supply conditions for January through June shall be redetermined monthly.
- 5) Cumulative inflow to Lake Pillsbury is the calculated algebraic sum of releases from Lake Pillsbury, increases in storage in Lake Pillsbury, and evaporation from Lake Pillsbury.
- 6) For Permit 12947A, estimated water supply storage space is the calculated reservoir volume between elevation 1,828.3 feet in Lake Pillsbury and below elevation 749.0 feet in Lake Mendocino. Both elevations refer to the National Geodetic Vertical Datum of 1929. The calculation shall use the most recent two reservoir volume surveys made by the U.S. Geological Survey, U.S. Army Corps of Engineers, or other responsible agency to determine the rate of sedimentation to be assumed from the date of the most recent reservoir volume survey.

PROPOSED RUSSIAN RIVER HYDROLOGIC INDEX

The proposed hydrologic index for the Russian River would evaluate water supply conditions to determine which schedule of required minimum instream flows (Flow Schedule) would apply during each month for each of the following river reaches: (1) upper Russian River¹; (2) lower Russian River²; and (3) Dry Creek³.

The Upper Russian River Flow Schedule for January through May would be determined by the Lake Mendocino Cumulative Inflow Condition (Inflow Condition). For June through December, this Flow Schedule would be set by a combination of the Inflow Condition and the Lake Mendocino Storage Condition (Storage Condition), as discussed below.

The Lower Russian River and Dry Creek Flow Schedules for January through December would be set by the Inflow Condition.

For the purposes of determining the Inflow Condition, the Storage Condition, and the applicable Flow Schedules for each month, the following definitions and rules would apply:

LAKE MENDOCINO CUMULATIVE INFLOW CONDITION

The cumulative inflow into Lake Mendocino (cumulative inflow) would be calculated from October 1 of the previous year through the start (midnight) of the first day of each month from January through October as the sum of the following daily amounts: (1) releases from Lake Mendocino; (2) increases in storage in Lake Mendocino; and (3) evaporation from Lake Mendocino. For the months of January, February and March, cumulative inflow calculated by this method would be constrained to the maximum value listed below for each month as the Cumulative Inflow Limit⁴. If the calculated cumulative inflow were to exceed the Cumulative Inflow Limit value listed below for the applicable month, then the cumulative inflow would be adjusted and set equal to the Cumulative Inflow Limit for that month.

Cumulative Inflow Limit:

January 1:	22,100 acre-feet
February 1:	37,500 acre-feet
March 1:	54,500 acre-feet

Any adjustments made to the cumulative inflow by the Cumulative Inflow Limit would carry forward and be applied to the calculations of cumulative inflows for subsequent months.

The following rules would be applied to determine the applicable Inflow Condition number for each month.

INFLOW CONDITIONS:

- 1) Inflow Condition 1 exists when cumulative inflow is equal to or greater than the following amount for the applicable month:

22,100 acre-feet as of January 1
37,500 acre-feet as of February 1
54,500 acre-feet as of March 1

¹ The upper Russian River refers to the river between the East Fork Russian River and Dry Creek.

² The lower Russian River refers to the river between its confluence with Dry Creek and the Pacific Ocean.

³ Dry Creek refers to the creek between Warm Springs Dam and its confluence with the Russian River.

⁴ These cumulative inflow constraints were developed to limit the effects of large, early-season inflows on the applicable cumulative inflow. This is appropriate because early season inflows are less predictive of the water supply conditions for the subsequent dry season.

64,100 acre-feet as of April 1
73,200 acre-feet as of May 1
80,600 acre-feet as of June 1
87,100 acre-feet as of July 1
93,500 acre-feet as of August 1
99,800 acre-feet as of September 1
105,000 acre-feet as of October 1

- 2) Inflow Condition 2 exists when cumulative inflow is less than the following amount for the applicable month and greater than or equal to the applicable amount for Inflow Condition 3:

22,100 acre-feet as of January 1
37,500 acre-feet as of February 1
54,500 acre-feet as of March 1
64,100 acre-feet as of April 1
73,200 acre-feet as of May 1
80,600 acre-feet as of June 1
87,100 acre-feet as of July 1
93,500 acre-feet as of August 1
99,800 acre-feet as of September 1
105,000 acre-feet as of October 1

- 3) Inflow Condition 3 exists when cumulative inflow is less than the following amount for the applicable month and greater than or equal to the applicable amount for Inflow Condition 4:

13,000 acre-feet as of January 1
24,900 acre-feet as of February 1
42,100 acre-feet as of March 1
56,400 acre-feet as of April 1
63,200 acre-feet as of May 1
70,200 acre-feet as of June 1
74,600 acre-feet as of July 1
79,400 acre-feet as of August 1
82,600 acre-feet as of September 1
86,700 acre-feet as of October 1

- 4) Inflow Condition 4 exists when cumulative inflow is less than the following amount for the applicable month and greater than or equal to the applicable amount for Inflow Condition 5:

10,800 acre-feet as of January 1
18,000 acre-feet as of February 1
31,900 acre-feet as of March 1
50,200 acre-feet as of April 1
55,700 acre-feet as of May 1
62,200 acre-feet as of June 1
66,600 acre-feet as of July 1
70,700 acre-feet as of August 1
74,900 acre-feet as of September 1
78,600 acre-feet as of October 1

- 5) Inflow Condition 5 exists when cumulative inflow is less than the following amount for the applicable month:

10,500 acre-feet as of January 1
13,700 acre-feet as of February 1
19,500 acre-feet as of March 1
23,900 acre-feet as of April 1
32,700 acre-feet as of May 1
37,700 acre-feet as of June 1
40,000 acre-feet as of July 1
42,000 acre-feet as of August 1
44,000 acre-feet as of September 1
44,000 acre-feet as of October 1

The Inflow Condition number for November and December would be the same as the Inflow Condition number for the preceding October.

LAKE MENDOCINO STORAGE CONDITION

The water storage in Lake Mendocino (total storage) would be calculated from the water surface elevation measured on the start (midnight) of the first day of each month from June through December and using the most recent reservoir volume surveys conducted by the U.S. Geological Survey, U.S. Army Corps of Engineers, or other responsible agency.

The following rules would be used to determine the applicable Storage Condition number for each month.

STORAGE CONDITIONS

- 1) Storage Condition 1 exists when the total storage is equal to or greater than the following amount for the applicable month.

78,900 acre-feet on June 1
76,100 acre-feet on July 1
70,400 acre-feet on August 1
64,600 acre-feet on September 1
58,500 acre-feet on November 1
54,500 acre-feet on October 1
54,400 acre-feet on December 1

- 2) Storage Condition 2 exists when the total storage is less than the following amount for the applicable month and greater than or equal to the applicable amount for Storage Condition 3:

78,900 acre-feet on June 1
76,100 acre-feet on July 1
70,400 acre-feet on August 1
64,600 acre-feet on September 1
58,500 acre-feet on November 1
54,500 acre-feet on October 1
54,400 acre-feet on December 1

- 3) Storage Condition 3 exists when the total storage is less than the following amount for the applicable month and greater than or equal to the applicable amount for Storage Condition 4:

- 73,500 acre-feet on June 1
- 70,700 acre-feet on July 1
- 65,100 acre-feet on August 1
- 60,200 acre-feet on September 1
- 54,200 acre-feet on October 1
- 50,000 acre-feet on November 1
- 51,550 acre-feet on December 1

- 4) Storage Condition 4 exists when the total storage is less than the following amount for the applicable month and greater than or equal to the applicable amount for Storage Condition 5:

- 70,000 acre-feet on June 1
- 66,800 acre-feet on July 1
- 61,200 acre-feet on August 1
- 55,500 acre-feet on September 1
- 49,100 acre-feet on October 1
- 45,700 acre-feet on November 1
- 45,600 acre-feet on December 1

- 5) Storage Condition 5 exists when total storage is less than the following amount for the applicable month:

- 67,100 acre-feet on June 1
- 62,800 acre-feet on July 1
- 57,000 acre-feet on August 1
- 50,600 acre-feet on September 1
- 42,600 acre-feet on October 1
- 40,800 acre-feet on November 1
- 41,700 acre-feet on December 1

DETERMINATION OF FLOW SCHEDULES

The Lower River Flow Schedule number and the Dry Creek Flow Schedule number for each month would be set equal to the Inflow Condition number for that month.

The Upper River Flow Schedule number for January through May would be set equal to the Inflow Condition number for that month.

For June through September, if the Storage Condition number is greater than the Inflow Condition number for the month, then the Upper River Flow Schedule number would be set to the Inflow Condition number plus one. Otherwise, the Upper River Flow Schedule number would be set equal to the Inflow Condition number for that month.

For October through December, if the Storage Condition number is greater than the Inflow Condition number for the month, then the Upper River Flow Schedule number would be set equal to the Storage Condition number for the month, but not greater than the Upper River Flow Schedule number for the previous month plus one. Otherwise, the Upper River Flow Schedule number would be set to the Inflow Condition number for the month.