

2003 DWORSHAK TEMPERATURE RELEASES CALCULATIONS

(Trying to maintain 45 degree water)

DWORSHAK TEMPERATURE RELEASES

(Trying to maintain 45 degree water releases)

ELEVATION	AVAILABLE H ₂ O KSFD	AVAILABLE H ₂ O'S TEMP(6/3/03)	AVERAGE TEMP W/WATER USED	AVAILABLE H ₂ O'S TEMP(7/1/02)
1574	131.7	60.6		58.6
1557	58.4	51.0		
1549	173.2	46.5		48.9
1524	90.5	43		45.6
1510	64.9	42.95		
1499	22.2	42.9	51.8	45.2
1495	108.4	42.8		
1474	78.6	42.5		44.5
1457.6	39.9	41.0		
1449	40.6	40.3		43.3
1440	65	40.0		
1424	111	39.3		40.0
1399	34	38.9	40.9	41.3
1387	34	38.6		
1374	66	38.3		40.6
1349	67	38.4		39.8
1324		38.5	38.6	

MASS BALANCE OF RESERVOIR FOR TEMPERATURE IN JUNE

OUTLETS	Possible Elevation	Actual Elevation- ft	Total Flow Amt KCFS or KSFD	% of Total Flow	Outflow Temperature	Wt. Contributions to total Temp.
RO 1,2,3	1350	1350	3.9	0.28	38.6	10.9
Selector Gate 1 & 2	1510 - 1435	1510	4.9	0.36	40.9	14.5
Selector Gate 3	1510 - 1435	1557	5	0.36	51.8	18.8
Daily Averages			13.8	1.0		44.1

*Note: we generally try to maintain plant operations within 1% of max. efficiency, which requires that we have near max. flows through an open gate.

* Note: 1 KCFS for 1 day = 1KSFD

Note: The average amount of water released from 7/1 to 10/1 is **911.6 KCFS**

LENGTH OF TIME WE CAN MAINTAIN 45 DEG TEMPERATURE WATER W/13.8 KCFS FLOWS				
WATERS USED IN TEMP CONTROL EFFORT	H ₂ O Used in 1 week (KSFD)	Total H ₂ O Available for effort (KSFD)	Elevations water is taken from	# weeks we can maintain 45 degrees T
Water taken from 1510 ft	35	540.9	1574-1499	15.5
Water taken from 1458-1380.6 ft	34.3	477.5	1380.6-1457 ft	13.9
Water taken from 1380.6-1350 ft	27.3	167.0	1380.6-1350 ft	6.1
Totals based on temperature profiles	96.6	1185.4	1565 - 1350	12.3
Totals based on 60 yr average outflows	96.6	820.4		8.5
Totals based on 60 yr average outflows X 10% protection factor	96.6	738.4		7.6

We recommend using the 60 yr. Average outflows with the 10% protective factor conclusions.

Calculations Prepared by Laura Hamilton
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CENWD-CM-WR-N

2002												
TEMPERATURE PROFILES USED IN CALCULATIONS												
	Elevation (ft)	5/8	6/3	7/17	8/1	8/8	8/28	9/10	9/27	10/2	10/7	10/16
T5	1574	49.5	67.2	58.6	74.2	71.0	70.9	60.1	59.9	54.2	55.3	46.6
T6	1549	49.9	53.5	48.9	56.7	69.8	70.6	61.8	58.9	54.1	55.2	46.1
T7	1524	50.3	44	45.6	49.8	52.3	67.0	61.2	58.7	54.3	55.3	46.5
T8	1499	46.6	43.6	45.2	46.9	48.4	53.9	63.7	63.9	61.1	52.3	43.8
T9	1474	42.5	43.1	44.5	44.4	45.7	47.2	51.9	58.2	61.3	58.2	54.1
T10	1449	40.6	42.1	43.3	43.2	44.0	43.2	44.5	49.2	49.2	49.7	46.8
T11	1424	40.2	41.4	40.0	42.7	43.3	41.2	40.8	45.2	45.2	44.4	42.9
T12	1399	40.1	40.2	41.3	41.9	42.5	40.7	39.8	43.6	43.2	43.1	40.3
T13	1374	39.4	39.6	40.6	40.7	41.3	38.9	41.8	42.8	43.1	41.9	38.6
T14	1349	39.2	39.3	39.8	39.8	39.7	37.9	40.3	41.4	41.7	41.0	35.7
T15	1324	39.0	39	39.3	38.9	39.1	37.3	39.5	40.0	40.2	39.8	39.7
T16	1299	38.3	38.1	37.9	37.9	38.1	36.0	38.4	39.0	39.0	38.7	38.2
T17	1249	38.3	38	37.7	36.3	37.8	35.5	38.1	38.6	38.6	38.1	37.9
T18	1199	37.8	37.7	37.1	35.9	37.4	35.3	38.6	38.1	38.0	38.7	37.5
T19	1149	38.4	38.2	38.2	36.5	38.1	36.7	37.3	38.7	38.6	37.9	37.3
T20	1099	37.5	37.4	35.1	35.7	37.2	35.1	36.5	37.9	37.8	37.9	37.9
T21	1049	39.1	38.9	36.6	37.0	38.6	36.4	38.0	39.2	39.1	38.2	38.5
Blue= highest available cold water Purple = lowest available cold water												
RO removes water from the 1350 ft elevation												
Units 1,2 & 3 removes water from 1435 ft in undershot mode and 1610 ft In overshot mode												

2003												
TEMPERATURE PROFILES USED IN CALCULATIONS												
Gage ID	Elevation (ft)	5/8 Temp (F)	6/2 Temp (F)	7/17 Temp (F)	8/1 Temp (F)	8/8 Temp (F)	8/28 Temp (F)	9/10 Temp (F)	9/27 Temp (F)	10/2 Temp (F)	10/7 Temp (F)	10/16 Temp (F)
T5	1574	55	60.6									
T6	1549	51.4	46.5									
T7	1524	42.6	43									
T8	1499	40.6	42.9									
T9	1474	39.8	42.5									
T10	1449	39.2	40.3									
T11	1424	38.7	39.3									
T12	1399	38.5	38.9									
T13	1374	38.3	38.3									
T14	1349	38.8	38.4									
T15	1324	39.2	38.5									
T16	1299	38.5	37.9									
T17	1249	37.6	38.1									
T18	1199	37.4	37.6									
T19	1149	38.1	37.2									
T20	1099	37.3	37.4									
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