

Bear River Hydroelectric Project FERC No. 20

Oneida Development Water Year 2007 Operations Report



Submitted to:

Idaho Department of Environmental Quality

Prepared by:



November 30, 2007

1.0 INTRODUCTION

This report fulfills the requirements of paragraph 4 of the 401 Water Quality Certification dated 23 June 2003 and Appendix A of the FERC license for FERC Project No. 20 issued 22 December 2003. We describe the operations of the Oneida development for water year 2007. The precise requirements are:

“At the November meeting of the Bear River Commission, PacifiCorp shall provide IDEQ a report for the preceding water year that describes PacifiCorp’s operation of the Oneida Project. The report shall set forth a record showing the times during the preceding water year when PacifiCorp released water for power production, flood control, irrigation delivery, facility maintenance or for other reasons. The annual report shall be delivered to IDEQ each year during the term of the New License.”

2.0 RESERVOIR INFLOW, RELEASES AND ELEVATION

Water year 2007 was very dry with earlier-than-normal spring runoff. Reservoir releases were made to pass inflow for power generation and for downstream irrigation demand (Figure 1). The early spring runoff advanced the delivery of irrigation water from Bear Lake relative to last year. The changes in reservoir storage (dips in Figure 2) were made to keep the Bear River system “in balance” during the irrigation season. One significant balancing event is visible in the drawdown in late June and into early July that is clearly visible in the both Figure 1 where the outflow exceeds the inflow and in Figure 2 where the reservoir level dropped to 4876 feet. A similar drawdown was made at Alexander reservoir. The conditions that led to this drawdown was the combination of the extremely low natural runoff for this period of the year, the nearly full Bear Lake storage allocation and the unusually high peak irrigation demand during this period. The drawdown was required to enable PacifiCorp Energy to fulfill its contractual irrigation obligations to the irrigators.

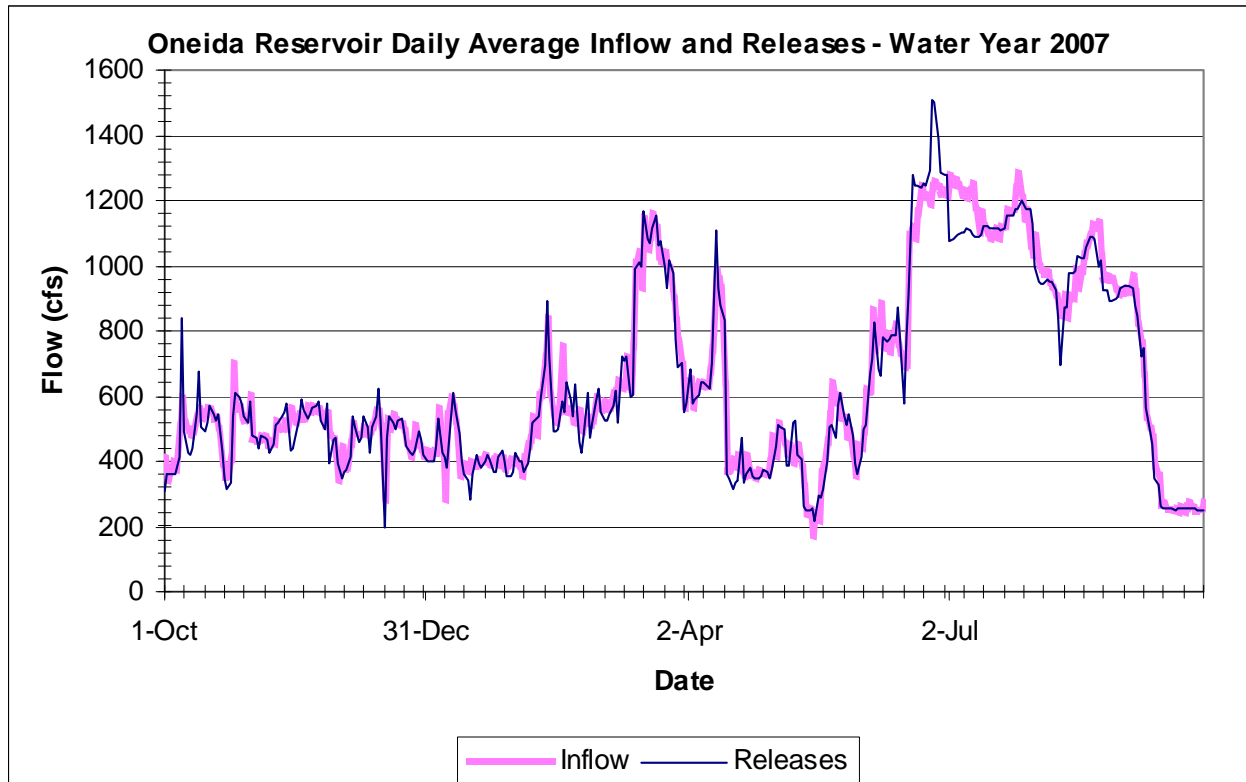


Figure 1. Daily average reservoir inflow and releases (no significant spill flow). Flows are in cubic feet per second (CFS).

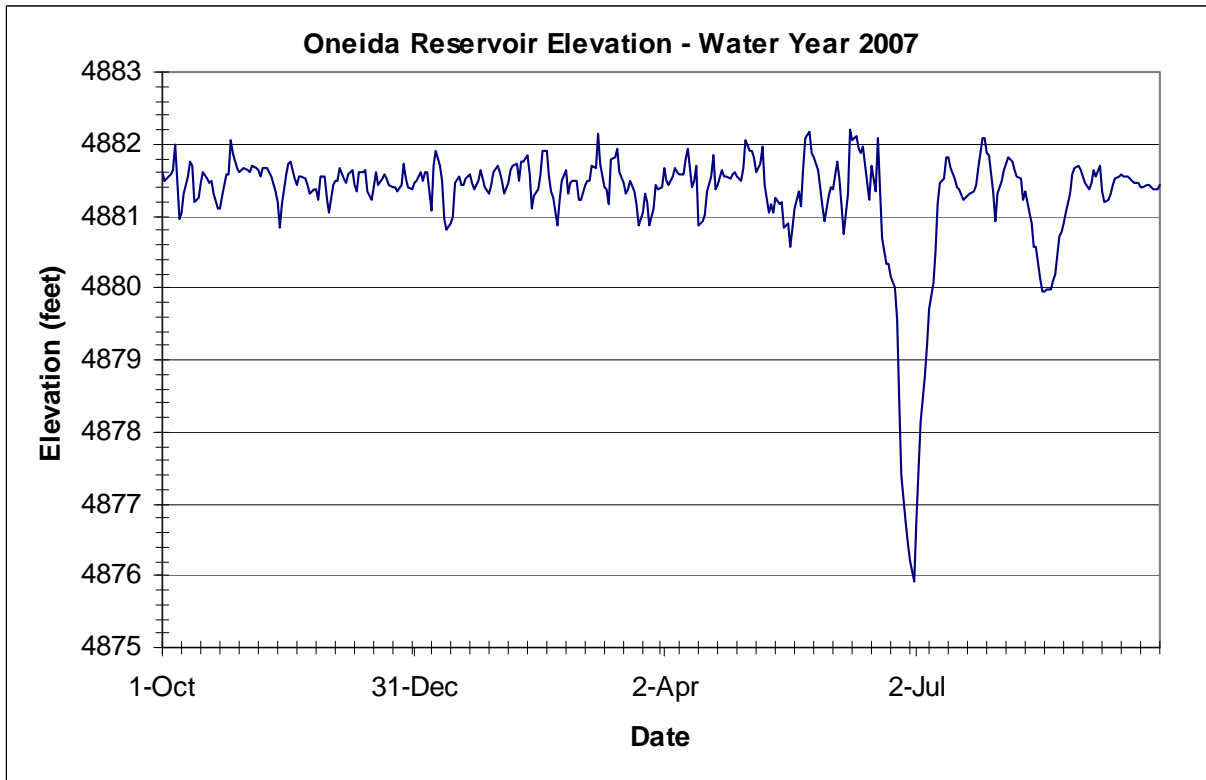


Figure 2. Oneida reservoir elevations. Elevations are in feet above mean sea level.

3.0 DAILY FLUCTUATIONS

Daily fluctuations are summarized by presenting plots and tables of statistics of daily stage values that are recorded every 15-minutes. The statistics used are average, maximum, and minimum. This is a concise way of demonstrating the daily fluctuations. Figures 4 and 5 show the average stage for a day as a black square with a line spanning the range from the minimum to the maximum.

Because Oneida was used for electrical grid stabilization in the 1980s, frequent and large flow fluctuations on the order of minutes were common, and this is the baseline against which current operations are measured. This annual report documents the dramatic reduction in flow fluctuations compared with this baseline.

Appendix A provides the record of purpose for reservoir releases on a daily time scale. One variation that warrants more explanation that is able to fit in the table took place on August 11th and 12th. On these days the fluctuations are a result of the transition from power generation to bypass flow through the spill gates on August 11th and restarting the plant on August 12th. The plant was taken offline as a precaution to prevent additional damage to the plant should the wildfire that was very active in the canyon engulf the plant. Also, fluctuations occurred when transmission lines were damaged that caused the plant to trip.

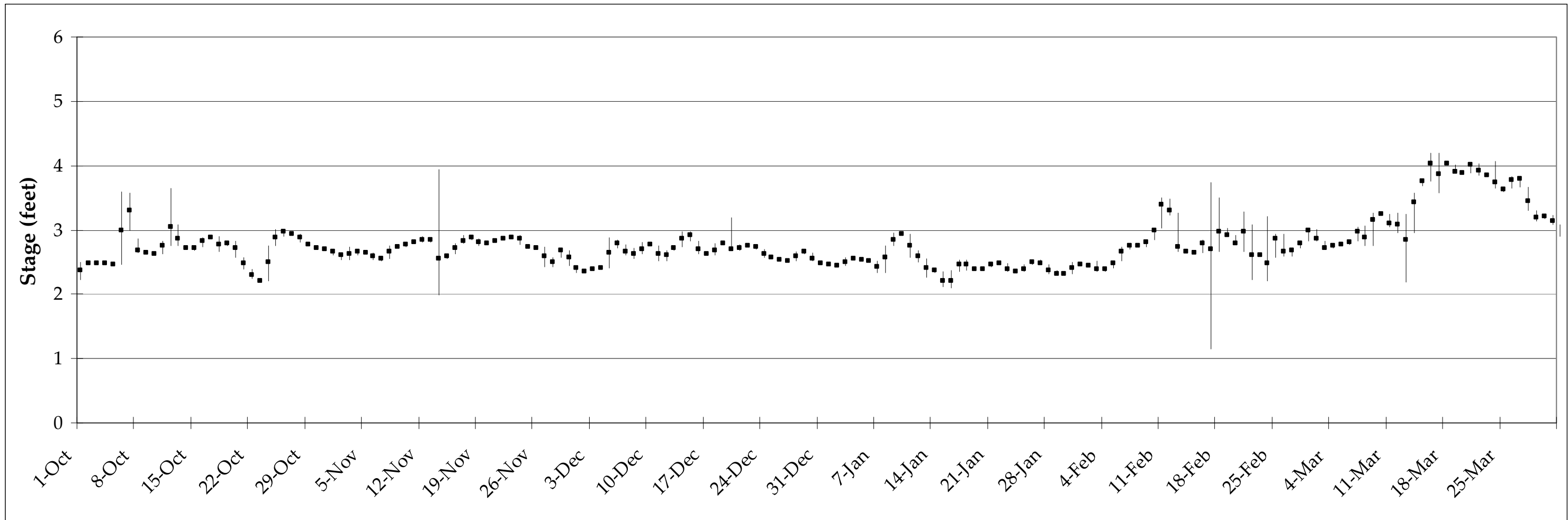


Figure 4. October 2006 through March 2007 daily average, maximum and minimum stage below Oneida. Precise values for each day and explanations are provided in Appendix A. Corresponding flows are shown in Figure 1.

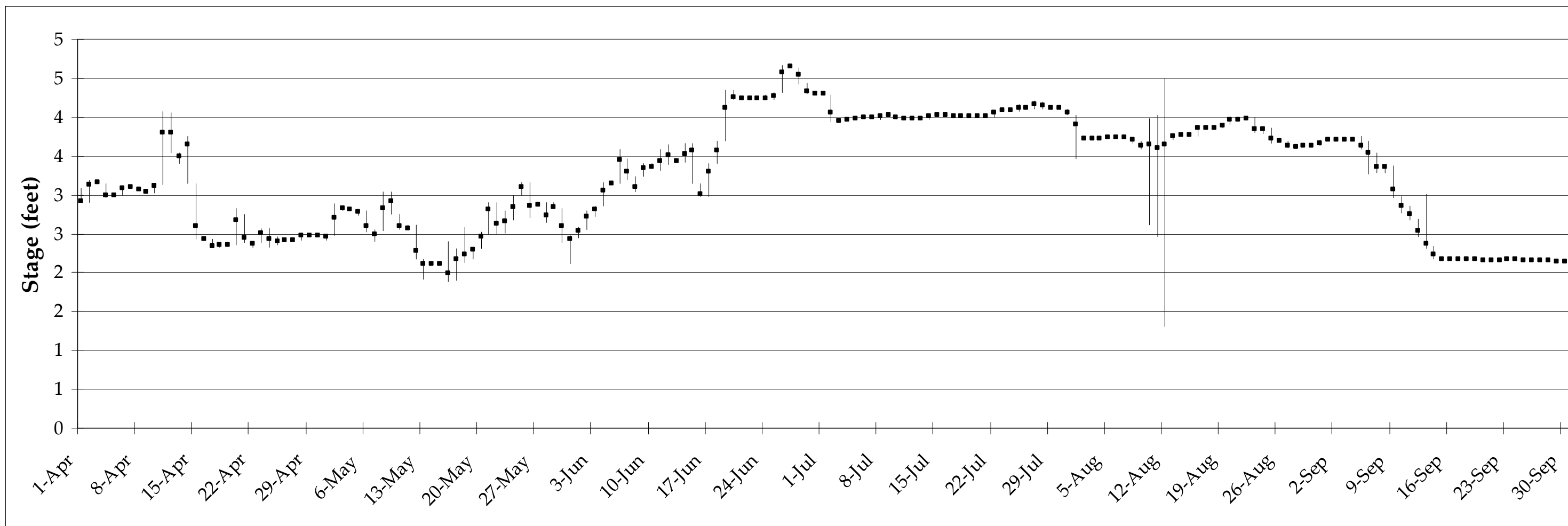


Figure 5. April through September 2007 daily average, maximum and minimum stage below Oneida. Precise values for each day and explanations are provided in Appendix A. Corresponding flows are shown in Figure 1.

4.0 RAMPING RATE ANALYSIS

A new addition to the report for this year is an analysis of the maximum daily ramping rate shown in Appendix A. There are no events when the 15-minute down-ramping stage change exceeded 2.0 feet per 15 minutes as specified by the analysis accepted by the Federal Energy Regulatory Commission in the Bear River Operations and Compliance Plan approved April 7, 2005 after review by the Environmental Coordination Committee which includes the Idaho Department of Environmental Quality.

An analysis of the 15-minute stage change record from December 23, 2003 (beginning of the Federal Energy Regulatory Commission license period) through September 30, 2007 provides further insight into the ramping in general and down-ramping in particular. In future years, only the most recent period will be analyzed. The stage change is simply the difference between successive stage changes at the 15-minute increment. In this calculation, a down-ramp event is a negative stage-change value. A new stage-change period is available for every 15-minute increment with the exception of the very first 15-minute period on December 23, 2003. The result is a sequence of 132,214 samples of 15-minute stage change. A brief summary of the data:

- 115,068 (87%) showed no stage change
- 8,267 (6%) increases in stage
- 8,879 (7%) decreases in stage

The remainder of this section presents a summary of the 8,879 down-ramping events in the context of the full sample. The stem-and-leaf plot in Figure 6 shows the extreme values and emphasizes the relatively small number of down-ramp changes more extreme than -0.2 feet (2.4 inches per 15 minute period). The data has not had any data excluded because of any license-approved allowances such as equipment failure or spinning reserve call-out. There have not been any exceedances of the down-ramping rate limitation because the turbine shut-down control rates have been extended well beyond the industry typical 4 to 8 seconds to a full minute which does have an impact on the equipment. The one-minute shut-down results in extended “over-speed” conditions and additional wear on bearings.

Fractiles of Non-Zero Down-Ramp Events December 23, 2003 - September 30, 2007

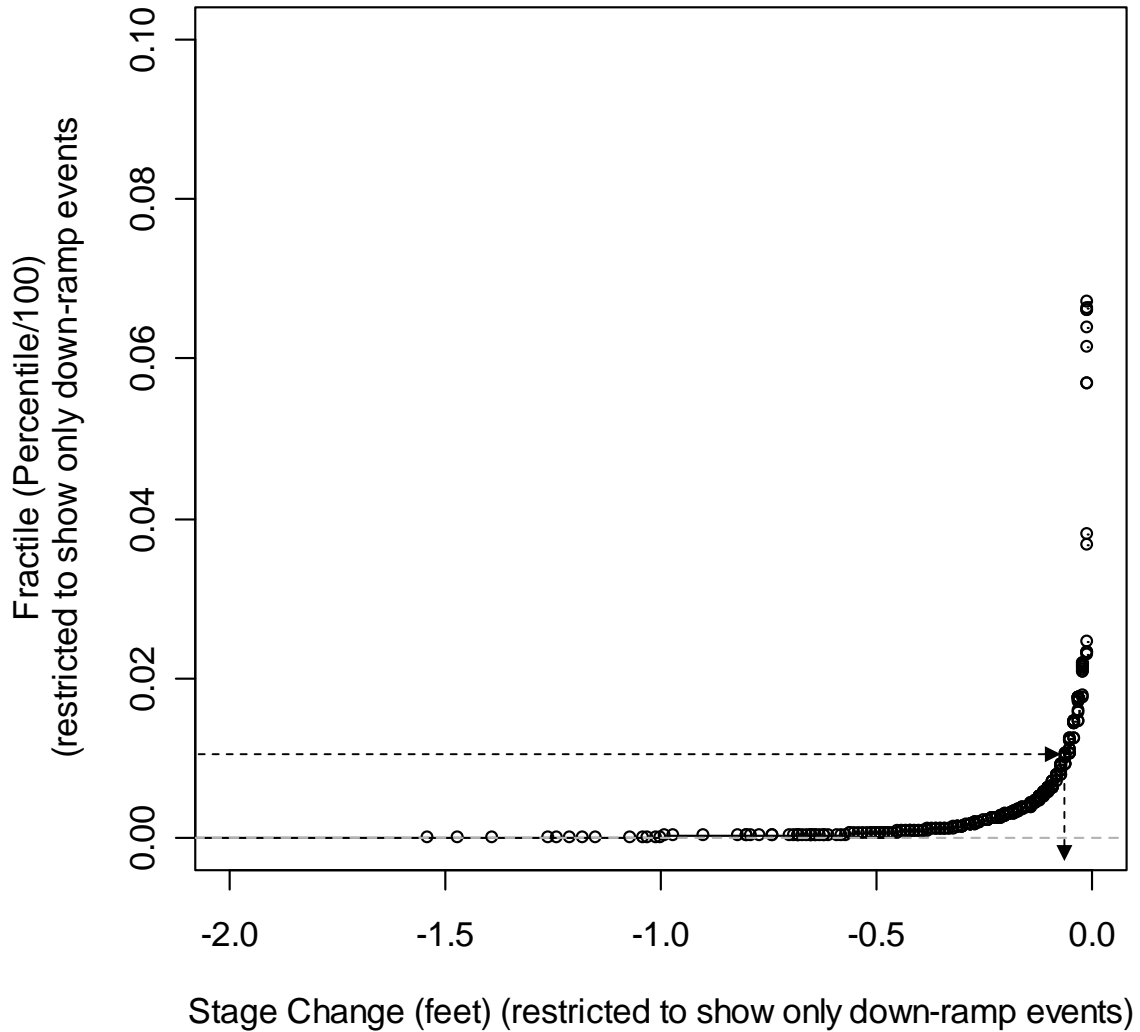


Figure 7. Fractile of non-zero down-ramping events of Oneida 15-minute stage changes for the period from December 23, 2003 to September 30, 2007. Note that the ranges are restricted to show only the down-ramp portion of the full sample. The lines highlight how to identify the 0.01 (1st percentile) value, which is slightly less -0.1 feet.

Appendix A. Daily Summary of Gage Height, Primary Purpose for Water Releases and Daily Maximum Down-Ramping Rate

Date	Maximum Of Stage	Minimum Of Stage	Average Of Stage	Maximum Down-Ramping Rate (feet per 15-min.)	Comment
1-Oct	2.49	2.22	2.38	0.06	Power production
2-Oct	2.48	2.48	2.48	0.00	Power production
3-Oct	2.48	2.48	2.48	0.00	Power production
4-Oct	2.48	2.47	2.48	0.01	Power production
5-Oct	2.48	2.46	2.47	0.01	Power production
6-Oct	3.59	2.46	2.99	0.65	Power production
7-Oct	3.58	3.00	3.29	0.17	Power production
8-Oct	2.87	2.65	2.67	0.17	Power production
9-Oct	2.65	2.63	2.64	0.01	Power production
10-Oct	2.64	2.62	2.63	0.01	Power production
11-Oct	2.83	2.63	2.75	0.01	Power production
12-Oct	3.64	2.76	3.05	0.38	Power production
13-Oct	3.08	2.75	2.87	0.12	Power production
14-Oct	2.75	2.69	2.71	0.03	Power production
15-Oct	2.76	2.68	2.71	0.01	Power production
16-Oct	2.88	2.74	2.82	0.01	Power production
17-Oct	2.89	2.87	2.88	0.01	Power production
18-Oct	2.90	2.66	2.78	0.08	Power production
19-Oct	2.83	2.76	2.79	0.01	Power production
20-Oct	2.82	2.58	2.71	0.08	Power production
21-Oct	2.58	2.38	2.48	0.09	Power production
22-Oct	2.38	2.25	2.29	0.06	Power production
23-Oct	2.25	2.19	2.22	0.05	Power production
24-Oct	2.76	2.20	2.50	0.01	Power production
25-Oct	3.01	2.75	2.88	0.01	Power production
26-Oct	3.00	2.90	2.97	0.08	Power production
27-Oct	2.95	2.93	2.94	0.01	Power production
28-Oct	2.94	2.80	2.88	0.04	Power production
29-Oct	2.80	2.76	2.78	0.02	Power production
30-Oct	2.76	2.69	2.72	0.05	Power production
31-Oct	2.69	2.69	2.69	0.00	Power production
1-Nov	2.69	2.60	2.66	0.06	Power production
2-Nov	2.65	2.54	2.60	0.08	Power production
3-Nov	2.73	2.53	2.62	0.03	Power production
4-Nov	2.68	2.61	2.66	0.04	Power production

Date	Maximum Of Stage	Minimum Of Stage	Average Of Stage	Maximum Down-Ramping Rate (feet per 15-min.)	Comment
5-Nov	2.65	2.64	2.64	0.01	Power production
6-Nov	2.64	2.53	2.60	0.05	Power production
7-Nov	2.58	2.52	2.55	0.01	Power production
8-Nov	2.76	2.56	2.66	0.01	Power production
9-Nov	2.75	2.74	2.74	0.01	Power production
10-Nov	2.81	2.74	2.77	0.01	Power production
11-Nov	2.83	2.79	2.81	0.01	Power production
12-Nov	2.90	2.81	2.85	0.01	Power production
13-Nov	2.88	2.80	2.85	0.04	Power production
14-Nov	3.94	1.99	2.56	1.15	Outage, penstock drained for intake inspection.
15-Nov	2.62	2.56	2.59	0.01	Power production
16-Nov	2.79	2.62	2.71	0.00	Power production
17-Nov	2.91	2.79	2.84	0.00	Power production
18-Nov	2.91	2.85	2.88	0.03	Power production
19-Nov	2.86	2.76	2.80	0.05	Power production
20-Nov	2.81	2.78	2.79	0.00	Power production
21-Nov	2.86	2.81	2.83	0.00	Power production
22-Nov	2.87	2.86	2.86	0.01	Power production
23-Nov	2.91	2.86	2.88	0.01	Power production
24-Nov	2.91	2.78	2.86	0.04	Power production
25-Nov	2.78	2.72	2.74	0.04	Power production
26-Nov	2.75	2.72	2.73	0.01	Power production
27-Nov	2.73	2.43	2.59	0.11	Power production
28-Nov	2.57	2.43	2.50	0.00	Power production
29-Nov	2.68	2.57	2.68	0.00	Power production
30-Nov	2.68	2.45	2.57	0.08	Power production
1-Dec	2.45	2.34	2.41	0.03	Power production
2-Dec	2.38	2.33	2.35	0.01	Power production
3-Dec	2.42	2.38	2.39	0.01	Power production
4-Dec	2.41	2.41	2.41	0.00	Power production
5-Dec	2.88	2.41	2.65	0.03	Power production
6-Dec	2.84	2.72	2.78	0.09	Power production
7-Dec	2.77	2.61	2.67	0.08	Power production
8-Dec	2.71	2.55	2.62	0.16	Power production
9-Dec	2.80	2.63	2.70	0.00	Power production
10-Dec	2.80	2.76	2.78	0.02	Power production
11-Dec	2.76	2.52	2.63	0.07	Power production

Date	Maximum Of Stage	Minimum Of Stage	Average Of Stage	Maximum Down-Ramping Rate (feet per 15-min.)	Comment
12-Dec	2.68	2.52	2.61	0.00	Power production
13-Dec	2.74	2.68	2.72	0.00	Power production
14-Dec	2.98	2.74	2.86	0.01	Power production
15-Dec	2.98	2.82	2.91	0.04	Power production
16-Dec	2.82	2.63	2.70	0.11	Power production
17-Dec	2.63	2.61	2.62	0.01	Power production
18-Dec	2.79	2.61	2.68	0.01	Power production
19-Dec	2.79	2.78	2.78	0.01	Power production
20-Dec	3.20	2.68	2.70	0.29	Power production
21-Dec	2.77	2.68	2.72	0.01	Power production
22-Dec	2.76	2.76	2.76	0.00	Power production
23-Dec	2.76	2.69	2.74	0.04	Power production
24-Dec	2.70	2.57	2.63	0.09	Power production
25-Dec	2.57	2.56	2.57	0.01	Power production
26-Dec	2.57	2.51	2.53	0.04	Power production
27-Dec	2.51	2.51	2.51	0.00	Power production
28-Dec	2.67	2.51	2.60	0.01	Power production
29-Dec	2.69	2.63	2.66	0.03	Power production
30-Dec	2.64	2.52	2.56	0.09	Power production
31-Dec	2.52	2.46	2.48	0.05	Power production
1-Jan	2.46	2.45	2.46	0.01	Power production
2-Jan	2.45	2.45	2.45	0.00	Power production
3-Jan	2.58	2.45	2.50	0.01	Power production
4-Jan	2.58	2.53	2.55	0.04	Power production
5-Jan	2.53	2.52	2.53	0.01	Power production
6-Jan	2.54	2.52	2.52	0.01	Power production
7-Jan	2.52	2.34	2.42	0.09	Power production
8-Jan	2.76	2.34	2.56	0.00	Power production
9-Jan	2.95	2.76	2.84	0.01	Power production
10-Jan	2.94	2.91	2.93	0.02	Power production
11-Jan	2.93	2.58	2.74	0.19	Power production
12-Jan	2.68	2.49	2.60	0.10	Power production
13-Jan	2.55	2.26	2.40	0.25	Power production
14-Jan	2.39	2.34	2.36	0.01	Power production
15-Jan	2.36	2.12	2.20	0.18	Power production
16-Jan	2.37	2.10	2.21	0.01	Power production
17-Jan	2.54	2.36	2.46	0.01	Power production
18-Jan	2.54	2.37	2.46	0.05	Power production

Date	Maximum Of Stage	Minimum Of Stage	Average Of Stage	Maximum Down-Ramping Rate (feet per 15-min.)	Comment
19-Jan	2.43	2.37	2.39	0.04	Power production
20-Jan	2.43	2.37	2.40	0.01	Power production
21-Jan	2.49	2.42	2.45	0.01	Power production
22-Jan	2.49	2.47	2.48	0.01	Power production
23-Jan	2.48	2.35	2.40	0.06	Power production
24-Jan	2.35	2.34	2.35	0.01	Power production
25-Jan	2.47	2.35	2.40	0.00	Power production
26-Jan	2.53	2.47	2.49	0.00	Power production
27-Jan	2.53	2.46	2.49	0.05	Power production
28-Jan	2.46	2.31	2.36	0.08	Power production
29-Jan	2.37	2.31	2.32	0.04	Power production
30-Jan	2.33	2.32	2.32	0.01	Power production
31-Jan	2.50	2.32	2.42	0.01	Power production
1-Feb	2.50	2.44	2.45	0.04	Power production
2-Feb	2.45	2.44	2.44	0.01	Power production
3-Feb	2.52	2.35	2.40	0.05	Power production
4-Feb	2.41	2.35	2.39	0.01	Power production
5-Feb	2.52	2.41	2.48	0.01	Power production
6-Feb	2.73	2.51	2.67	0.06	Power production
7-Feb	2.76	2.69	2.75	0.01	Power production
8-Feb	2.75	2.75	2.75	0.00	Power production
9-Feb	2.85	2.73	2.81	0.02	Power production
10-Feb	3.02	2.85	2.99	0.00	Power production
11-Feb	3.50	3.02	3.39	0.01	Power production
12-Feb	3.48	3.22	3.31	0.08	Power production
13-Feb	3.26	2.67	2.73	0.19	Power production
14-Feb	2.67	2.65	2.66	0.02	Power production
15-Feb	2.66	2.65	2.65	0.01	Power production
16-Feb	2.84	2.65	2.80	0.05	Power production
17-Feb	3.74	1.15	2.71	1.54	Multiple plant trips
18-Feb	3.51	2.67	2.98	0.33	Power production
19-Feb	3.02	2.91	2.92	0.08	Power production
20-Feb	2.91	2.79	2.80	0.07	Power production
21-Feb	3.28	2.67	2.98	0.22	Power production
22-Feb	3.08	2.22	2.61	0.62	Power production
23-Feb	2.60	2.60	2.60	0.00	Power production
24-Feb	3.21	2.20	2.48	0.38	Power production
25-Feb	2.94	2.58	2.86	0.00	Power production

Date	Maximum Of Stage	Minimum Of Stage	Average Of Stage	Maximum Down-Ramping Rate (feet per 15-min.)	Comment
26-Feb	2.94	2.59	2.67	0.10	Power production
27-Feb	2.71	2.59	2.68	0.00	Power production
28-Feb	2.83	2.71	2.79	0.00	Power production
1-Mar	3.03	2.83	2.99	0.01	Power production
2-Mar	3.01	2.83	2.85	0.05	Power production
3-Mar	2.83	2.70	2.73	0.07	Power production
4-Mar	2.77	2.72	2.76	0.00	Power production
5-Mar	2.77	2.77	2.77	0.00	Power production
6-Mar	2.83	2.77	2.81	0.00	Power production
7-Mar	3.04	2.83	2.98	0.01	Power production
8-Mar	3.06	2.76	2.88	0.20	Power production
9-Mar	3.26	2.76	3.16	0.01	Power production
10-Mar	3.26	3.25	3.25	0.01	Power production
11-Mar	3.25	3.05	3.10	0.07	Power production
12-Mar	3.26	2.95	3.08	0.20	Power production
13-Mar	3.25	2.18	2.84	0.65	Power production
14-Mar	3.58	2.95	3.43	0.01	Power production
15-Mar	3.78	3.69	3.76	0.01	Power production
16-Mar	4.20	3.76	4.03	0.03	Power production
17-Mar	4.20	3.57	3.87	0.27	Power production
18-Mar	4.06	4.01	4.04	0.03	Power production
19-Mar	4.01	3.89	3.90	0.10	Power production
20-Mar	3.90	3.88	3.89	0.01	Power production
21-Mar	4.03	3.88	4.01	0.01	Power production
22-Mar	4.03	3.85	3.92	0.05	Power production
23-Mar	3.86	3.85	3.85	0.01	Power production
24-Mar	4.06	3.65	3.74	0.28	Power production
25-Mar	3.65	3.60	3.63	0.03	Power production
26-Mar	3.83	3.64	3.77	0.02	Power production
27-Mar	3.83	3.66	3.79	0.11	Power production
28-Mar	3.67	3.31	3.45	0.09	Power production
29-Mar	3.31	3.13	3.19	0.08	Power production
30-Mar	3.24	3.17	3.22	0.01	Power production
31-Mar	3.22	3.08	3.13	0.12	Power production
1-Apr	3.08	2.90	2.92	0.10	Power production
2-Apr	3.19	2.90	3.14	0.01	Power production
3-Apr	3.18	3.15	3.16	0.02	Power production
4-Apr	3.15	2.96	2.99	0.19	Power production

Date	Maximum Of Stage	Minimum Of Stage	Average Of Stage	Maximum Down-Ramping Rate (feet per 15-min.)	Comment
5-Apr	3.00	2.98	2.99	0.01	Power production
6-Apr	3.10	2.99	3.08	0.01	Power production
7-Apr	3.10	3.09	3.09	0.01	Power production
8-Apr	3.09	3.06	3.07	0.01	Power production
9-Apr	3.06	3.02	3.04	0.03	Power production
10-Apr	3.14	3.03	3.12	0.01	Power production
11-Apr	4.07	3.13	3.80	0.20	Power production
12-Apr	4.06	3.54	3.80	0.22	Power production
13-Apr	3.54	3.40	3.50	0.13	Power production
14-Apr	3.76	3.14	3.65	0.25	Power production
15-Apr	3.14	2.43	2.59	0.17	Power production
16-Apr	2.44	2.42	2.43	0.01	Power production
17-Apr	2.43	2.32	2.34	0.09	Power production
18-Apr	2.38	2.32	2.35	0.01	Power production
19-Apr	2.37	2.36	2.36	0.01	Power production
20-Apr	2.83	2.36	2.68	0.14	Power production
21-Apr	2.75	2.39	2.45	0.21	Power production
22-Apr	2.40	2.33	2.37	0.06	Power production
23-Apr	2.57	2.38	2.51	0.01	Power production
24-Apr	2.57	2.33	2.44	0.11	Power production
25-Apr	2.46	2.35	2.40	0.11	Power production
26-Apr	2.41	2.41	2.41	0.00	Power production
27-Apr	2.42	2.41	2.42	0.01	Power production
28-Apr	2.49	2.41	2.48	0.01	Power production
29-Apr	2.48	2.46	2.47	0.01	Power production
30-Apr	2.48	2.46	2.47	0.01	Power production
1-May	2.48	2.41	2.46	0.05	Power production
2-May	2.88	2.47	2.70	0.05	Power production
3-May	2.86	2.80	2.82	0.04	Power production
4-May	2.81	2.80	2.81	0.01	Power production
5-May	2.80	2.74	2.79	0.05	Power production
6-May	2.80	2.53	2.60	0.05	Power production
7-May	2.56	2.40	2.50	0.12	Power production
8-May	3.04	2.54	2.83	0.01	Power production
9-May	3.04	2.75	2.92	0.13	Power production
10-May	2.75	2.55	2.60	0.07	Power production
11-May	2.61	2.56	2.57	0.00	Power production
12-May	2.61	2.18	2.28	0.12	Power production

Date	Maximum Of Stage	Minimum Of Stage	Average Of Stage	Maximum Down-Ramping Rate (feet per 15-min.)	Comment
13-May	2.18	1.92	2.11	0.20	Power production
14-May	2.11	2.10	2.11	0.01	Power production
15-May	2.12	2.10	2.11	0.01	Power production
16-May	2.40	1.88	1.99	0.28	Power production
17-May	2.31	1.90	2.18	0.06	Power production
18-May	2.58	2.13	2.24	0.27	Irrigation delivery
19-May	2.31	2.18	2.30	0.01	Irrigation delivery
20-May	2.52	2.31	2.46	0.02	Irrigation delivery
21-May	2.91	2.50	2.81	0.01	Irrigation delivery
22-May	2.91	2.50	2.62	0.17	Irrigation delivery
23-May	2.79	2.51	2.66	0.10	Irrigation delivery
24-May	3.00	2.67	2.84	0.23	Irrigation delivery
25-May	3.16	3.00	3.10	0.00	Irrigation delivery
26-May	3.16	2.70	2.86	0.27	Irrigation delivery
27-May	2.88	2.87	2.88	0.01	Irrigation delivery
28-May	2.91	2.64	2.73	0.20	Irrigation delivery
29-May	2.91	2.82	2.85	0.04	Irrigation delivery
30-May	2.82	2.39	2.59	0.17	Irrigation delivery
31-May	2.48	2.12	2.44	0.11	Irrigation delivery
1-Jun	2.58	2.45	2.54	0.02	Irrigation delivery
2-Jun	2.79	2.56	2.73	0.01	Irrigation delivery
3-Jun	2.85	2.72	2.81	0.02	Irrigation delivery
4-Jun	3.16	2.85	3.06	0.01	Irrigation delivery
5-Jun	3.16	3.15	3.15	0.01	Irrigation delivery
6-Jun	3.59	3.15	3.45	0.07	Irrigation delivery
7-Jun	3.46	3.19	3.30	0.11	Irrigation delivery
8-Jun	3.24	3.04	3.10	0.09	Irrigation delivery
9-Jun	3.40	3.24	3.35	0.01	Irrigation delivery
10-Jun	3.41	3.34	3.36	0.03	Irrigation delivery
11-Jun	3.58	3.31	3.44	0.17	Irrigation delivery
12-Jun	3.65	3.39	3.51	0.16	Irrigation delivery
13-Jun	3.47	3.42	3.44	0.04	Irrigation delivery
14-Jun	3.66	3.42	3.53	0.01	Irrigation delivery
15-Jun	3.66	3.14	3.57	0.24	Irrigation delivery
16-Jun	3.14	2.98	3.02	0.10	Irrigation delivery
17-Jun	3.41	2.98	3.29	0.00	Irrigation delivery
18-Jun	3.69	3.41	3.57	0.00	Irrigation delivery
19-Jun	4.35	3.69	4.12	0.01	Irrigation delivery

Date	Maximum Of Stage	Minimum Of Stage	Average Of Stage	Maximum Down-Ramping Rate (feet per 15-min.)	Comment
20-Jun	4.34	4.23	4.26	0.04	Irrigation delivery
21-Jun	4.25	4.23	4.24	0.01	Irrigation delivery
22-Jun	4.25	4.23	4.24	0.01	Irrigation delivery
23-Jun	4.25	4.22	4.24	0.01	Irrigation delivery
24-Jun	4.29	4.23	4.25	0.04	Irrigation delivery
25-Jun	4.31	4.22	4.27	0.01	Irrigation delivery
26-Jun	4.67	4.31	4.58	0.01	Irrigation delivery
27-Jun	4.66	4.64	4.65	0.01	Irrigation delivery
28-Jun	4.64	4.43	4.55	0.09	Irrigation delivery
29-Jun	4.44	4.30	4.34	0.04	Irrigation delivery
30-Jun	4.31	4.29	4.30	0.01	Irrigation delivery
1-Jul	4.30	4.28	4.29	0.01	Irrigation delivery
2-Jul	4.29	3.94	4.06	0.10	Irrigation delivery
3-Jul	3.96	3.94	3.95	0.01	Irrigation delivery
4-Jul	3.98	3.95	3.97	0.01	Irrigation delivery
5-Jul	3.99	3.97	3.98	0.01	Irrigation delivery
6-Jul	4.00	3.98	4.00	0.01	Irrigation delivery
7-Jul	4.01	3.99	4.00	0.01	Irrigation delivery
8-Jul	4.03	3.96	4.01	0.06	Irrigation delivery
9-Jul	4.03	4.01	4.02	0.01	Irrigation delivery
10-Jul	4.02	3.97	4.00	0.02	Irrigation delivery
11-Jul	3.99	3.97	3.98	0.02	Irrigation delivery
12-Jul	3.98	3.97	3.98	0.01	Irrigation delivery
13-Jul	3.99	3.96	3.98	0.01	Irrigation delivery
14-Jul	4.04	3.96	4.01	0.01	Irrigation delivery
15-Jul	4.04	4.02	4.03	0.01	Irrigation delivery
16-Jul	4.04	4.01	4.02	0.01	Irrigation delivery
17-Jul	4.02	4.01	4.02	0.01	Irrigation delivery
18-Jul	4.03	4.00	4.02	0.01	Irrigation delivery
19-Jul	4.03	4.00	4.02	0.01	Irrigation delivery
20-Jul	4.02	4.00	4.01	0.01	Irrigation delivery
21-Jul	4.02	4.00	4.01	0.01	Irrigation delivery
22-Jul	4.08	4.00	4.06	0.01	Irrigation delivery
23-Jul	4.09	4.08	4.09	0.01	Irrigation delivery
24-Jul	4.09	4.08	4.08	0.01	Irrigation delivery
25-Jul	4.16	4.08	4.11	0.03	Irrigation delivery
26-Jul	4.13	4.11	4.12	0.01	Irrigation delivery
27-Jul	4.21	4.11	4.17	0.01	Irrigation delivery

Date	Maximum Of Stage	Minimum Of Stage	Average Of Stage	Maximum Down-Ramping Rate (feet per 15-min.)	Comment
28-Jul	4.19	4.10	4.15	0.07	Irrigation delivery
29-Jul	4.15	4.11	4.12	0.04	Irrigation delivery
30-Jul	4.13	4.11	4.12	0.01	Irrigation delivery
31-Jul	4.11	4.02	4.06	0.04	Irrigation delivery
1-Aug	4.03	3.47	3.90	0.26	Irrigation delivery
2-Aug	3.73	3.72	3.73	0.01	Irrigation delivery
3-Aug	3.73	3.72	3.73	0.01	Irrigation delivery
4-Aug	3.73	3.72	3.73	0.01	Irrigation delivery
5-Aug	3.74	3.72	3.73	0.01	Irrigation delivery
6-Aug	3.75	3.73	3.74	0.01	Irrigation delivery
7-Aug	3.75	3.73	3.74	0.01	Irrigation delivery
8-Aug	3.74	3.66	3.71	0.08	Irrigation delivery
9-Aug	3.70	3.59	3.64	0.04	Irrigation delivery
10-Aug	3.98	2.61	3.65	0.70	Irrigation delivery
11-Aug	4.02	2.46	3.60	0.77	Irrigation delivery. Variation due to wildfire threat. See text.
12-Aug	4.50	1.30	3.65	1.26	Irrigation delivery. Variation due to wildfire threat. See text.
13-Aug	3.78	3.71	3.76	0.01	Irrigation delivery
14-Aug	3.78	3.76	3.77	0.01	Irrigation delivery
15-Aug	3.78	3.76	3.77	0.01	Irrigation delivery
16-Aug	3.88	3.76	3.86	0.02	Irrigation delivery
17-Aug	3.87	3.86	3.86	0.01	Irrigation delivery
18-Aug	3.88	3.86	3.87	0.01	Irrigation delivery
19-Aug	3.92	3.86	3.89	0.01	Irrigation delivery
20-Aug	3.98	3.91	3.96	0.01	Irrigation delivery
21-Aug	3.99	3.95	3.97	0.02	Irrigation delivery
22-Aug	4.00	3.96	3.98	0.02	Irrigation delivery
23-Aug	3.99	3.80	3.84	0.04	Irrigation delivery
24-Aug	3.86	3.79	3.84	0.01	Irrigation delivery
25-Aug	3.86	3.66	3.72	0.08	Irrigation delivery
26-Aug	3.72	3.68	3.69	0.04	Irrigation delivery
27-Aug	3.69	3.60	3.64	0.03	Irrigation delivery
28-Aug	3.62	3.60	3.62	0.01	Irrigation delivery
29-Aug	3.64	3.62	3.63	0.01	Irrigation delivery
30-Aug	3.65	3.63	3.64	0.01	Irrigation delivery
31-Aug	3.71	3.63	3.67	0.01	Irrigation delivery
1-Sep	3.71	3.69	3.70	0.01	Irrigation delivery

Date	Maximum Of Stage	Minimum Of Stage	Average Of Stage	Maximum Down-Ramping Rate (feet per 15-min.)	Comment
2-Sep	3.71	3.70	3.71	0.01	Irrigation delivery
3-Sep	3.72	3.70	3.71	0.01	Irrigation delivery
4-Sep	3.72	3.70	3.71	0.01	Irrigation delivery
5-Sep	3.76	3.58	3.64	0.08	Irrigation delivery
6-Sep	3.70	3.27	3.55	0.42	Irrigation delivery
7-Sep	3.54	3.28	3.36	0.10	Irrigation delivery
8-Sep	3.39	3.28	3.35	0.01	Irrigation delivery
9-Sep	3.38	2.97	3.08	0.25	Irrigation delivery
10-Sep	2.98	2.77	2.86	0.14	Irrigation delivery
11-Sep	2.86	2.68	2.74	0.07	Irrigation delivery
12-Sep	2.69	2.46	2.54	0.19	Irrigation delivery
13-Sep	3.01	2.31	2.37	0.25	Irrigation delivery
14-Sep	2.34	2.18	2.23	0.08	Irrigation delivery
15-Sep	2.18	2.17	2.18	0.01	Irrigation delivery
16-Sep	2.18	2.17	2.18	0.01	Irrigation delivery
17-Sep	2.18	2.16	2.17	0.01	Power production
18-Sep	2.18	2.16	2.17	0.01	Power production
19-Sep	2.17	2.16	2.17	0.01	Power production
20-Sep	2.17	2.15	2.16	0.01	Power production
21-Sep	2.16	2.14	2.15	0.01	Power production
22-Sep	2.18	2.14	2.15	0.01	Power production
23-Sep	2.19	2.17	2.18	0.01	Power production
24-Sep	2.18	2.16	2.17	0.01	Power production
25-Sep	2.17	2.16	2.17	0.01	Power production
26-Sep	2.17	2.15	2.16	0.01	Power production
27-Sep	2.16	2.15	2.16	0.01	Power production
28-Sep	2.16	2.15	2.15	0.01	Power production
29-Sep	2.15	2.13	2.14	0.01	Power production
30-Sep	2.14	2.13	2.14	0.01	Power production