

Section 2

Mono Basin Operations

Chapter 2

Mono Basin Operations

Compliance with State Water Resources Control Board
Decision 1631 and Order Nos. 98-05 and 98-07

May 2008

Los Angeles Department of Water and Power

Table of Contents **Page No.**

INTRODUCTION..... 1

MONO BASIN FORECAST FOR RY 2008-09..... 1

MONO BASIN OPERATIONS 1

Planned Operations for the Mono Basin for RY 2008-09..... 1

Review of Operations for the Mono Basin for RY 2007-08 3

MONO BASIN EXPORTS..... 4

Planned Exports from the Mono Basin for RY 2008-09..... 4

Review of Exports from the Mono Basin during RY 2007-08 5

MONO LAKE ELEVATION..... 5

Expected Mono Lake Elevations during RY 2008-09 5

Review of Mono Lake Elevations during RY 2007-08 5

Mono Lake Elevation Readings RY 2007-08 5

ATTACHMENTS:

- Mono Lake Elevation chart
- Mono Basin Operations, Guideline D

Introduction

Pursuant to State Water Resources Control Board (SWRCB) Decision 1631 and Order Nos. 98-05 and 98-07 (Orders), the Los Angeles Department of Water and Power (LADWP) is to undertake certain activities in the Mono Basin to be in compliance with the terms and conditions of its water right licenses 10191 and 10192. In addition to the restoration and monitoring activities covered in chapter 1 of this report, LADWP has certain required operational activities.

Mono Basin Forecast for RY 2008-09

The 2008-09 Mono Basin forecast for the April to March period is 105,200 acre-feet (AF), or 86% of normal using the 1956-2005 long term mean of 122,383 AF. This value puts the year type solidly within the "Normal" category. According to the Grant Lake Operations Management Plan (GLOMP) approved under SWRCB Order 98-05, LADWP will follow Guideline D (attached) for the operating requirements during Runoff Year (RY) 2008-09, with several variations described below.

Mono Basin Operations

Planned Operations for the Mono Basin for RY 2008-09

These planned operations are forecast based on data from 2003 hydrology which is a representative year. Operations are subject to change with variations in actual hydrology during the upcoming runoff year.

Rush Creek

Base flows will follow Guideline D of 47 cubic feet per second (cfs) from April 1 to September 30, 2008, and 44 cfs from October 1, 2008 to March 31, 2009, or Rush Creek at Damsite, whichever is less, down to a low of 31 cfs. Peak flows will be 380 cfs for 5 days followed by 300 cfs for 7 days. Ramping rates will be 10 percent daily change during ascending and descending limbs, or 10 cfs, whichever is greater.

In mid August, the fishery scientists plan to conduct instream flow study on Rush Creek. For the study, flows will be adjusted to 60, 45, 30, and 15 cfs for two days each.

Rush Creek Augmentation

LADWP has a concern regarding the use of the full 380 cfs through Mono Gate One diversion facility to provide Rush Creek peak flow release requirement. The existing Mono Gate One structure can only safely handle approximately 300 cfs, and any additional flows would have to come from the 5-Siphons. Mono Gate One facility is scheduled for upgrade next year to handle peak flows efficiently, but in the meantime, to relief Mono Gate One, LADWP plans to utilize the 5-Siphons bypass facility this year to augment lower Rush Creek in combination with Mono Gate One Return Ditch (MGORD). Depending on how much flow will be coming down Lee Vining Creek after

the peak has passed, LADWP will ramp up outflow from Grant Lake Reservoir and coordinate timing to ramp up Lee Vining diversion to the 5-Siphons while meeting the 54 cfs minimum base flow requirement on lower Lee Vining Creek. Therefore, by using a combination of flows from MGORD and the 5-Siphons bypass, LADWP intends to release 380 cfs for 5 days followed by 300 cfs for 7 days down lower Rush Creek.

5-Siphons Bypass

Aside from utilizing the 5-Siphons bypass facility to augment Rush Creek peak flow requirements, LADWP wishes to test the physical capability to augment up to 150 cfs from the Lee Vining Conduit through the 5-Siphons bypass facility. However, Southern California Edison (SCE), which operates reservoirs upstream, recently informed LADWP that their preliminary estimates show that they probably may not be able to provide the needed flow down Lee Vining Creek due to their operating requirements and lack of adequate runoff.

Grant Reservoir Spill

Grant Reservoir is forecasted not to spill during RY 2008-09.

Mono Gate One Diversion Facility

In August of this year, LADWP plans to start the first phase work to upgrade the Mono Gate One diversion facility. LADWP will tap into the Grant Lake Outlet Tunnel which feeds Mono Gate One approximately 200 feet to the east, and install approximately 150-foot bypass pipeline and a valve. The pipeline would extend east to the Return Ditch just north of Mono Gate One. This bypass will be maintained to ensure that flows to Lower Rush Creek would not be interrupted during the second phase structural upgrade of Mono Gate One, which will begin in late summer of 2009.

Lee Vining Creek

Base flows will follow Guideline D of 54 cfs, or Lee Vining Creek Above, whichever is less, from April 1 to September 30, 2008, and 40 cfs, or Lee Vining Creek Above, whichever is less, from October 1, 2008 to March 31, 2009. All flows in excess of these requirements will be diverted to Grant Lake Reservoir through the Lee Vining Conduit. Peak flow will be allowed to pass through the diversion facility.

The expected magnitude and timing of the peak flows in Lee Vining, Walker, and Parker Creeks were generated by a predictive model and are shown below:

Predicted magnitude and timing of peak flows.		
Creek	Magnitude	Timing
Lee Vining	196 cfs	June 5, 2008
Walker	29 cfs	June 15, 2008
Parker	43 cfs	June 19, 2008

The model uses regression analysis of historical data using representative data from the 2003 RY (similar year type) to predict future events. Since the actual values depend heavily on ambient temperatures that are difficult to predict with any degree of certainty, it is more than likely that the values in the above table are not accurate. It is intended that they be used as an indicator of magnitude and timing of the peak flows.

Parker and Walker Creeks

Until the Parker and Walker Creek facilities are upgraded for more precise metering of flows, LADWP will operate both the Parker and Walker Creek facilities as pass through.

Grant Lake Reservoir

Grant Lake Reservoir storage volume was 22,045 AF, translating into a surface elevation of 7,104 feet above mean sea level (AMSL) at the start of this runoff year. LADWP has halted export from the beginning of this runoff year to help Grant Lake Reservoir store water for the Marina operation. According to LADWP model, using representative data from the 2003 year (a 86% of normal year), and Guideline D, the model forecasts Grant Reservoir to dip low in mid or late June during the peak flow release to Rush Creek and steadily decline, (as export commence) to a final storage volume of approximately 17,000 AF (7,097 ft AMSL) by the end of the runoff year.

Review of Operations for the Mono Basin for RY 2007-08

Rush Creek

In 2007, California was experiencing one of the driest year on record. As a result LADWP requested and was granted by the SWRCB a short term variance from Decision 1631's minimum release requirement on Rush Creek between October and March. The November 2007 variance allowed baseflow releases to Rush Creek to be reduced to 26 cfs from 36 cfs beginning November 1, 2007 through the end of the runoff year of March 31, 2008.

There are no peaks in dry year but the highest flow on Rush Creek at Damsite was 148 cfs on May 22. An approximate total of 22,267 AF of water was delivered to Grant Reservoir from Rush Creek this year.

During RY 2007-08, since there was no spill from Grant Lake Reservoir, Rush Creek releases were only from the flow at the Return Ditch. An approximate total of 22,258 AF of water was released down into Rush Creek this year.

Rush Creek flows below "the Narrows", which consist of Rush Creek releases (Return Ditch, Spill, and Augmentation) combined with Parker and Walker Creek flows, had a highest flow of 64 cfs on May 29.

Rush Creek Augmentation

To meet flow targets for Lower Rush Creek, LADWP at times must employ facilities in addition to the Mono Gate One Return Ditch (MGORD). During the wetter year types, LADWP must release flows in excess of the MGORD capacity of 380 cfs. During these wetter years, LADWP employs one or both of its additional facilities to release higher peak flows. These facilities include the 5-Siphon Bypass, which can release up to 100

cfs from Lee Vining Creek, and the Grant Reservoir Spillway, which can release large reservoir spills, into Lower Rush Creek and during the wetter year types.

5-Siphons Bypass

The 5-Siphon Bypass was not utilized during RY 2007-08.

Grant Reservoir Spill

Grant Reservoir did not spill during RY 2007-08.

Lee Vining Creek

There were no peaks in this dry year but Lee Vining Creek had its highest flow on June 8 at 45 cfs. Total runoff for the year was approximately 23,716 AF.

Parker and Walker Creeks

Parker Creek had its highest flow on June 16 at 22 cfs. Total runoff for the year was approximately 4,818 AF.

Walker Creek had its highest flow on May 30 at 11 cfs. Total runoff for the year was approximately 2,180 AF.

Grant Lake Reservoir

Grant Lake began the runoff year at approximately 34,511 AF (7,118 ft AMSL). Due to the extremely dry year, the reservoir did not spill. The Rush Creek short term variance granted by the SWRCB in November 2007 for minimum release requirement made it possible to conserve approximately 3,500 AF of water within Grant Lake Reservoir for beneficial use in the Mono Basin. Despite that effort, final storage volume by the end of the RY of March 31, 2008 was approximately 22,045 AF (7,104 ft AMSL).

Mono Basin Exports

Planned Exports from the Mono Basin for RY 2008-09

LADWP will export 16,000 AF this year in accordance with SWRCB Decision 1631 and Guideline D, with a modified export regime. This modification was designed to maximize exports during the summer months in order to accommodate peak water use while limiting effects on Grant Lake Reservoir levels to late in the recreational season. The increased exports during the summer may also facilitate water temperature protection on the upper Owens River as requested by CalTrout.

According to Guideline D, under current conditions LADWP normally exports water from Grant Lake Reservoir to the Upper Owens River at a constant rate of 23 cfs. However, because of the low flows at the beginning of this runoff year and the LADWP's subsequent halting of export currently to help Grant Lake Reservoir store water, there will be on-going modifications made as necessary to commence and ultimately export 16,000 AF by March 31, 2009.

Review of Exports from the Mono Basin during RY 2007-08

During RY 2007-08, LADWP exported 15,916 AF from the Mono Basin, which falls within the volume allowed (16,000 AF) according to the State Water Resources Control Board Decision 1631.

Mono Lake Elevation

Expected Mono Lake Elevations during RY 2008-09

Mono Lake began this runoff year at 6,383.3 ft AMSL where it is forecasted to remain about the same and end the runoff year at 6383.0 ft on March 31, 2009 (see attached chart).

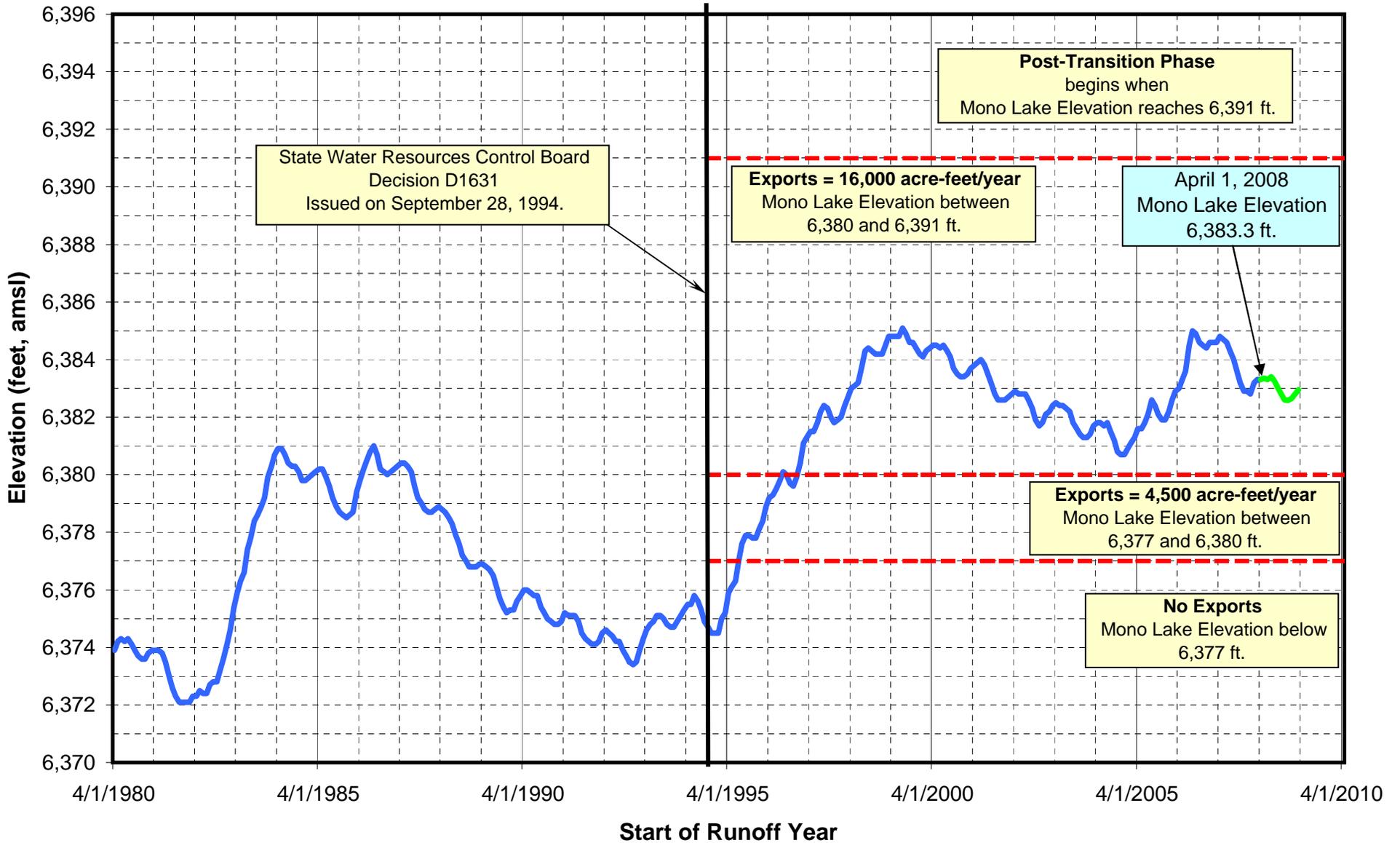
Review of Mono Lake Elevations during RY 2007-08

Mono Lake elevations were monitored 39 times during RY 2007-08. The following table shows these readings. The Lake elevation was at its highest of the year at the beginning of the runoff year with 6,384.8 ft AMSL, and ended the season at 6,383.3 ft AMSL.

Mono Lake Elevation Readings

Month	Day	Year	Elevation
4	5	2007	6,384.8
4	19	2007	6,384.7
5	3	2007	6,384.7
5	17	2007	6,384.6
5	23	2007	6,384.6
5	31	2007	6,384.6
6	7	2007	6,384.5
6	15	2007	6,384.4
6	21	2007	6,384.4
6	28	2007	6,384.3
7	4	2007	6,384.3
7	12	2007	6,384.2
7	19	2007	6,384.1
7	26	2007	6,384.0
8	1	2007	6,384.0
8	10	2007	6,383.9
8	16	2007	6,383.8
8	23	2007	6,383.6
8	30	2007	6,383.6
9	6	2007	6,383.5
9	13	2007	6,383.5
9	20	2007	6,383.4
9	27	2007	6,383.2
10	4	2007	6,383.1
10	11	2007	6,383.0
10	18	2007	6,383.0
10	25	2007	6,382.9
11	1	2007	6,382.9
11	8	2007	6,382.9
11	15	2007	6,382.9
11	29	2007	6,382.9
12	6	2007	6,382.8
12	20	2007	6,382.8
1	3	2008	6,382.8
2	8	2008	6,383.2
2	13	2008	6,383.2
3	6	2008	6,383.3
3	13	2008	6,383.3
3	31	2008	6,383.3

Mono Lake Elevation



Note: The time until the Mono Lake elevation reaches 6,391 ft is called the "Transition Period". Export rules change at the end of that interval.
USGS Datum

5/9/2008 by Paul Scantlin
Mono Lake Elev data-chart.xls

Mono Basin Operations, Guideline D

Year Type:..... NORMAL
 Forecasted Runoff in acre-feet.....100,750 – 130,670

Lower Rush Creek

Base Flows:

	APRIL	MAY-JUL	AUG-SEP	OCT-MAR
FLOW (CFS)	50	75	50	45

Minimum base flows are 47 cfs for Apr-Sep and 44 cfs for Oct-Mar, or the inflow to Grant Lake, whichever is less (flows listed above are for Mono Lake maintenance water). However, if Grant Lake inflow is less than the dry year base flow requirements under Guideline A, dry year requirements apply. If Grant Lake storage drops below 11,500 acre-feet (7,089.4' elevation), base flow requirements for a dry-year under Guideline A also apply (D-1631, p 197-198).

Peak Flows: - 380 cfs for 5 days followed by 300 cfs for 7 days*.

Ramping: - Begin ramping on June 1st (rule of thumb). Note that peak operations will take 43 days, so timing this with peak flows in P/W Creeks, with fish movement, and cottonwood germination is beneficial.
 - 10 percent daily change during ascending and descending limbs, or 10-cfs, whichever is greater.

Lee Vining Creek

Base Flows:

	APR-SEP	OCT-MAR
FLOW (CFS)	54	40

Minimum base flows are those specified above or the stream flow at the point of diversion, whichever is less.

Peak Flows: - Allow peak flow to pass through diversion facility.

Ramping: - Begin ramping on May 15th (rule of thumb)
 - 20 percent daily change during ascending and 15 percent during descending limbs, or 10-cfs, whichever is greater.

Diversions: - Divert flows in excess of base flows until May 15th (rule of thumb).
 - Diversions may resume 15 days after peak flow (rule of thumb); divert all flows in excess of base flows.

Augmentation: - None.

Parker and Walker Creeks

Flow-through conditions for entire year.

Exports

4,500 acre-feet scenario – Maintain 6 cfs export throughout the year.

16,000 acre-feet scenario – Maintain 23 cfs export except during peak flows in lower Rush Creek. During this time, exports should be zero.

*Section 1. a. (1) of Order 98-05 states that LADWP may reduce SRF's in dry/normal and normal years to maintain exports allowed under D-1631; that LADWP will seek to have between 30,000 and 35,000 acre-feet (elev. 7,113' and 7,119") in Grant Lake at the beginning and end of each runoff season; and LADWP will not be required to reduce storage in Grant Lake below 11,500 acre-feet (elev. 7089.4') to provide SRFs.