

## **Chapter 2**

### **Mono Basin Operations**



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

**May 2009**

**Los Angeles Department of Water and Power**



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## **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 2009-10**

The 2009-10 Mono Basin forecast for the April to March period is 107,900 acre-feet (AF), or 88 percent 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 is to follow Guideline D (attached) for the operating requirements during Runoff Year (RY) 2009-10, with several variations described below.

## **Mono Basin Operations**

### **Planned Operations for the Mono Basin for RY 2009-10**

These planned operations are forecasted 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, 2009, and 44 cfs from October 1, 2009 to March 31, 2010, or Rush Creek at Damsite, whichever is less, down to a minimum of 31 cfs. However, currently there is SWRCB approved petition to lower baseflow to 22 cfs until May 15, 2009 to help store more water in Grant Lake Reservoir.

Per Order 98-05, LADWP is not required to conduct peak operation in order to provide Stream Restoration Flows (SRF) if it would reduce storage in Grant Lake below 11,500 AF. Therefore, due to the current low level of Grant, there is no plan to release SRF on Rush Creek this year. This will help in storing more water in the reservoir.

#### ***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 Lake Reservoir Spillway, which can release large reservoir spills, into Lower Rush Creek and during the wetter year types.

### *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, informed LADWP that their preliminary estimates show that they probably will not be able to provide the needed flow down Lee Vining Creek due to their operating requirements and lack of adequate runoff. It's anticipated that the 5-Siphon Bypass will not be utilized during RY 2009-10.

### *Grant Reservoir Spill*

Grant Reservoir is forecasted not to spill during RY 2009-10.

### ***Mono Gate One Diversion Facility***

From June to August of this year (2009), LADWP plans to finish the upgrade of the Mono Gate One diversion facility which involves structurally upgrading the facility and installing flow measuring and monitoring control equipment. Export will be halted for this work but flow to the return ditch will be maintained.

In August 2008, LADWP tapped into the Grant Lake Outlet Tunnel which feeds Mono Gate One approximately 200 feet to the east, and installed a 36-inch diameter and approximately 150-foot long bypass pipeline as well as a valve. This bypass will be maintained to ensure that flows to Lower Rush Creek would not be interrupted during this year's structural upgrade.

### ***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, 2009, and 40 cfs, or Lee Vining Creek Above, whichever is less, from October 1, 2009 to March 31, 2010. 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 without any diversion.

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.		
<b>Creek</b>	<b>Magnitude</b>	<b>Timing</b>
Lee Vining	196 cfs	June 5, 2009
Walker	29 cfs	June 15, 2009
Parker	43 cfs	June 19, 2009

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 and actual flows coming down 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.

Between April 30 and May 5, 2009, the stream scientists conducted instream flow study on Lee Vining Creek as they did on Rush Creek in August of 2008. For the study, one-time flow change petition was submitted to SWRCB (and granted); and flows were adjusted to 12-, 20-, 28-, 37-, and 54-cfs on each day except for May 3, 2009.

### ***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 10,122 AF, translating into a surface elevation of 7,087.2 feet above mean sea level (AMSL) at the start of this runoff year. According to LADWP model, using representative historical data from the 2003 runoff year (86 percent of normal year), and Guideline D baseflows, with no peak operation, the model forecasts Grant Reservoir to steadily climb up in the summer. Starting in October, it forecasts that the level will decline back to a lower storage volume of approximately 25,000 AF by the end of the runoff year (see Scenario A at the end of this chapter). However, if another baseflow variance of 22 cfs on Rush Creek between October 2009 and March 2010 is agreed upon by the parties and the SWRCB approves a petition for it, the withdrawal rate will be decreased greatly and will allow the reservoir level to be maintained at around 30,000 AF (Scenario B). Both scenarios will be relatively accurate only if this runoff year turns out to be similar to the 2003 runoff year.

## **Review of Operations for the Mono Basin for RY 2008-09**

### ***Rush Creek***

In 2008, California continued to experience a third consecutive dry year. The runoff from Rush Creek was 42,024 AF. On March 12, 2009, on behalf of the stream scientists and the stake holders, LADWP requested SWRCB for a petition for temporary urgency flow change so that a lower minimum baseflow could be released down Rush Creek and hence store more water in Grant Lake Reservoir.

As required, LADWP released approximately 380 cfs for 5 days and 300 cfs for 7 days down to lower Rush Creek out of Grant Lake for the peak operations. With the augmentation from the 5-Siphons and the ramping flows, a total of approximately 16,500 AF was released down Rush Creek for the peak operations. An approximate total of 40,380 AF of water was delivered to Grant Reservoir from Rush Creek this year.

During RY 2008-09, since there was no spill from Grant Lake Reservoir, Rush Creek releases were from the flow at the Return Ditch. An approximate total of 39,535 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 as well

as the brief augmentation through the 5-Siphons, had an approximate total of 49,891 AF released to Mono Lake with the highest flow of 423 cfs occurring on June 7, 2008.

Between August 12 and August 22, 2008, the stream scientists conducted instream flow study on Rush Creek as planned. For the study, one-time flow variance was requested (and granted by SWRCB) and flows were adjusted to 15-, 30-, 45-, 60-, and 90-cfs for two days each.

### ***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 utilized during RY 2008-09 to augment Rush Creek peak flow releases. A total of 1,118 AF of water was diverted from Lee Vining Conduit to lower Rush Creek between June 3 and June 17, 2008.

#### ***Grant Reservoir Spill***

Grant Reservoir did not spill during RY 2008-09.

### ***Lee Vining Creek***

Above normal temperatures in the weekend of May 17, 2008 produced snowmelt runoff that increased more rapidly than anticipated down Lee Vining Creek (from 92 cfs to 158 cfs in one day) and finally peaking at 222 cfs on Monday, May 19. At that time, LADWP was diverting everything above the minimum 54 cfs to Grant Lake Reservoir through the Lee Vining Conduit to revive the Marina operation on Grant and could not catch the flow with reasonable ramping rates. A second peak of 167 cfs was passed on June 17, and again on June 22 and June 23. Total runoff for the year was approximately 34,336 AF.

### ***Parker and Walker Creeks***

Parker Creek had its highest flow on June 23 at 32 cfs. Total runoff for the year was approximately 6,031 AF.

Walker Creek had its highest flow on May 20 at 22 cfs. Total runoff for the year was approximately 3,329 AF.

### ***Grant Lake Reservoir***

Grant Lake Reservoir began the 2008-09 runoff year at approximately 22,045 AF (7,104 ft AMSL). Due to the third consecutive dry year, Grant level dipped into a historic low level of 7,080.8 ft AMSL (6,148 AF) by mid February 2009. On March 12, 2009, after several discussions with the parties, LADWP, on behalf of the stream scientists and the stake holders, submitted a petition to the SWRCB for temporary urgency flow change so

that a lower baseflow of 22 cfs could be released down Rush Creek hence decreasing the net withdrawal from Grant. The petition was approved by SWRCB on March 27 and allowed baseflow for lower Rush Creek to be lowered to 22 cfs until May 15, 2009.

## **Mono Basin Exports**

### ***Planned Exports from the Mono Basin for RY 2009-10***

LADWP plans to export 16,000 AF this year in accordance with SWRCB Decision 1631 and Guideline D, with an approximately constant export regime from the start of the runoff year. Export is currently halted to help Grant Lake increase storage and will remain halted between June and August for the Mono Gate One construction work. Export will commence around September 1 and ultimately 16,000 AF will be exported by March 31, 2010.

### ***Review of Exports from the Mono Basin during RY 2008-09***

During RY 2008-09, LADWP exported 15,958 AF from the Mono Basin, which falls below the allowed volume (16,000 AF) under Decision 1631.

## **Mono Lake Elevation**

### ***Expected Mono Lake Elevations during RY 2009-10***

Mono Lake began this runoff year at 6,382.4 ft AMSL where it is forecasted to remain about the same and end the runoff year at 6382.1 ft on March 31, 2010 (see attached chart).

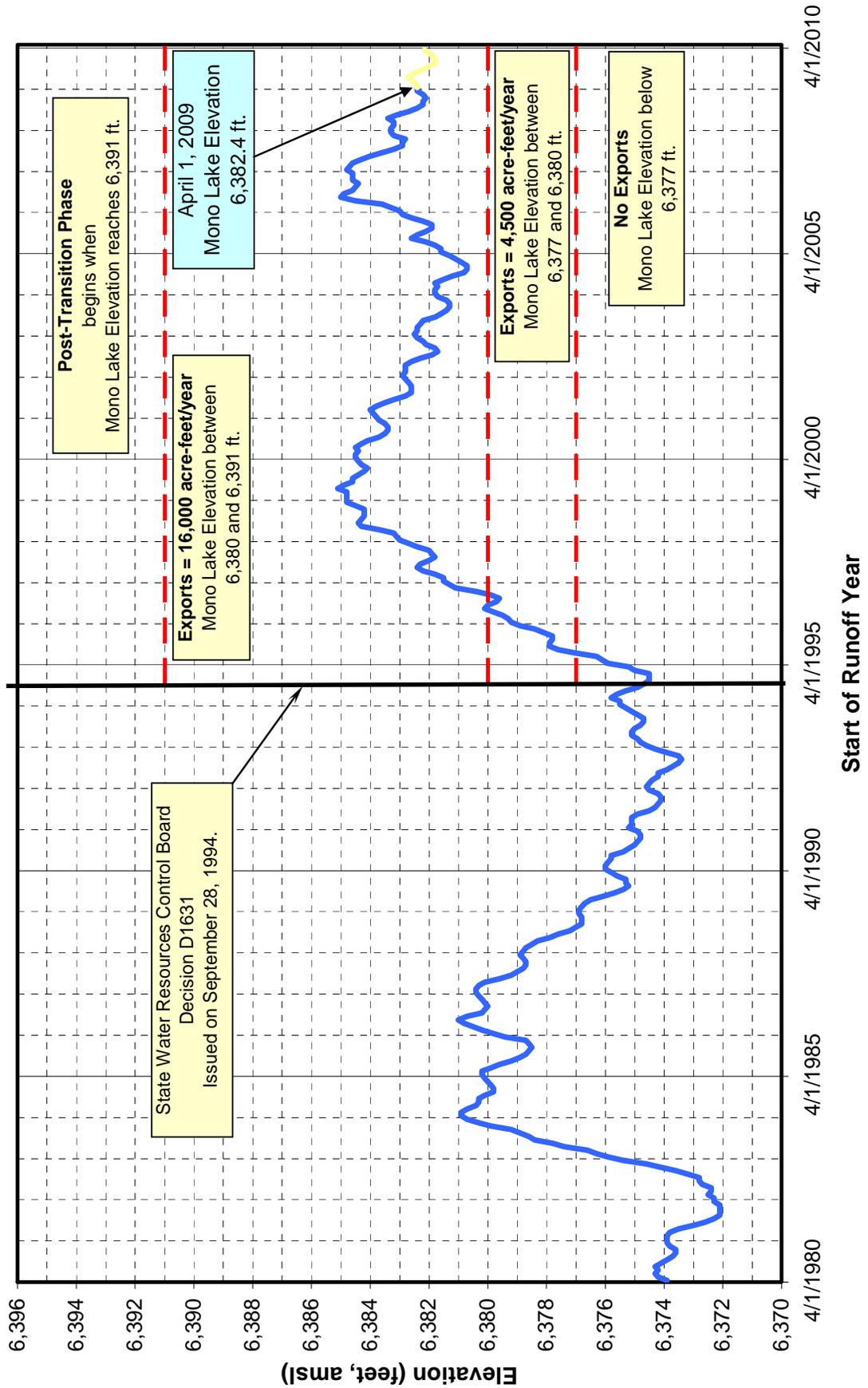
### ***Review of Mono Lake Elevations during RY 2008-09***

Mono Lake elevations were monitored 40 times during RY 2008-09. The following table shows these readings. The Lake elevation was at its highest of the year at the beginning of the runoff year with 6,383.3 ft AMSL, and ended the season at 6,382.4 ft AMSL.

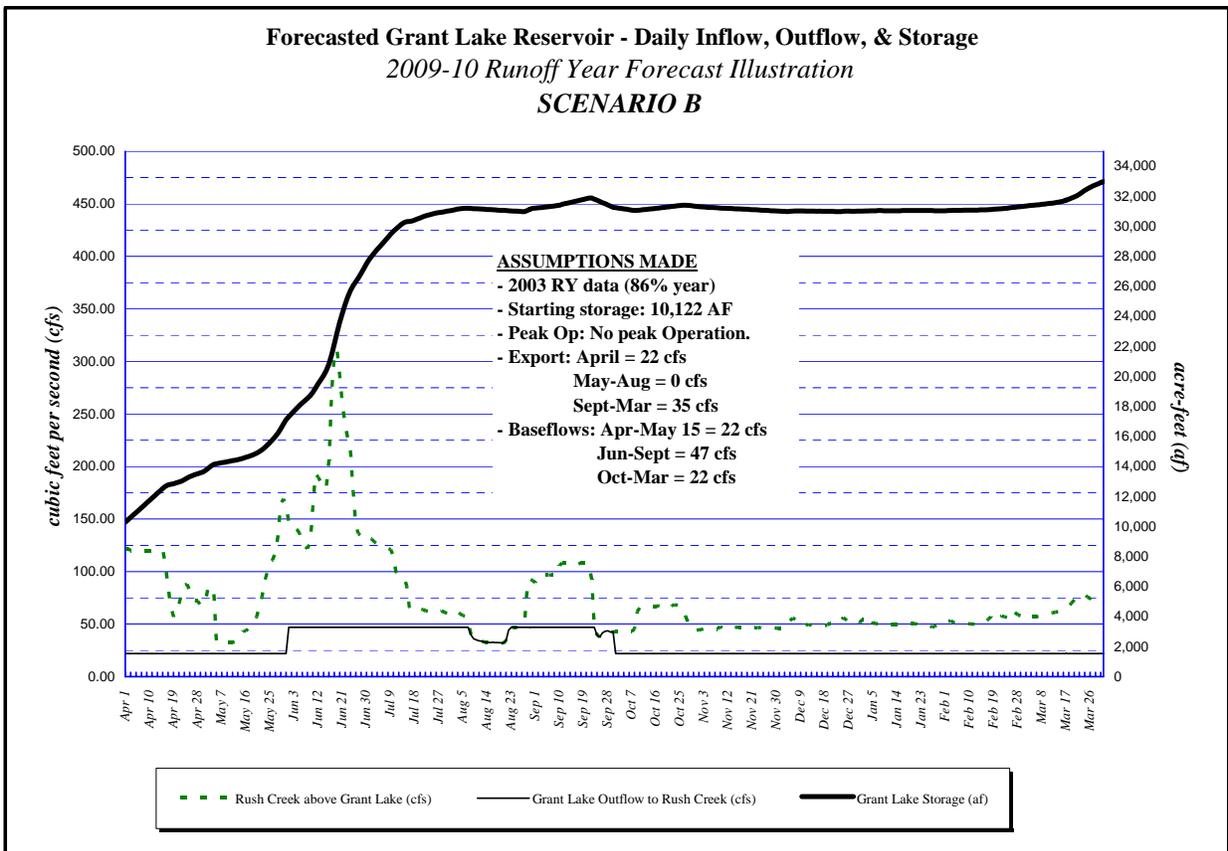
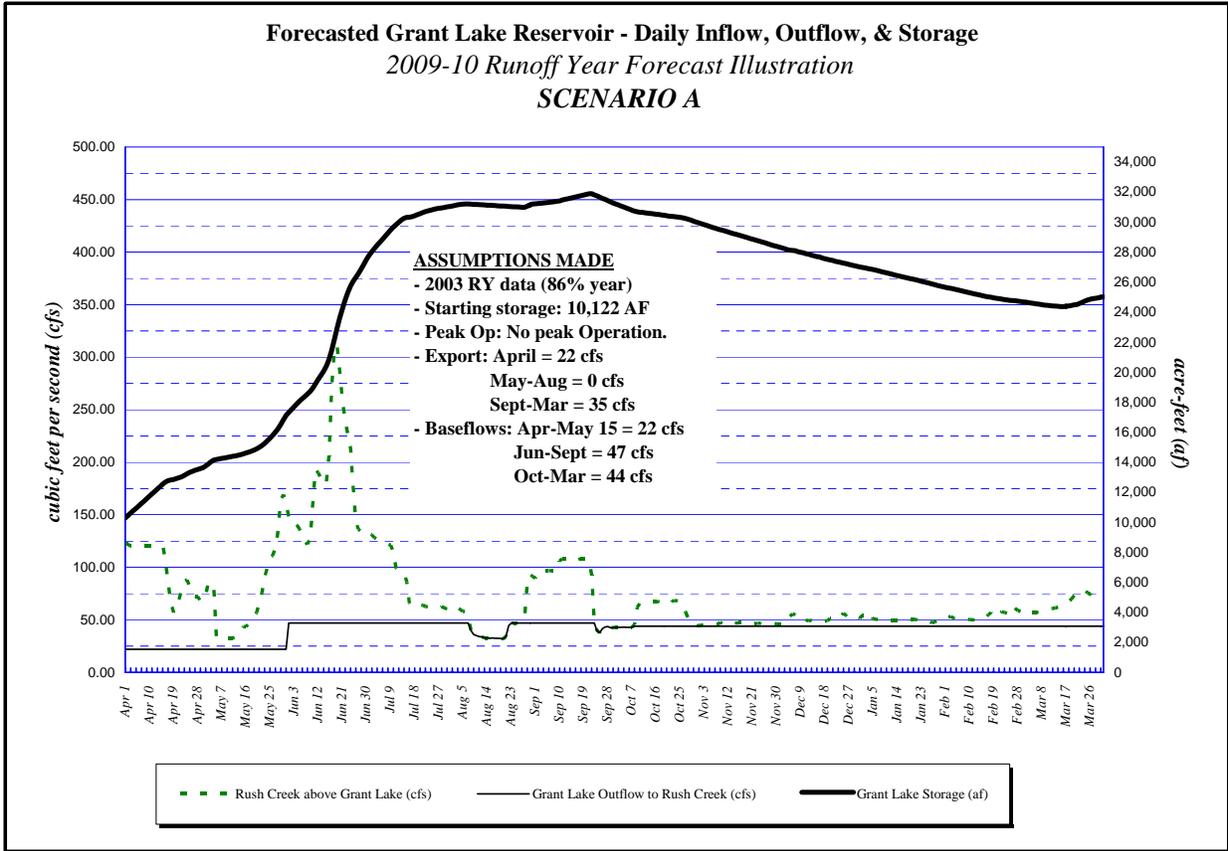
## RY 2008-09 Mono Lake Elevation Readings

<b>Month</b>	<b>Day</b>	<b>Year</b>	<b>Elevation</b>
3	20	2008	6383.3
4	3	2008	6383.3
4	17	2008	6383.3
5	8	2008	6383.2
5	30	2008	6383.2
6	6	2008	6383.2
6	11	2008	6383.3
6	19	2008	6383.4
6	26	2008	6383.4
7	3	2008	6383.4
7	10	2008	6383.3
7	18	2008	6383.3
7	24	2008	6383.2
7	31	2008	6383.1
8	7	2008	6383
8	13	2008	6382.9
8	21	2008	6382.8
8	27	2008	6382.8
9	1	2008	6382.7
9	4	2008	6382.6
9	11	2008	6382.5
9	19	2008	6382.5
9	25	2008	6382.4
10	2	2008	6382.4
10	9	2008	6382.3
10	16	2008	6382.2
10	23	2008	6382.2
10	29	2008	6382.2
11	5	2008	6382.2
11	19	2008	6382.2
12	4	2008	6382.2
12	11	2008	6382.2
12	19	2008	6382.1
12	24	2008	6382.1
1	8	2009	6382.1
1	15	2009	6382.1
2	5	2009	6382.2
3	4	2009	6382.4
3	11	2009	6382.4
3	17	2009	6382.4
3	31	2009	6382.4

# Mono Lake Elevation



# Grant Lake Level Forecast Scenarios



**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
<b>Flow (cfs)</b>	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 1<sup>st</sup> (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
<b>Flow (cfs)</b>	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 15<sup>th</sup> (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 15<sup>th</sup> (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.