Mono Basin Runoff Year 2025-26
Annual Operations Plan

Licenses 10191 and 10192
Order WR 2021-0086 EXEC – October 1, 2021

May 2025

Los Angeles Department of Water and Power

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I. Abbreviations, Definitions, Memberships Table

amsl	above mean sea level
AF	acre-feet
AFA	acre-feet per annum
AOP	Annual Operations Plan
BAU	business-as-usual
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
cfs	cubic feet per second
DSOD	California Department of Water Resources, Division of Safety of Dams
Deputy Director	Deputy Director for the Division of Water Rights
Division	State Water Resources Control Board, Division of Water Rights
GLOMP	Grant Lake Operations and Management Plan
GLR	Grant Lake Reservoir
Grant Outlet	Grant Lake Outlet
LADWP	Los Angeles Department of Water and Power (Licensee)
License(s)	Amended Licenses 10191 and 10192
MAT	Mono Basin Monitoring Administration Team
MBOP	Mono Basin Operations Plan
MGORD	Mono Gate One Return Ditch
Monitoring Directors	Stream Monitoring Team, Limnology Director, and Waterfowl Director
Parties	California Department of Fish and Wildlife, Mono Lake Committee, and California Trout
RCTE	riffle crest thalweg elevation
RY	runoff year
SCE	Southern California Edison
SEFs	Stream Ecosystem Flows
SMT	Stream Monitoring Team
SMR	storage management release
State Water Board	State Water Resources Control Board
TUCP	Temporary Urgency Change Petition
USFS	United States Forest Service
USGS	United States Geological Service
Teams and Directors as of Current Runoff Year:	
MAT	The Parties and LADWP
SMT	Bill Trush (streams) & Ross Taylor (fisheries)
Waterfowl Director	Director position to be filled
Limnology Director	Dr. John Melack

II. Introduction

The purpose of the AOP is to describe how operations will commence for the current year-type to accomplish exports and stream releases in accordance with the Licenses.

The AOP provides specific information about the flow schedule, export, and facility operations for the year ahead. The AOP also evaluates the prior year's plan and compares it to actual runoff and operations.

The timeline for AOP development and submittal is as follows:

- By March 31: convene a meeting to prepare for developing the AOP. Meeting attendees to include the SMT, the Waterfowl Director, the Limnology Director, and the Parties.
- By April 15: distribute the draft AOP to the Waterfowl Director, SMT, Limnology Director, and the Parties.
- By April 24: receive written comments from the Parties, SMT, and Directors on the draft AOP.
- By May 5: convene a meeting to address any unresolved issues.
- By May 15: submit the AOP to the SWRCB Deputy Director for a 30-day review, modification, and approval, if necessary. No Division approval is necessary if the terms of the AOP are entirely within the parameters of the MBOP then in effect.

The draft MBOP (last revised in 2024) is pending SWRCB review and approval and is not in effect at the time of this writing.

III. Summary of Mono Basin RY 2024-25 Operations

LADWP conducted Mono Basin operations in accordance with the 2024-25 AOP summarized below. No water diversions occurred on Walker or Parker Creeks. Rush Creek flows operated under a TUCP, based on a modified version of Table 1D shown in the 2024 AOP. The appropriate SEF table was implemented for Lee Vining Creek, exports were approximately 11,000 AF, and GLR spilled approximately 20,300 AF.

Planned Operations for RY	2024-25
Year Type	Normal
April 1 Mono Lake Elev (USGS)	6,383.70 ft
April 1 GLR Elev. & Storage	7,128.7 ft & 45,781 AF
Rush Creek SEF Table	1D (with modifications)
Lee Vining SEF Tables	2A, 2C, potential curtailment
Projected Five Siphons Operation	No
Projected West Portal (AF)	4,500 – 16,000
Projected GLR Spill (AF)	9,700
SMT Adaptive Management	Yes

Lower Rush Creek flows proceeded based on Table 1D with modifications due to limited GLR outlet valve flow capacity, in accordance with the 2024 TUCP order. Combined MGORD and spillway flows led to a peak release from GLR of 501 cfs in June, with a total of 14 consecutive days of releases above 380 cfs (the peak value of Table 1D).

DSOD valve cycling took place in September 2024. Cycling occurred while fisheries scientists were performing field work, and measures are in place to prevent this potentially dangerous situation from recurring.

Final runoff and export data will be presented in the corresponding Quarterly Reports, along with any comments on operations.

Lee Vining Creek operations were based on upstream flows according to Table 2 and adjusted on an hourly basis. This hourly-based operation complied with the SEF requirements, but this compliance may not be apparent when only viewing average daily flow data. The SMT prefers this method of operation on Lee Vining Creek over daily-based operations. Refer to the 2023-24 AOP for a detailed explanation of this operation methodology.

IV. Proposed Mono Basin Operations Plan for RY 2025-26

A. Forecast for RY 2025-26

The May 1 runoff forecast for RY 2025-26 is 69% of normal, or about 82,000 AF of runoff. This forecast sets the RYT as Dry-Normal I.

B. Adaptive Management

The SMT can provide adaptive management recommendations for flow requirements (such as ramping rates, durations, timing, and/or start and end dates) for SEF Tables 1 and 2, per Paragraphs 11.a.1, 20.f.3 and 20.f.4 of the Licenses. Each year the SMT produces an Annual Monitoring Report to document monitoring observations and discuss possible adaptive management recommendations; the SMT may also include adaptive management recommendations in comments on the draft AOP.

Real-time adaptive management in response to unforeseen circumstances may also be proposed by the SMT, per Paragraph 20.f of the Licenses. Unforeseen circumstances are extreme events (e.g., structural failures or natural disasters) that are not expected variations of regular operations. Such recommendations will be made by written notice to the Division, and they shall be developed in consultation with LADWP and Parties.

Adaptive management recommendations are subject to review, modification, and approval by the Deputy Director.

C. Planned Operations

Planned operations are summarized in the below table and will be based on the Mono Basin runoff forecast, SEF tables, Mono Lake elevation, SMT adaptive management comments, and any events that may arise during the year. RY operations were modeled in eSTREAM using April 1 elevations for GLR and Mono Lake.

Year Type	Dry-Normal I
April 1 Mono Lake Elev. (USGS)	6,383.25 ft
April 1 GLR Elev. & Storage	7,118.6 ft & 35,250 AF
Staff Gages & zero elevation (USGS)	1Q (6383.12) 1U (6380.10)
Rush Creek SEF Table	1F
Lee Vining SEF Tables	2B, 2C
Projected Five Siphons Operation	No; will operate if GLR <25k AF on 7/1/25
Projected West Portal (AF)	16,000
Projected GLR Spill (AF)	0
SMT Adaptive Management	No

The first several weeks of operations were based on an estimated Dry-Normal II RYT and changed after the May forecast resulted in a Dry-Normal I RYT.

The operational plan presented in this AOP was modeled using RY 2008-09 hydrology as inflows, which was 72% of normal. This year does not reflect current SCE practices, and LADWP will work on revised hydrology this year based on SCE re-licensing documents. LADWP estimates that actual SCE operations will send more flows downstream in spring and summer months, and less during later winter months. Planned Lee Vining Creek flows will follow Table 2, and planned Rush Creek flows will follow Table 1.

LADWP has submitted a notification to CDFW under Fish and Game Code Section 1602 regarding a possible diver inspection of GLR facilities, which would require work in the MGORD. The notification indicates LADWP intends to perform the inspection work within the next five years; work will be performed when conditions are favorable and diver contractors can be arranged. The diver inspection will not occur this year. Please see attached description of work for further details.

LADWP plans to evaluate the condition and function of the GLR rotovalve with an outside consultant during this RY.

Planned export is 16,000 AF. Modeled export flow in eSTREAM starts mid-June, runs through March, and has a peak flow of about 30 cfs. Actual export may vary from the model run and range between 10 cfs and 60 cfs. Export will start to prevent unintended summertime spills at GLR, if such conditions arise. LADWP staff will monitor aqueduct system storage and hydrologic conditions throughout the year regarding Mono Basin operations, including exports. Operational considerations will include maintaining Rush Creek fishery and streambed in good health, meeting environmental obligations, and supplying water to the City.

The SMT has planned field survey work from September 15-23. LADWP staff will meet with the SMT in the field before the survey work begins. During any fish survey periods, creek flows will be adjusted as directed by the SMT. Planned monitoring activities by the SMT are attached to this AOP.

The Walker and Parker Creeks sediment bypass repair project is currently in the design phase. LADWP will request a meeting with CDFW for project input regarding construction work as design progresses.

If GLR approaches spill elevation between October and March, planned operations are to cease Lee Vining Creek diversions and/or release SMRs if GLR storage is above 47,000 AF to avoid winter spills. Target SMRs will be at or below values discussed in Chapter 8.3.2 of the draft MBOP (shown below).

Month	MBOP # cfs	SEF # cfs	cfs increase	Possible AF/period
October	70	27	43	2,600
November	35	27	8	500
December	35	27	8	500
Jan - Mar	90	27	63	11,400
			Total =	15,000

Rush Creek and Lee Vining Creek and Conduit daily flows depend on both hydrology and SCE operations, and therefore may differ from eSTREAM model flows.

Each year includes planned cycling of the GLR outlet valve per DSOD requirements. The planned cycling period will depend on the applicable SEF tables for Rush Creek and typically occurs during periods of higher SEF flows in the summer months and will also depend on scheduling of SMT field work. The downstream effects of valve cycling include a reduction and then an increase in flows, followed by a return to the SEF flow rate at the completion of the cycling exercise. The cycling procedure occurs over a two- or three-hour period and the reduction and increase in flows is attenuated downstream due to the relatively short duration of flow variation. Based on experience, SEF flow values would likely be met during any cycling exercise.

This AOP is based on projections from eSTREAM modeling and forecasts with the understanding that actual creek flows and runoff may vary substantially due to actual

hydrology, weather patterns, SCE and other agency operations, and/or other factors. LADWP will notify the Parties of adjustments in operations via electronic communication within five business days if changes conflict with License requirements. Otherwise, monthly and quarterly reports will document adjustments in operations.

ATTACHMENTS

TABLE 1F: RUSH CREEK STREAM ECOSYSTEM FLOWS FOR DRY/NORMAL I YEARS

Hydrograph Component	Timing	Flow Requirement	Ramping Rate
Spring Baseflow	April 1 – April 30	40 cfs	Maximum: 10% or 10 cfs*
Spring Ascension	May 1 – May 15	40 cfs ascending to 80 cfs	Target: 5% Maximum: 25%
Snowmelt Bench	May 16 – July 3	80 cfs	Maximum Ascending: 20% Maximum Descending: 10% or 10 cfs*
Medium Recession (Node)	July 4 – July 9	80 cfs descending to 55 cfs	Target: 6% Maximum: 10% or 10 cfs
Slow Recession	July 10 – July 30	55 cfs descending to 30 cfs	Target: 3% Maximum: 10% or 10 cfs*
Summer Baseflow	July 31 – September 30	30 cfs target 28 cfs minimum	Maximum: 10% or 10 cfs*
Fall and Winter Baseflow	October 1 – March 31	27 cfs target 25 cfs minimum and 29 cfs maximum	Maximum: 10% or 10 cfs*
			* whichever is greater

TABLE 2B: LEE VINING CREEK STREAM ECOSYSTEM FLOWS

Timing: April 1 – September 30						Year-type: Dry/Normal I, Dry				
Maximum ramping at the beginning and end of this period is 20%.										
Inflow	**Flow Requirement**									
30 cfs or less	Licensee shall bypass inflow.									
31 – 250 cfs	Licensee shall bypass flow in the amount corresponding to inflow which is displayed as blocks of 10 cfs (left-hand vertical column) and 1 cfs increments within such blocks (top horizontal row).									
	0	1	2	3	4	5	6	7	8	9
30		30	30	30	30	30	30	30	30	30
40	30	30	30	30	30	30	30	30	30	30
50	30	30	30	30	30	30	30	30	31	32
60	32	33	34	34	35	36	36	37	38	38
70	39	40	41	41	42	43	43	44	45	45
80	46	47	47	48	49	49	50	51	52	52
90	53	54	54	55	56	56	57	58	59	59
100	60	61	61	62	63	64	64	65	66	66
110	67	68	69	69	70	71	72	72	73	74
120	74	75	76	77	77	78	79	80	80	81
130	82	82	83	84	85	85	86	87	88	88
140	89	90	91	91	92	93	94	94	95	96
150	97	97	98	99	100	100	101	102	103	103
160	104	105	106	106	107	108	109	109	110	111
170	112	112	113	114	115	115	116	117	118	118
180	119	120	121	121	122	123	124	124	125	126
190	127	128	128	129	130	131	131	132	133	134
200	134	135	136	137	138	138	139	140	141	141
210	142	143	144	144	145	146	147	148	148	149
220	150	151	151	152	153	154	155	155	156	157
230	158	158	159	160	161	162	162	163	164	165
240	165	166	167	168	169	169	170	171	172	172
250	173									
251 cfs and greater	Licensee shall bypass inflow.									

TABLE 2C: LEE VINING CREEK STREAM ECOSYSTEM FLOWS

Timing: October 1 – March 31				Year-type: All
Maximum ramping at the beginning and end of this period and at all times is 20%.				
Timing	Flow Requirement			
	Extreme/Wet, Wet	Wet/Normal	Normal	Dry/Normal II, Dry/Normal I, Dry
October 1 – October 15	30 cfs	28 cfs	20 cfs	16 cfs
October 16 – October 31	28 cfs	24 cfs	18 cfs	
November 1 – November 15	24 cfs	22 cfs		
November 16 – March 31	20 cfs	20 cfs		

2025 MONO BASIN RUNOFF FORECAST

May 1, 2025

APRIL THROUGH SEPTEMBER RUNOFF

	MOST PROBABLE VALUE (Acre-feet)	MOST PROBABLE VALUE (% of Avg.)	REASONABLE MAXIMUM (% of Avg.)	REASONABLE MINIMUM (% of Avg.)	LONG-TERM MEAN (1971 - 2020) (Acre-feet)
MONO BASIN:	**66,500**	**66%**	76%	57%	100,307

APRIL THROUGH MARCH RUNOFF

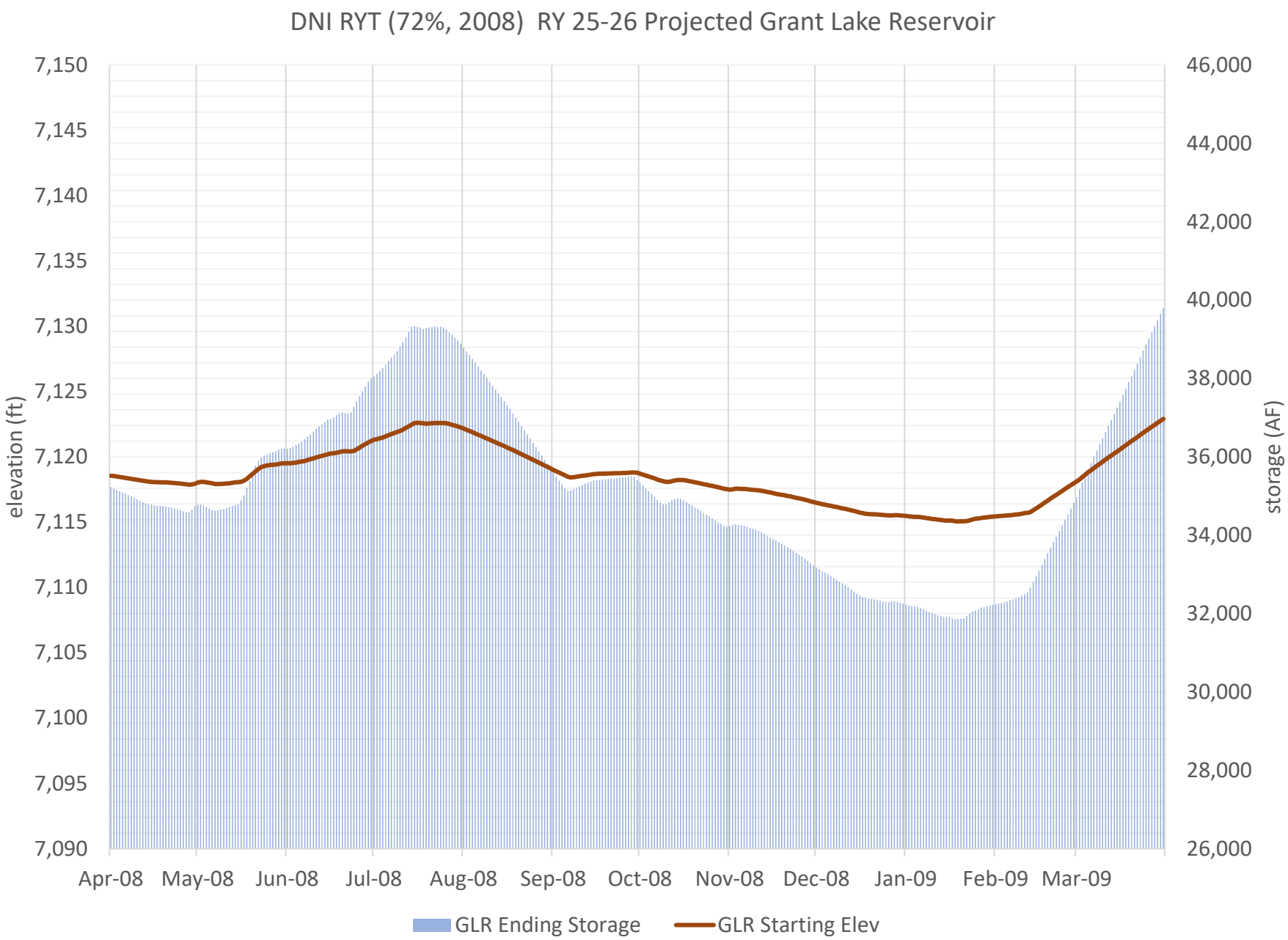
	MOST PROBABLE VALUE (Acre-feet)	MOST PROBABLE VALUE (% of Avg.)	REASONABLE MAXIMUM (% of Avg.)	REASONABLE MINIMUM (% of Avg.)	LONG-TERM MEAN (1971 - 2020) (Acre-feet)
MONO BASIN:	**82,100**	**69%**	80%	58%	118,600

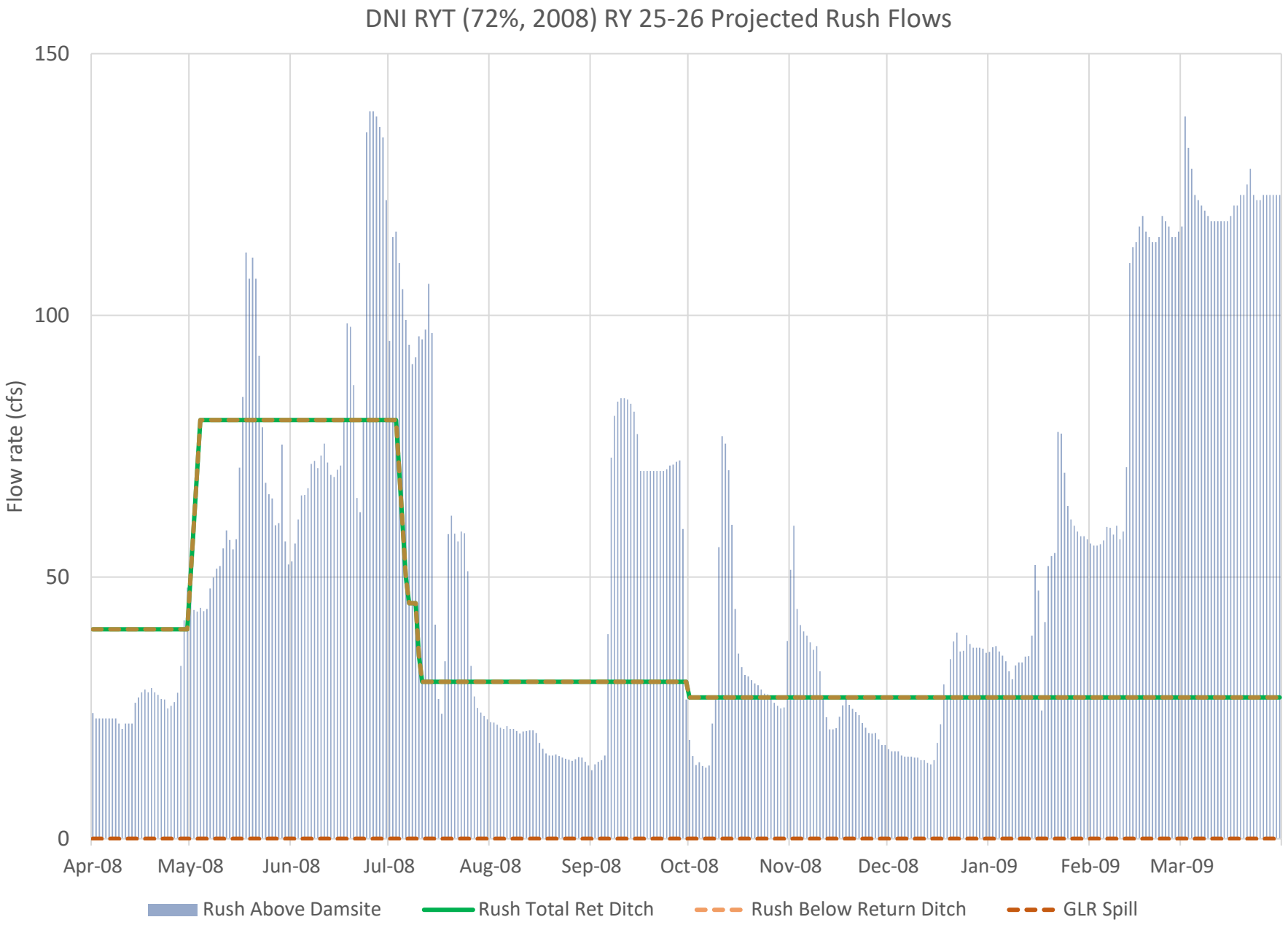
NOTE - Owens River Basin includes Long, Round, and Owens Valleys

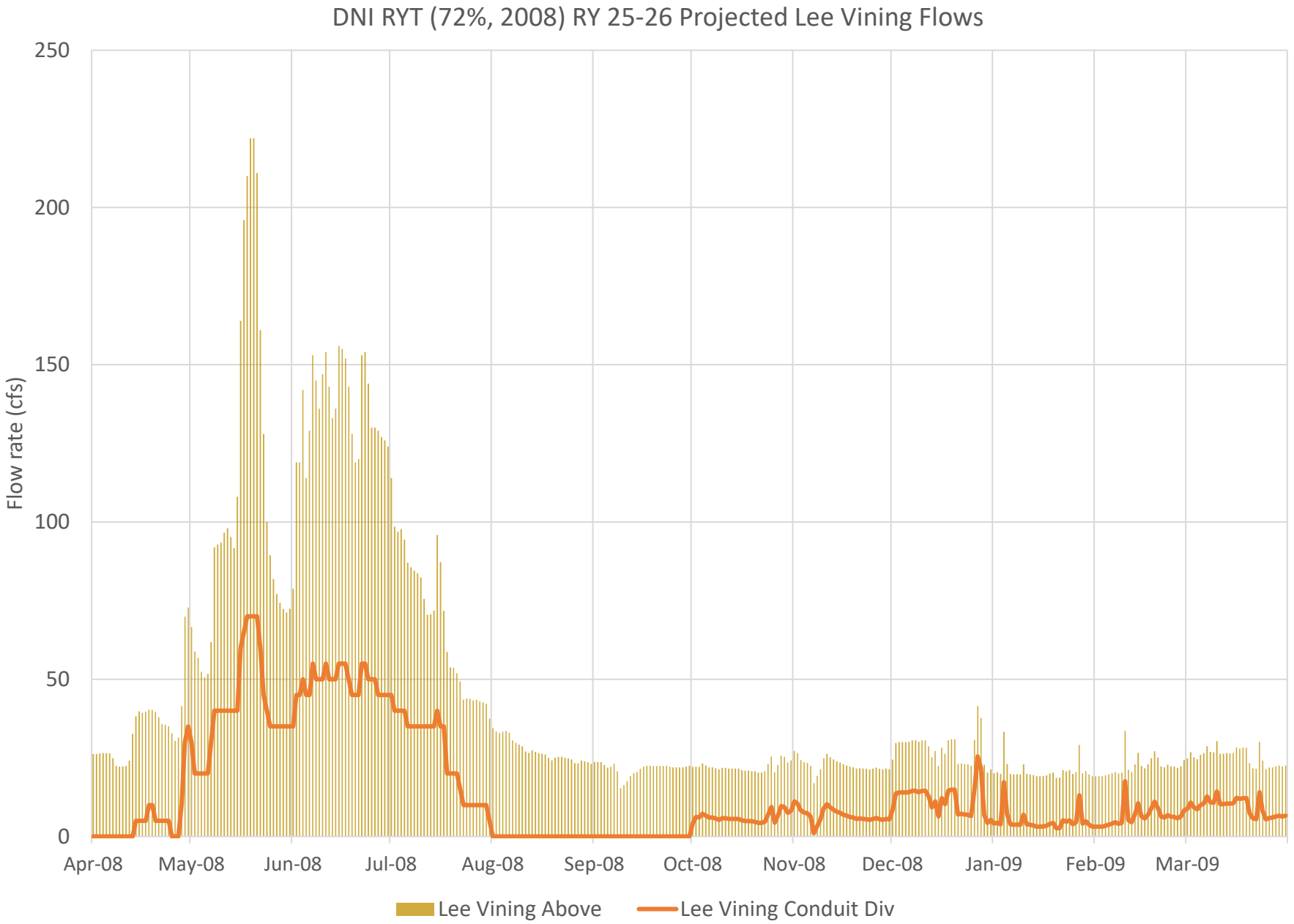
MOST PROBABLE - That runoff which is expected if median precipitation occurs after the forecast date.

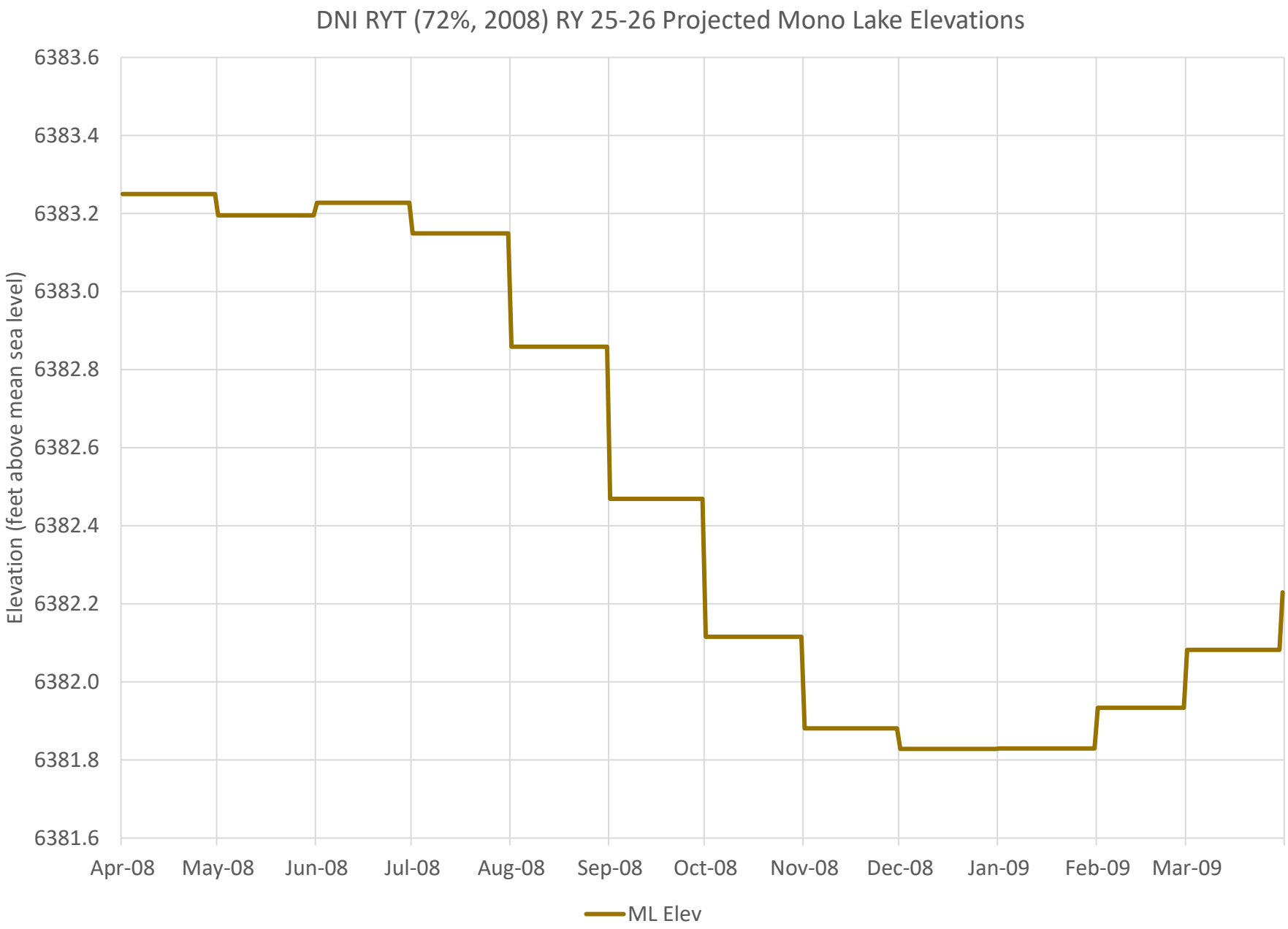
REASONABLE MAXIMUM - That runoff which is expected to occur if precipitation subsequent to the forecast is equal to the amount which is exceeded on the average once in 10 years.

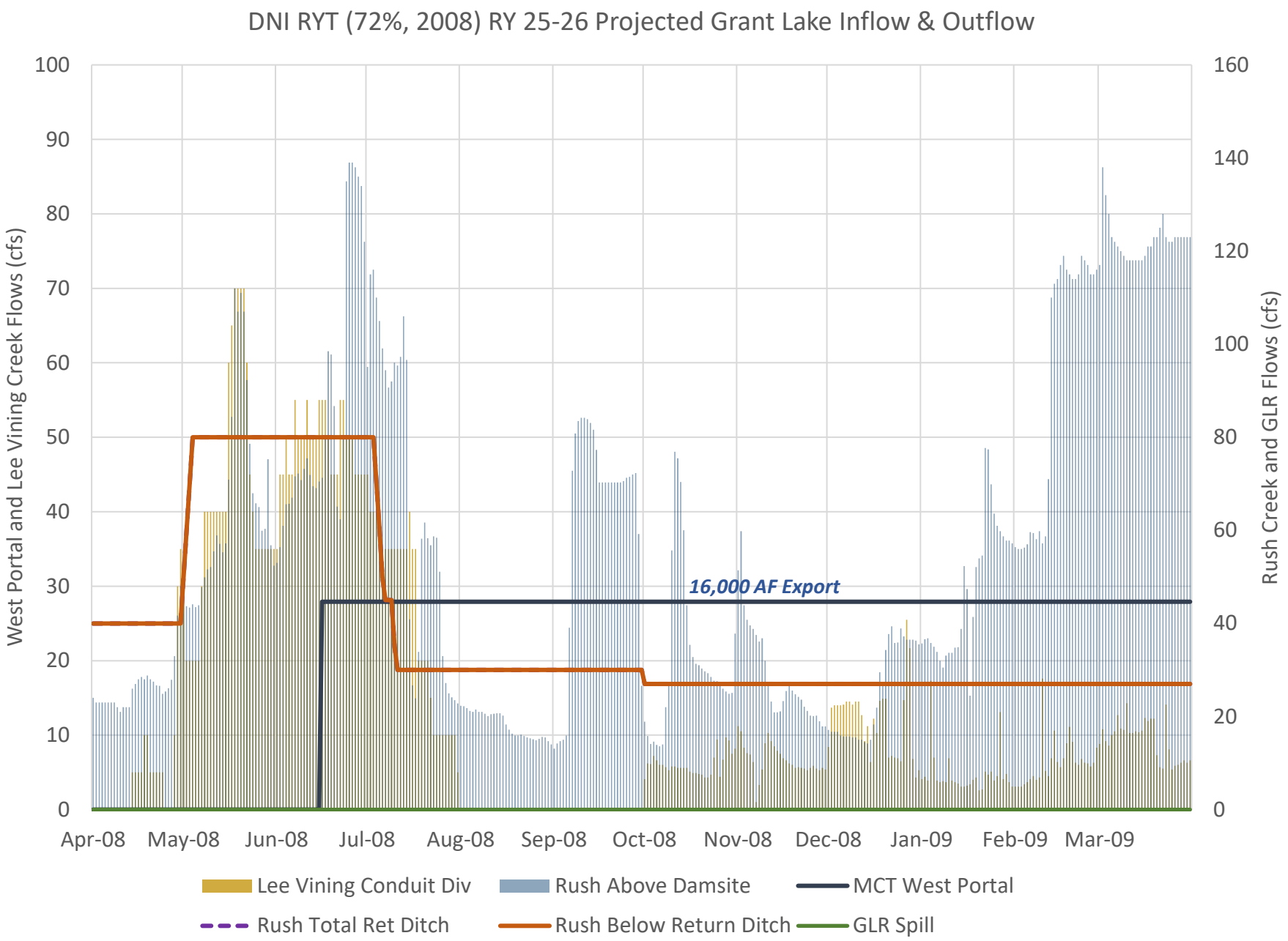
REASONABLE MINIMUM - That runoff which is expected to occur if precipitation subsequent to the forecast is equal to the amount which is exceeded on the average 9 out of 10 years.

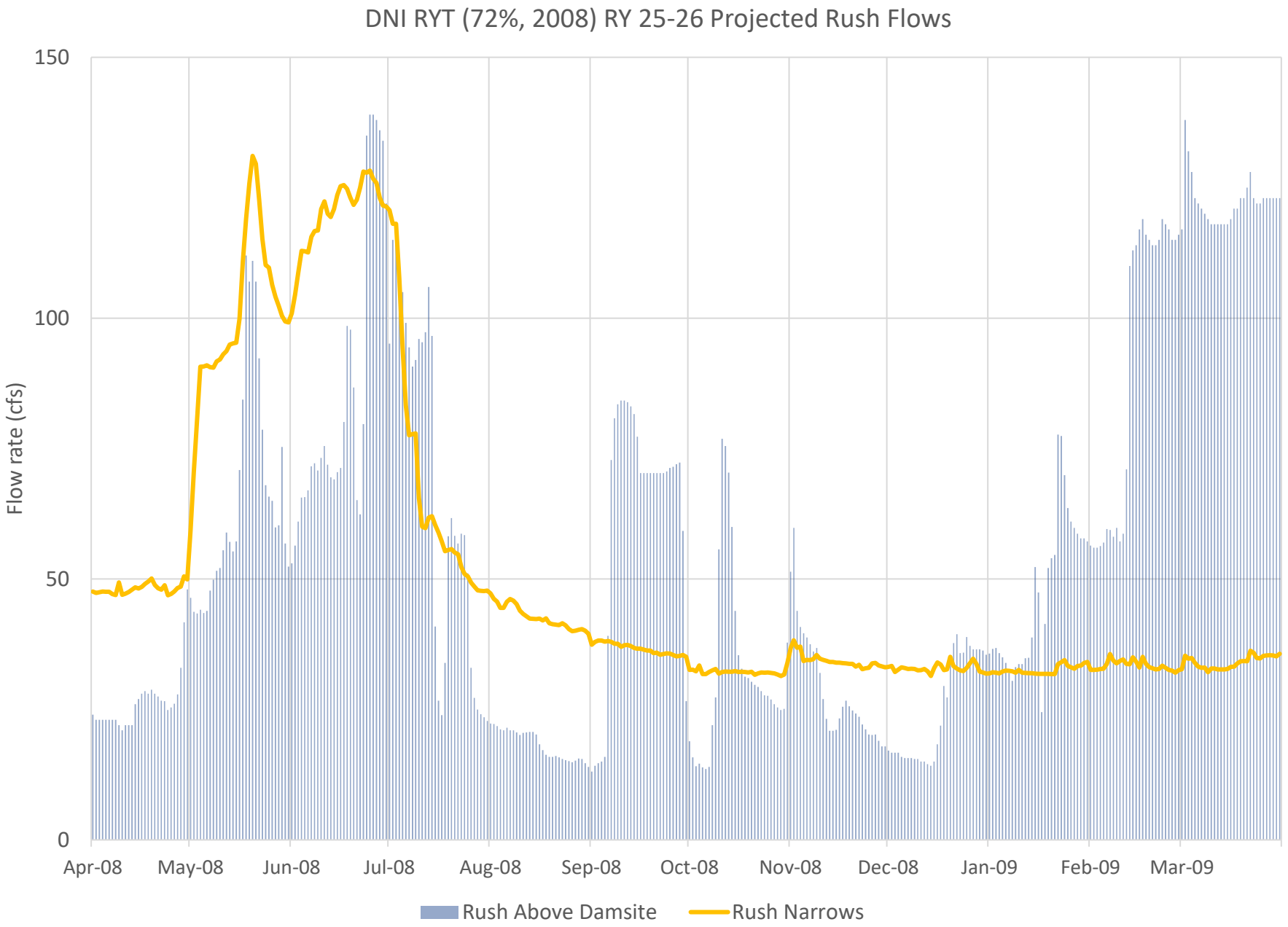

DNI RYT (72%, 2008) RY 25-26 Projected Grant Lake Reservoir
elevation (ft)
storage (AF)
7,150
7,145
7,140
7,135
7,130
7,125
7,120
7,115
7,110
7,105
7,100
7,095
7,090
46,000
44,000
42,000
40,000
38,000
36,000
34,000
32,000
30,000
28,000
26,000
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
GLR Ending Storage
GLR Starting Elev


DNI RYT (72%, 2008) RY 25-26 Projected Rush Flows
150
100
50
0
Flow rate (cfs)
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Rush Above Damsite
Rush Total Ret Ditch
Rush Below Return Ditch
GLR Spill


DNI RYT (72%, 2008) RY 25-26 Projected Lee Vining Flows
250
200
150
100
50
0
Flow rate (cfs)
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Lee Vining Above
Lee Vining Conduit Div


DNI RYT (72%, 2008) RY 25-26 Projected Mono Lake Elevations
Elevation (feet above mean sea level)
6383.6
6383.4
6383.2
6383.0
6382.8
6382.6
6382.4
6382.2
6382.0
6381.8
6381.6
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
ML Elev


DNI RYT (72%, 2008) RY 25-26 Projected Grant Lake Inflow & Outflow
West Portal and Lee Vining Creek Flows (cfs)
Rush Creek and GLR Flows (cfs)
100
90
80
70
60
50
40
30
20
10
0
160
140
120
100
80
60
40
20
0
16,000 AF Export
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Lee Vining Conduit Div
Rush Above Damsite
MCT West Portal
Rush Total Ret Ditch
Rush Below Return Ditch
GLR Spill


DNI RYT (72%, 2008) RY 25-26 Projected Rush Flows
150
100
50
0
Flow rate (cfs)
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Rush Above Damsite
Rush Narrows

SMT Planned Monitoring

Proposed Fisheries Sampling for 2025 Season

During the development of the post-settlement monitoring scope and budget, RTA proposed that the annual fisheries sampling was reduced to conduct population estimate sampling every other year (in even-years). In the odd-years, single-pass electrofishing sampling would occur to collect data to evaluate population age-class structure, compute condition factors, generate growth data from recaptures of previously tagged fish, and implant PIT tags in new cohorts of fish.

We intend to conduct single-pass sampling in the fall of 2025. In addition to conducting single-pass sampling at the annually sampled locations, RTA proposes sampling the 8-Channel section of Rush Creek to continue sampling the area adjacent to the area once occupied by beavers.

Plans for the 2025/2026 Season

The next season will continue to focus on the Rush Creek riparian area from the ford to the narrows.

Goals for the next field season are to:

- Establish a series of benchmarks at high resolution for validation of drone data and to increase the efficiency of on the ground surveys.
- Collect ground truth data for land cover (inc. vegetation).
- Obtain a complete high resolution LiDAR dataset with enough overlap between flights to seamlessly combine the dataset and create complete DEMs and CHMs for additional analysis.
- Test the effectiveness of adding infrared data for land cover classification.
- Obtain a complete set of aerial photos of the study area during relatively high flows.
- Survey a sample of the RCT elevations, water depth at RCTs, water depth and wetted width for pools, and LWD below the canopy. This will be used to determine the long-term process for monitoring RCT elevations and residual pool depths.
- A secondary goal is to establish additional photo points.

Monitoring activities to achieve this will include:

- Flying drone surveys with photo sensors (RGB and IR) and LiDAR during the spring (high flow) and fall (low flow)
- Ground surveys with Emlid professional grade surveying equipment to include:
    - To geolocate existing benchmarks and establish new long-term benchmarks
    - Vegetation cover for modeling
    - RCT surveys for elevations and water depth at low flow
    - Wetted width below the canopy
    - LWD below the canopy
    - Pool depths at low flow
- Establishing photo points for repeat photography

MONO GATE ONE RETURN DITCH POOLING DURING GRANT LAKE OUTLET DIVER INSPECTION

PROJECT SCOPE AND WORK DESCRIPTION

Project Scope:

- Installation of temporary dam structures in the MGORD waterway to create pools of water.
- This project is in support of a diver inspection of the Grant Lake Outlet – while divers are doing inspection work, flows to MGORD must be turned off.
- The cofferdams and pools will be used to provide areas for fish while outflows are turned off.

Work Description:

- Work will be done in the wet, within the MGORD channel
- The disturbance area for the project, which is entirely contained within a previously disturbed area (the MGORD channel), consists of two cofferdams, each with an area of approximately 6 ft by 30 ft, for a total of 6 ft x 30 ft x (2 cofferdams) of 360 square ft.
- In between diver inspection sessions, water flow to MGORD will be turned back on, while the cofferdams remain in place, and allow water to overflow into the next pool area.
- The cofferdams will be removed from the MGORD channel after the diver inspection work is complete.
- A test run of cofferdam installations and flow shut-off will take place approximately 1 week before the actual diver inspection. CDFW will be notified of this test run, to schedule any field testing CDFW wishes to perform.
- Snowpack and runoff factors: this project will take place while water is conveyed to Lower Rush Creek via alternative means than the MGORD channel. If snowpack and runoff conditions are such that alternative means are unavailable, then this project will be delayed until such conditions are present.

May 1 Forecasting vs. April 1 Forecasting

The LADWP Aqueduct Forecast Model was designed to produce an April 1 Forecast, not a May 1 Forecast. However, utilizing May 1 conditions as parameters in the model will produce an accurate forecast.

To demonstrate that the equations are still valid, the April 1 and May 1 conditions are modeled against Mono Basin Runoff (MBR) for the whole runoff year in the figure below. Since Mono Basin is a snow-dominated watershed we focus on the Gem Pass snow pillow data (SWE).

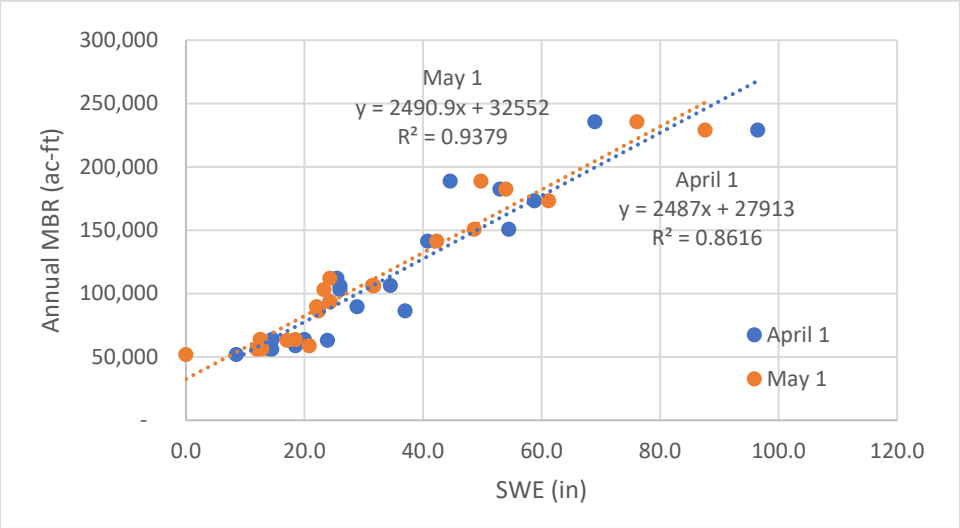


Figure 1. Runoff vs. Snow

This figure shows the same correlation between runoff and either April 1 or May 1 conditions. Because of this, the May 1 conditions may be used as forecast model parameters.

To show that within-year changes do not affect the cumulative annual runoff, we compare April MBR with the change in SWE from April 1 to May 1.

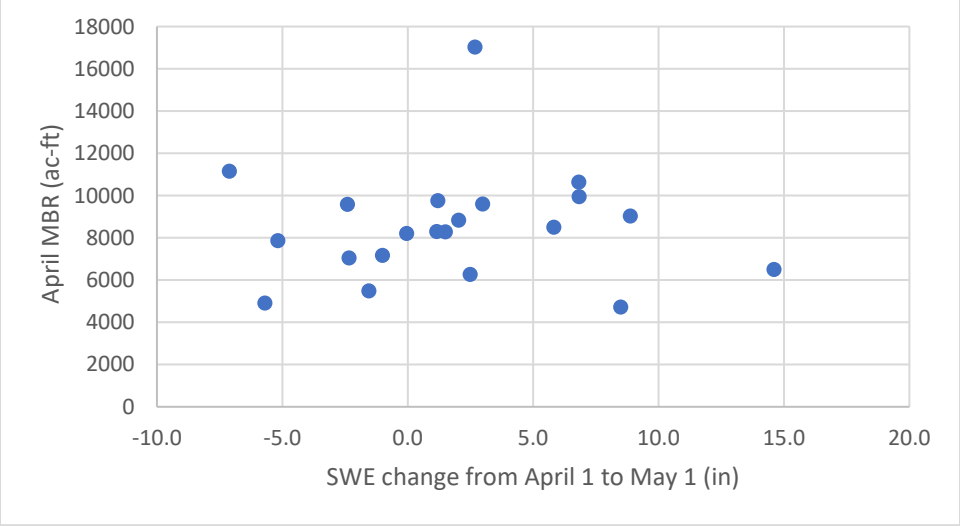


Figure 2. Runoff vs. Snow melt

This figure shows that there is no correlation between snow gain or loss and the amount of runoff that occurs in April. This points to the conclusion that the forecast models will not lose accuracy due to changes in snow conditions from April 1 to May 1.

After April 1, no new surveys are carried out in the Mono watershed so May 1 snow conditions at locations other than Gem Pass must be estimated using the Gem Pass snow pillow. To account for year-to-year variability, the April 1 spatial ratios are used to estimate the May 1 conditions.

Since the 2023 winter, Gem Pass snow pillow has been offline due to damage and the CA Dept. of Water Resources has not been able to repair it. The closest functional snow pillow is Mammoth Pass which can be used to accurately estimate the Gem Pass data as displayed in the figure below.

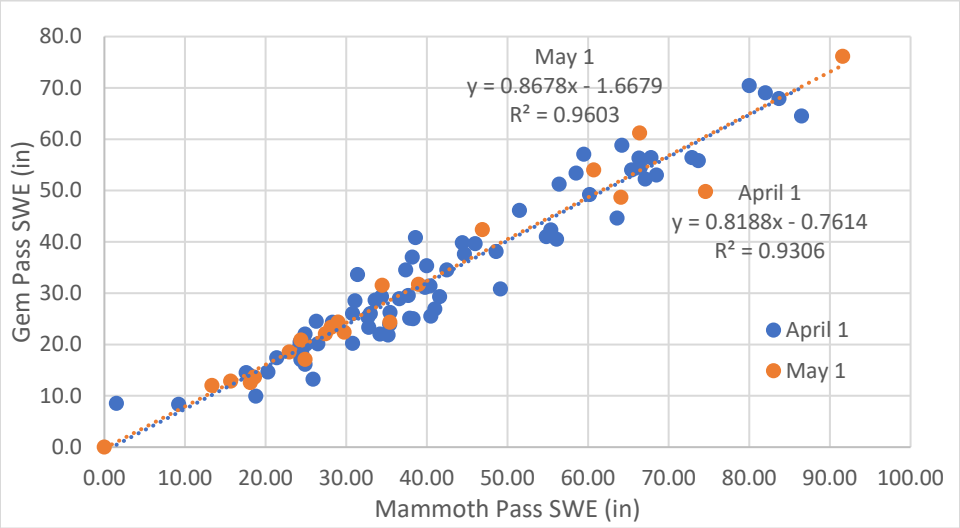


Figure 3. Snow conditions at Gem Pass and Mammoth Pass

Forecast Equations and Parameters

Listed below are a table of model parameters and equations used in the forecast model. A representative unit hydrograph is used to distribute these cumulative runoffs over the appropriate months.

Parameters	April 1, 2025 Value	May 1, 2025 Value
S_{Sad} (Saddlebag Lake Snowpack on 4/1):	29.0 in	24.3 in
S_{Tioga} (Tioga Pass Snowpack on 4/1):	26.0 in	21.8 in
$S_{G\ Lake}$ (Gem Lake Snowpack on 4/1):	22.9 in	19.2 in
$S_{G\ Pass}$ (Gem Pass Snowpack on 4/1):	25.4 in	21.3 in
S_{Mam} (Mammoth Pass Snowpack on 4/1)	37.00 in	31.28 in
$P_{Ell\ A-S}$ (Ellery Lake April to September Precipitation Forecast):	4.55 in	4.53 in
$P_{G\ Lake\ A-S}$ (Gem Lake April to September Precipitation Forecast):	4.18 in	3.35 in
$P_{G\ Lake\ O-M}$ (Gem Lake Precipitation from October to March):	3.84 in	3.84 in
$P_{Mam\ O-M}$ (Mammoth Precipitation from October to March):	19.81 in	19.81 in
$P_{Mam\ A-S}$ (Mammoth April to September Precipitation Forecast):	6.73 in	4.60 in
$R_{Par\ O-M}$ (Parker Creek Runoff from October to March):	1,574 ac-ft	1,574 ac-ft
ϕ_{A-S} (Likelihood of occurrence weighting for April to September)	1.011	1.012
ϕ_{A-M} (Likelihood of occurrence weighting for April to March)	1.009	1.009

- April – September Lee Vining Creek Runoff ($R_{Lee\ A-S}$)
  $R_{Lee\ A-S} = (353.138 * S_{G\ Lake} + 405.703 * S_{Sad} + 1385.331 * P_{Ell\ A-S} + 619.763 * P_{Mam\ O-M} + 4.744 * R_{Par\ O-M} - 13440.699) * \phi_{A-S}$
- April – September Parker Creek Runoff ($R_{Par\ A-S}$)
  $R_{Par\ A-S} = (88.652 * S_{G\ Pass} + 132.749 * P_{Mam\ A-S} + 50.716 * S_{Mam} + 0.966 * R_{Par\ O-M} - 607.769) * \phi_{A-S}$
- April – September Rush Creek Runoff ($R_{Rush\ A-S}$)
  $R_{Rush\ A-S} = (386.729 * S_{G\ Lake} + 906.675 * S_{G\ Pass} + 1360.726 * P_{G\ Lake\ A-S} + 347.893 * P_{G\ Lake\ O-M} + 2.749 * R_{Par\ O-M} - 7966.28) * \phi_{A-S}$
- April – September Walker Creek Runoff ($R_{Walk\ A-S}$)
  $R_{Walk\ A-S} = \big(59.737 * S_{G\ Pass} + 49.471 * S_{Tioga} + 109.773 * P_{Ell\ A-S} + 27.191 * P_{Mam\ O-M} + 0.442 * R_{Par\ O-M} - 1611.027\big) * \phi_{A-S}$
- April – March Lee Vining Creek Runoff ($R_{Lee\ A-M}$)
  $R_{Lee\ A-M} = (239.012 * S_{G\ Lake} + 720.105 * S_{Sad} + 1514.849 * P_{Ell\ A-S} + 425.432 * P_{Mam\ O-M} + 5.354 * R_{Par\ O-M} - 9961.507) * \phi_{A-M}$
- April – March Parker Creek Runoff ($R_{Par\ A-M}$)
  $R_{Par\ A-M} = (80.381 * S_{G\ Pass} + 158.099 * P_{Mam\ A-S} + 73.677 * S_{Mam} + 1.274 * R_{Par\ O-M} - 233.189) * \phi_{A-M}$
- April – March Rush Creek Runoff ($R_{Rush\ A-M}$)
  $R_{Rush\ A-M} = (425.387 * S_{G\ Lake} + 876.93 * S_{G\ Pass} + 1647.904 * P_{G\ Lake\ A-S} + 446.51 * P_{G\ Lake\ O-M} + 4.39 * R_{Par\ O-M} - 6002.192) * \phi_{A-M}$
- April – March Walker Creek Runoff ($R_{Walk\ A-M}$)
  $R_{Walk\ A-M} = \big(36.7 * S_{G\ Pass} + 94.43 * S_{Tioga} + 145.276 * P_{Ell\ A-S} + 33.762 * P_{Mam\ O-M} + 0.449 * R_{Par\ O-M} - 779.043\big) * \phi_{A-M}$