

Staff Report

For the Board of Directors' Meeting of January 22, 2020

TO: Board of Directors
FROM: Chip Close, Water Operations Manager
DATE: January 13, 2020
SUBJECT: Seasonal Irrigation Water Service Information

OPERATIONS

RECOMMENDATION:

Receive an informational presentation on the history and timing of seasonal irrigation water service.

BACKGROUND:

The District has received multiple requests for a change to its seasonal irrigation water service timing. Historically, the District has provided this service from April 15th through October 14th. This presentation will provide background on how and why the irrigation season was established, and how it relates to future water supply.

BUDGETARY IMPACT:

None at this time

Attachment:

- PowerPoint presentation

Seasonal Irrigation Water Service Information



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NEVADA IRRIGATION DISTRICT BOARD MEETING 1-22-2020



Seasonal Irrigation Information

- ▶ Irrigation Season April 15th
Through October 14th
- ▶ Historically Based Upon Crop
Needs and Weather
- ▶ Water Right License Collection
Dates
- ▶ Is Mirrored by Neighboring Water
Purveyors
 - ▶ SSWD, PCWA, NYWD, SFWP,
GDPUD



Seasonal Irrigation Information



Requests for Water Season Adjustments on the Rise

- ▶ Pre-Season Heat
- ▶ Crop Demands (pre & post season)
- ▶ Stock Water in Fall
- ▶ Fire Protection Flows
- ▶ Dry Fall Seasons
- ▶ No Other Supply Available
- ▶ Climate Variability





Seasonal Irrigation Information

Crop Water Needs

- ▶ District provides irrigation water for 30,000 acres
 - ▶ Number one crop is Irrigated Pasture (19,700 ac)
 - ▶ Irrigated pasture's growing season April – Sept.
 - ▶ Temperature and sunlight are key elements
 - ▶ Total water purchased in 2019 – 112,000 acft



	Pasture growth rate											
	Jan (Jul)	Feb (Aug)	Mar (Sep)	Apr (Oct)	May (Nov)	Jun (Dec)	Jul (Jan)	Aug (Feb)	Sep (Mar)	Oct (Apr)	Nov (May)	Dec (Jun)
lb/ac/d											
NZ coast	24	33	50	58	63	73	59	61	50	41	32	25
NZ inland	7	11	29	45	42	52	34	18	24	18	13	8
Stanislaus	5	23	26	34	58	49	34	27	24	18	12	9
Glenn	7	11	27	43	52	39	41	34	25	17	9	7
Humboldt A	10	22	27	54	50	51	30	45	34	28	17	12
Sutter	7	13	28	45	50	56	49	51	26	17	8	4
Humboldt B	8	10	18	39	33	56	43	20	27	17	24	8
Calif. Average	7	16	25	43	48	50	39	35	27	19	14	8
NZ Average	15	22	39	51	52	63	46	39	37	30	22	16

*California pastures are various mixtures of perennial ryegrass (*Lolium perenne*), orchardgrass (*Dactylis glomerata*), tall fescue (*Festuca arundinaceae*), "Ladino" white clover (*Trifolium repens*), and strawberry clover (*T. fragiferum*).

†New Zealand (NZ) pastures are dominated by perennial ryegrass and white clover. NZ was adjusted by 6 months, so that July data are listed under January.

Seasonal Irrigation Information



Crop Water Needs

- ▶ Number two crop is Family Gardens (6,244 ac)
 - ▶ Peak gardening months April - October
 - ▶ Gardening in raining season limited
 - ▶ Total water purchased in 2019 – 27,600 acft



Seasonal Irrigation Information



Crop Water Needs

- ▶ Number three crop is Hay (852 acres)
 - ▶ Same growing season as pasture
 - ▶ Water purchased in 2019 = 2,000 acft
- ▶ Number four crop is Grapes (720 acres)
 - ▶ Grape water needs are April – Oct.
 - ▶ Water purchased in 2019 – 1,688 acft



Table 15.4

Page 424 in *California Master Gardener Handbook*. Geisel, P., Farnham D., and Vossen, P. 2002. Pittenger, editor. University of California, Division of Agriculture and Natural Resources, Publication 3338. Oakland, CA. Copyright © 2009 - [The Regents of the University of California](http://www.regents.org). All rights reserved.

DRIP IRRIGATION SCHEDULE FOR GRAPES IN THE CENTRAL VALLEY

Week	Gallons (liters) of water per day per trellised vine under drip irrigation						
	Apr	May	Jun	Jul	Aug	Sep	Oct
1	0.5 (1.9)	5.0 (19.0)	8.0 (30.4)	8.0 (30.4)	10.0 (38.0)	6.5 (24.7)	5.0 (19.0)
2	1.0 (3.8)	5.0 (19.0)	8.0 (30.4)	8.0 (30.4)	6.0 (22.8)	6.5 (24.7)	5.0 (19.0)
3	2.0 (7.6)	7.0 (26.6)	8.0 (30.4)	10.0 (38.0)	6.5 (24.7)	5.0 (19.0)	3.0 (11.4)
4	3.5 (13.3)	8.0 (30.4)	8.0 (30.4)	10.0 (38.0)	6.5 (24.7)	5.0 (19.0)	3.0 (11.4)

Seasonal Irrigation Information



Off Season Operational Challenges

- ▶ District generally only provides winter water to Constructive Conveyance canals
- ▶ Non-operational winter canals will not be converted to off season canals
 - ▶ Winter, fall, and demand water available on all others
- ▶ Canals require spillway setting for every storm
 - ▶ Only have staff of 10 to cover 500 miles
 - ▶ Restoration is labor intensive
- ▶ Wetting up dry canals leads to high demand
- ▶ Fall is the beginning of water storage period
- ▶ PG&E conducts an annual outage Oct. 15th through November 15th on Bear River Canal



Seasonal Irrigation Information



Water Rights

- ▶ District has 13 Post 1914 Consumptive Rights
 - ▶ All 13 have collection restrictions for only portions of the year
 - ▶ The majority of direct diversion rights have collection dates that begin in April
 - ▶ Direct diversion rights total 268,652 AF
 - ▶ Most storage rights begin in November
 - ▶ Storage rights total 240,760 AF



Discussing Water Rights, A Western Pastime



Seasonal Irrigation Information

Water Right Purpose

- ▶ District's Post 1914 Water Rights include the following purpose of use:
 - ▶ Mining
 - ▶ Domestic
 - ▶ Irrigation
 - ▶ Municipal
 - ▶ Power
 - ▶ Recreation
- ▶ Pre 1914 rights can include stock water and fire protection



Seasonal Irrigation Information

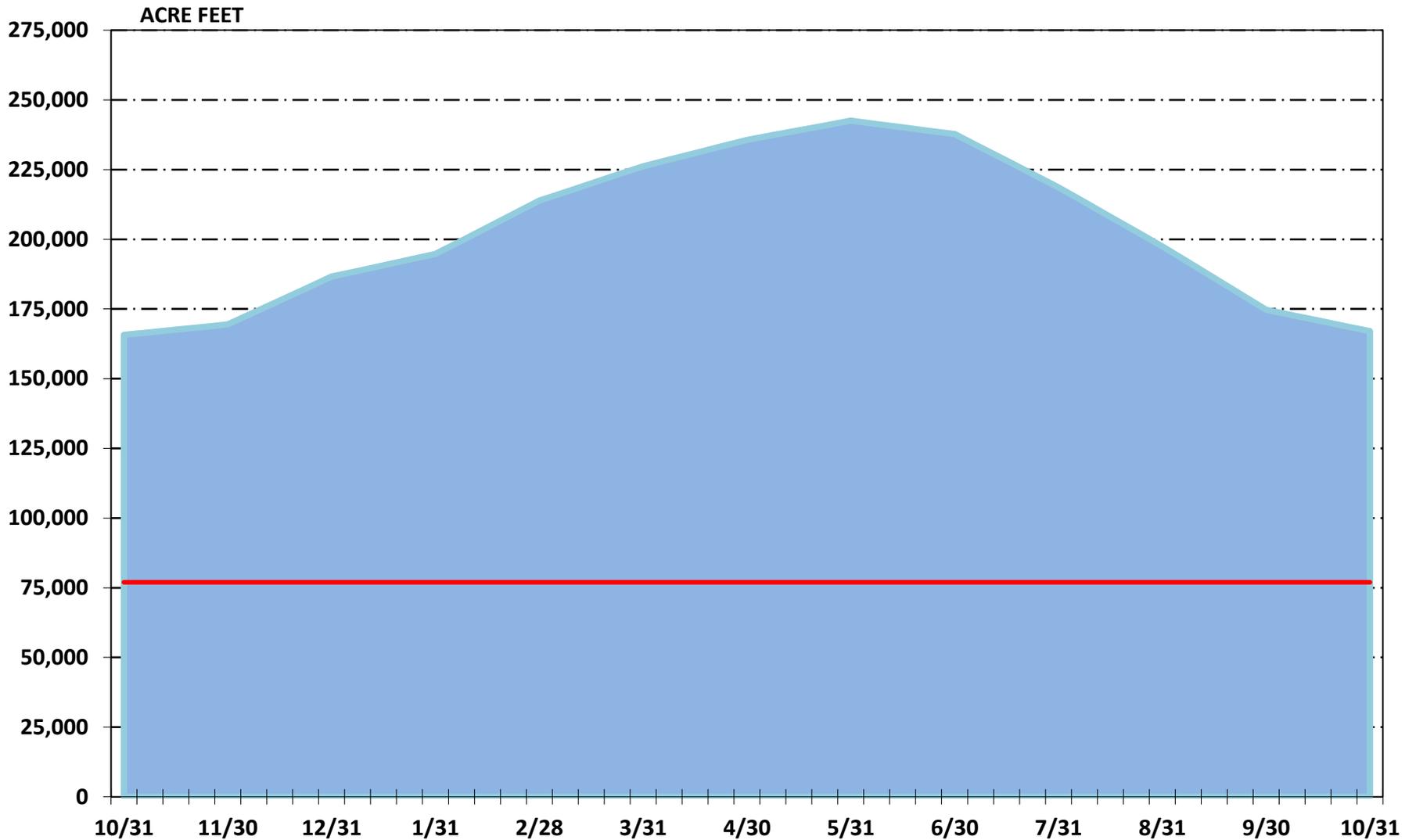


Why is the Timing Important?

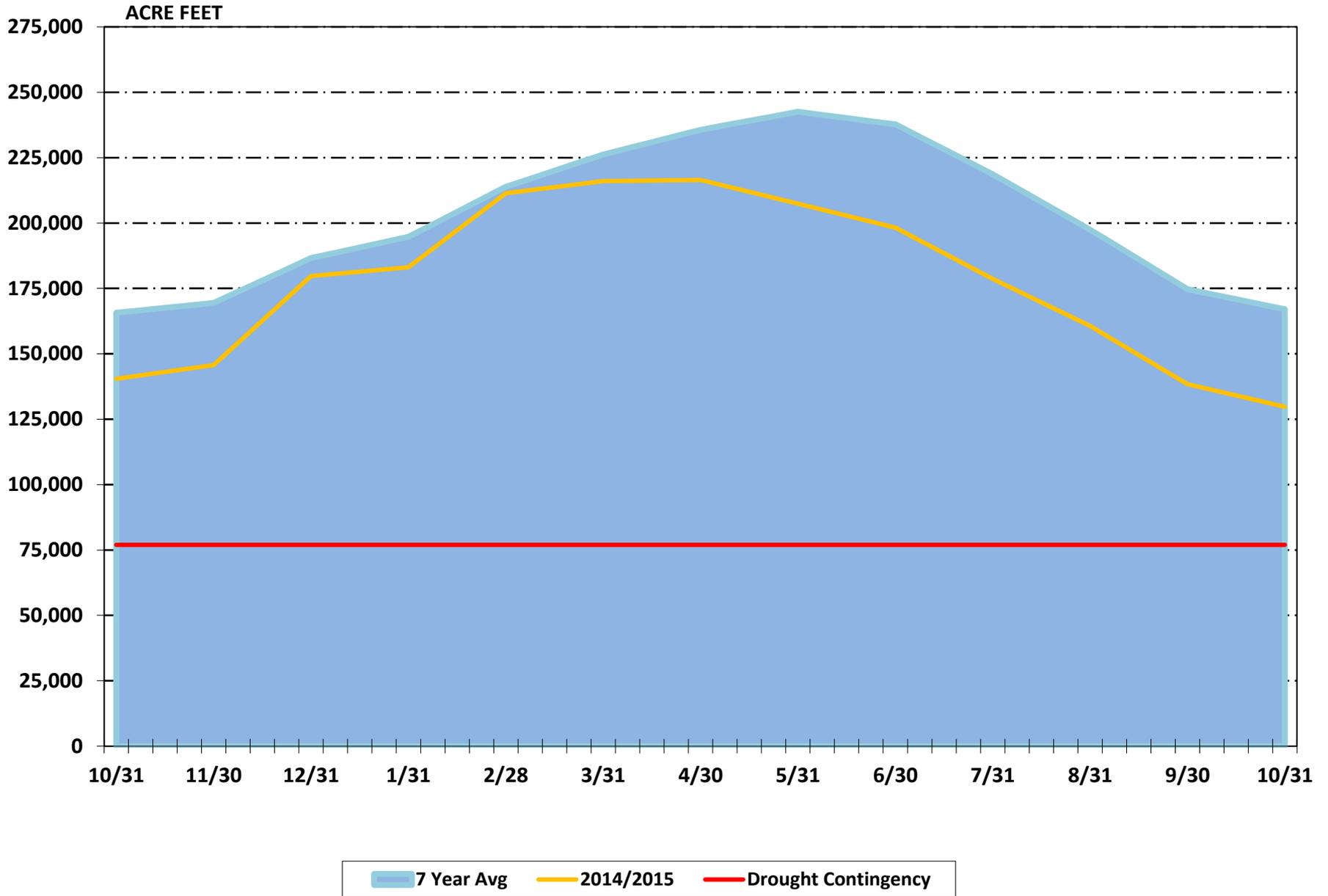
- ▶ Water Demands Following FERC License



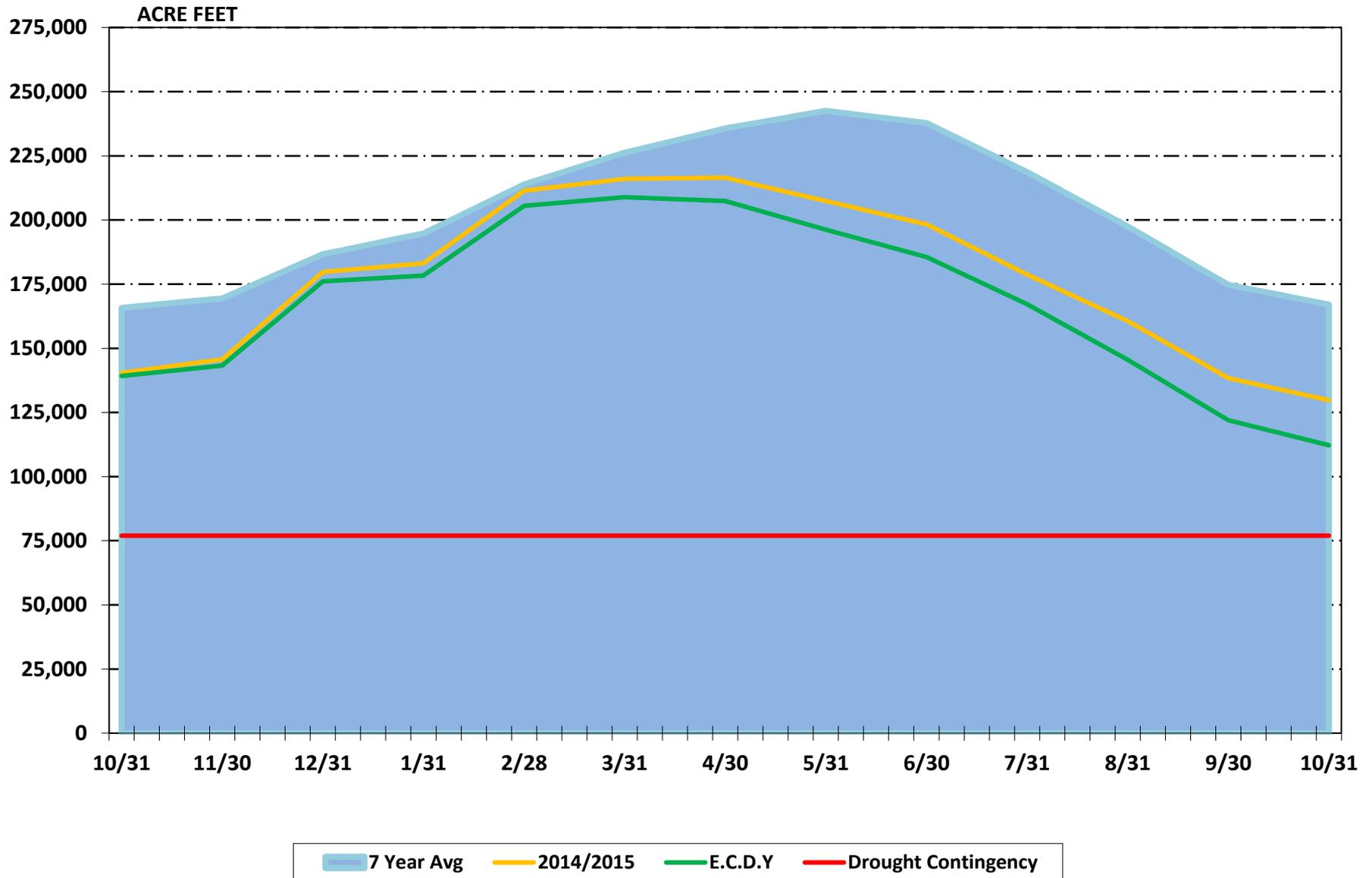
HISTORICAL NID RESERVOIR STORAGE



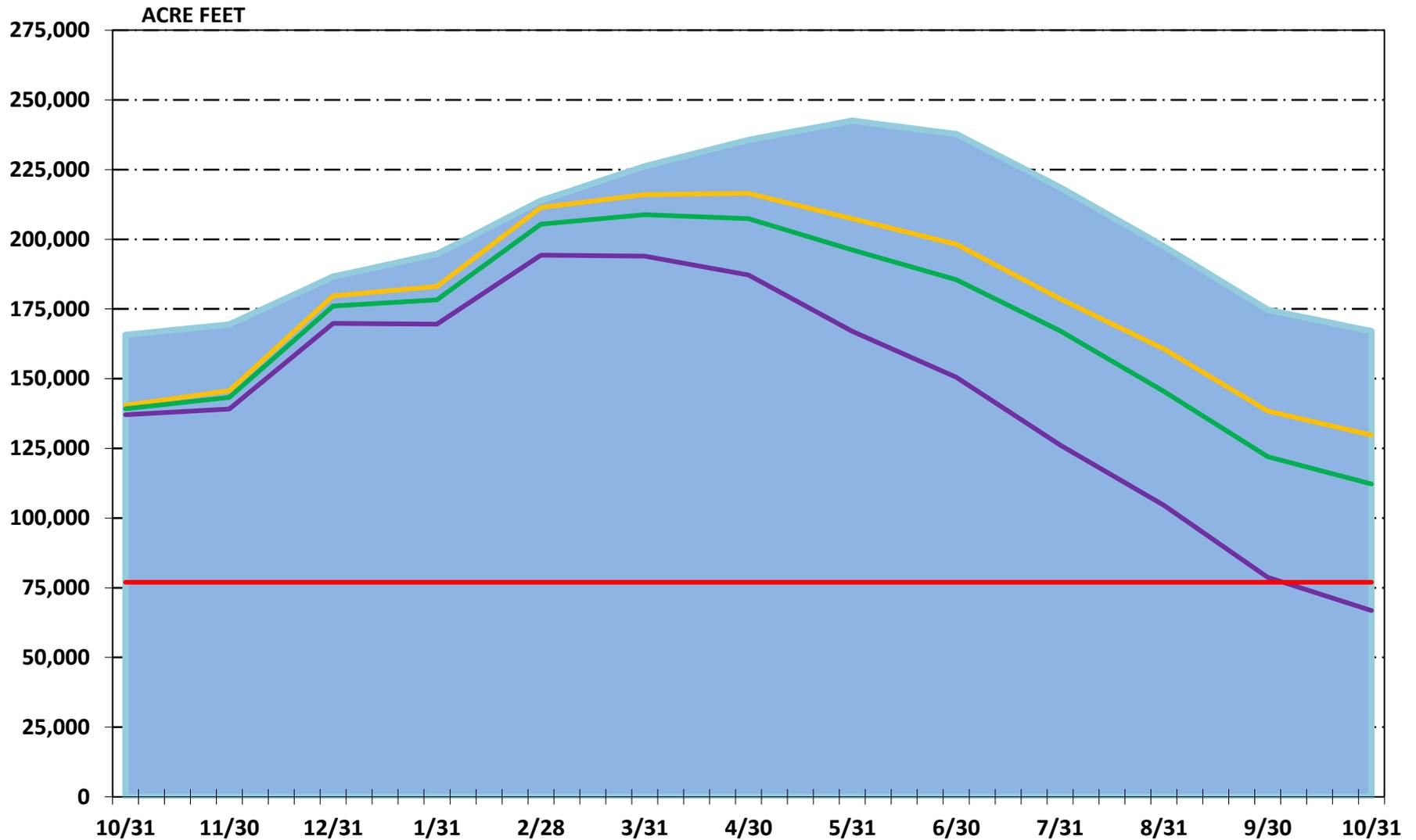
2015 - DRY YEAR STORAGE



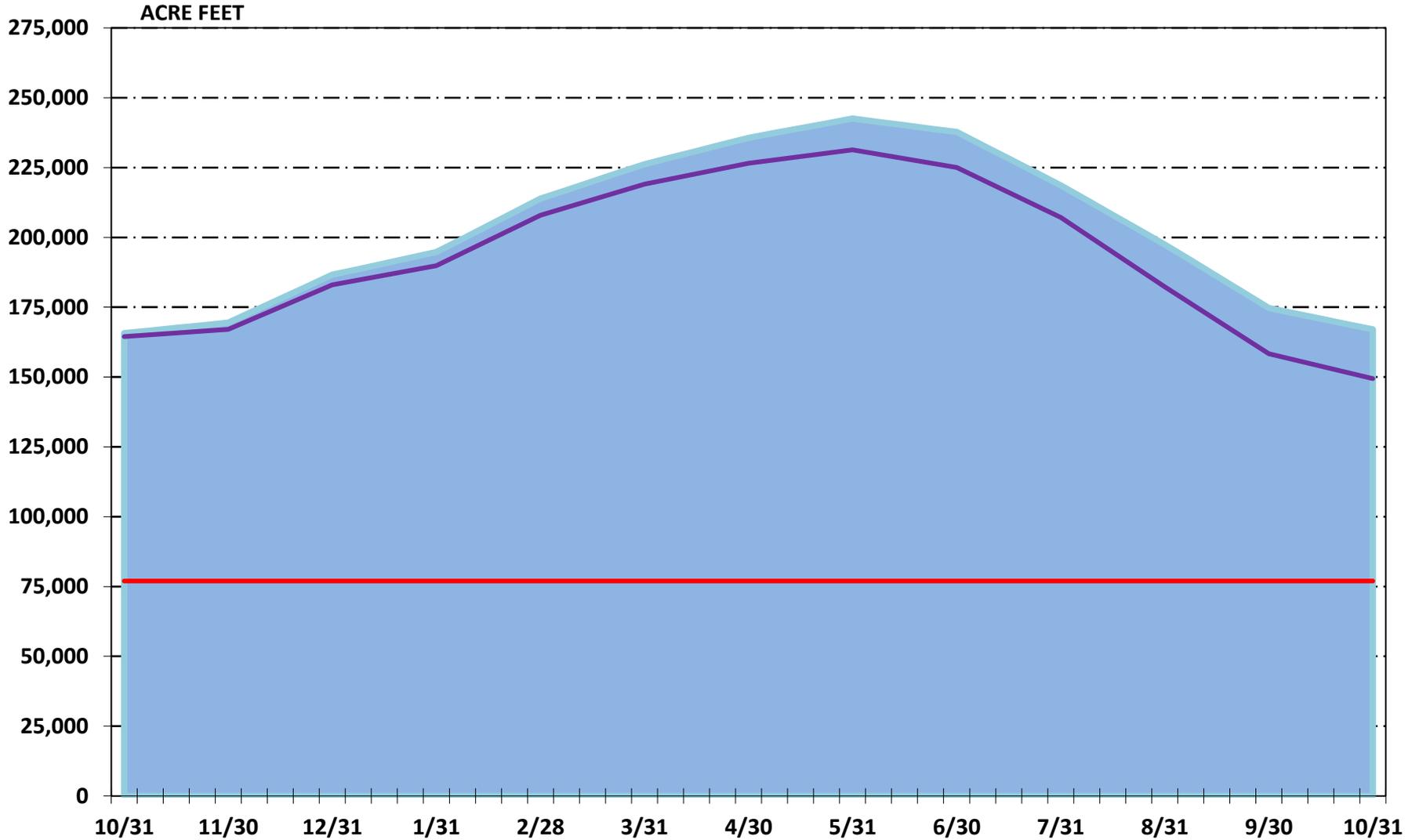
STORAGE POST FERC EXT. DRY WTR YEAR



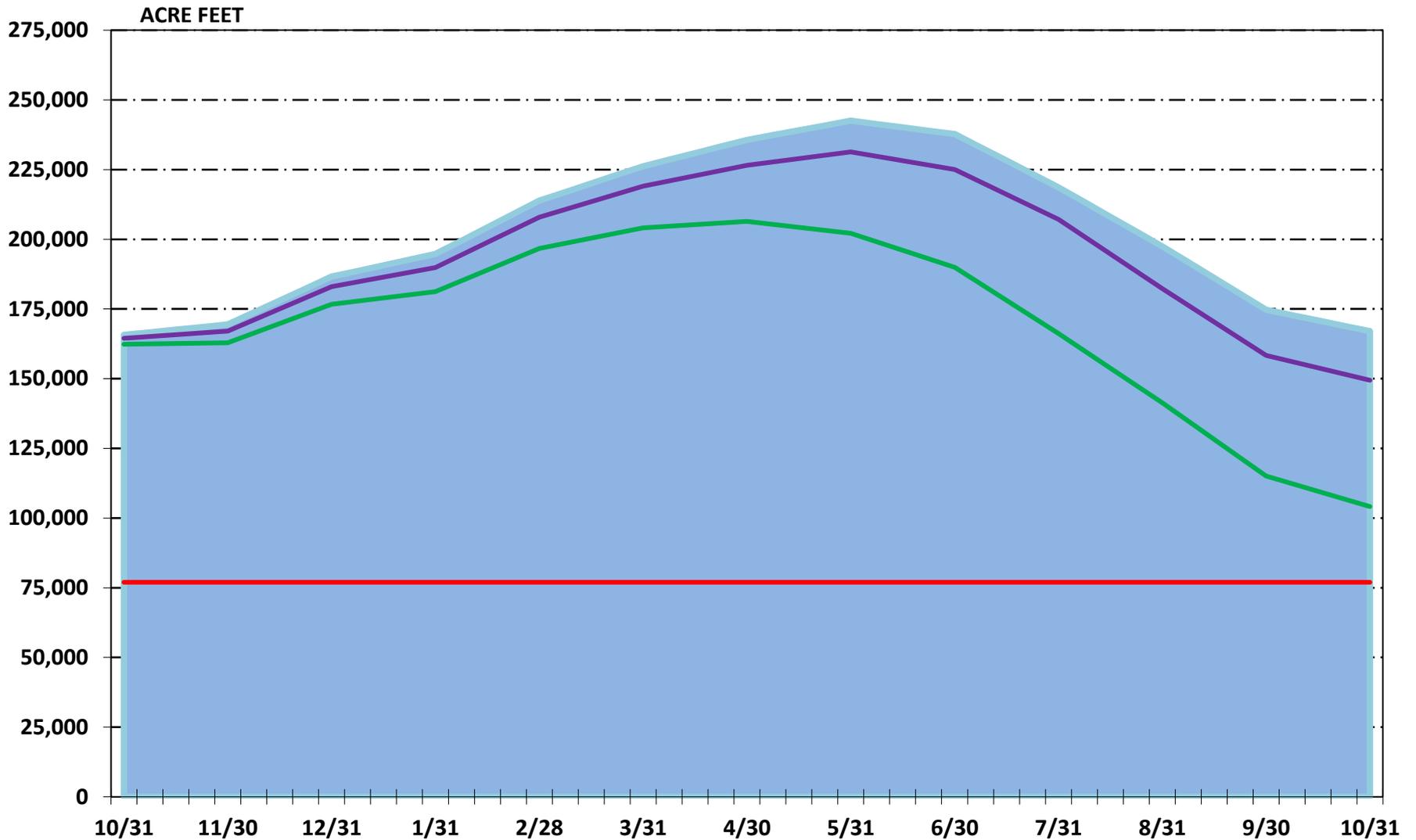
RESERVOIR STORAGE POST FERC DRY & WET



AVG RESERVOIR STORAGE POST FERC EX DRY



RESERVOIR STORAGE POST FERC WET & DRY



Irrigation Season Information



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QUESTIONS