WATER FOR SANTA CRUZ COUNTY

In-lieu water transfers and Pipeline upgrades February 5, 2017

A presentation of

www.waterforsantacruz.com

WATER FOR SANTA CRUZ COUNTY

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- **Mission Statement**: Keep alive in the public consciousness that the solution to N. Santa Cruz county water supply is the San Lorenzo River…..specifically harvesting the excess winter flows that are available in the river.
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- **Goals**:
- Santa Cruz and SqCWD are each trying to solve their water problem independently. We need regional solution
- Regional reduces capital cost $313 million to $50 million
- Hundreds of millions of Gallons in winter stream water each year. Existing North Coast Water rights provide for 500+ million gallons for transfers.
- Begin water transfers now.
- Lochquifer is expandable to provide drought security for Santa Cruz County with water rights changes, increased pipe sizes, Ranney collector and regional agreements.
- 5/24/16.

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• Purpose of this presentation

- To collect in one document the significant facts, findings and opinions that bear on the supplemental water supply.
- This is intended as a reference document
- This is also a celebration of the Santa Cruz mountain watershed.

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WSAC Report and conclusion

December 2015

- 14 member committee. Unanimous decision
- Committee Conclusions on water supply
  - Conservation,
  - Pursue In-lieu and ASR, even if 30% more expensive
  - Recycled water next,
  - then Desalination last option
- Based on Gary Fiske and Pueblo Engineering findings. Lots of water and lots of storage, previously unknown.

WSAC Plan Elements

- ***Section 4.04 Water Supply Augmentation Plan Portfolio Elements***
- The Water Supply Advisory Committee recommends that the City Council adopt a portfolio of measures for improving the reliability of the water supply. The recommended package includes the following Elements:
- **Element 0:** Additional water conservation with a goal of achieving an additional 200 to 250 million gallons of demand reduction by 2035 by expanding water conservation programs;
- **Element 1:** Passive recharge of regional aquifers by working to develop agreements for delivering surface water as an in lieu supply to the Soquel Creek Water District and/or the Scotts Valley Water Districts so they can rest their wells, help the aquifers recover, and effectively store water for use by SCWD in drought years;
- **Element 2:** Active recharge of regional aquifers by using existing infrastructure (wells, pipelines, and treatment capacity) and potential new infrastructure (wells, pipelines and treatment capacity) in the regionally shared Purisima aquifer in the Soquel-Aptos basin and/or in the Santa Margarita/Lompico/Butano aquifers in the Scotts Valley area to store water that can be available for use by Santa Cruz in drought years;
- • **Element 3:** A potable water supply using advanced treated recycled water as its source, as a supplemental or replacement supply in the event the groundwater storage strategies described above prove insufficient to meet the Plan's goals of cost effectiveness, timeliness or yield. In the event advanced treated recycled water does not meet the needs, desalination would then become Element 3.

Key Finding #1
Winter river flows.

Agenda Item 8a-2

GARY FISKE AND ASSOCIATES, INC.
Water Resources Planning and Management

Date: April 19, 2015
From: Gary Fiske
To: Water Supply Advisory Committee
Re: Modeling Results: Harvesting Winter Flows

Conclusion

The key outcome of this analysis is that the harvesting and storage of winter flows has the potential to completely address the City's water supply challenges and enable the City to meet projected future demands. This is the case even with current water rights, DFG-5 instream flows, and climate change. To achieve these benefits, the "virtual reservoir" used in the analysis would have to become real, i.e. suitable infrastructure improvements and institutional arrangements would have to be made to have a place to reliably store at least 3 billion gallons of water. In addition, the capacities of various current infrastructure would have to be increased.

Key Finding #2 More available storage

TECHNICAL MEMORANDUM

Pueblo Water Resources, Inc.
4478 Market St., Suite 705
Ventura, CA 93003
Tel: 805.644.0470
Fax: 805.644.0480

PUEBLO water resources

To:	Stratus Consulting, Inc.	Date:	May 15, 2015
Attention:	Robert S. Raucher, PhD	Project No:	14-0101
Copy to:	Kevin Crossly Heidi Luckenbach Jennifer Peers		
From:	Robert C. Marks, P.G., C.Hg		
Subject:	City of Santa Cruz WSAC; Reconnaissance-Level Evaluation of ASR and IPR		

Summary

In summary, there has been approximately 3,290 mg and 3,580 mg of estimated historical storage depletion in the Purisima Aquifer and Scotts Valley Subarea, respectively. These findings suggest that there may be up to 6,870 mg of potentially available storage space in local aquifers for managed aquifer recharge and recovery. For planning purposes at this stage (and in the absence of any other defensible factor), a 10 percent loss factor for hydraulic losses from recharge operations (i.e., as subsurface outflow to the ocean and/or losses to creeks) is considered reasonable.

The City of Santa Cruz 10 Year water plan

- Presented to the Water Commission in January 2016. Approved by City Council
- Initial Work Plan:
  - "includes the 5 years needed to determine the feasibility of groundwater and storage alternatives."
  - Construction begins 2023
  - Water flows beginning 2025
- Budget for the 10 year plan $233 million and no GHWTP upgrade (another $100 million)

Lessons learned in Year 1 of 10

- Water Conservation has exceeded all predictions
- Water Flows from North Coast streams average over 600 million gal./year. Fisheries permits are not needed to implement in-lieu.
- We have watched the water flow in the San Lorenzo river closely for the last 3 years. There is more harvestable water than we thought.
- Pipeline construction costs

Water conservation

- 700 M gallons of relief with no anguish.
-

Water Demand and Conservation in Santa Cruz 2010 - 2016		
Predictions	**2025 Water Demand (m gallons)**	**Conservation goal (m gallons)**
Urban Water management Plan 2010	3,800	0
WSAC, 2015	3,200	200
Urban Water management Plan 2015	3,200	225
Actuals		
2013 S.C. Water Production'	3,331	(131)
2014 S.C. Water Production'	2,560	771
2015 S.C. Water Production'	2,477	854
2016 S.C. Water Production'	2,562	769

North Coast Water supply predictions.

(2015 UWMP)

Table 6-10. Water Supplies -- Projected (page 6-24)	2020	2025	2030	2035	2040
North Coast sources	637	642	671	671	n/a
San Lorenzo River	1,882	1,842	1,829	1,834	n/a
Loch Lomond Reservoir	595	551	540	547	n/a
Live Oak/Beltz Wells	138	129	127	128	n/a
Totals	3,252	3,164	3,167	3,180	
		millions of gallons			

Santa Cruz Water Supply 2015 -2017

North Coast Stream, San Lorenzo River, and Loch Lomond						
	millions of gallons					
	10 year Average, 2002-2011	2013	2014	2015	2016	2017
North Coast Streams	1,100	399	502	471	591	
San Lorenzo Right ro Harvest	900	900	900	900	900	900
Felton Diversion to Loch Lomond.	28	30	65	300	200	0
Unused right	872	870	835	600	700	900
Loch Lomond on Aprill 1	101%	80%	66%	83.40%	101%	101%

San Lorenzo River annual flows

Figure 1 – Water Year Classification System Based on San Lorenzo River Runoff (by year)

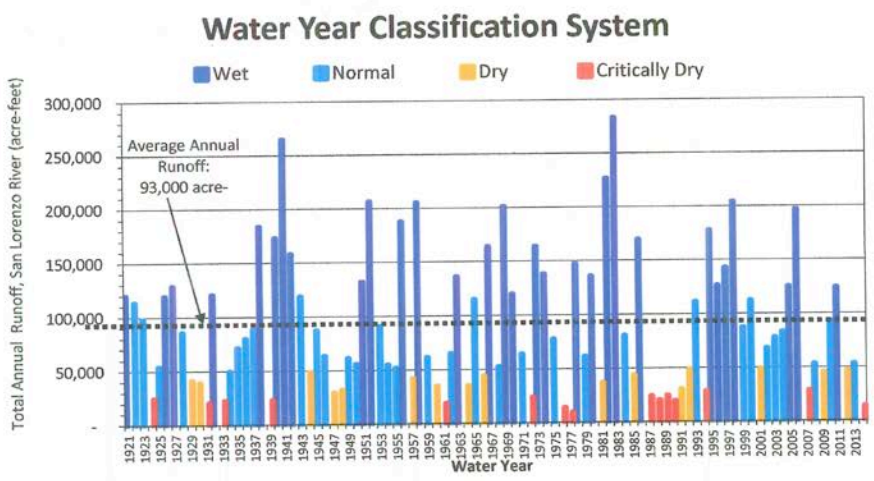
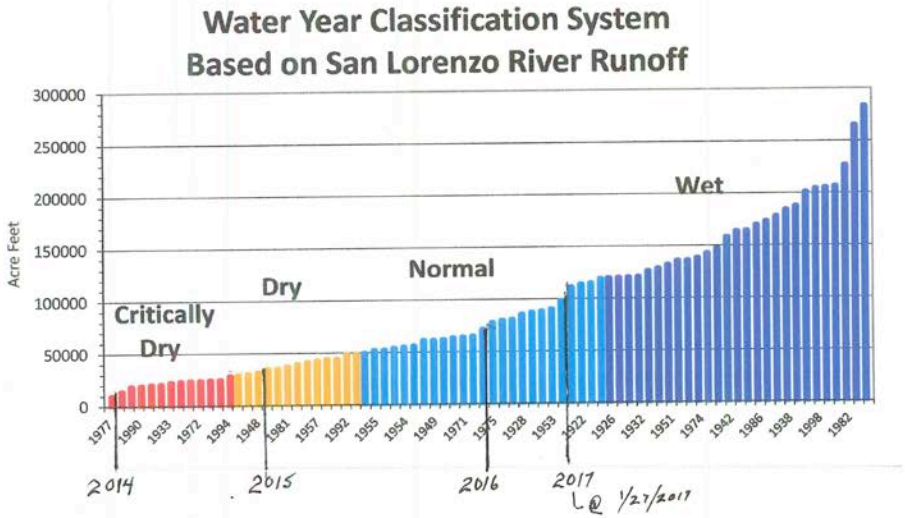


Figure 2 – Water Year Classification System Based on San Lorenzo River Runoff (by water year type)



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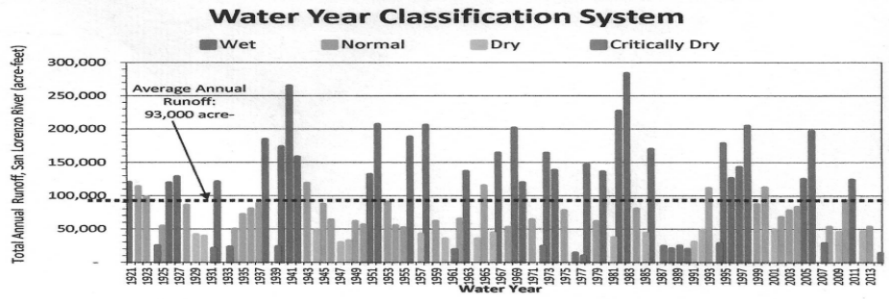
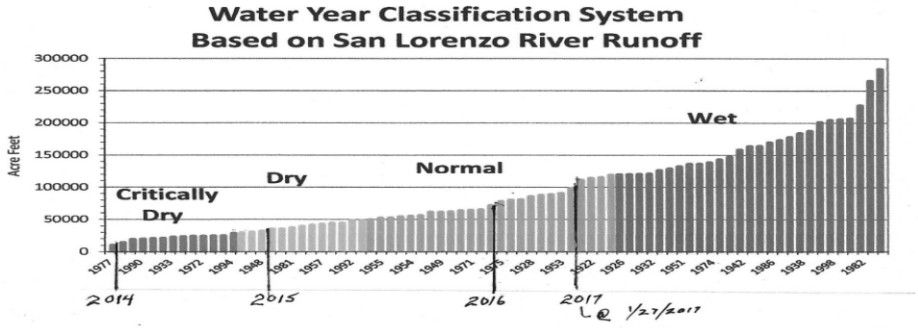


Figure 2 – Water Year Classification System Based on San Lorenzo River Runoff (by water year type)



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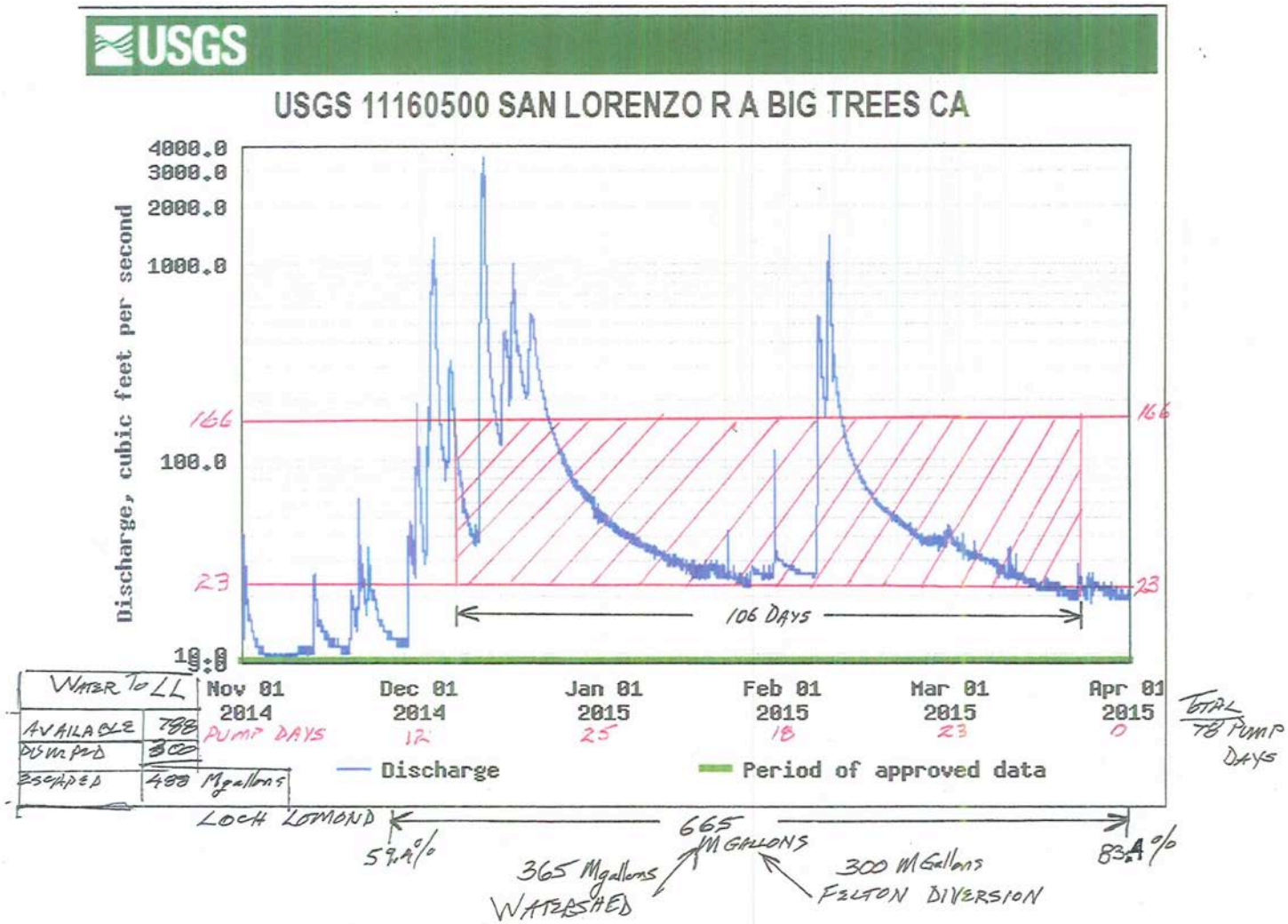
San Lorenzo river winter 2014-15

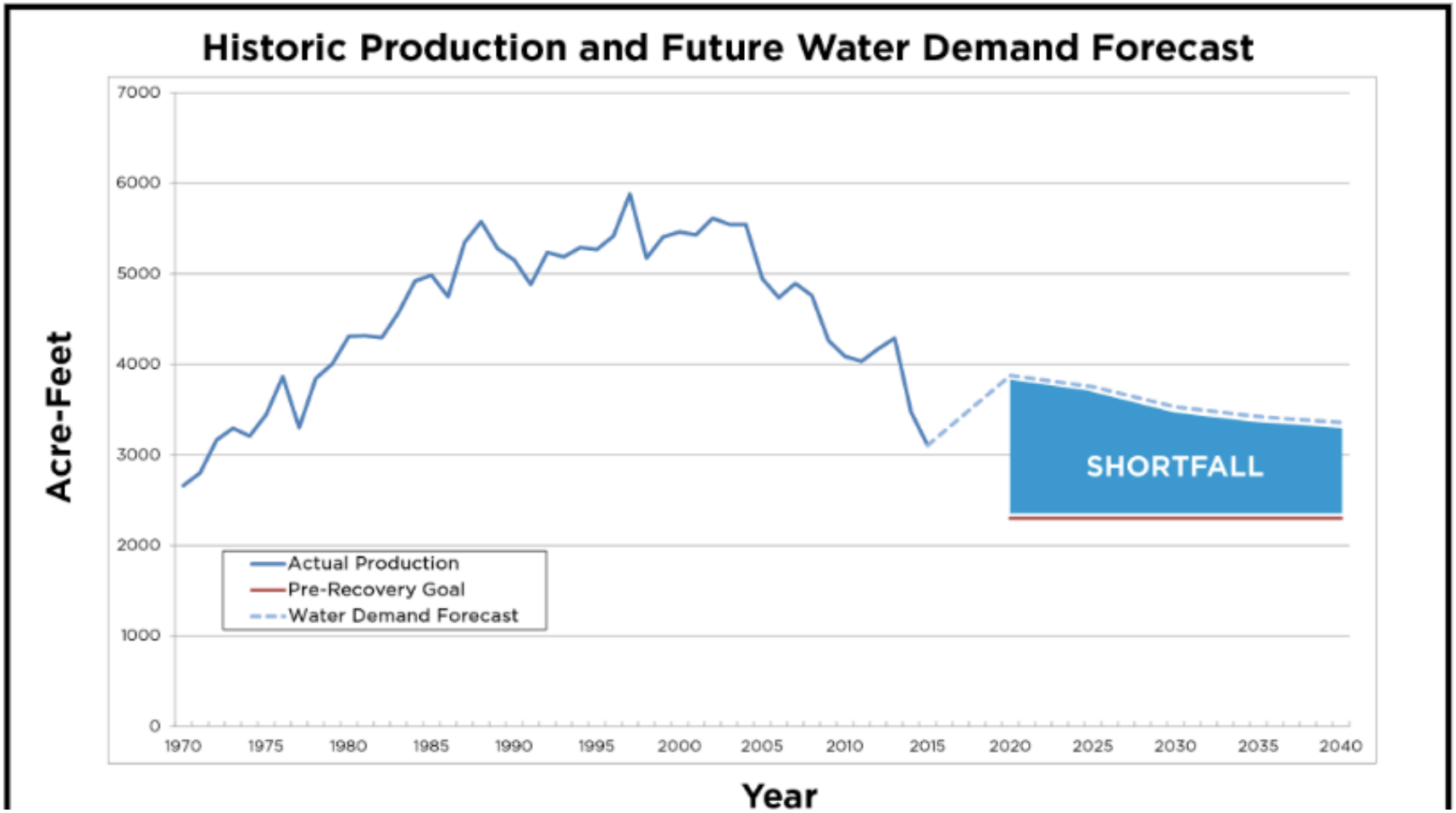


Pipeline construction costs

- Soquel Ave. Main line replacement cost, 2015.
  - 4//5 mile long, 12” main line, 66 water service connections, 6 fire hydrants
  - Cost $1.5 million = $ 1.9 million/mile

- North Coast Pipeline replacement cost, 2016
  - 3 miles, 24” main line
  - $6.4 million = $2.2 million/mile

SqCWD Problem



SqCWD Solution

- Recycled Water is preferred by district
- Water transfers from Santa Cruz possible now

Soquel Creek Water District supply solutions		
	"Preferred by board"	in lieu tranfer
Capital Cost	$60,000,000 to $80,000,000	$100,000
Water Delivery schedule	end of 2022	now
Cost/m gallons	$9,000	$1,000
Water per day	1.37 mgd	1.44 mgd
Water per year	471 mg	100-500 mg

How “in-lieu” works

SqCWD Water use table

Soquel Creek 2016 Water production.	
	mgallons
January	64.13
February	64.22
March	68.19
April	75.85
May	91.91
June	102.78
July	110.89
August	101.73
September	97.92
October	85.77
November	71.77
December	70.01
Totals	1,005.14

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Why are we doing this?

- Cost $303 million over 10 years vs. $50 million.
- Energy Use Recycled water 10x stream water
- Time 2022 water flow vs. Now.

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Conclusion

- Increase pipe size to LL from FD
- Put water into the Santa Margarhita aquifer.
- In lieu works without SqCWD.
- No one knows how far in lieu will go
- No downside. It costs very little to do in lieu.

San Lorenzo river flows

Figure 1 – Water Year Classification System Based on San Lorenzo River Runoff (by year)

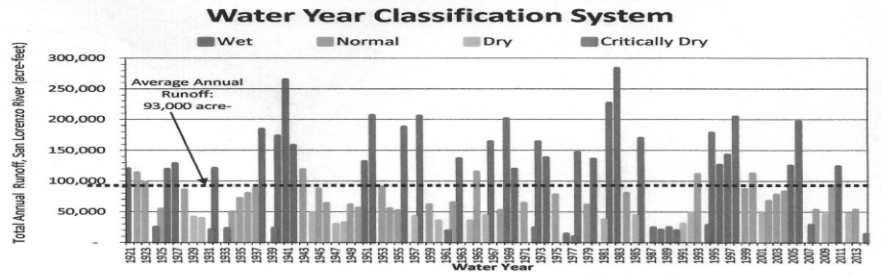

Figure 2 – Water Year Classification System Based on San Lorenzo River Runoff (by water year type)