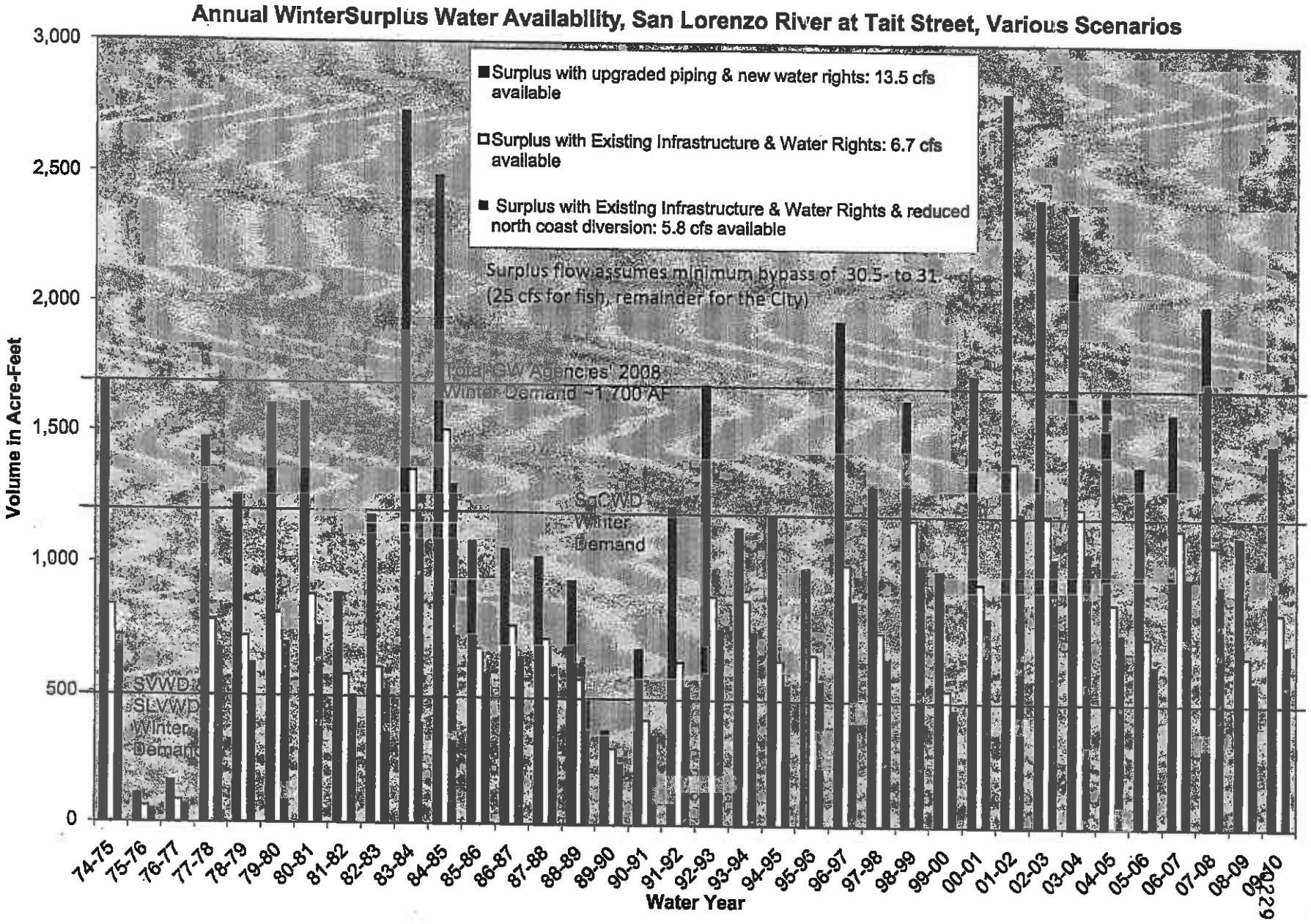
JOHN RICKER'S STUDY



ANNUAL PRODUCTION AT COASTAL SOURCES
2002 - 2011
MILLION GALLONS

Source	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	TEN YEAR AVERAGE
Majors Creek	220.52	189.18	118.77	69.82	144.74	105.80	172.24	131.39	44.91	182.36	137.97
Laguna Creek	564.72	632.79	882.88	980.56	276.43	320.29	276.63	634.39	741.97	206.58	551.72
Liddell Spring	511.75	493.47	485.53	553.45	427.49	417.43	365.63	402.36	424.29	321.62	440.30
TOTALS	1,296.99	1,315.44	1,487.18	1,603.83	848.66	843.52	814.50	1,168.14	1,211.17	710.56	1,130.00

Contact: Terry McKinney, Production Superintendent

Source: Monthly Production Report

MONTHLY FISH RELEASE FROM SOURCES
2011
MILLION GALLONS

Source	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS
Majors Fish Release	4.91	3.82	1.49	2.11	5.19	4.51	4.72	4.48	4.34	4.00	2.80	0.00	42.37
Newell Creek Fish Rel	20.21	17.86	18.41	19.87	20.53	19.87	20.53	21.08	19.68	20.23	19.70	18.40	236.37
Laguna Fish Release	2.53	0.00	0.00	0.00	0.00	0.00	0.00	1.66	5.51	1.99	0.00	0.00	11.70
Liddell Springs	2.03	2.99	2.85	1.20	1.94	3.95	4.37	11.41	3.86	4.09	2.65	2.50	43.82
TOTALS	29.68	24.66	22.75	23.18	27.67	28.33	29.63	38.63	33.39	30.31	25.15	20.89	334.25

Source: Monthly Production Report/ Ranger Read Log NC

ANNUAL FISH RELEASE FROM SOURCES
2007 - 2012
MILLION GALLONS

Source	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	TEN YEAR AVERAGE
Majors Fish Release						47.95	49.39	39.46	12.90	42.37	38.41
Newell Creek Fish Rel					242.05	251.44	235.96	199.33	238.48	236.37	233.94
Laguna Fish Release					26.09	64.10	63.04	60.72	64.39	11.70	48.34
Liddell Springs						30.33	42.46	42.23	48.60	43.82	41.49
TOTALS								341.74	364.36	334.25	362.18

Contact: Terry McKinney, Production Superintendent

Notes:
Laguna Fish Release installed July 2007
Majors Fish Release installed Feb 2008
Liddell Springs Fish Release installed May 2008

North Cost stream water supply:			**From Water supply plan, April 1,by T. Goddard**										
Based on "Net" production		April	May	June	July	August	September	October	7 month summer total	November	Dec-March		Year totals
2012 April through October		48	45	38	33	30	27	26	247		200		447
2013 April through October		31	47	46	43	40	39	43	289		200		489
2014 April through October		28	26	24	22	22	22	22	166		200		366
2015 April through October		32	46	40	39	35	32	37	261		200		461
2016 April through October		50	46	40	39	35	32	31	273		200		473
										Average 2012 thru 2016			447.2
Based on "Gross" production		April	May	June	July	August	September	October	7 month summer total	November	Dec-March		Year totals
2012 April through October		60	56	48	43	40	36	34	317		200		517
2013 April through October		37	55	54	50	47	46	51	340		200		540
2014 April through October		34	33	30	28	27	27	28	207		200		407
2015 April through October		32	46	40	39	35	32	37	261		200		461
2016 April through October		50	46	40	39	35	32	31	273		200		473
										Average 2012 thru 2016			479.6

Presentation to Water Commission on June 6, 2016

Good evening Commissioners,

My name is Scott McGilvray. I live in Live Oak. I am here tonight as the chair of Water for Santa Cruz County. I have spoken here recently on the amount of water that is available each winter season. I have also been to the Soquel Creek Water District. Telling the same story. The surprising and encouraging number is in excess of 500 million gallons per year. The response I get from the SqCWD board and RM is interesting. Rosemary says that we already know, and agrees about the amount of water that is available in the winter that flows out the mouth of the San Lorenzo to the sea. SqCWD says the water is not guaranteed, which is true. The irony is that over 500 million gallons fresh water flows to the sea year after year.

There is another important matter: Water supplied to Santa Cruz by North Coast streams. Because it it a pre-1914 water right, this water can be shipped out of Santa Cruz' service area. I think that the Water department reports show that the actual number is over 500 million gallons per year, and that water can be shipped year round. SqCWD chair Bruce Daniels thinks the permits needed to transfer San Lorenzo river water to Soquel Creek will be hard to get because of the fish.
The irony of these independent and highly justified decisions is that hundreds of millions of gallons of fresh water run out to sea every winter. The districts are not even talking about the same water.

When I moved here, in 2002, I remember going out to the Long's Marine lab to check out the pilot desalination plant. What I had not counted on was the City and SqCWD would do nothing about the "in-lieu" water. If we had started planning then, and constructed a pipeline of the right size, to Loch Lomond and flushed the water pipes in Soquel Creek that everyone knew needed to be flushed, we would have harvested and utilized 500 million gallons per year via in-lieu water transfers, and somewhere in North Santa Cruz County would be banked 5 Billion gallons of water by now. The irony of this is good people with narrow interests making decisions based on those narrow interests, result in suffering for all.

There is a name for this situation. It is called "The tragedy of the Commons". To my knowledge, "Tragedy of the Commons" was first described and discussed in 1833 in Great Britain, when Wm. Lloyd observed that the common grazing ground in English villages was destroyed by overgrazing, yet there were more cattle appearing on the green to eat the meager forage left. The economic description for this goes like this. For each farmer who adds one cow to his herd, the marginal gain he gets from having the one more cow graze on the common is all his, while the loss to the common of the overgrazing is not his alone, but everyone's, so the farmer's gain exceeds his share of the loss.

An example of "tragedy of the commons" for Santa Cruz is depleting a fishery; We all know the story of the disappearance of sardines from Monterey Bay after WW II. And in the last 5 years, Salmon and crab fisheries are declining along the coast. Every fisherman who catches one more fish from an overfished population obtains full benefit of that one more fish, but his loss because the fish school is decimated is only his share....so each fisherman is incentivized to add one more hook and one more pole. That is "the tragedy of the commons."

Now, To return to our local and regional water system, John Ricker did some work in 2011 about conjunctive use. He examined the winter flows in the San Lorenzo River and concluded that there was abundant winter water that could be used to rest wells in the Soquel Creek and Scotts Valley water districts during winter. Mr. Ricker predicted that 260 million gallons to 460 million gallons of water could be supplied by the GHWTP to neighboring districts. Even in the design of the study, Mr. Ricker was constrained by the narrow self interest of Santa Cruz.

1. Water transfer period limited to Dec 1 – March 31
2. Mr. Ricker was limited to San Lorenzo river water, which requires a permit change. He was not allowed to consider the rights held on North Coast water.
3. GHWTP production capacity was limited to 2 million gallons per day.

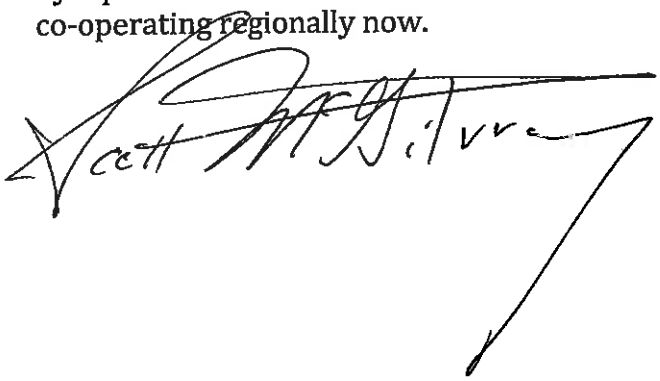
That was in 2011. 3 years later, more work had been done on Mr. Ricker's conjunctive use idea. It was sent to engineers, K-J, who looked at the limitations of GHWTP capacity and concluded that Ricker's plan could produce water only 71 days a year. reducing the harvest to 142 Million gallons per year and to achieve it, required over $50 million in investment. That was in October of 2014. End of story. Too expensive.

Here we have another irony: Water district models prove that the idea is unfeasible, yet every year 500 million gallons of fresh water flow out to sea. So, When Rosemary Menard removes these artificial constraints in 2015, Gary Fiske the City's water supply guru concluded:

" the Key Outcome of this analysis is that the haversting and storage of winter flows has the potential to completely address the City's water spply 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."

We are still stuck in this tragedy of the commons. The narrow self interest of Santa Cruz causes it to conclude that winter harvest and in-lieu water transfers are of secondary importance. The narrow self-interest of Soquel Creek, especially its insistence on guaranteed water, causes us to forgo hundreds of millions of gallons of water that is there for the taking, with existing water rights, and existing infrastructure.

The path currently being pursued with vigor by the SC Water department will take 10 years and cost $103 million. It is right there in the 10 year CIP. The plan pursued by SqCWD will take a similar time and cost over $70 million. We can do better by co-operating regionally now.



Water Supply Reliability

Choke Points

A presentation to the Santa Cruz Water Commission

Jerry Paul, M.S.E.E.

2016-06-06

WSAC Prime Recommendation: Surface Water Transfers

Concerns About Choke Points: Each Can Kill Effectiveness

Asking the Commission to help the public understand in a transparent way what actions are happening in each of these areas.

Choke Points

1. New Water Rights
2. Diversion
3. Pipeline to Loch Lomond
4. Treatment
5. Pipelines to Aquifer Storage:
    a. Soquel Creek water District (SqCWD)
    b. Scotts Valley Water District (SVWD)
    c. Santa Margarita Basin (SMB) outside SVWD
    d. other districts/areas?

3. Pipeline to Loch Lomond:

30 mgd (47 cfs)

Catch big, but short-lived storm spikes.
Stay ahead of the game, even in dry years.
Low-cost addition to planned refurbishment.
Long operating life.

2. Diversion:

20 mgd Ranney collector at Felton

Filters/de-turbidifies/cuts TOCs

Benefits Loch and GHWTP

Fills the Loch Pipeline

More diversion days per year

Fish-friendly: no entrainment or impactment

Easier CEQA than ordinary diversions

Proven

Low cost

4. Water Treatment:

The existing Graham Hill WTP

Virtually no capital cost.

~14 mgd summer peak

Benefits from any repairs and upgrades the City may eventually make.

NOTE: "eventually". No delay now.

5. Pipelines to Aquifer Storage:

a. ***SqCWD at ~6 mgd***

Allows for growth

Income of ~$345/AF

b. ***SVWD at ~5 mgd***

Recharges aquifer cleanly via in-lieu.

Charge them their cost to get buy-in.

Costs $200 to $400/AF—cheap compared to $2700/AF for SqCWD's sewage recycling plan.

5c. Santa Margarita Basin (SMB) outside SVWD:

Felton-SMB Pipeline

Short, inexpensive
Percolates raw (cheap) water into SMB
Surface spreading or percolation
Mostly at dry times to prevent slides
No WD cooperation needed
In spent quarries or other cheap land
Gravity flow from Loch (low energy)
Option: Felton Ranney-filtered water

1. New Water Rights:

6400 AFY at Felton in winter half-year

Place of use: to recharge area aquifers via Loch storage and in-lieu, i.e. participating water districts

Filed jointly by local agencies

Guarantees for fish in dry times: increased cool base flows

WDs need less summer stream water

All Choke Points Opened at Low Cost

1. New water rights – 6400 AFY in winter
2. Diversion – Felton Ranney collector
3. Pipeline to Loch Lomond – 30 mgd
4. Treatment – existing GHWTP
5. Pipelines to Aquifer Storage:
   a. SqCWD 6 mgd
   b. SVWD 5 mgd at their cost
   c. SMB Loch or Ranney water percolated
   d. other districts/areas TBD

Please help the public understand in a transparent way what actions are happening in each of these Choke Point areas.

Multi-Residential
MASTER METER vs INDIVIDUAL METER

Consider two identical 10 unit properties, one with a master meter, one individually metered with an additional irrigation account:

Master Meter = (1 * RTS)+(1 * Drought Recovery) + (Tier 2 * unit no tiers)

Individually Mtr = (11 * RTS) + (11*Drought Recovery) + (Tiered pricing)

As of current rates

MM = $21.08 + $7.37 + $4.84/unit
MM = $28.45 + $4.84/unit

IM = (11 * $21.08) + (11 * $7.37) + Tiered pricing
IM = $231.08 + $81.07 + Tiered Rates
IM = $312.15 + Tiered Rates

Examples:

2 units/apartment/month + 2 units irrigation

IM = $312.15 + (10 * 2 * $1.91) + (2 * $4.84) = **$360.03**
MM = $ 28.45 + (10 * 2 * $4.84) + (2 * $4.84) = **$134.93**

4 units/apartment/month + 2 units irrigation

IM = $312.15 + (10 * 4 * $1.91) + (2 * $4.84) = **$398.23**
MM = $ 28.45 + (10 * 4 * $4.84) + (2 * $4.84) = **$231.73**

8 units/apartment/month + 2 units irrigation

IM = $312.15 + (10 * 4 * $1.91)+ (10 * 4 * $4.84) + (2 * $4.84) = **$591.83**
MM = $28.45 + (10 * 8 * $4.84) + (2 * $4.84) = **$425.33**

12 units/apartment/month + 2 units irrigation

IM = $591.83 + (10 * 1 * $4.84) + (10 * 3 * $6.23) = **$827.13**
MM = $425.33 + (10 * 4 * $4.84) = **$618.93**