*Where's the Water?

Tracking reported North Delta water flow and the unaccounted for water data gaps.

If there is not enough water left to export, why build tunnels or any other form of conveyance?

2014 Presentation for the North Delta Cares & community, **updated May 19, 2015 and again November 2015**: Data compiled by Nicole S. Suard, Esq, (from Snug Harbor on Steamboat Slough). Uploaded as evidence during 2017 Waterfix Project Water Board hearing

The purpose of this slideshow presentation is to point out some of the unanswered questions regarding unaccounted for water flows in the North Delta, which were brought to the attention of DWR staff in 2012-2015, and the questions still remain unanswered. This is an update of the 2014 presentation for North Delta Cares, so only newer slides with have the updated dates.

There has been diversion of flows of the North Delta into other areas of the Delta that are not accounted for by DWR/USBR over the last several years, and it appears computer modeling for the effects of even more proposed diversion are based upon false and/or incomplete flow data.

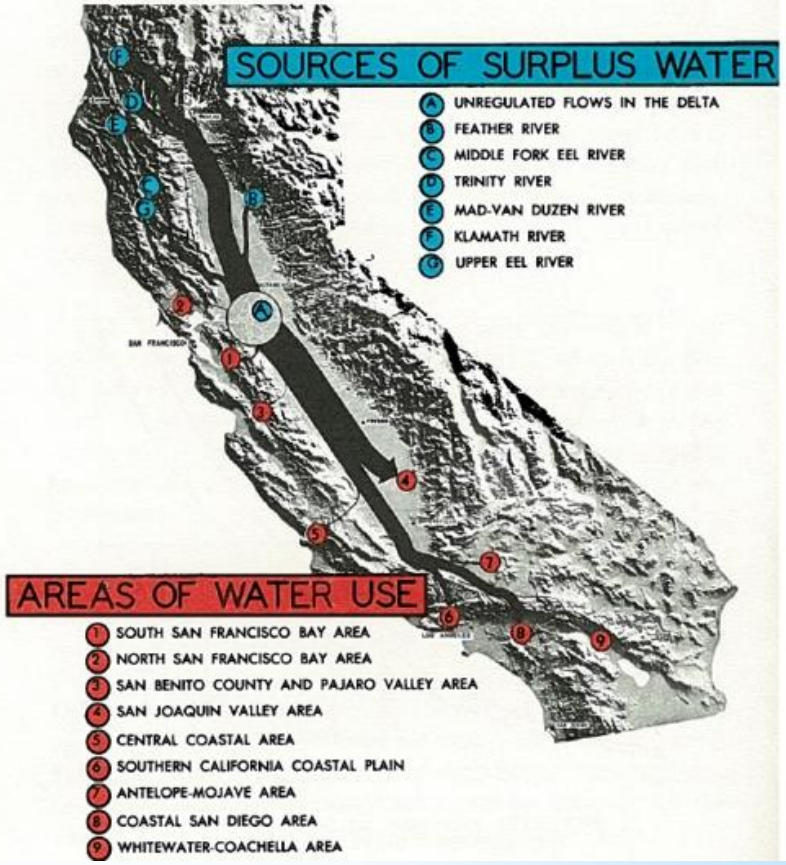
This presentation reviews just a few of the unanswered flow questions and gives and update of some of the impacts from the diverted flows of the Sacramento River which are still not accounted for as of May 2015.

The Delta — its role in California's water development

In 1959, the State Legislature enacted the California Water Resources Development Bond Act to finance construction of the State Water Resources Development System. The bond act was approved by the California electorate in November 1960. The State Water Facilities, the initial features of this system, will complement continuing local and federal water development programs and include the very necessary works in the Delta.

One of the principal objectives of the State Water Resources Development System is to conserve water in areas of surplus in the north and to transport water to areas of deficiency to the south and west. The Delta is important in achieving this objective, since it receives all of the surplus flows of Central Valley rivers draining to the ocean during winter and spring months and is the last location where water not needed in the Delta or upstream therefrom can conveniently be controlled and diverted to beneficial use. Surplus water from the northern portion of the Central Valley and north coastal rivers will be conveyed by the natural river system to the Delta, where it must be transferred through Delta channels to export pumping plants without undue loss or deterioration in quality. Aqueducts will convey the water from the Delta to off-stream storage and use in areas of deficiency to the south and west.

In addition to being an important link in the interbasin transfer of water, the Delta is a significant segment of California's economy, and its agricultural, municipal, and industrial water supply problems, and flood control and related problems, must be remedied. A multipurpose system of Delta water facilities, which will comprise one portion of the State Water Resources Development System, is the most economical means of transferring water and solving Delta problems.



*SWP & CVP "Trust us"

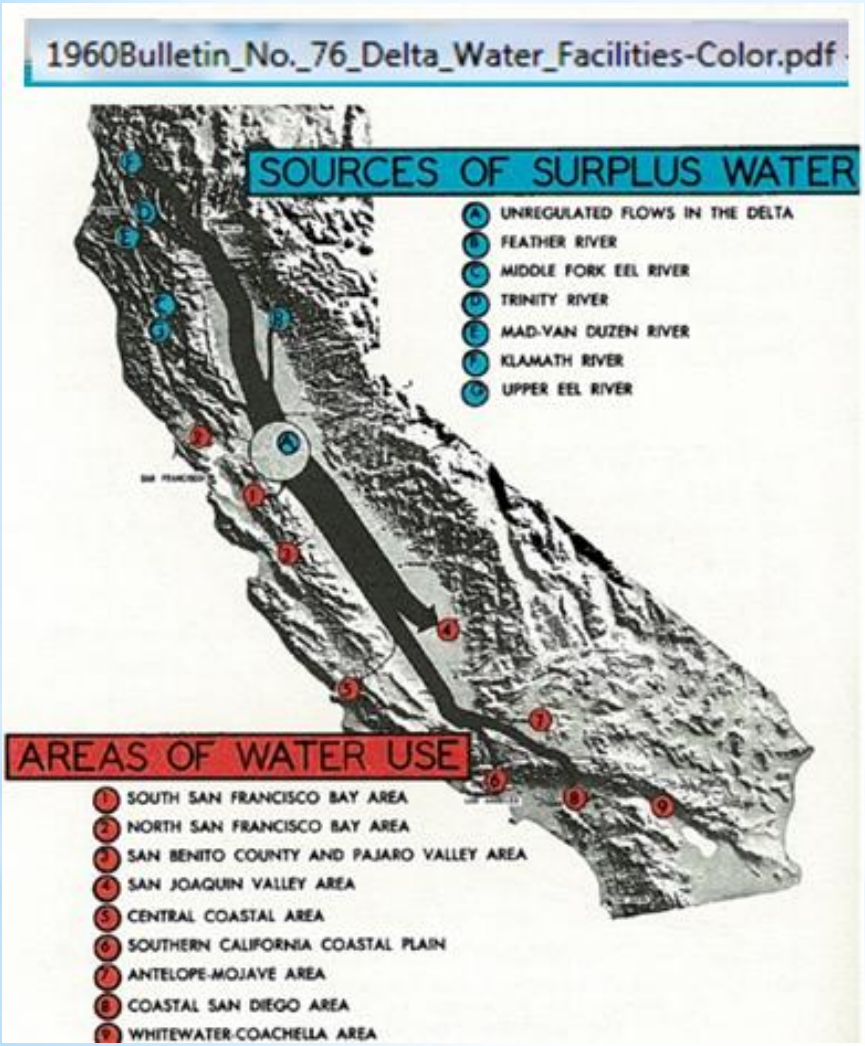
5/15/2014

Very simply stated, the first Governor Brown promised the people of Northern California that ONLY the "Surplus" water would be diverted from the Sacramento River, and would not harm the Northern California environment or impact the riparian water rights, flows, agriculture, recreation, or ecological environment of the California Delta region.

The second Governor Brown is the spokesperson for the water contractors currently breaking the stated promise to the people of California. In a drought there is NO "Surplus" water to export to the south without damaging the Delta as well as Northern California aquifers and the entire Bay-Delta ecosystem.

Mainstream media wants the public to believe the current Governor Brown is "completing" what his father started. That is a lie. What is happening all around Northern California is a replumbing of the water conveyance system to leave Northern California with "the surplus", which is the opposite of what the first Governor Brown promised us. And the "best available science" propagated to validate the actions is based partially on inconsistent, inaccurate and sometimes fabricated baseline data.

1st Governor Brown: 1960s
0 to 6500 cfs of diversions



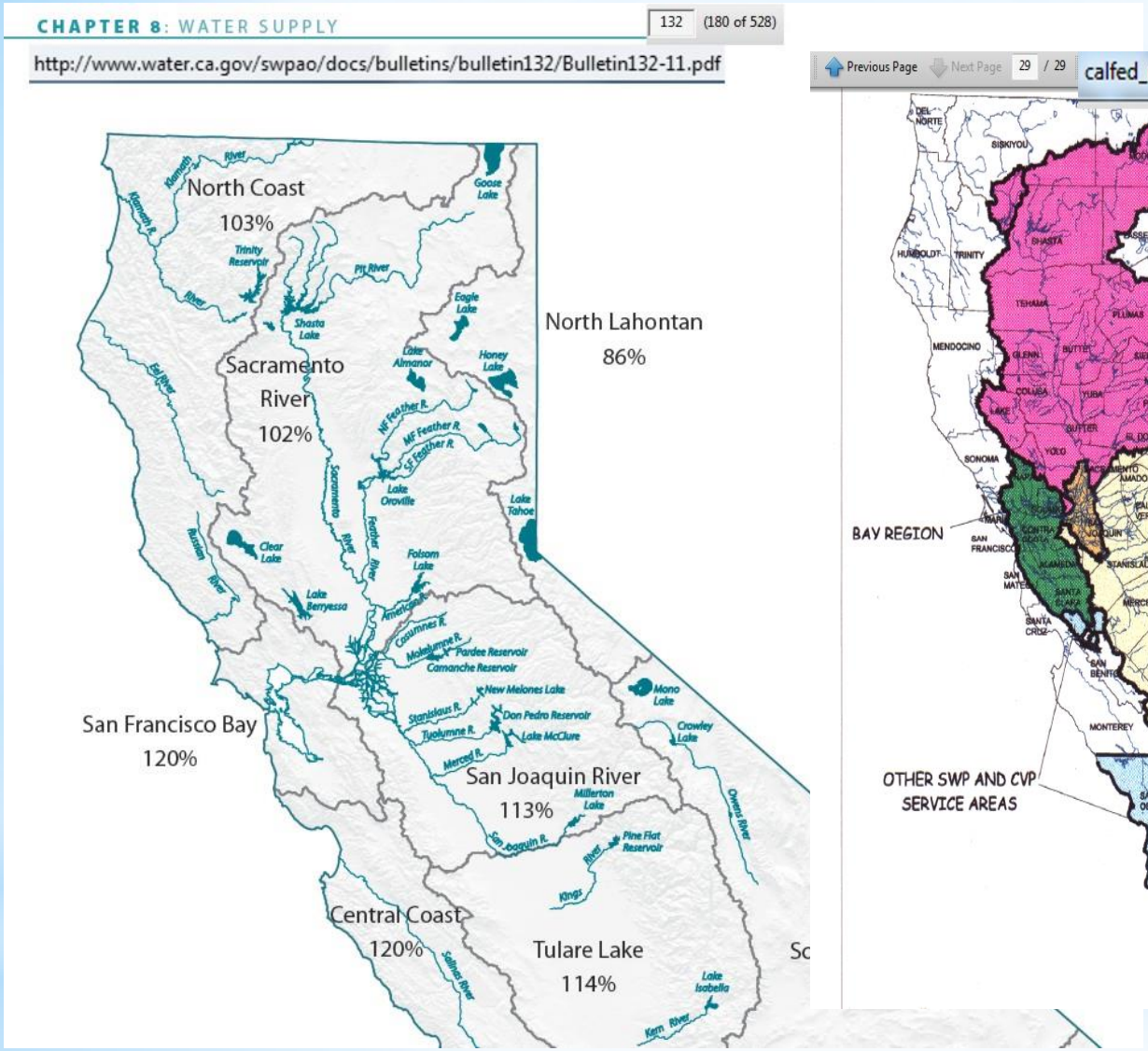
Second Governor allows and promotes the diversion of way more than "surplus" water exports to other areas south of the Delta even in drought times, to other areas of the state

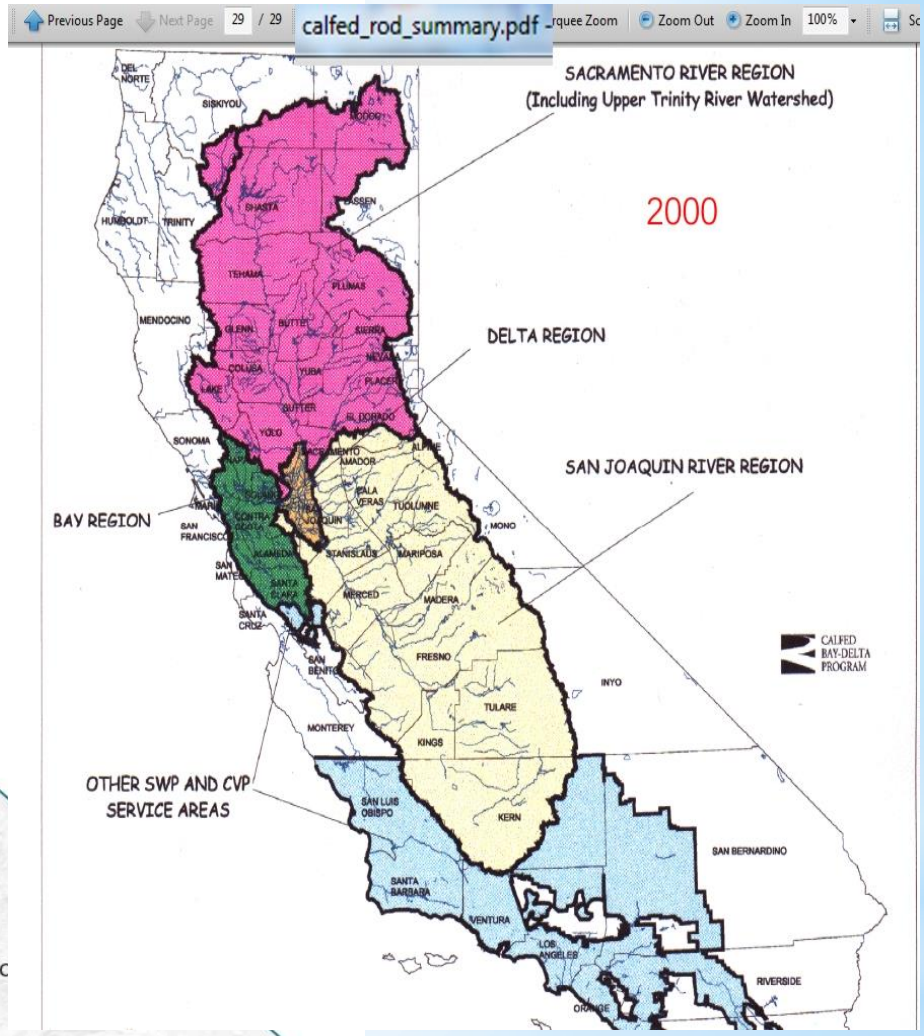
8500 cfs that is accounted for, ignoring unaccounted for flows or diversions that have been brought to DWR attention

* Over the last 10 years, it is the Delta that has been left with a "computed" surplus or what was left behind from the export pumps and new north-of-the-Delta diversion intakes.

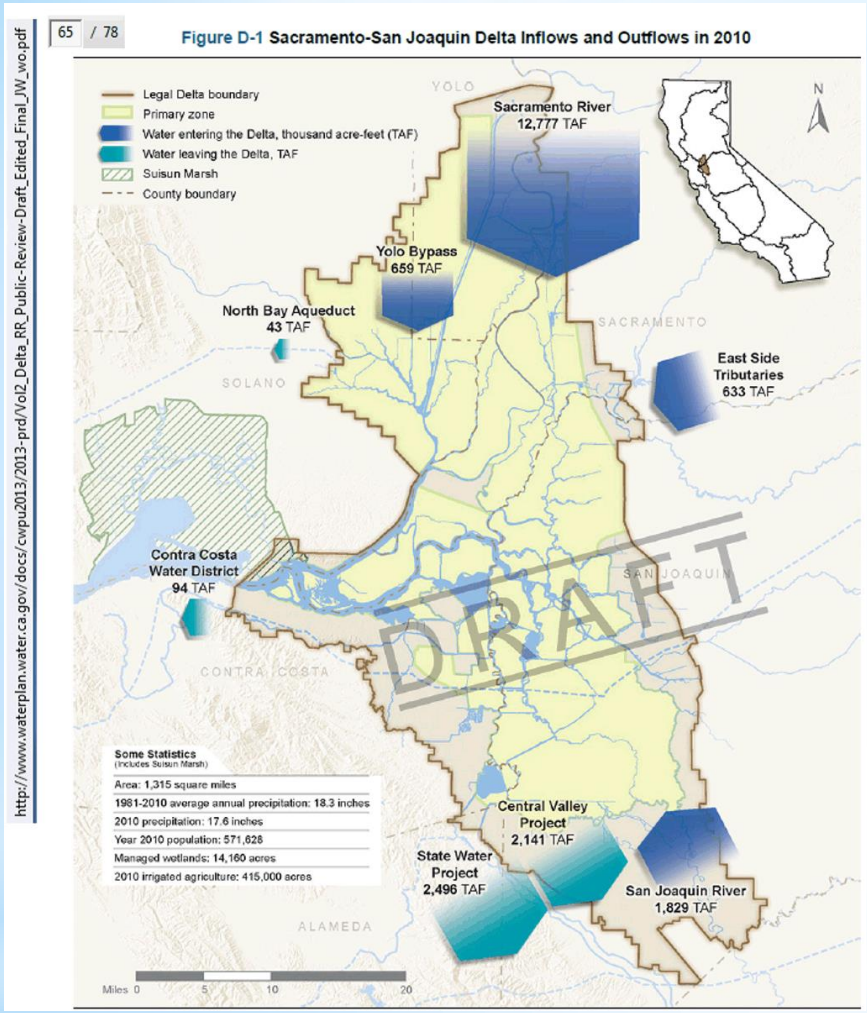
Who: State Water Contractors, Energy Companies, Developers, Online companies

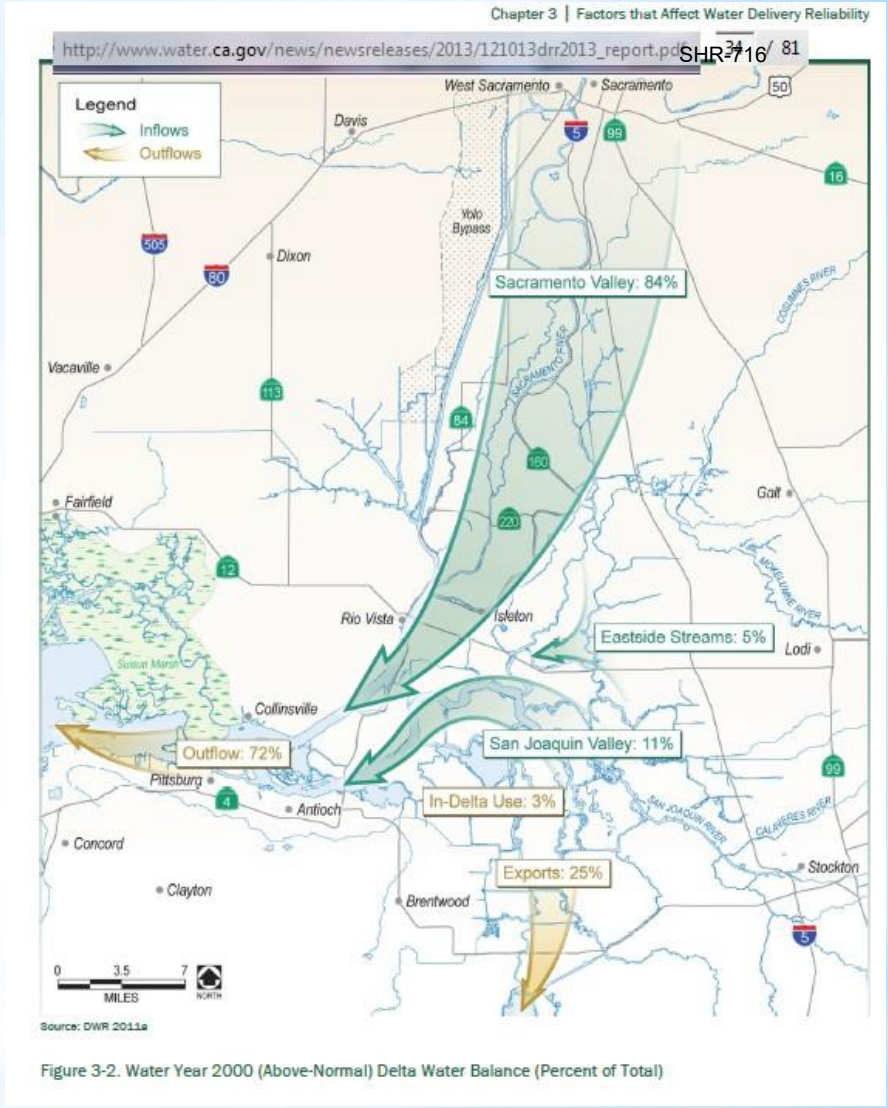

NSFRESINBriefing_Jan26.2010.pptx
US Army Corps of Engineers®
Sacramento District
Improving and Sustaining
California's Water Resources
External Collaborators
California ISO
Your Link to Power
10 Year
Anniversary 1998–2008
URS
DEPARTMENT OF
FISH AND GAME
Center for Watershed Sciences
UCDAVIS
PG&E Corporation
DEPARTMENT OF WATER RESOURCES
PPIC
PUBLIC POLICY INSTITUTE OF CALIFORNIA
Delta Risk Management Strategy
US Army Corps of Engineers



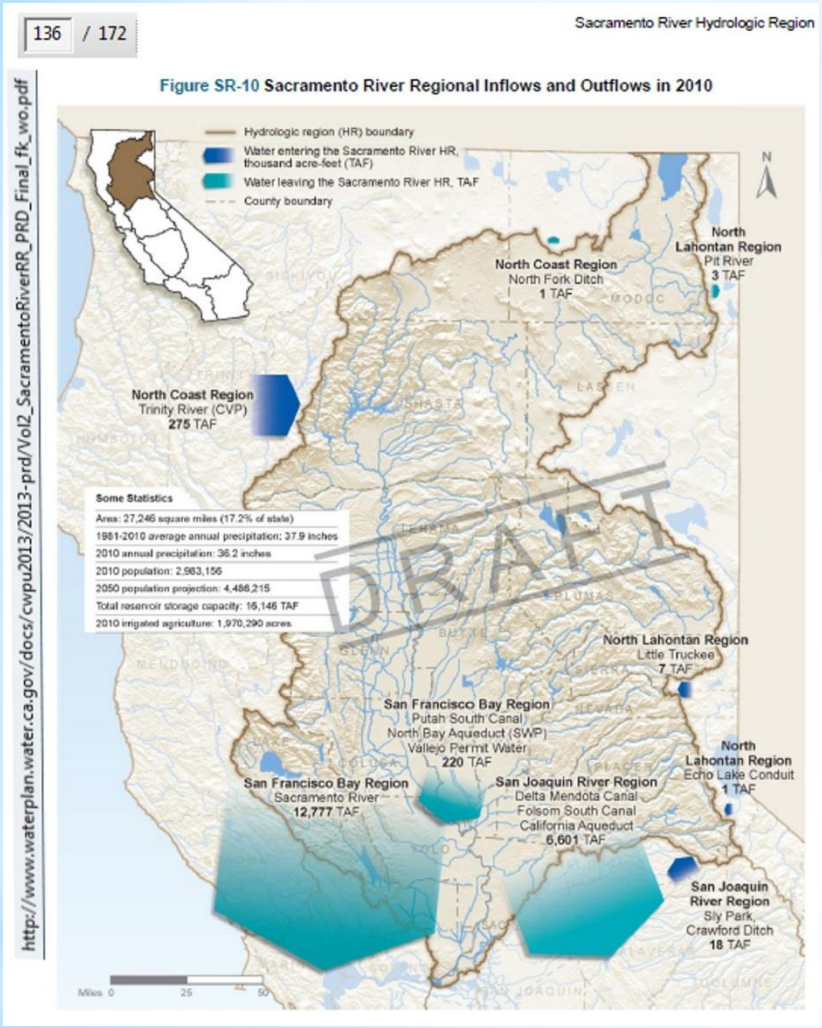


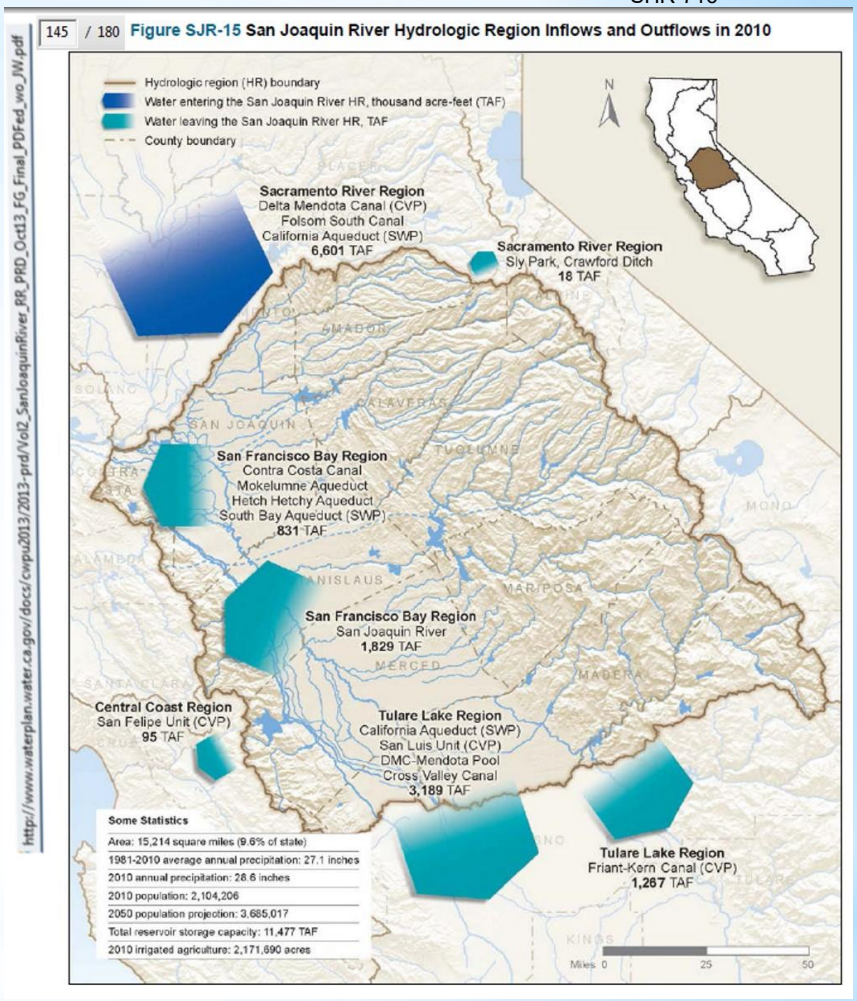
* Where North Delta water comes from…





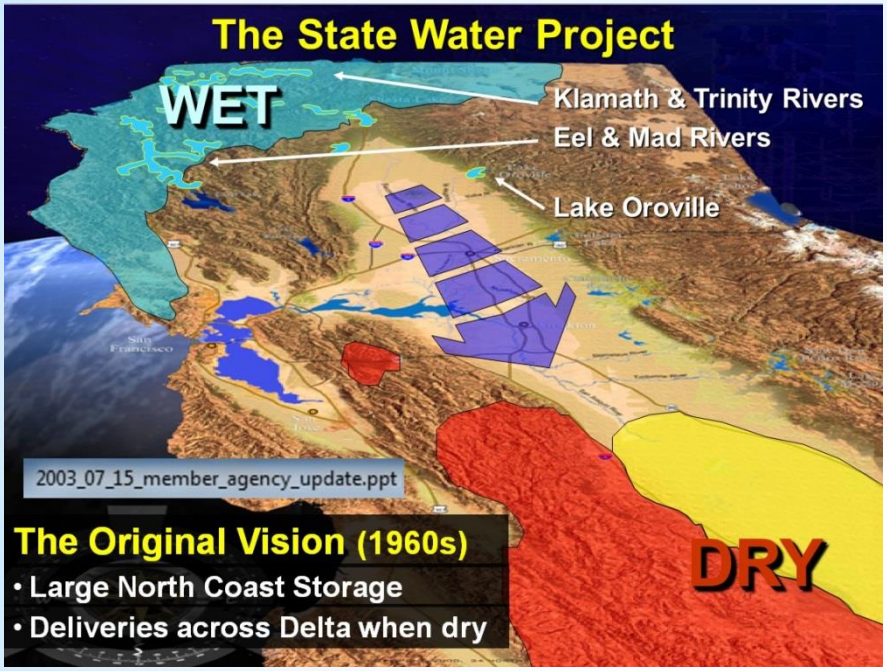
* Flows monitored, captured, stored, diverted, reported so water can be sold





* ONLY "surplus water" was supposed to be diverted from the Sacramento watershed to the south

It's about the money. Follow the flows and diversions, and you are following the money.



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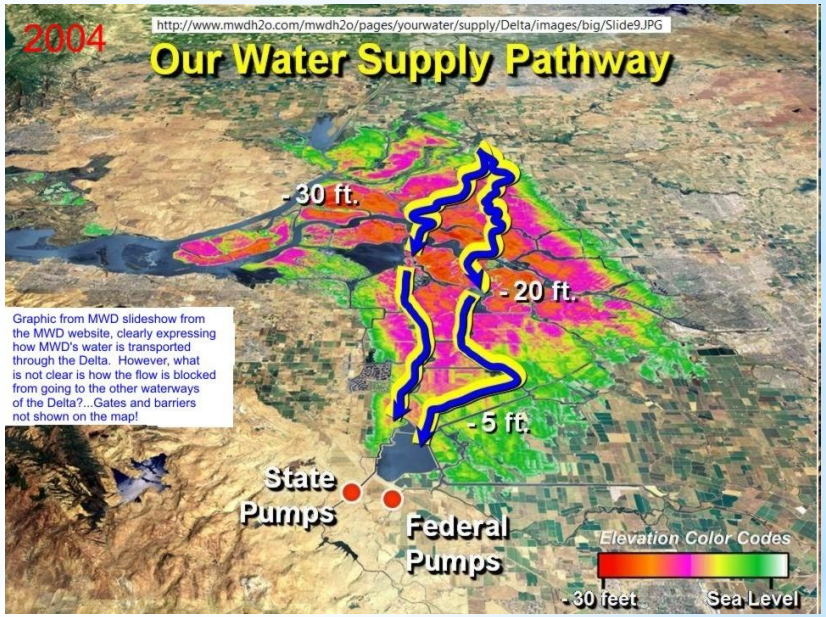
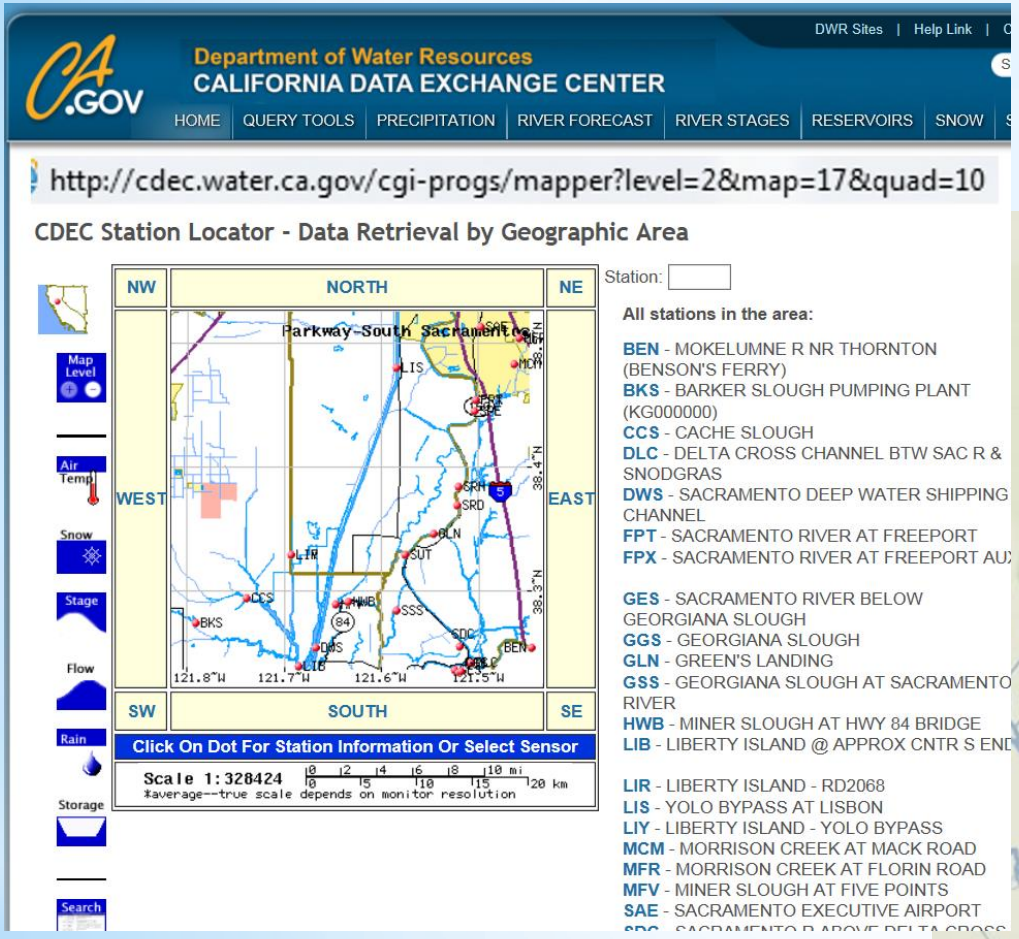
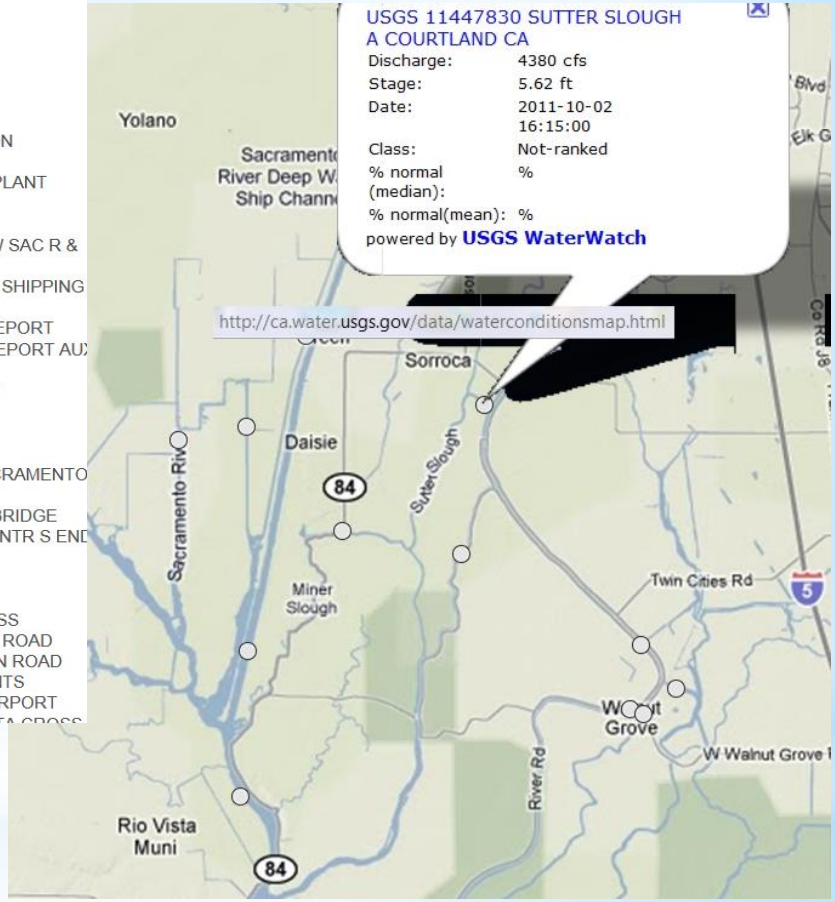


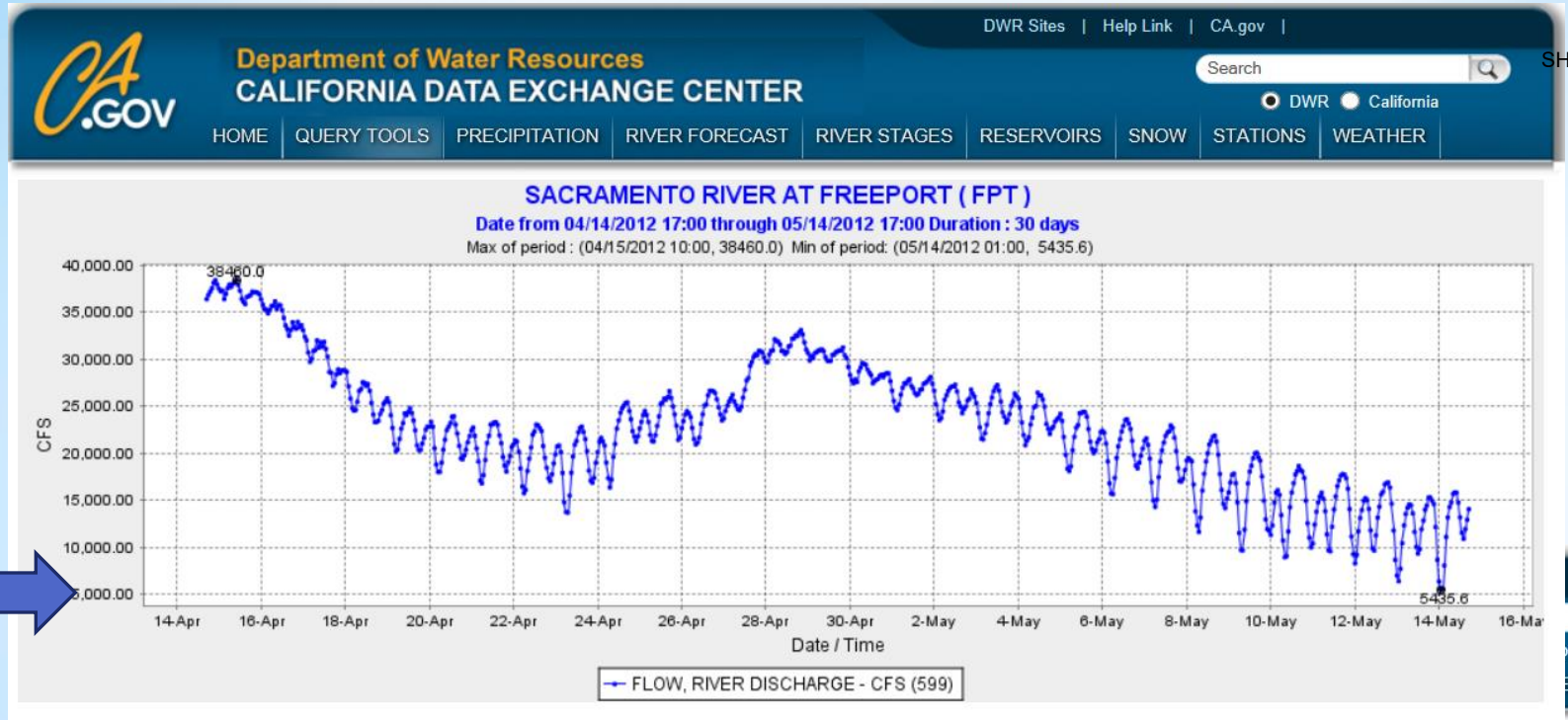
Actually, the original published data limited exports and transfers to "surplus" water from wet years, which is not commonly or historically available in the water system when it is a "dry" water year

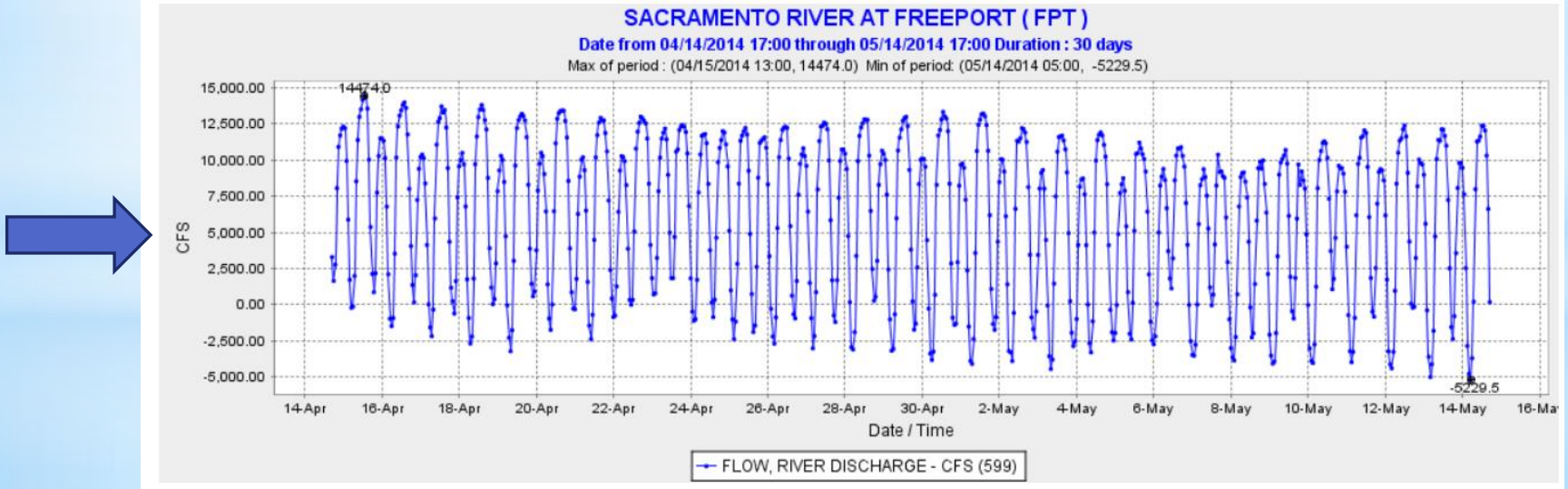
Who is monitoring and reporting the actual flows?





* Delta monitoring gage stations and online reporting





* Accessing flow reports online: DayFLOW

Department of Water Resources
CALIFORNIA DATA EXCHANGE CENTER

HOME | QUERY TOOLS | PRECIPITATION | RIVER FORECAST | RIVER

SACRAMENTO RIVER AT FREEPORT *(FPT)*

Elevation: 0' · SACRAMENTO R basin · Operator: US Geological Survey

Provisional data, subject to change.

Query executed Wednesday at 17:26:47

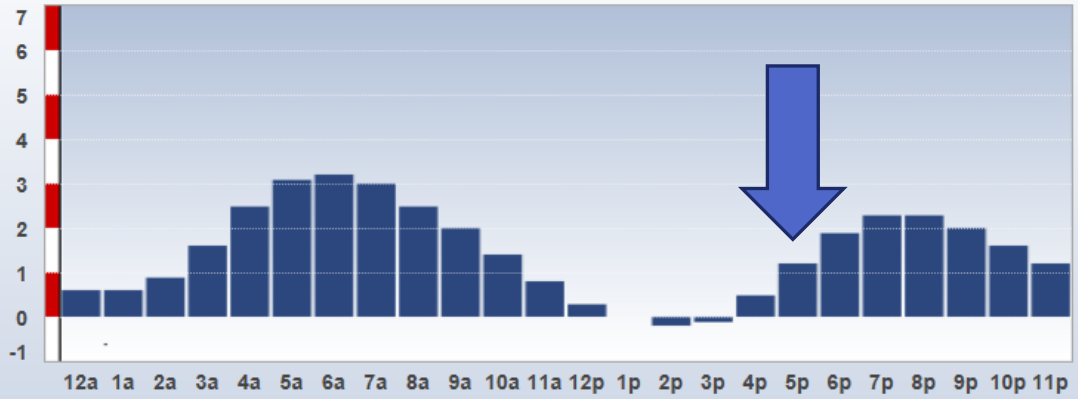
FLOW, RIVER DISCHARGE (599)

Date / Time	*FLOW* CFS
04/14/2014 00:00	13107

SHR-716

05/13/2014 11:00	12129
05/13/2014 12:00	12112
05/13/2014 13:00	11674
05/13/2014 14:00	10991
05/13/2014 15:00	7236
05/13/2014 16:00	2512
05/13/2014 17:00	-1562
05/13/2014 18:00	-2377
05/13/2014 19:00	-803
05/13/2014 20:00	3560
05/13/2014 21:00	8070
05/13/2014 22:00	9796
05/13/2014 23:00	9808
05/14/2014 00:00	9464
05/14/2014 01:00	7636
05/14/2014 02:00	2528
05/14/2014 03:00	-2866
05/14/2014 04:00	-4805
05/14/2014 05:00	-5230
05/14/2014 06:00	-3715
05/14/2014 07:00	189
05/14/2014 08:00	7985
05/14/2014 09:00	11283
05/14/2014 10:00	11346
05/14/2014 11:00	11628
05/14/2014 12:00	12387
05/14/2014 13:00	12356
05/14/2014 14:00	12047
05/14/2014 15:00	10310
05/14/2014 16:00	6618
05/14/2014 17:00	163

Hourly Tides for Clarksburg



Wednesday, May 14, 2014

Low tides were never so low on the Sacramento River!

http://baydeltaoffice.water.ca.gov/downloads/DSM2_Users_Group/BDCP/DSM2_Recalibration_102709_doc.

19 / 23

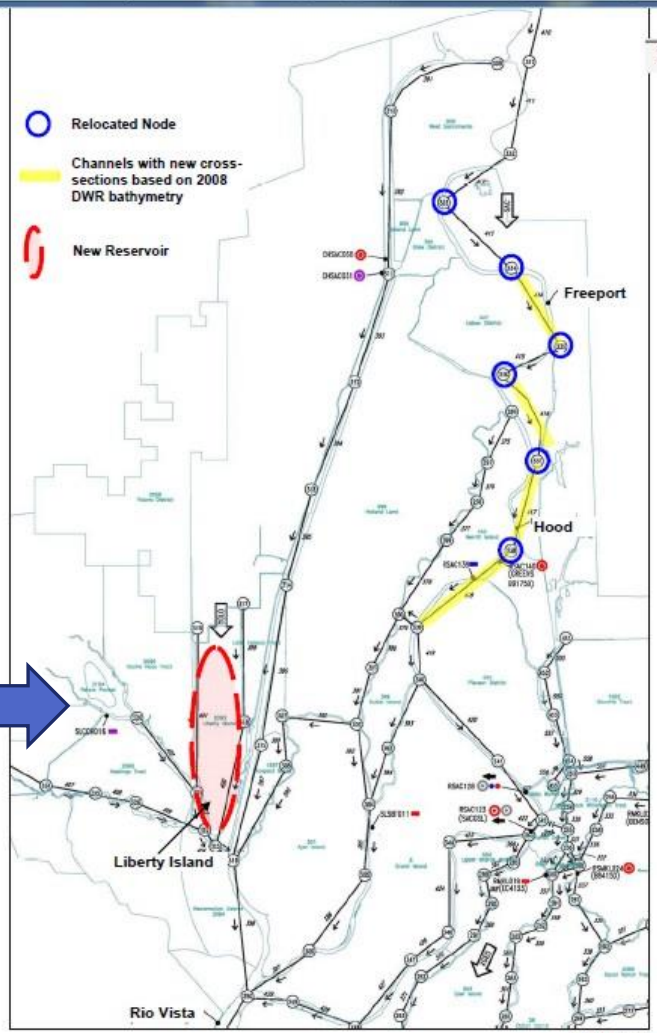


FIGURE 2-2
DSM2 Model Grid in the North Delta Showing the Grid Modifications Performed as Part of the Recalibration Effort

SHR-716

DSM2_Recalibration_102709_doc.pdf - 90 / 236

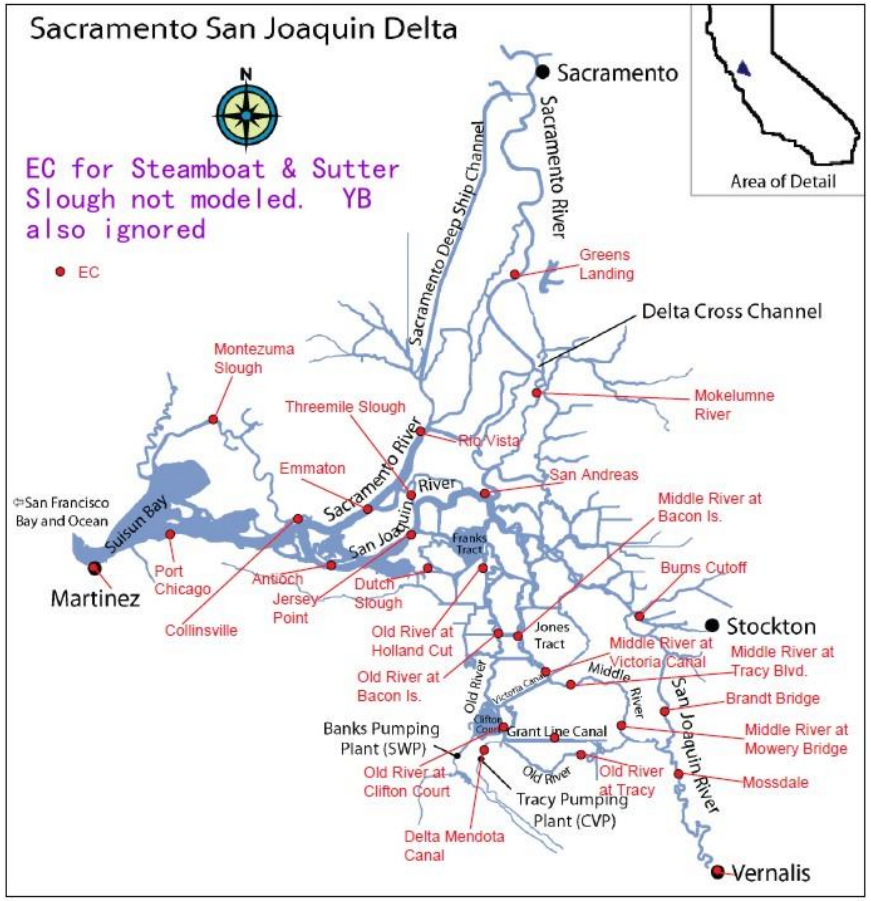
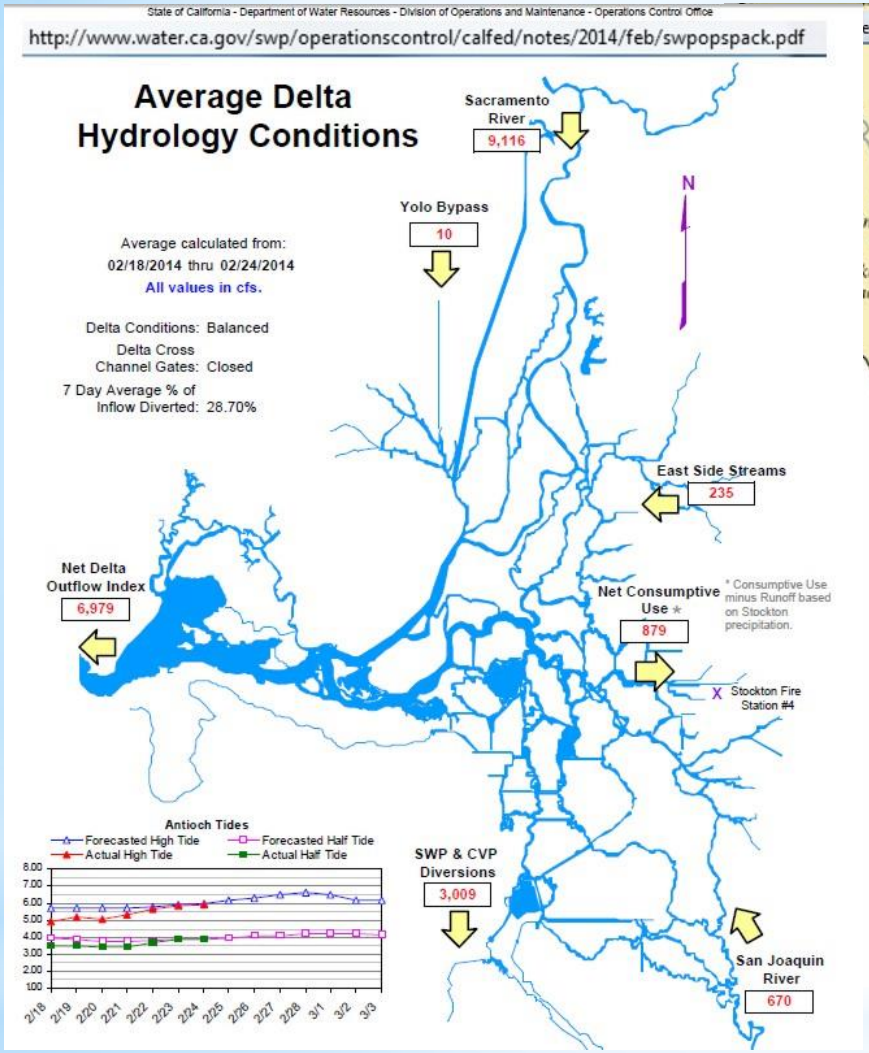


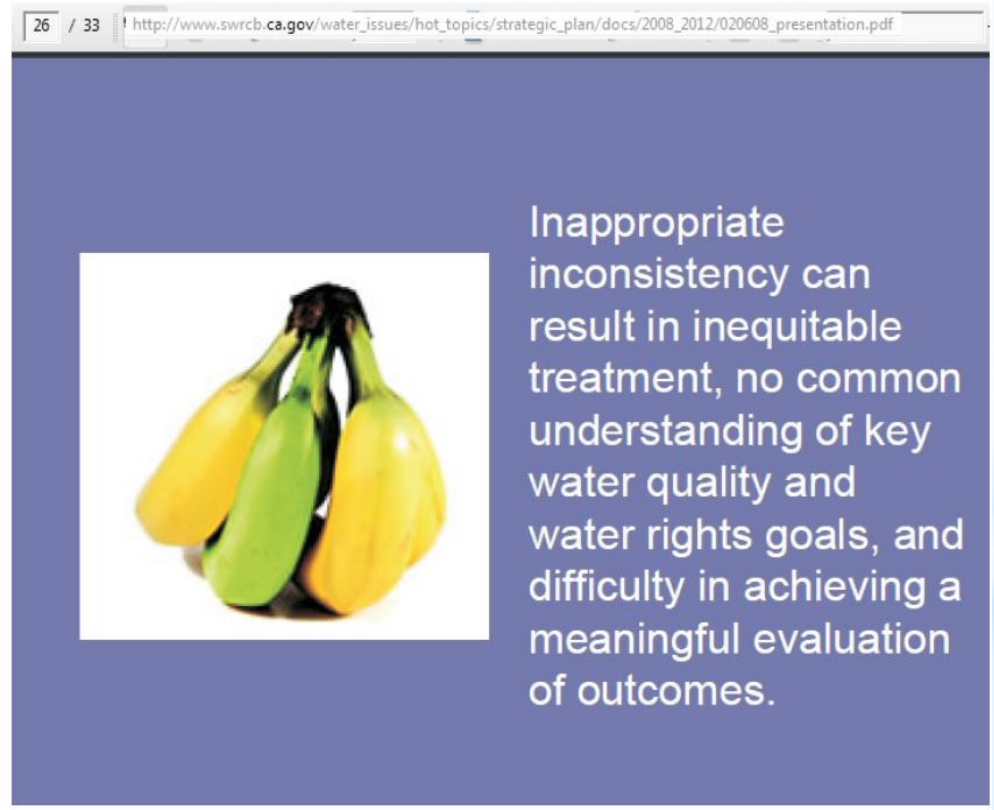
FIGURE 6-1
Map Showing EC Calibration Locations

* Computer modeling for BDCP used the flow data for CALSIM, CALSIM II, DSM2, RMA and others



* Reality: "surplus" water is what *we're* left with now and that water *may* be allowed to flow into the Delta if Delta farmers, business owners and residents fight hard enough to protect their water rights

The next series of slides bring up unanswered questions regarding how water flow has been tracked, counted, diverted, and accounted for … or ignored. The slides represent extensive studies of flows based on online data provided by DWR or USBR or USGS; data from the websites that provide the public with flow and export data and which are supposed to be reasonably reliable information. However, the inconsistencies of the last 6 or more years of flow data is quite concerning. Decide for yourself.



Flow tracking problem #1: which conversion formula do you use? DWR or USGS and CALSIM as an example

Q: Does 1 cubic foot/second equal 646,320 OR 646,272 gallons a day?

Why does DWR use different conversion numbers from USGS? Compare converting CFS to gallons per day

http://www.water.ca.gov/swp/operationscontrol/docs/annual/annual01.pdf

Conversion Factors

Quantity	Multiply	By	To obtain
Area	acre	43.560	square feet
Volume	cubic foot	7.481	gallons
	cubic foot	62.4	pounds of water
	gallon	0.13368	cubic feet
	acre-foot	325,900	gallons
	acre-foot	43,560	cubic feet
	million gallons	3.07	acre-feet
Flow	cubic foot/second (cfs)	450	gallons/minute (gpm)
	gallons/minute	0.002228	cubic feet/second (cfs)
	million gallons/day	1.5472	cubic feet/second (cfs)
	cubic foot/second (cfs)	646,320	gallons a day
	cubic foot/second (cfs)	1.98	acre-feet a day
	million gallons/day (mgd)	1,120	acre-feet a year
Pressure	feet head of water	.433	pounds/square inch (psi)
Power	kilowatts (kW)	1.3405	horsepower (hp)

http://md.water.usgs.gov/cfscalc/

USGS CFS Conversion Calculator

Convert to: gallons per day

CFS Value (ft³/s): 1

Convert from cfs

Result: 646272

Conversion factors for cfs calculations: 1 cfs =

7	.48	gallons per second
448	.8	gallons per minute
26,928	.0	gallons per hour
646,272	.0	gallons per day
28	.32	liters of water per second
1,699	.2	liters of water per minute
101,952	.0	liters of water per hour
2,446,848	.0	liters of water per day
2.446848	.0	million liters of water per day
0	.646272	million gallons per day
62	.5	pounds of water per second
3,750	.0	pounds of water per minute
225,000	.0	pounds of water per hour
5,400,000	.0	pounds of water per day

close this window

http://www.deltarevision.com/Issues/water-issues/waterflow/video/NorthDelta_vs_NorthDelta/waterflow-graphics-2of3.pdf

"We'll get back to you on that…" (2010)

SACRAMENTO RIVER INFLOW: CONFLICTS IN DATA FOR AN "AVERAGE" WATER YEAR

http://www.deltarevision.com/Issues/water-issues/waterflow/video/north_delta_low_flow_effect.pdf

cfs from the Sacramento River, when over the last 20+ years only 5,000 to 7,000 cfs has been diverted via the DCC and Georgiana Slough.

Flow data based on an "average" year per DWR - water year 2000

- Sacramento River Flow
- Cache Slough/Yolo Bypass Flow
- San Joaquin River Flow

CACHE SLOUGH/YOLO BYPASS FLOW (According to DWR documents)

Pre-2004	3,970 TAF
2005	2,956 TAF
2009	356 TAF
2010	0

SACRAMENTO RIVER FLOW (According to DWR documents)

Pre-2004	17,220 TAF
2005	18,327 TAF
2009	8,443 TAF
2010	21,283 TAF

2011 Proposed 15,000 cfs exports from Sacramento River calculates to approximately 10,859 TAF which is more than double the amount of exported water from the Sacramento River current exports!

17,220 TAF
Less 10,859 TAF
Leaves 6,361 TAF
Of flow to share between Elk Slough, Sutter Slough, Steamboat Slough and the portion of the Sacramento River between Georgiana Slough and Ida Island (Vieira's) which is insufficient flows for maintenance of navigation, water quality and management of invasive aquatic species!

Average Delta Outflow (Per DWR documents)

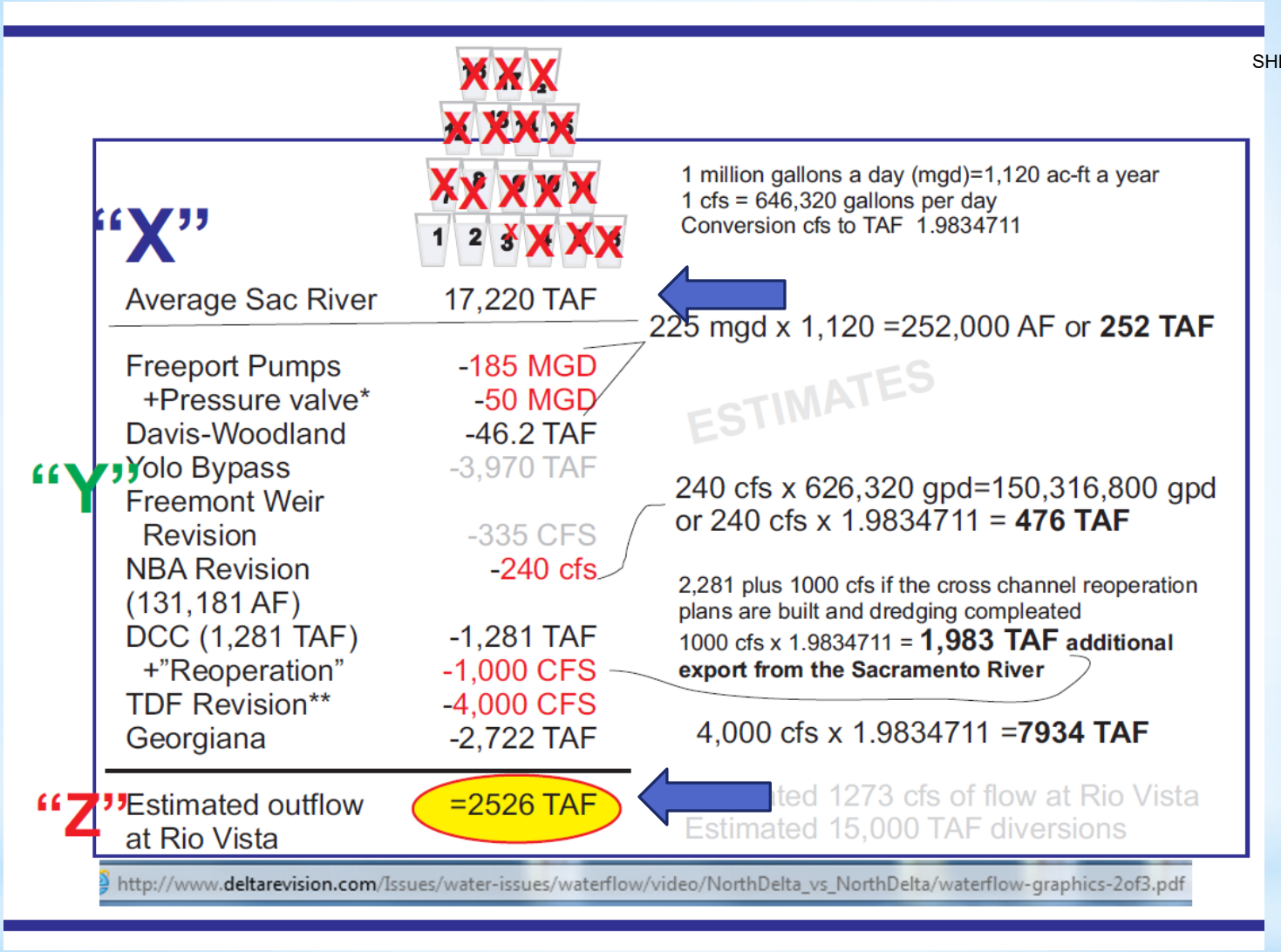
Pre-2003	21,020 TAF
2005	18,144 TAF
2009	not specified in map
2010	18,144 TAF

San Joaquin Ri (DWR documen

Pre-2003	4,30
2005	2,84
2009	1,90
2010	2,84

Inappropriate inconsistency can result in inequitable treatment, no common understanding of key water quality and water rights goals, and difficulty in achieving a meaningful evaluation of outcomes.

Review of flow data reports from several years showed inconsistency in the data flow calculations, leading to questions of formulas used for converting cfs to TAF or MAF



* Problem #2: Does BDCP, which uses CALSIM 1 and 11, and other flow models use the DWR or USGS conversion formula? It makes a big difference in the actual "surplus" left over in the Delta, if any.

Problem #3: DWR published "final" charts and reports quantifying the flow, exports and Delta outflow for the last 10 years. When DWR is presented with questions regarding the flow data, the "final" charts are simply changed only without notice or explanation why the incorrect data was published and distributed in the first place.

SCREEN PRINT OF DWR CHART ONLINE BEFORE DWR UPDATE

http://www.waterplan.water.ca.gov/docs/cwpu2013/ae/water_portfolio-inflow_outflow_delta.pdf

Delta Water Balance Estimates[1] (TAF)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sacramento River Inflow	29015	21770	18360	10517	13104	18304	17129	16747	28039	11010	9557	9867	12777
Yolo Bypass Inflow	8996	1635	2961	366	708	1122	3121	707	13034	248	417	317	659
Eastside Tributaries Inflow	2096	1399	1078	372	462	534	445	1173	9679	1979	n	1231	2461
San Joaquin River Inflow	8456	3568	2846	1732	1396	1365	1373	3777	7341	1596	1234	865	1829
North Bay Aqueduct Exports	39	37	47	45	47	42	52	48	43	61	55	46	43
Contra Costa Water District Diversions at Rock Slough and Old River	160	133	126	104	121	138	120	119	118	112	135	107	94
State Water Project Exports at Banks Pumping Plant or Clifton Court Intake	2134	2439	3692	2635	2900	3458	3251	3625	3527	2956	1527	1636	2496
Central Valley Project Exports at Tracy	2474	2262	2487	2332	2505	2685	2722	2679	2628	2679	2018	1884	2141
Delta Consumptive Use[2]	1691	1691	1693	1691	1691	1691	1693	1691	1691	1691	1693	1691	1666
Delta Precipitation[2]	1423	734	956	764	758	730	753	1089	1059	477	600	662	789
Delta Outflow	43487	22542	18155	6944	9163	14060	14922	15403	43805	6216	1529	6713	2461

1 Data from DAYFLOW Program; NOTE: includes DAYFLOW corrections through 01-07-2004 (http://iep.water.ca.gov/dayflow)
2 Content Required by Water Code Section 10004.6

SCREEN PRINT OFDWR CHART CORRECTED BY DWR AND POSTED 3/19/2014

Also note CCWD diversions are included in Delta Consumptive use and also listed as a separate category, indicating double-counting of same export #.

http://www.waterplan.water.ca.gov/docs/cwpu2013/ae/water_portfolio-inflow_outflow_delta.pdf

Delta Water Balance Estimates[1] (TAF)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sacramento River Inflow	29615	21770	18360	10517	13104	18304	17129	16747	28039	11010	9557	9867	12777
Yolo Bypass Inflow	8996	1635	2961	366	708	1122	3121	707	13034	248	417	317	659
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State Water Project Exports at Banks Pumping Plant or Clifton Court Intake	2134	2439	3692	2635	2900	3458	3251	3625	3527	2954	1527	1636	2496
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Delta Outflow	43487	22542	18155	6944	9163	14050	14922	16403	43805	6216	1529	6713	2461

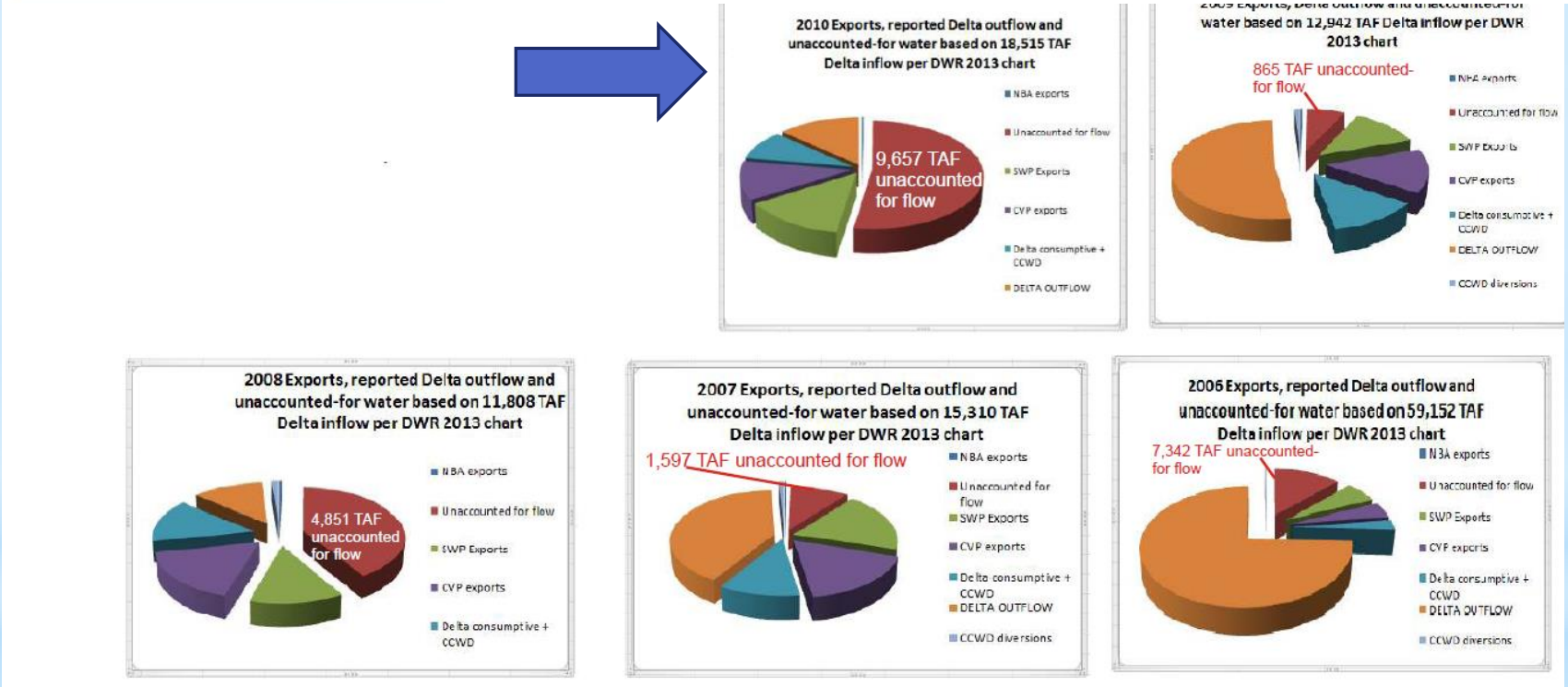
1 Data from DAYFLOW Program; NOTE: includes DAYFLOW corrections through 01-07-2004 (http://iep.water.ca.gov/dayflow)
2 Content Required by Water Code Section 10004.6

YEAR	total inflows	EXPORTS	DELTA OUTFLOW reported	Unaccounted for flow
2010	18515	6397	2461	9657
2009	12542	5364	6713	865
2008	11808	5428	1529	4851
2007	15310	7497	6216	1597
2006	59152	8005	43805	7342
2005	23459	8102	15403	72
2004	22821	7838	14922	61
2003	22064	8014	14050	0
2002	16428	7264	9163	1
2001	13706	6807	6944	-45
2000	26201	8045	18156	0
1999	29106	6562	22542	2
1998	49986	6498	43487	1

SHR-716

Data and references compiled by N. Suard, Esq. For use by Delta landowners 2/2014

http://snugharbor.net/images-2014/bdcp/flows/unaccounted_diversions.pdf



* Problem #3: Unaccounted for Delta outflow and DWR failure to account for incorrect flow data distribution

DWR CORRECTS WATER BALANCE TABLE ... MAYBE

Data compiled by N. Suard, Esq.
posted online 3/27/14

Location of flow study based on the first chart posted by DWR:
http://www.snugharbor.net/images-2014/bdcp/flows/unaccounted_diversions.pdf

In January 2014 it was noticed by Delta landowners that a chart online providing the estimated Delta outflow and in-Delta water uses indicated substantially low Delta outflow. In addition, there appeared to be "missing water". I hired a certified Quickbooks person to enter the numbers as shown in the top chart, as if those numbers were dollars instead of thousands of acre feet of water. The result was that there appeared to be MISSING water and the CCWD diversions may be counted twice as both independent export amount and as a portion of the in-Delta consumptive use figure. North Delta landowner focus on flows has been heightened in the last few years because DWR or USBR has been greatly reducing flows on Steamboat Slough, in particular, except for when the salmonid migration studies with pulse flows are going on. The above chart was provided to several North Delta water engineers and agency people with a request that others review the data.

Without notice to others, DWR revised the chart and posted it online on 3/19/2014, after revising the data in late February. It will take more time to analyze the new numbers, but the first posting shows how even for very important data like Delta outflow there is inconsistency when DWR reports data and then makes corrections without acknowledging the correction.

SCREEN PRINT OF DWR CHART ONLINE BEFORE DWR UPDATE

http://www.waterplan.water.ca.gov/docs/cwpu2013/ae/water_portfolio-inflow_outflow_delta.pdf

Delta Water Balance Estimates[1] (TAF)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sacramento River Inflow	29015	21770	18360	10517	13104	18304	17129	16747	28039	11010	9557	9867	12777
Yolo Bypass Inflow	8996	1635	2961	366	708	1122	3121	707	13034	248	417	317	659
Eastside Tributaries Inflow	2096	1399	1078	372	462	534	445	1173	9679	1979	n	1231	2461
San Joaquin River Inflow	8456	3568	2846	1732	1396	1365	1373	3777	7341	1596	1234	865	1829
North Bay Aqueduct Exports	39	37	47	45	47	42	52	48	43	61	55	46	43
Contra Costa Water District Diversions at Rock Slough and Old River	160	133	126	104	121	138	120	119	116	112	135	107	94
State Water Project Exports at Banks Pumping Plant or Clifton Court Intake	2134	2439	3692	2635	2900	3458	3251	3625	3527	2954	1527	1636	2496
Central Valley Project Exports at Tracy	2474	2262	2487	2332	2505	2685	2722	2679	2628	2679	2018	1884	2141
Delta Consumptive Use[2]	1691	1691	1693	1691	1691	1691	1693	1691	1691	1691	1693	1691	1666
Delta Precipitation[2]	1423	734	956	764	758	730	753	1089	1059	477	600	662	789
Delta Outflow	43487	22542	18155	6944	9163	14050	14922	15403	43805	6216	1529	6713	2461

1 Data from DAYFLOW Program; NOTE: includes DAYFLOW corrections through 01-07-2004 (http://iep.water.ca.gov/dayflow)
2 Content Required by Water Code Section 10004.6

SCREEN PRINT OFDWR CHART CORRECTED BY DWR AND POSTED 3/19/2014

http://www.waterplan.water.ca.gov/docs/cwpu2013/ae/water_portfolio-inflow_outflow_delta

Delta Water Balance Estimates[1] (TAF)	Note: Draft Information. The final Water Plan assumptions and estimates will be included in Volume 5, the Technical Guide.												
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sacramento River Inflow	29,015	21,770	18,360	10,517	13,104	18,304	17,128	16,747	27,592	10,970	9,557	9,867	12,777
Yolo Bypass Inflow	8,416	1,629	2,961	366	708	1,122	3,128	707	10,939	248	417	317	659
Eastside Tributaries Inflow	2,090	1,399	1,078	372	462	534	445	1,173	2,338	383	295	366	633
San Joaquin River Inflow	8,491	3,568	2,846	1,732	1,396	1,365	1,373	3,777	7,341	1,596	1,234	865	1,829
North Bay Aqueduct Exports	39	38	47	45	47	42	52	48	43	61	55	46	43
Contra Costa Water District Diversions at Rock Slough and Old River	160	133	126	104	121	138	120	119	116	112	135	107	94
State Water Project Exports at Banks Pumping Plant or Clifton Court Intake	2,134	2,439	3,692	2,635	2,900	3,458	3,251	3,625	3,527	2,954	1,527	1,636	2,496
Central Valley Project Exports at Tracy	2,474	2,263	2,487	2,332	2,505	2,685	2,722	2,679	2,628	2,679	2,018	1,884	2,141
Delta Consumptive Use (2	1,751	2,039	2,017	1,863	1,837	1,791	1,991	2,096	1,881	1,700	1,793	1,784	1,865
Delta Precipitation (2 (3	2,033	1,088	1,271	936	903	839	976	1,233	1,249	525	700	755	988
Delta Outflow	43,487	22,542	18,147	6,944	9,163	14,050	14,914	15,070	41,264	*6,216	*6,675	*6,713	*10,247

*1) Data from DAYFLOW Program; 7-1-2012 (http://www.water.ca.gov/dayflow)
2) Content Required by Water Code Section 10004.6
*3) Delta only without Suisun Marsh

Corrected chart posted online 3/19/14 with no reference to the fact it is a correction of the previous posting by DWR

Document Properties
Description | Security | Fonts | Initial View | Custom
Description
File: water_portfolio-inflow_outflow_delta.
Title: Water_Balance_Estimates_02-27-14(
Author: tmcich
Subject:
Keywords:
Created: 3/19/2014 1:54:54 PM
Modified: 3/19/2014 1:57:33 PM
Application: PScript5.dll Version 5.2.2
Advanced
PDF Producer: Acrobat Distiller 10.1.9 (Windows)
PDF Version: 1.5 (Acrobat 6.x)
File Size: 79.46 KB (81,366 Bytes)

*"We'll get back to you on that…"

SCREEN PRINT OFDWR CHART CORRECTED BY DWR AND POSTED 3/19/2014

Delta Water Balance Estimates[1] (TAF) — Note: Draft Information. The final Water Plan assumptions and estimates will be included in Volume 5, the Technical Guide.

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sacramento River Inflow	29,015	21,770	18,360	10,517	13,104	18,304	17,128	16,747	27,592	10,970	9,557	9,867	12,777
Yolo Bypass Inflow	8,416	1,629	2,961	366	708	1,122	3,128	707	10,939	248	417	317	659
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San Joaquin River Inflow	8,491	3,568	2,846	1,732	1,396	1,365	1,373	3,777	7,341	1,596	1,234	865	1,829
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Contra Costa Water District Diversions at Rock Slough and Old River	160	133	126	104	121	138	120	119	116	113	135	107	94
State Water Project Exports at Banks													
Pumping Plant or Clifton Court Intake	2,134	2,439	3,692	2,635	2,900	3,458	3,251	3,625	3,527	2,954	1,527	1,636	2,496
Central Valley Project Exports at Tracy	2,474	2,263	2,487	2,332	2,505	2,685	2,722	2,679	2,628	2,679	2,018	1,884	2,141
Delta Consumptive Use (2	1,751	2,039	2,017	1,863	1,837	1,791	1,991	2,096	1,88	1,700	1,793	1,784	1,865
Delta Precipitation (2 (3	2,033	1,088	1,271	936	903	839	976	1,233	1,249	525	700	755	988
Delta Outflow	43,487	22,542	18,147	6,944	9,163	14,050	14,914	15,070	41,264	6,216	6,675	6,713	10,247

1) Data from DAYFLOW Program; 7-1-2012 (http://www.water.ca.gov/dayflow)
2) Content Required by Water Code Section 10004.6
3) Delta only without Suisun Marsh

Corrected chart posted online 3/19/14 with no reference to the fact it is a correction of the previous posting by DWR

Chart changed 3/19/14 at 1:57 pm and again at 1:58 right after being screen printed by NSS for a follow-up review. Ironic, huh? In any case, the chart still appears to be reporting incorrect flow and Delta outflow data.

www.waterplan.water.ca.gov/docs/cwpu2013/ae/water_portfolio-inflow_outflow_delta.pdf

Delta Water Balance Estimates[1] (TAF) — Note: Draft Information. The final Water Plan assumptions and estimates will be included in Volume 5, the Technical Guide.

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
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Eastside Tributaries Inflow	2,090	1,399	1,078	372	462	534	445	1,173	2,338	383	295	366	633
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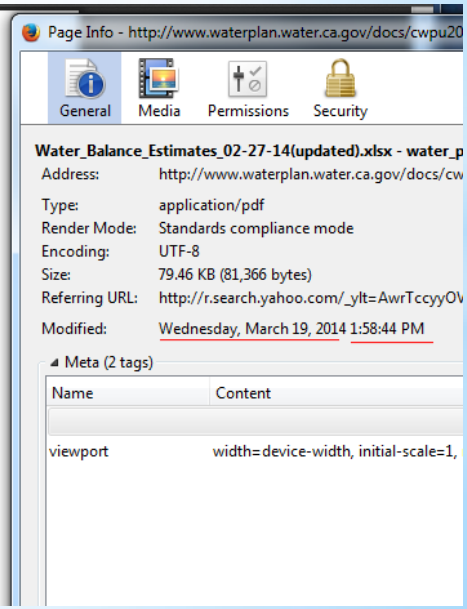
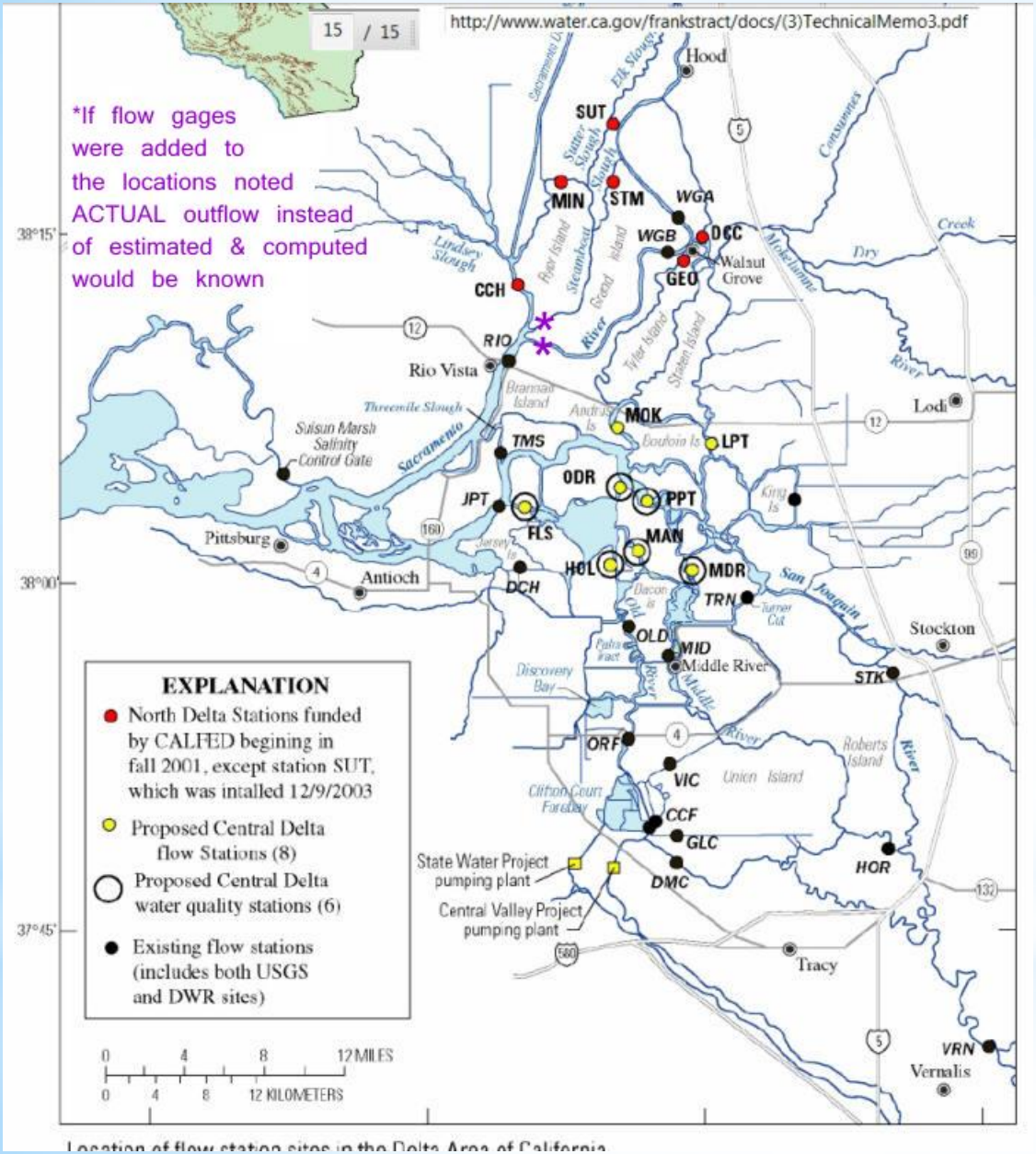
Delta Consumptive Use (2	1,751	2,039	2,017	1,863	1,837	1,791	1,991	2,096	1,881	1,700	1,793	1,784	1,865
Delta Precipitation (2 (3	2,033	1,088	1,271	936	903	839	976	1,233	1,249	525	700	755	988
Delta Outflow	43,487	22,542	18,147	6,944	9,163	14,050	14,914	15,070	41,264	6,216	6,675	6,713	10,247

1) Data from DAYFLOW Program; 7-1-2012 (http://www.water.ca.gov/dayflow)
2) Content Required by Water Code Section 10004.6
3) Delta only without Suisun Marsh

Screen print from 5/19/16 6:27 am



Inappropriate inconsistency can result in inequitable treatment, no common understanding of key water quality and water rights goals, and difficulty in achieving a meaningful evaluation of outcomes.

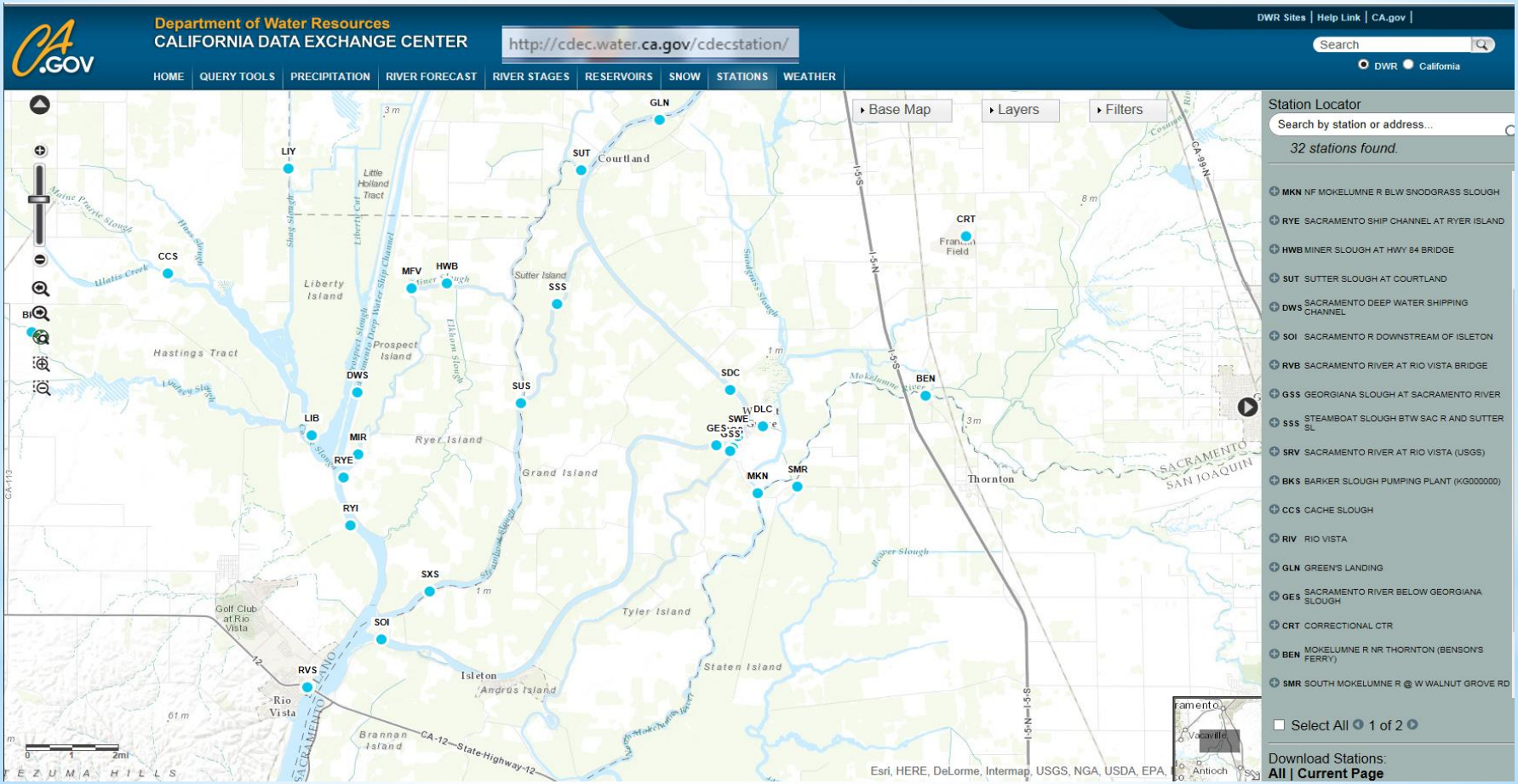


Location of flow station sites in the Delta Area of California

* Suggestion: By adding flow gages or moving existing ones to the lower end of waterways, actual in-Delta use and outflow from the Sacramento River could be more correctly calculated…if DWR wanted to use the actual flow data.

Why isn't the Steamboat Slough gage raw data available online? "We'll get back to you on that…"

2015 update: CDEC now shows new monitoring stations, but not all of the information monitored is accessible online in real time to everyone. Historical flow data for locations like lower Steamboat Slough still require an interested party to make a request of government water engineers to get the data.



Problem #4: Flow data gaps. Gaps in flow data, which appear to be intentionally hidden in plain sight in the online flow charts, result in UNDERREPORTING of actual water flow on the Sacramento River, Steamboat and Sutter Sloughs. Note the pattern of the data gaps…

SHR-716

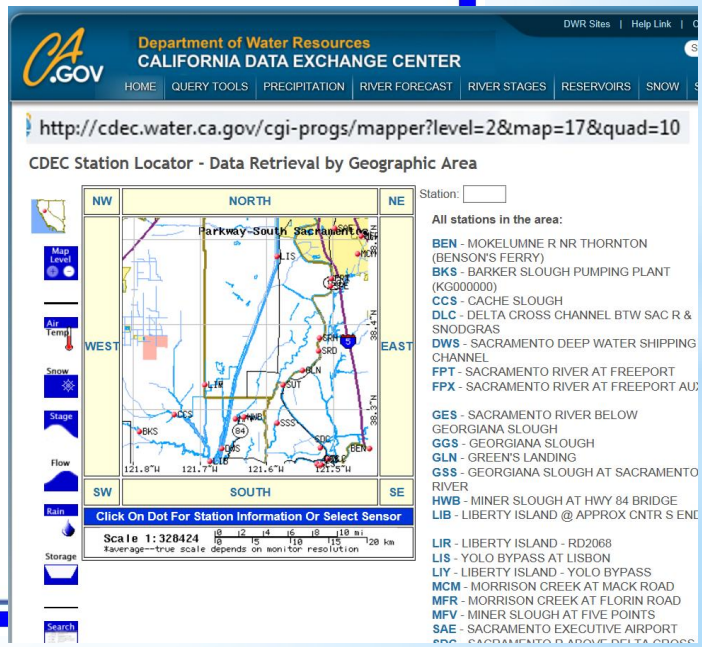
cdec.water.ca.gov/cgi-progs/selectQuery?station_id=FPT&sensor_num=20&dur_code=E&start_date=&end_date=now

03/26/2014 06:00	9440
03/26/2014 06:15	10000
03/26/2014 06:30	9980
03/26/2014 06:45	10500
03/26/2014 07:00	10900
03/26/2014 07:15	11100
03/26/2014 07:30	11600
03/26/2014 07:45	11500
03/26/2014 08:00	11400
03/26/2014 08:15	11300
03/26/2014 08:30	11300
03/26/2014 08:45	11500
03/26/2014 09:00	11600
03/26/2014 09:15	11900
03/26/2014 09:30	11600
03/26/2014 09:45	11300
03/26/2014 10:00	10500
03/26/2014 10:15	10100
03/26/2014 10:30	9260
03/26/2014 10:45	8210
03/26/2014 12:00	2180
03/26/2014 12:15	1140
03/26/2014 12:30	613
03/26/2014 12:45	-188
03/26/2014 14:00	-1760
03/26/2014 14:15	-1950
03/26/2014 14:30	-2240
03/26/2014 14:45	-1880
03/26/2014 15:00	-1320
03/26/2014 15:15	-855
03/26/2014 15:30	271
03/26/2014 15:45	1670
03/26/2014 16:00	2860
03/26/2014 16:15	4590

http://www.snugharbor.net/images-2014/news/notices/cdecdatagaps.pdf

Screen print from above CDEC site for Freeport flows, accessed 4/4/14, 4/8/14 with no changes by DWR.

Can you find the data gap?



Example: Data gap on 3/26/14 for Freeport and Steamboat Slough

http://www.snugharbor.net/images-2014/news/notices/cdecdatagaps.pdf

From 10:45 to 12 noon Sacramento River flow drops over 6000 cfs, from 8210 to 2180. Flows continue to drop to -1760 in just a 3 hour time. This indicates all flow on the Sacramento River at Freeport had been cut off

Impact to Steamboat Slough from flow cut-off is hidden due to gap in data reporting. What does show is that Steamboat Slough was already not receiving freshwater inflow, and the cutoff of flow created a more drastic low tide at this time. Impact to Sutter Slough shows less drastic low water impact.

2014FLOW-updated.xlsx — Section of review of flow data from CDEC which exposed missing data and experimental flow timing:

	A	B	C	D FREEPORT		F	G SUTTER	H	I	J STEAMBOAT	K	L	M GEORGIANA		O	
1100		3/26/2014 9:45		3/26/2014 9:45	11300		3/26/2014 9:45	2190		3/26/2014 9:45	1200		3/26/2014 9:45	3370		3/
1101		3/26/2014 10:00		3/26/2014 10:00	10500		3/26/2014 10:00	1910		3/26/2014 10:00	510		3/26/2014 10:00	3180		3/2
1102		3/26/2014 10:15		3/26/2014 10:15	10100		3/26/2014 10:15	1610		3/26/2014 10:15	-129		3/26/2014 10:15	2990		3/2
1103		3/26/2014 10:30		3/26/2014 10:30	9260		3/26/2014 10:30	1420		3/26/2014 10:30	-842		3/26/2014 10:30	2830		3/2
1104		3/26/2014 10:45		3/26/2014 10:45	8210		3/26/2014 10:45	1200		3/26/2014 10:45	-1770		3/26/2014 10:45	3050		3/2
1105	11:00 AM	3/26/2014 11:00		MISSING	DATA		3/26/2014 11:00	1190		3/26/2014 11:00	-2030		3/26/2014 11:00	2960		3/2
1106		3/26/2014 11:15		MISSING	DATA		3/26/2014 11:15	966		MISSING	DATA		3/26/2014 11:15	3100		3/2
1107		3/26/2014 11:30		MISSING	DATA		3/26/2014 11:30	714		MISSING	DATA		3/26/2014 11:30	3010		3/2
1108		3/26/2014 11:45		MISSING	DATA		3/26/2014 11:45	240		MISSING	DATA		3/26/2014 11:45	2840		3/2
1109	NOON	3/26/2014 12:00		3/26/2014 12:00	2180		3/26/2014 12:00	-7		MISSING	DATA		3/26/2014 12:00	2750		3/2
1110		3/26/2014 12:15		3/26/2014 12:15	1140		3/26/2014 12:15	-242		3/26/2014 12:15	-3000		3/26/2014 12:15	2620		3/2
1111		3/26/2014 12:30		3/26/2014 12:30	613		3/26/2014 12:30	-408		3/26/2014 12:30	-3130		3/26/2014 12:30	2480		3/2
1112		3/26/2014 12:45		3/26/2014 12:45	-188		3/26/2014 12:45	-658		3/26/2014 12:45	-3040		3/26/2014 12:45	2410		3/2
1113	1:00 PM	3/26/2014 13:00		MISSING	DATA		3/26/2014 13:00	-931		3/26/2014 13:00	-3050		3/26/2014 13:00	2320		3/2
1114		3/26/2014 13:15		MISSING	DATA		3/26/2014 13:15	-1040		MISSING	DATA		3/26/2014 13:15	2220		3/2
1115		3/26/2014 13:30		MISSING	DATA		3/26/2014 13:30	-1230		MISSING	DATA		3/26/2014 13:30	2110		3/2
1116		3/26/2014 13:45		MISSING	DATA		3/26/2014 13:45	-1260		MISSING	DATA		3/26/2014 13:45	1890		3/2
1117	2:00 PM	3/26/2014 14:00		3/26/2014 14:00	-1760		3/26/2014 14:00	-1310		MISSING	DATA		3/26/2014 14:00	1830		3/2
1118		3/26/2014 14:15		3/26/2014 14:15	-1950		3/26/2014 14:15	-1260		3/26/2014 14:15	-2070		3/26/2014 14:15	1620		3/2
1119		3/26/2014 14:30		3/26/2014 14:30	-2240		3/26/2014 14:30	-1120		3/26/2014 14:30	-1390		3/26/2014 14:30	1390		3/2
1120		3/26/2014 14:45		3/26/2014 14:45	-1880		3/26/2014 14:45	-959		3/26/2014 14:45	-588		3/26/2014 14:45	1130		3/2
1121	3:00 PM	3/26/2014 15:00		3/26/2014 15:00	-1320		3/26/2014 15:00	-635		3/26/2014 15:00	302		3/26/2014 15:00	732		3/2
1122		3/26/2014 15:15		3/26/2014 15:15	-855		3/26/2014 15:15	-194		3/26/2014 15:15	1260		3/26/2014 15:15	731		3/2

Sheet1 Sheet2 Sheet3

FLOW cdec.water.ca.gov/cgi-progs/queryF?FPT&d=26-Mar-2014+18:00

Date / Time (PDT)	FLOW CFS
03/26/2014 06:00	9440
03/26/2014 06:15	10000
03/26/2014 06:30	9980
03/26/2014 06:45	10500
03/26/2014 07:00	10900
03/26/2014 07:15	11100
03/26/2014 07:30	11600
03/26/2014 07:45	11500
03/26/2014 08:00	11400
03/26/2014 08:15	11300
03/26/2014 08:30	11300
03/26/2014 08:45	11500
03/26/2014 09:00	11600
03/26/2014 09:15	11900
03/26/2014 09:30	11600
03/26/2014 09:45	11300
03/26/2014 10:00	10500
03/26/2014 10:15	10100
03/26/2014 10:30	9260
03/26/2014 10:45	8210
03/26/2014 11:00	--
03/26/2014 11:15	--
03/26/2014 11:30	--
03/26/2014 11:45	--
03/26/2014 12:00	2180
03/26/2014 12:15	1140
03/26/2014 12:30	613
03/26/2014 12:45	-188
03/26/2014 13:00	--
03/26/2014 13:15	--
03/26/2014 13:30	--
03/26/2014 13:45	--
03/26/2014 14:00	-1760
03/26/2014 14:15	-1950
03/26/2014 14:30	-2240
03/26/2014 14:45	-1880
03/26/2014 15:00	-1320
03/26/2014 15:15	-855
03/26/2014 15:30	271
03/26/2014 15:45	1670
03/26/2014 16:00	2860
03/26/2014 16:15	4590
03/26/2014 16:30	6670
03/26/2014 16:45	8100
03/26/2014 17:00	9430
03/26/2014 17:15	11400
03/26/2014 17:30	12100
03/26/2014 17:45	11300
03/26/2014 18:00	11600

Screen print from 5/19/15 4:54 am

Freeport flow data now notes the data gap times but gives no explaination of the reason for data gap

The Freeport CDEC flow data appears to have been updated by the addition of the previously missing 15 minute blocks of time, by adding the – but there is no explanation as to WHY there is a data gap or when the flow data was updated.

This represents many acre feet of flow that is unaccounted for between 10:45 and 12:00 noon.

Data gaps in flow reporting for Steamboat Slough have still **not** been corrected or explained.

cdec.water.ca.gov/cgi-progs/queryF?SSS&d=26-Mar-2014+18:00

FLOW

Screen print 5/19/15 4:54 am

Date / Time (PDT)	FLOW CFS	
03/26/2014 06:00	3520	
03/26/2014 06:15	3690	
03/26/2014 06:30	3820	
03/26/2014 06:45	3740	
03/26/2014 07:00	3640	
03/26/2014 07:15	3710	
03/26/2014 07:30	3750	
03/26/2014 07:45	3660	
03/26/2014 08:00	3640	
03/26/2014 08:15	3520	
03/26/2014 08:30	3260	
03/26/2014 08:45	3040	
03/26/2014 09:00	2720	
03/26/2014 09:15	2270	
03/26/2014 09:30	1740	
03/26/2014 09:45	1200	
03/26/2014 10:00	510	
03/26/2014 10:15	-129	
03/26/2014 10:30	-842	
03/26/2014 10:45	-1770	
03/26/2014 11:00	-2030	*
03/26/2014 12:15	-3000	
03/26/2014 12:30	-3130	
03/26/2014 12:45	-3040	
03/26/2014 13:00	-3050	
03/26/2014 14:15	-2070	*
03/26/2014 14:30	-1390	
03/26/2014 14:45	-588	
03/26/2014 15:00	302	
03/26/2014 15:15	1260	
03/26/2014 15:30	1890	
03/26/2014 15:45	2430	
03/26/2014 16:00	2860	
03/26/2014 16:15	3290	
03/26/2014 16:30	3560	
03/26/2014 16:45	3690	
03/26/2014 17:00	3890	
03/26/2014 17:15	3990	
03/26/2014 17:30	4120	
03/26/2014 17:45	4140	
03/26/2014 18:00	4190	

cdec.water.ca.gov/cgi-progs/queryF?s=ss

CA.GOV Department of Water Resources CALIFORNIA DATA EXCHANGE C

HOME | QUERY TOOLS | PRECIPITATION | RIVER FOR

Real-Time Single Station Data

To retrieve Event / Hourly Data:

Station ID: SS Get Data

Warning! Data on this server has not been reviewed for accuracy. *

Try one of these:

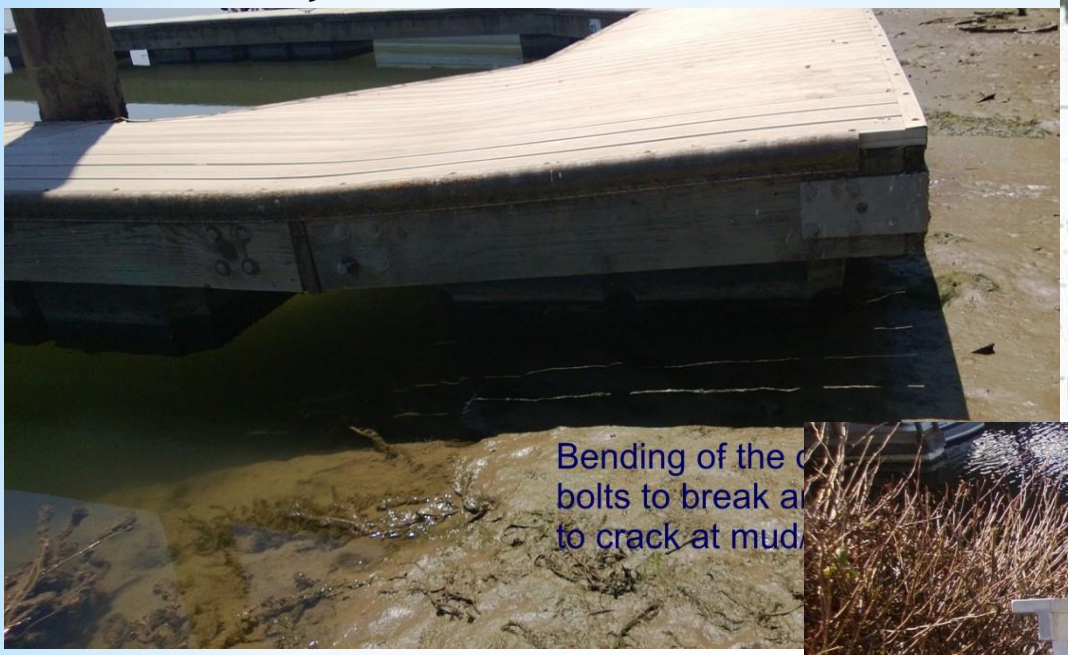
SSK	SACRAMENTO SLOUGH NR KARNAK (SACRAMENTO R)
SSH	SALT SLOUGH AT HWY 165 NR STEVINSON (SAN JOAQUIN R)
SSR	SALT SPRINGS PH (PG&E) (MOKELUMNE R)
SSP	SESPE CREEK NR FILLMORE (SANTA CLARA R)
SSL	SIERRA SNOW LAB (YUBA R)
SSB	SOMES BAR (KLAMATH R)
SSF	SOUTH FORK STANISLAUS R (STANISLAUS R)
SSC	STANISLAUS POWERHOUSE IN STAN. CANAL (STANISLAUS R)
SSS	STEAMBOAT SLOUGH BTW SAC R AND SUTTER SL (SACRAMENTO R)
SSD	SUSAN R NR STANDISH (SUSAN R)
SSU	SUSAN RIVER AT SUSANVILLE (SUSAN R)

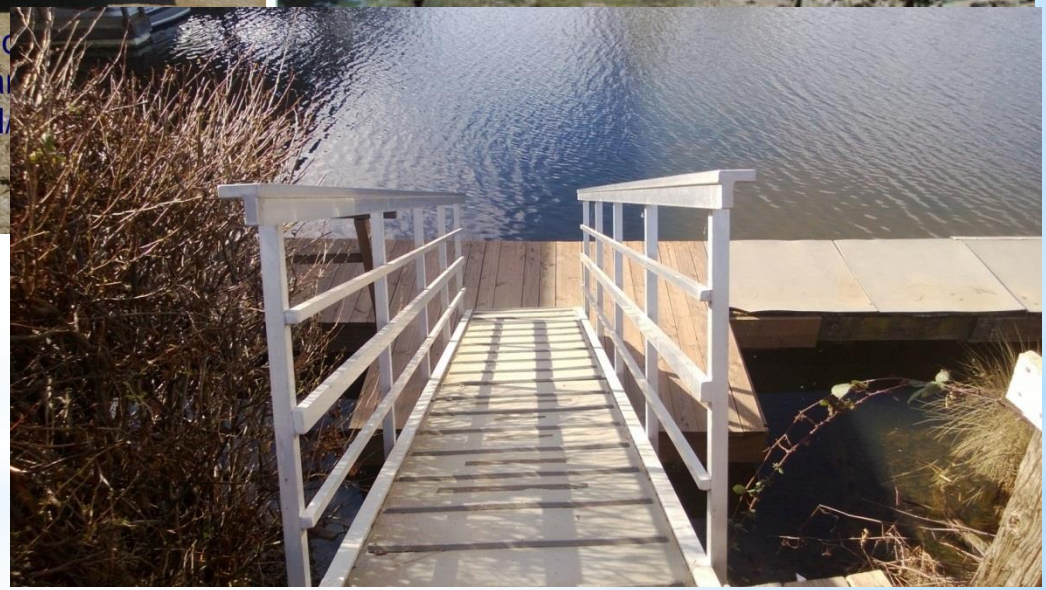
However, CDEC does now notify viewers the flow data has **not been reviewed for accuracy**. So export decisions are based upon not reviewed, demonstrated inaccurate flow data?!

26 / 33 http://www.swrcb.ca.gov/water_issues/hot_topics/strategic_plan/docs/2008_2012/020608_presentation.pdf

Inappropriate inconsistency can result in inequitable treatment, no common understanding of key water quality and water rights goals, and difficulty in achieving a meaningful evaluation of outcomes.

Example effects of flow diversions:
Unusual very fast outflow of fresh water



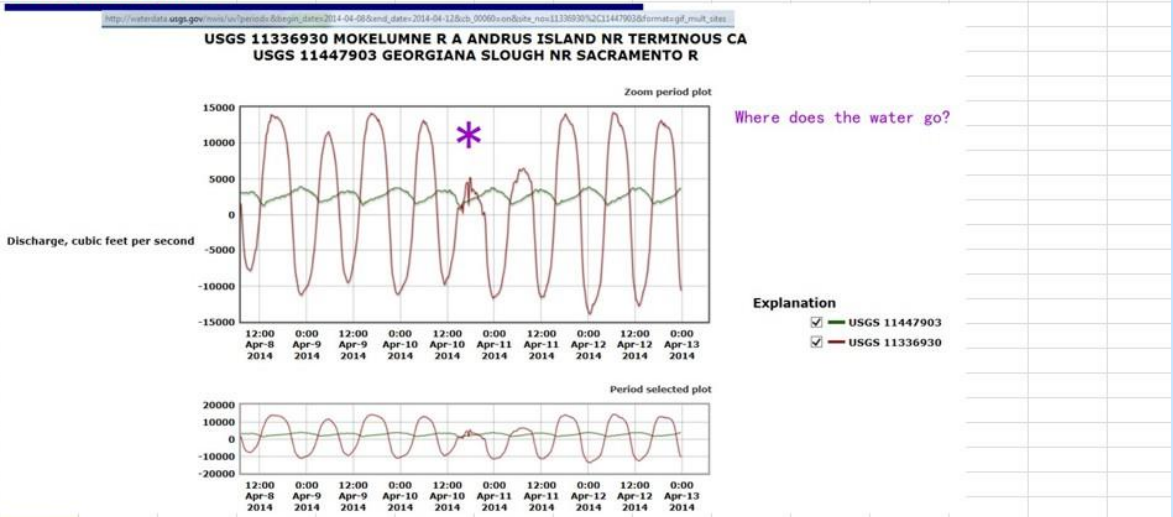


* 2014 Current Impacts from the low water flows on the Sacramento River into the Delta: dry docking marinas

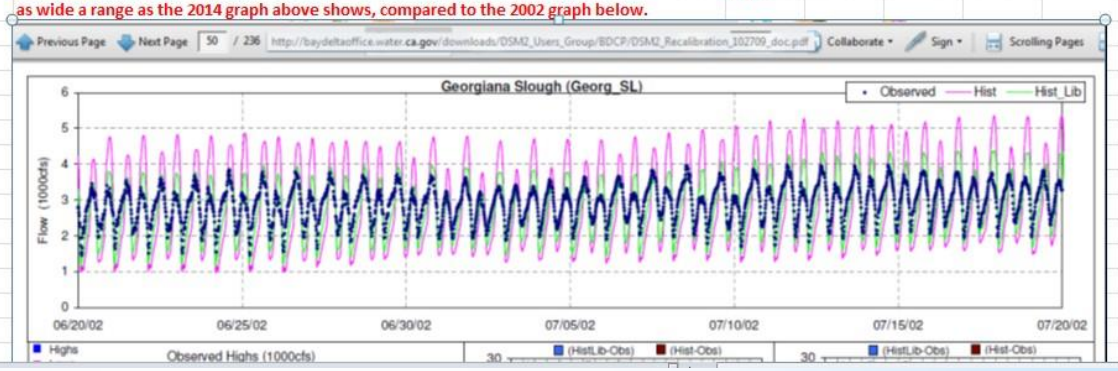
Georgiana	flow		Mokelumne	Flow
4/10/2014 9:15	2730		4/10/2014 9:15	9560
4/10/2014 9:30	2760		4/10/2014 9:30	7970
4/10/2014 9:45	2870		4/10/2014 9:45	6380
4/10/2014 10:00	3050		4/10/2014 10:00	4710
4/10/2014 10:15	3190		4/10/2014 10:15	2080
4/10/2014 10:30	3350		4/10/2014 10:30	-378
4/10/2014 10:45	3390		4/10/2014 10:45	-2860
4/10/2014 11:00	3380		4/10/2014 11:00	-4880
4/10/2014 11:15	3270		4/10/2014 11:15	-6630
4/10/2014 11:30	3310		4/10/2014 11:30	-7910
4/10/2014 11:45	3200		4/10/2014 11:45	-8430
4/10/2014 12:00	3260		4/10/2014 12:00	-9140
4/10/2014 12:15	3380		4/10/2014 12:15	-9770
4/10/2014 12:30	3450		4/10/2014 12:30	-9720
4/10/2014 12:45	3180		4/10/2014 12:45	-9070
4/10/2014 13:00	3120		4/10/2014 13:00	-8820
4/10/2014 13:15	3330		4/10/2014 13:15	-8850
4/10/2014 13:30	3220		4/10/2014 13:30	-8390
4/10/2014 13:45	3470		4/10/2014 13:45	-7710
4/10/2014 14:00	2960		4/10/2014 14:00	-6830
4/10/2014 14:15	3110		4/10/2014 14:15	-6240
4/10/2014 14:30	2880		4/10/2014 14:30	-5540
4/10/2014 14:45	2790		4/10/2014 14:45	-4640
4/10/2014 15:00	2770		4/10/2014 15:00	-3330
4/10/2014 15:15	2300		4/10/2014 15:15	-1710
4/10/2014 15:30	1680		4/10/2014 15:30	-199
4/10/2014 15:45	1610		4/10/2014 15:45	1000
4/10/2014 16:00	1380		4/10/2014 16:00	899
4/10/2014 16:15	1090		4/10/2014 16:15	696
4/10/2014 16:30	1130		4/10/2014 16:30	889
4/10/2014 16:45	1220		4/10/2014 16:45	1470
4/10/2014 17:00	1710		4/10/2014 17:00	197
4/10/2014 17:15	1710		4/10/2014 17:15	2040
4/10/2014 17:30	1750		4/10/2014 17:30	2620
4/10/2014 17:45	1790		4/10/2014 17:45	4240
4/10/2014 18:00	1870		4/10/2014 18:00	4510
4/10/2014 18:15	1860		4/10/2014 18:15	4480
4/10/2014 18:30	1970		4/10/2014 18:30	1330
4/10/2014 18:45	2030		4/10/2014 18:45	5190

in April 2014 when substantial amounts of fresh water was diverted from Georgiana Slough, which caused the saltier water of the San Joaquin River to travel up into Georgiana Slough creating the "reverse flows" as indicated from the flow data. Who was diverting that much water and

WHERE DID THE WATER GO?



Note that Georgiana Slough used to always have OUTFLOW into the MokeLumne River at the gage, and the tidal fluctuation was not as wide a range as the 2014 graph above shows, compared to the 2002 graph below.

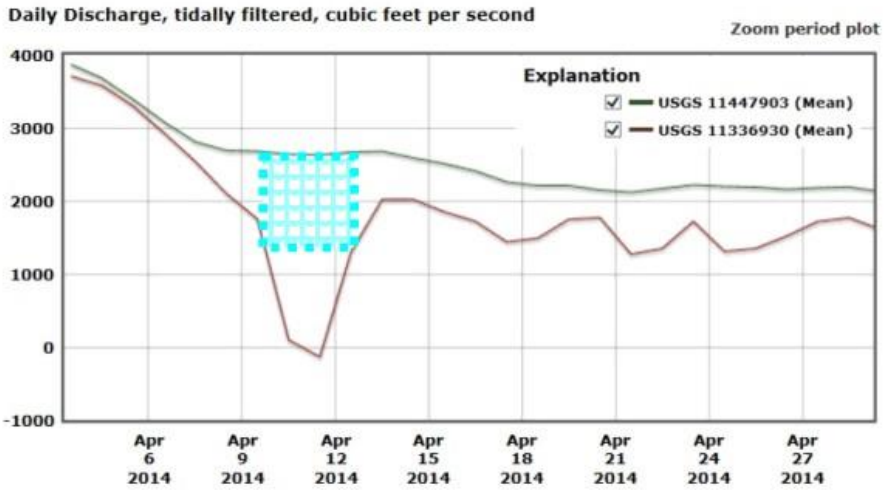


* Problem #5: Unexplained but consistent April 2014, 2013, 2012 unaccounted for substantial water exports from Georgiana Slough

DATA GAP OR UNACCOUNTED FOR WATER DIVERSIONS

SHR-716

USGS 11336930 MOKELUMNE R A ANDRUS ISLAND NR TERMINOUS CA
USGS 11447903 GEORGIANA SLOUGH NR SACRAMENTO R



The blue box was added to the USGS graphic showing the flow on Georgiana Slough and at the gage on the Mokelumne just below the end of Georgiana Slough. What happens to the Georgiana Slough flow which appears to show 1200 to 2500 missing cfs? That is a substantial amount of unaccounted for water in just a few days time frame. Oddly, there is a similar data gap several years going back, in April. To put it in perspective, the intake at Freeport is reported to run at 300 cfs. A typical larger farmer diversion pipe might have the capacity of 20 cfs down to less than 1 cfs. The unaccounted for water or data gap represents 1000 to 2500 cfs over the three day period shown, estimated.

Focusing on just the blue box area, the following formula was used to estimate how much water flow is unaccounted for on Georgiana Slough in 2014, from April 9 to April 12, and what is the value of that unaccounted for water flow:
1 cfs =1.98 af per day
1200 cfs x 1.98 af per 3 days = 7,128 af unaccounted for water
Value of 7,128 acre feet if sold at $150 per af agriculture use: **$1,069,200**
Value of 7,128 acre feet if sold at municipal/residential rates of $5,200 per acre foot: **$37,065,600.**

Conversion charts found at:
Http://md.water.usgs.gov/cfscalc/
Http://dnrc.mt.gov/water_rts/wr_genral_info/wrforms/615.pdf
http://www.ppic.org/content/pubs/report/R_1112EHR.pdf
Ag and residential value per acre foot based on online reports of water transfer values:
Http://exiledonline.com/how-limousine-liberals-oligarch-farmers-and-even-sean-hannity-are-hijacking-our-water-supply/
Http://www.sacbee.com/2012/01/08/4168916/water-barons-will-corner-market.html

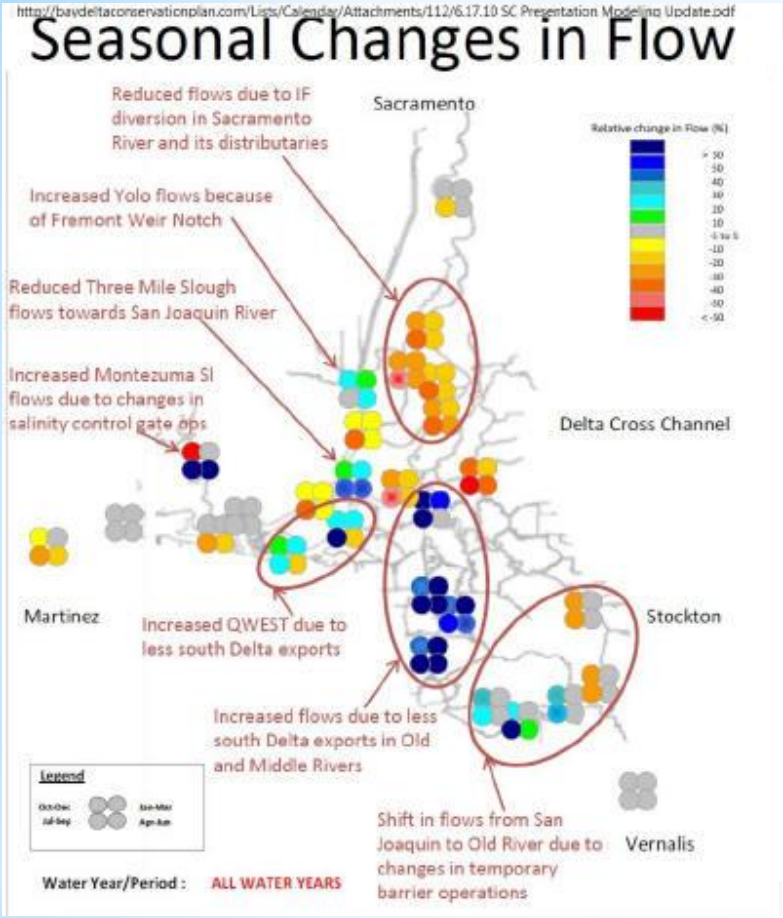
Data review by N. Suard, Esq. May 2014

* **Problem #5: Flow data gaps.** Where did the Georgiana water go? The value each year of "missing" water could be $37 million if sold to highest bidder!

Current low flow impacts: the death of waterside old oak trees on Georgiana Slough

SHR-716

* 2014 Current low flow impacts: reduced North Delta water quality in drinking water wells and irrigation pumps



SHR-716

www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/docs/DRMS_Phase2_Report_Section5.pdf

Figures

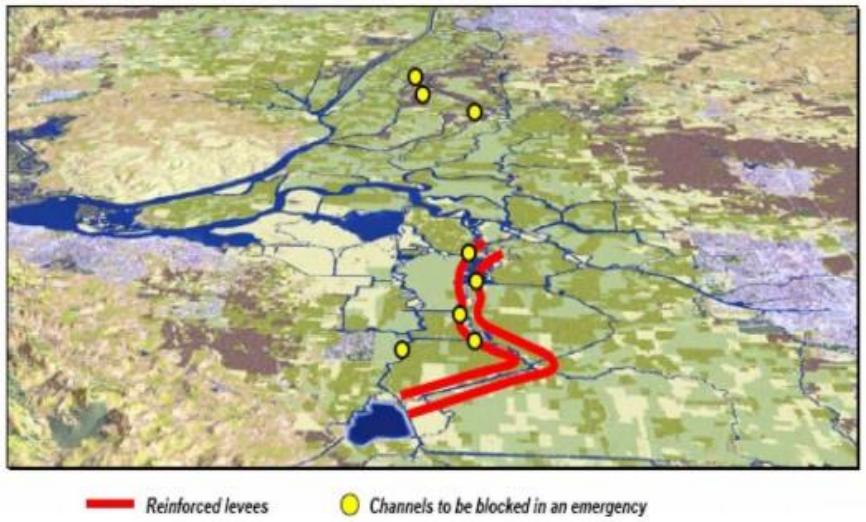


Figure 5-4 **South Delta Pathway Levees, Adjoining Channel Barriers, and North Delta Channel Closures**

Source: MWD 2007.

URS

Phase 2 Risk Reduction Report Section 5 Final F-4

* **Problem or Question #6:** Does DWR/BDCP, (which bases decisions on modeling outcomes from CALSIM 1 and 11, DSM2, RMA and other flow models), use the DWR or USGS conversion formula, and what raw or baseline flow data? If DWR's, there is actually less flow in the Delta than modeled, which may be one reason why we are seeing such negative impacts already...

Question #7: Who has been installing or causing subsurface water flow diversion structures and for what reasons?

* Did you know around 2008 a partial barrier 10 feet below the water surface at the north end of Steamboat Slough materialized? The subsurface barrier doesn't block boating traffic, but does block a portion of the natural freshwater flow into Steamboat Slough. Other North Delta confluences appear to have flow diversion structures as well. Did CALSIM, DSM2, RMA and the fish migration pathway studies and the other computer models account for the different depths of the waterways or for the new in-water berms?

Emergency Freshwater Pathway Concept

Dennis Majors
Metropolitan Water District of Southern California
August 22, 2007

www.science.calwater.ca.gov/pdf/workshops/workshop_dci_presentation_03_majors.pdf

Sacramento

DRMS Phase 2 Water Export Conveyance Element: Armored Pathway

Preliminary Design/Construction Costs

- 15,000 cfs Facility ~ $ 5 ½ - 9 Billion
- 10,000 cfs Facility ~ $ 4 ½ - 8 Billion
- 5,000 cfs Facility ~ $ 3 ½ - 6 Billion

Water Export

Isolating Old River

Barrier Gates

determined

CF for Water

Environmental Risks

for sea level rise

SLIDE 11

2007 Yolo Bypass Habitat & Food-Web Opportunities

Metropolitan Board Policy
Delta Action Plan Framework

- Board approved in June 2007 (Board Letter 8-6)
  - Short-Term Action Plan
    - Secure permits to operate Bank's Pumping Plant
    - Implement/Fund Delta Levee Emergency Preparedness and Response Plan
    - Select and approve key elements of BDCP and Delta Vision
  - Mid-Term Action Plan
    - Secure long-term operating permits for SWP under BDCP
    - Develop implementation plan and environmental documentation
    - Implement ecosystem restoration projects
  - Long-Term Action Plan
    - Implement long-term comprehensive solution

Sacramento River
Fremont Weir
Sacramento
Yolo Bypass
Ship Canal

Consider the FUNCTION of the plan instead of the words used. The FUNCTION of the Yolo Bypass plans are maybe 10% restoration and 90% diversion of Sacramento River water for export using west side intake facilities.

Note this MWD plan would require reducing flows on Steamboat Slough, Miner's Slough and Sutter Slough to meet only irrigation needs but would eliminate navigation Georgiana and DCC blocked

2004 Our Water Supply Pathway

http://www.mwdh2o.com/mwdh2o/pages/yourwater/supply/Delta/images/big/Slide9.JPG

- 30 ft.
- 20 ft.
- 5 ft.

State Pumps
Federal Pumps

Elevation Color Codes
-30 feet
Sea Level

Graphic from MWD slideshow from the MWD website, clearly expressing how MWD's water is transported through the Delta. However, what is not clear is how the flow is blocked from going to the other waterways of the Delta? Gates and barriers not shown on the map!

South Delta Improvement Program

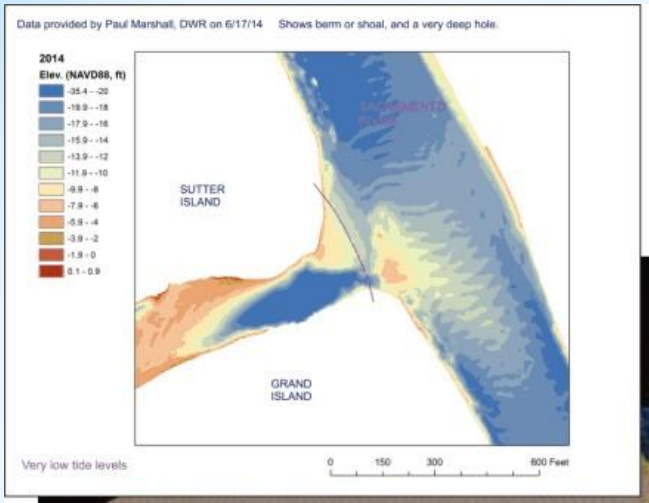
Agricultural Drains
Barriers
Banks Pumping Plant
Tracy Pumping Plant

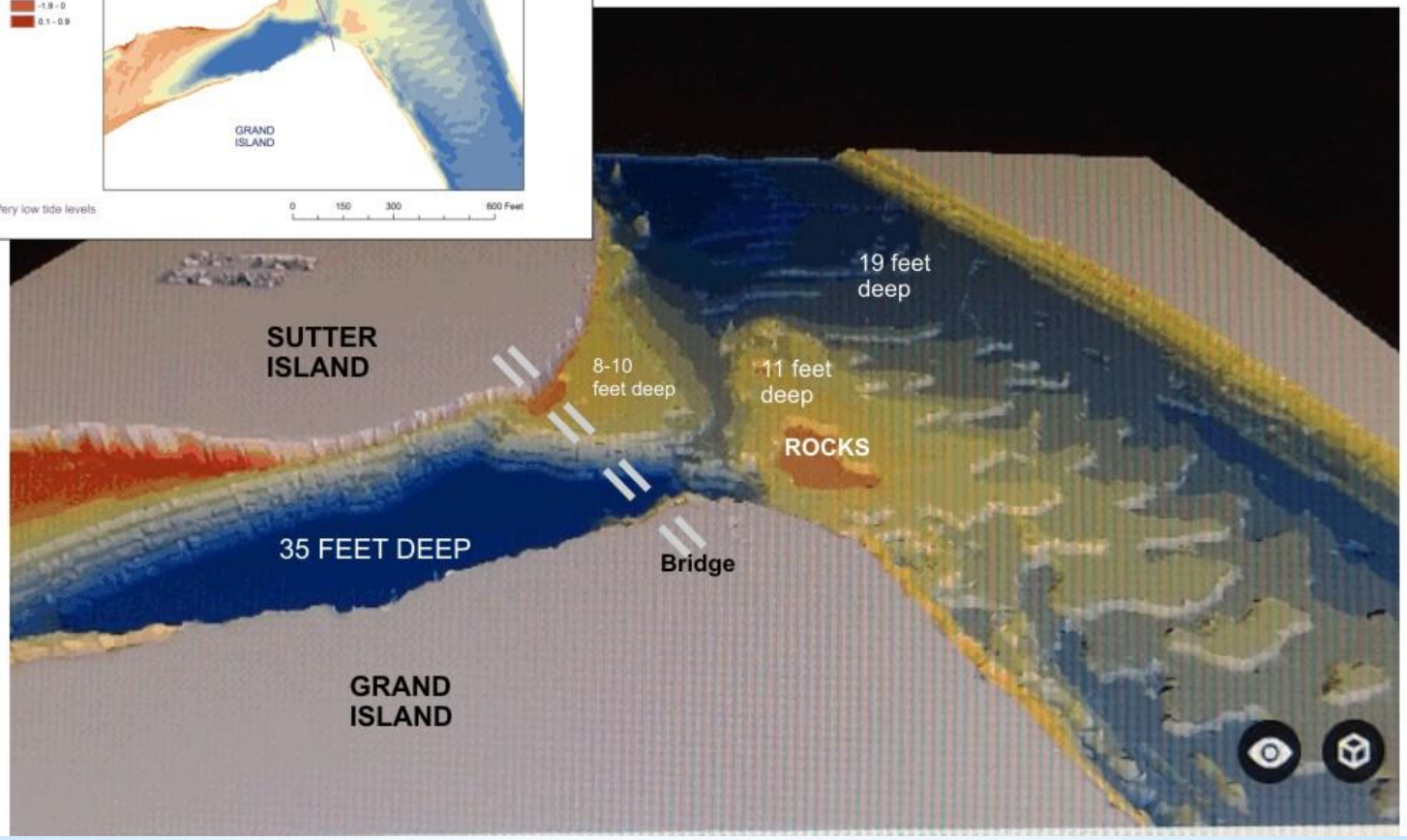
Reinforced levees
Channels to be blocked in an emergency

Figure 5-4 South Delta Pathway Levees, Adjoining Channel Barriers, and North Delta Channel Closures

Source: MWD 2007.

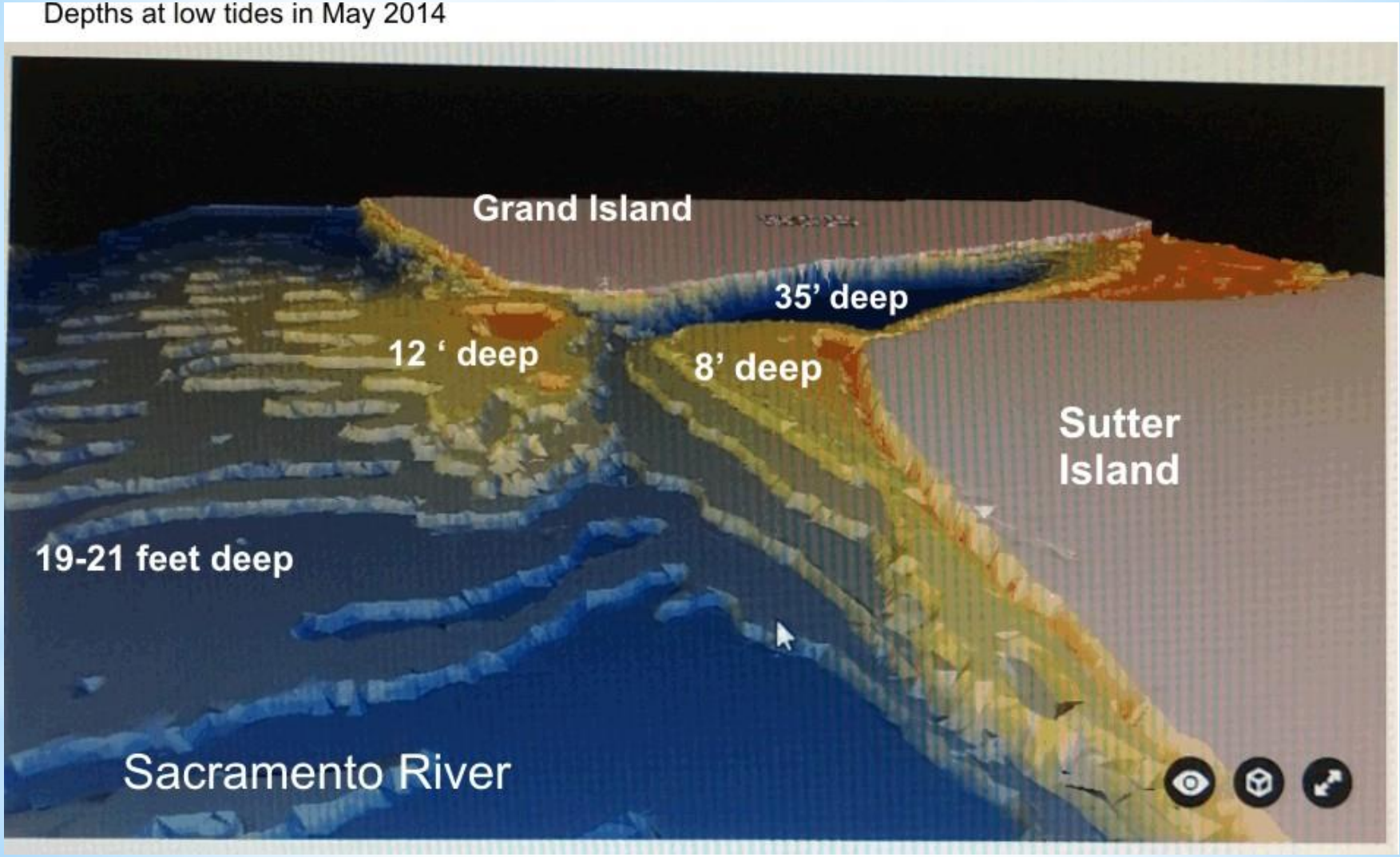
Bathymetery data provided by Paul Marshall from DWR was converted to 3D model to help the viewer understand exactly where and what "the obstruction" is at the head of Steamboat Slough. Despite Mr. Marshall's assertion the shoal is "naturally occuring" the steepness of the underwater walls shown in the sonar views, and the fact an underwater camera showed rock piles indicates this "obstruction" is something other than naturally occuring, at least when the obstruction was first installed.



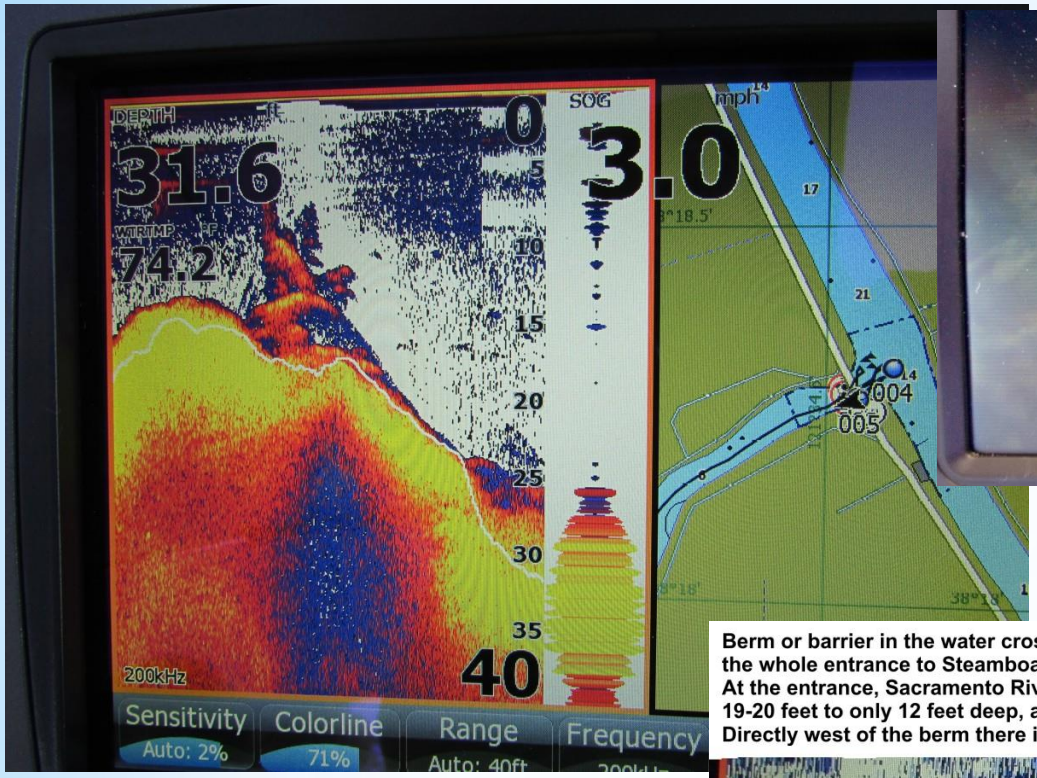


Did the scientists conducting salmon migration pathway studies know there was a subsurface Structure blocking flow into Steamboat Slough, thereby also influencing salmon migration choices?

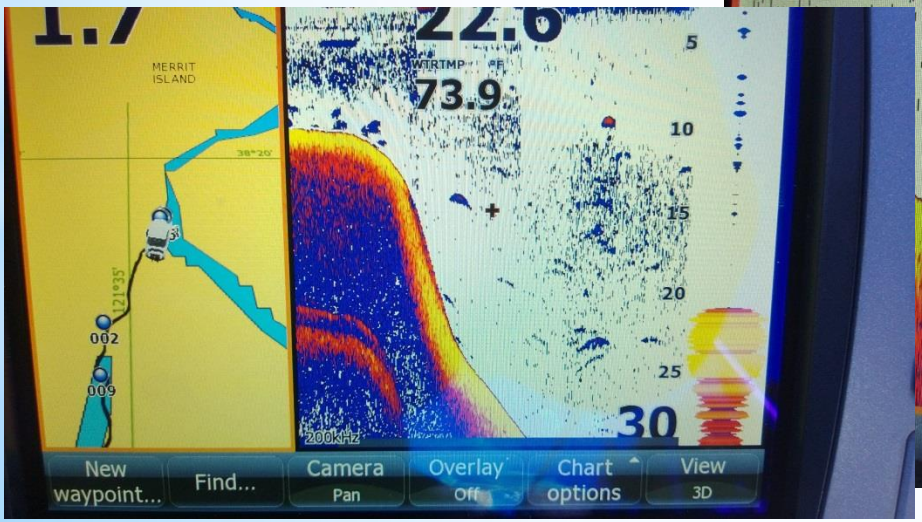
Another view of the 3D modeling made from the bathymetry provided by DWR in 2014 after a “barriers” meeting in Walnut Grove in March 2014.

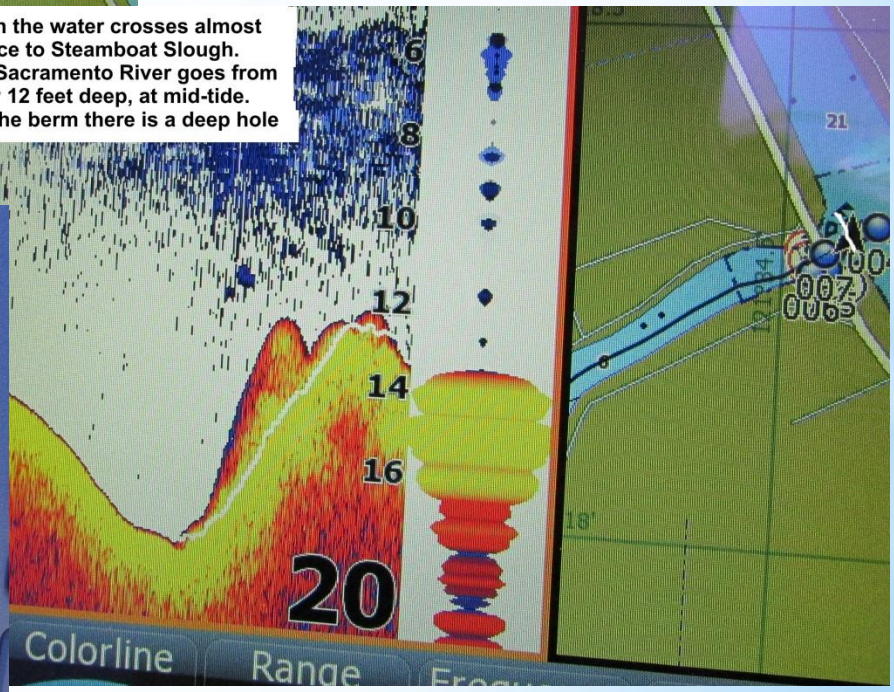


SHR-716

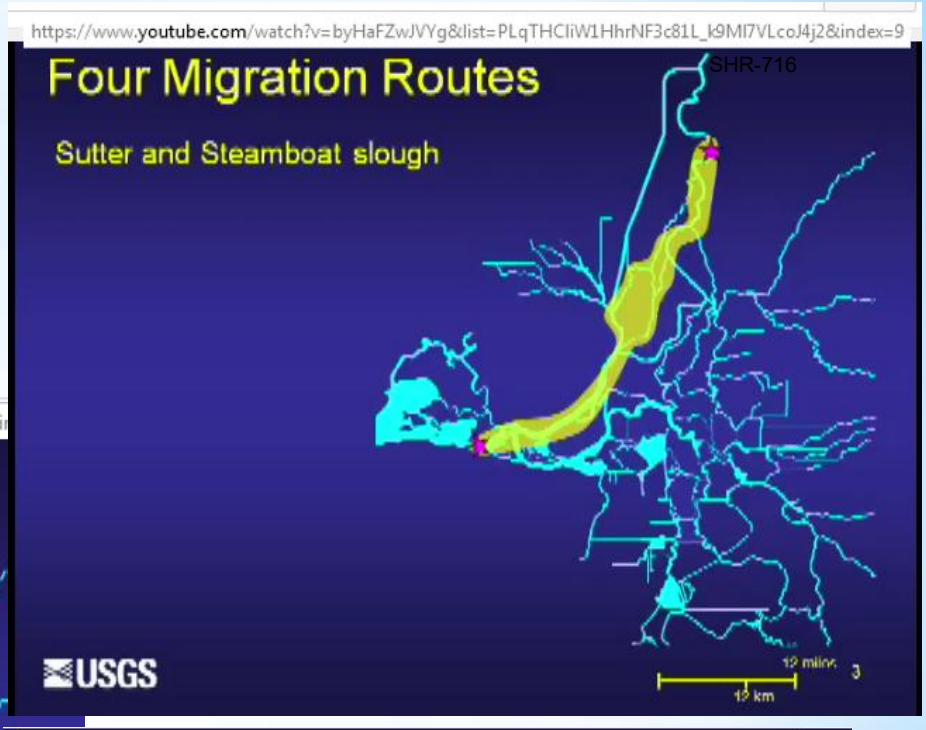


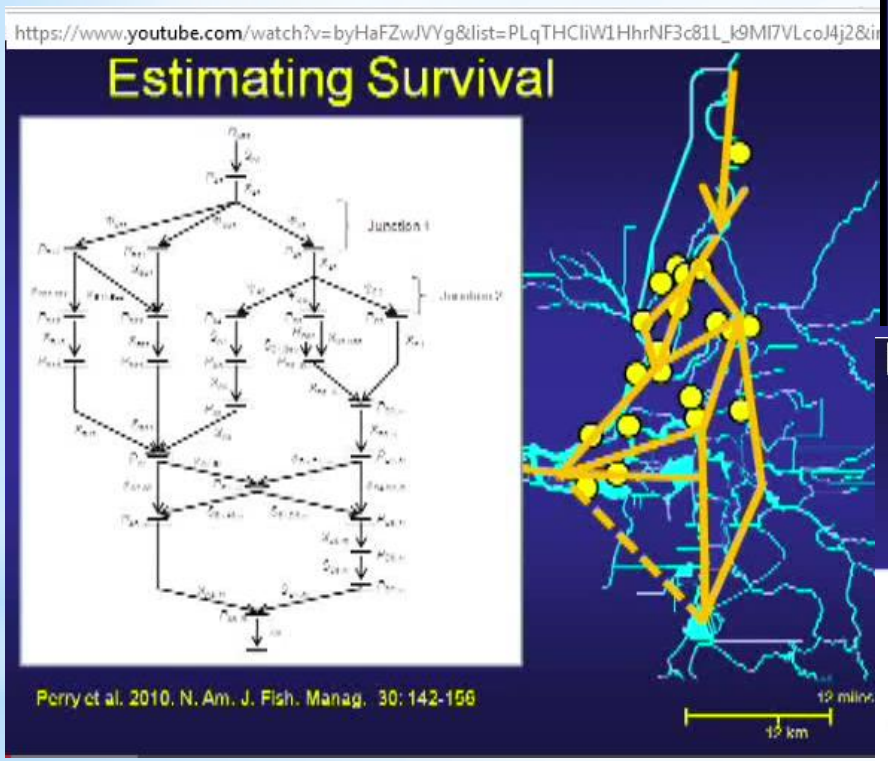
Berm or barrier in the water crosses almost the whole entrance to Steamboat Slough.
At the entrance, Sacramento River goes from 19-20 feet to only 12 feet deep, at mid-tide.
Directly west of the berm there is a deep hole

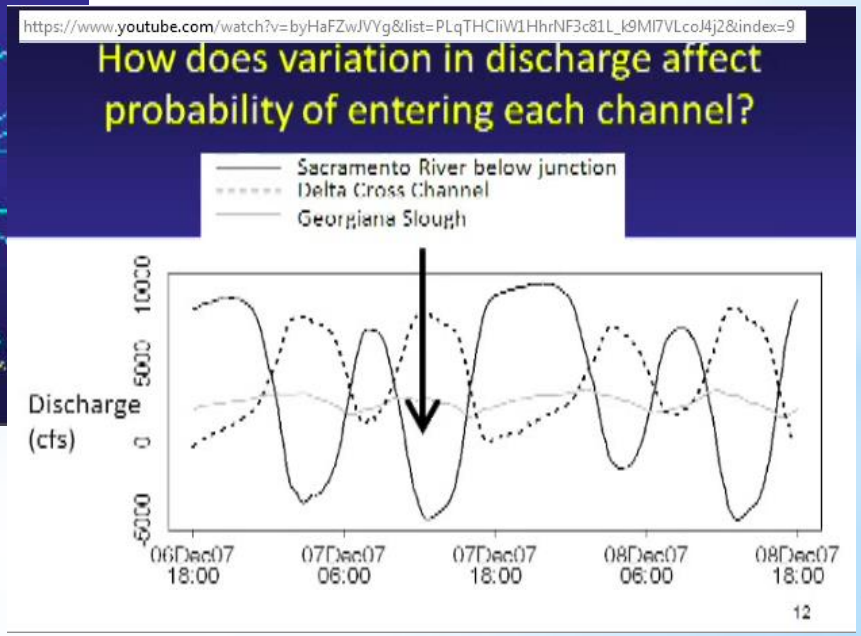


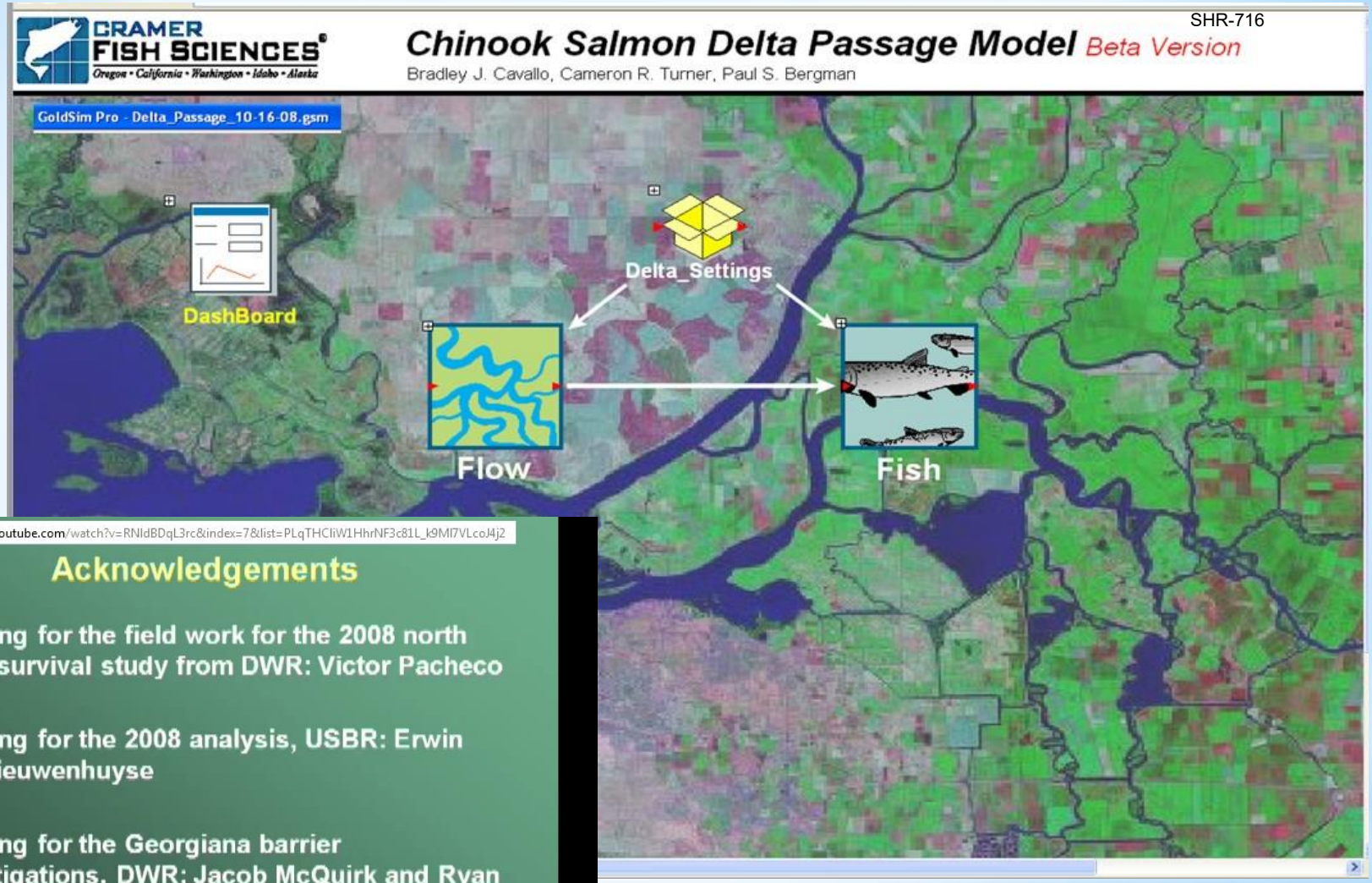


About those salmon migration pathway studies..









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ouncil

* 2006 tagged salmon study results

2006-2007salmon_study_report.pdf 37 / 48

The use of mobile telemetry is a useful technique to complement fixed-station telemetry for interpreting fish behavior and confirming fish mortality between fixed stations. On January 30 and February 1, 2007, some limited mobile telemetry was conducted in several Delta channels to locate acoustic transmitters. Figure 18 shows areas in the north Delta where mobile reconnaissance by boat was performed. Seven acoustic transmitters were located at stationary positions which were assumed to be where predatory fish may have defecated acoustic tags after consuming the juvenile salmon. Sites where tagged fish may have been eaten by a predator could not be determined; the data only show where a dead acoustic-tagged salmon or a defecated tag was detected.

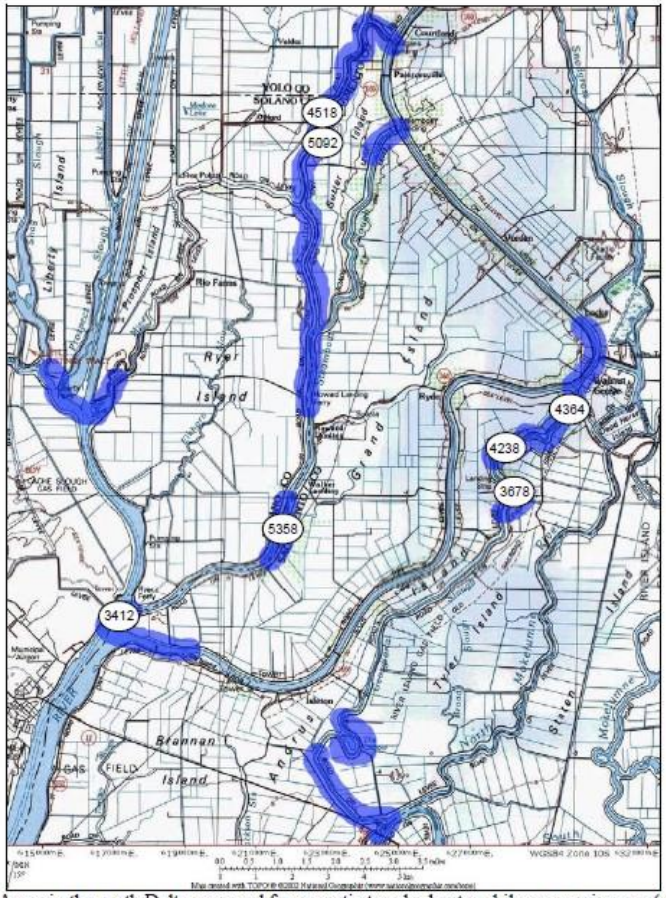
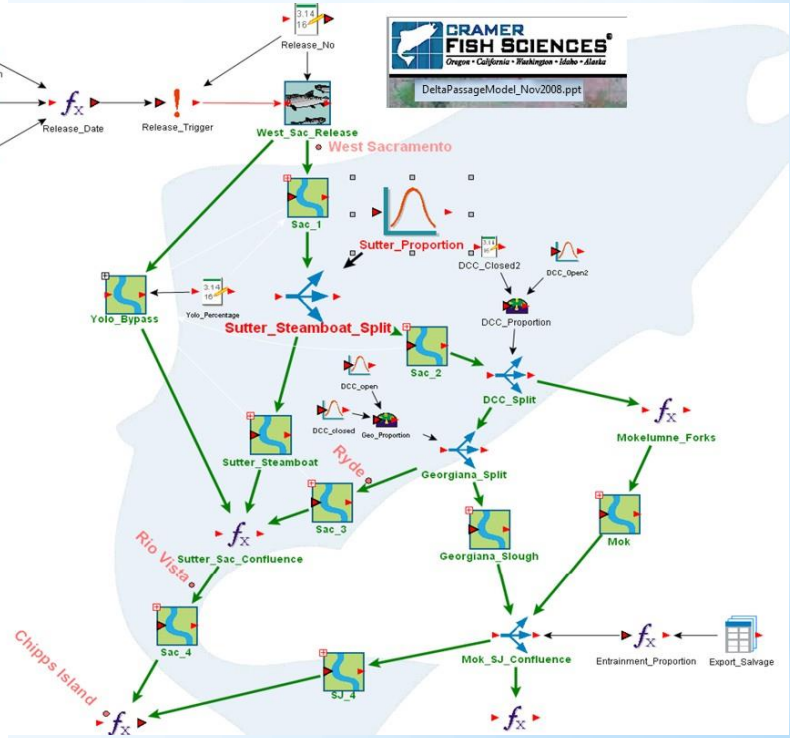


Figure 18. Areas in the north Delta surveyed for acoustic tags by boat mobile reconnaissance (shaded in blue) and locations of acoustic tags and tag codes found during the survey.



Depths at low tides in May 2014

A relatively high proportion of acoustic-tagged salmon entered Sutter Slough. Based on flow data provided by USGS, approximately 22% percent of the flow from the Sacramento River entered Sutter Slough during the time period between fish release at West Sacramento and the last detection of fish entering Sutter Slough. Although a substantial, but lesser, volume of Sacramento River flow enters Steamboat Slough as compared to Sutter Slough, a much smaller proportion of acoustic-tagged salmon entered Steamboat Slough. The reasons for the large discrepancy between proportions of fish diverted off the mainstem at the two locations may be a function of local channel geometries and hydrodynamic conditions at each site.

Further downstream, for the 56 fish reaching the general location o
Georgiana Slough, 18% were detected entering the DCC, 20% ente
Slough, and 62% remaining in the Sacramento River (Figure 12). N
in the lower South Fork Mokelumne River or Little Potato Slough s
mortality in this region. However, we experienced some hardware
receivers in this area so, conceivably, some fish may have passed th
Among those fish remaining in the Sacramento River downstream
Slough flow split, 74% were detected reaching the Cache Slough co
reaching the second receiver positioned just upstream of the Cache
may have been eaten by predatory fish based on aberrant tag move
data logged by that receiver.

https://www.youtube.com/watch?v=RNIdBDqL3rc&list=PLqTHCliW1HhrNF3c81L_k9MI7VLcoJ4j2&index=7

Route selection at the upstream junctions in the north delta is an extremely important factor in determining population level survival

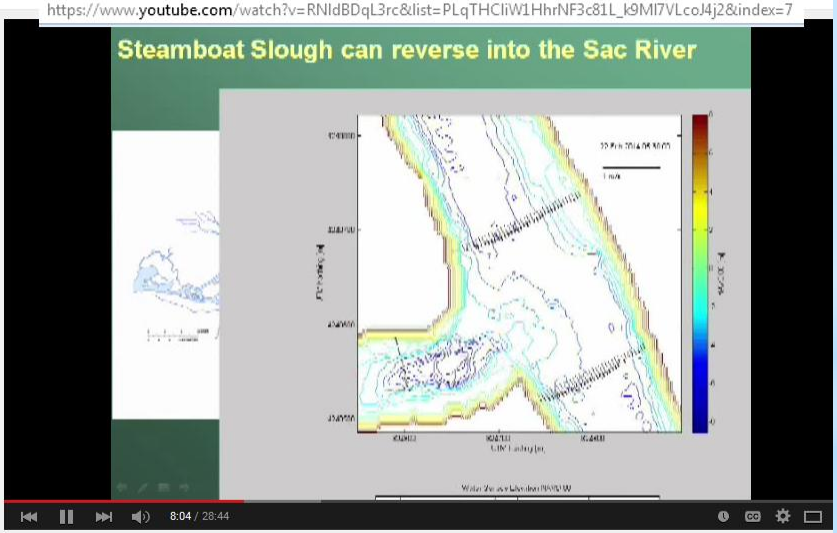
Detections by acoustic receivers were compromised by malfunctions on some of those units. This was particularly evident for some receivers placed in the Mokelumne River system when some receivers were not operational and acoustic-tagged salmon may have passed those sites undetected (Table 2).

Table 2. Periods of non-operation of acoustic receivers during December 2006.[1]

Receiver No.	Location[2]	Start Down Time	End Down Time
006	Steamboat Slough	12/17/06 0200 hrs.	12/17/06 0900 hrs.
007	Steamboat Slough	12/17/06 0800 hrs.	12/17/06 0900 hrs.
005-X	Sacramento River	12/17/06 0800 hrs.	12/17/06 0900 hrs.
026-X	Delta Cross Channel	12/15/06 0800 hrs.	12/15/06 1000 hrs.[3]
615	N. Georgiana Slough	12/19/06 2300 hrs.	12/20/06 1200 hrs.
025	S. Georgiana Slough	12/12/06 1200 hrs.	12/14/06 1800 hrs.
C-619	Lower Mokelumne River	12/18/06 1700 hrs.	12/20/06 1200 hrs.
C-607	Lower Mokelumne River	12/12/06 1200 hrs.	12/16/06 1400 hrs.

[1] The acoustic receivers in the Mokelumne River system and the two receivers in the lower Sacramento River were removed during the afternoon of December 20, 2006 and the remaining receivers on the Sacramento River system were removed during December 21, 2006.
[2] Refer to Figure 2 for receiver locations.
[3] Time when the DCC gates were closed.

https://www.youtube.com/watch?v=RNIdBDqL3rc&list=PLqTHCliW1HhrNF3c81L_k9MI7VLcoJ4j2&index=7



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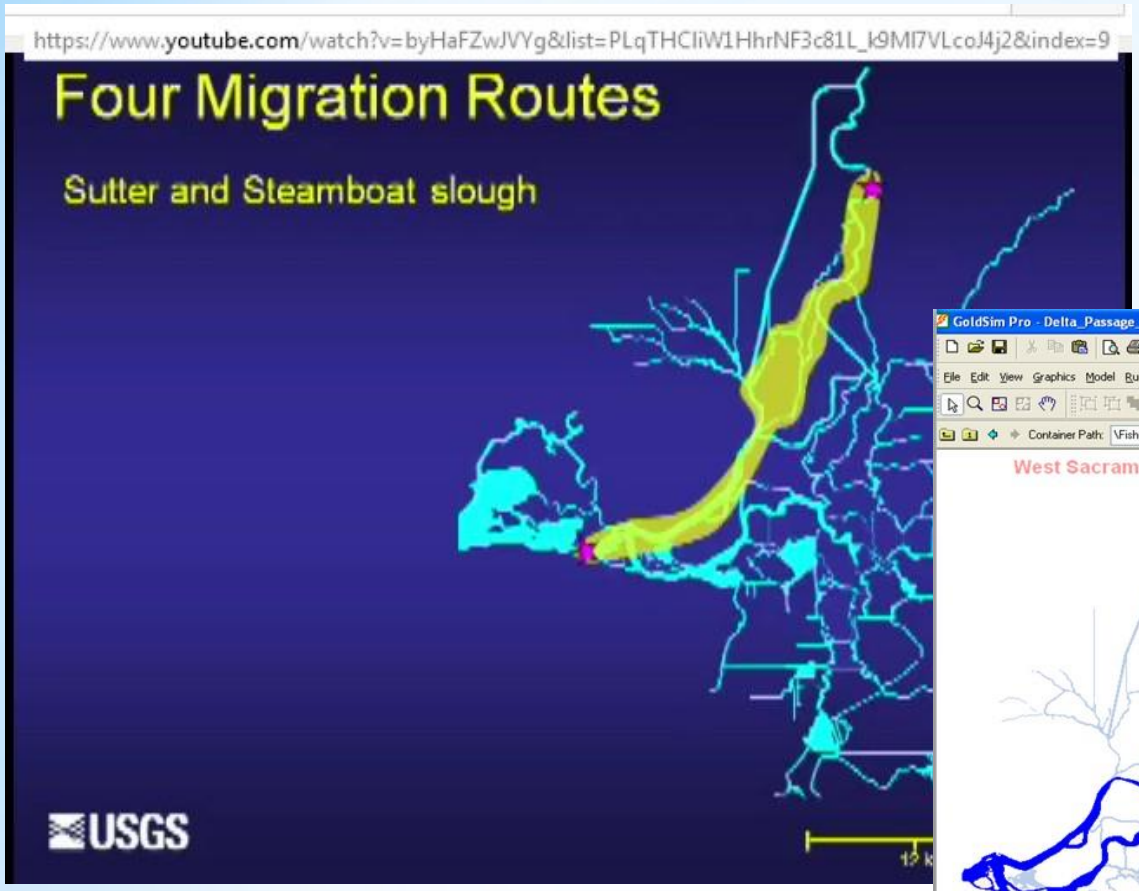
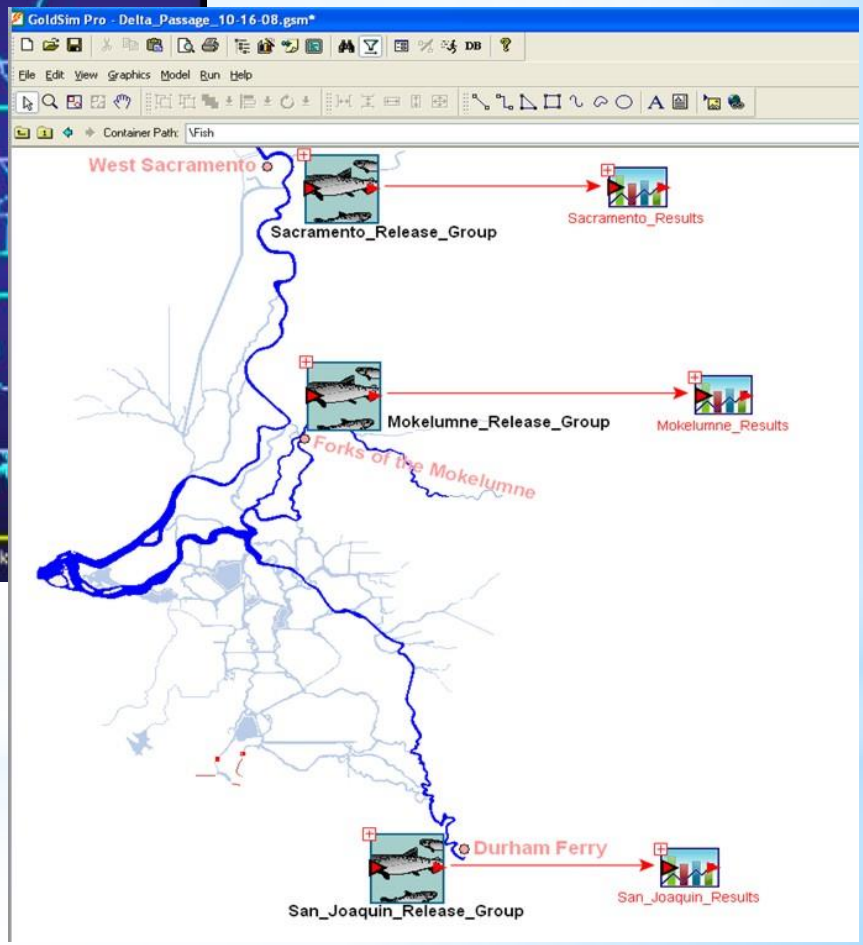
DeltaCouncil

January Fish Releases

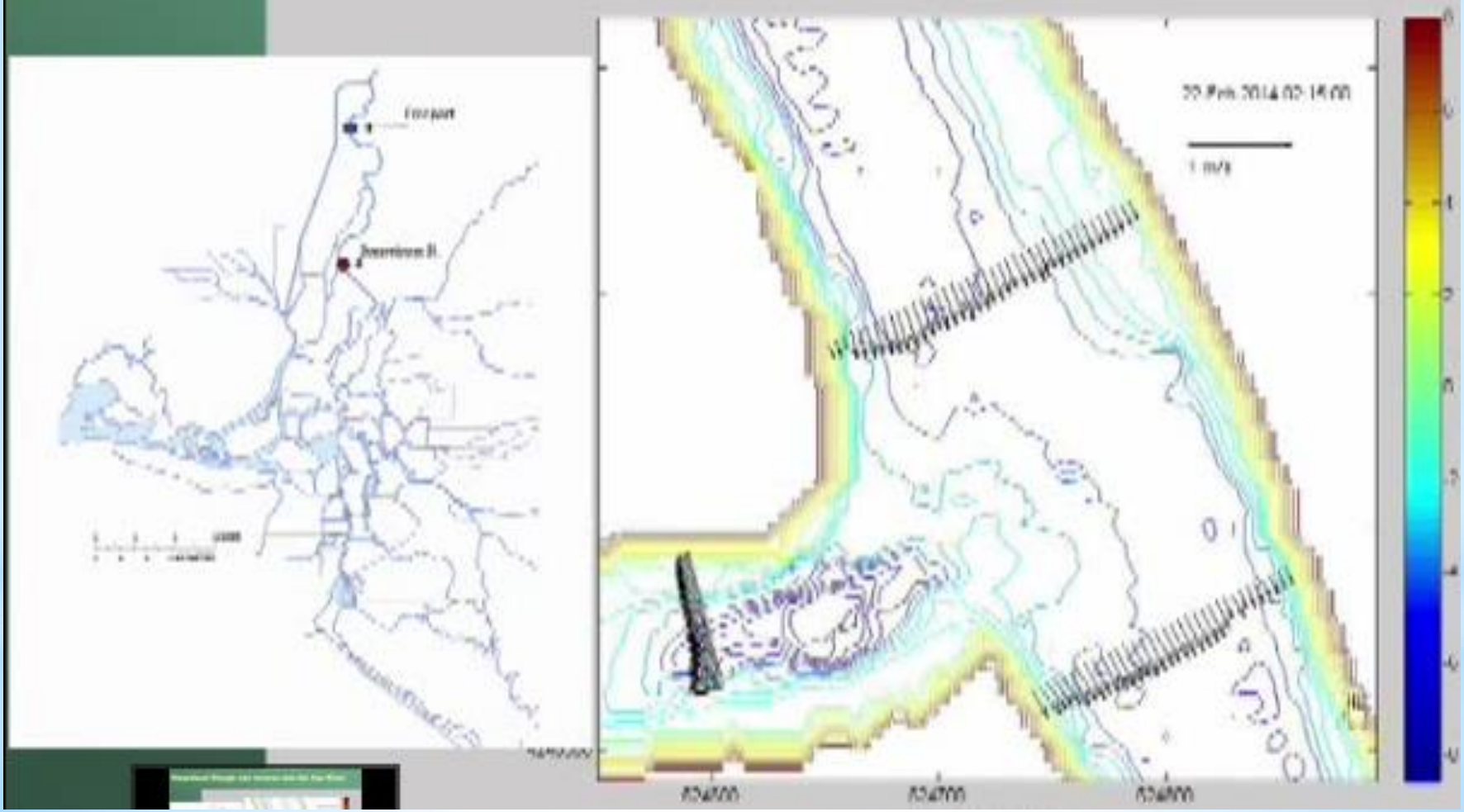
One hundred-fifty juvenile salmon to be used for the Delta experiments (test fish) were surgically implanted with acoustic transmitters at Coleman National Fish Hatchery on


https://www.youtube.com/watch?v=byHaFZwJVYg&list=PLqTHCIiW1HhrNF3c81L_k9MI7VLcoJ4j2&index=9
Four Migration Routes
Sutter and Steamboat slough
USGS

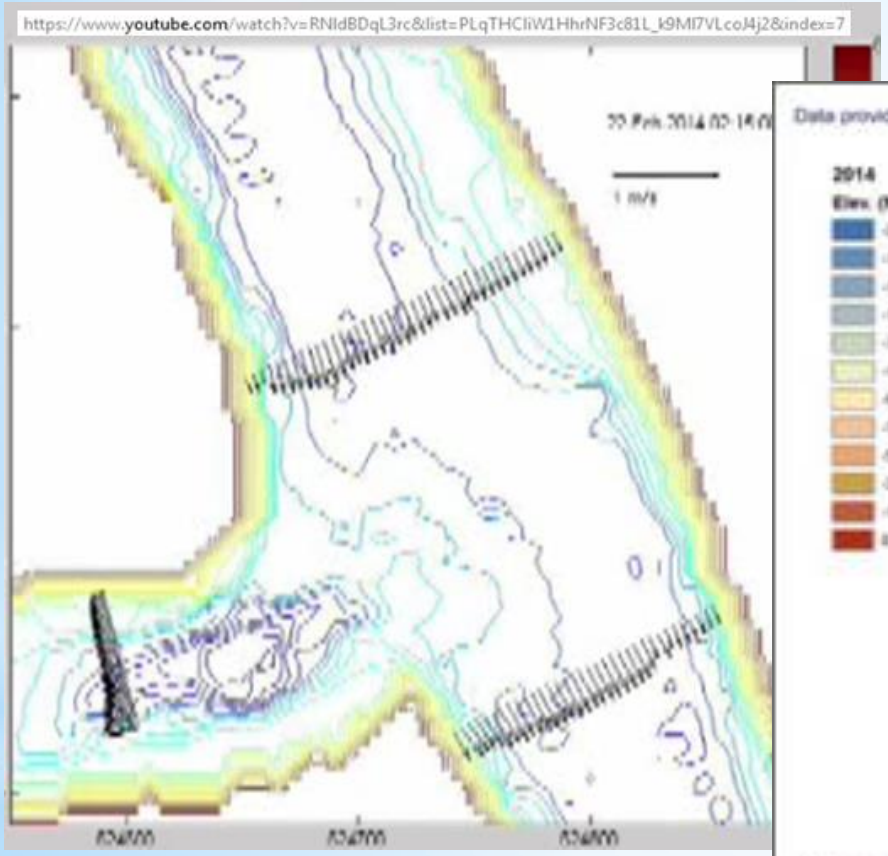

GoldSim Pro - Delta_Passage_10-16-08.gsm*
File Edit View Graphics Model Run Help
Container Path: \Fish
West Sacramento
Sacramento_Release_Group
Sacramento_Results
Mokelumne_Release_Group
Mokelumne_Results
Forks of the Mokelumne
Durham Ferry
San_Joaquin_Release_Group
San_Joaquin_Results

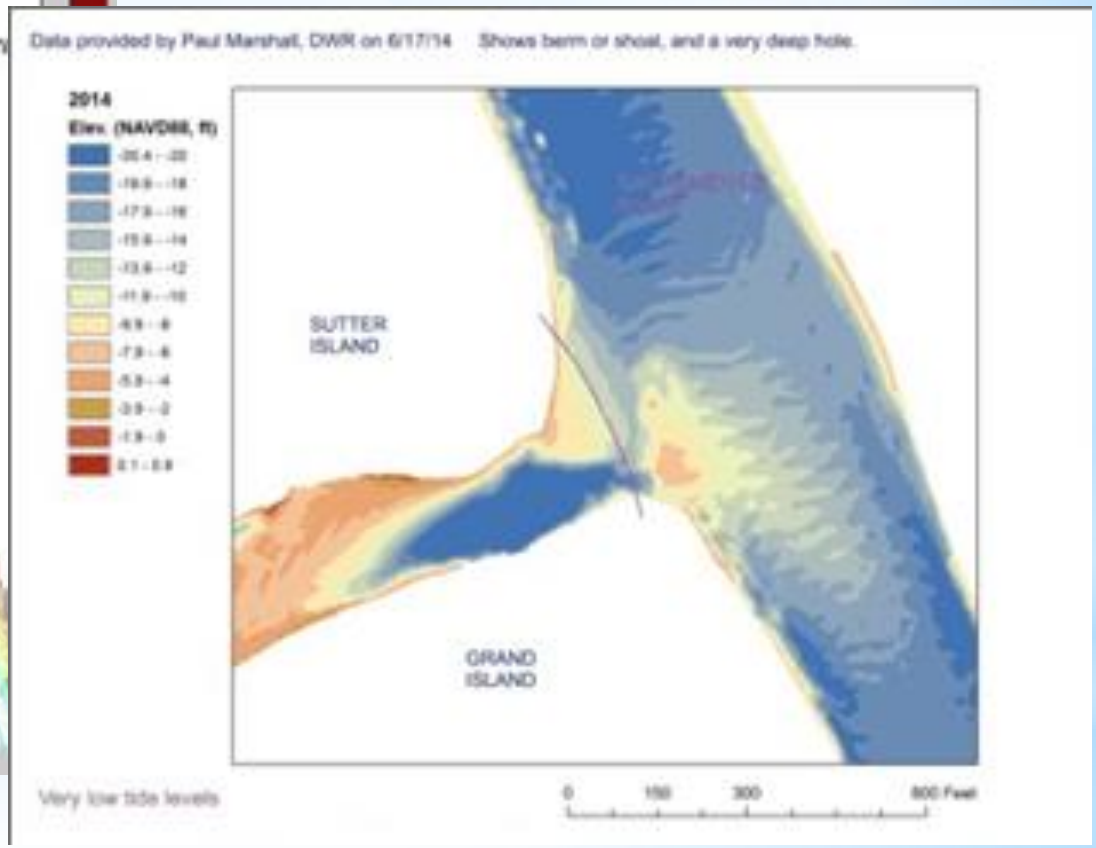
Steamboat Slough can reverse into the Sac River

https://www.youtube.com/watch?v=RNIdBDqL3rc&list=PLqTHCliW1HhrNF3c81L_k9MI7VLcoJ4j2&index=7



Questions #8: Why is the depth of the water at the confluence of Steamboat Slough and the Sacramento River shown differently in the 2014 salmon migration study presentation to the DSC science board than what actually existed at that time?





Why don't the fish scientists Conducting the salmon migration studies discuss the effect of blocking salmon access to Steamboat Slough by blocking much of the flow, but note boating traffic was NOT blocked.

A relatively high proportion of acoustic-tagged salmon entered Sutter Slough. Based on flow data provided by USGS, approximately 22% percent of the flow from the Sacramento River entered Sutter Slough during the time period between fish release at West Sacramento and the last detection of fish entering Sutter Slough. Although a substantial, but lesser, volume of Sacramento River flow enters Steamboat Slough as compared to Sutter Slough, a much smaller proportion of acoustic-tagged salmon entered Steamboat Slough. The reasons for the large discrepancy between proportions of fish diverted off the mainstem at the two locations may be a function of local channel geometries and hydrodynamic conditions at each site.

Further downstream, for the 56 fish reaching the general location of the DCC and Georgiana Slough, 18% were detected entering the DCC, 20% entering Georgiana Slough, and 62% remaining in the Sacramento River (Figure 12). No fish were detected in the lower South Fork Mokelumne River or Little Potato Slough suggesting high fish mortality in this region. However, we experienced some hardware problems with receivers in this area so, conceivably, some fish may have passed the sites undetected. Among those fish remaining in the Sacramento River downstream of the Georgiana Slough flow split, 74% were detected reaching the Cache Slough confluence. Two fish reaching the second receiver positioned just upstream of the Cache Slough confluence may have been eaten by predatory fish based on aberrant tag movements depicted in the data logged by that receiver.

Detections by acoustic receivers were compromised by malfunctions on some of those units. This was particularly evident for some receivers placed in the Mokelumne River system when some receivers were not operational and acoustic-tagged salmon may have passed those sites undetected (Table 2).

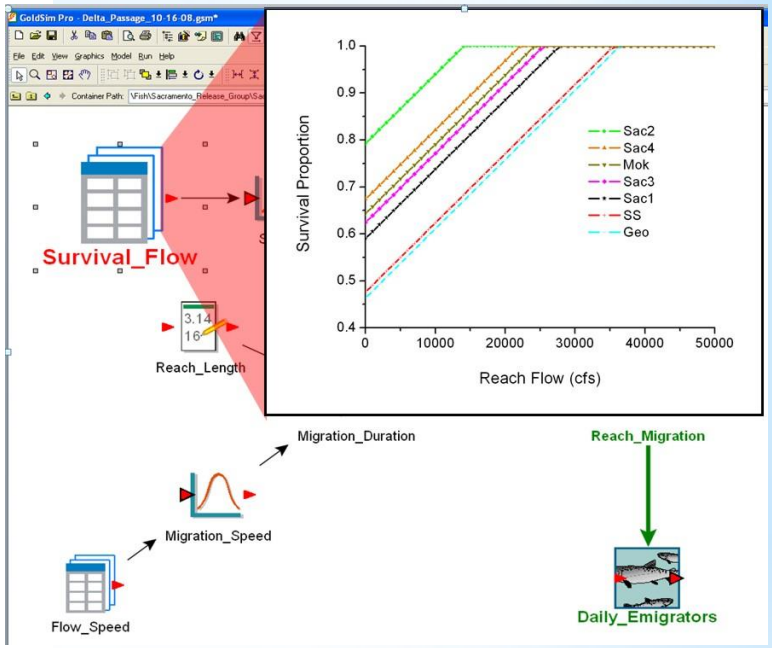
Table 2. Periods of non-operation of acoustic receivers during December 2006.[1]

Receiver No.	Location[2]	Start Down Time	End Down Time
006	Steamboat Slough	12/17/06 0200 hrs.	12/17/06 0900 hrs.
007	Steamboat Slough	12/17/06 0800 hrs.	12/17/06 0900 hrs.
005-X	Sacramento River	12/17/06 0800 hrs.	12/17/06 0900 hrs.
026-X	Delta Cross Channel	12/15/06 0800 hrs.	12/15/06 1000 hrs.[3]
615	N. Georgiana Slough	12/19/06 2300 hrs.	12/20/06 1200 hrs.
025	S. Georgiana Slough	12/12/06 1200 hrs.	12/14/06 1800 hrs.
C-619	Lower Mokelumne River	12/18/06 1700 hrs.	12/20/06 1200 hrs.
C-607	Lower Mokelumne River	12/12/06 1200 hrs.	12/16/06 1400 hrs.

[1] The acoustic receivers in the Mokelumne River system and the two receivers in the lower Sacramento River were removed during the afternoon of December 20, 2006 and the remaining receivers on the Sacramento River system were removed during December 21, 2006.
[2] Refer to Figure 2 for receiver locations.
[3] Time when the DCC gates were closed.

January Fish Releases

One hundred-fifty juvenile salmon to be used for the Delta experiments (test fish) were surgically implanted with acoustic transmitters at Coleman National Fish Hatchery on

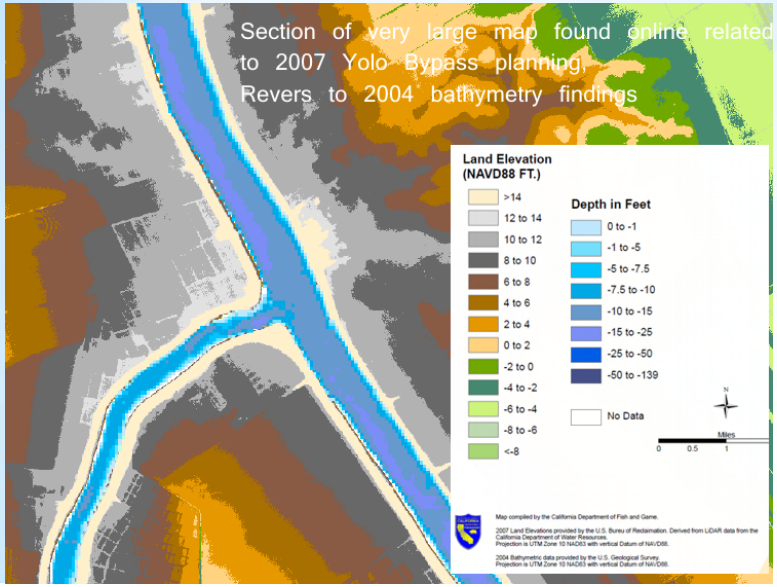


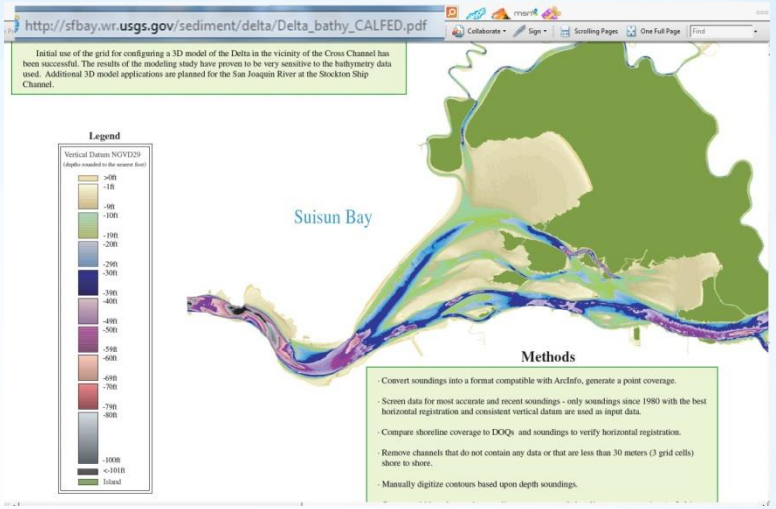
and the luxury of allowing learning from mistakes without undesirable consequences.

www.water.ca.gov/floodmgmt/docs/Delta_EOP_Concept_Paper-March_2007.pdf

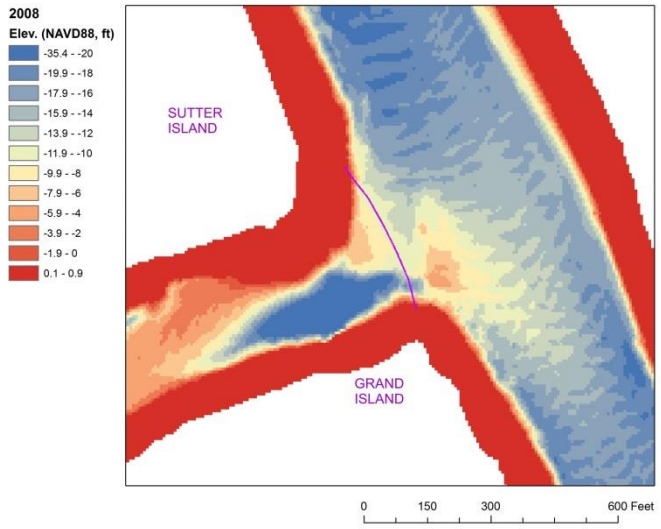
- **Temporary Barriers for New Locations Need Preliminary Designs** – Temporary barriers are indicated as available response actions in DWR's 1986 Emergency Plan and are now being discussed by others (e.g., Ref. 3). At the present time, moveable and/or sinkable structures, such as some of those being discussed, are not available. Mention is made of possibly using sinkable and refloatable rock barges to form temporary barriers. Existing rock barges that might be dedicated to that purpose are scarce. Also, the process of sinking a barge is not as simple as it may sound. It is unlikely to achieve flow diversion because of barge dimensions and the existing geometric properties of the Delta channels. They would also be needed for levee repairs in a major Delta incident. Thus, for the present, it is assumed that any temporary barrier will consist mainly of rock berms in the water, transported and placed by marine equipment. The rock berm may be supplemented by imbedded pipes with flap gates to enable tidal pumping, similar to those now installed in the south Delta. For example, DWR's 1986 Emergency Plan suggests temporary barriers in Steamboat Slough and in the Sacramento River immediately downstream of Georgiana Slough to facilitate greater diversions

Steamboat Slough at Sacramento River confluence in 2007 and 2008 from Published information provided by DWR/F&G representatives:





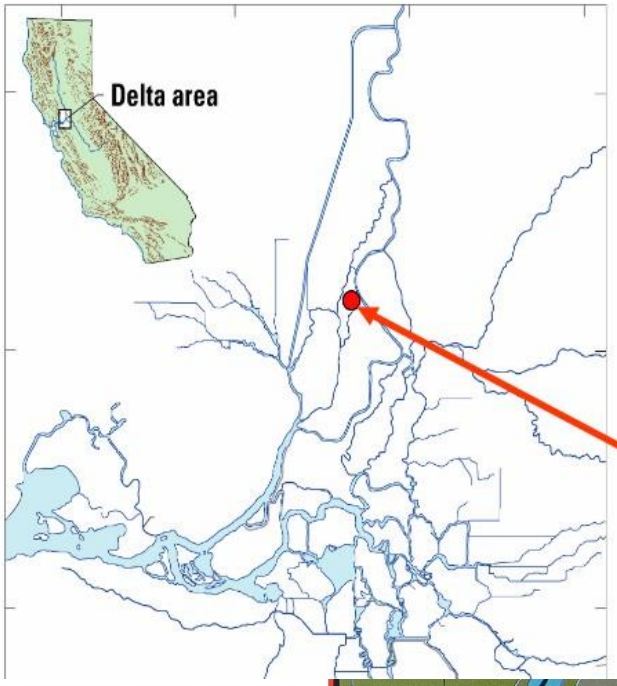
Data provided by Paul Marshall, DWR 6/17/14

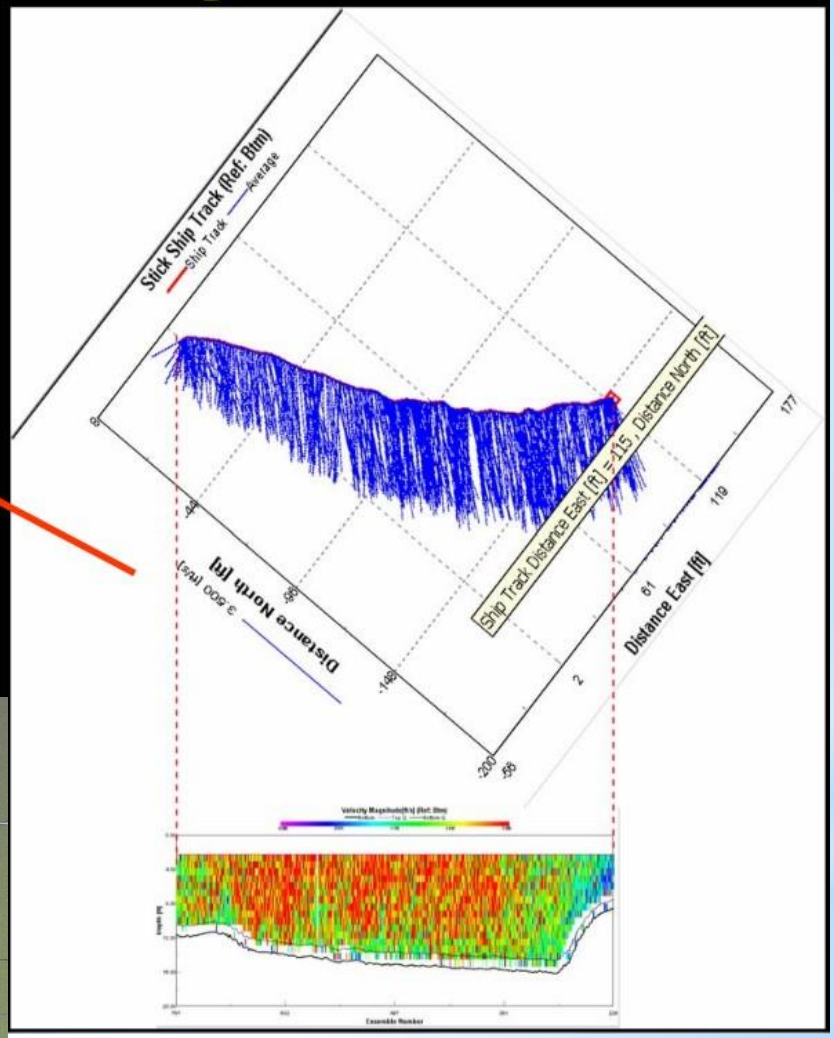


Cross Sectional Current variability

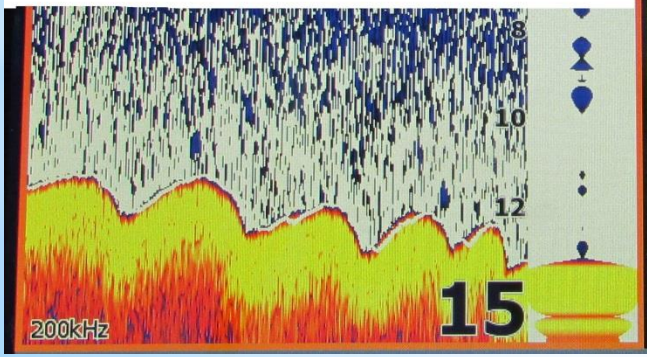
www.science.calwater.ca.gov/pdf/workshops/SP_workshop_variable_burau_061107.pdf 18 of 36

Steamboat Slough

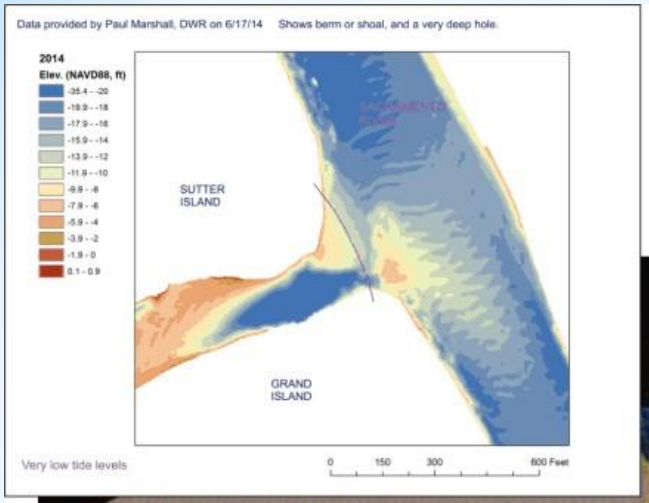


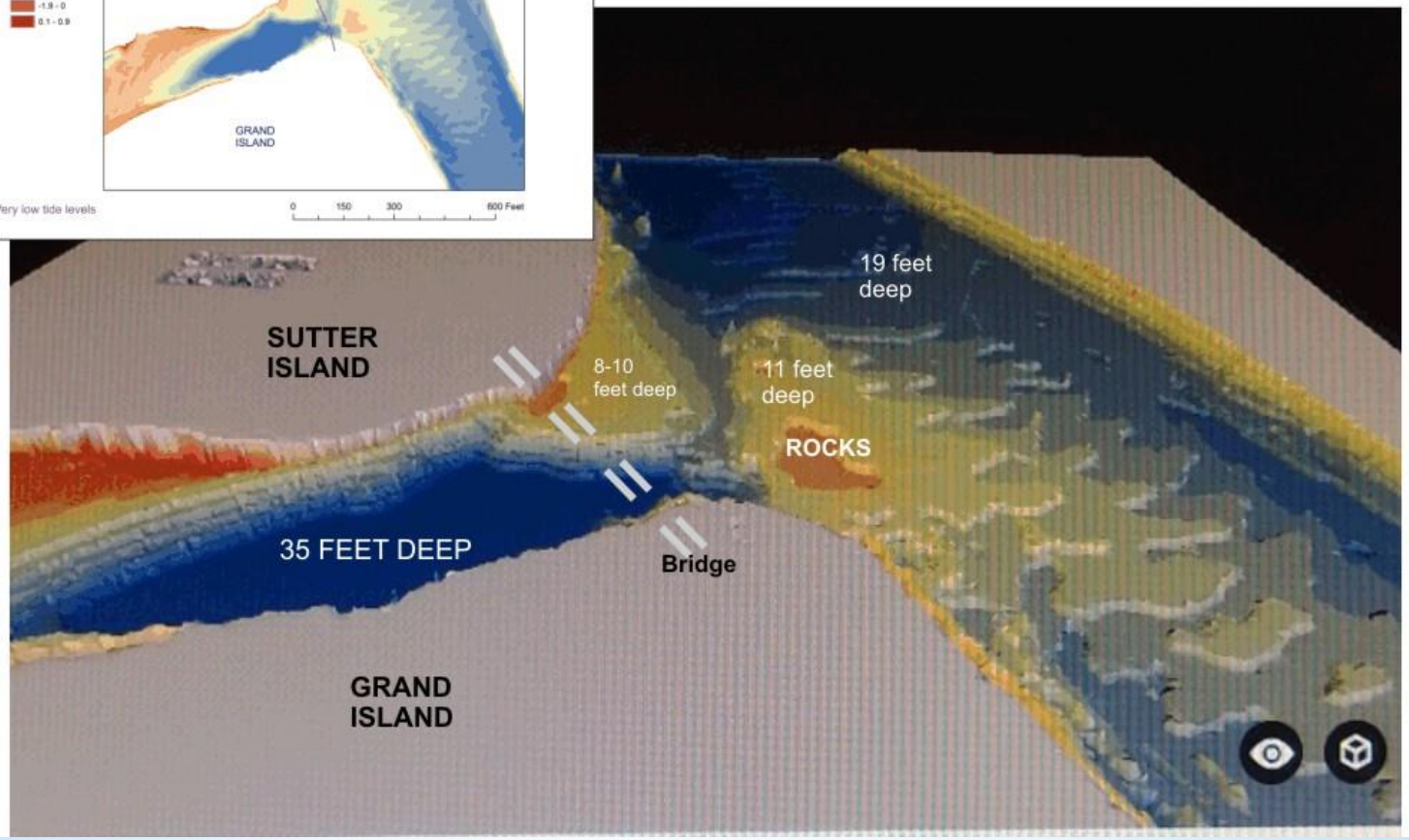


Steamboat Slough: river beds normally have ripples or small bumps on the bottom, that can go 12 to 18 inches high, at the most. Photo from the HD depth & fish finder shows the depth of Steamboat Slough several miles below the bridge.
Landowners of upper Steamboat Slough have noticed a sudden change in flow and silting patterns the last few years, which can be explained by the in-water berm located at the Steamboat Slough bridge area.

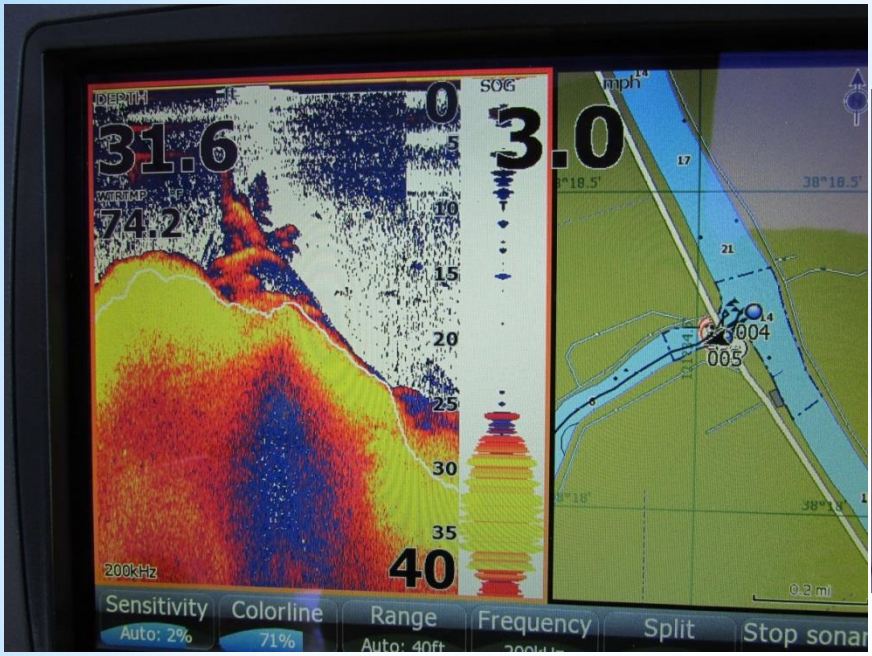


Bathymetery data provided by Paul Marshall from DWR was converted to 3D model to help the viewer understand exactly where and what "the obstruction" is at the head of Steamboat Slough. Despite Mr. Marshall's assertion the shoal is "naturally occuring" the steepness of the underwater walls shown in the sonar views, and the fact an underwater camera showed rock piles indicates this "obstruction" is something other than naturally occuring, at least when the obstruction was first installed.

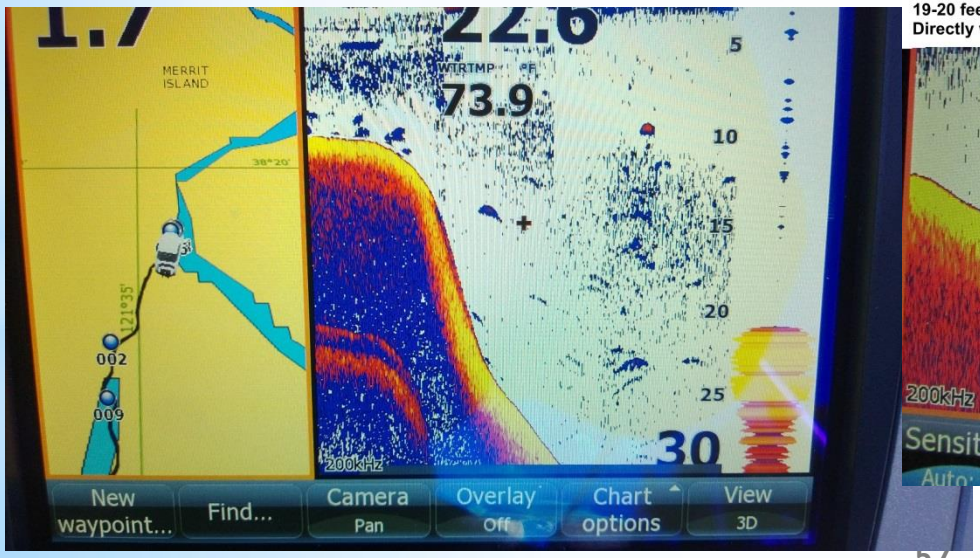


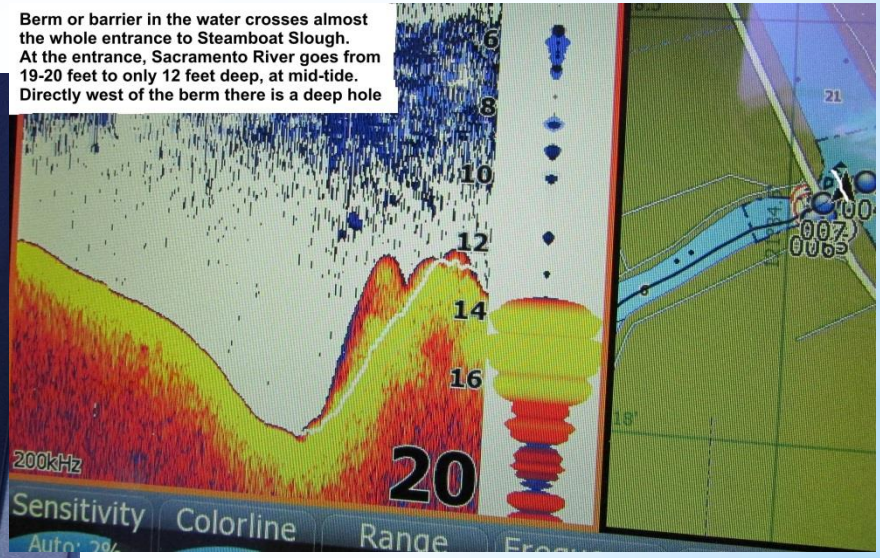


Did the scientists conducting salmon migration pathway studies know there was a subsurface Structure blocking flow into Steamboat Slough, thereby also influencing salmon migration choices?



Berm or barrier in the water crosses almost the whole entrance to Steamboat Slough. At the entrance, Sacramento River goes from 19-20 feet to only 12 feet deep, at mid-tide. Directly west of the berm there is a deep hole





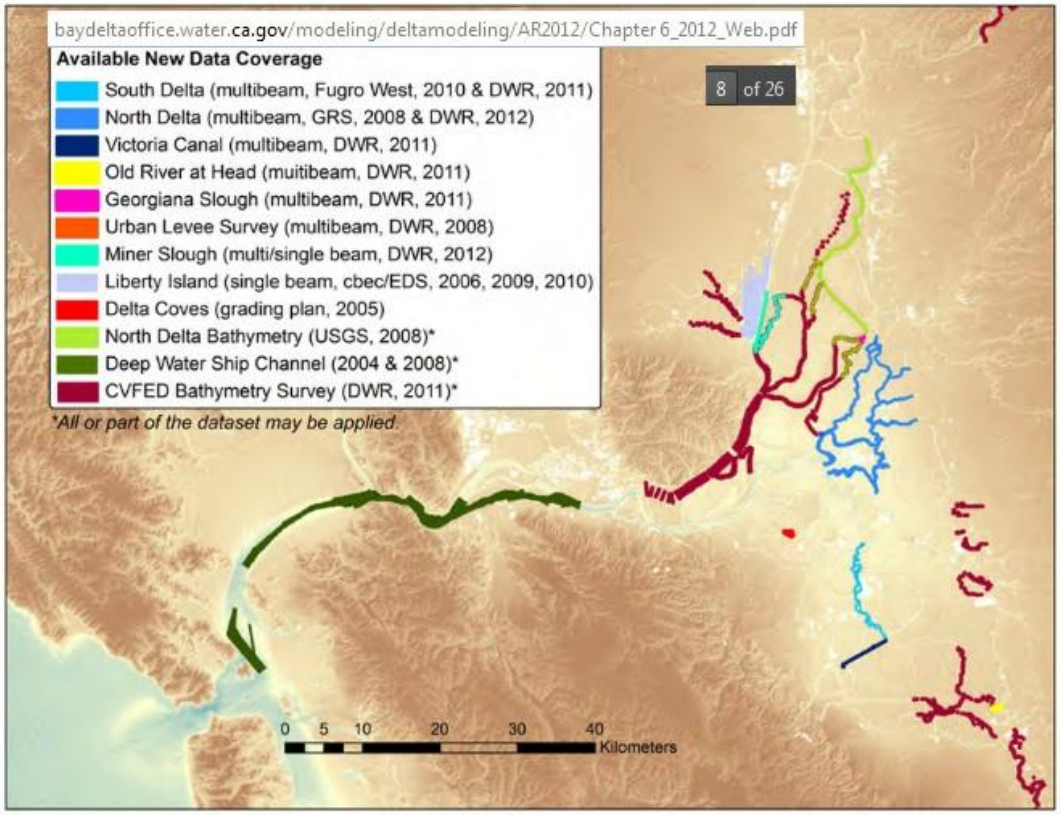


Figure note: References for the available new data:

South Delta (multibeam, Fugro West, 2010 & DWR, 2011)	(Mayr, 2011), (Fugro West, Inc., 2008)
North Delta (multibeam, GRS, 2008 & DWR, 2012)	(GRS, 2008), Mayr, 2011-2010
Victoria Canal (multibeam, DWR, 2011)	(Mayr, 2011)
Old River at Head (multibeam, DWR, 2011)	Mayr, 2011-2012
Georgiana Slough (multibeam, DWR, 2011)	Mayr, 2011-2012
Urban Levee Survey (multibeam, DWR, 2008)	(Fugro West, Inc., 2008)
Miner Slough (multi/single beam, DWR, 2012)	Mayr, 2011-2012
Liberty Island (single beam, cbec/EDS, 2006, 2009, 2010)	(EDS, 2006), (EDS, 2009), (Campbell, 2012)
Delta Coves (grading plan, 2005)	(Ruggeri-Jensen-Azar & Associates, 2005)
North Delta Bathymetry (USGS, 2008)	(USGS, 2008)
Deep Water Ship Channel (2004, 2008)	(Towill, Inc., 2009)
CVFED Bathymetry Survey (DWR, 2011)	(HDR, 2011); (PBS&J, An Atkins Company, 2010)

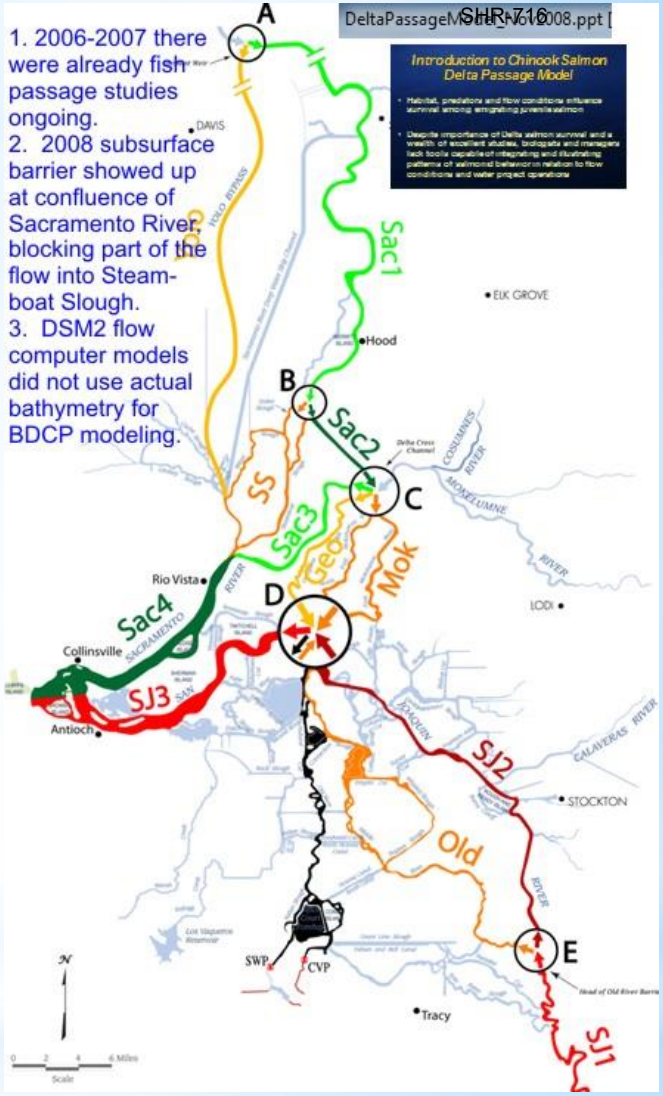
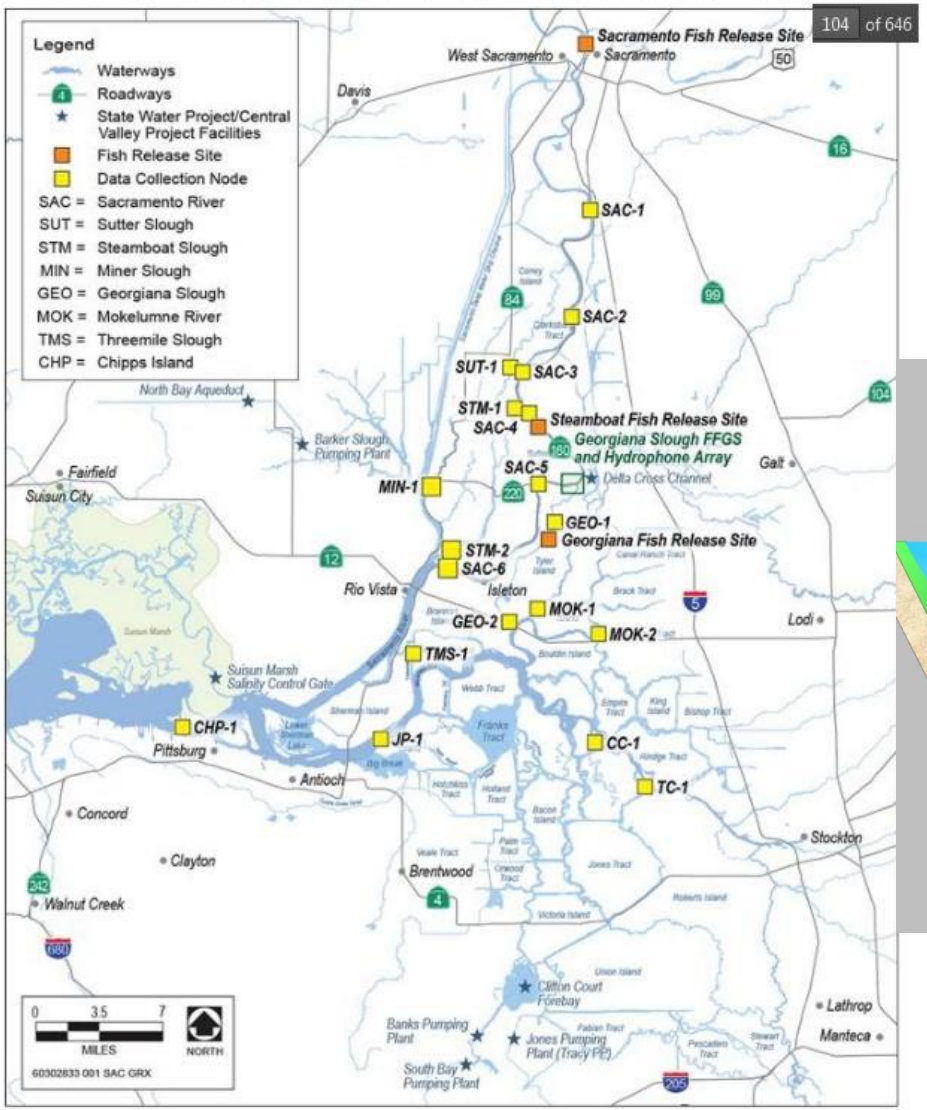


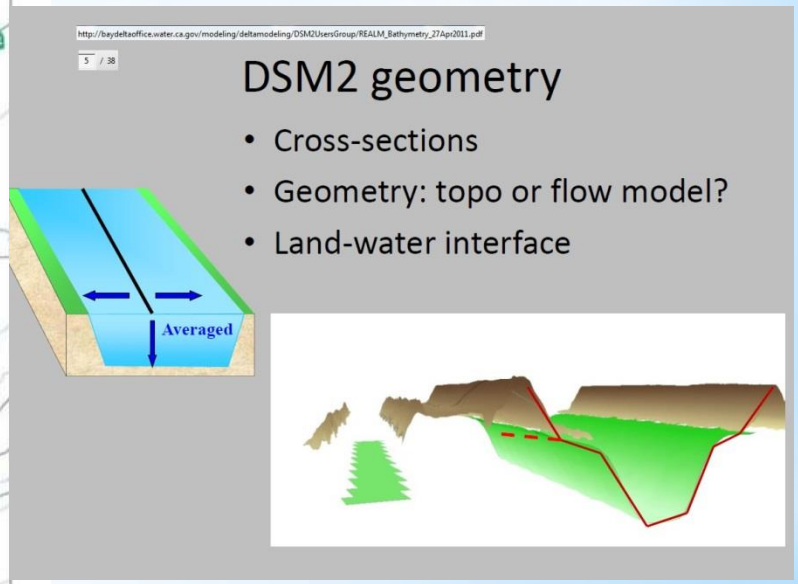
Figure 6-3 Data Sources Being Added for Version 2.0 of Elevation Model

https://bdo-portal.water.ca.gov/documents/92073/249680/ESS-03+Management+Draft_02132015.pdf



Source: AECOM 2013

Figure 3-5. Study Area Location



Question #9: Who or what organizations developed the baseline data for DRMS Phase 1 in 2006? 2007 was a pivotal year for the propagation of false historical data about the Delta via the technical baseline data from DRMS Phase 1

http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/docs/Economic_TM-updated07.pdf

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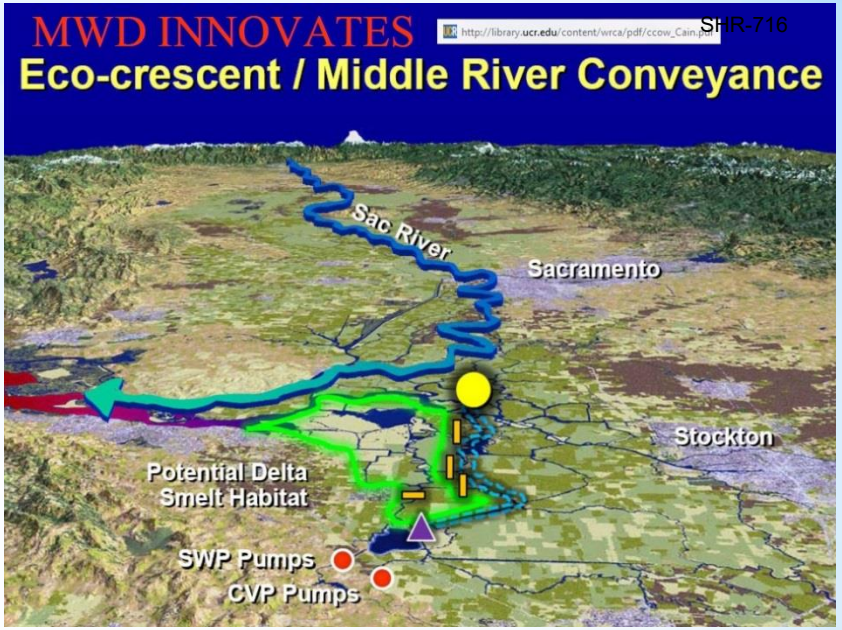
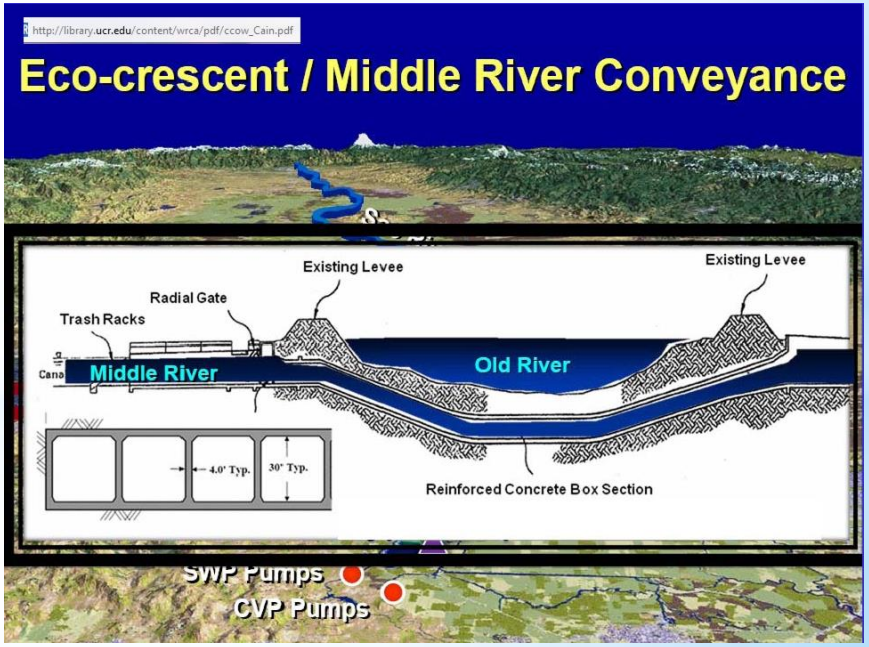
Appendix C
Delta Island Recreation

Table C-1
Delta Island Recreation Inventory

Island	Recreation Zone	Small Marinas	Medium Marinas	Large Marinas	Marina Berths	Fishing Access Sites
City of Sacramento	A		5	1	860	1
Merritt Island	A				0	
Netherlands	A	2	2		260	1
Hastings Tract	B				0	
Prospect Island	B		1		108	
Yolo Bypass	B				0	
Brack Tract	C				0	
Brannan-Andrus Island	C	8	6	6	2740	10
Canal Ranch Tract	C				0	
Deadhorse Island	C	2			44	
Glanville Tract	C				0	
Grand Island	C	3	1		174	
McCormack Williamson Tract	C				0	
New Hope Tract	C				0	
Pierson District	C				0	1
Ryer Island	C				0	1
Staten Island	C				0	
Sutter Island	C	1			22	1
Sycamore Island	C				0	
Tyler Island	C		1		108	1
Bacon Island	D				0	
Bethel Island	D	6	7		889	
Bouldin Island	D				0	
Bradford Island	D				0	
Brown Island	D				0	1
Chipps Island	D				0	
Decker Island	D				0	
Franks Tract	D				0	1
Holland Tract	D	1		1	341	
Hotchkiss Tract	D	9	1		306	
Jersey Island	D				0	
Kimball Island	D				0	1
Little Franks Tract	D				0	
Little Mandeville Island	D				0	
Manderville Island	D				0	
Neville Island	D				0	
Palm-Orwood Tract	D		2		216	
Rhode Island	D				0	
Sherman Island	D	2	3		368	1
Twitchell Island	D	1			22	
Van Sickle Island	D				0	
Veale Tract/Antioch	D		1	4	1385	6



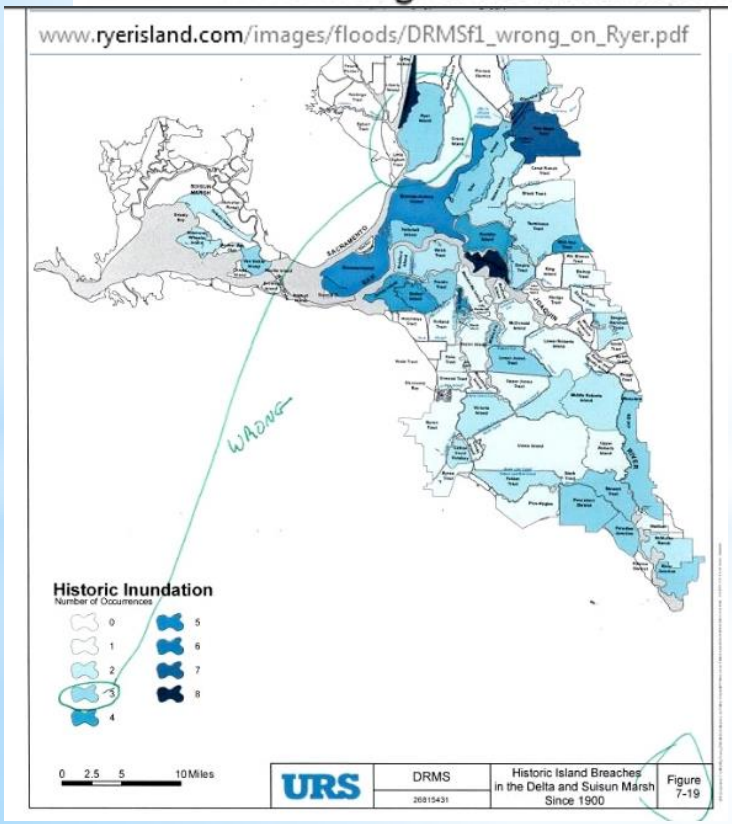


www.ryerisland.com/images/floods/DRMSf1_wrong_on_Ryer.pdf

The attached maps and tables provide examples of incorrect data contained in the **Delta Risk Management Strategy (DRMS) Phase 1, Final Report**.

Wrong data was found in **Sections 4, 7, 9 and 13** regarding island inundation history. Other sections that utilize the incorrect island data to calculate other risk factors may also be incorrect due to use of false base data.

Examples compiled and submitted to DWR various agencies, 2008 through November 2009; as of 11-19-09 corrections have not been made although DWR acknowledged the incorrect data.



Delta flood history was one of many baseline technical data reports used for the DRMS Phase 1 which influenced decisions like levee repair funding, development and values, present and future risk…all based on bogus and/or inflated and inconsistent baseline Delta history.

Inbox > Message Detail Entire thread Print Previous Next

Subject: Ryer Island Flooding
From: "Bagheban, Sean" <seanb@water.ca.gov> (Add as Preferred Sender)
Date: Thu, Oct 15, 2009 12:16 pm
To: <sunshine[redacted]
Cc: <karla.nemeth@resources.ca.gov>

Ms. Suard:

I am the project manager for the Delta Risk Management Strategy (DRMS). I received an e-mail from Paul Marshall regarding your inquiry about certain figures in the DRMS phase 1 report that show statistics of Ryer Island flooding.

After further review, it appears that Ryer Island only flooded twice, in 1904 and 1907. I will contact the consultant who worked on the figure and ask them to confirm this assessment and revise any figures accordingly. Once the revised figures are produced, I will post an updated version of the revised sections of the report and inform you that the changes have been made.

Please do not hesitate to contact me with any questions or concerns.

Best Regards,

Sean Bagheban

Delta Risk Management Strategy Project

Department of Water Resources

1416 9th Street, Suite 1601

Sacramento, CA 95814

(916) 651-0870 Tel

(916) 651-9678 Fax

seanb@water.ca.gov

delta > Message Detail Entire thread Print Previous Nex

Subject: RE: Incorrect Delta Island inundation data on DRMS phase 1 final repor
From: "Marshall, Paul" <marshall@water.ca.gov> (Add as Preferred Sender)
Date: Thu, Oct 15, 2009 9:27 am
To: <sunshine[redacted]
Cc: "Dudas, Joel" <jdudas@water.ca.gov>, "Yeadon, Robert" <ryeadon@water.ca.gov>

Yes, I saw the incorrect map showing 3-5 inundations. I sent all of your emails to Joel Dudas who is working on it to make sure the corrections are made on anything we maintain and he will inform URS as well. My first intent is to stop the error from propagating. My second intent is to correct past documents or get some sort of eradication.

I also saw your note on risk factors, and how you believe the risk of failing is zero because all of the inundations happened prior to levee improvements. While I understand your point, the DRMS is not in my area of expertise. I suggest you speak with Mike Floyd, the supervising engineer over that report
Mike Floyd, (916) 654-6274

mfloyd@water.ca.gov

Paul A. Marshall
Planning and Operations Manager
Delta Habitat Conservation and Conveyance Program
901 P Street, Room 433
Sacramento, CA 95814
(916) 651-2993
(916) 715-1848 Cell

To give credit where credit is due, DWR representatives Paul Marshall and Joel Dudas did get the DRMS consultant URS to make some of the corrections to maps and charts, but the risk data should have also been updated to reflect correct flood history baseline, correct island asset valuation, correct # of residents and more. Mr. Marshall had good intentions, based on the email below…

From: "Marshall, Paul" <marshall@water.ca.gov> (Add as Preferred Sender)
Date: Thu, Oct 15, 2009 9:27 am
To: <sunshine@snugharbor.net>
Cc: "Dudas, Joel" <jdudas@water.ca.gov>, "Yeadon, Robert" <ryeadon@water.ca.gov>

Yes, I saw the incorrect map showing 3-5 inundations. I sent all of your emails to Joel Dudas who is working on it to make sure the corrections are made on anything we maintain and he will inform URS as well. My first intent is to stop the error from propagating. My second intent is to correct past documents or get some sort of eradication.

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Mike Floyd, (916) 654-6274
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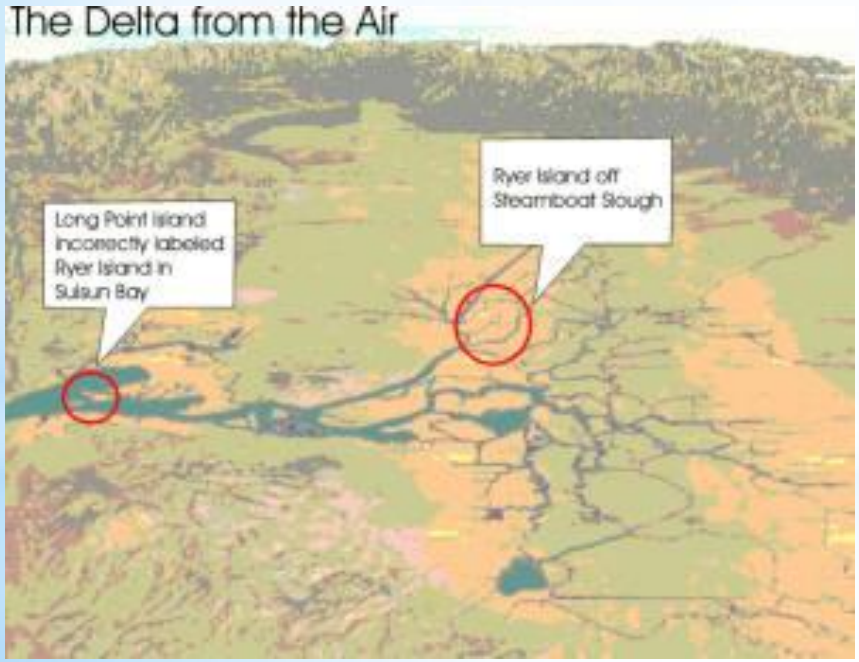
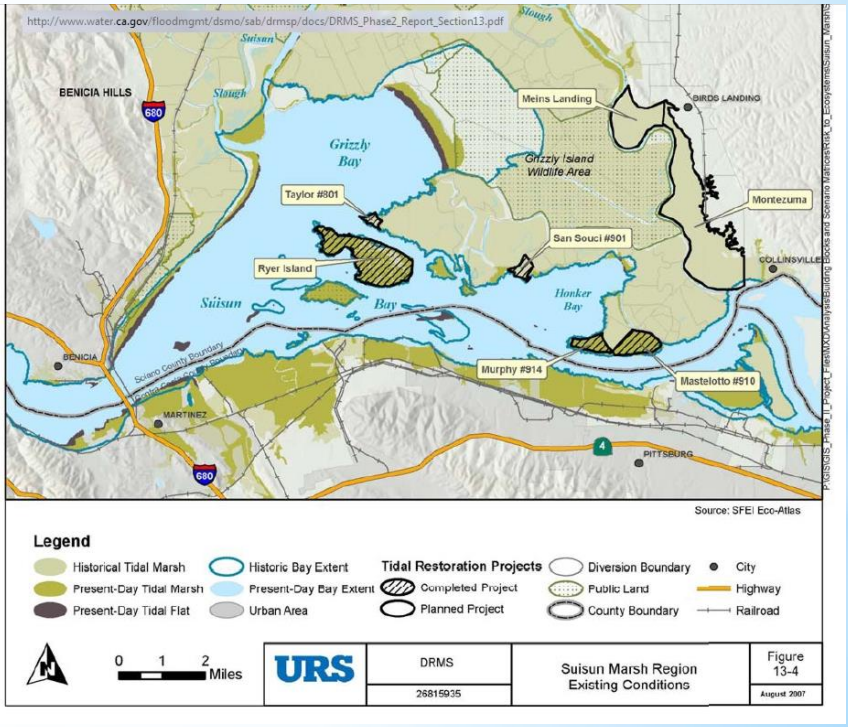
"My intent is to stop the error from propagating. My second intent is to correct past documents or get some sort of eradication." -Paul Marshall

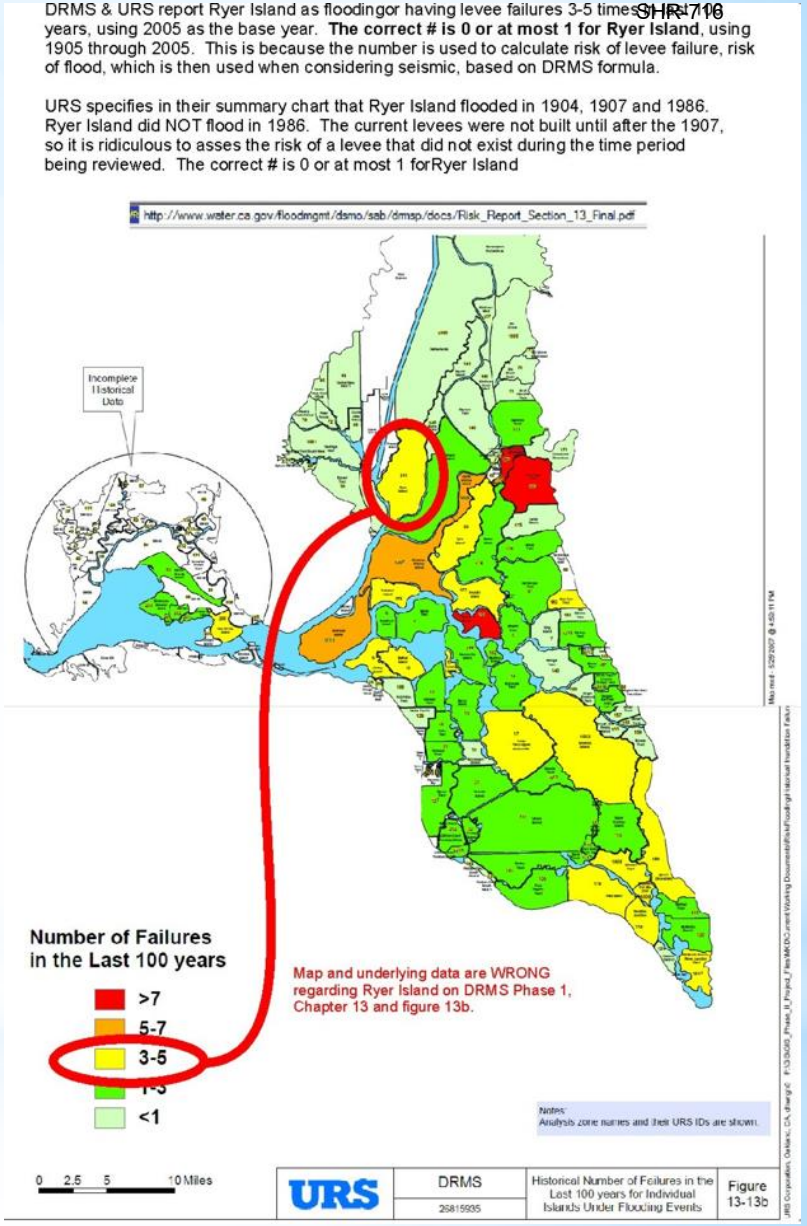
By the way, it might help to note that another of the problems with Delta planning and reports is that the drafters of those reports had problems correctly identifying the physical locations of the islands and waterways that were or are the subject of the different reports. Also, the same consultant, **URS**, was doing planning work under the BCDC on Ryer Island, and for CalFed/BDCP on the *other* Ryer Island, both located in Solano County. One "Ryer Island" is located in the Suisun Bay area and the other Ryer Island is located northeast of Rio Vista and is bordered by Steamboat Slough, Sutter Slough, Miner's Slough and Cache Slough.



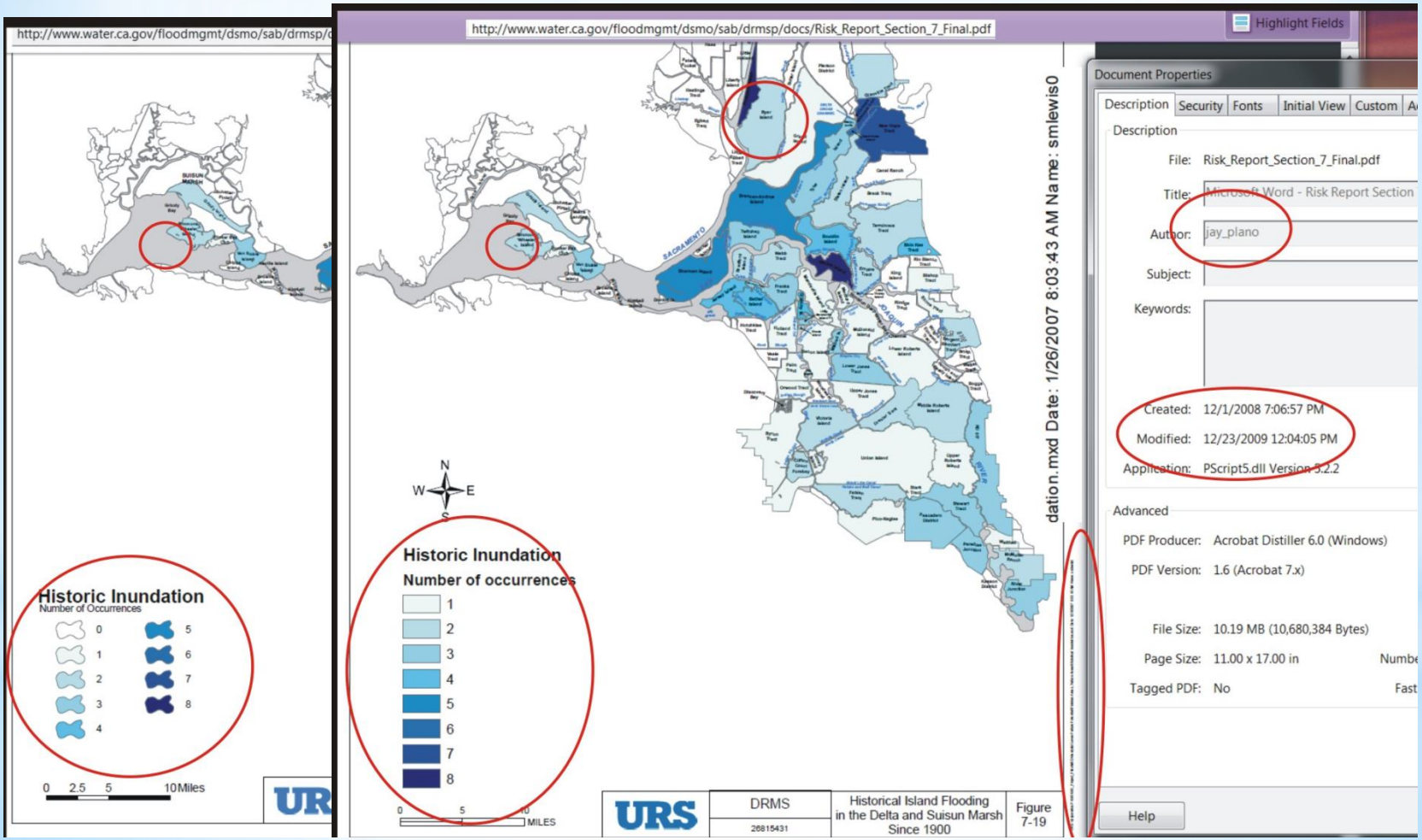


A review of the DRMS Phase 1 baseline data used for just one of the Delta Islands shows legally verifiable incorrect flood history, deflated land values, residential and commercial uses, and omission of historical and current ecological and economic importance for the state.

If DWR consultants got one island wrong, how correct is the data for other targeted islands of the Delta?



So WHY, in 2015, is the Delta Stewardship Council still referring to and using the false data from DRMS Phase 1 to validate decisions regarding use of tax dollars to do levee modifications in the name of "Flood Protection" when the actions were designed as Sacramento River water CONVEYANCE actions?



B. Delta Risk Management Strategy (DRMS) Phase 1[13]

- Phase I study was sharply criticized, and independent reviewers warned that results only indicated directions of risks and numerical predictions should not be taken literally.
- Economic loss calculations in the report critically depend on the failure probabilities in DRMS that are considered too high by virtually all experts.
- In-Delta flood loss costs are exaggerated. Some examples:

1) Overly high flood risk is matched with high-value properties. For example, the Sargent-Barnhart tract is the Stockton Brookside neighborhood, which was developed in 1990 with over 200 year flood protection from modern levees as recently confirmed by DWR FloodSafe program maps. However, DRMS estimates the island has over 7% probability of flooding, 3rd highest of all Delta islands based on old data. DRMS uses current economic asset data to repeatedly flood the over $1 billion in real estate assets in Stockton's most expensive neighborhood.

2) Billions of dollars in South Sacramento real estate is defined as inside the Delta 100 year flood plain, when those properties are both outside the Delta and were recently removed from the 100-year floodplain due to levee improvements.

3) High-risk flooded islands are assumed to be rebuilt just as they were originally and are repeatedly flooded in the simulations. Complete rebuilding is unlikely for behavioral and policy reasons, exaggerating the losses.

- Losses from water export disruptions are exaggerated.

1) The analysis assumes that water managers would not employ several strategies to r educe the costs of temporary water shortages.

2) New analysis done for the BDCP and DWR shows that the exports pumps would be disabled for a much shorter period of time than estimated in DRMS.

- Although the costs from DRMS were exaggerated, it has been made worse by frequent misuse and misinterpretation of results by others, including the Department of Water Resources and the PPIC. For example, the majority of the estimated losses are in-Delta, yet they are often portrayed as losses from water deliveries.

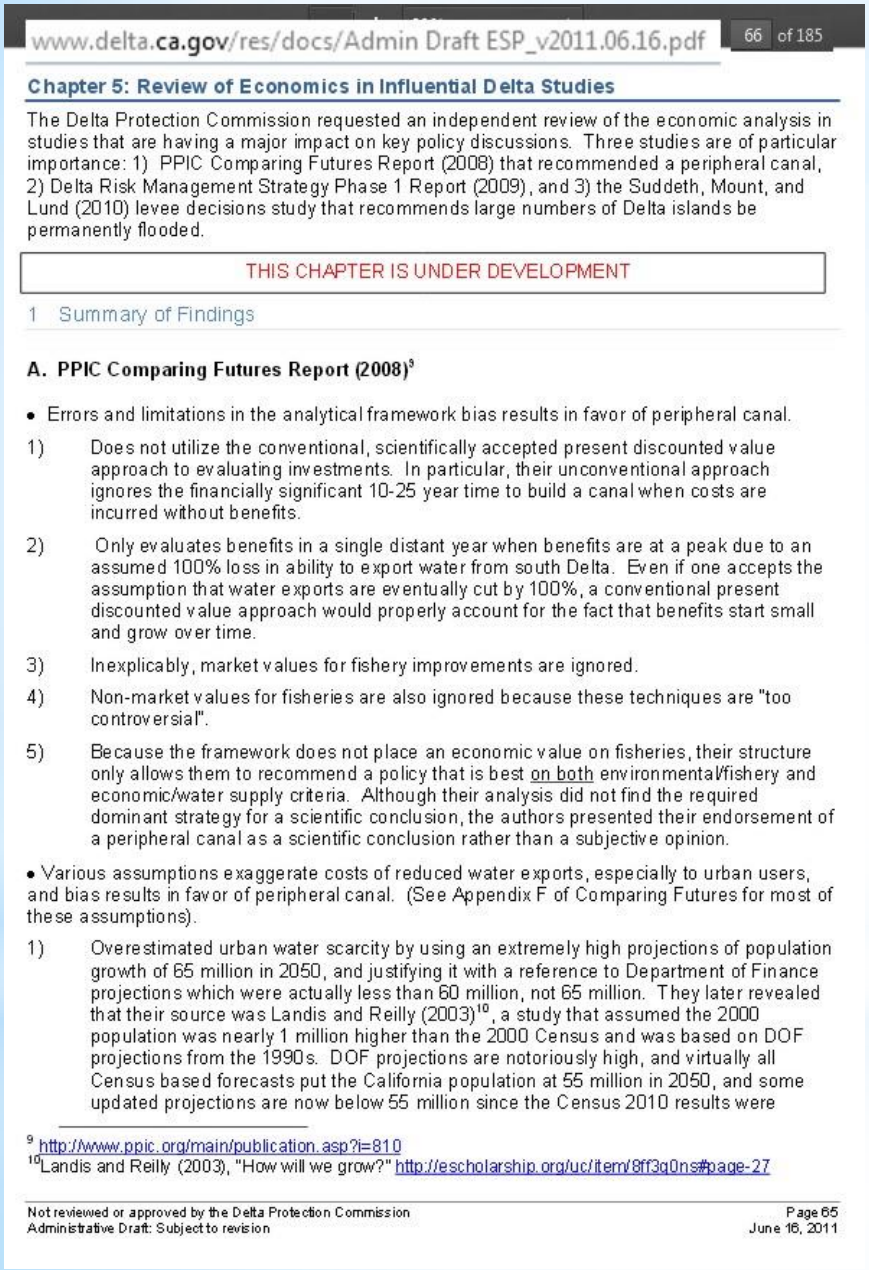
III. Suddeth, Mount and Lund (2010) Levee Decisions Study[14]

- Unlike the peripheral canal analysis by the same authors, this report evaluates levee investments with the present discounted value approach that explicitly considers the lack of benefits while costs are incurred during the building period. The framework is correct, but is notably inconsistent with the framework they used to evaluate the peripheral canal in the 2008 Comparing Futures report. Thus, they are evaluating levee investments with a much tougher framework than they used to evaluate a peripheral canal.
- Utilizes the high levee failure probabilities from the DRMS study which leads to what the recent National Academy of Sciences review of the BDCP refers to as "error propagation."
- Utilizes very low values for Delta farmland ($2500 per acre) that are substantially lower than current market values for Delta farmland ($8000 per acre) that already include a significant discount for flood risk and levee costs. An argument could be made that the correct value for

[13] http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/phase1_information.cfm
[14] http://watershed.ucdavis.edu/pdf/Suddeth-Mount-et-al-2010-SFEWS.pdf

"Utilizes the high levee failure probabilities from the DRMS study which leads to what the recent National Academy of Sciences review of the BDCP refers to as "error propagation".

* DRMS inflated numerical Delta flood risk totals by making up "historical" floods, by counting flooding of designated flood bypasses, and by adding in flooding of islands or areas not located in the Delta. False data propagated to FEMA & other agency use.
* DRMS ignored assets of some islands and inflated values of other islands to create a totally bogus set of numbers from which to "validate" expenditures in some areas of the Delta and exclude other areas of the Delta.
* DRMS inconsistently applied historical flood risk of some islands as if the event(s) happened on or to other islands.



www.delta.ca.gov/res/docs/Admin Draft ESP_v2011.06.16.pdf 66 of 185

Chapter 5: Review of Economics in Influential Delta Studies

The Delta Protection Commission requested an independent review of the economic analysis in studies that are having a major impact on key policy discussions. Three studies are of particular importance: 1) PPIC Comparing Futures Report (2008) that recommended a peripheral canal, 2) Delta Risk Management Strategy Phase 1 Report (2009), and 3) the Suddeth, Mount, and Lund (2010) levee decisions study that recommends large numbers of Delta islands be permanently flooded.

THIS CHAPTER IS UNDER DEVELOPMENT

1 Summary of Findings

A. PPIC Comparing Futures Report (2008)[9]

- Errors and limitations in the analytical framework bias results in favor of peripheral canal.

1) Does not utilize the conventional, scientifically accepted present discounted value approach to evaluating investments. In particular, their unconventional approach ignores the financially significant 10-25 year time to build a canal when costs are incurred without benefits.

2) Only evaluates benefits in a single distant year when benefits are at a peak due to an assumed 100% loss in ability to export water from south Delta. Even if one accepts the assumption that water exports are eventually cut by 100%, a conventional present discounted value approach would properly account for the fact that benefits start small and grow over time.

3) Inexplicably, market values for fishery improvements are ignored.

4) Non-market values for fisheries are also ignored because these techniques are "too controversial".

5) Because the framework does not place an economic value on fisheries, their structure only allows them to recommend a policy that is best on both environmental/fishery and economic/water supply criteria. Although their analysis did not find the required dominant strategy for a scientific conclusion, the authors presented their endorsement of a peripheral canal as a scientific conclusion rather than a subjective opinion.

- Various assumptions exaggerate costs of reduced water exports, especially to urban users, and bias results in favor of peripheral canal. (See Appendix F of Comparing Futures for most of these assumptions).

1) Overestimated urban water scarcity by using an extremely high projections of population growth of 65 million in 2050, and justifying it with a reference to Department of Finance projections which were actually less than 60 million, not 65 million. They later revealed that their source was Landis and Reilly (2003)[10], a study that assumed the 2000 population was nearly 1 million higher than the 2000 Census and was based on DOF projections from the 1990s. DOF projections are notoriously high, and virtually all Census based forecasts put the California population at 55 million in 2050, and some updated projections are now below 55 million since the Census 2010 results were

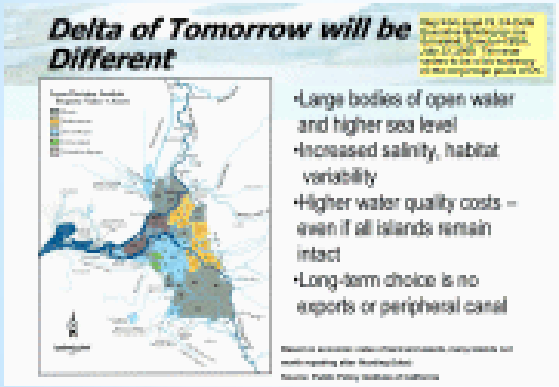
[9] http://www.ppic.org/main/publication.asp?i=810
[10] Landis and Reilly (2003), "How will we grow?" http://escholarship.org/uc/item/8ff3q0ns#page-27

Not reviewed or approved by the Delta Protection Commission
Administrative Draft: Subject to revision
Page 65
June 16, 2011

PPIC also propagates the same incorrect data

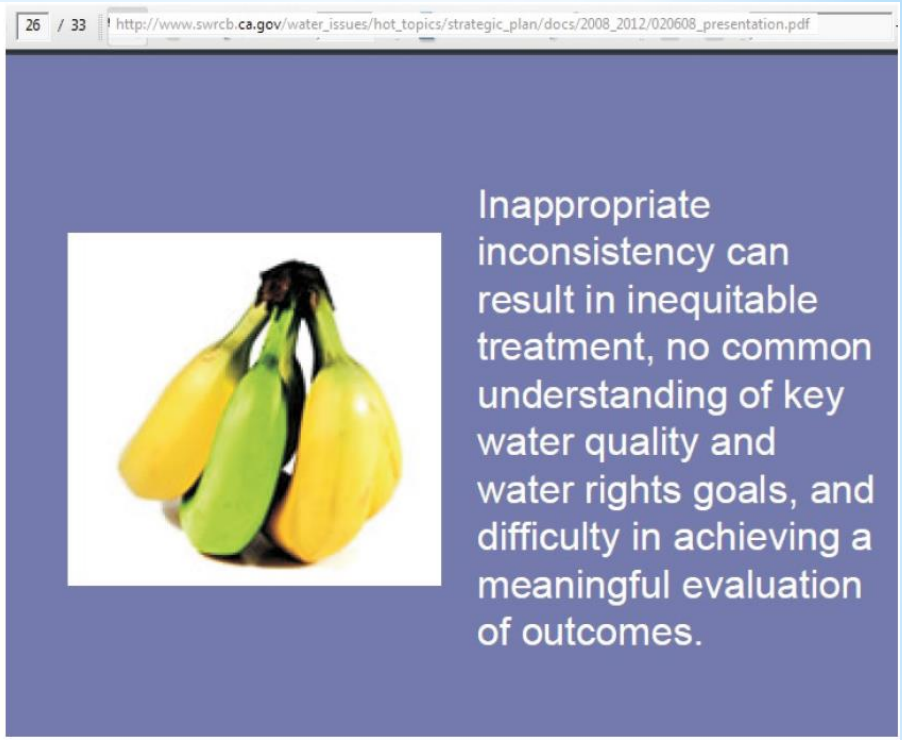
* Economic value of the Delta main income generation activities of agriculture and recreation are greatly undervalued, the economic value of the riparian water rights and mineral rights are ignored, and the current and future potential of land values are substantially undervalued for some islands, and overstated for other islands. An identifiable pattern of “mistakes” emerges as the inconsistent propagation of incorrect data and Delta maps and charts emerges over a series of reports and years.

Delta Vision, BDCP, FloodSafe, DSC, PPIC, and DWR/USBR/USR/ICF reports to Congress and Senators use the incorrect data from DRMS Phase 1 and Phase 2 from 2007 to 2015, so far. Decisions are made or influenced based on impressions created by the used of the false and incorrect baseline data of the DRMS Phase 1 report.



http://deltarevision.com/more_wrong_maps_of_the_delta_3.html

We have consistently asked that decisions be made based upon verifiable correct facts. "Delta Truth Project".
Instead, each time baseline data was reviewed, a pattern of inconsistency of data use, inconsistency of data application, and a consistent pattern of *omission of important information* has been established over time. When incorrect data was brought to the attention of the responsible agencies or consultants, on some occasions the data was superficially corrected and on other occasions the data is still currently in use.



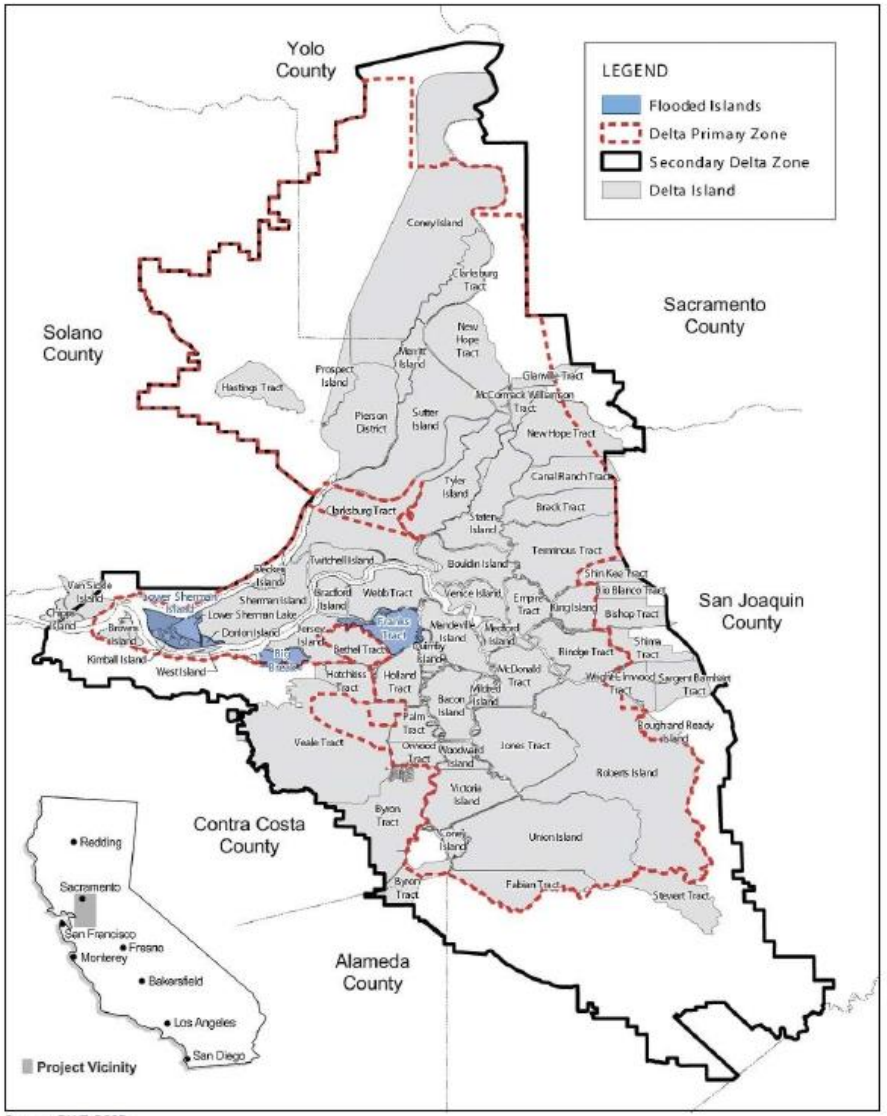
http://deltarevision.com/wrong-maps-of-the-delta.html

Example #1: Baseline data used for the Flooded Islands studies intended to validate actions proposed in 2015, such as placement of Barriers and Gates across navigable Delta waterways. Note the wrong island names, putting the whole report series validity in question, as one can not be sure which island the reports actually refer to: "Source DWR 2003, Regional Map for the Flooded Islands Feasibility Study Baseline Report.

More wrong maps of the Delta can be viewed at: www.deltarevision.com/wrong-maps-of-the-delta.html

http://baydeltaoffice.water.ca.gov/ndelta/summaryreport/documents/FloodedIslandFeasibilitySt

SHR-716



Source: DWR 2003

Regional Map

EXHIBIT 2-1

Flooded Islands Feasibility Study Baseline Report

5/19/2015 SW

2015 DSC utilizes the false, misleading, inflated and incorrect baseline data developed for DRMS Phase 1 to created the

In 2009 Mr. Marshall, in charge of the "South Delta Improvement Program" and "In-Delta Storage" planning, seemed sincere in his desire to eradicate the use of incorrect Delta historical information. Perhaps Mr. Marshall can communicate with the DSC consultants and stop DSC propagating the false DRMS phase 1 data?

http://www.science.calwater.ca.gov/pdf/workshops/workshop_dci_presentation_03_majors.pdf

Emergency Freshwater Pathway Concept

CALFED Science Program Workshops

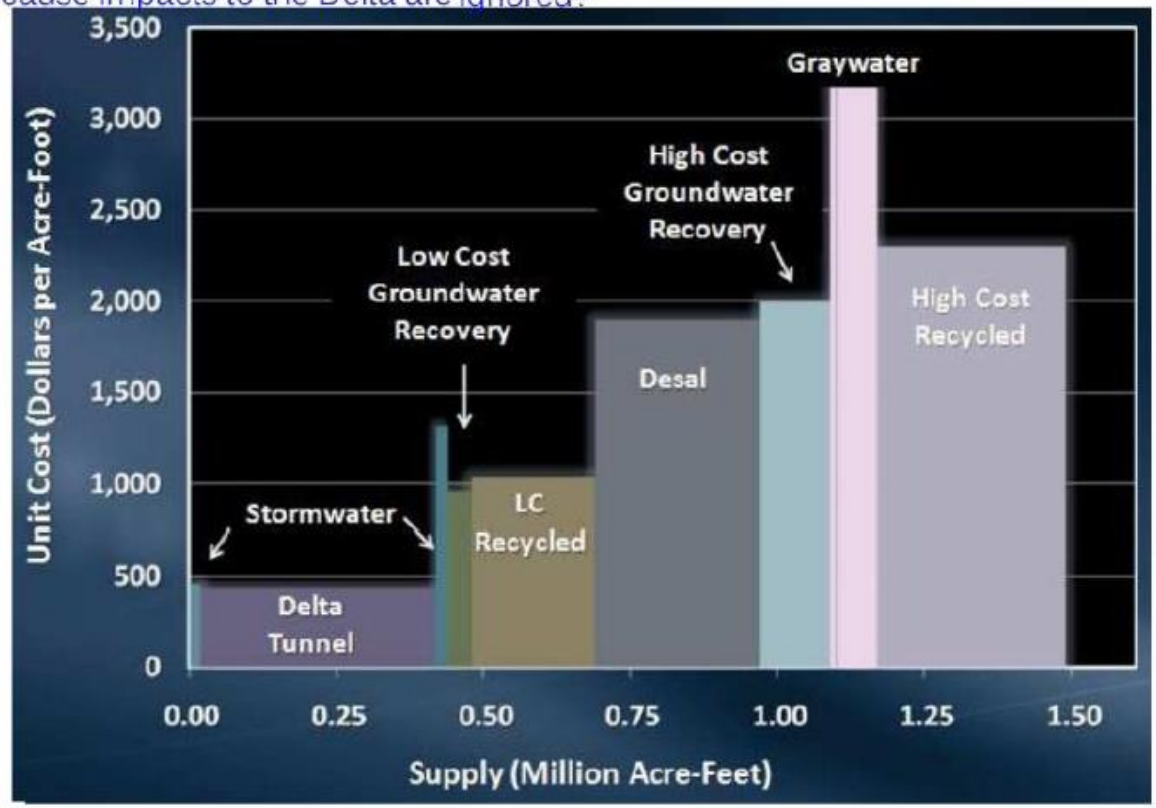
Science Issues Relating to Delta Conveyance Infrastructure

Design and Operation Issues

Dennis Majors
Metropolitan Water District of Southern California
August 22, 2007

Local supply costs derived from IRP analysis

For this slide, MWD assumes it has to pay for 44% of a $12 billion tunnel …
but it is still cheaper and better water than all other?
Perhaps it is because impacts to the Delta are ignored?



High Cost Scenario

SALINITY AND IMPACTS OF THE BDCP AND CALFED actions:

Before 1850 the Delta was entirely freshwater. When diversions north of the Delta, and dams on the rivers were built, less fress water flowed into the Delta, which began to affect drinking water and irrigation water quality

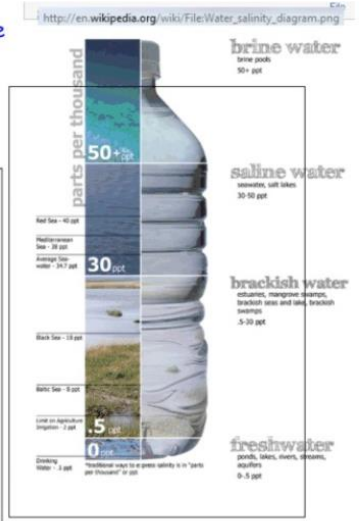
Table 10-1 Measurements of salinity

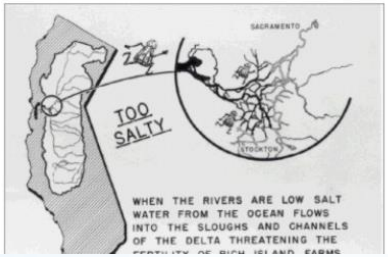
Salinity metric	Common Units	Comment
Electrical conductivity (EC)	µS/cm	EC is a measure of the concentration of dissolved ions in water, and is reported in µmhos/cm (micromhos per centimeter) or µS/cm (microsiemens per centimeter). A µmho is equivalent to a µS. EC may also be called specific conductance or specific conductivity of a solution.
Total dissolved solids (TDS)	mg/l or ppm	TDS is a measure of the all the dissolved substances in water and its units are milligrams per liter (mg/l) of solution.
Practical salinity units (PSU)	Unit-less	PSU is approximately equivalent to salinity expressed as parts per thousand (e.g. salt per 1,000 g of solution). Seawater is about 35 PSU. Its actual measurement is a complex procedure. Oceanographers are likely to use PSUs so it is mentioned here.

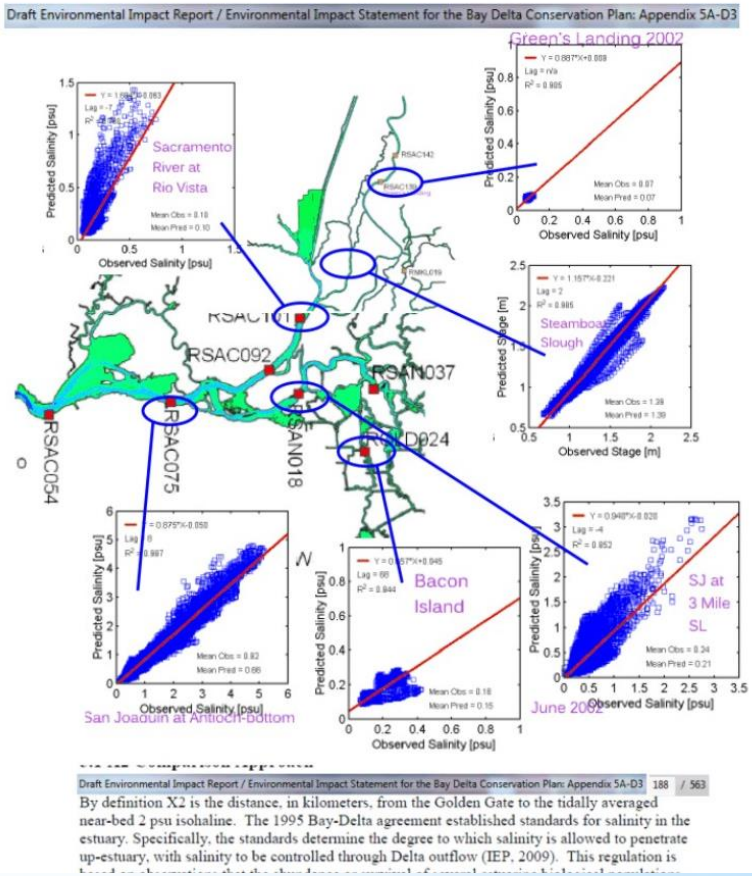
Degrees of salinity (L3)

There is no fixed delineation between "fresh" and "brackish" water; as such and for this chapter, a TDS concentration value of 1000 mg/l or 0.1 percent salinity is used for the dividing line, which is consistent with many references.

The term "brackish", in general, refers to water that has more salinity than fresh water but less than sea water. There also is no rigid delineation between brackish water and seawater; however, 30,000 mg/l or 3 percent salinity will be used for the purposes of this chapter to make a general delineation between brackish and sea water.



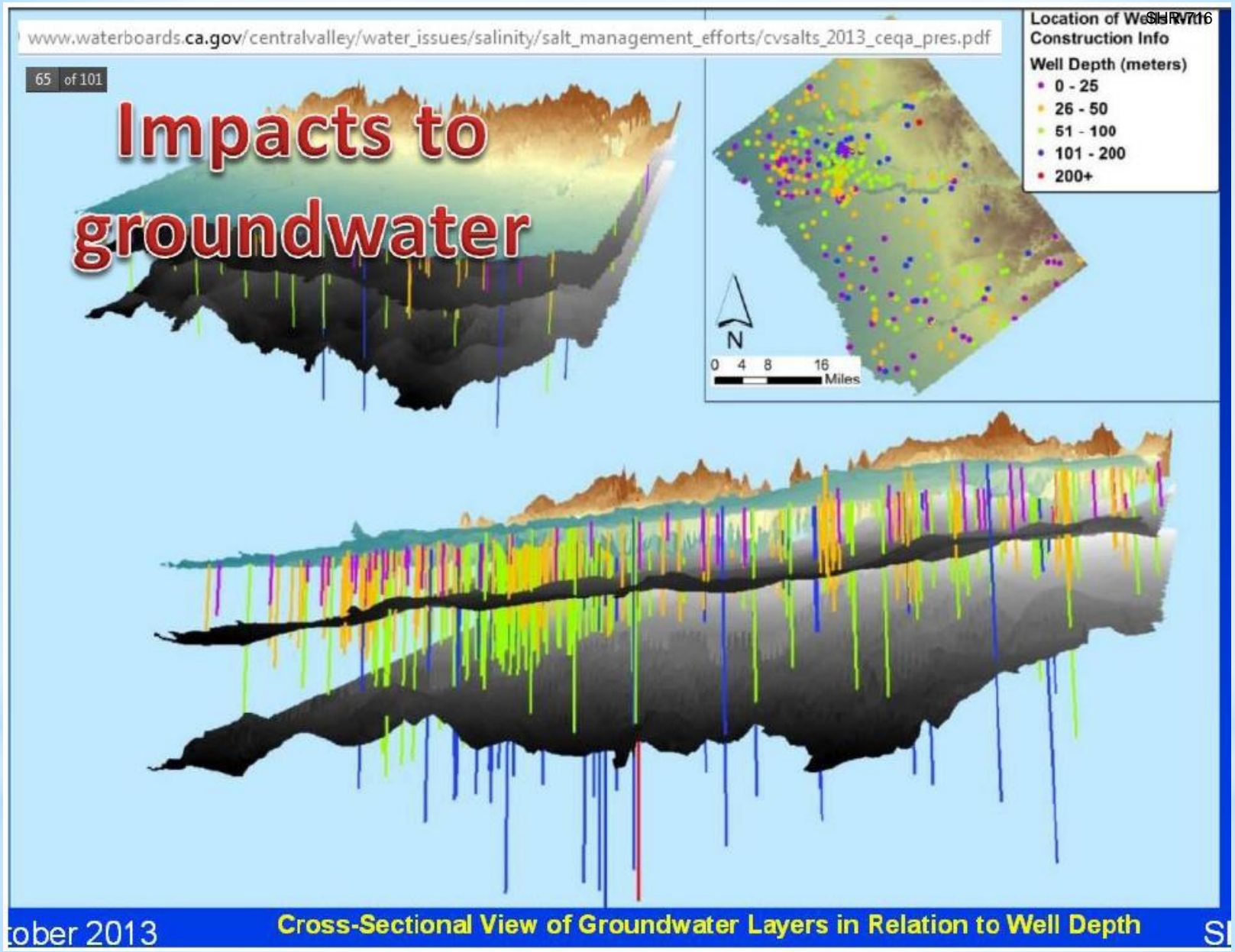




Draft Environmental Impact Report / Environmental Impact Statement for the Bay Delta Conservation Plan: Appendix 5A-D3 188 / 563

By definition X2 is the distance, in kilometers, from the Golden Gate to the tidally averaged near-bed 2 psu isohaline. The 1995 Bay-Delta agreement established standards for salinity in the estuary. Specifically, the standards determine the degree to which salinity is allowed to penetrate up-estuary, with salinity to be controlled through Delta outflow (IEP, 2009). This regulation is

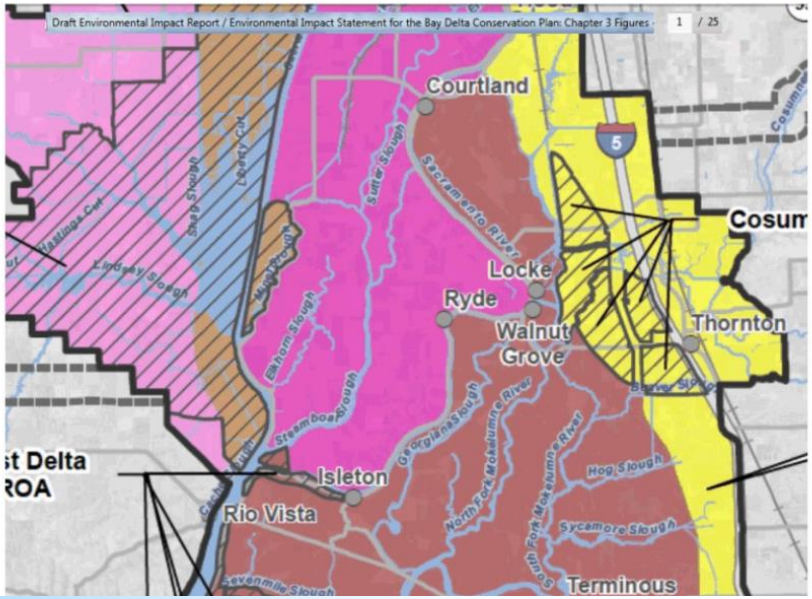
* We do not need to wait for the BDCP approval to feel the negative impacts of the pre-built elements of the BDCP/Delta Plan. Mismanagement of the reservoirs in 2012 and 2013 already has the impact of current increased salinity in the Delta in 2014.

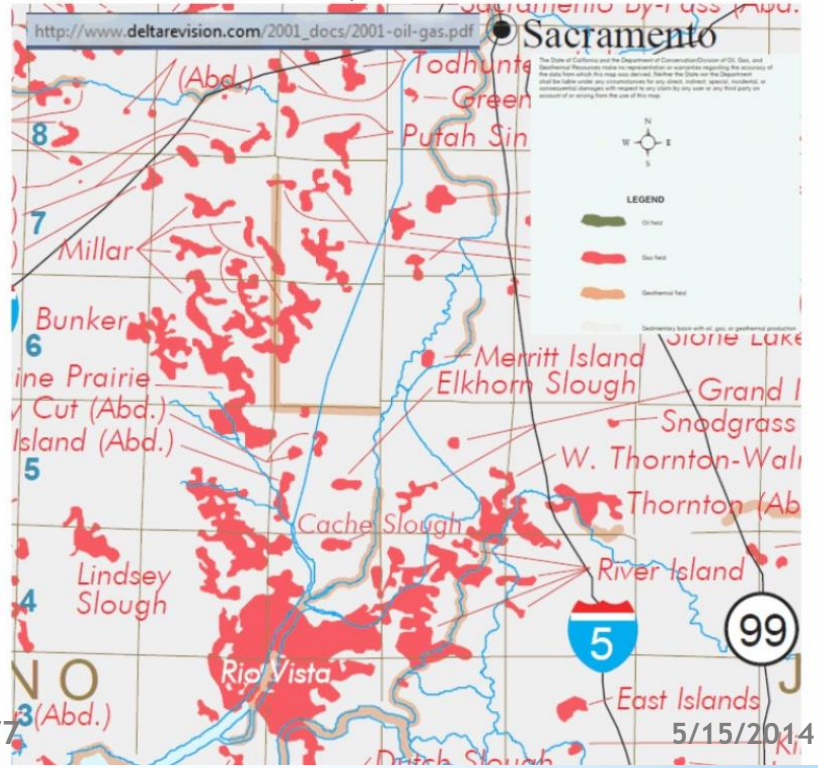

www.waterboards.ca.gov/centralvalley/water_issues/salinity/salt_management_efforts/cvsalts_2013_ceqa_pres.pdf
65 of 101
Impacts to groundwater
Location of Wells with Construction Info
Well Depth (meters)
0 - 25
26 - 50
51 - 100
101 - 200
200+
N
0 4 8 16
Miles
tober 2013
Cross-Sectional View of Groundwater Layers in Relation to Well Depth

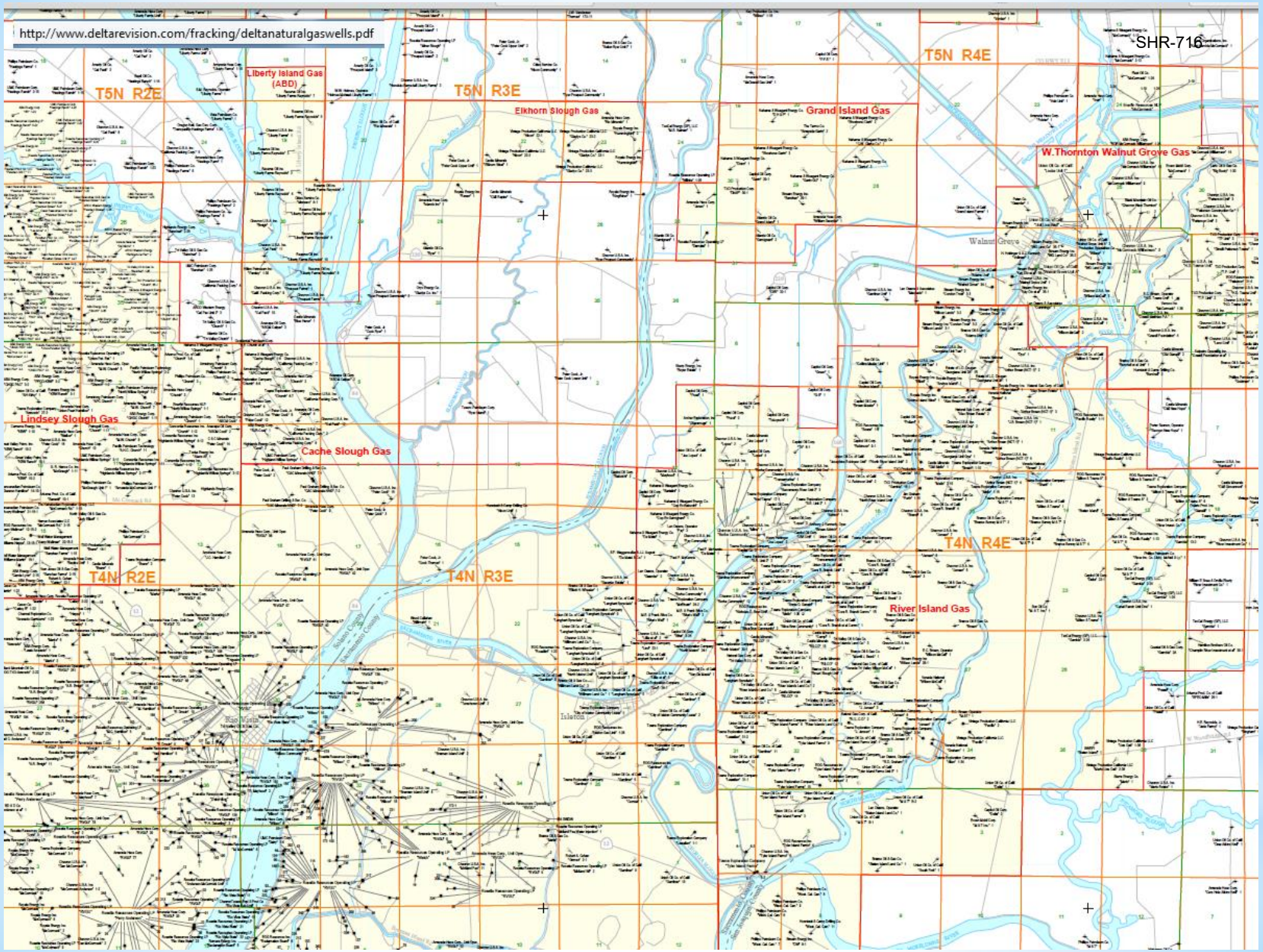
* Problem #7: Does BDCP water flow and in-Delta use account for water used for ***fracking*** and does BDCP computer modeling account for the fact that tules consume three times more water than crop irrigation, which therefore increases in-Delta water requirements?

THE CORRELATION BETWEEN NATURAL GAS RESERVES AND THE TARGETED "RESTORATION" AREAS

Look at the map sections below. Map on the right shows the locations of natural gas pockets available through the new "fracturing" method invented in 1998. Map on the left shows the areas of the Delta proposed for "restoration". The landowners in the Delta have mineral rights under their land most likely. Isn't it an interesting correlation that the places that are targeted "restoration" are also the places to be fracked, which has already started in the Delta? So DWR and other agencies appear to be using the BDCP as an excuse to take over privately-owned lands or force the sale of the lands. The water rights get sold to the highest bidder, and the oil companies like Chevron are free to frack the Delta. Ask what happens to the Bay Area aquifers from fracking residue fluids left in the Bay Area aquifer? Fracking induces seismic events (earthquakes). Will Chevron and the other chemical companies clean up the destroyed aquifer when they induce an earthquake that not only knocks down levees but breaks the residue wells to allow cross-contamination of our aquifer?







New fracking wells of the Delta as of 2009

http://deltarevision.com/Issues/conveyance/intakes/630cfs.jpg

2. Jibbon and I Street. Unknown million gallons per day (approximately 400 cfs ?) from the size of it as planning documents don't show online.

3. By Sac State on the American River . 200 million gallons per day (225 cfs)
http://www.nhcweb.com/section.asp?pageid=7077

4. Folsom South Canal expansion 100-200 Million gallons per day
http://deltarevision.com/2012%20docs/construction/fulsom-south-diversion.jpg and
http://deltarevision.com/Issues/conveyance/intakes/fulsomesouth-3500cfs.jpg

5. Freeport Project. 185 million gallons per day (286 cfs)

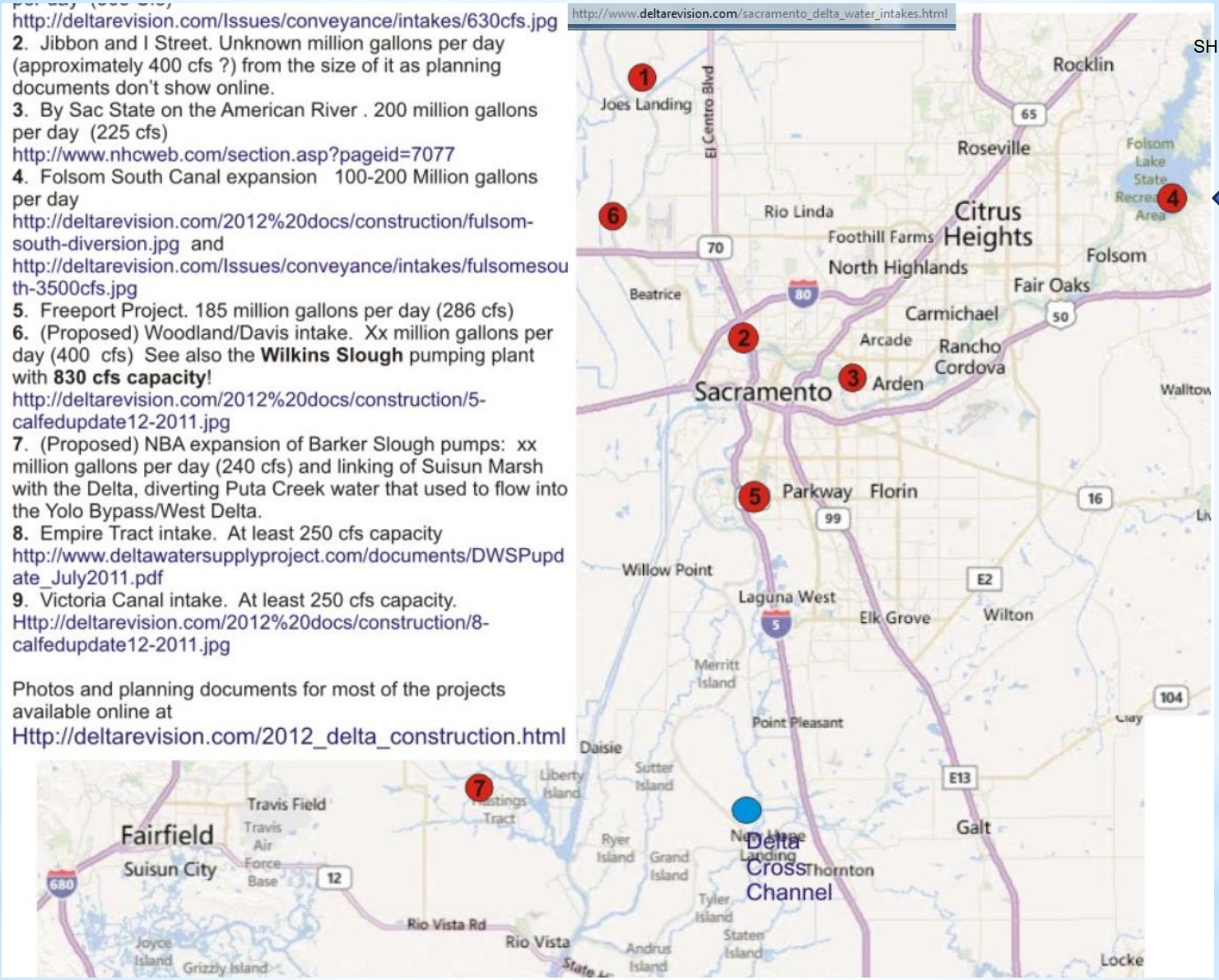
6. (Proposed) Woodland/Davis intake. Xx million gallons per day (400 cfs) See also the **Wilkins Slough** pumping plant with **830 cfs capacity**!
http://deltarevision.com/2012%20docs/construction/5-calfedupdate12-2011.jpg

7. (Proposed) NBA expansion of Barker Slough pumps: xx million gallons per day (240 cfs) and linking of Suisun Marsh with the Delta, diverting Puta Creek water that used to flow into the Yolo Bypass/West Delta.

8. Empire Tract intake. At least 250 cfs capacity
http://www.deltawatersupplyproject.com/documents/DWSPupdate_July2011.pdf

9. Victoria Canal intake. At least 250 cfs capacity.
Http://deltarevision.com/2012%20docs/construction/8-calfedupdate12-2011.jpg

Photos and planning documents for most of the projects available online at
Http://deltarevision.com/2012_delta_construction.html



* Problem #8: Does DWR/DSC/BDCP account for all of the new intakes built north of the Delta and storage in the Delta?

http://baydeltaoffice.water.ca.gov/downloads/DSM2_Users_Group/BDCP/DSM2_Recalibration_102709_doc.pdf

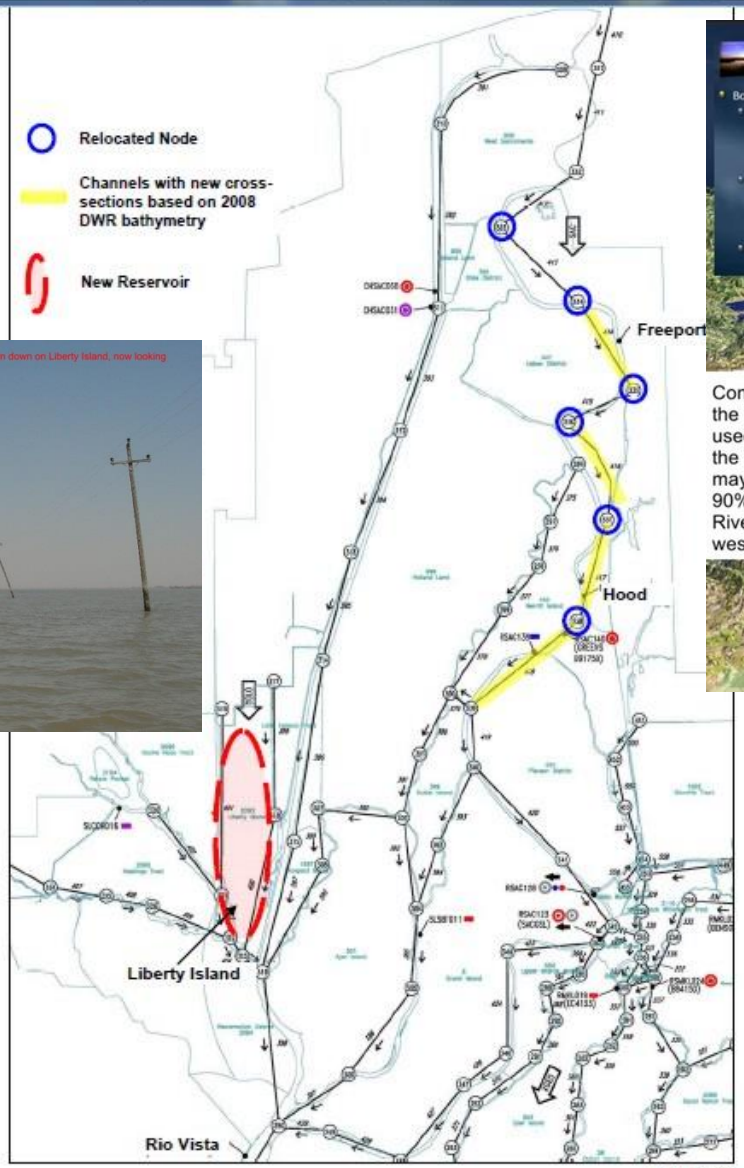
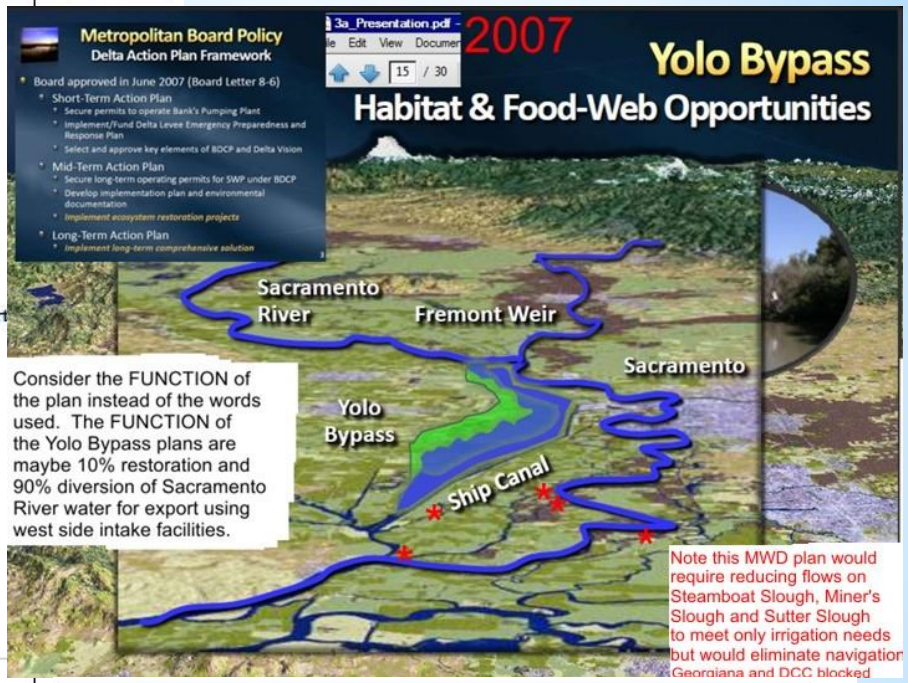
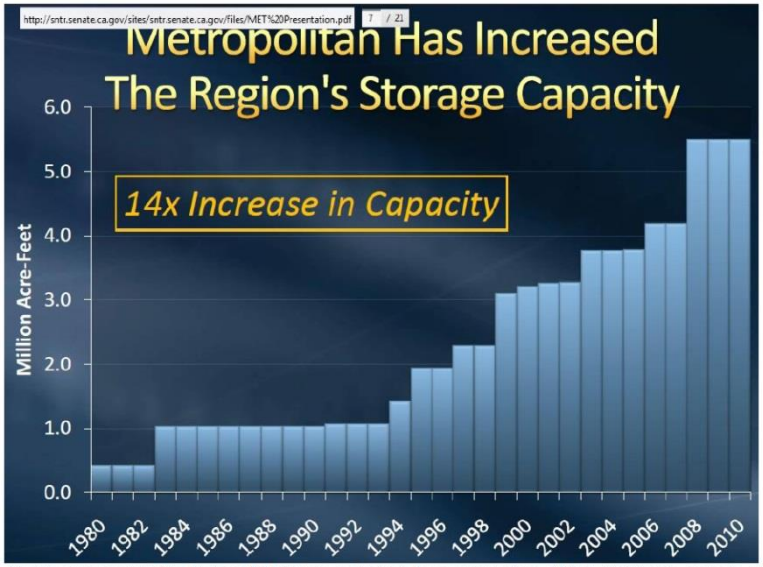


FIGURE 2-2
DSM2 Model Grid in the North Delta Showing the Grid Modifications Performed as Part of the Recalibration Effort



Note this MWD plan would require reducing flows on Steamboat Slough, Miner's Slough and Sutter Slough to meet only irrigation needs but would eliminate navigation Georgiana and DCC blocked

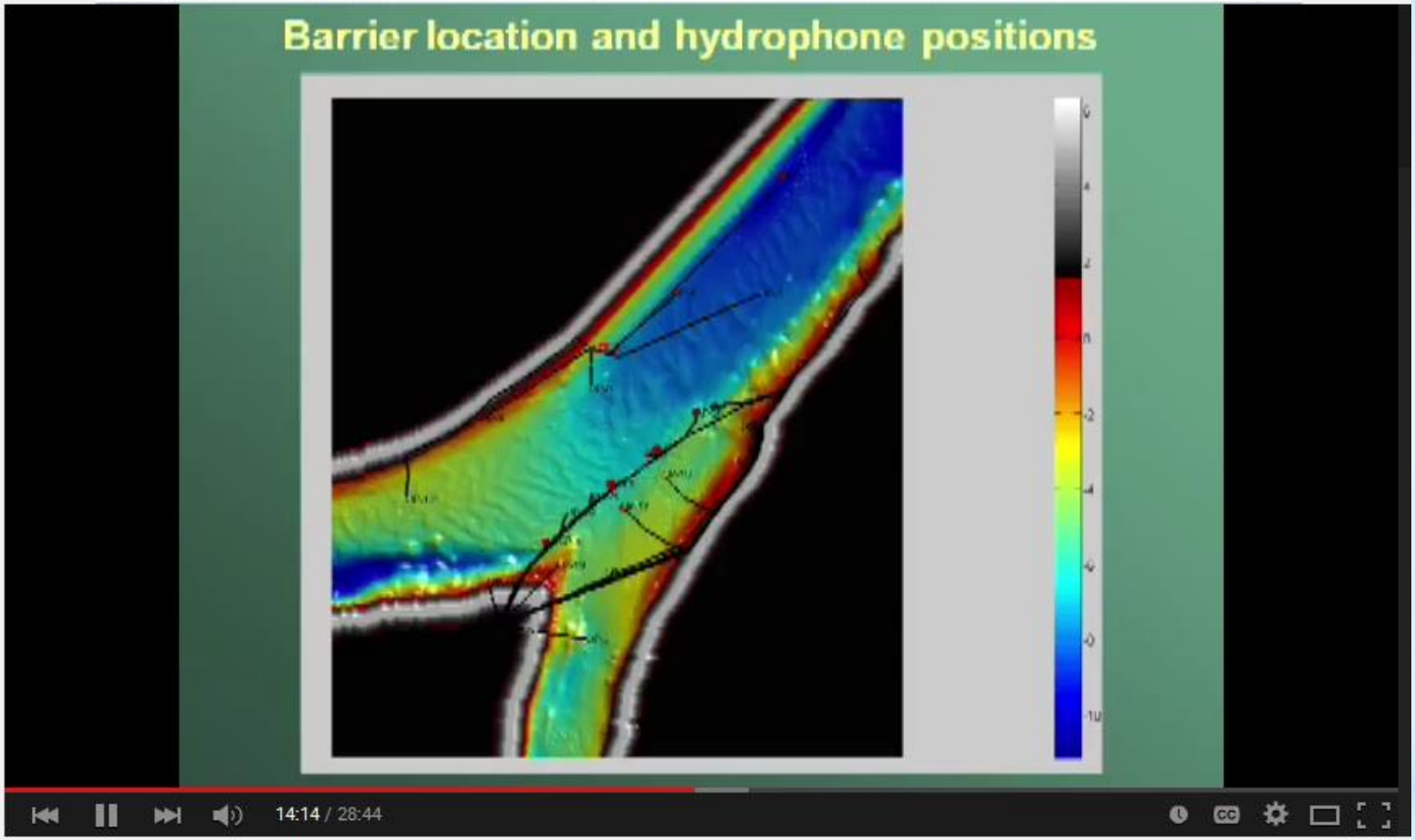


Above screen print is from a MWD presentation to a committee of the California senate which demonstrates the improved storage capacity which started to increase dramatically in 1998.

Inappropriate inconsistency can result in inequitable treatment, no common understanding of key water quality and water rights goals, and difficulty in achieving a meaningful evaluation of outcomes.

* If they can't correctly count the water flow, they also can't control it. Why should we trust them (DWR, USBR, SWRCB) to make sure there is sufficient fresh water flow in the North Delta?

https://www.youtube.com/watch?v=RNIdBDqL3rc&index=7&list=PLqTHCIiW1HhrNF3c81L_k9MI7VLcoJ4j2



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39 views

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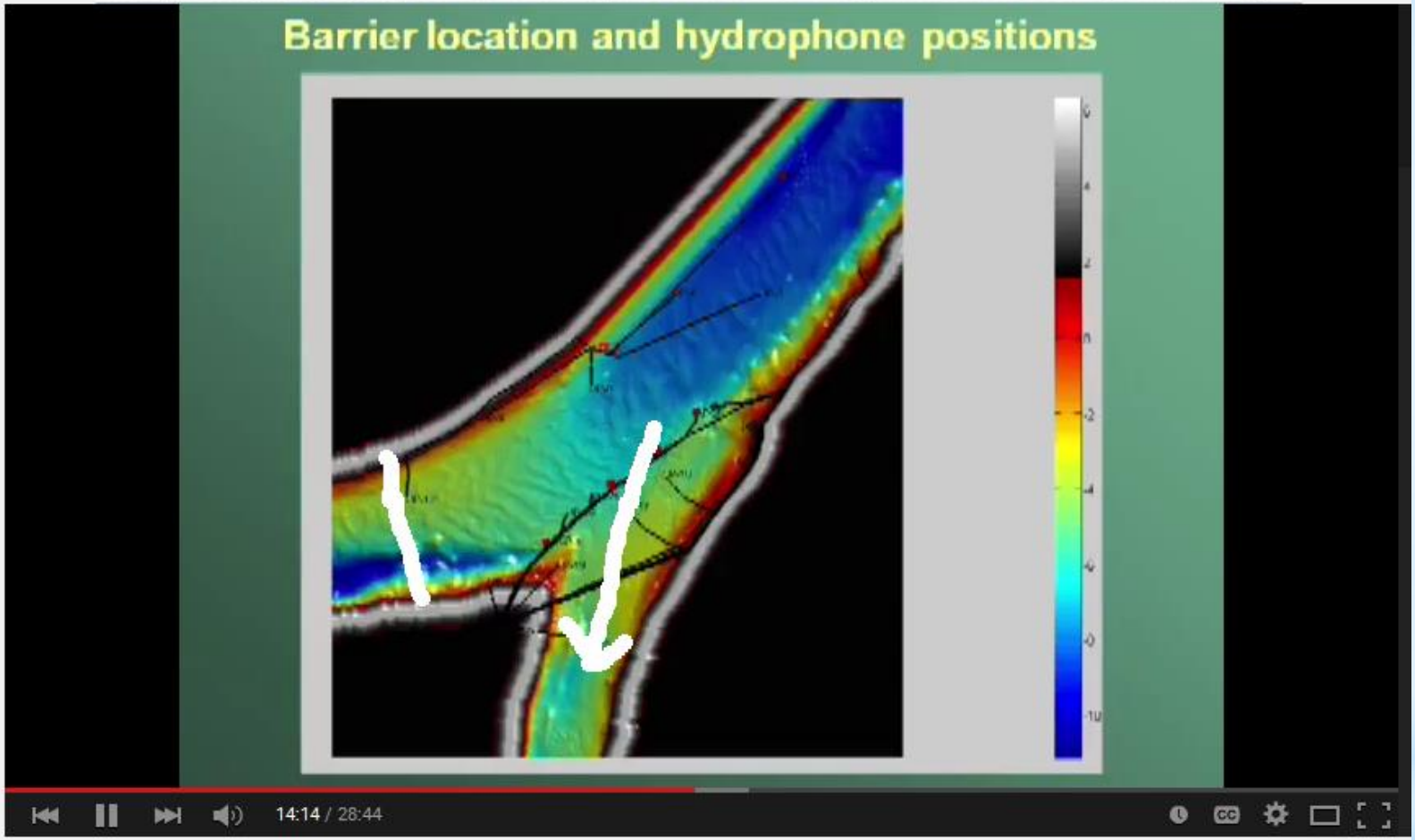
https://www.youtube.com/watch?v=RNIdBDqL3rc&index=7&list=PLqTHCIiW1HhrNF3c81L_k9MI7VLcoJ4j2



DSC Delta Science Program Workshop - April 16, 2014 - Hydrodynamics

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39 views

Add to Share More

* Current low flow impacts: increased non-native water weeds which clog the navigable waterways and gets into the farmer's irrigation channels

*Roads are already being blocked…

http://www.dot.ca.gov/dist4/publicaffairs/docs/rte12160mapfront.pdf

2-4-14: Ferry at SR still broken and, by the way, when did SR 84 become 160?

Rte 12/160 Detours

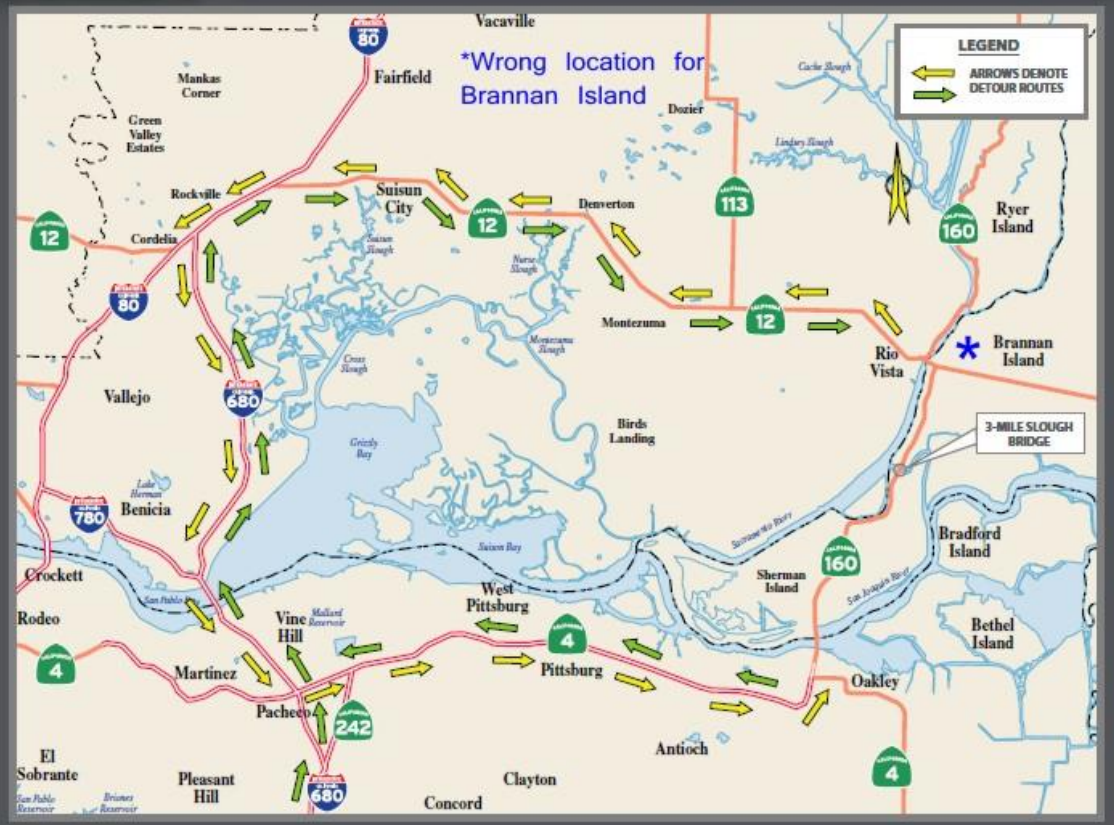
REPAIR CONTRACT FOR 3-MILE SLOUGH BRIDGE NIGHTLY CLOSURES OF STATE ROUTE 160 IN APRIL NO THROUGH TRAFFIC ON 160 RIO VISTA – ANTIOCH CLOSURE INFORMATION

Beginning Thursday, April 1 and continuing through Friday, April 30, State Route 160 (Highway 160) will be closed each night to all through traffic between Rio Vista and Antioch from 9:00 p.m. to 5:00 a.m. the following morning. Only local traffic will be allowed on SR 160 south of Rio Vista or north of the Antioch Bridge. The nightly closures of Route 160 will be in effect every night in April and under all weather conditions to facilitate the necessary repairs to the 3-Mile Slough Bridge.

TRAFFIC DETOURS

Changeable message signs have been strategically placed throughout the detour routes in both directions to assist in guiding motorists through the detour to destination points ending in Antioch and Rio Vista. These message signs will provide advanced closure notice prior to April 1, and then activated nightly through April to direct traffic during the closure of the 3 Mile Slough Bridge on Highway 160 between Rio Vista and Antioch. Please keep in mind that these detours could add more than 90 minutes to your travel time.

Traffic from the Rio Vista area with destination points in and around Antioch, will be detoured via State Route 12 west to and onto westbound Interstate 80 and west on I-80 to and south onto I-680 at the Cordelia Junction (I-80/I-680 interchange). Continue south on I-680 across the Benicia-Martinez Bridge and then east onto State Route 4 (about 3.8 miles south of Bridge), at the I-680/Route 4 Interchange in Concord. Continue east on Route 4 to destination points and detour end in Antioch. Traffic from the Antioch area with destination points in and around Rio Vista, will be detoured via Route 4 west to and then north onto I-680 and continue north on I-680 to and onto I-80 east at the I-80/I-680 Interchange (Cordelia Junction). From I-80 east take Route 12 east, and continue east on SR 12 to destination points and detour end just east of Rio Vista at the Routes 12/160 intersection.



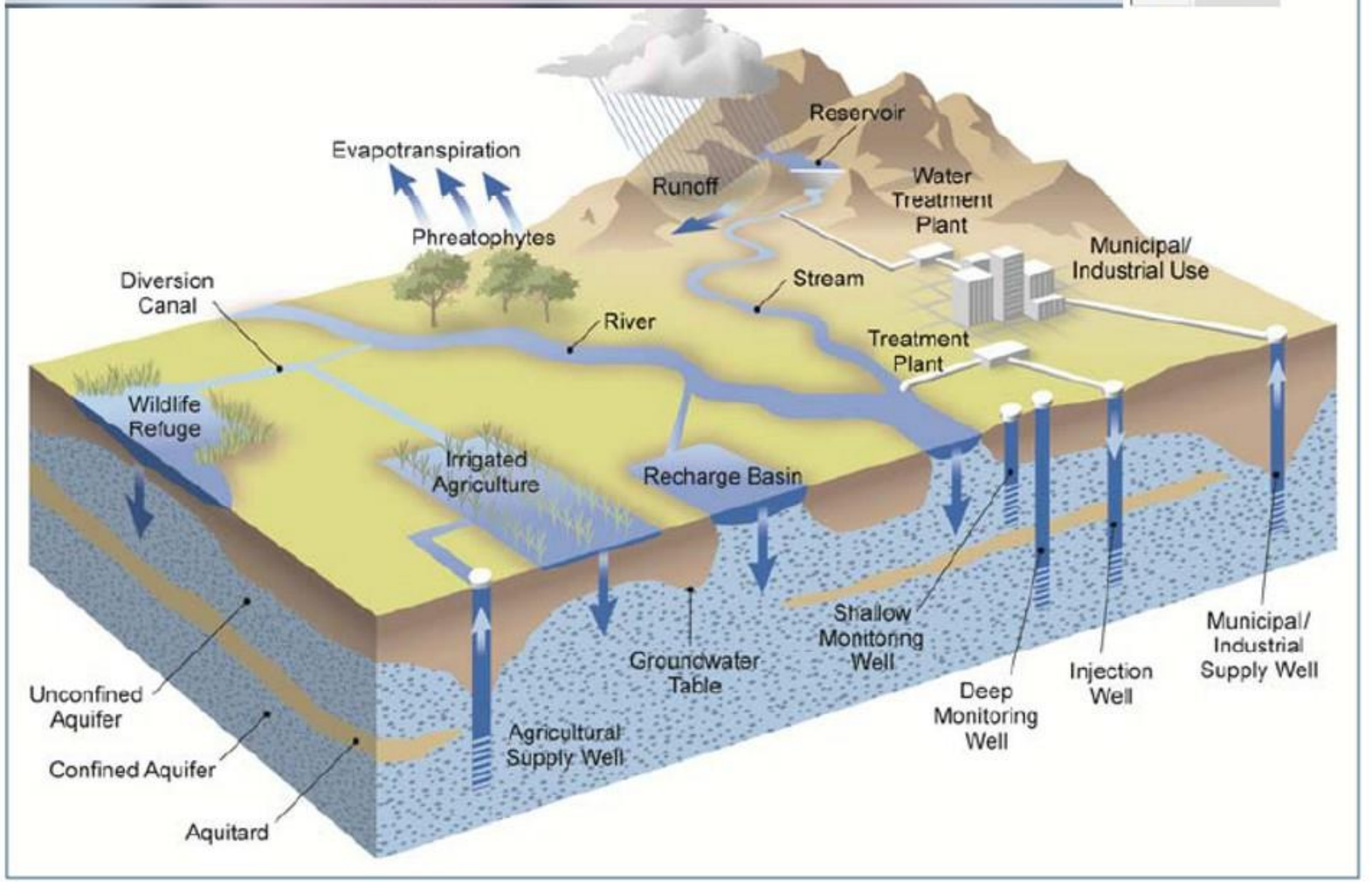
Caltrans

CT1405 Audio Visual Graphic Services 3/04

SHR-716

Figure 1 Conceptual Model of Water Management System

http://www.waterplan.water.ca.gov/docs/cwpu2013/ae/ae_brochure-cwpu2013.pdf 9 / 22



If all Sacramento River water is diverted into tunnels or other conveyance options, how does the Delta aquifer get replenished? Or will sea water invade the North Delta? Note: there is no such thing as an "aquitard" but it is one of the funnier new words invented by the silent players in this round of California water wars!

impacts: native fish going extinct, tion water quality, reduction in ality

4. SALSIM - John Shelton, CDFW, Region 4 www.dfg.ca.gov/erp/predation_presentations.asp

Models -- San Joaquin River Fall-run Chinook Salmon Population ...

Management Challenges

- Ecosystem limiting factors
- RPA's protective for salmon
- South Delta inflow objectives
- FERC instream flow objectives
- Hatchery augmentation influence
- Restore delta ecosystem concurrent with water supply reliability
- Water temperature standards
- Friant Restoration Program

2:51 / 15:58

"We divert 70% of the flow"

nationalatlas.gov™ Where We Are

http://www.nationalatlas.gov/mapmaker?AppCmd=CUSTOM&LayerList=Aquifers&visCats=CAT-hydro,CAT-aquifers

As more Sacramento River water is diverted away from the Northern California aquifer, trace consentrations of natural minerals, like arsenic, will increase most likely. How does the Delta Plan and BDCP address the impacts to private and commercial wells in NorCal?

Zoom to State(s)

Arsenic in Ground Water
Source: U.S. Geological Survey

Arsenic concentrations in 25% of ground water samples equal or exceed:

- 50 or greater micrograms per liter
- 10
- 5
- 3
- 1 or less
- Insufficient data

Have your drinking water well tested NOW and at least every month in low flow seasons!

www.waterboards.ca.gov/water_issues/programs/sw

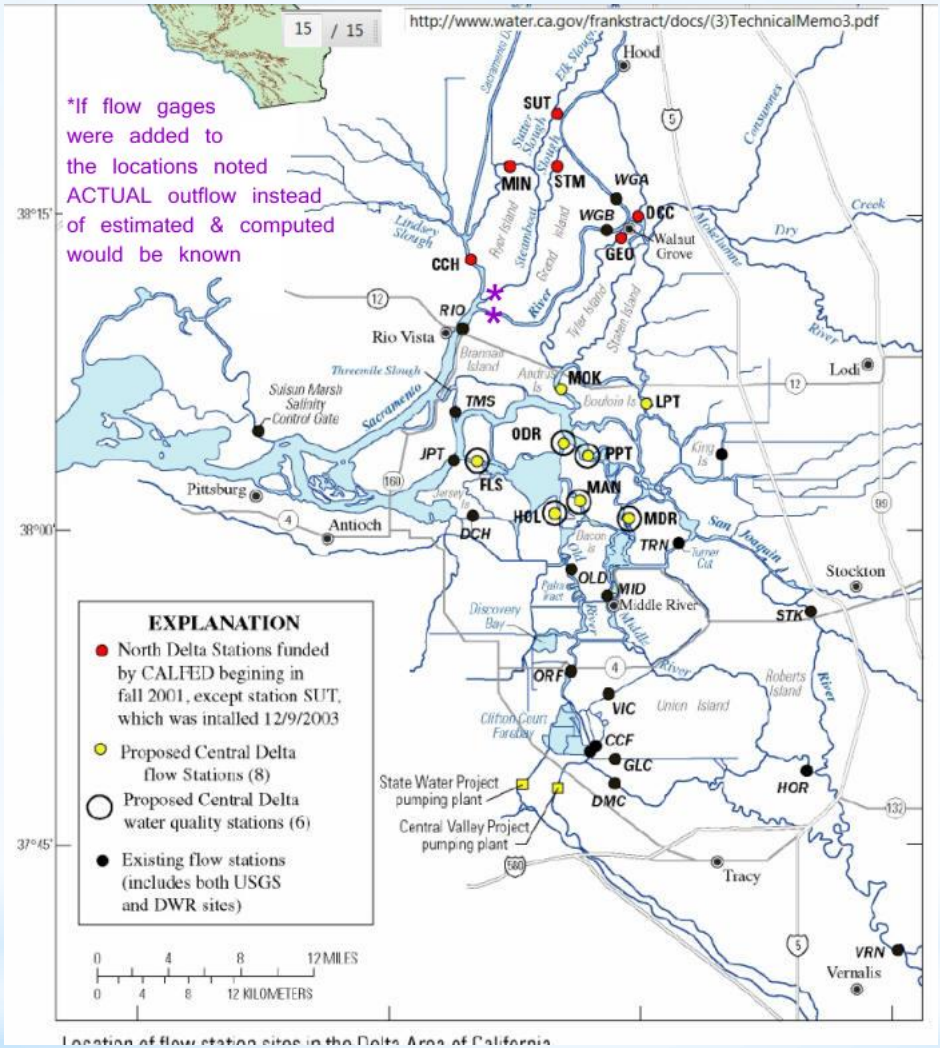
Methylmercury poses the greatest concern for consumers of fish caught in California rivers and streams. Most locations sampled (32 of 63, or 51%) had low concentrations of methylmercury (<0.07 ppm). A few locations, 8 of 63 (13%), were in the high contamination category, with an average for the most contaminated species exceeding 0.44 ppm. Most of the locations in the high contamination category were in the Delta region. Locations outside of the Delta region all had low or moderate methylmercury contamination, with the one exception of Laguna de Santa Rosa.

2011

Concentrations with the Highest

- 0.07 – 0.22 ppm
- 0.22 – 0.44 ppm
- > 0.44 ppm

Regional Water Quality Control Boards



Location of flow station sites in the Delta Area of California

* Demand that Delta outflow is reported based on gages, not a computed "estimate" of what might be left over after all exports, in-Delta uses and the unaccounted for water.

* State Water Contractors should pay for the monitoring of water flows statewide but not CONTROL the gages or CONTROL the reports. North Delta Water Agency or another Delta landowner controlled-entity should be funded to monitor and report actual flows and all monitoring gages should be viewable online for anyone. If water quality, water flows or water levels get below a reasonable point, the export pumps must be shut off and additional reservoir flows must be released to replenish the prime farm lands of California and preserve senior water rights.

* http://www.snugharbor.net/history_of_california_water_wars.html

* http://www.deltarevision.com/timeline.htm

* http://www.snugharbor.net/images-2013/deltastuff/wrongdeltanames.jpg

May 15, 2014. Presentation data compiled by Nicole Suard, Esq. (from Snug Harbor on Steamboat Slough) for educational purposes only. Water flow calculations are estimates only, provided to establish the fact there are gaps in flow data provided to the public, and substantial inconsistencies in flow and export reporting since at least 2004. Presenter is NOT a water engineer or expert at water flow or rights, so please refer specific questions regarding water flow to your local water agency representative, a water engineer, or your personal attorney.

Update April 2015

BDCP draft plan was released for public comment, and thousands of comments and criticizms showed the opposition to proposed tunnels and the diversion of more fresh water from the Delta is clearly opposed by many. The public has been told the BDCP will be revised sometime in 2015.

In the meantime, DWR and state water contractors continue to modify the Delta utilizing tools defined in phase 2 of DRMS report. One example is the proposal to use water flow barriers to block freshwater flow into some Delta waterways in order to force more Sacramento River water towards the export pumps. Around 2003 MWD came up with the concept to use barriers and gates to create a "mixing zone" in the Delta. That way the "sweet water" or more pure drinking water of the Sacramento River could be mixed with the lower quality of the San Joaquin River, which would reduce the processing and purification costs associated with providing urban drinking water and also the pure water needed for the new method of horizontal hydraulic fracturing.


NSFRESINBriefing_Jan26.2010.pptx
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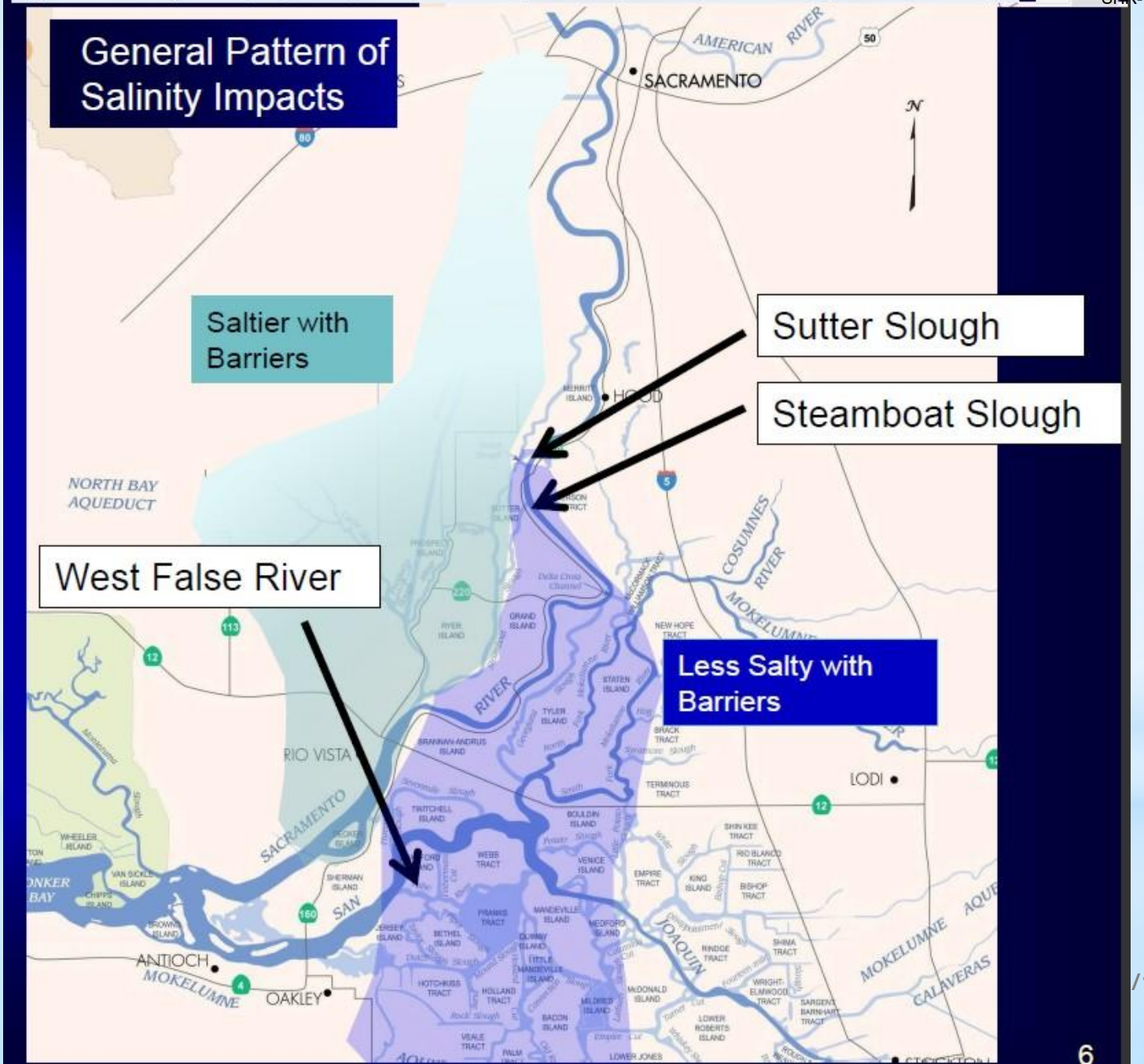
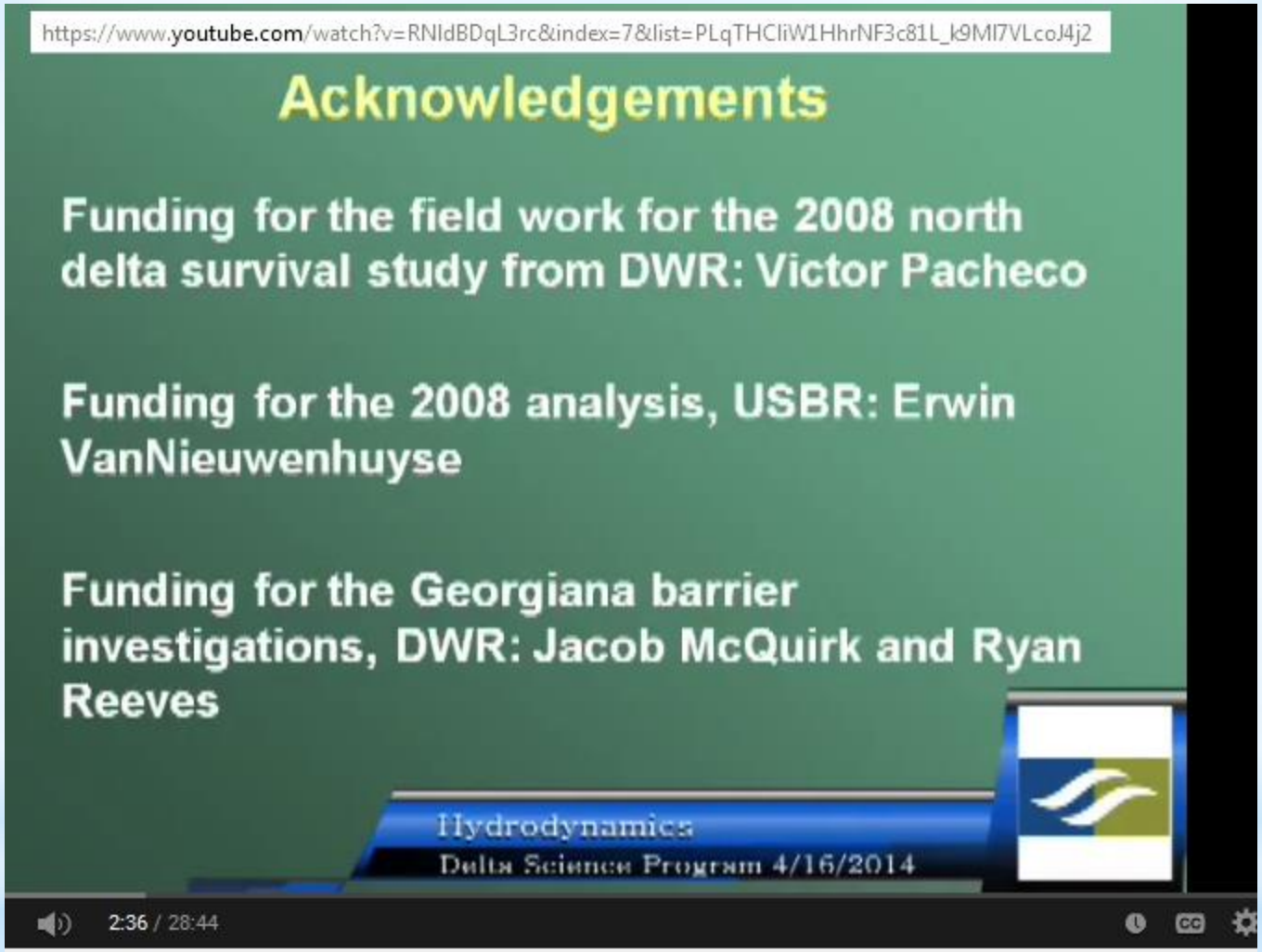
DEPARTMENT OF WATER RESOURCES
PPIC
PUBLIC POLICY INSTITUTE OF CALIFORNIA
Delta Risk Management Strategy
US Army Corps of Engineers


General Pattern of Salinity Impacts
Saltier with Barriers
Sutter Slough
Steamboat Slough
West False River
Less Salty with Barriers
SACRAMENTO
AMERICAN RIVER
HOOD
NORTH BAY AQUEDUCT
COSUMNES RIVER
MOKELUMNE
RIO VISTA
LODI
ANTIOCH
OAKLEY
SACRAMENTO RIVER
SAN JOAQUIN
CALAVERAS


https://www.youtube.com/watch?v=RNIdBDqL3rc&index=7&list=PLqTHCIiW1HhrNF3c81L_k9MI7VLcoJ4j2
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Funding for the Georgiana barrier investigations, DWR: Jacob McQuirk and Ryan Reeves
Hydrodynamics
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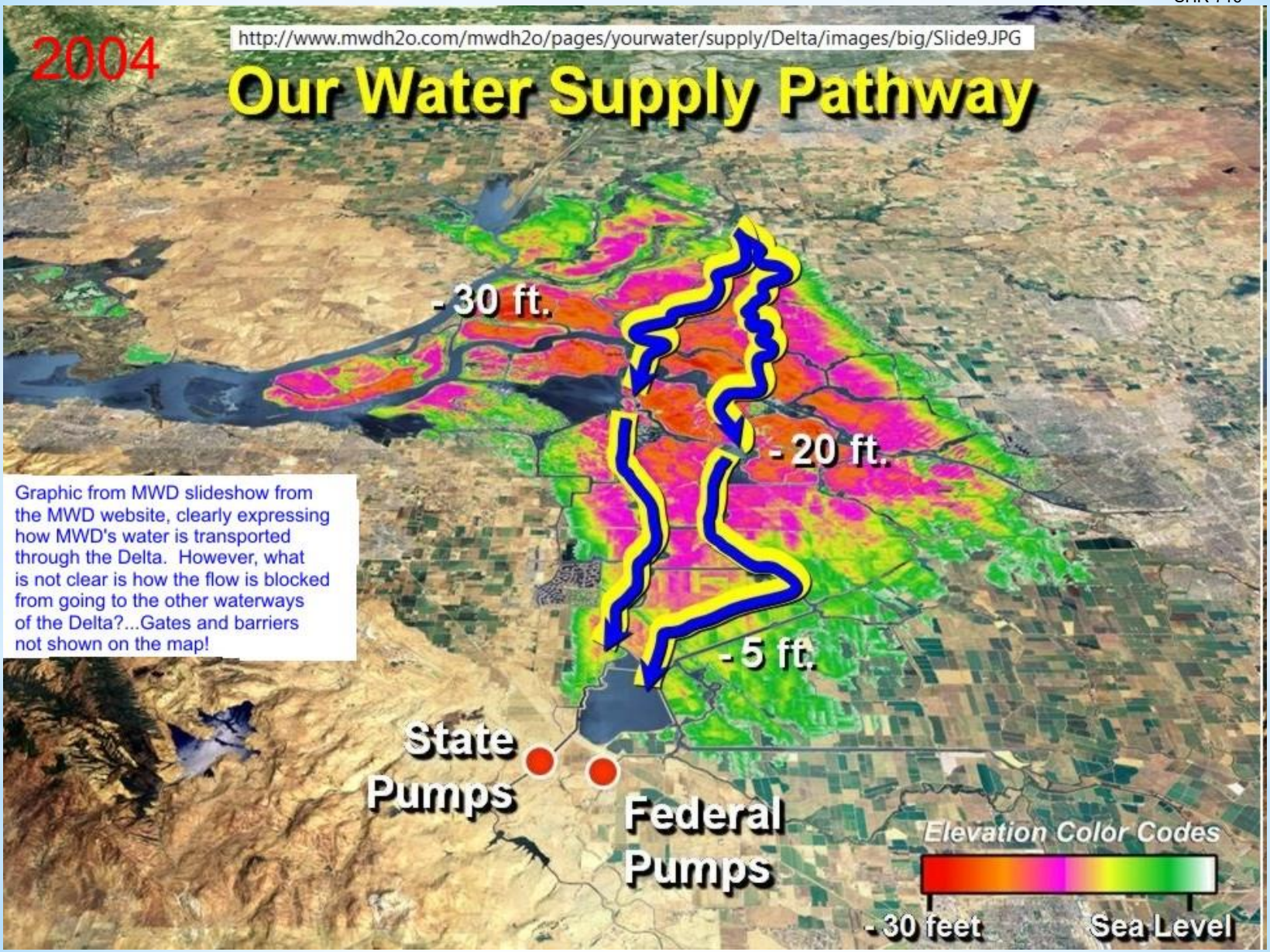
2004
http://www.mwdh2o.com/mwdh2o/pages/yourwater/supply/Delta/images/big/Slide9.JPG
Our Water Supply Pathway
- 30 ft.
- 20 ft.
- 5 ft.
Graphic from MWD slideshow from the MWD website, clearly expressing how MWD's water is transported through the Delta. However, what is not clear is how the flow is blocked from going to the other waterways of the Delta?...Gates and barriers not shown on the map!
State Pumps
Federal Pumps
Elevation Color Codes
- 30 feet
Sea Level