Emerging Constituents and PFAs Sampling Results – Aug. 2019

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Water Resources & Planning Mgr.
Commission I December 17, 2019
Item No. 5.A.

SAWPA

In 2008, a voluntary agreement was established between regulators and regulated community in place of a new regulation

Development of Sampling Program for Emerging Constituents

Consultant and Regulatory Support

- Tim Moore, Risk Sciences
  - Facilitation
  - Media Interaction
  - Regional Bd Presentations
- SAWPA
  - Workgroup administrator
  - Media Interaction
- Regional Board, State Board and USGS at table

21 Water & Wastewater Agencies and Regional Board Sign Agreement to Sample ECs

Who participates:

- Water Wholesalers
- Water Retailers
- Wastewater Treatment Operators
- Regional Board Staff
- DDW Staff
- USGS Staff
- Analytical Lab Staff
- NWRI Staff
- Environmental NGOs

Emerging Constituents (EC) Program Task Force

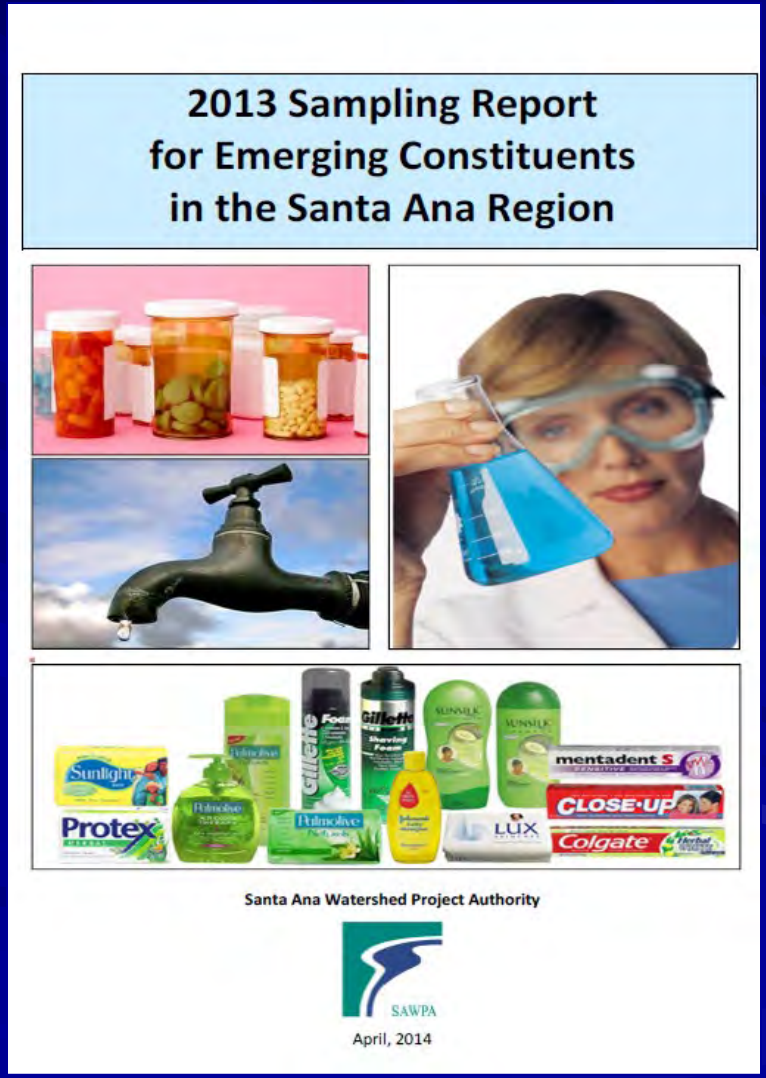
SAWPA authorized TF agreement - 2012

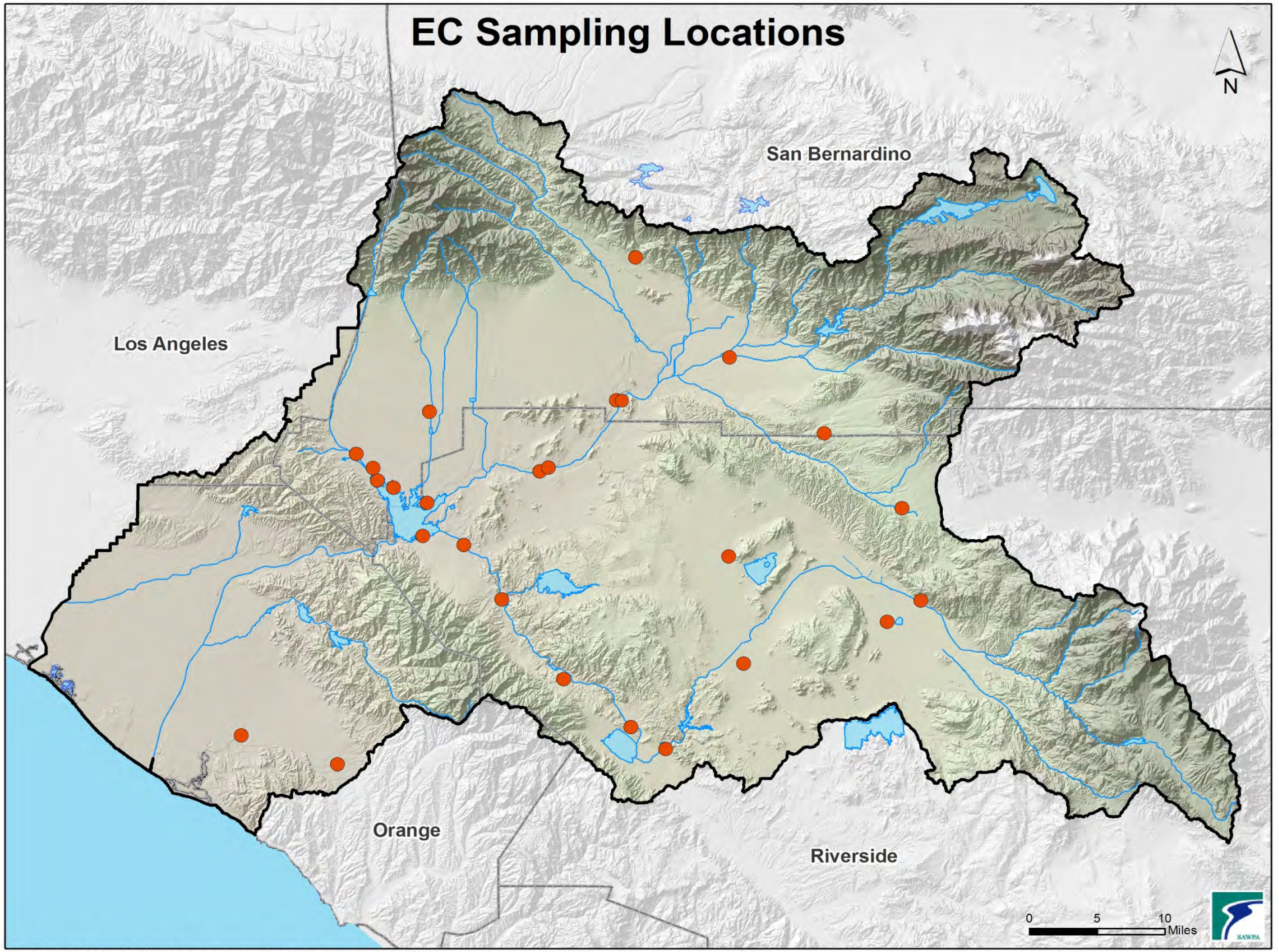
Description

- Complies with Regional Board Resolution under Cooperative Agreement for Imported Water Recharge
- Completed 2010-2013 Voluntary Annual Sampling reports for emerging constituents
- Implements safe tap water public outreach program based on SAWPA commission direction to respond to Environmental Working Group misinformation

Benefits

- Assisted state and federal agencies in determining most effective measuring and detection practices
- Avoided need to conduct long term EC monitoring costs on 100s of other ECs
- Watershed evaluation of ECs helped frame discussion on ECs at State level to our benefit
- Corrects misinformed media exposure through outreach




EC Sampling Locations
N
San Bernardino
Los Angeles
Orange
Riverside
0
5
10
Miles
P:\projects\Mark_Norton\EC\Wells\wells.mxd SW-1797

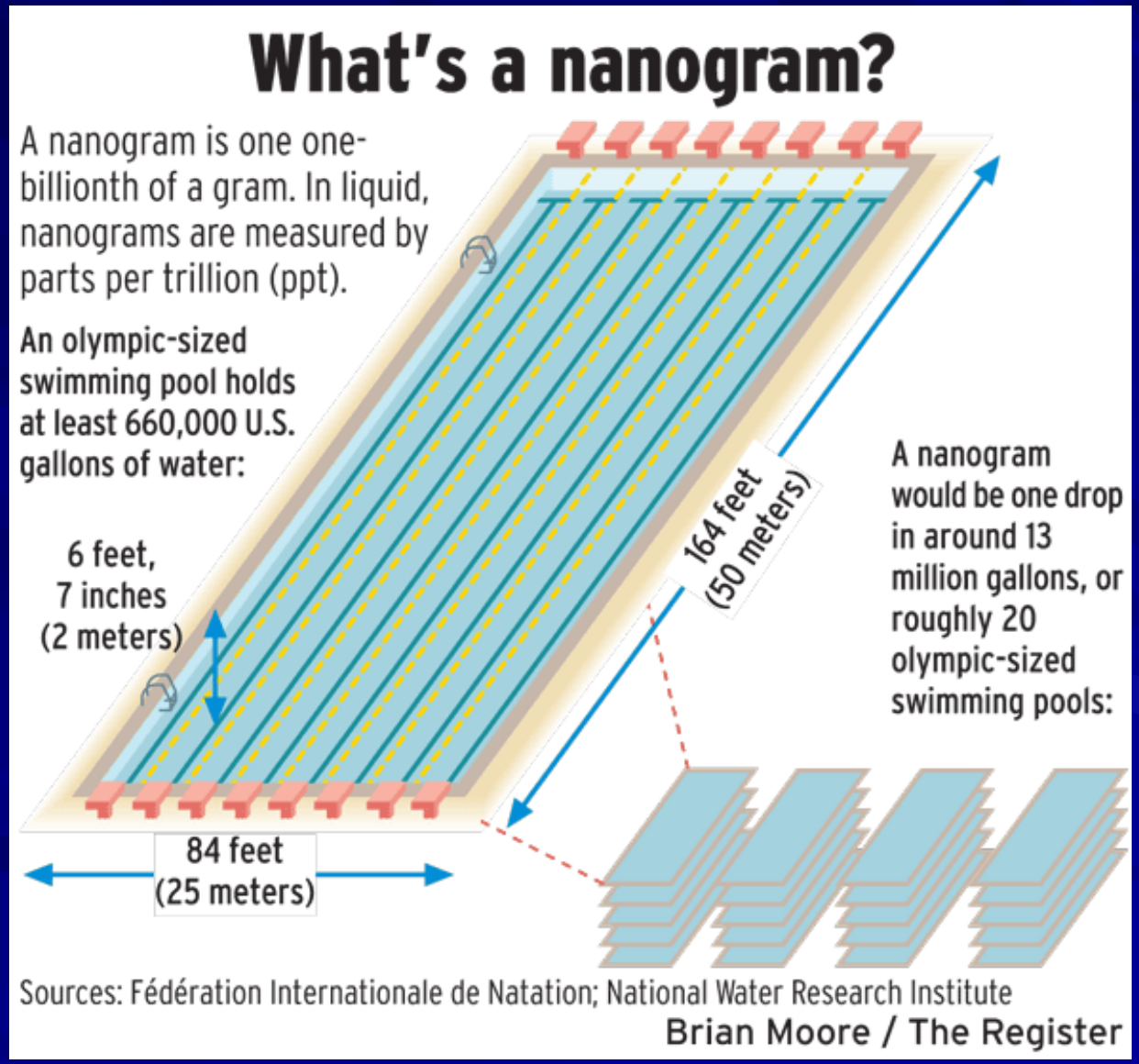
EC Sampling Program conducted from 2010-2013

Table 1: Summary of Results for 26 Samples Analyzed in 2013

Compound	Primary Use	Frequency of Detection	Reported Range[2]	Common Dose
Caffeine	Food Additive	42% (11 of 26)	ND – 0.000407 mg/L	100 mg
DEET[3]	Insecticide	81% (21 of 26)	ND – 0.000270 mg/L	270 mg
17β Estradiol	Natural Hormone	0% (0 of 26)	Never Detected	1 mg
Gemfibrozil	Anti-cholesterol	31% (8 of 26)	ND – 0.002000 mg/L	600 mg
Iopromide	Xray Contrast Agent	58% (15 of 26)	ND – 0.000680 mg/L	500 mg
Sucralose	Artificial Sweetener	100% (26 of 26)	0.000670 - 0.100000 mg/L	5,000 mg
Triclosan	Antiseptic	58% (15 of 26)	ND – 0.001000 mg/L	1 mg

Note: "mg/L" = milligram per Liter; 1 mg/L is one part per million. "ND" = Not Detected.

One part per trillion (ppt) = one single drop in about 20 Olympic sized swimming pools



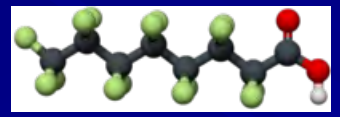
CALIFORNIA
WATER BOARDS
Santa Ana - R8

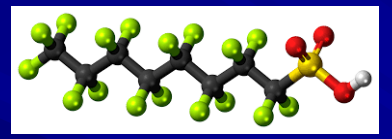
"The concentrations we're seeing are many, many times lower than the normal dosage of these particular drugs," said Kurt Berchtold, former executive officer of the Santa Ana Regional Water Quality Control Board. "So we certainly don't think there is any potential for human effects due to this."

Kurt Berchtold, Executive Officer,12/9/10
Upon sharing EC Sampling Results with
Santa Ana Regional Water Quality
Control Board

New Emerging Constituents of Concern - PFOA and PFOS

- Per- and polyfluoroalkyl substances (PFAS) or alkyl acids (PFAAs)
  - **PFOA** = Perfluorooctanoic Acid ($C_8HF_{15}O_2$)
  - **PFOS** = Perfluoroctane Sulfonate ($C_8HF_{17}O_3S$)





- Key ingredients/byproducts in the production of:
  - Consumer Products: Teflon, Scotchgard, Stainmaster, Gore-Tex
  - Polymers for aircraft and electronics
  - Paper packaging and wrappers for food (e.g., microwave popcorn bags)
  - Fire fighting foams
- Initially developed in 1940s
- PFOA & PFOS phase out in USA began in 2000s

PFOA & PFOS Properties

- Very stable, resistant to degradation
- Resistant to water, grease, and stains (lipophobic)
- Newer & more sensitive laboratory technology has revealed widespread occurrence in environment
- Found in groundwater near manufacturing sites and military bases

Recent Regulations Regarding PFOA and PFOS

- Since 2016, US EPA has established a lifetime Health Advisory Level for PFOA + PFOS of 70ng/L.
- July 2018: State Board Division of Drinking Water (DDW) Releases Interim Drinking Water Notification Levels & Response Levels
  - Notification Levels (NL)→ **PFOA = 14 ng/L; PFOS = 13 ng/L**
  - Response Level (RL) → **PFOA + PFOS = 70 ng/L (same as EPA HA)**
- Dec. 2018: State Board revised Recycled Water Policy to now require recycled water projects to analyze for PFOA & PFOS.
- Aug. 2019 State Board's DDW established notification levels at concentrations of 6.5 ppt for PFOS and 5.1 ppt for PFOA, consistent with OEHHA's recommendations

OEHHA
California Office of Environmental Health Hazard Assessment

OCWD Conducted Initial Testing for PFOA & PFOS (2013-2015)

- Within Orange County Water District service area,
  - 135 drinking water sites tested (e.g., wells, reservoirs, blending points)
  - 5 of 19 retailers had detections related to drinking water wells
  - Three retailers had one or more results > 70 ng/L 2016 EPA Health Advisory
- OCWD did not detect in their imported water sources or GWRS flows
- However, consistent detections > Notification Levels in Santa Ana River
  - Main river
  - Multiple WWTPs (POTW) discharges
  - Tributaries (e.g, Temescal Creek, Chino Creek)

Additional EC and PFA Sampling Need Response

- OCWD made 10/11/18 presentation to Santa Ana River Dischargers Association (SARDA) about PFOA & PFOS detections

- OCWD and SARDA informed Basin Monitoring Program Task Force which includes Regional Board staff of possible new EC/PFA sampling program need

- Report of planned voluntary PFAs and EC sampling by EC Program Task Force shared with SAWPA Commission on Dec. 18, 2018

EC Program Task Force – Aug. 2019 Sampling

- Sampling was conducted week of Aug. 26-30
- Included 20+ PFAs and many past ECs sampled
- Sampling discharges from all upper watershed wastewater trmt facilities, river flows and imported water
- Paid for by sampling agencies, report paid for by past contributions of EC Program TF

Aug. 2019 Preliminary Sampling Results

Compound	Primary Use	Frequency of Detection					2019 Concen. (ng/L)	
		2010	2011	2012	2013	2019	MWD-Xing	Prado
Acetaminophen (Tylenol)	Over-the-Counter Analgesic	56%	26%	12%	n/a	9%	ND	ND
1,4 Dioxane	Cosmetics & Shampoo	n/a	n/a	n/a	n/a	96%	849	917
Gemfibrozil	Anti-cholesterol	30%	74%	77%	31%	17%	ND	ND
Ibuprofen (Advil)	Over-the-Counter Analgesic	44%	67%	46%	n/a	26%	ND	ND
Iohexol	Xray Contrast Agent	n/a	n/a	n/a	n/a	100%	338	2,020
Naproxen (Aleve)	Over-the-Counter Analgesic	n/a	n/a	23%	n/a	17%	ND	ND
NDMA	Disinfection Byproduct	n/a	n/a	n/a	n/a	88%	ND	ND
NMOR	Disinfection Byproduct	n/a	n/a	n/a	n/a	80%	ND	ND
PFOA	Industrial/Commercial Surfactant	n/a	n/a	n/a	n/a	96%	10.1	18.5
PFOS	Industrial/Commercial Surfactant	n/a	n/a	n/a	n/a	36%	26.6	17.9
Sucralose (Splenda)	Artificial Sweetener	n/a	n/a	n/a	100%	100%	26,300	43,400
Sulfamethoxazole	Prescription Antibiotic	52%	44%	69%	n/a	26%	36.4	121.7

Preliminary Conclusions

- Detection of common painkiller meds (Tylenol, Advil, Aleve) shows downward trend over time in all POTW effluents and no detection in the river at MWD Crossing or at Prado.
- Two prescription meds (Gemfibrozil and Sulfamethoxazole) show similar downward trend.
- Sucralose detected in 100% of samples in both 2013 and 2019. Indicator compound only.
- PFOA was in all but 1 sample tested. All of those detected values were above the state notification level for drinking water.
- PFOS detected in only 7 of the 21 effluents and only 1 of those 7 was above the state notification level for drinking water (6.5 ng/L).
- Concentration of PFOS detected in effluents was far less than the concentration of PFOS measured at MWD-Crossing or at Prado.
- PFOS & PFOA concentrations in the SAR and the POTW effluents were in the same range as OCWD has been observing for the last 3 years.
- None of the POTW effluents or river sites exceeded EPA's Health Advisory Level for the combined PFOS/PFOA concentrations (70 ng/L).
- NDMA and NMOR (disinfection byproducts) frequently detected in POTW effluent but were not detected in either of the SAR samples.
- 1,4 Dioxane also frequently detected in POTW effluents and all around the same level 600-1200 ng/L.

Sampling Results – Next Steps

- Sampling results are still being analyzed and compiled to produce an ECs and PFAS Sampling Report by Risk Sciences to be released by Jan. 2019.
- Review comments will be requested of the EC Program Task Force.
- Responses to comments will be addressed and discussed at the EC Program Task Force.
- Report will be shared with the Santa Ana Regional Board and the SWRCB as objective data to support appropriate and science-based regulations.

Orange County PFAS Update

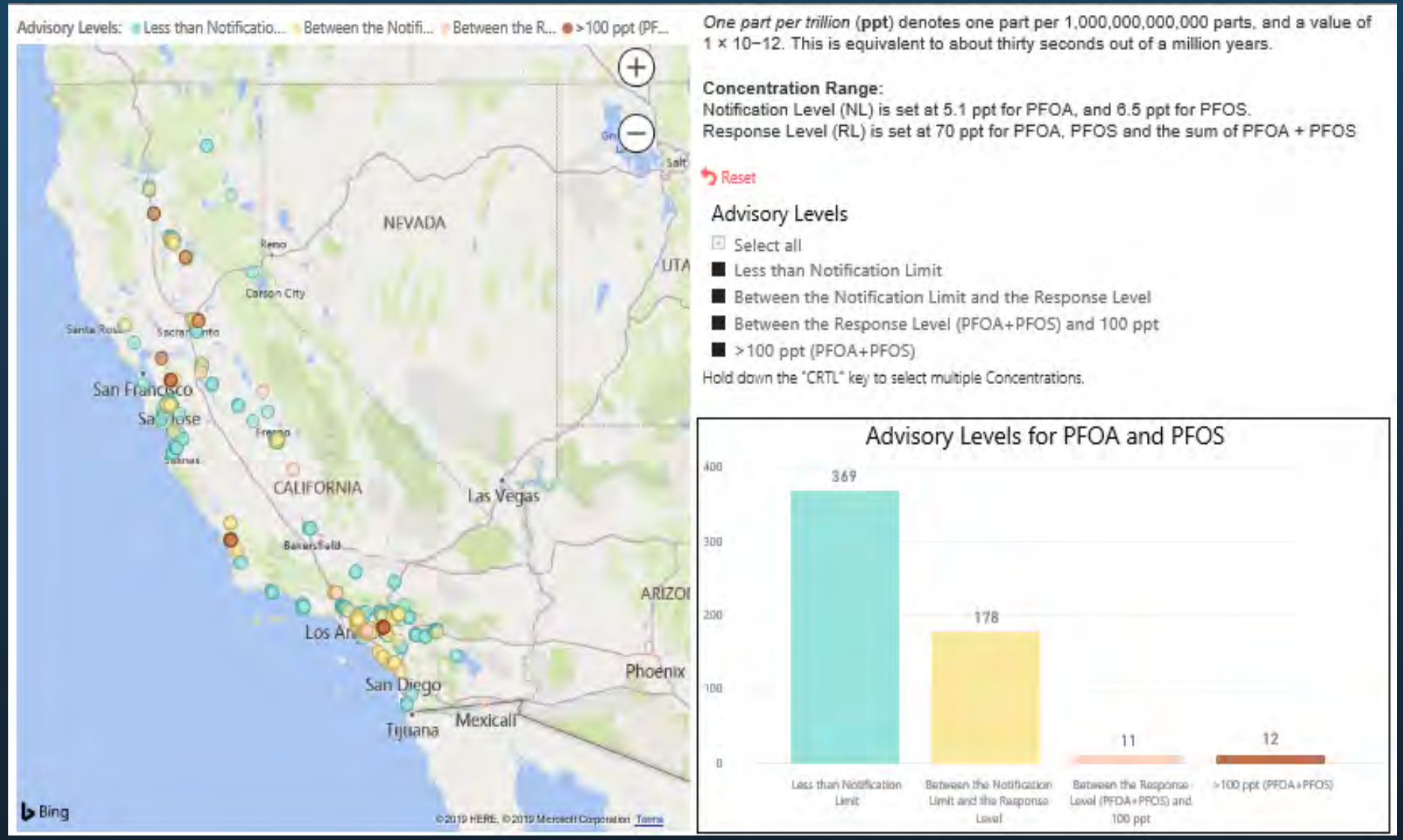
December 17, 2019

SAWPA Commission

Statewide PFAS Occurrence in Drinking Water Wells

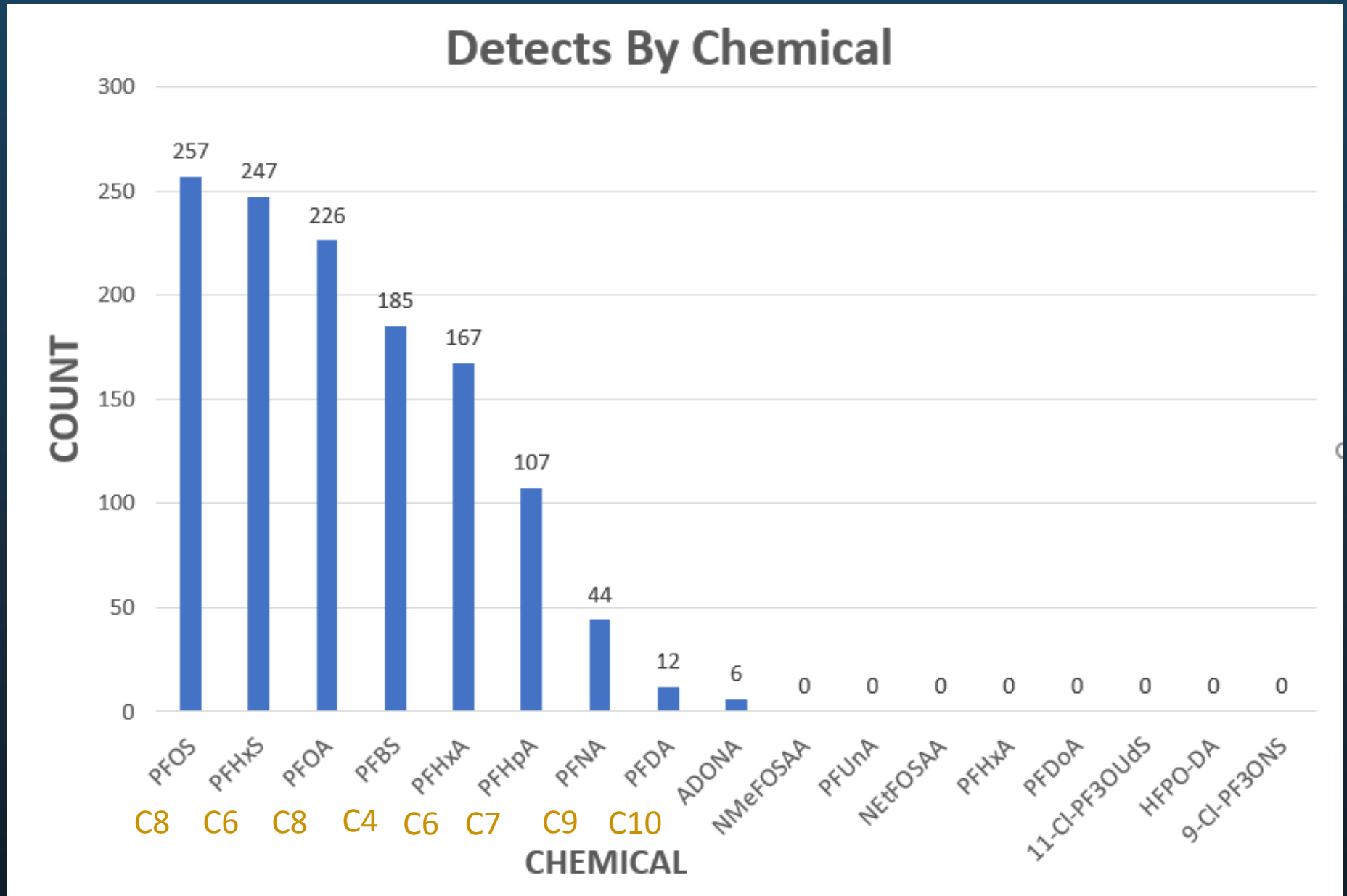
- Data released to the public on October 14, 2019
- Data and interactive maps available at https://www.waterboards.ca.gov/pfas/
- Complete data set available for download
- Charts summarizing frequency of detections
- DDW presentations at ACWA Conference and SWRCB PFAS Technical Seminar in early December

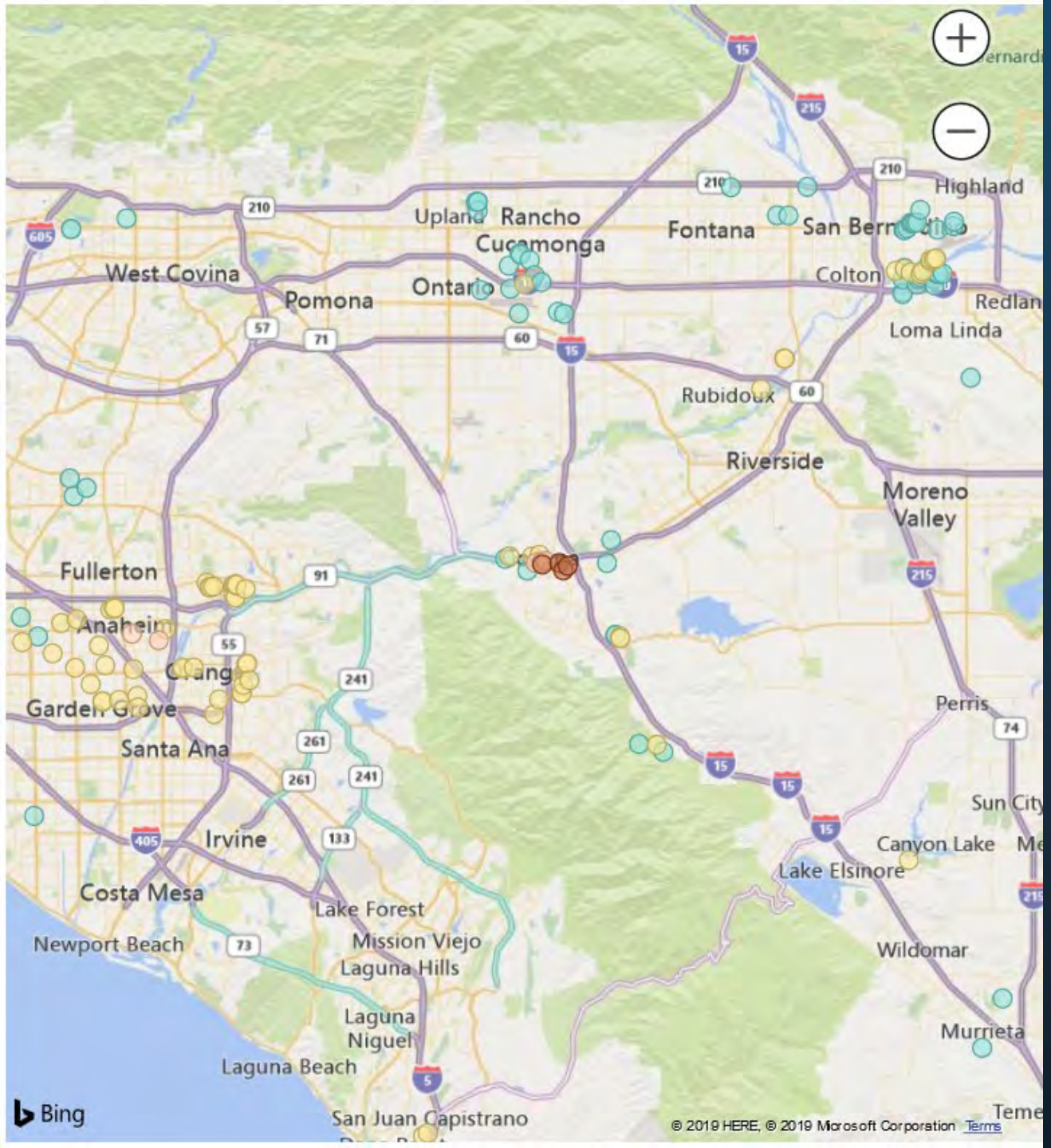
Example Interactive Maps



1st Quarter of statewide monitoring order results (570 wells)

Statewide: Frequency of Detection of Individual PFAS





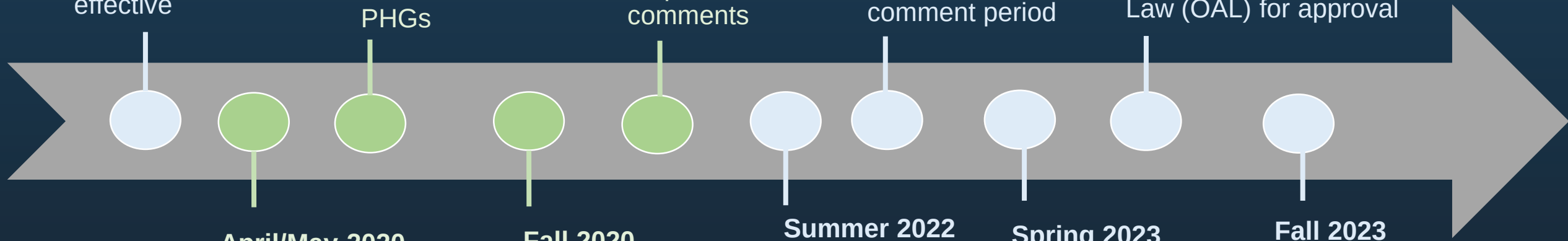
PFOA & PFOS occurrence in SAR Watershed

- Less than Notification Level (PFOA 5.1 ng/L, PFOS 6.5 ng/L)
- Between Notification & Response Level (70 ng/L combined)
- Between Response Level and 100 ng/L
- **Greater than 100 ng/L**

Other Upcoming State 2020 PFAS Actions

- Additional sampling outwards from impacted public water supply wells
- Focused watershed-based source & public water system investigations
- Sampling at Wastewater Treatment Facilities (influent, effluent, and biosolids)
- Source investigations at Refineries and Bulk Terminals
- Integration of data from DoD and additional sampling of public water system wells around impacted installations
- Identify strategies for domestic well sampling in impacted areas
- Data analysis and visualizations to inform the public and decision makers

PHG and MCL Regulatory Timeline



January 2020
- AB 756 statute changes become effective

April/May 2020
- OEHHA releases draft PHGs for public comment

July/August 2020
- OEHHA initiates scientific peer review of draft PHGs

Fall 2020
- OEHHA releases 2nd public review draft of PHGs for public comment

Summer 2021
- OEHHA releases final PHGs and responses to comments

Summer 2022
- Water Board releases draft MCLs regulation package and begins public comment period

Fall 2022
- Board Hearing on MCLs and close of comment period

Spring 2023
- Board adoption hearing on MCLs

Summer 2023
- Water Board submits regulation package to Office of Administrative Law (OAL) for approval

Fall 2023
- OAL approval, MCLs become effective

Pending changes to Response Level

- State wants to make change concurrent with AB 756 becoming effective (January 2020)
- State to release regulatory guidance this month on “compliance” with AB 756
- OCWD to meet with CalEPA/State Board before Response Level change

DDW Notification and Response Levels

Advisory Type	PFAS Compound	July 2018	August 2019	Likely January 2020 Revision
Notification Level	PFOA	~~14 ng/L~~ →	5.1 ng/L	?
	PFOS	~~13 ng/L~~ →	6.5 ng/L	?
Response Level	PFOA	70 ng/L combined	~~70 ng/L combined~~ →	10 ng/L
	PFOS		→	40 ng/L

- DDW likely to also establish future NLs/RLs for additional PFAS
  - PFHxA, PFHxS, PFBS, PFNA, PFDA (5 next most commonly detected in CA)

Impacts to OCWD Service Area

- 42 wells would exceed revised Response Levels, based on testing to date
- With expanded testing, estimate approx. 71 wells could be similarly impacted (~200 wells in basin)
- Preliminary estimate of financial impact = $775 - $875 million

Santa Ana River Wasteload Allocation Model Update

SAWPA Commission Meeting

December 17, 2019

SAWPA

GEOSCIENCE

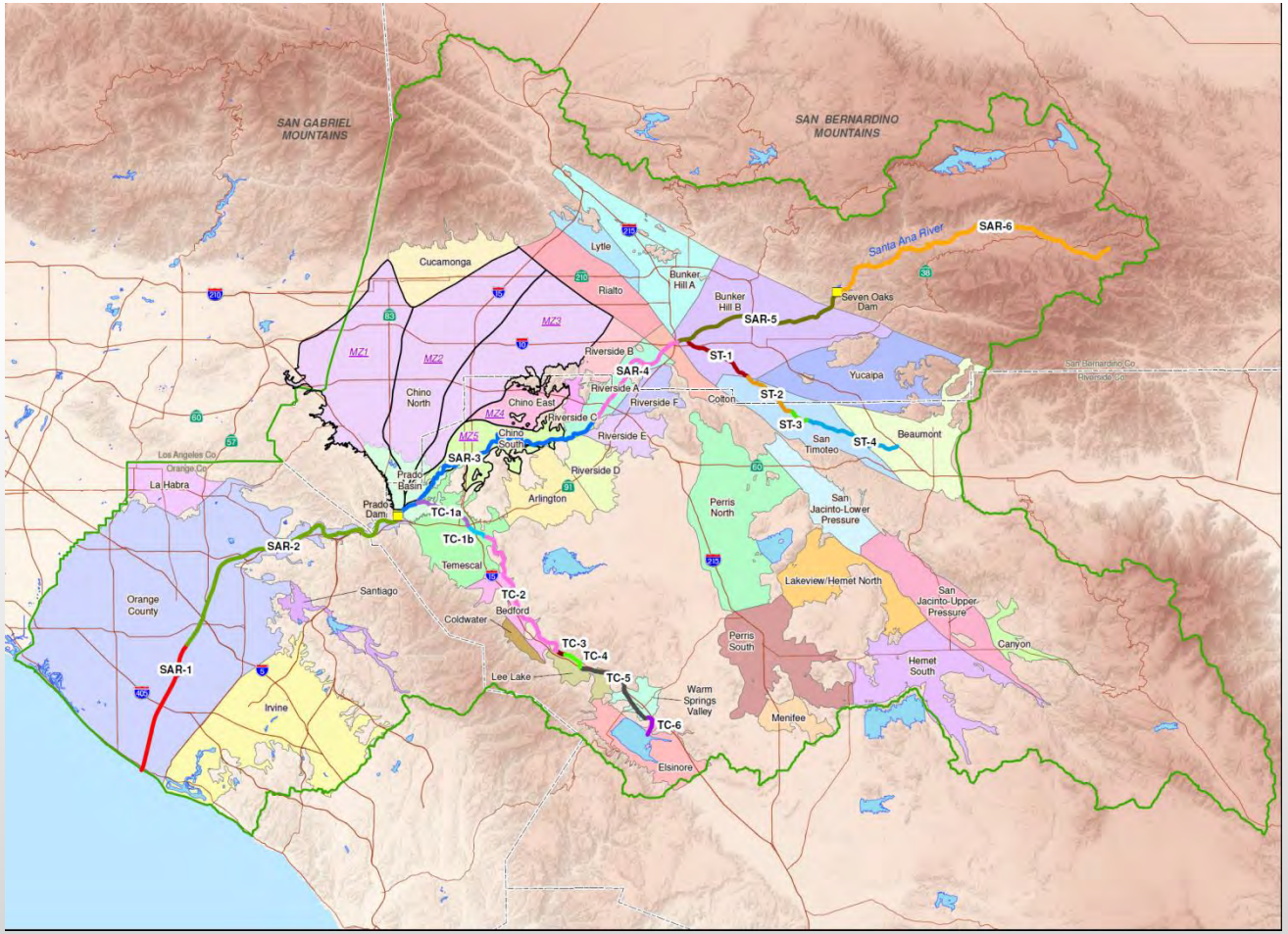
Overview

- Purpose
- WLAM Update
- Predictive Scenario Assumptions and Results
- Summary

Overview

- **Purpose**
- WLAM Update
- Predictive Scenario Assumptions and Results
- Summary

Purpose

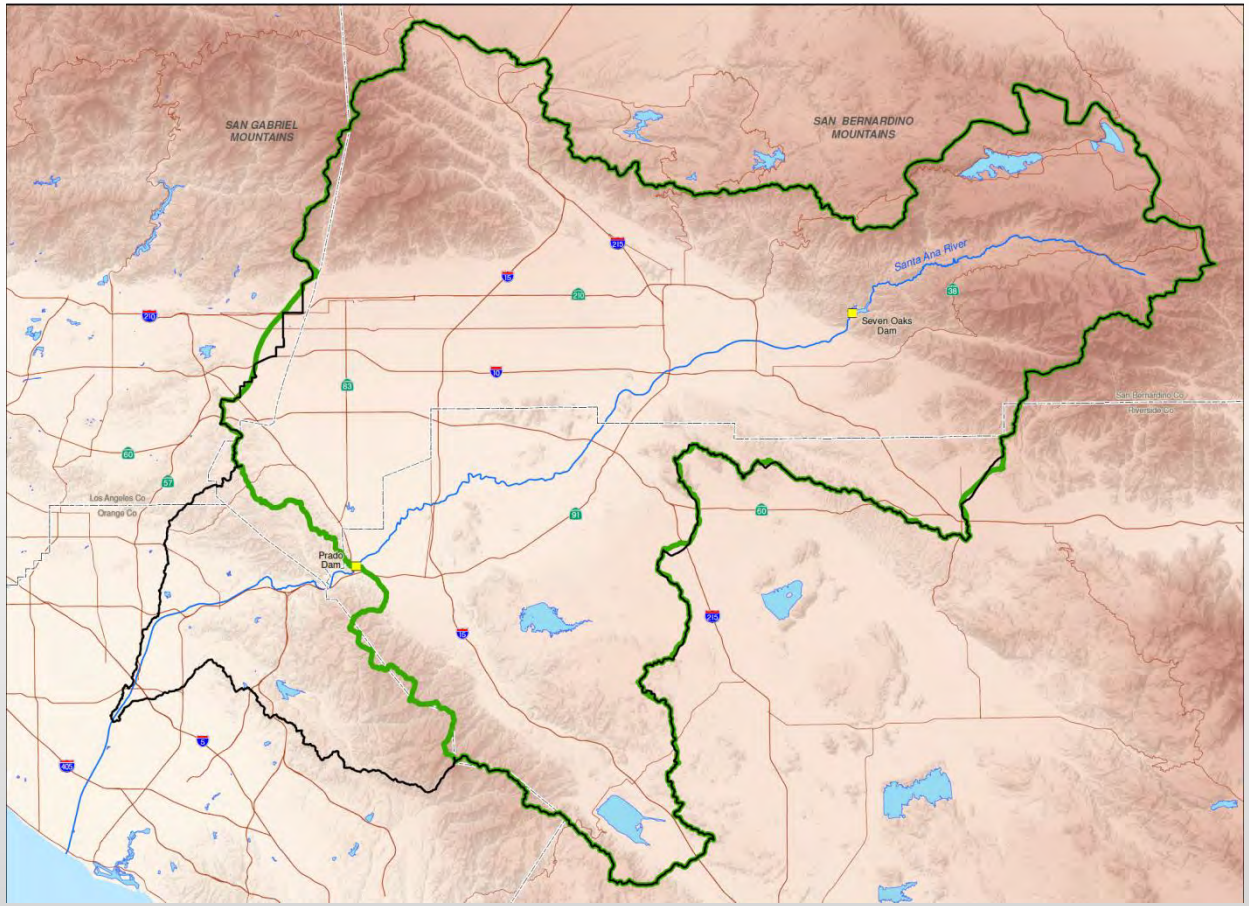


- Meet Basin Plan Requirements
- Update and Expand the 2008 WLAM
- Run TDS and TIN Projections

Overview

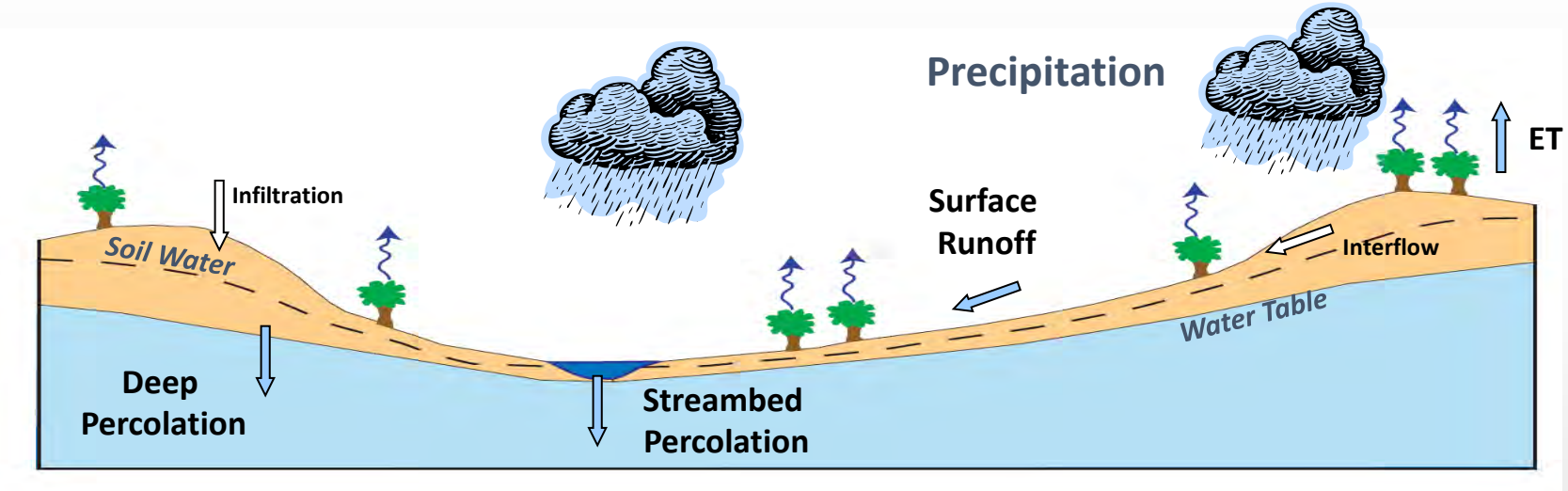
- Purpose
- **WLAM Update**
- Predictive Scenario Assumptions and Results
- Summary

WLAM Update



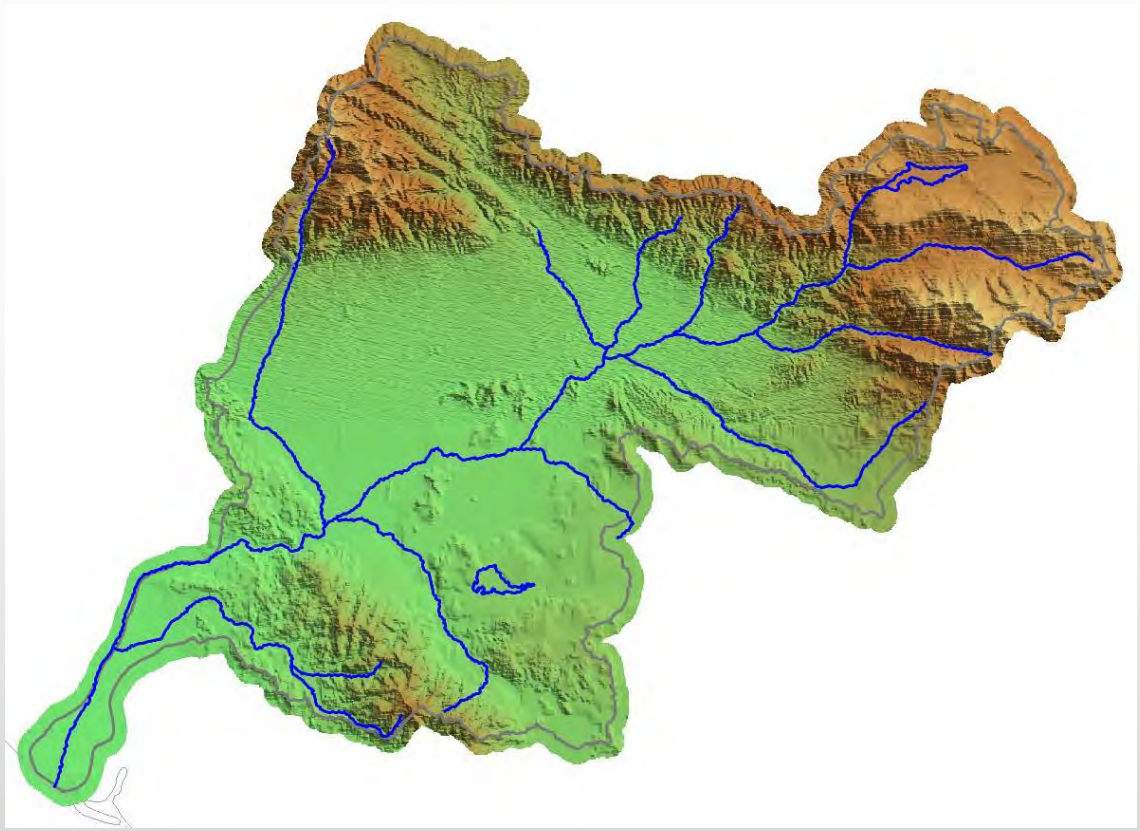
- Calibrated for the period from 2007 to 2016
- Expanded to include a portion of Orange County
- Simulated using HSPF computer code

Hydrologic Simulation Program – Fortran (HSPF)



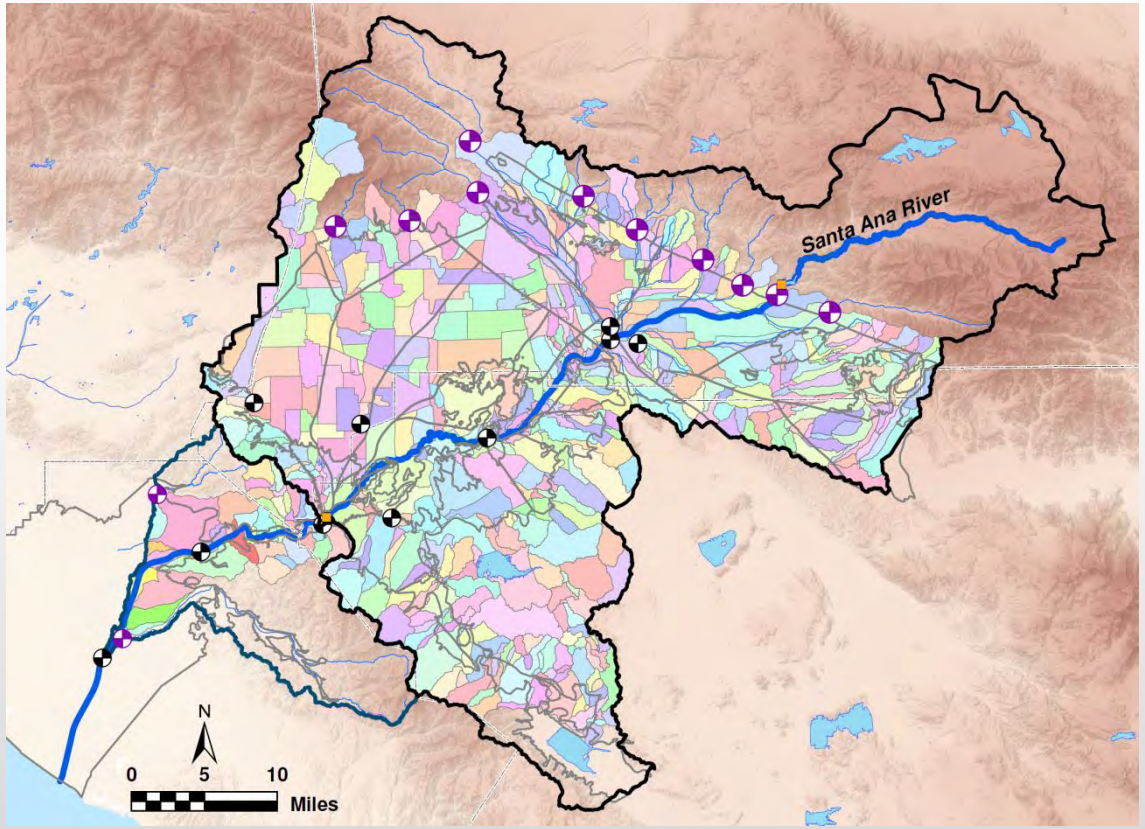
- Comprehensive & Physically Based
- Simulates ALL Water Cycle Components & Water Quality

Hydrologic Simulation Program – Fortran (HSPF) (cont.)



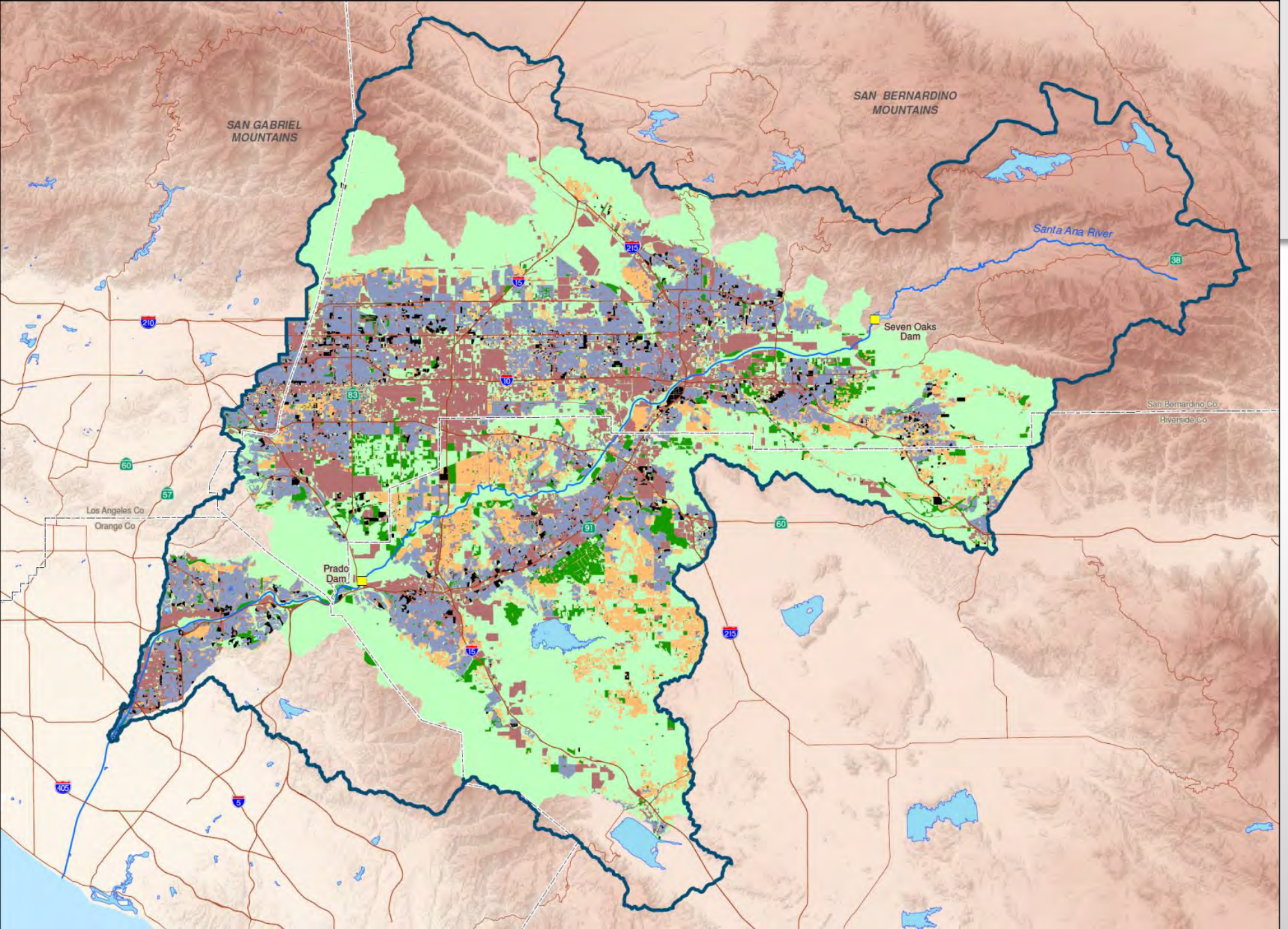
- Supported by EPA & USGS
- Widespread usage established
- Standard guidelines for model construction and calibration
- Software is free with powerful pre- and post-processors

Hydrologic Simulation Program – Fortran (HSPF) (cont.)



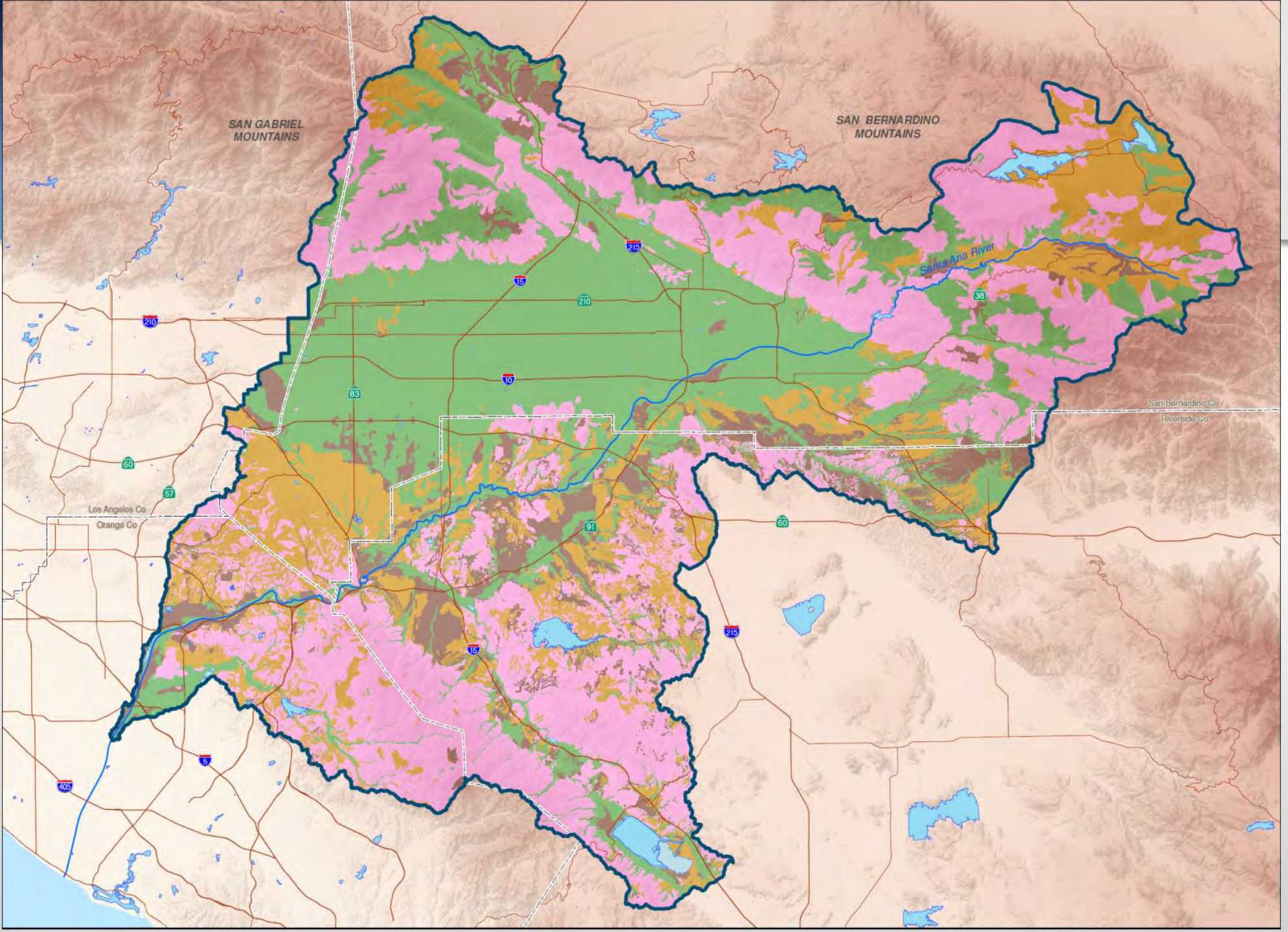
- **564 subareas were delineated**
- **Each subarea consists of :**
  - Stream segment,
  - Pervious land area, and
  - Impervious land area.
- **Subareas were delineated based on:**
  - Topography
  - Drainage patterns
  - Types of stream channels, and
  - Location of gaging stations and recharge basins

2012 Land Use Map



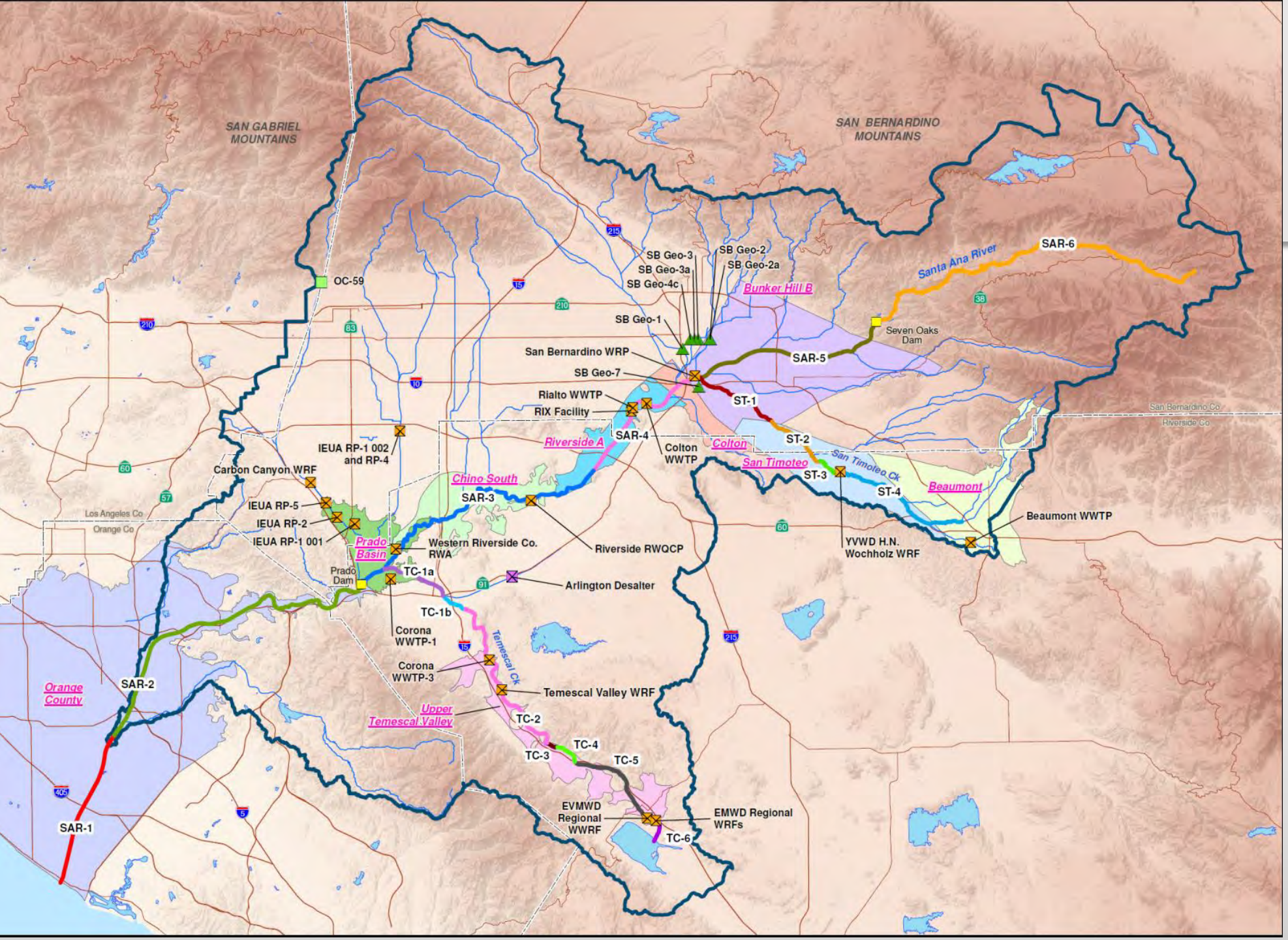
Source: Southern California Association of Governments (SCAG)

Soil Type Map



Source:
Soil Survey Geographic database (SSURGO)

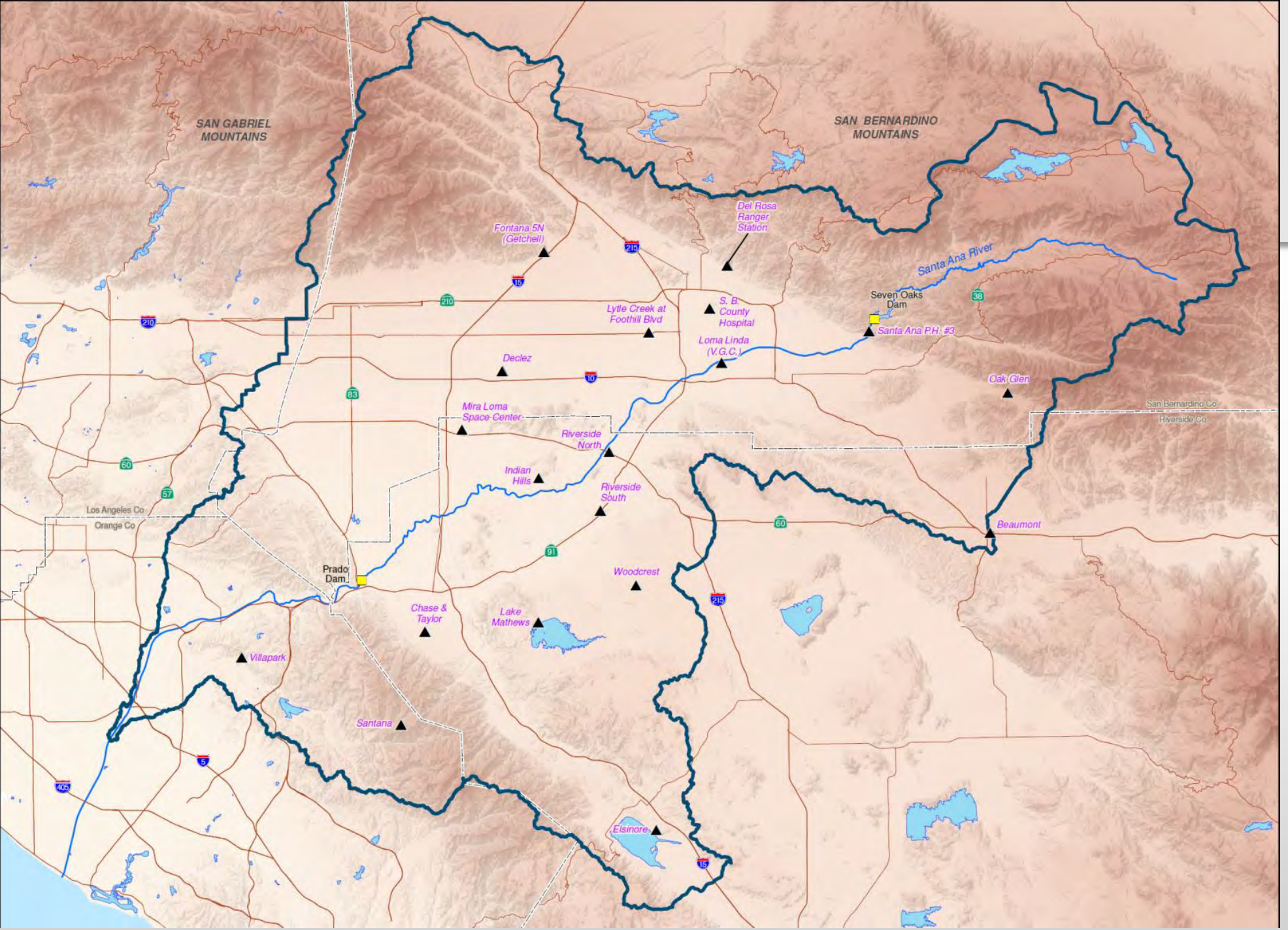
Discharge Point Locations



EXPLANATION

- Recycled Water Discharge Point (https://www.waterboards.ca.gov)
- OCWD State Water Project Turnout Point (Orange County Water District)
- San Bernardino Geothermal Plant Discharge Point (City of San Bernardino)
- Arlington Desalter Discharge Point (Western Municipal Water District)

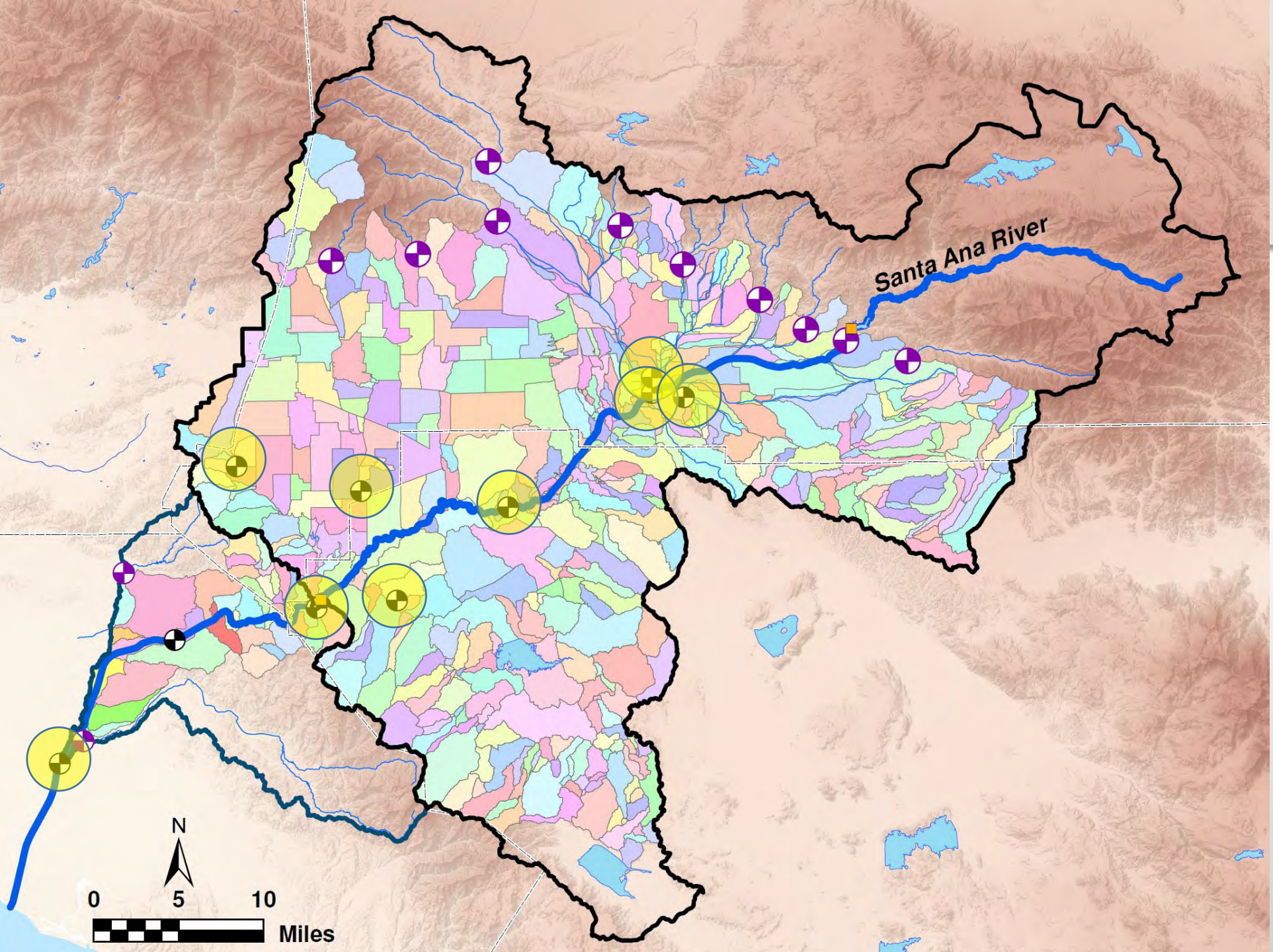
Precipitation Data



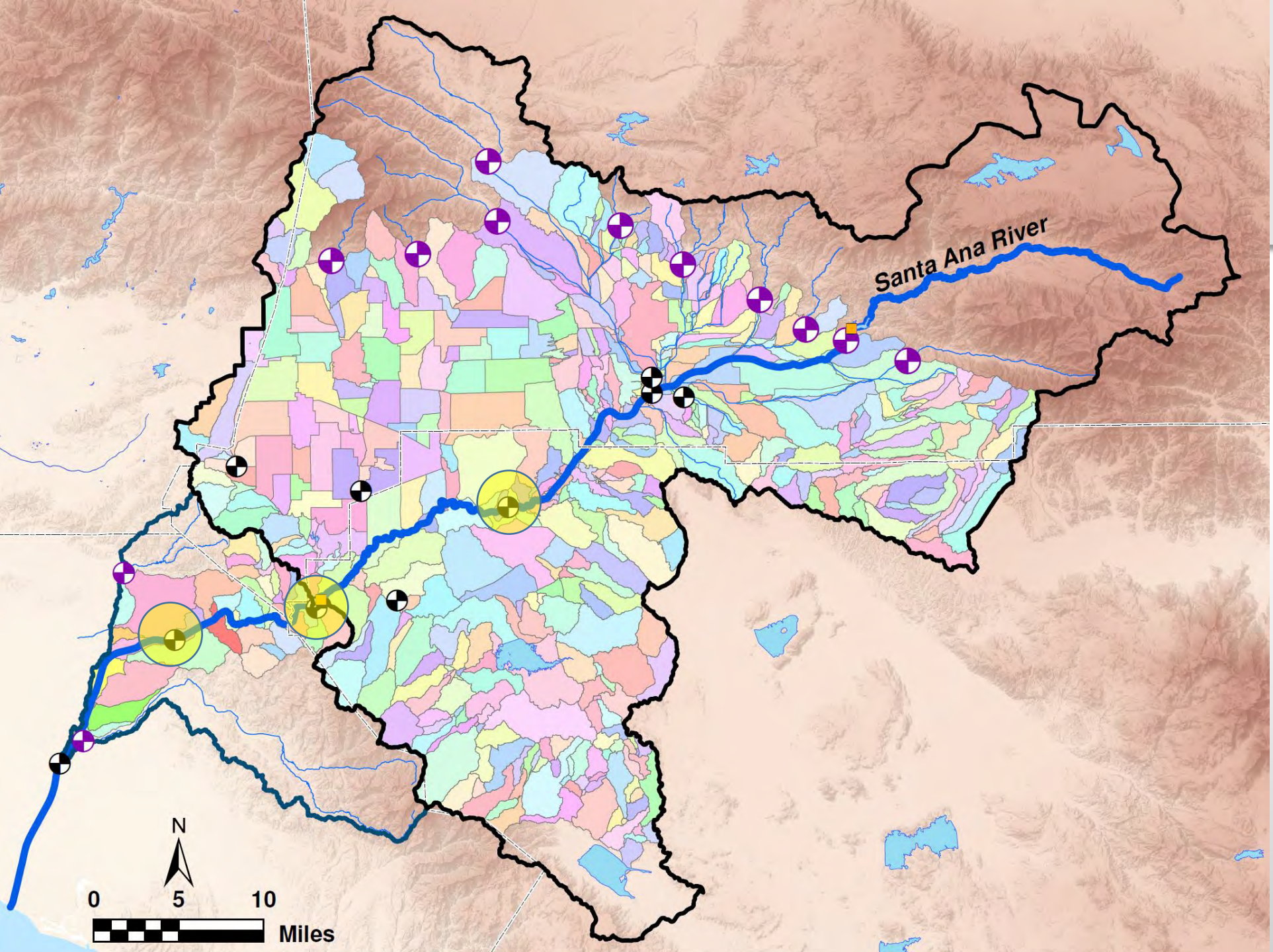
Sources:

- San Bernardino County Flood Control District
- Riverside County Flood Control and Water Conservation District
- County of Orange - OC Public Works
- National Climatic Data Center (NCDC)

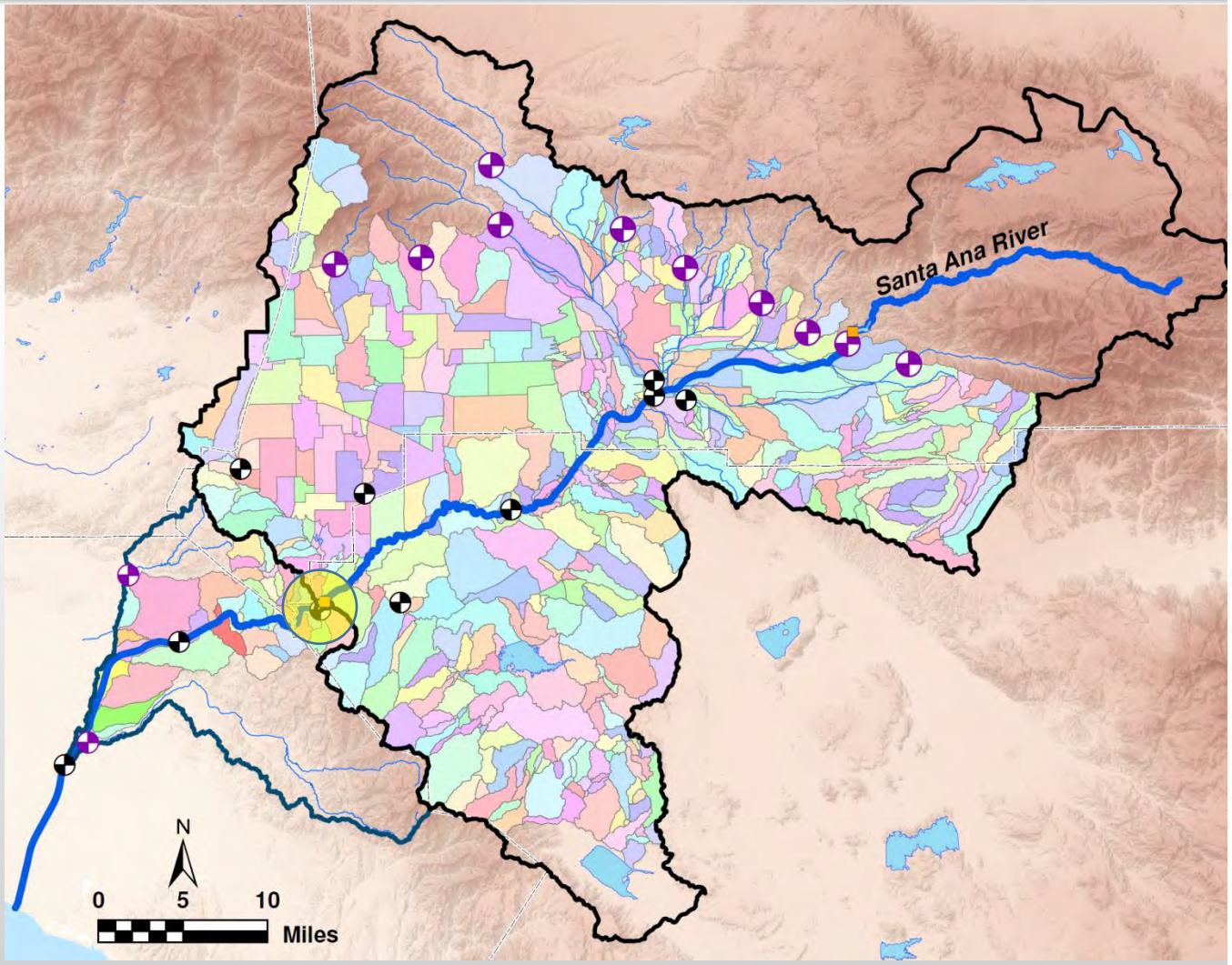
Gaging Station Locations for Streamflow Calibration

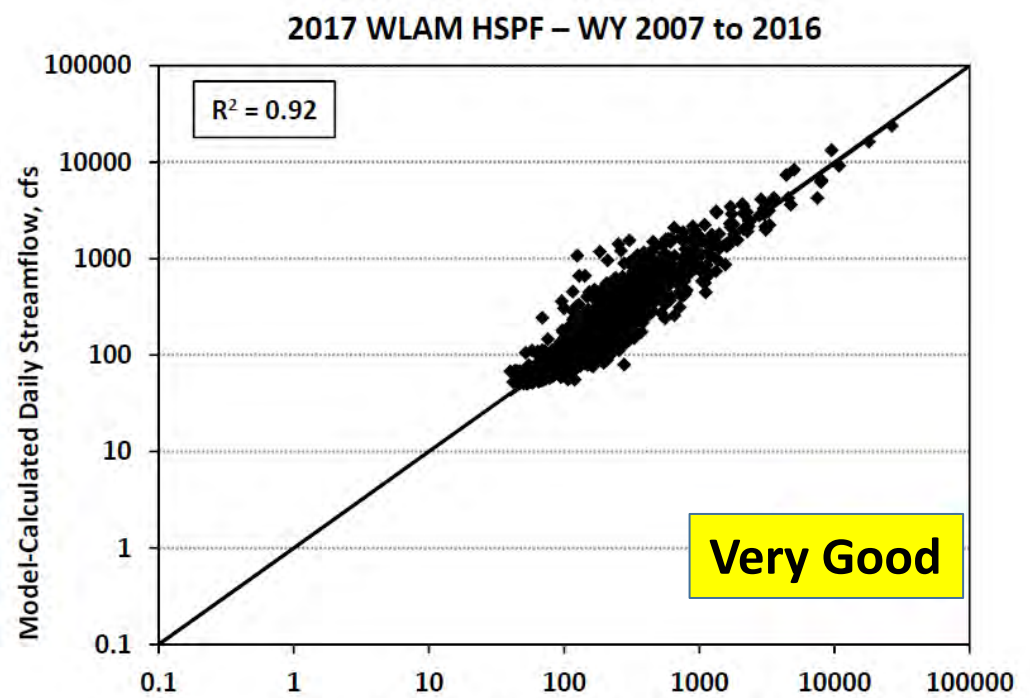


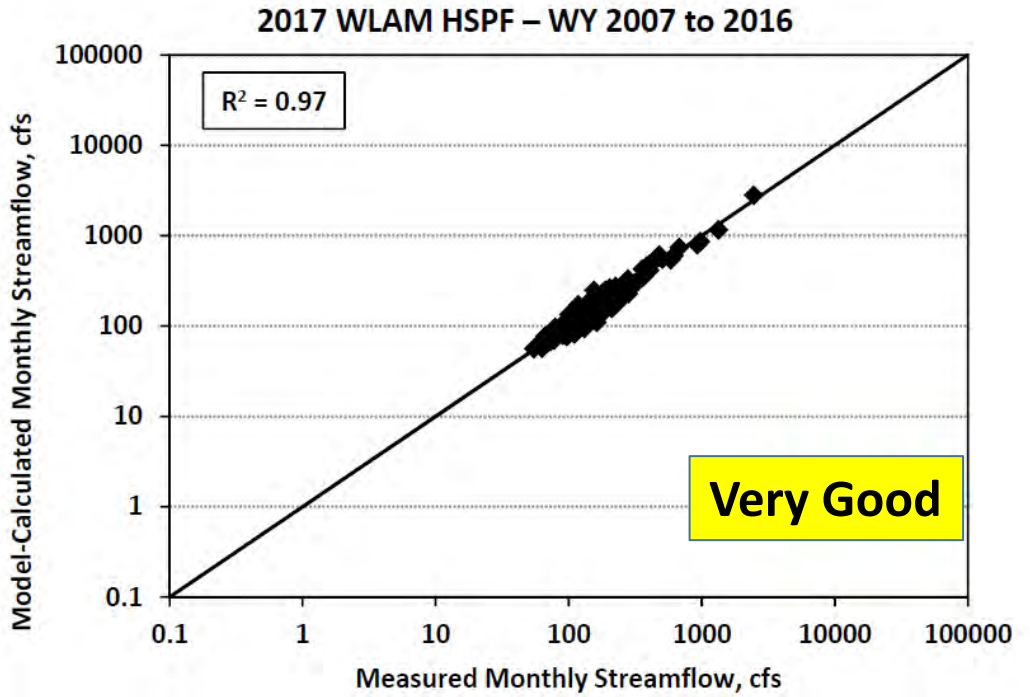
Gaging Station Locations for TDS/TIN Calibration

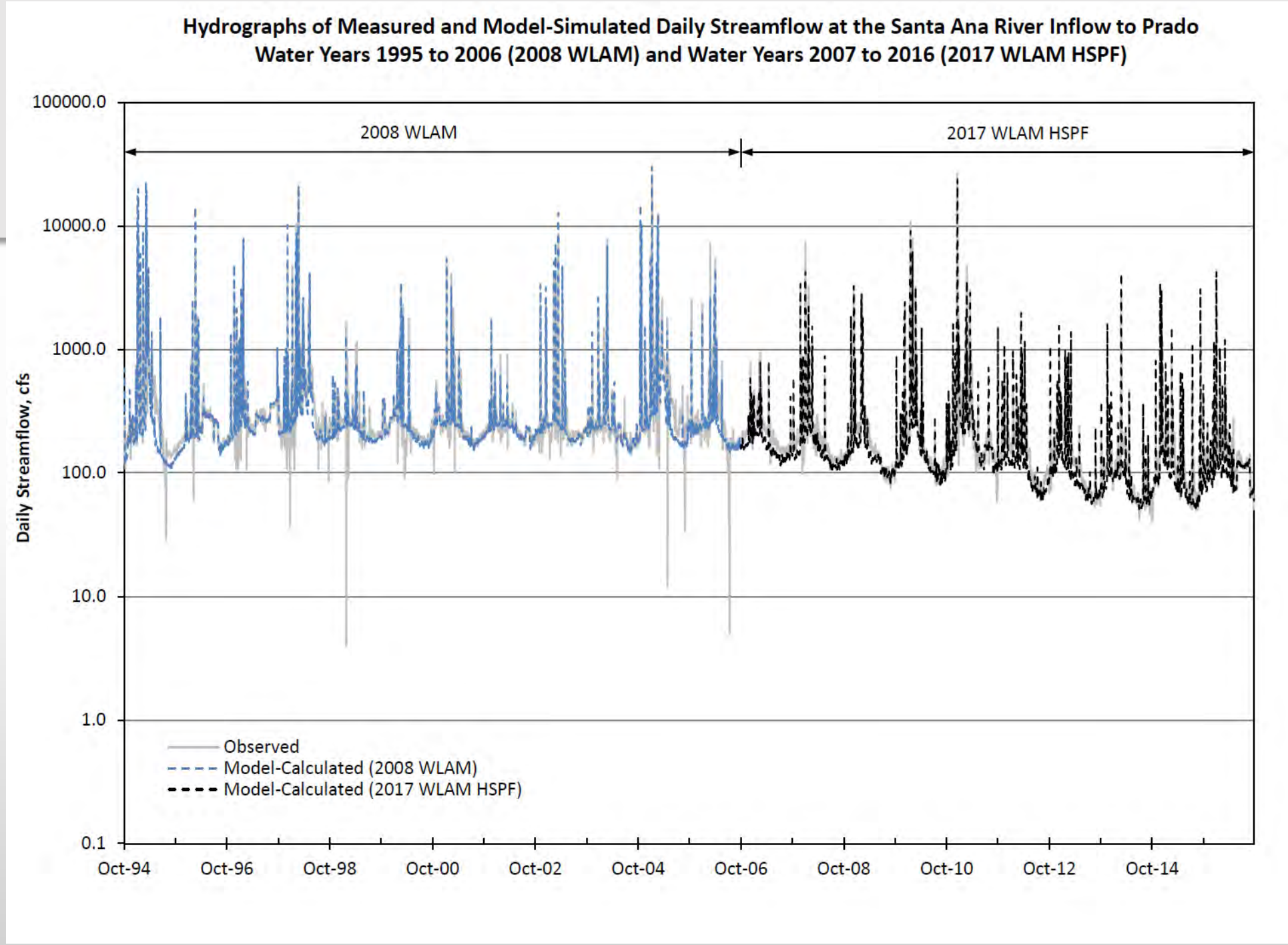


Santa Ana River at Prado Streamflow Calibration 2007-2016

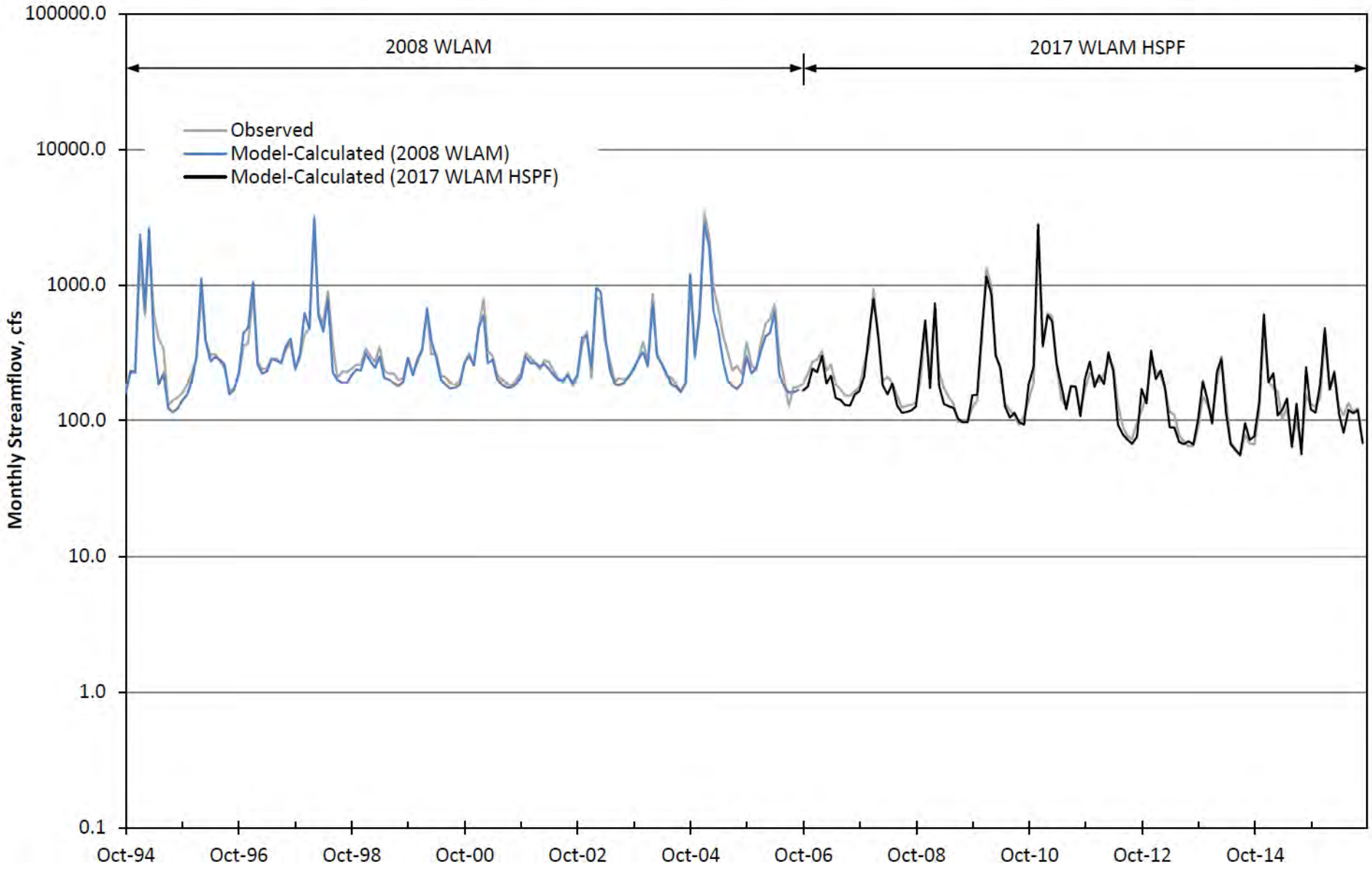


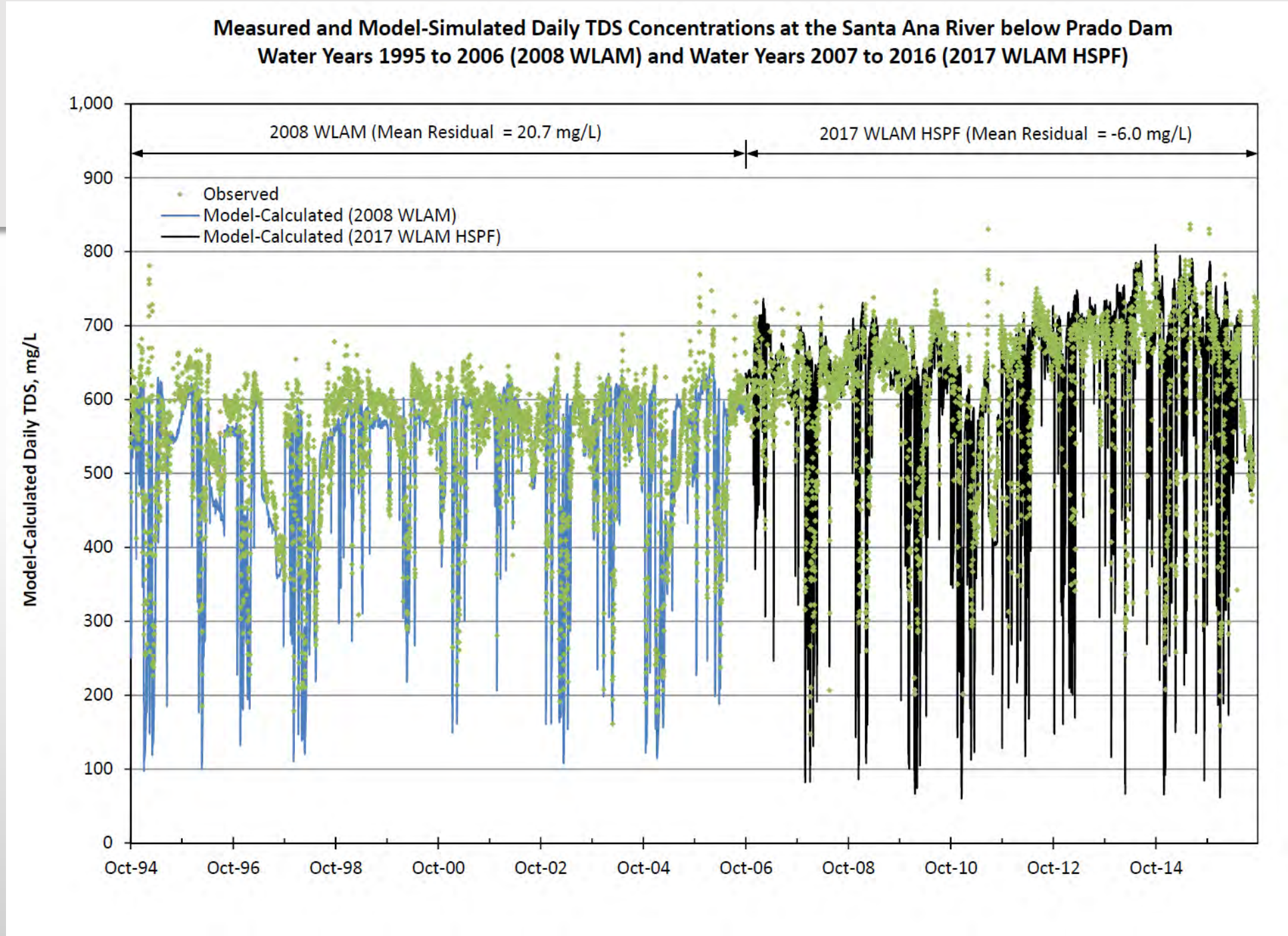




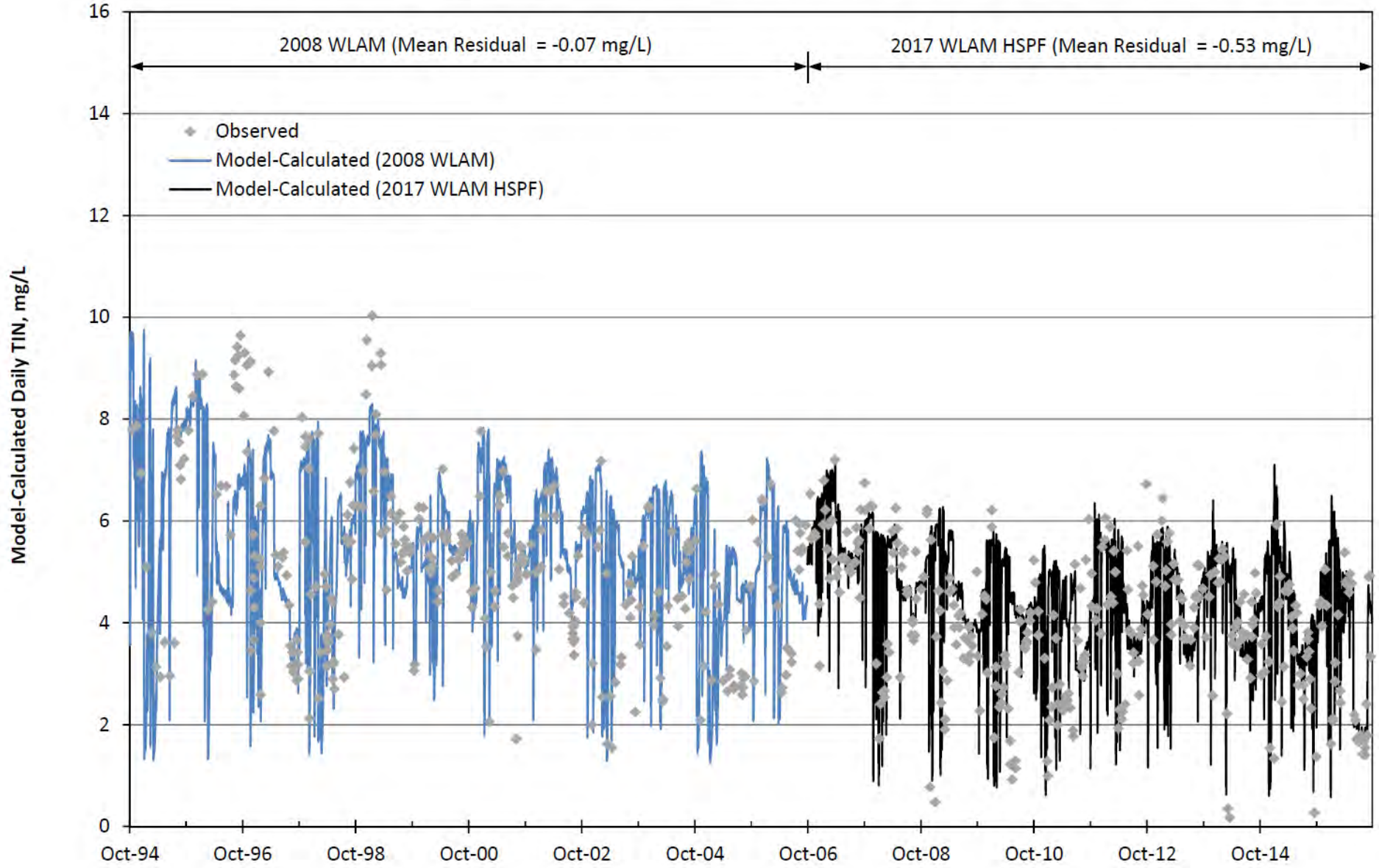

Hydrographs of Measured and Model-Simulated Daily Streamflow at the Santa Ana River Inflow to Prado
Water Years 1995 to 2006 (2008 WLAM) and Water Years 2007 to 2016 (2017 WLAM HSPF)
2008 WLAM
2017 WLAM HSPF
Daily Streamflow, cfs
100000.0
10000.0
1000.0
100.0
10.0
1.0
0.1
Oct-94
Oct-96
Oct-98
Oct-00
Oct-02
Oct-04
Oct-06
Oct-08
Oct-10
Oct-12
Oct-14
Observed
Model-Calculated (2008 WLAM)
Model-Calculated (2017 WLAM HSPF)

Hydrographs of Measured and Model-Simulated Monthly Streamflow at the Santa Ana River Inflow to Prado – Water Years 1995 to 2006 (2008 WLAM) and Water Years 2007 to 2016 (2017 WLAM HSPF)




Measured and Model-Simulated Daily TDS Concentrations at the Santa Ana River below Prado Dam
Water Years 1995 to 2006 (2008 WLAM) and Water Years 2007 to 2016 (2017 WLAM HSPF)
2008 WLAM (Mean Residual = 20.7 mg/L)
2017 WLAM HSPF (Mean Residual = -6.0 mg/L)
Observed
Model-Calculated (2008 WLAM)
Model-Calculated (2017 WLAM HSPF)
Model-Calculated Daily TDS, mg/L
1,000
900
800
700
600
500
400
300
200
100
0
Oct-94
Oct-96
Oct-98
Oct-00
Oct-02
Oct-04
Oct-06
Oct-08
Oct-10
Oct-12
Oct-14

Measured and Model-Simulated Daily TIN Concentrations at the Santa Ana River below Prado Dam
Water Years 1995 to 2006 (2008 WLAM) and Water Years 2007 to 2016 (2017 WLAM HSPF)



Overview

- Purpose
- WLAM Update
- **Predictive Scenario Assumptions and Results**
- Summary

Major Assumptions for Predictive Scenarios

Model Scenario	Hydrologic Period	Model Conditions	Land Use	Recycled Water Discharge to Surface Water			TDS and TIN	
				Maximum Expected Discharge	Most Likely Discharge	Minimum Expected Discharge	Permit TDS	Permit TIN
A	WY 1950 - 2016	WY 2020	2012	X			X	X
B					X		X	X
C						X	X	X
D		WY 2040	General Plan (2040)	X			X	X
E					X		X	X
F						X	X	X

Analysis of Model Results

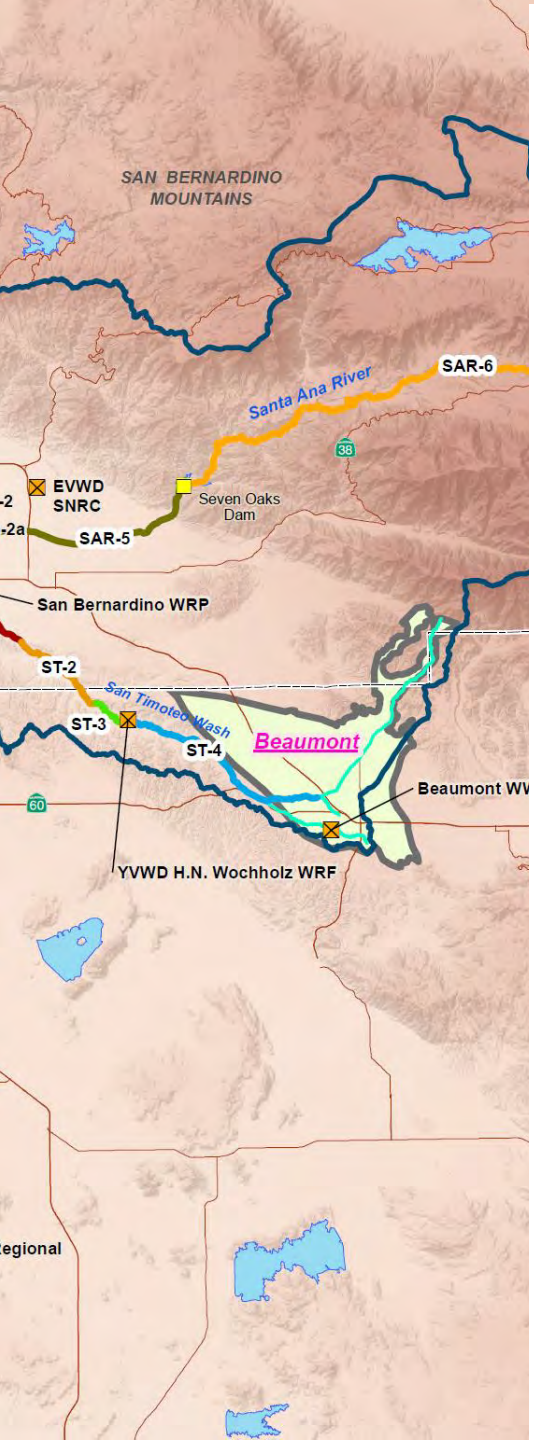
- 1-year averaging period : representative of the period of compliance for permits
- 5-year averaging period : typically covers the duration of the permit

Analysis of Model Results (cont.)

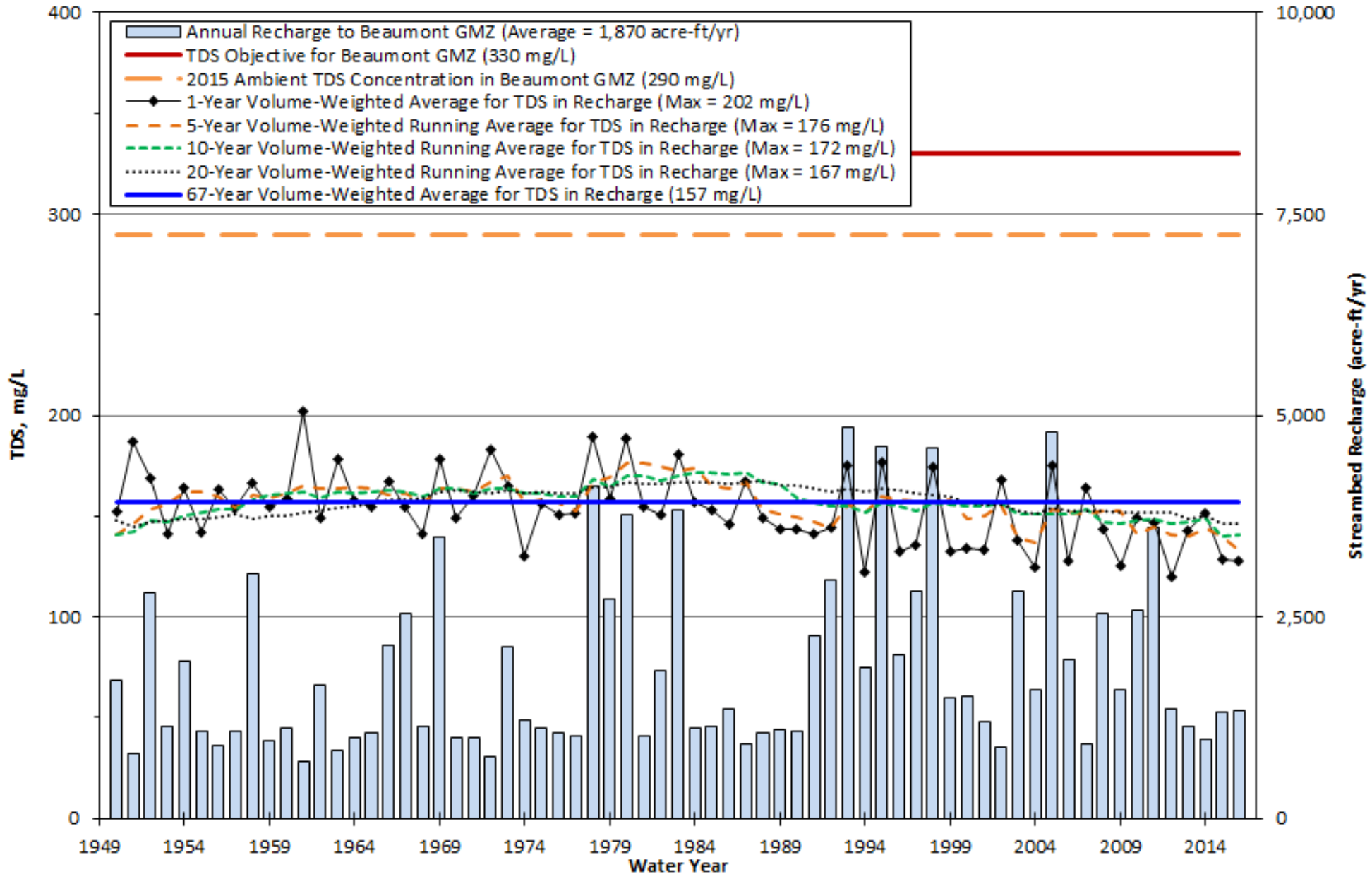
- 10-year averaging period : useful for identifying possible future compliance issues and is intended to identify periods of prolonged drought and to provide a surrogate indication of what might be expected to occur in response to projected climate change in the region.

Analysis of Model Results (cont.)

- 20-year averaging period : represents the amount of time over which ambient groundwater concentrations are generally computed.
- 67-year averaging period : covers the entire predictive scenario duration and is useful for long-term planning.



Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration of San Timoteo Creek - Reach 4 and Tributaries[1] Overlying Beaumont GMZ
Scenario A - 2020 Maximum Expected Discharge



[1]Noble Creek; unnamed tributary to Marshall Creek below Beaumont DP 007; Cooper's Creek

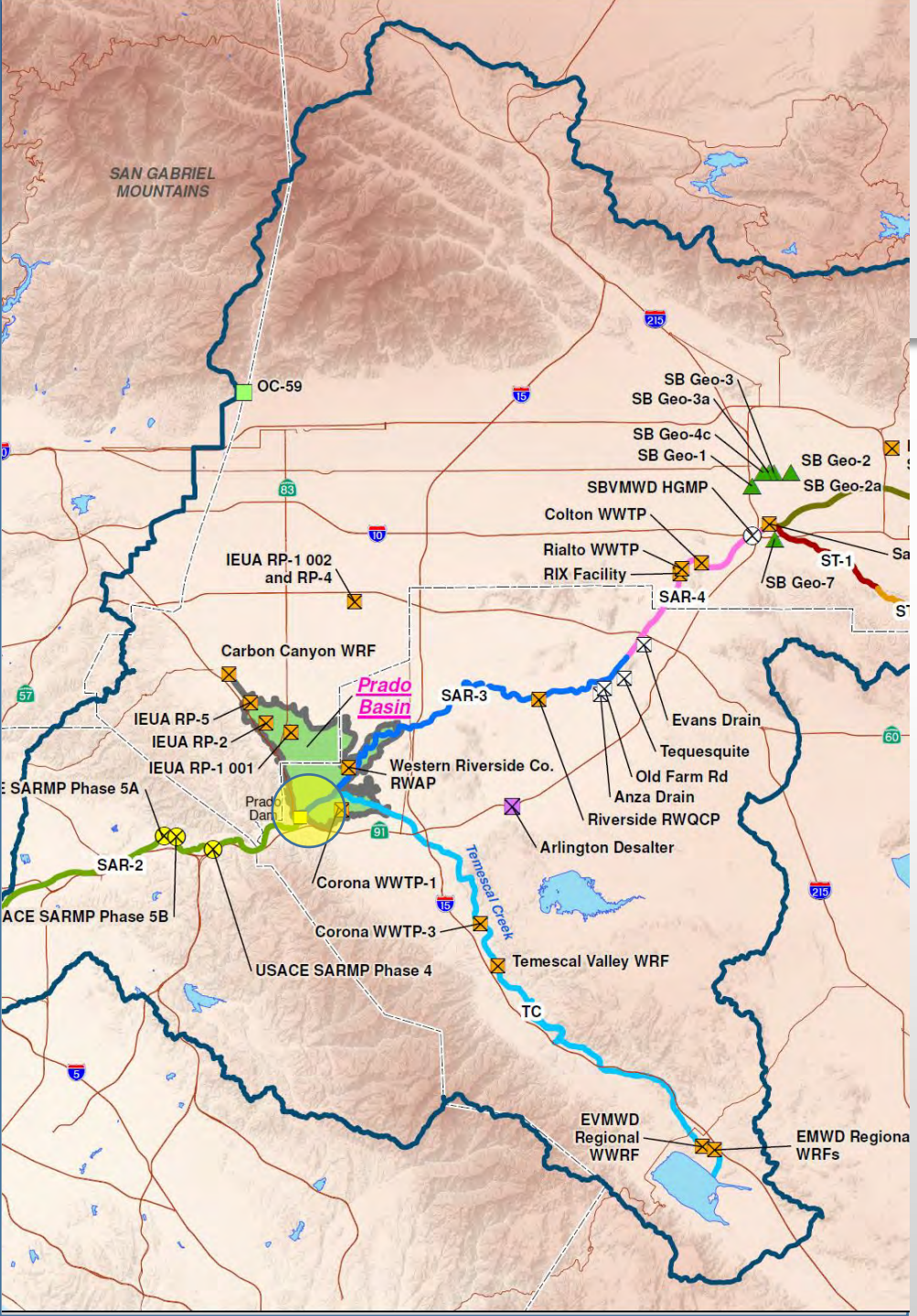
San Timoteo Creek – Reach 4 Overlying Beaumont GMZ

Maximum Value for the Volume-Weighted Recharge (units in mg/L)

	Objective	Ambient	Assimila-tive Capacity	Period	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
					2020 Expected Discharge			2040 Expected Discharge		
					Max	Avg	Min	Max	Avg	Min
TDS	330/230	290	40	1-year	202	204	206	177	177	177
				5-year	176	177	177	163	163	163
				10-year	172	172	173	157	157	157
				20-year	167	168	169	150	150	150
TIN	5.0/1.5	2.9	2.1	1-year	1.94	1.97	2.01	1.42	1.42	1.43
				5-year	1.46	1.49	1.51	1.19	1.19	1.19
				10-year	1.40	1.41	1.43	1.16	1.16	1.16
				20-year	1.36	1.37	1.39	1.13	1.13	1.14

Santa Ana River Reach 3 Below Prado Dam

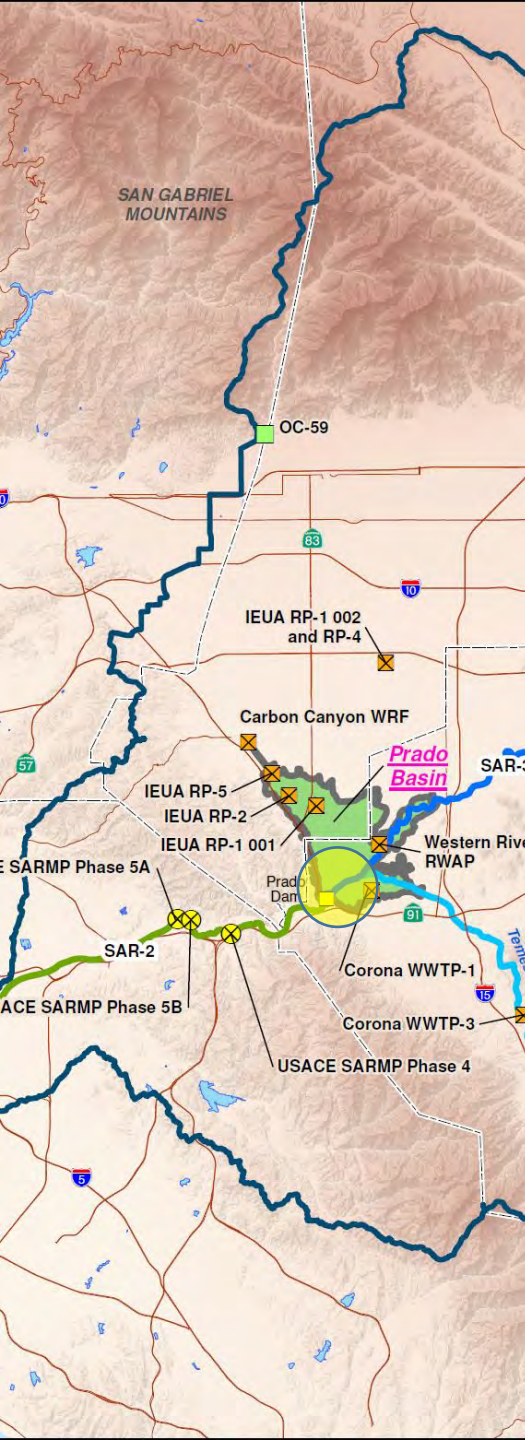
Maximum Value for the Volume-Weighted Stream Concentration (units in mg/L)



Revised Calculation

	Objective	Ambient	Assimila-tive Capacity	Period	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
					2020 Expected Discharge			2040 Expected Discharge		
					Max	Avg	Min	Max	Avg	Min
TDS	700	na	na	Baseflow Average	619	***733***	***774***	617	***730***	***761***
TIN	10.0	na	na	Baseflow Average	7.04	5.95	5.34	6.98	6.25	5.28

Bold red values represent concentrations above basin objective.



Estimated Annual Discharge and Volume-Weighted TDS Concentration at Santa Ana River Below Prado Dam Scenario B - 2020 Most Likely Discharge

Annual Discharge at Santa Ana River Below Prado Dam (Average = 171,456 acre-ft/yr)
Baseflow TDS Objective for Reach 3 (700 mg/L)
5 Year Moving Average TDS Objective for Reach 2 (650 mg/L)
Baseflow Volume-Weighted Average for TDS at Below Prado Dam (Max = 733 mg/L)
1-Year Volume-Weighted Average for TDS at Below Prado Dam (Max = 623 mg/L)
5-Year Moving Average of the 1-Year Volume Weighted Average for TDS at Below Prado Dam (Max = 481 mg/L)
5-Year Volume-Weighted Running Average for TDS at Below Prado Dam (Max = 477 mg/L)
10-Year Volume-Weighted Running Average for TDS at Below Prado Dam (Max = 416 mg/L)
20-Year Volume-Weighted Running Average for TDS at Below Prado Dam (Max = 411 mg/L)
67-Year Volume-Weighted Average for TDS at Below Prado Dam (353 mg/L)

TDS, mg/L
1,200
900
600
300
0

Streamflow (acre-ft/yr)
1,000,000
750,000
500,000
250,000
0

1949 1954 1959 1964 1969 1974 1979 1984 1989 1994 1999 2004 2009 2014

Water Year

Overview

- Purpose
- WLAM Update
- Predictive Scenario Assumptions and Results
- **Summary**

Summary

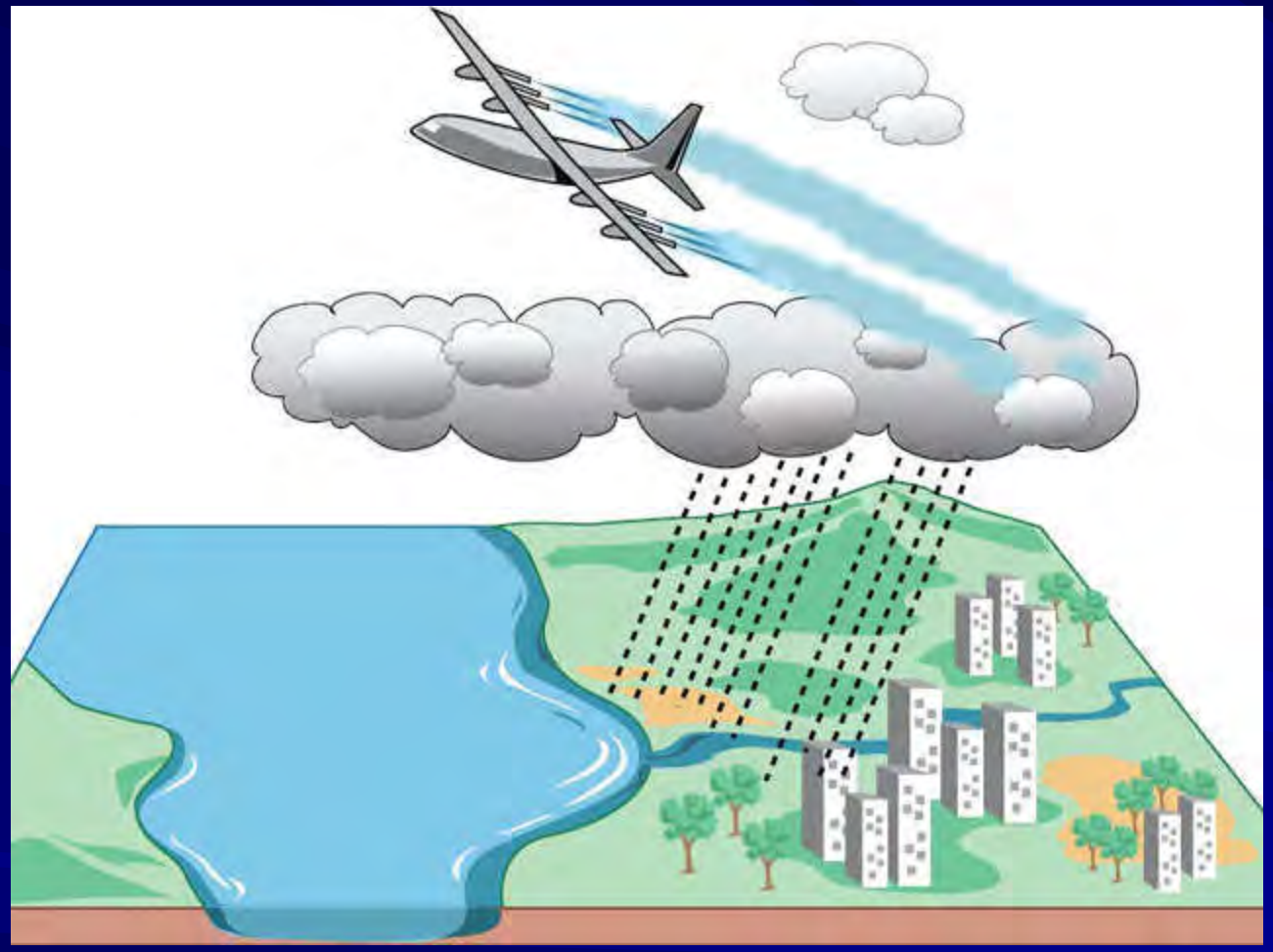
- The 2017 WLAM HSPF was constructed using recent data and calibrated from October 1, 2006 through September 30, 2016.
- The calibration results show:
  - Similar temporal dynamics in model-simulated and measured daily and monthly streamflow and TDS/TIN concentrations.
  - Good to very good performance at the majority of the streamflow gages.
  - The results indicate a satisfactory model calibration.

Summary (cont.)

- The calibrated 2017 WLAM HSPF was used to run predictive scenarios to evaluate water quality in major stream segments for maximum, most likely (average), and minimum expected discharges under 2020 and 2040 conditions.
- The scenario runs covered the 67-year hydrologic period from October 1949 (WY 1950) through September 2016 (WY 2016).

Summary (cont.)

- Flow-weighted average TDS and TIN concentrations were evaluated over various time periods, including 1-yr, 5-yr, 10-yr, 20-yr, and 67-yr.
- Each of these time periods is useful for evaluating possible compliance, depending on the planning objective.
- The 10-year averaging period is particularly useful for identifying possible future compliance issues because it represents a period of time that is typically long enough to cover one meteorological cycle (i.e., contains both wet and dry periods).



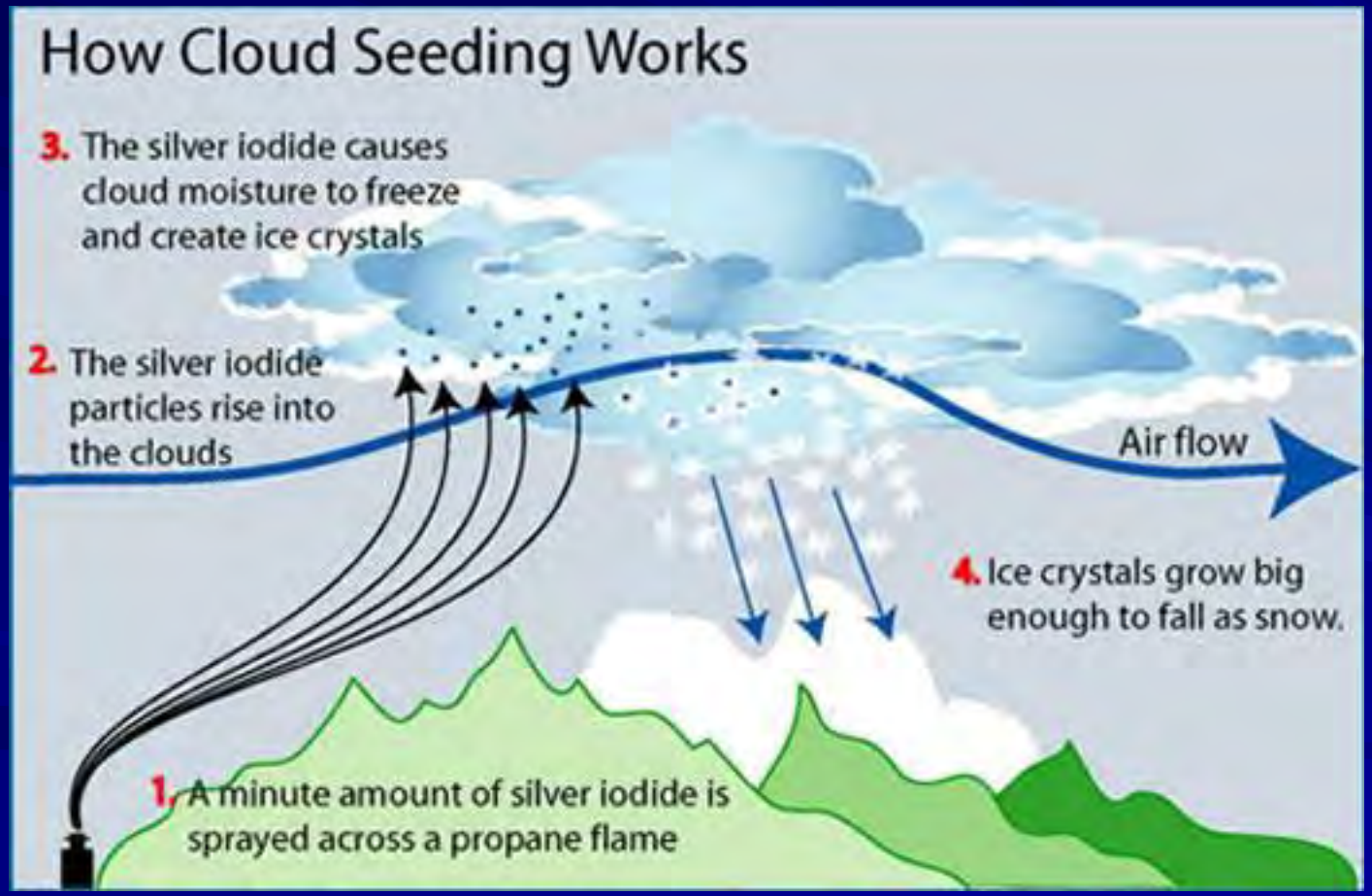
Santa Ana River Watershed Weather Modification for Water Supply Feasibility Study | AWARD OF CONTRACT

Mark Norton, PE, Water Resources & Planning Manager

Commission I December 17, 2019

Item No. 5.C.

On June 4, Tom Ryan from MWDSC discussed ongoing weather augmentation for water supply – cloud seeding programs with SAWPA Commission



Proven Technology

- Statistical, physical, and modeling analysis shows cloud seeding is a viable technology
- 5-15% increase in precipitation
- Cost-effective part of water operations portfolio
- No environmental or health effects
- Number of projects increasing
- Recent research have answered key questions

SAWPA staff received positive comments about program after presentation

150 programs in 40 countries and 11 states. Benefit to:

- Ski areas, Power utilities
- Insurance companies
- Water resources agencies
- Conservation, and Irrigation districts
- Downstream Lakes

Costs

$4-40/AF, including planning

SAWPA Member Agency GMs feedback

- SAWPA staff asked SAWPA Member Agency General Managers if weather augmentation in the Santa Ana River Watershed should be studied
- GMs felt feasibility study to possibly implement in the Santa Ana River Watershed may be worthwhile
- Could lead to possible request under DWR's Prop 1 IRWM Round 2 grant program in FY 2020-21 to implement by SAWPA

RFP Response

- On Aug. 6th Commission authorizes staff to issue RFP for Santa Ana River Watershed Weather Augmentation Feasibility Study
- Two consultants responded to feasibility study RFP
  - North American Weather Consultants Inc. $75,000
  - RHS Consulting, Ltd. $102,098
- Proposal Review Team
  - SBVMWD, WMWD, OCWD, SAWPA, MWDSC
- - North American Weather Consultants Inc. recommended

Funding

- Cost - $75,000
- Partner agencies and companies who may benefit are being approached by SAWPA but no commitments made yet
- Source of funding for study and possible implementation is not budgeted
- $15K contribution from each member agency suggested

Recommendation

That the Commission authorize the General Manager to execute an Agreement for Services and Task Order No. NAWC370-01 with North American Weather Consultants Inc. to conduct a feasibility analyses for a weather modification for water supply program in the Santa Ana River Watershed in an amount to not to exceed $75,000; and, authorize SAWPA invoice each Member Agency $15,000 to cover the cost of conducting this work.

SAWPA

CalPERS Unfunded Liability Payment Options

CalPERS Formula

PERS 2% @ 55 - Classic

	FYE 2020	FYE 2021
PERS Employers Rate	11.12%	11.816%
Employer Paid Member Contribution (EPMC)	1.40%	0%
Unfunded Liability Payment	$229,033	$277,384

PERS 2% @ 62 - PEPRA

	FYE 2020	FYE 2021
PERS Employers Rate	7.191%	7.847%
Unfunded Liability Payment	$6,095	$11,686

CalPERS & OPEB Funding Status

PERS 2% @ 55 – Classic

- 78% funded

PERS 2% @ 62 – PEPRA

- 91.7% funded

Retiree Medical Benefits – OPEB Trust

- 71% funded

Unfunded Liability as of 06/30/19

Liability	As of 06/30/19
CalPERS Pension	$3,649,848
Retiree Medical Benefits	545,415
Total	**$4,195,263**

Definitions

Unfunded Liability

A liability that does not have current or projected assets to cover the liability.

Unfunded Accrued Liability (UAL)

The present value of future employer contributions for service that has already been earned.

Deferred Outflows of Resources

The consumption of net assets by the government that is applicable to a future reporting period. (prepaid items and deferred charges)

Deferred Inflows of Resources

An acquisition of net assets by the government that is applicable to a future reporting period. (deferred revenue and advance collections)

Options to Pay Down the UAL

- Option 1
  - Pay off a portion of the UAL
- Option 2
  - Use Alternative Amortization Schedule
    - 15 year
    - 10 year

Option 1- Pay Down the UAL

Schedule of Plan's Amortization Bases

Reason for Base	Date Established	Amortization Period	Balance 6/30/18	Payment 2018-19	Balance 6/30/19	Payment 2019-20	Balance 6/30/20	Scheduled Payment for 2020-21
SHARE OF PRE-2013 POOL UAL	06/30/13	17	$995,357	$77,016	$985,366	$79,110	$972,510	$80,246
NON-ASSET (GAIN)/LOSS	06/30/13	25	$(14,944)	$(792)	$(15,171)	$(1,018)	$(15,180)	$(1,030)
ASSET (GAIN)/LOSS	06/30/13	25	$1,554,636	$82,432	$1,578,192	$105,860	$1,579,163	$107,126
NON-ASSET (GAIN)/LOSS	06/30/14	26	$1,312	$52	$1,350	$72	$1,370	$91
ASSET (GAIN)/LOSS	06/30/14	26	$(1,231,331)	$(49,085)	$(1,266,750)	$(67,242)	$(1,285,867)	$(85,030)
ASSUMPTION CHANGE	06/30/14	16	$752,049	$41,374	$761,895	$56,665	$756,613	$71,946
NON-ASSET (GAIN)/LOSS	06/30/15	27	$(60,302)	$(1,627)	$(62,840)	$(2,508)	$(64,645)	$(3,381)
ASSET (GAIN)/LOSS	06/30/15	27	$764,857	$20,639	$797,048	$31,809	$819,938	$42,886
NON-ASSET (GAIN)/LOSS	06/30/16	28	$(113,778)	$(1,579)	$(120,109)	$(3,245)	$(125,160)	$(4,919)
ASSET (GAIN)/LOSS	06/30/16	28	$955,787	$13,263	$1,008,973	$27,257	$1,051,406	$41,319
ASSUMPTION CHANGE	06/30/16	18	$290,704	$5,486	$305,379	$11,272	$315,096	$17,155
NON-ASSET (GAIN)/LOSS	06/30/17	29	$(23,572)	$0	$(25,222)	$(350)	$(26,625)	$(708)
ASSET (GAIN)/LOSS	06/30/17	29	$(472,726)	$0	$(505,817)	$(7,027)	$(533,955)	$(14,193)
ASSUMPTION CHANGE	06/30/17	19	$306,173	$(17,773)	$345,990	$6,535	$363,449	$13,253
NON-ASSET (GAIN)/LOSS	06/30/18	30	$70,036	$0	$74,938	$0	$80,184	$1,095
ASSET (GAIN)/LOSS	06/30/18	30	$(146,190)	$0	$(156,423)	$0	$(167,373)	$(2,286)
METHOD CHANGE	06/30/18	20	$136,321	$(1,020)	$146,918	$(1,048)	$158,286	$2,951
ASSUMPTION CHANGE	06/30/18	20	$479,689	$(15,410)	$529,207	$(15,833)	$582,630	$10,863
TOTAL			**$4,244,078**	**$152,976**	**$4,382,924**	**$220,309**	**$4,461,840**	**$277,384**

Discount rate used by CalPERS= 7%

Option 1 – Pay Down the UAL

- Pay off amortization bases of $2,551,673 using reserves
- Interest savings of $2,538,190 over amortization period
- Lower annual payment approximately $190,000 per year

- Other Options
  - Could pay off other amortization bases
    - Will ask CalPERS Actuary for biggest savings
  - Could pay off the total UAL

Option 1 – Pros and Cons

- Pros
  - Reduce the annual payment or continue same payment to pay down faster
  - Net Interest savings - $1,131,665 ($2,538,190 less $1,406,525)
  - Reduce liabilities on the balance sheet
  - Pay of UAL faster
  - Reserves earn average interest of 2%, liability accrues interest at 7%
- Cons
  - Lowers our total reserves
    - General Fund (100)
    - Brine Line Operating
    - Loss of $1.4 million in interest on reserves (@2%)

Option 2 - Use Alternate Amortization Schedule

- 15 Year Amortization Schedule
  - Increase annual payment amount by $125,046 for FYE 2020
  - Estimated interest savings of $1,052,918

- 10 Year Amortization Schedule
  - Increase annual payment amount by $272,759 for FYE 2020
  - Estimated interest savings of $2,167,359

- Suggested use of General Fund Reserves ($1 million) to offset increased payment for the 10-Year Amortization Schedule and not increase member contributions

Option 2 – Pros and Cons

- Pros
  - Pay off UAL faster
  - Reduce liabilities on the balance sheet
  - Interest savings

- Cons
  - Is the higher payment sustainable?
  - Payment would continue to increase each year
  - Increased indirect cost and benefit allocation rates
  - After $1 million of reserves is used, member contributions would increase

Option 2 –10 Year Amortization Schedule

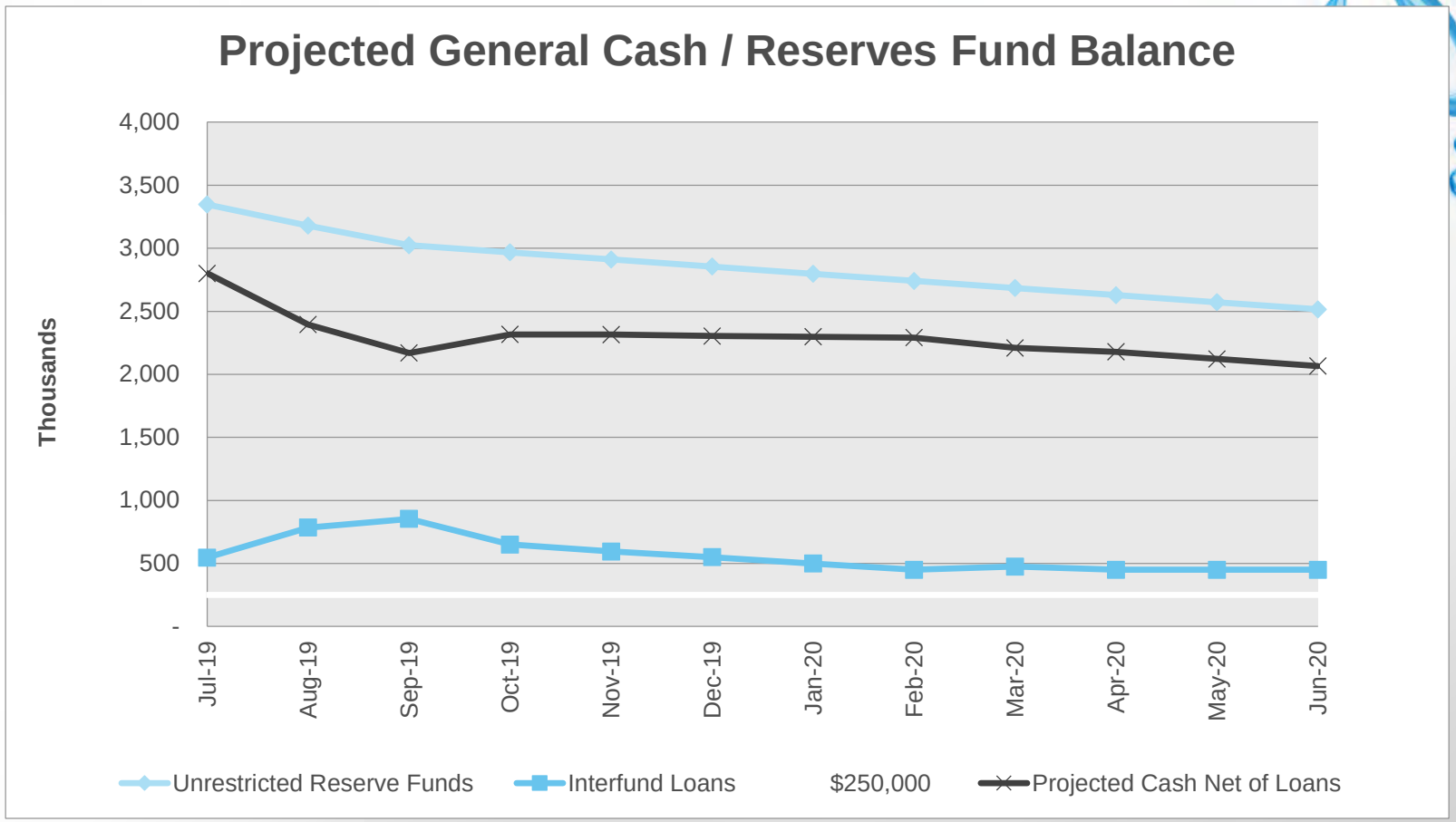
FYE 2020

	Current	10-Year Sch	Difference
UAL Payment	$277,384	$550,143	$272,759
Member Agency Contribution	305,393	348,621	43,228
Benefit Rate	45.6%	53.8%	8.2%
Indirect Rate	150.5%	147.2%	(3.3%)
Total Allocation Rate	196.1%	201.0%	4.9%

FYE 2021

	Current	10-Year Sch	Difference
UAL Payment	$325,627	$565,272	$239,645
Member Agency Contribution	306,068	343,128	37,060
Benefit Rate	45.3%	52.3%	7.0%
Indirect Rate	150.8%	148.8%	(2.0%)
Total Allocation Rate	196.1%	201.0%	4.9%

General Fund - Reserves



General Fund - Reserves

FYE	Balance
2014	$1,424,120
2015	$1,865,111
2016	$2,196,752
2017	$2,350,788
2018	$2,542,993
2019	$2,359,816
09/30/19	$3,023,603

180 days of operating expenses FYE 2020 Budget = $1,674,077
90 days of operating expenses FYE 2020 Budget = $ 837,038

Accrued Vacation & Sick = $629,820

General Fund - Reserves

- *General Fund Operating Reserve* – Established to provide cash flow for unbudgeted and/or unexpected expenditures and to mitigate potential delays between the time when expenditures are incurred and the time when revenues are received.

- Target Level – There is no required minimum for this reserve, although a prudent target level will be equal to 180 days of SAWPA's General Fund total budgeted operating expenditures. This reserve will be funded only based on realized efficiencies in the General Fund resulting in actual year-end expenditures being under budget.

- Member Agency CFO's suggest changing to 90 days of total budgeted operating expenditures.

Total Reserves @ 09/30/2019

Reserve	Balance
Self Insurance	$4,216,433
Debt Service	5,025,902
Pipeline Replacement	21,332,328
OCSD Rehabilitation	3,650,852
Capacity Management	11,691,357
OCSD Future Capacity	1,789,985
Flow Imbalance	86,513
Rate Stabilization	1,003,055
Operating	4,649,837
Total Reserves	**$53,446,262**

BL Operating - Reserves

FYE	Balance
2014	$2,000,562
2015	2,342,219
2016	3,790,275
2017	4,545,484
2018	3,988,170
2019	4,512,993

25% of operating expenses FYE 2020 Budget = $1,301,069

Total BL Reserves

FYE	Balance
2014	$51,621,279
2015	49,309,299
2016	49,975,185
2017	44,403,605
2018	40,513,834
2019	52,610,454
09/30/19	53,446,262

BL Operating - Reserves

- *Brine Line Operating Reserve*: The Brine Line Operating Reserve is established to cover temporary cash flow deficiencies that occur as a result of timing differences between the receipt of operating revenue and expenditure requirements. The reserve is utilized as needed to pay outstanding Brine Line Enterprise expenditures prior to the receipt of anticipated operating revenues.

- Target Level – Funding shall be targeted at a minimum amount equal to 90 days (i.e. 25%) of SAWPA's Brine Line Enterprise total annual operating expenditures. If SAWPA elects to issue variable rate debt, the minimum required balance in this reserve might need to be higher.

Other Information

- Average Rate of Return as of 09/30/19 = 2.216%
- Interest rates are declining
  - LAIF Interest = 2.18%@ as of 10/23/19
- CalPERS discount rate = 7%
- 36.4% of total hours are for brine line
  - 22,940 Brine Line and Capital Projects
  - 63,040 total labor hours budgeted

Recommendation

- Pay off $2,551,673 of our UAL
  - $972,510 from General Fund Reserves
  - $1,579,163 from Brine Line Operating Reserves


Questions?

SAWPA Strategic Plan

Richard Haller, P.E., General Manager

Commission | December 17, 2019

Item 5.G.

Recommendation

That the Commission provide input on the process and format for an update to the Strategic Plan; and, direct staff to issue a Request for Proposals (RFP) for Strategic Plan Facilitator Consultant Services.

Background

- Last Strategic Plan completed in 2016
- Paul Brown was facilitator
- Results:
  - **SAWPA Business Line Focus**
    - OWOW | Roundtables | Brine Line
  - **Prepared for Each Business Line**
    - Goals and Objectives
    - Critical Success Factors (CSFs)
    - Processes, Activities and Tasks (PATs)

2016 Process

1. Consolidated overlapping and crosscutting activities.
2. Clustered PATs considering synergies, dependencies, and efficiencies.
3. Determined level of certainty of achievement appropriate to each PAT, understanding that “A” level of certainty would require more resources than “C” level certainty.

2016 Process (continued)

4. Fine-tuned necessary resources to accomplish the PATs at the level deemed necessary and identified revenue to support efforts.
5. Determined necessary skill sets to accomplish each PAT and whether SAWPA had the capability/capacity to do the work in-house; or, would the PAT best be accomplished by staff or contracted help.
6. Build the results of analysis into the next overall SAWPA budget recommendation.

Proposed 2020 Process

- Similar to 2016, but with fewer and simpler PATs
- Use Facilitator to obtain Commissioner and Member Agency input and to keep efforts focused and on-schedule.

Recommendation

That the Commission provide input on the process and format for an update to the Strategic Plan; and, direct staff to issue a Request for Proposals (RFP) for Strategic Plan Facilitator Consultant Services.