Addressing California Water Issues

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Western Growers Association

The View from Washington on Water

Dennis Nuxoll
VP for Federal Affairs
Western Growers

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Waters of the United States

- **The Basics-** The Clean Water Act creates federal jurisdiction over all “navigable waters,” which it defines, unhelpfully, as “Waters of the United States” (WOTUS).
- In 2006 the Supreme Court tried to clarify in *Rapanos v. United States* that the Clean Water Act applies to waters that have a “significant nexus” with navigable rivers or seas. Since that decision the EPA and Army Corp has been working on a rule interpreting what that means. Last year a rule was issued interpreting jurisdiction as extending to streams, including seasonal ones, that flow into navigable rivers, and also to wetlands located near such streams or rivers.
- The EPA argued that the move was scientifically justified, as the quality of navigable waters downstream depends heavily on water quality upstream—polluted water, like clean water, flows downhill.
- Landowner and agricultural groups have lambasted the EPA rule as an overreaching infringement of private property rights and an onerous burden on farmers and ranchers.
- The 6th Circuit Court of Appeals is currently considering the legality of the WOTUS rule and the rule has been stayed pending a court decision.

Drought

- California, like all of the states in the Western United States, has been living through drought. Over the last two years about a half-dozen House Members from California and Senator Feinstein have been engaged in negotiations about a bill that would provide short, medium and long-term help.
- In the short-term the bill would increase pumping at the delta so more water flows south. In the medium term efforts would be made to help fish species recovery. In the long-term we need to build reservoirs and other infrastructure. Finding a sweet spot that doesn't spend too much money while not violating the ESA has been the thorny problem.

Drought

- **Trump's View-** in Fresno Trump famously promised to immediately solve California's water problem. Unfortunately, no details were ever provided on how he would do that.
- The assumption by many is Trump will appoint regulators who will turn the pumps on. That is not a realistic solution however since the moment pumps have been turned on by Obama regulators environmental activists filed lawsuits and got court injunctions to turn the pumps off again. That fundamental dynamic will not change.
- As a consequence Congressional action–along the lines of what has been long considered must finally be completed—hopefully before the end of the year so we do not loose another rainy season.

Endangered Species Act

- **Trump's View-** Trump has indicated that he will direct the Departments of Interior and Commerce to conduct a top-down review of all Obama Administration settlements, rules and executive actions under the Endangered Species Act and other similar laws, with an eye toward rescinding those actions.
- Trump also wants to work with Congress to improve and modernize the Endangered Species Act. His stated objectives in that regard are to make the law more transparent, use the best science, incentivize species conservation, protect private property rights, and reduce costs on American landowners.
- **Future Prospects-** House Republicans have over the last several years put forward ESA reform bills but all those efforts do not amount to an easy roadmap that can be quickly followed. Why? Almost all those previous efforts were either politically motivated (hence unrealistic overreaches) or piecemeal. As a consequence a serious ESA reform effort will take several years to develop, with a new round of focused Congressional hearings designed to investigate necessary reforms the starting point. Any reform will require bipartisan consensus in order to overcome the filibuster threshold in the Senate.

Thank you.

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State Water Resources Control Board

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Bay-Delta Water Quality Control Plan Update

State Water Resources Control Board

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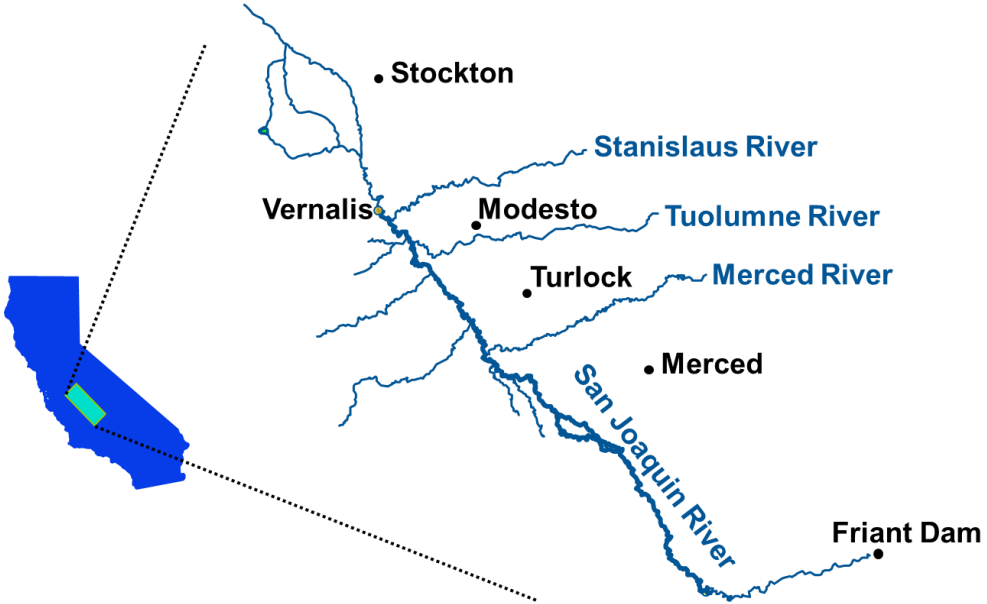
Why Now?
Current Plan Out of Date

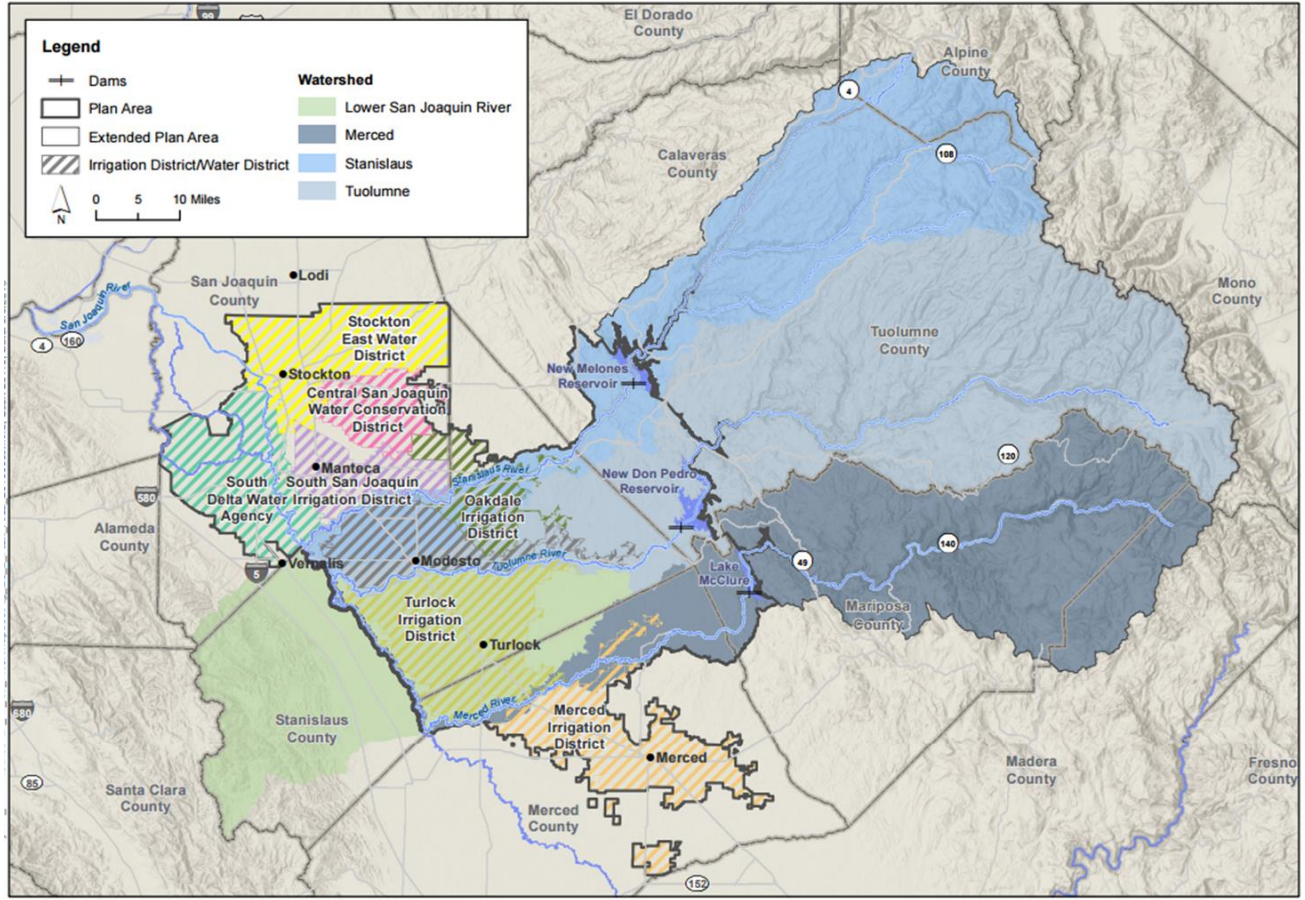
- Last Revision in 1995
- Species decline - need for update identified 10 years ago (in 2006 Plan update)
- Endangered Species Act increasing restrictions
- Administration's California Water Action Plan directs State Board to update the Plan to further achieve co-equal goals in the Sacramento-San Joaquin Bay Delta

Four Phase Process

- Phase 1 – San Joaquin River
- Phase 2 – Sacramento River and Other Delta Tributaries
- Phase 3 - Water Rights
- Phase 4 – Other Tributaries

San Joaquin River Flows & Southern Delta Water Quality





Phase 1
Substitute Environmental Document (SED) Staff Recommendation

- Flow and water quality objectives for protection of fish & wildlife
- Specifically, between 30%-50% of “unimpaired flows,” with a starting point at 40% remain in the rivers between Feb-June
- Stanislaus, Tuolumne & Merced Rivers

Why Focus on Flow? Staff Report:

- Cites Studies showing that flow a major factor in survival of fish
- Points to benefits of flow: (improved growth & survival of native fish by improving water temperatures and increasing floodplain habitat)
- Notes that flow affects risk of disease, predation, reproductive success, growth, migration, feeding behavior, etc.
- States that non-flow measures can also be important but Board has limited authority

Requires Balancing

- State Water Board's 2010 Flow Criteria Report – concluded that 60% of flow should be left in the LSJR for the benefit of fish
- Current uses (agriculture, municipal, industrial) rely on between 60% to 80% on average or more of the unimpaired flow
- Staff proposal would be a big increase
- Law requires balancing
- Unlike the 2010 report, this staff proposal considers other uses and attempts to strike a balance among competing uses of water

How to Balance?

- Staff recommendation less than what environmental and commercial fishing interests favor, and more than agricultural and affected urban users want
- Impacts:
  - Water Supply-Agriculture, M&I
  - Economic
  - Groundwater
  - Drinking Water
- Public Impact/Public Process

Settlements Encouraged

- State Board has long history of encouraging Settlements
- Governor Brown sent our Board a letter on September 19, 2016
  - Encouraging consideration of Settlements and
  - Directing Natural Resources Agency to explore a comprehensive agreement for San Joaquin and Sacramento Basins
- Durable local solutions can improve flows and other conditions that can reduce the need for flow
- Local water agencies and communities, agency experts, and other organizations can provide foundation for durable solutions

Next Steps – Phase 1

- Written Comments Due: 12:00 noon, January 17, 2017
- Email to: commentlettters@waterboards.ca.gov with "Comment Letter – 2016 Bay-Delta Plan Amendment & SED" in the subject line.
- You can also make oral comments at hearings:

SACRAMENTO
Nov. 29, 2016 and Jan. 3, 2017 – 9 AM
CalEPA Headquarters Building
2nd Floor
1001 "I" Street

STOCKTON
Dec. 16, 2016 – 9 AM
Stockton Memorial Civic Auditorium
Main Hall
525 "N" Center St,

MERCED
Dec. 19, 2016 – 9 AM
Multicultural Arts Center
645 W. Main Street

MODESTO
Dec. 20, 2016 – 9 AM
Modesto Centre Plaza
Tuolumne River Room
1000 "K" Street

For more information visit
http://waterboards.ca.gov/DeltaWQCP-Phase1

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SGMA Update and Alternate Water Supplies

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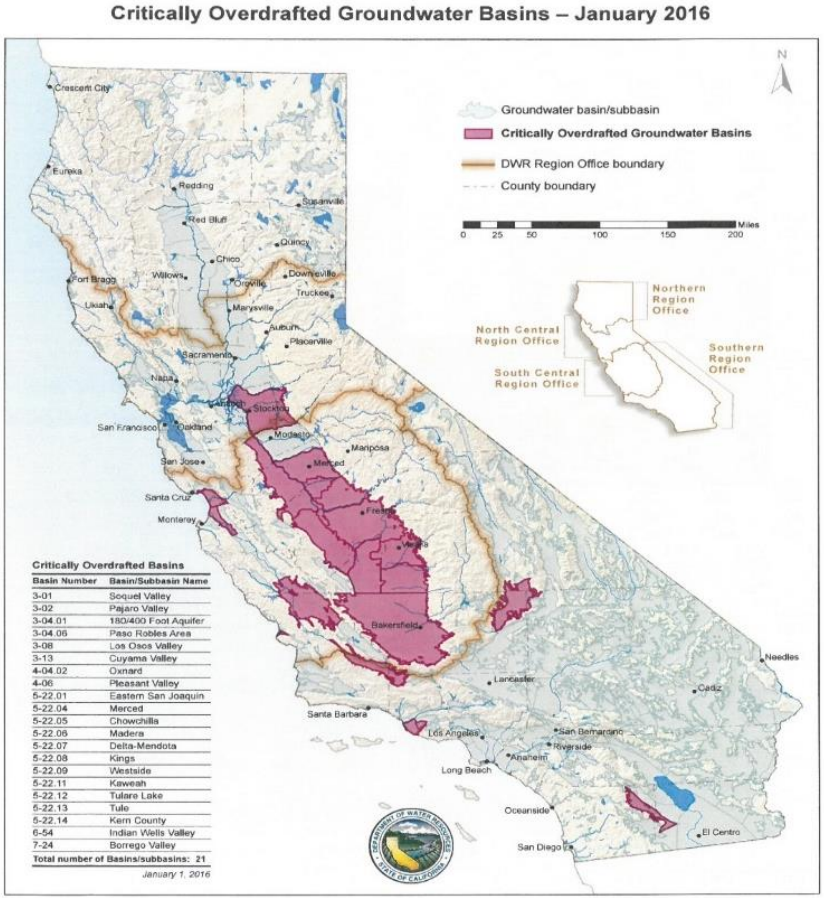
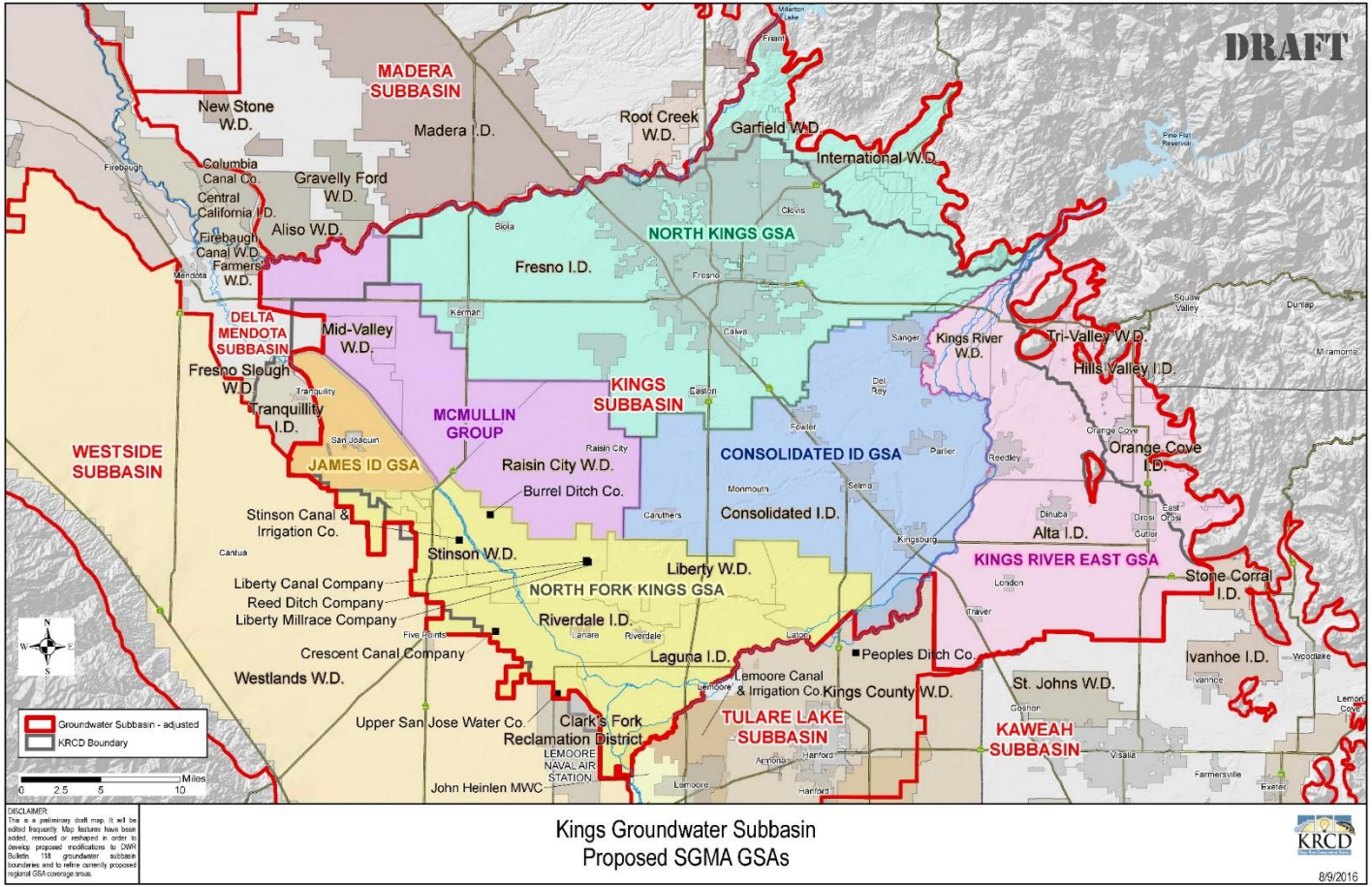
SGMA Update

- “Groundwater Sustainability Agency” (GSA) formation is under way
- Some are using “joint powers” authority
- Some were organized with special legislation (Kings River East, North Fork Kings)
- Groundwater sub-basins have multiple GSAs
- San Joaquin Valley has many proposed GSAs
- Map of Kings Groundwater Basin example follows
- Organizational issues of Kings Sub-basin are common elsewhere

Where the Action Is





Example Issues from Kings Sub-basin

- GSAs forming around surface water supplies
- County has areas with no surface water
- One area has well field in another GSA

Next Steps

- JPA or organizing entity submits documents for DWR approval
- Develop work efforts to address:
  - Legal and technical support consultants
  - Administration and financial processes
  - Outreach and membership activities
  - Technical program design, including groundwater data management, models and especially the groundwater sustainability plan (due by 2020)

Alternate Water Supplies

- Re-cycled water; requirements, technology, issues, active projects, volume and locations available
- Stormwater; requirements, technology, issues, active projects, volume and locations
- Produced water from oil and gas industry; requirements, technology, issues, active projects, volume and locations
- Brackish groundwater; technology, issues, active projects, volume and locations available

Recycled Water – Requirements for Unrestricted Use (Almonds)

- Highly treated wastewater (tertiary) must meet stringent standards (Title 17 CCR) such as no harmful bacteria, inactivation of viruses and drinking water quality for most metals and minerals (Title 22 CCR) in order to irrigate non-processed food crops (for unrestricted use).
- The result is a “highly regulated” environment (from treatment to final use), including monitoring and reporting on the irrigated/use area
- The benefit is a highly reliable/sustainable supply

Equipment Used to Meet Quality Goals

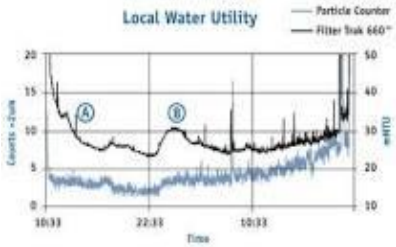
Membrane Biological Reactor (MBR)

Pulls vacuum on “noodles” = high energy consumption

Cloth Disc Membrane Filter

Uses gravity at bottom to push water through filter, discs rotate = high energy consumption

Ultra-violet disinfection



Laser particle counter

(must be less than 2 NTUs)

Recycled Water – Projects, Volumes/Locations

- Two major projects nearing completion in SJV
  - City of Visalia – Tulare Irrigation District = MBR = up to 13,000 acre-feet/year to Tulare ID
  - North Valley Recycling Project: Cities of Modesto, Turlock, Ceres (future) and Del Puerto Water District; Modesto = MBR, Turlock = Disc Filters = up to 30,000 acre-feet/year to Del Puerto WD
- Other tertiary projects = Merced and Atwater = up to about 15,000 acre-feet
- Large systems under way: Fresno = 67,000 acre-feet at buildout, Bakersfield = 25,000 secondary treated, 2,200 tertiary, Stockton = discharge to San Joaquin River

Storm water

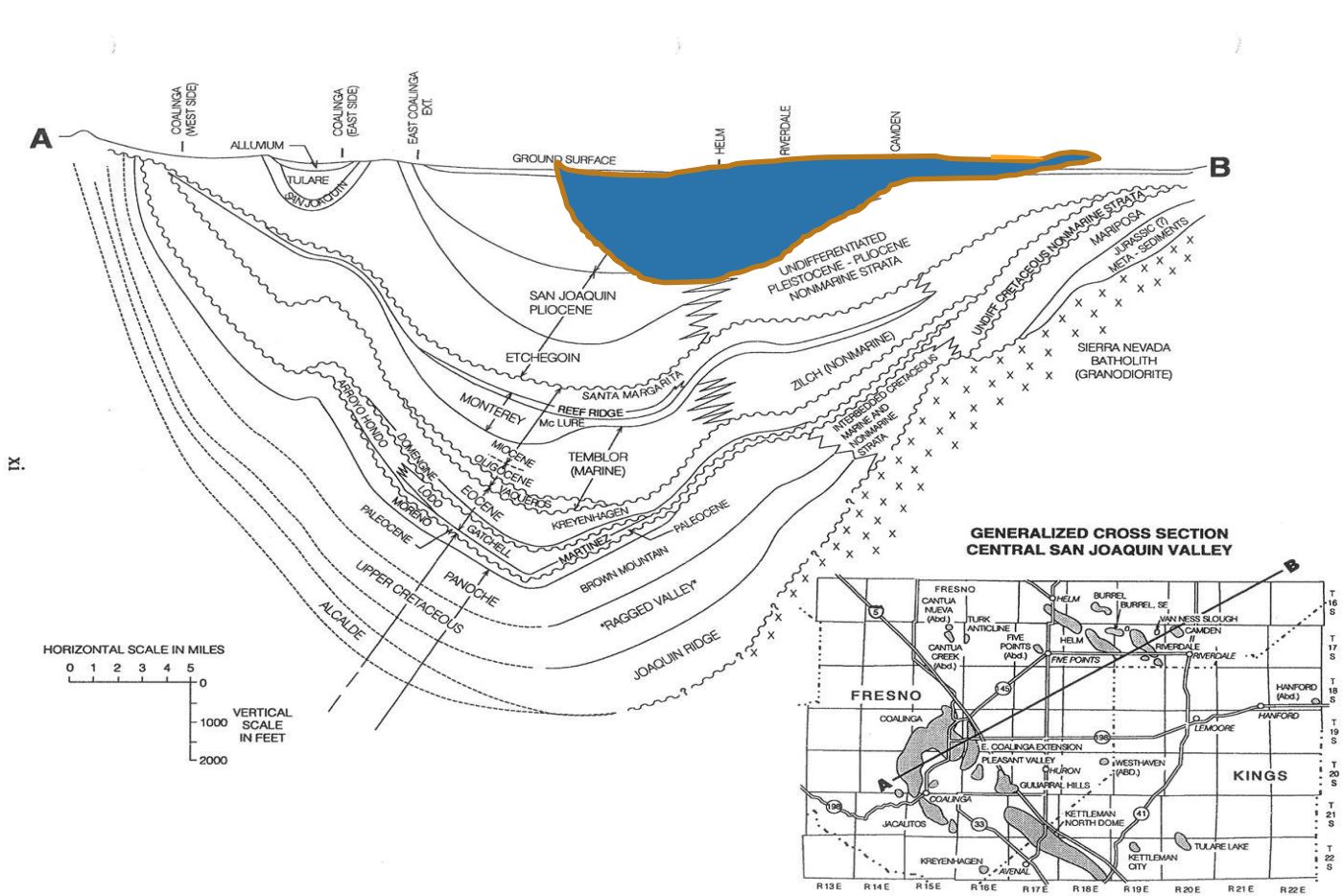
- Also is a regulated discharge, federal rules with state implementation
- Coastal areas have significant problems = beach water bacteria counts
- Most south SJV ag area stormwater is already used: Fresno = ponding basins for storage and recharge or moved west for ag recharge and use, no river discharge
- River discharge must meet standards = north SJV; Modesto uses dry wells and also discharges to the Tuolumne River and Dry Creek
- Additional storage and reuse schemes likely, especially for groundwater recharge, volumes unknown due to changing hardscape
- Some stormwater may still go to rivers to meet flow needs, especially from natural landscapes

Oil and Gas Production Water

- Water is produced during hydrocarbon extraction; approximately 1 - 4 acre-feet for each million cubic feet of natural gas and approximately 10 gallons of water for each gallon of oil
- The largest concentration of oilfield produced water is in Kern County and the estimated amount of water annually available is approximately 300,000 acre-feet, second is Coalinga area
- Not all produced water can be used, some is used for enhanced oil recovery and some re-injection keeps subsurface formations hydraulically stable (avoiding subsidence)
- Salinity ranges from less than 500 parts per million to greater than seawater (over 33,000 ppm) with complex chemistry

Produced Water, cont'd

- Oil and gas produced water is also heavily regulated; federal underground injection control regulations
- Complex chemistry makes treatment difficult; eg organics need to be removed before desalination to avoid destruction of membranes
- Water from the Kern River oilfield is treated, has low salinity, and has been used for irrigation in Cawelo Water District for many years
- De-salination would be an additional step to create more water, some pre-treatment is done by oil companies already to ease use as an injection fluid


A
B
COALINGA (WEST SIDE)
COALINGA (EAST SIDE)
EAST COALINGA EXT.
HELM
RIVERDALE
CAMDEN
ALLUVIUM
TULARE
SAN JOAQUIN
GROUND SURFACE
SAN JOAQUIN PLIOCENE
UNDIFFERENTIATED PLEISTOCENE - PLIOCENE NONMARINE STRATA
ETCHEGOIN
ZILCH (NONMARINE)
UNDIF. CRETACEOUS NONMARINE STRATA
MARIPOSA
JURASSIC (?) META - SEDIMENTS
SIERRA NEVADA BATHOLITH (GRANODIORITE)
SANTA MARGARITA
REEF RIDGE
Mc LURE
MONTEREY
ARROYO HONDO
DOMENGINE
LODO
MORENO
PALEOCENE
MIOCENE
PLIOCENE
EOCENE
VAQUEROS
KREYENHAGEN
TEMBLOR (MARINE)
INTERBEDDED CRETACEOUS MARINE AND NONMARINE STRATA
MARTINEZ
PALEOCENE
BROWN MOUNTAIN
RAGGED VALLEY
JOAQUIN RIDGE
PANOCHE
UPPER CRETACEOUS
ALCALDE
IX.
HORIZONTAL SCALE IN MILES
0 1 2 3 4 5
0
1000
2000
VERTICAL SCALE IN FEET
GENERALIZED CROSS SECTION
CENTRAL SAN JOAQUIN VALLEY
FRESNO
CANTUA NUEVA (Abd.)
TURK ANTICLINE
CANTUA CREEK (Abd.)
FIVE POINTS (Abd.)
HELM
BURREL
BURREL, SE
VAN NESS SLOUGH
CAMDEN
RIVERDALE
FIVE POINTS
HANFORD (Abd.)
HANFORD
LEMOORE
COALINGA
E. COALINGA EXTENSION
PLEASANT VALLEY
HURON
WESTHAVEN (ABD.)
GUIJARRAL HILLS
KINGS
JACALITOS
KETTLEMAN NORTH DOME
TULARE LAKE
KETTLEMAN CITY
KREYENHAGEN
AVENAL
R13E R14E R15E R16E R17E R18E R19E R20E R21E R22E
T 16 S
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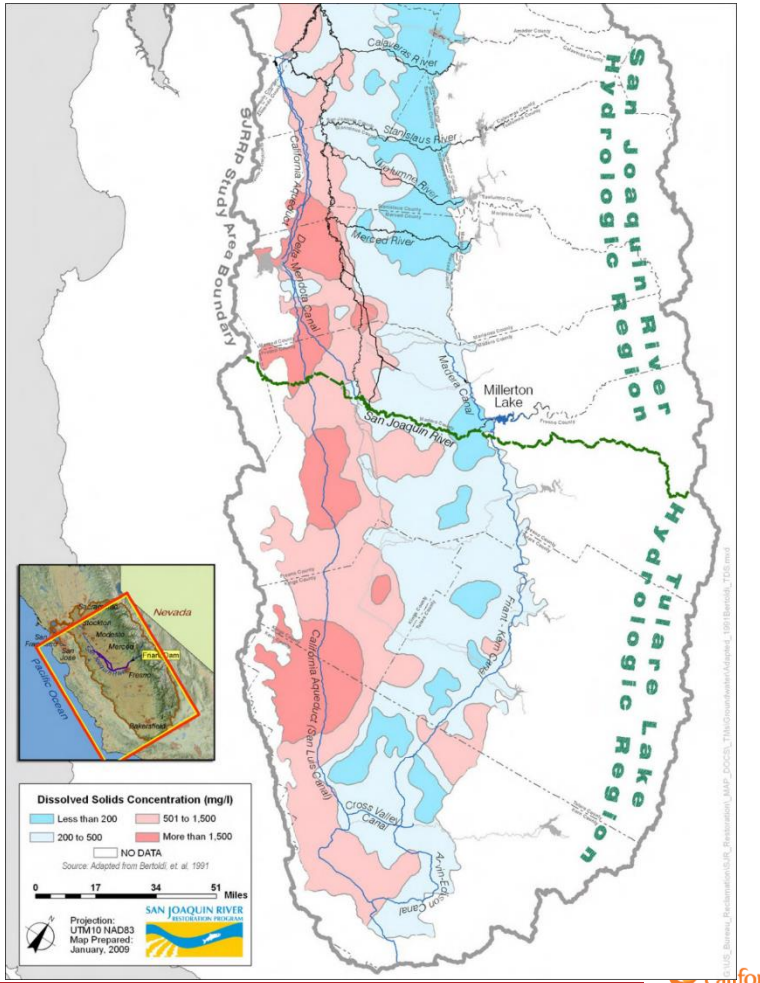
T 22 S

Brackish Ground Water

- Largest volume of untapped water supplies – millions of acre-feet both near surface and deep from Tracy to western Kern County
- Brackish range is from 1,500 to 10,000 ppm of salt
- Some of this water is used already and blended with higher quality surface water (when available)
- Chemistry is variable with some specific items that pose concern including boron, chromium and selenium, each with different use impairments; boron in agriculture, chromium (6) for drinking water and selenium can impact avian biology

Locations of Brackish Groundwater in the western SJV

- Pink and red areas higher in salts
- Generalized for near surface water quality
- Deeper zones often saltier



Brackish Water Treatment Technologies for Ag

- Reverse osmosis (RO) is still being tested in a number of locations
- Cost, especially energy requirements, is still a limiting factor for distributed, mass use by agriculture (well sites), solar photovoltaic and solar thermal strategies may reduce energy costs and reduce residual management issues, needs field testing confirmation
- Recent improvements in other technologies also need field confirmation
  - Electro-dialysis (ED) and RO combination units are becoming available, 1000 gpm trailer/container units are in test phase; ED is less energy intensive and chemistry customizable, ED is especially efficient in the 1500 to 10,000 ppm range, RO is the finishing process
- Waste disposal of treatment residuals concentrate or dry residual salt will still be a regulatory challenge unless the salts can be used as products

Questions?

- Contact information:

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FRESNO STATE

California Water Institute

Questions?

growing ADVANTAGE
The Almond Conference