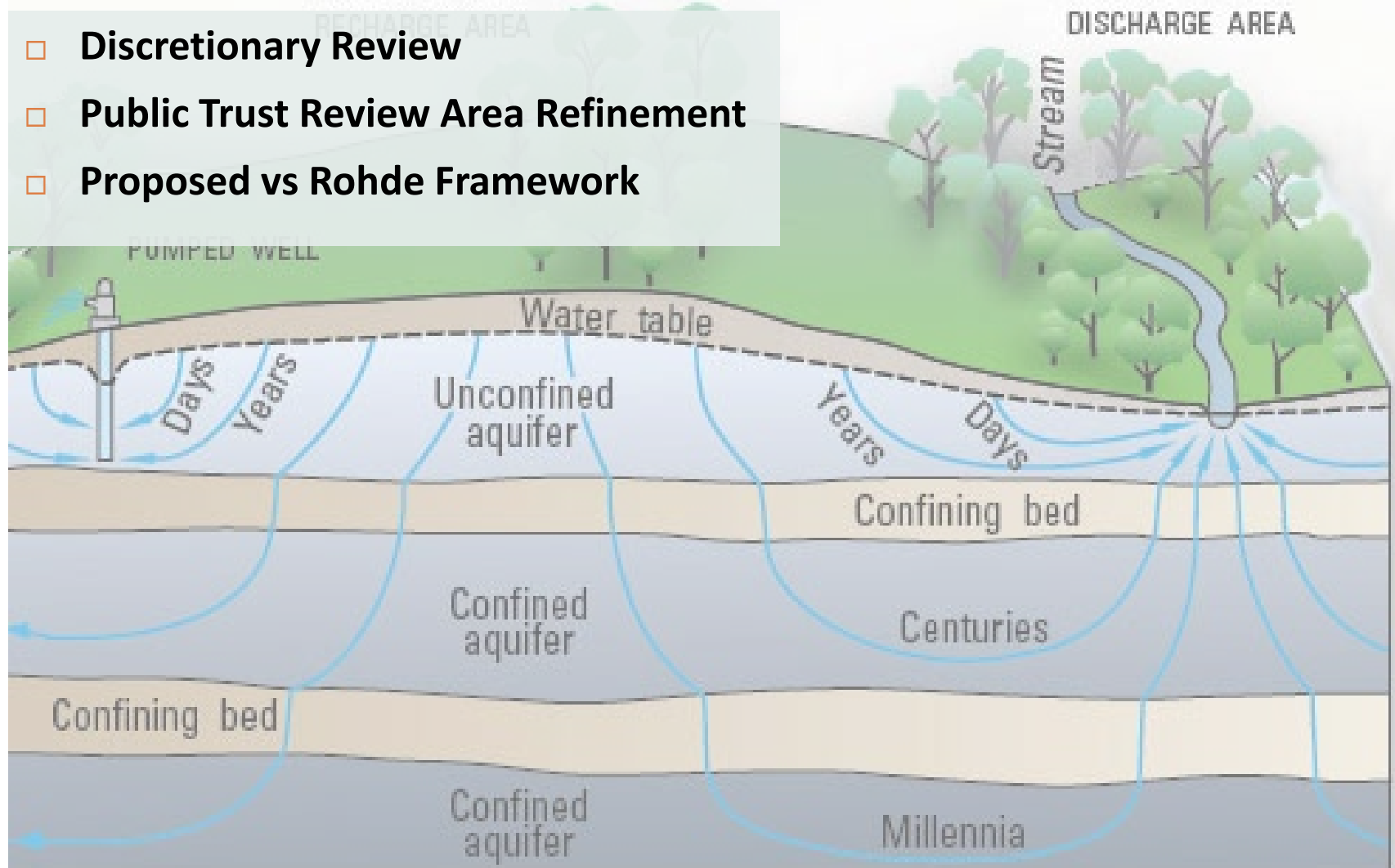


WELL ORDINANCE TECHNICAL WORKING GROUP MEETING

Robert Pennington, Professional Geologist, Permit Sonoma
February 09, 2023

Today's Presentation Topics

- Discretionary Review
- Public Trust Review Area Refinement
- Proposed vs Rohde Framework



Discretionary Permit Classes

3

- ❑ Wells within PTRAs associated with increased GW use, greater than 2.0 AFY
 - ❑ Permits that do not qualify as a ministerial class

- ❑ Zero Net Use/Increase
 - ❑ Enhanced groundwater recharge
 - ❑ Agricultural practices that improve soil health, increase recharge and reduce irrigation long term (regenerative agriculture)
 - ❑ Discretionary until objective standards are adopted

Discretionary Public Trust Review

4

- 1) **Public Trust Impacts Analysis:**
 - 1) Option 1 - Applicant provides the analysis, County reviews
 - 2) Option 2 - County conducts the analysis
 - 2) **Written findings and issuance or denial**
 - 3) **Decision by Permit Sonoma may be appealed to BOS**
 - 4) **BOS may approve with overriding consideration of public benefit**
-
- **CEQA compliance**
 - **At costs fees**
 - **Processing time (months to years)**

Public Trust Impacts Analysis

5

Option 1. Applications provides the analysis, County reviews the analysis and prepares written findings

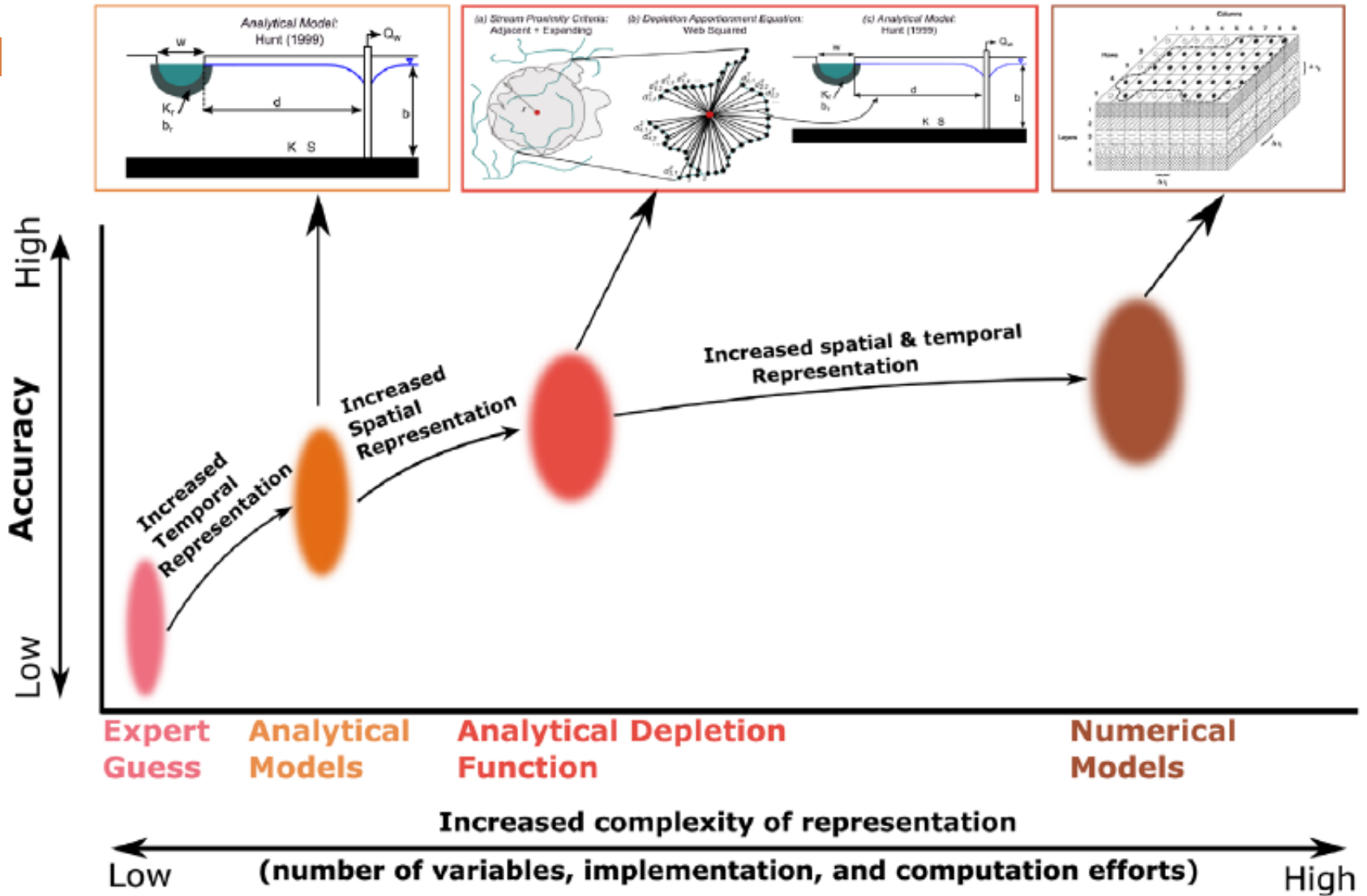
- ❑ Standard permitting arrangement
- ❑ Reports prepared by professional
- ❑ More control by applicant

Option 2. County conducts the analysis and prepares written findings

- ❑ Applicant provides project specific documentation
 - ❑ well construction details, water use estimate, water conservation plan, etc.
- ❑ Consistent and standardized
- ❑ Less overall cost to applicant
- ❑ Shorter permit processing time
- ❑ If adverse impact, applicant develops mitigation measures
- ❑ Applicant may refute the findings, and provide additional information

Methods of Analysis

6



Available Numerical Models

7

Calibrated numerical models developed:

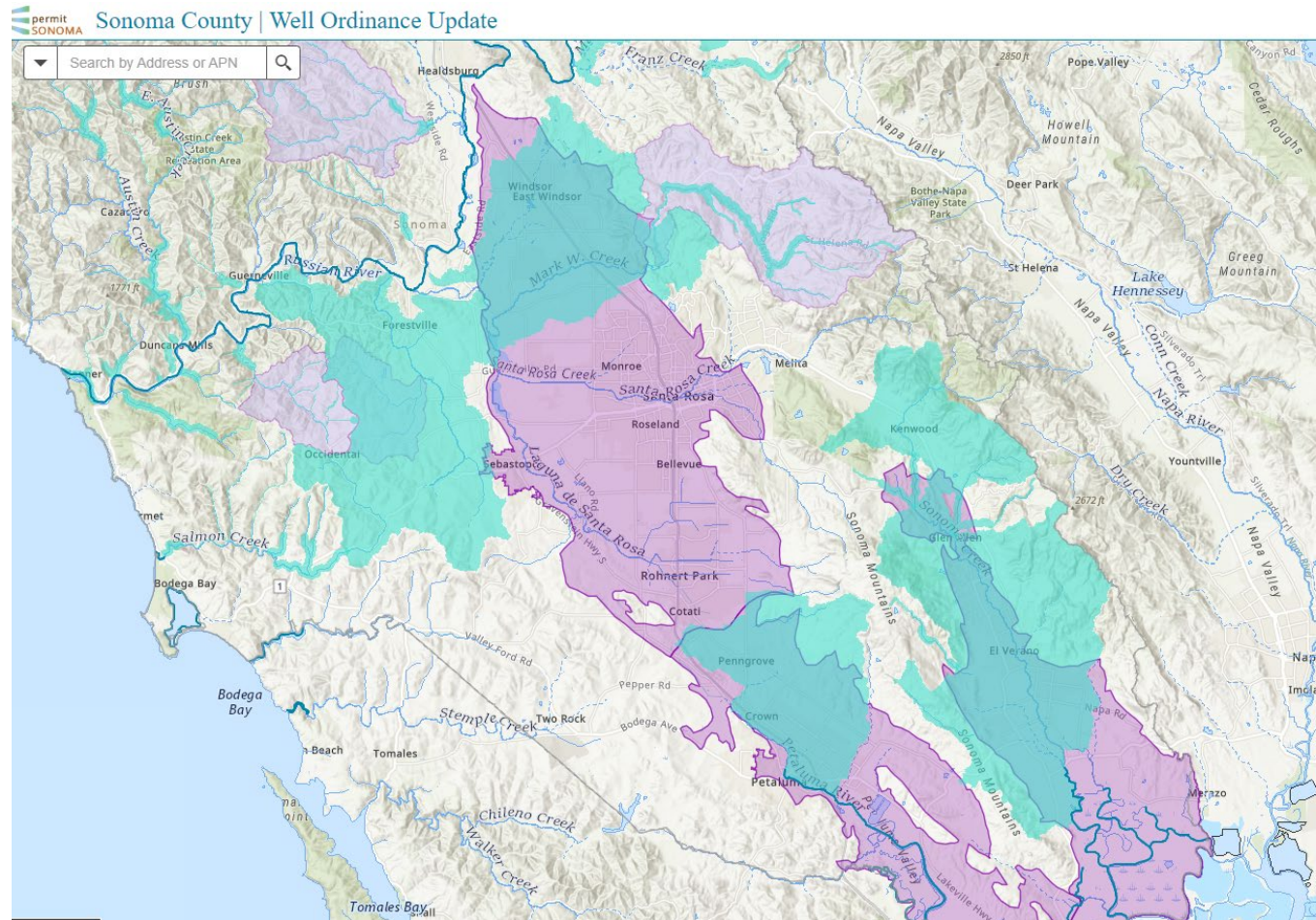
GSA's

- Santa Rosa Plain
- Sonoma Valley
- Petaluma Valley

Critical Watersheds

- Mark West Creek
- Dutch Bill Creek
- Green Valley / Atascadero Creek
- Mill Creek

Russian River watershed
(under development by USGS)

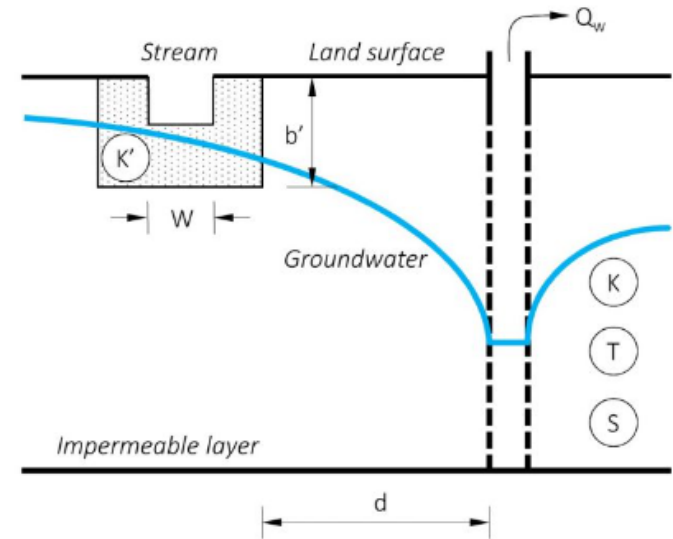


Impacts Analysis Methods

8

- Calibrated numerical models
 - “Gold standard” for estimating streamflow depletion
 - Useful for acute and cumulative impacts

- Analytical models with hydrogeologic reports and PTRA methods
 - Cumulative impacts - PTRA methods and/or hydrogeologic reports
 - Acute impacts – [analytical models](#)
 - Jenkins 1968 or Hunt 1999
 - Model run for year including spring recession and dry season



Discretionary Review - Adverse Impacts

(triggers mitigation or permit denial)

9

Habitat/Stream/Area	Percent of Flow
Coho Summer Rearing Streams	>10% reduction during periods of spawning, rearing and migration
Steelhead Streams	>20% reduction during periods of spawning, rearing and migration
GSA Basin	>20% reduction and not inconsistent Sustainable Management Criteria for Interconnected Surface Water ***

*** pending future development

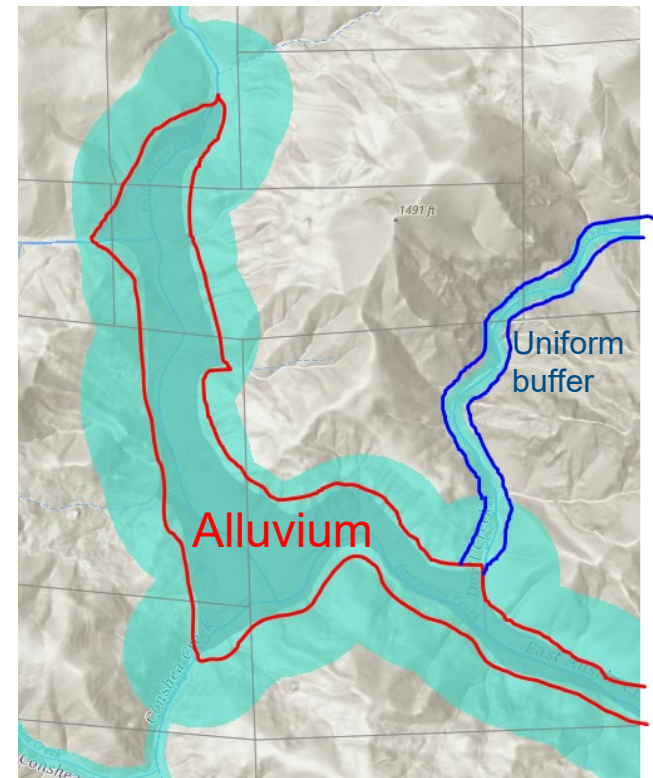
PTRA Refinements and Options

Refined buffer:

- Clipped uniform buffers to alluvium and sedimentary units (Stetson, 2008)
 - Stetson area within 750 ft.
 - 100 or 250 ft uniform buffer

Perennial Streams:

- NMFS steelhead streams plus contributing **perennial** tributaries (NHD)
- Prior version used USGS streams layer



Alternative “Fish Informed” PTRA

Expands to full sub-watersheds for “critical watersheds”:

- Mill, Mark West, and Dutch Bill Creeks

Removes Windsor Creek sub-watershed

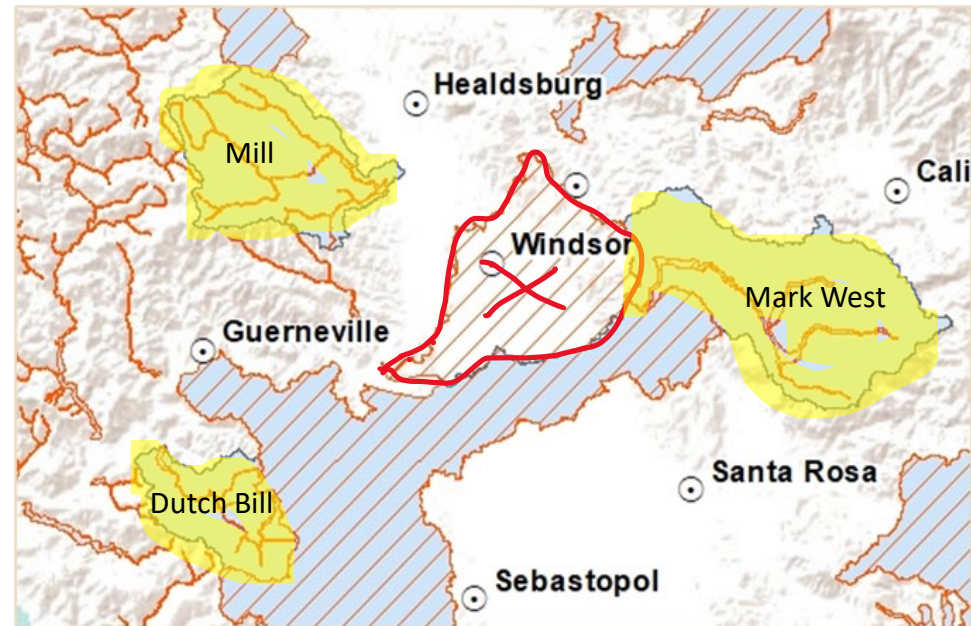
- Low priority steelhead stream
- No existing Coho or Steelhead rearing identified by Sonoma Water

Working PTRA = 277 square miles (16% of County)

Fish Informed = 315 square miles (18% of County)

Fish Informed Ad-hoc

Meet and discuss options next week (Meeting time TBD)



Working PTRA – Subwatersheds



Working PTRA – Buffered streams

Alternative Permit Framework - Rohde Proposal

12

Adverse Impacts Analysis Tool

- Estimates cumulative depletion from proposed well and existing wells
- Adverse impacts based off environmental flows or more comprehensive Ca. Env. Flows Framework process



Ministerial Well Class

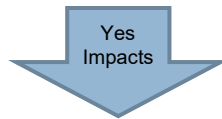
Existing Use
(Replacement Well)
Level 1 + 2
requirements

Zero Net Use
(New or Replacement Well)
Level 1 + 2
requirements

Water Board Regulated
Level 1
requirements

Public Water Well
(CEQA completed)
No conservation + monitoring requirements

New Wells
Level 1+ 2+ 3**
requirements
(Level 3 - based on depletion analysis)



Ministerial Well Class

Existing Use
(Replacement Well)
Level 1 + 2+ 3
requirements

Zero Net Use
(New or Replacement Well)
Level 1 + 2
requirements

Water Board Regulated
Level 1
requirements

Public Water Well
(CEQA completed)
Water Conservation and Monitoring requirements + Level 3 conservation

Discretionary Public Trust Review

New Wells
Permit Denied (until public trust impacts are mitigated) or applicant can appeal by providing its own analysis

New **Level 3** = Conservation measures designed to mitigate or prevent quantified impacts to public trust (e.g., well density rules, seasonal pumping requirements, etc)

Rohde Recommendations

13

1. Proceed with Working Proposal of PTRA and Permitting Process as an **interim** solution.
 - a. Schedule update of PTRA based on new pumping and recharge data.
 - b. Improve recharge estimates in pumping ratio by integrating geologic data.
2. Require metering on all wells and better well construction data collection, so that models can be improved over time.
3. Start California Env. Flows Framework (CEFF) process to define adverse impacts
4. Develop Analytical Model to screen all well permits
 - Public trust impacts assessed before designating permitting pathway

Framework Comparison

	Working Proposal	Rohde Proposal
Impact Evaluation Location?	<ul style="list-style-type: none"> • Navigable Waters • Non-navigable waters that are existing priority habitat for salmonids 	<ul style="list-style-type: none"> • All streams
Public Trust Review Area?	<ul style="list-style-type: none"> • Moderate or high risk areas based on PTRA Risk Matrix • 15 - 30 % of County • Static, unless revised by ordinance 	<ul style="list-style-type: none"> • County-wide
Permits subject to Impacts Analysis?	<ul style="list-style-type: none"> • Discretionary well permits 	<ul style="list-style-type: none"> • All well permits
Impacts Analysis Method?	<ul style="list-style-type: none"> • Calibrated numerical models (where available) • Analytical models / PTRA methods / hydrogeologic reports • Adverse impacts based off Richter (2012) 	<ul style="list-style-type: none"> • Single Analytical depletion function for the entire county • Adverse Impacts from Natural Flows Database or Ca. Env. Flows Framework process • Similar to state of Michigan’s Water Supply Assessment Tool
Permitting process and Water Conservation Requirements?	<ul style="list-style-type: none"> • Determined by the PTRA and well class • Requirements of ministerial permits may not fully mitigate impacts 	<ul style="list-style-type: none"> • Determined by output of impact analyses and well class • Requirements could be designed to prevent or mitigate impacts • Level 3 requirements may take significant planning for ministerial framework