Eel River Valley
Groundwater Working Group

Meeting No. 2

December 14, 2015
1:00 pm – 2:45 pm

Humboldt County Agricultural Center

Public Works Department

Today's Agenda

1. Introduction

   - Review agenda, personal introductions, review last meeting

2. Proposition 1 Grant Program (20-30 min.)

   - Summary of application submitted December 8

3. DWR's Medium-priority Ranking for the Eel River Valley Groundwater Basin (15-20 min.)

   - Criteria for ranking

4. Working Group Membership (20-30 min.)

   - Review purpose, role, expectations

   - Ground rules

5. RCD's Irrigation/Fertigation Planning Project (20 min.)

6. Set Next Meeting Date

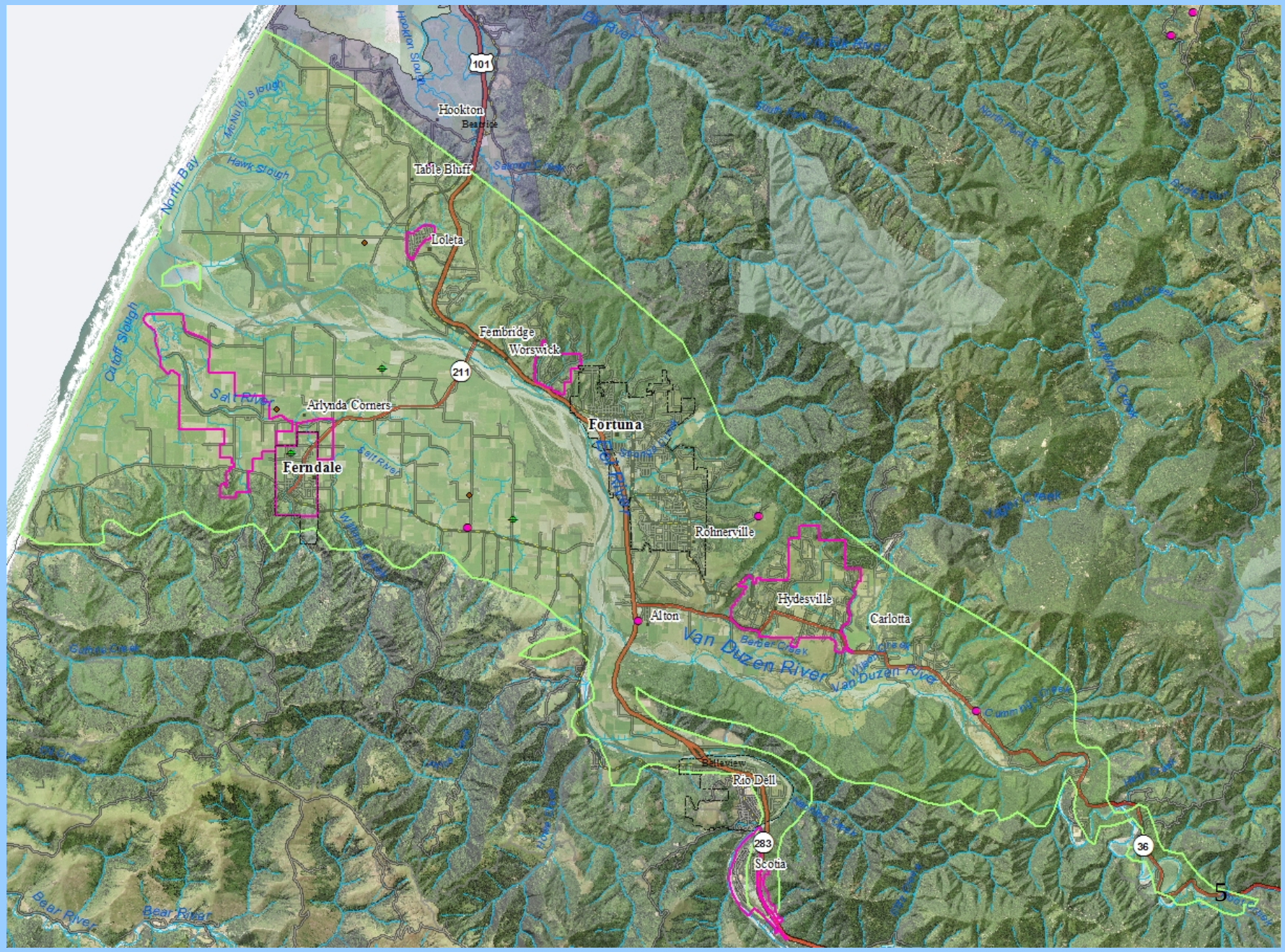
Review of October 21 Meeting

State Groundwater Policy

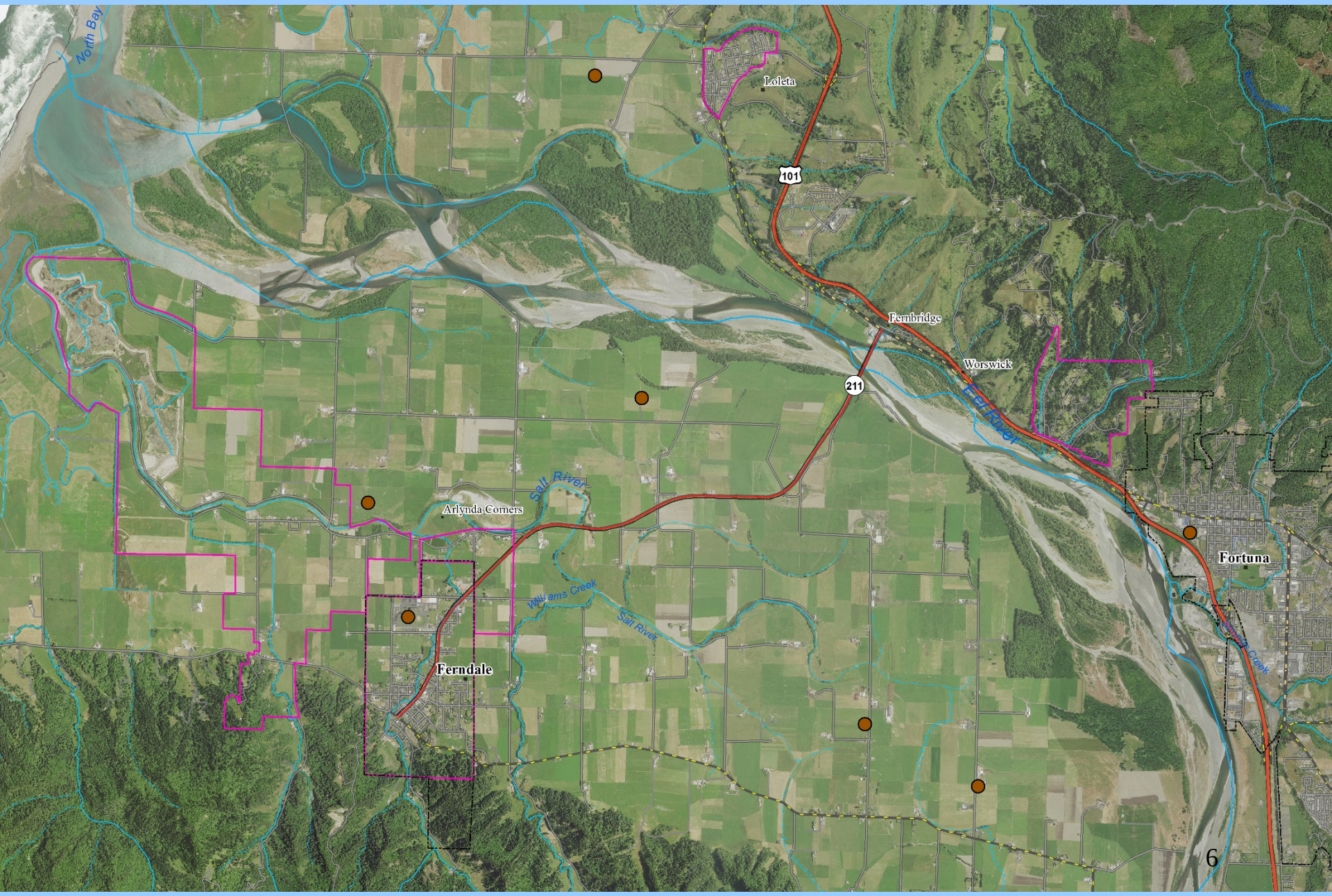
Water Code Section 113

It is the policy of the state that groundwater resources be managed sustainably for long-term reliability and multiple economic, social, and environmental benefits for current and future beneficial uses. Sustainable groundwater management is best achieved locally through the development, implementation, and updating of plans and programs based on the best available science.

Eel River Valley Groundwater Basin



DWR Monitoring Wells in Eel River Basin



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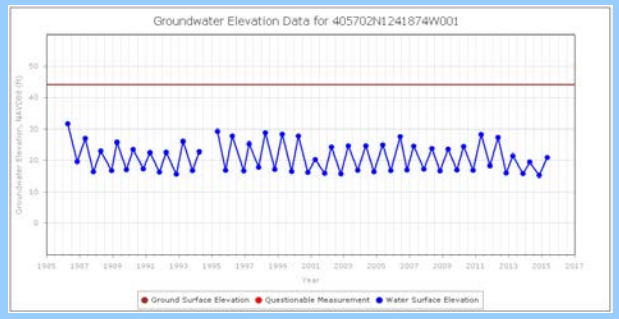
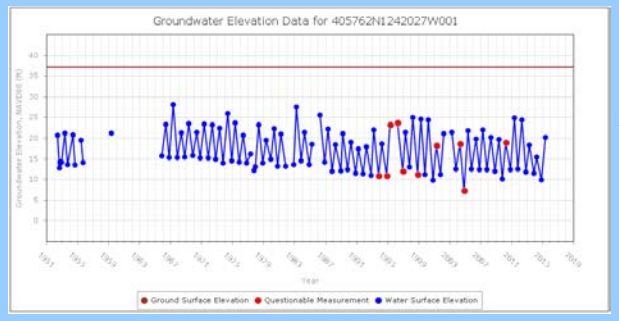
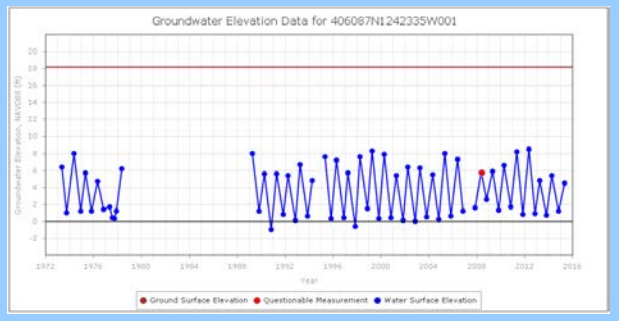


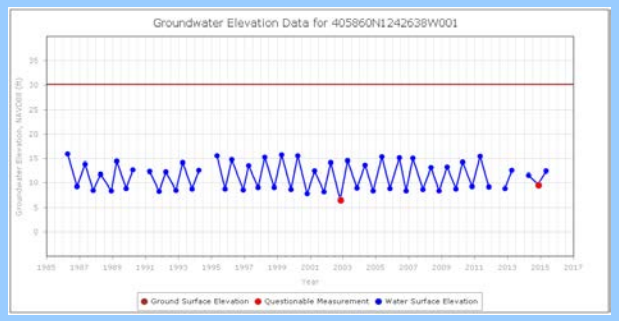
Pleasant Point Road (Ferndale)



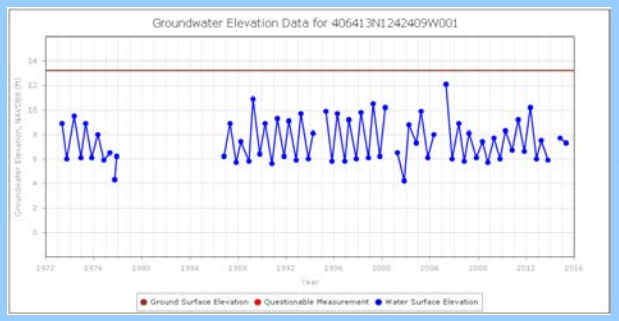
Waddington Road (Ferndale)



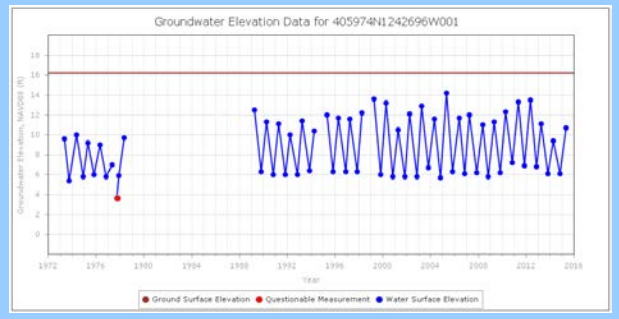
Goble Lane (Ferndale)



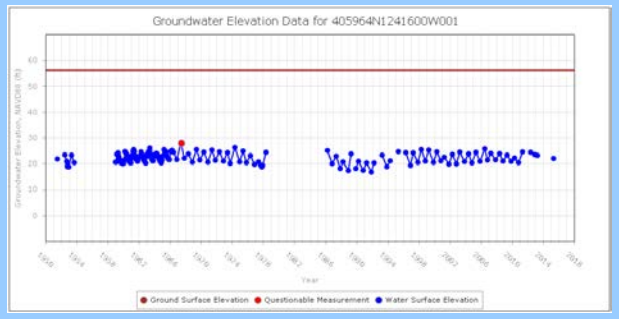
County Fairgrounds (Ferndale)



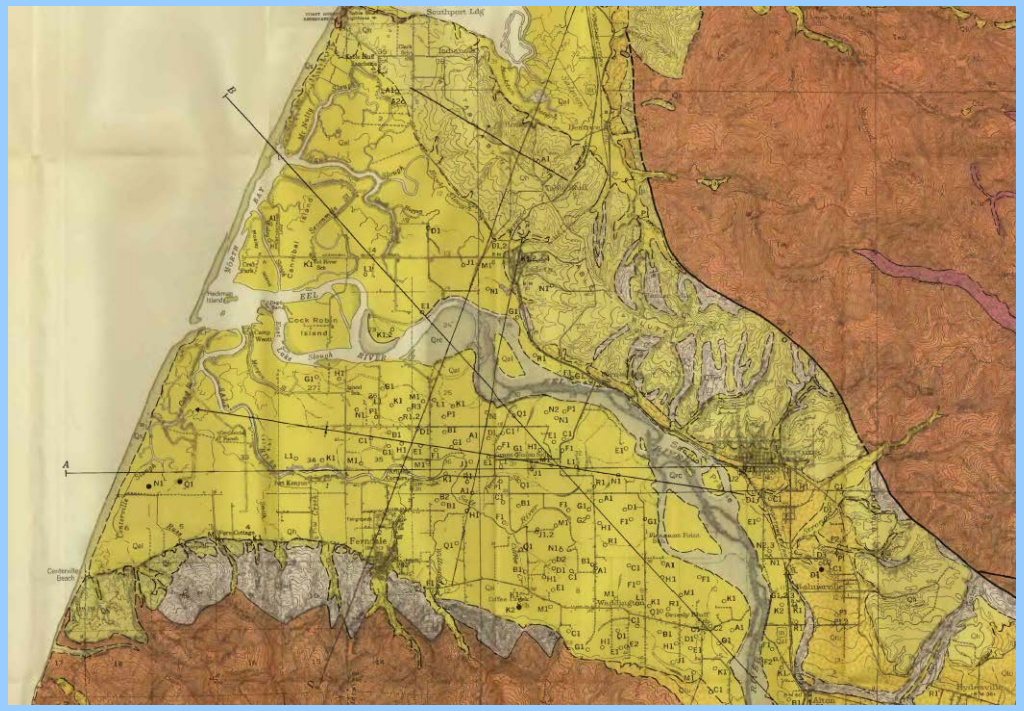
Cannibal Island Road (Loleta)



Dillon Road (Ferndale)



7th and K St. (Fortuna)



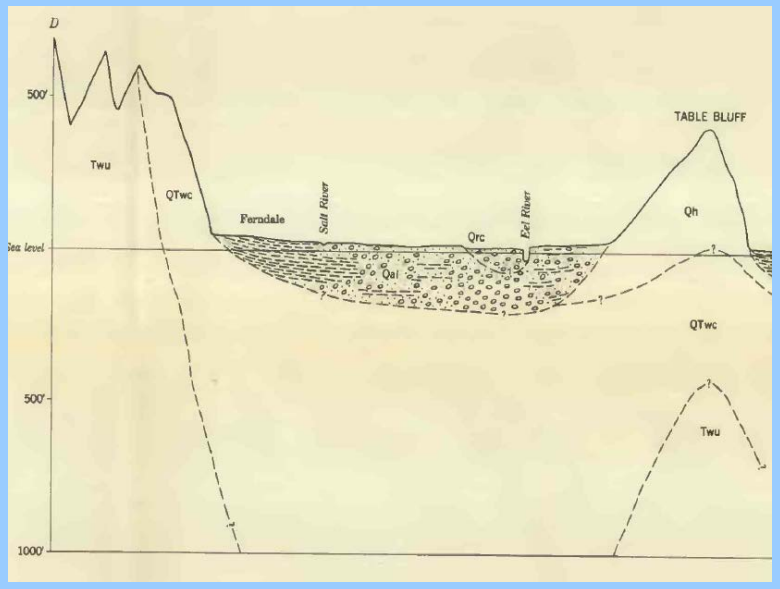
Geology and Ground-Water Features of the Eureka Area Humboldt County, California

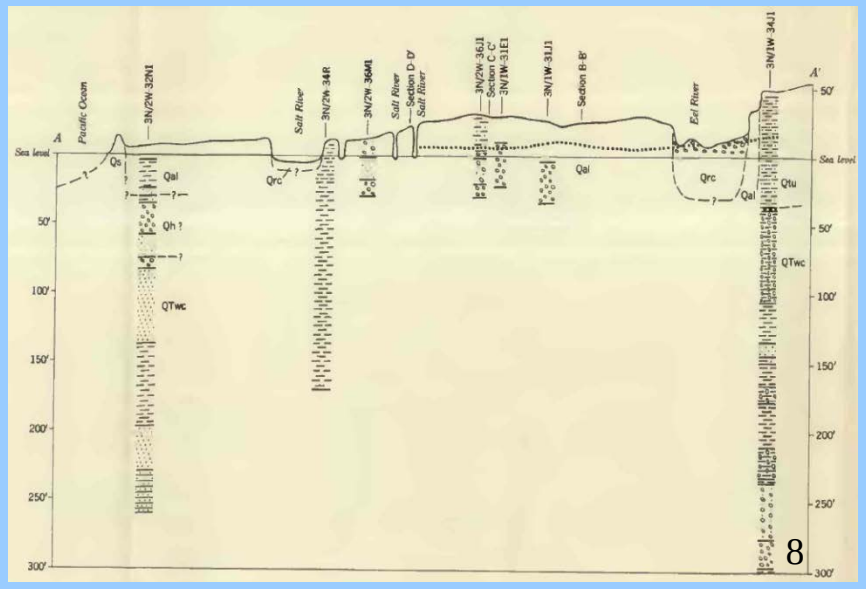
By R. E. EVENSON

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1470

Prepared in cooperation with the California Department of Water Resources

1959





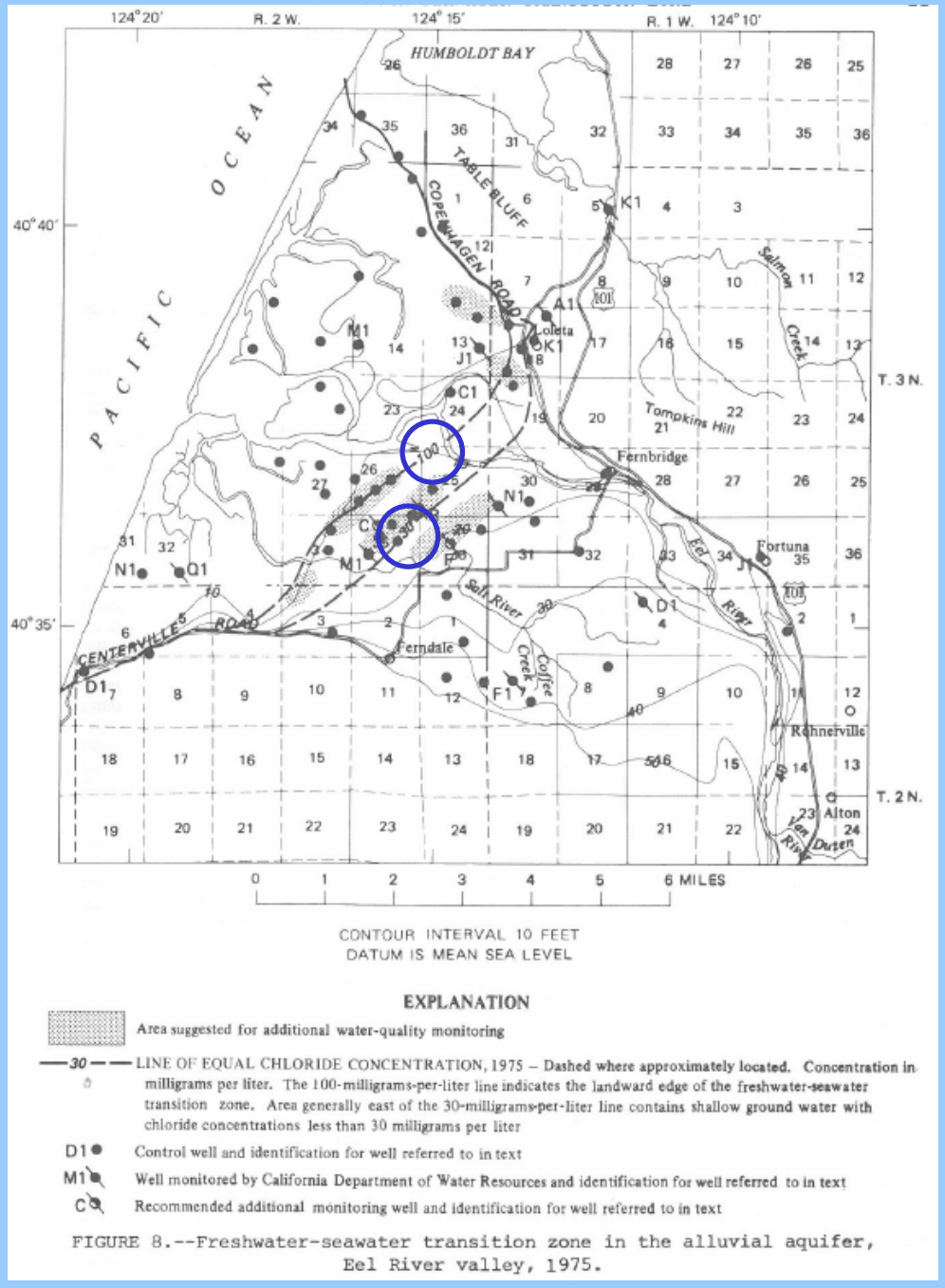
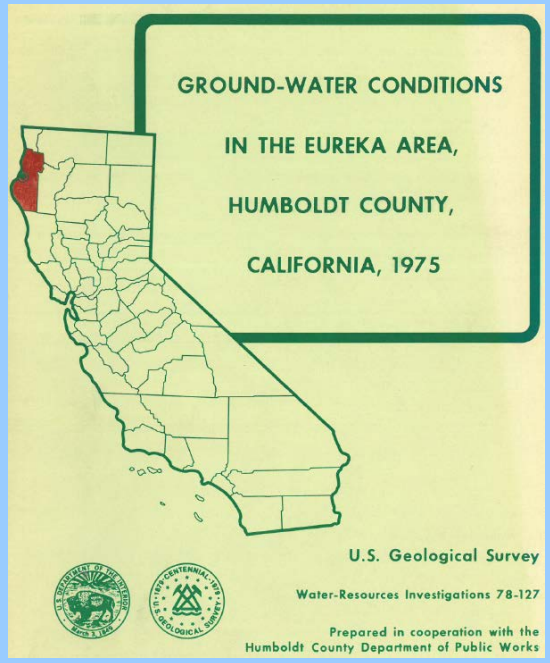


FIGURE 8.--Freshwater-seawater transition zone in the alluvial aquifer, Eel River valley, 1975.



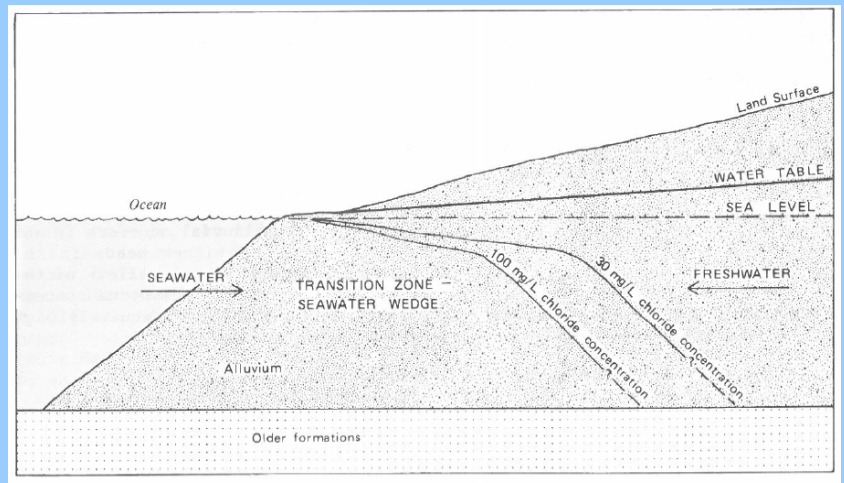
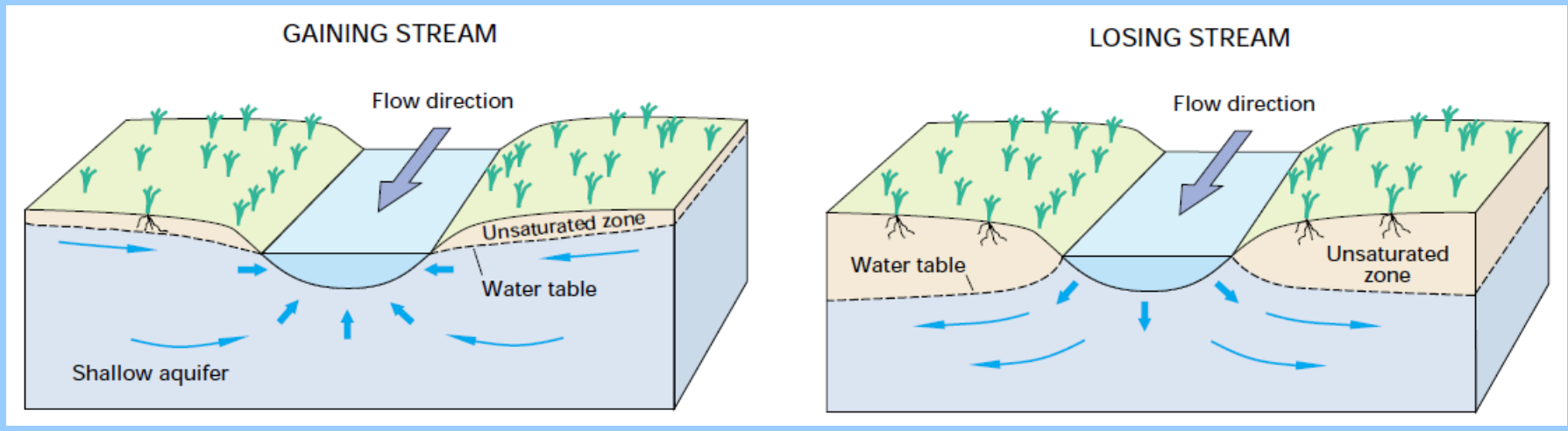


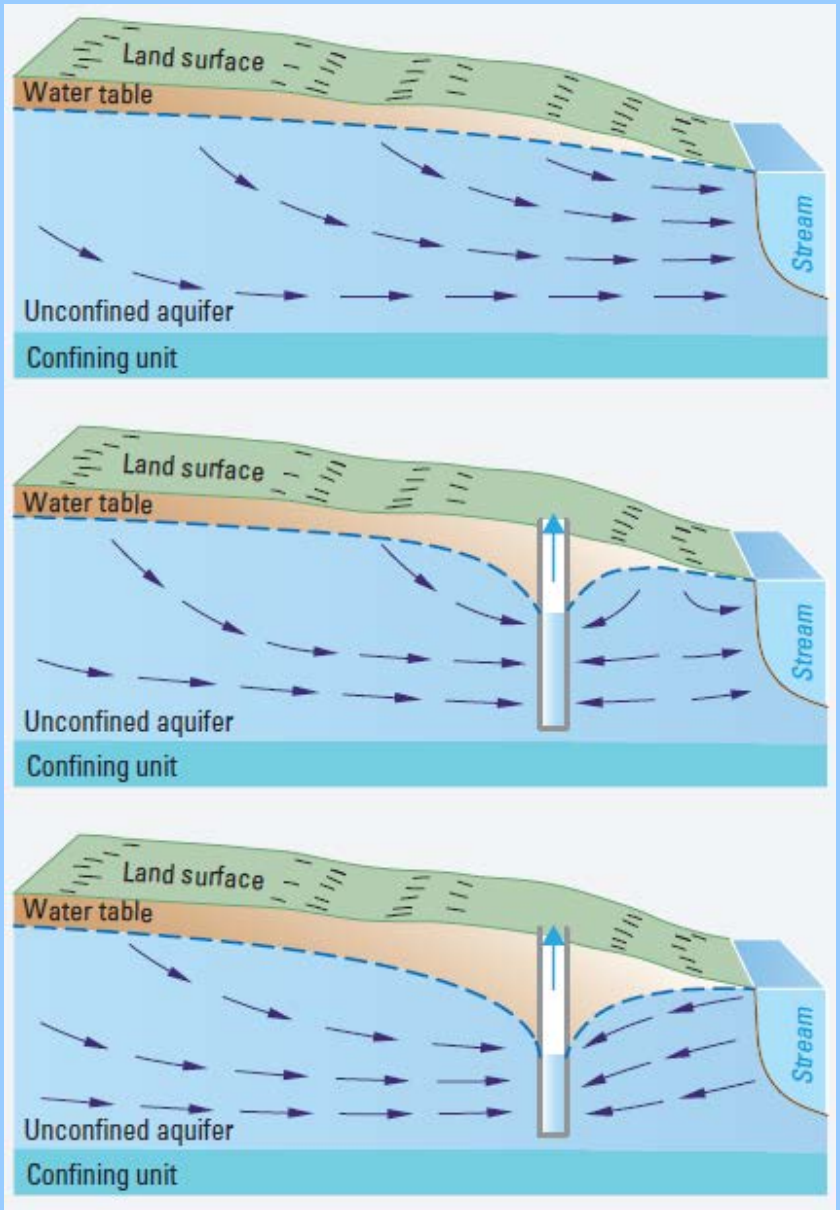
FIGURE 9.--Schematic section showing transition wedge in shallow aquifer.

Groundwater and stream interactions



Source: USGS Circular 1139

Pumping effects on groundwater and streams



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Proposition 1 Grant Program

Sustainable Groundwater
Planning Grant Program

Counties with Stressed Basins Proposal Solicitation Package

PROP 1
WATER BOND 2014

DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA

California Natural Resources Agency
Department of Water Resources
Division of Integrated Regional Water Management

October 2015

Definition of “Stressed Groundwater Basin”

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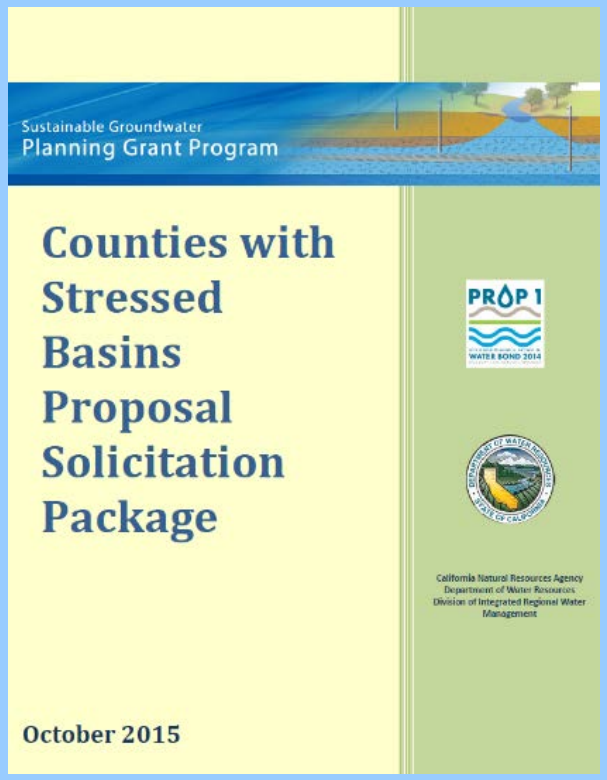
For the purposes of this solicitation, a stressed groundwater basin is characterized as a groundwater basin in which one or more of the following conditions exists:

- The groundwater basin is identified by DWR as being in critical overdraft.
- The groundwater levels within the basin are declining or fluctuating causing impacts including: reduced groundwater storage, seawater intrusion, threatening or degrading water quality, land subsidence, and/or surface water depletion.



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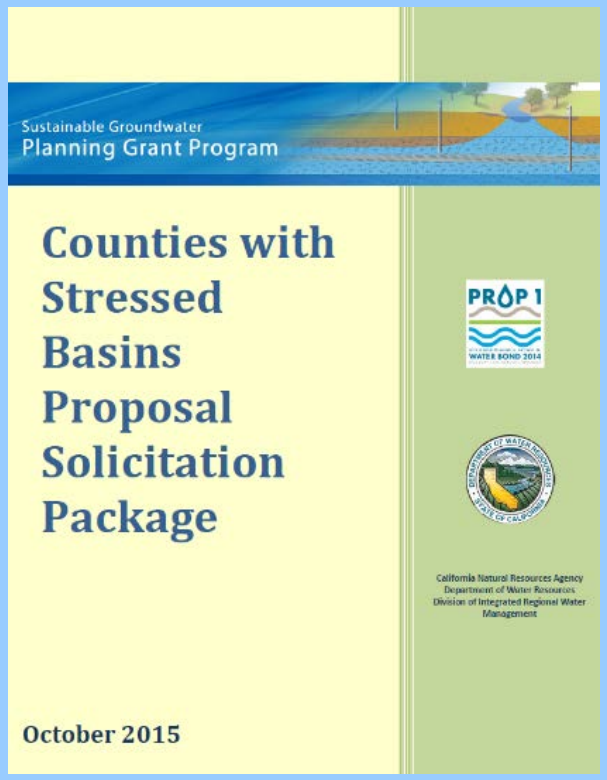

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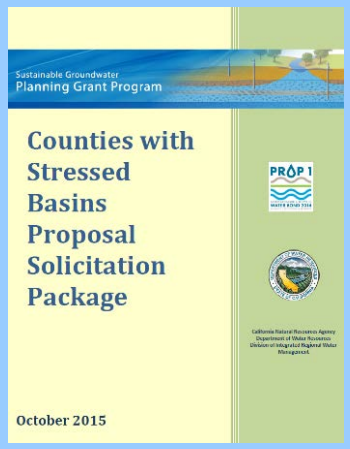

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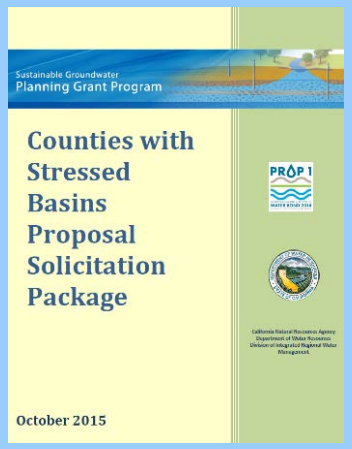

(w) “Undesirable result” means one or more of the following effects caused by groundwater conditions occurring throughout the basin:

(1) Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods.

(2) Significant and unreasonable reduction of groundwater storage.

(3) Significant and unreasonable seawater intrusion.

(4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.

(5) Significant and unreasonable land subsidence that substantially interferes with surface land uses.

(6) Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

Sustainable Groundwater Management Act

Water Code 10721

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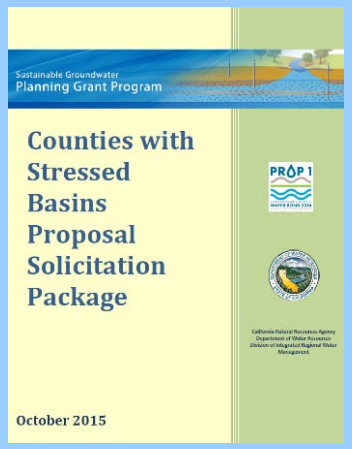

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Sustainable Groundwater Management Act

Water Code 10721

Grant Application for Eel River Valley Basin

Grant Application for Eel River Valley Basin

Existing data and information do not indicate an existing or imminent undesirable result as defined by Water Code 10721. However, further assessment is needed to address the following issues and concerns:

1. Limited spatial extent of groundwater level data
2. Limited understanding of basin hydrogeology
3. Limited understanding of river-aquifer interaction
4. Limited water balance development
5. Vulnerability due to upstream diversions
6. Vulnerability to long-term drought and climate change
7. Vulnerability to salt water intrusion
8. No previous planning efforts

Prop. 1 Grant Program - Eligible Projects

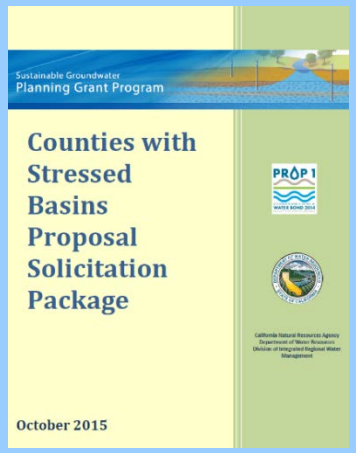
Prop. 1 Grant Program - Eligible Projects

- Update or develop groundwater plans that protect basins and their beneficial uses and help facilitate basin-wide sustainable groundwater management, or actions that will lead to the update or development of such plans. Examples are listed below.

Counties with Stressed Basins Proposal Solicitation Package *5*

October 2015

- Development and completion of interagency agreements that foster the formation of a Groundwater Sustainability Agency.
- Completion of basin assessments, determining data gaps, data collection, groundwater modeling, etc.



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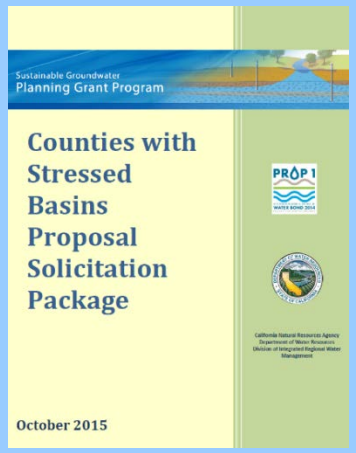

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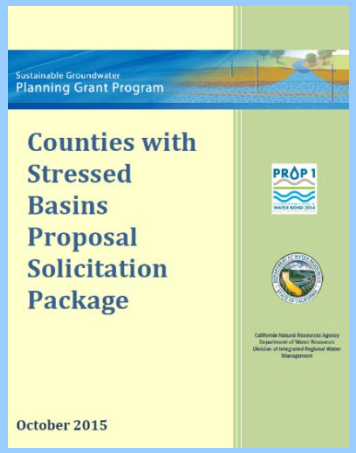


Grant Application for Eel River Valley Basin

Grant Application for Eel River Valley Basin

Project Summary

- The project is a geologic and hydrogeologic investigation combined with initial management planning efforts in response to the Sustainable Groundwater Management Act
- Purpose: provide improved understanding of the basin to support local decision-making; assess whether basin is being managed sustainably for beneficial uses without undesirable results
- Scope includes preliminary water balance and estimate of sustainable yield
- Will support determination on compliance pathway: Groundwater Sustainability Plan or Alternative Submittal
- Aim to collaborate with Working Group, RCD, NRCS, UC-CE, HSU, DWR, USGS

General Timeline for Sustainable Groundwater Management Act

	State	Local
Late 2015/ Early 2016	Funding program for local agencies to develop groundwater plans (from Prop. 1)	
2016	June 1: DWR to adopt regulations for implementing program	
2017	DWR to publish Bulletin 118 – Interim Update (boundaries, prioritization)	Jan. 1: Due date for "alternative submittals" June 30: Groundwater sustainability agencies established for all high- and medium-priority basins
2018		
2019		
2020		
2021		
2022		Jan 31: Groundwater sustainability plans adopted for high- and medium-priority basins not in critical overdraft
2042		Achieve sustainability goal

Grant Application for Eel River Valley Basin

Grant Application for Eel River Valley Basin

Task 1: Compilation of existing data and previous studies

Task 2: New data collection

Subtask 2.1: Exploratory borings

- Six borings (300 feet depth) to support two cross-sections
- Two nested well pairs, two single wells

Subtask 2.2: Surface water/groundwater level coupled monitoring

- Continuous hydrographs with dataloggers at three groundwater monitoring wells and two river monitoring sites for at least six months

Subtask 2.3: Pump tests to measure hydraulic conductivity

Subtask 2.4: Surface water flow measurements during dry season

- Measure Eel River discharge at four locations (min. 4 sampling events)

Grant Application for Eel River Valley Basin

Task 2: New data collection (continued)

Subtask 2.5: Irrigation pumpage estimation

Subtask 2.6: Water level measurements and chloride testing

- Measure groundwater levels and collect samples for chloride testing
- Minimum two sampling events (in conjunction with DWR monitoring)
- Minimum 40 monitoring wells (to supplement the seven DWR wells)

Task 3: Conceptualization of basin hydrogeology and river-aquifer exchange

- Analyze and describe the size, structure, composition, and characteristics of the basin
- Address interactions between water-bearing units, geographic areas
- Address seasonal variability

Grant Application for Eel River Valley Basin

Task 4: Water balance

- Evaluate and quantify the primary water balance components:

  Inputs

  - Deep percolation of rainfall
  - Irrigation/water supply return flows
  - Stream infiltration
  - Subsurface inflow

  Outputs

  - Agricultural pumping
  - Municipal pumping
  - Stream discharge
  - Subsurface outflow

- Develop best estimate and reasonable range for each component
- Discuss variability and uncertainty
- Estimate sustainable yield

Grant Application for Eel River Valley Basin

Task 5: Stakeholder involvement and initial management planning

- Work with Working Group to develop basin-specific definition of sustainability consistent with Sustainable Groundwater Management Act
- Assess historic and current sustainability, discuss future scenarios
- Four (actually five) potential paths of action

Grant Application for Eel River Valley Basin

Task 5: Stakeholder involvement and initial management planning

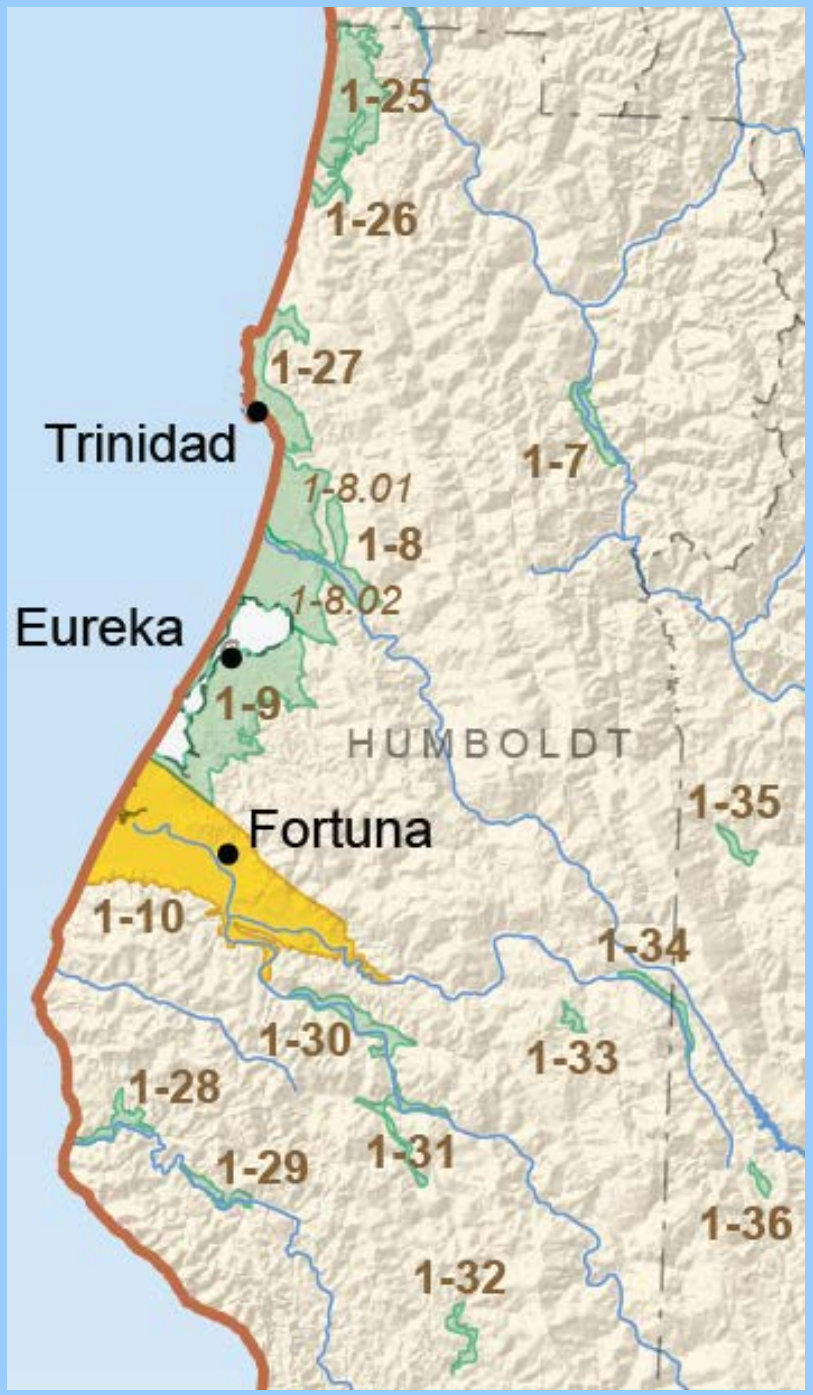
- Four (actually five) potential paths of action:

	Current Conditions	Future Changes	Action
1	Sustainable	Limited concern for adverse changes	Alternative Submittal
2	Unsustainable	Improvements needed	• Develop objectives to restore sustainability • Prepare GSP
3	Sustainable	Vulnerable to becoming unsustainable in near future	• Develop objectives to maintain sustainability • Prepare Alternative Submittal or GSP
4a	Inconclusive	To be determined	• Secure funds for additional investigation • GSP due by Jan. 2022
4b	Sustainable	Inconclusive	

Task 6: Grant administration

Basin Prioritization Criteria

Ranking of Groundwater Basin Importance – Humboldt County



Groundwater basin/subbasin

Basin prioritization ranking

- High
- Medium
- Low
- Very low

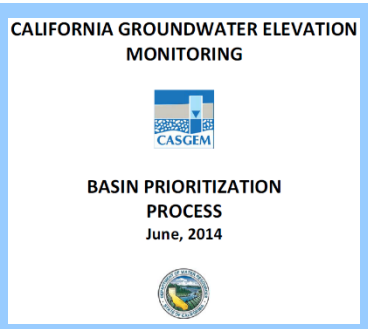
Source:
DWR Bulletin 118

DWR's Groundwater Basin Prioritization Process

Table 3. Data Component Ranking Ranges for CASGEM Groundwater Basin Ranking

Ranking	Ranking Value	Data Components and Ranking Ranges						
		Population		PSW Density	Total Well Density	Irrigated Acreage	Groundwater Reliance	
		Density	Projected Growth				GW Use	% of Total Supply [1]
		per sq.-mi	%	per sq.-mi	per sq. mi	ac/sq.-mi	ac-ft/acre	%
Very Low	0	x < 7	x < 0	x = 0	x = 0	x < 1	x < 0.03	x < 0.1
Low	1	7 ≥ x < 250	0 ≥ x < 6	0 > x < 0.1	0 > x < 2	1 ≥ x < 25	0.03 ≥ x < 0.1	0.1 ≥ x < 20
Moderately Low	2	250 ≥ x < 1000	6 ≥ x < 15	0.1 ≥ x < 0.25	2 ≥ x < 5	25 ≥ x < 100	0.1 ≥ x < 0.25	20 ≥ x < 40
Medium	3	1000 ≥ x < 2500	15 ≥ x < 25	0.25 ≥ x < 0.5	5 ≥ x < 10	100 ≥ x < 200	0.25 ≥ x < 0.5	40 ≥ x < 60
Moderately High	4	2500 ≥ x < 4000	25 ≥ x < 40	0.5 ≥ x < 1.0	10 ≥ x < 20	200 ≥ x < 350	0.5 ≥ x < 0.75	60 ≥ x < 80
High	5	x ≥ 4000	x ≥ 40%	x ≥ 1.0	x ≥ 20	x ≥ 350	x ≥ 0.75	x ≥ 80%

Note:
Population growth is percent growth from 2010 to 2030.
[1] Percent of total water supply (groundwater and surface water) that is provided by groundwater.
x = component data value



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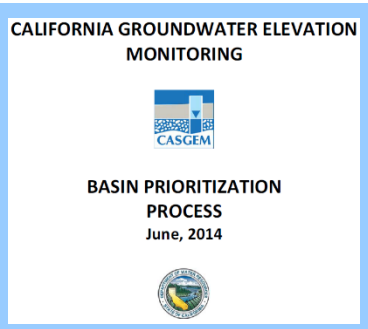

DWR's Ranking for Eel River Valley Basin

DWR's Ranking for Eel River Valley Basin

	Component	Data	Adjusted Value	Range for this Value
1	Population (2010 census data)	21,558 persons 187 persons/sq-mi	1	7 – 250 persons/sq-mi
2	Population growth (projected to 2030)	112%	2	6-15%
3	Public supply wells	23 wells 0.2 wells/sq-mi	2	0.1 – 0.25 wells/sq-mi (Need <12 wells to be less than 0.1 wells/sq-mi)
4	Total wells	763 wells 6.6 wells/sq-mi	2.25 (discounted from 3)	5-10 wells/sq-mi – 3 pts 2-5 wells/sq-mi – 2 pts (Need <230 wells to be less than 2 wells/sq-mi)
5	Irrigated acreage	33,309 acres 290 acres/sq-mi	4	200-350 acres/sq-mi (Need <23,000 irrigated acres to be less than 200 acres/sq-mi)

- 115 square miles (73,701 acres)

DWR's Ranking for Eel River Valley Basin

	Component	Data	Adjusted Value	Range for this Value
6	Groundwater reliance	55,000 acre-feet/yr 0.746 acre-feet/acre 77% of total water supply	4	0.5-0.75 acre-feet/acre 60-80% total supply
7	Documented impacts	No impacts identified	0	--
8	Other information	Shallow basin with strong SW-GW interaction and fishery issues. Useable GW basin storage is estimated at 100,000 acre-feet and annual use is estimated at over one-half the total storage.	1	--

- 115 square miles (73,701 acres)

DWR's Ranking for Eel River Valley Basin

Overall Basin Ranking Score:	16.25
Low Ranking Range:	5.75 – 13.42
Medium Ranking Range:	13.43 – 21.08
Amount above medium ranking cut-off:	2.82

Working Group

Eel River Valley Groundwater Working Group

Stakeholders

- Agricultural producers
- Municipal water suppliers
- Environmental interests
- Domestic users
- Well drillers
- Local agencies
- State/federal regulatory agencies
- General public

Conditions for Membership

1. Agree to Working Group's purpose and scope
2. Pledge to attend at least half of meetings
3. Agree to follow meeting ground rules

Spectrum of Public Participation

	Inform	Consult	Involve	Collaborate	Empower
Public participation goal	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunties and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the devlopment of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
Promise to the public	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.
Example techniques	• Fact sheets • Web sites • Open houses	• Public comment • Focus groups • Surveys • Public meetings	• Workshops • Deliberate polling	• Citizen advisory committees • Consensus-building • Participatory decision-making	• Citizen juries • Ballots • Delegated decision

Source: Community Water Center (2015)

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Goal for Eel River Valley Groundwater Working Group

Working Group to develop meeting ground rules

Humboldt County RCD's Irrigation/Fertigation Project

Set Next Meeting Date

Information will be posted at

www.humboldtgov.org/groundwater