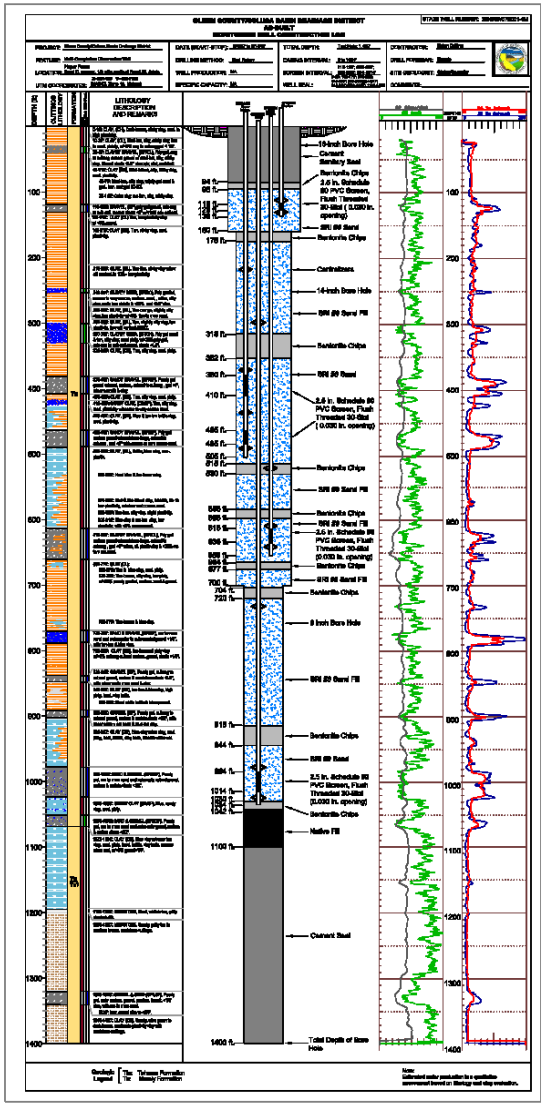
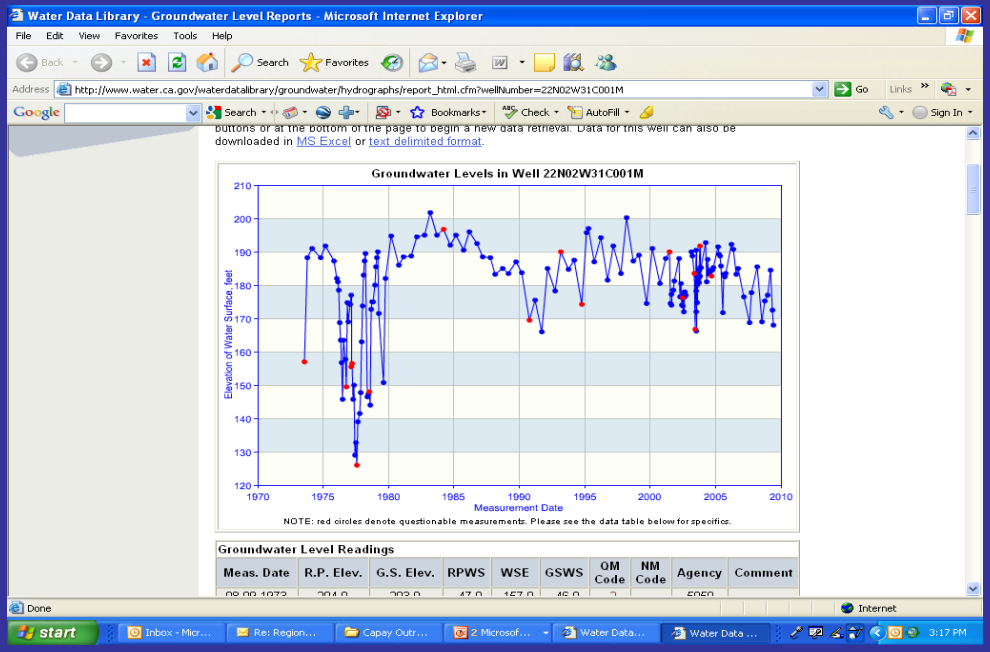
Groundwater Conditions in Orland/Artois Area





Water Data Library Home - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address http://www.water.ca.gov/waterdatalibrary/ Go Links

Google Search Bookmarks Check AutoFill Sign In

WDL STATION MAP

Site Selection

- Groundwater Level
- Water Quality
- Continuous Data

Refresh Map

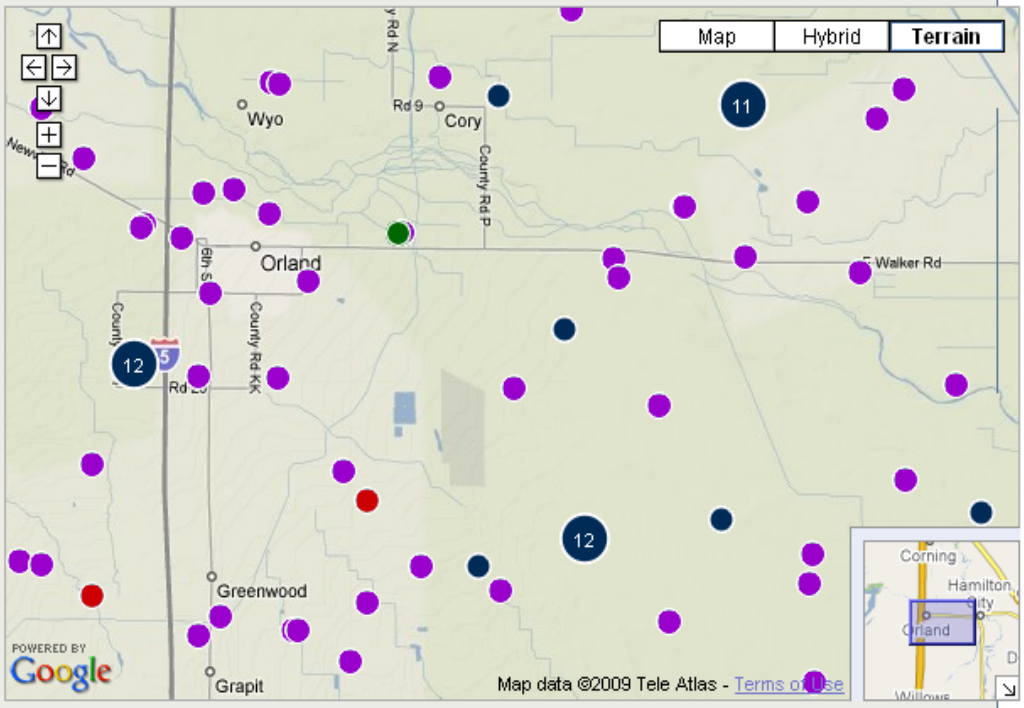
= Multi-parameter site

= Cluster, showing number of stations

To find monitoring stations for a specific area, enter the placename or zip code into the text box below then, click the "Find Stations" button.

95963

Find Stations



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Map SW: 39.677598, -122.238350
Map NE: 39.783740, -122.031670
Map Zoom: 12

Mouse LatLon: 39.699527, -122.114067
Mouse Px: 168605, 398109
Mouse Tile: 658, 1555
Mouse Click: 39.701904, -122.119904

Marcelo Montagna©2008 - http://maps.forum.nu

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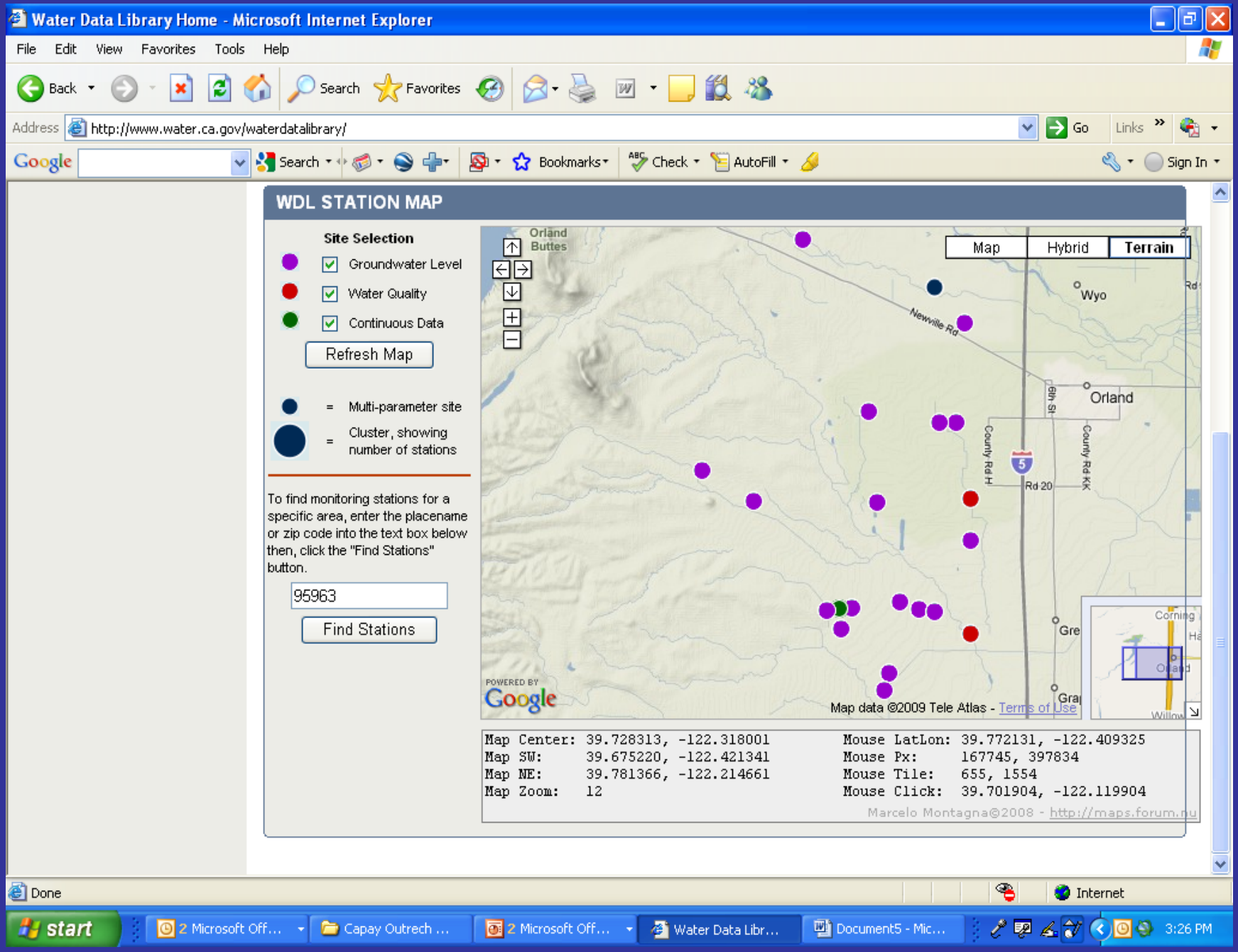
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WDL STATION MAP
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95963
Find Stations
Map Hybrid Terrain
Orland Buttes
Wyo
Newville Rd
Orland
6th St
County Rd H
County Rd KK
Rd 20
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POWERED BY Google
Map data ©2009 Tele Atlas - Terms of Use
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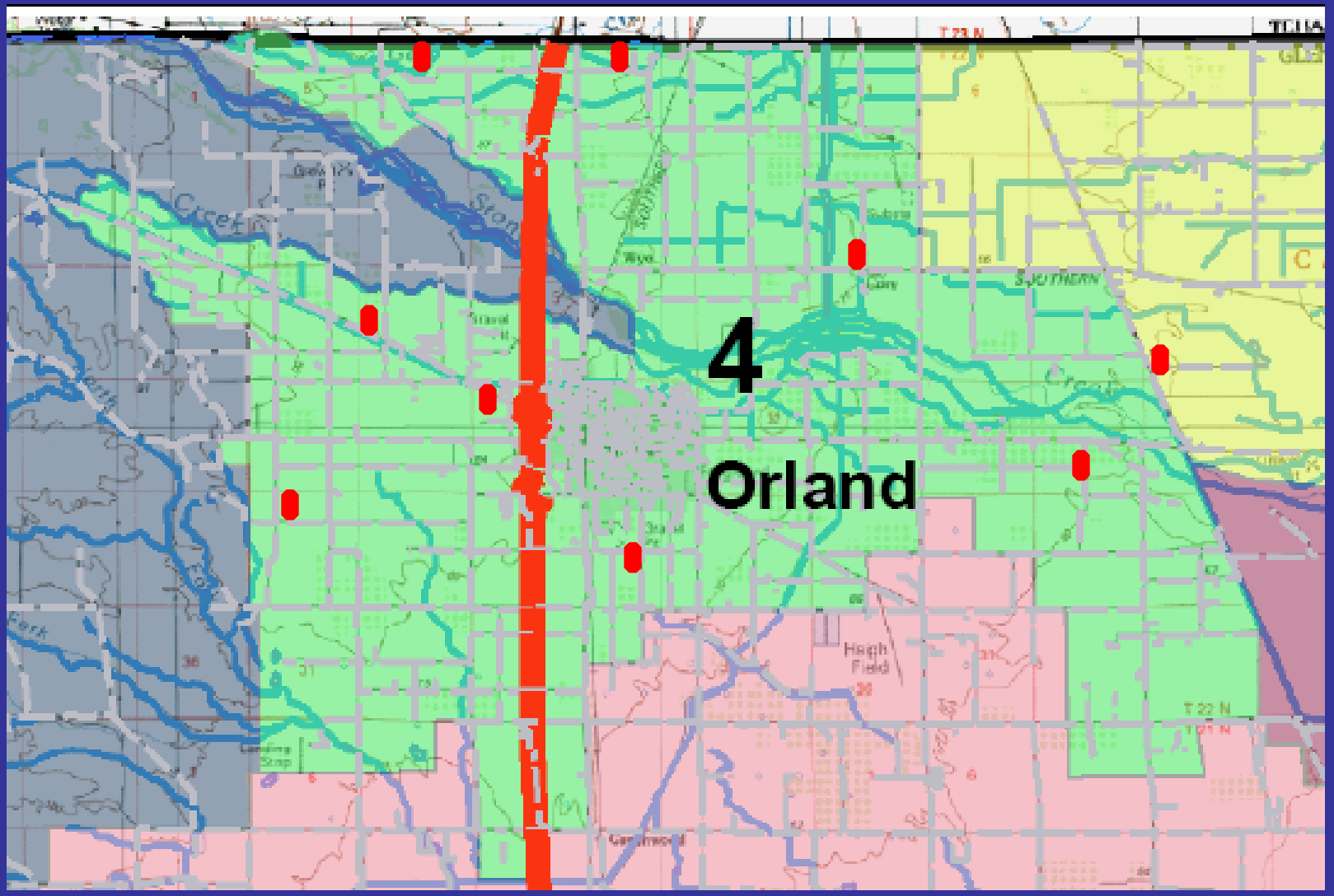
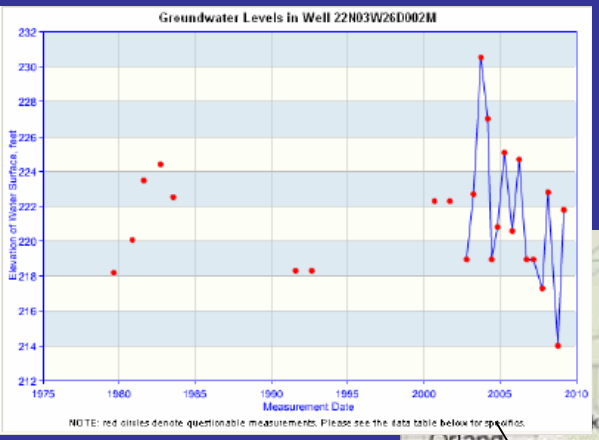
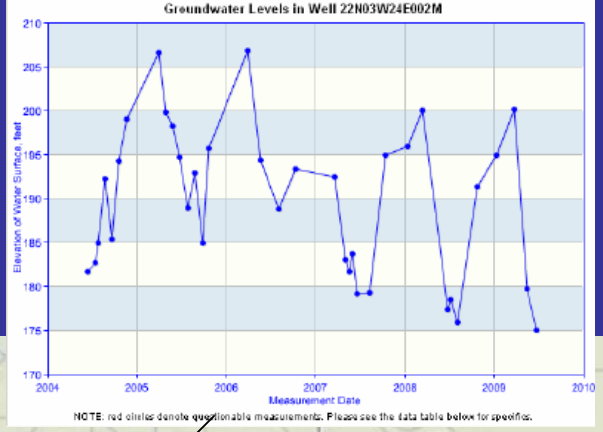
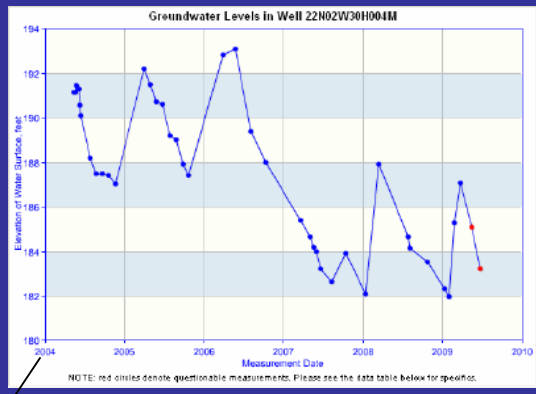
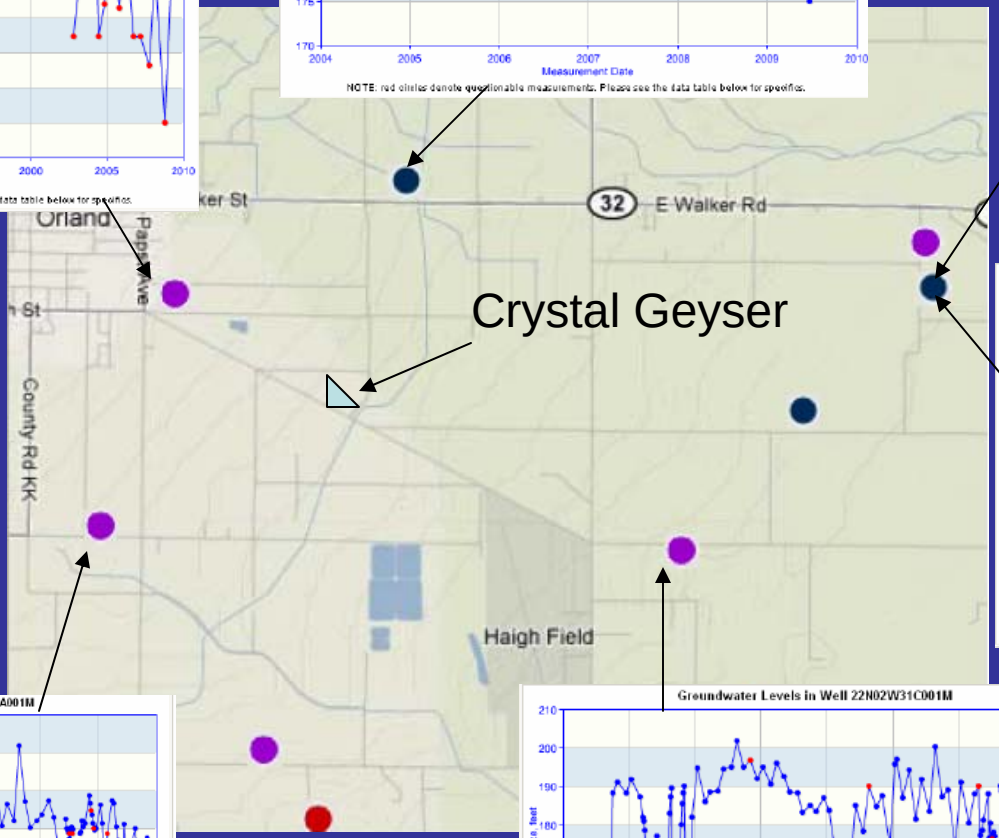
Basin Management Objective Sub-area 4
ORLAND UNIT WATER USERS ASSOCIATION

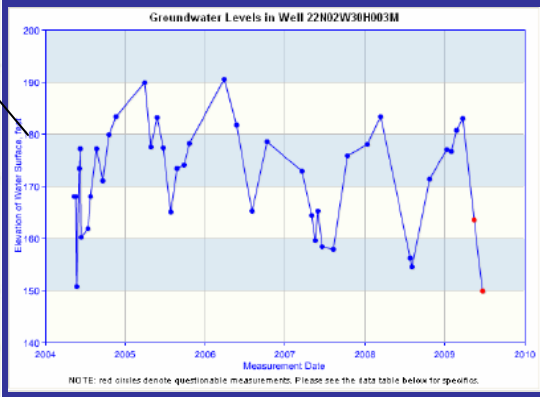


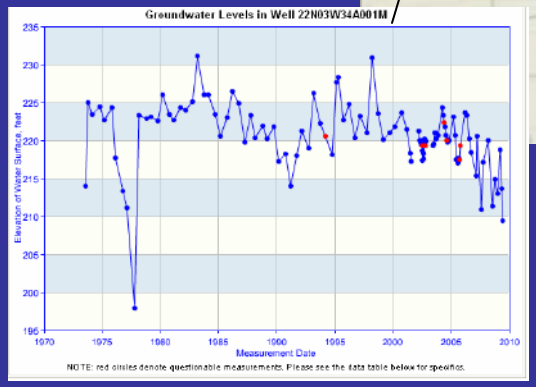

Groundwater Levels in Well 22N03W26D002M
Elevation of Water Surface, feet
Measurement Date
NOTE: red circles denote questionable measurements. Please see the data table below for specifics.

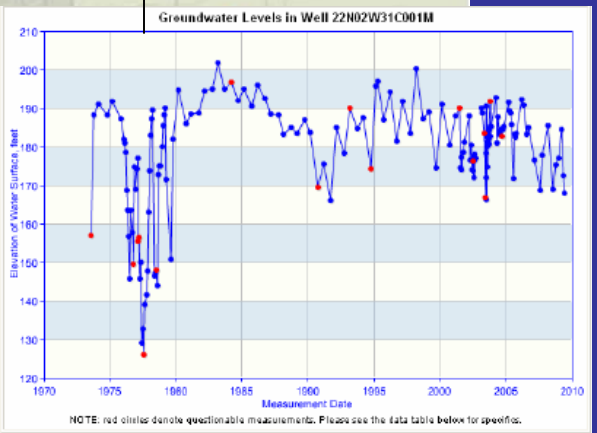

Groundwater Levels in Well 22N03W24E002M
Elevation of Water Surface, feet
Measurement Date
NOTE: red circles denote questionable measurements. Please see the data table below for specifics.


Groundwater Levels in Well 22N02W30H004M
Elevation of Water Surface, feet
Measurement Date
NOTE: red circles denote questionable measurements. Please see the data table below for specifics.


Orland
32
E Walker Rd
Crystal Geyser
Haigh Field
County Rd KK


Groundwater Levels in Well 22N02W30H003M
Elevation of Water Surface, feet
Measurement Date
NOTE: red circles denote questionable measurements. Please see the data table below for specifics.


Groundwater Levels in Well 22N03W34A001M
Elevation of Water Surface, feet
Measurement Date
NOTE: red circles denote questionable measurements. Please see the data table below for specifics.


Groundwater Levels in Well 22N02W31C001M
Elevation of Water Surface, feet
Measurement Date
NOTE: red circles denote questionable measurements. Please see the data table below for specifics.

STONY CREEK FAN AQUIFER PERFORMANCE TEST
GLENN COUNTY, CALIFORNIA
Township 22 North, Range 3 West, Section 24

Prepared by the California Department of Water Resources
Northern District Groundwater Section
in Cooperation with
Glenn County Department of Agriculture

March 2005

STONY CREEK GROUNDWATER RECHARGE
INVESTIGATION, 2003
GLENN COUNTY, CALIFORNIA

Prepared by the California Department of Water Resources
Northern District Groundwater Section
In Cooperation with
Glenn County Department of Agriculture

December 2004

Investigative Study of Conjunctive Use Opportunities in the Stony Creek Fan Aquifer

Lee G. Bergfeld

B.S. in Civil Engineering (United States Air Force Academy) 1995

THESIS

Submitted in partial satisfaction of the requirements for

The degree of

MASTER OF SCIENCE

In

Civil Engineering

In the

OFFICE OF GRADUATE STUDIES

Of the

UNIVERSITY OF CALIFORNIA, DAVIS

Jay Lund, Chair

Graham Fogg

Tim Ginn

2005

STONY CREEK GROUNDWATER RECHARGE
INVESTIGATION, 2005
GLENN COUNTY, CALIFORNIA

May 2006

This summary report was prepared by the Department of Water Resources, Northern District, Groundwater Section, on behalf of the Glenn County Department of Agriculture. It was prepared under the direct supervision of Dan McManus, Chief of the Northern District Groundwater Section, Professional Geologist No. 6162, and was written by Kelly Staton, Professional Geologist No. 7501, in accordance with the provisions of the Geologist and Geophysicists Act of the State of California.

Kelly Staton
Engineering Geologist
CA Professional Geologist No. 7501
CA Certified Engineering Geologist No. 2337
CA Certified Hydrogeologist No. 846

Impact of Urbanization in the Vicinity of Orland, CA

Glenn County
Department of Agriculture

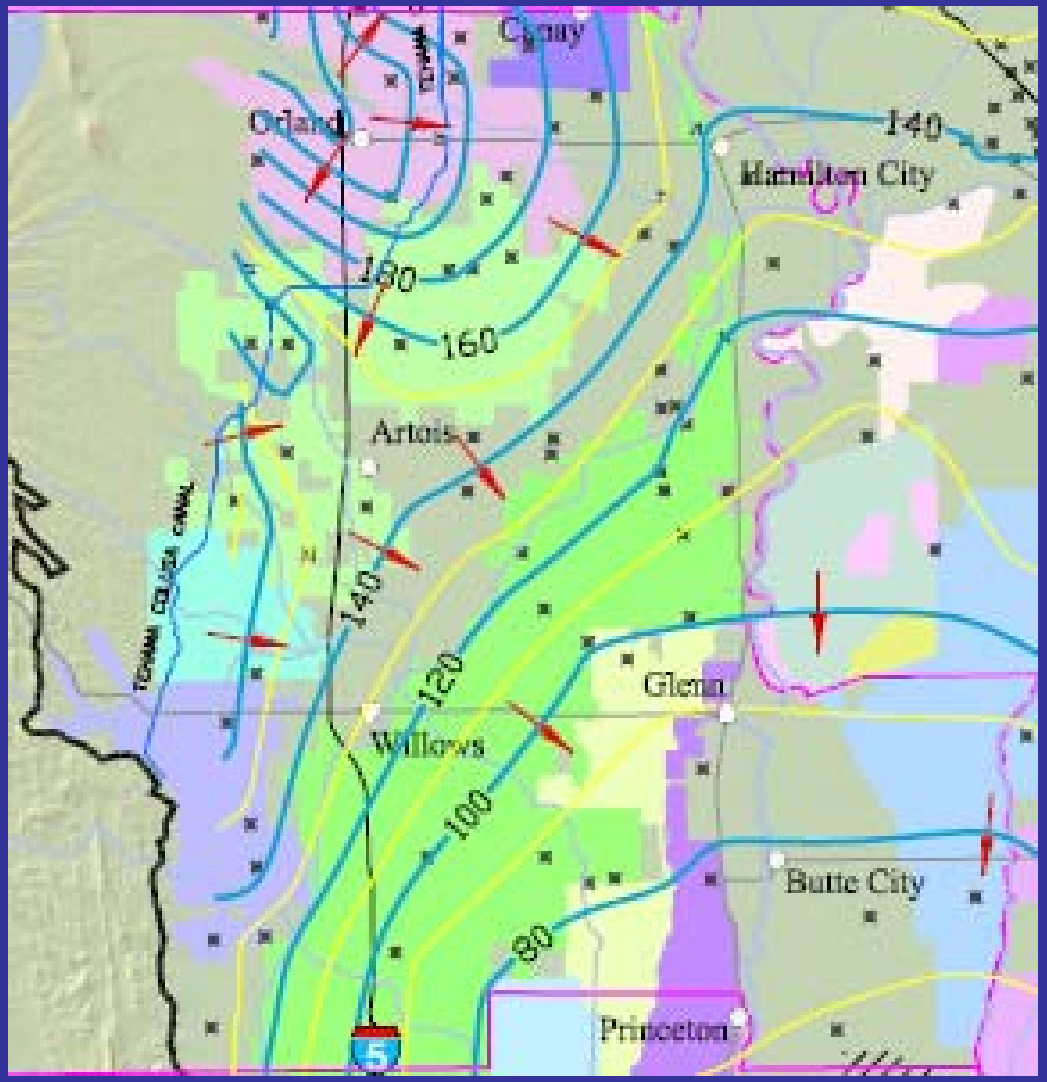
August 2005

Funding Provided by the:
Great Valley Center
LEGACI Grant

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

Background Information For Comparison

Groundwater Level Contours Spring 2006



SACRAMENTO VALLEY GROUNDWATER ELEVATION MAP

FOR

SPRING 2006

BY

State of California
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
Northern District

140 — LINE OF EQUAL GROUNDWATER SURFACE ELEVATION

REDDING GROUNDWATER BASIN BOUNDARY

SACRAMENTO VALLEY GROUNDWATER BASIN BOUNDARY

MONITORED WELL

DIRECTION OF FLOW

COUNTY BOUNDARY

N

5 0 5 10 15

MILES

NOTES:

1. Groundwater contours represent groundwater level measurements taken by the Department of Water Resources and Local Cooperators during March 2006 for Shasta, Tehama, Glenn, Butte and Colusa Counties and from February through April for Sutter County.

2. Groundwater elevations are based on national geodetic vertical datum 1988 (NGVD 88)

3. Groundwater contours are based on groundwater level measurements taken from wells constructed within the middle portion of the aquifer system (100 to 400 feet deep). This portion of the aquifer supplies approximately 70% of all domestic, agricultural and municipal wells.

Groundwater Level Contours Spring 2007

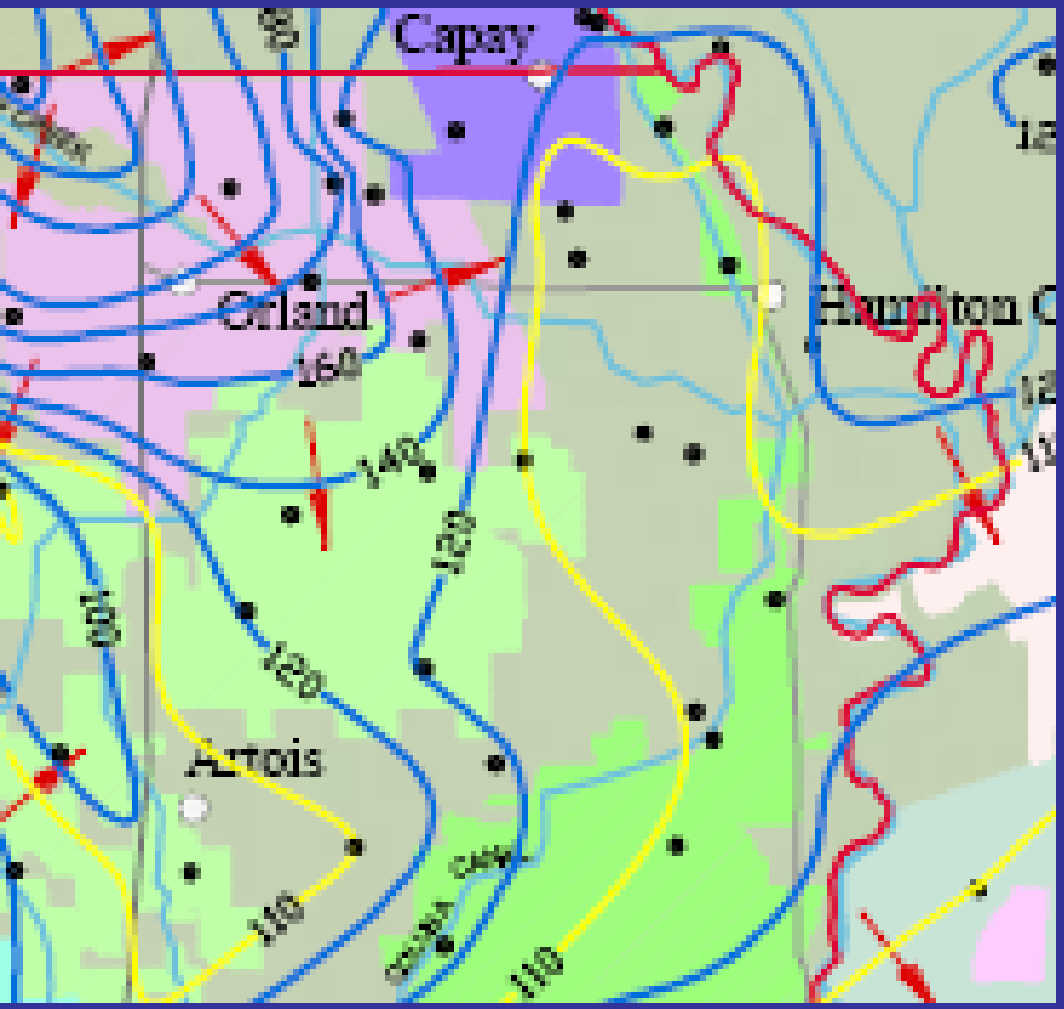
LEGEND

- 140 — GROUNDWATER SURFACE ELEVATION CONTOUR (ft msl)
- GROUNDWATER SURFACE ELEVATION CONTOUR APPROXIMATE LOCATION (ft msl)
- DIRECTION OF FLOW
- GROUNDWATER LEVEL MONITORING WELL
- REDDING GROUNDWATER BASIN BOUNDARY
- SACRAMENTO VALLEY GROUNDWATER BASIN BOUNDARY
- COUNTY BOUNDARY

NOTES:

1. Groundwater contours represent groundwater level measurements taken by the Department of Water Resources and Local Cooperators during march 2007
2. Groundwater elevations are based on national geodetic vertical datum 1988 (NGVD 88)
3. Groundwater contours are based on groundwater level measurements taken from wells constructed within the middle portion of the aquifer system (100 to 400 feet deep). This portion of the aquifer supplies approximately 70% of all domestic, agricultural and municipal wells.
4. Blue contour lines represent 20 foot intervals and yellow contour lines represent 10 foot intervals.

Groundwater Level Contours Spring 2008



LEGEND

- 140 — GROUNDWATER SURFACE ELEVATION CONTOUR (ft msl)
- GROUNDWATER SURFACE ELEVATION CONTOUR APPROXIMATE LOCATION (ft msl)
- DIRECTION OF FLOW
- GROUNDWATER LEVEL MONITORING WELL
- REDDING GROUNDWATER BASIN BOUNDARY
- SACRAMENTO VALLEY GROUNDWATER BASIN BOUNDARY
- COUNTY BOUNDARY

NOTES:

1. Groundwater contours represent groundwater level measurements taken by the Department of Water Resources and Local Cooperators between March 1st and March 20th, 2008
2. Groundwater elevations are based on national geodetic vertical datum 1988 (NGVD 88)
3. Groundwater contours are based on groundwater level measurements taken from wells constructed within the middle portion of the aquifer system (100 to 400 feet deep). This portion of the aquifer supplies approximately 70% of all domestic, agricultural and municipal wells.
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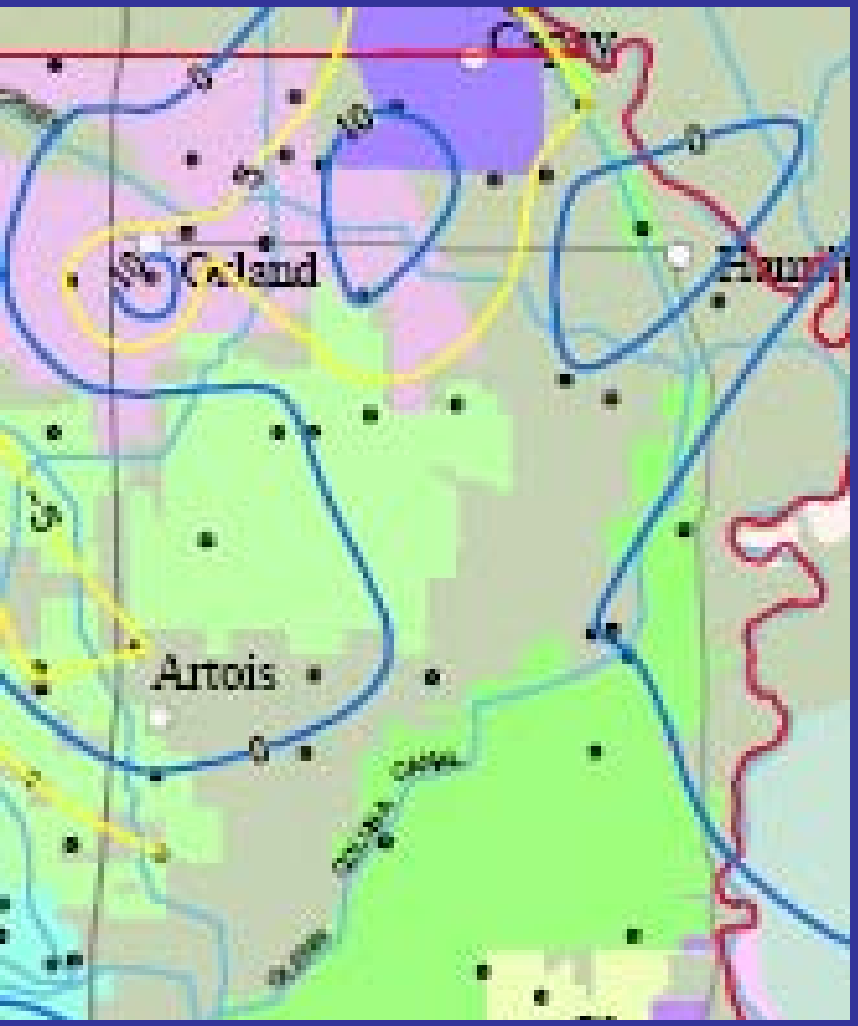
Groundwater Level Contour Change Spring 2007 to Spring 2008



LEGEND

140 — CHANGE IN DEPTH TO GROUNDWATER FROM SPRING 2007 TO SPRING 2008 (ft)

CHANGE IN DEPTH TO GROUNDWATER APPROXIMATE LOCATION (ft)

GROUNDWATER LEVEL MONITORING WELL

REDDING GROUNDWATER BASIN BOUNDARY

SACRAMENTO VALLEY GROUNDWATER BASIN BOUNDARY

COUNTY BOUNDARY

NOTES:

1. Groundwater contours represent the change in the depth to groundwater based on level measurements taken by the Department of Water Resources and Local Cooperators during March 1st to April 2nd 2007 and March 1st to March 20th 2008.

2. Groundwater level change contours are based on groundwater level measurements taken from wells constructed within the middle portion of the aquifer system (100 to 400 feet deep). This portion of the aquifer supplies approximately 70% of all domestic, agricultural and municipal wells.

3. Blue contour lines represent 10 foot intervals and yellow contour lines represent 5 foot intervals.

DEPARTMENT OF THE INTERIOR
HUBERT WORK, Secretary

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

WATER-SUPPLY PAPER 495

GEOLOGY AND GROUND-WATER RESOURCES OF SACRAMENTO VALLEY, CALIFORNIA

BY

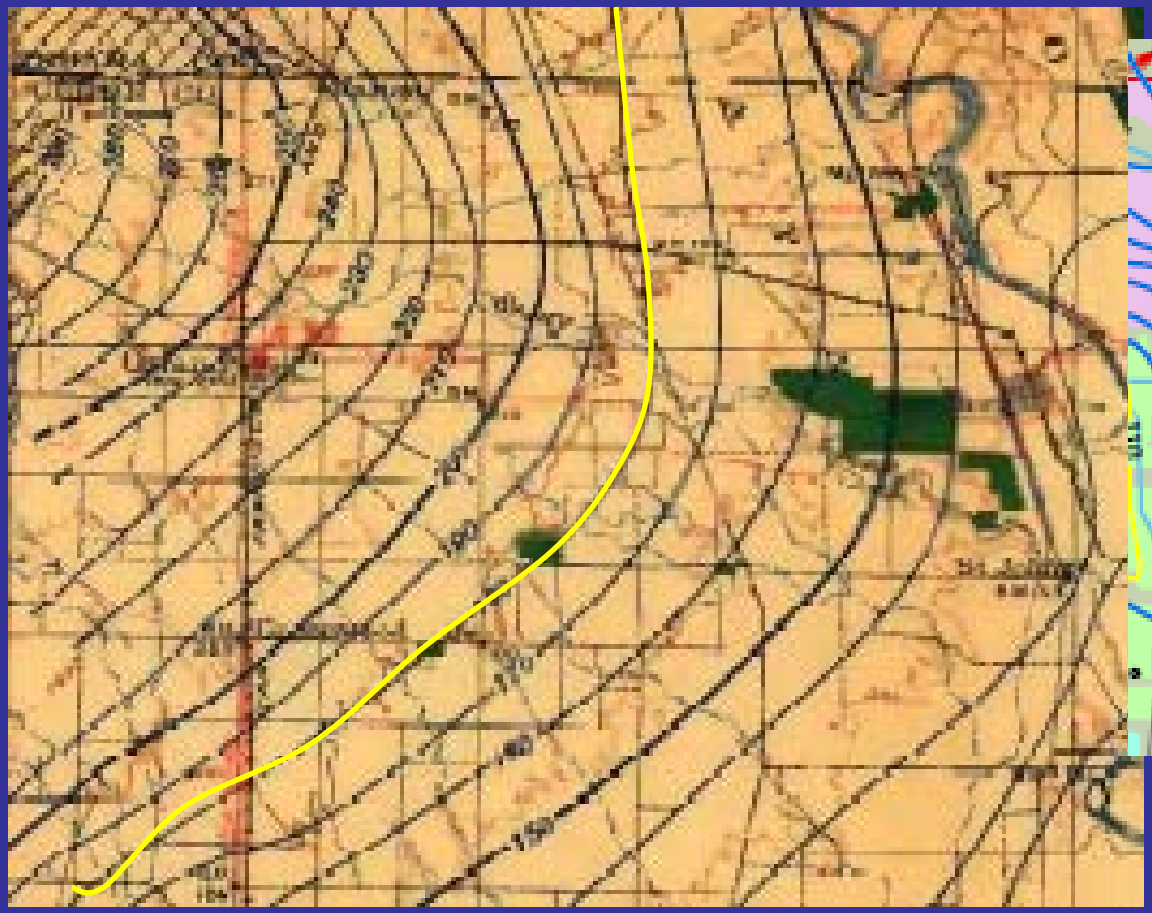
KIRK BRYAN

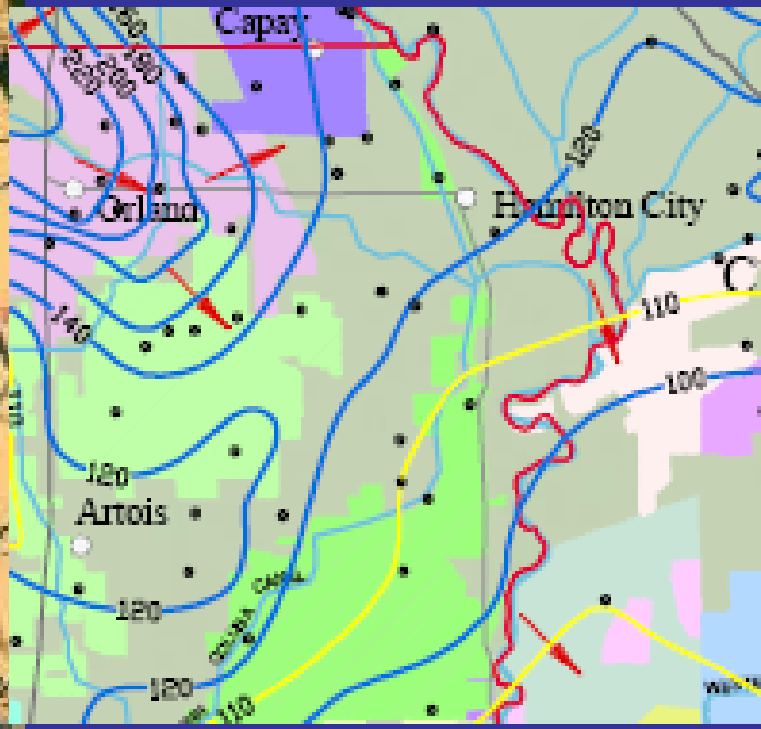
Prepared in cooperation with the Department of Engineering of the State of California

WASHINGTON
GOVERNMENT PRINTING OFFICE
1923

Fall 1912-1913 Contours

Fall 2008





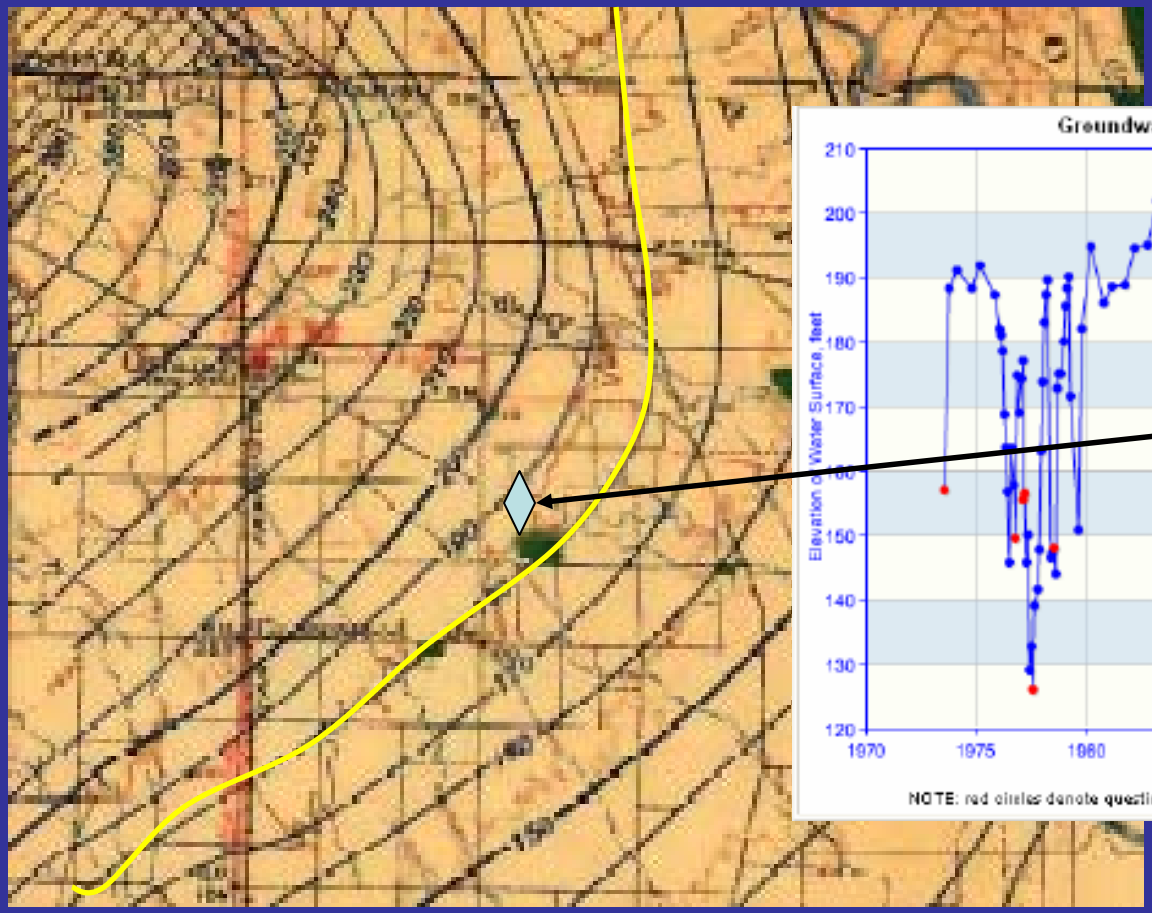
MAP OF

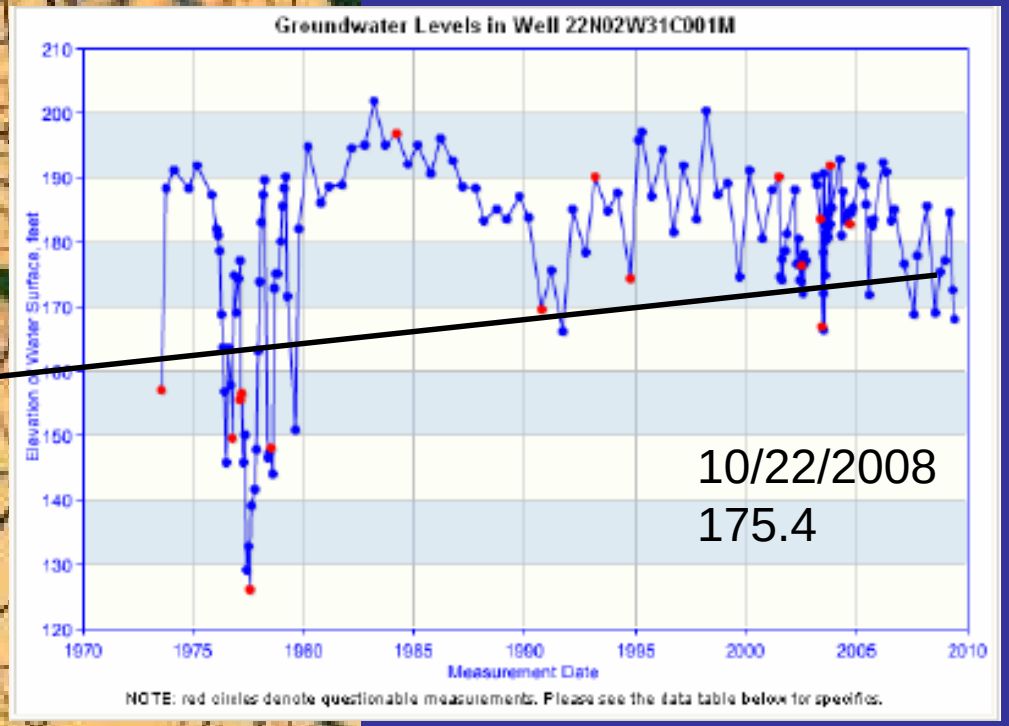
SACRAMENTO VALLEY, CALIFORNIA

SHOWING CONTOURS OF THE WATER TABLE, DEPTHS TO THE WATER TABLE, AREAS IRRIGATED WITH GROUND WATER, AND LOCATION OF WATERS ANALYZED

Fall 1912-1913 Contours

Fall 2008





MAP OF

SACRAMENTO VALLEY, CALIFORNIA

SHOWING CONTOURS OF THE WATER TABLE, DEPTHS TO THE WATER TABLE, AREAS IRRIGATED WITH GROUND WATER, AND LOCATION OF WATERS ANALYZED

DEPARTMENT OF WATER RESOURCES
Northern District
2440 Main St.
Red Bluff, CA 96080
May 08, 2009

GROUNDWATER LEVEL COMPARISON REPORT
SACRAMENTO VALLEY and REDDING GROUNDWATER BASINS
CHANGE IN GROUNDWATER ELEVATIONS SPRING 2006 TO SPRING 2009

Spring 2008 to Spring 2009

GLENN COUNTY

Spring 2008 to Spring 2009

GWE* Change Statistics by Well Depth

	All Well Depths	0 - 200	201 - 600	601 - 1500	Unknown
Glenn					
Max Increase In GWE (ft)	1.9	1.9	0.1	0	0
Max Decrease In GWE (ft)	-18.1	-18.1	-15.8	-12.5	-6.4
Avg Change In GWE (ft)	-3.5	-2.7	-3.4	-6	-2.6
Total Wells	136	54	54	24	4

GWE* Change Statistics by Well Use

	All Well Uses	Domestic	Irrigation	Observation	Other
Glenn					
Max Increase In GWE (ft)	1.9	1.2	1.6	1.9	0
Max Decrease In GWE (ft)	-18.1	-18.1	-15.8	-14.9	-8.7
Avg Change In GWE (ft)	-3.5	-2.9	-4.5	-3.3	-3.4
Total Wells	136	20	32	77	7

* Groundwater Elevation

-- Criterion included in report, but data not found for analysis

N/A Criterion not included in report or table element not applicable

Well Counts by Well Use, Depth

	All Well Depths	0 - 200	201 - 600	601 - 1500	Unknown
Glenn					
Domestic	20	17	3	0	0
Irrigation	32	8	17	4	3
Observation	77	25	32	20	0
Other	7	4	2	0	1
Total Wells	136	54	54	24	4

-- Criterion included in report, but data not found for analysis

N/A Criterion not included in report or table element not applicable

Glenn County Health Services

Environmental Health Department

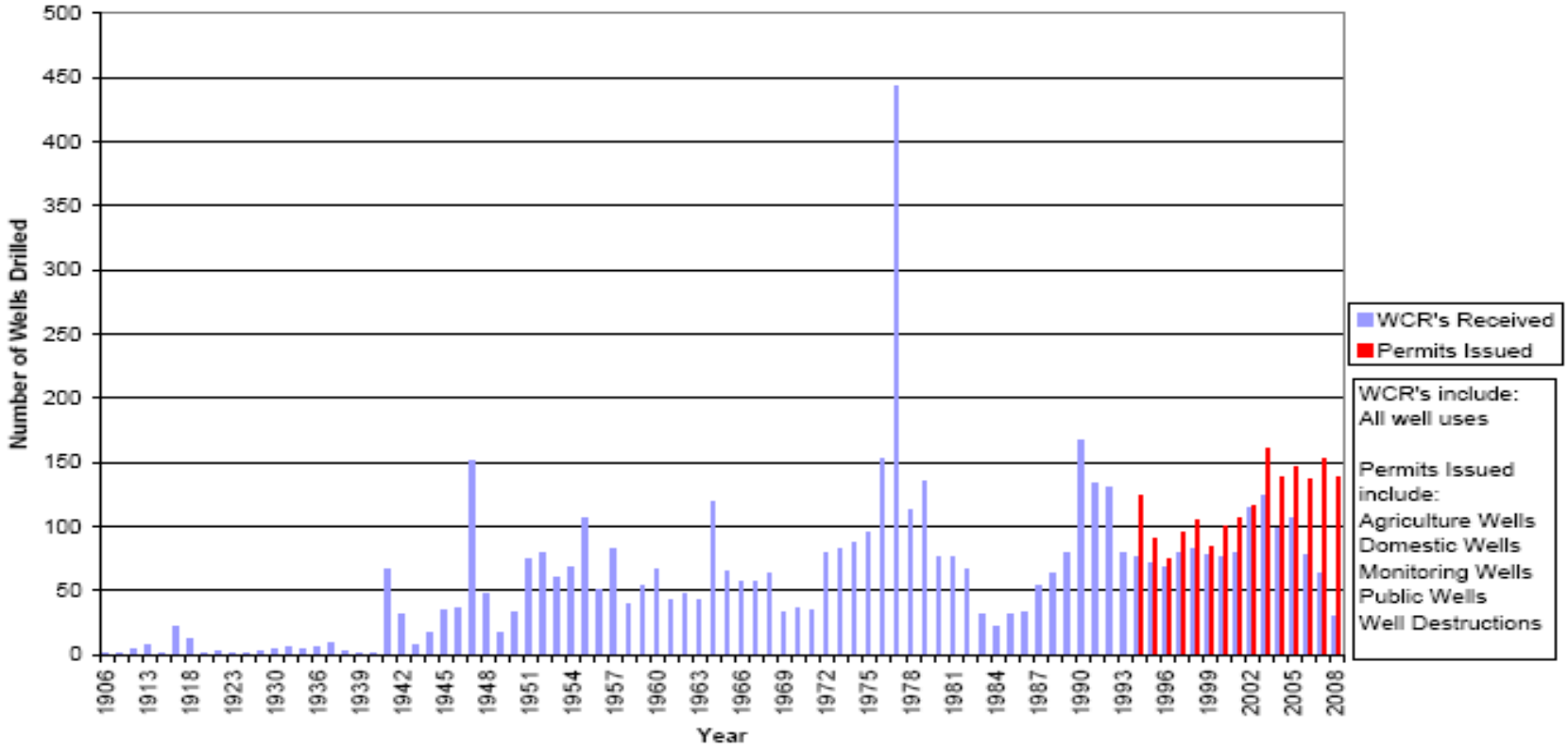
257 N. Villa Avenue
Willows, CA 95988
(530)934-6102, Fax (530)934-6103

Number of Permits Issued per Calendar Year

Type of Permit	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Totals
Ag Wells	41	14	23	21	29	28	24	23	20	9	25	33	20	39	66	66	481
Domestic Wells	67	49	37	46	54	41	47	53	53	88	67	86	55	58	25	8	834
Monitoring Wells	13	25	13	25	3	15	23	19	24	41	35	13	39	20	11	6	325
Public Wells	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2
Well Destructions	3	2	2	3	19	0	7	11	19	23	11	14	22	35	36	9	216
Sewage Disposal Sys	61	66	43	32	32	50	57	57	57	77	73	103	74	54	31	10	877
Sewage Disposal Sys Repair	20	35	20	18	17	18	31	39	21	75	25	27	41	28	25	12	452
TOTALS:	205	191	138	145	154	152	189	202	194	313	236	276	252	235	194	111	3187

As of June 3, 2009

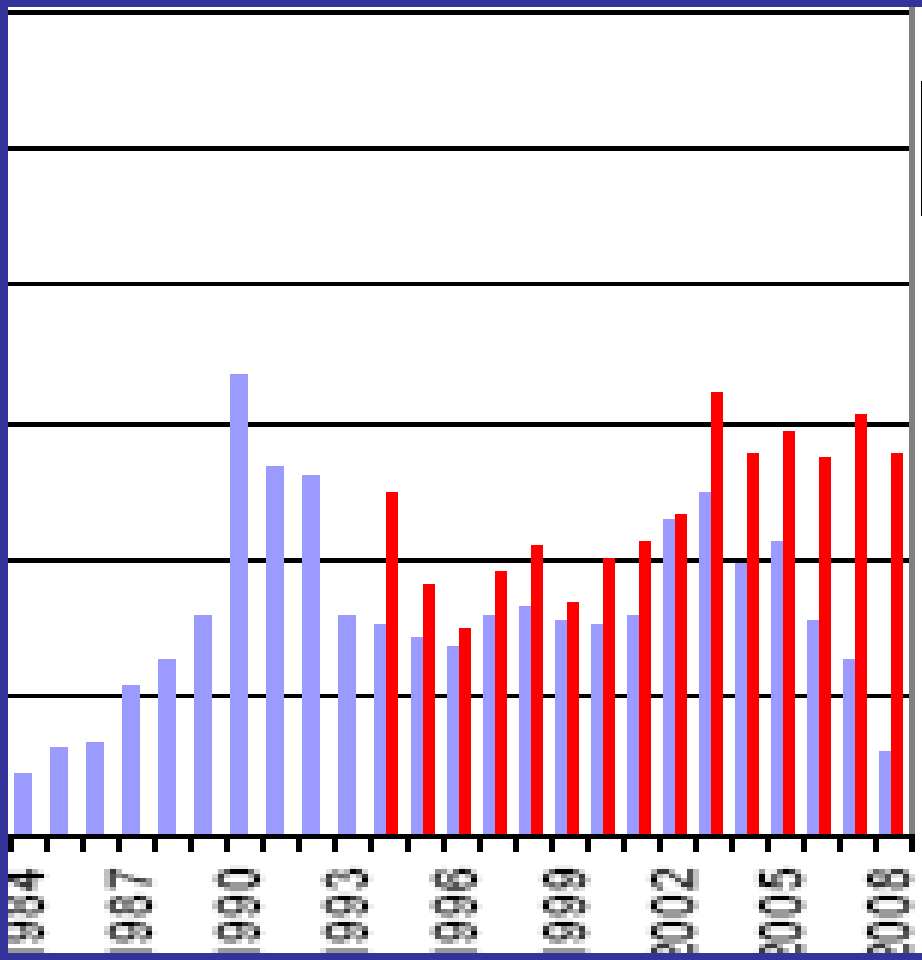
Number of Well Completion Reports Filed with DWR per Year
vs
Number of Permits Issued by Glenn County per Year



Department of Water Resources

2/18/2009

Number of Well Completion Reports Filed with DWR per Year
vs
Number of Permits Issued by Glenn County per Year



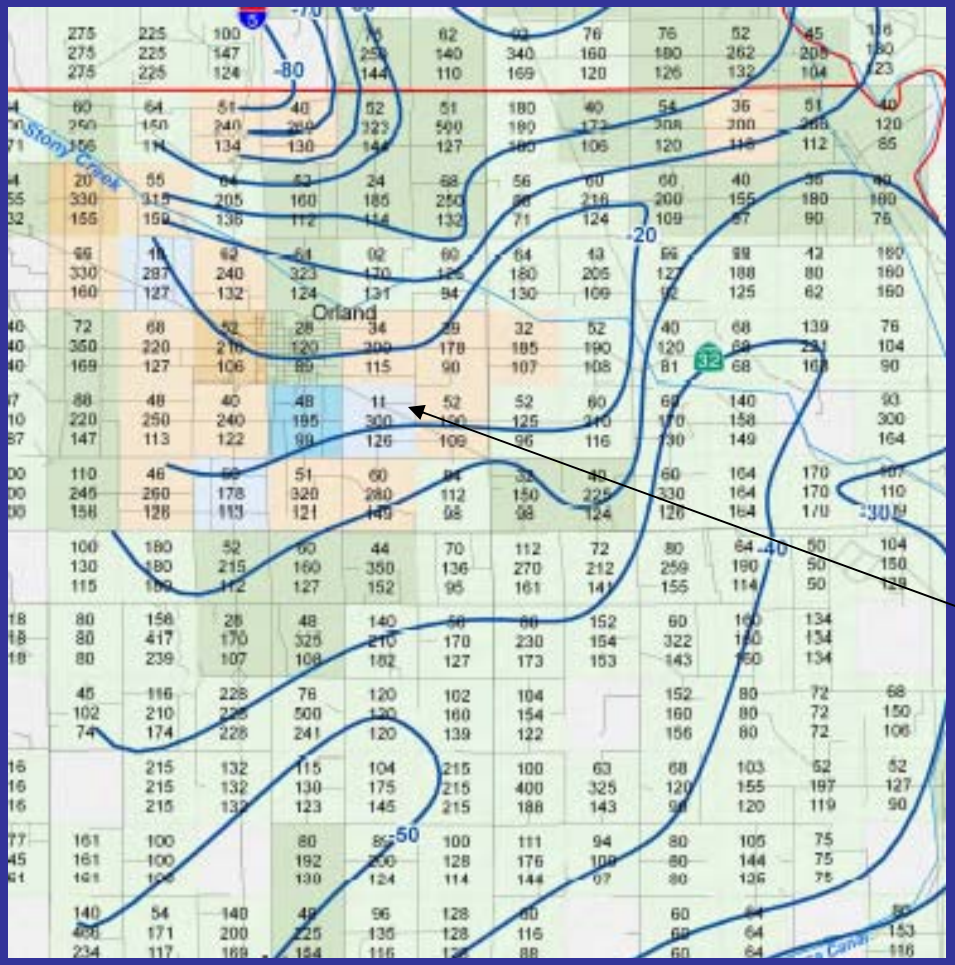
WCR's Received
Permits Issued

WCR's include:
All well uses

Permits Issued include:
Agriculture Wells
Domestic Wells
Monitoring Wells
Public Wells
Well Destructions

GLENN COUNTY DOMESTIC WELL DEPTH SUMMARY
with Depth to Groundwater Contours for Wells Screened at Depths Less Than 150 Feet

Northern District Department of Water Resources
2440 Main Street
Red Bluff, California 96080
(530) 529-7300
http://www.nd.water.ca.gov/index.cfm



-30 Depth to Groundwater Contour for Shallow Monitoring Wells (feet)

- The depth-to-water contour lines represent the depth below ground surface to which the groundwater was measured in wells that are screened at depths less than 150 feet during the summer of 2008.
- The depth-to-water contour lines should be considered a regional approximation of groundwater levels and not a specific representation of the depth to water at a particular location.
- In some areas, depth-to-water contour lines reflect artesian conditions, which means that the groundwater is under sufficient hydrostatic pressure to rise above the aquifer containing it. This may lead to a false assumption that the water-bearing aquifer is shallower than it actually is.

Please contact the California Department of Water Resources at (530) 529-7300 for more detailed well depth information in your area.

Domestic Well Count Distribution

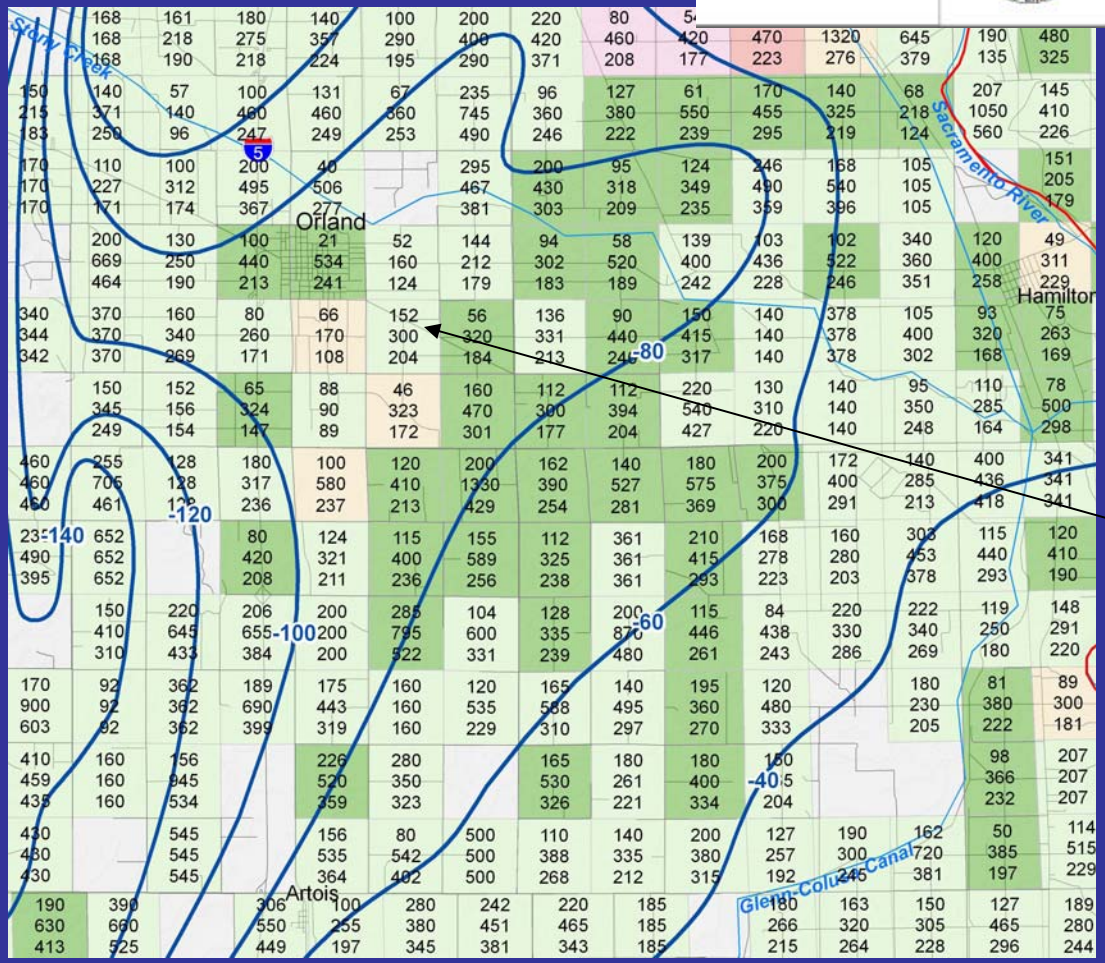
- 1 to 10 domestic wells per section
- 11 to 25 domestic wells per section
- 26 to 50 domestic wells per section
- 51 to 75 domestic wells per section
- 76 to 100 domestic wells per section
- 101 to 125 domestic wells per section
- 126 to 150 domestic wells per section

Domestic Well Depth Summary

105 Min Well Depth
128 Maximum Well Depth
113 Average Well Depth

GLENN COUNTY LARGE PRODUCTION WELL DEPTH SUMMARY
With Depth to Groundwater Contours for Wells Screened at Depths Greater Than 150 Feet

Northern District Department of Water Resources
2440 Main Street
Red Bluff, California 96080
(530) 529-7300
http://www.nd.water.ca.gov/index.cfm



Depth to Groundwater Contour for Deep Monitoring Wells (feet)

- The depth-to-water contour lines represent the depth below ground surface to which the groundwater was measured in wells that are screened at depths greater than 150 feet during the summer of 2008.
- The depth-to-water contour lines should be considered a regional approximation of groundwater levels and not a specific representation of the depth to water at a particular location.
- In some areas, depth-to-water contour lines reflect artesian conditions, which means that the groundwater is under sufficient hydrostatic pressure to rise above the aquifer containing it. This may lead to a false assumption that the water-bearing aquifer is shallower than it actually is.

Please contact the California Department of Water Resources at (530) 529-7300 for more detailed well depth information in your area.

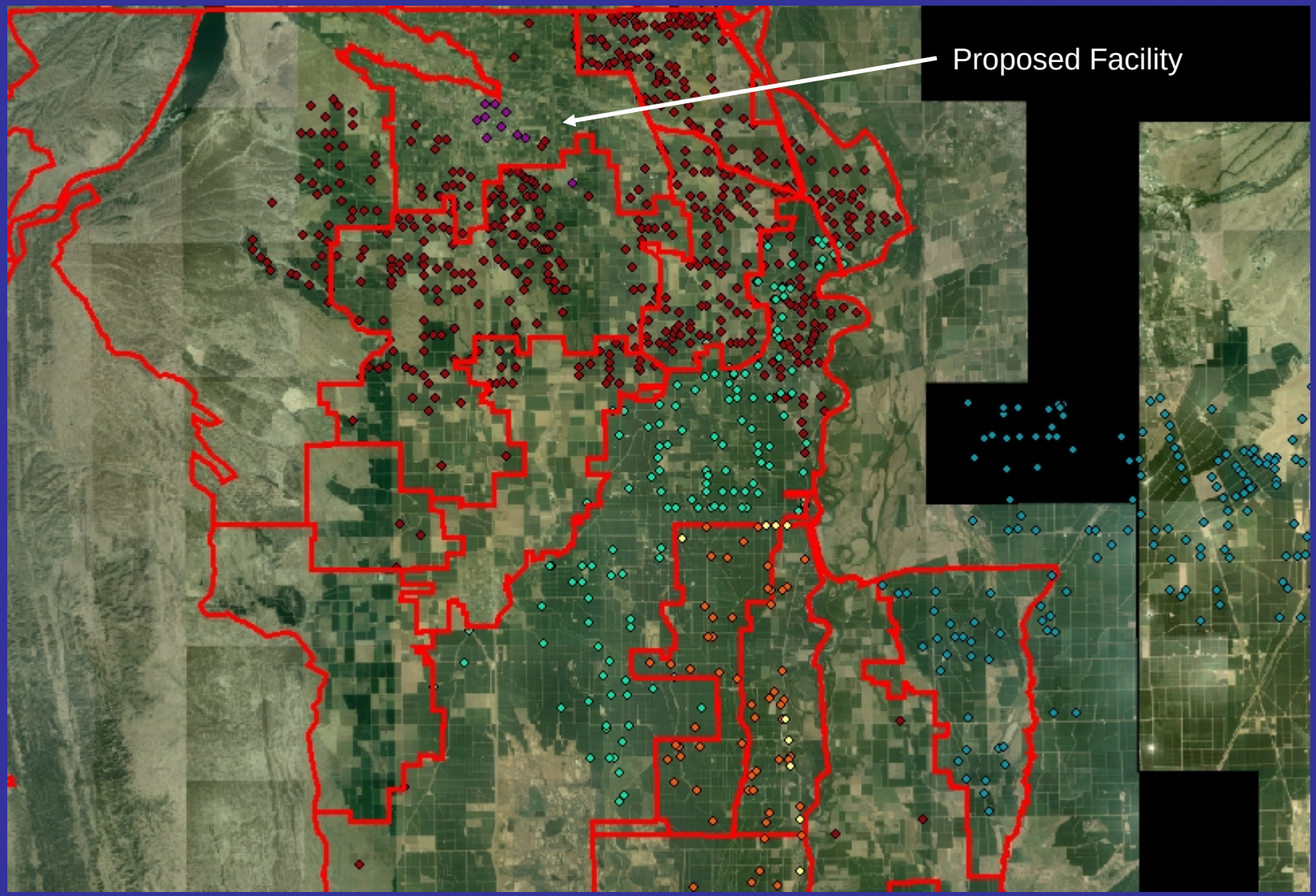
Large Production Well Count Distribution

- 1 to 5 large production wells per section
- 6 to 10 large production wells per section
- 11 to 15 large production wells per section
- 16 to 20 large production wells per section
- 21 to 25 large production wells per section
- 26 to 30 large production wells per section

Large Production Well Depth Summary

180	Minimum Well Depth
280	Maximum Well Depth
173	Average Well Depth

Documented New and Existing Irrigation Wells July 2009



Orland Water Facts

- **City of Orland**
- Population in July 2008: 7,174. Population change since 2000: +14.2%
- 100 gal/day/person = 261,851,000 gal/yr = 800 af/yr
- Anticipate 10,000 by 2020 – (2003 -2020 General Plan)
- 10,000 X 100/gal/day/person = 365,000,000 = 1,116 af/yr
- City of Orland currently at 50% capacity

- **Crystal Geyser**
- 160 af/year at build out in 10 years
- 20% increase from current City water deliveries
- At build out would be 14% of projected 2020 City water use

- **Sierra Nevada Brewery**
- 680,000 barrels/yr
- 31 gal/barrel (5:1 ratio) = 322 af/yr

- **To the West of the Proposed Facility**

- **Orland Project**
- Delivers approximately 85,000 af/yr to 26,000 acres from Stony Creek Diversions

- **Tehama Colusa Canal Authority**
- Receives approximately 20,000 af through Stony Creek at the CHO

- **The Bottom Line**
- Keep our agricultural surface supplies whole and work together to protect those rights and all associated agricultural, industrial, municipal, domestic, recreational, and environmental needs can be met now and in the future