

System name - Ventura River Water District
Ventura County

Month, year - May 2020

Checklist for Drinking Water Source Assessment - Ground Water Source

District Name Ventura River Water District District No. _____ County Ventura
System Name Ventura River Water District System No. CA 5610022
Source Name Well # 1, 2, 3, 4 & 7 Source No. PS Code: _____

Completed by Bert J. Rapp Date: May 2020

The following information should be contained in the drinking water source assessment submittal.

- ☒ X Cover Page
- ☒ X Checklist (*this form*)
- ☒ X Assessment Summary
- ☒ X Vulnerability Summary
- ☐ Source Location Form (*not currently available, contact DHS for information*)
- ☒ X Delineation of groundwater protection zones
- ☐ Source Data Sheet (select appropriate form)
 - ☒ X Well Data Sheet
 - ☐ Spring Data Sheet
 - ☐ Horizontal Well Data Sheet
- ☒ X Physical Barrier Effectiveness Checklist
- ☒ X Possible Contaminating Activities (PCA) inventory form
- ☒ X Vulnerability Ranking
- ☒ X Assessment map with source location and protection zone
- ☒ X Additional maps (optional) (e.g. local maps of zones and PCAs, recharge area maps, or maps indicating direction of ground water flow)

Means of Public Availability of Report (indicate those that will be used)

- ☒ X Notice in the Consumer Confidence Report* (minimum)
- ☒ X Copy in regulatory agency (DHS or LPA) office (minimum)
- ☒ X Copy in public water system office (recommended)
- ☐ Copy in public library/libraries
- ☒ X Internet (indicate Internet address: www.VenturaRiverWD.com)
- ☐ Other (describe)

*The CCR should indicate where customers can review the assessments.

Assessment Summary

District Name Ventura River Water District District No. _____ County Ventura
System Name Ventura River Water District System No. CA 5610022
Source Name Well # 1, 2, 3, 4 & 7 Source No. _____ PS Code: _____

Completed by Bert J. Rapp Date May 2020

Description of System and Source

The VENTURA RIVER WATER DISTRICT water system is located in VENTURA County and serves communities in the Ojai Valley from Casitas Springs to the City of Ojai. There are approximately 2,150 service connections serving a population of 5,700.

Well # 1, 2, 3, 4 & 7 are drinking water sources for the VENTURA RIVER WATER DISTRICT water system, they are located in the Upper Ventura River Groundwater Basin located in the Ojai Valley near Hwy 150 and the Ventura River. The Ventura River watershed covers 226 square miles and is the source for the Upper Ventura River Groundwater Basin. General land use is agricultural, urban, residential and National Forest.

Assessment Procedures

The assessment of the source Upper Ventura River Groundwater Basin was conducted by Ventura River Water District. The following sources of information were used in the assessment:

- Water system files,
- County records,
- Ventura River Watershed Management Plan
- Google Earth

Procedures used to conduct the assessment include: file review, calculations, field review, GIS and google earth.

Contents of this Assessment

Yes	X	No	___	Assessment Summary
Yes	X	No	___	Vulnerability Summary
Yes	X	No	___	Source Location Form
Yes	X	No	___	Delineation of Protection Zones
Yes	X	No	___	Physical Barrier Effectiveness Checklist
Yes	X	No	___	Source Data Sheet
Yes	X	No	___	Inventory of Possible Contaminating Activities
Yes	X	No	___	Vulnerability Ranking
Yes	X	No	___	Assessment Map

Comments

This assessment is being performed on all of the potable water wells on the District's property at 409 Old Baldwin Road. Where characteristics influenced a review parameter, the worst case parameter was utilized such as: pumping rate, depth of sanitary seal, etc.

Vulnerability Summary

District Name _____ VRWD _____ District No. _____ County _____
System Name VRWD _____ System No. _____
Source Name WELL # 1, 2, 3, 4 & 7 _____ Source No. _____ PS Code: _____

Completed by Bert J. Rapp _____ Date May 2020

THE FOLLOWING INFORMATION MUST BE INCLUDED IN THE SYSTEM CONSUMER CONFIDENCE REPORT

A source water assessment was conducted for Well # 1, 2, 3, 4 & 7 in the Ventura River Water District water system in May 2020.

The source is considered most vulnerable to the following activities associated with contaminants detected in the water supply:

None

The source is considered most vulnerable to the following activities not associated with any detected contaminants:

- Wells – Water supply (M)
- Transportation Corridors- Freeways/state highways (M)
- Transportation Corridors- Historic railroad right-of-ways (M)
- Transportation Corridors- Road Right-of-ways (herbicide use) (M)
- Transportation Corridors- Roads/ Streets (L)
- Storm Drain Discharge Points (M)
- Surface water - streams/ lakes/rivers (L)
- Automobile- Car washes (M)
- Sewer collection systems- Comm/Indus (H, if in Zone A, otherwise L)
- Parking lots/malls (>50 spaces) (M)
- Septic systems - high density (>1/acre) (VH if in Zone A, otherwise M)
- Sewer collection systems- Residential (H, if in Zone A, otherwise L)
- Apartments and condominiums (L)
- NPDES/WDR permitted discharges (H)
- Recreational area—surface water source (H)
- Underground Storage Tanks - Not yet upgraded or registered tanks (H)
- Underground Storage Tanks - Upgraded and/or registered - active tanks (L)
- Surface water - streams/ lakes/rivers (L)
- Wells – monitoring, test holes (L)

Discussion of Vulnerability

There have been no contaminants detected in the water supply, however the wells are still considered vulnerable to activities located near the drinking water source.

The sources of contamination of Wells # 1, 2, 3, 4 & 7 that are of heightened concern are from onsite water treatment systems to the east of the wells, a sanitary sewer located 53' to 100-feet west of the wells and surface water in the Ventura River low flow channel located 1,000-feet west of the wells. Well # 1, 2, 3, 4 & 7 have been constructed with 50-foot deep sanitary

Drinking Water Source Assessment and Protection (DWSAP) Program

seals and the first perforations vary from 72-feet to below the ground surface in Well #3 to 105' in Well #7. These design features will help protect against these three vulnerabilities.

Well	#1	#2	#3	#4	#7
Depth to Perforations	92'	68'	72'	92'	105'
Length of Screen	120'	100'	130'	120'	40'
Pumping Rate	1,000	600	400	1,000	800
Minimum Depth to Water	13'	13'	20'	20'	18'

Delineation of Ground Water Protection Zones

District Name VRWD _____ District No. ____ County _
System Name VRWD _____ System No. _____
Source Name Well # 1, 2, 3, 4 & 7 Source No. _____ PS Code: _____
Completed by Bert J. Rapp Date May 2020

Indicate the method used to delineate the zones:

(For more information refer to the *Drinking Water Source Assessment and Protection document*)

X Calculated Fixed Radius (Default) (Show calculations below)

_____ Modified Calculated Fixed Radius (Show calculations below and attach documentation for direction of ground water flow)

_____ More detailed methods

Type used (i.e., analytical methods, hydrogeologic mapping, modeling):

_____ Arbitrary Fixed Radius (For use only by or with permission of DHS—use minimum distances shown below)

Calculated Fixed Radius Equation

The equation for the calculated fixed radius (R) is $R_t = \sqrt{Q t / \pi \eta H}$

R_t = R₂, R₅, or R₁₀ corresponding to t (Calculate R for each travel time)

Q = maximum pumping capacity of wells

(ft³/year = gpm * 70,267):

1,000 x 70,267 = 70,267,000 ft³/year

t = time of travel (years), 2, 5 and 10 years

π = 3.1416

η = effective porosity (decimal percent) (If unknown, assume 0.2): 0.20

H = screened interval of well (feet) (If unknown, assume 10% of Q gpm, 10 ft minimum): H varies from 40' to 128', use 40-feet because it is most conservative.

Specific methods follow on next page

Calculated Fixed Radius Delineation Method (Default)

Using the equation presented above, calculate the size of zones for the appropriate aquifer setting of the source.

Porous Media Aquifer

Zone A (2 year TOT) $R_2 = \underline{2,400}$ ft, minimum = 600 ft—use larger: 2,400 ft

Zone B5 (5 year TOT) $R_5 = \underline{3,800}$ ft, minimum = 1,000 ft—use larger: 3,800 ft

Zone B10 (10 year TOT) $R_{10} = \underline{5,300}$ ft, minimum = 1,500 ft—use larger: 5,300 ft

Fractured Rock Aquifer

(Increase size of zones by 50%)

Zone A (2 year TOT) $1.5R_2 = \underline{\hspace{2cm}}$ ft, minimum = 900 ft—use larger: ft

Zone B5 (5 year TOT) $1.5R_5 = \underline{\hspace{2cm}}$ ft, minimum = 1,500 ft—use larger: ft

Zone B10 (10 year TOT) $1.5R_{10} = \underline{\hspace{2cm}}$ ft, minimum = 2,250 ft—use larger: ft

Modified Calculated Fixed Radius Delineation Method

In porous media aquifers, if the direction of ground water flow is known (see Section 6.2.3), the default zone circle may be shifted upgradient by $0.5R_t$. The upgradient and downgradient limits of the zone are determined below.

Zone A (2-year TOT)

upgradient distance = $1.5R_2 = \underline{3,600}$ ft, minimum = 900 ft, use larger: 3,600 ft

downgradient distance = $0.5R_2 = \underline{1,200}$ ft, minimum = 300 ft, use larger: 1,200 ft

Zone B5 (5-year TOT)

upgradient distance = $1.5R_5 = \underline{5,700}$ ft, minimum = 1,500 ft, use larger: 5,700 ft

downgradient distance = $0.5R_5 = \underline{1,900}$ ft, minimum = 500 ft, use larger: 1,900 ft

Zone B10 (10-year TOT)

upgradient distance = $1.5R_{10} = \underline{7,950}$ ft, minimum = 2,250 ft, use larger: 7,950 ft

downgradient distance = $0.5R_{10} = \underline{2,650}$ ft, minimum = 750 ft, use larger: 2,650 ft

Physical Barrier Effectiveness Checklist - Ground Water Source

District Name VRWD District No. County System Name
System No.
Source Name Well # 1, 2, 3, 4 & 7 Source No. PS Code:

Completed by Bert J. Rapp Date May 2020

Use the DHS Well Data Sheet (separate document) to complete the following form.

Directions:

1. Read through the form and collect the information needed to complete the form.
(Hydrogeology, Soils, Presence of abandoned or improperly destroyed wells, Well construction and operation.)
2. Determine Parameter A, Type of Aquifer.
 - If the aquifer is confined, use the right-hand column, and evaluate only the parameters indicated for confined aquifers.
 - If the aquifer is unconfined, semi-confined, or the degree of confinement is unknown, or if the aquifer is fractured rock, use the left-hand column and evaluate only the parameters for unconfined aquifers.
3. For each parameter appropriate for the source, place a check in the box for the answer that most closely applies to that source. If more than one answer is possible, select the more conservative (i.e. lower points) answer. *[For example, if the depth to static water (Parameter D) has varied between 45 and 55 feet, choose answer 2 (20 to 50 feet).]*
4. Add the points in the column appropriate for the source and interpret the score as shown on the bottom of the last page.
 - Determine whether the source has a High, Moderate or Low Physical Barrier Effectiveness. Use this in the Vulnerability analysis. The higher the points, generally the more effective the source and site are to retarding the movement of contaminants to the water supply.

NOTE: If the source is located in fractured rock the source is considered to have a Low Physical Barrier Effectiveness, regardless of the point total. So, if Parameter B, Aquifer Material is 3, the remainder of the form does not need to be completed.

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Physical Barrier Effectiveness (PBE) – Ground Water, page 1 of 2

Source Name: Well # 1, 2, 3, 4 & 7

Source No.:

PARAMETER	POINTS					
	Unconfined		Confined			
A. TYPE OF AQUIFER						
Confinement (up to 50 points maximum) choose one						
a. Unconfined, Semi-confined, Fractured Rock, Unknown	50	30				
b. Confined			0			
B. AQUIFER MATERIAL (Unconfined Aquifer)						
Type of materials within the aquifer (up to 20 points maximum) choose one						
1. Porous Media (Interbedded sands, silts, clays, gravels) with continuous clay layer minimum 25' thick above water table within Zone A	20					
2. Porous Media (Interbedded sands, silts, clays, and gravels)	10	10				
3. Fractured rock *	0					
(* Low Physical Barrier Effectiveness - no further questions required)						
C. PATHWAYS OF CONTAMINATION (All Aquifers)						
Presence of Abandoned or Improperly Destroyed Wells (up to 10 points maximum)						
1. Are they present within Zone A (2-year time of travel (TOT) distance)?						
a. Yes or unknown	0	0	0			
b. No	5		0			
2. Are they present within Zone B5 (2- to 5-year TOT distance)?						
a. Yes or unknown	0		0			
b. No	3		0			
3. Are they present within Zone B10 (5- to 10-year TOT distance)?						
a. Yes or unknown	0		0			
b. No	2		0			
D. STATIC WATER CONDITIONS (Unconfined Aquifer)						
Depth to static Water (DTW) = 13-feet (13' to 20') (up to 10 points maximum) choose one						
1. 0 to 20 feet	0	0				
2. 20 to 50 feet	2					
3. 50 to 100 feet	6					
4. > 100 feet	10					
E. WELL OPERATION (Unconfined Aquifer)						
Depth to Uppermost Perforations (DUP) DUP = 72 feet (72' to 105')						
Maximum Pumping Rate of Well (Q) Q = 1,000 gallons/minute						
Length of screened interval (H) H = 40 feet (40' to 128')						
$[(DUP - DTW) / (Q/H)] (72-13)/(1,000/40) = 2.3$ (up to 10 points maximum) choose one						
1. < 5	0	0				
2. 5 to 10	5					
3. > 10	10					

Physical Barrier Effectiveness – Ground Water, page 2 of 2

Source Name: Well # 1, 2, 3, 4 & 7 Source No. _____

PARAMETER	POINTS			
	Unconfined		Confined	
F. HYDRAULIC HEAD (Confined Aquifer) What is the relationship in hydraulic head between the confined aquifer and the overlying unconfined aquifer? (i.e. does the well flow under artesian conditions?) (up to 20 points maximum) choose one				
1. head in confined aquifer is higher than head in unconfined aquifer_ under all conditions			20	
2. head in confined aquifer is higher than head in unconfined aquifer under static conditions			10	
3. head in confined aquifer is lower than or same as head in unconfined aquifer			0	
4. unknown			0	
G. WELL CONSTRUCTION (All Aquifers)				
1. Sanitary Seal (Annular Seal) Depth = <u>50</u> feet (up to 10 points maximum) choose one				
a. None or less than 20 feet deep	0		0	
b. 20 to 50 ft deep	6		10	
c. 50 ft or greater	10	10	10	
2. Surface seal (concrete cap) (up to 4 points maximum) choose one				
a. Not present or improperly constructed	0		0	
b. Watertight, slopes away from well, at least 2' laterally in all directions	4	4	4	
3. Flooding potential at well site (up to 1 point maximum) choose one				
a. Subject to localized flooding (i.e. in low area or unsealed pit or vault) or Within 100 year flood plain	0		0	
b. Not subject to flooding	1	1	1	
4. Security at well site (up to 5 points maximum) choose one				
a. Not secure	0		0	
b. Secure (i.e. housing, fencing, etc.)	5	5	5	
Maximum Points Possible	70		100	
POINT TOTAL FOR THIS SOURCE				

Physical Barrier Effectiveness SCORE INTERPRETATION

<u>Point Total</u>	<u>Effectiveness</u>
<u>0</u> to 35 =	Low (includes all sources in Fractured Rock)
<u>36</u> to 69 =	Moderate
<u>70</u> to 100 =	High

Possible Contaminating Activities (PCA) Inventory Form - Ground Water

District Name VRWD District No. County: Ventura

System Name VRWD System No. CA 5610022

Source Name Well # 1, 2, 3, 4 & 7 Source No. PS Code:

Completed by Bert Rapp Date May 2020

Check the PCA tables that will be used for this drinking water source (assessment must include the "Other" checklist and at least one of the remaining three checklists):

Commercial/Industrial X

Residential/Municipal X

Agricultural/Rural

Other (required for all) X

Proceed to appropriate checklist or checklists. Indicate whether the PCA is located in the zone by placing a Y (yes), N (no), or U (unknown) in the appropriate boxes.

Example:

Zone A	Zone B5	Zone B10
Y	N	N
N	Y	U
U	N	N

Risk Ranking of PCAs, where VH = Very High Risk, H = High Risk, M = Moderate Risk, L = Low Risk

PCA Checklist COMMERCIAL/INDUSTRIAL

PCA (Risk Ranking)	PCA in Zone A?	PCA in Zone B5?	PCA in Zone B10?	Comments
Automobile- Body shops (H)	N	N	N	
Automobile- Car washes (M)	N	Y	N	
Automobile- Gas stations (VH)	N	N	N	
Automobile- Repair shops (H)	Y	N	N	
Boat services/repair/ refinishing (H)	N	N	N	
Chemical/petroleum pipelines (H)	N	N	N	
Chemical/petroleum processing/storage (VH)	N	N	N	
Dry cleaners (VH)	N	N	N	
Electrical/electronic manufacturing (H)	N	N	N	
Fleet/truck/bus terminals (H)	N	N	N	
Furniture repair/ manufacturing (H)	N	N	N	
Home manufacturing (H)	U	U	U	
Junk/scrap/salvage yards (H)	N	N	N	
Machine shops (H)	N	N	N	
Metal plating/ finishing/fabricating (VH)	N	N	N	
Photo processing/printing (H)	N	N	N	
Plastics/synthetics producers (VH)	N	N	N	
Research laboratories (H)	N	N	N	
Wood preserving/treating (H)	N	N	N	
Wood/pulp/paper processing and mills (H)	N	N	N	
Lumber processing and manufacturing (H)	N	N	N	
Sewer collection systems (H, if in Zone A, otherwise L)	Y	Y	Y	
Parking lots/malls (>50 spaces) (M)	N	Y	Y	
Cement/concrete plants (M)	N	N	N	
Food processing (M)	N	N	N	
Funeral services/graveyards (M)	N	N	N	
Hardware/lumber/parts stores (M)	N	N	N	
Appliance/Electronic Repair (L)	N	N	N	
Office buildings/complexes (L)	N	N	N	
Rental Yards (L)	N	N	N	
RV/mini storage (L)	N	N	N	

PCA Checklist RESIDENTIAL/MUNICIPAL

PCA (Risk Ranking)	PCA in Zone A?	PCA in Zone B5?	PCA in Zone B10?	Comments
Airports - Maintenance/ fueling areas (VH)	N	N	N	
Landfills/dumps (VH)	N	N	N	
Railroad yards/ maintenance/ fueling areas (H)	N	N	N	
Septic systems - high density (>1/acre) (VH if in Zone A, otherwise M)	Y	Y	Y	
Sewer collection systems (H, if in Zone A, otherwise L)	Y	Y	Y	
Utility stations - maintenance areas (H)	N	N	N	
Wastewater treatment plants (VH in Zone A, otherwise H)	N	N	N	
Drinking water treatment plants (M)	N	N	N	
Golf courses (M)	N	N	N	
Housing - high density (>1 house/0.5 acres) (M)	Y	N	Y	
Motor pools (M)	N	N	N	
Parks (M)	N	N	N	
Waste transfer/recycling stations (M)	N	N	N	
Apartments and condominiums (L)	Y	Y	Y	
Campgrounds/ Recreational areas (L)	N	N	N	
Fire stations (L)	N	N	Y	
RV Parks (L)	N	N	N	
Schools (L)	N	N	Y	
Hotels, Motels (L)	N	N	N	

PCA Checklist AGRICULTURAL/RURAL

PCA (Risk Ranking)	PCA in Zone A?	PCA in Zone B5?	PCA in Zone B10?	Comments
Grazing (> 5 large animals or equivalent per acre) (H in Zone A, otherwise M)				
Concentrated Animal Feeding Operations (CAFOs) as defined in federal regulation ¹ (VH in Zone A, otherwise H)				
Animal Feeding Operations as defined in federal regulation ² (VH in Zone A, otherwise H)				
Other Animal operations (H in Zone A, otherwise M)				
Farm chemical distributor/ application service (H)				
Farm machinery repair (H)				
Septic systems - low density (<1/acre) (H in Zone A, otherwise L)				
Lagoons / liquid wastes (H)				
Machine shops (H)				
Pesticide/fertilizer/ petroleum storage & transfer areas (H)				
Agricultural Drainage (H in Zone A, otherwise M)				
Wells - Agricultural/ Irrigation (H)				
Managed Forests (M)				
Crops, irrigated (Berries, hops, mint, orchards, sod, greenhouses, vineyards, nurseries, vegetable) (M)				
Fertilizer, Pesticide/ Herbicide Application (M)				
Sewage sludge/biosolids application (M)				
Crops, nonirrigated (e.g., Christmas trees, grains, grass seeds, hay, pasture) (L) (includes drip-irrigated crops)				

PCA Checklist OTHER ACTIVITIES

PCA (Risk Ranking)	PCA in Zone A?	PCA in Zone B5?	PCA in Zone B10?	Comments
NPDES/WDR permitted discharges (H)	Y	Y	Y	
Underground Injection of Commercial/Industrial Discharges (VH)	N	N	N	
Historic gas stations (VH)	Y	N	N	
Historic waste dumps/ landfills (VH)	Y	N	N	
Illegal activities/ unauthorized dumping (H)	U	U	U	
Injection wells/ dry wells/ sumps (VH)	U	U	U	
Known Contaminant Plumes (VH)	N	N	N	
Military installations (VH)	N	N	N	
Mining operations - Historic (VH)	N	N	N	
Mining operations - Active (VH)	N	N	N	
Mining - Sand/Gravel (H)	N	N	N	
Wells - Oil, Gas, Geothermal (H)	N	N	N	
Salt Water Intrusion (H)	N	N	N	
Recreational area - surface water source (H)	Y	Y	Y	
Underground storage tanks - Confirmed leaking tanks (VH)	N	N	N	
Underground storage tanks - Decommissioned - inactive tanks (L)	N	N	N	
Underground storage tanks - Non- regulated tanks (tanks smaller than regulatory limit) (H)	U	U	U	
Underground storage tanks - Not yet upgraded or registered tanks (H)	N	N	N	
Underground storage tanks - Upgraded and/or registered - active tanks (L)	N	N	N	
Above ground storage tanks (M)	Y	U	U	
Wells - Water supply (M)	Y	Y	Y	
Construction/demolition staging areas (M)	N	N	N	
Contractor or government agency equipment storage yards (M)	N	N	N	
Dredging (M)	N	N	N	
Transportation corridors - Freeways/state highways (M)	Y	Y	Y	
Transportation corridors - Railroads (M)	N	N	N	
Transportation corridors - Historic railroad right-of-ways (M)	Y	Y	Y	
Transportation corridors - Road Right-of- ways (herbicide use areas) (M)	Y	Y	Y	
Transportation corridors - Roads/ Streets (L)	Y	Y	Y	
Hospitals (M)	N	N	N	
Storm Drain Discharge Points (M)	Y	Y	N	
Storm Water Detention Facilities (M)	N	N	N	

PCA Checklist OTHER ACTIVITIES (continued)

PCA (Risk Ranking)	PCA in Zone A?	PCA in Zone B5?	PCA in Zone B10?	Comments
Artificial Recharge Projects - Injection wells (potable water) (L)	N	N	N	
Artificial Recharge Projects - Injection wells (non-potable water) (M)	N	N	N	
Artificial Recharge Projects - Spreading Basins (potable water) (L)	N	N	N	
Artificial Recharge Projects - Spreading Basins (non-potable water) (M)	N	N	N	
Medical/dental offices/clinics (L)	N	N	N	
Veterinary offices/clinics (L)	N	N	N	
Surface water - streams/ lakes/rivers (L)	Y	Y	Y	
Wells - monitoring, test holes (L)	Y	Y	Y	

Vulnerability Ranking – Ground Water

Download the “Vulnerability Ranking List” from the DHS website. Follow these directions for using the spreadsheet.

General Notes:

The list in the spreadsheet (*GW Vulnerability Ranking List.xls*, sheet “GW”) comes from the PCA checklists. Each PCA is listed four (4) times: Zone A, Zone B5, Zone B10, and Unknown.

PCA risk points (Column C) have been assigned based on the risk of the PCA (VH, H, M, or L) for that zone.

To use the Vulnerability Ranking Spreadsheet follow these steps:

1. Conduct the PCA inventory.
2. Make a copy of the spreadsheet “GW” and give the new sheet a descriptive name.
3. On the new sheet, delete rows for any PCAs that do not exist in any of the zones. (Remember that each PCA is listed 4 times).
4. Delete rows for PCAs that don't occur in a particular zone (i.e. if the PCA exists only in Zone A, delete the rows for Zone B5, B10 and Unknown).
5. For PCAs whose existence is unknown, delete the appropriate rows (i.e. if you have no idea whether the PCA exists, keep the Unknown row and delete the other three. Similarly, if you know the PCA exists in Zone A but you aren't sure about B5 and B10, delete the rows for B5 and B10 and keep the rows for Zone A and Unknown.)
6. The remaining rows should represent all of the PCAs that exist or whose existence is unknown within the zones. (For some sources, especially in urban areas, this may still be a very long list.)
7. Calculate Physical Barrier Effectiveness for the source. Insert the corresponding points (i.e., H =1, M = 3, L = 5) into column E for all the rows.
8. Determine the Vulnerability Score in Column F (sum of columns C + D + E)
9. Sort the list by the Vulnerability Score, from highest to lowest.
10. The source is considered vulnerable to all PCAs with vulnerability score ≥ 8 . Shade these yellow.
11. Review the list. This is a good time to review the assessment with the water supplier. Items to consider:
 - a. Are there detected contaminants in the source water? What are the PCAs associated with the contaminants? Are those PCAs at the top of the list? If not, move them there with a note or asterisk.

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- b. What were the perceived biggest problems before doing the assessment? Are these PCAs at the top of the list? Should they be?
 - c. Are there PCAs at the top of the list that don't seem particularly important?
- 12. If there are any concerns with the vulnerability ranking, go back and review the PCA inventory. Revise the inventory as necessary.
- 13. Revise the vulnerability ranking as necessary.
- 14. Print the final list, save to disk, and submit with the remainder of the assessment.

Instructions for Groundwater Assessment Map

The assessment map for a groundwater source should be submitted on USGS topographic maps ("quad maps") at 1:24,000 scale. The map should show:

- Location of the source
- Protection Zones
- Significant Possible Contaminating Activities (PCAs) within the zone (optional, but recommended)

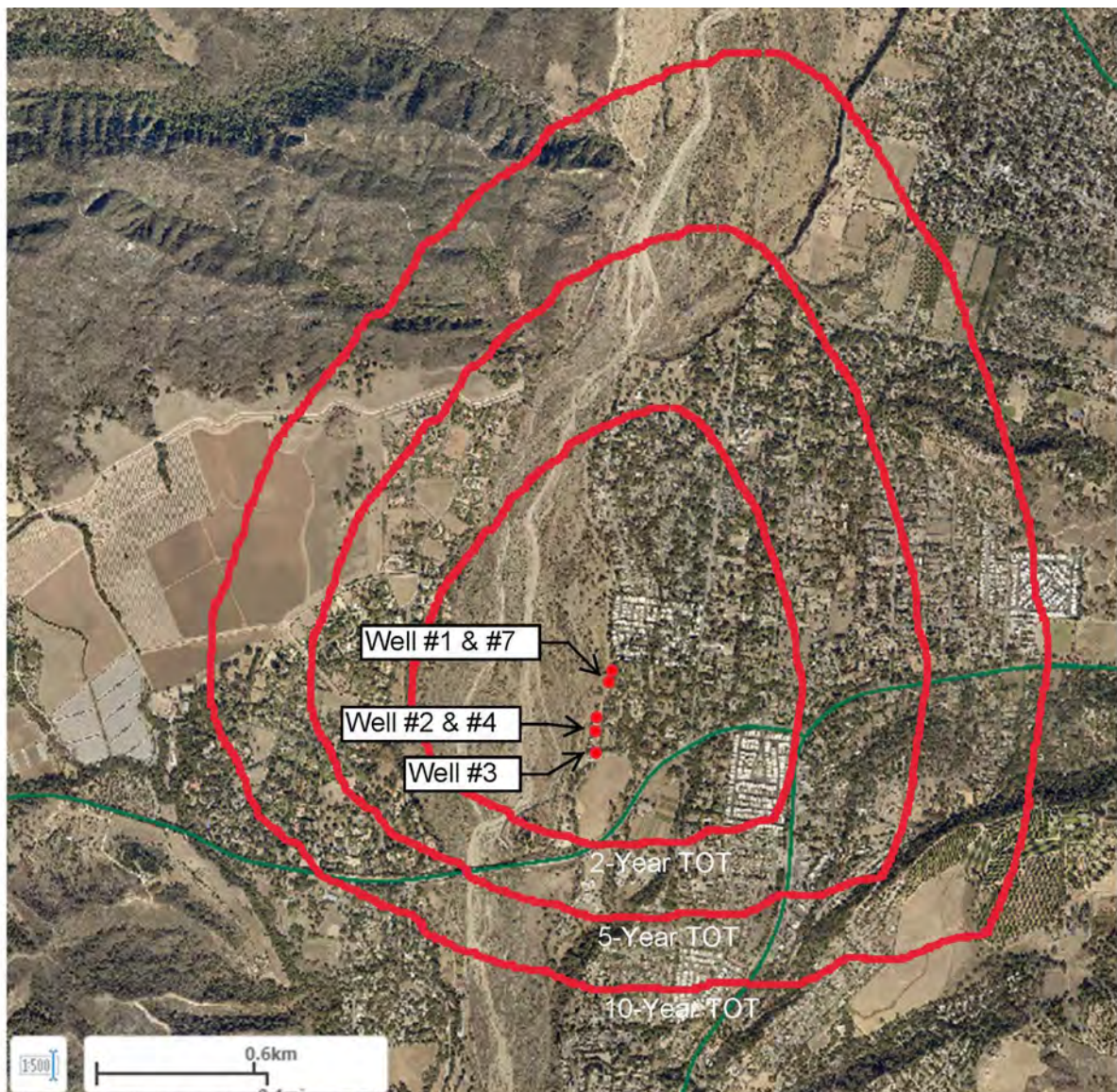
The protection zone for groundwater sources are a set of three circles surrounding the source. (For springs and horizontal wells, if determined to be groundwater sources, the protection zones need not include those portions of the circles down gradient of the source.) The radius of the protection zone is determined in the Delineation section of the assessment and depends upon the aquifer material, well pumping rate, screened interval, and aquifer porosity.

USGS quad maps may be obtained from map or backpacking retailers. There are also several computer software programs that include USGS quad maps.

At the discretion of the regulatory agency, the water system may request that the regulatory agency prepare a map displaying the source and zones.

Example maps for a well source and a spring source are attached.

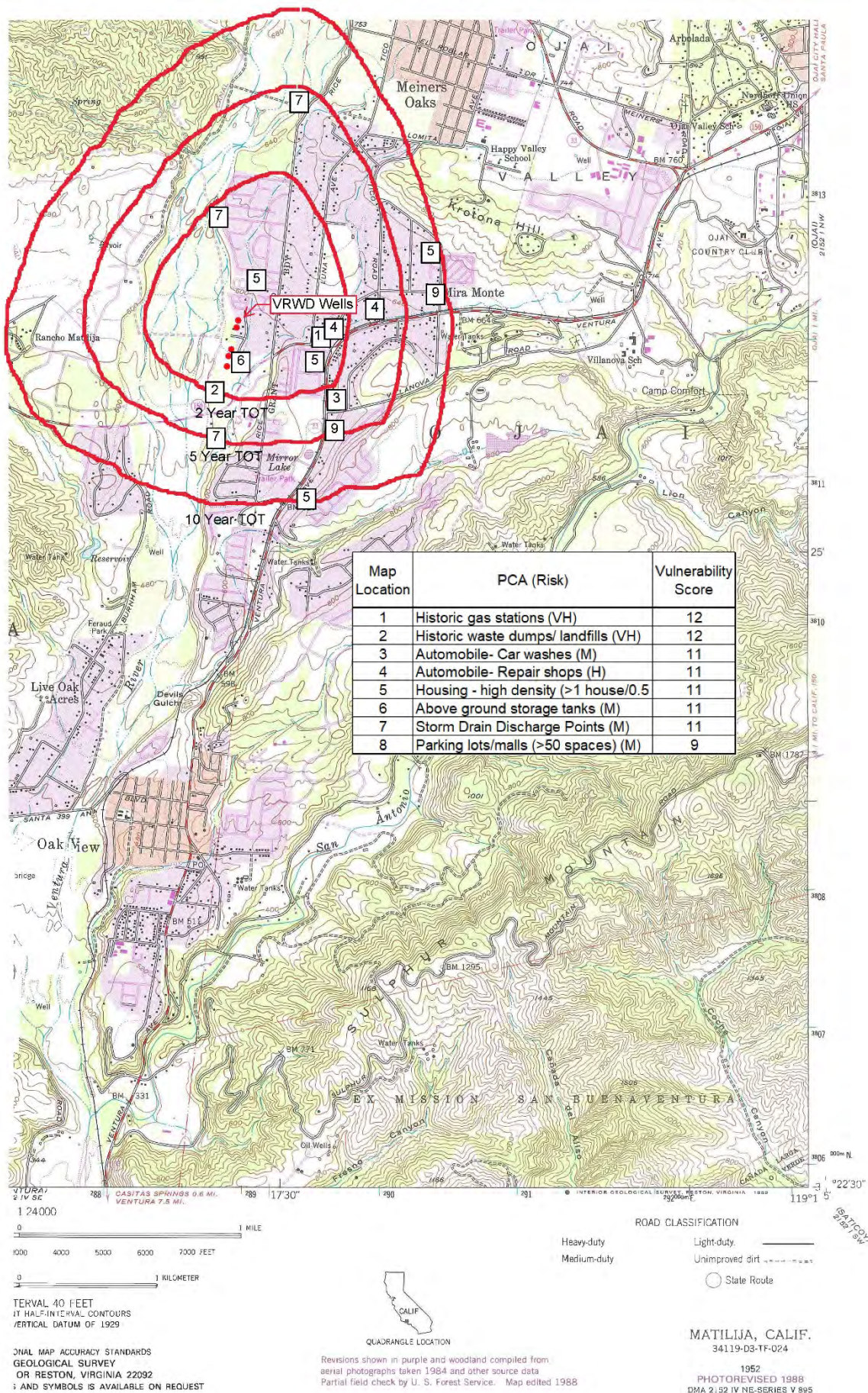
Well Assessment Maps

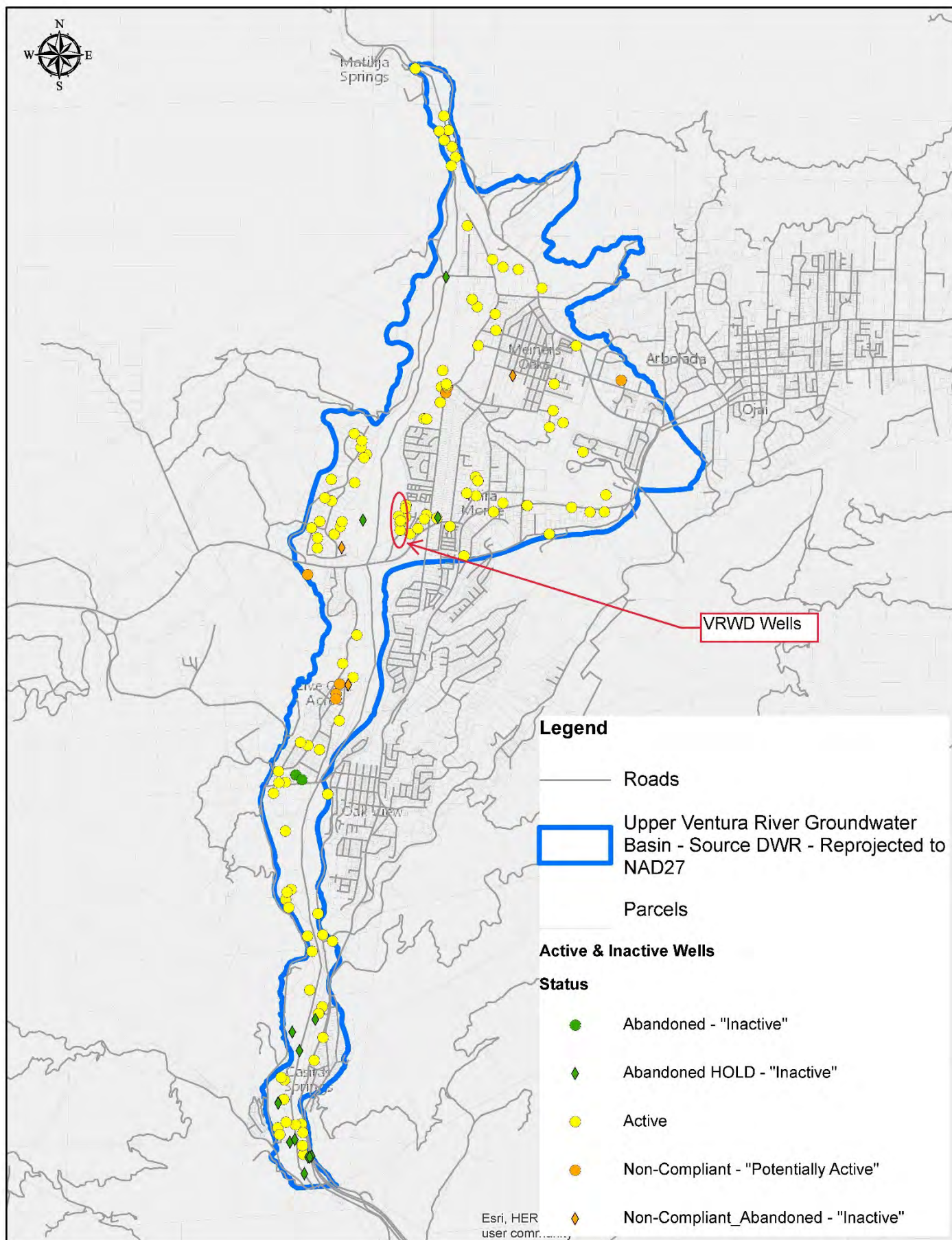


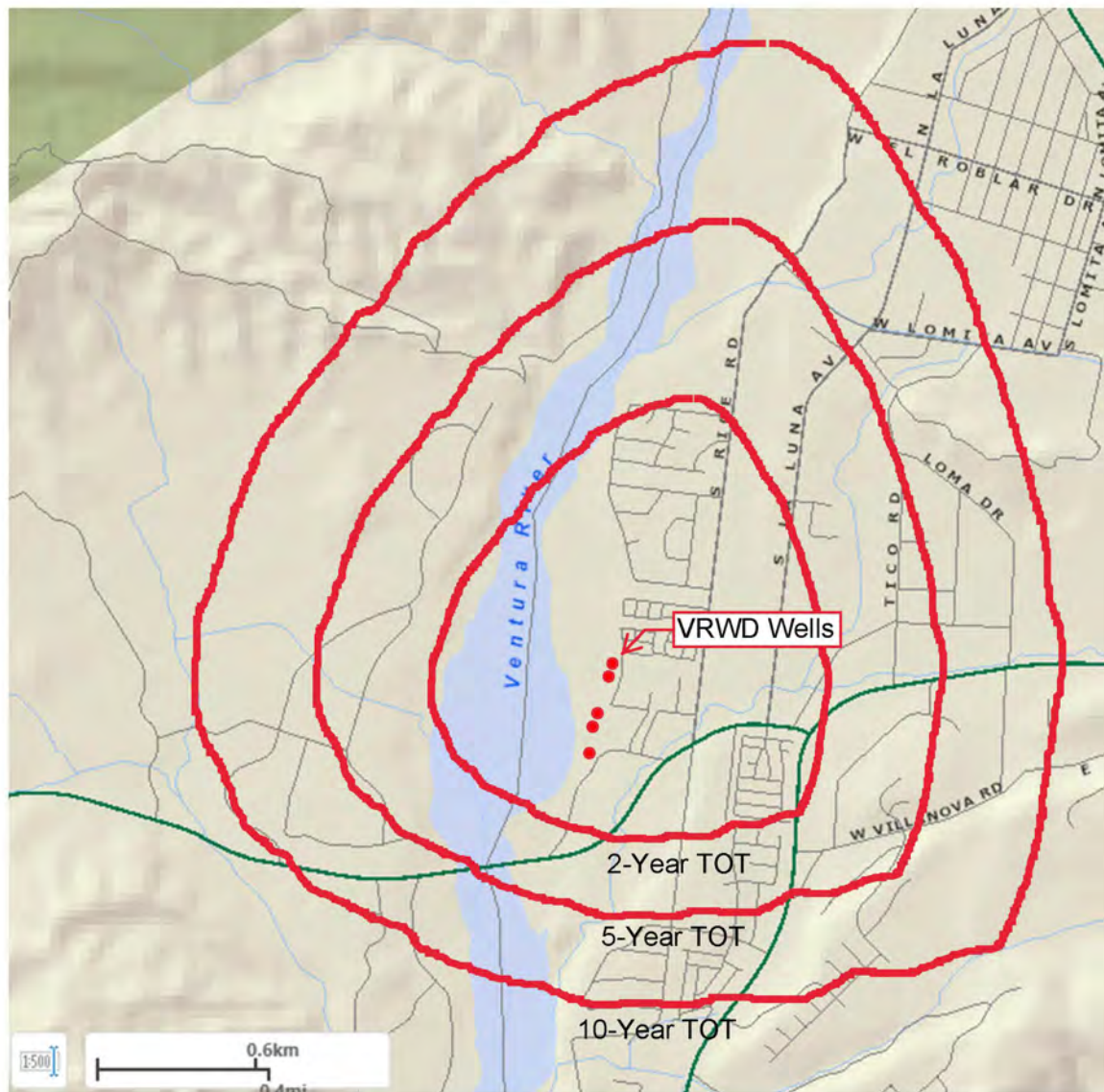
Groundwater Protection Zones

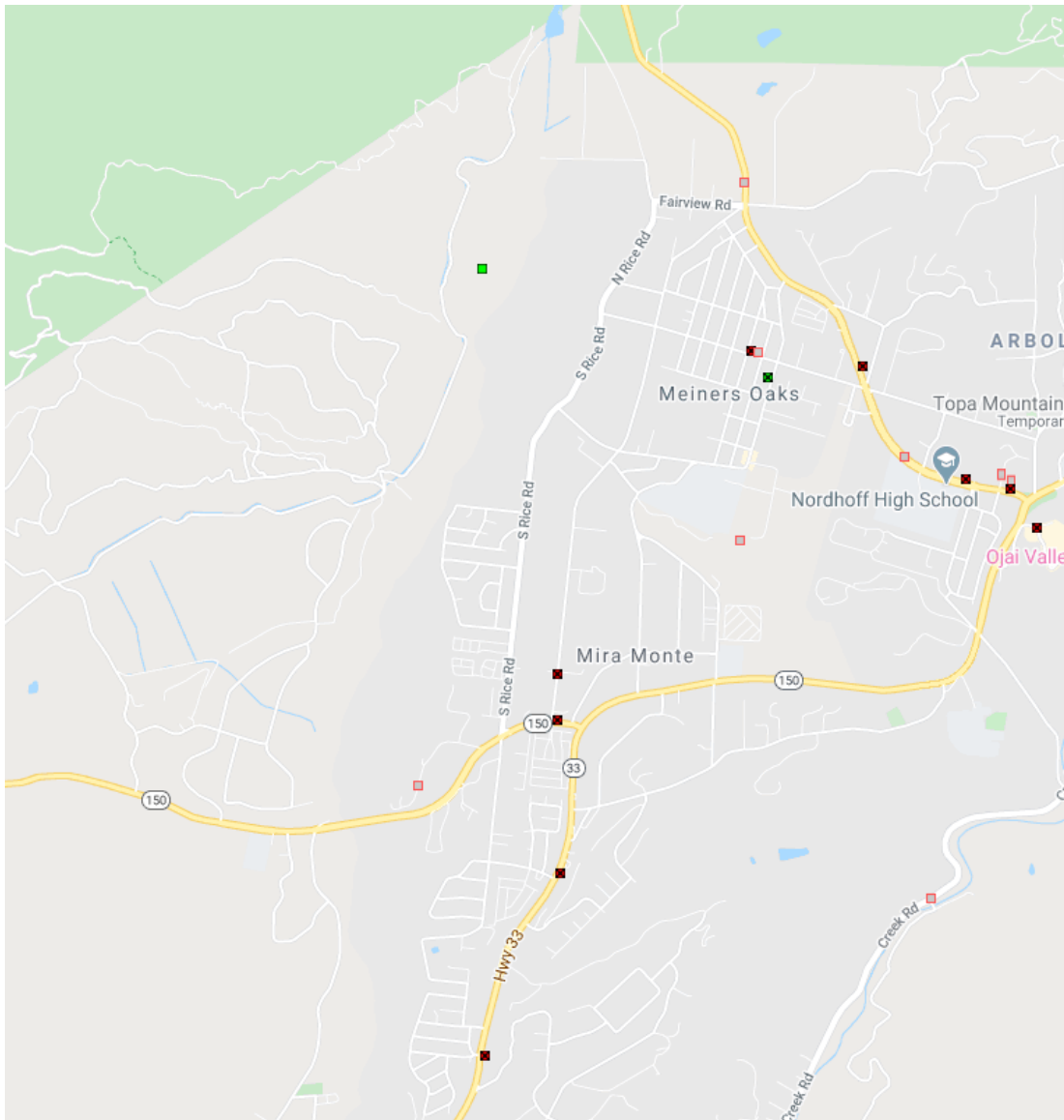
TOT modified for underground flow north and south with no modification for flow going east and west. Northern boundaries set by most northerly well and southern boundaries set by most southerly well.

Drinking Water Source Assessment and Protection (DWSAP) Program



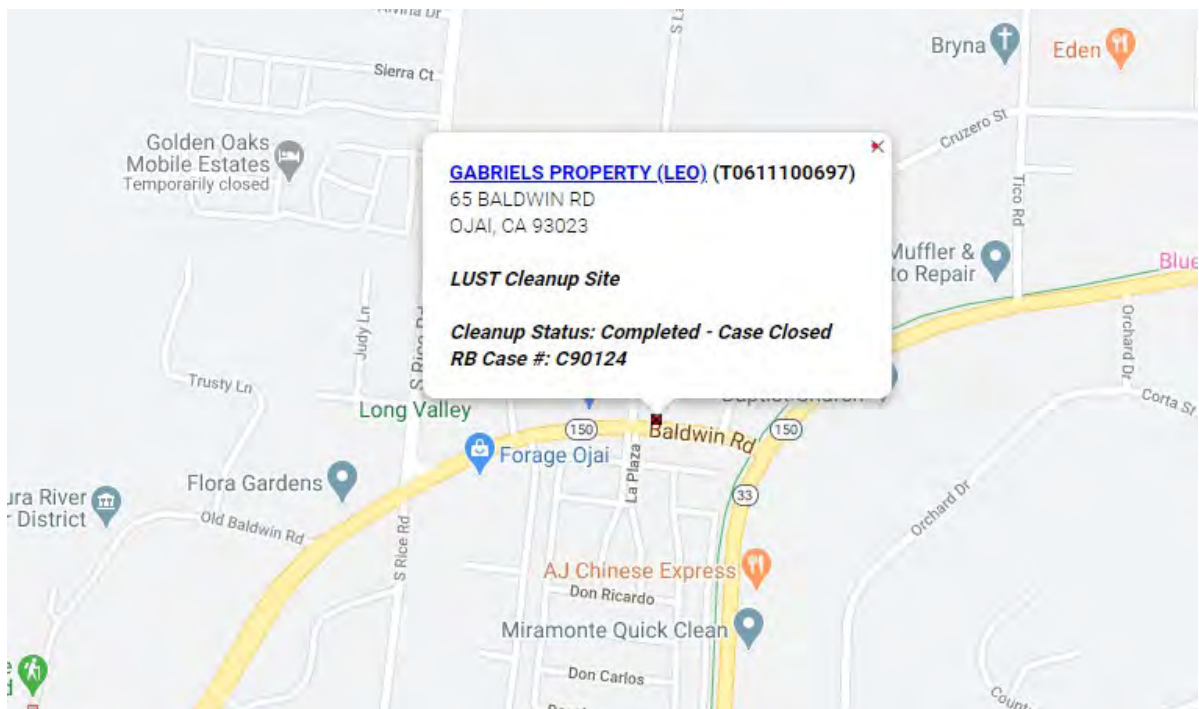




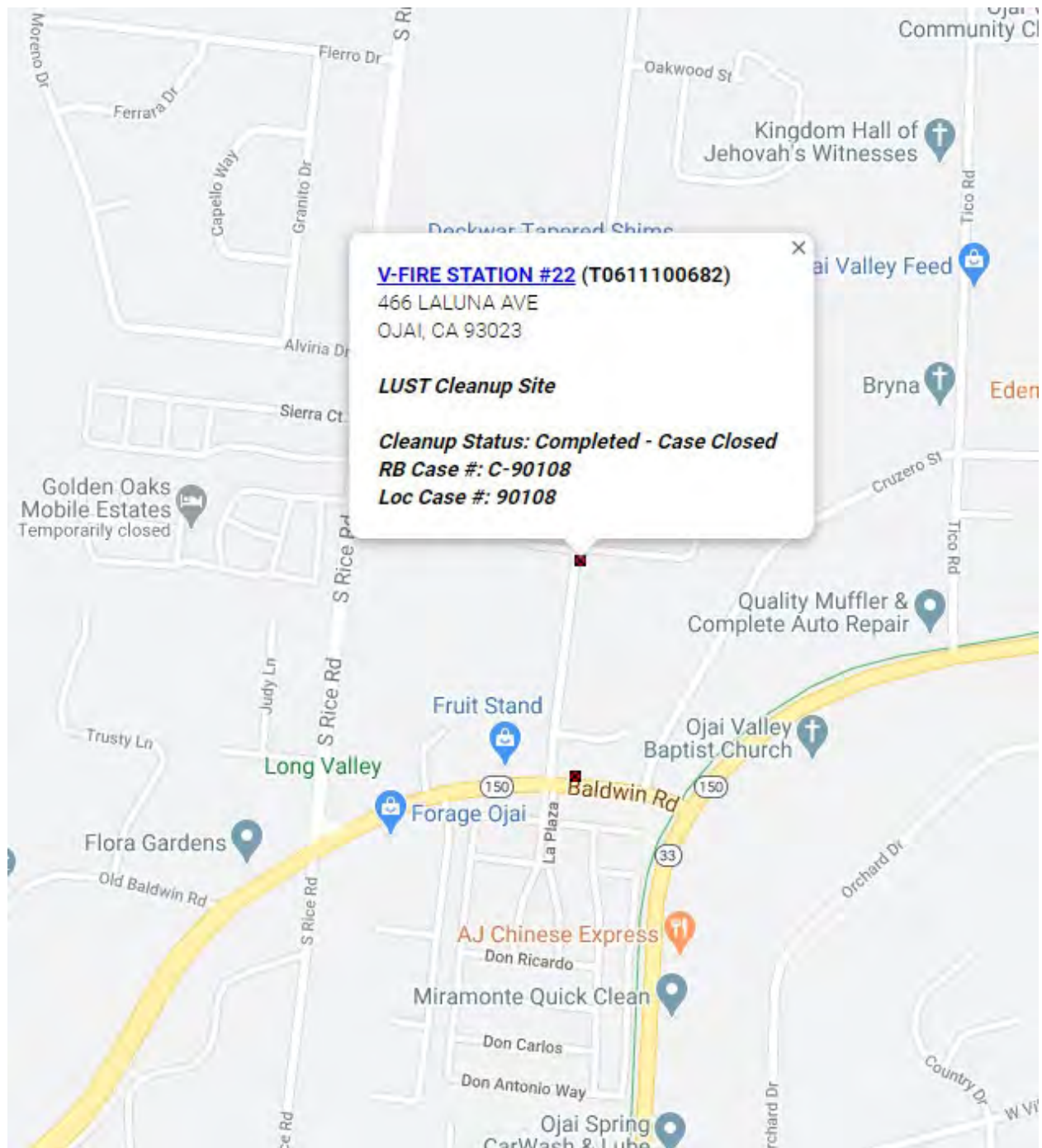


ABANDONED UNDERGROUND STORAGE TANK SITES

Drinking Water Source Assessment and Protection (DWSAP) Program



Drinking Water Source Assessment and Protection (DWSAP) Program



Drinking Water Source Assessment and Protection (DWSAP) Program

VULNERABILITY RANKING MASTER LIST - Ground Water					
District Name: Ventura River Water District		District No.	6	County	Ventura
System Name: Baldwin Wells		System No.	CA 5610022		
Source Name: VRWD Wells # 1, 2, 3, 4 & 7		Source No.		PS Code:	
	PCA	PCA Risk Points	Zone Points	PBE Points	Vulnerability Score
		VH = 7	A = 5	L = 5	
This list has been reduced using the PCA Checklists for Commercial/Industrial, Residential/Municipal and Other Activities		H = 5 M = 3	B5 = 3 B10 = 1 Unknown = 0	M = 3 H = 1	Risk + Zone + PBE points
Zone	PCA (Risk)	L = 1			
A	Septic systems - high density (>1/acre) (VH if in Zone A, otherwise M)	7	5		12
A	Historic gas stations (VH)	7	5		12
A	Historic waste dumps/ landfills (VH)	7	5		12
A	Automobile- Car washes (M)	3	5	3	11
A	Automobile- Repair shops (H)	5	5	1	11
A	Sewer collection systems- Comm/Indus (H, if in Zone A, otherwise L)	5	5	1	11
A	Sewer collection systems- Residential (H, if in Zone A, otherwise L)	5	5	1	11
A	Housing - high density (>1 house/0.5 acres) (M)	3	5	3	11
A	Apartments and condominiums (L)	1	5	5	11
A	NPDES/WDR permitted discharges (H)	5	5	1	11
A	Recreational area—surface water source (H)	5	5	1	11
A	USTs- Not yet upgraded or registered tanks (H)	5	5	1	11
A	USTs- Upgraded and/or registered - active tanks (L)	1	5	5	11
A	Above ground storage tanks (M)	3	5	3	11
A	Wells – Water supply (M)	3	5	3	11
A	Transportation Corridors- Freeways/state highways (M)	3	5	3	11
A	Transportation Corridors- Historic railroad right-of-ways (M)	3	5	3	11
A	Transportation Corridors- Road Right-of-ways (herbicide use) (M)	3	5	3	11
A	Transportation Corridors- Roads/ Streets (L)	1	5	5	11
A	Storm Drain Discharge Points (M)	3	5	3	11
A	Surface water - streams/ lakes/ rivers (L)	1	5	5	11
A	Wells – monitoring, test holes (L)	1	5	5	11
B5	Automobile- Car washes (M)	3	3	3	9
B5	Sewer collection systems- Comm/Indus (H, if in Zone A, otherwise L)	1	3	5	9
B5	Parking lots/malls (>50 spaces) (M)	3	3	3	9
B5	Septic systems - high density (>1/acre) (VH if in Zone A, otherwise M)	3	3	3	9
B5	Sewer collection systems- Residential (H, if in Zone A, otherwise L)	1	3	5	9
B5	Apartments and condominiums (L)	1	3	5	9
B5	NPDES/WDR permitted discharges (H)	5	3	1	9
B5	Recreational area—surface water source (H)	5	3	1	9
B5	USTs- Not yet upgraded or registered tanks (H)	5	3	1	9
B5	USTs- Upgraded and/or registered - active tanks (L)	1	3	5	9
B5	Wells – Water supply (M)	3	3	3	9
B5	Transportation Corridors- Freeways/state highways (M)	3	3	3	9
B5	Transportation Corridors- Historic railroad right-of-ways (M)	3	3	3	9
B5	Transportation Corridors- Road Right-of-ways (herbicide use) (M)	3	3	3	9
B5	Transportation Corridors- Roads/ Streets (L)	1	3	5	9
B5	Storm Drain Discharge Points (M)	3	3	3	9
B5	Surface water - streams/ lakes/ rivers (L)	1	3	5	9
B5	Wells – monitoring, test holes (L)	1	3	5	9
B10	Sewer collection systems- Comm/Indus (H, if in Zone A, otherwise L)	1	1	5	7
B10	Parking lots/malls (>50 spaces) (M)	3	1	3	7
B10	Septic systems - high density (>1/acre) (VH if in Zone A, otherwise M)	3	1	3	7
B10	Sewer collection systems- Residential (H, if in Zone A, otherwise L)	1	1	5	7
B10	Housing - high density (>1 house/0.5 acres) (M)	3	1	3	7
B10	Apartments and condominiums (L)	1	1	5	7
B10	Fire stations (L)	1	1	5	7
B10	Schools (L)	1	1	5	7
B10	NPDES/WDR permitted discharges (H)	5	1	1	7
B10	Recreational area—surface water source (H)	5	1	1	7
B10	USTs- Not yet upgraded or registered tanks (H)	5	1	1	7
B10	USTs- Upgraded and/or registered - active tanks (L)	1	1	5	7
B10	Wells – Water supply (M)	3	1	3	7
B10	Transportation Corridors- Freeways/state highways (M)	3	1	3	7
B10	Transportation Corridors- Historic railroad right-of-ways (M)	3	1	3	7
B10	Transportation Corridors- Road Right-of-ways (herbicide use) (M)	3	1	3	7
B10	Transportation Corridors- Roads/ Streets (L)	1	1	5	7
B10	Artificial Recharge- Injection wells (potable water) (L)	1	1	5	7
B10	Artificial Recharge- Injection wells (non-potable water) (M)	3	1	3	7
B10	Artificial Recharge- Spreading Basins (potable water) (L)	1	1	5	7
B10	Artificial Recharge- Spreading Basins (non-potable water) (M)	3	1	3	7
B10	Medical/dental offices/clinics (L)	1	1	5	7
B10	Veterinary offices/clinics (L)	1	1	5	7
B10	Surface water - streams/ lakes/ rivers (L)	1	1	5	7
B10	Wells – monitoring, test holes (L)	1	1	5	7
Unknown	Injection wells/ dry wells/ sumps (VH)	7	0		7
Unknown	Home manufacturing (H)	5	0	1	6
Unknown	Illegal activities/ unauthorized dumping (H)	5	0	1	6
Unknown	USTs- Non-regulated tanks (tanks smaller than regulatory limit) (H)	5	0	1	6
Unknown	USTs- Not yet upgraded or registered tanks (H)	5	0	1	6
Unknown	USTs- Upgraded and/or registered - active tanks (L)	1	0	5	6
Unknown	Above ground storage tanks (M)	3	0	3	6

WELL #1

ORIGINAL
File with DWRSTATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

No. 263148

Notice of Intent No. _____
Local Permit No. or Date Permit # 2430State Well No. 4N/23W-16C8
Other Well No. Permit # 2430

WATER DISTRICT

(1) OWNER: Name VENTURA RIVER COUNTY
Address 409 OLD BALDWIN RD.
City OJAI ZIP _____

(2) LOCATION OF WELL (See instructions):

County VENTURA Owner's Well Number _____

Well address if different from above _____

Township _____ Range _____ Section _____

Distance from cities, roads, railroads, fences, etc. _____

(12) WELL LOG: Total depth 600 ft. Completed depth 242 ft.
from ft. 0 to ft. Formation (Describe by color, character, size or material)0 - 80 COARSE SAND + GRAVEL, BOULDER
80 - 205 COARSE GRAVEL + SAND, BOULDERS
205 - 235 COARSE GRAINED GRAY SANDSTONE
235 - 280 COARSE GRAINED RED SANDSTONE
280 - 310 DARK GRAY SANDSTONE
310 - 350 FINE GRAINED BROWN SANDSTONE
350 - 440 BROWN SANDSTONE
440 - 470 HARD SILTSTONE, MEDIUM BROWN
470 - 489 MEDIUM GRAINED GRAY SANDSTONE
489 - 560 REDDISH BROWN SILTSTONE
560 - 600 LIGHT GRAY CLAYSTONE

(3) TYPE OF WORK:

New Well ☒ Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐Destruction ☐ (Describe
destruction materials and pro-
cedures in Item 12)

(4) PROPOSED USE:

Domestic ☒
Irrigation ☐
Industrial ☐
Test Well ☐
Municipal ☒
Other ☐
(Describe)

WELL LOCATION SKETCH

(5) EQUIPMENT:

Rotary ☒ Reverse ☐
Cable ☐ Air ☐
Other ☐ Bucket ☐

(6) GRAVEL PACK:

Yes ☒ No ☐ Size #5
Diameter of bore 28"
Packed from 242 to 55 ft.

(7) CASING INSTALLED:

Steel ☒ Plastic ☐ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
242'	0'	16"	1/4"

(8) PERFORATIONS:

From ft.	To ft.	Slot size
232'	152'	.080
132'	92'	.080

(9) WELL SEAL:

Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 55' ft.Were strata sealed against pollution? Yes ☐ No ☒ Interval _____ ft.Method of sealing SAND SLURRY

(10) WATER LEVELS:

Depth of first water, if known _____ ft.

Standing level after well completion 75' ft.

(11) WELL TESTS:

Was well test made? Yes ☒ No ☐ If yes, by whom? DRILLERType of test Pump Bailer ☐ Air lift ☐Depth to water at start of test 75 ft. At end of test 87 ft.Discharge 875 gal/min after 24 hours Water temperature _____Chemical analysis made? Yes ☒ No ☐ If yes, by whom? OWNERWas electric log made? Yes ☒ No ☐ If yes, attach copy to this reportWork started 12-10 1989 Completed 1-15 1990

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signed [Signature] (Well Driller)NAME ARROWHEAD WATER WELL DRILLING
(Person, firm, or corporation) (Typed or printed)Address 5243 WHITE CAPCity OXNARD ZIP 93035License No. 513681 Date of this report 2-12-90

COUNTY OF VENTURA
Department of Public Works

WATER WELL DRILLERS REPORT

Well Log: #2 well

Owner: V. R. C. W. D.

Address: 603 West 10th Ave

Total Depth of Well 256 Ft. Type of Drilling Equipment Rotary

Depth from Ground Surface

ft.	to	ft.
0	to	76
76	to	87
87	to	133
133	to	219
219	to	232
232	to	256
	to	
	to	
	to	
	to	
	to	

Formation (with details)

Boulders & Gravel
Boulders & Yellow Clay
Blue Shale & Boulders
Blue Shale
Blue Shale & Little Sand
Blue Shale

Casing Left in Well:

Length (ft)	Diam. (In.)	Type	Lbs./ft. or ga.	Seating Below G.S. (ft.)
<u>240 ft</u>	<u>16 in</u>	<u>Steel</u>	<u>54 lb.</u>	<u>240 ft</u>
	<u>10 ROWS 5-12"</u>			
	<u>TORCH CUT</u>			

Perforations:

Perforated	Type of Perforator	ft. to	ft.
<u>100</u>	<u>Antenna</u>	<u>10 rows</u>	<u>10 x 10"</u>
"		ft. to	ft.
"		ft. to	ft.
"		ft. to	ft.
"		ft. to	ft.
"		ft. to	ft.

COMPLETION NOTICE
DATED AUG. 17, 1958

ASSUMED
YEAR

Water Levels:

Depth Water First Encountered 26' ft.

Depth to Water Before Perforating 21 ft.

Depth to Water After Perforating ft.

Any Change in Water Level While Drilling

Well-pumping Test (24 hr. Minimum)

Date of Test Aug 17/1958 By Burr pump co.
Depth to Water when Test Began ft.
G.P.M. at Beginning Test ft.
Time to reach Maximum Drawdown hrs.
G.P.M. at Completion Test ft.
Drawdown at Completion Test 186 ft.
Length of Time Tested 48 hr hrs.

Was Gas Present in Water? no

General: Location: Describe or sketch on reverse hereof, or show on map.

Was Well Gravel-Packed? yes
Were any strata sealed against pollution? top 35 ft

Was a Surface Sanitary Seal Provided? yes

Strata Sealed top 35'

Well Drillers Statement:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signed Elwyn A. Taylor
By

Address R2 forest ave Gar Calif

TRIPLICATE
Retain this copy

WATER WELL DRILLERS REPORT

(Sections 7079, 7080, 7081, 7082, Water Code)

Do Not Fill In

THE RESOURCES AGENCY OF CALIFORNIA DEPARTMENT OF WATER RESOURCES

Nº 35645

State Well No. 4N/23W-16F4

Other Well No. WELL #3

(1) OWNER:

Name Ventura River County Water District
Address P. O. Box 595
Ojai, California 93023

(2) LOCATION OF WELL:

County Ventura Owner's number, if any #3
Township, Range, and Section
Distance from cities, roads, railroads, etc. 1000' west of Rice Rd.
40 ft. north of Hwy #150, Co. Honor Farm

(3) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Destroying ☐
If destruction, describe material and procedure in Item 11.

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:

Rotary ☒
Cable ☐
Other ☐

(6) CASING INSTALLED:

STEEL: OTHER:
SINGLE ☒ DOUBLE ☐

If gravel packed

From ft.	To ft.	Diam. in.	Gage or Wall in.	Diameter of Bore in.	From ft.	To ft.
0	220	16"	5/16	28"	0	225

Size of shoe or well ring:

Size of gravel: #5

Describe joint Collar & welded

(7) PERFORATIONS OR SCREEN:

Type of perforation or name of screen Louver

From ft.	To ft.	Perf. per row	Rows per ft.	Size in. x in.
70	200			1/8"

(8) CONSTRUCTION:

Was a surface sanitary seal provided? Yes ☒ No ☐ To what depth 50 ft.

Were any strata sealed against pollution? Yes ☐ No ☒ If yes, note depth of strata

From ft. to ft.

From ft. to ft.

Method of sealing cement slurry

(9) WATER LEVELS:

Depth at which water was first found, if known ft.

Standing level before perforating, if known ft.

Standing level after perforating and developing 38 ft.

(10) WELL TESTS:

Is pump test made? Yes ☒ No ☐ Location? Midway

Yield: 1200 gal./min. with 45 psi down after 8 hrs.

Temperature of water Was a chemical analysis made? Yes ☐ No ☒

Was electric log made of well? Yes ☒ No ☐ If yes, attach copy

(11) WELL LOG:

Total depth 296 ft. Depth of completed well 220 ft.

Formations: Describe by color, character, size of material, and structure

ft. to ft.

0' to 70' rock and clay

70 110 boulders

110 135 blue clay

135 220 sand and rocks

220' 296' sandy shale

SKETCH LOCATION OF WELL ON REVERSE SIDE

State of California
Well Completion Report
WCR Form - DWR 188 Submitted 09/26/2017
WCR2017-004575

Owner's Well Number #7 Date Work Began 07/05/2016 Date Work Ended 10/13/2016
Local Permit Agency Ventura County Water Resources
Secondary Permit Agency _____ Permit Number gwp-08011 Permit Date 06/30/2016

Well Owner (must remain confidential pursuant to Water Code 13752)

Name Ventura River Co Water District, Bert Rapp

Mailing Address 409 Old Baldwin Rd.

City Ojai State CA Zip 93023

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 409 Old Baldwin RD

APN 0110070035

City Ojai Zip 93023 County Ventura

Township 04 N

Latitude 35 25 55.03 N Longitude -119 17 47.53 W
Deg. Min. Sec. Deg. Min. Sec.

Range 23 W

Section 16

Dec. Lat. 34.4287686 Dec. Long. -119.2973551

Baseline Meridian San Bernardino

Vertical Datum _____ Horizontal Datum WGS84

Ground Surface Elevation 585

Location Accuracy 20 Ft Location Determination Method GPS

Elevation Accuracy 10 Ft

Elevation Determination Method GPS

Borehole Information

Orientation Vertical Specify _____

Drilling Method Downhole Rotary Hammer Drilling Fluid Air

Total Depth of Boring 165 Feet

Total Depth of Completed Well 160 Feet

Water Level and Yield of Completed Well

Depth to first water 103 (Feet below surface)

Depth to Static _____

Water Level 106 (Feet) Date Measured 10/06/2016

Estimated Yield* 200 (GPM) Test Type Pump

Test Length 24 (Hours) Total Drawdown 34 (Feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	145	Clay With Bolders
145	165	Red Claystone

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specifications	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	50	Conductor or Fill Pipe	Low Carbon Steel	Grade: ASTM A53	0.3125	30			
2	50	70	Conductor or Fill Pipe	Low Carbon Steel	Grade: ASTM A53	0.375	24			Interval 0 to 70
3	70	105	Blank	Stainless Steel	Grade: 304 Stainless Steel	0.25	16			Interval +1 to 105
3	105	145	Screen	Stainless Steel	Grade: 304 Stainless Steel	0.25	16	Louver	0.08	
3	145	160	Blank	Stainless Steel	Grade: 304 Stainless Steel	0.25	16			

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	60	Cement	10.3 Sack Mix		
60	165	Filter Pack	Other Gravel Pack	6x9	

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	50	42
50	165	24

Attachments

Well No. 7 Design 19 August 2016.pdf - Well Construction

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name JENSEN DRILLING COMPANY
Person, Firm or Corporation
1775 HENDERSON AVENUE EUGENE OR 97403
Address City State Zip
Signed electronic signature received 09/26/2017 340115
C-57 Licensed Water Well Contractor Date Signed C-57 License Number

DWR Use Only

--	--

Site Number / State Well Number

								N
--	--	--	--	--	--	--	--	---

Latitude Deg/Min/Sec

								W
--	--	--	--	--	--	--	--	---

Longitude Deg/Min/Sec

TRS:

APN: