

Well V817 Aquifer Test

Rose Valley, Inyo County

EASTERN SIERRA ENVIRONMENTAL GROUP, LADWP

December 1, 2024

Executive Summary

A constant-rate pumping test was conducted at Well V817 from June 24 to July 2, 2024. Groundwater levels were monitored in nearby monitoring wells V816, T889, and V832. The well was unable to sustain the target pumping rate of 720 gpm and an approximate analysis was performed on the recovery data. The result of 7,565 gpd/ft was comparatively lower than previous tests performed on this and nearby wells. V817 is located in a poor location for obtaining data representative of the aquifer and is unlikely to yield results characteristic of the regional aquifer.

Background

Rose Valley is located south of Haiwee Reservoir in Inyo County, California. LADWP acquired the land parcels with V817 and nearby monitoring wells in 1988. Well V817 was constructed in 1981 and monitoring well T889 was constructed in 2010 (figure 1).

Aquifer tests were performed on V817 in 1992 and 2009, the latter of which was also unable to sustain a constant pumping rate. Additional aquifer tests were performed on other wells in the region for other projects and studies (Rockwell, 1980; Moyle, 1977). Transmissivity values of previous tests in Rose Valley range from 10,000 to over 150,000 gpd/ft (Rockwell, 1980).

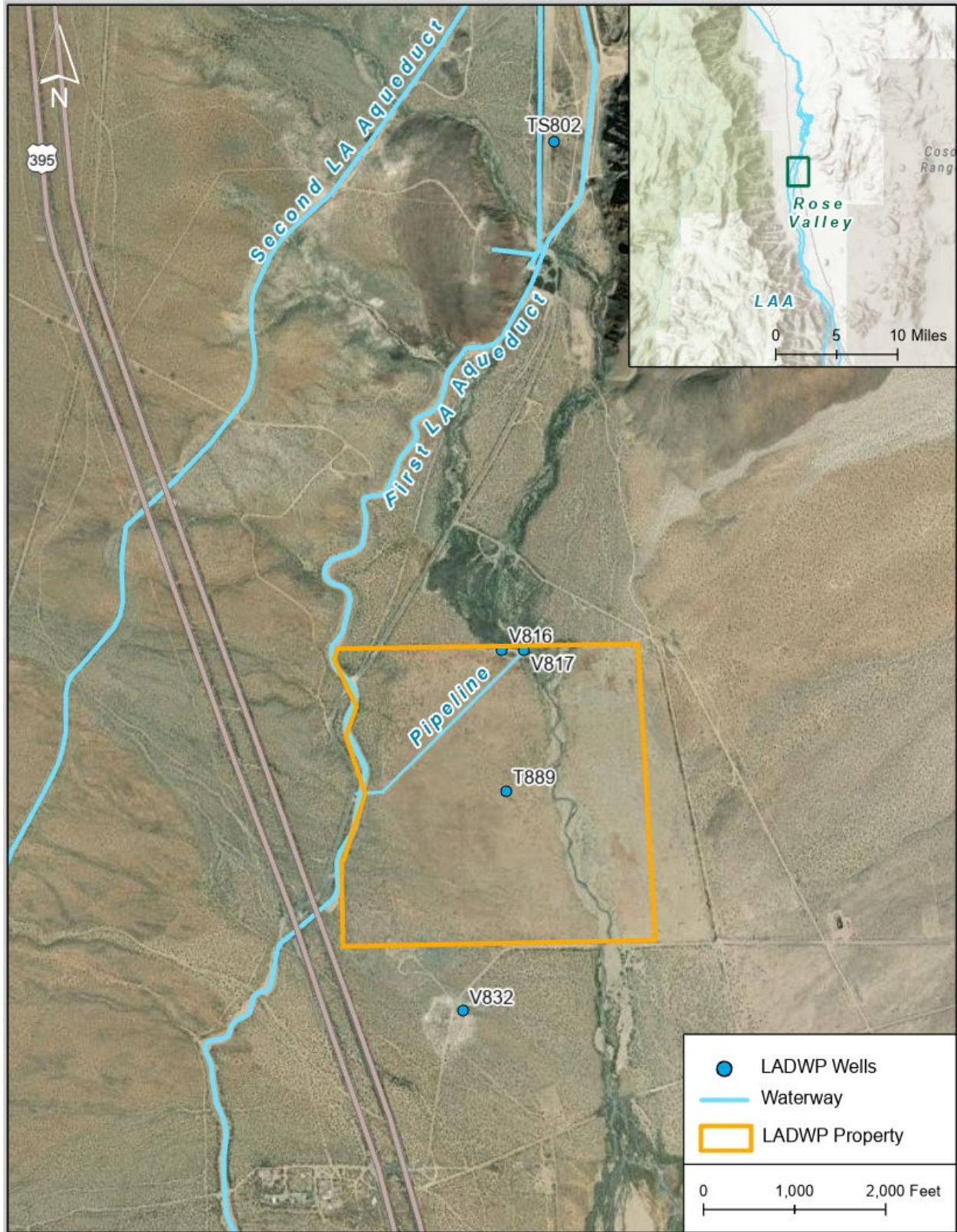


Figure 1 – V817 Pumping Test Monitoring Area in Rose Valley

Description of Wells

Table 1 summarizes the construction details of well V817. Table 2 summarizes nearby wells T889, V816, and V832.

Table 1 – Well V817 Construction Summary

Driller's Log	
Date Completed	9/20/1981
Driller	Layne-Western Company, Inc.
Method	Reverse Circulation Rotary
Initial Static Water Level (ft-bgs)	136
Total Depth (ft-bgs)	535
Final Diameter (in)	16
Casing	
Material	HSLA
Diameter (in)	16
Interval (ft-bgs)	0-290, 464-482
Screen	
Screen Type	Louver
Material	HSLA
Diameter (in)	16
Slot size (in)	.09375 (3/32)
Wall Thickness (in)	0.25 (1/4)
Interval (ft-bgs)	290-464

Table 2 – Rose Valley Area Well Information

	Total Depth (ft-bgs)	Screened Intervals (ft-RP)	Distance to V817 (ft)
T889	345	241-340	1,258
V816	200+	Unknown	195
V832	390	300-390	3,239

Aquifer Testing

The constant-rate aquifer test commenced at 1:30 PM on June 25, 2024 at a pumping rate of 830 gpm which could not be sustained and was reduced to 681 gpm by the conclusion of the test.

Pressure transducers were installed at Wells V817, V816, T889, and V832. Significant drawdown at V817 caused the groundwater level to fall below the transducer's measurement range on multiple occasions which necessitated manual readings being taken at V817 twice daily

throughout the test. Similarly, the groundwater level at Well T889 also dropped below the transducer’s range and was not known until after the test completion. Figure 2 shows the water levels before, during, and after the pumping test.

The record of data collected is presented in the zip folder “2024-06 Rose Valley Aquifer Test Data”.

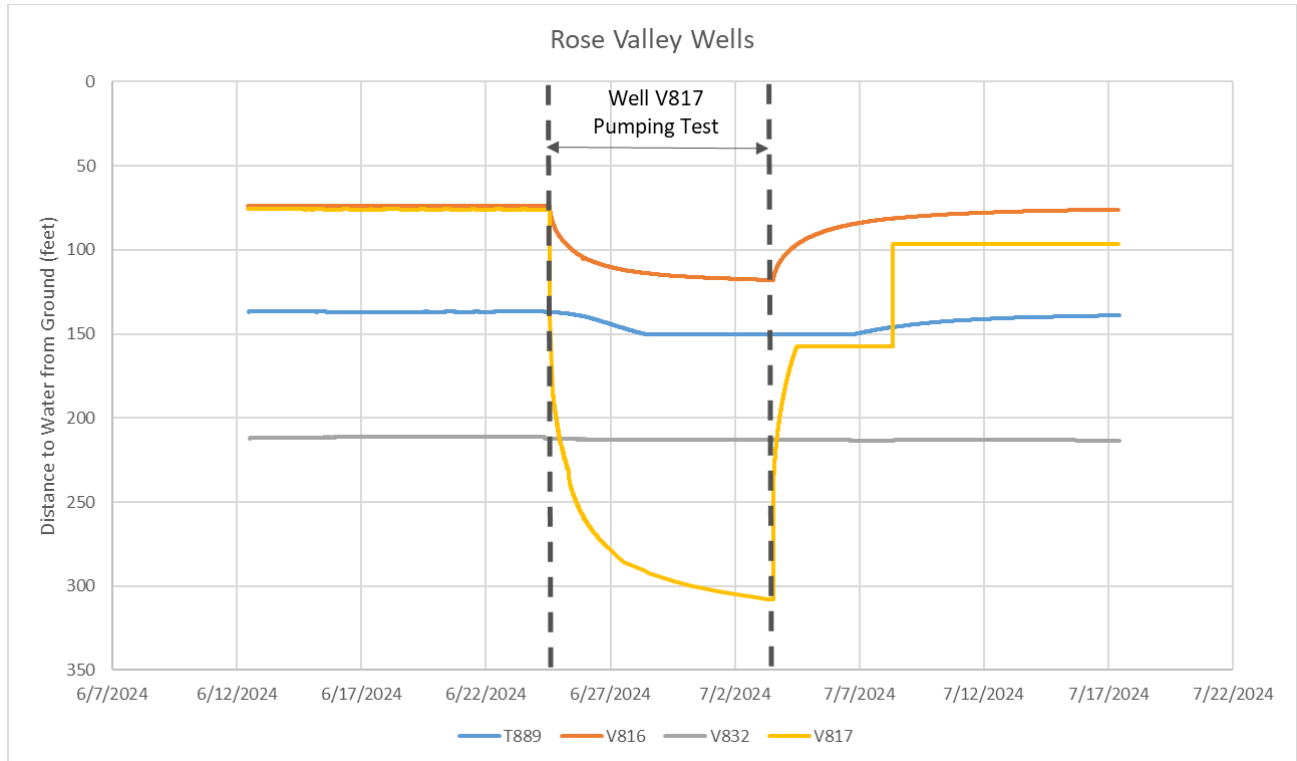


Figure 2 – Groundwater Levels during Test in Monitoring Wells before, during, and after V817 Pumping Test (6/24/24 to 7/2/24)

Discussion

Monitoring wells T889 and V832 are located too far from the pumping well zone of influence to record useful data. The range of the pumping rate of the aquifer test was too wide to adequately stress the aquifer for an extended period of time to produce data appropriate for a constant-rate analysis. The pumping rate varied approximately 20%, constant rate aquifer tests should not vary greater than 5% for reliable data (USBR, 1995).

However, an attempt at analysis was performed on the recovery data. The estimated transmissivity of 7,565 gpd/ft is approximate to the 1992 test which estimated 9,000 – 11,000 gpd/ft. Table 3 provides a summary of aquifer tests performed in Rose Valley.

Table 3 – Rose Valley Aquifer Tests

Well	Date	Transmissivity (gpd/ft)	Storativity	Pumping Rate (gpm)
V817	June 1992	9,000 - 11,000	0.0024	780
V817	March 2009	N/A	N/A	1,333 - 1,032
V817	April 2009	1,500	0.003	899 - 794
V817	June 2024	7,565	N/A	830 - 681
Rose Valley Ranch Well	1980	154,400	N/A	2,150
Southern California Energy Well	1980	73,300	N/A	1,170
Hay Ranch South Well	2007	1,239,000	0.0014	1,925

The wide variation of estimated transmissivity throughout Rose Valley is likely due to V817 being situated in a non-representative and hydrogeologically isolated location:

- The well is located on the edge of alluvial fans, which typically have lower transmissivities than valley fill.
- It's located in a channel, which, if is expressed as a paleochannel in the stratigraphy, will have differing aquifer properties from the surrounding valley fill.
- A fault may be located in the channel, between wells V816 and V817, which may affect groundwater flow (Figure 3; Stinson, 1977).
- The condition of the well is poor with high levels of tuberculation. A 2007 video log showed the well highly tuberculated and in need of rehabilitation, which has not been performed.

To obtain aquifer characteristics representative of the study area, a well not located in the channel and distanced from potential faults should be used. If not possible, the well should be rehabilitated prior to a future aquifer test and the pumping rate monitored to remain constant.

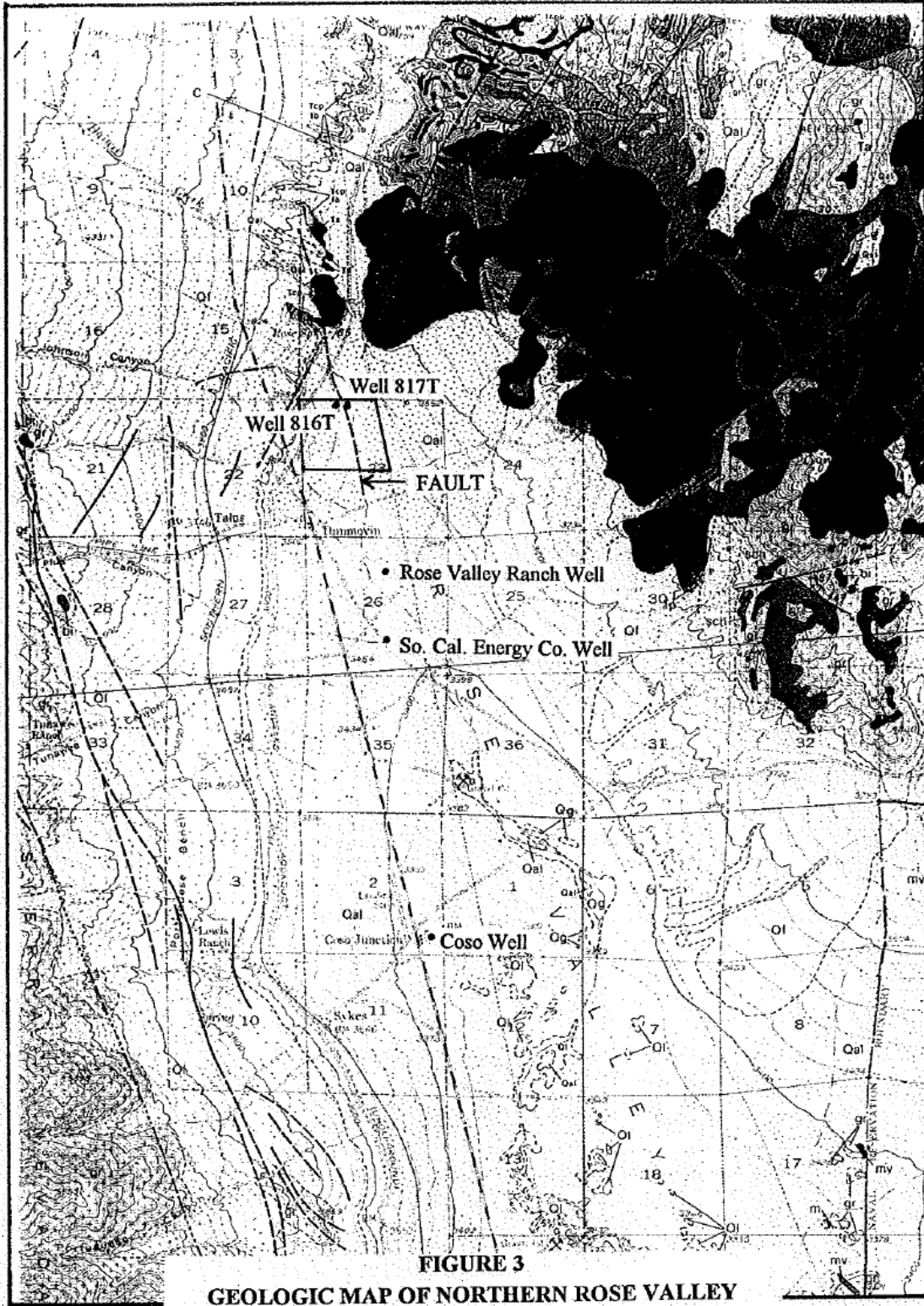


Figure 3 – Geologic Map of Northern Rose Valley

References

- Moyle, W. R., Jr. 1977. Summary of Basic Hydrologic Data Collected at Coso Hot Springs, Inyo County, California. U.S. Geological Survey Open-File Report 77-485.
- Rockwell International. 1980. Geology and Hydrology Technical Report on the Coso Geothermal Study Area. Prepared in support of the BLM COSO Geothermal Development Environmental Statement.
- Stinson, M. C. 1977. Geology of the Haiwee Reservoir 15' Quadrangle, Inyo County, California. California Division of Mines and Geology Map Sheet 37. Scale 1:62500.
- U. S. Bureau of Reclamation. 1995. Ground Water Manual A Water Resources Technical Bulletin. U.S. Bureau of Reclamation Report PB96-207394.

Attachment 1 - V817 Driller Log

Do not fill in

ORIGINAL
File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

No. 23682

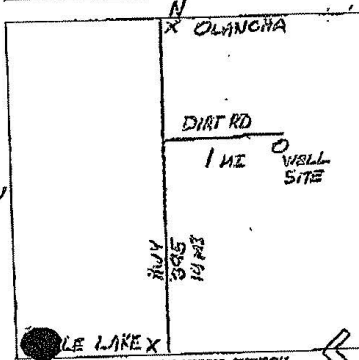
Notice of Intent No. 159679
Local Permit No. or Date

State Well No.
Other Well No.

(1) OWNER: Name: Phil Hennis
Address: P.O. Box 81
City: Olancha, CA Zip: 93549
(2) LOCATION OF WELL (See instructions):
County: INYO Owner's Well Number:
Well address if different from above: Rose Valley Ranch Co.
Township: 21 S Range: 37 E Section: 23
Distance from cities, roads, railroads, fences, etc.: 14 mi. north of
Little Lake, CA, 1 mi. east of Hwy 395

(12) WELL LOG: Total depth 535 ft. Depth of completed well 482 ft.

from ft.	to ft.	Formation (Describe by color, character, size of material)
0	10	Top Soil & Boulders
10	44	Gravel & Boulders
44	73	Gravel & Boulders
73	76	Fine Sand w/some clay
76	78	Small boulders gravel & sand
78	80	Boulders
80	82	Rock & Gravel
82	90	Boulders
90	100	Rock & Gravel
100	118	Rock & Gravel
118	125	Fine sand & gravel
125	127	Rock & Gravel
127	141	Sand & Gravel w/some clay
141	148	Sand & Gravel
148	170	Boulders, sand & gravel
170	228	Small boulders, gravel & sand
228	235	Rock & gravel
235	246	Rock w/some gravel
246	297	Gravel, sand & some clay
297	306	Rocky, gravel & sand
306	318	Gravel & sand w/small boulders
318	348	Boulders & Brown sandy clay
348	352	Gravel & sand
352	388	Small boulders, gravel & sand
388	405	Fine Sand
405	407	Brown & Blue Clay
407	415	Gray clay
415	428	Small boulders, gravel & fine sand
428	470	Course sand & gravel
470	510	gray clay
510	520	Sandy blue-gray clay
520	530	Blue clay
530	535	Gray clay



(3) TYPE OF WORK:
New Well Deepening
Reconstruction
Reconditioning
Horizontal Well
Destruction (Describe destruction materials and procedures in item 12)
(4) PROPOSED USE:
Domestic
Irrigation
Industrial
Test Well
Stock
Municipal
Other

(5) EQUIPMENT:

Rotary <input type="checkbox"/>	Reverse <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Size: 9/8
Cable <input type="checkbox"/>	Air <input type="checkbox"/>	Quantity of boom: 260	
Other <input type="checkbox"/>	Bucket <input type="checkbox"/>	Shutter <input type="checkbox"/>	Size: 482

(6) GRAVEL PACK:
Type of perforation or size of screen:
From ft. To ft. Dia. in. Gauge or Wall. From ft. To ft. Size

From ft.	To ft.	Dia. in.	Gauge or Wall	From ft.	To ft.	Size
0	290	16	1/4	290	482	3/32
464	482	16	1/4			

(7) CASING INSTALLED:
Steel Plastic Concrete

(8) PERFORATIONS:
Type of perforation or size of screen:
From ft. To ft. Dia. in. Gauge or Wall. From ft. To ft. Size

From ft.	To ft.	Dia. in.	Gauge or Wall	From ft.	To ft.	Size
0	290	16	1/4	290	482	3/32
464	482	16	1/4			

(9) WELL SEAL:
Was surface sanitary seal provided? Yes No If yes, to depth 45 ft.
Were state sealed against pollution? Yes No Interval _____ ft.
Method of sealing: Neat cement

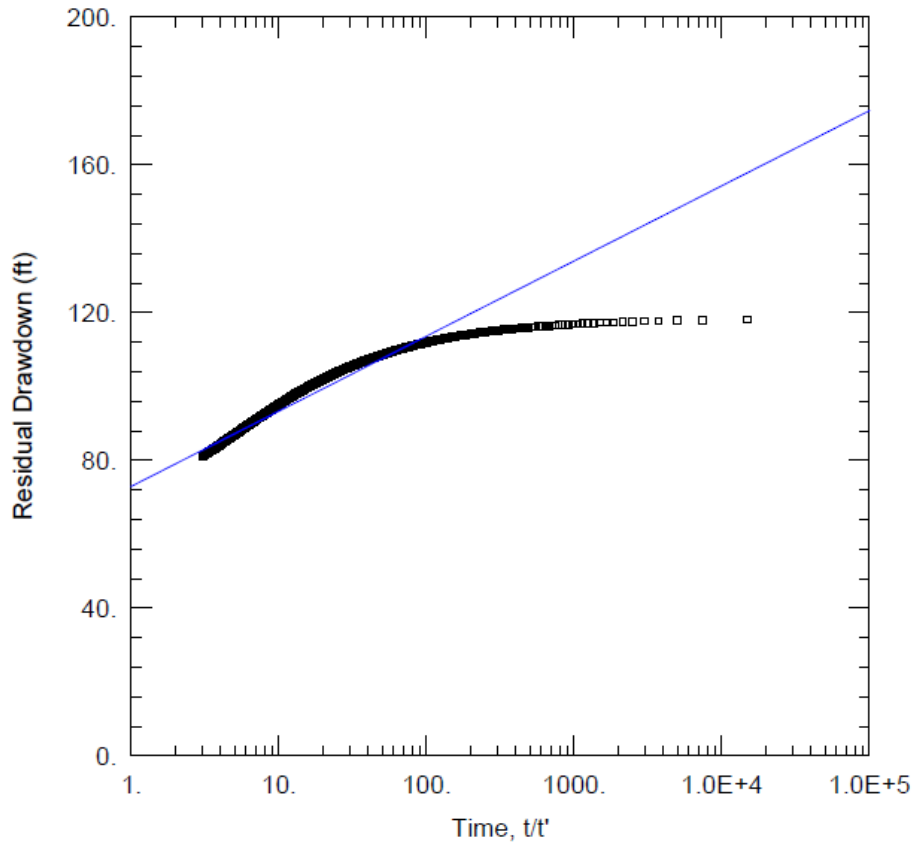
(10) WATER LEVELS:
Depth of first water, if known _____ ft.
Standing level after well completion: 136 _____ ft.

(11) WELL TESTS:
Was well test made? Yes No If yes, by whom: Layne-Western
Type of test: Pump Buffer Air lift
Depth to water at start of test: 125 ft. At end of test: _____ ft.
Discharge: 1500 gal/min after 3 hours. Water temperature: 64° F
Chemical analysis made? Yes No If yes, by whom? _____
Electric log made? Yes No If yes, attach copy to this report

Work started: 9-1-81 Completed: 9-20-81

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: LAYNE-WESTERN COMPANY, INC.
Address: 1600 East California Ave.
City: Bakersfield, CA Zip: 93307
License No.: 407409 Date of this report: 9-28-81

Attachment 2 - Recovery Analysis



<u>WELL TEST ANALYSIS</u>					
Data Set: <u>\\...\Rose Valley Aquifer Test V817 Mark.aqt</u>					
Date: <u>11/18/24</u>			Time: <u>12:28:34</u>		
<u>PROJECT INFORMATION</u>					
Company: <u>LADWP</u>					
Test Well: <u>V817</u>					
<u>AQUIFER DATA</u>					
Saturated Thickness: <u>388</u> ft			Anisotropy Ratio (Kz/Kr): <u>1</u>		
<u>WELL DATA</u>					
<u>Pumping Wells</u>			<u>Observation Wells</u>		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
V817	0	0	□ V817	0	0
<u>SOLUTION</u>					
Aquifer Model: <u>Confined</u>			Solution Method: <u>Theis (Recovery)</u>		
T = <u>7564.5</u> gal/day/ft			S/S' = <u>0.0002584</u>		