

STATE WATER RESOURCES CONTROL BOARD

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JAN 14 1991

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January 10, 1991

In Reply Refer
To: 331:LLE:28624

Mr. Kevin M. O'Brien
Attorney-at-Law
555 Capitol Mall, Tenth Floor
Sacramento, CA 95608

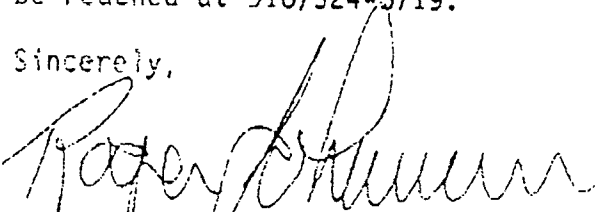
Dear Mr. O'Brien:

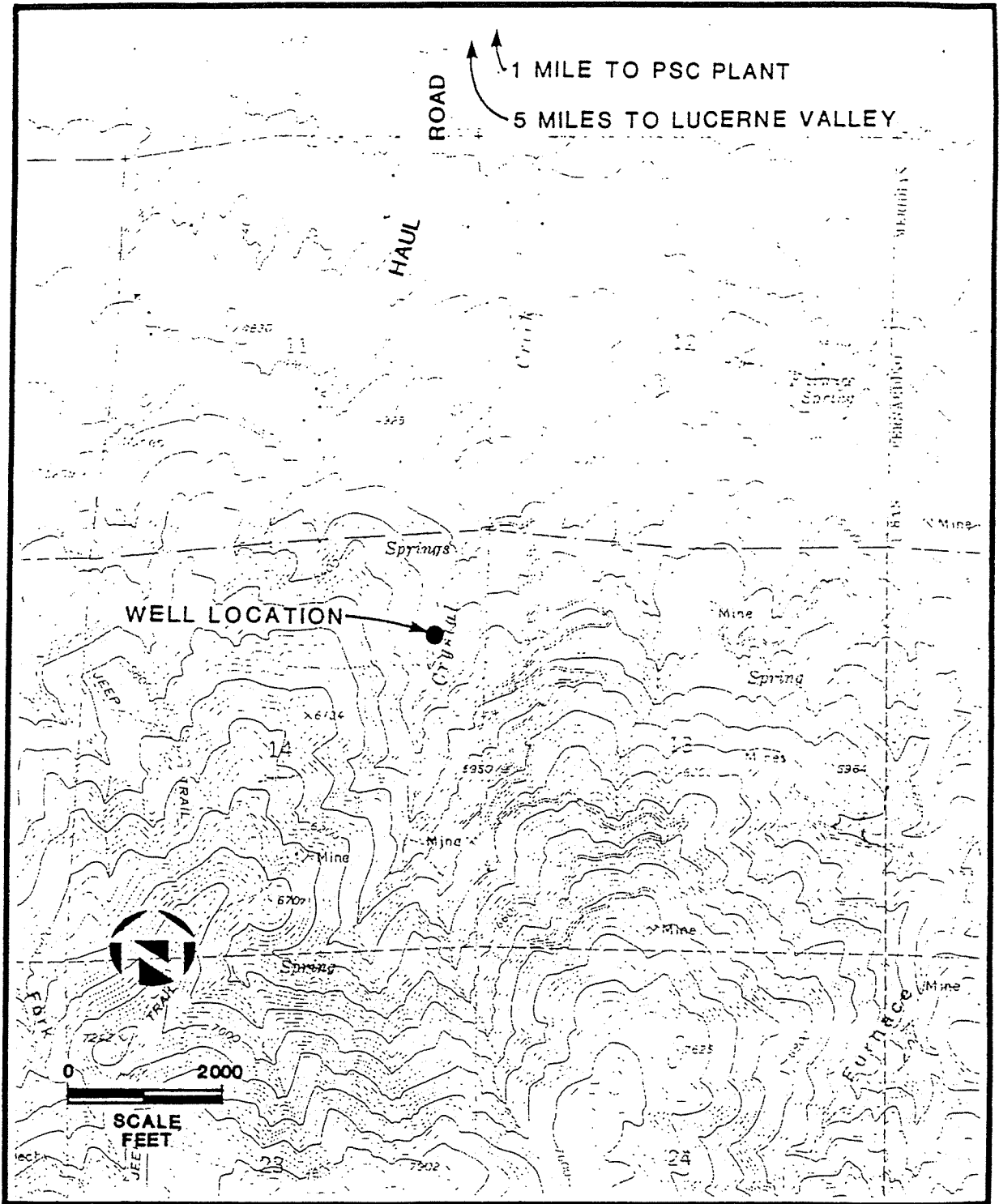
APPLICATION 28624 OF PLUESS-STAUFER (CALIFORNIA), INC., CRYSTAL CREEK IN
SAN BERNARDINO COUNTY

On November 20, 1990, you requested further written clarification of the Division of Water Quality and Water Rights' (Division) position regarding Pluess-Staufer's diversion from its recently drilled well in Crystal Creek Canyon. The report submitted by Pluess-Staufer's consultant, James M. Montgomery Consulting Engineers, Inc., indicates that the well was drilled and constructed in compliance with the requirements set forth in Walter G. Pettit's October 27, 1989 letter. The Division's staff geologist, Julie Laudon, has reviewed the report and, based on her review, the Division concurs that a permit is not necessary for the diversion.

If we can be of further assistance, please telephone me at 916/445-9552. The staff person currently working on this issue is Luann Erickson, and she can be reached at 916/324-5719.

Sincerely,


for Jesse M. Diaz, Chief
Division of Water Quality
and Water Rights



PLUESS-STAUFER (CA), INC.
 WELL LOCATION MAP
 FIGURE 1



333 North Madison Avenue
P.O. Box 7009 Pasadena
California 91109-7009

JMM James M. Montgomery
Consulting Engineers, Inc.



September 25, 1990

Walter G. Pettit, Chief
Division of Water Rights
State Water Resources Control Board
Post Office Box 2000
Sacramento, CA 95810

Subject: Application to appropriate No. 28624 of Pluess-Staufer (CA), Inc.

Dear Mr. Pettit:

In reference to the above application, we have monitored the construction and testing of a new water well in Crystal Creek Canyon performed by McDougall's Well Drilling of Lucerne Valley, California. The new water well, "new well", was constructed to replace an existing well, "old well", located adjacent to the new well.

The new well was constructed as a result of a decision by the staff of the State Water Resources Control Board that the well diverted, at least in part, surface waters of Crystal Creek. In a letter to Kevin O'Brien from Division of Water Rights dated October 27, 1989, you stated that "If a new well is to be drilled that only extracts percolating groundwater, the well should be perforated only in the bedrock unit, and the annulus should be sealed through the unconsolidated sediment and landslide deposit and into the bedrock unit." Further, in a letter to Mr. O'Brien dated April 6, 1990, you directed that a registered geologist be present during the drilling of the new well and that the geologist "submit to this Division an independent report certifying that the well diverts percolating groundwater and not water from a subterranean stream."

Background

Pluess-Staufer (California), Inc. (PSC), conducts mining activities in the San Bernardino Mountains approximately 8 miles north of the community of Lucerne Valley, California. A reliable water supply is needed for dust control on the mine haul road leading to the quarry. Historically, water was supplied from a well located in the Crystal Creek Drainage (Figure 1).

In October, 1989, the staff of the State Water Resources Control Board - Division of Water Rights determined that PSC's existing well diverts water in part from surface flows of

Crystal Creek, and therefore a permit was required for water extracted from the well. The State Board outlined conditions under which a well would be extracting percolating groundwater, for which a permit would not be required.

In July, 1990, PSC retained McDougall's Well Drilling of Lucerne Valley, California to construct a new well adjacent to the old well which would produce only percolating ground water. PSC also asked James M. Montgomery, Consulting Engineers, Inc. (JMM) to ensure that the well was constructed in accordance with the State Board's requirements for a new well which would produce only percolating groundwater.

The construction of the new well in Crystal Creek was closely monitored by registered geologists. JMM geologists prepared a lithologic log of drill cuttings and were present during drilling, casing installation, and sealing of the well. This letter provides a summary of drilling and testing activities, as-built drawing of the new well, lithologic log and Water Well Driller's Report for the new well.

Description of Drilling Activities

Drilling activities began on July 9, 1990, with the installation of a 14-inch diameter steel conductor casing installed to a depth of 22 feet. After placement of the conductor casing, a 12-inch diameter borehole was drilled using the air rotary method with foam to a depth of 84 feet. On July 11, while drilling at a depth of 84 feet, the drilling contractor experienced lost circulation in 12-inch borehole. Loose material in the borehole could not be returned to the ground surface.

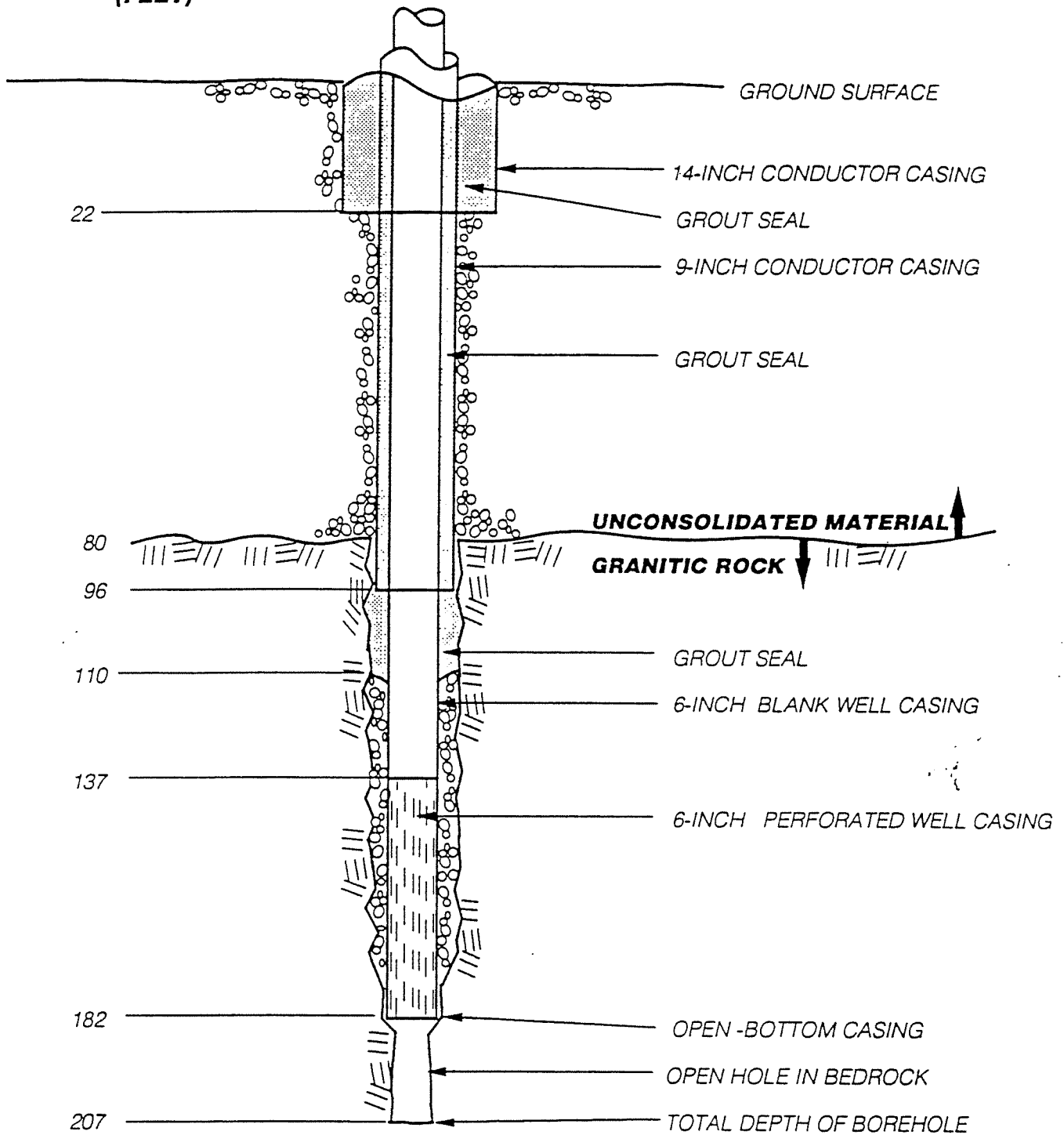
On July 13, 1990, the lost circulation problem was alleviated by pushing a 9-inch blank steel casing below 84 feet while drilling inside with an 8 3/4-inch bit. The 9-inch casing was advanced to a depth of 96 feet using this method. At 96 feet, drilling conditions prevented further advancement of the 9-inch casing. Open-hole drilling continued inside of the 9-inch casing with the 8 3/4-inch bit to a depth of 174 feet. At this depth, sloughing material and lost circulation again prevented further advancement of the drilling. Drilling was continued by pushing a 6-inch steel casing down through the 9-inch casing with a 5 5/8-inch drill bit inside the 6-inch diameter casing. Due to difficult drilling conditions, the 6-inch casing could only be advanced to a depth of 182 feet. Below 182 feet, an open hole was drilled to a depth of 207 feet. The as-built configuration of the completed well is depicted in Figure 2.

On July 20, 1990, grouting operations were initiated to seal off the shallow unconsolidated materials above the granitic bedrock. A tremie pipe was inserted down the annular space between the 9 and 6-inch casings to a depth of 107 feet. Below this depth, native materials had partially sloughed into the annular space between the 8 3/4-inch borehole and the 6-inch casing.

A sand/cement slurry was pumped through the tremie pipe, and the annular space between the 6-inch and 9-inch casings was completely filled with grout. Grout totaling approximately 135 cubic feet was pumped into the hole. The calculated volume of grout that is required to fill the annular space between the 9 and 6-inch casings is approximately 25 cubic feet. The fact that 135 cubic feet of grout was required indicates that a very significant amount of grout moved down into the sloughed native materials, and also moved outward to fill the

**DEPTHS FROM
GROUND SURFACE
(FEET)**

**ITEM
DESCRIPTIONS**



NOT TO SCALE

PLUESS-STAUFER (CA), INC.
AS-BUILT WELL DETAILS
FIGURE 2

JMM



lateral fractures in the granitic rock between 96 and 110 feet. Based upon the volume of grout pumped, it is the opinion of the undersigned that the materials in the well annulus are grouted down to a depth of at least 110 feet.

Abandonment of the Old Well

The old well was sealed with a mixture of bentonite hole plug and sand. A cement cap was poured into the old 6-inch casing from a depth of 6 feet to within 18 inches of the surface. The ground surface around the old well was then leveled to the existing grade.



Testing of the New Well

After completion of well construction activities, the well was developed by air-lifting water from the well until the water produced from the well was clear and free of silt and sand.

After development of the well, a 15 horsepower submersible pump was lowered in the well for pump testing. Prior to pumping, the static water level was measured at 85 feet below ground level. The well was pumped at a rate of 160 gallons per minute (gpm) for 15 minutes, and the pumping water level in the well was measured 168 feet, a drawdown of 83 feet. The well was tested for a period of 8 hours at a pumping rate of 100 gallons per minute, and after 8 hours the pumping water level stabilized at a depth of 135 feet below ground level, a drawdown of 50 feet.

Summary

The new well in Crystal Creek was designed and constructed specifically so that it produces only percolating ground water. As detailed in this letter the new well is perforated only in granitic bedrock, and is completely sealed in the overlying unconsolidated deposits. Thus, the new well produces only percolating ground water, and does not require a permit from the State Water Resources Control Board. Attached to this letter is a lithologic log prepared by a registered geologist and the Water Well Driller's Report.

Please feel free to call us if you have questions or comments.

Victor E. Harris
Supervising Hydrogeologist
C.E.G. 1363

Karl H. Wiebe
Vice President
C.E.G. 435

VEH:lch

Attachments

Lithologic Log
Water Well Driller's Report

<u>Depth of Individual Formation Sample (feet)</u>	<u>Sample Description</u>
20	Sand and Gravel. Mixed material consisting of limestone (marble), metamorphic and granitic rock. Some particles are subrounded. About 10-20% sand, remainder is pebbles and rock fragments.
26	Sand and Gravel. Mostly granitic and metamorphic rock with small percent limestone. About 60-percent sand, with rock fragments to 1/2-inch diameter. Some material is rounded.
32	Sand and Gravel. Similar to above. About 10-percent subrounded limestone and about 30-percent subangular granitic and metamorphic sand-sized material. Rock fragments to 1/2-inch diameter.
38	Sand and Gravel. Similar to above, consisting of rock fragments to 1-inch diameter (subangular). Some large limestone fragments. Estimate 10-percent limestone, 45-percent granitic, 45-percent metamorphic material. Trace of clay.
44	Sand and Gravel. As above, large material about 1/2-inch average diameter. Estimate 60-percent metamorphic, 30-percent granitic, 10-percent limestone. Limestone clasts are rounded. Metamorphic material is fine-grained, mafic, with some feldspar. Granitic material is more coarse-grained, with larger pink feldspar crystals.
50	Sand and Gravel. Primarily pebble-sized subangular metamorphic and granitic clasts. About 10-percent subrounded limestone.
56	Sand and Gravel. As above with more sand, and a trace of clay.
62	Sand and Gravel. As above, except generally finer (sand-sized) particles, and a trace of clay.

Depth of Individual Formation
Sample (feet)

Sample Description

68	Sand and Gravel. Primarily coarse sand to pebble-sized metamorphic and granitic clasts. Percentage of limestone decreases. Some clasts are rounded.
74	Granite (?). Fragments are primarily grey granitic rock with large pink feldspar crystals. About 2% of sample is limestone or metamorphic rock (some of which is rounded). Metamorphic rock and limestone may have sloughed from above.
80	Granite. Angular rock fragments to 2-inch diameter. Granite is grey, and consists of fine-grained mafic minerals with larger crystals of potassium feldspar.
85	Granite. Angular grey granite rock fragments. Coarse-grained crystals of quartz and potassium feldspar in fine-grained matrix of hornblende(?) and biotite.
90	Granite. As above.
95	Granite. As above, angular rock fragments are generally sand to pebble-sized.
120	Granite. As above, large angular rock fragments to 2-inch diameter.
135	Granite. As above, except with pieces of greenish-grey clay (fault gouge).
140	Granite. Grey; granite consists of large quartz and potassium feldspar crystals in matrix of finer-grained mafic minerals.
145	Granite. As above, angular rock fragments are mostly sand-sized. Trace of clay (fault gouge).
150	Granite. Large angular rock fragments, no clay.
160	Granite. As above.
170	Granite. As above.
170-207	Granite. As above.

Complete a separate notice for each well

STATE OF CALIFORNIA—THE RESOURCES AGENCY
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

Acceleration Number

State Well Number

Please do not mark in the above space

FIRST NOTICE

GROUND WATER EXTRACTATIONS

(Pursuant to Part 5, Division 2 of the Water Code)

Item

1. Name of person filling this notice Pluess - Stauffer California Inc.
Address P.O. Box 825 Lucerne Valley Ca 92356
Street address or P. O. Box number City State

2. Name of person extracting ground water, if different than item 1 Same
Address _____ State _____

3. Names and addresses of other persons claiming an interest in or a right to extract water from this well
None

WELL LOCATION

4. Owner's designation of well Plant Site Well 5. County San Bernardino
Name and/or Number

6. Describe location of well (a) to the nearest 40-acre quarter section or (b) by reference to streets or local landmarks. A complete street address is acceptable.

(a) SW ¼ of NW ¼, Section 1, Township 3N, Range 1W, S.B. B.&M.

(b) 200 FT E/O Crystal Creek Road, 1700 FT S/O AT+SF RR Tracks,
1200 FT S/O Pluess-Stauffer Plant, Thorn, Ca

Location of well should be indicated by sketch in the space provided in item 22.

WATER USE

7. Describe the Place of Use: (If sketch is required please use space under item 22.)

Highroad

8. Quantity and Use of water extracted and method used in determining quantity for the following calendar years. (Extractions prior to preceding 10 years not required.)

Calendar year	EXTRACTATIONS		USE	
	Annual extractions in acre-foot or <u>GALLON</u> specify unit	Method of measurement or of estimates (Specify)	When use is for irrigation Crops served	When use is other than irrigation Natures and extent of use, i.e., population, products manufactured, number and kind of stock watered
1988	<u>1,668,100</u>	<u>Meier</u>		<u>Road Dust Control</u>
19				
19				
19				
19				
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Complete a separate notice for each well

STATE OF CALIFORNIA—THE RESOURCES AGENCY
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

Registration Number
State Well Number

Please do not mark in the above space

FIRST NOTICE

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