

BEFORE THE DIVISION OF WATER RIGHTS
DEPARTMENT OF PUBLIC WORKS
STATE OF CALIFORNIA

In the matter of Application Number 3575
of Bertram W. Jack to appropriate from an
unnamed canyon, tributary of Hog Canyon
(also commonly known as Wildwood Canyon)
in San Bernardino County, for agricultural
and domestic purposes.

DECISION NO. 3575 -- D 52

Decided May 19, 1925.

APPEARANCES AT HEARING HELD MARCH 27, 1924.

For Applicant:	Anderson and Anderson by J. A. Anderson
For Protestant:	F. C. Finkle
Examiner:	Edward Hyatt, Jr., Acting Chief of Division of Water Rights.

OPINION

This application is for the appropriation of water from an unnamed canyon, also commonly known as Wildwood Canyon in San Bernardino County. It proposes an appropriation of 0.62 cubic foot per second of direct diversion for agricultural and domestic purposes.

This application was completed in accordance with the Water Commission Act and the requirements of the Rules and Regulations of the Division of Water Rights, and being protested was set for a public hearing at the Supervisor's room of the County Court House, San Bernardino, on March 27, 1924, at 3:00 o'clock P.M. Of this hearing applicant

and protestant were duly notified and their representatives introduced testimony for and against the granting of the application respectively.

The protest of the Yucaipa Water Company, the only protestant, was filed January 14, 1924. It is based upon a claim of right to appropriate all the water which is in, on, or under the South half of the Northeast quarter of Section 8 and the Southwest quarter of the Northwest quarter of Section 9, T 2 S, R 1 W, S.B.B.&M.; that one of its wells from which it obtains an important portion of its supply is located in Wildwood Canyon on the Southwest quarter of the Northwest quarter of Section 8, above mentioned; that if any water is diverted by the applicant from its present channel it will reduce the protestant's water supply at the well, as the natural underground channel from the applicant's proposed point of diversion is in close proximity to the well.

The protestant company bases its water right on the terms of a grant deed and also on the fact that it has yearly since 1913 taken water from the well during the entire irrigating season, except during the year 1923 when plenty of gravity water was available.

The protestant company claims that in the irrigation season of 1923, 0.40 cubic foot per second was taken from the well, yielding approximately 104 acre feet, which approximates the amount used in other seasons; that the water is used in conjunction with other water to irrigate 80 acres situated in Sections 6 and 7, T 2 S, R 1 W, S.B.B.&M. which area could not otherwise be supplied without diminishing the supply used elsewhere and thereby reducing the productivity of the crops.

The applicant answers the protest by denying the protestant's

statements and affirms that Wildwood Canyon has a very extensive watershed which is capable of producing an underground flow many times in excess of the amount drawn from the underground channels of Wildwood Canyon by the protestant's well, or than has been taken from the well by the protestant in the past; that the stream from which the applicant proposes to divert is in a small canyon and flows quite a distance across applicant's property and that the water in the stream is insignificant in comparison with the total sources of the underground water supply of Wildwood Canyon and that the water from the stream can be diverted as proposed without affecting the well and without materially diminishing the underground flow of Wildwood Canyon.

The stream from which the applicant proposes to divert rises at the lower end of a little saucer shaped valley, being an alluvial fill of 400 or 500 acres in area. It comes to the surface in a cienega a little above a very marked reef of bed rock in close proximity to the east line of the applicant's property, the exact point at which the water rises varying somewhat with the quantity of flow. From this source the water flows in a north-easterly direction between banks which are close together and consist of ledges or reefs of bedrock, at short distances apart filled in with debris that has run down the hillsides, a distance of about one-half mile to the junction of the South Fork with the main canyon of Wildwood Creek where the South Fork Canyon widens out considerably.

The water flows past the last visible ledge of bedrock out into the sand near the mouth of the canyon and there sinks into a loose

sand fill. The surface of the wash is not very wide but it cuts down a couple of feet into the old canyon bottom. The water sinks at a point which is near the junction of the bedrock banks of the two canyons.

From the junction of the two canyons down to Wildwood Well is a broad sandy wash, on the south side of which bedrock outcroppings are seen at different points. On the north side of Wildwood Canyon are numerous small canyons extending back from the main canyon a short distance at the foot of which are small areas of bottom land on which hay has been raised.

This main canyon, which is about five or six hundred feet wide, slopes toward the west and is deeply cut into the alluvium.

There is no continuous stream in the North Fork of Wildwood Canyon, commonly called "Water Canyon", although water flows in the winter time immediately after a storm.

In 1909 or 1910, five wells were drilled across Wildwood Canyon about three quarters of a mile below the junction of the North Fork and the South Fork. These wells extended across the canyon at intervals of 75 to 100 feet. Water was encountered in but two of these wells. The depth to bedrock in the well producing the most water was 125 feet and in the other the depth was 85 feet. Pumping tests resulted in the abandonment of the more shallow well for direct pumping purposes but a connection by a tunnel 75 feet in length was made to the deeper well or what is now known as Wildwood Well. From this Wildwood well and the connecting tunnel the present supply is obtained.

Mr. Dessery, engineer for the applicant, assumes a mean rainfall of 30 inches on a watershed of approximately 4200 acres above the

Wildwood Well. He bases this mean rainfall on the precipitation for a nine year period at Oak Glen which is three miles northeast of the center of the Wildwood watershed, the record for Oak Glen being 32.34 inches at an elevation of 4844. As the area is fairly well wooded he assumes transpiration losses to be 20% of the precipitation. He assumes that 50% of the rainfall is lost as storm water and 10% for other probable losses, leaving 20% of the estimated 30 inches or 2100 acre feet to reach the gravel area above the Wildwood pumping plant. He declares this figure to be conservative since the runoff of the Little San Geronio Watershed which results in an underground water supply is 23% of the rainfall and a 14 year mean underground water supply of Mill Creek, which is several miles northeast of Wildwood, is 36% of the precipitation. He states that if a mean of 6 miners inches is taken for a fair flow of the South Fork stream for the 6 months irrigation season, the gravels above the Wildwood well will suffer an estimated loss of 43 acre feet of replenishing waters, or 2% of the estimated probable yield of the total watershed area, as there can be no question that the South Fork waters contribute to the underflow in the main Wildwood Canyon.

He states that the greatest output of North Fork (Water Canyon) and Wildwood well was 186.1 acre feet in 1923 and this is but 8.9% of the total estimated yield of the combined watershed and that the Wildwood well and tunnel undoubtedly have a capacity of greater yield than the maximum output for 1923 which was 105.4 acre feet as is evidenced by a maximum drawdown of only 20 feet. He concludes with the statement that "it does not appear that the proposed application to divert the waters

of the South Fork will appreciably affect the output of the Wildwood well."

Mr. Finkle, engineer for the protestant, submits data relative to the five wells drilled in Wildwood Canyon and information attempting to prove that the amount of water diverted by the tunnel from the North Fork of the Wildwood Canyon decreased the yield of the Wildwood well by an amount equal to that so diverted and that similarly if the applicant diverted water from the South Fork of Wildwood Canyon the same effect in the protestant's supply from the Wildwood well would result. He claims that the cross section was fully explored and that the wells and tunnel intercept any underground waters which reach this point.

In his water supply study he shows the area of the Wildwood watershed above the well to be 7.24 square miles or 4630 acres. From the precipitation records at Redlands, Crafton, South Mountain Water Company pumping plant in Yucaipa Valley, Beaumont, Oak Glen and Yucaipa townsite extended by interpolating from the record at San Bernardino beginning with the season 1870-71 and considering the respective elevations he shows the rainfall to be considerably less than the figure obtained by Mr. Dessery.

In obtaining the estimated runoff he has selected other watersheds for the purpose of deduction, namely, San Luis Rey River, above Palo, as it is both steeper and higher than the Wildwood drainage area, while the geological formation is the same.

From his study Mr. Finkle concludes that the total runoff from the watershed tributary to Wildwood Canyon is 1200 acre feet for the entire year and states that 30% of this total runoff may be taken as a liberal allowance for the probable underflow during the whole year and as

the average length of the irrigation season is six months in Yucaipa Valley there will be 180 acre feet available during the pumping season, the remainder passing down during the remaining six months to feed the natural springs some two miles lower down.

From similar deductions based upon the Lake Hemet watershed Mr. Finkle obtains an annual Wildwood supply at the pumping plant of 247 acre feet or 123.5 acre feet for the irrigation season.

He states from this study that the quantity will vary from year to year depending upon the preceding rainfall but can not exceed a mean of somewhere from 125 to 180 acre feet per annum in the six irrigation months and from the superior character of the two watersheds upon which the deductions were based it is likely to be less rather than more.

On April 3, 1925, Harold Conkling, Hydraulic Engineer for the Division of Water Rights, in company with Mr. Victor Norman, one of the present owners of the property to which it is proposed to divert the water, and Mr. F. B. Hasbrouck, superintendent for the protestant company, made an inspection of the situation. He reported as follows:

The investigation indicates that the entire drainage area above Wildwood Canyon, with the exception of three rocky hog-backs, is favorable for deep percolation of rainfall. These hog-backs are, however, covered with sufficient soil to absorb the rainfall, and cause it to pass off slowly to the deeper alluvium below. It was stated by Mr. Hasbrouck that only after excessive rainfall was there any surface runoff through Wildwood Canyon and that therefore most of the

water from the watershed which is not lost through transpiration or evaporation must reach the underground supply which is tributary to Wildwood Canyon.

Both the yield from the tunnel in Water Canyon which has been measured for a period of five years and the surface flow in South Fork, from which the applicant proposes to divert, may serve as criteria by which to estimate the total underground yield of the watershed, and it is probable an estimate based upon these flows would be better than one based upon an estimated rainfall on the watershed with further estimated deductions therefrom for transpiration, evaporation and surface flow.

Before proceeding with the estimate, it is necessary to determine whether the watershed which topographically appears to be tributary to the points where the flow has been observed (i.e. tunnel in Water Canyon and bedrock reefs in South Fork) is also tributary underground or whether there may be an additional area that may be tributary underground.

On the west side of the tunnel outlet in Water Canyon, there is a point of one of the rocky hogbacks previously referred to, extending northward about one mile to the boundary of the watershed, and there is no doubt that all of the underflow from this side reaches the outlet end of the tunnel although it may not be diverted by the tunnel. On the east side surface topography would indicate that possibly 0.25 square mile is not tributary to the tunnel but from the fact that a spring issues into the east side of the canyon, midway of the tunnel (the tunnel taps it) and that the closest surface outlet for underground water from the east is this Canyon, it is evident that this 0.25 square

mile should be included in the drainage area tributary to the tunnel, which with this addition would be approximately 1.86 square miles above the tunnel inlet.

South Fork, from which the applicant proposes to divert, has no deeply eroded water course, indicating that there is little surface runoff and that there is a greater percolation from the rainfall as compared with the main Wildwood Canyon and Water Canyon, which both receive the runoff from the remaining area of watershed above the Wildwood well and are deeply eroded by stream channels.

The surface slope of South Fork of Wildwood Canyon watershed from its southeastern boundary to the point of diversion proposed by the applicant is approximately 400 feet in $1\frac{1}{2}$ miles, while to the north a quarter of a mile lies the main Wildwood Canyon, 100 feet lower than the surface of the South Fork Valley. It therefore would appear that the slope of the ground water should be steeper toward this canyon than along the axis of South Fork, which is the case for the lower $1/2$ mile of South Fork, but which is probably not true for the upper South Fork, as the distance to the Main Wildwood Canyon increases. A tunnel has been driven into the south side of Main Wildwood Canyon near a ranch house lying about $1/4$ mile up the canyon from the mouth. This tunnel runs toward the South Fork and is said not to encounter bedrock. From this tunnel water issues and it is probable that this water comes from the percolation of the waters of South Fork.

It is therefore evident that the entire percolation from South Fork does not reach the applicant's proposed point of diversion but that a portion of it escapes to the north.

The yield of the tunnel in Water Canyon during the years 1917, 1920, 1921, 1922 and 1923, is given in a record submitted by Mr. Hasbrouck and filed with the Division of Water Rights. Water was diverted through the tunnel from April to October of these years and was fully open during a total of 21 months. The diversion during these 21 months varied from a minimum of 7.2 acre feet in September, 1921, to a maximum of 30.5 acre feet in October, 1922. The average for these 21 months was 16.7 acre feet per month.

It is probable that there was some underflow past the tunnel during the period it was discharging, but on the other hand the tunnel could draw down the water table stored during the winter months. This storage would be slight in amount and it is believed that the average underground flow at the tunnel is more than the recorded discharge.

The years during which the records of the tunnel discharge were kept, had a rainfall close to the long time average in Southern California generally. It is therefore believed that the underflow at the tunnel during an average year is in excess of 16.7 acre feet per month or 200 acre feet per year. As the drainage area tributary to the tunnel in Water Canyon is approximately 1200 acres, the annual yield per acre would be 0.167 acre feet of underground flow.

Mr. Norman stated during the inspection trip that the South Fork was dry at the bedrock reef where the diversion is proposed in August, 1924, and an estimate by Mr. Hasbrouck on this same trip was that the present flow is 3.5 miners inches which would indicate the probability of its being dry in the summer of this year. From testimony presented at the hearing it would appear that the summer flow might be

as great as 10 miners inches (0.20 cubic feet per second). It may be that there is a comparatively wide variation in this flow as there is probably a constant prior draft to the north toward Main Wildwood Canyon because of the steeper slope in that direction.

Evidence presented at the hearing was to the effect that the average summer discharge at the proposed point of diversion is 6 miners inches (0.12 cubic foot per second) and this figure appears to be generally accepted and used by the representatives of the applicant and protestant in their engineering and legal briefs.

Assuming that the underground flow from the South Fork averages 6 miners inches throughout the year the watershed tributary to it will produce 86 acre feet in a year and the total runoff from the 750 acres above the proposed point of diversion will average 0.11 acre feet per acre per year.

It is apparent that the best measure of underflow available is the tunnel in Water Canyon. The drainage area above the tunnel is higher and therefore should receive more rainfall than that received on the entire water shed tributary to the protestants well in Wildwood Canyon, but the difference is probably not marked. In order to allow for this, the average annual percolation over the entire watershed may be reduced to 0.15 acre feet per acre and applying this to the 4634 acres determined from Mr. Finkle's survey there results 695 acre feet per annum, or in round numbers 700 acre feet per annum, as the average underflow which should pass through Wildwood Canyon.

The surface indications at Wildwood Canyon suggest a narrow

underground stream flowing with comparative rapidity down the steep slope of the Canyon which is shown on the United States Geological Survey quadrangle sheets to be 500 feet to the mile. Above the canyon, water probably does not exist in anything approaching the semblance of an underground lake but it is feeding toward the Canyon and is itself lying on a steep slope. Underground conditions in the Canyon may be analagous to a surface stream which flows quietly and with little slope in the broader reaches of the stream but which cascades rapidly down a narrow canyon which lies below the broader reach just above. It takes very little difference in depth of water in the stream through this narrow steep portion to make a very large difference in discharge. Conversely, a considerable decrease in discharge can take place with comparatively small change in depth. This same condition may exist in Wildwood Canyon. The Wildwood well has produced as much as 105 acre feet in a season against the above estimated supply of 700 acre feet. As seasonal irregularities, and to an extent, annual irregularities, are smoothed out by the slow movement of water above the Canyon it is not very material when the diversion of a portion of the surplus is made above the Canyon.

It appears that the elevation of water in Wildwood well is now 10 feet lower than formerly due to a succession of dry years just past. The present tunnel flow is not known but must be at or below the lowest recorded. The maximum depth to bedrock is 125 feet and the former depth to water 53 feet, making the depth of water in the channel 72 feet. It is now 62 feet, a decrease in depth of 14¹/₂, while the total flow is estimated to be decreased at least 57¹/₂, based upon the fact that in the

dry year 1921 the tunnel in Water Canyon yielded only 7.2 acre feet per month against an average of 16.7 acre feet per month for the period of record or in other words the yield during the dry year was 43% of the average yield. This bears out the general statement made above that the depth of water flowing in an underground channel such as Wildwood Canyon is reduced only a comparatively small amount by a considerable decrease in discharge.

It may be expected that South Fork at the applicant's proposed point of diversion will vary more widely in its flow than the tunnel because of the probable faster underground flow toward the north from South Fork. If it varies in the same proportion and if the generally assumed average summer discharge of 6 miners inches is correct, then there would be available to the applicant in dry years an average of 2.6 miners inches throughout the irrigation season.

The following tabulation shows the estimated amount of water passing Wildwood well in average and dry years; the estimate for the dry year being based upon 43% of the estimated average year.

Dry Year

Estimated underflow at Wildwood Well		300 acre feet
Tunnel diversion, 6 mo. @ 7.2 acre feet	43 a.f.	
Possible diversion by applicant, 6 months @ 2.6 miners inches	<u>19 a.f.</u>	<u>62</u> acre feet
Surplus - - - -		238 acre feet
Estimated surplus in 6 month irrigation season		88 acre feet.

Average Year

Estimated underflow at Wildwood Well		700 acre feet
Tunnel diversion, 6 mo. @ 16.7 acre feet	100 a.f.	
Possible diversion by applicant, 6 months @ 6 miners inches	<u>43 a.f.</u>	<u>143</u> acre feet
Surplus - - - -		557 acre feet
Estimated surplus in 6 month irrigation season		207 acre feet.

It is evident that the above estimated flows could be grossly in error without affecting the conclusion that a surplus exists.

The probable interference with the protestant is, of course, a matter of much uncertainty, but the applicant has indicated that he will be satisfied with the approval of his application to the extent of the summer flow at his proposed point of diversion, which appears to average approximately 6 miners inches (0.12 cubic feet per second) and may amount to as much as 10 miners inches (0.20 cubic feet per second) the diversion of which we believe it has been shown above would result in a negligible interference with the protestant. It therefore appears reasonable that the application should be approved for a maximum amount of 10 miners inches (0.20 cubic feet per second) for the period from about April 30th to about November 1st of each season, or not to exceed 43 acre feet for irrigation and domestic purposes, plus a maximum of 650 gallons per day (.001 cubic foot per second) throughout the remainder of the year for domestic purposes only.

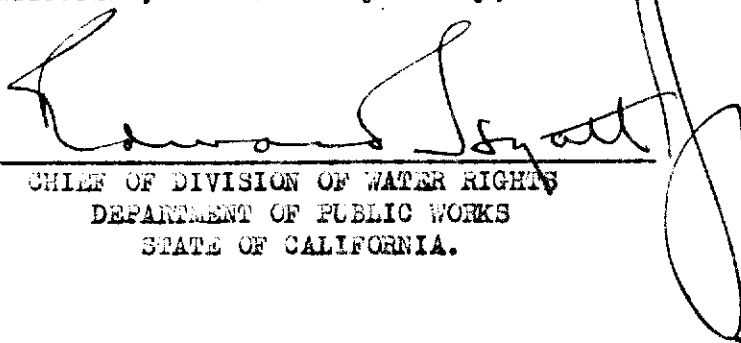
ORDER

Application Number 3575 for permit to appropriate water having been filed with the Division of Water Rights, as above stated, a protest having been filed, a public hearing having been held, and the Division of Water Rights now being fully informed in the premises:-

IT IS HEREBY ORDERED that the said Application Number 3575 be approved for an amount not to exceed 0.20 cubic foot per second of direct diversion to be so diverted from April 30th to November 1st of each year, the total amount of diversion during this period to be limited

to an amount not to exceed 43 acre feet to be used for agricultural and domestic purposes and that it further be approved for .001 cubic foot per second or 650 gallons per day of direct diversion to be so diverted throughout the remainder of the year for domestic purposes only, and that a permit be granted to the applicant subject to such of the usual terms and conditions as may be appropriate.

Dated at Sacramento, California, this 19th day of May, 1925.



CHIEF OF DIVISION OF WATER RIGHTS
DEPARTMENT OF PUBLIC WORKS
STATE OF CALIFORNIA.

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