

## UNDERGROUND WATER PROBLEMS IN PECOS VALLEY

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We in the Pecos Valley only have one problem, just not enough water to go around. We have about 132,300 acres in cultivation, of that about 14,000 to 18,000 are watered illegally. Part of this or all will be taken care of in the adjudication of water rights, which is now in progress.

Our recharge is about 210,000 acre feet and withdrawal about 400,000 acre feet per year from both sources shallow and artesian.

By an order from the State Engineer the basin was closed August 1, 1937 to further developments in the Roswell Artesian Basin.

In 1925-1927 Fiedler and Nye reported a total withdrawal from the Artesian Basin as being 150,000 acre feet. C. V. Theis in 1939 estimated the withdrawal from the artesian basin to be 153,249 acre feet plus 97,400 acre feet from shallow wells or a total of 250,649 acre feet from both sources. The figure of 250,649 acre feet is some 40,649 acre feet over the annual recharge at this time.

In Dr. Hontush<sup>1</sup> report 1955, he states the safe withdrawal to be 130,000 acre feet from the artesian source and from the shallow source 116,000 acre feet. Part of the recharge to the shallow basin comes from return irrigation from the artesian aquifer. Using both figures a total of 246,000 acre feet being the safe withdrawal in the basin.

In 1947, there were lots of new farms developed to the North and West of the Pecos Valley Artesian Conservancy District. April 19, 1947, the Pecos Valley Artesian Conservancy District wrote Mr. John Bliss, State Engineer, to close this area to the North and West. It was not until 1953 that all of this was closed by the State Engineer.

By this time there were 16,000 acres and 141 wells added to the basin, which was closed in 1937. Since 1947 all of our recorder wells show a sharpe decline in water levels.

The Berrendo recorder, which is in the north of the District dropped 19.75 feet from 1927 to 1955.

The Berrendo-Smith recorder well dropped 19.19 feet from 1941 to 1955.

The Mountain-View recorder well dropped 21.41 feet from 1941 to 1955.

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The Greenfield Recorder well dropped 41.15 feet from 1941 to 1955.

The Orchard Park recorder well dropped 40 feet from 1926 to 1955.

The Artesian recorder well which is in the south end of the District dropped 71.55 feet from 1932 to 1955.

In the early part of 1956 the Board of Directors of the Pecos Valley Artesian Conservancy District wrote this letter:

Dear Sir:

The Board of Directors of the Pecos Valley Artesian Conservancy District are making a survey to find the thinking of all well and farm owners in the Valley as to what possible steps should be taken to stop the lowering of the water table.

The Board of Directors would appreciate if you would answer the questions below either yes or no. If you feel these are not the solution to our water problems, please feel free to express your idea as to what you feel would solve the problem.

1. Do you think by each farmer in the Valley laying out 5% or 10% of his land would be fair toward the solution?  
71 Yes 276 No.
2. Would you volunteer to lay out 5% or 10% of your land?  
79 Yes 269 No.
3. Do you think that metering all wells would help solve the problem? 111 Yes 254 No.
4. Would you be in favor of the Conservancy District raising their levy to buy up water rights in marginal areas and retiring the water rights? The additional levy to be set aside for this program only. 132 Yes 222 No.
5. Would you be in favor of metering all wells? 88 Yes 272 No.
6. What is your opinion of correcting this problem?

We had 394 or 39% that replied to these letters. The remarks were many and some were very good.

The adjudication suit will first take care of illegal land and second waste of water.

We flew the Roswell Basin this year locating waste from the air and making personal contact with the farmers, who were in violation. In most cases we found the farmers are not aware of wasting water, and places waste accrued were readily repaired. Usually the farmer thanked us for calling to his attention the loss of the water. We found many who were very interested in helping to cooperate with us in this program. Eight farmers were contacted during the summer in regard to wasting water.

We find through measurements that from 25% to 30% of water used in earthen ditches is lost to seepage evaporation and transpiration. An estimated 3000 miles of earthen ditches are in use today in the Roswell Basin. In the past few years farmers are becoming aware of the water being lost in earthen ditches and through the Government A.S.C. program, the farmers of the Roswell Basin have installed about 100 miles of concrete ditch lining and 200 miles of underground pipe. One can see that we have a long way to go.

RESERVOIRS: I know of a reservoir that is losing one acre foot a day, through seepage evaporation and transpiration. The lost is more than this farmer uses.

Plugged Artesian wells in the Roswell Basin: The Pecos Valley Artesian Conservancy District has plugged some 1036 wells since 1934 to date. At a cost of \$2000.00 a well in 1934 to \$850.00 in 1955 and 1956.

METERS: We have seven farmers who have agreed to meter their wells this year. Of these seven I will give you the records taken from three meters.

The first well is located in the northern part of the district. The soil condition is very sandy and the farm hasn't very much underground irrigation tile. This 72.3 acre farm used 3.76 acre feet of water during the irrigation season.

Another metered well is located in the East Grand Plains area in what is considered the center of the pumping area in the Roswell District. This 162.2 acre farm has some two miles of underground tile. The duty of water used on this farm during the crop year of 1956 was 3.76 acre feet.

The last farm was a 75 acre farm below Artesia in the Southern part of the District. The use of the sprinkler system was applied to this farm with the exception of one irrigation, and the total amount of water used was 3.24 acre feet during the crop year.