

CASE - 4336

QUAIL RIDGE FIELD

**N.M.O.C.C. - HOBBS, N.M.
APRIL 1970 - J.W.R.**

Docket No. 10-70

DOCKET: REGULAR HEARING - WEDNESDAY - APRIL 15, 1970

OIL CONSERVATION COMMISSION - 9 A.M. - THE HOLIDAY INN, 200 SOUTH LINAM,
HOBBS, NEW MEXICO

CASE 4336: Application of Byron McKinight for an exception to Order No. R-3221, as amended, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil or gas on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties. Said exception would be for applicant's lease comprising all of Section 19, W/2 Section 20, NW/4 Section 29, and NW/4 Section 30, Township 19 South, Range 34 East, undesignated Yates-Seven Rivers gas pool, Lea County, New Mexico. Applicant seeks authority to dispose of salt water produced by wells on said leases in unlined surface pits on the leases.

RECOMMENDATIONS

I, personally, strongly recommend that Case 4336 be denied due to the following:

- 1) Three fresh water aquifers exist immediately west, south and east of the area of requested exception.
- 2) All three aquifers are fresh and usable for household or domestic purposes.
- 3) The upper and lower aquifers probably extend under the area of requested exception.
- 4) The recharge area of the upper aquifer is from the sand dune areas, partly from the same area in which the produced water would be put into open pits.
- 5) There is no indication (in drilling records) of any impervious zones which would prevent produced waters from going into the upper water aquifer or migrating to this aquifer.
- 6) With the completion of the gas pipeline additional drilling is planned for the area. Additional areas of exception will probably be requested if the present requested exception is granted.
- 7) There are several P & A wells in the immediate area which can be converted to SWD wells and there is a SWD well nearby.
- 8) The possible contamination of the upper aquifer by granting the exception could cause a great hardship on the rancher, Mr. Smith.

Respectfully submitted,

John W. Runyan
Geologist, District I
New Mexico Oil Conservation Commission

JWR:fd

GEOLOGY OF AREA

The area in and around the boundary of application for exception to the No-Pit Order, in Township 19 South, Range 34 East, consists of large sand dunes with the exception of the area just south and west (refer to map) of Mr. Mark Smith's house which is a flat area having no sand dunes.

The sand dunes of this area rest directly upon the Triassic-red beds, and there isn't any impervious zones near the surface (indicated by drilling records), such as the caliche beds on top of the caprock or clay layers. The flat area consists of a very sandy/clay soil resting directly on the red beds.

The Triassic formation dips gently to the south-southeast in this area, which is normal regional dip. There are no surface structural highs in this area (except for dunes).

The Triassic formation is composed of a sandy/clay - red bed, very porous. The upper water aquifer is probably recharged from the sand dunes which catch and prevent water run-off during rainy periods.

GROUND WATER

In referring to the map, there are three separate water sands in the immediate area of the Quail Ridge Field, with their known locations being west, south, southeast and east of the area of application for exemption of the no-pit order. It is very possible that the upper and lower fresh water sands extend under the area of application.

The upper water sand is of good enough quality for household use, and Mr. Mark Smith does use it. The other two water zones are good enough for cattle and perhaps for some domestic use.

Again, the probable recharge area for the upper water zone is through the sand dunes, the same sand dunes in which McKnight proposes to dispose of his produced water.

Listed below are the wells which encountered or produced from the water aquifers.

1. Upper water sand/aquafer:

- a). Windmill, Mr. Smith's house - Unit H, Section 26, T19S, R33E - household and domestic use. TD 98 feet, water level 91 feet, chlorides 298 PPM, specific conductance 2560.
- b) Windmill - Unit B, Section 31, T19S, R34E - TD 120 feet, chlorides 289 PPM, specific conductance 2290.
- c) Windmill - Unit E, Section 31, T19S, R34E - TD 66 feet, water level 58 feet, chlorides 717 PPM, specific conductance 4420.
This mill is abandoned due to rods and pump in hole, due to broken rod.
- d) Windmill - Unit P, Section 4, T20S, R34E - used for cattle, shallow well, chlorides 1450 PPM, specific conductance 9890.

2. Middle water sand/aquafer:

- a) Fresh water well - drilled for rig water, Unit M, Section 16, T19S, R34E - TD 408 feet, water level 360 feet, reported by Gulf Oil to be fresh.
- b) Water sand encountered in P & A well, when drilled, Unit O, Section 33, T19S, R34E. Water sand at 280 - 290 feet. Reported on C-105.

Ground water

3. Lower water sand - Santa Rosa:

- a) Encountered in P & A well, when drilled, Unit F, Section 28, T19S, R34E. Depth 808 - 860 feet. Reported on C-105.
- b) Encountered in P & A well, when drilled, Unit N, Section 28, T19S, R34E. Depth 830 to 850 feet. Reported on C-105.
- c) Encountered in P & A well, when drilled, Unit L, Section 30, T19S, R34E. Depth 785 to 810 feet. Reported on C-105.

PRODUCED WATER

The amount of produced water as reported on four of the six wells inside of the area of application is 289 barrels of water per day. Most of these wells are presently shut-in awaiting completion of a gas pipeline now under construction.

Outside the application area there are six wells capable of producing. Their reported water production is 194 BWPD, most of which is being disposed of in Atlantic Richfield's SWD well located in Unit B, Section 28, Township 19 South, Range 34 East.

The amounts of reported water are very low because these are original completion tests and not actual production figures.

It is reported that many more Yates gas wells will be drilled in the area (particularly by Me-Tex) when the gas line is complete.

The nature of the Yates gas wells are such that they load up with water and condensate and a pump jack is necessary to keep the gas wells producing.

The chloride content of the produced water of the Yates gas wells is unknown because they have all been shut-in awaiting the pipeline, and no sample has been available.

COMMUNICATION

Personal contact with the rancher, Mr. Mark Smith, brought out the following information.

1. The shallow surface, fresh water sand is not a large aquifer of unlimited supply, such as the Ogallala, but does cover the area in question.
2. If this upper water becomes contaminated, he (Mr. Smith) would be practically ruined. He would have to haul in water or pipeline it from the caprock or drill to the Santa Rosa water aquifer and pump it for his personal use and cattle. Any method would be very expensive for an individual.