STOKES V. MORGAN, 1984-NMSC-032, 101 N.M. 195, 680 P.2d 335 (S. Ct. 1984)

**ROBERT STOKES and CALVIN BLEVINS, Protestants-Appellees,
vs.
ROBERT MORGAN, Applicant-Appellant, and S. E. REYNOLDS, New Mexico State Engineer, Respondent-Appellee, and ROBERT STOKES and CALVIN BLEVINS, Protestants-Appellees, v. DAVID C. SANDERS, DAVID C. SANDERS, JR., and THE FEDERAL LAND BANK OF WICHITA, Applicants-Appellants, and S. E. REYNOLDS, New Mexico State Engineer, Respondent-Appellee**

No. 14798

SUPREME COURT OF NEW MEXICO

1984-NMSC-032, 101 N.M. 195, 680 P.2d 335

March 20, 1984

Appeal from the District Court of Roosevelt County, Fred T. Hensley, District Judge

COUNSEL

RICHARD A. SIMMS, HINKLE, COX, EATON, COFFIELD & HENSLEY, Santa Fe, New Mexico, For Appellants.

JOE PARKER, ROWLEY & HAMMOND, Clovis, New Mexico, For Protestants-Appellees.

PETER THOMAS WHITE, Assistant Attorney General, Santa Fe, New Mexico, For Respondent State Engineer.

JUDGES

Federici, C.J., wrote the opinion. WE CONCUR: DAN SOSA, JR., Senior Justice, WILLIAM RIORDAN, Justice, MARY C. WALTERS, Justice, HARRY E. STOWERS, Jr., Justice, dissenting.

AUTHOR: FEDERICI

OPINION

*{*196}* FEDERICI, Chief Justice.

{1} This is an action involving two applications for change in point of diversion and place of use of groundwater rights in the Portales Underground Water Basin (Basin). The State Engineer approved the changes and the protestants appealed the decisions to the District Court of Roosevelt County. By agreement of the parties, the actions were combined for trial. In a trial de novo the court ruled in favor of the protestants and denied the transfers. Both applicants appealed the district court decision. We reverse.

{2} On December 1, 1981, the Federal Land Bank of Wichita and David Sanders (Sanders) *{*197}* filed three applications to change the point of diversion and place of use of irrigation rights within the eastern administrative area of the Basin. Calvin Blevins and Robert Stokes (protestants) protested the move pursuant to NMSA 1978, Section 72-12-7, claiming that the move would impair their existing water rights. After an administrative hearing, the State Engineer found that the proposed move would not impair existing water rights and granted the permit to move the point of diversion.

{3} On January 4, 1982, Robert Morgan (Morgan) filed an application for a permit to change the point of diversion of certain wells in the Basin. Protestants objected to this move for the same reasons that they challenged the Sanders application. The State Engineer concluded that the move would not impair existing water rights and granted the permit to move the point of diversion.

{4} In both cases the parties agreed that the quantitative change in the water supply would be insignificant. The real issue in each case was whether termination of pumping at the move-from wells and commencement of pumping at the move-to wells would cause an increase in salinity in neighboring wells which would result in a decrease in crop yields. The Morgan and Sanders applications have three things in common: (1) all of the move-from and move-to locations are located in the eastern administrative area of the Basin; (2) Calvin Blevins and Robert Stokes protested each application; and (3) the important issue in each case is whether the moves would cause an increase in salinity which would constitute impairment of neighboring water rights. Because of these similarities the two cases were consolidated for appeal in the district court. On December 9, 1982, the district court judge rendered a single decision reversing the two orders of the State Engineer. In the appeal to this Court, Morgan and Sanders (applicants) claim that the district court erred in finding impairment, and also erred in the issuance of a single judgment to dispose of two factually distinct applications.

{5} The move-from and move-to locations in these cases are located in the Portales Valley, a broad, shallow depression in the eastern plains area of New Mexico. Surface water in the valley is scarce and consists primarily of relatively small, saline lakes. The Basin is geologically an abandoned river valley filled with alluvial material derived from the Rocky Mountains. Saturated thickness of the aquifer in the area in question varies from 40 to 140 feet. The aquifer is being mined heavily, primarily for irrigation purposes. Water in the southern part of the aquifer is of a lower quality than that to the north. The water quality interface runs generally from the southeast to northwest, from the north of Section 29, Township 2 S., Range 36 E. to the southern half of Section 10, Township 2 S., Range 35 E. **See** Figure 1 for the approximate location of the interface. The interface

appears to coincide with a depression or trough in the water table. The move-from locations of Sanders' wells are south of this interface and the move-to locations and protestants' wells are north of the interface. The Morgan move-from and move-to locations both appear to be north of the interface, although its configuration is not well defined in this area. In the time period from 1962 to 1982 the interface has migrated some distance to the north. Protestants argue that water to the south of the interface is not suitable for irrigation and that granting the Morgan and Sanders applications will accelerate the rate of intrusion of salt water into the aquifer underlying their wells. Protestants claim that this acceleration will shorten the effective lives of their wells and that this reduction in life expectancy constitutes impairment of their rights.

*{*198}* **{6}** In a case such as this there are two separate bases upon which a showing of no impairment may be founded. The first is that the proposed increase in pumping will not significantly accelerate the rate of intrusion of poor quality water. The second is that the quality of the intruding water is still good enough to be used for existing purposes.

{7} The rate of movement of water within an aquifer has been studied and a simple relationship between the hydrostatic gradient and water velocity has been found. This relationship generally follows Darcy's Law.[1]

{8} The rate of intrusion is important because, as this Court has previously recognized, "the beneficial use by the public of the waters in a closed or non-rechargeable basin requires giving to the use of such waters a time limitation." **Mathers v. Texaco, Inc.,** 77 N.M. 239, 245, 421 P.2d 771, 776 (1966). The supply of water available from the shallow nonrecharging aquifer system of the Basin is primarily limited to stored water that has accumulated in the *{*199}* aquifer system over a period of several thousand years. At the present time water is being mined from the aquifer at a rate which is significantly higher than the recharge rate. Therefore, the aquifer has a finite life expectancy.

{9} The State Engineer has developed a system of administration for the Basin which is intended to provide a reasonable measure of protection to existing water rights without unduly restricting the full economic utilization of existing water supplies in the Basin. S. Galloway and J. Wright, Administration of Water Rights, Portales Valley Underground Water Basin, New Mexico 17 (Office of the State Engineer, 1968) (introduced as State's Exhibit No. 5). For purposes of administration, townships within the Basin were divided into nine square units of four sections each. Life expectancies for each block were calculated by dividing the average effective saturated thickness of the aquifer by the average annual historical water level change beneath the block. Decisions as to whether to allow additional appropriations are based on the life expectancy of the administrative block and immediately surrounding blocks. If the life expectancy is calculated to be less than 40 years from 1956, the block is considered to be fully appropriated. **Id.** at 24. Although this system obviously does not take into account water quality problems, it nonetheless indicates a time frame which should be considered in a determination of whether an increased rate of intrusion constitutes impairment.

{10} The second important consideration in salinity impairment cases is the quantification of acceptable levels of degradation in water quality. Applicants contend that impairment, in the context of agricultural water use, should be defined as a decrease in crop yield. Applicants argue that any increase in salinity in protestants' wells which does not result in decreased productivity does not constitute impairment. This appears to be the standard that was followed in **City of Rosewell v. Reynolds,** 86 N.M. 249, 522 P.2d 796 (1974). Protestants contend, on the other hand, that lower salinity water is always preferable to higher salinity water for agricultural purposes and that any measurable increase in salinity necessarily constitutes impairment. The actual determination of whether an increase in salinity constitutes impairment is more complex than either party suggests.

{11} An argument presented by applicants is that an increase in salinity is analogous to a lowering of the level of the water table (or a decrease in pressure in an artesian aquifer). This Court has held that a lowering of the water table does not necessarily constitute impairment of the water rights of adjoining appropriators. **Mathers v. Texaco, Inc.,** 77 N.M. 239, 421 P.2d 771 (1966); **Application of Brown,** 65 N.M. 74, 332 P.2d 475 (1958). It is not clear that this analogy is a good one. A lowering of the water table may require existing wells to be deepened or pumping lift increased. Although this places an increased economic burden on owners of existing wells, it does not normally destroy the usefulness of the well. Generally, wells which must be retired from agricultural use because of insufficient quantities of water for irrigation may still produce enough water for domestic use. Increased salinity, however, has been recognized as a more serious, long-lasting problem in the underground water supply.

{12} Because of the relatively slow movement of ground water, saltwater intrusion may detrimentally affect [the quality of the water in the aquifer] for years under the most favorable circumstances, or many decades in other cases. The movement of poor quality water into fresh water supplies is generally considered a more serious problem than ground water depletion. Wells may have to be abandoned while ample supplies of water are in the aquifer. Declining water tables may stabilize or rise if pumping is reduced, but dissolved contaminants may be difficult or impossible to remove.

{13} General Accounting Office, Ground Water: An Overview 17-18 (Report to Congress by *{*200}* the Comptroller General, 1977) (hereinafter cited as GAO Report). Wells which must be retired from agricultural use because of excessive salinity are also generally unsuitable for domestic uses.

{14} Detrimental effects from excessive salinity in irrigation water supplies range from a need for increased quantities of water for leaching to total destruction of crops and soils. **See** United States Department of the Interior, Westwide Study Report on Critical Water Problems Facing the Eleven Western States 117-118 (1975). Moderately saline water is unsuitable for human consumption or other domestic uses. Water which is too salty for irrigation may only be useful for limited stock watering purposes. Intrusion of saline ground water constitutes a potential problem in 42 states and is particularly prevalent in

New Mexico. GAO Report at 17; **see also** 1 United States Water Resources Council, The Nation's Water Resources 1975-2000 at 64-65 (1978).

{15} The mere presence of dissolved solids in ground water does not necessarily indicate a water quality problem. Salts are present in varying amounts in all underground waters. This is a result of the contact between the water and soluble components of the solid matrix of the aquifer. A small amount of dissolved salt in water might even be desirable. For instance, calcium and magnesium, which are major constituents in "hard" water, are essential plant nutrients. H. Dregne and H. Maker, New Mexico Agricultural Experiment Station, Bulletin No. 386, Irrigation Well Waters of New Mexico 5 (1954) (hereinafter cited as Dregne and Maker). Some salts, such as potassium fluoride, are added to domestic water supplies because of their beneficial effects on human health. However, even beneficial salts, in high concentrations, will render water useless for irrigation and other purposes.

{16} The level of salinity which may be tolerated in water depends on the intended use. Determination of acceptable salinity levels for irrigation water, which is our concern in this case, is not a simple task. Acceptable levels will depend on the type of soil to which the water is applied, the type of crop grown, prevalent irrigation practices, and other localized factors. 9 Nat. Res.J. 329, 336 (1969). **See also** H. Dregne, New Mexico Agricultural Experiment Station, Bulletin No. 543, Prediction of Crop Yields from Quantity and Salinity of Irrigation Water (1969) (hereinafter cited as Bulletin 543).

{17} A variety of parameters are commonly employed in an attempt to describe water quality. Irrigation waters with high concentrations of dissolved solids present hazards which fall into two separate categories. The first is classified as the "salinity hazard." Irrigation waters which contain high concentrations of dissolved solids generally suppress the ability of plants to absorb water through their roots. Plants with roots immersed in high salinity solutions may actually wilt and die from lack of water. Dregne and Maker at 4. The salinity hazard is determined by the concentration of total dissolved solids (TDS) in solution. TDS and the concentration of individual components of the solution are measured by chemical analysis. The salinity hazard of the water may also be gauged by the electrical conductivity (EC) of the water. **Id.** at 7. The second hazard presented by water with high concentrations of dissolved solids is the "sodium hazard." When the sodium concentration greatly exceeds the concentration of calcium plus magnesium in water the sodium may cause unfavorable conditions in the soil. The potential sodium hazard is represented by the sodium absorption ratio (SAR). The higher the SAR, the greater the potential hazard from using the water. **Id.** at 9.

{18} In this case the State Engineer argues that chloride concentration is a good indicator of water quality. Due to differences in composition of the solid matrix of different aquifers, on a statewide scale the relative concentration of chloride with respect to other dissolved ions in the water is highly variable. Therefore it is difficult to make a statewide generalization which relates water quality to chloride concentration alone. This assumption may have some validity on *{*201}* an intrabasin level where the composition of the solid matrix of the aquifer is relatively homogeneous.

{19} Several factors must be considered before a determination of impairment due to increasing salinity can be made. These factors include: composition of the soil, composition of the solid matrix of the aquifer, type of crop grown, irrigation technique, EC of the irrigation water, concentrations of specific ions, and annual rainfall. In a case such as this one it is also important to know how the water quality in a particular location is changing with respect to time.

{20} The record before us shows that most of the needed information was provided in the exhibits, although it may not have been explained in detail at the trial. State's Exhibit No. 10 is an extensive list of wells in the area which have been tested both recently and in the past. Specific conductance (EC), TDS and chloride concentration are reported for each well. Protestants' Exhibit No. 1 presents a detailed analysis of water quality for a few wells in the area. The usefulness of this data is diminished because the location of the wells is described only by a common name of the property on which the well is located. Therefore the exact location of the wells analyzed is not known. The data from protestants' Exhibit No. 1 are, however, useful for determining the relative concentrations of some ions in the underlying aquifer (i.e., for the calculation of SAR). State's Exhibit No. 15, Dregne and Maker at 9-10, proposes a classification system for ground water basins in New Mexico based on physical characteristics of the soil and crops grown.

{21} Protestants' Exhibit No. 1 contains a Water Analysis Report done by the Cooperative Extension Service at New Mexico State University which classifies the salinity hazard for water from one of the Blevins wells as "very high". The report states that water of this quality is unsuitable for irrigation under ordinary conditions. Under the Dregne and Maker classification system, which takes local soil conditions into account, water from this well is "class 2" water. "Class 2 water can be used satisfactorily for most crops if care is taken to prevent the accumulation of soluble salt and sodium in the soil." Dregne and Maker at 10. Application of additional quantities of water for leaching would probably be required in this area in order to sustain maximum crop yields. **See** Bulletin 543.

{22} Regardless of the classification system used, in this case it appears that water south of the trough is of significantly lower quality than that north of the trough. Therefore, a situation exists in which intrusion of poor quality water could result in impairment of existing rights. Although it is clear that all factors must be considered on a case-by-case basis, **City of Roswell v. Berry,** 80 N.M. 110, 452 P.2d 179 (1969), a change in water quality from Dregne and Maker class 1 to class 2 (or from class 2 to class 3) that would result from the granting of a permit creates a strong inference of impairment. In this case there is at least a one-class difference between water north of the interface and that to the south. However, in order to find impairment, there must also be evidence that the grant of a permit would result in a reasonable scientific probability of a significant increase in the rate of intrusion of lower quality water into the fresh water aquifer. There must also be evidence of a causal connection between the drilling of the well in question and the increased movement of the water quality interface. In this case

there is a lack of evidence in the record to support the impairment claimed due to an increased rate of intrusion.

{23} Protestants argue that NMSA 1978, Section 72-12-7 imposes the burden of proof on the applicant to show **no** impairment will result from the relocation of the well. "No impairment" does not necessarily mean "no change in conditions." This Court has previously held that the lowering of a water table does not necessarily constitute impairment, even though there may be some negative economic impact on adjacent water users. **Mathers v. Texaco, Inc.,** 77 N.M. 239, 421 P.2d 771 (1966); **Application of Brown,** 65 N.M. 74, *{*202}* 332 P.2d 475 (1958). This result is necessary if the water is to be put to beneficial use, and if the use is to be made available to more than the initial appropriator. 77 N.M. at 245, 421 P.2d at 777. The same common-sense approach should be applied in salinity cases. New withdrawals which cause a minimal acceleration in the rate of saltwater intrusion or a minimal increase in salinity do not constitute impairment as a matter of law. Because of the number of variables involved it is impossible to set strict guidelines as to what constitutes a reasonable scientific probability of a significant increase in the rate of intrusion. The determination of whether there is impairment must be made on a case-by-case basis.

{24} In applying this standard to the case before us we find that both applicants met their burden of proof. Testimony that the State Engineer has made a finding of no impairment pursuant to a valid hearing is considered strong evidence of no impairment. **Spencer v. Bliss,** 60 N.M. 16, 287 P.2d 221 (1955). The special knowledge and experience of state agencies should be accorded deference.

{25} The State Engineer found, and there was expert testimony at the trial, that the small amount of water being pumped would have a minimal effect on the movement of the poor quality water in the vicinity of the move-to wells.

{26} In opposition to the applicants' case, protestants presented expert testimony that increased pumping to the north would accelerate movement of the poor quality water in that direction. Protestants, however, failed to present evidence on the magnitude of this acceleration claiming that any increase, no matter how small, constitutes impairment. Protestants' expert, Mr. Kelly, admitted on cross-examination that the amount and rate of movement of the saline water was not a part of his study. Mr. Kelly also testified that it is clear that the quality of water in this area has degraded in the last twenty years. This degradation is undoubtedly an unfortunate condition but protestants have not shown that the proposed move will cause a significant change in the rate of deterioration.

{27} It is clear that the underground encroachment of saline water into fresh water supplies is a very serious problem. Although individual applications for permits to drill new wells or to move existing wells must still be considered on a case-by-case basis, we feel that basin-wide studies of salinity encroachment problems which would result in policy guidelines for the granting of permits, analogous to the document compiled by

Galloway and Wright for aquifer depletion in the Basin would be very useful in combatting the expanding salinity encroachment problem.

{28} Applicants also argue that it was improper for the district court judge to apply a singular finding of impairment to factually distinct cases. We have previously stated that "in the trial of consolidated cases * * * 'each case retains its distinctive characteristics and remains separate in respect of * * * verdicts, findings, judgments, and all other matters except the one of joint trial.'" **Aragon v. Kasulka,** 68 N.M. 310, 312, 361 P.2d 719, 721 (1961), **quoting** 88 C.J.S. **Trial** § 6 (1955). It appears that there were important factual differences between the Morgan and Sanders applications. We need not address this issue, however, since we find, on review of the evidence presented in this case under the guidelines for impairment stated above, that both applicants have met their burden of proof.

{29} The district court is reversed in both cases. The cause is remanded for entry of judgment granting permits to both applicants. Appellants shall recover their costs on appeal.

{30} IT IS SO ORDERED

SOSA, Senior Justice, and RIORDAN, and WALTERS, JJ., concur.

STOWERS, J., dissenting.

DISSENT

STOWERS, Justice, dissenting.

{31} I respectfully dissent.

*{*203}* **{32}** This case was tried **de novo** before the trial court.

{33} The issue in this case is substantial evidence, and as we have held on many occasions, the trial court's decision will not be disturbed where there is substantial evidence to support its findings. **See Toltec International, Inc. v. Village of Ruidoso,** 95 N.M. 82, 619 P.2d 186 (1980); **State ex rel. Reynolds v. Lewis,** 84 N.M. 768, 508 P.2d 577 (1973); **Tapia v. Panhandle Steel Erectors Co.,** 78 N.M. 86, 428 P.2d 625 (1967). I find that to be the case here. For this reason I respectfully dissent.

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1 The general formulation of Darcy's Law, as it applies to ground water velocity, is: **v** = **K(dh/dL)**. Where **v** is the flow velocity, **K** is a constant which depends on the permeability of the solid matrix of the aquifer, and **dh/dL** is the hydrostatic gradient (the

change in water table height over a given distance). R. Bowen, Ground Water 44-45 (1980); **See also** S. Davis and R. DeWiest, Hydrogeology 156-157, 174-175 (1966).