



Fourth Court of Appeals
San Antonio, Texas

OPINION

No. 04-13-00892-CV

Dora **GULLEY**,
Appellant

v.

STATE FARM LLOYDS,
Appellee

From the 288th Judicial District Court, Bexar County, Texas
Trial Court No. 2008-CI-03371
Honorable Sol Casseb, Judge Presiding

Opinion by: Rebeca C. Martinez, Justice

Sitting: Catherine Stone, Chief Justice
Karen Angelini, Justice
Rebeca C. Martinez, Justice

Delivered and Filed: December 23, 2014

AFFIRMED

Homeowner Dora Gulley appeals the trial court's judgment in favor of State Farm Lloyds in her lawsuit alleging that the foundation movement at her residence was caused by plumbing leaks, and therefore the interior damage was covered under the water damage endorsement to her homeowners policy. We overrule Gulley's issues on appeal and affirm the trial court's judgment.

FACTUAL AND PROCEDURAL BACKGROUND

In 1999, approximately three years after Dora Gulley's home was built on a general slope, she and her husband, who is now deceased, started noticing cracks in the walls and ceilings inside

the house. Mr. Gulley initiated a claim with State Farm in 2000, but later withdrew it upon being informed that coverage depended on whether there was a plumbing leak. Having built the house himself, Mr. Gulley was confident there was no plumbing leak. The Gulleys had the interior sheetrock cracks repaired in 2000.

The cracks inside the house reappeared and worsened from 2000 to 2006. In March 2007, Mrs. Gulley called AAA Auger Plumbing because she was having drainage problems in the toilets inside the home's two side-by-side bathrooms. The plumber found two breaks in the sewer drain line below the foundation under the hall bathroom. Mrs. Gulley contacted State Farm and it sent out another plumber from T.C. Carey Plumbing, who found the same two issues.¹

The State Farm claims adjuster, Jerry Duran, inspected the home and took photographs of the interior cracks. Based on his investigation and the Carey plumber's findings, Duran made a report that stated the bathrooms' "drain line is severed" and the plumber found "gravel in the drain line;" there is "cracking damage in both bath areas along the ceiling and wall;" and "the hall bath has signs of cracking damage on the vinyl floor." Duran concluded, "[t]here appears to be correlation between the significant plumbing leak and the cracking damage to the bath and offset areas." Duran recommended that State Farm pay the claim under the Dwelling Foundation Endorsement ("DFE") of the homeowners policy, which had a 15% cap. Mrs. Gulley accepted the payment from State Farm of \$13,550.

Mrs. Gulley obtained a \$17,500 estimate from Mitchco Foundation Company to repair the home's foundation. She contacted Duran and asked why the Water Damage Endorsement

¹ The first problem was a two-inch vertical separation in the sewer drain line underneath the toilet in the hall bathroom. The second problem was a blockage about four feet down the same drain line which was caused by roots that invaded the pipe through some type of opening which the plumbers' cameras could not reach. Carey found that the drain line was also filled with gravel. The parties refer to these two line breaks as "leaks" and we will do so as well. Moreover, both experts assumed the line breaks were leaking some amount of water, although the quantity of water was unknown.

(“WDE”) to her State Farm policy did not cover the “collateral damage” as well as the plumbing repairs. Duran replied that, “there was causation from the plumbing leaks to the cracking damage to your home . . . [but] the collateral damage (cracking damage to the home) was included as part of the foundation coverage. . . [and] the 15 percent limit applied to this damage as well.” Gulley repaired the foundation in 2008 through a less expensive method, installing interior and exterior piers under the foundation at a cost of \$14,600. Similarly, instead of hiring a professional plumber to replace the damaged drain line under the slab for almost \$25,000, she had her friends and family re-route the drain line and another plumber repair the bathroom drain. At the time of trial, the interior cracks in the walls, floor, and ceiling had not been repaired.

Mrs. Gulley sued State Farm for breach of contract after it rejected her claim for additional coverage under the WDE. Both parties filed cross motions for summary judgment on the issue of coverage under the WDE. The trial court did not rule on the agreed question of law regarding coverage; instead, the parties and court agreed to bring an interlocutory appeal on the stipulated legal issue. *See* TEX. CIV. PRAC. & REM. CODE ANN. § 51.014(d) (West Supp. 2014). A panel of this court held the trial court erred when it denied both summary judgment motions and expressly declined to make a decision on the substantive question of law; the case was remanded for the trial court to rule on the legal issue. *Gulley v. State Farm Lloyds*, 350 S.W.3d 204 (Tex. App.—San Antonio 2011, no pet.). Following remand, the trial court reconsidered the parties’ previously filed summary judgment motions. The court denied State Farm’s motion and granted Gulley’s motion in a general order, ruling that the WDE did apply to Gulley’s damage claim.² Gulley then decided she wanted to proceed to a jury trial. State Farm, however, sought to enforce a prior Rule 11 agreement it claimed precluded a trial. State Farm brought another interlocutory appeal on that

² State Farm has not raised a conditional cross-point on the issue of WDE coverage in this appeal. *See* TEX. R. APP. P. 25.1(c).

issue which we dismissed for lack of jurisdiction. *State Farm Lloyds v. Gulley*, 399 S.W.3d 242 (Tex. App.—San Antonio 2012, no pet.).

A jury trial finally commenced in July 2013. At trial, in addition to the testimony of Mrs. Gulley, the plumbers, and the State Farm adjuster Duran, both sides presented their own professional engineering experts with over 30 years' experience. Gulley's expert was James Bradley; State Farm's expert was Phil King. Both engineers inspected Gulley's home in 2008 before the plumbing and foundation repairs and issued reports, and then re-inspected the home shortly before trial in 2013, after the repairs, and issued supplemental reports. Both obtained land survey elevations of the interior and exterior before and after the repairs. Both agreed that the soil surrounding the Gulley home was expansive clay soil with high plasticity. Further, Bradley and King agreed that the Gulley home had suffered excessive foundation movement, and that due to the movement there was interior damage throughout the home.

As to the cause of the excessive foundation movement, Bradley concluded that it was due to the two plumbing leaks. Bradley opined that the two plumbing leaks had, over time, released water which gravity caused to flow down the dirt and gravel trench underlying the center drain line that ran the length of the house below the slab. Bradley stated the water was absorbed into the expansive clay soil, causing a "heaving" movement of the foundation along the drain line under the center of the house, which in turn caused the wall cracks and separation of the ceiling from the walls. Bradley based his conclusion on the 2008 elevations and his observations of the interior damage. King, on the other hand, read the 2008 elevations as showing "distortions" in the form of bending and flexing all across the home's foundation, with no evidence of consistent "heaving" along the center drain line or at the site of the plumbing leaks under the hall bathroom at the south wall of the house. King agreed with Bradley that if the plumbing leaks under the hall bathroom had caused the foundation movement there would be obvious "heaving" at the site of the leaks

where the clay soil had absorbed the water. However, based on the 2008 elevations and the contour diagrams he obtained from those measurements, King did not see consistent “heaving” of the slab under the hall bathroom; in fact, he stated the hall bathroom was at a relatively low point on the foundation according to the elevations and diagrams.

King concluded the excessive foundation movement was caused by naturally occurring seasonal moisture fluctuations in the clay soil, i.e., soil expansion when wet and soil contraction when dry, which the lightly-constructed foundation was not rigid enough to withstand.³ Bradley’s opinion concerning seasonal moisture fluctuations in the soil was that it would cause foundation movement, but only within five to eight feet of the perimeter of the house and would not reach the center of the house. King agreed with the general principle that seasonal moisture changes will affect the perimeter first, but opined that once the soil became saturated at the perimeter the moisture front would migrate farther inward toward the center of the slab and then recede as the soil became drier; this cyclic in-and-out movement is typical with clay soil. Finally, King testified that the 2013 elevations and contour diagrams, obtained after the plumbing leaks were repaired and piers were installed under parts of the foundation, showed continued excessive movement in the foundation, which confirmed his conclusion that the plumbing leaks were not the cause of the excessive movement and interior damage. Bradley disputed King’s interpretation of the 2013 elevations and contours, stating he did not see evidence of excessive foundation movement after the repairs.

³ In his reports, King stated that settlement of un-compacted fill material underneath the slab likely contributed to the foundation movement. At trial, King clarified that the fill settlement would have been a one-time occurrence within one to two years after construction of the home in 1995. Because the Gulleys repaired the first interior cracks in 2000, King stated the current interior damage would not be due to fill settlement. King further explained that fill settlement usually causes a tilt, which was present in the Gulley slab, but does not cause a flexing or bending of the slab which was also present in the Gulley slab. King stated the interior damage is related to flexing of the slab.

At the conclusion of trial, the jury was asked to determine the following issue in Question No. 1 of the charge: “Did the walls, floors or ceilings of Dora Gulley’s home deteriorate as the result of . . . continuous or repeated plumbing leaks which occurred over a period of time?” The jury answered “No.” As a result of the jury’s finding of no causation, the trial court entered a take-nothing judgment against Gulley on her breach of contract claim and awarded State Farm its costs of court plus interest. Gulley now appeals.

Gulley raises two issues on appeal: (1) whether the trial court abused its discretion by admitting the expert testimony by King, State Farm’s engineer, because it was not relevant and reliable; and (2) whether the jury’s finding that the plumbing leaks did not cause the foundation movement which resulted in the home’s interior damage is against the great weight and preponderance of the evidence, i.e., not supported by factually sufficient evidence.

ADMISSION OF EXPERT TESTIMONY – PHIL KING

In her first issue, Gulley challenges three particular opinions testified to by King:

- * that the 2008 pre-repair elevations showed “no heave” at the site of the plumbing leaks or center drain line, and therefore the leaks were not the cause of the excessive foundation movement and interior damage;
- * that the cause of the excessive foundation movement and interior damage was seasonal moisture fluctuations and migration within the clay soil which the under-constructed foundation was not stiff enough to withstand; and
- * that the 2013 post-repair elevations show the foundation has continued to move significantly, which confirms that the damaging foundation movement was due to seasonal moisture changes, not the plumbing leaks.

Gulley concedes that King was well qualified as an expert, but argues the trial court should have excluded the above testimony because (1) it was speculative and conclusory, and thus not relevant, and (2) it was not reliable because it was not based on reliable scientific data and methodology, and the analytical gaps between the data/methodology and opinions were too great. To be admissible as expert testimony, a witness must be (1) qualified as an expert, and (2) his

testimony must be relevant and based on a reliable scientific foundation. TEX. R. EVID. 702 (requiring the proffered expert testimony to be “scientific, technical, or other specialized knowledge” that will assist the trier of fact in understanding the evidence or determining a fact in issue); *E.I. du Pont de Nemours & Co., Inc. v. Robinson*, 923 S.W.2d 549, 556 (Tex. 1995) (holding that, in addition to qualifications, Rule 702 requires the proponent to show the expert’s testimony is relevant to the issues in the case and is based on a reliable foundation).

Standard of Review In determining the admissibility of expert testimony, the trial court has broad discretion and accordingly we review its ruling for an abuse of discretion. *Mack Trucks, Inc. v. Tamez*, 206 S.W.3d 572, 578 (Tex. 2006). In its role as gatekeeper, the trial court is only required to ensure that the expert testimony is based on a reliable foundation and is relevant to the issues in the case. *Gammill v. Jack Williams Chevrolet, Inc.*, 972 S.W.2d 713, 728 (Tex. 1998). The trial court does not determine whether the expert’s opinion is correct, but only whether the analysis used to reach the expert’s conclusion is reliable. *Id.*; *Exxon Pipeline Co. v. Zwahr*, 88 S.W.3d 623, 629 (Tex. 2002).

Preservation of Error The rule on preservation of error regarding the reliability of expert testimony is that a challenge to the underlying methodology, technique, or foundational data used by the expert must be preserved by a specific, timely objection to permit the trial court to evaluate the scientific methodology and data in its role as gatekeeper. *Coastal Transp. Co., Inc. v. Crown Cent. Petroleum Corp.*, 136 S.W.3d 227, 233 (Tex. 2004) (trial objection also ensures a full record will be developed on the issue). A trial objection is not required, however, to preserve a challenge to speculative or conclusory expert testimony which is non-probative on its face. *Id.* at 232 (conclusory expert testimony is not relevant evidence and cannot support a judgment); *accord City of San Antonio v. Pollock*, 284 S.W.3d 809, 817 (Tex. 2009).

Gulley filed a pretrial motion to exclude the following opinions by King: (i) that the foundation was under-designed and under-constructed which contributed to the excessive movement and interior damage on the ground that the opinion had “no factual basis” and was “based on flawed reasoning,” and was therefore unreliable; and (ii) that the foundation continued to move excessively after the piercing and plumbing repairs, which supports his conclusion that the plumbing leaks did not cause the initial movement and interior damage, on the ground that the post-piering movement was “not relevant to show the initial cause of foundation movement before repairs.” Gulley’s motion also objected to King’s opinion concerning “fill settlement” as speculative and sought to prohibit the use of his demonstrative 3-D elevation model; however, neither of these arguments are relevant to this appeal.⁴ At the conclusion of the *Daubert*⁵ hearing, the trial court denied Gulley’s motion to exclude the challenged portions of King’s testimony. Gulley did not raise any additional objections during King’s testimony at trial. However, after State Farm closed, Gully moved to strike King’s testimony concerning post-piering foundation movement, arguing it was “not the same foundation” after installation of the piers and repair of the plumbing leaks, and that King “could not explain” where he saw 5.4 inches of new movement on the 2013 elevations. The trial court denied the motion.

Thus, the record shows Gulley presented a trial objection to King’s underlying methodology and foundational data only with respect to his opinions about (i) the foundation being under-constructed for the clay soil, and (ii) the foundation’s continued excessive movement after repairs. As to King’s other opinions challenged on appeal, that there was no “heave” at the site of the leaks or center drain line and that seasonal moisture fluctuations and migration caused the

⁴ Gulley’s brief contains some references to King’s “fill settlement” theory, but ultimately both sides agree that fill settlement was a non-issue with respect to causation of the current interior damage.

⁵ *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993).

excessive foundation movement and interior damage, Gulley is limited to showing on the face of the record that these opinions were conclusory. *Coastal Transp.*, 136 S.W.3d at 232-33; *Pollock*, 284 S.W.3d at 817.

Analysis We have determined that in these types of cases involving challenges to expert testimony about the cause of foundation damage, whether from plumbing leaks, seasonal moisture, or other causes, *Gammill* provides the applicable analysis. *United Servs. Auto. Ass'n v. Pigott*, 154 S.W.3d 625, 630 (Tex. App.—San Antonio 2003, judgm't withdrawn by agr.) (citing *Gammill*, 972 S.W.2d at 727); *State Farm Lloyds v. Mireles*, 63 S.W.3d 491, 499 (Tex. App.—San Antonio 2001, no pet.). Thus, as the proponent of the expert testimony, State Farm was permitted to show the relevance and reliability of King's testimony through "his experience, skill and consideration of whether his analysis is grounded in scientific methods and procedure." *Gammill*, 972 S.W.2d at 726-27; *Mireles*, 63 S.W.3d at 499.

At the *Daubert* hearing, as well as at trial, King testified that he is a civil engineer with specialties in geotechnical engineering and construction materials engineering and has approximately 30 years' experience. He explained that geotechnical engineering involves studying and designing for the interaction between structures and the earth. As part of a committee, King authored guidelines for the proper design and repair of residential foundations to be used by the Texas State Board of Professional Engineers. King also holds several patents in the field, has published multiple articles and papers in professional journals, has taught college level engineering courses, and has been honored for his work. King stated he has inspected thousands of residential foundations and testified at many trials. Gulley's attorney conceded that King is more than qualified to testify as an expert on residential foundation issues.

King testified that he was retained in this case by State Farm to evaluate Gulley's residence to determine if the foundation movement was caused by the reported plumbing leaks. At the

Daubert hearing, King described the generally accepted methodology used by civil engineers in conducting a forensic evaluation of a slab foundation. King stated that the evaluation involves visiting the site and physically inspecting the slab itself, “looking at the performance of the slab and the factors that have influenced the movement of the slab,” along with taking land survey elevations of the interior and exterior of the home. King testified that he performed two interior and exterior inspections at Gulley’s house, the first in 2008 before any foundation repairs and the second in 2013, after the repairs and before trial. He took photos and obtained elevations from AccuTech Consultants each time he visited the site. AccuTech used a computer program to create a diagram showing the mathematical elevation points as topographic contour lines; Bradley also used this contour diagram. King reviewed the AAA Auger and Carey plumbing reports, including a diagram of the house that depicts the location of the plumbing lines under the slab; he also spoke to Mr. Carey before trial. King reviewed Bradley’s deposition and two reports, Bradley’s soil sample showing the clay had “moderately high” plasticity, and the elevations used by Bradley (taken by Northstar). King also reviewed the elevations by Westbrook Engineering after the plumbing was repaired and the foundation was pried by Mitchco. In all, King reviewed five sets of elevations taken between 2008 and 2013 and their related contour diagrams. In addition, King reviewed Mrs. Gulley’s deposition. Finally, King testified that he relied on engineering principles contained in various manuals and treatises that are generally accepted in the civil engineering industry, and on his own experience in performing thousands of residential foundation inspections. King issued his first report in December 2009 and a supplemental report in April 2013. His opinion remained the same between both reports—that the excessive foundation movement was caused by seasonal moisture changes, not the plumbing leaks. King’s 2013 report added an opinion that the foundation was “under-designed and under-constructed” for the area’s clay soil and a finding that the foundation had continued to move excessively five years after the plying and plumbing repairs.

In sum, King's investigation mirrored Bradley's investigation with both engineers inspecting the site twice, obtaining elevations each time, and reviewing the plumbers' findings and diagrams, and each other's expert reports. One difference was that Bradley conducted his own soil test which showed the clay soil generally adjacent to the house has "high plasticity," meaning it is highly reactive to moisture. King did not conduct his own soil test, but stated he reviewed the test conducted by Bradley and he agreed with the results showing the clay soil around the Gulley house is highly plastic. Another difference was that King had AccuTech produce contour line diagrams from the numerical elevation surveys, which Bradley then used as well.

A. Were King's Opinions Conclusory?

Gulley challenges as conclusory King's opinions that (1) there was no "heave" at the site of the leaks or along the center drain line, and (2) that seasonal moisture fluctuations and migration caused the excessive movement of the foundation and the interior damage. Gulley asserts those opinions were based on "unfounded or false assumptions" and consist of "bare conclusions and speculation" which were contradicted by the actual facts and scientific data; therefore, the opinions did not constitute relevant or competent evidence and cannot support the judgment. *See Robinson*, 923 S.W.2d at 557 ("Scientific evidence which is not grounded 'in the methods and procedures of science' is no more than 'subjective belief or unsupported speculation.'") (quoting *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 590 (1993)); *see also Coastal Transp.*, 136 S.W.3d at 232.

To be relevant, the expert testimony must bear a relationship to the issue in the case so that the testimony will aid the jury. *Gammill*, 972 S.W.2d at 720. An expert opinion is conclusory when it is offered with no factual substantiation. *Coastal Transp.*, 136 S.W.3d at 232; *State Farm Lloyds v. Hamilton*, 265 S.W.3d 725, 733 (Tex. App.—Dallas 2008, pet. dism'd). An opinion is not conclusory if there is "a reasoned basis which the expert, because of his 'knowledge, skill,

experience, training, or education,’ is qualified to state.” *United Servs. Auto Ass’n v. Croft*, 175 S.W.3d 457, 464 (Tex. App.—Dallas 2005, no pet.) (quoting *Burrow v. Arce*, 997 S.W.2d 229, 236 (Tex. 1999)). An expert must explain how he reached his conclusion. *Croft*, 175 S.W.3d at 464. In evaluating whether the expert’s testimony is conclusory, we look to the entire record, not to statements in isolation. *Id.* Opinion testimony that is conclusory or speculative is not relevant evidence and cannot support a judgment. *Coastal Transp.*, 136 S.W.3d at 232; *Merrell Dow Pharms., Inc. v. Havner*, 953 S.W.2d 706, 712 (Tex. 1997); *see also Russell Equestrian Ctr., Inc. v. Miller*, 406 S.W.3d 243, 247 (Tex. App.—San Antonio 2013, no pet.).

(1) No “Heave” at Site of Plumbing Leaks or Center Drain Line

The plumbing reports showed the two leaks in the drain line were located underneath the hall bathroom at the south wall of the house; the second leak was approximately four feet away from the hall toilet. Both King and Bradley agreed that, under generally accepted scientific principles, there would be a “heave” or rise in the foundation above the plumbing leaks if they were the cause of the foundation movement because the clay soil would absorb the water from the leak and expand, pushing the foundation upward. However, based on King’s review of the 2008 elevations by AccuTech and Mitchco, as well as Bradley’s 2008 elevations by Northstar, King did not see a “heave” at the site of the plumbing leaks or along the center drain line of the house. King read the three sets of 2008 elevations and the contour diagrams based on the elevation measurements as showing up-and-down distortion or flexing all across the slab; he stated there was no consistent heave at the leak-site or ridge along the center line of the house.⁶ King explained that, to the contrary, the elevations and line contours showed that the high point of the foundation

⁶ King explained the difference between foundation movement that results in tilting of the foundation as a unit, comparing it to how a battleship moves on waves, and “differential” foundation movement that results in flexing and bending of parts of the foundation, comparing it to how a rubber raft moves on waves with one part rising while the other part falls simultaneously.

was in the kitchen where there were no plumbing lines, and that the hall bathroom where the leaks and lines were located was actually in a relatively low spot. The center of the house was not consistently raised up along the center drain line; rather, the elevation measurements in the center of the house fluctuated up and down. King stated that in his experience inspecting thousands of foundations he has seen a lot of plumbing leaks cause foundation damage and that the tell-tale “heave” is easy to spot; he did not see it at the Gulley residence.

Gulley argues that King’s opinion that there was no “heave” at the site of the plumbing leaks or along the center drain line was speculative and conclusory because King did not know the pre-leak elevations at the site of the leaks or along the center drain line. As discussed below, King based his opinion that there was no “heave” at the leak-site or along the center drain line on a comparison of different locations within the home’s interior as shown on three sets of 2008 elevations and contour diagrams. Neither King nor Bradley knew the initial elevations of the interior prior to the plumbing leaks; therefore, neither expert attempted to compare the 2008 elevations to the elevations (unknown) right after construction.

Gulley also asserts that the slab was irregular, not flat, when initially poured, and that King’s opinion is speculative because it assumes the slab started out flat. First, Gulley cites us to no evidence proving the slab was poured irregularly when the house was constructed in 1995. Second, although both experts agreed that during construction slabs are generally poured flat within about a two-inch variation, neither stated that the scientific principle of heaving occurring at the site of a plumbing leak was dependent on the slab being flat, or that heaving could not be seen even with an irregular slab. King in particular explained that it was easy to use forms to level the slab when first poured, and that it would be “extremely unlikely” for a slab to initially be poured five to eight inches out of level because that would be very noticeable. Finally, Gulley argues that King’s opinion discounts the fact that the center of the home showed significant

damage from foundation movement, and that the hall bathroom had cracking in the walls and floors and separation of the ceiling from the walls. King did not discount the significance of the damage to those areas of the home, but emphasized that the same type of significant cracking damage was present across the entire home, not just in those areas.

We disagree that King's "no heave" opinion was conclusory. King described the facts upon which he relied as the three sets of 2008 elevations and the three contour diagrams that AccuTech prepared based on those elevation values, and explained his reasoning process in examining those elevations and diagrams within the context of the accepted scientific principle of heaving to reach his conclusion that no "heave" was present.

(2) Seasonal Moisture Fluctuations and Migration as Cause of Interior Damage

King testified that, in his experience, foundation movement caused by moisture is the main cause of the type of cracking damage observed in the Gulley home. The two main sources of water underneath a foundation are plumbing leaks and seasonal moisture fluctuations in the ground, which can be affected by vegetation, weather conditions like drought and rainfall, and other factors. Having ruled out the plumbing leaks as the cause of the foundation damage because there was no "heave," King turned to examine seasonal moisture fluctuations as the cause of the damage.

King reviewed Bradley's soil test and agreed with the finding that the clay soil at the Gulley home has "high plasticity," which he stated means that it is highly reactive to moisture. King explained that, due to its composition, clay soil naturally attracts water molecules; one cubic foot of clay soil contains between four to five gallons of water. The clay soil is constantly in a state of flux, expanding as it absorbs water and contracting as the water evaporates—a scientific process involving the interplay between evapotranspiration and precipitation. King further testified that once an area of soil becomes saturated, the water is pulled toward drier areas of soil and the "moisture front" will migrate or spread to the drier areas. King agreed with Bradley that seasonal

moisture will initially affect the perimeter of a house plus about five to eight feet inside the perimeter. But, King also opined that seasonal moisture can migrate as far inward as the center of the house depending on the moisture content of the soil. King explained that the expansion of the soil underneath the foundation can cause a rise, while the contraction of the soil can cause the foundation to fall, creating a flexing or bending movement and causing “distortion” across the slab. King testified that, based on his review of the 2008 elevations and contour lines, he saw “differential movement” or “distortions” all across the Gulley foundation where the slab had flexed up or down; the distortions were not limited to any one area of the home but were present throughout the entire home, as was the cracking damage. King stated this type of differential movement and damage was consistent with foundation movement caused by seasonal moisture changes. King further testified that well-designed and constructed foundations are able to withstand the expanding and contracting forces of clay soil as it reacts to naturally occurring moisture changes. Based on the wide-spread and severe distortions shown on the elevations, King reasoned that the Gulley foundation was too shallow and insufficiently rigid to withstand the natural expansion and contraction of the clay soil over time. Therefore, King concluded that the excessive foundation movement and resulting interior damage was caused by seasonal moisture fluctuations in the soil which the under-constructed foundation was not able to withstand.

Gulley argues that King’s causation opinion based on seasonal moisture is not supported by any facts or reasoning, but is merely speculative and conclusory. Specifically, Gulley argues that King’s theory that seasonal moisture migrated all the way to the center of the home is contrary to the established scientific principle that seasonal moisture generally affects only the area within five to eight feet inside the home’s perimeter. Gulley also asserts that King did not present any supporting treatise or authority for his migration theory. As noted, King agreed with the idea that seasonal moisture first affects the perimeter and the five to eight-foot area inside the perimeter.

He used the principle of how clay soil attracts water and pulls water toward the soil's dry areas to explain how a moisture front would move from a saturated area to a drier area, thus moving or migrating inward once the perimeter soil became saturated. As support for this idea of seasonal moisture migration beyond the perimeter, King cited a manual published by the Building Research Advisory Board, a division of the National Engineering Council, which discusses differential movements across a house due to moisture migration, and provided a page with explanatory diagrams from the lengthy manual at trial. Gulley argues that the manual was published in 1968 and that King provided only a single page with diagrams and no explanatory text. However, King stated on the record that he had the entire manual in court and offered to go through it with Gulley's counsel in front of the jury, but counsel declined. In addition to that manual, in his first report King cited a source titled "Expansive Soils – Problems and Practice in Foundation and Pavement Engineering," published in 1992, to support the concept of groundwater's ability to migrate laterally. In fact, King's report cites several professional engineering texts in support of the section on "Moisture Migration Movement." Finally, Gulley argues that King's opinion on seasonal moisture migration conflicts with the fact that the house was protected on two perimeters by the concrete slabs for the carport and patio. However, the floor plan attached to King's report reflects the carport and patio, and King stated at trial that the effect of those concrete slabs was not known. Bradley too stated that he did not know the protective effect of the carport and patio slabs.

King provided the factual and logical foundation as well as supporting engineering principles and texts for his testimony about seasonal moisture fluctuations and migration as the cause of the damaging foundation movement. We thus disagree that King's opinion on this issue was conclusory.

B. Were King's Opinions Reliable?

As noted, Gulley preserved the right to challenge the methodology, technique, and foundational data underlying King's opinions that (1) the foundation was under-designed and under-constructed for the clay soil, and (2) there was post-repair excessive movement in the foundation. Specifically, Gulley argues these opinions were not reliable because they were not based on scientific data and methodology, and even if they were, the analytical gap between the data/methodology and opinions was too great.

Under a *Gammill* analysis, the following factors are used to determine whether an expert opinion is unreliable and should be excluded:

- (a) If the foundational data underlying the opinion is unreliable;
- (b) If the methodology used to interpret the underlying data is flawed;
- (c) Notwithstanding the validity of the underlying data and methodology, if there is an analytical gap between those and the expert opinion; or
- (d) If the expert fails to rule out other plausible causes.

Gammill, 972 S.W.2d at 727; see *Pigott*, 154 S.W.3d at 630; *Mireles*, 63 S.W.3d at 494-95; see also *Hamilton*, 265 S.W.3d at 730. Gulley does not challenge the reliability of King's opinions on the basis that he failed to rule out other plausible causes of the damaging foundation movement.⁷

(1) Foundation was Under-Designed and Under-Constructed

Gulley argues that King's opinion that the foundation was under-designed and under-constructed is unreliable because he had no knowledge of the design or construction process used in 1995 when the home was built; thus, there is an analytical gap between the facts and King's opinion. King conceded that he did not have the blueprints and did not analyze the slab beyond making a visual inspection on his two site visits and studying the 2008 and 2013 elevations and

⁷ The record shows that King did rule out other plausible causes for the foundation damage.

contour diagrams. However, other trial evidence showed, and King was aware, that Mr. Gulley had designed and constructed the home without a professional engineer and without any code inspections. As discussed above, King testified that he made a logical deduction that the Gulley foundation was not properly designed or constructed to withstand the expansive effects of the clay soil based on the 2008 elevation measurements and contour lines showing differential movement (distortion) across the entire slab. King further testified that the elevations taken in 2013, five years after the piers were installed below the foundation and the leaks were repaired, showed the foundation had continued to move excessively. King explained that this mathematical evidence of continued differential movement supported his opinion that the foundation was not sufficiently strong or rigid to withstand the natural soil movement, even after piercing. We disagree that King's testimony on this issue was unreliable due to analytical gaps or insufficient foundational data or methodology.

(2) Post-Repair Movement of the Foundation

Finally, Gulley challenges King's opinion that the foundation continued to move excessively after the repairs as lacking a credible factual foundation and methodology and suffering from analytical gaps. King testified that the 2013 elevations showed the foundation had continued to move excessively, more than five inches, after the piercing and plumbing repairs. King stated that such post-repair movement confirmed his opinion that the leaks did not cause the foundation movement and interior damage, and that it was due to seasonal moisture changes in the soil.

Gulley's expert, Bradley, disagreed that the 2013 elevations showed substantial post-repair slab movement. Gulley argues that King's opinion was full of analytical gaps because he was not able to explain at trial how the elevations and diagrams showed five inches of slab movement during the period after the repairs. King testified that he took the elevation measurements obtained

by Westbrook Engineering a few days after the piercing was completed in 2008 and compared them to the new elevations that AccuTech took for him in 2013. AccuTech then used a computer program to translate the elevation data points into a contour line diagram which depicts foundation movement by how close together the lines are as well as the number values listed for the elevation points. King explained that the elevation data points are “quantitative measurements” and “detailed mathematical calculations” that are then plotted as the contour lines on the diagrams. King also had AccuTech prepare a comparison contour diagram titled “Relative Difference Elevations” by subtracting the 2008 Westbrook elevations from the 2013 AccuTech elevations; the positive numbers reflect upward movement of the foundation, while the negative numbers reflect downward movement. All of these elevations and contour diagrams are attached to King’s reports. When asked on cross-examination whether he could re-calculate the numbers showing movement, King stated that he could do so but that it would take “some time,” about an hour; Gulley’s counsel declined to ask him to do the calculation in court. Gulley characterizes this as King’s inability to “show his work” and explain his analysis. To the contrary, when asked on cross-examination to explain where he found five inches of movement on the diagram, King spent several pages of record explaining how the comparison of the 2008 and 2013 elevations was done and explaining that a “0.0” value meant there was no movement, while the “4.0” value noted in a corner of the house meant there was upward movement. King explained that the presence of a contour line in a space on the diagram meant there was movement, either upward or downward. King testified that the elevation measurements and contour diagram showed there was substantial continued movement across the foundation, on both the pierced parts and the unpiered parts.

Finally, Gulley argues that King’s comparison is faulty because after piercing the foundation was not the same foundation on which the 2008 elevations were based. In other words, Gulley argues it was an unfair and unreliable comparison. However, the trial evidence showed that not

all areas of the foundation were piers. Sheet 1 attached to King's 2013 report is a diagram prepared by AccuTech that shows the locations of the exterior and interior piers. It is apparent that the southern half of the home containing the two bathrooms and bedrooms had no interior piers installed. King testified that, therefore, that un-piered portion of the slab would still be resting on the ground, or "on grade," and would be the same concrete slab with the same stiffness, or lack thereof, as before any repairs. King testified that he disagreed with the use of piers to repair the foundation, citing as support the evidence that the foundation was continuing to move substantially. We conclude that King's opinion on this issue was not unreliable due to analytical gaps or lack of foundational data or scientific methodology.

Conclusion In its role as gatekeeper, the trial court was only required to ensure that King's expert testimony was based on a reliable foundation and was relevant to the causation issue in the case. *Gammill*, 972 S.W.2d at 728. The trial court's role is not to determine whether the expert's opinion is correct, but only whether the analysis used to reach the expert's conclusion is reliable. *Id.*; *Zwahr*, 88 S.W.3d at 629. For the reasons detailed above, we hold that King's analysis was sufficiently reliable and his opinions were not speculative or conclusory.

FACTUAL SUFFICIENCY - CAUSATION

As discussed, *supra*, Gulley initially argues that King's testimony should have been excluded and, even if admissible, was merely conclusory and cannot support the jury's verdict. *See Coastal Transp.*, 136 S.W.3d at 232. We have rejected that argument. In her second issue, Gulley argues that, even if King's testimony was properly admitted and not conclusory, the other evidence and her expert Bradley's testimony and conclusion on causation was more credible and reliable than King's testimony and conclusion; therefore, the jury's finding that the leaks were not the cause of the interior damage is against the great weight and preponderance of the evidence.

Standard of Review In evaluating factual sufficiency, we consider all the evidence and determine if the evidence supporting the jury finding is so weak, or so against the overwhelming weight of the evidence, that the finding is clearly wrong and manifestly unjust. *Cain v. Bain*, 709 S.W.2d 175, 176 (Tex. 1986). Here, because Gulley had the burden of proof on the adverse finding she must show it is against the great weight and preponderance of the evidence to prevail on her factual sufficiency challenge. *Dow Chem. Co. v. Francis*, 46 S.W.3d 237, 242 (Tex. 2001). In conducting this review, we may not pass on the credibility of the witnesses or substitute our judgment for that of the trier of fact, even if a different answer could be reached upon review of the evidence. *Id.*

Analysis Gulley argues that the great weight and preponderance of the evidence supports a finding that the leaks caused the foundation movement and interior damage based on Bradley's expert testimony, along with Duran's testimony and report finding a causal link between the plumbing leaks and the foundation movement at the time State Farm paid Gulley's first claim. Gulley asserts that Bradley's expert testimony was more credible and reliable than King's testimony which was the only evidence that supports the jury's finding.

We agree that King's expert testimony, reports, and attached diagrams constitute the evidence in support of the jury's finding that the plumbing leaks did not cause the cracking of the walls, floor, and ceiling inside the house. We have overruled all of Gulley's challenges to King's opinions and determined that it was all properly admitted and not conclusory. As detailed above, Bradley's and King's opinions differed on several points. Bradley testified that the 2008 elevations and contour line diagrams showed a rise or "heave" in the middle of the house along the center drain line; King disagreed that the 2008 elevations showed a "heave" along the center line or at the site of the leaks, as would be expected if the leaks had caused the foundation damage. Bradley did not believe there was any flaw in the design of the slab or that the foundation was not well

constructed. The two experts also differed as to the effect of seasonal moisture changes, with King testifying that natural moisture could migrate underneath the slab to the center of the home and Bradley testifying that natural moisture can only penetrate about five feet inside the perimeter of the slab. Finally, while King read the 2013 elevations as showing significant foundation movement was still occurring five years after the repairs, Bradley stated the 2013 elevations showed no such movement.

We must defer to the jury's credibility assessments and resolution of conflicts in the evidence when weighing factual sufficiency. *City of Keller v. Wilson*, 168 S.W.3d 802, 819, 821 (Tex. 2005) (in factual sufficiency review, appellate court does not substitute its judgment for that of the jury, as the jury is the sole judge of the credibility of the witnesses and the weight to be given their testimony). Resolution of the conflicts in the trial evidence, including the testimony of the two engineers, was solely within the jury's role as the fact finder. *Allstate Tex. Lloyds v. Mason*, 123 S.W.3d 690, 702 (Tex. App.—Fort Worth 2003, no pet.) (when the parties present competing expert witnesses, the burden falls on the jury to determine which expert opinion is more credible). We hold King's expert testimony and ultimate opinion that the leaks did not cause the cracking damage inside the home, which the jury believed, provided factually sufficient evidence to support the jury's finding.

CONCLUSION

Based on the above reasons, we overrule Gulley's appellate issues and affirm the trial court's judgment.

Rebeca C. Martinez, Justice