A Roundtable Discussion on the No-Injury Rule of Colorado Water Law

by Britt Banks and Peter Nichols

This article reports on a workshop on the no-injury rule of Colorado water law sponsored by the Getches-Wilkinson Center for Natural Resources, Energy & the Environment of the University of Colorado School of Law.

Colorado, like many arid places in the world, faces an uncertain water future. Demand for water is projected to continue to accelerate due to an expanding economy, a growing population and associated urbanization, growth in the tourism and oil and gas sectors, and increasing international demand for agricultural products.

At the same time, pressures on water supplies are also expected to continue to accelerate, due in part to climate change impacts—for example, longer growing seasons, reduced average flows, increasingly frequent droughts, higher temperatures, and earlier melting of high-country snow pack—and ongoing depletion of groundwater aquifers. Increasing demand for water from powerful downstream states, such as California and Arizona, could also negatively affect future supplies available to Colorado users.

The potential for a water crisis in the Centennial State is real and growing every day. At some point soon, demands for water could substantially exceed available supplies, threatening significant economic, social, and environmental consequences. The fact that there are legal claims for more water than falls on Colorado in all but the snowiest years underscores the challenges facing the state. As the Colorado Supreme Court presciently observed:

As administration of water approaches its second century the curtain is opening upon the new drama of maximum utilization and how constitutionally that doctrine can be integrated into the law of vested rights.¹

The goal of maximizing the use of our waters, however, must sometimes yield to the protection of vested rights.² That said, there is increasing discussion regarding whether Colorado water law, as it currently stands, is flexible enough to accommodate unmet current and forecast water demands to avoid a crisis, while at the same time protecting vested water rights.

Working within the system often requires hiring expensive engineers and legal advisors, and—in the view of some—overcoming a hard-wired resistance to the changes needed to promote maximum utilization, efficiency, conservation, and sustainable use.

In October 2014, the Getches-Wilkinson Center sponsored a roundtable discussion featuring a diverse group of expert water jurists, water lawyers, water engineers, state water officials, and academics on Colorado water law and Colorado water policy.³ The workshop discussed one aspect of the state’s water law that is seen by some as imposing the type of flexibility needed to avoid a crisis—namely, the “no-injury rule.” The rule is of overriding importance because appropriators have claimed virtually all of the water available; therefore, accommodating new or additional demands generally requires adjudicating changes to existing irrigation water rights.⁴

The No-Injury Rule

Under Colorado water law, a water right cannot be changed unless the applicant can demonstrate that such action will not “injuriously affect” water rights held by others. This is the no-injury rule:

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Injury involves diminution of the available water supply that a water right holder would otherwise enjoy at the time and place and in the amount of demand for beneficial use under the holder’s decreed water right operating in priority. Moreover, “a change of water right proceeding precipitates quantification based on actual historical consumptive use, in order to protect other appropriators.”

As currently implemented, any type of impact, no matter how small or distant in the future, is deemed to be injurious. Thus, satisfying other water right owners’ allegations of injury usually requires applicants to prove they can maintain the stream conditions that existed before the change—that is, they must guarantee that essentially every drop of water is present at the same “time, location, and amount” as before the change. Too often, the result is costly, years-long litigation over small amounts of water—so-called “teacup changes to stream conditions”—given overcrowded dockets and the extensive expert disclosure process in the court rules. Complicating matters for the applicant, it is hard to propose mitigation without a clear and accepted approach to evaluate injury. It is accordingly often easier and cheaper for applicants to simply relinquish or transfer part of their water right to the stream or objects than to prove no injury.

A number of Colorado water lawyers, engineers, and managers—certainly not all—are concerned that this doctrine, as currently implemented in the state, limits the flexibility needed to manage water in a supply-constrained environment, especially in the South Platte and Arkansas river basins. Many of the participants in the roundtable noted that, under current law, there is no material or de minimis standard for injury. One participant cited an example of terms and conditions to protect a downstream water right from a stream depletion of less than a cup of water more than five years in the future.

Proving a lack of injury can lead to costly engineering and expensive and lengthy litigation, and can result in the imposition of burdensome terms and conditions. Many feel that recent changes in the court rules regarding expert disclosures have exacerbated this problem. And too often, and many times long after the objecting water users have settled with the applicant, the State and Division Engineers challenge changes irrespective of injury. Increasingly, the risk of these negative effects can deter applicants from even attempting to change the use of a water right, and in other cases changes that would foster maximum utilization of the state’s water resources do not proceed because the costs required are simply too high.

Some roundtable participants expressed the view that the no-injury rule must be reformed to permit and promote the flexibility and innovation that is needed now and will become critical to manage Colorado’s water to meet future needs. As one jurist observed, we are boxed into a corner by climatic change; preserving the past means a lack of flexibility to address the future.

Participants focused on three topics related to the no-injury rule in change cases in particular: (1) the role of data collection and modeling in determining injury; (2) whether a material or de minimis injury standard should be developed and how it could be applied; and (3) whether rules governing the burden of proof and standing in water court proceedings should be altered in some way. The discussion of each of these three topics follows.

**Engineering and Data**

To calculate whether a proposed change will reduce return flows of water to other holders of water rights, engineers employ various formulae, computerized spreadsheets, and mathematical models—for example, GLOVER, AWAS, State CU, or MODFLOW (models). These models produce long-term predictions of impacts, with results often quantified at a very high level of detail—for example, daily time steps extending for decades into the future. Although the science and the models are widely accepted, their application can be problematic. Modeled effects are highly dependent on data and assumptions. Whether the application of a model to any given hydrological setting accurately captures its essential behavior is often the subject of contention among applicants, opposers, and the State and Division Engineers.

Many workshop participants expressed concern that the models currently being used are simply incapable of the level of precision that is implicitly attributed to them by courts and the Division of Water Resources (DWR). Some participants expressed skepticism that any model could measure a natural system, such as stream flows and groundwater, to the degree of accuracy that is needed or presumed to address injury at the level recently specified in water court decrees and DWR approvals. One noted in particular that groundwater is extremely hard to model, especially deep groundwater, due to complex geology, and that one key variable is at best accurate at an order of magnitude. Others stated that the results of these models are often only correct within plus-or-minus 10%, and that this level of uncertainty needed to be understood and recognized by the lawyers, courts, and DWR using these models to approve terms and conditions to prevent injury to other water rights. Implicit in these criticisms was the idea that it makes no sense to spend months or years, and tens or hundreds of thousands of dollars, arguing over the accuracy of models that are by their nature incapable of being as accurate as objects demand where simpler models could suffice.

The limitations on the accuracy of the modeling and in river administration have been implicitly recognized by the water courts and the State Engineer. For example, numerous decrees of water courts and substitute water supply plans approved by the State Engineer provide for “folding” the final 5% to 10% “tail” of calculated return flows obligations back into earlier years to address tiny amounts of water calculated to be owed to the river in distant years.

For some participants, the bigger issue is the over-reliance on these models by engineers, lawyers, courts, and DWR. The con-
cern is that the models are used as a substitute for professional judgments that, in decades past, were commonplace in water court cases. One participant asked, "What happened to the application of professional engineering judgment?" In fact, this may be a manifestation of a larger issue—that is, the interface between engineering and the law, and engineers and lawyers, who see things through different lenses.

For example, when lawyers see a number, say 0.1 acre-feet, they tend to treat it as fact, whereas engineers understand the limitations inherent in the supporting science and data—for example, while 0.1 acre-feet may be the answer from the model and data, the actual effect on the system could be 1 or 0.01 acre-feet, or even more or less. Jurists, however, seem to understand that it is not possible to get the desired accuracy because there will be errors in modeling naturally non-uniform and often complex hydrogeology, and scientific understanding will improve and change over time. That said, everyone agreed that generally accepted models would give the courts better information to make good decisions.8

Many participants also pointed to the limited data feeding into the models, and noted that this lack of data limits the precision of any model. In addition, many noted that it can be prohibitively expensive for individual applicants, objectors, or DWR to collect the data needed in any particular case, necessitating the use of simplifying assumptions, which introduce uncertainty into the modeled results. All agreed on the need to collect more data, on a basin- or subbasin-wide basis where possible. The San Luis Valley was mentioned as an example where basin-wide data collection efforts have worked well; the South Platte Basin was mentioned as an example where more localized data is needed.

The Water Court Committee of the Colorado Supreme Court recognized these problems in 2008 when it recommended, "The Colorado General Assembly should continue to foster the development of publicly usable river basin computational models, predictive tools, and model data transparency." There are a couple of promising recent examples of accepted computational models and predictive tools.9

Out of this discussion came a number of proposals for reform:

- The State Engineer’s Office should develop through rulemaking (a few thought through policy) computational models and predictive tools to determine historical consumptive use, return flows, injury, and compact compliance for basins or sub-basins where their use would facilitate resolution of numerous, complex or broadly contested applications.
- Although some think the State Engineer has the authority to undertake this now, others disagreed. Most thought that legislative direction would be very useful.
- Some suggested that there should be a statutory rebuttable presumption for an applicant that uses a model developed through State Engineer’s rulemaking, because that process would provide everyone an opportunity to participate in adjudication of the validity of the model, like ISAM or RGDS.10

- The state legislature or the Colorado Water Conservation Board (CWCB) should provide funding for expanded basin and sub-basin data collection in each of the state’s water divisions.
- The water courts and DWR should recognize the inherent uncertainty in computational models and predictive tools and stop applying the results to impose terms and conditions that are beyond the scientific accuracy of the models, tools, and data.
- Some thought that as more data is collected and the models are improved, there should be some provision for reopening decisions or decrees based on earlier, less-accurate modeling.

The last recommendation was controversial and highlights the tension between the certainty needed by individual water users in decrees and administrative action on the one hand, and the need for flexibility and reliance on sound science on the other.

Everyone agreed we should "follow the science," although all did not agree on how to do that. Because science is not static, some thought decrees and administration should adjust in some manner as data, science, and engineering improve. One participant posed the dilemma between wanting decrees now and certainty for the future, or providing for the incorporation of better science and engineering in fifty years. Another participant noted that the legal concepts of res judicata and collateral estoppel are not well suited to Colorado water law, given the technical and scientific uncertainty behind many prior decisions, which seemingly opens the door for future modifications.

**Defining a Material or De Minimis Injury Standard**

As stated above, most participants felt that as Colorado law is currently applied, any impact appears to constitute injury and there is no de minimis or other practical materiality standard to define injury. There was a lengthy discussion about whether a material or de minimis injury standard could or should be defined by statute. Many participants argued that the state legislature, or perhaps the State Engineer, should define an acceptable range of impact to apply to changes of water rights.

It was noted that, in certain specific instances, the legislature has statutorily declared that certain water uses do not constitute injury, effectively legislating findings of de minimis injury. Examples include gravel pits,12 small-capacity household wells,13 groundwater depletions,14 and stormwater retention.15 It was also noted that, on a cumulative basis, the impacts from these types of activities can be quite significant—for example, exempt wells consume 20,000 to 40,000 acre-feet/year statewide, and South Platte gravel pits consume 10,000 acre-feet/year. These examples were advanced to support the proposition that the legislature has the authority to define what constitutes injury, and could define what constitutes a de minimis injury. A few, however, thought that such legislation might interfere with the constitutional right to appropriate or could constitute an unconstitutional taking or inverse condemnation.

One participant noted that the Idaho Supreme Court adopted a materiality standard of 10%, although many thought this too high.16 Others threw out numbers ranging from 1/10 of 1% to 1% to 5%, or 50 acre-feet. For comparison, Colorado statute defines non-tributary groundwater using a depletion standard of 1/10 of 1% within 100 years,17 although one participant reminded everyone that water engineers and lawyers had recommended 1% and the legislature reduced that by a factor of 10, perhaps enacting a preference in 1985 for protecting vested rights. The Colorado Water Conservation Board has a 1% de minimis rule, although the CWCB may still object to a change.18 And Colorado statute requires the user of non-tributary groundwater more than a mile from a stream to relinquish 4% of the annual withdrawal per year.19 Still another example is the State Engineer’s confidence level in

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8. See supra note 8.
10. See supra note 10.
11. See supra note 11.
12. See supra note 12.
15. See supra note 15.
16. See supra note 16.
17. See supra note 17.
18. See supra note 18.
19. See supra note 19.
stream depletions modeled by the Rio Grande Decision Support System (RGDSS), which is currently 50 acre-feet per year. Other than these and a few other isolated exceptions, any other diminishment of stream flow resulting from a change of water right would constitute injury. Some argued that a range of acceptable percentage impact should be implemented, while others argued for a fixed quantitative standard or a combination.

A statutory definition of injury could relate to depletion of the river (return flow), to a limitation on the yield (CU) of the applicant's water right, or to a reduction of yield (CU) of an objector's water right. Basing a standard on a percent of applied-for change or objector's water right would be different for every application (1% of 1 cfs is 0.01 cfs, 1% of 100 cfs is 1 cfs), however, and might not be equitable because the standard would be more stringent for small changes than for larger ones. Furthermore, the cumulative effects of multiple changes on individual water rights complicates application of a de minimis standard and requires consideration. These considerations may favor a methodology that results in an applicant relinquishing water to ensure no injury—effectively formalizing the ad hoc approach of innumerable historical decrees.

Some participants felt that any standard needed to address the frequency and duration of impacts. A few also favored a multi-tiered approach, with different standards related to the size of the change, perhaps relative to the native stream flow.

Applying a Material or De Minimis Injury Standard

While many participants agreed on the need for an injury standard, there was less agreement on how such a standard should be applied. Some thought proposed changes that are within an injury standard should be allowed to proceed. Others argued that proposed changes within an injury standard should still be required to mitigate predicted depletions, but that there should be much more flexibility or discretion as to how that should be done, such as through cash payments, structure improvements, or stream improvements.

One proposed approach would be to give the water court explicit direction and flexibility to make a finding of no injury within some statutorily defined parameters. However, that approach may not address the issue, but could instead merely recast the argument between the applicant and the objectors in water court. Others proposed that the General Assembly should create a framework approach on injury, and then charge the State Engineer's Office with exercising technical judgment within that framework, similar to his authority to administer futile calls. Many others, however, did not favor giving the State Engineer this additional authority, given widespread concern over legal positions taken by his office in recent cases.

Burden of Proof and Standing

Finally, there was a robust discussion on burden of proof and standing in change of water rights proceedings. Currently, an applicant seeking a change of water right decree bears the burden of showing that injury to other adjudicated water rights will not result. Weibert v. Rotte Bros., Inc. If the applicant successfully meets this burden, objectors have the burden of going forward with evidence of injury to other adjudicated water rights. City of Thornton v. Bijou Irrigation Co.

The burden shifts back to the applicant if the objectors provide evidence of injury to their vested water rights. Although this is a straightforward three-step process in theory, it is not simple in practice. For example, some decisions have held that on an over-appropriated stream, there is a presumption of injury the applicant must overcome. Moreover, objectors do not have to show that a depletion actually causes an injury to their water right. Instead, the applicant must prove a negative—that its proposed action will not cause injury. Proving a negative is, of course, extremely difficult. Complex change cases regularly generate myriad terms and conditions and accounting obligations designed to assure objectors there will be no diminution of their water rights. In practical effect, such terms and conditions usually mean that applicants leave water court with significantly less wet water than when they entered.

Many participants accordingly felt that the rules on burden of proof need to change, because they give too much power to objectors and lead applicants to acquiesce to onerous conditions simply out of fear of litigation. This is a particular concern of asset-rich cash-poor applicants, such as owners of irrigation rights. Many believed that injury is seldom the real issue but becomes the proxy to force resolution of other matters between an objector and the applicant.

Some felt that the burden of proof should squarely shift to an objector, and that objectors should be required to prove that their water rights would be actually harmed by a proposed change, at least after an initial showing by the applicant of non-injury. Another suggestion was that the burden of proof rules should work in tandem with a statutory injury standard. So, for example, if the injury standard were 1% of an objector's water right, and the applicant's modeling shows that its proposed action would fall below that standard, the burden of proof would shift to the objector to prove injury to their water right.

One participant advanced a different approach, proposing that once a water right holder objects in a change case, the applicant should be able to question whether the objector is wasting water or using water inefficiently. If the applicant can demonstrate waste or inefficient use by the objector of an amount equal to or more than the alleged impact of the proposed action, the proposed change would be allowed to proceed.

With respect to standing, many noted and some objected to the State Engineer's recent practice of objecting to changes purportedly to protect the state's water supply and represent the "little guys," perceived by some to be on behalf of future appropriators. Many felt that only the holders of actual water rights should be allowed to file objections and assert injury in change cases. Standing to assert injury requires the objector to show a legally protected interest in a vested water right or a conditional decree. Anyone, however, can oppose a change and insist on strict proof of all elements of the application, even if they do not own any water rights.

Conclusion

Climate change, growth, and evolving social values pose major challenges for Colorado's water future. Addressing these issues through reallocation of existing water rights will be particularly challenging within a generally over-appropriated system. One participant posed this issue as a question of philosophy: Should the law err on the side of protecting existing users, provide a level playing field, or err on the side of facilitating reallocation to meet changing social needs? There was vigorous advocacy during the roundtable on all sides of this issue. Most seemed to agree, however, that the current system is generally too costly and too rigid.
In Colorado, all surface and ground water is a public resource.\(^{29}\)

Shifting some legal burden onto opposers could establish a balance that is lacking, whereby opposers have the upper hand in maintaining the status quo. Although some cautioned about approaching the General Assembly, most participants did seem to agree that everyone would benefit from more statutory guidance on what constitutes injury to water rights.

Notes

3. Approximately twenty judicial officers, state officials, private and public practicing attorneys, and water engineers participated in the five-hour workshop in Boulder on September 20, 2014. The workshop followed the Chatham House Rule to encourage openness and sharing of information — i.e., “participants are free to use the information received, but neither the identity nor affiliation of the speaker(s), nor that of any other participant, may be revealed.” See www.chathamhouse.org/about/chathamhouse-rule#hash.vjkhRhnAnFipuf.
10. The Irrigation Systems Analysis Model (ISAM) is a peer-reviewed computer program developed by DWR to compare monthly water budgets of surface water irrigation systems with and without an improvement to evaluate the impacts of an improvement to a surface water irrigation system located in the Lower Arkansas Basin. DWR developed ISAM over a couple of years with input from an advisory committee of more than a dozen water engineers. It has been in use for four years to analyze irrigation changes for more than 100 farms annually, and eliminated the need for individual modeling of each farm. In the Matter of the Proposed Compact Rules Governing Improvements to Surface Water Irrigation Systems in the Arkansas River Basin in Colorado, Case No. 09CW110 (Water Div. No. 2, Oct. 25, 2009).

The Lease Following Tool (LFT) is another computational model and predictive tool developed by DWR and the CWCB with a technical committee consisting of approximately twenty water engineers. The LFT is used to implement ag-municipal water sharing pursuant to HB 13-1248. It employs a number of conservative assumptions — e.g., irrigation efficiency, surface runoff and deep percolation, and specific aquifer yield — that together underestimate historical consumptive use (HCU) and overestimate return flows by at least 5% to 10% according to the consulting water engineers involved in its development. The use of the LFT for the Catlin Pilot Project dramatically reduced the engineering costs and disputes over injury, especially as compared to a nearly identical substitute water supply plan (SWSP) proposed in 2012 using traditional engineering modeling. CWCB and DWR, “Criteria and Guidelines for Following-Lessing Pilot Projects,” cwb.state.co.us/water-management/water-proj-trends-programs/Documents/FollowLease/FollowingLeasingCriteria%2020131119.pdf.

12. CRS § 37-92-305 (12) (exempting from replacement historical natural depletion cases by pre-existing vegetative cover).
13. CRS §§ 37-90-105(1) and 37-92-602(1) and -602(3)(b)(II)(A).
14. CRS §§ 37-90-103(10)(5) (defining nontributary ground water) and -178(9)(c); (ii) (requiring augmentation of Denver Basin wells).
15. See CRS § 37-90-602(9).
16. *Clear Springs Foods, Inc. v. Spackman*, 252 P.3d 71 (Id. 2011) (footnoting that the margin of error was probably much higher than 10%, but the conflicting testimony supported use of a 10% margin of error as a minimum).
17. CRS § 37-90-103 (10)(5).
18. 2 CCR 408-2 8e.
20. Draft Rules Governing the Withdrawal of Ground Water in Water Division No. 3 at ¶ 7.2 (Aug. 11, 2014); water.state.co.us/DWR/PA/Trk%20Luis%20Valley%20Advisory%20Committee/Ground%20Water%20Rules%20for%20Division%209%20Draft%20August%202014.pdf.
21. The water court has considerable authority regarding conditions and terms to prevent injury to vested water rights. CRS § 37-92-305(3) and (4).
25. A recent example is SB 15-212 (enacted in May 2015), which requires, for stormwater detention and infiltration facilities, objects to prove material injury to their water right by the modification of the amount or timing of water that would have been available for diversion by the water right under hydrologic conditions that existed as of the water right’s priority date. See CRS § 37-92-602(8)(c).
26. See, e.g., Taussig, supra note 6 at 141-42.
28. CRS § 37-92-302(b).