

***WATER LAW'S CLIMATE DISRUPTION
ADAPTATION POTENTIAL***

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WATER LAW'S CLIMATE DISRUPTION ADAPTATION POTENTIAL

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I. INTRODUCTION: CLIMATE CHANGE WILL STRESS BOTH REGIONS AND WATER LAW

A. Auf Wiedersehen to Hydro Stationarity

In the coming decades, Global Climate Change (GCC) will impact hydrologic balances and thus water availability, use, and management in both arid and humid regions of the United States.² Many of the fundamental hydrologic assumptions upon which water allocation, water pollution control and aquatic ecosystem conservation are based will be fundamentally changed. GCC will therefore stress both the laws of prior appropriation and riparian rights.³ Water law follows hydrology and is premised on the assumption that regional water balances will remain relatively constant or “stationary” over time. This is no longer a viable assumption.⁴ Water managers must now assume that existing hydrologic models are no longer reliable and in many

¹ Professor of Law, Chicago-Kent College of Law, A.B., 1962, LL.B., 1965 Stanford University. This is an abridged, reorganized and updated version of *How Well Can Water Law Adapt to the Potential Stresses of Global Climate Change?*, 14 *Denver Water L. Rev.* 1 (2010).

² E.g., Intergovernmental Panel on Climate, *Climate Change and Water* (IPCC Technical Paper VI, 2008) and National Science and Technology Council, *SCIENTIFIC ASSESSMENT OF THE EFFECTS OF CLIMATE CHANGE ON THE UNITED STATES 12- 13* (A Report of the Committee on Environment and Natural Resources 2008);

³ E.g., Robert H. Abrams and Noah D. Hall, *Framing Water Policy in a Carbon Affected and Carbon Constrained Environment*, 50 *Nat. Res. J.* 3 (2010); Robert W. Adler, *Climate Change and Hegemony of State Water Law*, 29 *Stan. Env'tl L. J.* 1, 10– 17 (2010); Brian E. Gray, *Global Climate Change: Water Supply Risks and Water Management Opportunities*, 14 *Hastings W.-Nw J. Env'tl. L. & Pol'y* 1453, 1454-55 (2008); and Kathleen A. Miller, *Climate Change and Water in the West: Complexities, Uncertainties, and Strategies for Adaptation*, 27 *J. Land Resources & Env'tl. L.* 87, 91 (2007).

⁴ See Robin Kundis Craig, *Stationarity is Dead: Long Live Transformation: Five Principles for Climate Change Adaptation*, 33 *Harv. Env'tl. L. Rev.* 9 (2010) and *Climate Change, Regulatory Fragmentation, and Water Triage*, 79 *U. Colo. L. Rev.* 825 (2008).

cases lead to an underestimation of available supplies.⁵ The end of stationarity will create new conflicts between present right holders and future claimants and between consumptive and non-consumptive, especially environmental, uses. The hard question is how the law and those charged with applying it and managing water within its framework should react to this new, even more, uncertain world.

Climate change response strategies are divided into two separate categories: mitigation and adaptation. The first question is whether to place one's faith in mitigation or adaptation. Mitigation attempts to stabilize or roll back green house gas emissions. Adaptation is defined as an action which either reduces "an area's vulnerability to the negative impacts of climate change" or enhances "its ability to capture any benefits."⁶ Adaptation proceeds from one of two assumptions, although the consequences are the same. First, the "real politick" assumption is that serious, as opposed to band-aid or feel-good, mitigation will not occur. The failure of the 2009 Copenhagen Summit⁷ and the failure of the United States Congress to enact any climate change or energy legislation even after the 2010 Gulf of Mexico oil spill confirm this assumption.⁸ Second, the second "leap of faith" assumption assumes that mitigation strategies

5National Research Council, COLORADO BASIN WATER MANAGEMENT: EVALUATING AND ADJUSTING TO HYDROCLIMATIC UNCERTAINTY 73-92 (2007) summarizes the studies of the potential impact of warmer temperatures in the Colorado River Basin. It observes that the more scenarios predict modest stream flow decreases but "[a]ny future decreases in the Colorado River stream flow . . . would be especially troubling because the quantity of water allocations under the Law of the River already exceeds the amount of the annual mean Colorado River Flows." *Id.* At 92.

6Elizabeth C. Black, *Climate Change Adaptation: Local Solutions for a Global Problem*, 22 *Georgetown Int. Envtl. L. Rev.* 359, 362 (2010), quoting Nicholas Stern, *THE ECONOMICS OF CLIMATE CHANGE* 458 (2007). Alejandro E. Camaco, *Adopting Governance to Climate Change: Managing Uncertainty Through A Learning Infrastructure*, 59 *Emory L. Rev.* 1, 17- 18 (2010), further distinguishes between reactive and proactive, direct and indirect and procedural and substantive measures. .

7 Any doubts about the total failure of the world's nations to reach a meaning mitigation agreement at the 2009 Copenhagen Summit are dispelled by Tobias Rapp, Christian Schaeferl and Gerald Traufetter, *How China and India Sabotaged the UN Climate Summit*, *Der Spiegel*. See also Policy Paper, CLIMATE POLICY POST-COPENHAGEN: A THREE LEVEL STRATEGY FOR SUCCESS 5 (German Advisory Council on Global Change 2010)(Copenhagen Accord, "even if honored in full," falls "short of what is required to limit the increase of the global mean temperature to 2oC . . .").

8 Any predictions about the course of energy policy are extremely risky, but the contrast between the 1969 Santa Barbara oil spill, which triggered the modern environmental movement and the first generation of environmental legislation, and 2010 Gulf Oil Spill, which has triggered nothing nationally except a Presidential commission, is instructive. Of course, the 2010 Spill may have longer term impacts. Frederic J. Frommer, *Gulf Oil Spill Lacks Societal Punch of*

will be implemented but the benefits will not kick in for at least a century and possibility a millennium⁹ - a very Keynesian long run. Both lead to the conclusion that for the foreseeable future

water managers have no choice but to take the various GCC risk scenarios as a given and ask how those potentially impacted can take steps to reduce the adverse impacts through changes in water use and management.¹⁰ This article assumes that water users and managers have no choice but to adapt because the adverse impacts will manifest themselves long before mitigation kicks in if at all and focuses on the capacity of water quantity law to adapt to GCC, although it recognizes that lower net stream flows can also undermine pollution control standards and discharge permit conditions.

B. Do We Really Know Anything Useful?

Climate change is a scientific hypothesis. The science is a combination of sophisticated models augmented by the increasing scientific evidence that anthropocentric change is beginning to manifest itself in concrete ways around the world. There is a relatively firm consensus that arid and semiarid regions risk the net loss of stream run off as Winter snow packs diminish and Spring and Summer evaporation increases.¹¹ In all regions, there is an increased risk that of decreased production from thermal and hydroelectric power plants.¹² As a result, federal and

Santa Barbara, Oakland Tribune, July 29, 2010, available at http://www.insidebayarea.com.ci_15628954?IADID.

9 The latest research suggests that we are reaching dangerous CO₂ concentrations more quickly than previous estimations and that the recovery time from reductions, should they actually occur, may be as much as a 1,000 years. Richard Monastersky, *A Burden Beyond Bearing*, 458 *Nature* 1091 (April 30, 2009). See generally Gary Braasch, *EARTH UNDER FIRE: HOW GLOBAL WARMING IS CHANGING THE WORLD* (2009).

10 Adaptation has also been criticized because it deflects attention away from mitigation. Holly Doremus and Michael Hanemann, *The Challenges of Dynamic Water Management in the American West*, 26 *UCLA J. Envtl. L and Policy* 55, 56- 57 (2008), discuss and answer the objections. Orr Karassin, *Mind the Gap: Knowledge and Need in Regulation Adaptation to Climate Change*, 22 *Georgetown Int. Envtl. L. Rev.* 383 (2010), sets out the case for a regulatory framework to guide adaptation and provides useful comparative examples of ongoing efforts.

11 E.g., Stephen Saunders et al., *HOTTER AND DRIER: THE WEST'S CHANGED CLIMATE* 10 (The Rocky Mountain Climate Organization and the Natural Resources Defense Council 2008); National Research Council, *COLORADO RIVER BASIN WATER MANAGEMENT*, supra Note ____; and Robert W. Adler, *Climate Change and Hegemony of State Water Law*, supra Note ____ at 10- 17. In 2009, Colorado's peak snow melt occurred several weeks earlier than normal which may be pose a problem for direct flow irrigators in western Colorado. Colleen O'Connor, *Colorado's Snowmelt Early Flow May Be a Problem*, *Denver Post*, June 17, 2009.

12 Benjamin K. Sovacool, *Running on Empty: The Electric-Water Nexus and the U.S. Electric Sector*, 30 *Energy L. J.* 11 (2009)

state carry-over storage projects may not be able to meet their contractual delivery obligations, in growing, water-stressed areas.¹³ Predictions are cloudier for more humid areas but there is little doubt that the climate will be altered. Many areas in East may experience intense bursts of increased run-off which will cause severe flood events at the same time that these areas may experience lower summer water flows in major, heavily used rivers. The Great Lakes are an example of a region that may face new stresses. A synthesis of the climate change literature for the Great Lakes concludes that:

“Mean annual lake surface evaporation s could increase by as much as 39% due to an increase in lake surface temperatures. This will be a particular concern during summer and autumn, which are already characterized by low stream flow. Moreover, with increased evapotranspiration and decreased snowpack, less moisture will enter the soil and groundwater zones, and runoff will be even further decreased. Consequently, under future warmer and drier conditions, Great Lakes residents will become more vulnerable to water supply and demand mismatches.”¹⁴

Most water managers have already absorbed the first lesson of GCC water scenarios. The possibility of altered flows and more intense flood events is taken very seriously and GCC is now a relevant factor which is considered in all major state and federal planning studies. The question remains: do we know enough to mandate new management strategies or change existing legal regimes? There is still great uncertainty. The problem starts with distinguishing GCC-induced change from the “normal” climate variability which was observed before anthropogenic greenhouse gas contributions reached their present dangerous levels. For example, between 2005- 2007 the Southeast United States experienced a severe drought which stressed Atlanta’s water supply and destroyed billions of dollars worth of crops in Alabama and Georgia. However, Columbia University scientists have concluded that the stresses were the product of regional population growth and bad planning not GCC.¹⁵ To take more concrete steps, more must

13 In 2008, the National Research Council convened a workshop on the future of water use in the Apalachicola-Chattahoochee-Flint and Alabama-Coosa-Tallapoosa River Basins, and participants divided on the issue of whether all uses could be supplied in the future, although “[a]ttendees generally acknowledged that additional population growth would add further stresses to the water supply system.” Summary of a Workshop on Water Issues in the Apalachicola-Chattahoochee-Flint and Alabama-Coosa-Tallapoosa River Basins 5 (2009). For additional discussion of drought vulnerability in the region see Oxfam America, EXPOSED: SOCIAL VULNERABILITY AND CLIMATE CHANGE IN THE US SOUTHEAST 6 - 8 (2009).

14 Noah D. Hall and Bret B. Stuntz, *Climate Change and Great Lakes Water Resources: Avoiding Future Conflicts With Conservation*, 31 Hamline L. Rev. 641, 645 (2008).

15 Richard Seager, Alexandrina Tzanova and Jennifer Nakamura, *Drought in the Southeastern United States: Causes, Variability over the Last Millennium and the Potential Future Hydroclimatic Change*, 22 J. Of Climate 5021, 5022 (2009).

be known about the geographic scale, the timing and magnitude of the projected impacts.¹⁶ Likewise, 2009 was marked by wild temperature swings from record warmth in September for California and Nevada to record July lows in the eastern Great Plains and the Ohio Valley. But, the latest assessment of the world's 2009 climate concludes, "[s]uch seasonable extremes most certainly **were not** the result of human-induced climate change."¹⁷ (emphasis added)

C. How Can Water Managers, Legislatures and Judges Adapt?

Adaptation can take many forms, but water managers have settled on six primary strategies: (1) the greater use of integrated regional water management, including adaptive management¹⁸, to balance ground and surface water use and to incorporate environmental considerations into existing flow regimes, (2) the use of markets to reallocate of water among competing uses, primarily transfers from irrigated agriculture to urban and environmental uses, (3) the promotion of more aggressive agricultural and urban conservation, (4) the promotion of more water and energy efficient urban settlement patterns in water stressed areas by linking water, energy consumption and land use planning and regulation,¹⁹ (5) technological fixes such as desalinization,²⁰ and (6) the capture of more run-off.²¹

This list does not include changes in water law, but there are at least five possible water law adaptation scenarios. First, the existing law could adapt with no changes.²² Second, the

16 See J.F. Anderson et al., *Progress on Incorporating Climate into Management of California's Water Resources*, 89 *Climatic Change* 1573 (2008).

17H.P. Hoerling, Strong Seasonality in 2009 U.S. Temperatures, in *STATE OF THE CLIMATE IN 2009* 141 (Special Supplement to the Bulletin of the American Meteorological Society, Vol. 91, June 2010 D.S. Arndt, M.O. Baringer and M.R. Johnson eds.)

18See Daniel Schramm and Akiva Fishman, *Legal Frameworks for Adaptive Natural Resource Management in a Changing Climate*, 22 *Geo. Int. Envtl. L. Rev.* 419 (2010).

19 See Cooper-Walsh Colloquium, *Cities and Climate Change*, 36 *Fordham Urban L. J.* 159 (2009) and Section IV(B), *infra*.

20 See Robin Kundis Craig, *Water Supply, Desalinization, Climate Change, and Energy Policy*, 41 *Pacific McGeorge Global Business and Development L. J.* 225 (2010).

21 For a similar list adapted to California see State of California, Resources Agency, Department of Water Resources, *MANAGING AN UNCERTAIN FUTURE: CLIMATE CHANGE ADAPTATION STRATEGIES FOR CALIFORNIA'S WATER* (October, 2008).

22 The common law can sometimes adapt to new technologies or other changed conditions by not changing. E.g., *Intel Corporation v. Hamadi*, 71 P.3d 296 (Cal. 2003). The California Supreme Court refused to apply the common law of trespass to real property, which presumes damage from any entry on land in the possession of another, to mass emails by former,

law could evolve over time, as it always has, as new conditions require the reevaluation of the utility various doctrines, especially those that encourage inefficient use patterns.²³ Third, state legislatures could intervene to make more drastic changes in the law. Fourth, the federal government could exercise its constitutional power to preempt state law which Congress deems a barrier to adaptation. Fifth, other developments, such as laws designed to promote more sustainable urban growth, could, for example, exert indirect pressure on water law to harden its risk allocation function. As the rest of the article indicates, one can find examples of all these scenarios with the possible exception of federal preemption.

II. WATER LAW AS A PERFECT ADAPTIVE, RISK ALLOCATION SYSTEM?

The least costly adaptation strategy is to use the existing law of water rights to adapt. The case for this strategy is that due to the “natural” vagaries of climate risk allocation is the central feature of all water rights. In theory, water law has always functioned as a shortage allocation system which assigns the risks of drought among users thus forcing those most at risk to adapt. Thus, water rights are of necessity correlative because water is not always available in the desired quantities due to climate variation and is unique and necessary for human and ecosystem survival. Thus, water rights have always been incomplete rather than complete property rights.²⁴ Water is simultaneously a semi-exclusive, a shared and partially communal resource.²⁵ Of necessity, each user’s right is subject to the rights of other similarly situated users on a stream or over an aquifer. No user has the power to exclude completely other users to the extent that a land owner can punish trespassers.²⁶ The state has great discretion to establish the

disgruntled Intel employees sent through the company’s system. The Court applied trespass to chattels, which requires a showing of actual damage, in part to preserve an open internet.

23 At the beginning of the environmental movement, there was concern that courts would not recognize instream flow appropriations because there was no physical diversion, but courts have generally held that as long as the water is put to beneficial use, which includes minimum flow maintenance, and other users have notice of the right, there is no need for an “actual” or physical diversion. E.g., *In the Matter of the Adjudication of the Existing Rights to the Use of all the Water, Both Surface and underground, Within the Missouri River Drainage*, 55 P.3d 396 (Mt. 2002).

24 *In re Water Use Permit Applications, Petitions for Interim Instream Flow Standard Amendments, and Petitions for Water Reservations for the Waiahole Ditch*, 9 P.3d 409 (Hawaii 2000).

25 Joseph W. Dellapenna, *Global Climate Change and Water Law Reform*, 15 *Widener L. Rev.* 409, 418 (2010).

26 Compare *Jacque v. Steenberg Homes, Inc.*, 563 N.W.2d 154 (Wis. 1997)(Court awarded \$1.00 in actual and \$100,000.00 in punitive damages for nominal trespass because “landowners should feel confident that wrongdoers who trespass . . . will be appropriately punished.”) with *Board of County Commissioners v. Park County*, 49 P.3d 693 (Colo. 2002)(Aquifer recharge

ground rules for the acquisition and exercise of water rights and to recognize private rights as well as to subordinate them to public rights and public interest limitations.²⁷

The net conclusion is that water law has always provided users clear notice of the risks of a reduction in the amount of water to which they will be entitled. The risks include reduced quantities because of a drought, the wasteful or non-beneficial use of water and total or partial displacement by a “higher” or subsequent uses including public rights.²⁸ Thus, GCC can be characterized as simply another drought risk to which all users have always been subject. Users can therefore be expected to adopt the most cost-effective adaptation strategy and will not be surprised if this requires making do with less water than was previously available.²⁹ The rub is that water law has not been widely used for this function.³⁰ Until recently, nature and human intervention kept the risks of supply curtailment to a low and the expectation of full enjoyment of the right high. As a result, there are major psychological, political, institutional and legal barriers to using the law to distribute the extreme risks of global climate change among large classes of water users in the common law of riparian rights, prior appropriation and regulated riparianism.

pursuant to Plan of Augmentation which passes beneath various overlying tracts before withdrawal is not a trespass.)

27 But see Soctt Andrew Shepard, *The Unbearable Cost of Skipping the Check: Property Rights, Takings Compensation & Ecological Protection in the Western Water Context*, 17 N.Y.U. Envtl. L. J. 1063 (2009).

28In rare cases, the public trust may require the displacement of existing water rights which impair trust values. *National Audubon Society v. Superior Court of Alpine County*, 33 Cal.3d 419, 658 P.2d 709, cert. Denied, 464 U.S. 977 (1983); *In re Water Use Permit Applications, Petitions for Interim Instream Flow Standard Amendments, and Petitions for Water Reservations for the Waiahole Ditch*, 9 P.3d 409 (Hawaii 2000). In *Stop the Beach Renourishment, Inc. V. Florida Department of Environmental protection*, ___ U.S. ___ (2010), the Supreme Court held, 8-0, that a Florida statute which replaced the common law rule that littoral owners were entitled to coastal accretions with a statute that fixed erosion control lines and awarded any gain (or loss) seaward of the line to the state was not a taking. However, the four justice plurality opinion also suggested, but did not hold, that a judicial decision, such as the Florida Supreme Court opinion upholding the statutes, could be a judicial taking. Four justices disagreed with the principle or reasoned that the case was not an appropriate one to formulate a judicial takings doctrine. Justice Stevens, a Florida beachfront condominium owner, did not participate in the decision.

29 All “real” water allocation conflicts center on the fact that there is an insufficient amount of water to provide reliable supplies for all competing users, and thus some alteration of the status quo is inevitable. Dereje Zeleke Mekonnen, *The Nile Basin Cooperative Framework Agreement Negotiations and the Adoption of a ‘Water Security’ Paradigm: Flight into Obscurity or a Logical Cul-de-sac?*, 21 *European J. Int. L.* 421,436-440 (2010). GCC simply drives home this point.

30 Adler, *Climate Change and the Hegemony of State Water Law*, *supra* Note ___ at 24.

A. Riparian Rights

The common law of riparian rights, which prevails in the East and to a lesser extent in California and Nebraska, is a system which in theory, but not in practice, could be used to adapt to GCC. Ironically, the common law's much criticized incoherence and lack of useful precedent pushes users toward adaptation because it creates a high level of risk to all right holders.³¹ This existing uncertainty also could allow courts the flexibility to adjust quantities and uses among existing users in cases of GCC-induced shortages with minimal fear that these adjustments could be successfully challenged as a taking of property without due process of law.³²

From an environmental but not reallocation perspective, the early common law was adaptive if inefficient but neo-welfare economic standards. Riparian rights were originally limited solely to owners of riparian land, a term which remains incompletely defined in most states.³³ Reallocation was difficult because of the narrow class of water right holders and *per se* rules which prohibited the use of water on non-riparian land or on land outside the watershed; non-watershed and non-riparian uses could be enjoined without a showing of injury, although these rules were seldom actually applied.³⁴ However, this rigid law promoted flow

31 However, the conventional thinking is that the common law of riparian rights does not promote adaptation. See Dellapenna, *Global Climate Change and Water Law Reform*, *supra* Note ___ at 425.

32 For example, almost all courts have rejected constitutional challenges to switches from the common law of riparian rights to prior appropriation so long as the actual use of water was protected e.g. *Knight v. Grimes*, 127 N.W.2d 728 (S.D. 1964). Only Oklahoma has upheld a constitutional challenge to the elimination of unused riparian rights. *Franco-American Charolaise, Ltd. v. Oklahoma Water Resources Board*, 855 P.2d 568 (1990). See generally Joseph L. Sax, *The Constitution, Property Rights and the Future of Water Law*, 61 U. Colo. L. Rev. 257 (1990). But see Shepard, *The Unbearable Costs of Skipping the Check*, *supra* Note ___.

33 All jurisdictions agree that the land must reach the high water mark of a stream during some part of the year, *Turner v. James Canal Co.*, 99 P. 520 (Cal. 1909), under ordinary flow conditions. In the *Matter of Determination of the Ordinary High Water Mark and Outlet Elevation for Beaver Lake*, 466 N.W.2d 163 (S.D. 1991). Under this standard, GCC might strip some land of its riparian status. Heretofore, the major issue has been the extent of riparian land. The source-of-the-title rule, limits riparian land to the smallest tract of abutting land in a chain of title from a single track that was once riparian. Thus, riparian land can shrink over time. The unity-of-title allows reasonable additions of land to an original riparian tract. The latter has been defended as more suitable for the east. William F. Farnham, *The Permissible Extent of Riparian Land*, 7 Land & Water L. Rev. 31 (1972). However, the source-of-title rule, which was adopted in California to limit riparian rights, could be defended as better adapted to GCC adaptation because it promotes prior appropriation which is a better climate adaptation law. See Notes ___ to ___, *infra*.

34 *Stratton v. Mt. Hermon Boys' School*, 103 N.E. 87 (Mass. 1913).

maintenance which will be an important element in the conservation of aquatic ecosystems impacted by GCC.³⁵ The perceived inefficiencies in the common law led to major changes. Overtime, the common law was modified to allow water to be used where the demand is highest.. Courts and legislatures moved from property to tort rules in the name of efficiency and focused on the injuries, if any, that non watershed and riparian uses cause. The shift to tort rules has opened rivers to a wider class of users to promote the more efficient use of water but at the cost of increasing the uncertainty of rights. Originally, riparian rights were non-consumptive rights to support mill power. Each riparian had an equal right to the stream's natural flow, undiminished in quantity and quality. Thus, the scope of the right was relatively easy to calculate. But, because the natural flow theory prevented dams³⁶, other than run-of-the-river ones, and most consumptive diversions, Thus, the law promoted flow maintenance which will be an important element in the conservation of aquatic ecosystems impacted by GCC.³⁷ This limitation was deemed unsuited for an emerging industrial, urban economy. Today, the natural flow theory has been replaced by the reasonable use theory which permits diversions and storage,³⁸ but the right to make these uses remains inchoate and uncertain.

35 See Lynda L. Butler, *Allocating Consumptive Water Rights in a Riparian Jurisdiction: Defining the Relationship Between Public and Private Interests*, 47 U. Pitt. L. Rev. 95 (1985).

36 In 1926, the California Supreme Court held that the natural flow theory prevented upstream dams which altered the flow used by downstream riparians, *Herminghouse v. Southern California Edison Co.*, 200 Cal. 81, 252 P. 607 (1926), but two years later the voters of the state enshrined reasonable use in the state Constitution. California Constitution, art. XIV, s 2.

37 See Lynda L. Butler, *Allocating Consumptive Water Rights in a Riparian Jurisdiction: Defining the Relationship Between Public and Private Interests*, 47 U. Pitt. L. Rev. 95 (1985).

38 ¹⁶ E.g., *Red River Roller Mills v. Wright*, 15 N.W. 167 (Minn. 1883).

The main source of uncertainty is the lack of protection for prior uses. All riparian land owners have an equal right to use the water. Thus, courts can, in theory, at any time displace prior users to make room for subsequent ones or for higher valued uses,³⁹ and thus neither existing nor prospective users have a high expectation that an amount of water withdrawn will remain constant over time. Uncertainty can chill either adaptation measures such as water transfers or it can encourage adaptation to reduce the uncertainty. In general, the firmer the right, the more adaptation is facilitated. Two major steps have been taken to create firm riparian rights. In 1970, Restatement (Second) of Torts, retained the common law's inchoate, open-ended balancing test which allows courts to consider a wide range of factors but tweaked it in the name of certainty. . Section 850 sets out a nine-factor test, and the relevant factors include: (1) the purpose of the use, (2) the suitability of the use to the water body, (3) the economic value of the use, (4) the social value of the use, (5) the extent and amount of harm it causes, (6) the practicality of avoiding harm by adjusting the use or method of use of one proprietor or the other, and (7) the protection of existing values of water uses. The first six factors basically restate the balancing test developed by courts in the mid-19th century. The seventh is new. The protection of prior uses is not, however, an express common law factor, but it was added to the test on the ground that it represents judicial practice because prior uses are seldom actually displaced and it promotes the more efficient use of water.⁴⁰

For all its faults, reasonable use balancing is a potentially adaptive doctrine. The Restatement was drafted in the 1960s and 1970s before climate change appeared on the environmental agenda, but GCC could be legitimately factored into the balancing test.⁴¹ Courts could use the reasonable theory to order *pro rata* cutbacks if GCC produces permanent lowered stream flows. Section 850 could allow courts to pick winners and losers among GCC-stressed uses, beyond those protected by the preference of domestic use, and to develop a wide range of cut back formulae. Still, it will be hard to use Section 850 balancing for this purpose because it was primarily designed to reduce the common law's uncertainty by the protection of prior uses and thus flexibility has been curtailed in the name of the creation of firmer rights. Any GCC adaptation is likely to be through water transfers.

The second reform regulated riparianism. Regulated riparianism overlays a permit system on the common law rather than completely displacing it.⁴² As in the West, a state agency issues water use permits which seek to introduce greater security of right into the common

39 E.g., *Harris v. Brooks*, 283 S.W.2d 129 (Ark. 1955).

40 J.H. Beuscher, *Appropriation Elements in Riparian doctrine States*, 10 *Buf. L. Rev.* 448 Z(1961). For a modern application of priority in a riparian jurisdiction see *Edmunson v. Edwards*, 111 S.W.3d 906 (Mo.App., 2003).

41 Joseph W. Dellapenna, *Adapting the Law of Water Management to Global Climate Change and Other Hydrologic Stresses*, 31 *J. AM. WATER RES. AS'N* 1301 (1999).

42 Joseph W. Dellapenna, Chapter 9, *Regulated Riparianism*, in 1 *WATERS AND WATER RIGHTS* (2007 replacement vol.)

law.⁴³ Regulated riparian permits are potentially more adaptive compared to prior appropriation permits because legislation often gives state water administrators some flexibility to condition new uses, to use public interest considerations in deciding among competing applicants and to refuse, in whole or in part, to renew time-limited permits.⁴⁴ However, once a permit is issued, the state is unlikely to dislodge it or to issue inconsistent subsequent permits⁴⁵ thus hampering efforts to use the flexibility of regulated riparianism to adapt to GCC.⁴⁶ In addition, permit systems do not always cover all withdrawals or use.⁴⁷ On the plus side, permit rights can encourage transfers⁴⁸ which will promote market adaptation.

GCC will also impact aquifer recharge, but groundwater law is even less adaptive than the common law of surface use. In contrast to the common law of riparian rights, sharing rules were initially applied only to surface water. Groundwater was allocated by a pure capture rule which provides almost no incentives to adapt because there is little risk of curtailment of the privilege to pump.⁴⁹ In most states, pure capture has been replaced with the reasonable use rule,⁵⁰ although the right to pump without restriction still applies in a few states, most notably Texas.⁵¹ Reasonable use does not substantially limit the right to capture. Under this rule, the owners of overlying an aquifer can capture without restraint, but non-overlying owners cannot pump water if overlying owners are injured.⁵² In practice, it functions primarily to force cities to pay

43 Permit systems are seldom comprehensive. E.g., Va.CodeAnn. S 62.-1-243-246 (permits for new withdrawals required only in declared surface management areas which can only be declared after withdrawals are likely to impair natural flows and associated instream values.)

44 Fla.Stat.Ann s 373.233.

45 Harloff v. City of Sarasota, 575 So.2d 1324 (Fla. 1991)(agricultural users' requested withdrawal reduced to protect prior municipal well field.)

46 See Dellapenna, *Global Climate Change and Water Law Reform*, *supra* Note ____ at 443.

47 Virginia requires permits for new withdrawals only in declared surface management areas. Va.Code Ann. S 62.-1-243. These areas may be declared only after withdrawals "are likely to exacerbate natural flow conditions to the detriment of instream flow values." s 62.1-246.

48 See Notes ____ to ____, *infra*.

49 Huber v. Merkel, 94 N.W. 954 (Wis. 1903).

50 E.g., Michigan Citizens for Water Conservation v. Nestle Waters North America, Inc., 269 Mich.App. 25, 709 N.W.2d 174 (2005), rev'd on other grounds, 479 Mich. 280, 737 N.W.2d 447 (2007).

51 Sipriano v. Great Springs Waters of America, 1 S.W.3d 75 (Tex. 1999).

52 E.g., Meeker v. City of East Orange, 74 A. 379 (N.J. 1909).

damages farmers and small users caused by high capacity municipal well fields which are drilled to export water to non-overlying areas. The Restatement (Second) of Torts Section 858 goes further and provides a remedy for small overlying pumpers injured by large overlying ones,⁵³ but the expectations of continued pumping are high in almost all states.

The incoherence of riparian law often chills transfers, but riparian rights may be also transferred, but the risks that a transfer will not yield the expected water are much higher compared to appropriative rights because of the inherent uncertainty of common law. A conveyance of riparian rights transfer may not be a property right transfer at all. It could be characterized as nothing more than a grantor-grantee contract not to interfere with the exercise of the granted right rather than a conveyance of a property right.⁵⁴ However, courts have held that riparian rights are property rights and may be severed from riparian land.⁵⁵ The cases are not, however, a satisfactory adaptation precedent because they primarily involve the severance of non-consumptive rights such as access and view. Transfers of consumptive rights face two major barriers in addition to the traditional rule that riparian rights must be presumptively used within the watershed of a stream. First, the amount of an individual riparian's right is almost always inchoate. Second, a conveyance only binds the transferor(s). Other, non-joining riparians remain free to assert their rights to make a reasonable use against the transferee *at any time*.⁵⁶ Even the grantor may make a concurrent, but non-injurious use, despite the conveyance.⁵⁷ Thus, any transfer is subject to being cut back as other riparians assert their rights.

In addition to these constraints, transfers to non-riparian land or out of the watershed are still problematic as environmental review has gradually replaced the common law's *per se* rules. Today, it is not clear if a court would apply the riparian-non-riparian distinction or the watershed rule or if reasonableness is measured by the needs of the grantor or the grantee. As early as the 1930s, the Supreme Court has refused to incorporate the watershed limitation into the law of equitable apportionment⁵⁸ to allow transbasin diversions for urban growth. Modern riparian law provide some support for inter-basin adaptive transfers. A leading case⁵⁹ holds that severed riparian rights may be used on non-riparian land if there is no injury to other riparians. Regulated riparianism also promotes adaptation as many states have eliminated the *per se* rules against

53 E.g., *State v. Michaels Pipeline Construction, Inc.*, 63 Wis.2d 278, 217 N.W.2d 339 (1974)

54 1 WATERS AND WATER RIGHTS, Section 7.04(a)(3)(B), p. 7-105.

55 *Conrad/Dommel, LCC v. West development Co.*, 815 A.2d 825 (Md.App. 2003).

56 *Portage County Board of Commissioners v. Akron*, 808 N.E.2d 44, *aff'd* on transfer issue, 846 N.E.2d 478 (Ohio 2006).

57 *Borough of Media v. Edgmont Golf Club*, 446 Pa. 388, 288 A.2d 803 (1972)

58 *Connecticut v. Massachusetts*, 297 U.S. 517 (1936).

59 *Pyle v. Gilbert*, 265 S.E.2d 584 (Ga. 1980).

inter-basin transfers and allow them subject to administrative review.⁶⁰ But, this review provides new opportunities to oppose transfers

B. Prior Appropriation: A Perfect Adaptation Institution- In Theory

Prior appropriation is a better adaptation candidate because it is a firm risk allocation scheme. Water law performs three basic functions: (1) it sets the ground rules for the acquisition of secure rights to use water, (2) it allocates scarce water resources between competing private and public uses and requires the internalization of some of the social costs of use because water performs a variety of essential societal functions, and (3) it distributes the pain of shortages among right holders. By these standards, prior appropriation could function as a complete GCC adaptation regime.⁶¹

Prior appropriation is already a risk allocation mechanism scheme because it clearly assigns all risks of climate variability to junior users and eliminates the inchoate and inefficient features of the common law of riparian rights. According to the catechism, the law of prior appropriation allocates water in times of shortage by the strict enforcement of priority schedules which provide fair notice to junior users of their potential risks. There is *no pro rata* sharing, as there is under the common law of riparian rights. The risk of shortage curtailment is assigned completely to most recent right holders who can be required to bear the full costs of senior calls.⁶² This seemingly harsh rule is a superior risk allocation system compared to either the common law of riparian rights or regulated riparianism because junior appropriators have strong incentives to use the market to reallocate water or to take other adaptive measures such investment in more efficient water use technologies or temporary fallowing. The incentives to adapt are also theoretically strengthened by the severance of water rights from land, which allows water to be used any place to which it can be transported within a state,⁶³ and the beneficial use doctrine. A water right must be put on the continuous, non-wasteful (beneficial) use⁶⁴ or it will be lost through forfeiture or abandonment.⁶⁵

60

E.g. Va.CodeAnn. S 62.1- . Substantial barriers still exist. See Note ____, *infra*.

61 Adler, *Climate Change and the Hegemony of State Water Law*, *supra* Note ____ at 21- 26.

62 E.g. State ex rel. Cary v. Cochran, 292 N.W.2d 239 (Neb. 1940).

63 Ironically, many states have imposed statutes which prohibit or restrict the export of water across state lines. Export prohibitions, *Sporhase v. Nebraska*, 458 U.S. 941 (1982), are a presumptive unconstitutional discrimination against interstate commerce, but statutes which prefer in to out of state users for demonstrated conservation reasons may be constitutional.

64 *State Department of Ecology v. Grimes*, 852 P.2d 1044 (Wash. 1992).

65 E.g., *Jenkins v. State, Department of Water Resources*, 647 P.2d 1256 (Idaho 1982).

The most promising GCC adaptation strategy is to use the market to reallocate water to more GCC-stressed uses. In general, these uses are primarily urban and environmental, and transfers will provide these right holders with an increased margin of safety during GCC-induced shortages.⁶⁶ Transfers can be permanent or short term. For example, either a water right can be severed from the land or some land can be fallowed for an irrigation season. Economists have long criticized western water law as inefficient because senior rights are generally dedicated to low value agricultural uses instead of continually moving it to higher, alternative uses⁶⁷; GCC only strengthens this traditional critique of western water law. Appropriative water rights have always been transferable, but the rules are different compared to other commodities. The major barrier to adaptation is the correlative and incomplete nature of water rights because these features increase the transaction costs of transfers. Because they have correlative elements; they must be exercised with regard to their impact on other uses. The most concrete manifestation of their correlative and incomplete nature is the protection of junior appropriative rights.⁶⁸ Unlike other property rights, which can be transferred without regard to the effect on neighboring property holders, an appropriative water right cannot be transferred unless there is no injury to junior water right holders.⁶⁹

Water marketing occurs in both a legal and political environment that simultaneously encourages and constrains transfers. The politics of water have long proceeded from the premise that water is *not* just another commodity but a resource with higher, transcendent values.⁷⁰ In arid regions, control of water means political power, and power is not something that is ever surrendered with low transaction costs. There are three relevant parties in any transaction: (1) sellers, (2) other water right holders, and (3) third party interests such community claimants or environmental interests. The question for GCC adaptation is how responsive to market demand the system will be in the future? The primary source of transfer transaction costs is the need for experts to determine the range of affected water right holders, the amount of water actually beneficially used by the sellers,⁷¹ and the amount of return flow to which junior water right

66 Jonathan H. Adler, *Water Marketing As An Adaptive Response to the Threat of Climate Change*, 31 Hamline L. Rev. 729 (2008).

67 E.g., Zach Wiley, *ECONOMIC DEVELOPMENT AND ENVIRONMENTAL QUALITY IN CALIFORNIA'S WATER SYSTEM* (Institute of Governmental Studies, University of California, Berkeley 1985).

68 See George Gould, *Water Rights Transfers and Third-Party Effects*, 23 LAND & WATER L. REV. 1 (1988).

69 *Green v. Chaffee Ditch Co.*, 371 P.2d 775 (Colo., 1962).

70 But see Scott Andrew Shepard, *The Unbearable Cost of Skipping the Check*, *supra* Note ___ at 1115-1119.

71 E.g., *City of Westminster v. Church*, 445 P.2d 52 (1968); *Farmers Highline Canal and Reservoir Co. V. City of Golden*, 975 P.2d 189 (Colo. 1999).

holders are legally entitled.⁷² The junior protection rule does not bar transfers, but it does add to the cost of transfers. However, in addition to protecting the rights of other users, the third party rule also functions as a form of watershed protection rule. Thus, it is basis to promote adaptation efforts to maintain minimum stream flows to conserve stressed aquatic ecosystems.

Three water transfer reforms have been proposed to lower transaction costs and to counter the potential "chilling effect" of third-party protection rules: (1) transaction cost reduction through more streamlined procedures, (2) water conservation incentives such as the ability to transfer the saved water, and (3) water banking.⁷³ Water marketing advocates argue that streamlining existing administrative approval process and eliminating disincentives to transfers is necessary. One of the major proposed examples of the later reform is a legislative reversal of the presumption that saved water should return to the stream and be open to appropriation by other claimants. Legislation in several states allows users to conserve water and to transfer the saved water.⁷⁴ The same result was reached judicially in a widely noted Utah decision. A senior flood irrigator switched to sprinklers with a 25% efficiency gain. The Court held that the senior "should be allowed to make the most efficient use of water" subject to two conditions: (1) the senior is limited to the original entitlement and (2) no irrigation runoff has reached the watercourse or an associated aquifer.⁷⁵

Transfer reforms have helped to stimulate water transfers, but water markets will not necessarily "unblock" large quantities of water. An early study of water transfers in six states concluded that – with the exception of lawyer-dominated Colorado – the current transaction costs of water transfers are not excessive.⁷⁶ The real barriers are political not legal.⁷⁷ A subsequent study found that transfers are increasing but most transfers are agriculture to agriculture or urban to urban. It further found that the bulk of the water transferred is through short-term leases rather than permanent sales.⁷⁸ To complicate matters, many water rights transfers remove water from

72 See *CF & I Steel Corp. v. Rooks*, 495 P.2d 1134 (Colo. 1972)(Junior produced no evidence to counter allegation that they would not be injured.)

73 See Notes ___ to ___, *infra*.

74 ORE. REV. STAT. § 537.455(2). See Larry J. MacDonnell, *Transferring Water Uses in the West*, 43 OKLA. L. REV. 119 (1990).

75 *Estate of Steed v. New Escalante Irrigation Co.*, 846 P.2d 1223 (Utah 1992).

76 Larry J. MacDonnell, *THE WATER TRANSFER PROCESS AS A MANAGEMENT OPTION FOR MEETING CHANGING DEMANDS* (Natural Resources Law Center, University of Colorado School of Law, 1990).

77 See Barton H. Thompson, Jr., *Institutional Perspectives on Water Policy and Markets*, 81 CAL. L. REV. 671 (1993).

78 Jedidiah Brewer et al., *Transferring Water in the American West: 1987- 2005*, 40 Mich. J. L. Reform 1021 (2007).

agricultural use and dedicate the right to urban use. Those who object to a transfer argue that these “third party” interests such rural sustainability and instream flow needs should also be considered in transfers even though they are junior water right holders.⁷⁹ Water law provides no direct protection for these interests, but these claims are increasingly being asserted both through litigation and the political process.⁸⁰ The legal bases for third party challenges to transfers varies from state to state,⁸¹ but the larger the transfer, the greater the need to consider third party impacts.⁸²

C. Theory Meets Reality (and Money) in the East and West

There is a large disconnect between the theory and reality for at least three related reasons. First, water law, like all property, is designed to provide secure rights, but security creates the expectation of the perpetual maintenance of the status quo.⁸³ Thus, there will always be resistance to forward adaptive planning. Change is not only surprising, but any change that reduces that amount of water previously available is potentially unconstitutional. Second, the “illusion” of perpetual security has been nourished by the federal government and states such as California⁸⁴ which have invested millions of dollars in tax revenues and bond sales to construct the necessary carry-over storage to avoid disruptive calls. Third, junior users often have put water to high valued uses compared to senior right holders. These junior users have every incentive to push back politically and legally when disruptive calls are threatened. In short, the continued protection of existing rights is potentially inconsistent with the proposed adaptation strategies which counsel increased flexibility in responding to change, the greater recognition of the risks of

79 CY OGGINS & HELEN INGRAM, DOES ANYBODY WIN? THE COMMUNITY CONSEQUENCES OF RURAL-TO-URBAN WATER TRANSFERS: AN ARIZONA PERSPECTIVE (Udall Center Issue Paper No. 2, 1990).

80 See A. Dan Tarlock, James N. Corbridge, Jr., David H. Getches and Reed D. Benson, WATER RESOURCES MANAGEMENT 319-343 (6th ed. 2009). See generally F. LEE BROWN & HELEN INGRAM, WATER AND POVERTY IN THE SOUTHWEST (1988).

81 Wyo.Stat. Ann. S 4103-104(a)(Economic loss to a community is a relevant factor in transfer review).

82 See National Research Council, WATER TRANSFERS IN THE WEST: EFFICIENCY, EQUITY, AND THE ENVIRONMENT (1992).

83 See Sarah Harding, *Perpetual Property*, 61 Fla. L. Rev. 285 (2009).

84 California’s efforts to redress the historic imbalance between the north, where most of the water originates, and southern California, where most of the state’s population lives, is well told in Norris Hundley, Jr., THE GREAT THIRST: CALIFORNIANS WATER, A HISTORY (Rev. Ed. 2001).

supply interruption, more cooperation among all users from small watersheds to large regions, and real time water use management.⁸⁵

The net result of the disconnect between theory and reality is users do not expect that “real,” pain-causing allocation will actually often happen. The law of riparian rights is a “use and be sued” rule with low risks of a challenge by other similarly situated users. In the eastern states, nature has provided sufficient ground and surface water to meet all competing demands so right holders seldom faced serious risks of curtailment, except on very small streams.

85 Stephen Draper, *The Impact of Climate Change on Interstate/International Water Sharing*, 11 ABA Water Resources Committee Newsletter No. 2, 5, 11 (February 2009), notes interstate and international agreements that require fixed water delivery schedules “no longer appears viable for the future” and that future agreements may include adjustable flow percentage entitlements with a “real time feed back loop that provides river stages . . . at various locations on a regular basis.”

The expectation of supply disruption should be more widely accepted in the prior appropriation states, but ironically, the expectation of no supply disruption is as strong in the arid and semi-arid West as it is in the East. Priority administration does occur on small streams, but the western states have worked hard to make sure that there are few calls. The thrust of federal and state water policy from the conservation era until the 1970s was to minimize the risks of shortages by constructing large carry-over storage facilities. The West is now living off that legacy, although the amount of constructed carry-over storage may not provide the cushion that it has in the past. In addition to the dams and reservoirs which vein the West, formal and informal mechanisms also exist to share the burdens of shortages by pro rata rather than pro tanto delivery reductions.⁸⁶

III. JUNIOR PUSH BACK

The expectation that there will be limited enforcement of priorities means that existing users will resist the consequences of any curtailment of withdrawals in both riparian and appropriative states. Two examples are offered below. The first, from a regulated riparianism jurisdiction, illustrates how the introduction of a permit system can promote adaptation but may also impede it. The second, from a prior appropriation state, illustrates the lengths to which a state may go to avoid calls on junior appropriators and thus preserve the status quo, a result that may not produce the necessary GCC adaptation.

A.. *Regulated Riparianism*

Regulated riparianism gives the state some flexibility to adjust to new conditions. Permits are not perpetual as they are in the West, but water use permits introduce a high degree of stability into any system. Thus, it will be hard to dislodge them even though the law permits the reassignment of rights as Georgia's response to a severe drought illustrates. A severe, prolonged drought started in the Flint River Basin in 1998 and did not break until 2009. The river is at the center of an on-going interstate dispute among Alabama, Florida and Georgia in two river basins. The nub of the dispute is that the downstream states of Alabama and Florida challenge upstream Georgia's claims to the amount of stored water in a Corps of Engineers' reservoir necessary to keep Atlanta watered.⁸⁷ While the states were trying to negotiate an interstate compact, Georgia took the proactive step of dealing with the risks of intrastate and interstate shortages in a major downstream agricultural basin. She passed the Flint River Drought Protection Act⁸⁸ which

⁸⁶ See Larry McDonnell, *Out-of-Priority Water Use: Adding Flexibility to the Water Appropriation System*, 83 Neb. L. Rev. 485 (2004).

⁸⁷ The literature on the controversy and the states' inability to resolve their competing claims through an interstate compact is vast. Robert Haskell Abrams, *Settlement of the ACF Controversy: Sisyphus At the Dawn of the 21st Century*, 31 Hamline L. Rev. 680 (2008), is a good introduction.

⁸⁸ CodeGa. Ann. § 12-540 et seq.

requires permits for ground surface diversions over 100,000 gallons per day. In addition, when a drought is declared, the Director of the Environmental Protection Division of the Department of Natural Resources may set the number of acres that must be retired for the irrigation season. This allowed Georgia to meet the minimum Flint River flows informally promised to Florida. The costs of fallowing are borne by the public fisc. Farmers bid the price per acre that they will accept to participate in the program. However, if the auction does not produce the target reduction, the Director can begin to revoke the most recent permits and “work chronologically backward with each order issued.”⁸⁹

The state initially issued agricultural use permits for groundwater based on the amounts used prior to 1998, but it realized that it had to tighten the permits based on the 1998 data. Earlier data was not a reliable indicator to determine how much water was actually saved by the auctions because the state did not know the amount of actual- – let alone beneficial- – prior use. After 2003, new permits are limited to 25 year terms and existing permits may be renewed at a lower capacity if they “would have unreasonable adverse effects on other water users.”⁹⁰ The reality is that the permit system entrenches large withdrawals. The 2001 auction withdrew about 33,000 acres from production. The state calculated that the withdrawals increased the flow of the Flint by about 399 acre feet per day, but this figure has been questioned.⁹¹ GCC could be factored into the Georgia permit system because permits over 25 years require a supply adequacy determination which must be periodically reviewed.⁹² But, because the permits allow a user to withdraw as much water as they can use to grow any commodity,⁹³ they will be hard to cancel and this impedes, if not frustrates, adaptation. Financial hardship or circumstances beyond the control of the user are cancellation

⁸⁹ § 12-5-547.

⁹⁰ Code Ga. Ann. S 12-5-31(b). See generally John L. Fortuna, *Water Rights, Public Resources, and Private Commodities: Examining the Current and Future Laws Governing Allocation of Georgia Water*, 38 Ga. L. Rev. 1009 (2004) and *The Problem of Reallocation in A Regulated Riparian System: Examining the Law of Georgia*, 40 Ga. L. Rev. 207 (2005)

⁹¹ Sagata Banerjee et al., *Forecasting Irrigation Water Demand: A Case Study of the Flint River Basin Georgia*, 39 J. Applied Agricultural Economics 641 (2007).

⁹² s 12-5-31(g). But see Ronald Cummings, Brigham Daniels, Mark Masters, Kristin Rowles and Douglas Wilson, *Managing Agricultural Water use During Drought: An Analysis of Contemporary Policies Governing Georgia’s Flint River Basin*, Water Policy Working Paper No. 2007-001, available at http://www.h2opolicycenter.org/pdf_documents/water_workingpapers/WP2007-001_final.pdf, for an analysis of the system which concludes that the permits are highly uncertain because the Director has considerable discretion to modify or fail to renew them

⁹³ Banerjee et al., *Forecasting Irrigation Water Demand: A Case Study of the Flint River Basin Georgia*, supra Note ____.

defenses, and the Director of the Department of Natural Resources “shall give preference to existing use over an initial application.”⁹⁴

2. *Prior Appropriation*

Junior appropriators will not always accept the necessity for a call by senior appropriators. In many cases, junior appropriators have strong financial incentives to seek legal redress against a call or to negotiate a new sharing regime with seniors. The efforts of junior appropriators in Idaho’s Snake River Plain to resist priority calls illustrate the power of high valued junior users to modify the law of prior appropriation to their advantage. Starting in 1993, senior appropriators have made calls on junior pumpers, and the state has nimbly tried to avoid shutting off junior users, who are mainly large groundwater pumpers. The issue came to a head in 2005 when two trout farms in the Magic Valley made a call and rejected an initial offer from junior pumpers of 45,000 acre feet of replacement water. The Department of Water Resources eventually threatened to shut down pumps for 33,000 acres and several towns and industries in the Valley, the nation’s major source of potatoes for fast food chains. Not surprisingly, the state tried to avoid this drastic and economically disruptive step by adopting new call rules. In brief, the Conjunctive Management of Surface and Ground Water Resources⁹⁵ allow the Director of the Idaho Department of Water Resources to apply a combination of two traditional doctrines to avoid calls. The first is the seldom applied futile call doctrine which allows a court or water master to reject a call by a senior if the junior’s curtailed use would not actual produce additional wet water at the senior’s point of diversion.⁹⁶ The second doctrine posits that a senior’s means of diversion must be reasonable before a call will be honored. Ironically, an early Supreme Court case involving the Snake River Plain announced the doctrine. The Supreme Court held that the state could refuse a call by a senior, who claimed a large base flow of the Snake River to turn a water wheel to bring the amount of his right to the top of a gorge, against a junior irrigation district which constructed a dam across the river.⁹⁷ The Court questioned whether all the water needed to operate the wheels was in fact an appropriation and squarely held that “[s]uch use also lacks one of the essential attributes of an appropriation; it is not reasonable.”⁹⁸

94 § 12-5-31(f).

95 IDAPA, 37.03.22.002.

96 In the leading case, *State ex rel. Cary v. Cochran*, 138 Neb. 163, 292 N.W. 239 (1940), the state ordered junior appropriators on the North Platte River to forego diversions because 700 cubic feet per second were required to deliver 162 cubic feet to senior appropriators at Kearney on the Platte because of carriage loses. The Court rejected the arguments that the call was futile or that calls were subject to a reasonableness standard because allowing so much discretion in a water master would “destroy the very purpose of the prior appropriation doctrine existent in this state.”

97 *See Schodde v. Twin Falls Land & Water Co.*, 224 U.S. 107 (1912)(senior water right holder not entitled to current necessary to run water wheel which lifted water from a canyon to the rim).

98 224 U.S. at ____.

Initially, the seniors succeeded in convincing a district court that the Rules violated the constitutional right to divert because they did not permit the timely administration of water rights and failed to include a presumption that any junior withdrawal in times of shortage is a *per se* interference with senior surface rights. The Idaho Supreme Court reversed⁹⁹ and reasoned that the Director of the Department of Water Resources needed the discretion to decide when to honor a call. Thus, no presumption of interference was necessary because the rules contained sufficient standards and did not constitute a readjudication of decreed water rights. It also held that a contrary ruling would ignore “the constitutional requirement that priority over water be extended only to those using water.”¹⁰⁰ In the end, the court decided that it is more important to have an administrative agency charged with allocating this public resource make a scientifically-informed decision about the extent of injury to a senior user rather than to mandate a speedy delivery based on the reflexive enforcement of priorities. In the course of the opinion, the Court observed that “[w]hile the Constitution, statutes and case law in Idaho set forth principles of the prior appropriation doctrine, these principles are more easily stated than applied. These principles become especially more difficult, and harsh, in their application in times of drought.”¹⁰¹ This candid but seldom voiced observation from a “hard core” prior appropriation court could be the basis for the development of a general doctrine that GCC demands that all diversions be reasonable and that senior appropriators must expect, within the parameters of the Fifth Amendment, some adjustment to the sources of their rights.

To resolve the conflict junior users offered several mitigation plans to senior users. Junior users also have more security because in 2008, the Idaho Water Resource Board and the City of Twin Falls purchased Pristine Springs which will allow the juniors to supply 10 cubic feet per second to the trout farm which was making calls.¹⁰² But, seniors continue to make calls. A shutdown was avoided in 2009 after the Department of Water Resources decided to stay the shut down order to evaluate a new mitigation plan, but the conflict between senior and junior right

99 American Falls Reservoir Dist. v. Idaho Dept. of Water Resources, 143 Idaho 862, 154 P.3d 433 (2007).

100154 P.3d at 437.

101 154 P.3d at _____. New Mexico also recently recast priority as a mere principle rather than a rule or vested right in a decision affirming the legislature’s power to depart from the protection of prior rights by exempting domestic wells from priority calls. *Bounds v. D’Antonio*, ____ P.3d ____ (N.M.App. 2010)(Domestic well exemption constitutional and does not interfere with senior rights on over-appropriated stream, *inter alia*, because “[t]he Constitution’s priority doctrine establishes a broad priority principle, nothing more.”)

102<http://ridenbaugh.com/waterrights/?p=569>

holders continues.¹⁰³ The broader lessons of Idaho's experience are mixed for GCC adaption. The Magic Valley story shows that when prior appropriation creates a class of losers and the economic stakes are high, and thus there will be pressure for administrators to make crude benefit-cost analyses and to ease the strictness of prior appropriation. This could promote adaptation in several ways. All users will face pressure to invest in the technology to use water more efficiently, extralegal stakeholder solutions will emerge to consider alternatives such as land retirement, set-aside pools and to shift the cost of adaption to state and federal tax payers. This may yield flexible more efficient water use patterns that will be necessary in any adaptation strategy, but it will rob prior appropriation of its ability to used as a hard risk allocation system. And, it may simply result in a shift of water from senior to junior users and do nothing to deal with more serious GCC-induced shortages.

103 See Randall C. Budge, *Ground Water & Surface Water Conjunctive Management Contentions, Delivery Call Litigation in Idaho: Ground Water Users' Perspective*, 64 Water Report, June 15, 2009.