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Defining Sustainability in Nebraska's Republican River Basin: The LB 1057 Task Force

Anthony B. Schutz

DEFINING SUSTAINABILITY IN NEBRASKA'S REPUBLICAN RIVER BASIN: THE LB 1057 TASK FORCE

*By: Anthony B. Schutz**

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I. INTRODUCTION

This symposium presents an opportunity to discuss agricultural sustainability. But we have little practical understanding of what agricultural sustainability really means. This is a common problem with sustainability efforts. This Article provides one example of this problem. But it also provides a story of how an effort at defining sustainability served as a catalyst for a group of stakeholders that wanted to make improvements in water management. Understood in this way, sustainability discussions can serve to overcome historic barriers to progress that so often arise with resource management problems, especially in the agricultural sector.[1]

Legislative Bill 1057 (2010), codified in section 46-2,140 of the Nebraska Revised Statutes, created the Republican River Basin Water Sustainability Task Force.[2] Its purpose was "to define water sustainability for the Republican River basin, develop and recommend a plan to help reach water sustainability in the basin, and develop and

* Associate Professor of Law, University of Nebraska College of Law. The Author thanks Nicole Wall, Alan Tomkins, and the Republican River Basin Water Sustainability Task Force for enabling him to take part in this project. The Author also gratefully acknowledges financial support from the University of Nebraska College of Law and a McCollum Research Grant.

1. This Article does not situate the Republican River Basin Water Sustainability Task Force's work or its product within a larger arena of sustainability literature. Rather, this Article is a first step toward such an endeavor.

2. Legis. B. 1047, 101st Leg., 2d Sess. (Neb. 2010) (codified at NEB. REV. STAT. ANN. § 46-2,140 (repealed 2015)).

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recommend a plan to help avoid a water-short year in the basin."[3] The taskforce operated for approximately two years, providing an interim report in May of 2011 and a final report in May of 2012. The Author was a facilitator for this taskforce, along with Nicole Wall. Both of us worked under the auspices of the Nebraska Public Policy Center.[4]

There are two main purposes attending this Article. The first is to provide accurate and detailed descriptions of the taskforce's work, the context in which it was operating, and the conclusions it reached. The second purpose builds upon the first. That is, a complete picture of the taskforce's work holds value for those concerned about sustainability planning in other forums. So this Article takes a close look at the taskforce's work, with primary emphasis on the questions it confronted, rather than on the results it achieved. This aspect of the taskforce's efforts may hold value to others engaged in sustainability planning.

This Article proceeds in three parts. Part II describes the physical and legal context in which the taskforce was operating. Part III describes the taskforce's progress and its conclusions. Part IV summarizes the lessons gleaned from the effort.

II. CONTEXT[5]

A. *The Republican River Basin*[6]

Generally speaking, the Republican River Basin is a remarkably diverse basin from east to west across Nebraska. Climate ranges from

3. *Id.*

4. *See generally Republican River Basin Water Sustainability Task Force Facilitation*, UNIV. OF NEB. PUB. POLICY CTR., http://ppc.unl.edu/projects/republican-river-basin-water-sustainability-task-force-facilitation/ [https://perma.cc/2MFT-U4LU].

5. Some of the text included in Part II is derived from report drafts circulated during the taskforce's work and compiled with the assistance of a "background committee" established to collect information and educate the taskforce. The Author, who has omitted attribution to any particular participants because the taskforce did not track that information, thanks all of those who helped compile that information. Any errors, of course, are those of the Author.

6. For relevant descriptions of the basin, see generally REPUBLICAN RIVER GROUND WATER MODELING COMM., REPUBLICAN RIVER COMPACT ADMINISTRATION GROUND WATER MODEL 3–5 & app. B (2003), http://www.republicanrivercompact.org/v12p/RRCAModelDocumentation.pdf [https://perma.cc/FP72-5J7R]; Ryan M. Bjerke, Stakeholder Perceptions of Water Supply Management and Sustainability in the Republican River Basin in Nebraska 15–29 (Dec. 2009) (unpublished M.S. thesis, University of Nebraska, Lincoln) [https://perma.cc/X226-XKBD]; *The Republican River Basin*, NEB.'S DEP'T NAT. RES.: WATER PLANNING & INTEGRATED MGMT., http://dnr.ne.gov/iwm/republican#Map [https://perma.cc/D4ML-G94K]; *Republican River Basin*, NSF REPUBLICAN RIVER BASIN PROJECT, http://waterproject.web.engr.illinois.edu/rrbintro.html [https://perma.cc/2A4V-9WFM]; REPUBLICAN RIVER BASIN PORTAL, http://www.rrbdp.org/index.html [https://perma.cc/FE6K-7FL4]; U.S. DEPARTMENT OF THE INTERIOR, RESOURCE MANAGEMENT ASSESSMENT REPUBLICAN RIVER BASIN WATER SERVICE CONTRACT RENEWAL (July 1996); U.S. DEPARTMENT OF AGRICULTURE, REPUBLICAN RIVER BASIN, NEBRASKA WATER AND RELATED LAND RESOURCES STUDY REPORT (1978).

dry subhumid in the west, to wet subhumid in the east. Total average annual rainfall varies considerably, approaching 25–27 inches in the east and tapering to 16 inches in the west. Within the irrigation season (generally the beginning of May until mid-September), the western reaches receive on average 14 inches, while the east receives 22–24 inches. As a result of the rainfall distribution, as well as some geologic differences, ground water recharge caused by precipitation similarly varies across the basin, and it generally increases towards the east.

Topographically, the basin is composed of a wide floodplain along the main stem and rolling terrain beyond. In Nebraska, the river has eroded a valley averaging 2 miles wide that sits 100 to 200 feet below the surrounding uplands. The main stem consists mostly of stream sediment, called alluvium, and coarse wind-carried sediment that was deposited in the region about 2 million years ago. This material ranges up to 100 feet of thickness along the bluffs of the river and makes up the valuable soil used today for farming.

While the Republican River gains flow from overland runoff events, a portion of the river's flow is baseflow—discharge from aquifers in the region. This generally occurs through the tributaries that feed into the main stem, rather than through aquifer discharges at the main stem. The main stem, unlike other rivers in the state, has little connection to the water-bearing formations of the High Plains Aquifer. Additionally, a significant amount of aquifer recharge occurring in the Platte River Basin reaches the Republican River through aquifer discharges into the Republican tributaries.

Since the mid-1900s, the primary economic activities in the basin were agricultural. As rainfall amounts vary, so do the agricultural endeavors that are possible. Thus, corn production in the eastern reaches of the basin is more feasible than in the western reaches because the crop requires more water than is available in the west. Arguably, no part of the basin has the climactic conditions to support relatively water-intensive crop production, absent irrigation. At the very least, climactic variations make it impossible sometimes, resulting in crop failures. Irrigation can help avoid those failures in years with too little rainfall. The crops raised within the basin, however, tend not to vary as dramatically as the rainfall distribution. As a result, the irrigation requirement is higher in the western part of the basin than it is in the eastern part of the basin. But irrigation remains an essential element to the current forms of agricultural production throughout the basin.

Surface water development for irrigation in the Republican River basin dates back to the late 1800s.[7] Most of the infrastructure and associated water rights were created in the 1950s in conjunction with the

7. For a map depicting the surface water system, see *Republican River Basin Map (January 12, 2005)*, NEB. DEP'T NAT. RES.: WATER PLANNING & INTEGRATED MGMT., http://dnr.ne.gov/iwm/republican-river-basin-map-january-12-2005 [https://perma.cc/6KKA-C8A7].

Bureau of Reclamation and Pick Sloan Missouri Basin Program. There are two divisions of surface water facilities in the Republican Basin associated with the Bureau of Reclamation: the Frenchman-Cambridge Division and the Bostwick Division.

The Frenchman-Cambridge Division includes four reservoirs and their associated dams: (1) Enders Dam and Reservoir, (2) Trenton Dam and Swanson Reservoir, (3) Red Willow Dam and Hugh Butler Reservoir, and (4) Medicine Creek Dam and Harry Strunk Reservoir.

Enders Reservoir is the storage water supply for the Culbertson Canal and the Culberston Extension. Water is released into the Frenchman Creek and diverted at the Culbertson Diversion Dam downstream. Stinking Water Creek and Spring Creek join the Frenchman River just before the Culbertson Diversion. The Culbertson Extension Canal begins where the Culbertson Canal ends. It, too, is supplied with storage water from Enders Reservoir. These canals serve land in the Frenchman Valley Irrigation District, which has 9,292 acres, and the H&RW Irrigation District, which has 11,946 acres. In this area, the Riverside Irrigation Company has historically operated the Riverside Canal, which diverts natural flow to irrigate 672.1 acres in the Culberston area.

Swanson Reservoir is the storage water supply for the Meeker-Driftwood Canal system, which begins at the dam. These canals are operated by the Frenchman-Cambridge Irrigation District. Swanson Reservoir is also used to supply water to the Bartley Canal, which diverts water from the main stem of the river.

Hugh Butler Reservoir is the storage water supply for the Red Willow Canal, which diverts water from Red Willow Creek. It also supplies the Bartley Canal, which diverts water from the main stem and serves 6,353 acres. These canals are also operated by Frenchman-Cambridge Irrigation District.

Harry Strunk Lake is in the Medicine Creek sub-basin and is the storage water supply for the Cambridge Canal, which diverts water after Medicine Creek's confluence with the river and serves 17,664 acres. The Frenchman-Cambridge Irrigation District also operates this canal.

Each of the irrigation districts operating in the Frenchman-Cambridge Division (Frenchman-Cambridge, Frenchman Valley, and H&RW) also have natural flow permits for the acres they serve. Most of these permits have a priority date of 1946, a date shared in common with the Bostwick Irrigation Division water rights, with the exception of two 1890 rights held by Culberston Canal (approximately 140 cubic feet per second (c.f./s), held only by the Frenchman Valley Irrigation District) and Meeker-Driftwood Canal (approximately 40 c.f./s).

The Bostwick Division's storage reservoir in Nebraska is Harlan County Reservoir. Two irrigation districts use storage water from the reservoir: Kansas Bostwick and Nebraska Bostwick. Kansas Bostwick

operates the Courtland Canal, which diverts water near Guide Rock at the Superior-Courtland Diversion Dam and serves 42,000 acres. Nebraska Bostwick diverts water into four different canals: the Naponee and Franklin Canals (which divert water at diversion outlets at the dam and serve 10,920 acres and 1,650 acres respectively), the Franklin South Side Pump Canal (which diverts water at a pumping station 17 miles downstream of the dam and serves 2,090 acres), and the Superior Canal (which diverts water at the Superior-Courtland Diversion Dam and serves 5,849 acres). There are also about 1,946 acres that Nebraska Bostwick serves using laterals from the Courtland Canal, but for the most part, the Courtland Canal is devoted to serving irrigators in the Kansas Bostwick Irrigation District. The total Nebraska acreage served in the Bostwick Division is 22,456 acres.

There are also 329 natural flow permits that have been issued since 1960, amounting to approximately 18,750 surface water acres. These acres, along with those served by others in the surface water system, often also have wells from which they can be irrigated. These "commingled acres" can be served by either ground or surface water, depending upon the availability of surface water in a particular year. There are approximately 48,000 commingled acres in the basin.

Ground water has been the primary source for domestic water and water for range livestock since the river basin was settled in the 1800s. Ground water was also important to the Burlington and Missouri Railroad, whose steam locomotives needed substantial quantities of clean water for their operation. Use of ground water for crop irrigation was apparently first attempted in Chase County in 1899. Irrigation wells were regularly used at several locations in the Republican Valley during the 1920s. By the time the Republican River Compact was signed in 1943, at least 145 irrigation wells were in use in the basin. Fifteen years later, 1,922 irrigation wells were registered with the state.

The number of ground water wells in the basin dramatically increased from the mid-1960s to the late 1980s. As ground water pumping became affordable, and as irrigation technologies like the center pivot developed, land that historically could not be irrigated was brought into irrigation use. Irrigated acreage grew from the 22,427 acres that the surface water system could serve without the reservoirs, to 451,385 acres in 1960 and, ultimately, to approximately 1.3 million acres today. Presently, there are approximately 70,000 acres that have surface water rights and 1,257,595.32 ground water acres. About 48,000 of the surface water acres are also ground water acres, for a total of around 1.3 million irrigated acres.

There are many other uses of water resources within the Republican River Basin. Recreational uses of the surface water system are economically significant. Boating and other recreational activities that occur at the reservoirs throughout the system are significant contribu-

tors to local economic activity. Some people also use the main stem of the rivers for canoeing and similar activities.

Water resources also support a number of game and non-game species through the basin. This, in turn, creates economic returns to landowners and supporting businesses through hunting, fishing, and non-consumptive wildlife activities like birdwatching.

Conservation measures have also had a significant impact on water consumption and the timing of water movement throughout the basin. Since pre-development, terraces and farm ponds, for example, have reduced the amount of water that runs off into the stream system. Land use changes, like reduced tillage practices, native-vegetation restoration (through things like the Conservation Reserve Program), improved management of pastures and rangeland, invasive species growth, and the expansion of riparian forest also affect the use and movement of water in the basin. Many of these conservation measures also provide habitat for species within the basin. In addition, these practices have improved water quality and reduced soil erosion.

B. *Nebraska Water Law*

Nebraska maintains a legal distinction between surface and ground water. Nebraska's surface water law is found in the Nebraska Constitution, Article XV, sections 4, 5, 6, and 7,[8] and in Chapter 46, Article 2, of the Revised Statutes of Nebraska.[9] Generally speaking, these provisions establish a prior appropriation system.

Formally established in Nebraska in 1889, the main principle of the prior appropriation system is "first in time is first in right."[10] The Nebraska Department of Natural Resources ("DNR") administers the surface-water system and has the authority to issue permits granting the right to divert surface water for beneficial uses. In order to obtain a permit to appropriate water, an applicant must provide general information indicating the source of the appropriation, the amount of desired water, the location of the extension, the estimated time of completion of diversion works, a description of the land served if the appropriation is for irrigation, and a description of what the water will be used for.[11]

Upon issuance of the permit, the applicant gains the right to divert water with a "priority date" matching the date the initial application was filed with the DNR. This priority date essentially establishes the permit holder's rights between prior ("senior") and subsequent ("jun-

8. NEB. CONST. art. XV, §§ 3–7.

9. NEB. REV. STAT. ANN. §§46-201 to -299, -2,100 to -2,141 (LexisNexis 2012 & Supp. 2015).

10. NEB. REV. STAT. ANN. § 46-203 (LexisNexis 2012).

11. For a discussion of these basic principles, see generally RICHARD S. HARNSBERGER & NORMAN W. THORSON, NEBRASKA WATER LAW & ADMINISTRATION (1984).

ior") appropriators. Generally, a senior appropriator is entitled to receive its allocated amount of water without the interference of junior appropriators. Thus, junior appropriators are bound to take notice of senior users, ceasing a diversion when it would interfere with the rights of seniors downstream.

There are a number of different appropriation types that exist under Nebraska law. The rights that exist in the Republican basin include storage permits (the right to divert a certain quantity of water and store it in a reservoir), storage-use permits (the right to use water previously stored), and natural-flow appropriations for direct out-of-stream use (the right to divert water from the river and, for example, irrigate crops with it without storing it).

The ability to use ground water, however, is not regulated under the prior appropriation system, nor by the DNR. Ground water management began with judicial doctrines that protected water resources from pollution and provided rules to govern disputes over access to water resources. The common-law right to use ground water has been enunciated as the ability to withdraw water from beneath one's property and put it to a reasonable use on the overlying land.[12] However, landowners must observe a rule of correlative rights that requires users to share the resource proportionately in times of shortage.[13]

The Nebraska Ground Water Management and Protection Act ("GWMPA") governs the management of ground water resources in Nebraska and modifies the judicial doctrines resolving well disputes.[14] Specifically, the GWMPA recognizes the existence of the common-law doctrine but limits it: "Every landowner shall be entitled to a reasonable and beneficial use of the ground water underlying his or her land subject to the provisions of Chapter 46, article 6, and the Nebraska Ground Water Management and Protection Act and the correlative rights of other landowners when the ground water supply is insufficient to meet the reasonable needs of all users."[15]

Broadly speaking, the GWMPA empowers Natural Resources Districts ("NRDs") to manage water resources in three important areas: (1) protecting ground water quality; (2) protecting ground water quantity; and (3) managing to avoid or resolve conflicts between ground water and surface water users. Each district is required to have a Ground Water Management Plan under section 46-709, which must be reviewed by the DNR under section 46-711. This planning basically involves taking stock of the resource characteristics and selecting

12. Spear T Ranch, Inc. v. Knaub, 691 N.W.2d 116, 128 (Neb. 2005); Prather v. Eisenmann, 261 N.W.2d 766, 769 (Neb. 1978); Metro. Utils. Dist. v. Merritt Beach Co., 140 N.W.2d 626, 637 (Neb. 1966).

13. *Spear T Ranch*, N.W.2d at 128; *see also Metro. Utils.*, 140 N.W.2d at 637; Luchsinger v. Loup River Pub. Power Dist., 299 N.W. 549, 551 (Neb. 1941); Olson v. City of Wahoo, 248 N.W. 304, 308 (Neb. 1933).

14. NEB. REV. STAT. ANN. §§ 46-701 to -754 (LexisNexis 2012 & Supp. 2015).

15. *Id.* § 46-702 (LexisNexis 2012).

management objectives. It contains a list of fourteen mandatory subjects that the NRD's plan must include, one of which is a "proposed ground water reservoir life goal for the district."[16]

In its current form, the GWMPA recognizes that ground water use has an impact on surface water, and vice versa, through a series of statutory provisions that provide for integrated management. This was not always the case. Indeed, the common law did not recognize the hydrologic impacts of surface and ground water use until 2005, in *Spear T Ranch v. Knaub*.[17] There, the court concluded that a surface water appropriator could maintain a claim for interference with his appropriation against ground water pumpers. Such a claim would be successful if the appropriator could establish intentional and unreasonable interference with the appropriator's right to use water. Unreasonable interference was defined in much the same way as it is for nuisance claims,[18] requiring among other things a comparative analysis of the relative social value of the competing uses.[19] Needless to say, the opinion provides little certainty in the event of a conflict among surface and ground water users.

The historic legal separation between surface and ground water persists in Nebraska's water-management world. Surface water users, of course, care about the relative temporal priority of their rights and look to the DNR for administration. Ground water users, care less about time and more about access to a reasonable share of the resource and look to NRDs as their regulatory authority. In the event of conflicts between these two types of users, *Spear T* provides one murky answer to the question of relative priority.

The Nebraska Legislature has made great strides in attempting to bring these two groups of users together, but it has stopped short of proclaiming a clear rule of relative priority.[20] As it stands today, the Legislature has granted NRDs the legal authority to regulate water level declines, establishing them as the preferred entities to regulate ground water use that can cause conflicts with other ground water

16. *Id.* § 46-709(11).

17. Spear T Ranch, Inc. v. Knaub, 691 N.W.2d 116, 128 (Neb. 2005).

18. *See* Hall v. Phillips, 436 N.W.2d 139 (Neb. 1989).

19. *Spear T*, 691 N.W.2d at 131.

20. *See, e.g.*, J. David Aiken, *Hydrologically-Connected Ground Water, Section 858, and the* Spear T Ranch *Decision*, 84 NEB. L. REV. 962 (2006); Stephen D. Mossman, *"Whiskey is For Drinkin' but Water Is for Fightin' About": A First-Hand Account of Nebraska's Integrated Management of Ground and Surface Water Debate and the Passage of L.B. 108*, 30 CREIGHTON L. REV. 67 (1996); Joseph A. Kishiyama, Note, *The Prophecy of Poor Dick: The Nebraska Supreme Court Recognizes a Surface Water Appropriator's Claim Against a Hydrologically Connected Ground Water User in* Spear T Ranch, Inc. v. Knaub, 85 NEB. L. REV. 284 (2006). A more complete listing of significant changes to the GWMPA and other Nebraska water statutes affecting NRDs, can be found in NEB.'s NAT. RES. DISTS., 2012 NRD GROUNDWATER MANAGEMENT SUMMARY 7–10 (2012), https://www.nrdnet.org/sites/default/files/groundwater-managment-summary-2012.pdf [https://perma.cc/H2TY-HYPL].

users or surface water users.[21] The Legislature also stated that surface water project sponsors and the DNR are the key authorities when it comes to managing surface water supplies, with project sponsors having responsibility for the use of their facilities and the DNR having regulatory authority.[22] The GWMPA's integrated management provisions seek to bring all of these players together through a process-based approach that will allow hydrologically connected ground water and surface water supplies to be managed "in order to permit equity among water users and to optimize the beneficial use of interrelated ground water and surface water supplies."[23]

The product of the GWMPA's effort at cooperative governance is the Integrated Management Plan ("IMP"). Generally, IMPs provide a framework to obtain sustainability and water use equity within the selected basin as determined by the DNR and the NRDs. Data are, of course, important. Thus, in order to provide for economic development and "economic sustainability" within the designated area, an IMP must provide procedures to track depletions and gains to stream flows caused by water-use changes within the basin.[24] These procedures must be based on the best available information, identify means that will ensure new uses will not have more than a *de minimus* effect upon existing surface water and ground water users, identify potential water available to mitigate new uses, develop plans with other political subdivisions in the basin to make water available to offset water shortages, and encourage economic development and sustainability.[25] Consideration must be given to the applicable information relied upon and provided by the DNR.[26] Also, the DNR must identify by rule or regulation the types of scientific data and other information that will be considered. The DNR and the NRD developing an IMP may also utilize information provided by other NRDs, irrigation districts, and state and federal agencies involved in the designated area.[27]

The statutes also empower NRDs to utilize a number of "controls" to implement the IMP. These statutes require that the surface water and ground water controls proposed in an IMP be sufficient to ensure that the state will remain in compliance with applicable laws, compacts, and agreements and that they will protect ground water and surface water users from depletions to their respective sources caused

21. §§ 46-702 to -703.

22. *Id.* § 46-703(5)–(6).

23. *Id.* § 46-703(2).

24. *Id.* § 46-715(3), (3)(b) (LexisNexis Supp. 2015).

25. *Id.* § 46-715(3)(a), (c), (e), (f).

26. *Id.* § 46-717(1) (LexisNexis 2012).

27. *Id.* For more information about the IMP process, see Amy Ostdiek, *The Integrated Management Planning Process*, WATER MATTERS (Neb. Dep't of Nat. Res., Lincoln, Neb.), Nov. 2009, http://dnr.ne.gov/Media/iwm/PDF/WaterMatters_No1.pdf [https://perma.cc/8845-RTMJ].

by new uses begun after the basin has been preliminarily determined to be fully appropriated.[28]

C. *The Republican River Compact*[29]

Nebraska's water law also operates in the shadow of an interstate compact in the Republican basin. The Republican River Compact was ratified in 1943 to govern the use of the Republican River's water among Colorado, Nebraska, and Kansas. The Department of the Interior looked to the Compact to ensure that the river's water was allocated among the states in a manner that would protect its investment in future projects from inadequate water supplies and prevent conflicts between the states. The overall goals of the Compact were to maximize water use for multiple purposes, divide the waters in an equitable manner, and reduce flooding.

Difficulties arising under the Compact's allocation system, along with the expansion of irrigation development and an increase in ground water pumping, led to interstate litigation in the late 1990s. Kansas initiated a lawsuit alleging that Nebraska overused its allocated amount of the Republican River's stream flow. After years of litigation and findings issued by the U.S. Supreme Court-appointed Special Master, the Compact states entered into a settlement agreement in 2003 that serves to clarify each state's responsibilities under the Compact.

Broadly, the 2003 Final Settlement adopts decisions made by the Special Master that ground water use, to the extent that it depletes stream flow, will be counted as a state's consumptive use or "Computed Beneficial Consumptive Use" ("CBCU"). To facilitate this, a computer model assessing the effect of ground water use on streamflow was developed by the three states. In addition, the Final Settlement contains numerous calculations and formulas to determine use throughout the entire Republican River Basin and for sub-basins located in each state. It also provides for an imported water supply credit to Nebraska for water that comes from the Platte River, generally through aquifer discharges created by surface water projects located south of the Platte River. The settlement also led Nebraska to continue to develop integrated management laws and regulations that govern both surface water and ground water use in order to ensure that it complies with the compact.

One important provision related to the taskforce's assignment is called "Water Short Year Administration," which occurs in so-called "water-short years." The final determination of a water-short year is

28. § 46-715(4).

29. Comprehensive information concerning the Republican River Compact, including the 2003 Final Settlement, can be found at *Republican River Compact,* NEB.'S DEP'T NAT. RES.: WATER PLANNING & INTEGRATED MGMT., http://dnr.ne.gov/iwm/republican-river-compact-2 [https://perma.cc/R9N5-25YV].

made in July of every year. Under the Final Settlement, a water-short year is triggered when the irrigation supply "is less than 119,000 acre-feet of storage available for use from Harlan County Lake as determined by the Bureau of Reclamation." During a water-short year, Nebraska must "limit its Computed Beneficial Consumptive Use above Guide Rock to not more than Nebraska's Allocation that is derived from sources above Guide Rock." This generally has the effect of reducing Nebraska's allocation during water-short years and makes it more likely that Kansas's allocation is available at Guide Rock for Kansas Bostwick Irrigation District.

In water-short years, Nebraska's overall compliance with the Compact is measured on a two- or three-year average rather than the five-year average used during normal years. A decrease in the amount of years that are averaged makes compliance more difficult. A five-year average allows Nebraska to offset a year in which it overused with other years in which it did not. However, when a two-year average is used, offsetting overuse becomes more difficult simply as a function of having fewer years' use to average. Further, in dry years, there is a greater potential of higher demand for irrigation water, lower surface-water availability, and increased pumping.

D. *Contextual Summary*

The description above tells only a portion of the Republican River Basin's story. But it tells enough to shed some light on the forces at work in the creation and conduct of the taskforce and the historical baggage the group brought with them to the discussion. There are at least four salient things to keep in mind moving forward.

First, Nebraska's water resources were developed before integrated management. The surface water system developed first through the rules of prior appropriation. And ground water was developed later with vastly different rules. To date, the only answer to the question of who has priority as between surface and ground water users is the rule of reasonableness from *Spear T*. The IMPs in the basin have not provided answers to the question either.

Second, the Compact has caused a lot of angst. In part, this places pressure on the lack of clear priority among surface and ground water users. To maintain compact compliance, the first group to feel the impact of scarcity is surface water users. Often, the impression surface water users get is that ground water users are allowed to continue while the surface water users must shut down their irrigation. While this is true in the short term, there are two relevant observations.

The first is that pumping's impact to streamflow is distributed over time, which means that today's pumping may deplete streamflow many years in the future. Relatedly, shutting ground water users down in a dry spell does little to replace streamflow. Surface water impacts are, however, immediately related to streamflow. So limiting surface

water use for Compact purposes is an important part of Compact compliance, despite the perceived equities.

The other relevant observation about ground and surface water users is that there is not a clear distinction between the two groups. Many farmers use both sources, and often some irrigated acres are subject to irrigation from either source. Thus, the politics of surface water and ground water at the individual level are somewhat muddled. Surface water systems, however, often interpose an intermediary entity that controls and finances the surface water delivery structure. That entity's interests are not as clouded by a simultaneous interest in ground water delivery. Thus, irrigation districts are important players in the somewhat contentious push and pull between surface water and ground water use and the impact of Compact compliance.

The third salient piece of baggage that attended the taskforce's sustainability discussions is the view that surface water irrigation and infrastructure are outdated. This is, in part, an outgrowth of the fighting between surface and ground water users which is, in turn, somewhat a function of Compact compliance. One response to surface water users' (and surface water institutions') claims of inequity in water administration is that the surface water system is a product of a very different time in available agricultural technology. According to this view, the system ought to be abandoned in favor of more efficient modes of irrigation, like ground water pumping.

On the other hand, the surface water system is important for flood control in the basin and allows the basin to otherwise use river flows that are high and would otherwise result in water that is not utilized. To continue the existence of those systems, money is necessary and, thus, the continued operation of the systems is necessary (else it cannot fund its operations).

The final salient point of contention in the basin is, in some part, a response to the surface-water system nay-sayers. This view is quick to point out that utilizing ground water can, and has, resulted in significant aquifer declines in the basin. Accordingly, streamflow use is a necessary piece of the irrigation puzzle if such declines are a problem.

Others point out those aquifer declines as a further indication of streamflow impacts, even though the hydrology only supports that claim to a limited extent. This point often has a geographical flavor that brings to bear some aspects of Compact compliance. That is, those in the eastern part of the basin (where ground water supplies have not been as diminished) claim that they should not have to bear as much responsibility for Compact compliance (as it relates to ground water-based streamflow depletions) because the ground water overuse has clearly been in the western part of the basin.

III. The Task Force's Work

A. *Defining Water Sustainability*

With all of this baggage in play, the taskforce began its work. Nearly the entirety of the first year of the taskforce's discussions was focused on defining water sustainability. This section describes the process it went through and the results it reached.[30]

We began with a survey to get a better understanding of where individual taskforce members stood on the question of sustainability. Our initial goal was to assess the level of thought that taskforce members had afforded the concept and the underlying economic, social, and environmental concerns that many people associate with sustainability. So we presented the taskforce members with the following question:

> We need a picture of what the group thinks sustainability is generally. To that end, we are offering one definition and asking you if it corresponds with how you view the general question of what sustainability is. Here is that definition:
>
> "Sustainability can be thought of as humans living within ecological means and achieving equity from one generation to the next and so on. Thus, those who live within a sustainable basin, over the long term, have the resources they need to maintain their economy, society, and environment."
>
> Please explain whether or not you agree with this notion of sustainability. If you have an additional or different idea of the concept of sustainability, please describe it here.[31]

The responses to this survey revealed that the participants were not thinking at a very deep level about the concept of sustainability, though many had no reason to disagree with the statement we offered. Those that did disagree were objecting more to the breadth of the statement than its accuracy, often claiming that the statement was not focused enough on water resources.

Knowing that the breadth might be found objectionable and wondering about the utility of such a broad statement ourselves, we asked three more specific questions about water use:

> a) What type and level of water use is necessary to the economic well-being of the population using those resources now and in the future?
>
> b) What type and level of water use is necessary to support the local culture and social community now and in the future?

30. For another account of sustainability concerns in the Republican River Basin, see Bjerke, *supra* note 6, at 85–109.

31. Results of Initial Survey of Republican River Basin Water Sustainability Task Force 1 (2010) [https://perma.cc/88N5-JAWF].

> c) What type and level of water use is necessary to satisfy environmental concerns now and in the future?[32]

These are, of course, difficult questions. The respondents largely had few answers. The first one grabbed the most attention from the survey takers. Most respondents were farmers or directly involved in agriculture in some way. To them, the primary goals involved carrying on with irrigation into the future. A strong concern for equity emerged from the discussion of economic concerns, ranging from concerns for the economic vitality of all parts of the basin (which is very diverse in terms of resource availability) to concerns for future generations.

Beyond the first question, respondents had little to offer, sometimes referring back to their answer to the first question, which was sometimes that they did not have enough information to answer the question.[33] In the end, however, this exercise served two purposes. First, it gave the participants a flavor at the outset of their work of just how amorphous the question of sustainability could become. Second, it gave us some indication of what, if anything, the taskforce members had in mind.

The most significant concrete statement made by multiple participants (though not a majority) about water sustainability was that water sustainability involved using no more than what can be recharged by inflows to the system. This appeared to reflect the concern for aquifer declines described above. And, to some extent, it indicated that the push for sustainability may simply be a new way of arguing about an old problem. Given that evidence, one of our early tactical judgments was to keep the participants one step removed from these concerns. To do this, we decided that we would push the participants to explain why these old problems raised concerns about sustainability. That, in turn, required one to have some definition of the concept. And so, we thought that we may be able to use these old problems to get at a definition of sustainability. Then, perhaps, we could use that definition to shed new light on these old problems.

Given the evidence we had collected in the initial survey and in the initial meeting, we also decided that the group would benefit from interim work in the nature of education and brush clearing for the report. So we arranged for an interim educational event, and I started to collect background material with the help of a committee. This material included information about current water management, the history of water management, and so on. This would later become background material for the report, and it would get something on paper that would at least give the group a sense of accomplishment about their work, which would be fairly important given the difficul-

32. *Id.* at 2–4.
33. *See id.* at 1–4.

ties I saw in defining sustainability and writing a sustainability plan. To boot, there was a lot for the participants to learn about the basin.

We returned to the question of defining sustainability in January 2011. To me, there was a major problem facing this stakeholder group: they were not experts in water management,[34] had little background knowledge of hydrology, and had little advanced training in other disciplines that would be relevant and helpful to the complex task set before them. Moreover, given the relatively short time frame and lack of funding associated with their tasks,[35] it was difficult to discern what exactly this group of stakeholders could really accomplish.

However, my research revealed a role for a group like this. Sustainability is clearly a multi-disciplinary subject.[36] But one core aspect of sustainability efforts is attention to the normative questions associated with resource use that science cannot answer. According to the literature, these questions are often overlooked. Those few who call for attention to them argue that they should be addressed in a political realm that is suited to answering such questions.[37] I thought the taskforce could perhaps advance its (as well as the legislature's) understanding of the question of water sustainability by turning its attention to these fundamental and normative questions. And, as mentioned, it would help avoid the old fights and focus on common ground before proceeding into more contentious territory.

The first task was to present the group with a somewhat more concrete statement of sustainability than we had offered in the initial scoping survey. We settled on one offered by Peter Gleick and the Pacific Institute, framing water sustainability as the level of use that sustainable water management would allow. Thus, we presented them with the following statement: "Sustainable water use 'supports the ability of human society to endure and flourish into the indefinite future without undermining the integrity of the hydrological cycle or the ecological systems that depend on it.'"[38]

34. Only one member of the taskforce had relevant technical water-management expertise, and that was the Director of the DNR. This troubled some task force members, because the managers of the NRDs were not on the taskforce. Again, the old lines between surface and ground water resources and users were important.

35. The total appropriation for the effort was $50,000. Legis. B. 1047, 101st Leg., 2d Sess. (Neb. 2010) (codified at NEB. REV. STAT. § 46-2,140 (repealed 2015)).

36. Daniel P. Loucks, *Sustainable Water Resources Management*, 25 WATER INT'L 3, 3 (2000) (explaining how multi-faceted the question of water sustainability is).

37. *Id.*

38. Memorandum Explaining Activities of February 9, 2011 to Republican River Basin Water Sustainability Task Force 1 (Feb. 9, 2011) [hereinafter Memorandum of February 9, 2011] [https://perma.cc/FN4D-RDTZ] (quoting Peter H. Gleick, *The Changing Paradigm: A Look at Twenty-First Century Water Resources Development*, 25 WATER INT'L 127, 131 (2000)).

Other authors, however, had observed that there are many definitions of sustainability, opening up a large number of critiques.[39] One of the primary critiques, was the observation that none of these definitions of sustainability had grappled with a further notion of what might be meant by terms like "support[ing] the ability of human society to endure and flourish into the indefinite future."[40] In another common definition, sustainable use is that which "meets the needs of the present without compromising the ability of future generations to meet their own needs."[41] Again, however, the terms lack definition.

Vucetich and Nelson penned a critique that highlighted one view of the problem.[42] To them, sustainability under these various definitions was in need of a normative assessment, perhaps in the hands of an ethicist or philosopher.[43] This is because the notion of sustainability could range from the "vulgar"—"exploit as much as desired without infringing on future ability to exploit as much as desired"—to the "virtuous"—"exploit as little as necessary to maintain a meaningful life."[44] The choice between those visions of sustainability, of course, is a matter of judgment. And it was that judgment that we concluded could be beneficially put to the taskforce and, perhaps, assist them in their charge.

At the January 2011 meeting, we presented four different formulations of what sustainable water management would do and split the group into four sub-groups, each with one of the following statements in hand:

> Sustainable water management would . . .
>
> 1) . . . allow users to exploit as much as desired so long as their use does not impair the long term renewability of the resource.
>
> 2) . . . allow users to exploit as much as desired without infringing on the future ability to exploit as much as desired.
>
> 3) . . . allow users to exploit enough to meet their present needs without infringing on the ability of future users to meet their needs.
>
> 4) . . . allow users to exploit as little as necessary to maintain a meaningful life.[45]

Each sub-group was tasked with answering three questions about the statement and reporting back to the larger group:

- What they thought such a definition meant (i.e., what they would need to do to implement it).

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39. *See generally, e.g.*, Daniel Bonevac, *Is Sustainability Sustainable?*, 23 ACAD. QUESTIONS 84 (2010).

40. Gleick, *supra* note 38, at 131.

41. WORLD COMM'N ON ENV'T & DEV., OUR COMMON FUTURE 43 (1987).

42. *See generally* John A. Vucetich & Michael P. Nelson, *Sustainability: Virtuous or Vulgar?*, 60 BIOSCIENCE 539 (2010).

43. *Id.* at 540–41.

44. *Id.* at 540–43.

45. Draft Minutes of the January 4, 2011 Meeting of the Republican River Basin Water Sustainability Task Force 7–8 (Jan. 17, 2011) [https://perma.cc/E8G7-P9UQ].

- Whether they thought it was a good or bad definition and why.
- How it compared to other definitions (i.e., what made it different, superior, or inferior).

As each sub-group reported their findings to the larger group, the group had a broader discussion of each version and voted on what they wanted to adopt. The group cast no votes for either the second or the fourth definition. As between the first and third options, the votes were fairly evenly split, with the third garnering a slight majority.

The first definition is one that raises the prospect of imposing nearly no limits on present use. Present users can simply use as much as they want, so long as they do not impair the overall resiliency of the water-resource system. Presenting the group with this option was meant to present them with nearly no limitation on present use. Of course, this interpretation would depend on what the term "renewability" meant.

The taskforce seemed to understand that interpretation and nearly half of the members voted in favor of this option, but the comments they offered focused on changing the terms to impose at least some restraint on present use. Thus, there were numerous suggestions to change the term "renewability." One proposed to replace it with the term "availability," which imposes a more significant potential limit on present use. Others, however, opted for the term "viability," which may or may not be more restrictive than "renewability." Moreover, the group was not impressed with the notion of present users using as much as "desired." They sought to change that term to "required" or "necessary."

The second definition was written with the notion of equitable treatment over time in mind, limiting present use only insofar as the future's ability to do the same thing as the present (use as much as desired) is at stake. Interestingly, this definition was roundly rejected, even though the same theory of equitable treatment is at play in the third definition (which a majority of the taskforce voted for). The discussion seemed to attribute this disconnect to the nature of present and future use at play in the definition: "as much as desired." No one seemed to think that mere desire is enough to justify water use. There were many calls to limit this term to "needs" or something like "beneficial use." The group also raised questions about feasibility (could we really guarantee that to the future?) and interpretation (how could we possibly know what the future may want?).

The third statement garnered the favorable votes of a majority of the taskforce. That rendition encapsulated the idea that inter-generational equity is a chief concern. It also imposes some limit on present use and future entitlement through the use of the term "needs."[46]

46. This definition, of course, closely follows that of WORLD COMM'N ON ENV'T & DEV., *supra* note 41, at 43.

The fourth definition was meant to be the most limiting of the four choices. To me, it stood in stark contrast to the first definition and helped frame the second and third definitions as somewhere in between. The group seemed to understand this option as the most limiting of the four options, remarking that it was "minimalist" and "on a positive note, this definition may indicate good stewardship."[47] This definition, like the second one, received no votes.

Overall, then, we saw a clear rejection of perhaps the most virtuous understanding of water sustainability—the fourth definition. There were some nods to moderation in the discussion, but the vulgar definition (the first) was not roundly rejected. However, the members wanted to modify it in such a way as to make it somewhat closer to the more moderate equality-laden third option.

In the next phase of our work, at the same meeting, we sent the remaining two definitions to the small groups and asked each one to come up with their definition of choice. Three of the groups emerged with new formulations while the fourth basically recounted the vocabulary changes and definitional problems reported above with the two remaining definitions.[48] The three new formulations were as follows:

> Sustainable water management would . . .
>
> . . . allow beneficial use to meet present needs without infringing on the availability to future users.[49]
>
> . . . allow users to beneficially use as much as needed without hurting or jeopardizing future generations.[50]
>
> . . . allow use for a beneficial purpose, in an efficient manner, to satisfy present needs and obligations while minimizing the risk to water resources for future generations and their needs.[51]

With that, our January 2011 meeting ended. In the interim, we recounted the taskforce's work and mapped a plan for the next meeting. The goal was to finish up defining the principle of water sustainability and transition to the other main charge for the taskforce, which was mapping a plan to achieve it. As we prepared for the next meeting, in February 2011, I summarized the taskforce's work, distilling what I thought were threads in their consideration of different definitions and reporting it back to the taskforce:

> [T]hree main aspects of the definitions emerge[d]: (1) a characterization of the level of present use that should be allowed without regard to future concerns, (2) a characterization of the level of future availability that sustainable water management should look to

47. Memorandum of February 9, 2011, *supra* note 38, at 4.

48. To this fourth group, the focus turned to implementation, which became a significant question at the next meeting and occupied most of the taskforce's time after that.

49. *Id.* at 4.

50. *Id.* at 5.

51. *Id.* at 6.

provide, and (3) the relationship between the present and the future.

Present Use

The notion of characterizing present use is found in the terms "as much as desired" (in both definitions 1 and 2), "enough to meet present needs" (definition 3), and "as little as necessary to maintain a meaningful life" (definition 4). Each of these terms, of course, requires definition[,] but when placed next to one another they seem to indicate different levels of what the present should be entitled to, even absent a concern for the future. Many of the comments were geared at defining "need" or "desire" in the first and third definitions or replacing the concept with another term.

Future Availability

Characterizing future availability is explicit in the terms "as much as desired" (in definition 2) and "to meet their needs" (in definition 3). Again, placed next to one another (even without further definition), each seems to indicate different levels of concern for the future. In the other definitions, the level of future availability may be implicit . . . . Thus, the concern for long-term renewability in the first definition guarantees some level of future functionality to the water resources system. The absence of any mention of the future in the fourth definition may be taken in context as guaranteeing that all but the absolute minimum amount of water needed now will be preserved for future use. Many of the comments we heard were geared at this, including the difficulties associated with changes that may impact future needs or renewability.

The Relation Between the Two

The third aspect of these definitions is the relationship between the future and the present. There are at least two observations that appear. First, each involves some level of pressure that the future places on the present. For instance, a concern for renewability in the first definition limits the present desires that can be met. In the fourth, the implicit premise could be that the future (whatever it might be) imposes quite significant limits on the present. In the second and the third, again when placed next to one another, there are different levels of concern that could be taken as limits on fulfilling present desires or needs.

The second observation concerning the relationship between the future and the present is the notion of equity over time. In both the second and third definitions, the present and the future are treated the same in principle. That is, in the second, the future gets the same thing as the present—the ability to fulfill their desires. The third definition takes the same approach, fulfilling needs in the present and the future. But in the first and fourth definitions, things are different. In the first, present desires are tempered only by guarding against long-term renewability. Depending upon how one defines renewability, this could mean leaving for the future something less than what we have now. In the fourth, present needs are strictly defined to, perhaps, provide as much water for the future as we can.

> Thus, one could interpret it as leaving for the future something more than we have now.[52]

Along with this summary, we presented a number of tasks to the members, which would occupy us for the better part of the next two meetings (In February and March 2011). The first task is the most important for present purposes:

> [Task] 1: Focusing on Common Aspects of the Definitions
> In small, randomly selected groups, we would like you to answer the following questions geared at fleshing out these aspects of the definition. Please don't worry about implementing the definition. Rather, at this point, we would like to focus on overall principles. For now[,] let's assume anything is possible.
>
> 1) What level of present use (regardless of the needs of the future) do you think is appropriate? More specifically, what word or words would you use to describe it (need, use, beneficial use, desire, etc.) and why?
>
> 2) What level of future availability do you want to ensure? More specifically, what word or words would you use to describe it (as much we can, as little as they may need, as much as they may want, just don't make things impossible for them, etc.) and why?
>
> 3) Is your choice about the level of future availability informed by the likelihood that it would impose significant restraints on current use?
>
> 4) What do you think we owe the future? What language would you use to incorporate your thoughts on that? What language would you try not to use?
>
> 5) Do you see any other key aspects of these definitions (or others) that we may have overlooked in trying to boil down the areas of concern for discussion?[53]

We presented the taskforce with these five questions to challenge their thinking on the common threads they had been wrestling with in the prior meeting. We broke the group into four smaller groups to fashion their answers to the questions and then each group reported back to the larger group for discussion.

The first question concerned the appropriate level of present use. The general consensus was that the appropriate level of present use involved elements of necessity, efficiency, productivity (what many described as "beneficial use"), and flexibility. Many participants considered present levels of use as appropriate.

The second question focused on the desired state of water availability in the future. Here the discussion became more difficult. Often the participants resorted to indicators of future well-being, like a strong economy. They seemed to want the future to have it as good as they

52. Memorandum of February 9, 2011, *supra* note 38, at 7–8.
53. *Id.* at 8.

currently have it, but they had a difficult time framing that in terms of water availability or economic well-being. The participants did not frame their responses in terms of social or environmental outcomes.

The third question asked them to consider whether or not the desired future state was chosen based, in part, on whether or not it imposed significant costs on the present. Most were clear that it was, but the responses seemed to avoid a direct admission. However, there were discussions of how too significant of water restraints today could harm the future and make the need for water resources a potentially moot issue. But there was at least tacit approval for the notion that present costs do not preclude actions geared at future benefits.

The fourth question asked the participants to focus on the future in relation to the present. My main concern here was trying to figure out what they were trying to give the future in a relatively qualitative way. That is, should we try to pass on the same opportunities to the future or, perhaps, better opportunities? Or, for instance, should we just try not to impose harms upon them. The general consensus was that we should not harm the future and try to pass along to them the same opportunities that the present enjoys.[54]

The fifth question was meant to pick up anything that we had missed. The participants had nothing to offer in response to it. At this point, I asked the participants to reconsider the definitions that had been produced at the prior meeting in light of what they had learned about their thinking.[55] There was agreement that the best definition they had at this point was one that emerged in the second phase of the last meeting: Sustainable water management would "[a]llow use for a beneficial purpose, in an efficient manner, to satisfy present needs and obligations while minimizing the risk to water resources for future generations and their needs."

From that point forward, the discussion generally focused on the words within the definition. Over the next two meetings, we conducted numerous activities designed to flesh out these terms, including an interim survey. By the time the definition reached the preliminary report stage in May 2011, it read as follows:

> Management for water sustainability allows use for a beneficial purpose, in an effective and efficient manner, to satisfy our socio-economic needs and obligations while minimizing the risk to water resources for future generations while recognizing their socio-economic needs and obligations.[56]

54. We refrained for the most part from placing this in terms of water availability or economic well-being.

55. *See supra* text accompanying note 45.

56. REPUBLICAN RIVER BASIN WATER SUSTAINABILITY TASK FORCE, FINAL REPORT app. C at 6 (2012) http://dnr.ne.gov/republican-river-basin-water-sustainability-task-force-final-report-may-7-2012 [hereinafter FINAL REPORT] [https://perma.cc/NVV8-DWE7].

In the final report, in May 2012, it had become this:

> Management for water sustainability allows the beneficial use of water, in an effective and efficient manner, to satisfy our socio-economic needs and obligations while minimizing the risk that water resources will be insufficient for future generations to meet their socio-economic needs and obligations.[57]

Generally, the changes between the preliminary and final report were typographical in nature. There was not a great deal of debate concerning the language that was changed. As for the meaning of the terms included in definitions, there were three noteworthy debates.

The first had to do with the phrase "minimizing the risk." This language was chosen as a means of conveying the notion that the future is uncertain, in terms of technological change, future needs, and so on. To the taskforce, the uncertainty boiled down to the realization that, at best, water management could only minimize the risk that current actions would have an adverse impact on the future.

This language was chosen over three other choices: "without infringing on the availability of water resources . . . ," "without infringing on the ability of future generations to . . . ," and "without imposing a substantial risk that there will be insufficient water resources available . . . ."[58] There was not, however, a deep discussion of whether or not this language invoked precautionary principles. That is, it was not clear from the taskforce's discussion which way the notion of future uncertainty cut. On the one hand, uncertainty could be taken as a directive to err on the side of preserving more resources for the future. On the other, it could be taken as a directive that current actions are acceptable so long as there is no indication that there is an adverse future impact to worry about.

This language was also found insufficient by three members of the taskforce who chose to report their dissenting views in an appendix attached to the report. To them, the definition was "not strong enough because it allows present socio-economic needs to trump future water availability while only minimizing the risk to future generations." They concluded that water sustainability should "require the continued availability of water in perpetuity."[59]

The second point of debate concerned the modifiers that accompanied the term "needs." Over time, the definition came to include "socio-economic needs and obligations." The addition of the term "obligations" was to accommodate concerns about Compact compliance. Notably, it also appeared to justify the exclusion of the term "environmental" as a modifier. When pressed about environmental

57. *Id.* at 9.

58. Summary of the March 14, 2011 Republican River Task Force Meeting 3–4 [https://perma.cc/32Y6-CLNZ].

59. FINAL REPORT, *supra* note 56, at app. A.

concerns, one answer offered by taskforce members was that such concerns were adequately reflected by the term "obligations." I took this to mean that either the group elevated environmental concerns above mere "needs" to the status of an obligation, or the group thought that environmental concerns were hoisted upon the state and stakeholders as legal obligations. The matter was not debated at length.

The exclusion of environmental concerns also brought about the observation that environmental concerns were to some extent reflected within the notion of "socio-economic" obligations through both the importance of the agricultural industry in the area and the presence of outdoor recreation and for-profit pursuits like hunting and fishing. Of course, this at least is clear evidence that this group of stakeholders thought the notion of water sustainability to be an anthropocentric principle.

The final area of dispute concerned the question of efficiency and whether or not the term "effective" should be used in lieu of it (as a broader encompassing principle) or in addition to it. The main concern was for how efficiency would be judged. In the end, the group settled on "effective and efficient" as a middle ground. The discussion concerning efficiency was confusing to some because it is not altogether clear that efficiency operates to exclude otherwise effective water management decisions. It is at least the case that it may not or that efficiency is a broad enough construct to encompass most management actions. There is, of course, the concern that more efficient water-use technologies could increase overall consumptive use, which can be a management problem.[60] But the tenor of the discussions was not geared at that level. When we entered the next phase of the taskforce's work—mapping a plan for achieving water sustainability—it became a bit clearer why attention was focused on the notion of efficiency: the term had been often used as an attack on the surface-water system, deemed "inefficient" by those uninterested in its continuation and who viewed it as an impediment to more open use of ground water supplies in light of debates about Compact compliance.

B. *Water-Sustainability Planning*

The next task before the taskforce was to create a plan for achieving water sustainability. With a definition at the ready, and a fairly good understanding of the institutions and water management decisions

60. *See* Norman K. Whittlesey, *Improving Irrigation Efficiency Through Technology Adoption: When Will It Conserve Water?*, *in* WATER RESOURCES PERSPECTIVES: EVALUATION, MANAGEMENT AND POLICY 53, 59–61 (Devs. in Water Sci. Ser. No. 50, Abdulrahman S. Alsharhan & Warren W. Wood eds., 2003). This is only the case, however, if decision makers are not attending to consumptive use by, for instance, holding the number of overall irrigated acres constant or otherwise making efforts to generate water savings from more efficient uses.

that were in play in the basin, the taskforce was in a good position to begin its work on that task. To begin the taskforce's formulation of a water-sustainability plan, we asked the members to identify things in the basin that it thought were unsustainable under the definition it had settled on.[61] The hope was that this activity would help the group evaluate sustainability definitions and help it transition to the planning aspect of its charge. There were two quite clear aspects of the basin's water regime that the group thought were unsustainable: the surface-water irrigation system and aquifer depletions.

To those concerned with aquifer depletions, the main problem with current water use from a water sustainability perspective was the presence of large-scale and significant ground water declines in some parts of the basin, primarily in the western third or half of Nebraska's part of the basin. To those who supported this view, the main goal of sustainable water management would be to stop these declines.

The concern for this problem was so significant that some members of the taskforce identified this concern as a statement of what sustainable water management would do: eliminate aquifer declines by limiting use to that which could be recharged over a relatively short period of time. I will refer to this as the "storage-maintenance goal."

There were two clear objections to the storage-maintenance goal. The first was practical—we simply cannot limit irrigation use to the amount that would be allowed under this limitation. The reason this was so, to objectors, was because of the hydrologic fact of mass balance. In essence, keeping water storage levels the same over time would require water users to limit their withdrawals to only that amount of water that flows into the system.[62] Those in-flows, absent ground water pumping, match out-flows from the system. Thus, restricting pumping to a level that maintains aquifer levels, in effect, limits irrigation use to the amount of streamflow that occurs in the absence of any pumping.

What this means in the Republican River basin is that the overall scope of irrigation would resemble something like that level of irrigation that occurred in the basin before the onslaught of pumping. This would require a large reduction in irrigation. At present, 1.3 million acres are under irrigation. Pre-pumping, surface water irrigation systems allowed for the irrigation of around 23,000 acres. While the amount of surface-water acres could theoretically increase using more modern technology, the amount of water removed from storage to irrigate each year dwarfs the amount of useable streamflow.

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61. *See* Memorandum of February 9, 2011, *supra* note 38, at 8–9.

62. For a good description of how ground water pumping impacts surface water sources, see WILLIAM M. ALLEY ET AL., U.S. GEOLOGICAL SURVEY, CIRCULAR 1186, SUSTAINABILITY OF GROUND-WATER RESOURCES 45–48 (1999), http://pubs.usgs.gov/circ/circ1186/pdf/circ1186.pdf [https://perma.cc/3EBY-X5CD].

Moreover, objectors noted that focusing their attention on maintaining storage did nothing to guard against depletions to streamflow, and, relatedly, compact compliance. This is because water can be withdrawn from storage to a level that captures all streamflow contributions. If those withdrawals, however, are not in excess of aquifer recharge, then the amount of aquifer storage will remain the same. In sum, detractors of the storage-maintenance goal decried it as both impractical and incomplete.

In retrospect, the move toward defining water sustainability in terms that did not directly involve changes in aquifer storage was an important part of our work. Had we simply debated the problem of aquifer declines, the taskforce may not have engaged many of the questions they did. As it turned out, the taskforce essentially turned to the question of why aquifer declines might be harmful, framed a standard (likely with that and other problems in mind, but one step removed from consideration), and then returned to the problem for analysis.

The standard for water sustainability, however, did not lend a clear answer to the question of whether aquifer declines needed to end. Under that standard, water management should not tolerate those declines if (1) the current use was not beneficial or necessary or (2) it would pose a future risk to the availability of necessary water resources. The taskforce concluded that aquifer declines were significant problems to deal with and recommended that "consideration be given to amending the statutes governing Groundwater Management Plans to require that NRDs identify water sustainability goals that address and ultimately stop aquifer declines."[63] It did not, however, provide any time frame for when such declines should stop. So it is not altogether clear to what extent the taskforce's membership was willing to accept dramatic changes in irrigated acreage in the foreseeable future.

As for the continued use of the surface-water system, the taskforce's work seemed to bring all members around to the idea that the surface water system was a necessary component to sustainability management in the basin. No direct statement to that effect can be found in the Final Report, but it is evident in those provisions calling for conjunctive management, utilizing wet-year opportunities, and of course, those that mention surface water sources and surface water storage.

In the end, the taskforce's Final Report did not map a clear concrete plan for achieving water sustainability. With the budget and the expertise we had on the taskforce, such a feat was impossible. But the taskforce's efforts in that regard should be noted. In fact, the report draft that was to be considered by the taskforce at the last meeting in April 2012 was a hefty draft that included fifty-six pages, independent

63. FINAL REPORT, *supra* note 56, at 10.

of ten appendices and six attachments. It was, however, a far cry from being finished, and it contained a number of contentious points worthy of extended debate and, perhaps, technical study. In the end, the taskforce opted for a more minimalist approach to reporting its recommendations. It included a relatively short background section, a brief statement of the sustainability definition, and a two-page series of bullet points that compromised a water-sustainability plan. These bullets were framed at a level of generality that accommodated all of the taskforce members' views.

IV. Conclusions

In reviewing our work over the course of those two years, four important lessons emerge. The first lesson was to understand the context in which the group was operating. Compiling the background information for the report and submitting it to the group was an important part of our work. It educated this group of stakeholders on the complexity of the basin and the management regime that was already in place. Even though it did not make it into the final report, the act of compiling it was beneficial for both the taskforce and the facilitators. So too were the various educational presentations, spanning subjects from weather derivatives to basic hydrology.

The second lesson concerned the relationship between this history and the taskforce's charge. Knowing what we did about the basin and its history, it became important to try to focus the work away from the old disputes concerning aquifer declines, Compact responsibilities, and friction between surface water and ground water users. To do this, we focused on the definition of sustainability and its normative dimensions. From there, we were ready to address these old issues in a new light. And, for the most part, the new light gave the taskforce members a different understanding of the issues. The education they derived from the background work also helped in this regard.

Third, one must appreciate the limits of the group engaging in the discussion of sustainability. We were in no position to make complex hydrologic judgments or engage in a thorough benefit-cost analysis of a proposed conjunctive-management project. But we could answer questions about what such actions should aim to accomplish. We could answer questions about what we owe the future and the appropriate qualitative limits to place on present use. And we were able to fashion some bullet points for future consideration. Of course, these aptitudes will differ with the group that has been convened. But one needs to honestly develop a vision for what the group can feasibly do in a complex arena like sustainability. The Republican River Basin Water Sustainability Task Force developed that vision and accomplished all that it could in the time that it had.

The final lesson to be gleaned from this exercise concerns the utility of engaging in sustainability discussions. For this group, given its com-

position and context, the concept served to facilitate discussions of old problems. That is no small feat. As is the case in many areas, difficult problems defy solutions. Over time, and after repeated attempts to solve such problems, debates and positions become calcified and appear intractable. But sustainability planning served, at least in this instance, to break up these positions and force participants to rethink their views in a new context. That, in turn, provided an incentive to gain knowledge and perhaps opened minds in ways that they had not been opened in quite some time. It is somewhat troubling that a better definition of sustainability and a comprehensive plan for pursuing it did not emerge from the taskforce's work. But such things may not be possible. And, in any event, the taskforce's work constituted a significant achievement unto itself.