

Value Creation in Water Allocation Negotiations:  
Lessons from the Apalachicola-Chattahoochee-Flint River and Lower Colorado River Basins

By

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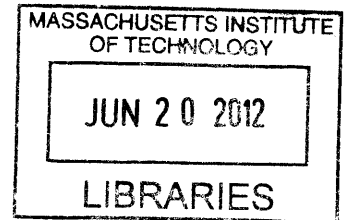
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Submitted to the Department of Urban Studies and Planning  
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**Abstract**

Intense water disputes in the United States are being caused by new and conflicting demands from many quarters and changes in water availability that appear to be caused by climate change. Projections of heightened water conflict signify the need to understand the best methods of resolving these disputes. The published literature on negotiation suggests that parties are more likely to develop sustainable agreements and cooperative relationships through an integrative approach to negotiation. In these instances, negotiators work to understand each other's interests to jointly create and distribute value. This thesis examines the role of value creation in water allocation negotiations to determine if and how it enables agreement. Water allocation negotiations in the Lower Colorado River and Apalachicola-Flint-River Basins are compared; an agreement was reached in the first case but not the second. My findings support the hypothesis that value creation enables agreement; they also suggest that even when value is created, its allocation may prevent agreement among parties. Findings are used to deduce a broader set of lessons associated with value creation and the benefits of an integrative approach to negotiating water allocations.

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## **Acronyms and Abbreviations**

<b>af</b>	acre foot
<b>ACF</b>	Apalachicola-Chattahoochee-Flint
<b>Corps</b>	U.S. Corps of Engineers
<b>CVWD</b>	Coachella Valley Water District
<b>IID</b>	Imperial Irrigation District
<b>Interior</b>	U.S. Department of the Interior
<b>MWD</b>	Metropolitan Water District of Southern California
<b>mgd</b>	millions of gallons per day
<b>QSA</b>	Quantification Settlement Agreement
<b>Reclamation</b>	U.S. Bureau of Reclamation
<b>SDCWA</b>	San Diego County Water Authority
<b>State Water Board</b>	State Water Resources Control Board (California)

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# 1 Value Creation in Water Allocation Negotiations

*"The past century is no longer a reasonable guide to the future for water management."*  
(U.S. Global Change Research Program 2009:49)

## Introduction

In 1908, the Governors of the United States convened at the White House to discuss the country's growing reliance on natural resources (Conference of Governors 1909). State and federal officials were concerned over the impact that industrialization might have on the proper use of water and land. The Conference participants authored a declaration recognizing water as "a most valuable asset," and stating that its conservation should "engage unremittingly the attention of the Nation, the States, and the People in earnest cooperation" (Conference of Governors 1909: 2). At the time, water conflicts were commonplace in the Southwest. More than one hundred years later, the Governors' call for cooperation in managing water resources is relevant not only in the Southwest but across the whole country.

Intense water disputes are being caused by new, conflicting demands from many quarters (U.S. Department of the Interior 2003, Scholz and Stiffler 2005). Water use has grown dramatically in the United States (Figure 1.1). Withdrawals are used for drinking water, food production, power generation, and a range of industrial purposes. Water does not have to be withdrawn to serve an important use: navigation and recreation involve the direct use of a watercourse. Water also sustains all of our natural ecosystems (Richter et al 2003). In many places across the country—especially those experiencing continued population growth—demands for water are increasingly in conflict.



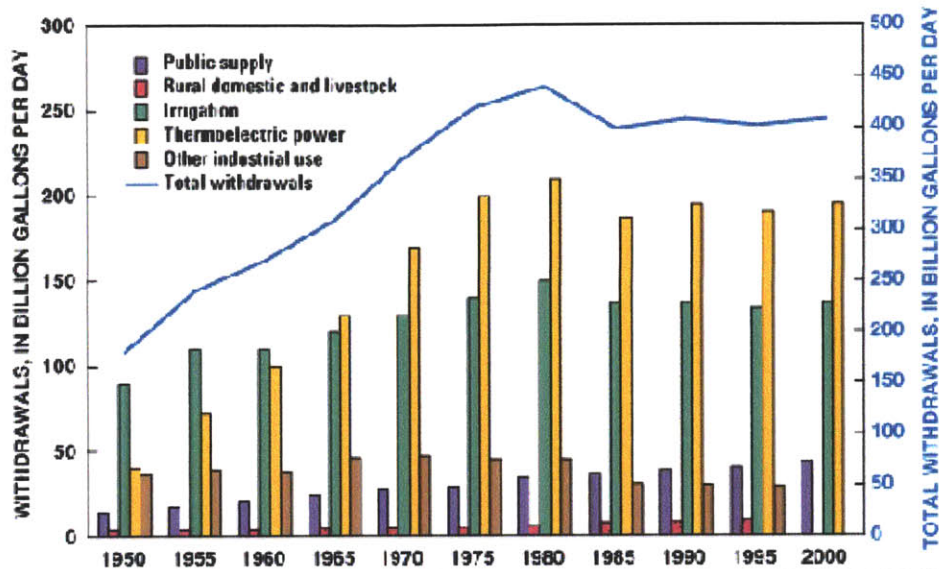


Figure 1.1 Trends in total water withdrawals by water-use category, 1950-2000 (Hutson et al 2004)

Climate change is compounding all of these conflicts as it increases the variability of water supplies. The impact of climate change is manifesting in numerous ways: the frequency of drought, earlier snowmelt peaks, changes in runoff quantity, and changes in water quality and stream temperature (U.S. Global Change Research Program 2009). Groundwater supplies are also being affected. All parts of the country will experience some or all of these effects, to varying degrees. Observed drought trends, for example, have increased or decreased in different parts of the continental United States (Figure 1.2).<sup>1</sup> Water officials now regard uncertainty as a defining characteristic of water availability (Clark and Kubly 2011).

<sup>1</sup> Climate change can decrease drought because rising temperatures can increase evaporation rates. Cumulative water in the atmosphere causes increased precipitation (U.S. Global Change Research Program 2009).

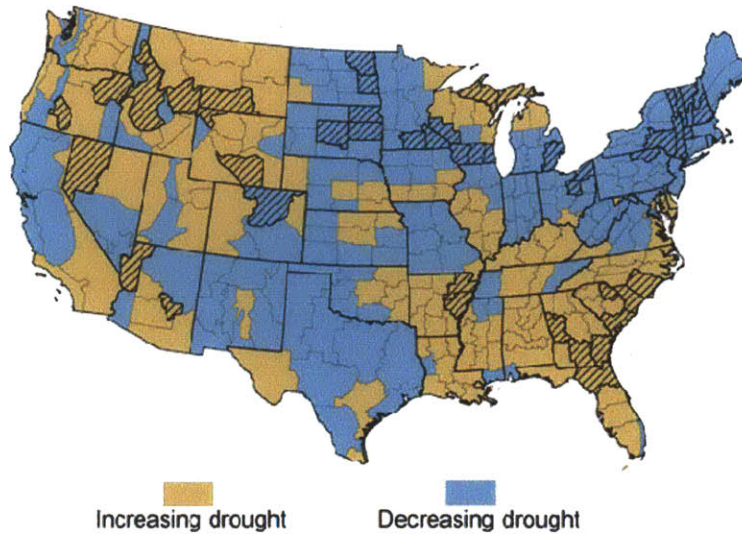


Figure 1.2 Observed drought trends, 1958-2007. Hatching indicates significant trends. (U.S. Global Change Research Program 2009, in Guttman and Quayle 1996)

Competing water uses and climate change have resurfaced old disputes and given rise to new ones. Disagreements between states, as well as between individual users and providers, have been litigated before the Supreme Court since the 1800s (Sax et al 2006). Historically, water conflict has been endemic to the Southwest (Reisner 1986, U.S. Global Change Research Program 2009). These ongoing disagreements led to the formation of the “Law of the River,” a collection of compacts, laws, court decisions, contracts and regulations that dictate how Colorado River water is allocated and managed. Even so, Colorado River users continue to fight over water. Indeed, water conflict is “highly likely,” and there is “moderate” or “substantial” conflict potential in most Western states (Figure 1.3). Lakes, waterways big and small, and groundwater are all expected to be under contention.

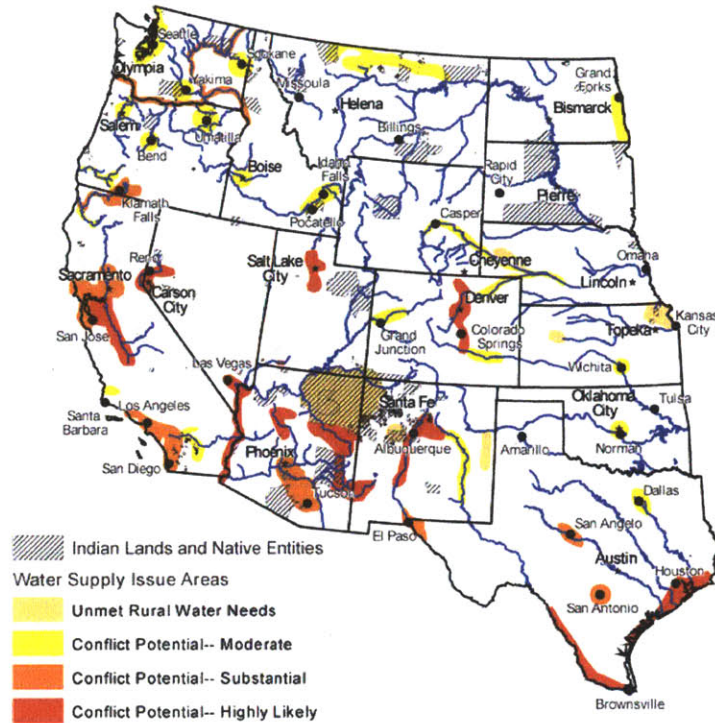


Figure 1.3 Potential water supply conflicts by 2025 (U.S. Department of the Interior 2003)

Over the past several decades, disputes have emerged in places not commonly associated with water conflict. In 2010, for example, the Supreme Court decided a high profile water allocation dispute between South and North Carolina (*South Carolina v. North Carolina* 2010). In the Florida Everglades, water officials have been trying to reconcile an increase in demand for public water supply with environmental impacts of freshwater use. Indeed, water conflict is now prevalent east of the Mississippi River (Greenberg 2009, U.S. Global Change Research Program 2009).

Projections of heightened water conflict signify the need to understand the best methods of resolving these disputes. By drawing on negotiation theory and examining the outcomes of two water allocation negotiations, this thesis aims to contribute to such an understanding. Specifically, I examine the role of value creation in water allocation negotiations to determine if and how it enables agreement. Using comparative, qualitative

techniques, water allocation negotiations in the Apalachicola-Chattahoochee-Flint-River and the Colorado River Basins are compared; an agreement was reached in the first case but not the second. Findings support my hypothesis that value creation enables agreement but also provide important lessons about the role and challenges of value creation in water allocation negotiations.

## **Value Creation in Water Allocation Negotiations**

Water is frequently under dispute in terms of how supplies are allocated and to whom (for which purposes) (Folger, Cody, and Carter 2010). An allocation is a measured amount of water set aside for a particular purpose or use. Water allocation can represent a guaranteed distribution or a more complex contingent set of arrangements that try to account for changes in water availability or use (Congressional Budget Office 2006).

U.S. states generally determine how to allocate water, as there is no overarching national water policy. States allocate water according to a system of riparianism, an alternative approach called prior appropriation, or a hybrid of the two (Sax et al 2006). In riparianism, the water law of the East, landowners adjacent to a water body have the right to use that water. All water uses must be “reasonable.” In prior appropriation, which is most commonly applied in Western states, those with water rights are allotted a defined quantity and time period for use. In the West, all water uses must be “beneficial.” States use these two administrative frameworks to allocate water resources to users within their states.

Even with these administrative frameworks in place, water conflicts arise within states and between states. Jurisdictions including cities, counties and water supply districts, as well as individual users, dispute each other’s right to water or contest their state’s allocation decisions (Sax et al 2006). There are many reasons for this—chief among them are how the

water is being used, how much is or is not available, and how long certain uses are meant to remain in place. Water conflict also occurs between states. This is often the case when a watercourse traverses one or more state boundaries, or when water serves as the boundary between several states.

Water disputes are usually settled in court, but this approach to problem-solving has its limitations. Litigation is expensive, and there is no telling how long it might last (Thorson et al 2006). It is difficult for a court to address all the needs of all parties involved—some parties are likely be left unsatisfied or out of the decision all together (Susskind, Levy, and Thomas-Larmer 2000). Finally, judicial decisions cannot adjust to changes in the environment, economy, or demographics — all factors that weigh heavily on water needs and uses (Dellapenna 1999, Huang 2006).

The limitations on the courts are especially acute in interstate disputes. The Supreme Court uses an equitable apportionment doctrine, which bases water decisions on notions of fairness (Tarlock 1985). However, members of the court have expressed reservations about ruling in water disputes, because interstate problems are "more likely to be wisely solved" by the states themselves than by any court (*New York v. New Jersey* 1921). Congressional allocation is another method to resolve water disputes, but it is hardly used, since members of Congress believe that the states involved know the problem best (Carriker 2000).

An alternative—though not always successful—approach to resolving water disputes is collaborative problem-solving through negotiation. Parties engaged in environmental disputes began experimenting with this approach since the 1970s (Susskind and McKearnan 1999), and it began to gain traction in the 1990s (Gerlak 2008). Collaborative processes can “produce not only effective options for how actors can move forward together to deal with their problems, but also individual and collective learning that will help make the community more adaptive



and resilient” (Innes and Booher 2010: 9). Coordination among states is achieved through interstate compacts. Because these compacts are voluntary, they seem to provide the most agreeable option, at least from the standpoint of the states. Voluntary agreements allow those most familiar with the issues to make the actual water allocation decisions.

Whether parties reach agreement depends largely on how they approach the negotiations. Two primary approaches exist. The first, more conventional kind is distributive and assumes a zero-sum outcome (Lewicki, Saunders, and Barry 2010). In these instances, one side wins and the other side loses. Parties assume that there is a fixed amount of value to be allocated. The goal of all negotiators is to claim as much of that value for themselves or their side as possible. As a result, little effort goes into learning about the other sides’ concerns. In a distributive negotiation, value-claiming often leads to stalemate or collapse, especially when one or more parties feel that the outcome is unfair (Susskind, Levy, and Thomas-Larmer 2000). Distributive negotiations tend to undermine relationships in the long term.

A second approach to negotiation is integrative. In these instances, negotiators work to understand each other’s interests and to jointly create a way to expand the “pie” through value creation (Fisher, Ury and Patton, 1991). To create value, it is helpful for parties to participate in a period of inventing without committing and to explore packages or trades (Susskind and Cruikshank 1987). Parties can use this approach to simultaneously pursue conflicting goals and respond to sticking points, as “the set of differences among negotiations is often the engine that drives their joint action and may point them toward potential gains (Lax and Sebenius 1986: 91). Integrative negotiations help the parties improve relationships over the long-term, which contributes to the agreement’s stability over time (Susskind and Cruikshank 1987). Good process design and management are important to integrative negotiation.

The value created in an integrative negotiation can take various forms. Albrecht and Albrecht (1993) provide a framework that highlights five value categories (Table 1.1) that can work synergistically to create more options. More value indicates a greater possibility for agreement. After creating all the value they can, parties must still engage in a process of distributing and claiming. Once options or packages have been identified, they must address the practical details involved in trading value, to ensure the durability of their agreements (Albrecht and Albrecht 1993).

Table 1.1 Value categorization framework adapted from Albrecht and Albrecht (1993)

<b>Value categories</b>	<b>Description</b>
<b>Money</b>	Can take different forms (e.g., cash, credit, check, stocks, bonds, securities)
<b>Property</b>	Physical and intellectual
<b>Actions</b>	"Who does what"; what parties will or will not do
<b>Risks</b>	Who covers for unexpected outcomes or a loss
<b>Rights</b>	"Who's allowed to do what"; something to which a party is entitled

While Albrecht and Albrecht's categories of value are useful for the purposes of this paper, they are partial. Different disciplines have different theories of value. Axiology is the philosophy and science of value (Oxford University Press 2000). Sociology discusses value as the convictions held by individuals and groups of people. In economics, value is achieved and revealed through market transactions between producers and consumers. Albrecht and Albrecht define their categories of value as the "substance or medium of exchange in a negotiation; various tangible and intangible elements..." (33). This definition suggests that their categories of value are not necessarily informed by one discipline, but nor are they exhaustive.

Unfortunately, parties engaged in water disputes tend to take a distributive approach to negotiations (Dore and Smith 2010, Islam and Susskind 2012). They view water as a fixed rather than a flexible resource. This approach inhibits the creation of value. It may also compound the challenges the parties face (Scholz and Stiffler 2006) including the changing

nature of the conflict (Susskind and Islam 2012), as well as technical complexity and scientific uncertainty (Dore and Smith 2010).

## **Research Question and Methods**

The scholarship on factors that enable parties to reach agreement over water allocation postulates that parties ought to think hard about ways to create value. This thesis tests that hypothesis. My findings provide clear evidence for the important role value creation can play in water allocation negotiations.

I apply a comparative, qualitative approach, examining two cases in some detail—the Lower Colorado River Basin and the Apalachicola-Chattahoochee-Flint River Basin. The parties in the first case reached agreement, but those in the second case did not. I examine the history of water conflict in each setting and look closely at how the negotiations were designed and executed. To evaluate value creation, I identify the parties' responses to key sticking points. How the parties handled these points is critical—they either find a way to resolve these sticking points or they are left with an impasse. I use Albrecht and Albrecht's (1993) categories of value—money, property, actions, risks, and rights—to identify the kinds of value the parties tried to create at each sticking point. In addition to ascribing value to the terms of the deals discussed, I ascribe value to what was actually accomplished (when possible). Thus, I compare the potential value created and the actual value gained in both negotiations.

An increase in water-related research and data availability provides an opportunity to pursue comparative water studies (Wescoat 2009). Without a consistent analytic framework, however, comparative water studies lack "rigor or cultural salience to shape action, policy, or meaning" (Wescoat 2012: 2). I therefore use Albrecht and Albrecht's categorization of value to identify the value that is proposed or gained. However, I draw an analogy between cases when



I deduce prescriptions from these findings. There are no two cases that are exactly similar, and thus I use these cases as distinct examples and analogies that can be learned from. Parties should consider recommendations insofar as they are deemed applicable and useful (Meyer et al 1998).

I searched for water allocation disputes in which agreement had and had not been reached. In August 2003, officials from the states of Georgia, Alabama, and Florida failed to reach an agreement regarding the allocation of water from the ACF Basin. Conflict between the states began in the late 1980s, and the parties had been in negotiations for over five years. The conflict was ultimately relegated to the courts, where it remains today. At about the same time, the State of California, the United States Department of the Interior, and local water agencies entered into the Colorado River Quantification Settlement Agreement (QSA). By many accounts, the QSA brought peace to a long-standing and intensifying water dispute among the signatories to the agreement.

There are other important parallels between the two cases. When the disputes emerged, both regions were experiencing rapid population growth that pitted non-urban uses against urban needs for water. Both disputes involved agricultural and environmental interests. Further, both regions experienced severe drought in the decades leading up to the conflict. Both cases date back to the late 1980s, and both negotiations ended in 2003, only a few months apart. Finally, the two regions face similar water problems going forward (Sansonetti and Quast 2003, Greenberg 2009).

I reviewed primary documents and media reports. I also conducted 22 semi-structured interviews with people who work for organizations or government agencies involved in the negotiations. Interviews were conducted in-person and over the phone with people contacted

through snowball sampling. Data were coded using a list of sticking points, responses to sticking points, and categories of value created.

It appears that the parties in the Lower Colorado River case created sufficient value to reach agreement, while the quantity and distribution of value in the ACF Basin case was insufficient to enable agreement. These findings confirm my hypothesis about the importance of creating value and provide a broader set of lessons associated with the benefits of an integrative approach to negotiating water allocations.

## **2 Case Study: Value Creation during Water Allocation Negotiations in the ACF Basin**

*“The task before us is tremendous, both in scope and in complexity, how to share and steward wisely the surface waters of the confluence of nearly 40,000 square miles of Southeastern river basin. Nothing of this scope has ever been accomplished east of the Mississippi, to my knowledge, but I can assure the members of this panel it will not be the last challenge of this nature, whether we succeed or fail.”*

Lindsay Thomas, Federal Commissioner, ACF River Basin Compact Commission  
(U.S. House Committee on the Judiciary and Administrative Law 2001)

### **Water Allocation**

The Apalachicola-Chattahoochee-Flint (ACF) River Basin is located in the Southeastern United States. It is composed of three distinct but connected and descending rivers (Figure 2.1). The Chattahoochee River begins just outside and northeast of Atlanta, Georgia. It flows south, serving as the boundary between the states of Alabama and Georgia. The Flint River shares the Chattahoochee’s headwaters. It passes through central and southwest Georgia before merging with the Chattahoochee to form the Apalachicola River in the Florida Panhandle. There, the watercourse meets its end as it flows into the Gulf of Mexico. Combined, the rivers drain into 19,800 square miles across the three states (Couch, Hopkins, and Hardy 1996).

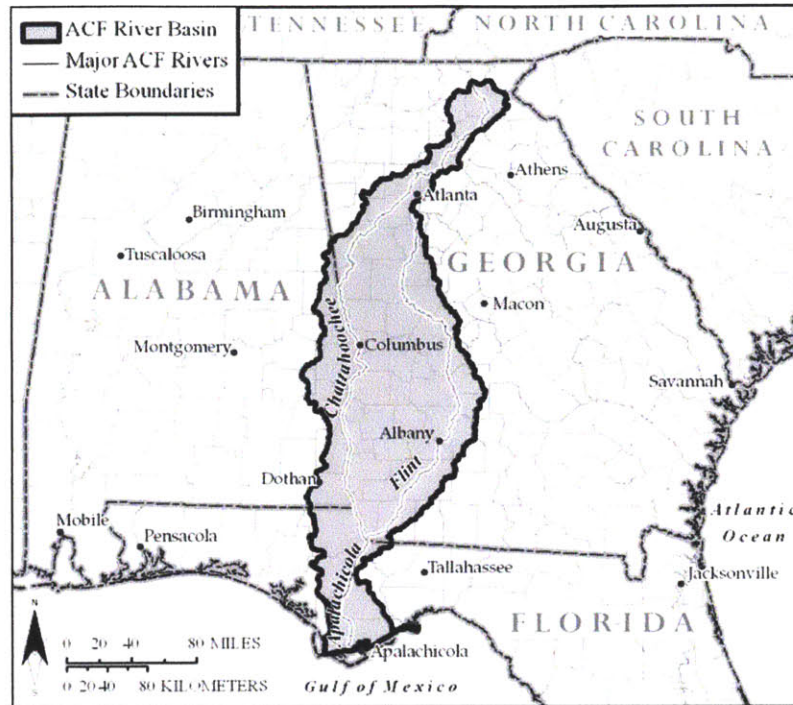


Figure 2.1 Apalachicola-Chattahoochee-Flint River Basin (Stallins 2011)

Water in the ACF basin has multiple uses (Davis and Jordan 2006). Water withdrawals primarily serve municipal and industrial needs in metropolitan Atlanta. Downstream of Atlanta, within Georgia, the ACF's surface water and groundwater are used for irrigation. Water is mostly used for recreation, commercial navigation, and hydropower generation in Alabama. The ACF watercourse sustains Florida's Apalachicola Bay ecosystem. The Bay is also a very productive oyster bed: 90% of Florida's oysters are farmed there (Couch, Hopkins, and Hardy 1996).

Water for these uses is provided through the management of a system of dams and reservoirs. Five federal dams hold 11% of the basin's annual flow (Burke 2004). Buford Dam creates Lake Sidney Lanier (Lake Lanier), which comprises 62% of the basin's storage system (U.S. Army Corps of Engineers). At the time of its construction, the dam was intended to support flood control, navigation, and hydropower. The Water Supply Act of 1958 authorized

the U.S. Army Corps of Engineers (Corps) to also allocate storage in the reservoirs for municipal supply through temporary contracts of limited quantities.

Historically, water allocation has not been a source of interstate conflict in the Southeast (Davis and Jordan 2006). Allocation within states in this region is based on a “reasonable-use” riparian doctrine: property owners along a watercourse can use that water in a reasonable way and as long as it does not adversely affect others along the watercourse. As long as there was enough water for water uses within and between the three states, conflict was averted.

### **Conflict over Water Allocation**

Conflict in the ACF basin began in the 1980s and was triggered by metropolitan Atlanta’s growing water supply needs. The region was experiencing dramatic growth; from 1970 to 2000, it went from 1.5 to 3.4 million residents (Atlanta Regional Commission 2010). This growth increased the demand for water (Figure 2.2), 72% of which came from Lake Lanier (Carter et al 2008). The region withdrew: 289 million gallons per day (mgd) in 1980; 459 mgd in 1990; and 606 mgd in 2000 (Lipford 2004). Demographers projected that metropolitan Atlanta’s 2000 population would double by 2030 (Burke 2004). The commensurate water needed would be 705 mgd by 2030.

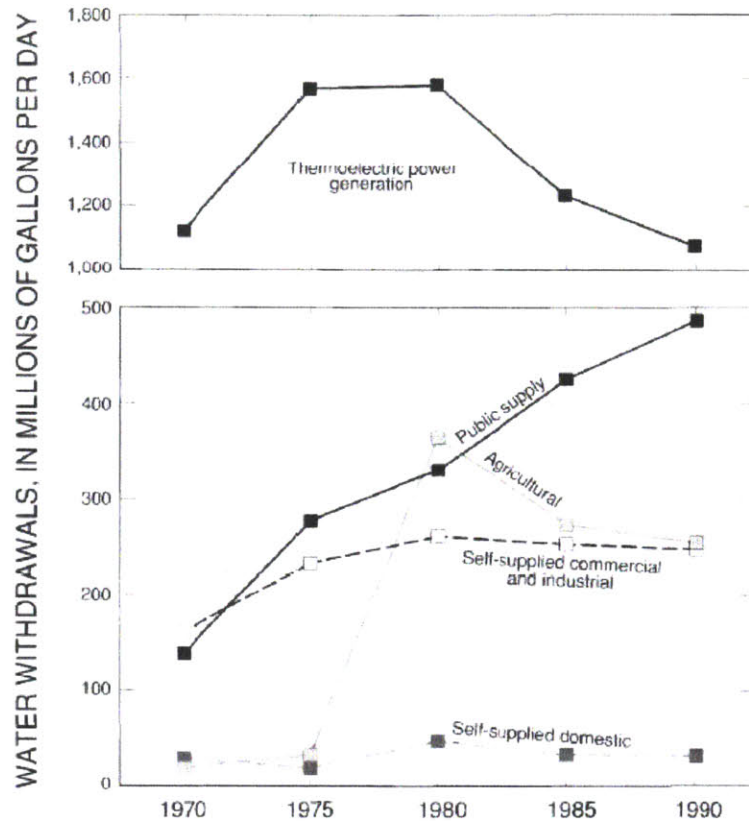


Figure 2.2 Water withdrawals by principal water-use categories in the ACF Basin, 1970-90 (Couch, Hopkins, and Hardy 1996)

The growing water need was complicated by the Corps' municipal contracts, as they were made for a limited time and quantities. In 1972, the US Congress authorized the Corps to study and make recommendations on ways to respond to metropolitan Atlanta's growing water needs (Carriker 2000). The Corps issued a draft report in 1989 which recommended a reallocation of 529 mgd (*Economist* 1991) of water from Lake Lanier to secure Atlanta's water need through 2010 (Carriker 2000). Two years later, Atlanta attempted to secure an additional supply by submitting a proposal to the Corps to build a dam in the Tallapoosa Basin, only about five miles from the Alabama border (Burke 2004).

Alabama and Florida officials fervently opposed the Corps' plan, and for several reasons. Alabama was concerned that a larger allocation for Atlanta would limit the availability of water

resources needed for its own economic growth (Bryan and Rose 2006). In June 1990, the state filed suit to enjoin the Corps from reallocating the water on the basis that the diversions failed to comply with the National Environmental Policy Act in the Environmental Impact Statement (*Alabama v. U.S. Army Corps of Engineers* 1990). Siding with the Corps, Georgia became a fourth party to the lawsuit to assert its sovereign power as a state to manage its water resources. The lawsuit marked the first time the three ACF Basin states were engaged in water conflict.

An underlying concern for all three parties was an increasing frequency of drought. In the 1980s, the basin experienced three severe droughts (Figure 2.3) that had disastrous consequences. The droughts hampered navigation along the Chattahoochee River, and they affected power generation (Stephenson 2001). In the 1986 drought alone, farmers across the South lost an estimated \$2 billion on crops (*New York Times* 1986). When the flow rate into Apalachicola Bay fell to less than half the usual rate, the Bay was declared a federal disaster area (Burke 2004). The droughts increased demand on ACF water resources (Dellapenna 2006).

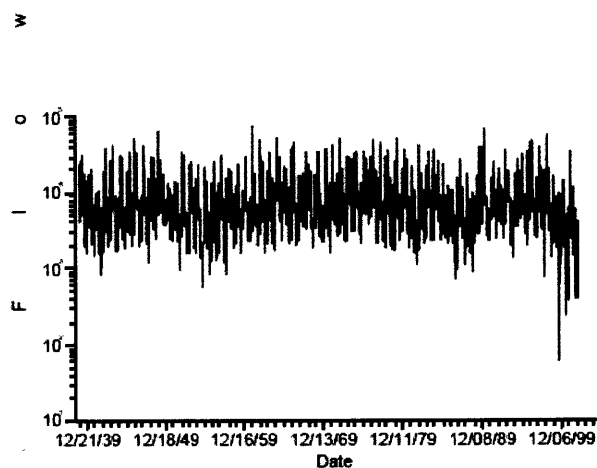


Figure 2.3 Unimpaired flows at the Columbus Gauge on Chattahoochee River (Leitman, Dowd, and Holbeck-Pelham 2003)

The ways that the Corps and Atlanta tried to secure additional water for the region, as well as the prospects of unstable water availability, induced conflict between states.

## **Water Allocation Negotiations**

Even as Alabama and Florida filed suit against the Corps, it was in all four states' interest to explore the possibility of a negotiated agreement. There was no telling how long litigation might last (Lipford 2004). Even worse, a court decision might not be to their liking; nor would it necessarily resolve the fundamental question of how much water each state should or could use. In 1991, the three states signed an agreement to undertake an information-gathering process. To assist the negotiations, the Corps requested and was given Congressional funds to begin the ACF Comprehensive Water Resources Study, an in-depth assessment of the ACF's water availability and uses (Jordan 2001). The states officially joined as equal partners eighteen months into the study in 1992. Technical consultants and advisors were jointly agreed upon, a financial pool was created, and officials from all four parties administered the funds. The courts stayed the litigation to allow the joint-fact finding effort to proceed and encourage a settlement (Jordan 2001). In a matter of two years, the states went from engaging in litigation to working jointly toward a solution.

While the Comprehensive Study produced new and significant information about water use in the Basin, it did not and could not resolve the question of how to apportion the water. In 1997, as the Study came close to an end, the states and federal government agreed to enter in an ACF River Basin Compact to continue work on the allocation formula (U.S. 1997). The Compact read that the formula "may be represented by a table, chart, mathematical calculation or any other expression of the Commission's apportionment of waters pursuant to this compact" (U.S. 1997: 2). The Compact also promoted "interstate comity, removing causes of present and future controversies, and equitably apportioning the surface waters of the ACF" (U.S. 1997: 1). The states finally had the legal authority and the coordinating mechanism to decide how to apportion the ACF waters.



The Compact was a historic achievement. It was the first interstate allocation compact in the Southeast, as well as the first interstate compact since major environmental legislation of the 1970s (Leitman 2005). The Compact created a Commission that would handle decision-making, and it included each state's governor or an appointee (U.S. 1997). Commission members would promote the interests of all the relevant stakeholders in their states, and full agreement among them was required. A Federal Commissioner was appointed to represent the interests of more than ten federal agencies; the Commissioner could also veto an agreement if it conflicted with federal laws and regulations. Under the Compact negotiations, state officials had to hold public hearings and invite public comment for sixty days after agreeing to a formula. The agreement would then be subject to review and ratification by the Federal Commissioner. With the authorized Compact in hand and a structure within which to move forward, state officials expressed optimism at the prospects of reaching agreement. Indeed, on the day of its signing, the *Atlanta Journal Constitution's* headline about the Compact read, "End to three-state water war seen; Governors prepare to sign rare interstate compact on sharing resources of rivers" (Seabrook 1998).

Optimism over the Compact was quickly tempered by differences between the states, which became evident early. In the first year of negotiations, the states created a statement of "principles" which would be used to decide the allocation formula (Moore 1999). These principles revealed three of the states' biggest points of disagreement. First, Florida and Alabama favored instituting and regulating caps on metropolitan Atlanta's consumptive water use. The caps would involve looking at the state's various uses, such as irrigation, and setting limits on different types of uses. Georgia opposed consumption caps on the basis that they threatened the state's sovereignty (Carriker 2000).

The second major point of contention involved how to manage the flow rate into the Apalachicola Bay. Georgia proposed an average flow rate based on seasonal fluctuations (Seabrook 1999a). Alabama and Florida did not agree to a minimum flow rate because they preferred a flow rate that mimicked a natural flow regime. Florida, in particular, wanted to protect a natural hydrograph that ebbs and flows, because it sustained the ecosystem and oyster bed. The Corps supported this view in a draft environmental impact statement (U.S. Army Corps of Engineers 1998).

A third major difference concerned ways the upstream management of the reservoirs would be used to regulate the downstream flows. Georgia favored operating Lake Lanier as if “drought was imminent” (Moore 1999: 5), which meant keeping the reservoirs at full capacity. The state had an interest in keeping the reservoirs full to sustain the lake’s recreational value, estimated to be nearly \$2 billion per year (Burke 2004). Alabama and Florida, however, preferred that the reservoirs be managed to support downstream flows, or to use Lake Lanier for “sharing the excess and sharing the pain” (Burke 2004: 10).

The public process undertaken by state officials heightened the conflict. The states took informal and varied approaches to keeping parties within their states informed and engaged. At the onset of negotiations, Florida had many meetings with stakeholders, but those tapered off as negotiations progressed (Leitman 2005). Stakeholders then started having meetings on their own. Georgia had the Georgia Advisory Committee, which consisted of a wide range of stakeholders from throughout the state, but meetings were mostly to debrief the stakeholders rather than to formally engage them in the process. Alabama held large public meetings, but these tended to focus more on the Alabama-Coosa-Tallapoosa Basin Interstate Compact, which had separate, ongoing interstate compact negotiations (Leitman 2005). The tension between state officials and parties within their states became particularly acute in Georgia, where

metropolitan Atlanta's water needs ran up against downstream uses (e.g., farming).

Conservation groups in all three states insisted on having a voice in the process: in August 1999, they formed the Tri-state Conservation Coalition, which frequented the states' negotiation meetings (Leitman 2005). The overall informality and inconsistency in the inclusion of non-state parties led to negative media attention and prompted non-state parties to exert significant pressure on their negotiators.

The way that state officials negotiated with each other also inhibited progress. Alabama, Florida, and Georgia officials drafted individual agreements and presented them to each other during the public meetings. The agreements reflected their positions on the central allocation numbers under consideration (Burke 2004). This meant that each proposal was authored by a single state, making it difficult for the other states to sign on during public meeting and provoked posturing (Seabrook 1999b): "One hundred fifty people sitting there representing all of the various organizations led a great deal of posturing and no real good give and take—on the order of, 'If I do this, will you do that?' ... It was more like, 'Here is my position. Your position is this, and we'll talk about it later'" (Burke 2004: 256). Publicly, state officials would also often publicly state that they were prepared for legal recourse if an agreement was not reached (Seabrook 2000). The progress in the negotiations was challenged both by how state officials engaged interests within their state and by the ways they engaged each other.

Tension between the states had heightened, but officials continued to work toward an agreement. The states had originally set January 1, 1999 as their deadline, but they voted to extend it multiple times. Some progress was evident. The states, for example, began to collaborate to define the parameters of a natural hydrograph for the ACF basin. However, the states' major points of disagreement remained unresolved. In an attempt to salvage the compact, at the suggestion of ACF Compact Commissioner Lindsey Thomas, the states agreed to

mediation. In the summer of 2000, state officials participated in a mediation facilitated by Talbot (“Sandy”) D’Alemberte, President of Florida State University, whom they jointly chose (Florida 2000). The states learned more about each other’s’ interests but did not get closer to deciding on an allocation formula. The states made halting progress and had no clear end in sight.

After the mediation, negotiations were hampered by two new lawsuits involving metropolitan Atlanta’s efforts to secure more water. In May 2000, the state reintroduced plans to reallocate water from Lake Lanier to meet Atlanta’s demand until 2030 (Snowden 2005). Florida and Alabama made public appeals for the state to put the plans on hold until an allocation formula was determined. The Corps denied Georgia’s request on the basis that the agency needed congressional authorization to approve the request. Georgia filed suit against the Corps to challenge its decisions. In the summer of 2002, Florida joined the lawsuit as a defendant to challenge what it saw as a “*de facto* partial apportionment of the water” that violated the Compact (*Georgia v. US Army Corps of Engineers v. Caldera* 2002: 6). Negotiations continued against the backdrop of motivated legal recourse.

A second lawsuit complicated the negotiations. The Southeastern Federal Power Customers (SeFPC), a group of power distributors in metropolitan Atlanta, filed suit against the Corps in December 2000 (*Southeastern Federal Power Customers, Inc. v. Caldera* 2003). SeFPC alleged that the Corps was giving Atlanta more water than what was authorized under the Water Supply Act. Metropolitan Atlanta officials requested and were granted permission to become a part of confidential mediation between SeFPC and the Corps. Under their settlement agreement, the Corps would provide metropolitan Atlanta at least twenty years of interim water supply storage, and Atlanta would compensate SeFPC for the allocations (*Southeastern Federal Power Customers, Inc. v. Caldera* 2003). News surfaced of the settlement agreement

reached between the SeFPC, the Corps, and metropolitan Atlanta parties in January 2003. Alabama and Florida, who had been unaware of metropolitan Atlanta's participation in the settlement talks, expressed outrage over the "secret settlement" (Shelton 2004). The two states subsequently filed to have the settlement agreement enjoined, on the grounds that it violated the Stay Agreement of 1990, and they threatened to pull out of negotiations. The lawsuits pointed to a looming collapse of the Compact.

As the lawsuits impinged on the states' progress, one final, untried opportunity provided some hope. Georgia and Alabama elected Republican Governors in the fall of 2002, making it the first time that all three Governors were members of the same political party. If the impasse was ever about politics, then the states could now move past it. In the spring of 2003, Georgia Governor Sonny Perdue called a gubernatorial summit; he affirmed, "We'll come together face-to-face with no staff and hammer this thing out" (Shelton 2003). The Governors agreed to stay the two new lawsuits, and they signed a memorandum of understanding (MOU) at a July meeting in Columbus. The MOU contained an agreed-upon "principles" of the allocation formula (Florida, Georgia, and Alabama 2003). State officials would use the following months to figure out the details associated with the implementation of those principles. The Governors lauded the effort: "When finalized, this agreement will be viewed as a historic one that will positively impact millions of Georgians, Alabamans and Floridians as well as having a widespread and positive impact on the environment," said Florida Governor Jeb Bush (Georgia 2003). After five years of negotiations, the states had finally reached an agreement on the principles of the allocation formula.

## Value Creation

The governors aimed to use the MOU to resolve the states' three sticking points: consumption caps on metropolitan Atlanta, flows into the Apalachicola Bay, and the management of reservoirs in times of drought. The MOU itself did not contain the details of implementation, but the principles agreed upon under the MOU would provide a framework within which to move forward.

The states agreed to consumptive caps for metropolitan Atlanta, even though Georgia officials had initially opposed it. Water withdrawals from Lake Lanier would be limited to 705 mgd—the region's estimated water need by 2030 (Burke 2004)—with the possibility of withdrawing more. Using Albrecht and Albrecht's framework (1993), this cap created value in the form of "actions" Georgia would take (Table 2.1). For Alabama and Florida, this agreement meant a reduction in the "risk" of metropolitan Atlanta's monopolization of water.<sup>2</sup>

The MOU also contained a minimum flow rate in the Apalachicola Bay. It was assumed that the downstream flow was contingent on Georgia's upstream actions. Initially, Georgia proposed a seasonally averaged flow rate, which Florida and Alabama opposed because they preferred a flow rate that mimicked a natural hydrograph. In the five years of negotiations, the states had developed weekly variable flow rates. Because the flow rate was contingent on what Georgia did, the regulation of flow was also a value created by the state's "actions" that reduced Florida's "risk" of exceedingly low flows (Table 2.1).

The MOU also addressed how the reservoirs would be managed in times of drought. Alabama and Florida had maintained that the reservoirs should be used during droughts. In this way, the states would share the adversity. The MOU contained an alternative solution to

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<sup>2</sup> In the value table, 'proposed value' refers to the source of the value, which differs from proposing an idea for value. The idea of consumption caps was initially proposed by Florida and Alabama, but the value would not have been coming from them. That fact is why I indicate that consumption caps come from Georgia.

managing the water during droughts: Georgia would implement the State Water Management Plan, with limited use of Lake Lanier. This option created value for Alabama and Florida in the form of Georgia's required "actions," and it aimed to reduce the "risk" that Florida and Alabama would be disproportionately affected by drought (Table 2.1).

The MOU would not make it past the next stage of individual state ratification. Florida's chief negotiator had not been at the meetings, and he and other Florida parties challenged the way the MOU responded to Florida's previously stated stipulations. In a letter of intent issued days after the signing of the MOU, the Florida Department of Environmental Protection Secretary David Struhs, Florida outlined its differences with the MOU (Struhs 2003). The state wanted guarantees that metropolitan Atlanta would not consume more than 705 mgd or that it would at least have a chance to have a say in additional withdrawals, but the MOU still gave metropolitan Atlanta the opportunity to increase its withdrawals beyond the 705 mgd without a clear role for the other states. Secretary Struhs (2003) said, "Florida's position is that an allocation formula cannot allow more water to be taken out of the system than is currently being negotiated during the term of an agreement without mutual consent" (3). Florida also wanted to ensure that the MOU explicitly stated that the flows into Apalachicola Bay would be treated as minimums and not targets. The MOU did not contain the language needed to assuage the state's concern, though Georgia contended that the flows would logically be exceeded. Finally, Florida wanted to use water drawn down from Lake Lanier during times of drought, but Lake Lanier was not written into the MOU explicitly for this use. In the end, the MOU did not give Florida enough assurance to sign on.

The states created value in various ways but nevertheless reached an impasse. After five years of allocation formula negotiations, the Compact collapsed on August 31, 2003.

## **Outcome**

Nearly ten years after the collapse of the ACF Compact, negotiations between the states continue, albeit in a court setting. Following the collapse of the compact, the three stayed lawsuits were reactivated (Carter et al 2008). More lawsuits followed, most of which were joined. In a major 2009 court ruling, metropolitan Atlanta was barred from drawing water from Lake Lanier (U.S. District Court Middle District of Florida 2009). This decision was overturned in 2011. Today, state officials are engaged in confidential settlement talks to reach an agreement on how to share the water.

While the states have not yet reached agreement, the interstate Compact made two important contributions. First, the three states learned a great deal about the Basin and about their relative uses and future needs (Leitman 2005). They also increased their capacity to manage water issues; Alabama created a water department, for example. Second, the Compact helped build public awareness around water issues. More than ever, groups throughout the Basin are interested in the rivers' fate, as well as in state comity. The most marked example of this is ACF Stakeholders, a self-organized group composed of groups and individuals who aim to represent a wide range of interests in the basin. Whether this learning and increased interest inspires state negotiators to apply a more integrative approach remains to be seen.



Table 2.1 Value creation in the ACF Basin MOU

Sticking Point	Response to sticking point	Value		
		Alabama	Florida	Georgia
Water use caps	Atlanta to withdraw <705 mgd from Lake Lanier	M	M	M
		P	P	P
		A	A	A <sup>3</sup>
		I <sup>1</sup>	I <sup>2</sup>	I
		R	R	R
Flow into Apalachicola Bay	Target min. flow of 5,000 cfs into the Apalachicola River	M	M	M
		P	P	P
		A	A	A <sup>5</sup>
		I	I <sup>4</sup>	I
		R	R	R
Management of reservoirs in times of drought	Relief provided according to GA's Drought Management Plan	M	M	M
		P	P	P
		A	A	A <sup>8</sup>
		I <sup>6</sup>	I <sup>7</sup>	I
		R	R	R

Legend
Money
Property
Actions
Risks
Rights
Proposed
Gained
Neutral

Key	
1 Risk	Caps on metropolitan Atlanta's water use (Actions) reduced Alabama and Florida risk of insufficient water (Risk).
2 Risk	
3 Actions	"The states will support authorization for allocation of storage in Lake Lanier for 705 mgd (annual average) for water supply. Consideration will be given to additional water supply in excess of 705 mgd" (Florida, Georgia, and Alabama 2003).
4 Risk	Georgia guaranteed a minimum flow rate of 5,000 cfs (actions) to reduce Florida's risk of insufficient water supply (risk) "A guaranteed minimum flow of 5,000 cfs in the Apalachicola River at the Florida state line during droughts" (Seabrook 2003).
5 Actions	
6 Risk	During times of drought, Georgia would implement its Drought Management Plan (actions), which would help ensure some downstream flows to reduce the risk of disproportionate impact (risk). "Georgia shall impose in the relief month the terms and conditions described in the published Georgia Drought Management Plan as appropriate for the existent level of drought" (Florida, Georgia, and Alabama 2003)
7 Risk	
8 Actions	

### **3 Case Study: Value Creation during Water Allocation Negotiations in the Lower Colorado River Basin**

*"Water is the lifeblood of the American West and the foundation of its economy. More than a century ago, American pioneers began harnessing the water of the West, opening vast new lands for settlement and development. Today, the American West is the fastest growing region of the country. Water is its scarcest resource."*

(U.S. Department of the Interior 2003)

#### **Water Allocation**

The Colorado River flows 1,450 miles across the American Southwest (California 1997). From its headwaters in Colorado's Rocky Mountains, the river descends through the states of Wyoming, Utah, Colorado, Nevada, and New Mexico before serving as the physical boundary between Arizona and Nevada, and Arizona and California. The Colorado River waterway crosses the United States-Mexico border and flows into the Gulf of Mexico. The river and its tributaries create a basin that covers 246,000 square miles of mostly arid and semiarid North American landscape (Tucson 2004).

In 1917, the seven basin states formed the League of the Southwest to build regional collaboration and marshal federal support for Colorado River development (Gimbel 2010). The League maintained that development was integral to the future of the Southwest because it would help control drought, floods, improve navigation, minimize land erosion, and ensure an adequate irrigation system for an agricultural economy. The US Congress was keen to support this view. In 1922, it issued the Fall-Davis Report, which recommended that the federal government construct a canal to transfer water from the Colorado River to California's Imperial Valley, as well as a dam and reservoir near Boulder Canyon (U.S. Bureau of Reclamation 1922).

Though unified in their pledge to develop the river, the states were at odds over how to allocate the water. Water allocation in Western states is based on a prior appropriation

doctrine, whereby those who first acquire water rights for beneficial uses are made senior to those who acquire rights at a later date. The upper basin states were concerned that the doctrine would eventually enable the lower basin states to use their population growth and agricultural expansion to monopolize Colorado River water (Anderson 2002). To avoid costly and drawn-out litigation, the seven states successfully appealed to the United States Congress to pass an act that authorized them to negotiate an “equitable division and apportionment” of the Colorado River. The states organized the Colorado River Commission; was comprised of appointed state representatives who negotiated the Colorado River Compact (Colorado River Commission 1922). The Compact divided the basin into two parts: an upper basin that included Wyoming, Utah, Colorado, and New Mexico and a lower basin that covered Arizona, California and Nevada. Each basin would be entitled to 7.5 million-acre feet (maf) per year of Colorado River water.

The states and federal government’s aspirations for the Colorado River became a reality in the 1928 Boulder Canyon Project Act (U.S. 1928). The Act implemented the recommendations in the Fall-Davis Report and authorized the Secretary of the Interior to manage the dam and serve as the River’s sole contracting authority. Under the Act, a special master applied the country’s “equitable apportionment” doctrine to allocate the river’s water among the lower basin states: 4.4 maf to California; 2.8 maf to Arizona; and 300,000 maf to Nevada.

California state officials had to allocate Colorado River water within the state, too. Water districts for southern California municipal and agricultural uses began forming decades earlier (National Research Council 2002). Palo Verde Irrigation District, Yuma Project, Imperial Irrigation District (IID), and Coachella Valley Water District (CVWD) supplied water for agricultural uses (Figure 3.1). Metropolitan Water District (MWD) supplied water for

municipal uses. In 1931, officials signed the California Seven Party Agreement on water use and storage priorities (Table 3.1). The water districts subsequently signed delivery contacts with the Secretary of the Interior. California's first four priority uses constituted the state's 4.4 maf allocation. Water uses beyond the 4.4 maf allocation would be contingent on surplus declarations made by the Interior Secretary.



Figure 3.1 Colorado River California service areas (Metropolitan Water District of Southern California 2009)



Table 3.1 Colorado River water: Colorado River entitlements (Palo Verde Irrigation District et al 1931)

Priority	Entity	Maf/yr
1	PVID	
2	Yuma Project	
3(a)	IID & CVWD	
3(b)	PVID	3.850
4	MWD	.550
5	MWD	.662
6	IID, CVWD, PVID	.300
7	Additional Ag Use	All remaining

### Conflict Over Water Allocation

Even as the Boulder Canyon Act had established a water allocation formula for the Lower Basin states, California and Arizona continued to disagree over their water allocations. A main source of contention for Arizona was that its use of the Gila River, a Colorado River tributary, was included in its 2.8 maf apportionment. The Supreme Court ruled in Arizona's favor when the state challenged inclusion allocation in court (*Arizona v. California* 1964). The decision enabled Arizona to devise an implementation plan to use its full apportionment, which included groundwater banking programs and the Central Arizona Project, an aqueduct that would divert water for central and southern Arizona. However, California had become dependent on Arizona's and Nevada's unused allocation (California 1997). By 1985, California was using more than 4.71 maf—well above its 4.4 maf allocation—and its use was expected to grow to 5.2 maf by 1997 (Table 3.2). Arizona and Nevada, on the other hand, were using less than half of their apportionment in 1985, but would use all or nearly all of their apportionment by 1997 (Table 3.2). In 1996, the Interior Secretary ordered California to devise a new water plan to reduce its water use to 4.4 maf, and he threatened to reduce the state's allocation if it did not devise a plan to reduce its water use (Babbitt 1996). California would have to wean itself from the water it had become dependent on.

Table 3.2 Colorado River water: Entitlements v. use in thousands acre-feet (California 1997)

	Entitlement <sup>b</sup>	Use	
		1985	1997 (Estimated)
Lower Basin			
California	4,400	4,712	5,168
<i>Agriculture</i>	3,850	3,443	3,922
<i>Urban</i>	550	1,269	1,246
Arizona	2,800	1,200	2,800
Nevada	300	115	250
Upper Basin	7,500	4,000	4,300
Mexico	1,500	-- <sup>d</sup>	-- <sup>d</sup>

<sup>b</sup> Entitlement is for a "normal" (non-drought) water year, according to "Law of the River."

<sup>c</sup> Includes Wyoming, Colorado, Utah, New Mexico, and a small portion of Arizona.

<sup>d</sup> Not available.

In the 1990s, southern California districts also clashed for two reasons. First, the top three priorities under the Seven Party Agreement were for agricultural uses, but southern California increasingly had urban water needs (Table 3.2). San Diego's water needs had grown the most, and the San Diego County Water Authority (SDCWA) wanted an independent water source (Elias 1997). The city bought its water from MWD but did not want to be subject to MWD's water controls. Second, the top three priorities were given an overall allocation of 3.850, but the number was not disaggregated and allocated between the users (Table 3.1). In the 1980s, IID entered a transfer agreement with MWD without consideration of CVWD's next-in-line rights (National Research Council 2002), which created friction between the two agricultural water suppliers. Any major water changes IID was to make would put CVWD on the defensive. California water officials thus needed to reconcile their agricultural water uses with increasing urban demands, as well as with the way that CVWD factored into IID's water plans.

The IID's use of water also presented a challenge for a new California water plan. In the mid-1990s, IID was by far the biggest Colorado River user in California. It was using 70% of the state's allocation to irrigate more than 500,000 acres of farmland (Yardas and Kusel 2006). The IID's water use practices were first challenged in 1980, when an Imperial Valley farmer



filed suit against the district for its misuses of water (National Research Council 1992, Nolan 2002). Agricultural runoff flowed into the Salton Sea, causing the lake level to rise and submerge his land. The State Water Resources Control Board (State Water Board) investigated the case and subsequently issued the Water Rights (WR) Decision 1600, which declared that IID needed to make operational changes to improve its water use practices to reduce runoff (California 1988). When IID did not immediately act on WR 1600, the State Water Board issued WR 88-20, which mandated that IID submit a plan and implementation schedule for water conservation measures.

Projected increases in the variability of water availability in the Colorado River created uncertainty that compounded the conflict between the states and the districts. Severe drought had struck the Lower Colorado River Basin four times since the Compact was signed: in the 1930s, 1950s, 1970s and 1980s (United States 1998, McKee 2000)(Figure 3.2). The droughts did not cause severe damage, but since water uses had grown, state officials grew increasingly concerned over the consequences the states would have to bear (Diaz and Anderson 1995).

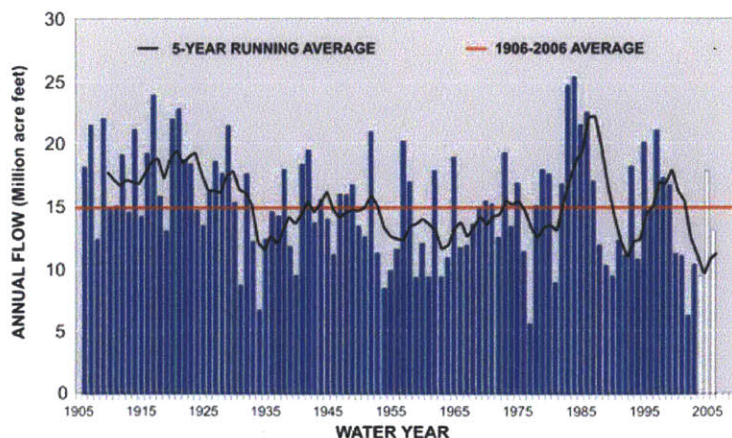


Figure 3.2 Natural Colorado River flows at Lees Ferry, AZ (National Research Council 2007)

In the early 1990s, conflict and uncertainty converged in the Lower Colorado River Basin. At the basin scale, California needed to reduce its water use. Within the state, demand

for urban water uses increased, and IID's water operations needed to be reformed. Pressure mounted as future water availability projections showed increased variability in water availability. Meanwhile, the Interior would no longer allow the state to use the surpluses on which the state had become dependent. The water suppliers and the state and federal government needed to agree on a new water allocation scheme to accommodate everyone's needs.

## **Water Allocation Negotiations**

The IID heeded the state's call to reduce its water use by entering talks with SDCWA for a water transfer. In July 1996, the two parties unveiled the draft terms of a 40-year 200,000 af transfer (Sterngold 1996), the largest agricultural-to-urban water transfer in US history (San Diego County Water Authority 2003). The transfer would constitute nearly one third of SDCWA's water use, and it left open the possibility of transferring another 100,000 af after the first ten years of the program. SDCWA would pay IID for each af of water that was to be transferred; IID would use the money to pay for the WR 88-20 conservation measures. The boards of each district and the California Water Board approved the transfer in April 1998, as long as it complied with environmental regulations (Imperial Irrigation District 2003). Later that year, IID and the Bureau of Reclamation initiated the environmental impact studies required under the National Environmental Policy Act and California Environmental Quality Act. The transfer seemed like a promising solution to multiple problems: it would help reduce the state's overall water use, apply more water to urban uses, and help IID conserve water.

Interior and the State Water Board actively supported the transfer. It responded to Interior's 1996 water reduction mandate by issuing California's "4.4 Plan," a draft plan that proposed reducing the state's water use by 800,000 af over fifteen years through conservation



measures such as a crop rotation, canal-seepage recovery, and groundwater banking (Colorado River Board of California 2000). The 4.4 plan's cornerstone was the IID-SDCWA transfer and would be ratified only once the individual agreements, like the transfer, were finalized. The state moved to launch other features of the 4.4 plan. It created and successfully passed legislation that included \$200 million for canal lining projects. In 1998, Interior Secretary Bruce Babbitt lauded the state's efforts: "I recognize the very considerable expenditure, both in human and economic terms, that the state of California has invested in moving the plan forward" (Israelsen 1998). The Dept. of Interior would move forward the development of interim surplus guidelines for Lower Colorado River operations, which would serve as a buffer during the state's water use transition. The Interior Secretary would thus allow California to use surplus water as long as it met predetermined water use reduction benchmarks. California, it seemed, finally had a path forward.

But as IID and SDCWA finalized the agreement, CVWD, MWD, and Imperial County filed court actions to challenge the transfer. CVWD maintained that its next-in-line water right under its shared priority use with IID meant that it had rights to any conserved water (Passell 1998). In December 1998, CVWD and IID entered a "peace agreement" to undertake negotiations (Israelsen 2003). Under an agreement signed the following year, CVWD's allocation was set at 330,000 af. SDCWA and IID would be able to proceed with the transfer with CVWA on board.

IID and SDCWA held separate negotiations with MWD. As part of the transfer, SDCWA wanted to "wheel" the water via the 242-mile Colorado River Aqueduct, which the MWD owned. MWD contended that the aqueduct could not be used without negotiating a price for its use. The district first proposed to transfer the water at a cost of \$262 per af, but SDCWA argued the actual cost to wheel the water was \$68 af (Elias 1997). The parties began to negotiate an agreement that involved an exchange of payment for the transport of water.

Under the exchange agreement, SDCWA agreed to pay \$253 per af at the start of the transfer. MWD, too, was now on board.

IID, SDCWA, MWD, and CVWA representatives approved the draft of key terms of the transfer, formally known as the Quantification Settlement Agreement (QSA) in October 1999 (Imperial Irrigation District 1999). Over the following year, it would be circulated for public review. The key terms were a prerequisite for Secretarial approval of the transfers. At the same time, the state planned for the implementation of other features of the 4.4 plan (Stapleton 2001). These features included canal-lining measures that would save over 100,000 af. To this point, the QSA parties, including the state and federal government, had amplified the scope of the agreement to ensure its success.

As the water districts reviewed the QSA, however, IID faced increasing opposition to the transfer at home. The environmental assessments were expected to demonstrate that the transfer would erode the coastal line and increase salinity levels of the Salton Sea (Figure 3.3), an enclosed saline lake and ecological sanctuary in northern Imperial County (Cohen 1999). The lake was sustained through 1.34 maf of agricultural runoff from the Imperial Valley. Under the IID-SDCWA transfer, the projected inflows would decrease to 1.23 maf and could be as low as .93 af (U.S. Dept. of the Interior 2007). Lowered shorelines would lead to the concentration of salts or other harmful chemicals, which would harm the ecological integrity of the Sea. The IID and Imperial County officials worried that they would be held accountable for the environmental consequences of the water transfer (Newcom 2003). County public health officials were also concerned that exposed bottomlands might form "dust storms," aggravating the Imperial Valley's already poor air quality (Cohen and Hyun 2006). The Nature Conservancy, Environmental Defense, and Forest Community Research were among the organizations to

publicly oppose the transfer (Yardas and Kusel 2006). The water transfer thought to solve multiple problems at once seemed too risky.

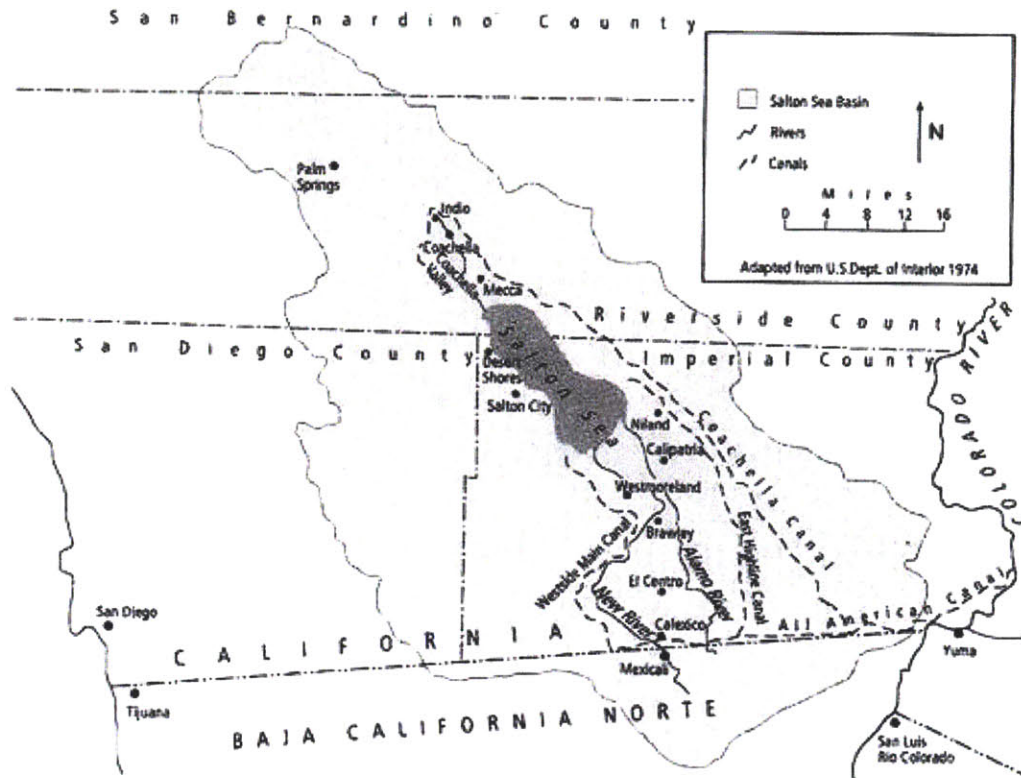


Figure 3.3 Salton Sea watershed map (California Environmental Protection Agency 2000)

The IID proposed a fallowing program to mitigate environmental impacts (Imperial Irrigation District 2003). Under this voluntary program, farmers would be compensated for letting their land sit idle; the freshwater that they would have normally used would flow directly into the Sea. In a survey conducted by IID in October 1999, 160 farmers expressed interest in such a program (Imperial Irrigation District 2003). However, the fallowing proposal faced strong opposition due to its potential negative socioeconomic consequences. County officials and advocacy groups such as Latino Issues Forum, United Farm Workers/La Union del Pueblo Entero, and Institute for Socioeconomic Justice and Progressive Community Development maintained that fallowing would affect everyone participating in the agricultural

economy, including farm workers, wholesalers to farmers, and buyers and distributors of local produce (Yardas and Kusel 2006). Socioeconomic uncertainty that might prevent IID board members from voting in favor of the QSA put the transfer at risk.

Environmental and socioeconomic sticking points might have prevented IID's final sign-off, but Interior continued to insist on an agreement. In January 2001, Secretary Bruce Babbitt released 15-year interim guidelines for allocating surplus water, which would apply as long as California was on track to reduce its consumption to 4.4 maf (U.S. Bureau of Reclamation 2001). Southern California water districts would have to approve the QSA by December 31, 2002; the Interior Secretary would otherwise forcibly reduce the state's allocation. State officials—State Water Board and state legislators—also became more involved in the negotiations as the deadline loomed. Assembly Speaker Emeritus Robert Hertzberg led negotiations (Yardas and Kusel 2006); he was joined by other state legislators from both parties and from all of the parties' districts. During those negotiations, SDCWA agreed to mitigate socioeconomic impacts by funding a mitigation program to be implemented by IID. Federal and state officials used both carrots and sticks to impel an agreement.

On December 9, 2002, just days following the California Water Board's approval and weeks before the Interior's deadline, the IID Board voted 3-2 against the transfer (Imperial Irrigation District 2003). The dissenting Board Members held that they were not convinced that the QSA and related agreements did enough to pay for environmental mitigation. This rejection led to a legal struggle between IID and the Interior. On December 27, the Interior Secretary decreased 204,900 af from IID's water order for 2003 (Miller 2003). IID sought and was granted injunctive relief days later. IID's water order was restored in March, but Interior would again decrease the water order by 330,000 af in July (Imperial Irrigation District 2003). Fear of the potential collapse of QSA negotiations and a legal impasse sent Sacramento

lawmakers, interior officials, and district representatives into a new phase of intense negotiations (Imperial Irrigation District 2003). What emerged was the creation of new institutional arrangements to support the environmental mitigation efforts, which would mostly be led and funded by the state.

In the summer of 2003, water delivery to California had been reduced and IID was prepared to vote against the QSA once again. The state, however, stepped in to enhance its support of environmental mitigation measures through the passage of a package of legislation to pay for associated costs (McCarthy and Newton 2008).

Negotiations between parties involved in the SDCWA-IID transfer had been in the works for more than five years when Secretary of the Interior Gale Norton signed the Quantification Settlement Agreement (QSA) and related agreements on October 16, 2003 in Boulder City, Nevada. It was a compilation the main transfer agreement and 34 related agreements that hinged on each other (Stapleton 2010). At the signing, the Secretary declared, "With this agreement, conflict on the river is stilled" (Murphy 2003). That was the hope, anyway.

## **Value Creation**

What began as a proposal to transfer water between two parties ended up as a more encompassing agreement. Four major sticking points had emerged: water transport, Coachella's water rights, and the environmental and socioeconomic impacts of the transfer. QSA parties responded to the sticking points through the creation of all five types of value in Albrecht and Albrecht's value typology (Table 3.3).

SDCWA worked with MWD to create an Exchange Agreement that would dictate the terms of using the Colorado River Aqueduct (U.S. Department of Interior et al 2003). This agreement included a pricing scheme under which SDCWA would initially pay \$253 per af; the

water authority proposed value in the form of “money” to gain the use of the Colorado River Aqueduct (“property”). In return, MWD would be responsible for delivering the water (“actions”).

CVWD’s long-standing concern over its water entitlement was addressed in several ways, including a guaranteed allocation of 330,000 af, which secured its water “rights”. The district would also receive support from the state and MWD to implement conservation measures. The support was key because the district was under pressure to make efficiency improvements to its water system. The canal-lining project partly subsidized by the state also contributed to Coachella’s overall gains. At the onset of negotiations, even though CVWD’s interest in the transfer was chiefly about its entitlement, the district not only secured its water rights but also gained from the larger suite of value proposed under the QSA and related agreements.

Plans to mitigate the environmental impacts on the Salton Sea took the form of the state’s commitment to facilitate the implementation plan (McCarthy and Newton 2008). The Department of Fish and Game was to serve as the lead implementing agency for the efforts. Under the agreement, IID, CVWD and SDCWA were responsible for up to \$133 million in mitigation costs, and any excess costs were to be covered by the state (Jones 2004). The “actions” and “money” the state put up reduced the “risk” that CVWD’s, IID’s and SDCWA’s would be left to handle mitigation on their own. As part of the agreement for the Salton Sea, the parties agreed to create a Joint Powers Authority to manage the funds.

In response to socioeconomic concerns, SDCWA and IID conceptualized a socioeconomic mitigation office called Local Entity. SDCWA, whose priority was to secure additional water supply, agreed to pay IID \$10 million; IID would also pay \$10 million, and it would administer, solicit claims for, and distribute the funds. Thus, the exchange involved

created value in the form of “money” and “actions”. The Local Entity was the cornerstone of a broader agreement to socioeconomic concerns, and chief among them was how to conduct economic analyses. The socioeconomic mitigation plan also included a regional economic analyses plan. The water districts agreed to jointly hire a panel of economists to assess the socioeconomic impact of the QSA.

For each response to a sticking point, the parties collaborated on the details of implementation. In some responses, this collaboration involved creating organizations and institutional arrangements to support the implementation of the response to the sticking point. This process also involved drawing value from other measures. For example, the canal-lining project sponsored by the state was a decisive feature of negotiations, as different parties drew from it to “create more” water.

## **Outcome**

The QSA is a landmark agreement to reduce California’s Colorado River water use, but it has been fiercely challenged since it was signed in 2003. Several parties filed lawsuits against the QSA—fifteen have been filed against IID alone (Varin 2012). Plaintiffs include parties who were not a part of negotiations, such as the Imperial County Air Pollution Control District, because the QSA did not address public health concerns. The QSA has also faced implementation challenges. Most notably, the state has been slow to develop a Salton Sea restoration plan (Imperial Irrigation District 2011).

Under the QSA and related agreements, California has begun to successfully reduce its Colorado River water use through the water transfer and various conservation measures (Stapleton 2010). It has also enabled basin-wide planning and collaboration. In 2007, for example, California and other basin states updated the interim guidelines. Meanwhile, several

courts have upheld the validity of the QSA, and most of the lawsuits filed against IID have been dismissed (Varin 2012).

The QSA agreements enabled California to move toward its goal of reducing its water use to its 4.4 maf apportionment while reconciling new water demands and uncertainty with existing water uses. While agreement did not come easy, the QSA provides important lessons on how to work toward a more collaborative approach to water planning.



Table 3.3 Value creation in the Lower Colorado River Basin QSA

Sticking Point	Response to sticking point	Value				
		CA State	CVWD	IID	MWD	SDCWA
Use of Colorado River Aqueduct	Exchange Agreement	M	M	M	M <sup>1</sup>	M <sup>3</sup>
		P	P	P	P	P <sup>4</sup>
		A	A	A	A <sup>2</sup>	A
		I	I	I	I	I
		R	R	R	R	R
Coachella's water rights	Quantification	M	M	M	M	M
		P	P	P	P	P
		A	A	A	A	A
		I	I	I	I	I
		R	R <sup>5</sup>	R	R	R
Salton Sea Impact	Salton Sea restoration plan	M <sup>6</sup>	M <sup>8</sup>	M <sup>10</sup>	M	M <sup>12</sup>
		P	P	P	P	P
		A <sup>7</sup>	A	A	A	A
		I	I <sup>9</sup>	I <sup>11</sup>	I	I <sup>13</sup>
		R	R	R	R	R
Socioeconomic Impact	Local Entity	M	M	M <sup>14</sup>	M	M <sup>16</sup>
		P	P	P	P	P
		A	A	A <sup>15</sup>	A	A
		I	I	I	I	I
		R	R	R	R	R

Legend
Money
Property
Actions
Risks
Rights
Proposed
Gained
Neutral

Key	
1 Money	MWD to transport water via Colorado River Aqueduct (Actions) for a cost (Money).
2 Actions	SDCWA to pay for each af of transferred water (Money) and gain the use of the Colorado River Aqueduct (Property). "San Diego County Water Authority (SDCWA) agreed to pay MWD's wheeling charge... that water will be conveyed to SDCWA via MWD's Colorado River Aqueduct as part of the IID-SDCWA water transfer agreement" (Water Education Foundation 2005).
3 Money	
4 Property	
5 Rights	CVWD to receive a legal entitlement of 330,000 af (Rights). "This is about what CVWD's order has averaged in the last decade, but without the QSA the amount is not guaranteed and subject to conditions beyond the district's control" (Coachella Valley Water District 2003).
6 Money	State to cover QSA mitigation costs in excess of \$133 million (Money), which would reduce mitigation "risk" for water districts. State also to play a key role in the development and implementation of a restoration plan (Actions). CVWD, IID, and SDCWA to pay for environmental mitigation (Money). "To facilitate local agency execution of the QSA, the state assumed responsibility for a share of the environmental mitigation requirements for the QSA water transfers and for all of Salton Sea ecosystem restoration" (Jones 2004).
7 Actions	
8 Money	
9 Risks	
10 Money	
11 Risks	
12 Money	
13 Rights	
14 Money	
15 Actions	
16 Money	

*program IID shall further seek to facilitate the voluntary, broad-based participation by farmers to meet the long-term water delivery requirements to SDCWA" (United States 2003).*  
Note: IID would also fund the Local Entity, though that is not reflected in the table.

## **4 Findings and Recommendations**

*"It is one thing to find fault with an existing system. It is another thing altogether, a more difficult task, to replace it with an approach that is better."*  
Nelson Mandela (World Commission on Dams 2000)

An examination of water allocation negotiations in the Apalachicola-Chattahoochee-Flint (ACF) River and Lower Colorado River Basins supports my hypothesis that value creation makes it easier for parties to reach agreement. The published literature on negotiation suggests that parties are more likely to develop sustainable agreements and cooperative relationships through an integrative approach to negotiation (Susskind and Cruikshank 1987, Lax and Sebenius 1986). Further, it is easier for parties to respond to sticking points if they engage in integrative bargaining (Fisher, Ury, and Patton 1991). Albrecht and Albrecht (1993) provide a framework for differentiating various forms of value that can be created in negotiation: money, property, actions, rights, and risks. An examination of value—both proposed and gained—in my cases shows that value creation was, indeed, key to progress in both negotiations, although agreement occurred in one case but not in the other. My findings support the hypothesis that value creation enables agreement; they also suggest that even when value is created, its allocation may prevent agreement among parties.

### **Analysis of Value Creation**

#### ***ACF Basin***

An examination of ACF negotiation outcomes indicates that value creation does not necessarily lead to agreement. In the fifth year of negotiations, in 2003, the governors of

Alabama, Florida and Georgia signed a memorandum of understanding (MOU) that laid out the key principles of an allocation formula. The MOU signed by the parties focused on creating value mostly in terms of “actions” that Georgia was willing to take to meet Alabama and Florida’s downstream interests. Following the signing of the MOU, however, Florida tried to adjust the terms to its advantage. The negotiations subsequently collapsed.

If value was created, why did the parties *not* reach agreement in the Apalachicola-Chattahoochee-Flint (ACF) River Basin? The answer, I think, is that they failed to create *sufficient* value (missing various types of value that could easily have been generated) and they did not distribute the created value in ways that allowed all sides to commit to an agreement. Several factors seemed to have inhibited the parties’ ability to generate more value and distribute it in a way that worked for all parties.

First, how the states negotiated with their internal constituencies was significant. Each state’s negotiator needs to be clear at the outset about his or her mandate (i.e., internal prioritization of interests) and he or she needs to stay in touch with constituents so that the final agreement has internal support. It appears that this clarity and connection did not happen with all the states involved.

Second, Georgia was not open to making conservation measures for metropolitan Atlanta as part of the interstate agreement. It did not want other states to dictate its internal water policies. The parties were able to design a variable flow rate element for the Apalachicola Bay, even though Georgia initially opposed minimum flow rates. However, Georgia took the position that the flow rates and consumption caps, as proposed by Florida, were mutually exclusive. If the states had been able to explore conservation measures more fully, they might have ended up with a greater volume of water to allocate in future years.

Third, while the states were engaged in negotiations, they also prepared to go to court. In the literature on negotiation, each party's calculation of its Best Alternative to a Negotiated Agreement (BATNA) is crucial. This is the benchmark against which they compare all offers. The parties knew that going to court was a possibility all along—after all, it was a lawsuit that triggered the negotiations in the first place. It appears that a number of the parties had optimistic views about how they might fare if the case went to a judge or jury. Perhaps the clearest indication that several parties viewed their legal BATNA quite positively were the two lawsuits filed while negotiations were ongoing. Unfortunately, these suits undermined trust among the state negotiators. The states' view of their estimated outcomes if they went to court—and the extent to which they continued to develop their legal BATNAs—may have affected their commitment to the negotiations and their abilities to create value.

Fourth, apparently, the parties did not distribute value in a way that all sides thought was fair. The outcome suggests that a particular commitment to a value proposition may mean different things to different parties. The actions Georgia was willing to take under the MOU, for example, sufficed for Alabama but not for Florida, even though the same things were offered. When it came to distributing the value they had created, Florida did not feel it was getting a fair shake, although it is not entirely clear that it was being asked to shoulder a disproportionate burden. That Georgia created most of the value was also a cause for concern. When Florida offered its counter-proposal, Georgia called it unfair. The outcome suggests that the value the parties created was insufficient and it was not distributed in such a way that the parties felt they had enough to arrive at a fair deal.

### ***Lower Colorado River Basin***

Water allocation negotiations in the Lower Colorado River Basin clearly support the hypothesis that value creation enables agreement. After five years of negotiations, the Quantification

Settlement Agreement (QSA) was signed in October 2003. The application of Albrecht and Albrecht's framework to the parties' response to sticking points shows that various kinds of value were created. This value supported the search for agreement in at least three ways.

First, the quantity and various types of value permitted mutually advantageous trade-offs. In the QSA negotiations, when issues emerged, the parties found ways to address them. This flexibility meant that value was created in response to unforeseen difficulties associated with implementing the promised water transfer. The creation of this added value also made the various trades contingent on each other. For example, even though the use of the Colorado River Aqueduct involved only a transaction between Metropolitan Water District and San Diego County Water Authority (SDCWA), it was critical because it was the only feasible means of transferring water between Imperial Irrigation District (IID) and SDCWA. Thus, even if other QSA parties did not directly benefit from a response to a sticking point, the overall package hung together. In this way, the value created sufficed to meet the various parties' interests.

Second, a shared commitment to greater water efficiency and conservation enabled agreement. The canal lining projects, for example, were key to "creating more water," as were the conservation measures that IID and CVWA were required to implement under state mandate. These shared values are important because most water disputes involve scarcity. Conservation and efficiency will invariably form part of most dispute resolution efforts, especially when questions arise about who is using too much water and who needs to reduce their water use. In the QSA, water efficiency and conservation were achieved through the use of five types of value noted in Albrecht and Albrecht's framework.

Finally, the parties created administrative and institutional arrangements to support the implementation of the value-creating promises they had offered. The value created in response to each sticking point depended on the detailed design and implementation of a



specific plan of action. These responses were all contingent on each other. Indeed, in the end, the QSA consisted of a main agreement—the transfer of the 200,000 af between SDCWA and IID—as well as 34 related commitments. Several of these commitments involved the creation of new institutional arrangements, including various means to mitigate the transfer’s socioeconomic and environmental impact. All the parties’ highest priority concerns were addressed.

**Cross-Case Analysis**

My cross-case analysis notes my estimates of the cumulative value created in both cases -- both proposed and attained (Table 4.1). The QSA involved the creation of more diverse types of value than the ACF MOU. Placing proposed value alongside gained value also demonstrates how value takes different forms in water allocation negotiations.

Table 4.1 Value categories proposed and gained in the ACF and Lower Colorado River Basin negotiations

Value Element	ACF MOU	Lower Colorado River QSA
<b>Proposed</b>		
Money		✓✓✓✓✓✓
Property		
Actions	✓✓✓	✓✓✓
Rights		
Risks		
<b>Gained</b>		
Money		✓✓
Property		✓
Actions		
Rights		✓
Risks	✓✓✓✓✓	✓✓✓

In sum, value creation enables but does not guarantee agreement. Value creation offers a way to get beyond what might otherwise seem like intractable problems. Its efficacy is contingent on other factors, such as the extent to which the value created responds to the priority

concerns of all parties and having the agreement describe believable ways of holding all parties to their commitments.

## **Limitations and Areas for Future Research**

My findings suggest possible areas for future research. First, different administrative frameworks apply in the ACF and Lower Colorado River Basins. The Southeast primarily uses a riparian doctrine, whereas a prior appropriation doctrine is predominantly used in the Southwest. The backgrounds of the cases indicate that parties in both basins had the authority, flexibility, and opportunity needed to create value. This finding counters the perception that the overarching administrative framework in the region dictates the outcome of water allocation negotiations. Future research, however, might explore the impact of administrative frameworks on the shape and outcome of various kinds of water allocation negotiations.

Second, I do not consider the full history of water development and conflict in each basin. Water conflicts are deep-seated in the Southwest. This history of water conflict has earned the Bureau of Reclamation an influential role in the management of the Colorado River. This history and strong federal participation may have played a role in impelling the parties to reach an agreement. The literature on negotiation suggests that parties can learn to work more collaboratively over time because they learn the consequences of not reaching agreement, as well as how to improve upon any agreements previously reached (Innes and Booher 2010). The Southeast lacked both a strong role for the federal government and a history of conflict. Thus, future research on value creation may consider the extent to which a history of conflict plays into the parties' ability to generate value.

Third, the parties involved in the two negotiations represented different roles in the overall water governance structure. The parties in the ACF Basin were three states, whereas



the parties in the Lower Colorado Basin were primarily regional water suppliers, with strong state and federal partners. Some may be inclined to deduce that the negotiation outcomes may be explained by the differences in these intergovernmental relationships—that the higher the scale, the more difficult it is to create value (i.e., it becomes harder among three large states). For that to be true, we would need to understand what is inherently different about water institutions at different scales that affects their ability to effectively participate in integrative negotiations. Currently, no perceived relationship exists between scale and outcome, but the literature on water allocation negotiations would benefit from added insight into this area.

Fourth, I used Albrecht and Albrecht's framework to ascribe value to negotiation outcomes. This ascription involved a great deal of interpretation on my part. It is possible that participants in the negotiations might not characterize the value created in the same way I have. Is it also possible that the parties proposed or gained kinds of value that I have missed and that go beyond the kinds that Albrecht and Albrecht specify. Cultural and political value, for example, may have played a role in ACF and Lower Colorado River Basin negotiations, but that analysis is beyond the scope of this thesis.

Finally, I focused on negotiation outcomes. I did not explore all the things that cause parties to shift from traditional value-claiming to value-creating behaviors. My findings are thus helpful only insofar as readers can "back into" negotiations—by looking at outcomes. More needs to be done to determine the best ways of helping parties prepare for integrative negotiations.

## **Recommendations**

The creation of value can promote agreement, but water officials need to know how to proceed. Drawing from the lessons learned from these two cases, I offer several tentative recommendations.

### ***Value Creation Preparation***

**Build and improve integrative negotiation skills and capacity.** Value creation is the cornerstone function of an integrative negotiation, but value on its own will not lead to an agreement. Knowledge of the strategies and techniques of integrative bargaining and a well-designed negotiation process will better enable parties to get to the point of creating the value necessary to work toward an agreement. Without a deliberate and well-executed process, parties may revert to a traditional approach to negotiations (a distributive approach) or make slow, if any progress. From the onset, parties would benefit from applying the lessons of integrative negotiations to get to and through the value-creation process.

**Check any BATNA at the door.** Literature on negotiation encourages parties to build their BATNAs during negotiations as a means to evaluate agreements (Lewicki, Saunders, and Barry 2010). This idea is partly based on the assumption that the parties do not have to work together over the long-term. However, memories of injustice often rankle. Because water is a shared resource and water problems are increasingly complex, parties can be liable to underestimating the value of an agreement in relation to their BATNA, especially if the alternative is legal recourse. The history of interstate water allocation in AFC negotiations indicates that parties who previously believed that litigation was a better alternative to reaching agreement may find themselves in contention nearly ten years later. Thus, parties

should think more strategically about whether legal recourse actually offers a better alternative, should be deliberate, and should fully commit to the negotiation (or alternative) path chosen. Otherwise, they risk losing large amounts of time and resources, as well as damaging the parties' rapport.

### ***Value Types***

**Diversify value types.** Enhanced diversity of value forms will offer a broader range of benefits. All of Albrecht and Albrecht's value categories were *proposed* or *gained* in the ACF and Lower Colorado River Basins. These were combined to meet the interests of the various parties. In the ACF, the parties mainly worked with one form of proposed value — "actions" — which was mostly proposed by Georgia and ultimately insufficient for Alabama and Florida. Greater amounts of value and diverse types of value can meet parties' interests in ways that were previously unthinkable. Water officials should consider the full range of value available to explore these options.

**Achieve greater water efficiency and conservation through value.** Aiming for water conservation and efficiency is one way to create value (Susskind and Islam 2012), but the cases show that value creation *on its own* will not lead to greater water efficiency and conservation. Rather, parties must make a *deliberate effort to build efficiency and conservation measures* through value that is proposed. In the Lower Colorado River Basin, water conservation was key to enabling parties reach agreement, and it was achieved through money and actions proposed and gained by the parties. As a result, several water system improvements were made (e.g., fallowing and use of conservation technology). Water conservation did not form part of the ACF MOU. Because water scarcity is likely to be a problem in many water disputes,

parties would benefit from considering water efficiency and conservation a key part of their plan.

### ***What to do with value***

**Fairly distribute value.** Value must be distributed fairly. In the case of the Lower Colorado River Basin, the entities worked to develop solutions that addressed all the signatory parties' interests, but the parties worked to get to that point. In the ACF Basin, the MOU was perceived as unfair by Florida, while Georgia perceived Florida's suggested changes to MOU as unfair; negotiations collapsed. Water officials should thus learn about each other's interests to have a sense of how value achieves goals that meet their interests. This learning needs to be done by and for all participating parties.

**Support value through new institutional arrangements.** Having cumulative value enables the making of trade-offs, and these trade-offs will likely require jointly designed and coordinated institutional arrangements. The Salton Sea Protection Plan and the Local Entity, for example, were new administrative entities created to address environmental and socioeconomic mitigation of the water transfer in the Lower Colorado River Basin. Conversely, parties in the ACF Basin wanted to create the principles of an allocation formula without delving into the details of their implementation. Water officials should thus be prepared not only to create value, but also to take the steps needed to turn created value into responses with the institutional support to make them durable, efficient, and implementable. This institutional support is particularly helpful in cases with heightened uncertainty, because parties will know how to work together when water conditions change.

## **Final Thoughts**

When United States Governors convened at the White House in 1908 for a conference on the country's natural resources, they called for greater cooperation (Conference of Governors 1909). Today, this mandate is as relevant as ever. Importantly, uncertainty surrounding water availability has increased. Water allocation negotiations in the ACF and Lower Colorado River Basins demonstrate that cooperation is possible, even if it is no simple feat.

With this research, I hope to have made two contributions. First, my study shows how value creation can move a water allocation negotiation forward. My analysis links ideas from the field of negotiation with the dynamics of actual water allocation negotiations. I hope I have created a more thorough picture of how value can be created. What is "proposed" by one party, for example, must meet the other party's interests, and thus not all value-creating moves will necessarily succeed. Creative problem-solving is called for to identify what each party values.

Second, I hope these findings contribute to a broader discussion of ways to respond to complex water challenges. Heightened water conflict in the United States and abroad is anticipated. In fact, the need to develop sound and fair water allocation negotiation outcome has never been so pressing, necessitating a focus on ways to respond. The strategies and techniques of integrative bargaining, and value creation in particular, can unlock a forward-thinking approach and enable agreement.

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