

# Water Reallocation By Settlement: Who Wins, Who Loses, Who Pays?

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## ABSTRACT

The 2004 Arizona Water Settlements Act (AWSA) is the current standard for what a comprehensive, negotiated settlement can achieve in terms of water rights reallocation, water resource management, and water supply reliability enhancement. This note reviews the flows of money and water specified in Titles I and II of the AWSA to identify the signatory and non-signatory parties that benefit from the settlement and the allocation of costs between the various parties to the agreement. Opportunity costs are also considered. Innovative elements of the agreement are discussed particularly those that improve water supply reliability for the Gila River Indian Community and third parties. The central roles of water resource management tools and market mechanisms in the AWSA are also discussed.

## 1. INTRODUCTION

The location of the Gila River Indian Community (GRIC) reservation on the southern border of Phoenix, a mega-city with two of the ten fastest cities in America <sup>2</sup> and the risk to non-Indian water users in the state inherent in the Community's 1.8 million acre feet (MAF) Gila River Adjudication claim provided impetus for the AWSA. Implicit in any legal proceedings is uncertainty. This negotiated settlement removed these risks and also resolved the allocation of Central Arizona Project (CAP) water between Indian and non-Indian uses. The resolution of these allocation issues also settled a long standing dispute over the repayment of the CAP and numerous disputes between the GRIC and water providers and users in the state. The size of the settlement in terms of water and cost and the number of signatories to it are indicators of the importance of this agreement and the motivation to research the elements of the settlement.

The AWSA contains four Titles, they are the: Central Arizona Project Settlement, Gila River Indian Community Water Rights Settlement, Southern Arizona Water Rights Settlement, and the San Carlos Apache Tribe Water Rights Settlement. The focus of this note is the first two Titles. The main points of these settlements are described and the economic implications are elaborated.

An 1859 Act of Congress created the initial Gila River Indian Reservation in what is the Gila River watershed. It was enlarged seven times over the next 56 years to include a small area within the Salt River watershed. The current reservation is 372,000 acres (see Map 1). The priority of the Community's water rights, as per the *Winters* Doctrine is 1859.<sup>3</sup> Although the doctrine establishes Federal reserved water rights, they remained unquantified. The risk when water rights are unquantified are several: the pending claims themselves are unprotected against future competing water rights claims, and the claims pose a risk to current and future water use in the affected region. The GRIC reservation lies at the bottom of two watersheds at the confluence of the Gila and Salt Rivers. This geography has meant that their water access has been subject to diminishment from the development of water rights upstream in the Gila River watershed, and to

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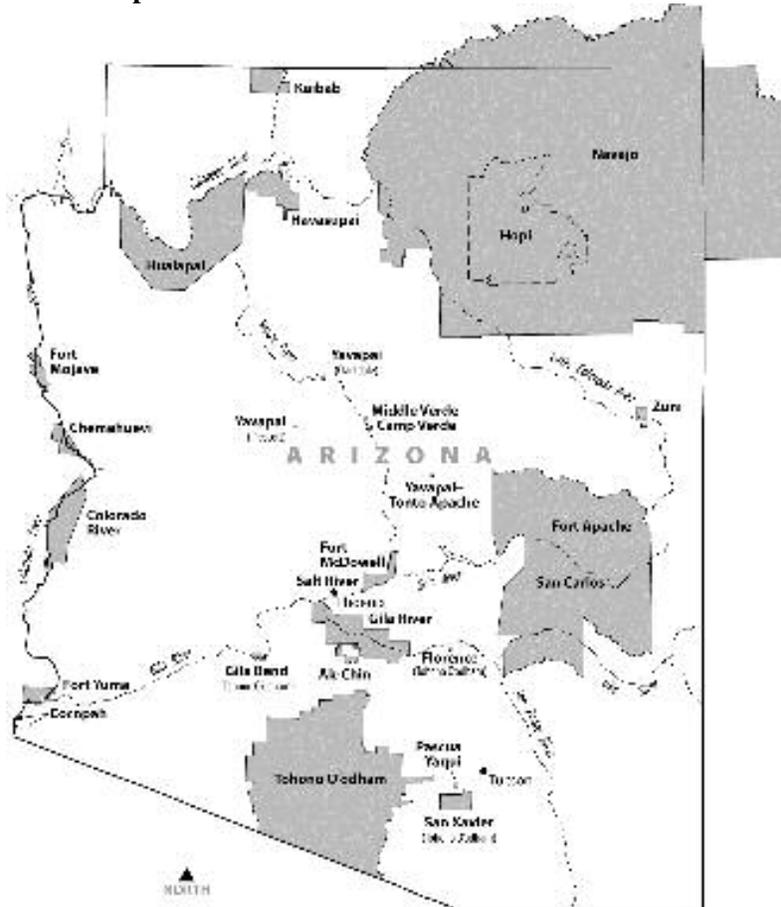
<sup>1</sup>This research was supported by Sustainability of semi-Arid Hydrology and Riparian Areas (SAHRA), a National Science Foundation, Science and Technology Center. I would like to thank my advisor Dr. Bonnie G. Colby, Katharine Jacobs and several regional water experts for their input. Thanks also to Nancy Bannister for creating the Arizona map.

<sup>2</sup> Gilbert is the fourth and Chandler the seventh fastest growing cities in the US, U.S. Census Bureau, 2005.

<sup>3</sup> *Winters v. United States* 207 U.S. 564 (1908) found that tribes have reserved water rights appurtenant to reservation lands to fulfill the purpose of reservation as a homeland. The date of these implicit water rights is the date of the establishment of the reservation.

a lesser extent, in the Salt River watershed. From the early 1870s two large irrigation districts<sup>4</sup> upstream of the reservation diverted water from the Gila River impacting downstream availability for the Community. To address growing water access issues the U.S. Congress in 1924 authorized the construction of the Coolidge Dam and San Carlos Irrigation Project (SCIP) to supply irrigation water for 50,000 acres on the GRIC Reservation. A year later the United States on behalf of the Community and San Carlos Irrigation and Drainage District (SCIDD) sued upstream water users to establish the water rights of the Community. After ten years of litigation, the *Globe Equity* decree<sup>5</sup> entitled the GRIC to divert 300 KAFY (thousand acre feet per year) from the Gila River. Despite the decree, these higher priority water rights were not enforced and disputes over the provisions resulted in decades-long-litigation between GRIC and other water users, litigation that has been resolved by the AWSA.<sup>6</sup>

**Map 1: Arizona's Indian Reservations and Rivers**



<sup>4</sup> Water rights were developed in the Safford Valley and the Duncan-Virden Valley, which correspond to current day Gila Valley Irrigation District and Franklin Irrigation District. At the same time the downstream Florence-Case-Grande area, present day San Carlos Irrigation and Drainage District, was also developed.

<sup>5</sup> Globe Equity Decree shall mean the decree dated June 29, 1935 entered in *United States of America v. Gila Valley Irrigation District, Globe Equity No. 59, et al.*, in the United States District Court for the District of Arizona.

<sup>6</sup> Pub. L. 108-451

A second set of GRIC water claims are centered on the Salt River watershed. The reservation enlargement in 1879 added the lands farmed by Maricopa Colony to the GRIC Reservation. This branch of the GRIC irrigated around 1,000 acres of land from the Salt River. Again development of non-Indian agriculture challenged the prior rights of the Community and again the United States sued these water users on behalf of the Community. This litigation began in 1901 and in 1903 *United States v. Haggard* adjudicated the Community's right to irrigate 1,080 acres from the Salt River (equivalent to around 5.9 KAFY). This decree was incorporated into the 1917 *Benson-Allison* decree which adjudicated water rights for the Community near the confluence of the Gila and Salt rivers.

These water rights adjudicated in the early 1900s fall far short of the 1.8 MAF<sup>7</sup> GRIC claim in the Gila River Adjudication proceedings. This claim was formulated based on the Practicably Irrigable Acreage (PIA) standard articulated by the courts in *Arizona v. California*.<sup>8</sup> This standard quantifies *Winters* rights by determining the amount of water necessary to irrigate all practicably irrigable acreage within the reservation. This formulaic standard is not without its flaws<sup>9</sup> and an alternative recently articulated by the Arizona Supreme Court is the homeland test.<sup>10</sup> This doctrine allows tribes to prosecute for water to meet their future needs. Permitted water uses explicit in the homeland test include water for population growth, the environment, community development, industry, and recreation. As with tribal water rights quantified through PIA, the development of these tribal water uses can pose a threat to junior water rights holders in an over-allocated watershed.

Regardless of which legal doctrine on quantification is applied, the Community's claims remained an exceptional risk for the viability and future development of the central valley cities and also the rest of the state. Many believed that the GRIC had a very strong reserved right claim based on their location at the confluence of two rivers, a documented history of irrigated agriculture, and large tracts of irrigable and developable land on the reservation. Other regional water users were concerned that the Community might also have a strong ability to limit significant groundwater pumping near the reservation boundary. Given this exposure, the surrounding cities were primed for settlement. Furthermore, excess Colorado River water was available for reallocation to the Community: this water will in practice replace a block of *Globe Equity* Decree (Gila River) water (without this 'exchange' the water rights of non-Indian agriculture and municipalities in the Gila River watershed would have to be reduced). Finally, an agreement was bolstered by the Community's acceptance of water leasing.<sup>11</sup> The outcome of multi-party negotiations, the AWSA, not only provides benefits for non-Indian water users whose water rights remain undiminished (or will be compensated) but also for the Community. The agreement substitutes delivered 'wet' Colorado River water and provides funds to develop its use and management. The settlement incorporates a number of water management innovations that should improve water supply reliability for the Community, and for others reliant on the Gila River watershed and its tributaries.

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<sup>7</sup> A water right of 1.8 MAF would have reallocated a quarter of the State's current water supplies (7.24 MAF, ADWR, 2006) to one tribe and concurrently severely impacted non-Indian water rights holders.

<sup>8</sup> 373 U.S. 546 (1963).

<sup>9</sup> Dana Smith, Note, *Doctrinal Anachronism?: Revisiting the Practicably Irrigable Acreage Standard in Light of International Law for the Rights of Indigenous Peoples*, 22 (3) ARIZ. JNL of INTL & COMPTVE LAW. 712-713 (2005).

<sup>10</sup> *In re the Gen. Adjudication of All Rights to Use Water in the Gila River Sys. & Source*, 35 P/3d68, 79 (Ariz. 2001).

<sup>11</sup> Pub. L. 108-451, Title II, Sec. 205(a)(2).

Another aspect of settlements is economic. The core of many of the 16 Federal criteria<sup>12</sup> for Indian water rights settlements relates to allocating costs based on benefits, maintaining status quo in watersheds, promoting efficiency, and removing risk and uncertainty, by attaining past, present and future waivers of water rights,<sup>13</sup> (and waiving claims for water quality<sup>14</sup> and subsidence damages).<sup>15</sup> It is also the policy of the Federal government that the federal contributions to a settlement may not exceed the "calculable legal exposure".<sup>16</sup>

This note examines the costs and benefits of Titles I and II of the agreement not only as an accounting exercise, but also as a means to understand the motivation for 35 signatories<sup>17</sup> to and the 85 plus side agreements attached to the settlement. Other than the large number of side agreements, there is another clue that it was these players who were the main drivers for the settlement: there are no explicit Federal penalties owed by the federal government to GRIC associated with the repeal of Titles I and II of AWSA, if the parties do not meet the enforceability date.<sup>18</sup> First the Titles I and II are introduced: the settlement of the Central Arizona Project (CAP)<sup>19</sup> repayment and allocation between Federal and non-federal uses, CAP M&I (municipal and industrial) reallocation to the Phoenix valley cities, water for the tribes, and the proliferation of side agreements that are exhibits to the main settlement. Then the water management implications and water supply reliability outcomes of the settlement are discussed before concluding remarks on what lessons other tribes and states can learn from the comprehensive AWSA legislation.

## 2. THE AWSA

While the AWSA is not quite as comprehensive as its name suggests, within the CAP three county service area<sup>20</sup> and the Gila River watershed it resolved major uncertainties. This is no coincidence. Just over half of Arizona's allocation of Colorado River water<sup>21</sup> is delivered by the federally-funded CAP.<sup>22</sup> This 'new', renewable water boosts intra-state water supplies of 5.825

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<sup>12</sup> See, 33 Fed. Reg. 9223 (1990).

<sup>13</sup> Pub. L. 108-451, Title II Sec 207(a)(1)(A)-(B) and (F)-(G) for claims against the Salt River Project (SRP), and Id. Sec 207 (a)(3)-(5) for waivers against the Community, the U.S. and the Upper Gila Valley, respectively.

<sup>14</sup> Exceptions from this blanket waiver of rights to remediation for water quality injury are 44 potential and documented contamination sites as per Exhibit 25.4.1.1 and Pub. L. 108-451, Sections 207(a)(1)(C)-(E). The Community is also prohibited from imposing higher water quality standards than the State, Sec (a)(6).

<sup>15</sup> Id. Sec 207(a)(5)(I). Notwithstanding this waiver, Title II, Sec 209(d) specifies specific subsidence areas that will be remediated as per Exhibit 30.21, up to \$4M appropriated for this program (Sec 214(a)(3)).

<sup>16</sup> See, 55 Fed. Reg. 9223 (1990), Criteria No. 5a.

<sup>17</sup> See Exhibit 7.2, para 3 for the names of all the parties to the GRIC settlement.

<sup>18</sup> Pub. L. 108-451, Title I, Sec 111 includes provisions in the event of non-implementation to return all appropriated funds to the Federal Treasury and to void contracts and Title II, Sec 215 provides for the return of Federal and SRP funds. In contrast the SAWRSA Amendments (Title III) includes a provision whereby the Secretary must compensate the tribe \$18.3M if the new San Xavier farm is not completed to take the scheduled 27KAFY, Id at Title III, Sec 304 (c)(3)(a)(ii). There are also penalties for the non-delivery of CAP water even in times of shortage, Id. at Sec 304(c)(d)(ii), Sec 305(a)(2)(A)-(B) and Sec 305(d)(1).

<sup>19</sup> CAP is a reclamation project authorized and constructed by the U.S. in accordance with Title II of the Colorado River Basin Project Act (43 U.S.C. §§ 1521 *et seq.*)

<sup>20</sup> These counties are: Maricopa (Phoenix cities), Pinal (Phoenix cities and Casa Grande), and Pima (Tucson).

<sup>21</sup> The Colorado River Compact, 1922 (Congressional Record, 70th Cong. 2d Sess. At 324-325 ) allocated 2.8 million acre feet (MAFY) to Arizona, of which 1.415 MAFY is delivered by the CAP, the remainder is used directly from the main stem of the Colorado River.

<sup>22</sup> Pub. L. 108-451, Article I, Sec.104, 2(c), 1(A).

MAF by 24% to a total 7.24 MAF (see Table 1). The CAP delivers an additional water supply that can be utilized to provide water for Indian water rights settlement, or, to support growth, or afford a buffer against future drought, or in the case of the AWSA support all three. Clearly the latter two outcomes could be achieved by other means. For example, voluntary water transfers could facilitate the transfer of agricultural water to municipal use, and the private sector or State agencies could increase water recharge efforts, respectively. However, the momentum to settle the GRIC claims brought all the major water players in the state together and enabled the concurrent discussion of other water management issues. The simultaneity facilitated a relatively comprehensive resolution of water issues within central Arizona (and with New Mexico).

**Table 1: Arizona annual water demand by water source**

<b>Source</b>	<b>MAF</b>	<b>% of total</b>
Colorado River	2.8	38.7
on-river	(1.385)	(19.1)
off-river	(1.415)	(19.5)
In-state Rivers	1.4	19.3
Salt	(1.0)	(13.8)
Gila and others	(0.4)	(5.5)
Groundwater	2.9	40.1
Reclaimed water	0.14	1.9
<b>TOTAL</b>	<b>7.24</b>	

*Source:* Arizona Department of Water Resources

The agreement, specifically Title I, settles outstanding CAP repayment and allocation issues. However, without the numerous side agreements that accompany the legislation, Titles II and III are not stand alone pieces of legislation. It is in the exhibits that the volume and sources of water for the GRIC settlement are specified and that the terms of water exchanges, water leases, and groundwater protection zones are specified. The side agreements are central to the agreement as a whole and facilitated the passage of State legislation.<sup>23</sup> Many of the side agreements reflect mutually-beneficial relationships between tribal and non-tribal interests, not only in settling long-standing disputes but also in working towards improved allocation of water quality to use, such as effluent-CAP exchanges.<sup>24</sup> The side agreements with the State demonstrate how the settlement process enabled problematic issues of water management to be resolved, such as the development of groundwater protection zones and upstream consumptive use forbearance.

### **2.1 Title I: Central Arizona Project Settlement**

Senator John Kyl (R) was a major proponent of the settlement, particularly this Title of the agreement. The contentious issue of CAP repayment was particularly troubling as it pitted Arizona against the Federal government. The agreement resolved this conflict. The CAP settlement also reallocates CAP water between federal and non-federal uses, from irrigation districts to Indian water settlements and cites, simultaneously resolving agricultural debt problems and advancing the stated goal of the CAP board to fully utilize Arizona's Colorado River allocation.

#### *2.1a. CAP reallocation: Federal: non-Federal*

A key provision is the division of CAP water between Federal and non-Federal uses. Of the total 1.415 MAFY stipulated for delivery under long-term contracts by the CAP, 650,724 AFY is

<sup>23</sup> For example, firming legislation had to be enacted by the State for the agreement to come into force as per Id. Title II, Sec 207(c)(1)(I)(ii). This legislation has passed, see H.B. 2835.

<sup>24</sup> Exhibit 18.1 to the AWSA, 2004.

contracted to Arizona tribes, or to the Secretary of the Interior for allocation to Arizona tribes, and the remainder, 764,276 AFY is set aside for non-Indian municipal and industrial (M&I) entities, the Arizona Department of Water Resources (ADWR), and non-Indian agricultural (NIA) water.<sup>25</sup> An outcome of this change is that NIA priority water has been converted into fixed volumes and 295,263 AFY in NIA contracts have been voluntarily relinquished. These provisions resulted in excess water available for Indian water rights settlements.

### *2.1.b. CAP repayment*

The allocation between Federal and non-federal uses substantially affects the repayment schedule for the conveyance infrastructure, the CAP. The resolution is also critical for the CAP Board to know with certainty its overall obligation to repay the “project's reimbursable construction costs as provided in its repayment contract with the United States”.<sup>26</sup> The State is not responsible for the Federal uses portion (46%) of the project. In return for this division, the state or state parties benefit from \$73.56M agricultural debt relief<sup>27</sup> and \$2B CAP debt repayment relief and Indian water cost-reduction benefits.<sup>28</sup> On the other hand a significant share of CAP water is dedicated to Indian settlements and not for the other purposes it might have served.

The settlement went further than just resolving debt-related issues; it also identified a funding source to pay for the settlement through amendments to the Colorado River Basin Project Act of 1968.<sup>29</sup> These amendments allow funds credited to the Lower Colorado River Basin Development Fund (LCRBDF), a portion of revenues derived from the sale of energy for use in the State, and any annual payment made by the Central Arizona Water Conservation District (CAWCD) for reimbursable CAP construction costs, be credited each year against the annual payment owed by CAWCD to the Federal government for the CAP, without the need for further appropriations for specified purposes. Currently around \$55M annually is deposited into the fund,<sup>30</sup> but from 2010 these accumulated funds will be used to pay down the cost of Indian water<sup>31</sup> and to fund a suite of other projects identified in the settlements.<sup>32</sup> The Fund in essence made this large and expensive settlement possible. The major advantage of this mechanism is that it precludes the need to go to the Congress, at a time of budget deficits and competing policy agendas, for appropriations to

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<sup>25</sup> Pub. L. 108-451, Title I, Sec. 104, (a)(2)(c)(1)(A)(i)

<sup>26</sup> CAP's Mission Statement, [http://www.cap-az.com/public/cap\\_award/index.cfm?action=award2](http://www.cap-az.com/public/cap_award/index.cfm?action=award2). Accessed May 11, 2006.

<sup>27</sup> This is the debt incurred by non-Indian agriculture (minus a \$85M contribution from CAWCD) and waived in return for the relinquishment of long-term CAP entitlements to NIA water. Sec 106(b)(1). Note that this debt relief will also reduce receipts for CAP capital costs, estimated at \$2M annually, *supra* note 25, p3.

<sup>28</sup> Net 93.5 KAFY (see footnote 92) CAP GRIC water MI&E subsidized costs of approximately \$49/AF, 28.2 KAFY CAP water for Tohono O'odham delivered free (2006 CAP M&I rate \$82/AF), and 67.3 KAFY for other tribes, probably under the same terms as the GRIC water, is equivalent to  $93.5Kx\$49 + 28.2Kx\$82 + 67.3Kx\$49 = \$10.19M$  annually.

<sup>29</sup> 43 U.S.C. 1543

<sup>30</sup> Congressional Budget Office Cost Estimate H.R. 885 AWSA, October 5, 2004, p4.

<sup>31</sup> The U.S. is responsible for delivering up to 311.8 KAFY of Community CAP water, Exhibit 8.2, para 5. This is the sum of its initial allocation, new NIA CAP allocation, and relinquished HVID and RWCD CAP allocations (subparas 5.4.1.1-5.4.1.4). This water will be delivered to the Community without CAP OM&R charges. GRIC is not required to repay any of the construction costs of the CAP, Pub. L. 108-451, Title II, Sec 205(a)(7)(B). In addition the Community is also released from paying CAP water service capital charges, *Id.* at Sec 205(a)(8). In 2006 these charges were \$24/AF for M&I long-term subcontracts and \$2/AF for agricultural long-term subcontracts.

<sup>32</sup> Other uses of this Fund are detailed in *Id.* at Title I, Sec 107(a) amendments to *Id.* at 403(f)(2)(A)-(F). Note that revenue funds in excess of those credited against the CAWCD payments will be directed to the Federal government as per *Id.* at Sec 107 amendments to 403(f)(3)(A)-(G).

fund Indian water rights settlements. On the State side, the funding mechanism limits the financial contribution from the State for the settlement of claims.

There are a large number of beneficiaries from this Fund and although some funding priorities are detailed, others are not.<sup>33</sup> This could set up future competition for funds; however, the Gila Settlement Agreement Parties have agreed to work together with the Secretary to ensure the funding of all projects in a timely manner. The establishment of the fund and these revenue streams was key in the acceptability of the settlement for Arizona water users: it was also key in the Office of Management and Budget's (OMB) opposition to the settlement as it deprives the U.S. Treasury of CAP repayment funds: funds that now are redirected to the settlement parties.

#### *2.1.c. CAP reallocation: non-Indian Agricultural Priority Water*

Resolving these issues engaged water users and water managers and identified a category of excess CAP NIA water as water that was available for Indian water rights settlements. The Secretary reallocated 195 KAFY of NIA water for this purpose,<sup>34</sup> of which 102 KAFY is reserved for the GRIC,<sup>35</sup> 28.2 KAFY as part of the SAWRSA Amendments<sup>36</sup> and 67.3 KAFY to other tribes.<sup>37</sup> Of this latter allocation, 6,411 AFY is set aside for a future settlement with the Navajo Nation.<sup>38</sup> This reallocation of NIA water is subject to future reallocation by the Secretary, if any of this set aside water remains unused, before a deadline date of December 31, 2030.<sup>39</sup> Significantly, the federal government has provisions for a \$250M Future Indian Water Settlement Subaccount to the LCBDF to aid in future Indian water rights settlements on the Gila, the Little Colorado and Colorado river systems.<sup>40</sup> There are other arguments to settle without delay, such as rapid growth in the State with consequent increased water competition and dwindling excess water supplies.

The GRIC also has access to another block of the total 295 KAFY NIA relinquished water. The Secretary in addition to the 195 KAFY discussed above also held a total 37,918 AF of CAP relinquished RWCD and NVID water. Of this total, 36.7 KAFY has been reallocated to GRIC and the remaining 1,218 AF will be held in trust for future Indian water rights settlements in either the Gila or Verde watershed.

Another block of reallocated water is 96,295 AFY reallocated to the ADWR.<sup>41</sup> This water will be held in reserve for future allocation. The motivation behind this staged allocation is to give growing communities that do not yet have the financial means to buy CAP contracts, the chance to participate in future CAP allocations. Without such a provision it is likely that large cities would contract for this water. There is demand for this currently unallocated water as cities and towns plan for future development. A looming concern for the cities is that once all unallocated CAP water is allocated or leased, they will have to secure new water supplies from other sources, water that could be more expensive than CAP water.

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<sup>33</sup> Id. at 403(f)(2) and (2)(D), for prioritized and non-prioritized funding, respectively.

<sup>34</sup> Id. at Sec 103, (a)(A).

<sup>35</sup> Id. at Sec 103, (a)(A)(i).

<sup>36</sup> Id. at Sec 103, (a)(A)(ii). Of which, 23KAFY will be delivered to the San Xavier Reservation and 5.2KAFY to the eastern Schuk Toak District.

<sup>37</sup> Id. at Sec 103, (a)(A)(iii).

<sup>38</sup> Id. at Sec 103, (a)(B)(ii). This is not a limit on a potential allocation to the Nation but rather an initial identified water source in part fulfillment of a negotiated water budget.

<sup>39</sup> Id. at Sec 103, (a)(B)(i).

<sup>40</sup> Id. at Sec 107(a) amendments to 43 U.S.C. 1543 Sec 403(f)(2)(D)(vi).

<sup>41</sup> Id. at Sec 104, (a)(2)(A).

#### *2.1.d. CAP reallocation: AWS*

Settling Indian water rights claims requires buy-in from existing non-Indian water rights holders. For an Indian water settlement to be federally supported a necessary condition is that the settlement does not cause harm to non-Indian water rights holders and that uncertain tribal claims are resolved. The sufficient condition for this bill's passage is that the settlement offers non-Indian water users tangible benefits in addition to the removal of uncertainty over tribal claims, such as increased access to Assured Water Supply (AWS) supplies,<sup>42</sup> and opportunities to lease or exchange water with the Community.

The agreement reallocates 65,647 AFY of uncontracted CAP M&I priority water that was not allocated in the first round of CAP allocations to twenty cities in the three-county CAP area.<sup>43</sup> Not only is this water secure against all but the worst droughts, in terms of its 'seniority' in the CAP system, it is also available to the cities at CAP M&I rates, which in 2006 are \$82/af delivered.<sup>44</sup> In contrast, if these same cities were to purchase M&I water through market transaction the cost is likely to be many times this amount. The quid pro quo for reallocating this M&I water to the cities, rather than using it for federal purposes, namely the settlement of Indian water rights claims, was that an equivalent volume<sup>45</sup> of lower priority CAP water would be allocated to Arizona tribes, but that this water would be 'firmed' to M&I priority. FIRMING is discussed under supply reliability below.

#### **2.2. Title II: Gila River Indian Community Water Rights Settlement**

Title II concerns the GRIC water rights settlement. Settlements in the western U.S. facilitate access to 'wet' water through the identification of water sources and funds to develop the water for use on reservation. This settlement identifies water sources, pledges low cost water,<sup>46</sup> allocates rehabilitation funds to ensure water deliver are made,<sup>47</sup> and earmarks a \$200M trust fund for water development.

Before AWSA GRIC had the largest single contract for CAP water: 173,100 AFY.<sup>48</sup> This is a non-trivial volume of water; however, given unlined conveyance canals and CAP prices, it was not profitable for the Community to use this water instead of groundwater. The agreement is significant because it not only settles outstanding water rights claims but also provides funds<sup>49</sup> to

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<sup>42</sup> Assured Water Supply terms are described in A.R.S. §45-576, *et seq.* New rules became effective in 1995.

<sup>43</sup> Pub. L. 108-451, Title I, Sec. 104(a)(2)(b)(1). To put this volume in context, 65,647 AFY of water could supply 65,647 five-person households for a year, ADWR 2006. This context is not theoretical, because the grade of water, M&I, meets AWS standards. Therefore the twenty cities that received a portion of this reallocated supply can use this water for AWS purposes, that is, to support additional growth.

<sup>44</sup> CAP, Final 2006 Water Rate Schedule.

<sup>45</sup> The firming obligations of the Secretary and Arizona add up to 60,648 AF not 65,648 AF because during negotiations of the settlement Asarco agreed to offer 5KAFY to the GRIC settlement reducing the total volume of water to be firmed by 5 KAFY. Of the total the Secretary is obliged to firm 28.2 KAF for the SAWRSA agreement, ADWR 15 KAF for the GRIC agreement and the remaining 17,477 AF responsibility is divided equally between the parties. This water is for future Indian settlements. The State's total firming responsibility is 23,724AF.

<sup>46</sup> The agreement provides for \$53M to be deposited in the GRIC Water OM&R Trust Fund (Sec 107(a) which amends Section 403(f)(2)(B) of the Colorado River Basin Project Act (43 U.S.C. 1543(f)).

<sup>47</sup> Id. (f)(2)(C) provides for \$147M (adjusted) to rehabilitate the San Carlos Irrigation Project.

<sup>48</sup> Water Delivery Contract No. 3-07-30-W0284, dated October 22, 1992.

<sup>49</sup> Exhibit 8.1 concerns the construction and payment of Project Works to deliver the initial 173.1KAFY CAP allocation (para2.16). The U.S. agrees to make available to the Community appropriated CAP funds not to exceed \$388M (adjusted for construction cost inflation for the Project Works (para 5.1). The Community will be responsible for capital charges if any of this water is converted into CAP M&I water

develop all its water sources whilst simultaneously curbing groundwater pumping.<sup>50</sup> It also buys down the operation costs for water delivered to the reservation.<sup>51</sup> Water is not provided to the Community at zero delivery cost, unlike under the early Ak-Chin settlement.<sup>52</sup> However, even though GRIC water is not costless to the tribe, an advantage in this settlement vis-à-vis the Ak-Chin settlement, is that there is no need secure annual Congressional appropriations to buy down the water cost because of the AWSA's unique funding mechanism.<sup>53</sup>

### *2.2.a. GRIC water budget*

Title II authorizes the Gila River Indian Community's water budget as per the Master Agreement.<sup>54</sup> To make up for the Gila River water that will not be delivered, the GRIC has received 'substitute' quantities of CAP water. This CAP water was available because agricultural interests, the state's largest water users, were not fully utilizing CAP water because of lower cost access to groundwater. Agricultural districts defaulting on their CAP contracts is problematic, therefore the settlement rescues these unexercised agricultural contracts and ensures that the CAP investment is fully utilized. The settlement provides debt relief for contract relinquishment. Of the 350 KAFY relinquished 195 KAFY has been set aside for Community. The AWSA increases GRIC's CAP water allocation from 173,100 AF to 328,800 AF or from 12% to 23% of total CAP water. (The resulting total allocation to Indian users exceeds 50% of the total CAP water). GRIC's share of CAP water is large and reflects the strength of the GRIC's water rights claims, however, the impact of this reallocation on other water users is mitigated by leasing arrangements embodied in the settlement.

The GRIC water budget (see Table 2) demonstrates how a comprehensive agreement can resolve a number of outstanding legal disputes between the Community and other parties. Some smaller cities made relatively large contributions to the overall water budget, such as the City of Chandler. In addition to the water, GRIC also gains access to the existing water conveyance system. Some side agreements do not add to the water budget of the Community, but use exchanges to protect GRIC water rights (for example the agreement between the Community and the Phelps Dodge Corporation, discussed later). The water budget also highlights the diversified portfolio of water rights held by the GRIC which is comparable to those held by other large water providers in the state, such as Salt River Project (SRP) and the city of Phoenix. This diversification will assist the Community in managing its water supplies in times of drought, as its supplies come from three surface water sources, the Gila, Colorado and Salt Rivers, as well as from more drought-proof reclaimed and groundwater supplies. The agreement elevates the GRIC to a large water manager<sup>55</sup> (and user) in the State. The Community has the opportunity and

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(para 6.3.5). With certain exemptions, the Community will be responsible for OM&R costs of the completed Project Works (para 11.1.2).

<sup>50</sup> This is in contrast to the San Carlos Apaches who got a large slug of CAP water but were unable to use it so instead have made 100-year leases. That is this water is not responsible for any direct jobs on the San Carlos Apache reservation.

<sup>51</sup> The Secretary's first priority is to pay for fixed OM&R costs for water deliveries [Pub. L. 108-451, Title II, Sec 205(a)(6)]. These costs are approximately \$40/AF. Significantly, these costs have been increasing at a higher than inflation rate as they are sensitive to healthcare and wage costs. The Community must pay the residual costs which are the electricity costs or Pumping Energy Rate charges, which in 2006 were \$33/AF.

<sup>52</sup> Pub. L. 95-328 and amendments to this Act Pub. L. 102-497.

<sup>53</sup> Previously, the CAWCD fixed the repayment schedule through the Fund, then forwarded it to the Congress, which then reallocated it back to the Community. Now, the money will go straight to the Community without the need for further appropriation.

<sup>54</sup> Pub. L. 108-451, Sec 2: Definitions #34.

<sup>55</sup> Pub. L. 108-451, Title II, Sec 205 (c) allows the Community to lease water, Sec 205 (d) allows the Community to exchange reclaimed water and Sec 205 (f)(3) allows the Community to contract with the

mandate to refine its institutional and professional capacities for water management. There are numerous provisions in the settlement for the funding of, and the assumption of, responsibility for water measurement and monitoring activities on the reservation.

**Table 2: GRIC Water Budget**

<b>Water Source</b>	<b>AF</b>
Community CAP Indian Priority	173,100
Groundwater	156,200
Globe Equity Decree	125,000
New CAP non-Indian Agricultural (NIA) priority	102,000
Salt River Project (SRP) Stored	20,500
Roosevelt Water Conservation District (RWCD) CAP	18,600
Harquahala Valley Irrigation District (HVID) CAP	18,100
Asarco CAP	17,000
Haggard Decree <sup>56</sup>	5,900
Mesa reclaimed exchange premium	5,870
RWCD surface water	4,500
Chandler contributed reclaimed	4,500
Chandler reclaimed exchange premium	2,230
<b>TOTAL</b>	<b>653,500</b>

### 3. INNOVATIONS

An innovative feature of the AWSA is the degree to which it incorporates Indian water rights settlements into a comprehensive water bill. While all Congressionally authorized settlements consider water concerns in their region, AWSA does this on a greater geographic scale and across a broad variety of issues. The AWSA resolves multiple water allocation and payment issues between the State and Federal government and, in the process, identifies excess water for Indian water rights settlements; making the agreement least disruptive to existing water users. The GRIC settlement itself, Title II, uses a watershed framework for resolving basin-wide disputes. Solutions negotiated on this scale are more likely to be durable because upstream water users and competing valley water users are integrated into the agreement. The Gila is already one of the most intensively managed and monitored watersheds in Arizona: the settlement will primarily reallocate water and funds in the watershed.

The settlement creatively taps existing financial resources from the Lower Colorado River Basin Development Fund, circumventing the need for what would otherwise be very large Congressional appropriations to buy-down the costs of significant quantities of water for the GRIC. While this creative funding was essential to AWSA, it will be difficult to use for future settlements as the OMB is opposed to altering U.S. Treasury fund inflows in this manner. The

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Arizona Water Banking Authority. The Community will also need to manage water rights with different priorities and the timing of deliveries. For example, the RWCD allocation has a delivery schedule of January 1 through September 30 (Exhibit 9.1, Sec 5.1.2) whereas other water is available each month of the year, such as CAP water contracts.

<sup>56</sup> In lieu of Haggard Decree water SRP shall deliver to the Reservation, at no cost to the Community of the U.S. the 5.9 KAFY from a pumping plant, the so-called Booster, on the Maricopa Drain. Exhibit 7.2 Articles I and II. Article IV provides provisions for pumping in excess of this limit from this site, however, the electrical pumping charges would have to be borne by the Community or the U.S. This agreement is in return for waivers of liability for Salt River diversion that may have impacts water supplies for GRIC irrigation (Article X).

agreement also contains water and money<sup>57</sup> for future Indian water rights settlements in Arizona. This is an innovative tool to move future negotiations forward. Finally, there are numerous side agreements to the AWSA which enabled discrete issues between the Community and other parties (for example, with Phelps-Dodge, SRP, and RWID). These side agreements in part helped to break the logjam in the wider negotiations. These agreements also established good faith negotiations with the Community and got others on board so that the negotiators could move forward to other issues. The next sections highlight some of the market tools, and water resource management and water supply reliability aspects of the AWSA.

### ***3.1. Market-based tools: lease and exchange reallocation***

Two types of market-based tools are discussed here: leases<sup>58</sup> and exchanges.<sup>59</sup> A crucial aspect of the settlement is that the GRIC is permitted to lease water.<sup>60</sup> There are several restrictions: only non-*Winters* water can be marketed,<sup>61</sup> CAP water can only be leased within Arizona,<sup>62</sup> and water can only be leased for a maximum 100-years.<sup>63</sup> Community CAP water must also be delivered through the CAP system<sup>64</sup> and is subject to the CAP system's priority-based shortage-sharing arrangements in times of drought.<sup>65</sup> Furthermore, to protect lessees, there is a provision that leases and exchanges of Community CAP water will not affect any future allocation or reallocation of water by the Secretary.<sup>66</sup> Leases fulfill a federal objective. Federal criteria require that the beneficiaries of Indian water rights settlements pay in proportion to their benefits. Lease payments to the Community provide a key means for funding economic development on the reservation.

At the time of the AWSA, the GRIC had entered into lease agreements with four Phoenix valley cities: Goodyear, Peoria, Phoenix, and Scottsdale.<sup>67</sup> These agreements provide for the leasing of a total 41 KAFY of GRIC CAP water to the cities for a period of not less than 100 years. This clause means that the water meets AWS requirements: water that can be used to support growth. Although the volumes leased differ, all the agreements have the same cost terms. There are various payment schedules; all involve an initial lump sum, money that can be used for immediate investments on the Reservation. Water is available for lease at a price determined by a pricing formula. This formula is based on water valuation completed for the Salt River Pima

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<sup>57</sup> \$250K will be credited to the Future Indian Water Settlement Subaccount of the Lower Colorado Basin Development Fund to fund future settlements (Id at Title I, Sec 107(a) The agreement provides for \$53M to be deposited in the GRIC Water OM&R Trust Fund (Sec 107(a) which amends Section 403(f)(2)(D)(vi) of the Colorado River Basin Project Act (43 U.S.C. 1543(f)).

<sup>58</sup> Pub. L. 108-451, Title II, Sec 205(c) gives the Secretary approval for the lease arrangements with Phelps-Dodge and the seven Phoenix cities attached to the agreement as Exhibits.

<sup>59</sup> Id at Sec 205(d) provides the Secretary approval for the reclaimed water exchange agreements with the cities of Chandler and Mesa, which also appear as Exhibits to the agreement.

<sup>60</sup> Id at Sec 205(a)(2).

<sup>61</sup> Id at Sec 205(f)(2) states that Gila River agreement, Globe Equity Decree, and Haggard Decree water cannot be sold, leased, transferred, or used off-Reservation other than by exchange.

<sup>62</sup> Id at Sec 205(a)(2)(A). This limitation is repeated in Sec 205(a)(8)(f)(1). Exceptions are detailed in Title I, Sec 104(e)(2) for water leased or exchanged with the AWBA or for an exchange with New Mexico as per the NM Consumptive Use and Forbearance Act ratified under Title II, Sec 212.

<sup>63</sup> Id at Sec 205(a)(2)(B).

<sup>64</sup> Id at Sec 205(a)(4)(A).

<sup>65</sup> Id at Sec 205(a)(4)(B).

<sup>66</sup> Id. at Sec 213(d).

<sup>67</sup> Exhibits 17.1A-D. Goodyear and Peoria have contracts to lease up to 7 KAF of CAP water each, Phoenix up to 15 KAF and Scottsdale up to 12 KAF annually.

Maricopa Indian Community Water Rights Settlement Act in 1988,<sup>68</sup> but it allows for consumer price inflation over the intervening years.<sup>69</sup> There are several payment plans.<sup>70</sup> If the entire lease is paid for upfront (in March 2006, for example), \$1,743 secures 1 AFY of water over the period of the lease, 100 years. This water is available to the cities without payment of water service capital charges, though operation, maintenance and replacement (OM&R) charges must be paid. This water is also subject to shortage sharing. Any reductions will be in the same proportion as M&I priority CAP water. The cities are allowed to re-lease this water, but only within the CAP three county area.

These agreements seem to benefit both sides to the contract: the cities secure, inexpensive water that meets AWS standards, while the Community receives money upfront (a total \$71.463M)<sup>71</sup> for investment on the reservation. In addition, the U.S. Treasury benefits to the extent that lease holders must pay CAP OM&R costs, costs that would not be paid if the water remained with the Community.<sup>72</sup> To illustrate, in 2006 OM&R costs for these leases would be around \$2M.

A clearer evaluation comes from comparing the lease agreements to a likely alternative. The four cities with lease agreements have accessed low price,<sup>73</sup> secure water, at the cost of the lease price and CAP OM&R costs. However, it is possible that the cities could have made even better water deals, for example with agricultural interests along the Colorado River. The opportunity costs<sup>74</sup> of the cities' investment in 100-year leases are alternative spending priorities in the cities. However, their opportunity costs are mitigated by their ability to re-lease the water to others and their desire to hold a diversified portfolio of water. On the other hand the Community is bound by the lease pricing mechanism even if the value of water in the region rises substantially. This designated pricing formula has little connection with forces affecting future water demand, supply and market value.

The Community has a side agreement with Phelps-Dodge Corporation resolving all outstanding water rights litigation between the parties<sup>75</sup> and incorporating provisions for lease and exchange.<sup>76</sup>

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<sup>68</sup> Pub. L. 100-512. The water price in this agreement is the result of a cost analysis of replacement CAP water capitalized over the period of the lease.

<sup>69</sup> To account for inflation the base payment of \$1,203 per AF is multiplied by a ratio. This ratio is of the CPI-U (this is the Consumer Price Index for All Items for All Urban Consumers, U.S. City Average, published by the U.S. Department of Labor, Bureau of Labor Statistics) in the month the term begins divided by this index value in December 1991. For example, for the City of Goodyear the formula for an agreement beginning in March 2006 is:  $((199.8/137.9) \times \$1,203) \times 7 \text{ KAF} = \$12,200,985$ .

<sup>70</sup> These plans range from the upfront payment of the entire lease costs within 30 days of the contract to an upfront payment of 1/15 of the total lease cost plus fourteen annual installments of 1/15 of the lease cost plus interest, where the interest is the Chase Manhattan Prime rate plus 1%.

<sup>71</sup> If the cities paid the leases upfront. See footnote 69.

<sup>72</sup> Pub. L. 108-451, Title II, Sec 205(a)(6) provides that the Secretary shall pay the OM&R costs for the delivery of Community CAP water to GRIC, given adequate funds in the Lower Colorado River Basin Development Fund, but not for water leased by others. In 2006 OM&R costs are \$49/AF.

<sup>73</sup> Id. at Sec 205(a)(8) states that CAP water service capital charges are not payable for Community CAP water whether or not the water is used on-Reservation. This is reiterated in Sec 205(e).

<sup>74</sup> Opportunity cost is a term used in economics to mean the cost of an action or project in terms of the next most valuable opportunity forgone (and the net benefits that could have been received from that opportunity. (Wikipedia, accessed May 12, 2006).

<sup>75</sup> Phelps-Dodge's water rights are listed as Attachments C-1 to C-3 and its water rights priorities asserted in Attachment D to Exhibit 10.1

<sup>76</sup> Exhibit 10.1.

The initial lease is for 12 KAFY of CAP Indian Priority<sup>77</sup> water for a 50 year term.<sup>78</sup> The lease price will be paid in full at the start of the lease term in the amount of \$4.8M.<sup>79</sup> Within two years of the end of this initial lease the parties can start negotiating for a renewal for an additional 50 years. At this stage a new lease price will be determined by negotiation of ‘fair market value’ which will be based on then-current M&I priority CAP water prices and other agreed to factors.<sup>80</sup> If no price can be agreed upon within a year of the termination of the initial lease then the Secretary will establish a fair market value using comparable lease quantities and prices for M&I priority CAP water.<sup>81</sup> This lease can either be paid in a single installment or in ten equal installments plus accrued interest of 8% per annum.<sup>82</sup> As per the city leases above, Phelps-Dodge will not pay CAP capital charges, but will pay OM&R charges.<sup>83</sup> The corporation can use the water for direct use, recharge or exchange with GRIC or other parties within the CAWCD Service Area.<sup>84</sup> The agreement also includes terms for an option to lease an additional 10 KAFY of Indian priority CAP water within a 20-year option period.<sup>85</sup> The price and payment terms of this agreement are similar to those of the renewal lease above.<sup>86</sup>

The Community also has an exchange agreement with Phelps-Dodge Corporation whereby the corporation can divert upstream Gila River water, in accordance with environmental laws, in lieu of CAP water. This exchange provision allows for a limited decoupling of beneficial use and location of the exchange-water right. This may have implications for water management in this watershed: issues that must be resolved by the Secretary.<sup>87</sup> In addition to the lease agreement, another source of Phelps-Dodge funds for the benefit of the Community is the so-called “monetary consideration for settlement”. This \$18M compensation fund<sup>88</sup> is in return for waivers and confirmation of the company’s water rights.<sup>89</sup>

Another side agreement<sup>90</sup> authorizing exchanges with two Phoenix valley cities will give GRIC access to “exchange” and “contributed” reclaimed water supplies to up to 45.1 KAFY. These exchanges were made possible by new water ‘accounting’ rules that mean any entity which receives CAP water in exchange for reclaimed water does not have to count this CAP-exchange water against its contracted CAP allocation.<sup>91</sup> GRIC will receive up to 29.4 KAFY of Mesa reclaimed water, up to 11.2 KAFY of Chandler “exchange reclaimed water”, and an additional 4.5 KAFY of Chandler “contributed reclaimed water”. The Chandler and Mesa exchanges are based on a 4:5 ratio: the cities receive 1/5 less CAP water (a total 32.5 KAFY). This exchange

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<sup>77</sup> This type of CAP water has high priority in the system. Exhibit 8.2, Sec 5.7 details the priority system of the CAP and the impact of shortage on the system and the appropriate formula to calculate CAP Indian and CAP M&I allocations.

<sup>78</sup> Id para 6.1.

<sup>79</sup> Id para 6.2. There are provisions to adjust this sum for inflation. The lease cost works out at \$400/AF for 50 years, this is a lower price that the lease water for cities, see footnote 69.

<sup>80</sup> Id. Para 6.3(a)

<sup>81</sup> Id. Para 6.3(b).

<sup>82</sup> Id. Paras 6.4 (a)-(b).

<sup>83</sup> Id. Para 6.5. The value of these OM&R charges is \$588,000/year.

<sup>84</sup> Id. Para 6.8.

<sup>85</sup> Id. Paras 7.1-7.7. Phelps-Dodge will pay the Community \$50K annually for right to have this option.

<sup>86</sup> Id. Paras 7.4-7.5.

<sup>87</sup> See footnote 114.

<sup>88</sup> Exhibit 10.1, Sec 4.1.

<sup>89</sup> Of this total, \$1M has already been paid as per the terms of the agreement and a schedule and terms for the payment of the remaining \$17M have also been agreed, including penalties for non-compliance.

<sup>90</sup> Exhibit 18.1 to the agreement.

<sup>91</sup> Pub. L. 108-451, Title I, Sec 104(d)(2)(E)(i).

may seem like a poor trade, however, such exchanges can delay new investment in wastewater treatment facilities or upgrades. Cities often recharge treated wastewater (which is of poorer quality); it is consequently mixed with groundwater and recovered. This is an expensive process that also requires large tracts of land and available aquifer space. This process is bypassed in these agreements at the cost of a fifth of the water. The exchange water (CAP water) requires no pre-treatment for storage. The cities likely incur cost savings at their wastewater treatment facilities and the Community benefits from securing reclaimed water as a drought-proof agricultural and golf course irrigation<sup>92</sup> water supply.

The sum of all of these lease and exchanges just discussed is that the GRIC will have a net 93.5 KAF additional allocation of mostly NIA grade water for agricultural development.<sup>93</sup> We estimate that leases, exchanges and options will reduce the Community's combined CAP IA, CAP M&I, and CAP firm NIA water (a total 205.1 KAFY) by 95.5 KAFY while increasing revenues by around \$78M.<sup>94</sup>

### **3.2. Water resource management**

This section details some of the water management tools incorporated into the settlement, such as conservation measures and water management plans.

A water settlement process creates the opportunity to settle not only Indian water rights claims but also to address other water management issues. This is particularly true when the settlements are basin-wide. In multiple agreements the signatory tribes are required to develop on-reservation water codes,<sup>95</sup> groundwater codes,<sup>96</sup> water management plans,<sup>97</sup> and monitoring capabilities.<sup>98</sup> The reason for these requirements is that the ADWR has no jurisdiction on Indian reservations. Thus tribal water management features have been incorporated as integral elements in the settlements. The tribes remain sovereign managers of their groundwater use but are required to contribute to overall water use efficiency in the state.

One aspect of water management is efficiency, efficiency in use and in delivery. Conservation practices are incorporated into the settlement through the rehabilitation of irrigation district infrastructure. The GRIC settlement makes the GRIC the manager of the SCID, makes provisions for its rehabilitation, and creates a rehabilitation fund.<sup>99</sup> Investments in canal lining will conserve water, of which, GRIC will be entitled to up to 18 KAF.<sup>100</sup> The Community agreed to develop an effective water conservation program prior to the delivery of its initial allocation of CAP NIA

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<sup>92</sup> The reservation has three golf courses.

<sup>93</sup> On the addition side: 102 KAF new NIA CAP + 18.6 KAF RWCD CAP + 17.8 KAF HVID CAP + 17 KAF Asarco CAP + 40.6 KAF Chandler/Mesa reclaimed = 196 KAF. On the subtraction side: 41 KAF city leases + 17 KAF Asarco lease + 12 KAF Phelps-Dodge lease + 32.5 KAF Chandler/Mesa exchange = 102.5 KAF. Net additions are 196 KAF-102.5 KAF = 93.5 KAF.

<sup>94</sup> See footnote 165.

<sup>95</sup> The GRIC must develop a Community Water Code within 18 months of the enactment of the AWSA, 2004. The requirements of this code are detailed in Pub. L. 108-451, Title II, Sec 204(e)(A).

<sup>96</sup> The Secretary will provide \$215,000 to the San Xavier District and \$175,000 for the eastern Schuk Toak District to develop and implement a groundwater management program, Id. at Title III, Sec 311(c)(1)-(2).

<sup>97</sup> The Secretary will provide \$891,200 to the San Xavier District and \$237,200 to the Tohono O'odham to develop such plans (Id. at Sec 308(d)(2)(A)(i) and (ii)).

<sup>98</sup> The Community has a \$3.4M fund to develop a water monitoring program, GRIC WRSA, subpara 27.2.

<sup>99</sup> Pub. L. 108-451, Title II, Sec 203(d) and a \$52.396M fund Title II, Sec 214(a)(1)(A).

<sup>100</sup> Id. at Sec 203(d)(4)(B)(ii).

water.<sup>101</sup> A final example of conservation as a water efficiency tool is contained in the side agreements between GRIC and four towns along the Gila River.<sup>102</sup> All the agreements have a clause requiring the town to control phreatophytes.<sup>103</sup> The conservation measures adopted in the settlement are small steps towards greater water efficiency in the State.

### **3.3. Water supply reliability**

There are a number of features in the AWSA that increase water supply reliability for the Community (and third parties). These include agreements with upstream water users, increased diversification of water supplies, and firming arrangements. Groundwater pumping protection zones are also important supply reliability mechanisms, because they reduce stressors to the reservation's aquifers.

#### *3.3.a. Upstream consumptive use forbearance*

A key provision in the agreement to improve basin-wide water management is upstream forbearance. There are a number of provisions incorporating outright water right extinguishment and fallowing arrangements. The Secretary will provide funds to the Gila Valley Irrigation District and the Franklin Irrigation District (the so-called Upper Valley Defendants, UVD) for the acquisition of specified decreed water rights. The water rights appurtenant to 2,000 acres of land<sup>104</sup> will either be extinguished to reduce diversions from the Gila River or will be transferred to the SCIP for the benefit of the GRIC and SCIDD.<sup>105</sup> The agreement incorporates a timetable for the acquisition of these rights and a formula for compensation.<sup>106</sup>

An interesting feature of the AWSA is the number of clauses that consider future Indian water rights settlements. The motivation for including such clauses in this agreement is to encourage and provide resources for future settlements and also in recognition of the failed attempt to incorporate a comprehensive agreement with SCAT (Title IV) in the AWSA. For example, provisions are made for the purchase and transfer of water rights appurtenant to between 500 and 3,000 additional acres from the UVID if a water rights settlement with the San Carlos Apache Tribe is reached.<sup>107</sup>

Fallowing arrangements can be used with, or in lieu of, the water rights extinguishment and transfer arrangements above. Irrigation districts can enter into fallowing arrangements which essentially reduce irrigation acreage thereby reducing demands on the Gila River.<sup>108</sup> Another

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<sup>101</sup> Exhibit 8.1, para 14. This program must contain objectives, economically feasible water conservation measures, and time schedules for meeting the objectives. At five year intervals progress must be reported and necessary revisions made to the program.

<sup>102</sup> Exhibits 26.1 and 26.3-26.5.

<sup>103</sup> For example, in Exhibit 26.1, Para 13. Phreatophytes are water-loving plants. The middle Gila River is one area in the State that has growing problem with salt cedar infestation of waterways: these exotic phreatophytes consume large volumes of water.

<sup>104</sup> Pub. L. 108-451, Title II, Sect 211(a)(2)(A)-(B). Water rights will be acquired in two 1,000 acre phases.

<sup>105</sup> Id. at Sec 211(a)(5)(a)(i). Of the decreed water rights associated with 2,000 acres above, the water rights associated with 900 acres will be transferred to the SCIP.

<sup>106</sup> Id at Sec 211(a)(2)(A)-(D). The value of a water right appurtenant to 1,000 acres of land will be determined and the Secretary will pay districts 125% of this value, Id. at Sec 211(a)(2)(D)(3). Such monetary compensation is one method for keeping non-Indian water rights holders 'whole'. In addition the UV irrigation districts will receive a \$15M fund to comply with the NM CUFA, Id. at Sec 213(g)(1).

<sup>107</sup> Id. at Sec 211(a)(2)(C). The division of benefits from such a transfer and elucidated in Sec 211(a)(5)(B)(i)-(iii) whereby GRIC will receive the water rights to 200 acres, the water rights appurtenant to 300 acres will be extinguished and the balance will be transferred to SCAT.

<sup>108</sup> Id. at Sec 211(a)(4)(B).

provision incorporates environmental goals. A cooperative program would allow for the purchase and extinguishment of water rights appurtenant to agricultural lands that have not recently been irrigated in the upper valley for the benefit or riparian habitat. Essentially this provision would prevent riparian parcels from being reclaimed for agriculture. The irrigation districts have also agreed to limits on river diversions and groundwater pumping for the benefit of the river and GRIC's water rights.<sup>109</sup>

There is also a consumptive use and forbearance agreement with the upstream State of New Mexico as part of the "New Mexico Unit" (NMU).<sup>110</sup> New Mexico has an authorized apportionment of Gila River basin water as provided by article IV of the decree of *Arizona v. California* (376 U.S. 340). At the time of the decree an apportionment for future uses was not specified. This NMU refers to supplemental consumptive use water that will be made available to water users of an amount not to exceed a 18 KAFY, of which 4 KAFY can be diverted from the San Francisco River and the rest from the Gila River.<sup>111</sup> This use is conditional on there being adequate Colorado River (exchange) water for delivery to downstream Gila River users in Arizona and adequate reservoir storage.<sup>112</sup> Funds to construct this project are detailed in Title II, Sections 212 (i) and (j) and Section 213(g)(1). The NMU must pay its share of the OM&R CAP costs but is exempt from capital costs. A fund has been created to pay for the construction of the Unit.<sup>113</sup> Crucially, the Secretary is instructed not to approve any new Gila River water for CAP water exchanges that would conflict with this more senior exchange.<sup>114</sup> In this basin the Secretary will have the responsibility to ensure that all the decree, exchange, and other water rights are kept "whole",<sup>115</sup> and that each new exchange proposal is strictly reviewed.

There are significant provisions for managing water resources in other areas of the Gila River and its tributaries. These sections of the settlement combine a number of water management tools, for instance municipal water budgets, groundwater pumping forbearance zones, and restrictions on new dam building. A comprehensive assessment of current and future water needs and of various water resource management strategies has underpinned the design these measures. GRIC has forbearance agreements with municipalities in the middle Gila valley<sup>116</sup> and with agricultural, industrial, M&I, and domestic water users in the San Pedro River and Aravaipa Creek watersheds<sup>117</sup> and those inside the Gila River Impact Zone<sup>118</sup> who are parties to the *Globe Equity*

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<sup>109</sup> Id. at Sec 211(b)(1)-(3).

<sup>110</sup> This side agreement is an exhibit to the main law. It is not numbered but goes by the short title "Consumptive Use and Forbearance Agreement" (CUFA). The main provisions are under Id. at Sec 212. Phelps-Dodge Corp is also a signatory to this agreement.

<sup>111</sup> CUFA paras 4.4 and 4.3 (Pub. L. 212(d)(1)). The cost of installing water gauges on the rivers will be borne by the U.S. up to \$0.5M (Pub. L. 108-451, Title I, Sec 107(a)) The agreement provides for \$53M to be deposited in the GRIC Water OM&R Trust Fund (Sec 107(a) which amends Section 403 (f)(2)(D)(vii) of the Colorado River Basin Project Act (43 U.S.C. 1543(f)).

<sup>112</sup> CUFA paras 4.5 and 4.7. Water banking provisions are allowed (paras 4.6, 5.4-6.6) and the terms of the water diversions, including dates and volumes are specified Exhibit 2.47 Sec (B) (1.1)-(1.1.2.3.).

<sup>113</sup> These provide for a \$66M (adjusted) NMU Fund for the construction of the NMU. The Secretary may provide additional construction funds from \$34M to a maximum \$62M (Pub. L. 108-451, Title I, Sec 107(a) which amends Section 403(f)(2)(D)(i) and (ii) of the Colorado River Basin Project Act (43 U.S.C. 1543(f)).

<sup>114</sup> Pub. L. 108-451, Title II, Sec 212 (m). New Mexico has senior exchange priority as per the 1968 Act.

<sup>115</sup> In an over-allocated watershed where no 'new' water supplies are available for settlement, non-Indian water users might be financially compensated or made whole, for relinquished water rights.

<sup>116</sup> Agreements with Safford, Duncan, Kearney, and Mammoth are attached as exhibits (Exhibits 26.1, 26.3, 26.4 and 26.5, respectively).

<sup>117</sup> Two Impact Zones (IZ) are specified on maps they are: the San Pedro River and Aravaipa Creek IZs, as shown in Exhibit 2.146B. These zones extend to the incorporate the fluvial depositional systems of these

Decree. These agreements require the establishment of the Gila River Watershed Maintenance Program<sup>119</sup> in State law to limit groundwater pumping in these areas. Another section of the proposed program is the establishment of “Safe Harbor” provisions<sup>120</sup> to protect existing non-irrigation water users water rights in these watersheds from legal challenge. The Safe Harbor provisions permit new domestic and large industrial uses in these impact zones under specific terms and as long as the new use does not exceed the adjudicated water entitlement. These provisions allow for growth but place limits on groundwater pumping for the benefit of the rivers and the downstream Community.

The state has passed new legislation establishing a Gila River Maintenance Area (GRMA) and a GRMA Impact Zone.<sup>121</sup> There are prohibitions on the construction of new or enlarged dams within the GRMA, with some exceptions for example for flood control, and provisions to prohibit the irrigation of new lands within the GRMAIZ.<sup>122</sup> These provisions will be enforced by the ADWR. This legislation will not only benefit the downstream GRIC Reservation by limiting groundwater pumping in the alluvial zones of the main rivers and tributaries and limiting new storage on the river, but also benefit the SRP, the other large downstream water right holder.

To illustrate the complexity of the municipal forbearance arrangements, the side agreement with the City of Safford (Exhibit 26.1) is examined. The city has an initial water budget of 9.74 KAF for M&I uses: this budget allocates water for growth as projected water use on the enforceability date is just 7.5KAFY.<sup>123</sup> Any consumptive water use above this budget must be matched with an identified water source. Furthermore, any exceedances must be mitigated according to set rules.<sup>124</sup> The impact of potential new groundwater pumping (in and outside the protection zones) has to be modeled. If and only if, it is found to have no impact on the upper Gila River, is it exempted from counting as a new diversion against water budget, but if not, it will count against the city’s water budget.<sup>125</sup> In return for compliance with these terms, the city will receive debt relief of up to \$13.9M.<sup>126</sup> The agreement incorporates provisions for accounting, reporting, and dispute resolution; hallmarks of a durable agreement.<sup>127</sup> There are similar restrictions and provisions in the other metropolitan side agreements.<sup>128</sup> These side agreements demonstrate the benefits of a negotiated settlement in achieving improved water management in effected watersheds.

### *3.3.b. Reservation groundwater protection zones*

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rivers. Areas included in this forbearance are San Manuel, Winkelman, Cochise County, and BHP company (subparas 26.8.2.7.1-26.8.2.8.).

<sup>118</sup> Exhibit 2.84A.

<sup>119</sup> State legislation creating this GRWMP must be enacted by the enforceability date to secure all these side agreements (Title II, Sec 207(c)(1)(I)(iii)).

<sup>120</sup> These provisions are detailed in the GRIC WRSA, para 26.8.2

<sup>121</sup> As per HB 2728 which added A.R.S. §45-2603.

<sup>122</sup> Id. §45-2631 and §45-2641. Lands irrigated between January 1, 2000 and the effective date of this Section are exempt. This new prohibition may be redundant if new irrigated agriculture in this region is not profitable.

<sup>123</sup> Exhibit 26.1, budget as per subpara 2.15 and current use as per subpara 4.2.

<sup>124</sup> Id. Para 10.

<sup>125</sup> Id. Subpara 9.3 and subpara 9.2.

<sup>126</sup> Pub. L. 108-451, Title II, Sec 214(a)(5)(A).

<sup>127</sup> Exhibit 26.1, paras 12, 14, and 17.

<sup>128</sup> Initial water budgets for the other towns are: Kearny 600 AF, Mammoth 300 AF, both within the Gila River, Middle Gila River and San Pedro River impact zones, and the Town of Duncan 470AF, of which 400AF within the UV impact zone.

The settlement requires new state legislation to protect on-Reservation groundwater for the GRIC.<sup>129</sup> Titles II (and III) contain provisions that create a buffer zone around reservations, within which groundwater pumping by non-Indians is limited. This is a regulatory innovation: a specific settlement provision analogous to State groundwater law is being used to protect groundwater levels beneath the reservations of sovereign tribes. A precursor to these protection zones are limits to on-reservation groundwater pumping. The GRIC are allowed to pump 156.2 KAFY. For the tribes to accept such limits on their groundwater use there had to be concurrent groundwater pumping restrictions on non-Indians near reservation boundaries. Significantly, the GRIC's groundwater protection zone and replenishment requirements are stricter than State well spacing rules and the Central Arizona Groundwater Replenishment District (CAGR),<sup>130</sup> in terms of the actual measurement of the cone of depression and the spatial connectivity of replenishment and pumping.

The Southside Replenishment Program establishes five protection zones<sup>131</sup> along the southern border of the GRIC Reservation in which water conveyance outside the Eastern or Western Protection Zones is prohibited for non-irrigation use, with certain exemptions,<sup>132</sup> and where the State has obligations to replenish groundwater pumped in excess of set limits. For example, in the Eastern Protection Zone replenishment obligations are triggered when pumping is in excess of 2.33AF/acre.<sup>133</sup> The replenishment obligations are spatially connected to the groundwater pumping so that the spatial integrity of the aquifer is respected and incidentally subsidence risk is reduced. This spatial aspect of the replenishment was a sticking point with the Community which was concerned about existing impacts on their groundwater by non-Indian users. To resolve this issue the state agreed to an additional replenishment volume to recompense for historic pumping. The State is required to establish a Southside Replenishment Bank and deliver at least 1 KAFY up to a total 15 KAF and to ensure that credits never fall below 5 KAF.<sup>134</sup> This block of water will be delivered at no charge to the Community and will be paid for by withdrawal fees from Pinal County. The AWBA, the firming agent for the State, has plans to fulfill this obligation in one direct delivery of CAP water during 2006 because excess water is available now.

### *3.3.c. Access to stored water*

A key benefit of the GRIC settlement is new access to reservoirs and thus stored water. It is with stored water that one of the SRP roles in the settlement becomes clear. SRP was one of the drivers of the settlement and is one of the main beneficiaries.<sup>135</sup> The 1.8 MAFY GRIC claim could have severely impacted SRP's ability to reliably supply water. The agreements between GRIC and SRP are detailed in the GRIC Water Rights Settlement Agreement. SRP offered a combination of access to water and access to water delivery infrastructure to settle outstanding disputes with the Community. GRIC is entitled to an initial 2 KAFY rising to 35 KAFY of stored

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<sup>129</sup> Title II, Sec 207(c)(1)(i). This is the so-called Southside Replenishment Program.

<sup>130</sup> "The purpose of the CAGR is to provide a mechanism for landowners and water providers to demonstrate an assured water supply under the new AWS Rules". "The CAGR must replenish (or recharge) in each AMA the amount of groundwater pumped by or delivered to its members which exceeds the pumping limitations imposed by the AWS Rules." There is no requirement to replenish the same localized area where groundwater was pumped.

[http://www.cagr.com/Gen\\_Info/index.cfm?action=execSum](http://www.cagr.com/Gen_Info/index.cfm?action=execSum). Accessed May 11, 2006.

<sup>131</sup> A.R.S. §45-2602 (A) as amended by HB 2728.

<sup>132</sup> Id. §45-2611(A-B).

<sup>133</sup> Id. §45-26022(3)(d).

<sup>134</sup> Id. §45-2624(A)-(C).

<sup>135</sup> SRP delivers 1 MAFY to a central Arizona service area and also provides electricity to nearly 860,000 retail customers in the Phoenix area. <http://www.srpnet.com/about/facts.aspx> accessed May 5, 2006.

SRP water in any year that net storage levels are above 100 KAF on May 1st.<sup>136</sup> Furthermore, the Community can accrue credits up to 45 KAF: this facility is another hedge against supply variability.<sup>137</sup> This stored water will be delivered through SRP drainage ditches that GRIC is permitted to use,<sup>138</sup> and the water will be managed and monitored by the Community.<sup>139</sup> The price of stored water is determined annually and in 2005 was \$11.25/AF.<sup>140</sup> Up to 836 AFY of additional stored water from the Blue Ridge Dam may be made available to the Community.<sup>141</sup> The parties have an option for a SRP stored water-CAP water exchange.<sup>142</sup> As with the other stored water, the Community can receive water credits.<sup>143</sup> This agreement entitles the Community to yet another source of water and access to storage at a low cost.<sup>144</sup>

#### 3.3.d. *Diversification of water sources*

A key benefit of the GRIC settlement is the diversification of the tribe's water supplies and new access to reservoirs, discussed above (see Figure 1). Prior to the agreement, the tribe was reliant on a drought-prone and over-allocated Gila River watershed. Prior to the settlement the Community received just over a third of its *Globe Equity* allocation. The settlement shifts the Community's water allocation from the Gila River to the Colorado River, via the CAP. In essence, 185 KAF of Gila water has been replaced by CAP water. There are advantages to this substitution. The Colorado River has more storage, and is highly managed with drought reliability a foremost objective. One drawback from this substitution is that CAP water is more expensive to provide for the Community than Gila River water.

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<sup>136</sup> GRIC WRSA, Sec 12.1. Volumes available will ratchet up over a five year period to the maximum entitled as per para 12.2.

<sup>137</sup> Id. at subpara. 12.3.1.

<sup>138</sup> SRP will also pay GRIC \$0.5M towards cost of easements, construction, rehabilitation, operation and maintenance of these drain ditches on the reservation, Id at subpara 16.9.

<sup>139</sup> Id. at subparas 12.5.1 and 12.5.4.

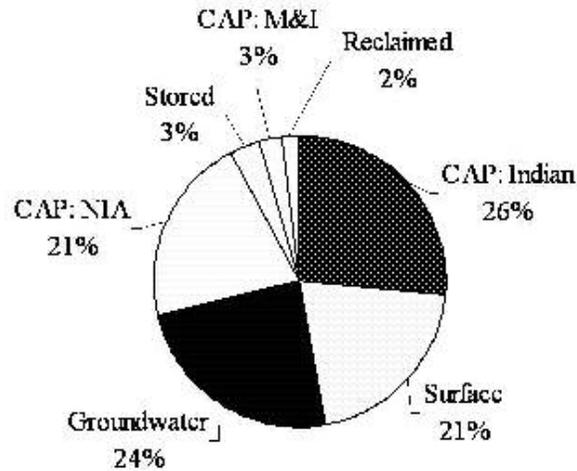
<sup>140</sup> Id. at para 12.7. Prices are determined by the Board of Governors of the Salt River Valley Water Users' Association.

<sup>141</sup> Id. at subpara 12.13.1. Unlike the SRP stored water this will not be subject to transportation or evaporation losses, or spills (Id. at subpara 12.13.3.). The cost of this water is 10% of the OM&R costs (Pub. L. 108-451, Title II, Sec 12.12.4 and Exhibit 12.13.4). In addition up to 3.5 KAFY will be made available for M&I purposes in Northern Gila County (Id. at Sec 213 (i)(3)(B)).

<sup>142</sup> GRIC WRSA, para 13.1. The Community will pay for all associated pumping charges (Id. at subpara 13.1.1)

<sup>143</sup> Id. at para 13.2.

<sup>144</sup> Id. at subpara 13.5.5. Water costs in 2005 were \$10.06/AF plus transportation charges of \$12.14/AF. A flat administrative fee of approximately \$4,254 in each year the option is exercised would also be levied.



**Figure 1: GRIC Water Budget Water Sources**

GRIC’s water portfolio is dissimilar to that of the State as a whole (see Table 1). GRIC is more heavily reliant on surface water (Colorado River and in-state rivers) than the State. The Community has a lower reliance on groundwater than Arizona as a whole. Groundwater supplies, if well managed, can be a buffer against long-term drought and improve long term sustainability of reservation activities that depend on water. The settlement introduced groundwater management rules akin to those in Active Management Areas (AMAs), to the reservation. Additionally, the Community benefits from stricter-than-State’s rules governing the pumping and sinking of new wells within the newly created groundwater protection zone. The Community now has access to above-ground stored water through agreements with SRP. The settlement also opened a new source of water to the Community; highly reliable reclaimed water. The Community itself has a small population and therefore limited opportunities to generate reclaimed water supplies. However, through side agreements with the nearby cities of Chandler and Mesa it takes Grade A+ reclaimed water in exchange for CAP water on a 5:4 ratio. This reliable water source has another benefit, in that it can replace higher quality groundwater for agricultural and golf course irrigation. Overall the settlement has diversified the Community’s water supplies and increased protection from current and future water users upstream, bordering the reservation, and on the reservation.

An important aspect of water diversification is water supply reliability. The priority of the Community’s CAP water allocations is fundamental to any assessment of the reliability of the Community’s (agricultural water) supplies. The Community currently plans to develop up to 120,000 acres of irrigable land on the reservation. The PIA standard has focused near-term economic development on the reservation on agriculture. For a period of 100 years, just 15 KAFY or 14.7% of the Community’s new 102 KAFY NIA CAP allocation will have at least the same priority as M&I water via State firming commitments. Delivery of the residual 87 KAFY is at risk in a future drought because it has the lowest priority in the CAP system: in a severe drought these contracts would be cut first. If one uses the State’s forecast of drought probability, which they use in determining firming volumes, the Colorado River is expected to be in drought one quarter of the time, that is one year in four the Community might receive none of this

allocation.<sup>145</sup> One hundred years after the settlement, the Community will be reliant on low priority rights for a fifth of its total water budget.

Other water sources included in GRIC budget are also subject to shortage risk. For example, the RCWD 4.5 KAFY relinquishment water, surface water from the Salt and Verde Rivers, has lower priority than RCWD water allocated to the Salt River Pima Maricopa Indian Community and the Fort McDowell Indian Community settlement agreements.<sup>146</sup> Mitigating this risk are firmer alternative Community agricultural water supplies, namely 173.1 KAFY of IA water and 45.1 KAFY of reclaimed water. These water sources are more drought-proof for planning agricultural investments, but also are appealing to potential lessees. The Community could minimize its exposure to NIA junior status by managing groundwater as a backup drought supply. This however would require the Community to establish a groundwater recovery and delivery system capable of delivering groundwater to reservation locations normally reliant on surface water. An alternative strategy for reducing drought-induced risks to agricultural investments is to limit the amount of irrigable land developed (developing least profitable lands last).

However, it is important to compare this situation with the situation prior to the settlement for the Community. The GRIC likely has much more reliable supplies with this arrangement than its previous reliance on Gila River and groundwater supplies.<sup>147</sup> Nevertheless, GRIC needs to plan for drought to ensure that cutbacks in the activities relying on its 102 KAFY NIA CAP allocation can readily be accommodated. Possible uses for this water include annual crops (that could be fallowed in dry years), or leasing to the Arizona Water Banking Authority or other entities that recharge excess water for firming obligations. Other Community surface water deliveries are more assured, as per the *Globe Equity* and *Haggard* Decrees. The settlement side agreements increase the surety of these surface water supplies through the Upper Gila River Maintenance Area and the CUFA.

### 3.3.e. Firming

The outcome of reallocating M&I water to M&I uses rather than to tribal settlements resulted in a compromise to firm equivalent volumes for such settlements so that tribal water can be delivered during shortages as if it were M&I priority water (see Section 2ic above). This was an innovative solution to what had become a vexing and contentious issue between the State and the Federal negotiators. The firming volumes and division of responsibilities are detailed in Title I, Sec 105. A consequence of dividing firming responsibilities by water quantity (rather than dividing up costs of a single firming program) is that federal and state agencies may compete for excess water and aquifer space. This is perhaps somewhat more problematic for the federal side as the State has got a head start on the process because of the necessity to pass new legislation<sup>148</sup> to address several components of the federal legislation.<sup>149</sup> This new legislation created a Firming Program Study Commission<sup>150</sup> which modeled shortages on the Colorado River to estimate the firming

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<sup>145</sup> The modeling assumptions used by the State can be found in Appendix II of the Indian Firming Study Commission, Interim Report, Draft 10-06-05. Available from [http://www.awba.state.az.us/annc/Indian\\_Firming\\_Study\\_Comm/default.htm](http://www.awba.state.az.us/annc/Indian_Firming_Study_Comm/default.htm), accessed May 6, 2006.

<sup>146</sup> Exhibit 9.1, Sec 5.1.3. Sec 5.2 sets the terms of the delivery of this water at \$18.5/AF, of which \$13.5/AF is for transportation of the water, this charge will be adjusted for inflation and a \$5/AF charge for pumping, which will be adjusted with power and energy rates.

<sup>147</sup> Pre-settlement the GRIC were subject to an 185 KAFY shortfall in its *Globe Equity* decreed water.

<sup>148</sup> Pub. L. 108-451, Title II, Sec 207(c)(1)(I)(ii).

<sup>149</sup> HB 2728.

<sup>150</sup> The Study Commission was established per Appendix III, HB 2728, Section 12, to investigate firming volumes, options to meet the obligation including costs and funding sources, and identifying necessary changes to Arizona Revised Statutes.

volume required,<sup>151</sup> estimated the costs of various options, and made recommendations including changes to law. This firming legislation was adopted by the Arizona legislature in March 2006.<sup>152</sup> The outcome is that new authorities and duties have been identified for the AWBA and these have been codified into the AWBA statutes.<sup>153</sup> An interesting outcome of the State firming program is the creation of a groundwater savings facility (GSF)<sup>154</sup> on the GRIC reservation.<sup>155</sup> This GSF has permitted the direct delivery of CAP water in lieu of a portion of the State's firming obligation. This facility reduces the cost of water banking for the State and makes water available for the tribe earlier, water that will be used for agricultural purposes. Incidentally, it has also increased recharge capacity in the State.

### ***3.4. Access to water infrastructure***

A key benefit for the Community and the Federal government in this settlement is access to water conveyance and storage infrastructure: infrastructure that in many cases was built by the federal government. This access does three things: it allows the Community to quickly ramp up its water use, it reduces the costs of the agreement to the Federal government, and it is an in-kind contribution to the settlement from state parties. For example, GRIC can use the RWCD system to transport water to the northern boundary of the reservation subject to 30 cubic feet per second (CFS) capacity restrictions.<sup>156</sup> This capacity is equivalent to 21,719 AFY, making it significantly greater than the RWCD surface water reallocation to the Community. Furthermore, RWCD will pay all the capital and OM&R costs of making the capacity available to the Community.<sup>157</sup> Additionally, the RWCD will undertake to increase the capacity of the system to 200 CFS (equivalent to 144,794 AFY) to provide for future additional deliveries to the Reservation. All costs, including OM&R costs, associated with the expanded system will be borne by the U.S..<sup>158</sup> The Community also has agreements with SRP for the direct delivery of CAP water to the Reservation using SRP infrastructure.<sup>159</sup> The benefits accruing to the Community from these arrangements are hard to quantify. Clearly they are significant in terms of delivering wet water and also in reducing the cost of implementing the overall agreement by using existing infrastructure.

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<sup>151</sup> The firming volume used by the Study Commission was 548,770 AF. [Reclamation, the lead Federal agency in charge of the firming for Title III estimates that firming the 28.2 KAFY will require a firming obligation of 846 KAF. Using Reclamation's calculations the State's firming requirement is much higher at 711.7KAF]. See also footnote 149.

<sup>152</sup> HB 2835.

<sup>153</sup> These changes make the AWBA the State's agent for firming. The Statutes also identifies State general funds and a portion of groundwater withdrawal fees in the Phoenix, Pinal and Tucson Active Management Areas (AMAs) to pay for the program A.R.S. §45-611(C)(1)-(3). Other duties include developing accounting mechanisms for tracking firming. The Statutes also identify water sources that can be used for Indian firming, these include effluent, which is not permissible for other types of firming, however, the legislation still prioritizes the use of CAP excess water, to comply with priorities to fully utilize the CAP. Finally the AWBA is permitted to direct deliver firming water to the GRIC. See next footnote.

<sup>154</sup> A GSF works by conserving groundwater through the direct delivery of an alternative water source as a replacement for groundwater pumping.

<sup>155</sup> Agreement between the Arizona Water Banking Authority, and Gila River Indian community for Storage of Central Arizona Project Water at a Groundwater Savings Facility, April 2006. The facility has been permitted for up to 56 KAFY.

<sup>156</sup> Exhibit 9.1, paras 5.3 and 6.1. This option is for all water sources not just the RWCD portion of the water budget.

<sup>157</sup> Id. at para 6.1.

<sup>158</sup> Id at para 6.3 and subparas 6.3 (c) and (d).

<sup>159</sup> GRIC WRSA, para 14.1, for delivery of up to 4 KAF per month or 20 KAFY (subpara 14.3.2.) for which the Community will pay the same charges as in footnote 143. SRP ditches are also available to the Community as per subpara 16.9.

#### 4. CONCLUDING OBSERVATIONS

The AWSA brought together the dominant water stakeholders in central Arizona across tribal, state, federal, municipal and agricultural interests. This negotiation process itself is as significant, involving years of dialogue among hundreds of individuals and legal representatives. Important regional water management measures were incorporated into the agreement, a commendable outcome of complex negotiations. It is conceivable that similar water management goals could have been achieved more cheaply or efficiently in other ways, for example through new measures to control private wells or to improve agricultural water efficiency. The proliferation of side agreements makes it challenging to track the flows of water and money among parties and to clearly identify consequences of the AWSA. However this is critical in understanding the distribution of costs and benefits. Given the pre-existing challenges of rapid growth, variable surface supplies and spatially dis-connected pumping and replenishment activities it is remarkable that the AWSA achieved so much. The effort and expense that went into the AWSA is, of course, in large part due to the location of the GRIC Reservation and the size of the settlement. Improvements in water supply reliability are shared with other water rights holders who are reliant on the same watersheds.

Total costs of the settlement comprise monies expended in negotiation, money pledged for various funds and administrative activities, in-kind water costs, and opportunity costs. Settlements have proven expensive to negotiate and implement. However, they defuse litigation, bind parties to make durable solutions, and deliver wet water to tribes. The Congressional Budget Office estimates that the AWSA will increase federal discretionary spending by \$6M in the years 2005-2009 and increase direct spending by \$445M in the years 2005-2014.<sup>160</sup> Meanwhile, the State has, and will continue to, provide resources for studies, legislative amendments, oversight and monitoring, and enforcement. The State must also contribute \$3M for Federal firming, in cash or in-kind. State firming obligations using a traditional AWBA approach are estimated to cost between \$25.35M and \$53.48M.<sup>161</sup> The Southside Replenishment District costs are estimated at \$0.3M.<sup>162</sup> The AWBA also expects to hire one full-time staff person to assist in these program activities.<sup>163</sup> Other costs are to the Settling Parties, estimated at around \$78.06M.<sup>164</sup> There are of course other costs, such as costs to enforce the new legislation and the opportunity costs of new water, after the large reallocation to the GRIC; however, this cost could be negative, if Indian water leases are less expensive than the next alternative water source.

The sources of water for the agreement are almost evenly split between federal and (state) Settling Parties. The federal portion includes the 102 KAFY CAP NIA water, 18 KAFY conserved in the upper Gila Valley, and an unspecified volume of water from CUFA. On the state

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<sup>160</sup> *Supra* note 25, p1.

<sup>161</sup> Indian Firming Study Commission, Interim Report, November 1, 2005. Appendix VII. The lower bound estimate is for a groundwater savings facility (GSF) and the higher bound for underground storage facility (USF). A USF facility (A.R.S. § 45-811.01) allows the permit holder to operate a facility that stores water in the aquifer. A GSF facility (A.R.S. § 45-812.01) allows the permit holder to deliver a renewable water supply, called "in-lieu" water, to a recipient who agrees to replace groundwater pumping with in lieu water, thus creating a groundwater savings. Other solutions were estimated to be more costly, such as dry year fallowing, at \$88.16M.

<sup>162</sup> The direct delivery of CAP water to fulfill this obligation reduces the cost of this program. Using current AWBA rates of \$20/AF the total cost of this program is around \$300,000.

<sup>163</sup> As per discussion with AWBA staff on November, 15, 2005.

<sup>164</sup> This is not a complete list. The \$78.06M includes city lease costs (for which the lessors receive water). This upfront money has an opportunity cost. The \$78.06M also includes Phelps-Dodge's compensation money, lease cost and 20-year option, SRP payments for easements, and Tucson Water's \$300K subsidence fund.

side, SRP contributed 20.5 KAFY stored water and 5.9 KAFY in lieu of *Haggard* Decree water, RWCD and HVID contributed 36.7 KAFY CAP NIA water, RWCD also contributed 4.5 KAFY of surface water, Asarco 17 KAFY of CAP M&I priority water, and the cities of Mesa and Chandler a total 12.6 KAFY treated effluent, for a total 97.2 KAFY. The contributions from the Settling Parties reduced the overall cost of the settlement for the federal government in line with Federal criteria.

Opportunity costs are harder to quantify. These are the costs associated with reallocating water to GRIC that could have been allocated to current and future competing uses. There may also be opportunity costs in terms of future settlements. To the extent that water settlements are a zero-sum game the GRIC settlement was the recipient of significant federal indirect and direct funds and within Arizona a large fraction of outstanding excess water has been reallocated to the GRIC.

Undeniably all parties to the settlement (and many non-signatories) benefit from the settlement. However, it is hard to quantify some of these benefits. The main benefit is the removal of risk and uncertainty associated with the GRIC water claim. Twenty cities also gained access to new allocations of AWS water and four cities to inexpensive lease water. The benefits to individual signatories vary. Signatories and non-signatories also benefit from third-party effects, for example from upstream water forbearance agreements. The Community meanwhile benefits from the delivery of ‘wet’ water and the economic development, cultural, and environmental opportunities afforded by water resources. The Federal government benefits by fulfilling its trust obligation and both the federal and state governments benefit by resolving contentious CAP issues and introducing water management improvements. This agreement may also benefit other Indian tribes: 67 KAFY and \$250M was set aside to facilitate other settlements. It is difficult to monetize these combined benefits or allocate them between various participants, however, the OMB’s reluctance to endorse the agreement suggests that the costs to the federal government might exceed estimated “calculable legal exposure”. This contention paradoxically is one of the reasons why the agreement may prove to be durable.

Many settlements incorporate penalty provisions in the event the federal government does not meet its obligations in a timely manner. The GRIC settlement does not: this is attributable to the source of implementation funding, the LCRBD fund, and not more discretionary annual federal appropriations. However, even without such penalties, the Settling Parties have enormous incentives to ensure the durability of the settlement, particularly as this settlement includes money and water and also lease provisions for the reallocation of this water from the Community to the Settling Parties. It is unclear whether the AWSA will be a precedent for future settlements as it is the largest settlement in the United State’s history and therefore costly. There is a provision in the AWSA to keep Congress informed about the status of settlement implementation, negotiations for future settlements,<sup>165</sup> and identification of critical on-Reservation water needs.<sup>166</sup> This creates a potential window of opportunity for other Arizona tribes to negotiate settlements. However there are new political and financial realities at the federal level that create obstacles for such settlements. Nevertheless, the agreement does contain elements that could be adopted in other settlements such as watershed forbearance agreements, cost sharing with Settling Parties, access to water conveyance and storage infrastructure, the “bought-down” water price model, and matching water quality with use.

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<sup>165</sup> The San Carlos Apaches, Navajos and Hopis are all currently negotiating.

<sup>166</sup> Pub. L. 108-451, Title I Sec 104(a)((1)(C).