Arizona Water Settlements Act:

A Rare Opportunity

New Mexico Interstate Stream Commission
History

1964 – Arizona v. California decree allocates 30,000 acre-feet average consumptive use in Gila Basin.

1968 – Colorado River Basin Project Act allocates additional 18,000 acre-feet to NM.

2004 – Arizona Water Settlements Act
Arizona Water Settlements Act (AWSA)

💧 Amends Colorado River Basin Project Act.
💧 Permits New Mexico additional annual average 14,000 acre-feet consumptive use from Gila River.
💧 Also provides up to $128 million in non-reimbursable federal funding to New Mexico for water utilization projects.
The SOI replaces the water NM diverts out of AZ’s Colorado River apportionment.
ISC Gila Policy

"The Interstate Stream Commission recognizes the unique and valuable ecology of the Gila Basin. In considering any proposal for water utilization under Section 212 of the Arizona Water Settlements Act, the Commission will apply the best available science to fully assess and mitigate the ecological impacts on Southwest New Mexico, the Gila River, its tributaries and associated riparian corridors, while also considering the historic uses of and future demands for water in the Basin and the traditions, cultures and customs affecting those uses."

– ISC formally adopted September 2004
There are 10 conditions that must be met before NM can divert the AWSA water.

- The most restrictive is a limit of 140,000 acre-feet in any running 10-year period.
- For each month, NM cannot divert until minimum daily flows are bypassed.
## Minimum Bypass Flows

<table>
<thead>
<tr>
<th>MONTH</th>
<th>MINIMUM BYPASS (cfs)</th>
<th>% to 350 cfs MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>82.5</td>
<td>0.80</td>
</tr>
<tr>
<td>February</td>
<td>137.5</td>
<td>0.80</td>
</tr>
<tr>
<td>March</td>
<td>292.5</td>
<td>0.80</td>
</tr>
<tr>
<td>April</td>
<td>432.5</td>
<td>0.80</td>
</tr>
<tr>
<td>May</td>
<td>437.5</td>
<td>0.75</td>
</tr>
<tr>
<td>June</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>July</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>August</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>September</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>October</td>
<td>267.5</td>
<td>0.80</td>
</tr>
<tr>
<td>November</td>
<td>152.5</td>
<td>0.80</td>
</tr>
<tr>
<td>December</td>
<td>75.5</td>
<td>0.80</td>
</tr>
</tbody>
</table>
## Minimum Bypass Flows

<table>
<thead>
<tr>
<th>MONTH</th>
<th>MINIMUM BYPASS (cfs)</th>
<th>% to 350 cfs MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>82.5</td>
<td>0.80</td>
</tr>
<tr>
<td>February</td>
<td>137.5</td>
<td>0.80</td>
</tr>
<tr>
<td>March</td>
<td>292.5</td>
<td>0.80</td>
</tr>
<tr>
<td>April</td>
<td>432.5</td>
<td>0.80</td>
</tr>
<tr>
<td>May</td>
<td>437.5</td>
<td>0.75</td>
</tr>
<tr>
<td>June</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>July</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>August</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>September</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>October</td>
<td>267.5</td>
<td>0.80</td>
</tr>
<tr>
<td>November</td>
<td>152.5</td>
<td>0.80</td>
</tr>
<tr>
<td>December</td>
<td>75.5</td>
<td>0.80</td>
</tr>
</tbody>
</table>

(The maximum that can be diverted at any time is 350 cfs. This was chosen to ensure flood functionality will not be impaired.)
## Minimum Bypass Flows

<table>
<thead>
<tr>
<th>MONTH</th>
<th>MINIMUM BYPASS (cfs)</th>
<th>% to 350 cfs MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>82.5</td>
<td>0.80</td>
</tr>
<tr>
<td>February</td>
<td>137.5</td>
<td>0.80</td>
</tr>
<tr>
<td>March</td>
<td>292.5</td>
<td>0.80</td>
</tr>
<tr>
<td>April</td>
<td>432.5</td>
<td>0.80</td>
</tr>
<tr>
<td>May</td>
<td>437.5</td>
<td>0.75</td>
</tr>
<tr>
<td>June</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>July</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>August</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>September</td>
<td>442.5</td>
<td>0.75</td>
</tr>
<tr>
<td>October</td>
<td>267.5</td>
<td>0.80</td>
</tr>
<tr>
<td>November</td>
<td>152.5</td>
<td>0.80</td>
</tr>
<tr>
<td>December</td>
<td>75.5</td>
<td>0.80</td>
</tr>
</tbody>
</table>

(Modeling shows that NM could always leave 150 cfs before diverting and still harvest the water. This limit is double the median flow and provides an ecologic buffer: 89% of flows occur below 150 cfs.)

(Median flow is 73 cfs)
ISC and the AWSA

ISC is joint lead agency for environmental compliance.

ISC administers New Mexico Unit Fund.

ISC to determine which water utilization alternatives to fund.
Timeline

2004
• AWSA signed into law.

2005
• Stakeholders’ consensus: $945K scientific studies

2006
• Enviro’s opposed; Governor vetoed.

2007
• ‘SWNM Stakeholders Group’ — No consensus
  Two-Tiered Evaluations

2012
• Commission selected 16 proposals for study

2013
• Multiple evaluations and studies underway
2014 Schedule

Jan. • Preliminary study reports / Legislature

Jun. • Final reports from studies

Aug. • ISC preliminary decision on project funding

Nov. • ISC final decision on project funding

Dec. • Notice to Secretary of the Interior
Stakeholder Proposals

Municipal Conservation (1)

Wastewater Reuse (3)

Agricultural Improvements (3)

Watershed Improvement (5)

Diversion & Storage (3)
FY14 AWSA Work Plan

• Nine Elements
• Total = $2,845,000
• Appraisal level evaluations
For Each of the 15 Stakeholder Proposals We’ll Evaluate:

• Technical feasibility and design options
• Environmental impact assessment
• Cultural considerations
• Economics
• Water Supply
Element 1: Assess and Evaluate Effluent Reuse Proposals

• $187,000 (completes FY13 work)
• Deming, Grant County, and Grant County Water Commission
• Bayard proposal withdrawn
Deming Effluent Re-Use

FROM WWTP
Grant County Water Commission
Municipal Supply System

- Effluent from WWTP dumped in aquifer.
- Return flow credits pumped out at Airport well field
- Pipeline to Hurley, Bayard, Santa Clara, Silver City

(INTO AQUIFER)

Pumped back out at well Field at Regional Airport
Element 2: Technical Evaluation of Diversion and Storage Proposals

• $720,000
• Gila Basin Irrigation Commission
• Hidalgo County
• Regional Water System
Gila Basin Irrigation Commission

- Improve existing diversions
- Divert AWSA water and store in holding ponds, ditches, side canyons, aquifer
- Release during low flows for farms and river
Hidalgo Co

- Storage in Schoolhouse Canyon
- Smaller storage near Virden
- Releases for irrigation and river during low flows
Southwest Regional Water System

- Divert from Gila.
- Store off stream.
- Releases to protect river.
- Regional Water Supply System.
<table>
<thead>
<tr>
<th>Canyon</th>
<th>Storage Volume (BHI, ac-ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spar Canyon</td>
<td>2,376</td>
</tr>
<tr>
<td>Maldonado Canyon</td>
<td>3,778</td>
</tr>
<tr>
<td>Winn Canyon</td>
<td>7,120</td>
</tr>
<tr>
<td>Pope Canyon</td>
<td>11,926</td>
</tr>
<tr>
<td>Sycamore Canyon</td>
<td>35,151</td>
</tr>
<tr>
<td>Dix Canyon</td>
<td>4,040</td>
</tr>
<tr>
<td>Davis Canyon</td>
<td>3,776</td>
</tr>
<tr>
<td>Cherokee Canyon</td>
<td>3,129</td>
</tr>
<tr>
<td>Schoolhouse Canyon</td>
<td>9,032</td>
</tr>
</tbody>
</table>

**Legend**
- Diversion Point
- Conveyance Alignment
- Storage Location

**Potential Reservoir and Diversion Locations**
Element 3: Assess Agricultural Conservation Projects

- $25,000
- Pleasanton, Luna, and Sunset/New Model Acequia Improvements
- Ten Catron County Ditches
- Drip Irrigation Study Complete
Element 4: Assess Municipal Conservation

• $100,000 Pilot Project
• $50,000 to Silver City for smart irrigation
• $50,000 to Deming for low flow toilets, xeriscaping, retire swamp coolers
Element 5: Assess Watershed Restoration Projects

- $25,000
- Expert consultant to assess all five proposals
- May convene a watershed restoration workshop with outside experts
Element 6: Ecologic Assessments of Proposals and Baseline Ecologic Studies

• $1,365,000

• Broad-based independent panel of experts

• Includes FWS, academics, NM G&F, Reclamation, TNC, consultants
Element 7: Legal Support

• $100,000
• Focused on potential NEPA/ESA
• NEPA required on any BLM or Forest Service lands
Element 8: Economic Analysis

- $250,000
- Support, add to Reclamation work
Element 9: Planning Consultation and Facilitation

- $75,000
- Facilitate public meetings, disseminate materials, and public involvement
- Will continue throughout the AWSA process, including NEPA
FY14 AWSA Budget

- Ecologic Assessments ($1.365M) 48%
- Diversion-Storage 25%
- Municipal Effluent Reuse and/or Reservoir) 7%
- Legal Services for NEPA, ESA 3%
- Economic Analysis 9%
- Public Involvement 3%
- Municipal Conservation 3%
- Watershed Improvement 1%
- Ditch Improvement 1%
- Ecologic Assessments ($1.365M) 48%
- Ditch Improvement 1%
### Completed and In-Progress Studies and Evaluations

<table>
<thead>
<tr>
<th>WORK EFFORT</th>
<th>COMPLETION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low water use crop study</td>
<td>Completed</td>
</tr>
<tr>
<td>Groundwater/SW model, Phase I</td>
<td>Completed</td>
</tr>
<tr>
<td>Groundwater/SW model, Phase II</td>
<td>Prelim January 2014 Final June 30, 2014</td>
</tr>
<tr>
<td>IHA comparison, Phase I</td>
<td>Completed</td>
</tr>
<tr>
<td>IHA comparison, Phase II</td>
<td>1-Jan-14</td>
</tr>
<tr>
<td>Ecologic data compilation</td>
<td>Completed</td>
</tr>
<tr>
<td>Biologic resource surveys</td>
<td>1-Jan-14</td>
</tr>
<tr>
<td>Cultural surveys</td>
<td>1-Jan-14</td>
</tr>
<tr>
<td>Climate change study</td>
<td>Completed</td>
</tr>
<tr>
<td>Wetlands study</td>
<td>30-Jun-14</td>
</tr>
<tr>
<td>Economic Studies</td>
<td>30-Jun-14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WORK EFFORT</th>
<th>COMPLETION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHABSIM, PVA for birds, fish</td>
<td>Prelim January 2014 Final June 30, 2014</td>
</tr>
<tr>
<td>Macroinvertebrate studies</td>
<td>Prelim January 2014 Final June 30, 2014</td>
</tr>
<tr>
<td>Riparian/flow correlations</td>
<td>Prelim January 2014 Final June 30, 2014</td>
</tr>
<tr>
<td>Municipal conservation</td>
<td>30-Jun-14</td>
</tr>
<tr>
<td>Acequia improvement projects</td>
<td>1-Dec-13</td>
</tr>
<tr>
<td>Re-Use projects evaluation</td>
<td>Completed</td>
</tr>
<tr>
<td>Watershed projects</td>
<td>Prelim January 2014 Final June 30, 2014</td>
</tr>
<tr>
<td>Geomorphologic study</td>
<td>Completed</td>
</tr>
<tr>
<td>Drip irrigation study</td>
<td>Completed</td>
</tr>
<tr>
<td>Meetings/Facilitation</td>
<td>Through 2014</td>
</tr>
</tbody>
</table>
Grant County Reservoir

Southwest Regional Water System

Ft. Bayard
Grant Co Reservoir

• What they want: a reservoir for recreation (swimming and fishing).

• Effluent water not suitable

• AWSA is fresh clean water.
Grant Co Water Commission
Wellfield & Pipeline

• Optimizations: eliminated wells and storage tanks, cheaper pipe (-$15M)

• GCWC requested larger pipe.
Deming Effluent Re-use

Optimizations:
Different sizes of pipes were used for cost savings.
Existing Situation: Users

• All the water rights in the region have already been adjudicated. (No more new sources)

• 2009 Water Plan: 30,000+ AF/yr water deficit (Luna)

• Declining Groundwater Levels in Mimbres Basin
There are also concerns over regional aquifer supplies, but in a 2013 USGS Report:

“Water levels in Mimbres basin are generally stable.”
If all the reliable well data are used, average basin declines are apparent:
USGS monitoring well located in drip-irrigated acreage near Deming, NM
USGS Monitored Well Trends

USGS 321352107493901

~4 miles SW of Deming

Source: USGS
USGS Monitored Well Trends

USGS 321352107493901

~4 miles SW of Deming

Water Level Below Ground Level

2000-2007: 1.37 ft/Yr

Source: USGS
**Groundwater levels in the Mimbres Basin since 2000:**

USGS author’s response:

“Glancing at the information you sent me, it certainly appears that some water-level declines continued to occur during 2000-2008, and perhaps even accelerated from 2007-2012.”

**Conclusion:** There is a deficit of groundwater in the region.
Projected Water Supply Deficit, Colorado River Basin

If NM doesn’t want the Gila water, someone else will!
This is what people picture when they think of the Gila
The Gila River below Redrock
June 2011

This is the frequent reality in places downstream of the Wilderness.
During low flows, the river can dry for significant distances.
Existing Situation: Ecology

• Endangered species going extinct in the valley.

• Riparian and aquatic habitat stressed and dying
Why the river dries:
On OCTOBER 11, 2012, there were 37 cfs in the river; 20 cfs was diverted into the first of three diversions, leaving only 17 cfs for the river and the other diversions: a dry river below the diversions.
Agricultural Community

Small, historic family farms

Three main diversions and ditches

Important riparian habitat

Schematic of the Cliff-Gila Valley
As long as flows are sufficient, there is plenty of water for communities, agriculture and the environment.
When flows get low, you have to make a choice.
The irrigators have the senior right, established in the 1860’s. They have the legal right to take the water, leaving little or none for the stream, wildlife, or riparian habitat.
Depriving either the river or the irrigator violates the ISC policy to BOTH protect the environment and meet human water demands.

If you leave the low flows in the river, you can protect the environment but not meet agricultural water needs.
Some stakeholders propose to resolve the conflict by diverting and storing water during high flows. The diverted water would be conveyed by gravity and stored in an off-stream reservoir.
The water could be returned to the system when flows are low...

...providing for both the environment and agriculture.
If enough storage is available, water could be conveyed to meet additional needs, such as municipal demands.
January to May 1965 — “Average Year”

Diversions happen on only 10% of days, only 7% of the Gila’s flow.

AWSA Diversion
Total = 4,100 acre-feet for an average flow year.
Most AWSA water is harvested during high flow years.
Normal flows at the HWY 211 bridge in the Cliff-Gila Valley
Gila River September 11, 2013, from the HWY 211 bridge
- 11,000 acre-feet per day
- Max = 57,000 acre-feet per day
- 200,000 + acre-feet to AZ in Sept
The red shows the allowable diversions during the September 2013 flood. The red and blue together equal the total flow.

AF/Day

September 2013

Flood at Gila near Gila

The red shows the allowable diversions during the September 2013 flood. The red and blue together equal the total flow.

AWSA Diversion

Total = 28,000 acre-feet out of 200,000+ acre-feet

150 cfs
Diverting under the AWSA actually increases flows in the important low flow 150 cfs to 350 cfs range.
Gila at 137 cfs
• 75% of flows occur at lower than 137 cfs
• 89% of flows occur at less than 150 cfs, the minimum that NM must bypass before diverting.
Response to Growth in Nearby Metropolitan Areas

Population Growth: Denver Metro and Laramie County, WY

- 1960-1970: Denver 29%, Laramie County -6%
- 1970-1980: Denver 29%, Laramie County 22%
- 1980-1990: Denver 14%, Laramie County 7%
- 1990-2000: Denver 30%, Laramie County 12%
Subdivisions are popping up in the Gila Valley
People like their gardens, swimming pools, stock tanks.
Modeling has shown no significant effects on if NM diverts under the AWSA.
Modeling has shown no significant effects on if NM diverts under the AWSA.
Modeling has shown no significant effects on if NM diverts under the AWSA.
Some stakeholders feel the AWSA provides the opportunity to turn periodic drying...

...to a healthy, flowing river
Change stressed and drying riparian habitats...

...to a healthy and vibrant bosque
Change fields fallowed by drought...

...to a robust, sustainable agricultural economy
And to utilize conservation, treated effluent, existing water supplies, and storage of a renewable water source...

...to sustain and improve the quality of life and...
Improve the regional economy...
FOLLOW US AT:
WWW.NMAWSA.ORG