AQUIFER RECHARGE TO SUSTAIN THE SAN PEDRO RIPARIAN NATIONAL CONSERVATION AREA
PRESENTED TO IBWC CITIZENS FORUM

Mark Apel  Cochise County
February 10, 2022
~ Our Vision ~
A flowing San Pedro River.
The conservation of water resources.
A vibrant local economy.
WHO: Sierra Vista, Bisbee, Cochise County, Hereford Natural Resource Conservation District, Ft. Huachuca, The Nature Conservancy

WHAT: Implement a network of recharge projects to meet environmental, social, economic needs

WHERE: 8 projects along 25 miles of the river
USPP formed by ADWR in 1998, as part of their Rural Watershed Initiative

-Initial focus was development of a regional groundwater model
Groundwater Capture Maps

Simulated Effects of Ground-Water Withdrawals and Artificial Recharge on Discharge to Streams, Springs, and Riparian Vegetation in the Sierra Vista Subwatershed of the Upper San Pedro Basin, Southeastern Arizona

Figure 4. Area where groundwater pumping will capture 50% or more of the groundwater moving toward the river in 10 and 50 years.
Existing Project

Sierra Vista EOP Effluent Recharge Facility

- Capacity to treat 4 million gallons per day
- Recharges over 2,700 acre-feet per year
- Less variability than stormwater for recharge
Existing Project

Palominas Flood Control & Stormwater Recharge Pilot Project

- Seasonal groundwater level increases
- Pilot and testing for most effective techniques to get water into ground
Existing Project
Horseshoe Draw Sediment Control & Stormwater Recharge Project
Where is additional recharge needed the most?
How many days does the river flow each year at the Palominas Bridge?
Benefits of Simulated Recharge of San José Wastewater Treatment Facility Effluent Near the San Pedro River

Presented to the Cochise Conservation and Recharge Network

By
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January 11, 2017
Bisbee, Arizona

Lacher Hydrological Consulting
San José Wastewater Treatment Facility (WWTF)

- Replaces all older Bisbee WWTFs;
- Has discharged to Greenbush Draw since 2006;
- Permitted for Class B+ Effluent
- Annual production since 2006 ranges from 322 to 456 AF/yr.
How will recharging treated effluent near the river affect riparian conditions and base flow in the San Pedro River?
2050 Simulated Increase in Groundwater Level (≥0.5 ft) in Model Layer 1 with Recharge

- Benefits 630 acres - mostly eastern edge of SPRNCA
- Benefits 1260 acres
- Benefits 1910 acres
- Almost continuous improvement from Mexico to Hereford bridge
## 2050 Simulated Response to Recharge

<table>
<thead>
<tr>
<th>Simulated Recharge Rate (AF/yr)</th>
<th>Simulated Length of Affected Reach in San Pedro River (miles)</th>
<th>Simulated # of Riparian/Floodplain Acres Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>4.2</td>
<td>630</td>
</tr>
<tr>
<td>300</td>
<td>4.4</td>
<td>1260</td>
</tr>
<tr>
<td>400</td>
<td>4.4</td>
<td>1910</td>
</tr>
</tbody>
</table>

![Graph showing simulated response to recharge]

*Graph 2050 Simulated HD Recharge vs. Riparian Acres Affected in Upper San Pedro River*
Collaboration has been key

USGS and ARS developed a predictive model working closely with the UPPER SAN PEDRO PARTNERSHIP since 1998

U.S. Army provided $8M for land acquisition in hydrologically sensitive areas to increase recharge and preclude new pumping

The Nature Conservancy helps to acquire lands, and provide private funds for water projects, and hydrologic and riparian expertise

City of Bisbee has signed an option agreement that sets the stage for a long-term lease of their effluent for recharging the river

City of Sierra Vista has recharged their treated effluent since 2002 which now serves as a proof-of-concept project

Cochise County has supported the design, implementation and long-term management of recharge projects

Hereford NRCD implemented a new erosion control project that also had recharge benefits on private lands

Citizen scientists in the U.S. and Mexico have volunteered to map the river’s flows annually for 22 consecutive years
Thank you.

Questions?

For more info:
ccrnsanpedro.org