Instream Exchange, LLC

Supplying water in constrained markets

The Problem
Demand for water exceeds supply throughout much of the western United States, leading to water constraints which limit growth, well being and development.

The Opportunity
Instream Exchange (IE) is a venture created to resolve this shortage by securing and marketing water in constrained basins. IE accomplishes this goal by:

• Obtaining ownership of treated effluent from the City
• Partnering with treatment facility to apply treatment to water
• Distributing the water to our clients via surface piping or groundwater recharge.

Approach
Choosing the Right Basin
While a myriad of basins have constraints, only select few hold potential to support a business opportunity. Thus, IE partnered with WestWater Research, LLC who identified seven basins which hold clear business potential. IE then developed the selection matrix, a systematic method of analyzing and ranking basins based on their market to select a pilot with greatest market potential.

Selection Matrix
The Selection Matrix enables IE to assess the demand for water in the basin, the opportunity for supplying the needed water and the legal framework of water rights and transfers in the basin. The figure below presents a summary of the final round of the selection matrix to choose Market 1 as IE’s pilot basin.

Market 1: Demand
Market 1: Supply
Market 1: Legal

Market 2: Demand
Market 2: Supply
Market 2: Legal

Market 3: Demand
Market 3: Supply
Market 3: Legal

For each criterion listed above, green indicates that the basin met the criterion, yellow indicates that it was not clear if the basin met the criterion, and red indicates that the basin did not meet the criterion.

Pilot Basin
Problem in the Pilot Basin
• The basin is capped and water is fully allocated, which limits growth and development
• There are no new water rights in the basin
• The pilot city needs a permanent solution for getting rid of its treated wastewater

IE Solution in Pilot Basin
1. Obtain ownership of treated effluent from the City
2. Partner with treatment facility to apply treatment to water
3. Distribute the water to our clients via surface piping or groundwater recharge.

Market Feasibility
Instream Exchange performed a market feasibility analysis on the pilot basin to determine if and how a private market could increase water supply in the basin. A summary of the analysis is presented below.

Demand for New Water
• Mean price in pilot basin is $5,990/AF
• 3,579 AF – projected basin water need by 2030
• 2,000 AF – potential new demand from neighboring city
• 1,622 AF – potential recycled water demand (recycled effluent water with no additional treatment)
• 2,200 AF – potential new demand from neighboring city
• 3,559 AF – projected basin water need by 2030

Supply of New Water
The current potential sources for new water supply are limited and expensive.

<table>
<thead>
<tr>
<th>Source</th>
<th>Capacity</th>
<th>Cost / Acre-Foot</th>
<th>Quantity (Acre-Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater recharge</td>
<td></td>
<td></td>
<td>652 AF</td>
</tr>
<tr>
<td>Groundwater recharge</td>
<td></td>
<td></td>
<td>519 AF</td>
</tr>
<tr>
<td>Artificial recharge or “storage water” programs</td>
<td></td>
<td></td>
<td>300 AF</td>
</tr>
<tr>
<td>Thermal use</td>
<td></td>
<td></td>
<td>250 AF</td>
</tr>
<tr>
<td>Wastewater treatment facility</td>
<td></td>
<td></td>
<td>150 AF</td>
</tr>
<tr>
<td>Potential new sources</td>
<td></td>
<td></td>
<td>452 AF</td>
</tr>
</tbody>
</table>

Legal and Regulatory Framework
All of the water rights in the basin are allocated and clearly defined. The following legal rules are critical to Instream Exchange’s ability to increase supply in the basin via recharge of treated effluent:

• Withdrawals from the basin are capped
• Transfer of pumping rights to new owners or new soils is legal
• Underutilized pumping rights are not subject to forfeiture
• Artificial recharge or “storage water” programs are allowed

In addition to the Court Judgment, recharge of treated effluent will be subject to several other legal considerations, including:

• Federal Maximum Contaminant Levels (MCLs) for drinking water
• Basin Plan Objectives, established by the Regional Water Quality Control Board (RWQCB)
• State Anti-degradation Policy, which mandates that high quality water be protected to maintain current quality, even if it exceeds all enforced water quality standards
• Groundwater recharge project permit requirements, as established by RWQCB. These requirements are determined on a case-by-case basis

Conclusions
Instream Exchange has found that a demand for new water in the basin exists, that IE could use effluent to create new pumping credits in the basin and that the legal and regulatory environment supports IE’s proposal for generating the additional credits. In addition, this proposed solution provides a long term plan for utilizing wastewater, instead of simply disposing of it.

Instream Exchange intends to lease or purchase the effluent, treat it to standards sufficient for irrigation and recharge, and provide usable water to meet demand within the basin.

Next Steps
With the market feasibility complete, IE needs to determine if its proposed solution meets further research and financial backing. Next steps include:

• Collaborate with wastewater treatment facility to determine the cost of additional treatment
• Approach the City to acquire water rights to the effluent water
• Assign responsibility for the effluent
• Evaluate costs for recharge and conveyance of recycled water
• Create business model to determine the valued added of securing, treating and distributing effluent water

Team
Instream Exchange: Liz Whiteley, Jake MacArthur, Ryan Smith
Partner: WestWater Research, LLC
Advisors: Bob Wilkinson, Tom Danne

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