Thousand Springs Reach Water Management Projects

Brian W. Patton
Idaho Department of Water Resources
# Water Management Projects Summary Table

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Amount of Water (Acre-Feet)</th>
<th>Preliminary Estimated Construction Cost</th>
<th>Preliminary Estimated O&amp;M Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line Selected Hagerman Valley Canals</td>
<td>18,500</td>
<td>$5,000,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Brailsford Pipeline-Seapac Pump Project</td>
<td>4,000</td>
<td>$115,000</td>
<td>$25,000</td>
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<tr>
<td>Hunt Ditch - Curren South Pipeline Pump</td>
<td>1,400</td>
<td>$107,000</td>
<td>$14,000</td>
</tr>
<tr>
<td>Padgett/Bell Ditch Spill Pump Back</td>
<td>1,200</td>
<td>$127,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Niagara Pump Back to Irrigation</td>
<td>4,300</td>
<td>$57,000</td>
<td>$24,000</td>
</tr>
<tr>
<td>Briggs Springs Irrigation Pump</td>
<td>2,400</td>
<td>$141,000</td>
<td>$25,000</td>
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<tr>
<td>North Hagerman Pump Project</td>
<td>11,000</td>
<td>$900,000</td>
<td>$400,000</td>
</tr>
<tr>
<td>Billingsley Creek Ranch Fish Farm Pump</td>
<td>6,500</td>
<td>$66,000</td>
<td>$18,000</td>
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<tr>
<td>Clear Lake Pump Back</td>
<td>36,200</td>
<td>$616,000</td>
<td>$85,000</td>
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<tr>
<td>Other Hatchery Pump Backs</td>
<td>72,400</td>
<td>$2,000,000</td>
<td>$300,000</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td><strong>157,900</strong></td>
<td><strong>$9,129,000</strong></td>
<td><strong>$911,000</strong></td>
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</tbody>
</table>
Hagerman Valley Canals Proposed for Lining

<table>
<thead>
<tr>
<th>Canal</th>
<th>Estimated Construction Cost</th>
<th>Estimate of saved water*</th>
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</thead>
<tbody>
<tr>
<td>Big Bend Ditch</td>
<td>$1,335,000</td>
<td>5,790 AF</td>
</tr>
<tr>
<td>Buckeye Ditch</td>
<td>$1,422,000</td>
<td>5,490 AF</td>
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<tr>
<td>Brailsford Ditch</td>
<td>$580,000</td>
<td>2,000 AF</td>
</tr>
<tr>
<td>Curren Ditch</td>
<td>$509,000</td>
<td>1,200 AF</td>
</tr>
<tr>
<td>Hunt Ditch</td>
<td>$480,000</td>
<td>1,670 AF</td>
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<tr>
<td>Sands Ditch</td>
<td>$599,000</td>
<td>2,310 AF</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$4,945,000</strong></td>
<td><strong>18,460 AF</strong></td>
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</table>

*Based on conveyance loss numbers developed for the SRBA Court

- Reduce conveyance losses for canals that utilize springs or spring-fed streams for water supply.
- Firm up water supply for water users on these canals.
Brailsford-Seapac Pump Project

- Replace spring flows piped across Snake River for irrigation through the Brailsford pipeline with Snake River pumping plant.

- Allows the Brailsford water to pass through Seapac’s Magic Springs Hatchery.

- After passing through hatchery, the Brailsford water would then be pumped from the Snake River.

- Estimated water supply increase for Seapac: 4,000 AF/yr

Preliminary Estimated Costs

Construction: $115,000
Annual O&M: $25,000
Hunt Ditch – Curren South Pipeline Pump Project

- Replace spring flows piped across the Snake River for irrigation with Snake River pumping plant.

- Pump saved spring flows into Buckeye Farms system to offset their use of spring flows delivered through the Curren Ditch system.

- Estimated water supply increase to Billingsley Creek system: 1,400 AF/yr

- Companion to similar project proposed by Buckeye Farms through the ESPA Mitigation Grant program.

**Preliminary Estimated Costs**

- Construction: $107,000
- Annual O&M: $14,000
Padgett-John Bell Ditch Spill Pump Project

- Capture spills from Padgett Ditch and John Bell Ditch and deliver for irrigation use in the Birch Creek area.
- Offset/replace use of Birch Creek springs and other springs for irrigation use.
- Estimated water supply increase: 1,200 AF/yr.

Preliminary Estimated Costs

- Construction: $127,000
- Annual O&M: $10,000
Niagara Spring Pump Back to Irrigation Project

- Pump hatchery outflow up to the state Wildlife Management Area diversion to offset the use of spring flows for irrigation.
- Allows flows currently diverted for irrigation to pass through the hatcheries.
- Estimated water supply increase to hatcheries: 4,300 AF/yr

**Preliminary Estimated Costs**

- Construction: $57,000
- Annual O&M: $24,000
Briggs Spring Pump to Irrigation Project

- Pump from Snake River to replace use of Briggs Springs flows for irrigation.
- Allows the offset irrigation flows to pass through the hatcheries.
- Estimated water supply increase to Briggs Spring users: 2,400 AF/yr.

Preliminary Estimated Costs

Construction: $141,000
Annual O&M: $25,000
North Hagerman Irrigation Pump Project

- Replace use of Billingsley Creek flows by three irrigation-only canals with pumping from Snake River.
- This assumes “high-lift” water will be available for use in this project.
- Also allows flows offset from the Hagerman Water Users Ditch to pass through the Aquarius Aquaculture hatchery.
- Estimated water supply increase to Billingsley Creek system: 8,000 AF/yr
- Estimated water supply increase to Aquarius Aquaculture: 3,000 AF/yr

**Preliminary Estimated Costs**

Construction: $900,000
Annual O&M: $400,000
Augment spring flow supply with pumping from Billingsley Creek.

Flow would return to Billingsley Creek at approximately same location as pump.

This assumes other water management projects increase Billingsley Creek flows to a sufficient level.

Estimated water supply increase to Billingsley Creek Ranch Fish Farm: 6,500 AF/yr

Preliminary Estimated Costs

Construction: $66,000
Annual O&M: $18,000
Clear Lake Pump Back Project

- Recycle flow for the benefit of hatcheries at this location.
- Pump from Clear Lake to upper end of diversion facilities.
- Mix recycled flow with new spring flows to augment water supplies.
- For preliminary planning a flow rate of 50 cfs was selected, which results in 36,200 AF/yr

Preliminary Estimated Costs

Construction: $616,000
Annual O&M: $85,000
Other Hatchery Pump Backs

- Pump back systems could be installed at other hatcheries throughout the Thousand Springs reach.
- Within the Thousand Springs reach the aggregate aquaculture water rights total approximately 3,000 cfs.
- It is assumed, with other parties bearing the costs, enough aquaculture facilities will want pump backs to reach a target of 100 cfs (72,400 AF) throughout the Thousand Springs reach -- 3% of aquaculture water rights.
Managed Recharge Projects

David Blew
Idaho Department of Water Resources
## Managed Recharge Projects Summary Table

<table>
<thead>
<tr>
<th>Milepost 31</th>
<th>$535,000</th>
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<tbody>
<tr>
<td>K Canal</td>
<td>$685,000</td>
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<tr>
<td>W Lateral (Wendell Sites)</td>
<td>$90,000</td>
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<tr>
<td>Janss and W37</td>
<td>$75,000</td>
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<tr>
<td>Delivery System Improvements</td>
<td>$100,000</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$1,485,000</strong></td>
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<tr>
<td><strong>ESTIMATED O&amp;M AND OPERATIONAL COST</strong></td>
<td><strong>$1,112,920</strong></td>
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<tr>
<td><strong>Total Acre Feet</strong></td>
<td><strong>219,000</strong></td>
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</table>
Recharge on the North Side Canal

500 cfs Diversion at Milner Dam
- Transmission loss – 50cfs
  - Wilson Lake
    - Transmission loss – 50cfs
      - Sugar Loaf and K Canal
        - Transmission loss – 100 cfs
          - W Lateral Recharge Sites
            - Transmission loss – 50cfs
              - Janss and W 37 Recharge Sites
                - Recharge 30 cfs

Recharge 100 cfs
Recharge 70 cfs
Recharge 50 cfs

Recharge on the Milner-Gooding Canal

700 cfs Diversion at Milner Dam
- Transmission loss – 100cfs
  - Milepost 31 Recharge site
    - Transmission loss – 100cfs
      - LSRARD Recharge Site
        - Transmission loss – ??
          - Dahar Flume
            - Big Wood River

ESPAAquifer

North Side Canal
Total Recharge via transmission losses and recharge basins
137059 Acre Feet

Milner-Gooding Canal
Total Recharge via transmission losses and recharge basins
185011 Acre Feet
Diversion Potential at Milner into the Milner-Gooding Canal

Cumulative Diversions from 1982 - 2001

Total 1.949 Million Acre Feet
Diversion Potential at Milner into the North Side Canal

Cumulative Diversions from 1982 - 2001

Total: 1.716 Million Acre Feet
30 Year Amortized Cost for Implementation of Conjunctive Management Projects on the ESPA

Year of Implementation

Development Phase