



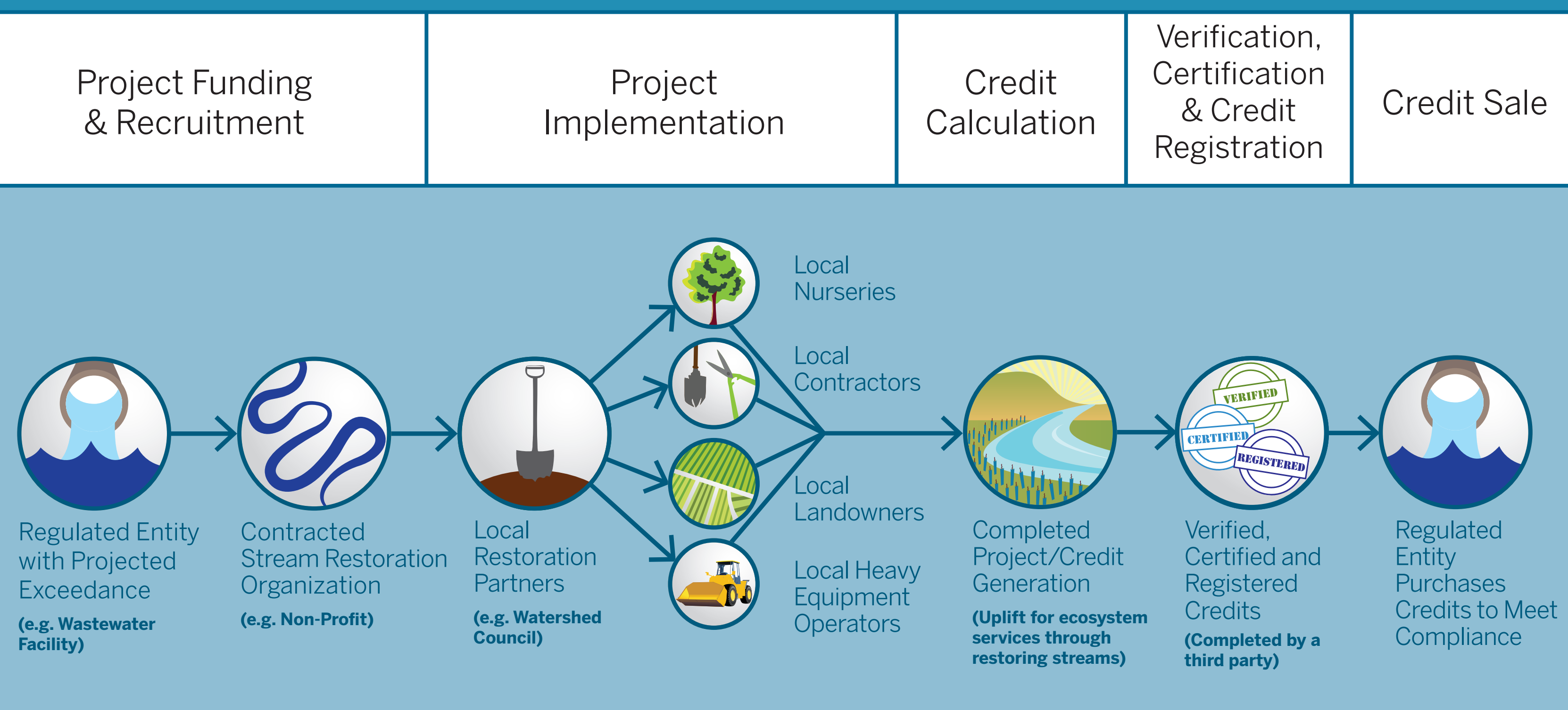
The Freshwater Trust is a 501(c)(3) not-for-profit organization that actively works to preserve and restore freshwater ecosystems.

# Water Quality Trading Program Requirements and Monitoring

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## Restoration Transaction Process



## Case Study: City of Medford

**Population:** 170,000

**Projected Excess Heat under new TMDL limits:**  
300 million kcals/day in 10 years

### Options:

- Giant holding pond to store water for 1 month each year: **\$16 Million**
- 10-15 miles of native riparian vegetation restored and maintained for 20 years: **\$6.5 Million**

### Outcome:

- Riparian restoration program to comply with NPDES permit requirements

### Money Stays in Local Economy:

- Money pays local restoration contractors
- Farmers get annual lease payments
- Restoration = **20 jobs per \$1 Million spent\***

\* Adapted from M. Nielsen-Pincus, C. Moseley, 2010. Economic and Employment Impacts of Forest and Watershed Restoration in Oregon. Ecosystem Workforce Program Working Paper Number 24. University of Oregon. <http://ewp.uoregon.edu/sites/ewp.uoregon.edu/files/downloads/WP24.pdf>

### Four Keys for Communities

- **ECONOMIC:** Restoration for compliance is generally far less expensive than technological solutions, spread over many years
- **SOCIAL:** Restoration keeps money in the local community, creating jobs
- **ECOLOGICAL:** The restoration solution converts point-source investment into non-point source projects, with multiple environmental benefits
- **TURN-KEY:** Cities only pay for certified credits



## Riparian Restoration vs. Credit Generating Restoration

Traditional Restoration Steps	Compliance-Grade Credit Generation Steps
Identify project site	Identify project site
Fundraising	Financing
	Negotiate 20+ year contract with landowner
	Collect pre-project data
Project design	Project design
	Estimated credit values
Implement	Implement
	Verification that implementation meets standards
	Certification that credits meet accounting protocols
	Credit registration
Monitoring and maintenance (Years 1 – 3)	Monitoring and maintenance (Years 1 – 3)
	Monitoring and maintenance (Years 4 – 20)
	Annual payments to landowners (20+ years)

Local Project Managers

The Freshwater Trust

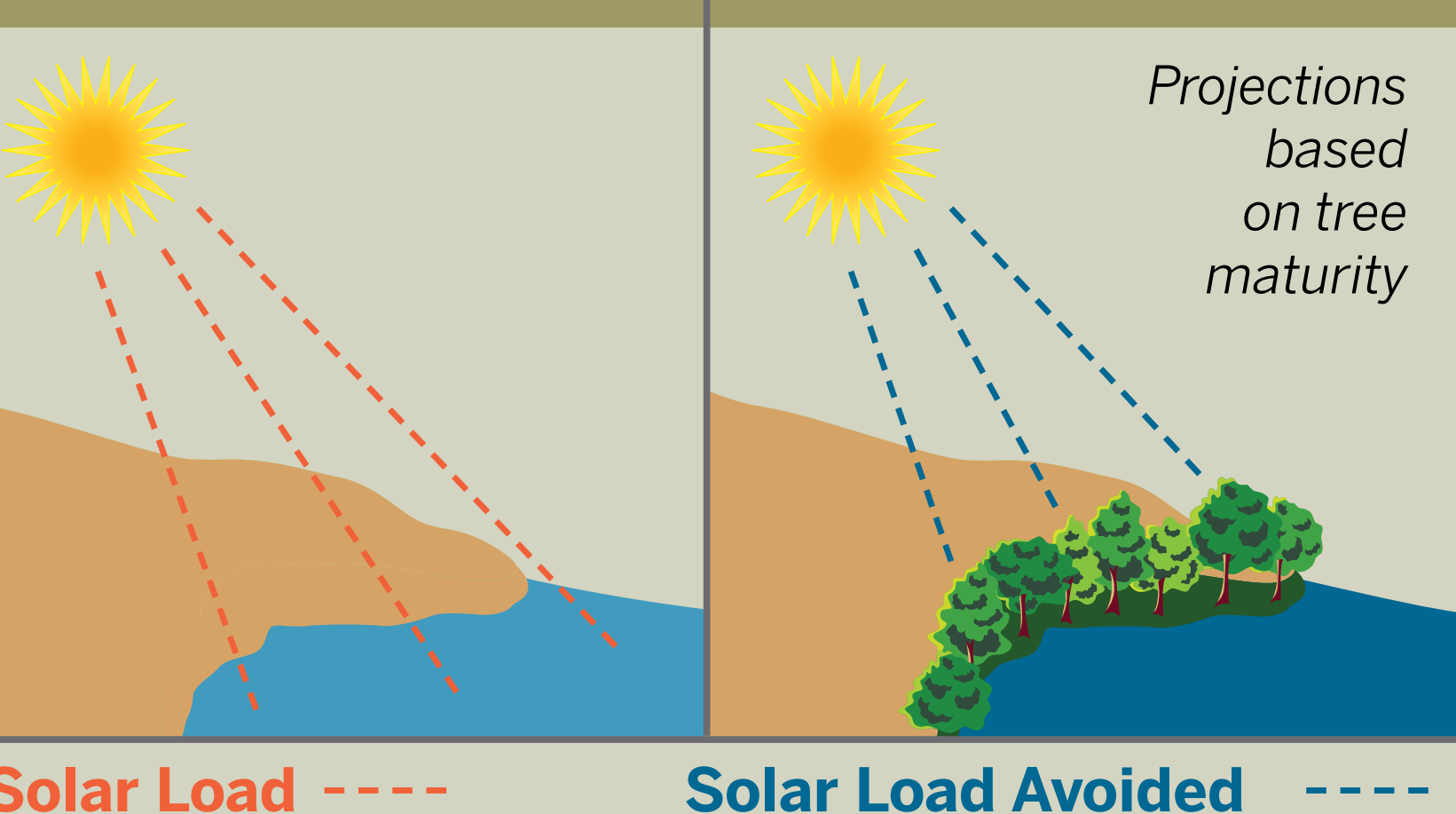
### HOW IT WORKS:

Calculating Uplift for Solar Load Avoided

**UPLIFT = Change in kilocalories per day (a measurement of energy)**

BEFORE Restoration

AFTER Restoration

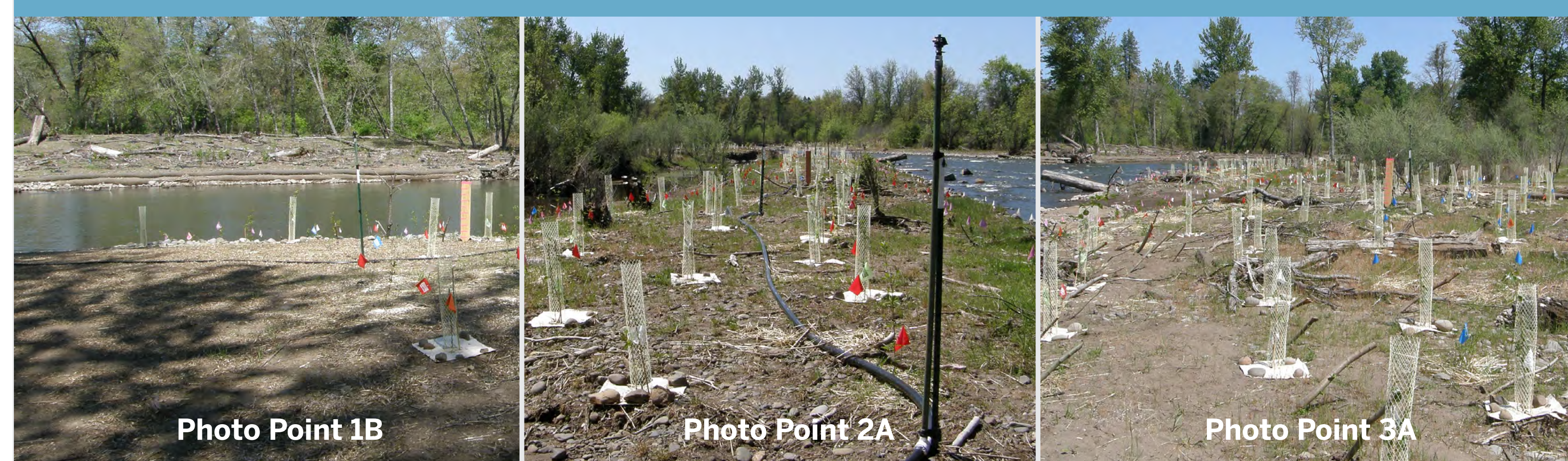


Credit Type	Pre-Project	Post-Restoration	Reduction
<b>Temperature (kCals/day)</b>	56,246,205	41,726,475	<b>14,519,730</b>
<b>Phosphorus (lbs/year)</b>	6	1	<b>5</b>
<b>Nitrogen (lbs/year)</b>	103	12	<b>91</b>
<b>Sediment (lbs/year)</b>	8,243	3,331	<b>4,912</b>

**Nutrient Tracking Tool** — <http://nn.tarleton.edu/NTTWebARS/>  
A. Saleh, O. Gallego, E. Osei, H. Lal, C. Gross, S. McKinney and H. Cover, 2011. Nutrient Tracking Tool—a user-friendly tool for calculating nutrient reductions for water quality trading. Soil and Water Conservation Society. November/December 2011 vol. 66 no. 6 400-410

**Heat Source** — <http://www.deq.state.or.us/wq/tmdls/tools.htm>  
M. Boyd and B. Kasper, 2003. Analytical methods for dynamic open channel heat and mass transfer: Methodology for heat source model Version 7.0. Oregon Department of Environmental Quality.

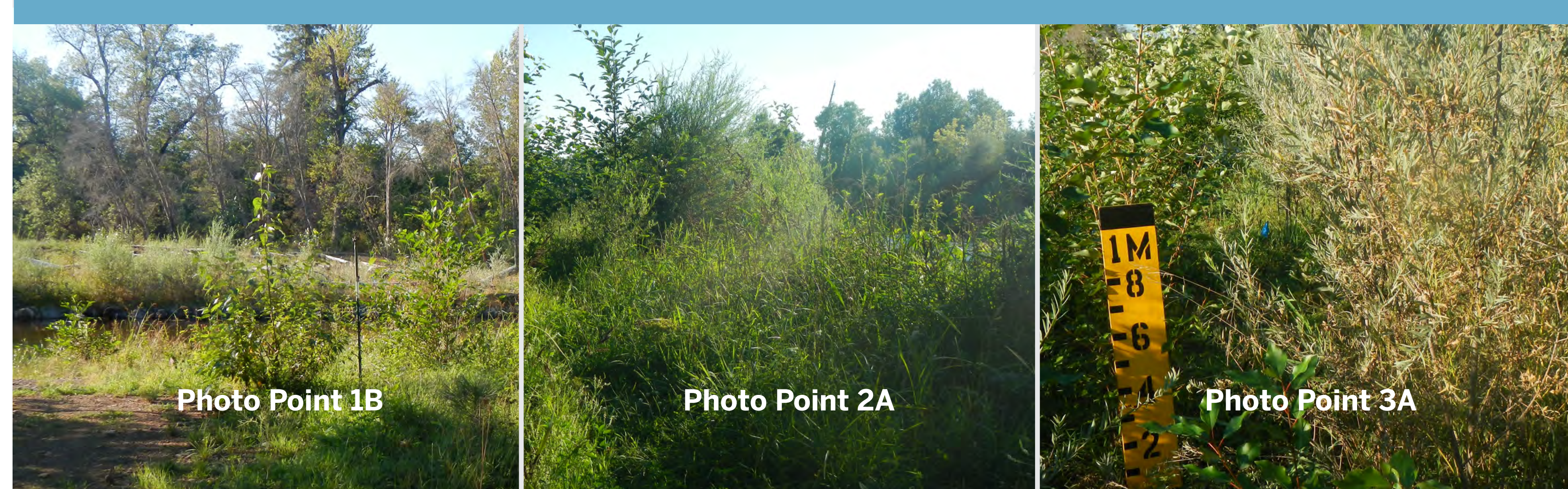
### As Built Conditions: May 2012



### Year 1 Conditions: September 2012



### Year 2 Conditions: September 2013



## Three Keys to Restoration Viability

For restoration to be a viable compliance alternative...

### CLEAR AUTHORITY:

Regulators must adopt and promote required rules

### CLEAR FRAMEWORK:

Approved standards and protocols for measuring ecosystem services and implementing credit generating projects

### CLEAR ROLES:

Third parties (such as The Freshwater Trust) willing to assure delivery of compliance-grade credits with secure, turn-key projects

