Upper Apple Valley Restoration
April, 2015
Final Report

OVERVIEW

The Flood of September 2013 destroyed much of the cottonwood riparian forest along North St. Vrain Creek between Lyons and the Apple Valley Road bridge about 2.5 miles upstream. The photographs below show the current condition of North St. Vrain Creek about ¼ mile downstream of the bridge; the companion photo was taken in July 2010 looking upstream prior to the flood. The photographs show that the riparian forest downstream of the Apple Valley Road Bridge was nearly obliterated. In 2014, the channel of the creek for a half-mile downstream of the bridge was reconstructed with heavy equipment by the Colorado Water Conservation Board. The project site is now ready for replanting.

PROJECT SCOPE

The site includes about 2500 feet of the North Saint Vrain Creek in upper Apple Valley, downstream of the landmark wooden bridge, plus another 800 feet of stream further downstream. The revegetation area encompasses about 8 acres left devoid of vegetation by the flood and subsequent equipment work to reconstruct the stream

This area is listed as a priority for restoration in the Saint Vrain Master Plan, and the Saint Vrain Watershed Coalition authorizes and supports the work. WRV discussed the project with all affected property owners and got written permission to work on their land. All were very enthusiastic and supportive.

SITE PREPARATION

A backhoe mounted "stinger" was used to make many hundreds of holes through the cobbly streamside substrate.

Over 500 bales of WoodStraw mulch was delivered and pre-staged in pallets. 280 bales were donated by the manufacturer.

SUMMARY OF REVEGETATION TREATMENTS

Seeding

Volunteers broadcast seeded a native seed mix, mostly grasses, in order to establish ground cover relatively quickly. The seed mix also contains a small amount of ReGreen (sterile cover crop) and quick-growing native forbs.

Species (Common Name)	Seeds/LB	% of Mix	PLS LBS Seed	Price / LB
Elymus lanceolatus ssp. lanceolatus (Streambank Wheatgrass) – cool	153,000	14.00	31.887	$7.00
Pascopyrum smithii (Western Wheatgrass) – cool	115,000	10.00	30.303	$8.00
Sporobolus cryptandrus (Sand Dropseed) – warm	5,200,000	10.00	0.670	$5.00
Elymus canadensis (Canada wildrye) – cool	115,000	10.00	30.303	$12.50
Stipa viridula (Green Needlegrass) – cool	181,000	10.00	19.253	$8.00
Chondrosum gracile (Blue Grama) – warm	825,000	6.00	2.534	$15.00
Elymus trachycaulus (Slender Wheatgrass) – cool	159,000	8.00	17.534	$5.00
Calamovilfa longifolia (Prairie Sandreed) – cool	273,000	6.00	7.659	$22.00
Bouteloua curtipendula (Side Oats Grama) – warm	190,000	5.00	9.171	$13.00
Panicum virgatum (Switchgrass) – warm	200,000	6.00	10.454	$8.00
ReGreen - nurse cover crop	12,000	2.00	58.080	$4.85
Elymus elymoides (Bottlebrush Squirreltail) – cool	192,000	4.00	7.260	$15.00
Koeleria macrantha (Prairie Junegrass) – warm	2,300,000	4.00	0.606	$30.00
Achillea lanulosa (Western Yarrow)	2,700,000	2.00	0.258	$45.00
Artemisia Frigida (Fringed Sage)	4,500,000	2.00	0.155	$30.00
Aster laevis (Smooth Blue Aster)	1,280,000	1.00	0.272	$165.00

Soil Amendments

Because the post-flood soils are very low in nutrients (sand and cobble), WRV spread organic Biosol fertilizer at a rate of 600 LBS per acre. This is a light application intended to temporarily boost native plant establishment, without stimulating weed growth.

Mulch

WoodStraw mulch was spread over the seeded area, above the anticipated bank full level, at a rate of 150 45-LB bales per acre. Woodstraw mulch helps to keep seeds moist, provides some organic matter, has no risk of weed seed contamination, resists soil erosion, and resists blowing up to 100 MPH wind.

Planting of Purchased Stock

We planted the following quantities of available purchased stock.

Species	Size	Quantity
Padus virginiana, Chokecherry	Bare-root	75
Prunus sp., Native plum	Bare-root	75
Alnus incana ssp. tenuifolia, Thin-leaf alder	Large tubes	90
Salix exigua, Coyote willow	Large tubes	60
Salix exigua, Coyote willow	Bare-root	50
Salix amygdaloides, Peach-leaf willow	Bare-root	40
Populus deltoids, Plains cottonwood	#1 and #10	45

Planting of locally gathered Willow Stakes

WRV volunteers gathered dormant willow poles from two sites in Boulder and Longmont, utilizing materials that would have been otherwise destroyed and wasted.

Volunteers planted these poles into holes made by the backhoe mounted stinger or by hand with a "willow probe" driven in by sledge hammer.

Altogether, over **3000** willows were planted on two dates, April 11, and May 3. The later date was added so we could plant more willows higher on the bank as the water table rose with run-off. Most of the willow stakes were submerged during the recent flooding, but were solidly embedded in 18 to 30" of rocky substrate, so we expect most of them to survive and grow in the coming months.

VOLUNTEERS

Volunteers participated on four dates in April and May, including 2 small events to harvest willows, 1 large event (120 volunteers) to begin the planting, and 1 additional small event to finish the planting.

Altogether, **168** volunteers contributed **1309** hours, valued at $29,500.