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## FINAL PROJECT MEMORANDUM

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**TO:** WRIA 54 WIT  
**FROM:** THE LANDS COUNCIL  
**SUBJECT:** WRIA 54 DEEP COULEE CREEK WATERSHED RESTORATION  
PROJECT 2012 UPDATE  
**DATE:** 7/16/2012  
**CC:** SPOKANE COUNTY WATER RESOURCES



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### INTRODUCTION

This memorandum describes the work completed and presents initial data collected for the WRIA 54 Deep Coulee Creek Watershed Restoration Project (project) between July 1, 2011 and June 30, 2012. The project is funded by Washington Department of Ecology (Ecology) and is administered by Spokane County Water Resources under Professional Service Agreement Contract number P7390.

This project began on July 1, 2011. Work completed between July 1, 2011 and June 30, 2012 includes the following:

- Door-to-door and selective mailing outreach conducted to 20 and 45 residences, respectively, on properties along Deep and Coulee Creeks.
- Site visits and assessments conducted on 8 properties, which was narrowed down to 4 final sites due to ease of access and need for restoration.
- Re-vegetation actions implemented, including seed broadcasting on bare ground, willow whips, willow poles, and sedges planted along riparian zone, and upland trees and shrubs planted where appropriate.
- Materials planted catalogued and photo points taken at each site.
- Newly planted vegetation watered regularly. Competing vegetation surrounding the plants, such as reed canary grass, was trimmed or removed, and ground cloth was placed around plants.

Figure 1 shows the site locations while Figures 2-4 show the individual site maps.

### IMPLEMENTATION ACTIONS

#### *Outreach*

Targeted outreach was conducted by The Lands Council (TLC) staff and volunteers in the fall of 2011. Using Spokane County Assessor's interactive parcel map, properties along Deep and Coulee Creeks of 50 acres or larger were selected for outreach. Staff and volunteers went door to door, speaking reach 20 residences. A letter of request from TLC and a letter of support from WRIA 54 Watershed Implementation

Team were sent to an additional 45 residences. Of these, 8 residences responded positively to restoration actions and requested site visits.

*Site Assessment and Selection*

Site assessments were conducted at 8 properties in the fall of 2011. Qualities that were required for final selection included relatively easy access to the riparian area due to the need to bring materials and volunteers to the site, perennial stream flow since many parts of Deep and Coulee Creeks flow underground during some of the year, and a need for restoration. Final site selection was narrowed down to 4 of these sites. Table 1 describes each of the 4 restoration sites.

**Table 1 – Site Descriptions**

| Site Name | Parcel No.                | Stream Name  | Acres | Stream Miles |
|-----------|---------------------------|--------------|-------|--------------|
| <b>C1</b> | 06295.9003,<br>06295.9002 | Coulee Creek | 629   | 1.2          |
| <b>C2</b> | 06251.9046                | Coulee Creek | 81    | 0.5          |
| <b>D1</b> | 15056.9045                | Deep Creek   | 252   | 1.0          |
| <b>D2</b> | 15083.9107,<br>15085.9110 | Deep Creek   | 36    | 0.8          |

*Re-Vegetation Actions*

A variety of re-vegetation actions were employed. In late-fall of 2011, site D1 seed broadcasting on bare ground. The goal was to seed eroded stream banks without disturbing the ground before snowfall. The mix of seeds used was of native wetland and upland plants, and the mix was designed by Rainier Seed Company.

In the spring of 2012, further re-vegetation actions were employed at each site. Specifically, there were 5 types of methods/materials used. Branches of willow trees from site D1, which contained a few mature, healthy, native willow trees, were harvested in the late winter. These branches, known as willow poles, soaked in water before being planted in the spring. Willow and cottonwood whips were purchased from the Spokane Conservation District (SCD) tree sale in April, 2012. Whips were up to 36” long and included *Salix exigua*, *Salix lasiandra*, and *Populus trichocarpa*. Alder, *Alnus incana*, 4 cubic inch plugs were purchased from Plants of the Wild and planted in the riparian zone. A variety of sedge plugs, 10 cubic inch in size, was also purchased from Plants of the Wild and planted in the riparian zone. Species include *Carex amplifolia*, *Carex lasiocarpa*, *Carex utriculata*, and *Carex nebrascensis*. Finally, a variety of potted, native upland plants from TLC’s nursery were used. These plants were initially obtained from SCD’s tree sale in April, 2011. Species include *Betula occidentalis*, *Comus stolonifera*, *Crataegus douglasii*, *Pinus ponderosa*, *Populus tremuloides*, *Prunus virginiana*, *Rosa woodsii*, and *Sorbus sitchensis*.

Table 2 shows the date, method, and number of plants that were planted at each site, and the totals for each category.

**Table 2 – Re-Vegetation Actions by Date Implemented**

| <b>Date</b>      | <b>Site</b>    | <b>Poles</b> | <b>Whips</b> | <b>Alders</b> | <b>Sedges</b> | <b>Potted</b> | <b>Total</b> |
|------------------|----------------|--------------|--------------|---------------|---------------|---------------|--------------|
| <b>6-Apr-12</b>  | D1             | 3            | 0            | 0             | 0             | 0             | <b>3</b>     |
| <b>12-Apr-12</b> | C1             | 17           | 100          | 25            | 0             | 12            | <b>129</b>   |
| <b>13-Apr-12</b> | C1             | 6            | 100          | 0             | 60            | 37            | <b>228</b>   |
| <b>18-Apr-12</b> | D1             | 5            | 70           | 0             | 25            | 0             | <b>100</b>   |
| <b>18-Apr-12</b> | D2             | 0            | 50           | 0             | 0             | 15            | <b>65</b>    |
| <b>18-Apr-12</b> | C1             | 0            | 50           | 0             | 0             | 0             | <b>50</b>    |
| <b>19-Apr-12</b> | C2             | 0            | 125          | 0             | 35            | 33            | <b>193</b>   |
| <b>23-Apr-12</b> | C2             | 0            | 0            | 0             | 0             | 27            | <b>27</b>    |
| <b>24-Apr-12</b> | C1             | 0            | 0            | 0             | 0             | 75            | <b>75</b>    |
| <b>2-May-12</b>  | C1             | 0            | 0            | 0             | 0             | 145           | <b>145</b>   |
| <b>9-May-12</b>  | D1             | 0            | 250          | 0             | 0             | 0             | <b>250</b>   |
| <b>9-May-12</b>  | D2             | 0            | 250          | 0             | 0             | 0             | <b>250</b>   |
| <b>14-May-12</b> | C1             | 0            | 1000         | 0             | 0             | 0             | <b>1000</b>  |
|                  | <b>Totals:</b> | <b>31</b>    | <b>1995</b>  | <b>25</b>     | <b>120</b>    | <b>344</b>    | <b>2515</b>  |

*Monitoring and Maintenance*

During planting and in some cases as a follow-up, an organic repellent known as Plantskydd® was sprayed on some plants in order to reduce herbivory. Other plants had tree tubes installed over them to protect against herbivory, though plants nearest the floodplain did not receive tree tubes due to the risk of being knocked over and injuring the plant during high flow.

Once planting was complete, former potted plants were watered by hand on average once a week until June 30, 2012. During June further maintenance actions included trimming and digging vegetation, mostly reed canary grass, which surrounded any of the newly planted material. Upland plants also had 3' x 3' squares of ground cloth staked in around them, to ensure the plants were not shaded out by others.

Photo points were taken at each site, with a 2 meter, striped photo pole visible in each photo to show scale. These pictures can be seen in Figures 5-14. More qualitative monitoring was done at each site during maintenance, mainly assessing plant health and rate of herbivory.

## DISCUSSION

All sites were prone to significant ungulate browsing pressure and shading from reed canary grass (RCG). At site C1, the landowner had planted willow whips in the previous year which were not maintained and apparently died from shading by surrounding RCG.

Plantskydd had some effectiveness at deterring browsing where tree tubes couldn't be used in the flood-prone zone with strong currents. However, it seems to wear off in some instances, and possibly cause leaf scorch on some species. Further observations show that tree tubes also present a risk of overheating the plant with limited water or ventilation, or improper installation. In ideal conditions, tree tubes seem to be the best way to protect trees from browsing.

Seven to ten foot cuttings (poles) of willow were almost always effective at taking root and leafing out, and required minimal maintenance if planted at least 3 feet deep into the summer water table.

Regular watering, combined with a wet spring, had a positive effect on survival rates. Initial survival rates are over 80% at all sites.

## RECOMMENDATIONS

Following the 2012 season's riparian restoration procedure, combined with input from collaborating programs, TLC has developed the following recommendations toward future projects and adaptive management:

- Larger, more mature planting materials should be used- especially if height can exceed browse zone and RCG height
- For shorter willow cutting, RCG needs to be trimmed back to open canopy above cutting and prevent shading out
- Cuttings should be planted to a depth below the RCG root zone
- Ideally, RCG should be completely removed surrounding new plantings until the plantings become established
- Herbivory is hard to manage, and a combination of tree tubes and Plantskydd, while at times effective, need to be monitored regularly in case tubes fall over or Plantskydd wears off
- Securing 3 square foot ground cloth around plantings has high potential for reducing impact of RCG, though further observation is needed

# Figures

**Figure 1: Site Locations within Lower Spokane Watershed**



**Legend**

- City
- Site Parcel Boundaries
- Reservoir
- Stream
- Watershed Boundary

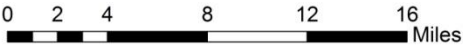
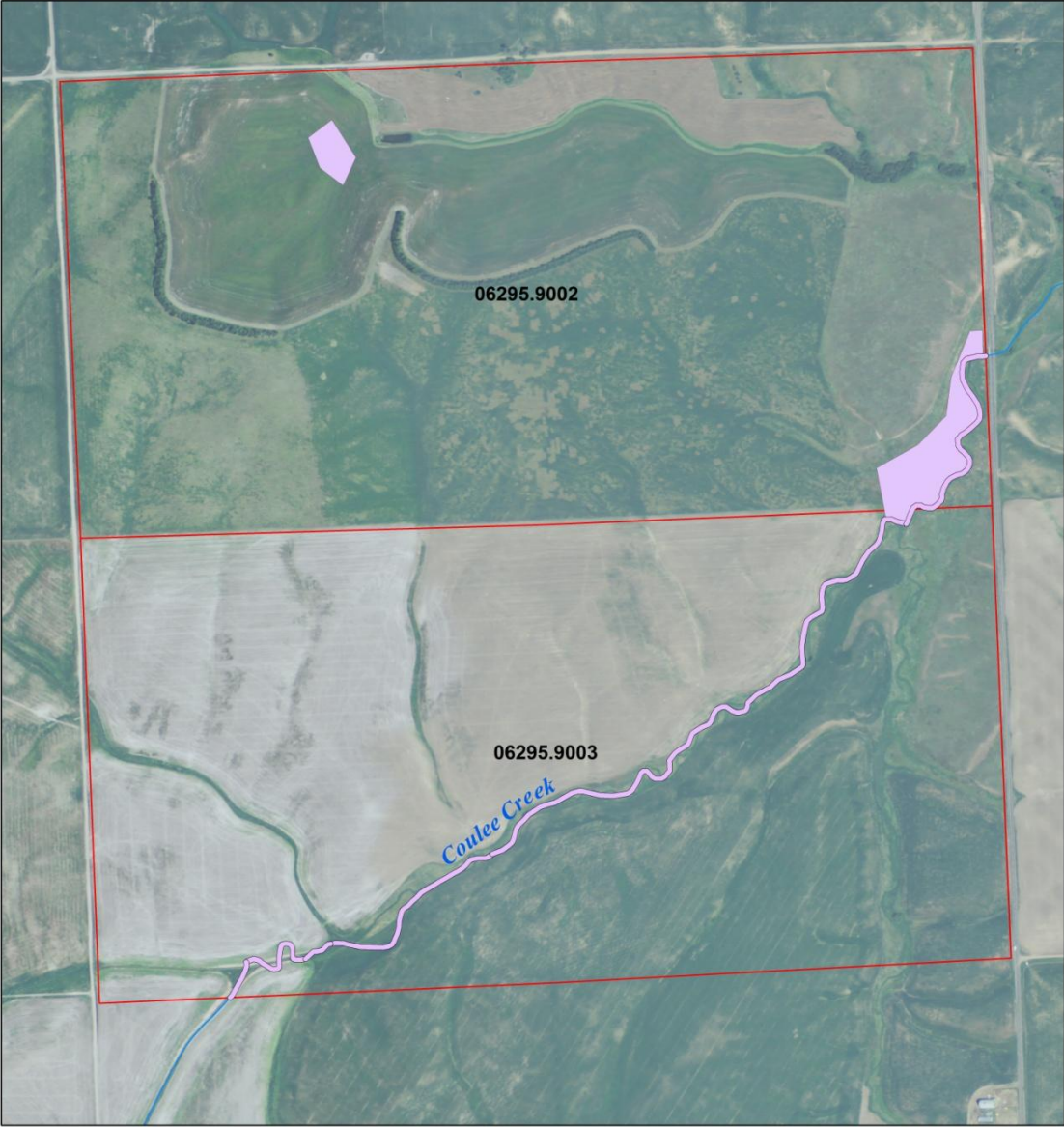





Figure 2: C1 Site Map



**Legend**

-  Areas Restored
-  Creek
-  Parcel Boundary

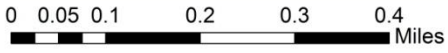

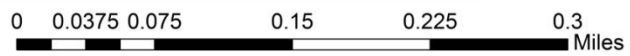
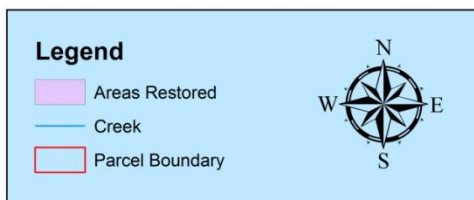
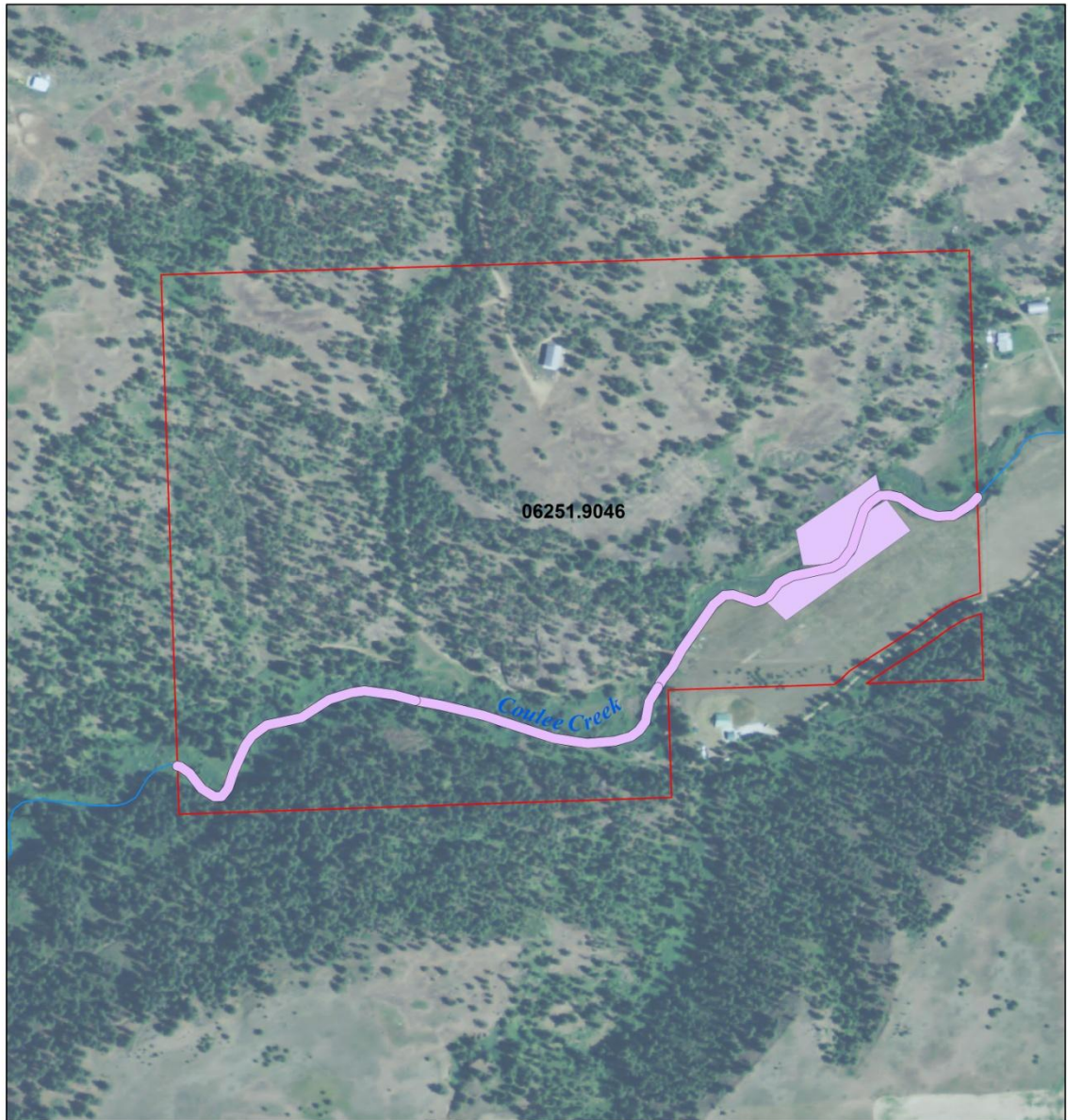


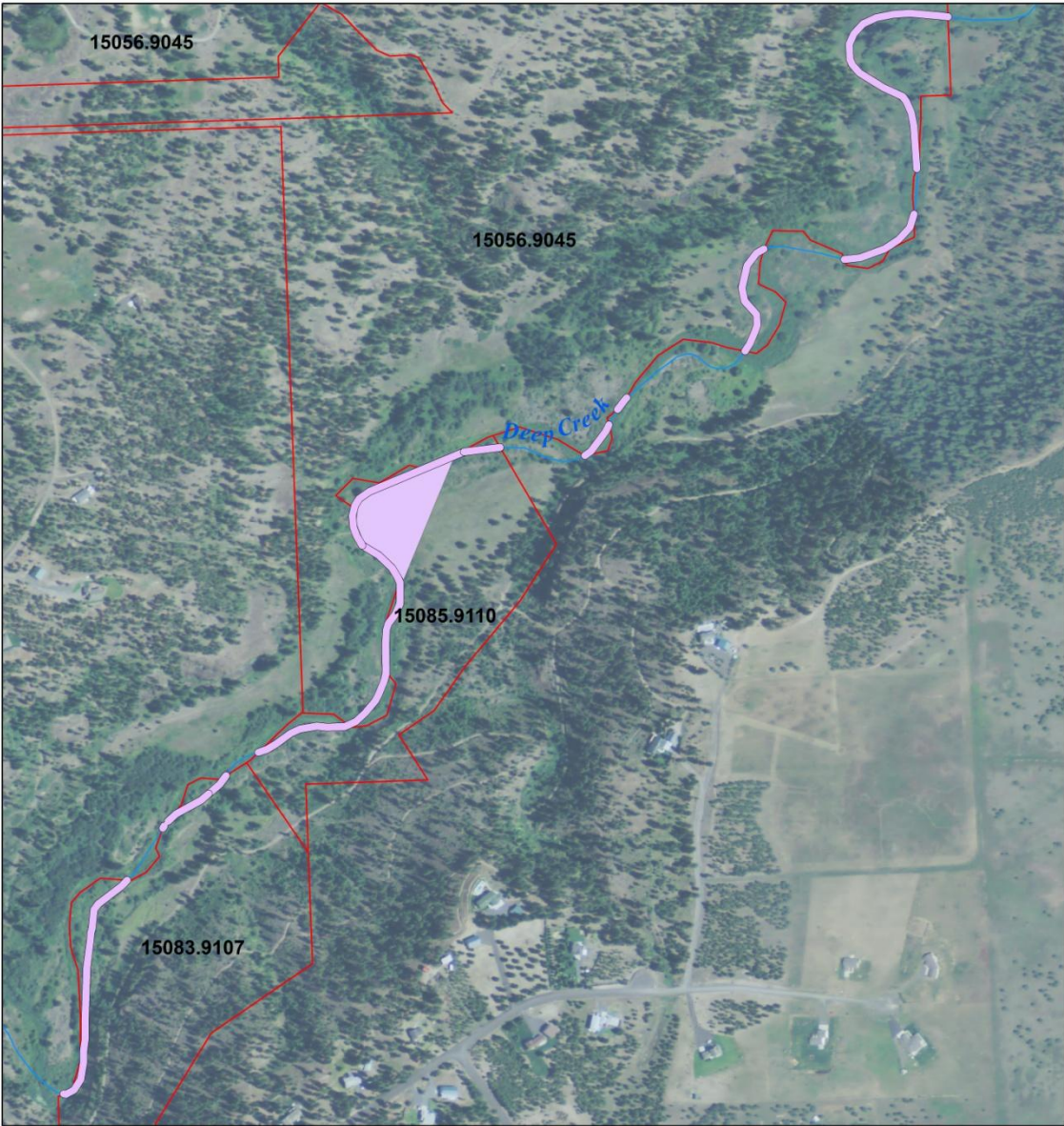


Figure 3: C2 Site Map



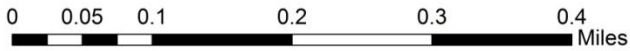



**Figure 4: D1 and D2 Site Map**



**Legend**

- Areas Restored
- Creek
- Parcel Boundary



**Figure 5: Photo Point 1, Site C1**





**Figure 6: Photo Point 2, Site C1**



**Figure 7: Photo Point 3, Site C1**





**Figure 8: Photo Point 1, Site C2**



**Figure 9: Photo Point 2, Site C2**





**Figure 10: Photo Point 3, Site C2**



Figure 11: Photo Point 1, Site D1





**Figure 12: Photo Point 2, Site D1**



**Figure 13: Photo Point 1, Site D2**





Figure 14: Photo Point 2, Site D2

