

# Rancho Del Sol Revegetation Plan

## Location of Restoration Sites

The Rancho del Sol Streambank Stabilization Project is located on the Scott River at river kilometer (rkm) 67 (PLSS Township 42 N Range 09 W, Section 14 NE ¼). The project area encompasses a 15 acre section of the floodplain from a private bridge to the downstream property line. To access the site, depart from Main Street in Etna, cross State Highway 3 onto Island Road, and travel 2.9 miles to 2914 Island Road. Turn right into Rancho del Sol and proceed 0.8 miles down a dirt road to the private bridge that crosses the Scott River. The project site is immediately downstream. The property owner must be notified before visiting the site.

## Scott River Stream Restoration and Sediment Reduction Program Project Site Map

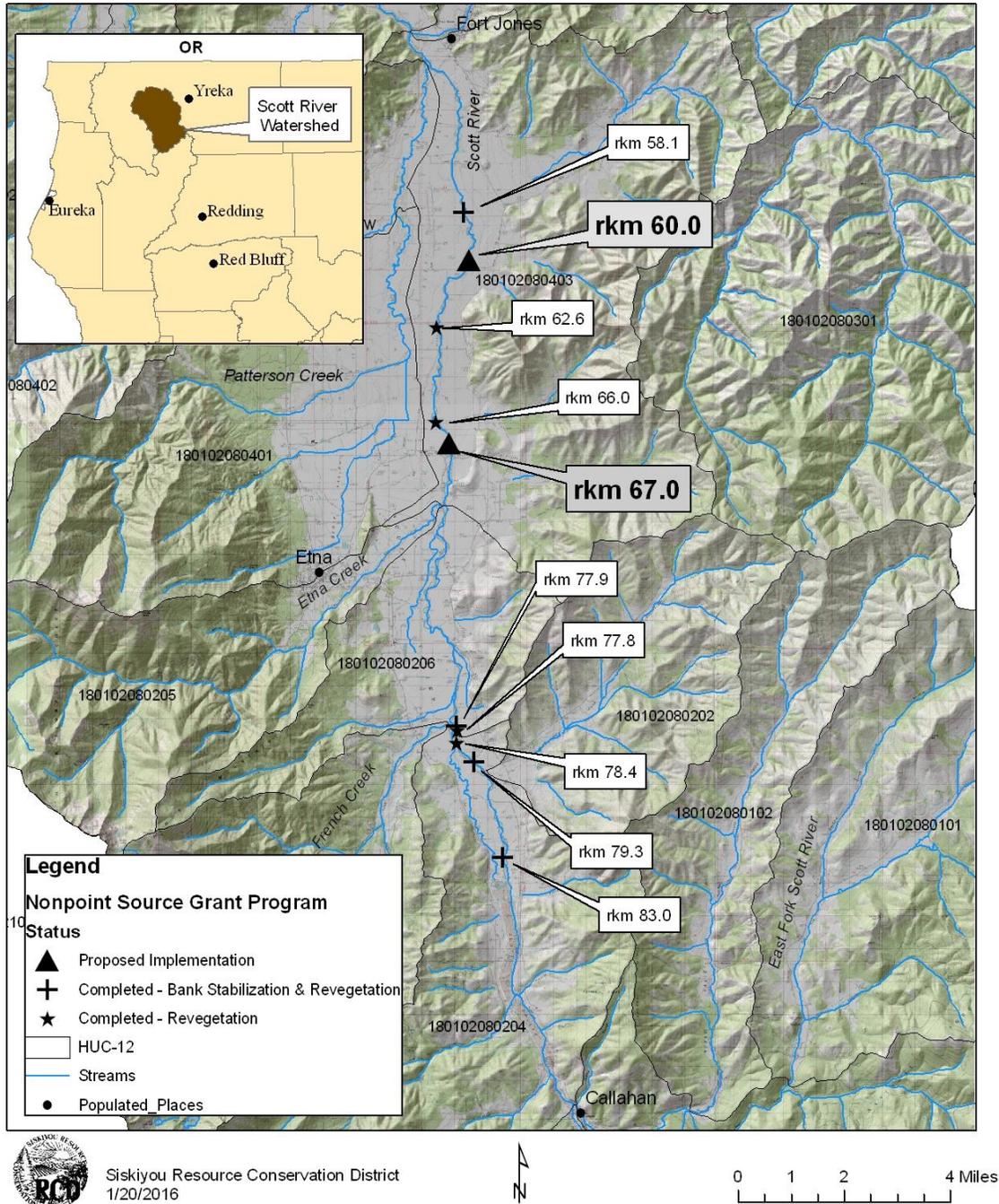


Figure 1. Project Location Map

## Site Suitability Evaluation

The Rancho del Sol streambank stabilization site at rkm 67 is characterized by an entrenched channel with a moderate to high width-to-depth ratio. The western bank is nearly vertical in most locations and has eroded downstream approximately 100 feet over the past five years due to geotechnical failure, which has prevented the establishment of a riparian corridor. Isolated vegetation exists at the toe of the bank, but there is no vegetation at the top of the bank to provide canopy cover. The eastern bank is recovering with some mature riparian vegetation that is providing canopy cover, however recent failure of the rock-slope protection (rip-rap) has introduced erosion and vulnerability. Continued migration of the western bank is increasing pressure on the compromised portion of the eastern bank and associated vegetation.

In 2014, the Scott River Watershed Council and the Siskiyou Resource Conservation District prepared the *Scott River Watershed Restoration Strategy and Schedule* (Strategy and Schedule). The purpose of the Strategy and Schedule was to evaluate the status of the Scott River riparian corridor, assess previous revegetation efforts, and develop a protection plan for various riparian conditions throughout the watershed.

The Rancho del Sol site falls within Reach IV of the Strategy and Schedule, which is described as exhibiting suboptimal riparian potential due to the fact that the combined width of available land on both sides of the river averages less than 300 feet and the distance from the terrace to the low-flow water elevation is relatively large (estimated at 8-11 feet). It was recommended that sites with active bank erosion be treated with bioengineered stabilization techniques to prevent further erosion and promote riparian vegetation establishment.

The Ranch del Sol site was specifically identified in the Strategy and Schedule and bioengineered treatments were prescribed. It was recognized that active erosion, loss of established riparian vegetation, and river downcutting could make riparian vegetation difficult to maintain and establish within Reach IV. However, the Rancho del Sol site was prioritized, in part, to protect and reestablish the riparian forest. Further, revegetation efforts have the potential to reduce the water temperature impairment, as the river's west bank orientation could provide stream shading. Some vegetation exists at the site and will be fundamental in the effort to reestablish riparian function.

## Bank Stabilization and Revegetation Plan

The Rancho del Sol Streambank Stabilization Project will work to stabilize the eroding river banks, protect and promote riparian vegetation, and improve fluvial form and function through the utilization of bioengineered structures, recontouring of the western terrace, and riparian plantings. The river left (western) bank will be stabilized with a constructed toe and three engineered log jams (ELJ) Type B to deflect thalweg pressure away from the eroding bank. In order to reduce the subsequent meander curvature and improve flood conveyance, the adjacent terrace and flood plain will be excavated and re-contoured. This will involve reducing the elevation of pressure points on the bank immediately downstream, enhancing existing flow channels through the floodplain to allow for the more frequent access, and removing the tip of the river left gravel bar to avoid constriction of flow and scour on the river right bank. Excavation will reduce flow, velocity, and sheer stress against the banks, and has been designed to minimize disturbance to riparian vegetation. The river right (eastern) bank will be treated with an ELJ Type A ("apex jam") just upstream from an ELJ Type B to deflect impinging flows away from the bank.

Revegetation efforts will occur across excavated and re-graded areas (including where the newly excavated overflow channels reenter the main channel), along the constructed toe, in the engineered log jams, and along the bank and terraces. Riparian plantings throughout the treatment area are integral to the stability of the banks and to the development of a functional riparian corridor. During project construction, any disturbed willows will be salvaged. Additional willow plantings will be harvested from available stands of dense willows on the property or elsewhere if necessary. Willows will be collected in the following ways:

- Willow clumps: Whole willows salvaged intact, including the root ball for direct relocation.
- Willow bundles: Willow sprigs cut and formed into bundles for partial burial

- Willow poles: Larger willow sprigs driven directly into the ground

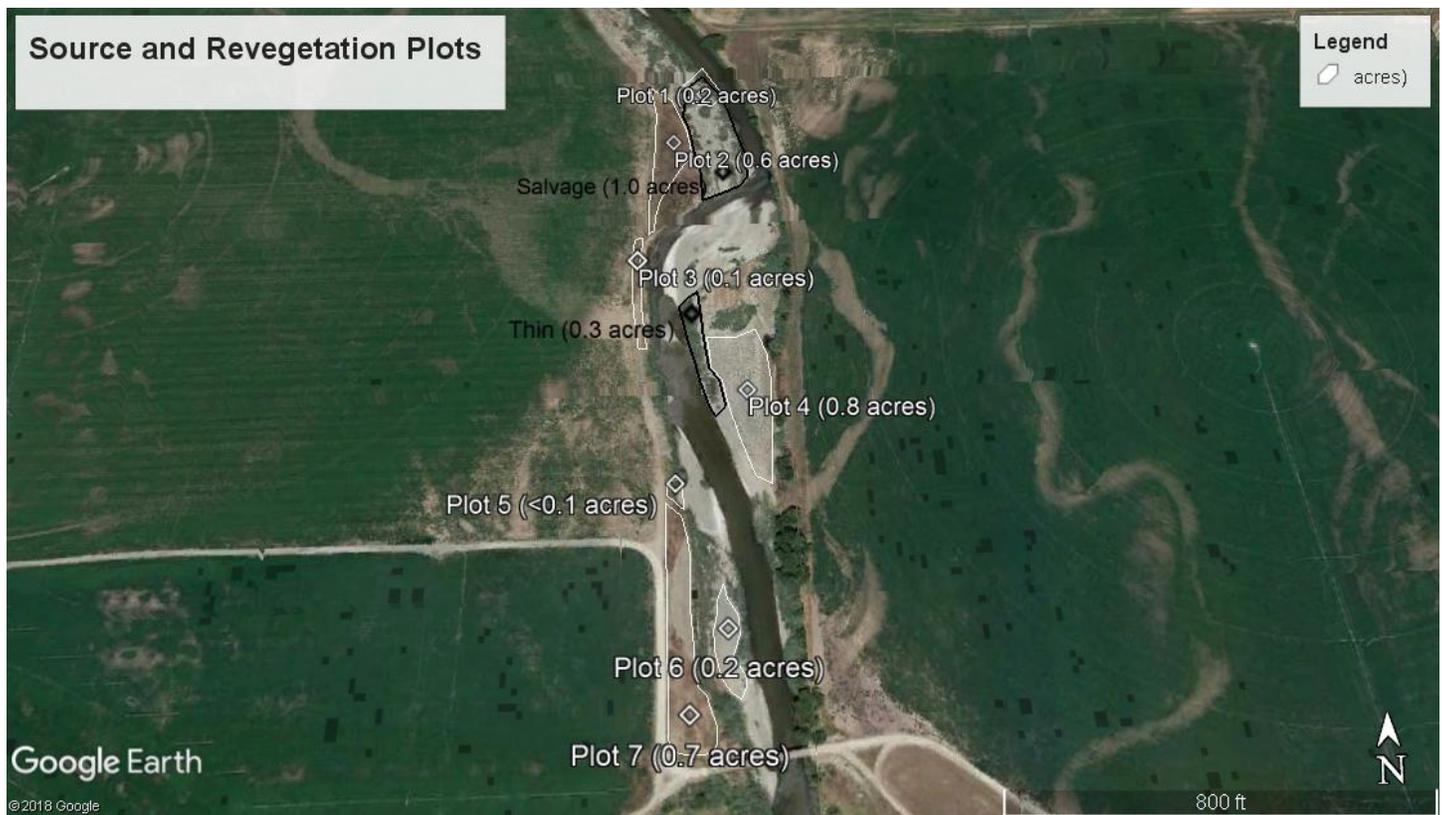
Willow plantings will work throughout the project site to provide roughness, diffuse water velocity, secure sediment and improve soil cohesiveness. To that end, willows will be planted in the following ways:

- Willow bundles will be planted within and between all ELJ structures.
- Willow bundles and willow clumps will be planted along the toe of eroding banks.
- Willow bundles will be planted into the banks of the newly excavated overflow channels near where they enter the main channel (Plot 1)
- Willow clumps will be planted into the lower terraces and floodplain in rows running parallel with the direction of flow (Plots 4 & 6)
- Willow bundles will be planted in an eroding cusp on the river left bank upstream from the treatment site (Plot 5)

To provide greater canopy cover and stream shading upon plant maturation, cottonwood poles, and, if applicable, pine plugs will be planted along the tops of banks (Plot 3), across the western terrace above the floodplain grading (Plot 1) and across the western terrace below the bridge (Plot 7). Cottonwoods and pines will be harvested off-site.

The gravel bars and the entrance to the newly constructed overflow channels will not be planted so as not to impede flow (identified as a Salvage site).

Plantings in the ELJs and through the instream bank zones will be implemented during the construction phase of the project. Floodplain and terrace plantings will occur between February and April of 2019 during planting stock dormancy.



**Figure 2. Preliminary identification of revegetation plots**

### Materials

Materials utilized in the revegetation process will include the following:

- Native willows salvaged from the project site and collected from dense willow stands on the property (“Salvage” and “Thin” plots in Figure 2). Whole willows will be acquired with the roots intact (clumps). Willow cuttings with a minimum diameter of 1/4 inch and length of about 18-40 inches and will be bundled for planting (bundles). Willow cuttings with a minimum diameter of 1/2 inch will be left in water for use as pole plantings (poles).
  - *Salix lucida* (pacific willow)
  - *Salix exgua* (sandbar willow)
- *Populus trichocarpa* (black cotton wood) poles, harvested off-site.
- *Pinus ponderosa* (ponderosa pine), purchased as plugs.

## Planting Diagrams and Schematics

Planting methods will follow the standard specifications used by the Natural Resources Conservation Service as detailed in the following references:

Hoag, C. et al. 2008. Field Guide for the Identification and Use of Common Riparian Woody Plants of the INtermountain West and Pacific Northwest Regions. United States Dept. of Agriculture – Natural Resources Conservation Service Plant Materials Program. [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs144p2\\_045486.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_045486.pdf)

Hoag, C. and Fripp, Jon. 2002. Streambank Soil Bioengineering Field Guide for Low Precipitation Areas. United States Dept. of Agriculture – Natural Resources Conservation Service Plant Materials Program. [https://www.nrcs.usda.gov/Internet/FSE\\_PLANTMATERIALS/publications/idpmcpussbfglpa.pdf](https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/idpmcpussbfglpa.pdf)

## Maintenance of Plantings

Plantings will be watered monthly over the summer using a water truck or similar method. Some of the plantings located on the upper terraces might be close enough to irrigated fields to be watered by the landowner.

No cages will be utilized at this project site as browse by wildlife is not a concern.

## Success Criteria

Success criteria for the revegetation efforts at Rancho del Sol include the following:

- Implementation of over 2 acres of riparian planting
- 75% survival rate of riparian vegetation plantings at the end of the contract

River area that is influenced by tree canopy cover is not expected to be measurable over the duration of this contract.

## Monitoring Methods

Outcome indicators of revegetation work include increased presence of riparian vegetation on the river banks, and an increase in the river area that is influenced by tree canopy.

Revegetation monitoring methods include the following:

- Establishment of photo points prior to treatment to track the success of the techniques. GPS locations will be taken for each photo point. Photo monitoring will occur annually in the summer when vegetation is at full leaf-out.
- Annually plant survival assessments at designated monitoring plots. Plant survival will be tracked to account for overall survival by site as well as by species and planting methodology. Notes will be taken related to plant health, condition and vigor.

## **Adaptive Management and Contingency Measures**

The planting success will be evaluated annually. If it is determined that the plantings are not successful, replanting may occur.

Outcomes of the Rancho del Sol revegetation effort will inform future streambank stabilization methods and treatments through similar reaches of the Scott River.