

Proposal to conduct 5 year monitoring for Ute ladies' tresses along Rocky Reach Reservoir, 2013

In addition to annual monitoring of known occurrences of Ute ladies' tresses (*Spiranthes diluvialis*) along Rocky Reach Reservoir, Article 404 in the Rocky Reach operating license requires Chelan PUD to:

"...conduct a survey of suitable habitats along the project reservoir to identify the establishment of any new populations" every 5 years.

Since the license was awarded in early 2009, the 2013 monitoring effort is the 5th year of annual surveys required and needs to include the first 5-year monitoring effort.

Ute ladies' tresses occur in a variety of habitat types including perennial streams, rivers, lakes, irrigation canals, and spring/meadow habitats. While there are some general descriptions of habitat where Ute ladies' tresses are found, most are from riparian areas outside of Washington State. Therefore, defining suitable habitat along Rocky Reach Reservoir is challenging. Chelan PUD has 10 years of Ute ladies' tresses monitoring data that provides a good indication of habitats where this Threatened orchid occurs. However, applying the habitat characteristics from the known occurrences to the entire Rocky Reach Reservoir requires some type of modeling. Fortunately, Chelan PUD has GIS data that describes the shoreline habitats within the Rocky Reach project boundary. Specifically, these data define the slope and a variety of habitat variables along the shoreline. These data were collected in 2004 and are the best data available for defining shoreline habitats along Rocky Reach Reservoir. Using the known occurrences of Ute ladies' tresses and the GIS data available, we created a habitat model to identify additional areas to survey for Ute ladies' tresses in 2013 as required by the FERC.

The habitat model was created by removing habitat layers until the only habitat variables remaining were those adjacent to known occurrences of Ute ladies' tresses along Rocky Reach Reservoir. The first variable examined was slope: 100% of the Ute ladies' tresses occurrences were associated with a slope of 15° or less, so shoreline slopes above 15° were removed, which left only two littoral habitat variables, unconsolidated rock and beach. When considering shoreline habitats, only shrubland and beach habitats were adjacent to known sites. Vegetation associations related to known occurrences included riparian and weedy habitats. The remaining variables removed were related to land use along the shoreline and included railroad, industrial, park, and orchard. The resulting model contained slope less than or equal to 15°, unconsolidated shoreline with shrubland or beach habitat which was riparian or weedy, and had land uses that were described as rural or unmanaged (Table 1). These variables include 100% of all known occurrences of Ute ladies' tresses within the Rocky Reach Reservoir project boundary and are highlighted in Figure 1.

Table 1. GIS variables used to create habitat model for Ute ladies' tresses on Rocky Reach Reservoir. Variables used in the predicting suitable habitat (included) were associated with 100% of the known occurrences of Ute ladies' tresses on Rocky Reach Reservoir. The proportion (%) for each variable is also shown for total distance.

Model Status	GIS Layers													
	Slope ^o	%	Littoral habitats	%	Shoreline	%	Vegetation	%	Land Use	%				
Included	0-15	26	Mixed fines	29	Shrubland	20	Riparian	30	Unmanaged	30				
			Unconsolidated	46	Beach	12	Weedy	42	Rural	13				
Removed	16-30 30 +	29 45	Consolidated Rip-rap	4 21			Marsh	7	House	2				
							Marsh	3	Sagebrush	9	Railroad	30		
									Pine-juniper	1	Orchard	16		
							Woodland	11	Rock	31	Lawn	5	Industrial	2
									Rip-rap	23	Grass	4	Park	6

With 100% if the known occurrences of Ute Ladies' tresses represented by the shoreline areas highlighted in Figure 1, Chelan PUD proposed that these areas be surveyed in 2013, in addition to the existing occurrences, to satisfy the FERC requirement to survey suitable habitat every 5 years.

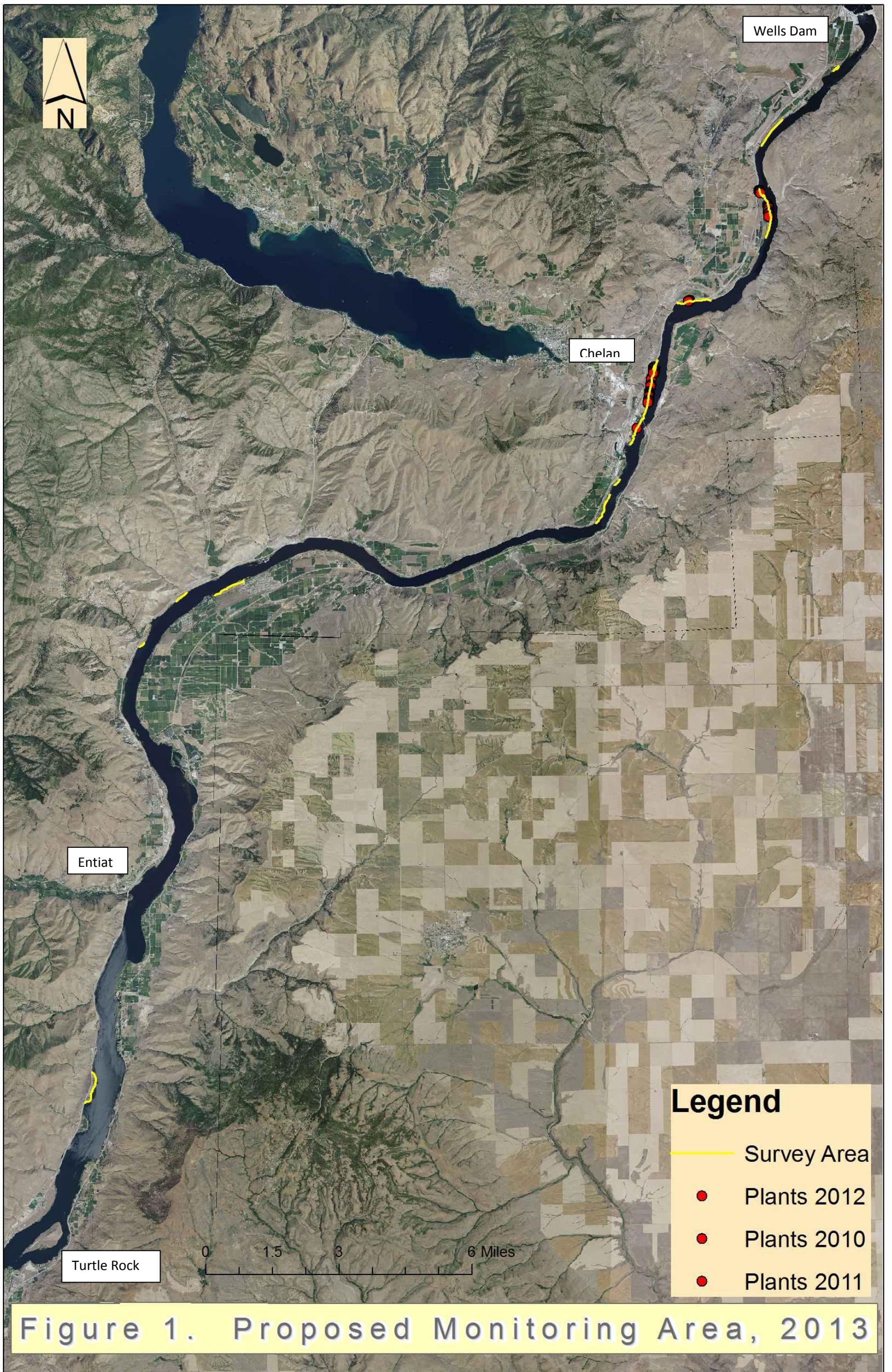


Figure 1. Proposed Monitoring Area, 2013