

Project Plan

14 Lakes Riparian Enhancement

1. Project and Site Description

The 14 Lakes wetland complex includes five ponds that differ in size, water depth, slopes and vegetative character. These depressional wetlands lack inlets or outlets, so their hydrology is primarily influenced by precipitation and groundwater fluctuations. The ponds are located less than one mile east of the Rock Creek wetland complex and less than one mile north of the Cedar River (Figure 1). The ponds do not support any fish species and consistently support the heaviest density of amphibian breeding in the lower Cedar River Municipal Watershed (CRMW).

The forest surrounding the ponds was harvested in the early 1900's and subsequently burned as shown in 1912 archival photos. A Douglas-fir dominated forest surrounds the ponds with a well defined forest edge (Figure 1). Pond water level varies annually as well as between ponds. Historic water levels remained higher through the year, and the ponds rarely dried (D. Paige, SPU, pers. comm.). Current lower water levels mean that breeding amphibians as well as newly metamorphosed individuals must move across dry grassland before reaching the forest edge. This zone lacks large wood on the ground at most pond sites and contains little shade or protection for amphibians. Trees felled towards the pond edge would create a migration corridor for amphibians during the breeding season and for newly metamorphosed individuals leaving the ponds. The following project suggested for Ponds B, C and D (Figure 1) provides an opportunity to link enhancement/restoration efforts between upland, riparian, and wetland habitat in a biologically diverse portion of the watershed.

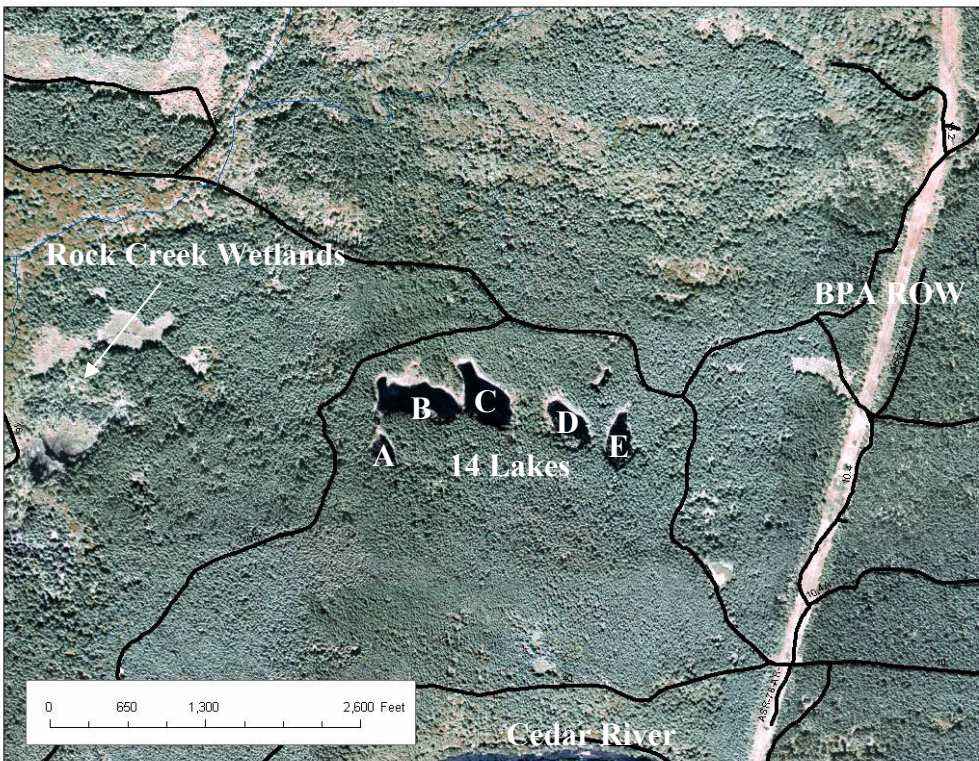


Figure 1. Location of 14 Lakes wetland complex (T22N, R7E, Sec.14).

1.1 Individual Pond Characteristics

All ponds in the 14 Lakes wetland complex maintain unique habitat features. Pond A and Pond E already contain numerous pieces of wood connecting the pond to the upland forest and are not recommended for habitat enhancement in this project. Pond B supports the largest surface area of water of all ponds, and also shows large water fluctuations between years. Very little wood is present surrounding the pond; vegetation consists primarily of grass species with a few forbs; and the slope of the pond edges gradually stretches up to the forest edge. The distance between the forest edge and the pond varies between 15 to 30 meters depending on water level in Pond B. In some years, Pond B completely dries and the water temperature in the late summer has been measured as high as 23°C. The water level in Pond C remains relatively consistent through the year, generally dropping only a few feet between March and September. The forest edge is generally 15 to 20 meters from the pond; the water depth is greater than all other ponds; the vegetation consists primarily of grass species with a few young alder; and the slope of the pond is much steeper in Pond C than any other pond. Pond D is much smaller than Pond B, but also contains a gradual slope from the pond to the forest edge and is very shallow in depth. A mud substrate persists in the bottom of this lake, likely because the pond infrequently dries out. The distance to the forest edge at Pond D varies between 15 to 30 meters.

1.2 Past Work on Amphibians at 14 Lakes

In 2002, the area was surveyed to document amphibian species present. Red-legged frogs, Pacific treefrogs, roughskin newts, northwestern salamanders, and long-toed salamanders are present and breeding at 14 Lakes. Egg mass surveys began in 2003 and continued in 2004 and 2005. All egg masses and amphibians encountered were recorded (except for Pacific treefrog egg masses, which were too numerous), and the pond edge was also surveyed by turning movable pieces of wood and rocks to search for animals. Key findings are listed below.

- Adult salamanders and frogs were found under pieces of wood during spring egg mass surveys (Photo 1).
- There is a lack of vegetation structure and branches for egg mass attachment in the ponds. Salamander and frog eggs are typically located in large aggregations on the few pieces of vegetation present in the pond.
- Newly metamorphosed frogs and salamanders were documented under rocks and wood during late summer and early fall (Photo 2). All amphibians at 14 Lakes appear to metamorphose in one year and then move to the upland forest to overwinter.
- Distance between cover items and the edge of water was substantial in some areas.
- Temperatures in the largest pond reached over 23°C during the late summer of 2004. During this visit, highly stressed frogs were observed due to lack of cover and shade between the pond and the upland forest.

Table 1. Results of Amphibian Egg Mass Surveys at 14 Lakes. (First number is northwestern salamander / second number is red-legged frog).

	2003	2004	2005
Pond A	12 / 0	0 / 0	106 / 45
Pond B	54 / 72	2 / 262	1 / 67

Pond C	0 / 292	33 / 283	82 / 628
Total of all Lakes	66 / 364	35 / 545	189 / 740



Photo 1. Example of importance of wood and other cover to pond-breeding amphibians coming to 14 Lakes to breed (March 2003). One northwestern salamander, 2 long-toed salamanders and two treefrogs were under one small piece of wood.



Photo 2. Newly metamorphosed northwestern salamanders under a rock (these areas retain moisture through hot days). Additional logs would provide additional cover options while also providing a migration route to the forest.

2. Project Goals and Objectives

The objectives at Ponds B, C and D in the 14 Lakes wetland complex are:

- Improve connectivity between the ponds and the adjacent upland forest by creating corridors for wildlife including amphibians and small mammals.
- Provide additional habitat diversity within the ponds by adding treetops to serve as cover for aquatic organisms and egg mass attachment substrate for breeding amphibians.

3. Project Justification

The ponds at 14 Lake provide some of the most important habitat for pond breeding amphibians in the lower CRMW. An apparent change from the historical hydrology of these wetlands has created lower water levels in the ponds during summer months. The forest edge is a substantial distance from the pond edge in some locations, especially at low water levels, and little to no shade or cover exists around the pond edge. Metamorphosing amphibians must move through the area between the ponds and the forest as they migrate to upland habitat to overwinter. The lack of trees or other cover objects in this zone creates hot dry conditions for juvenile frogs and salamanders to move through on their journey to upland forest habitat. Providing log corridors that retain moisture and provide shade will enhance the habitat for amphibians.

4. Coordination with Other Projects

This project will coordinate with an upland habitat restoration project planned through the BPA (Bonneville Power Administration) program. A project currently in the planning phase includes forest surrounding 14 Lakes and stretches east across the BPA ROW (800 acres). The goals of the upland forest project are to diversify the forest by adding small gaps in the forest canopy, planting tree species not currently present in the forest, and falling some trees on the forest floor to provide habitat for wildlife species.

5. Evaluation of Potential Effects

We do not anticipate any negative effects from this small-scale habitat enhancement project. The forest at the edge of the 14 Lakes ponds is approximately 85 years old and mainly comprised of Douglas-fir. The project calls for cutting a minimal number of trees (20-40) and all parts of the tree will be left at the site to provide habitat for wildlife species.

6. Evaluation of Costs versus Benefits

It is expected that it will take two chainsaw operators and one Ecosystems staff member approximately 4 hours to implement the project (Table 2). The expected benefits of this project include improved habitat for amphibians within the 14 Lakes wetland complex. The benefits of this project will continue to help frogs and salamanders as amphibians often use the same migration routes back to a pond as they took leaving a pond.

Table 2. Estimated project costs for 14 Lakes habitat enhancement project.

Project Element	Cost per Unit	Cost
Two Chainsaw operators (C100020)	4 hours @ \$70/hour	\$560
Ecosystems staff members – project planning (C100020)	20 hours @ \$70/hour	\$1,400
Ecosystems staff member- project implementation (C100020)	4 hours @ \$70/hour	\$280
TOTAL PROJECT		\$2,240

IMPLEMENTATION		
Project monitoring	To be determined	\$????
Total		\$

7. Project Design, Prescriptions, and Mitigation

The project team visited all ponds in the 14 Lakes wetland complex and noted conditions at each pond. Tree height measurements were taken at Ponds B, C and D to ensure that treetops would reach the ponds. It was determined that the selection of trees to fall would be done by a chainsaw operator and Ecosystems staff member in the field. By waiting to select specific trees, we hope to minimize damage to surrounding trees while still picking those trees that maximize benefit to habitat at each pond. Due to the relatively small amount of trees identified for falling at each pond, we do not anticipate significant delays in the project by waiting until a chainsaw operator is in the field.

The project team estimated that by cutting 10-15 trees around Pond B, corridors to the upland forest would be present around the entire pond. Some of these trees will be clumped to effectively create a wider corridor away from the pond, others will be placed next to logs already present at Pond B, and some logs will be placed in areas where no cover currently exists. Cutting will be planned to result in the trees lying flush with the ground. Project plans call for cutting 6-10 trees around Pond C and 3-5 trees around Pond D. The cutting procedure will be similar to that described for Pond B.

8. Outside Review, Permitting, and Approvals

This project does not require permits from county, state, or federal agencies (e.g. FPA, HPA, Shorelines). Because all ponds proposed for habitat enhancement in the 14 Lakes complex are less than 20 acres in size, a Shorelines exemption will not be needed. The project will not involve the sale of any trees.

9. Implementation Plan

At the time of project implementation (expected October 2005), the project team and chainsaw operators will work together to determine specific trees to fall. The project team will mark specific trees prior to the implementation date and then talk with the chainsaw operators to ensure these trees can be placed where desired. Changes will be made in the field to accommodate tree placement goals if necessary. All safety guidelines as outlined by SPU safety protocol will be followed during project implementation.

10. Adaptive Management and Monitoring Plan

See 14 Lakes Monitoring Plan (to be developed...).