

Chuckanut Community Forest Design Project

Abby Severns

ESCI 439

Design Approaches

The three proposed plans are different in what is valued within each one. The first design plan option takes into account mainly the wants and concerns of the public, while the second plan is putting conservation first. The third approach strives to be a balance of conservation and recreation, while still taking into consideration the impacts on the wetlands. The six exits will remain the same for each approach.

Each plan discusses policy options for dog-walking and biking within CCF, but these will be excluded for the final design consideration and plan assessments due to the potential input from the community regarding these park issues and others holding more knowledge about the issue. They are included below to demonstrate the planning considerations made.

The following table was made from the information provided in the CCF Baseline Documentation Report and what was based on the NES 2005 Wetland Delineation Report with additional references from the report (Eissinger 2017). It was made to simplify information about the wetlands within each CCF parcel for determination of trail placement and restoration.

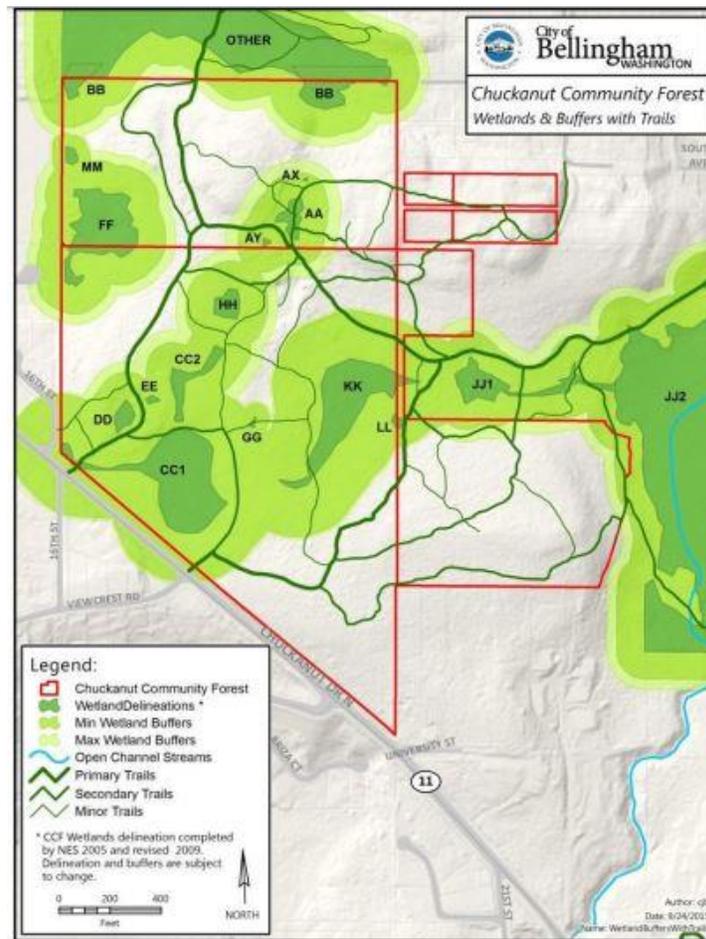
Table 1: CCF Wetland Summary

Information all derived from CCF Baseline Documentation Report (Eissinger 2017).

Wetlands	Flora/fauna and water presence	Notes
AA	Deciduous trees, shrubs, grasses, weedy herbaceous plants, forested area has seasonal small ponded area	Young trees, reestablished, two informal trails go through, disturbed area, past gravel pit
AY	Native plants, seasonal ponds	Native plants
AX	Grasses, weedy herbaceous plants, seasonal pond	Past gravel pit
BB	Standing water in northwest corner, plant mixture	Native plants, mature forested class 1 wetland
FF	Slope wetland, shrubs, herbaceous plants	Native plants, trails don't interfere
MM	Standing water areas, plant mixture	No trail interference
CC (CC1 and CC2)	Depressional wetland, plant mixture, fairy shrimp, Barred Owls, sensitive amphibian habitat	Native plants, category 1 mature forested wetland, divided by trail, foot paths possible, surrounded by trails
DD	Deep wetland, mostly open water/bare ground, dense trees and shrubs	One access point on east side, one southern trail that has access, artificial

EE	Small wetland, herbaceous plants	Trail by west side, native and non-native. artificial
GG	Small wetland, herbaceous plants, surrounded by uplands	Undisturbed, one trail near south, native and non-native
HH	Plant mixture, water functions	Native plants, trail near north
KK	Large Depressional wetland, trees, herbaceous plants, canopy cover, fairy shrimp, Great Blue Heron, sensitive amphibian habitat	Trails are close, large muddy area at western part of JJ is disturbed, category 1 mature forested wetland, mountain biking disturbance
LL	Shrubs, herbaceous plants, cottonwood trees	On side trail from major trail near north
JJ	Plant mixture, cutthroat trout and three-spine stickleback seen	Off-site, past of beaver presence, mountain biker disturbance

The map below is the original CCF trail map used as a reference (Eissinger 2017).

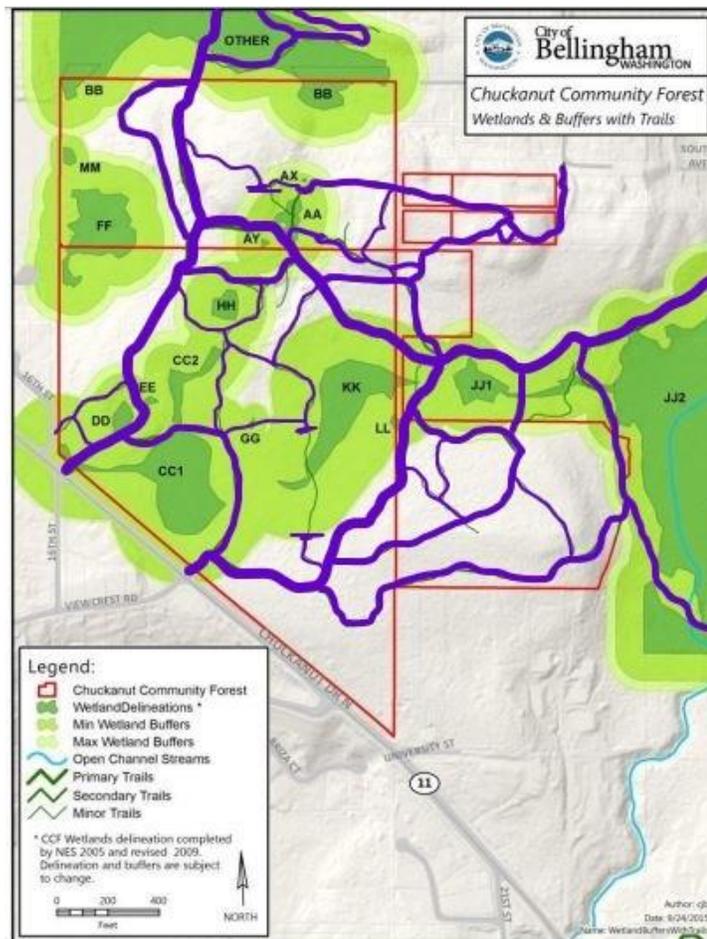


Plan 1:

The existing primary trails and majority of the secondary trails are kept for this plan. Majority of the minor trails will be restored or shortened so they have endpoints, similar to “viewing points”, where there are educational signs for the public to look at and learn about the area around them. The public wanted to know more about the area so by educating those going through the area, the respect for the wetlands and forest will hopefully rise as well as public interest. The shortening of trails will result in restored areas of some of the minor trails. The rest of the minor trails and the secondary trails will be altered in order to connect to the primary trails and create more loops, resulting in longer paths and therefore longer walks the public can take as they inquired about. Dogs will be allowed off leash everywhere. All trails will be open to bikers.

Minor trails that cross the delineation areas within wetlands AA, KK, and JJ will be restored. Educational endpoints added to minor trails on outskirts of wetland KK. Secondary trails crossing delineation area within AA will be restored. The trail going through CC (between CC1 and CC2), the trail between KK and JJ, the secondary trails between JJ1 and JJ2, and the trail between KK and CC should become boardwalks over the delineation area and part of the buffer areas, around 275 m in length total. Only the purple lines are the trails.

Preliminary Design 1:

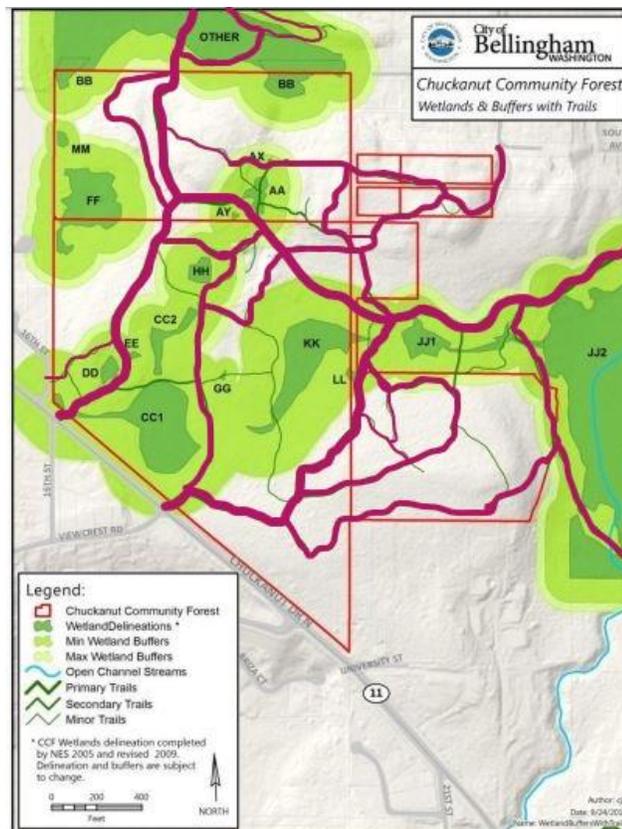


Plan 2:

The primary trails will be kept the same but all minor trails that do not directly connect to an exit will be restored. Secondary trails are shifted and some will be restored in order to make longer path loops but ones that will avoid wetland delineation interference and minimize wetland buffer crossing, with the exception of pre-existing boardwalks and paths connecting to said boardwalks. Educational posts are located alongside the primary and secondary trails in order to educate the public and answer questions about the wetland areas and why the trails do not lead into these areas. Dogs must be on leash everywhere within the CCF. Bikers are not allowed within the area. Nurse logs could be implemented in restoration plans to block off restored trails in order to prevent the public from walking through and continuing disturbance.

Minor trails crossing delineation areas in AA, JJ, and KK will be restored. Secondary trails crossing delineation areas in AA and JJ will be restored. Minor trails in minimum wetland buffer areas near AA, HH, CC, KK, DD, GG, and JJ will be restored and some altered (shown below). Secondary trails in minimum wetland buffer areas of AA will be restored. The minor trail in the southeast corner going over incline will be restored. The wetland disturbance has potential to diminish with this plan and the public is given longer loops due to restoring some small trails that caused many trail branches. The trail between KK and CC, the trail between KK and JJ, the trail between JJ1 and JJ2, and the trail going through CC1 should become boardwalks, about 190 m in length total. Only red lines are the trails.

Preliminary Design 2:

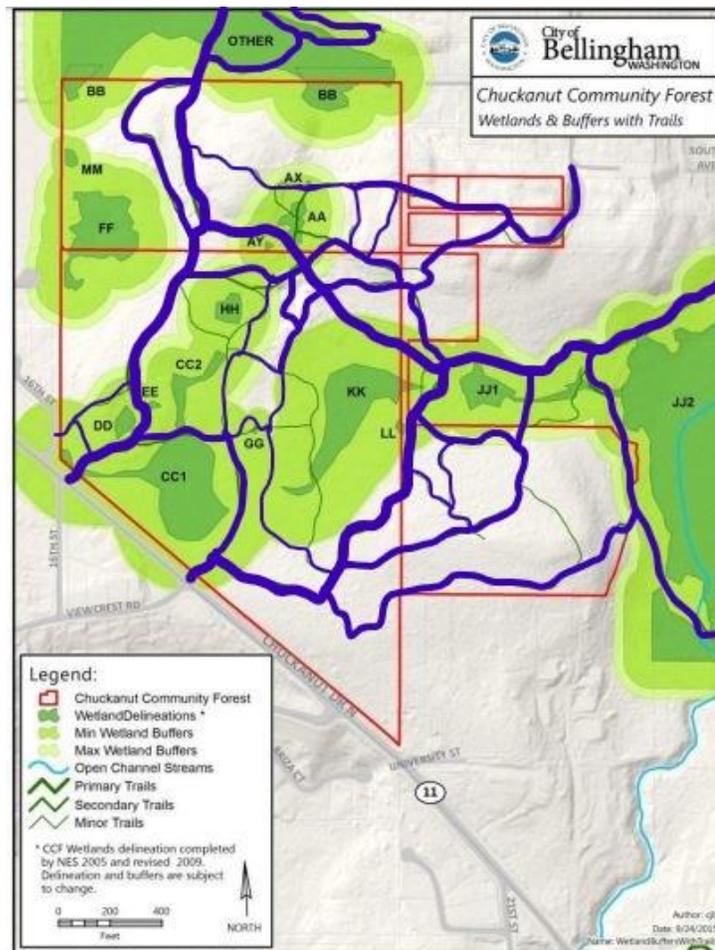


Plan 3:

The third approach is a combination of the first two. The primary trails will stay intact, along with majority of the secondary trails but there will be some restored secondary trails to create larger loops and avoid wetland interference. Majority of minor trails will be restored, with the exception of some that will be cut off and serve as the education post points for the wetlands and overall CCF. Primary trails could be made prominently, therefore easier to distinguish for the public. With this, dogs are only allowed off leash on primary trails and must be on leash for secondary and minor trails. Bikers are also only allowed to use primary trails and are not excluded due to wanting to promote biking and avoiding the use of cars for commuting.

Minor trails surrounding wetland AA are restored and shifted to outside of the buffer and delineation area. Some minor and secondary trails are shifted and created to avoid minimum wetland buffer areas and delineation areas but still provide loops. This is mainly between wetlands HH, CC, KK, and GG. Minor trails going through JJ, the southeast incline, and KK are restored. The trail going through CC, the trail between KK and JJ, the secondary trails between JJ1 and JJ2, and the trails between KK and CC should become boardwalks, around 300 m in length total. Only blue lines are the trails.

Preliminary Design 3:



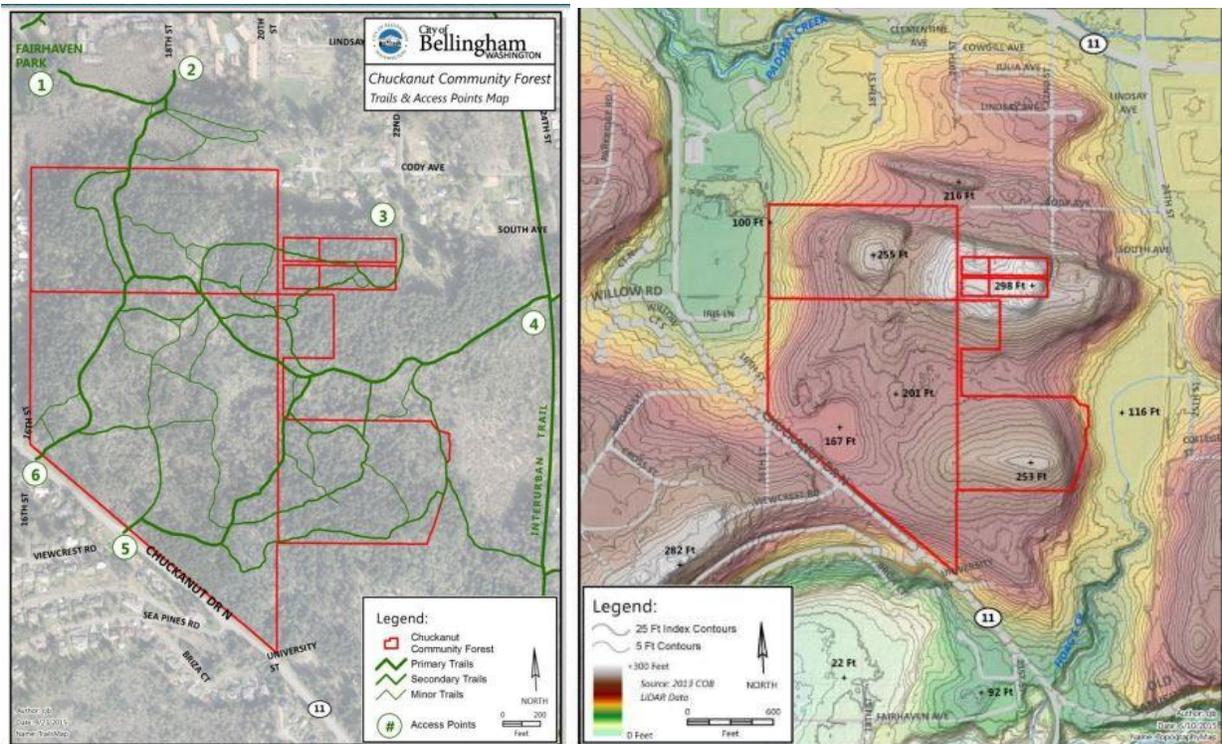
Evaluation of Preliminary Designs

For total boardwalk length, plan one will have 275 m, plan two will have 190 m, and plan three will have 300 m, all due to relocation and restoration of trails to minimize impact. With this, the amount of total new boardwalk will be out of the total 188 m of original trail crossing the wetlands and taken as a percent, resulting in a percent addition of boardwalk for scoring. Due to the factor of costs and soil impact, boardwalks were only added in areas crossing or in very close proximity to delineation areas of wetlands. Total trail length was estimated and the length of secondary trails that are at least 30 m from other trails was made as a percent out of the total. The total area is 32.9 ha.

Table 2: Evaluation Scores of Preliminary Designs

	Plan 1	Plan 2	Plan 3
Total Boardwalk Length: 100% - % of current trail length crossing wetlands	-46.3%	-1.1%	-59.5%
Length of secondary trails that are at least 30 m from other trails	43.7%	39.1%	46%
CCF area at least 30 meters from any trail	51%	50.8%	51.2%
Evaluation Score (total %)	48.4%	88.8%	37.7%

Figures 1 and 2: Maps of CCF Area (Eissinger 2017)



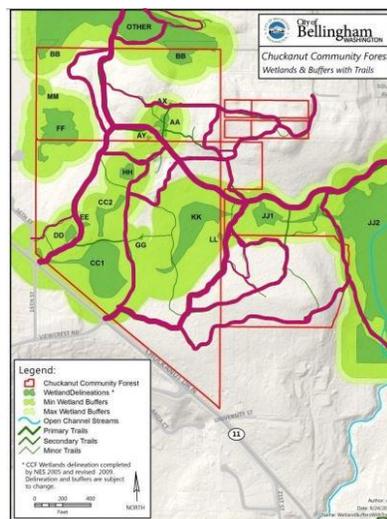
The figures above were used to take into account slopes and prior trails for the evaluations of each preliminary plan, from the CCF Baseline Documentation Report (Eissinger 2017).

Evaluation Assessment

Plan 3 had the lowest evaluation score of 37.7%, with many trails relocated so the crossing over of delineation and buffer areas was diminished without completely restoring too many trails. This led to a large increase of boardwalks. Plan 1, with a score of 48.4%, was second best but the trail placement still interferes with delineation and buffer areas while attempting to keep most trails intact and satisfy the public demand for more loops and wetland interaction. Plan 2 minimized trails by the most in attempt to minimize wetland impact by trails and human interaction and was the best plan, with a total score of 88.8%.

Final Design

Plan 2 is the best design proposal out of the three preliminary designs due to its high evaluation score and goal to maximize wetland protection (refer to pg. 4). BB, CC, and KK are all class 1 mature forested wetlands and within plan 2, disturbance is minimized within these areas by restoring trails that go directly through or reducing the number of trails that do. KK and CC have sensitive amphibian habitat, which was taken into account as well. AA, CC, and KK had signs of disturbance, which can be reversed if trail crossing is diminished and proper restoration actions are taken. Many secondary trails were restored in this plan, as well as a slight increase in boardwalks, in order to successfully reach this goal. Boardwalk addition was least out of the plans, but this plan does the most restoration, getting rid of the need for a large amount of boardwalk addition. Trails are relocated to make wider loops in order to protect the wetland areas, including buffer zones, while attempting to not greatly take away the number of loops for the public. Trails going over inclined areas are also minimized, primarily in the southeast corner of the CCF, where a trail had gone over a large slope. This plan strives to take into account the public community's needs, but more importantly the needs of the community of the Chuckanut forest which consists of native plants, mature forests, and valued animals all which play a vital role within this local ecosystem.



Works Cited

Eissinger, Ann. "Chuckanut Community Forest Baseline Documentation Report." *Chuckanut Community Forest*, 8 May 2017, www.chuckanutcommunityforest.com//files/CCF-Baseline-Documentation-Report-Final-5-8-17.pdf.