

Ski Resort Site Selection in Washington State

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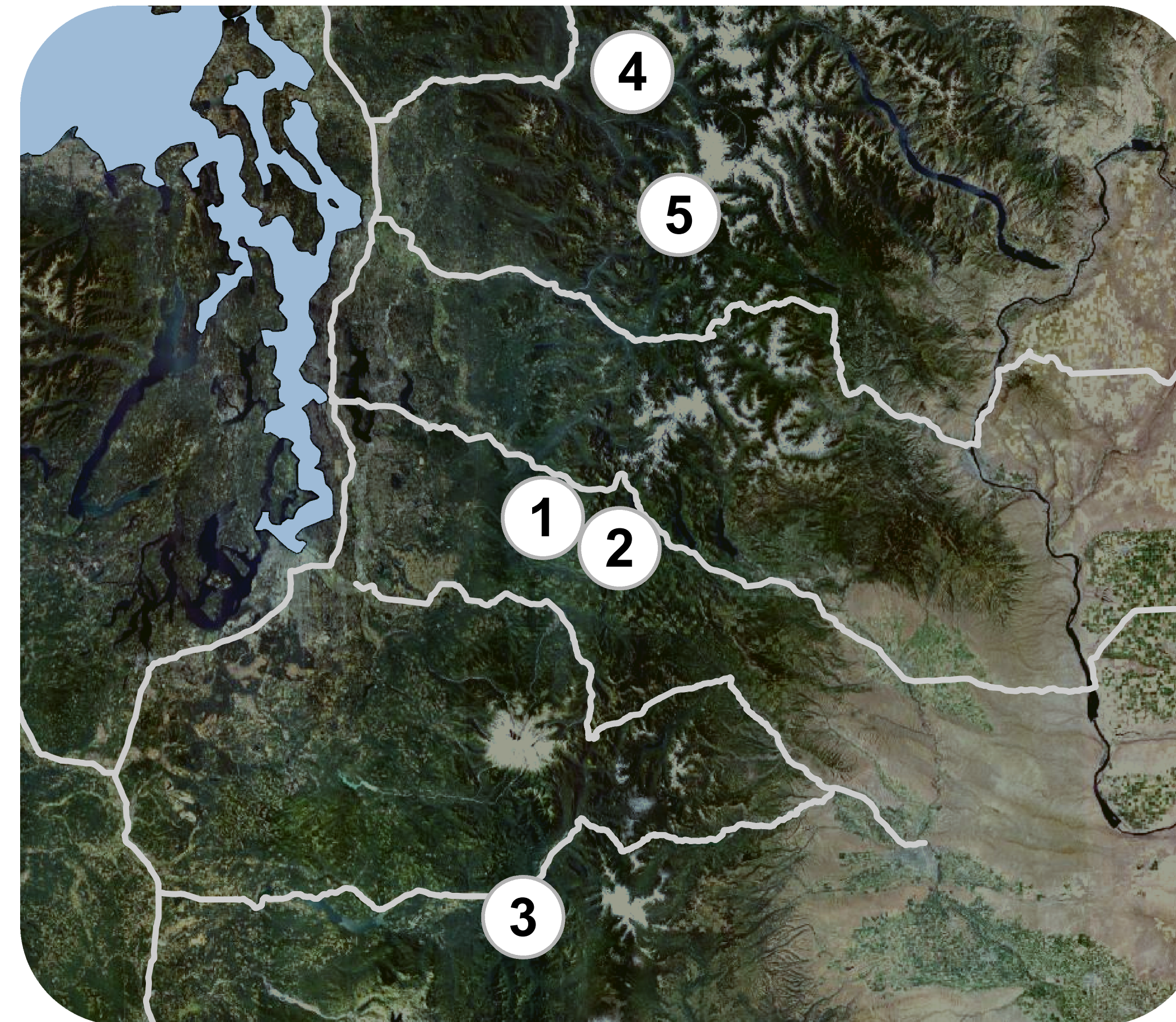
GIS Certificate Program

Project Purpose

The purpose of this project was to locate the best potential sites for future ski resorts in Washington State using GIS. After locating these sites I performed location analyses in order to determine where ski runs and lifts could be built. These are intended to be used as suggestions for resort planners who are looking for new sites to expand to.

Ski venues are located far from Washington's major population centers, often requiring more than 100 miles of driving to reach. By building more resorts, ski venues become more accessible to populations living nearby, which can help expand the potential market for ski resort companies. Sites that are located in the same region as existing ski venues can also be beneficial as they can reduce wait times for lifts.

For the purpose of this project I decided to focus on the Cascade and Olympic mountain ranges, as they are located closest to Washington's major population centers. Five sites were located, shown on the map on the right. Detailed information about these sites can be found in the results section.



Objectives

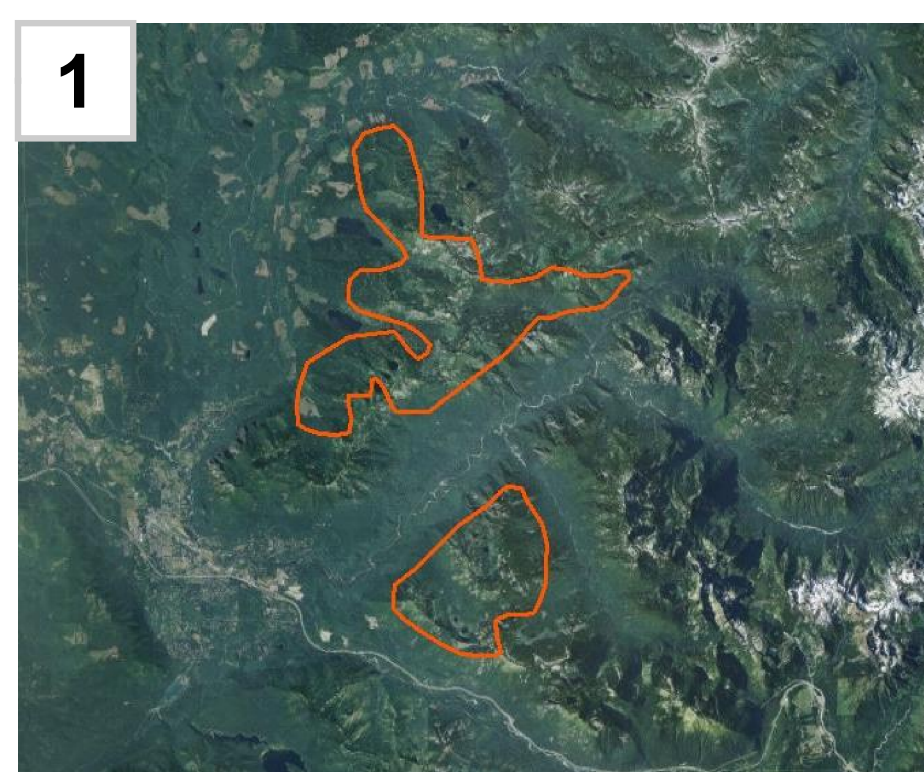
- Determine which geographic features make for successful ski resorts through literature review and analysis of current ski areas
- Create a list of criteria based on those features
- Locate areas where ski venues can be built using land use data
- Perform location analysis on each site using slope and land cover data
- Map out the ski area, including locations of runs and lifts
- Calculate stats for each site (number of runs & lifts, etc.)

Citations and Acknowledgements

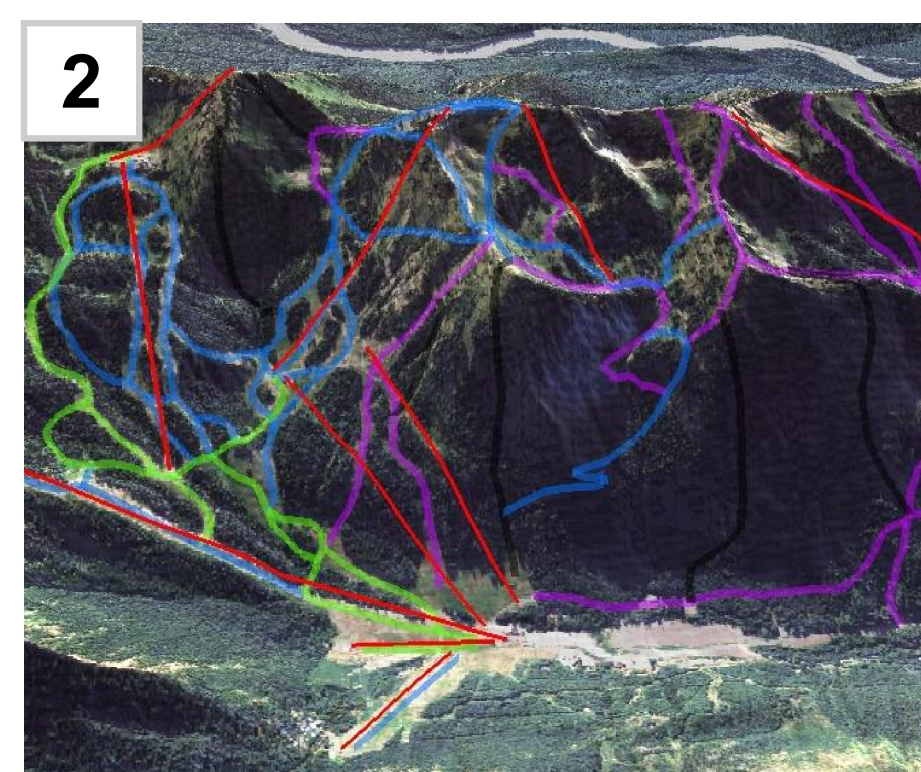
Sources:
USGS (DEMs and land cover), census (roads), NAIP (orthophoto), and county GIS websites (land use).

Acknowledgements:
I would like to thank Matt Kelley and my fellow classmates for their help and support throughout the course of this project. I would also like to thank the above sources for providing the extensive amount of data that was needed to conduct this project.

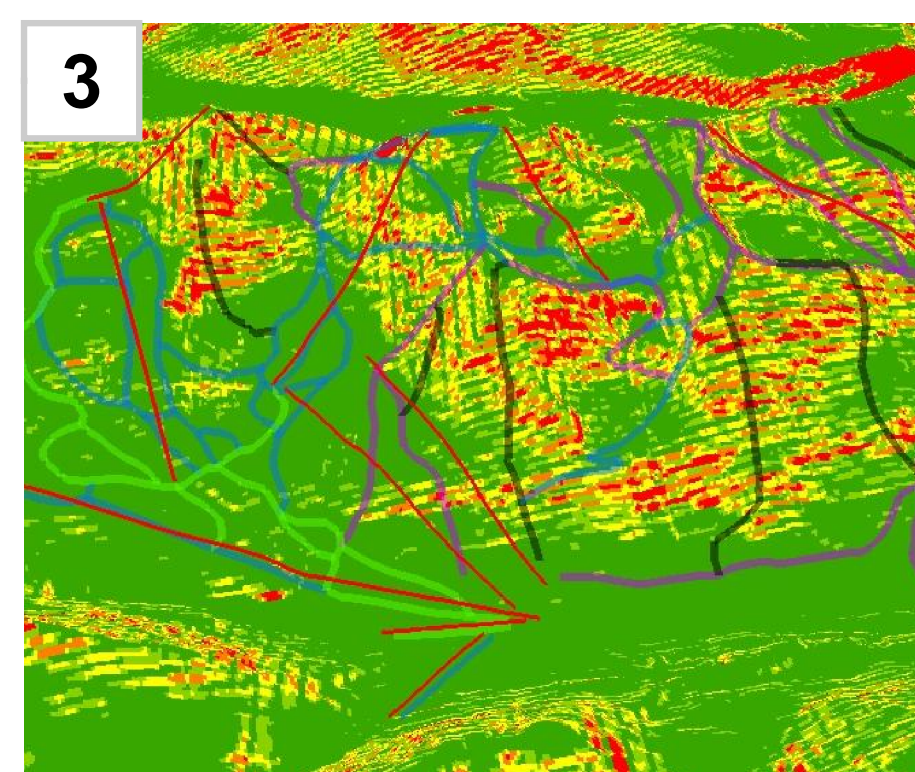
Methods



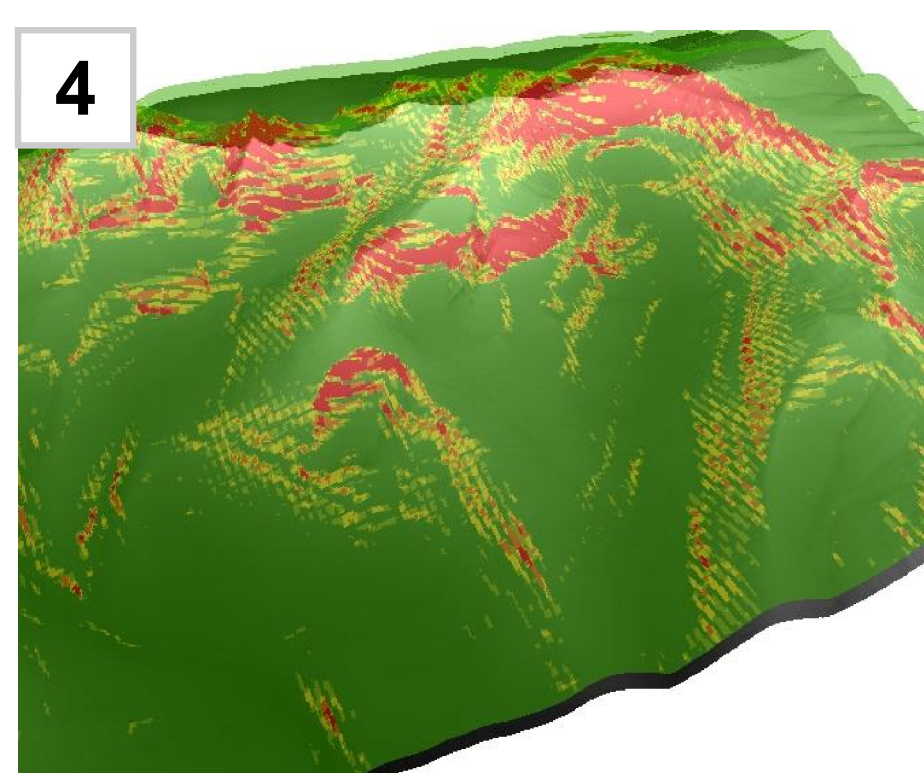
1 Eliminated unusable space using roads, land use, and land cover data. Created boundaries for areas where potential ski areas could be constructed.



2 Digitized ski runs and lifts at Crystal Mountain, Washington's largest ski resort. This served as a model to determine the run and lift locations for selected sites.



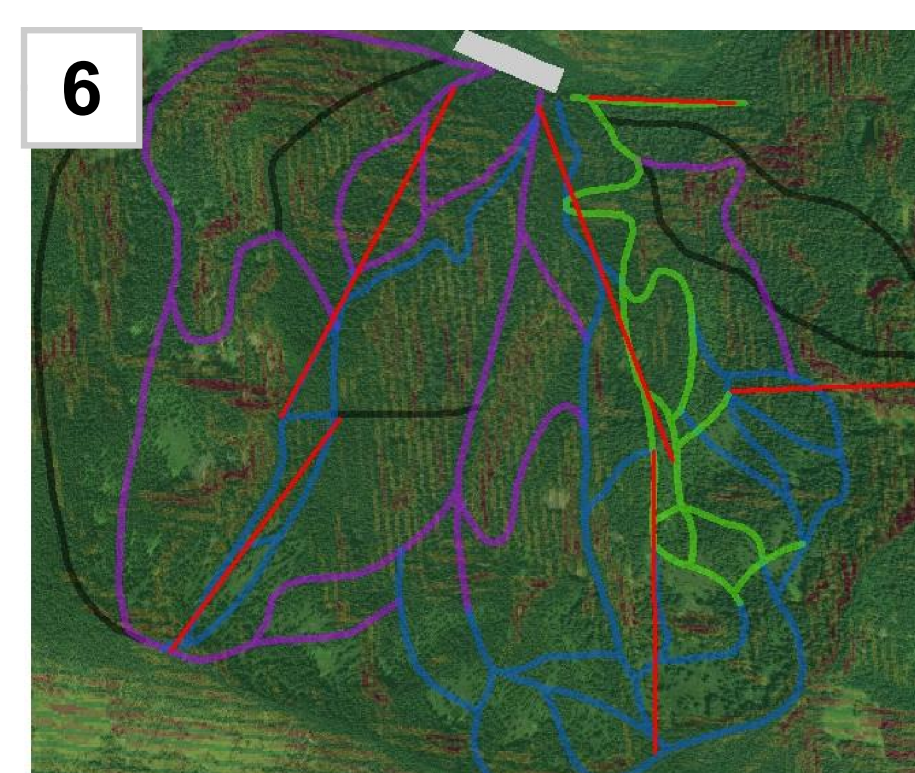
3 Conducted 3D slope analysis in ArcScene on Crystal Mountain in order to determine the maximum grade for each type of ski run: beginner, intermediate, advanced, and expert.



4 Conducted slope analysis on selected sites. Green indicates areas that are skiable for any skill level, and red indicates slopes that are too steep for any skill level.



5 Used land cover and slope data in order to determine and digitize ski area boundaries for selected sites.



6 Imported slope data into ArcMap and placed a transparent orthophoto layer on top of it. Digitized ski runs, ski lifts, and parking locations for selected sites. Visualized in 3D in ArcScene (see right for

Results

Ski run classifications:
— Beginner — Intermediate — Advanced — Expert
Other items:
— Ski lifts Parking

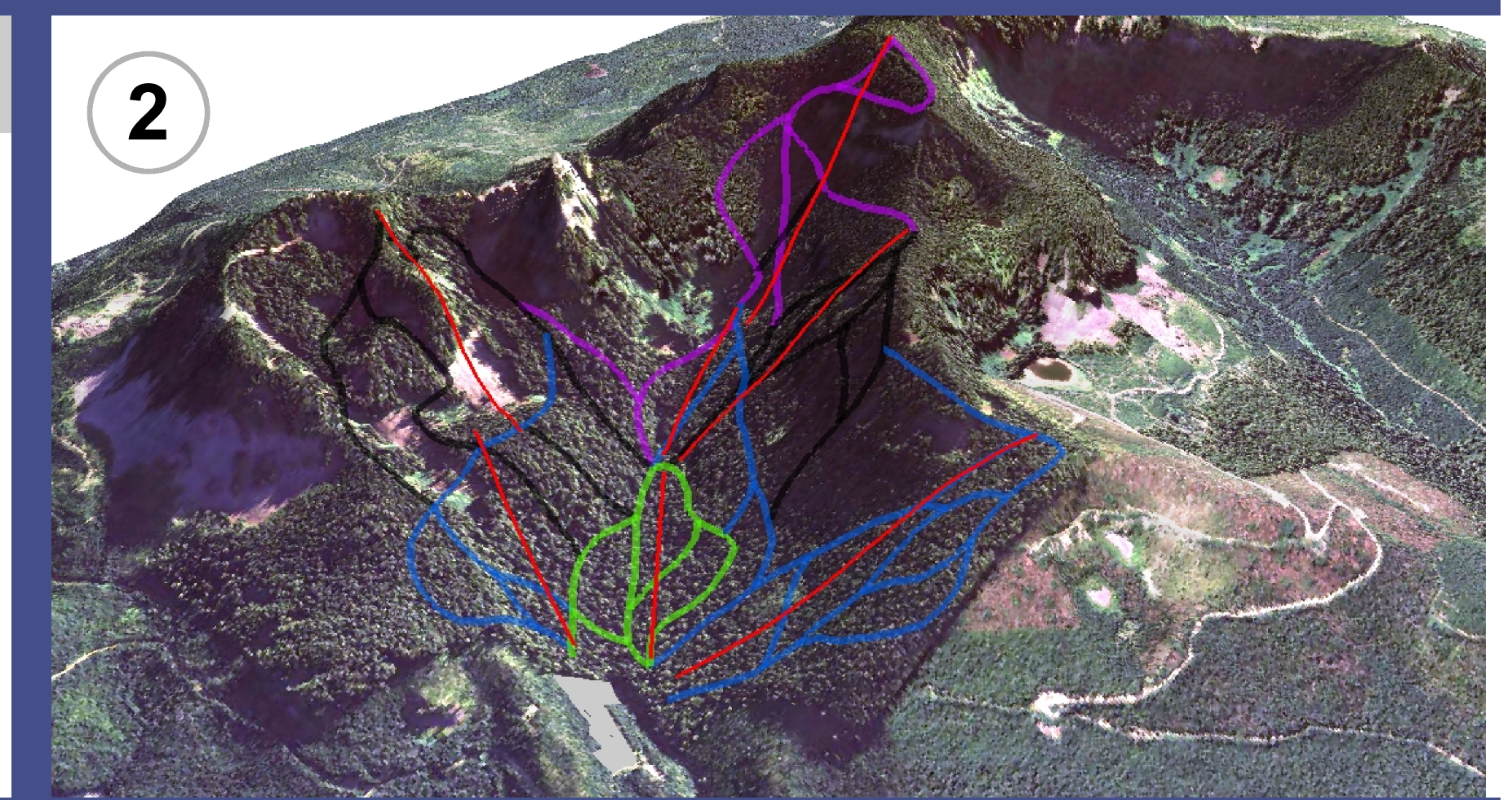
Paranoia Peak

Ski lifts: 6
Runs: 34
Miles of Trails: 8.92
Vertical Drop: 1,546 ft.



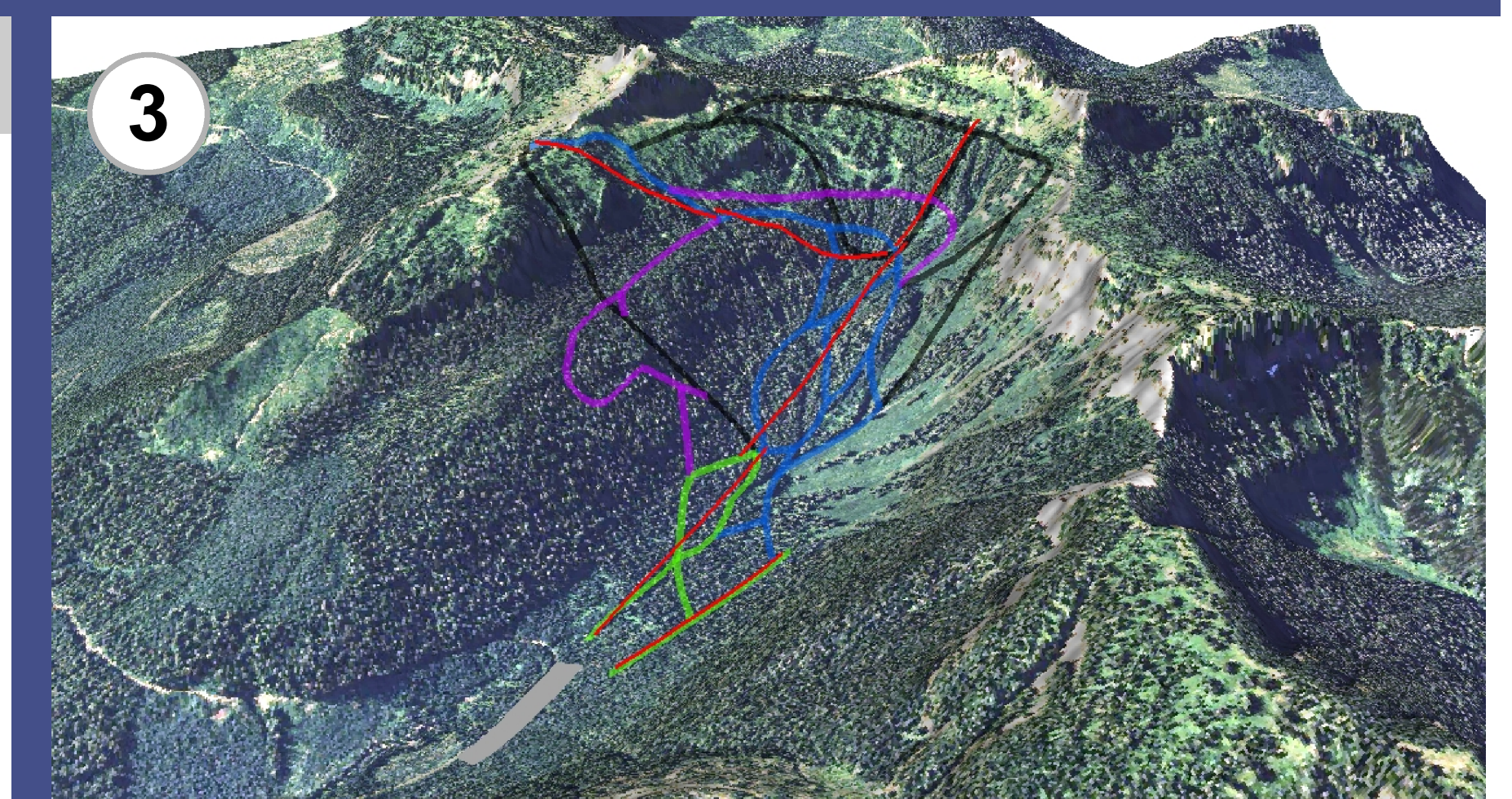
Goat Mountain

Ski lifts: 7
Runs: 34
Miles of Trails: 13.25
Vertical Drop: 2,181 ft.



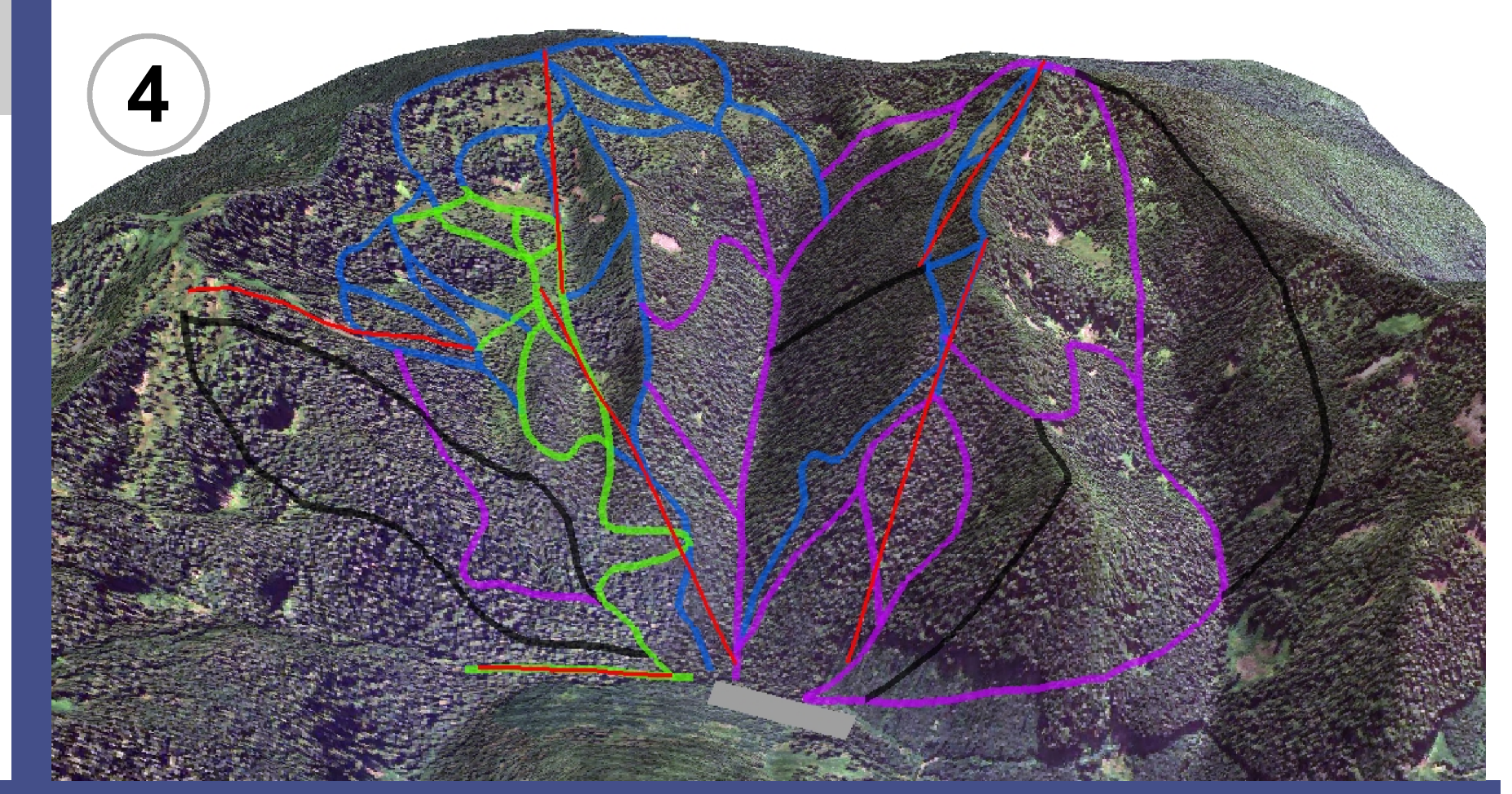
Castle Butte

Ski lifts: 6
Runs: 23
Miles of Trails: 9.8
Vertical Drop: 2,178 ft.



Hurricane Peak

Ski lifts: 6
Runs: 46
Miles of Trails: 25.33
Vertical Drop: 2,279 ft.



Long John Mountain

Ski lifts: 10
Runs: 37
Miles of Trails: 18.5
Vertical Drop: 2,152 ft.

