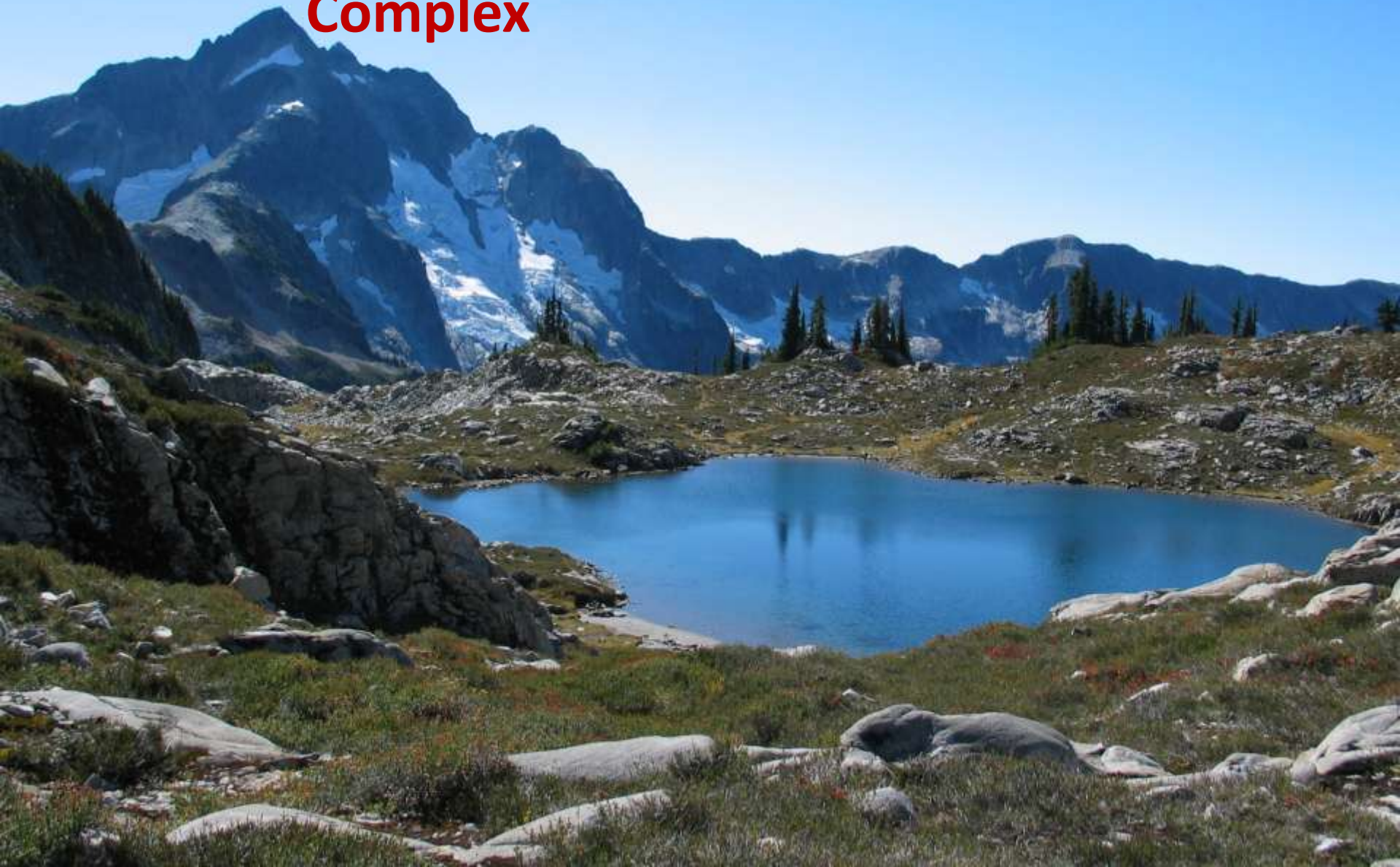
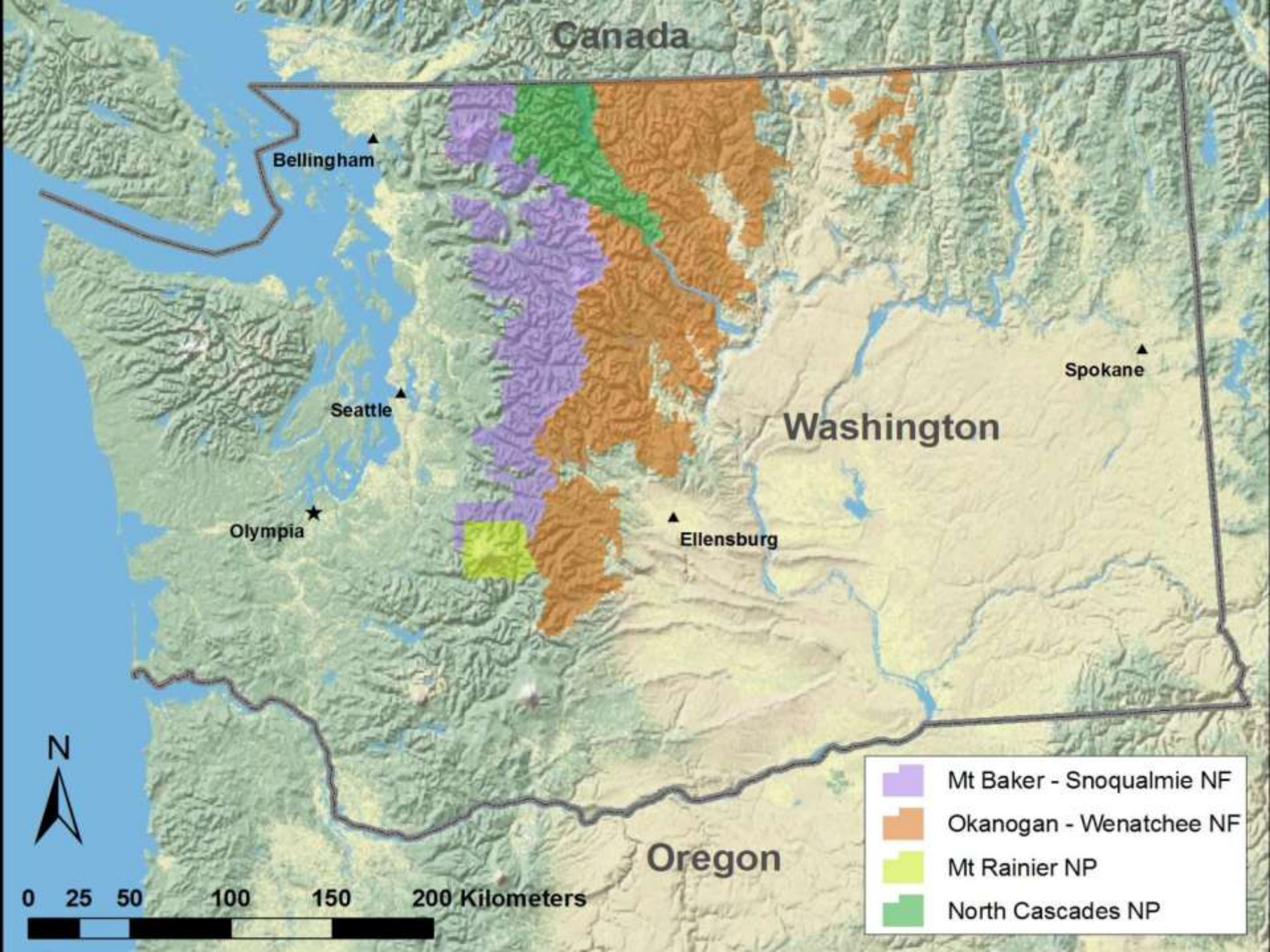


Trail, Road, and Access Management – North Cascades National Park Service Complex





Canada

Bellingham

Seattle

Olympia

Ellensburg

Spokane

Washington

Oregon

- Mt Baker - Snoqualmie NF
- Okanogan - Wenatchee NF
- Mt Rainier NP
- North Cascades NP

N

0 25 50 100 150 200 Kilometers

People access and use NOCA in a number of ways....



People access and use NOCA in a number of ways....



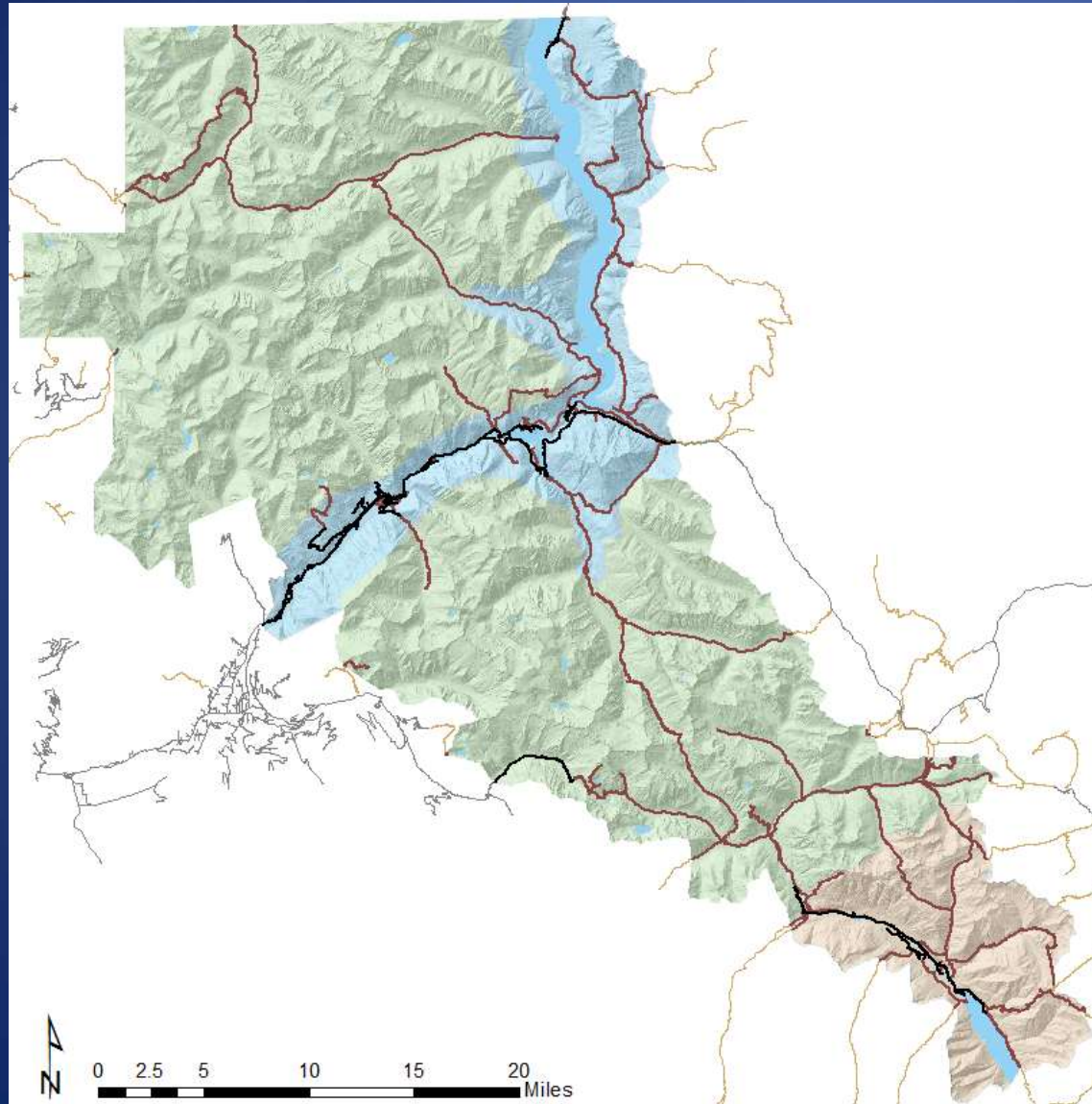
People access and use NOCA in a number of ways....



People access and use NOCA in a number of ways...



Roads and trails network



Legend

-  Park Roads
-  Non-Park Roads
-  Park Trails
-  Non-Park Trails

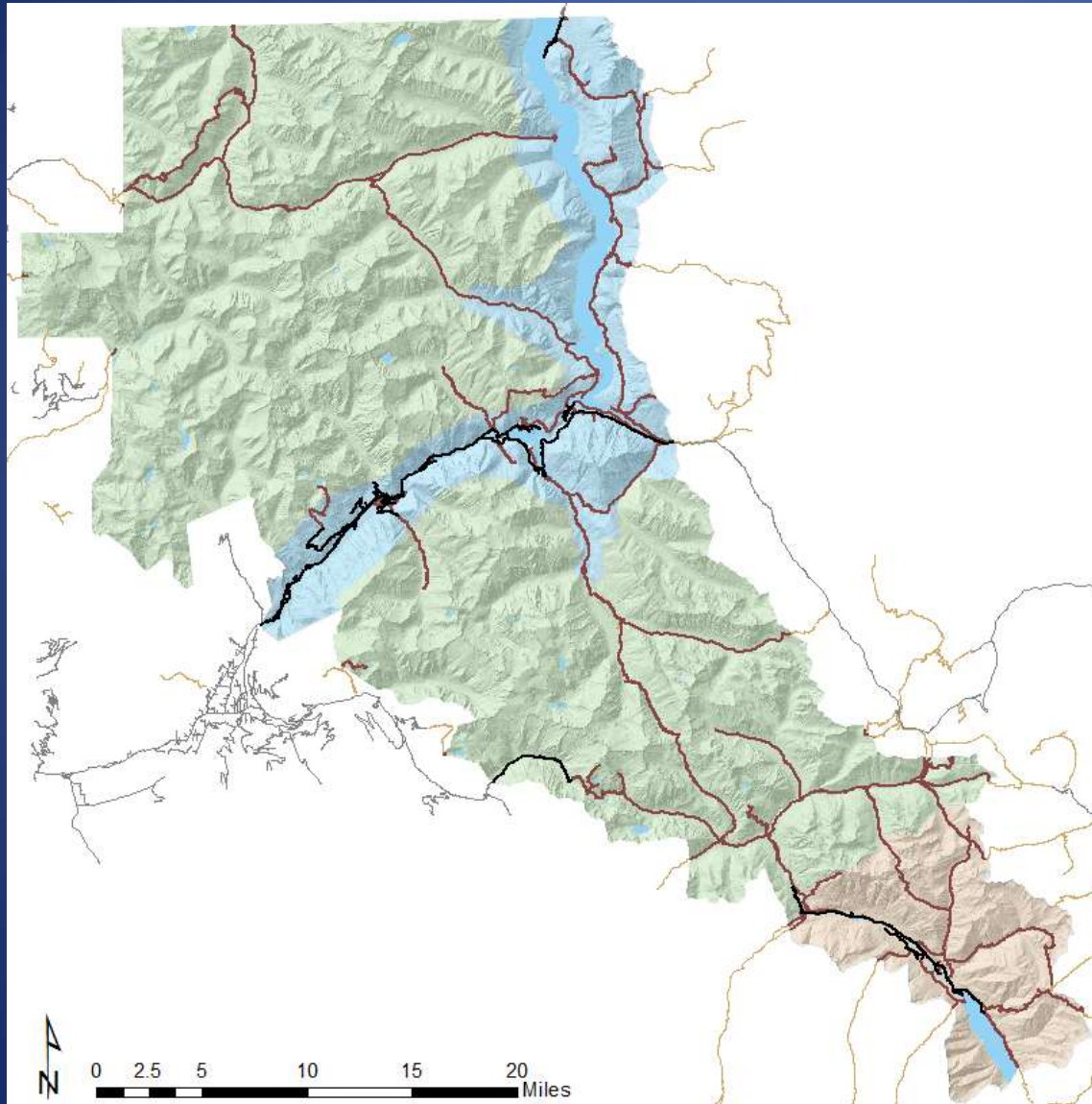
Roads

- NPS : 47 miles
- WSDOT (SR20): 28 miles

Surface type

- Bituminous: 11 miles
- Gravel: 33 miles
- Soil: 1.3 miles

Roads and trails network



Legend

-  Park Roads
-  Non-Park Roads
-  Park Trails
-  Non-Park Trails

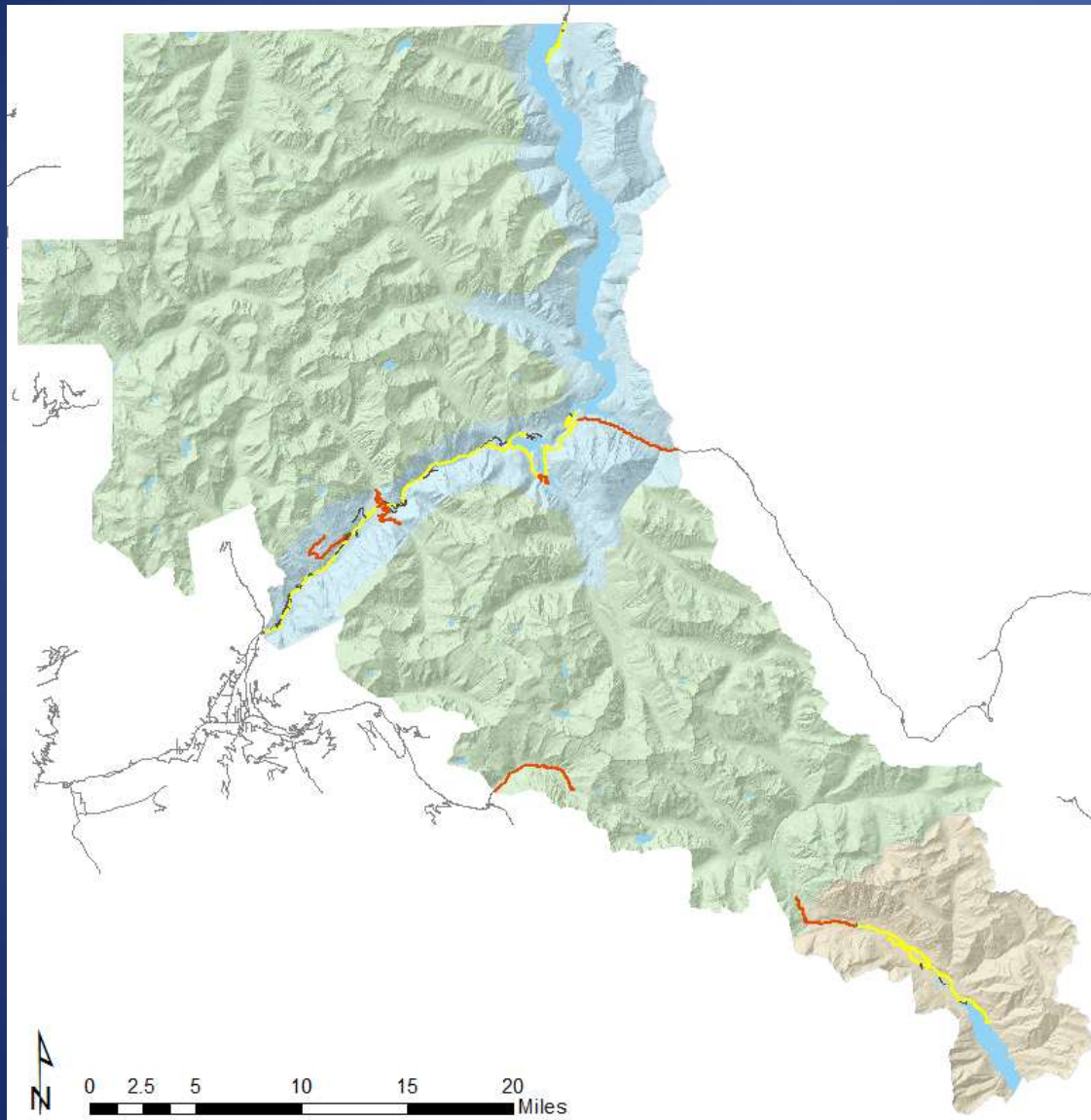
Bridges

- NPS: 11
- WSDOT (SR20): 14

Culverts

- NPS: 194
- WSDOT (SR20): 268

Roads: Year-round vs. seasonal use



Legend

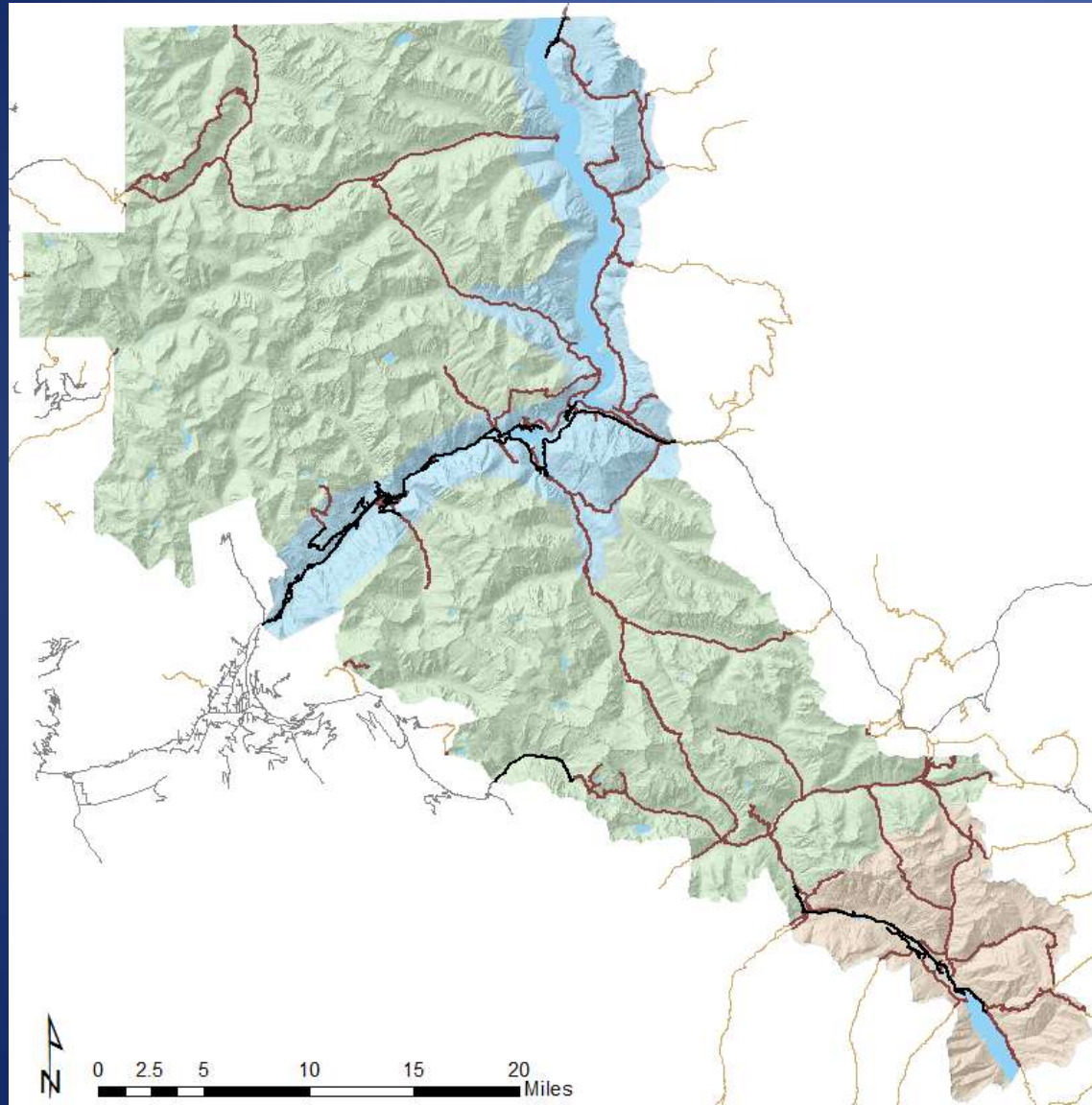
Park Roads

-  Year-round
-  Seasonal
-  Private/Other

Non-Park Roads



Roads and **trails** network



Legend

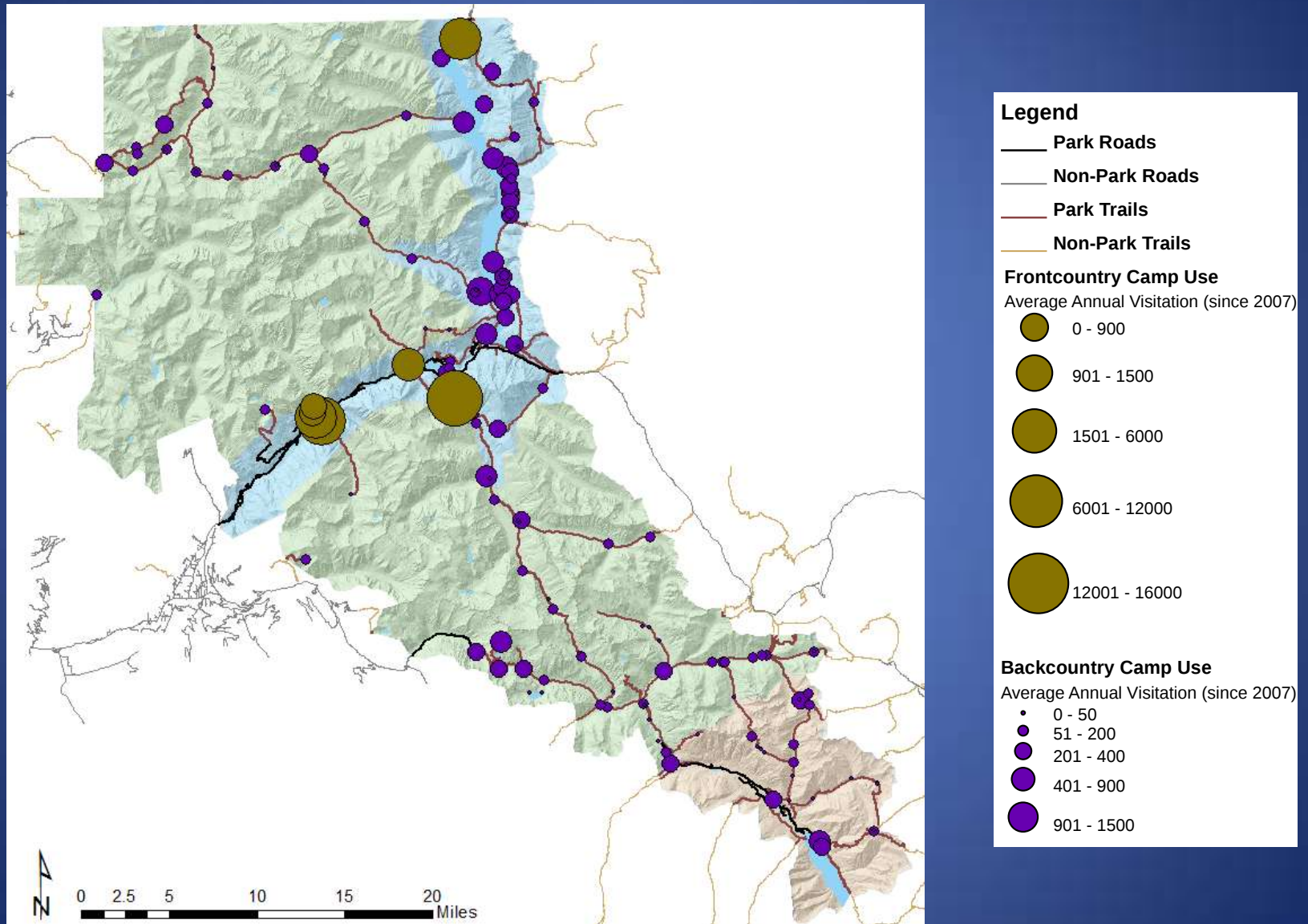
-  Park Roads
-  Non-Park Roads
-  Park Trails
-  Non-Park Trails

Trails:

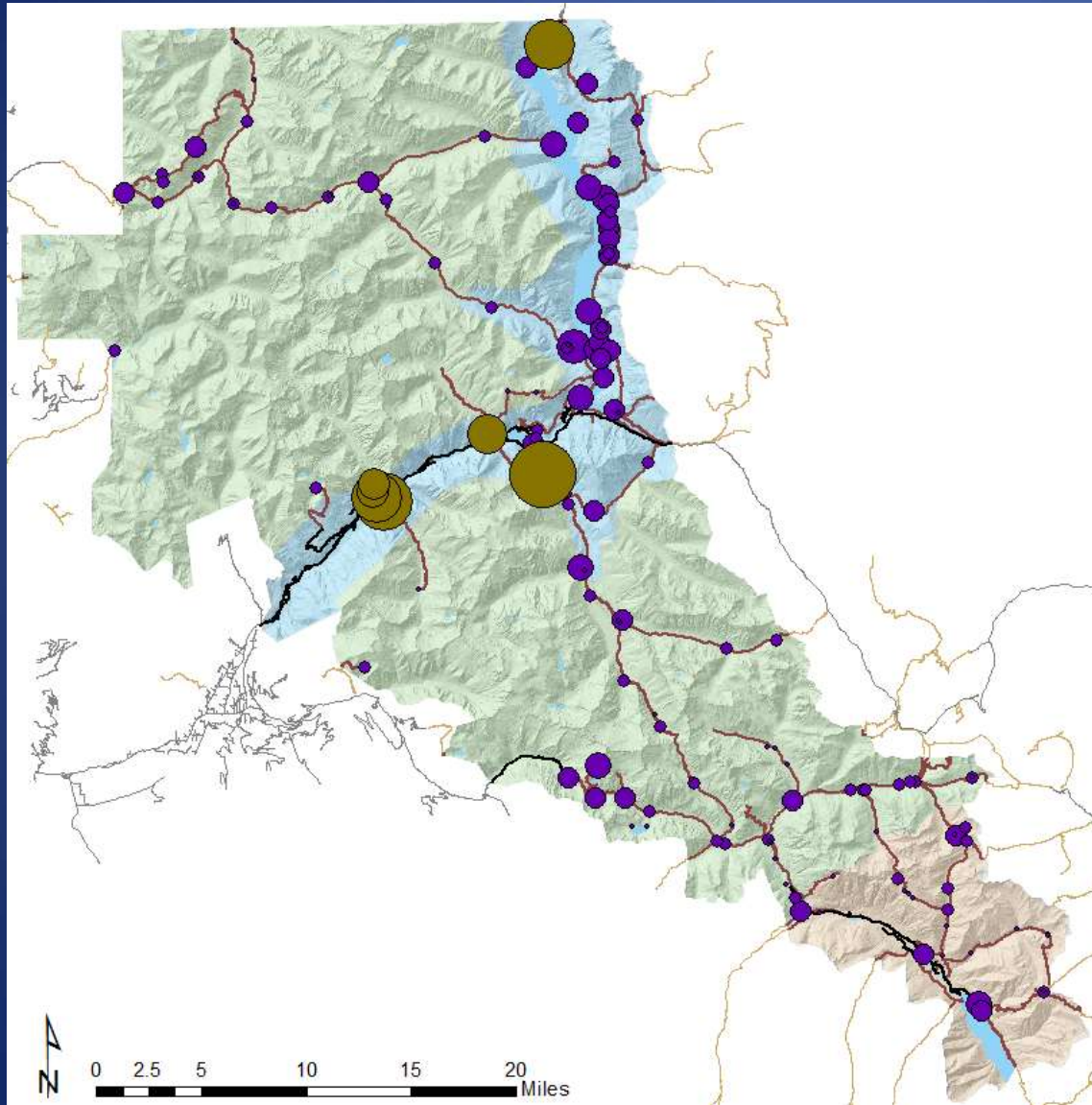
- Hiker only: 133 miles
- Pack animal: 256 miles

Trail bridges (FHWA inspected): 11

Campgrounds and use

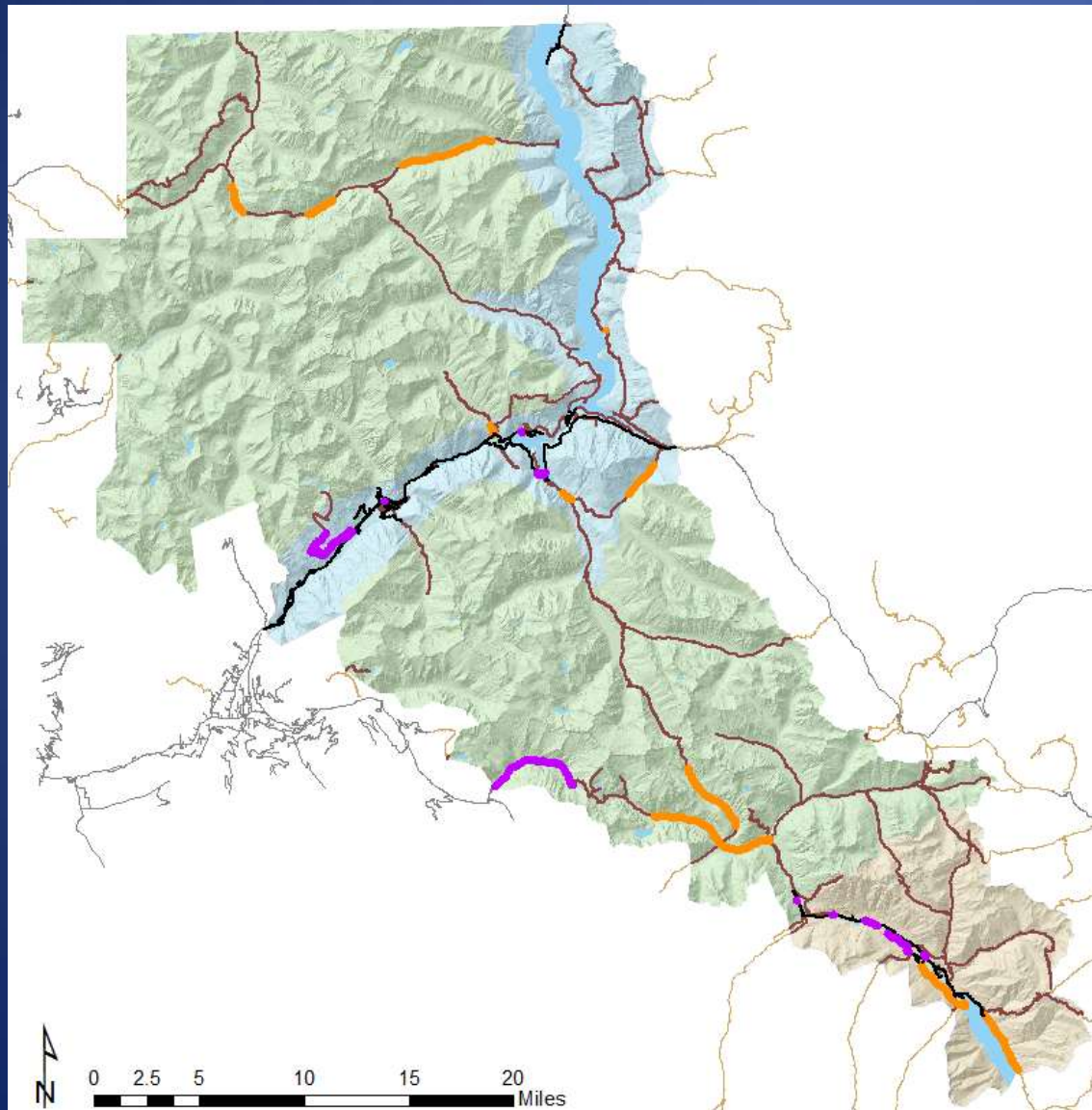


Campgrounds: number and capacity



Frontcountry sites		
Individual	Group	Capacity
266	4	1984
Backcountry sites		
Individual	Group	Capacity
260	34	1726

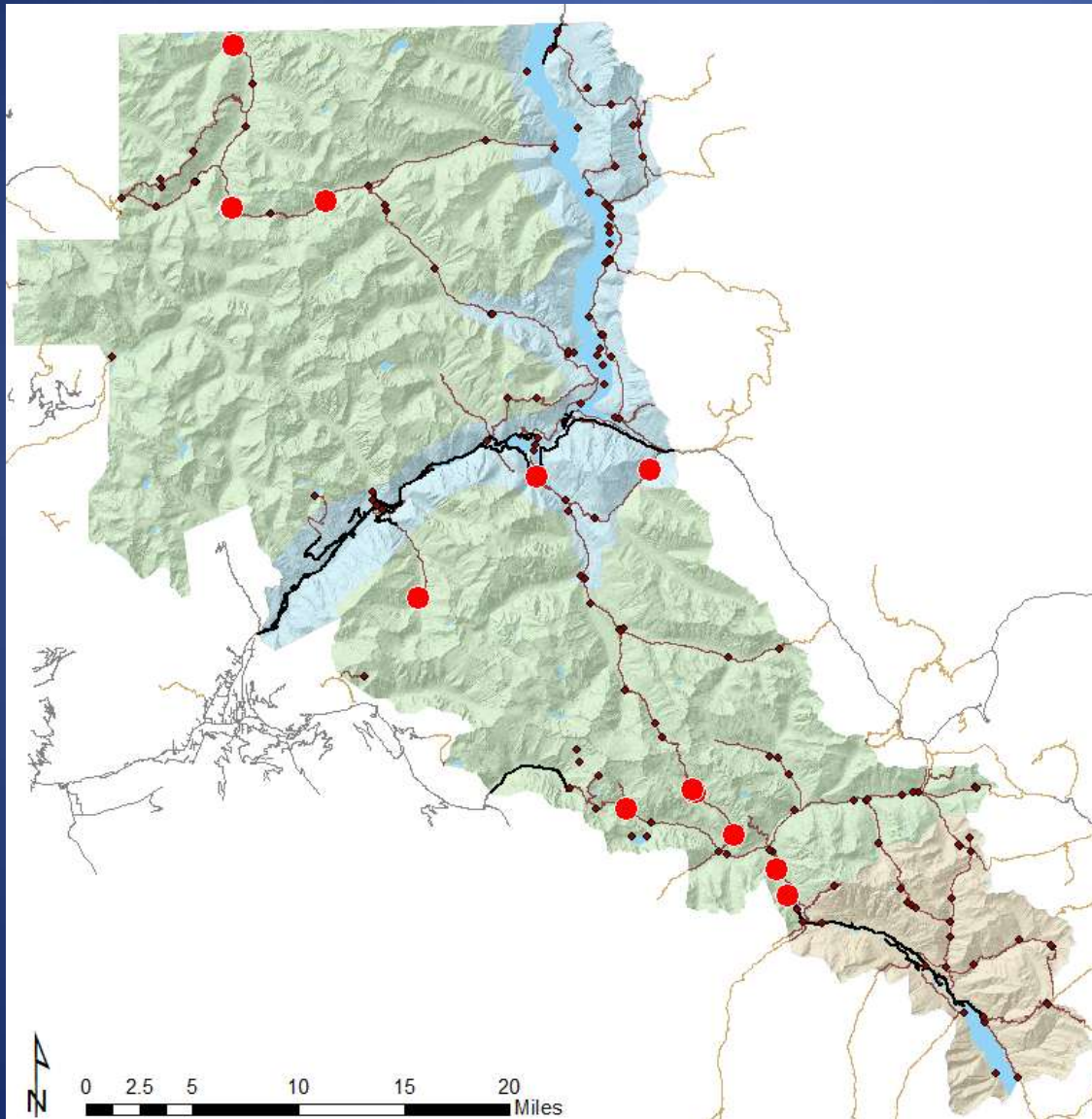
Roads & trails w/ multiple damage events



Legend

-  Roads - Repeat Damage
-  Trails - Repeat Damage
-  Park Roads
-  Non-Park Roads
-  Park Trails
-  Non-Park Trails

Camps with multiple damage events



Access and vulnerability issues - NOCA

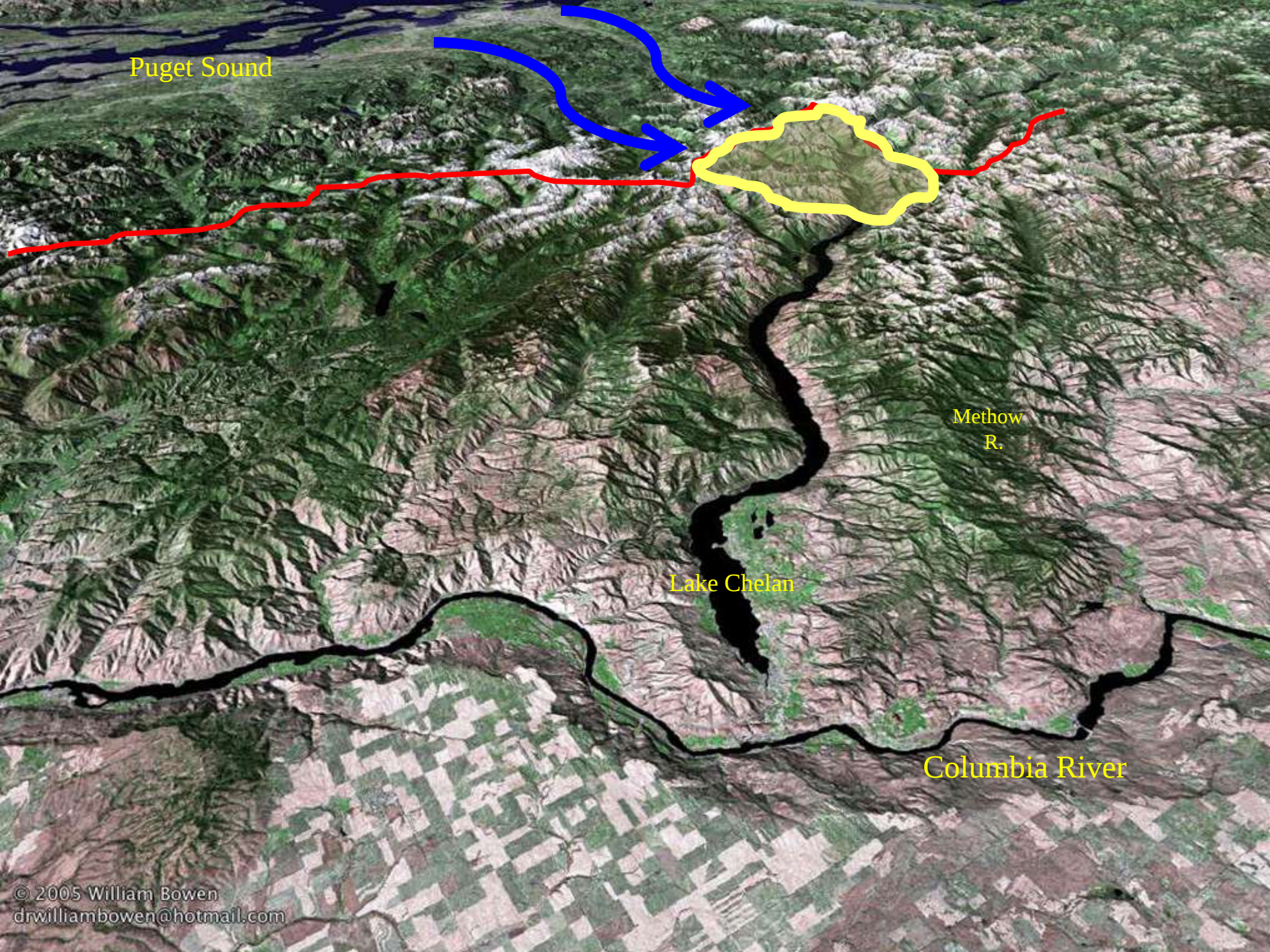


Puget Sound

Methow
R.

Lake Chelan

Columbia River



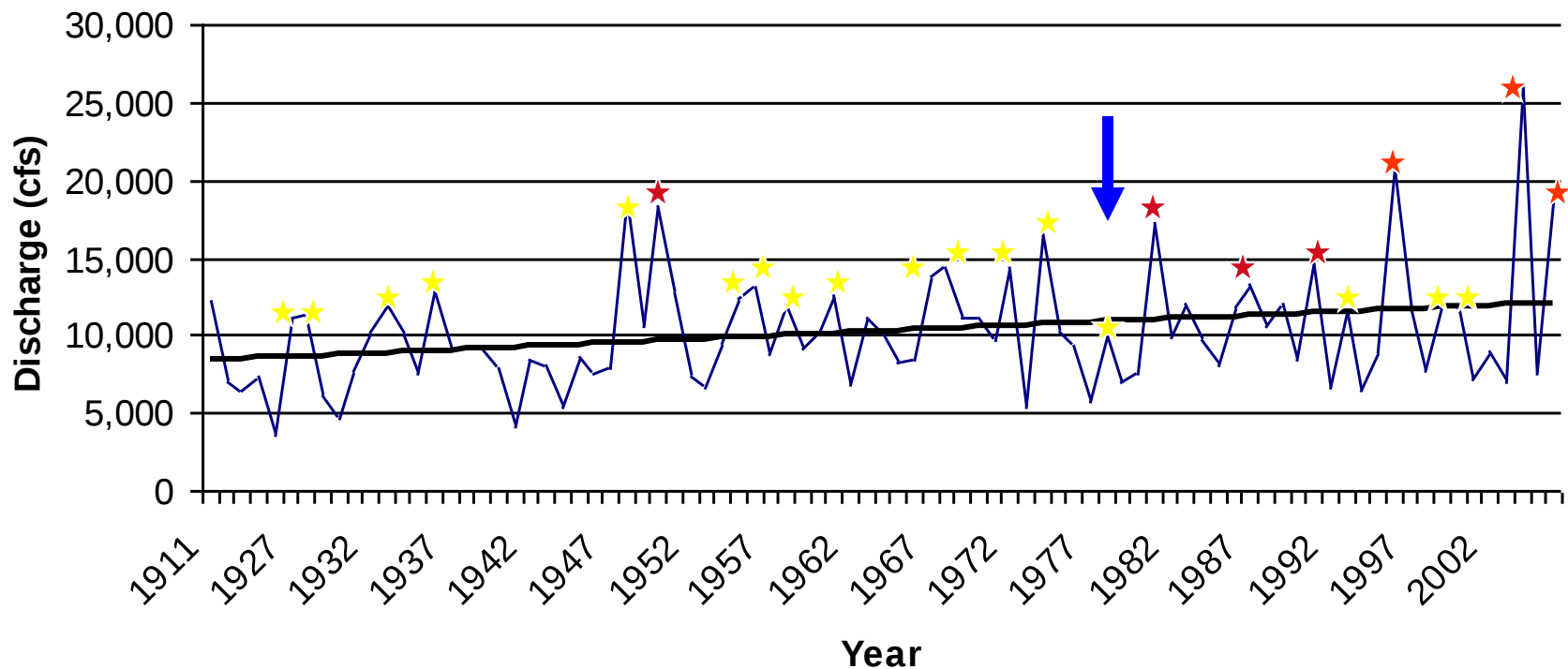
Magnitude and Timing of the Annual Peak Flood on the Stehekin River



spring flood



fall flood





Roads in floodplains/channel migration zones





**Primary road access in Stehekin Valley –
McGregor Meadows, 2003 flood**

A photograph showing a steep, eroded hillside next to a river. The hillside is composed of light-colored, sandy soil with patches of green vegetation. A large, dark tree trunk is visible on the left side of the frame. The river is turbulent and blue, flowing through a forested area. In the background, more forested hills and mountains are visible under a clear sky. A blue banner with white text is overlaid at the bottom of the image.

**Road placement constrained by
Wilderness boundaries**

West side road/flood issues



Trail vulnerabilities





**Lake Chelan near Stehekin River
mouth, 2003**

**Isolated, intense storm
cells**









Colonial campground, 2003 flood



**Ross Dam/powerhouse
access issues**

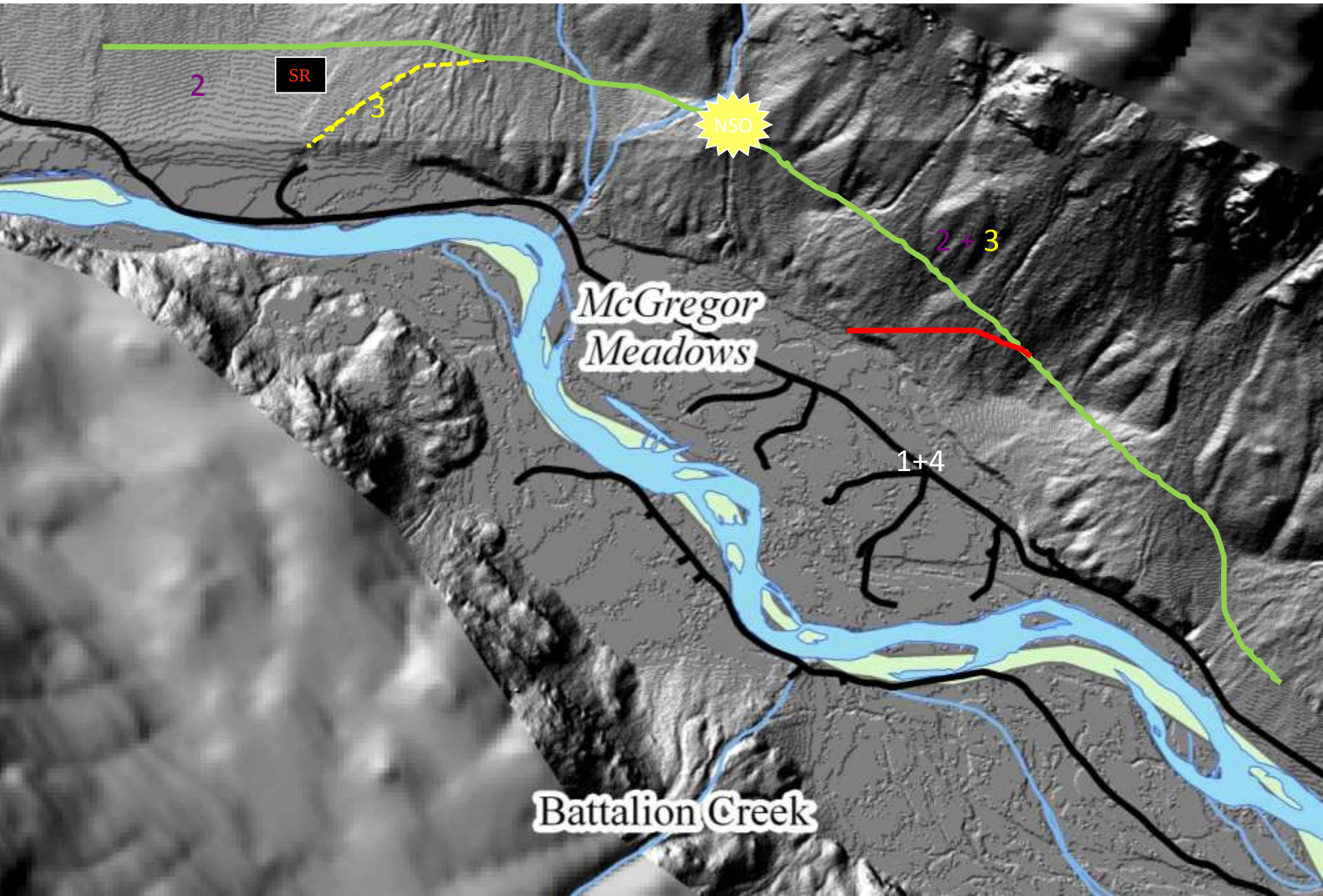
Powerhouse



Road to dam
(and Ross Lk
Resort)



NPS response? – move out of CMZ



Road abandonment – but at a cost



Embrace it...? – interpretive trail



NPS Planning

- General Mgmt Plan – Ross Lake NRA – 2011
 - “close, abandon, or rehab facilities destroyed by severe weather events”
 - for facilities destroyed “[if possible] first attempt to construct in the general vicinity; otherwise, construct at another feasible location to limit net loss”
 - “strive to preserve camping opportunities at Colonial Creek; if reconstruction not feasible, replace sites at another already disturbed location”

NPS planning

- Ross Lake GMP:
 - “Abandon or rehab affected portions of Goodell Crk campground; alternative access...would be provided to the west of the existing access road”
 - “build replacement sites to the west of the Goodell Creek Lower Group campground, as necessary”