

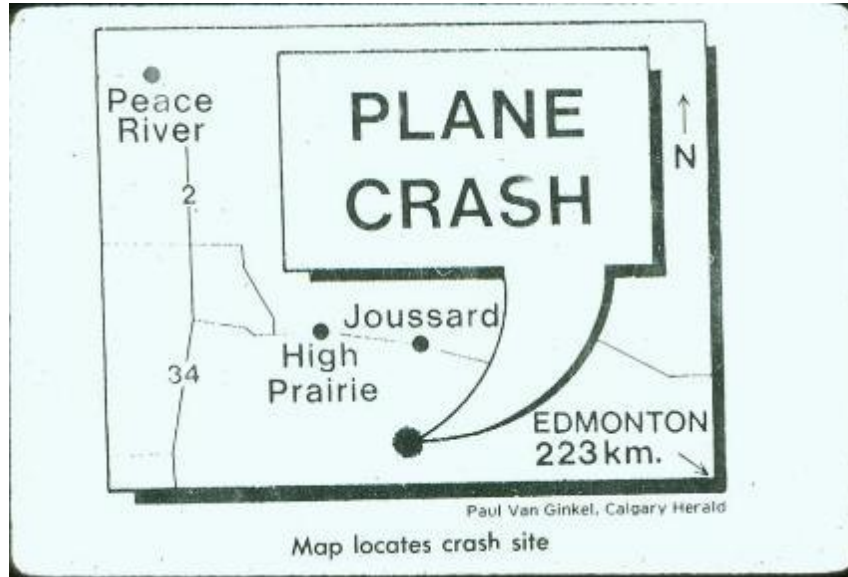
Ancillary data

‘subordinate’ = Information required to explain the display contents



1. **Scale** is required – it explains the amount of reduction

No scale – then it's a diagram, not a map



- Scale must be given on the map / display
- it is usually placed near the bottom of the map
- *Verbal statement*, ratio or graphic bar (best for output)



Kilometres ...

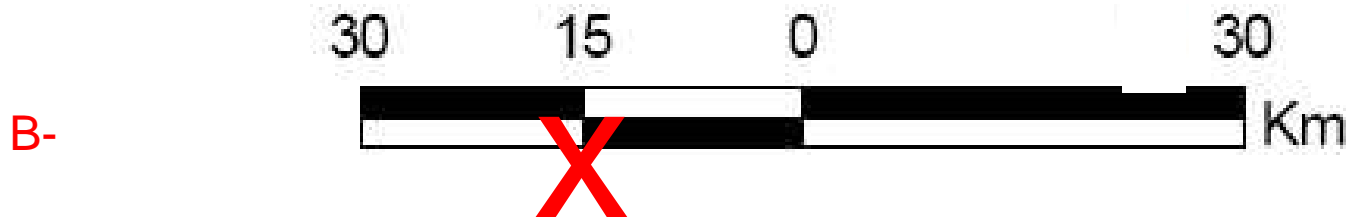
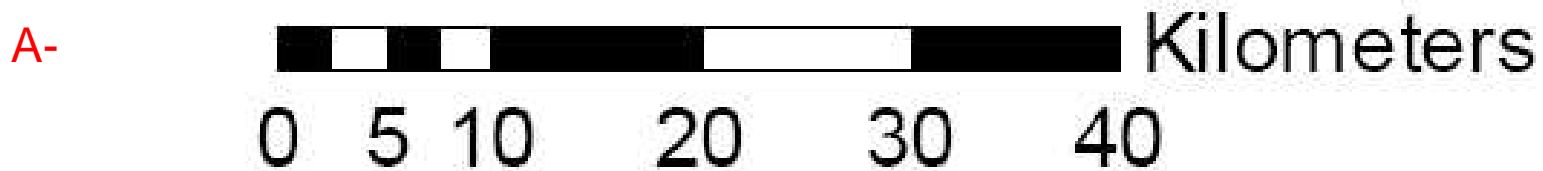


- Use round numbers
- Subdivide as appropriate
- Use appropriate units e.g. 1km not 1000m

Examples of scale bar abuse (#1 ArcGIS error)

The least worst

Kms ...



Avoid the checkered flag design



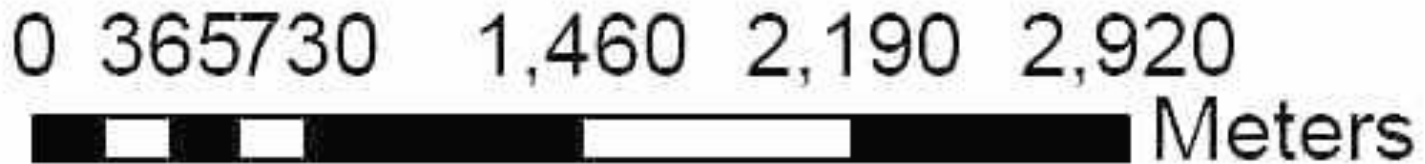
kms

C

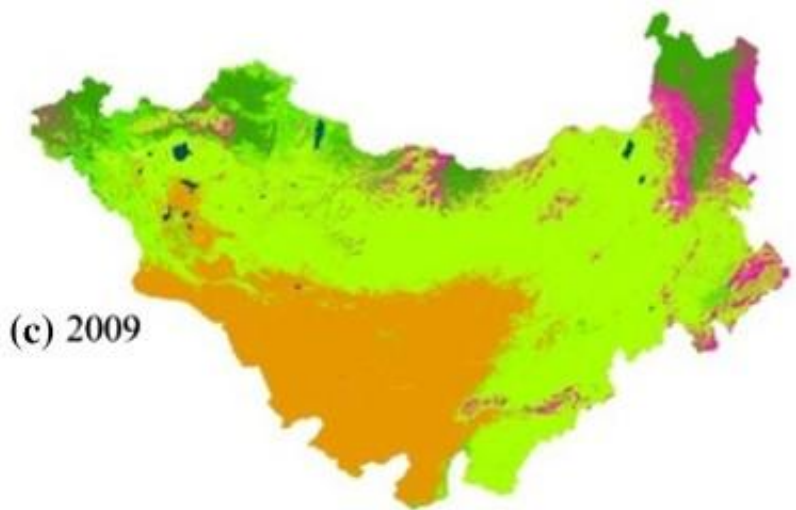
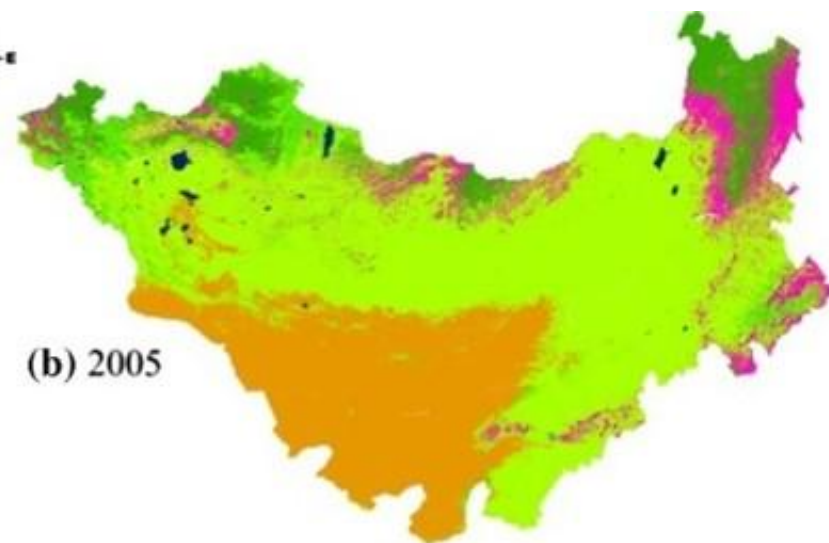
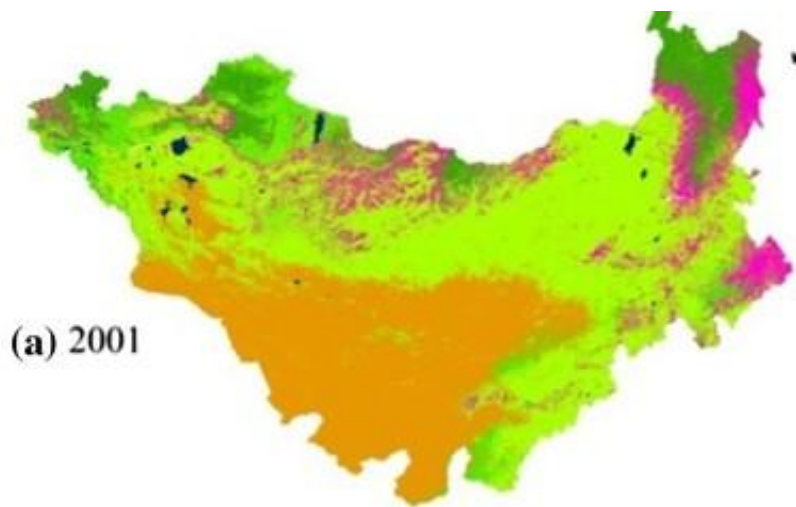


D

X



F



Legend

- | | |
|------------|-------------------|
| Forest | Bare land |
| Shrub land | Construction land |
| Grassland | Wet land |
| Cropland | Others |

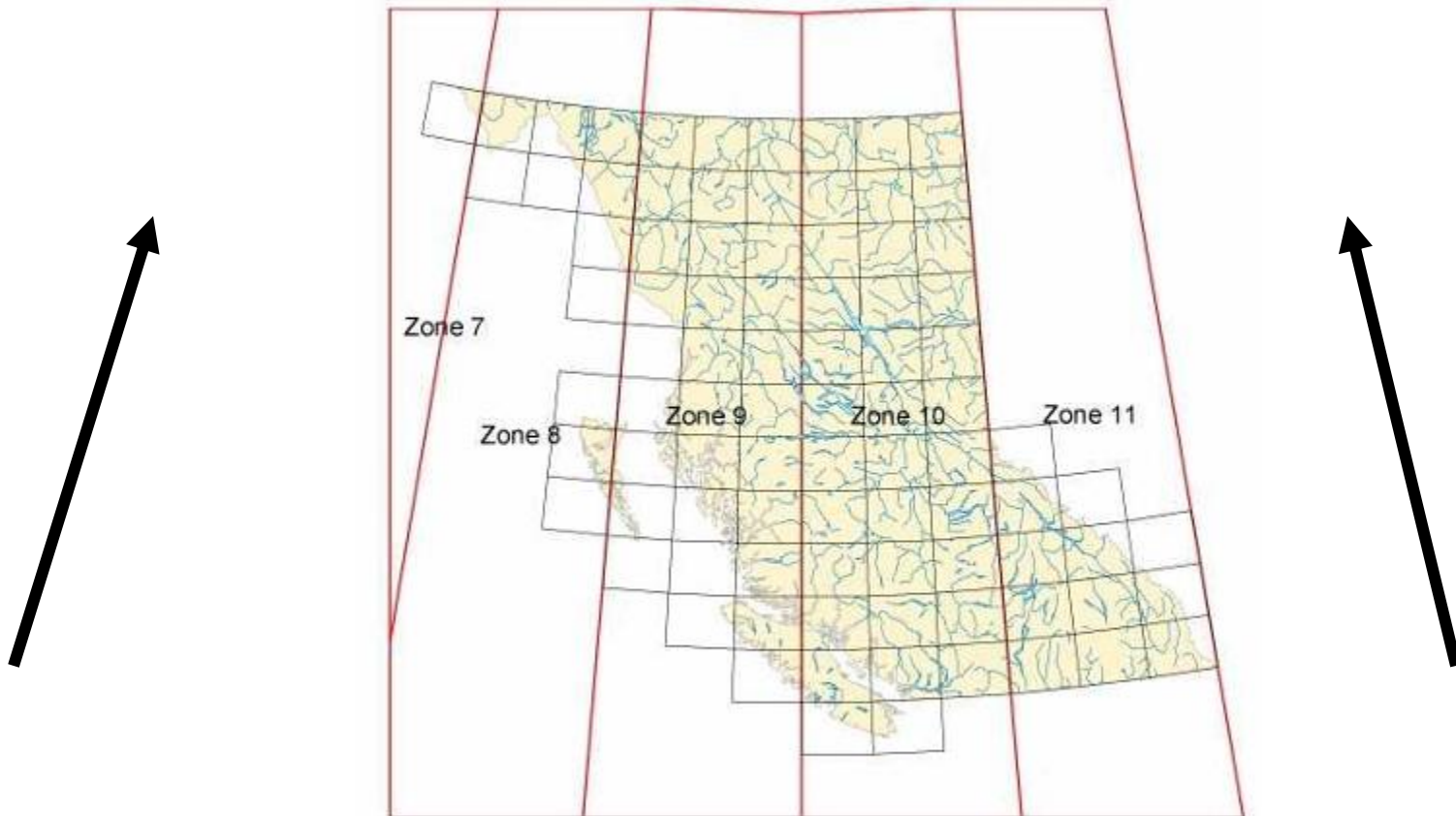
0 437,500 875,000 1,750,000
Meters

2. Direction

A North arrow is optional if it is clear that (true) North is to the top (ArcGIS error #2)

If North is not to the top, a North arrow is a **MUST**

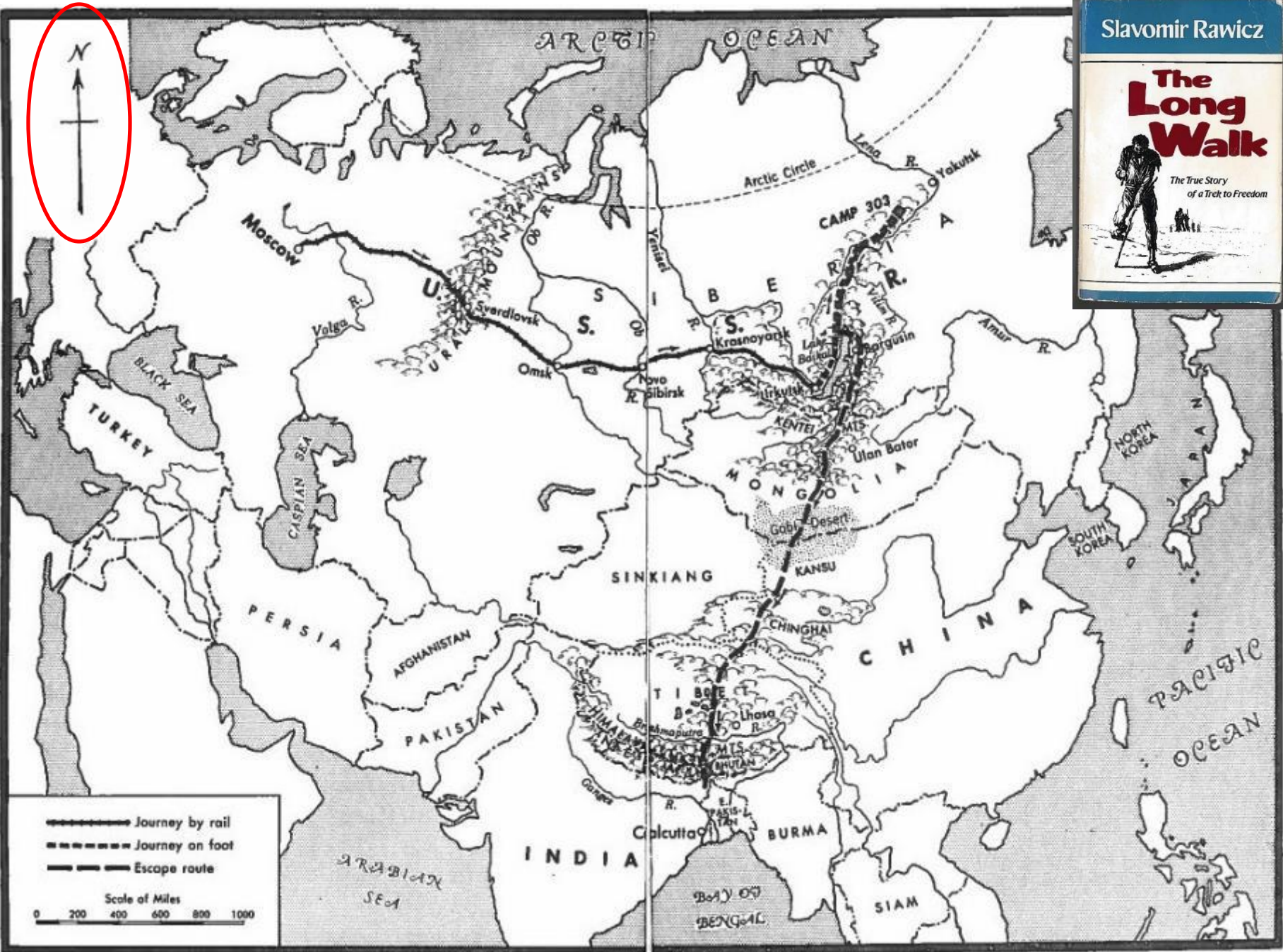
A North arrow is wrong for some maps (= most world maps)



The Long Walk



The True Story
of a Trek to Freedom



———— Journey by rail
- - - - - Journey on foot
————— Escape route

Scale of Miles
0 200 400 600 800 1000

True north and Grid north

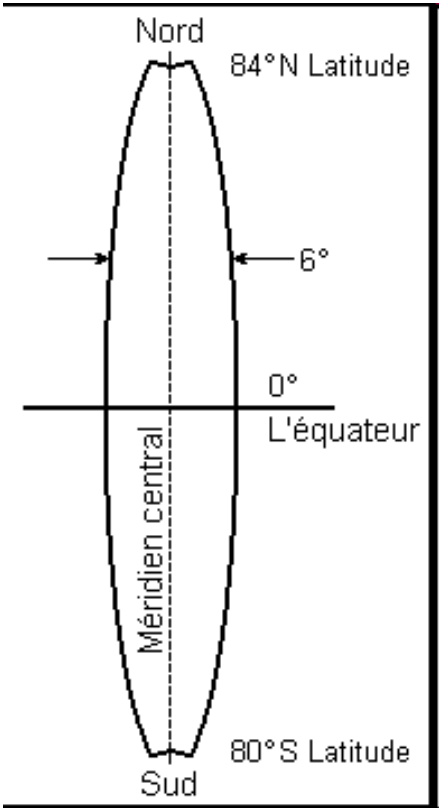
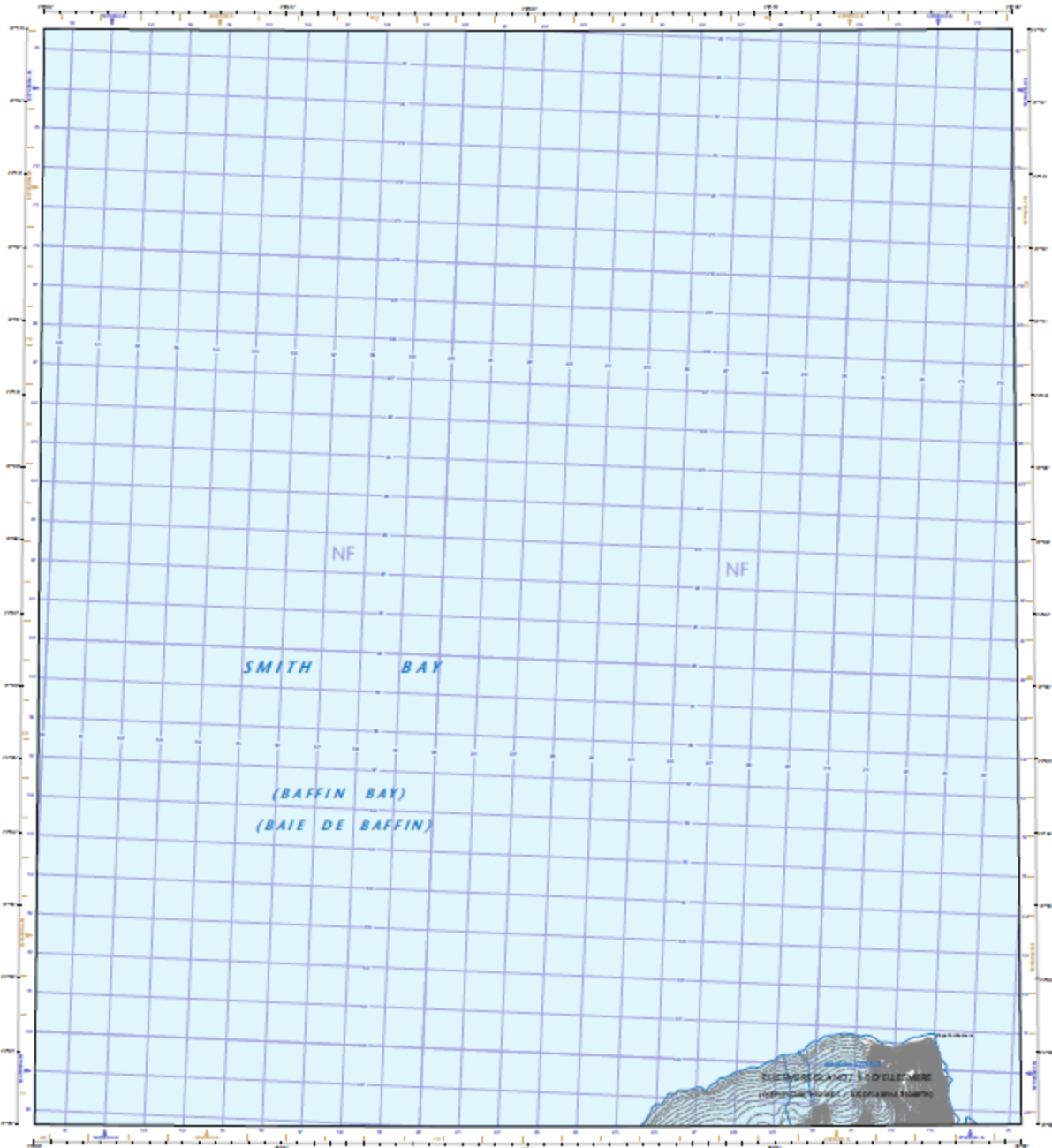


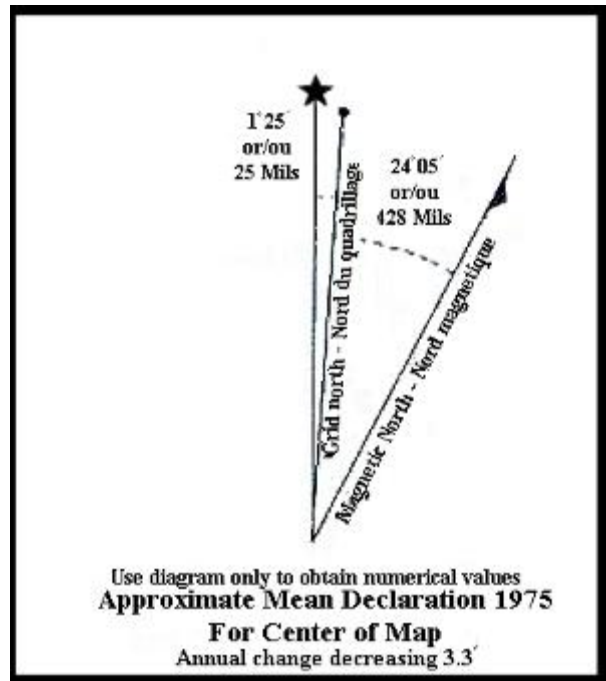
Figure 1 - Zone UTM



Magnetic North

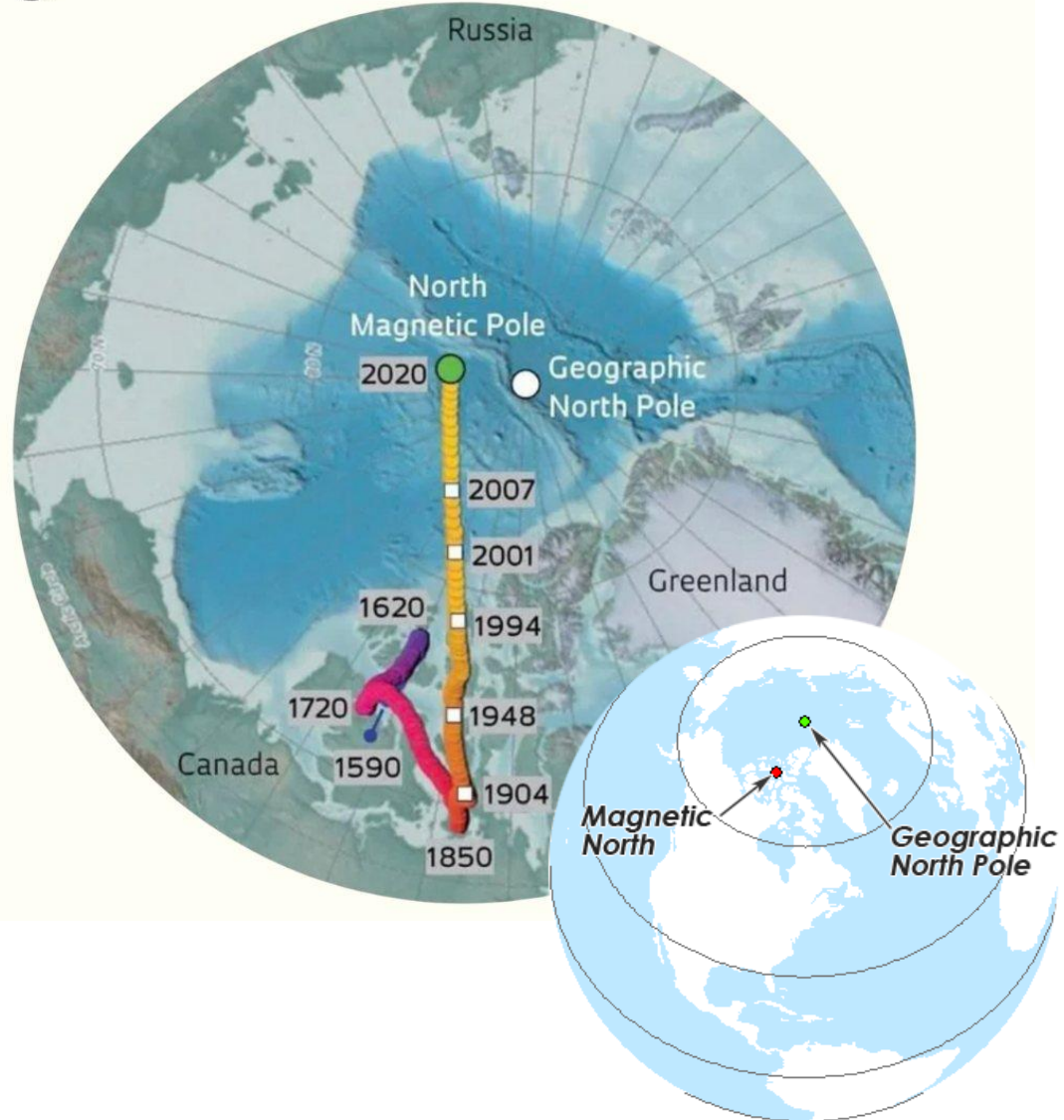
There are 3 'Norths'

The compass points to the magnetic north pole, not the 'true' north pole or grid north



The difference between magnetic north and true north is the **declination**

Map Of The North Pole's Magnetic Shift Over 400 Years:



3. Title: often at top

Title usually required -
but it may be a caption in
magazine articles

Geographic area

map content:

and date (if variable)

No need for the word
'map' !!!

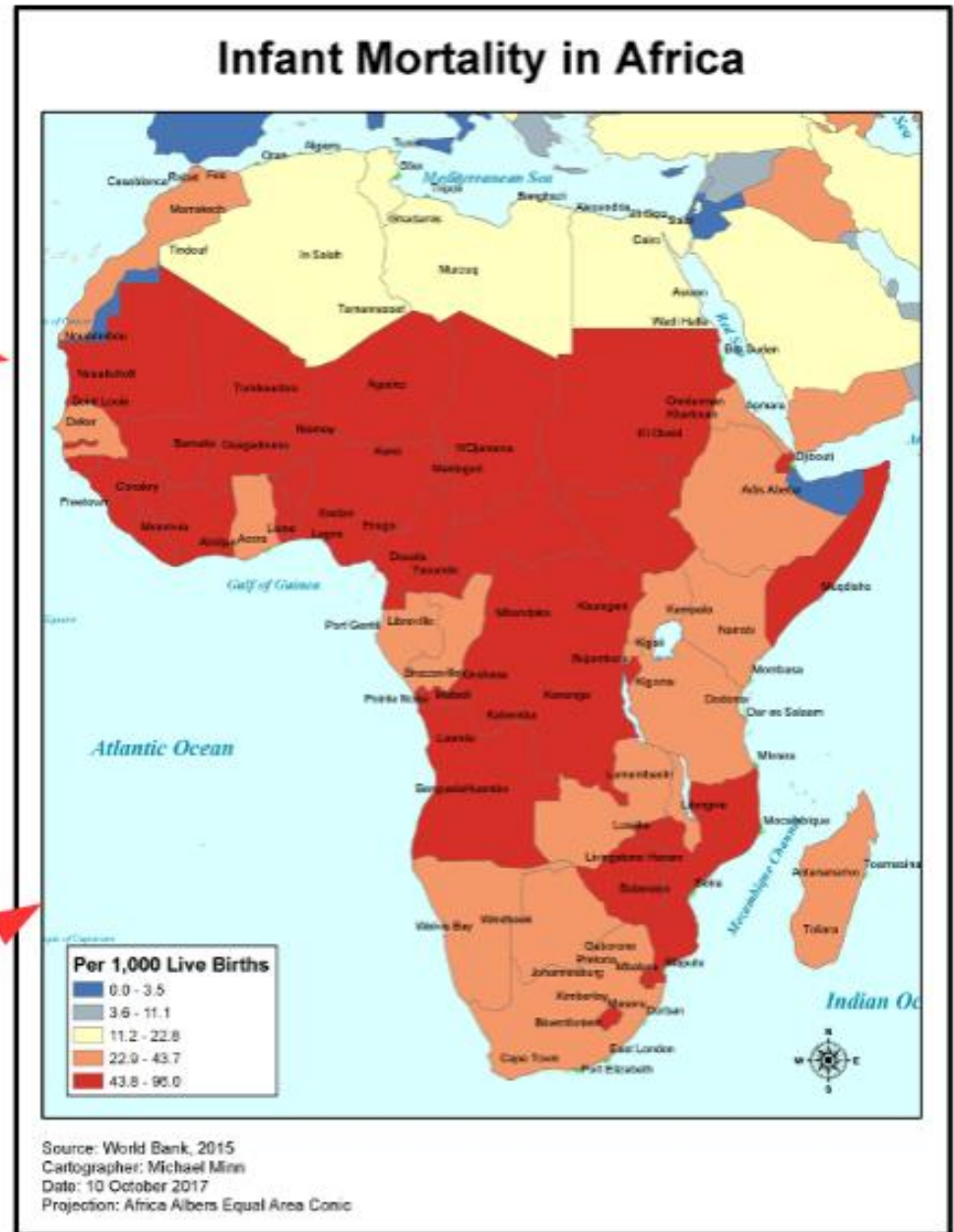
<https://gis.unbc.ca/wp-content/uploads/2024/01/What-good-maps-should-have2.pdf>

4. Borders – neatlines

Page
Frame
Line

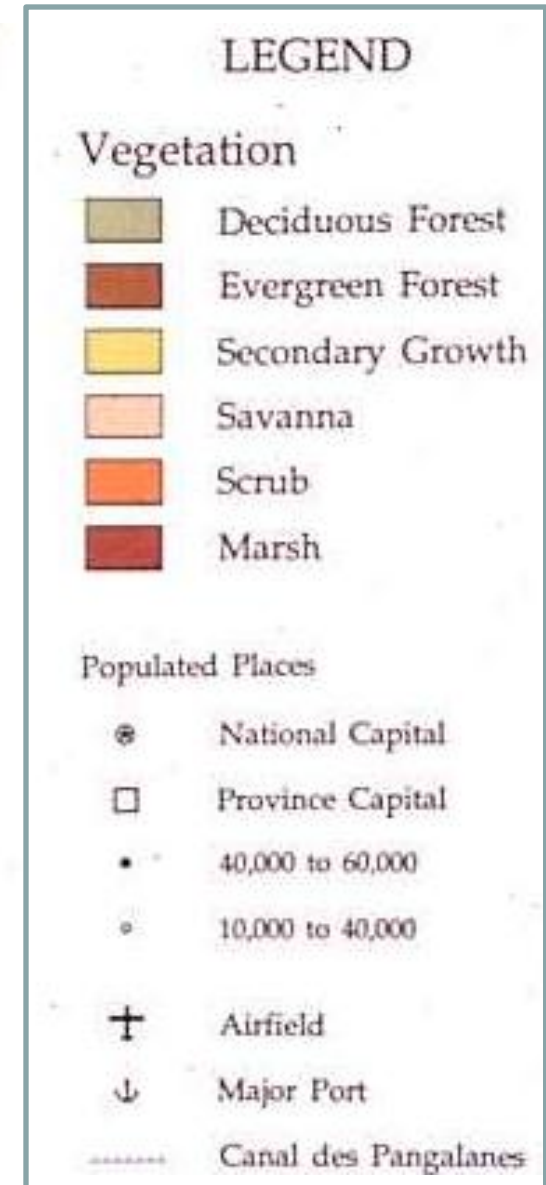


Neat
Line



5. Legend


- Symbols should be in legend unless explained by lettering
- May be omitted if obvious on map, e.g. lakes if one is named
- Symbols appear in legend exactly as on map, same size etc..
- Symbols on the left, labels on the right
- Boxes for area symbols
- Optional box for legend
- Capitalise the first letter




No 'ziggie-zaggies' ... (early versions of ArcGIS)

Line symbols should be a straight or gently curved section


Boundaries


 Federal Electoral District Boundaries

 International

 Provincial / Territorial

 EEZ (200 mile)

 Canada / Kalaallit Nunaat dividing line

 Main Trail

 Block Trails

 Hell Trail

 Logging Block

 Gravel Pit


Alternate polygon design

Do not take software defaults - which will usually include all layers

... no need to include the obvious e.g. lakes

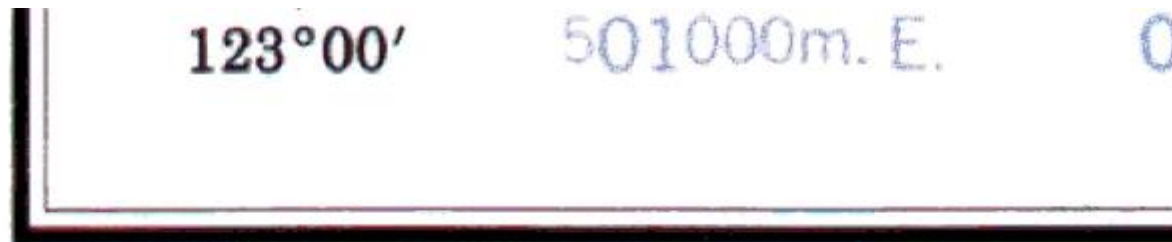
Legends

<https://pro.arcgis.com/en/pro-app/latest/help/layouts/add-a-legend.htm>

6. Data source / credits

A set of statements usually at the bottom in small text explains how the data were derived, and when

Not required for common base data e.g. coastlines, roads

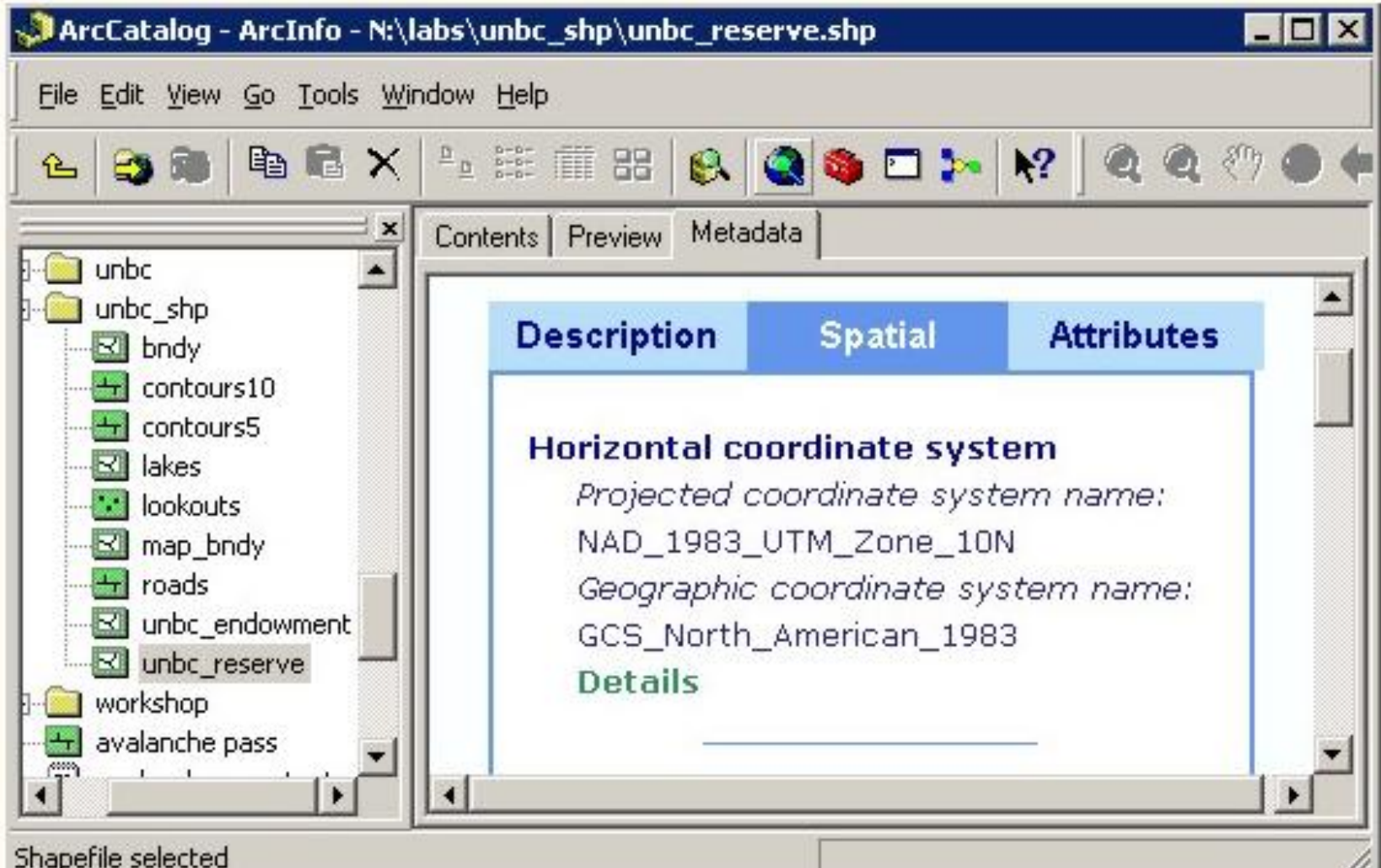


Produced by the SURVEYS AND MAPPING BRANCH,
DEPARTMENT OF ENERGY, MINES AND RESOURCES,
from aerial photographs taken in 1980. Culture check 1982. Published
in 1985. e.g. 2020 version: Roads updated 2019

Data source: GIS software digital mapping: 'Metadata'

Metadata = 'data about data' - how, when, where etc.. (often stored in a text file)

We often do not need all these details - GIS error #3



7. Location

- a. Direction / distance indicators (e.g. x kms to Edmonton)
- b. Locator maps, including scale of locator /inset
- c. Grids showing latitude and longitude

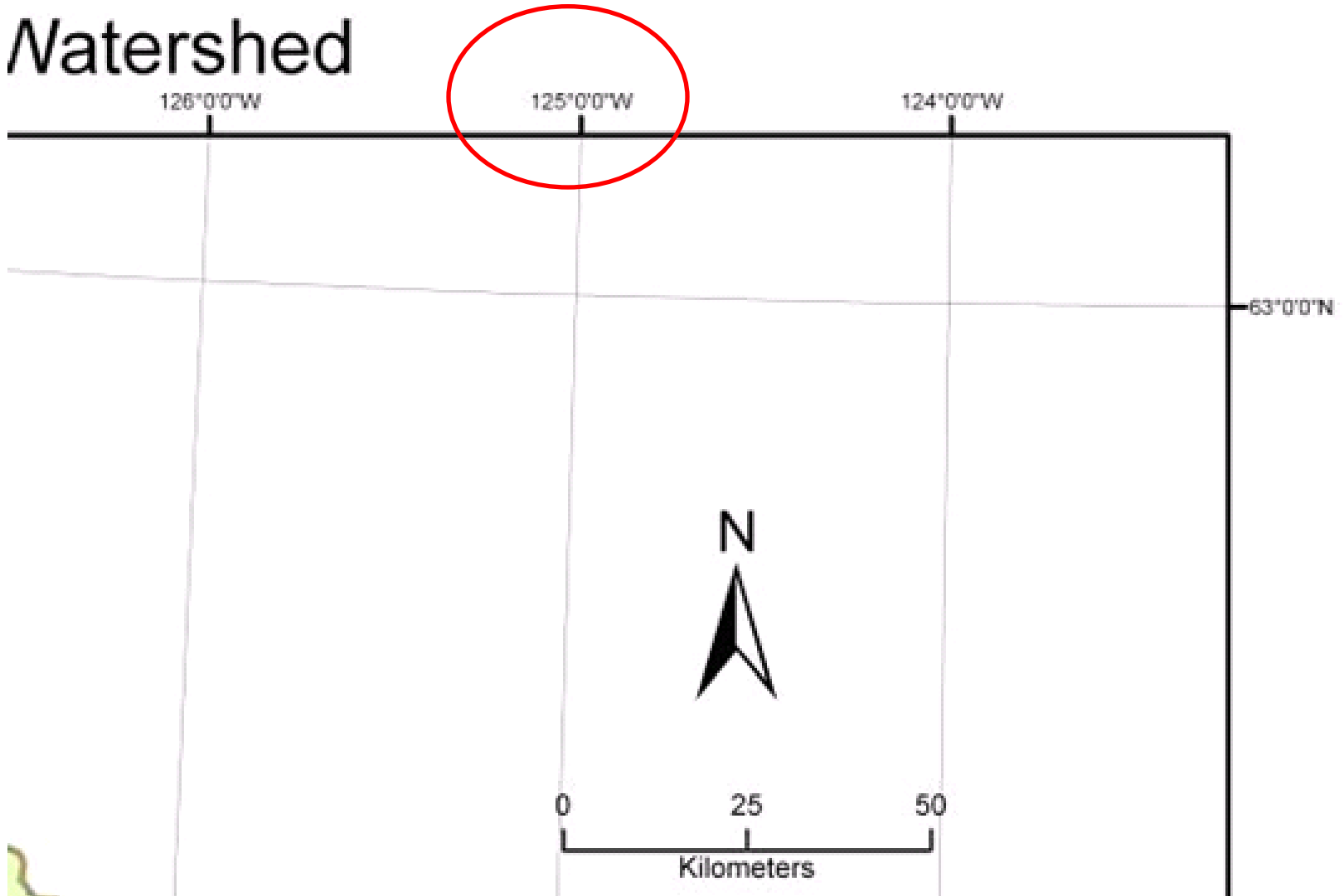


Locator map

Grid labels: common ArcGIS error #4

software default: silly graticule precision

Watershed



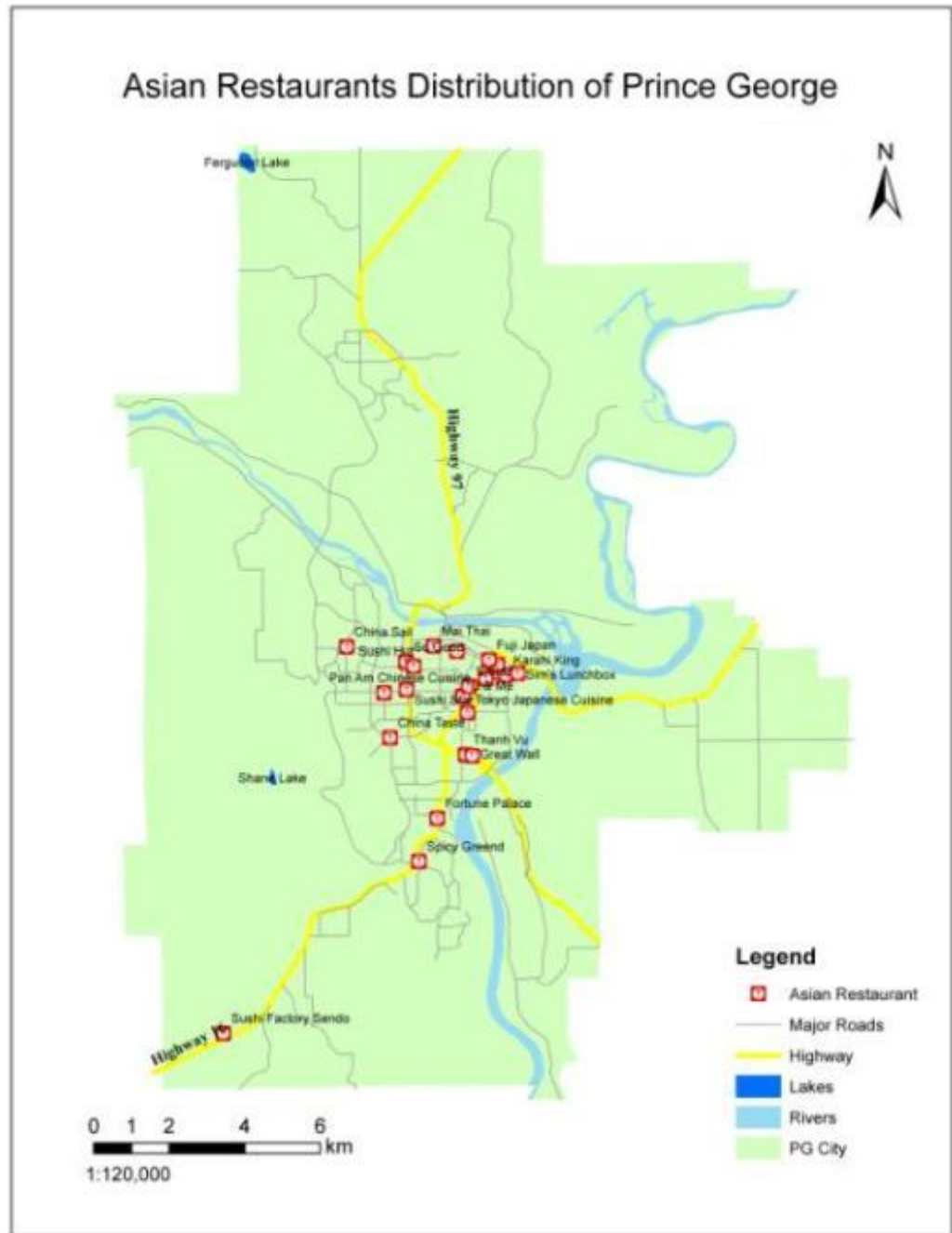
8. Graphic Design/Layout

Optional 'neatline' around the map as a whole and/or the legend

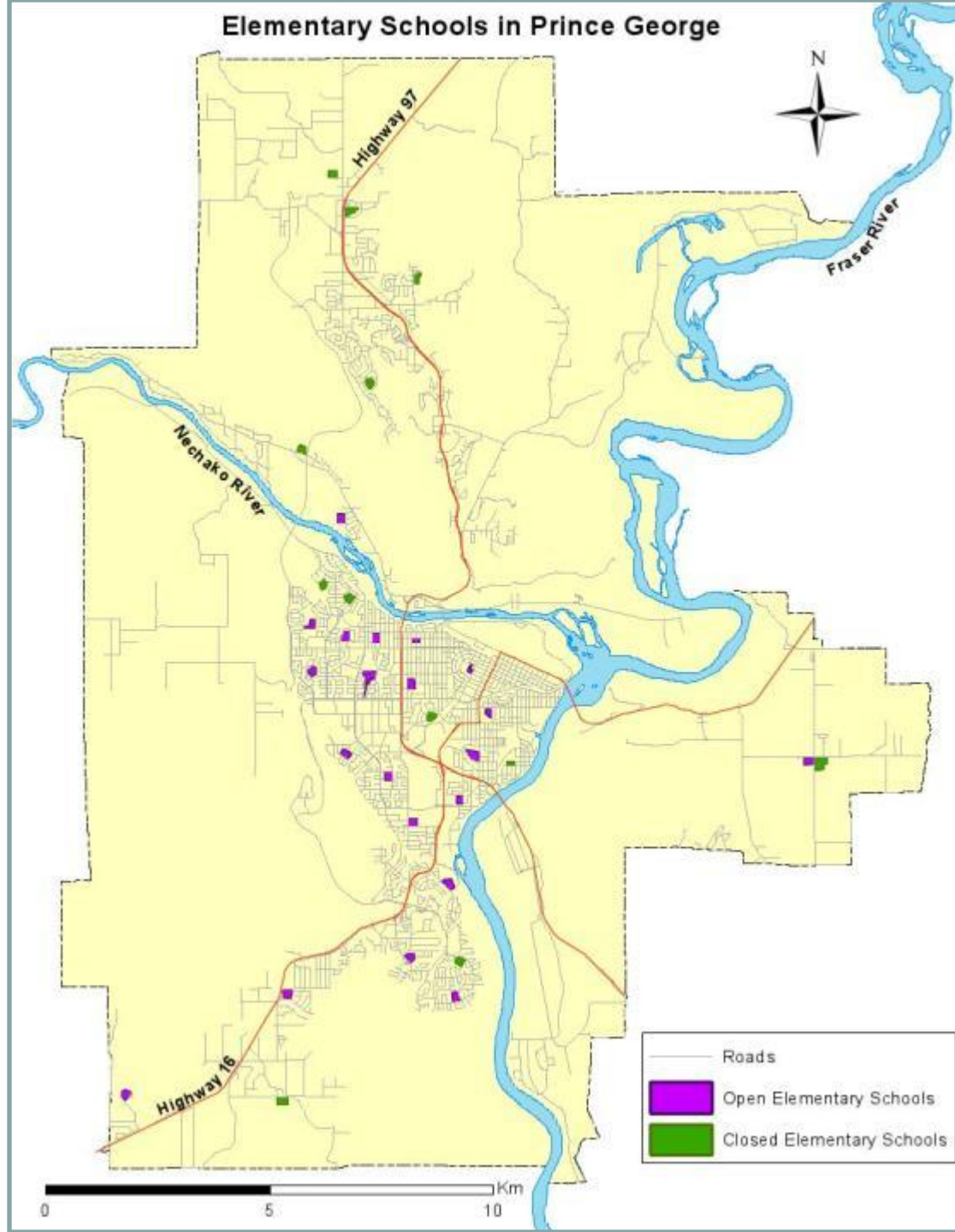
Use space wisely –don't waste white space

Maximise map content space – use white area for ancillary info

This map could be bigger and fill the box

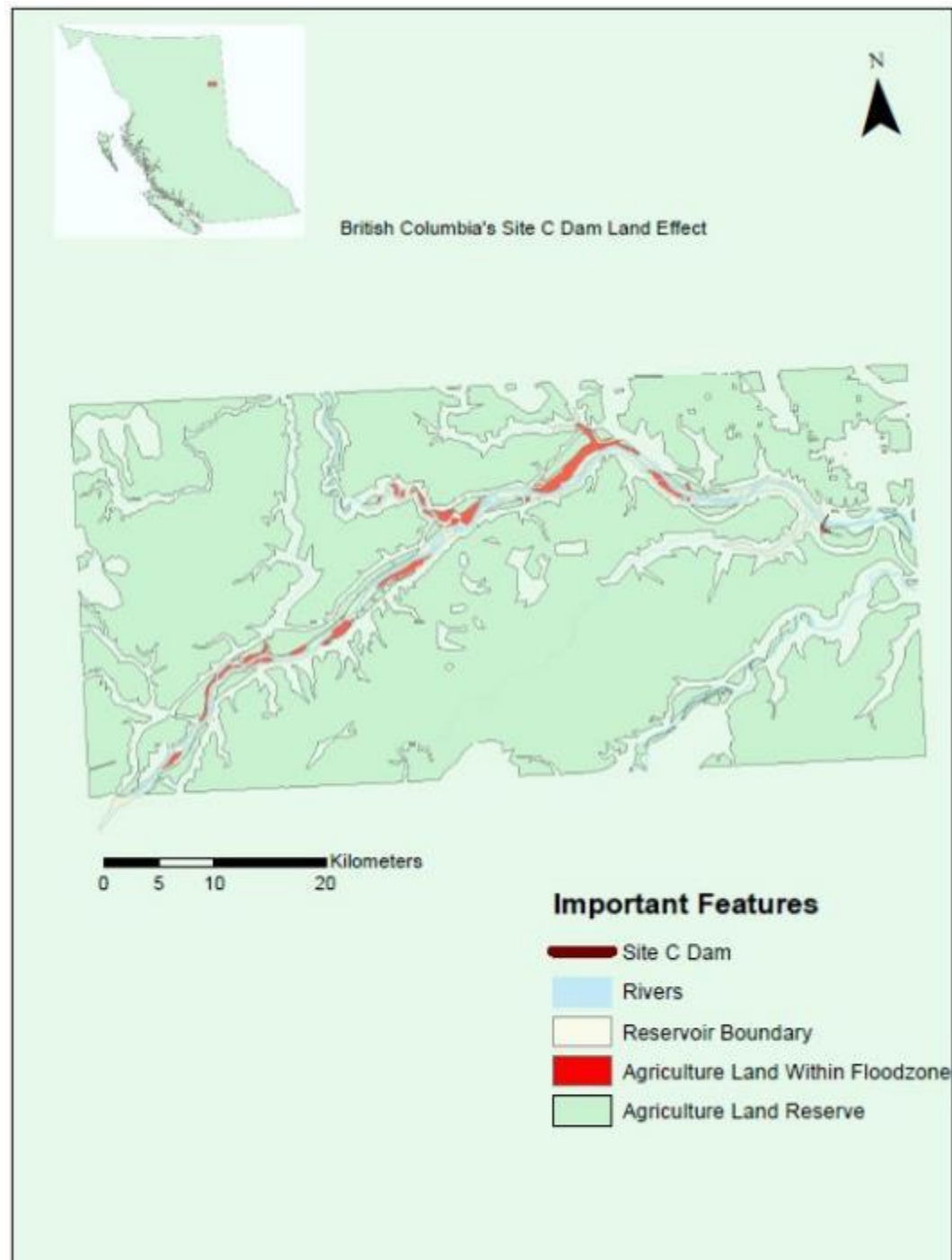


This one works ...
... better

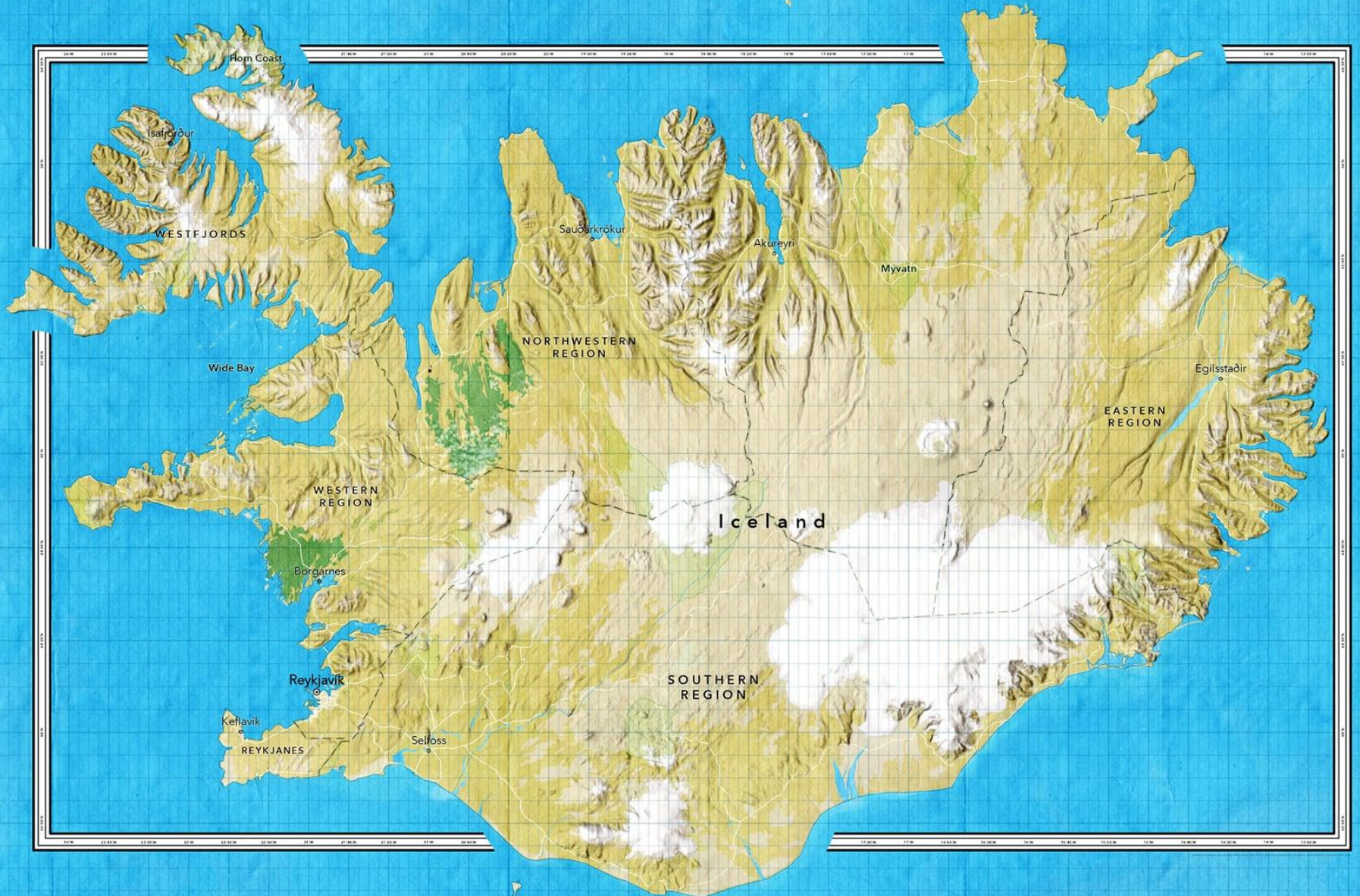


**This could
hardly be
worse ...
landscape
area in a
portrait frame**

**Legend items
are as big as
the map
Legend text
runs right to
the frame**

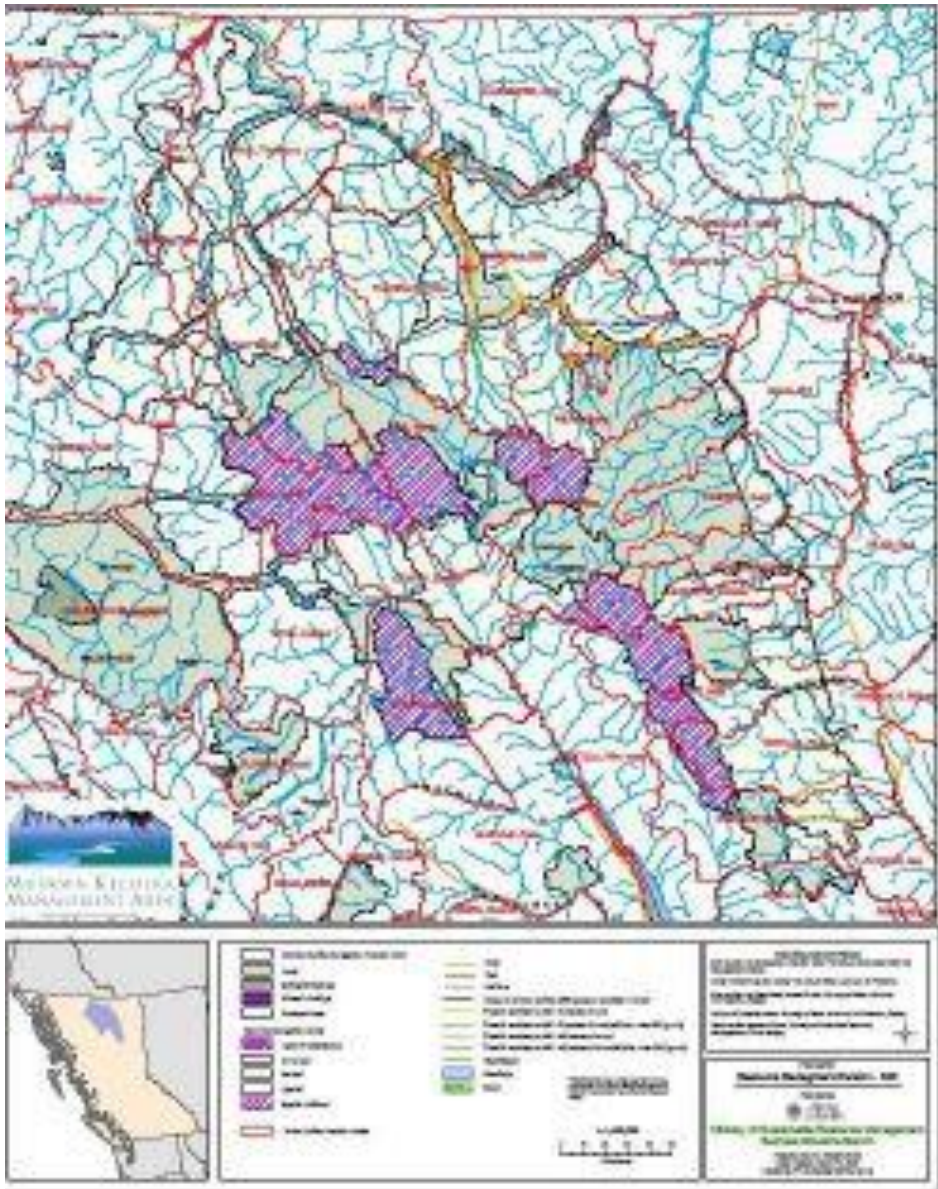


Over neatline 'bleed' to optimize use of space



Ancillary map content summary: visual position and prominence

	Item	Best Position
TITLE	what?	Prominent, near top
SCALE	how big?	Near bottom
LEGEND	what (details)?	On side, may be boxed
DIRECTION	which way is up?	Side
LOCATION	where?	Side ticks, or inset
SOURCE	where from?	Very bottom, inconspicuous
LAYOUT	Shape and space	Visual Balance, Neatline etc



Layout

- **Rectangle ~3 x 2 preferred over a square**
- **Landscape v portrait**
- **Letter v tabloid v poster (if printed)**

<http://www.muskwa-kechika.com>

9. VISUAL HIERARCHY: a hierarchy of symbology should be used for the lettering, line weights and shading. More important features are typically larger and/or darker, less important/background information should be smaller and/or lighter. At the same time, do not "over weight" or "under weight" features.

10. PURPOSE: All maps have a purpose which should influence every element of the map and the map layout.

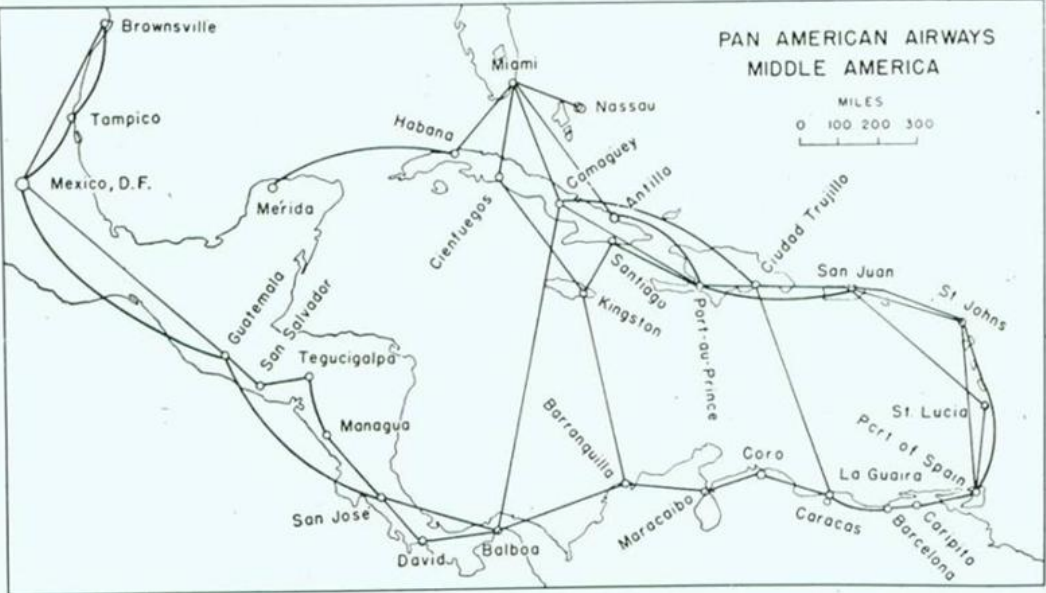
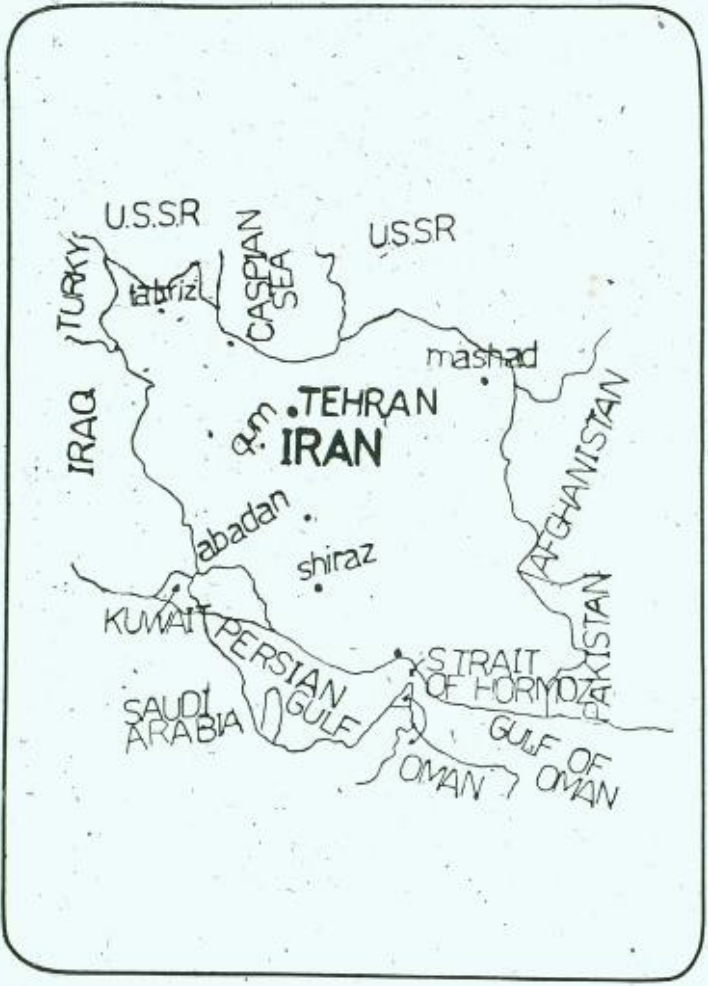
<https://gis.arizona.edu/sites/default/files/page-attachements/What%20all%20good%20maps%20should%20have.pdf>

Good design involves:

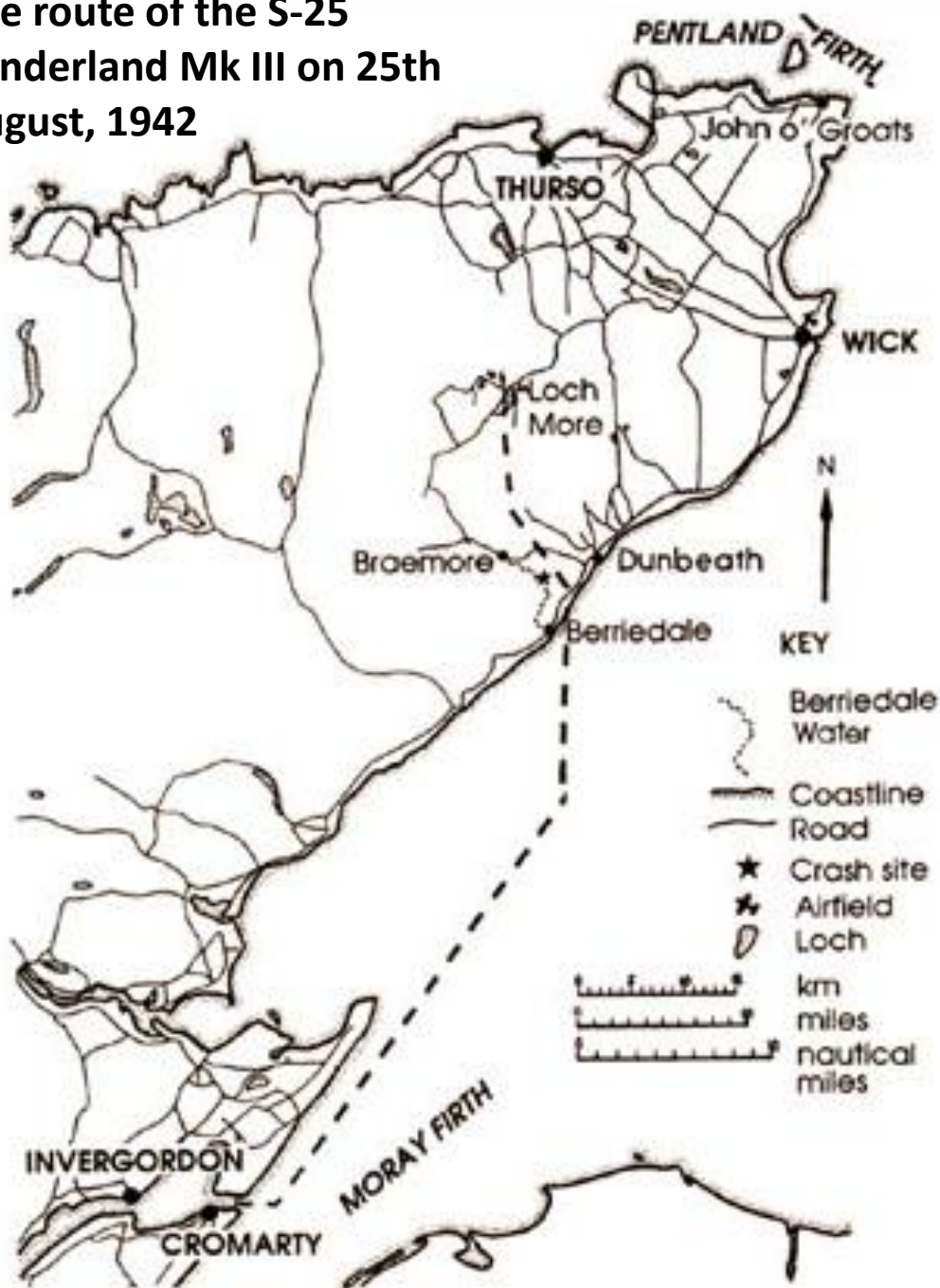
Visual hierarchy of layers and elements:

1. Contrast between map layers
2. Map features visually dominant over ancillary info
3. Thematic layers over base layers
4. Important features dominant (based on map purpose)

Absence of visual hierarchy – all layers have similar line weights



The route of the S-25
Sunderland Mk III on 25th
August, 1942



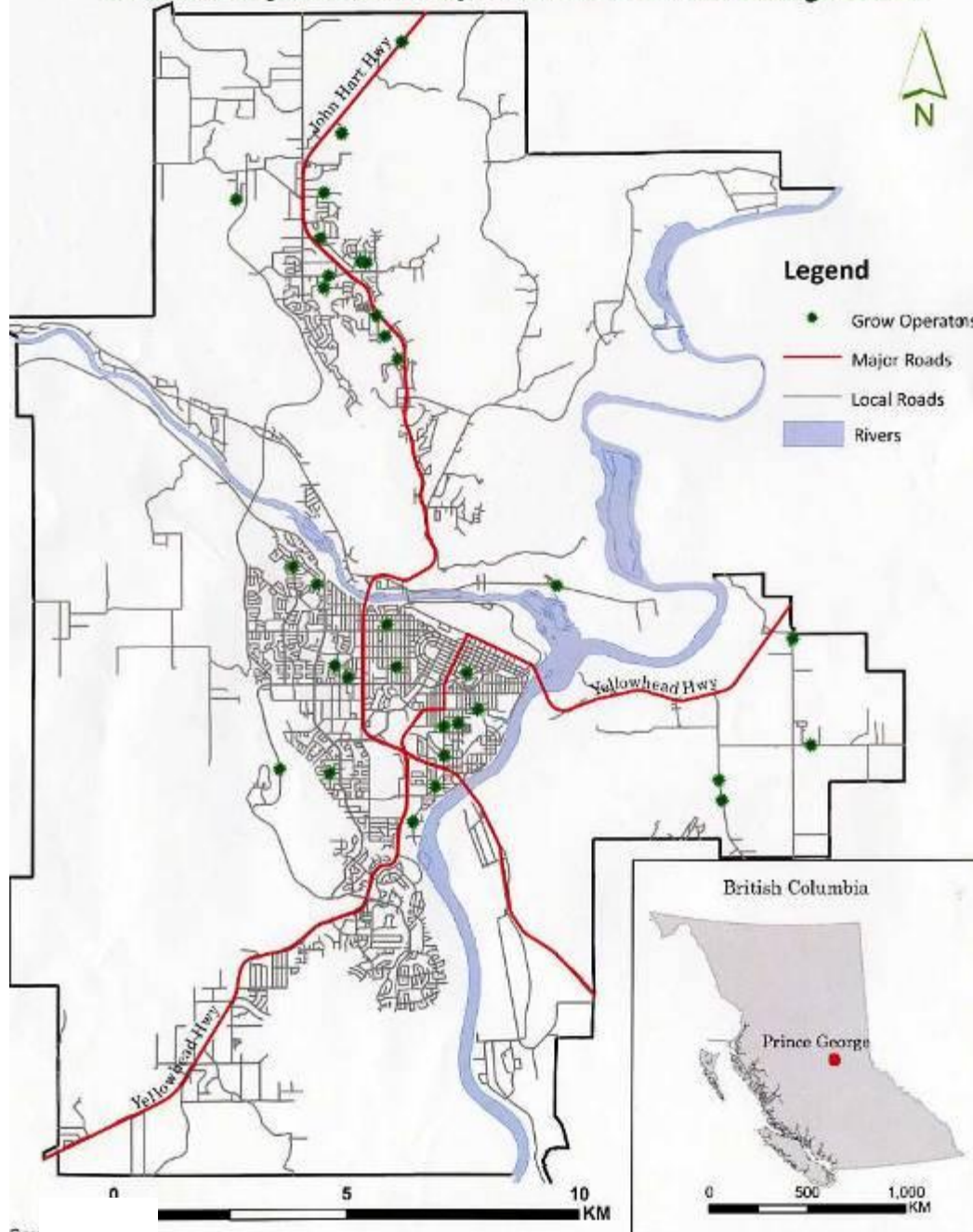
Local interest map:

The plane crash and death of **Prince George**, 1942

The plane crashed on a hillside due to inability of seaplane to climb

Legend is same weight not ancillary

Seized Marijuana Grow Operations for Prince George, 2010

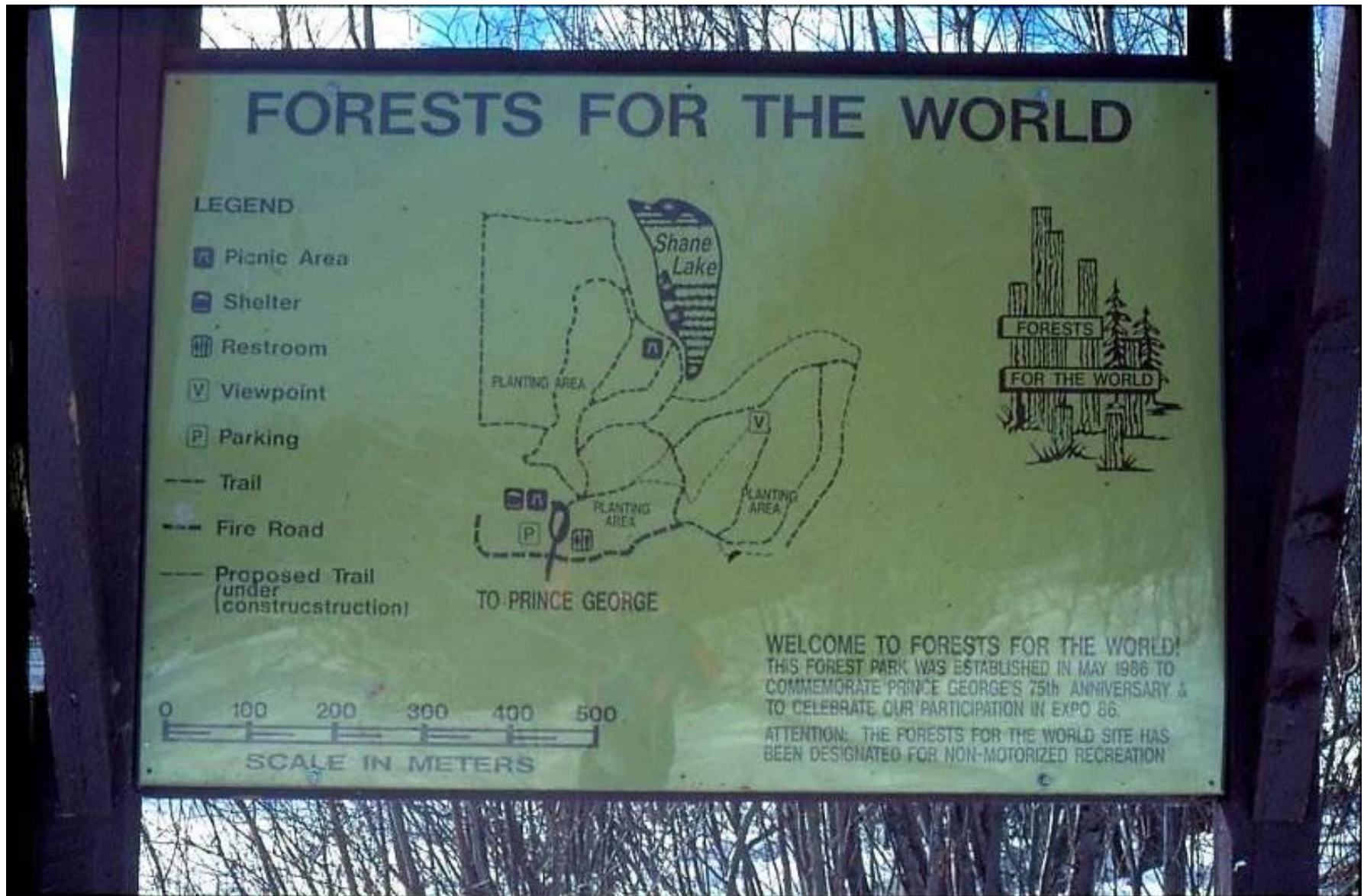


Visual levels

- Water (blue) recedes
- Roads (red) advance
- Green points are solid
- Gray recedes

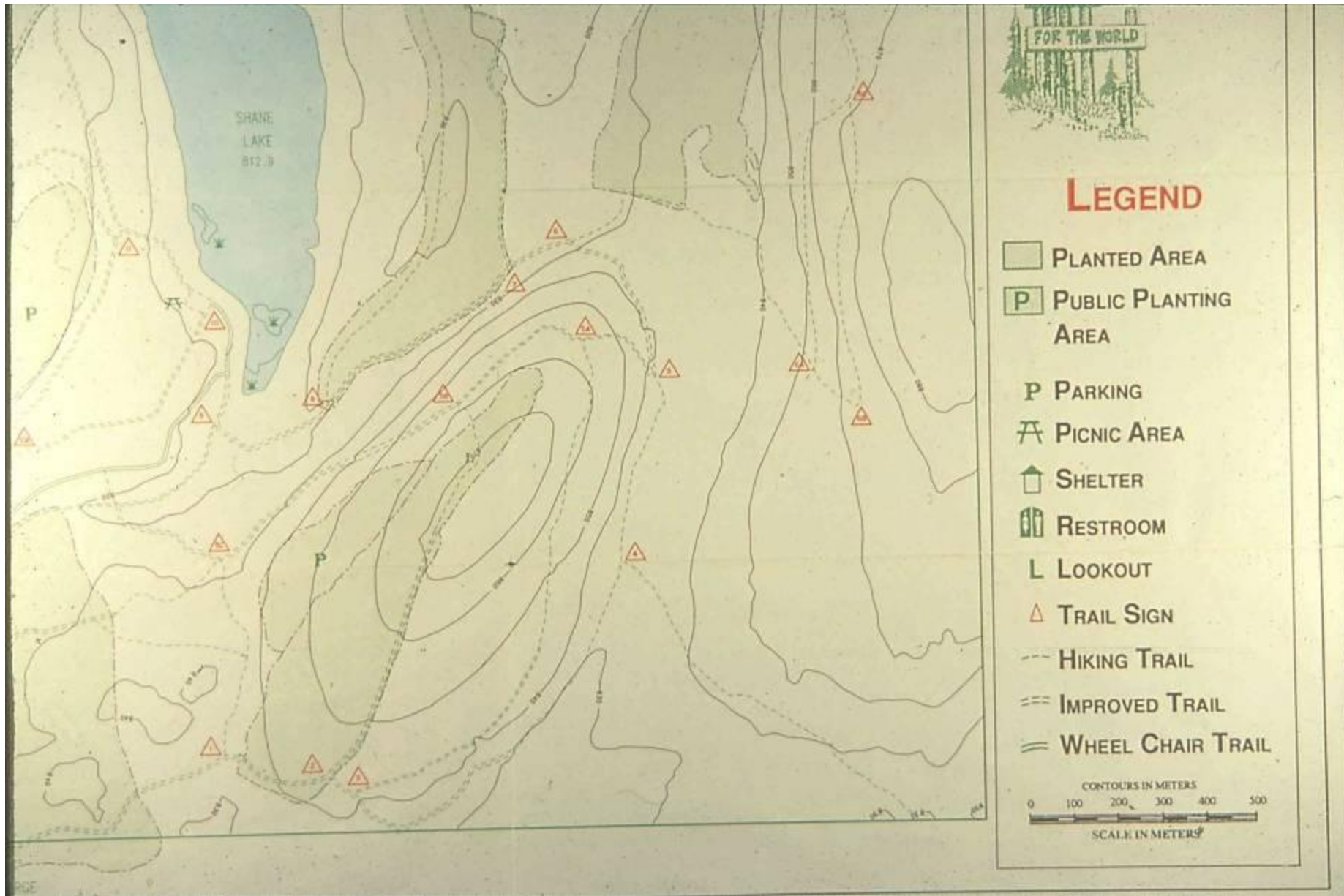
Design and ancillary information - local example

Forests for the World 1986-95



Scale bar size, north to the bottom

1993-96



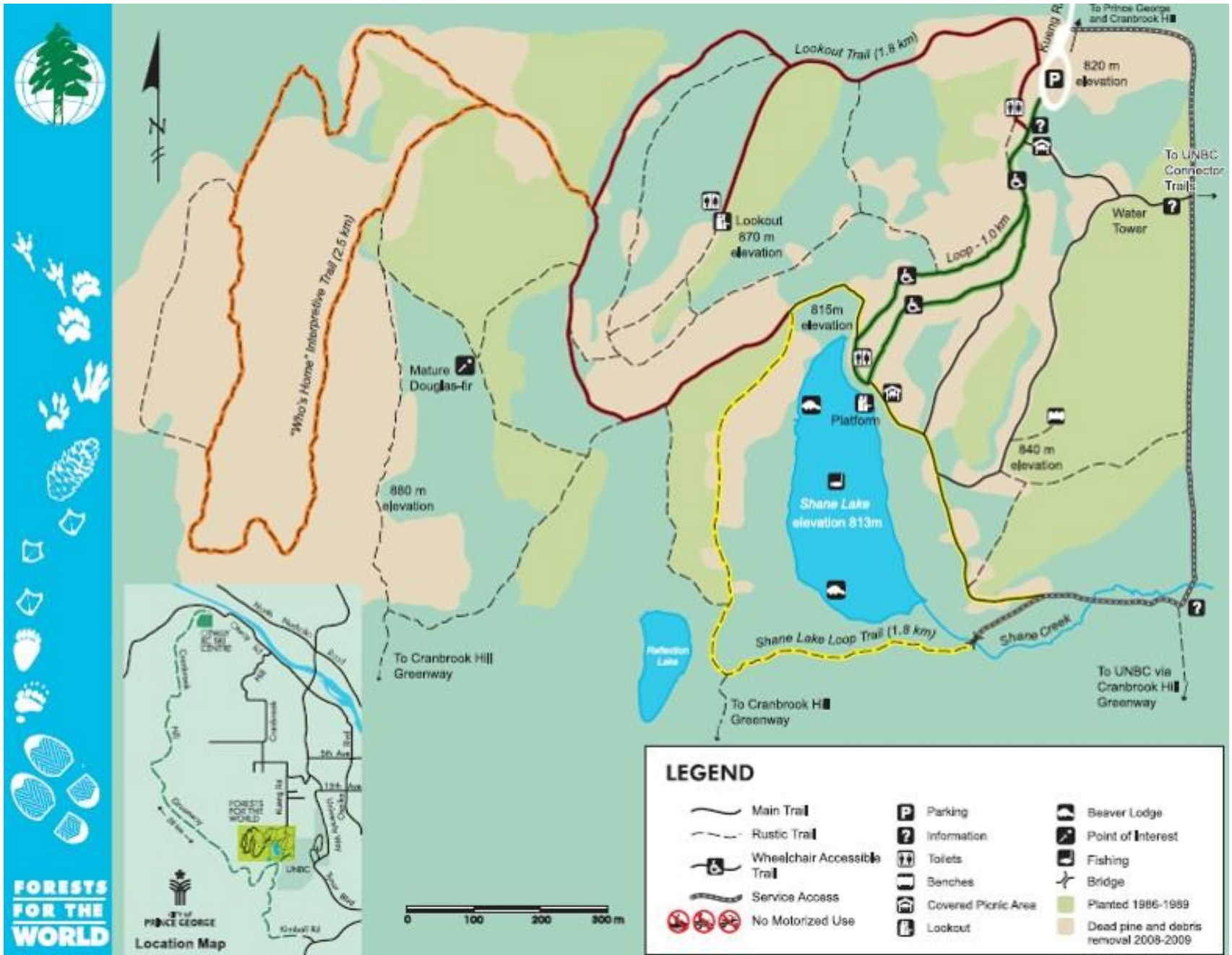
Scale bar size incorrect, north to the bottom, P (sans serif) and P (serif)

1997-



Redesigned by (just one) UNBC GEOG205 student, fall 1994

2010 – includes mountain pine beetle blocks



2013 – full use of ArcGIS options

Trails of Prince George: *Forests for the World*

- | | | |
|----------------------------------|------------------|---|
| ==== Major Trail | ----- Main Trail | ● Map, Marker Post or Natural History Sign |
| - - - - Secondary Trail | | ⚡ Gate/Barrier |
| - - - - Single-track Trail | | ▲ 840 m Spot Height, metres above sea level |
| Route (may be overgrown) | | 🏠 Picnic Shelter |
| — Wood Chipped Surface/Skid Line | | ⬆️ Trail Junction Label: On Map only |
| J3 | | Reno Natural History Panel Key Word |

Data Sources:
 Shaded Relief, Contours, Lakes: City of Prince George Open Catalog.
<http://princegeorge.ca/cityservices/online/odc/Pages/Terms.aspx>
 Map Design, Trail and Infrastructure Survey and Data Analysis by
 the map author: © Nancy Doreen Alexander
 Contact: ndigart@gmail.com

Grid Tic Interval: 500 m
 Contour Interval: 5 m
 UTM Zone 10 N
 Datum WGS84



Grid North
 West ← East
 South
 Magnetic Declination:
 18°51', 2011

