Reducing Your Ecological Imprint

• Green Technology
  – “5 E’s + 1 E” program planning
• Learning to use the technology
  – GPS and software
• Applications
• Transportation
  – movement patterns
  – less fuel
• Marking
  – conserving sensitive areas
• Scale: schoolyard to community and beyond
• Others…
• Resource CD – English and French - Canadian Ecology Centre
  www.canadianecology.ca
• bill@canadianecology.ca
• Green Check GPS Certification
  www.greencheckgps.ca
A Balanced Equation...

Becoming A Competent Navigator = MAP + COMPASS + GPS
3 Important Navigation Questions

Where are you now?

**Current Location**

Where are you going?

**Destination**

How am I going to specifically identify these locations?

**Means of Measurement**
Latitude & Longitude
vs.
Universal Transverse Mercator

Latitude and Longitude system
Example: N049°17.344 W081°45.344

Latitude is horizontal lines, Longitude is vertical lines
Uses degrees, minutes, and decimal minutes (or seconds)

Universal Transverse Mercator (UTM)
Example: 17 T E 663450 N 5129525

Eastings is vertical lines, Northings is horizontal lines
Uses the metric system. Based on metres.

Both of these coordinate systems can be displayed on your Waypoint, Trip Computer, and Satellite pages on your GPS.
UTM System Components

We choose to use the UTM system for mapping and navigating because its coordinates are based on the metric system.

Here's a sample coordinate:

UTM ZONE 17T

Easting
E 0663450

Northing
N 5129525

The ‘0’ is shown on Garmin units as a significant place holder.
The Highlighted Zone is 17T
Eastings and Northing values (horizontal lines) reflect actual distance (in metres) North of the Equator.

Thus, a northing value of 5129000 mN would mean that any point along this northing will be 5 129 000 m north of the Equator, or 5129 km.

Since Canada’s southernmost point is over 4 620 000 m north of the equator, all Northing figures will be above this number.

Easting values (vertical lines) relate to a central meridian (line) inside each zone. This central meridian is labelled 500 000 mE.

You always know if you are east or west of this central meridian by the value of the easting.

Thus, an easting value of 655000 mE would mean that any point along this easting would be 155 000 m (155 km) east of the central meridian. A value of 455000 mE would be 45 000 m (45 km) west of the central meridian.

The northing and easting coordinates will be displayed in several places on your GPS unit when using UTM.
Latitude and Longitude

**Latitude** is horizontal lines that tell the location, in degrees (°), of a position north (N) or south (S) of the **Equator**

The **Equator** is designated as 0°.

- Points north (N) of the equator range from 0° to 90° N (at the North Pole)
- Points south (S) of the equator range from 0° to 90° S (at the South Pole)

**Longitude** is vertical lines that tell the location, in degrees (°), of a position east (E) or west (W) of the **Prime Meridian** (in Greenwich, England)

The **Prime Meridian** is designated as 0°.

- Points east (E) of the Prime Meridian range from 0° to 180°E (at the International Date Line)
- Points west (W) of the Prime Meridian range from 0° to 180°W (at the International Date Line)
Latitude and Longitude
The latitude and longitude system is still widely used today, especially by pilots and boaters. Most nautical charts only contain a latitude/longitude coordinate system.

Here’s a sample coordinate:

North: 49° 17.344’

West: 081° 45.344’
Compass Parts

- Compass Ring
- Grid Lines
- Bearing/Sighting Line
- Magnetic Needle
- Orienting Needle

READ BEARING HERE
Finding North

Hold the compass flat, on the palm of your hand, in front of your chest and keep it steady.

Find the Directional Arrow (FRED)

Turn the compass dial so the N is lined up with the directional arrow

Find the Orienting Arrow (SHED)

Find the Magnetic Needle (RED)

Now turn your body, (never turn the compass), and let the magnetic needle (red part of the needle) align itself within the orienting arrow.

“Line up FRED and put RED in the SHED”
How does GPS Work?

GPS Nominal Constellation
24 Satellites in 6 Orbital Planes
4 Satellites in each Plane
20,200 km Altitudes, 55 Degree Inclination
GPS does not send information - It will not tell other people where you are.

Your GPS unit will show your location with a reception from 3 or more satellites.

Reception can be affected by thick forest, buildings or the roof of your car.

Two Dimensional Navigation (2DNAV) is sufficient for navigating.

Three Dimensional Navigation (3DNAV) works the same as 2DNAV but includes elevation as an extra dimension.
LET’S GO!