North Slave Metis Alliance Capacity Building: GPS and GIS Training

The North Slave Metis Alliance (NSMA) secured capacity building funding from the Cumulative Impact Monitoring Program (CIMP) to conduct Global Positioning System (GPS) and Geographical Information Systems (GIS) training. The training sessions conducted had five main objectives:

- Introduce NSMA members to GPS and GIS technologies,
- Introduce and discuss Valued Component (VC) monitoring programs currently being conducted,
- Discuss gaps in VC monitoring programs,
- Identify monitoring priorities and interests within the NSMA community,
- Provide NSMA members with the capacity to conduct monitoring programs using GPS and GIS.

Although the GPS and GIS training conducted was only introductory it is hoped participants gained enough experience with these technologies to develop and participate in VC monitoring, or at the very least, identify GPS and GIS areas the trainees may want to take further training in.

The following report outlines the training completed and the VC monitoring discussions conducted.

NSMA Training Participants:
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Global Positioning System Training
Conducted By: Terry Hauf, TGIT Geomatics Ltd.

The NSMA conducted GPS training March 8-10 and March 15-17, 2004 to train NSMA member in the background theory and practical application of GPS handheld technology in order to increase the environmental monitoring capacity of the NSMA organization and membership. It is hoped by conducting this training the NSMA now have the capability to develop and participate in Valued Ecosystem monitoring initiatives using GPS.

The GPS training session consisted of four sections:
1. Introduction to Maps
    -Introduction to different map types
    -Introduction to map projections
    -Concepts of scale
    -Four types of 'North'

-Use of a compass and setting declination
-Geographic and UTM coordinate systems
-Typical information portrayed on maps
-NTS map reference system for topographic maps

2. Examples of map work
-Position scale, and direction in a geographic co-ordinate system
-Position scale, and direction on frictional grid
-Position scale, and direction in a UTM co-ordinate system
-WGS 84, NAD83 & NAD27

3. GPS introduction and equipment orientation
-GPS term, features and limitations
-Basic concepts on how it works
-Typical screens, and how to interpret the info in each.

4. Data collection techniques
-Collect data at several points
-Navigation to a point
-Setting a route, and navigation
-Track log

Upon completion of the GPS course trainees were asked to provide feedback on the training. Most of the feedback received was positive with the exception that all the trainees agreed more time to absorb technical concepts and play with the GPS units was needed. To address these concerns the NSMA provided the students with compasses to take home as part of their training package. Providing the compasses allowed the students the opportunity to practice the concepts learned and to practice their orienteering skills. The students are also able to sign out the GPS 76c units purchased to practice or conduct monitoring at anytime.

Overall the GPS training conducted was a great success. The students who received training all commented they did not realize maps were so complicated, the training really opened their eyes to how GPS can be used by the NSMA for monitoring and they hope additional training will be provided in the future.

Geographical Information Systems Training

The NSMA conducted GIS training March 11-12 and March 18-19 to introduce NSMA members to the GIS software and data currently used and maintained by the Land & Resources Department of the NSMA. Although the GIS training conducted was only introductory it is hoped participants gained enough experience to develop and participate in VC monitoring, or at the very least, identify aspects of GIS trainees may want to take further training in.

Monitoring Program Discussions

Two of the objectives of the GPS & GIS training were to introduce the Valued Component (VC) monitoring initiatives already conducted and to identify monitoring priorities and interests of the NSMA community.

During the monitoring discussions NSMA participants were asked to identify indicators and monitoring priorities of the NSMA community. The following table summarizes the monitoring discussions.

Human Health	**Discussions**	**NSMA Priority**
-Cancer Rates		√√
-Smoking Rates		√
-Sexual Behaviours	-Promiscuity	√√
-Sexually transmitted disease rates		
-Employment Rates	-Opportunities -Advancements	√√
-Workplace hazards/ incidents	-Are improvements working? -What training is taking place?	
-Education		√
-Levels of sleep	-Impacts of shift changes -Impacts of lack of sleep	√
-Housing	-Affordable housing -Number of people/ household	√√
-Calorie Intake	-Obesity	√
-Traditional vs. Store bought food Consumption	-Barriers -Nutritional differences	√
-Berry contaminants at mine sites	-Sample berries for contaminants	
-Employment Satisfaction		√√
-Disabilities		√√
-Stress Levels		√√
-Barriers	-Where improvements can be made	√√
-Diabetes Rates	-NSMA community heavily impacted -Diabetes education initiatives -To prevent diabetes -To people diagnosed	√
-Living on the Land vs. in the City	-Choices -Barriers	√
-Creditor Avoidance	-Fugitive lifestyles	√
-Surgery waitlists		√√
-Birth rates		
-Family statistics		
-Drug & alcohol use rates		√√
Employment		
-Members employed		√
-Rates of advancement		√
-Frequency of denials & reasons		√
-Male/ female ratios		√

-Training & Education levels		√
-Training & Education opportunities		√
-Types of employment		√
-Non-traditional roles employment	-Men and Women employed in non-traditional roles	√
-Salary levels & raises		√
-Term/ casual/ full time employment rates		√
-Employment rates & opportunities		√
Education		
-Education levels		√
-Rates of advancement		√
-Awareness of opportunities	-Advertising	√
-Rates of intervention	-Access to programs such as AHRDA	√
-Accessibility	-Mature student status -Poor grades prevent access -Financial barriers	√
-Funding availability/ amounts	-Two parent households receive less funding than single parent families. This encourages single parent families. -Funding is inadequate to compete with entry level jobs at mines	√
-Discrimination		√
-Family support availability	-Family support encourages student success. -Family discouragement influences student failure rates.	√
-Child care availability	-Costs -Quality of care	√
Financial Stability		
-Bankruptcy rates		
-Garnishing rates		
-Investment rates		
-Saving rates		
-Mortgages		
-Financial experience/ training rates	-Is training effective?	
-Investment incentives		
-Credit ratios		
-Male & female differences		
Land Use		
-Rates harvesters use the land		
-Land use types	-Commercial, industrial, recreational, spiritual, tourism sites, bad lands (ex: dump sites)	
-Tourism rates		
-Harvest rates		
-Traditional food consumption		
-Traplines		

-Number of sustenance hunters		
-Physical elements of land		
-Protected/ Spiritual areas		
-Habitat	-Ideal vs. substandard	
-Traditional Knowledge Transference		
Ski-doo Trails		
-Upkeep		√
-Open water		√
-Overflow		√
-Accident rates		√
-Number of Users		√
-Areas used		√
-Impacts on wildlife		√
-Impacts on vegetation/ habitat		√
-Elevations		
-Offences	Incidents of breaking the law	
-Types of snow machines		
Water & Sediment Quality		
-Color		√√
-Bacteria		√√
-Ph		√√
-Bugs		√√
-Users of water/ developments in the Area		√√
-Contaminants		√√
-Ground Water		√√
Water Quality		
-Snowfall		√√
-Winter Road Impacts		√√
-Snow removal		√√
-Water Levels		√√
-Users of Water		√√
-Impacts of increased water levels		√√
-Impacts of decreased water levels		√√
-Impacts of changing water levels on fisheries		√√
-Number of fish		√
-Spawning areas		√
-Mineral/ elements content		√
-Ph		
-Sediment levels		
-Development rates/ numbers		
-Flow rates		
-Sediments		
-Salts		
Snow, Ground Ice, Permafrost		

-Snow removal		√√
-Snow color		√√
-Types / Variety		√√
-Mine fallout (Air Quality)		√√
-Permafrost regeneration		√√
-Greenhouse gases		√√
-Storing of Toxic Substances in permafrost		√√
Fish Habitat		
-Recreational harvest rates	-Number of People Using the Area -Catch & Release Rates	√√
-Migration patterns		√√
-Spawning areas		√√
-Pollution sources	-Humans -Boats -Wastes -Lead	√√
-Education effects		√√
-Population size		√√
-Numbers of species		√√
-Tourism impacts		
-Habitat Quality	-Good -Bad	
Fish Quality		
-Number of fish (abundance)		√√
-Size		√√√
-Fish food source		√√
-Color	-Scales -Tissue	√√
-Palatability	-Taste -Texture	√√√
-Diseases		√√
-Parasites		
-Contaminants		√√
-Tourism impacts		
-Harvest rates	-Commercial -Traditional	√
-Spawning success		
-Contaminants		√
-Water Quality		√
Caribou		
-Migration patterns/ routes		√√
-Seasonal changes/ differences		√√√
-Population		√√
-Marrow	-Runny may indicate caribou is no good	√√
-Male/ female ratios		√√
-Age		
-Size		√√√

-Fat		√√
-Reactions to humans		√√
-Food source		√√
-Diseases		√√
-Parasites		√√
-Birth rates		
-Impact of forest fires		
-Impacts of natural systems		
-Impacts of humans		
-Water quality		
-Harvest rates		
Moose		
-Migration patterns/ routes		√
-Population		√
-Marrow		√
-Male/ female ratios		√
-Age		
-Size		√
-Fat		√
-Seasonal differences		√
-Reactions to humans		√
-Food source		√
-Diseases		√
-Parasites		
-Increased sightings further North		√
-Birth rates		√
-Impact of forest fires		√
-Impacts of natural systems		√
-Impacts of humans		√
-Water quality		√
-Harvest rates		√
Other		
Buffalo- Moving further North		√√
Muskrats- impacts from roads and blasting		√√
Rabbits- impacts from roads		√√
Fox- increased numbers in town		√√
Bears- population increasing		√√
Avian		
-Diseases carried		√
-Population		√
-Food sources		√
-Nesting areas		√
Vegetation		
-Cranberries		√√
-Growth rates		√√

-Impacts of mines		√√
-Contaminants		√√
-Diseases		√√
-Parasites		√√
-Forest fires		√√
-Rainfall		√√
-Snowfall		√√
-Harvest rates		√√
-Harvest areas		√
-Impacts from recreational vehicles		√√
Minerals		
-Locations		
-Abundance		
-Toxicity		
-Revenues		√
-Development rates		√
-Number of claims held by NSMA members		
Protected Areas		
Tourism Impacts		