



# Eclipse GIS

## PROJECT REPORT

*To:* Anne Hetherington  
*From:* Johanna Pfalz  
*CC:*  
*Date:* April 8, 2008  
*Re:* Sensitive Ecosystem Project

Hi Anne,

Here is a summary of the work completed to date, as well as some recommendations to keep moving this project ahead.

The materials provided for the project consist of an erroneous GIS data layer representing all the sensitive ecosystem polygons, hard copy 1:20,000 TRIM maps depicting all the polygons, and project binders containing air photos of polygon sites.

The intent of the project is to correct the boundaries of the digitized polygons as some of them were digitized using an incorrect projection.

The polygons provided on the 1:20,000 maps have four different ranks: good, marginal, poor, and complexed. The work to date focused on the polygons rated "Good". The digitized line work provided was compared to various project information to confirm or correct boundary locations, in the following order:

- The existing line work was displayed on top of 2006 orthophotos and trim water and roads
- The line work was then compared to the polygons drawn on the air photos provided in project binders
- The 1:20,000 trim maps with polygons drawn on them provided a second reference, particularly when no air photos were available (or air photos were available but not polygons were drawn on them).

There were no attributes attached to the original digitized layer. The following fields were added to the dataset:

- Edited Values: yes/no
- Interm\_ID Values: e.g.: DE1 These are the interim polygon ids
- Map\_id Values: e.g.: 093L085\_36a These are unique polygon ids, combining the map sheet number with the polygon id
- Ranking Values: Good, Marginal, Poor, Complexed
- Eco\_desc Values: SWDry, SWMoist, SBSdk\_black, SBSdk\_white, CWH\_sitka, CWH\_bc, FM, Misc

The Eco\_desc values represent:

SWDry: Southwest-facing slope complexes, dry (TEM codes: CAw, AMw and BW)

SWMoist: Southwest-facing slope complexes, mesic to moist (TEM codes: CAw, AMw and BW)

SBSdk\_black: SBSdk floodplains, black cottonwood (TEM code: ML, CD)

SBSdk\_white: SBSdk floodplains, white spruce (TEM code: SH)

FM: Fluvial Meadow (& Wetland) Complex (TEM code: CAtc, AMtc, BWx or tc)

Misc: Miscellaneous Noteworthy Plant Populations and Communities

CWH\_sitka: CWHws2 Floodplains, primarily Sitka spruce (TEM code: SS)

CWH\_bc: CWHws2 floodplains, primarily black cottonwood (TEM code: CD)

The polygons were generalized before any boundaries were changed because I found them to be over digitized (too many vertices per feature). Also, the dataset provided was set to a geometry of polylines, and I converted the features to a geometry of polygons.

Many of these polygon sites have experienced significant change since the fieldwork was carried out roughly ten years ago. Development, agriculture, and fluvial changes to the landscape are evident when comparing existing polygons to 2006 orthophotos.

Occasionally, it was difficult to determine where the original boundaries are located for some of these polygons as:

- there were no air photos with polygons to reference
- the current 1:20,000 base map has been significantly updated, so contour lines from the hard copy 1:20,000 maps didn't always match up to the digital base maps used for reference on screen. Contour lines were used quite frequently to determine polygon boundaries.
- The 2006 orthophotos displayed a landscape significantly changed from 1994/97, particularly along the Telkwa and Bulkley Rivers.

In these cases, the original boundary was left as is.

## **Project Continuation**

Here are a few thoughts as to what could be done to continue on with the project and ensure the work done in the past to identify these ecosystems is not lost (from a GIS perspective).

### **1. Verify/correct Marginal and/or Poor sites**

Continue with the process described above to verify the boundaries of the existing remaining polygons ranked marginal or poor.

### **2. Print verification maps**

These would be 1:20,000 maps displaying TRIM information with polygons shaded according to rank and attribute information displayed. I would recommend perhaps



picking only a handful of 1:20,000 maps to verify – perhaps some of the busier map sheets covering the Bulkley and Telkwa River systems. The purpose of the maps would be to verify the spatial and non-spatial edits made to the dataset.

### 3. Monitoring Preparation

A possible approach to update the sensitive ecosystem polygon layer to 2006 using GIS:

- Determine the polygons to be updated: do all the possible rankings need to be updated? Are you interested in how individual polygons change over time, or more of overall view of how all the sensitive ecosystem categories are changing throughout the landscape over time?
- What map sheets/areas would you like to focus on? There are some map sheets that do not have updated ortho photos (at least I wasn't able to find them). These are 93L.036, 93L046, 93L047. Some map sheets showed significant change over the landscape, such as 93L.057, 93L.064, 93L.065.
- Do you want this process to be entirely in-office, or will there be a field component? The in-office component could involve:
  - printing off maps of the areas of interest using 2006 orthophotos, TRIM, and existing polygons for reference. The maps would be roughly at a scale of 1:5,000 as the orthos are quite detailed.
  - The maps would be reviewed by a biologist who could identify the updated polygon boundaries
  - You could then take the orthos into the field (on a handheld unit) and collect updated information in particular areas
  - The polygon boundaries from the maps are digitized, created a new layer of sensitive ecosystem polygons. These polygons will then be integrated with any field verified polygons.
  - Create a few verification maps to ensure data has been loaded properly and attributes are correct.
  - Now with an original layer and an updated layer, one could start looking at how the various categories of ecosystems have changed over time.
- Update cycle for future changes? Every 10 years, or more frequent?

These thoughts are more from a technical perspective than an ecological/biological one, so you may have other ideas you may want to include as to how to monitor the change in ecosystems over time. When you have some time I would be happy to sit down and discuss this further.

Regards,

Johanna Pfalz