Attachment E - Beta Version Design Notes

These subjects were discussed by the core project group at its November meeting.

ATR site annotation – can its creation be automated?

The creation of ATR site annotation done by hand using a new Arcview 3.1technique. We can either continue to use this technique or create it automatically; auto-created annotation will scale properly, but as view is zoomed in the annotation moves farther and farther away from the location of the point it annotates. There is no perfect solution to this well-known Arcview problem.

Hotlinking of ATR sites to JMP analysis document

We can't figure out a way to un-check the "scale image" box in the popup window; as of now, this has to be done by hand. However, the size of the window can be specified in Avenue. However, is a .gif screen capture the appropriate format to use? Could a DDE call from Arcview be used to link to a "live" MS-Word document? Would this allow the hotlink to be used for something else, like an image? What if we converted the MS-Word document to PDF, and use the hotlink to summon that document in a PDF viewer?

New button requested on interface

We need a button on the interface somewhere that brings up a document with the seven seasonal "average" profiles, and maybe some other information; DOT has taken the responsibility to create this document.

Terminology change

In the existing application, change references to "not enough data" to "not assigned".

Development of project documentation

The documentation should evolve in two parts -- the "user-level" cookbook for the technician in charge of examining the PTC site assignments, and the "administrator-level" cookbook for project
setup and shutdown functions. (Most of the latter will be Access functions and as such will be developed and documented by NCDOT.)

The documentation should include a Data Flow Diagram listing software modules, direction and content of data flow, and any custom scripts, documentation, and table joins used. The supporting documentation should also include a listing of scripts (well-commented for the benefit of future DOT code maintainers) and their associated GUI elements, and an explicit listing of any fields/themes/data
sources they refer to directly.

Application training

NCDOT Arcview/application training is deferred until the US 70 pilot corridor data capture is completed, analyzed, and incorporated into the application and documentation. This will result in a substantial change to both, so it was agreed that is was best not to go through this exercise twice. When the pilot corridor data is delivered, ITRE will do the SAS analysis, rebuild the training documentation, and return the data back to DOT to process on their own.

Implementation of the ATR/PTC data within MS-Access

Project Technical Committee member Julia Harrell is working on the ODBC link between Arcview and MS-Access. Others have been successful in setting up this link. DOT wants Access to be at the center of this application (not a .dbf table) since the ATR and PTC data is already stored that way.

The Access table of all 65,000 PTCs will be the basis for the final version of the application. The matching shape file of PTC site locations will be created gradually, and newer and more complete versions of this file will be substituted in the applications as they arrive from the digitizing shop.

The Access table will include these fields for each PTC station:

its current group assignment

its date stamp, indicating the last time the current group assignment was made official

an "Access Flag", which will be raised when a SAS JMP analysis has been performed on the station.

fields for "Best fits" 1 through 3, which will be populated with seasonal group candidates from SAS JMP for those stations whose "Access Flag" is raised.

the "pending" assignment for that station. For stations whose "Access Flag" is not raised, this will be calculated to be the same as its current group assignment. For stations whose "Access Flag" is raised, it will be calculated to be the same as "Best Fit 1".

an "accept" flag. When the table is set up by the administrator, none of the "accept" flags will be raised.

The procedure of building this table will be known as a "reset", and will be performed once a year by the application administrator (see below).

Routine data processing procedure

The analyst in charge of actually operating the application (heretofore referred to as the "user") will make two passes at the data. The first pass will be to approve or change the "pending" assignment for stations for which SAS JMP analysis has been completed (that is, the Access Flag is raised and the "pending" assignment has been calculated from "Best Fit 1"), based on the proximity of the seasonal classifications of neighboring stations and ATRs.

The second pass will be to approve or change the "pending" assignment for stations for which SAS JPM analysis has NOT been performed, but are in the same geographical area as the stations examined in the first pass. These are the stations for which the Access Flag is lowered, and the "pending" assignment has been calculated from the "current" (historical) assignment.

In either case, the user's job will be to "accept" the "pending" assignment, whether it's the one placed there by the administrator during the reset, or updated in the table by the user based on the
assignments made on the surrounding stations. The "accept" function will be implemented as a button on the view interface, and will cause the symbology of the station to be encircled with a black outline (see below).

PTC Station Symbology

We discussed various approaches to symbolizing the PTC station locations. The problem we're facing is that we need to symbolize the stations on a combination of values and fields: Does the station have a "pending" assignment of 1, 2, 3, 4, 5, 6, or 7; is the origin of the "pending" assignment a SAS analysis or a "current" (historical) assignment; and has the site been "accepted" or not?

We're going to deal with the SAS analysis vs. "historical" assignment problem by calc'ing the "historical" assignments (1 through 7) to be their arithmetic inverse -- that is, a SAS assignment of 6 will be distinguishable from a "historical" assignment of -6. This will be handled at the once-a-year system reset by the application administrator. These will be stored in the "pending" field, using
bright "neon" colors to represent positive values and matching pastel colors to represent the negative values.

The other problem is representing the "accepted" flag. To do this we will create a second theme from the same data source, and have it draw on top of the theme described above; an "unaccepted" PTC site will not be drawn in this theme, but an "accepted" one will draw as a black-outlined shape matching the symbols used in the "pending" theme. This way the user will be able to tell at a glance if the site is accepted or unaccepted, the source of the "pending" assignment, and the assignment itself. We think this will work.

Yearly "reset" message

When the project opens, after a global variable is checked to see whether or not to display a "nag" message regarding system reset time (see below), an Access connection should be established. Then, the user should be prompted with a listbox to select the county or counties in which s/he wishes to work. There should also be a 'box' option to allow a box to be used to specify the study area. Whichever method is chosen, it should be used to do an up-front filter on both PTC themes described above (to prevent all 56,000 of them from drawing every time). The mapextent should be set to the specified area, and the locator map should be updated.

A "nag message" should be displayed at startup, before the DB connect, by checking the value of a project global variable set by the administrator, when the program is within 30 days of the "reset" date. Between 30 and 0 days of that date, the nag screen should be dismissable and the user should be able to work. After the reset date, the user should be locked out of the application (or at least the DB connect) until the Administrator "resets" the PTC file. Most of this work will be handled in Access, but we will provide a small administrator-level script to reset the global variable.

The administrator will perform a reset once a year, on or shortly after October 1st.   The reset will notify access to update the "current assignment" from the "pending assignment" for "accepted" PTCs; to update the associated date stamp for "accepted" PTCs, to lower all the "accepted" and "access" flags, and then to raise "access" flags and populate the best-fit and "pending" fields for the next year's set of PTCs.