R3 Regional QC: **NWI SOUTHWEST MICHIGAN UPDATE**
FY 2002 Project
June 2003

Project: R03Y06P01, Port Huron West, MI

Quad Scale: 1: 24,000
100 Total Quads

Regional QC Tools:

*Technology: ArcGIS 8.3 Photo Interpretation and "Heads-up" combination

Cluster Tolerance: 0.0000659363 meters (default)
Topology Rules: Must Not Overlap, Must Not Have Gaps

Photo Date (month/year): 04/1999
Photo Scale: 24,000
Emulsion: CIR

DOQQ Date (month/year): 04/1993

DOQQ Projected Coordinate System:
NAD_1983_Hotine_Oblique_Mercator_Azimuth_Natural_Origin

From SMU:

100 Digital Quads (21 Updated from Black & White DOQQ's): geodatabases edited in ArcGIS 8.2

Projected Coordinate System:
Name: NAD_1983_UTM_Zone_16N

Collateral data: DRG (1983_UTM_Zone_16N), DOQQ (NAD_1983_Hotine_Oblique_Mercator_Azimuth_Natural_Origin), county & quad base data (Michigan Georef)

Photography: CIR, NAPP, 1:40K, 4/99
Fort Wayne NW, NE
Grand Rapids SW, SE
Chicago NE
Racine SE

Regional QC Process:

Set-up:

Data Projection
Convert all Final Quads from SMU (NAD_1983_UTM_Zone_16N) to MI Georef (NAD_1983_Hotine_Oblique_Mercator_Azimuth_Natural_Origin) to perform "Heads-up" QC in ArcGIS 8.3. *See Attached* *(Project from UTM to MiGeoref)*

- All B&W Quads and bottom row (bridgeman → adrian) are converted to MiGeoref

Geodatabase structure in ArcCatalog *See attached*

Open ArcCatalog:

1. *Create new geodatabase*: Right click in desired folder → New → Geodatabase (full quad_name_migeo) *pg. 10 Building a Geodatabase 8.3*

2. *Create new Feature Dataset*: Right click on new geodatabase → New → Feature Dataset, name: full quad_name, spatial reference: edit → import → browse to MiGeoref coverage/data that will be imported here → apply, ok *pg. 31 Building…8.3*

3. *Import Data*: Right click on new feature dataset → import → *coverage to geodatabase* OR if data already exists in a geodatabase, move the feature class inside the dataset *pgs. 68-70 Building a Geodatabase 8.3*

4. *Create Topology:* Right click on new feature dataset → New → Topology: name: default , cluster tolerance: default (click next), check the box for the NWI feature class, next, ranks: default (next), add 2 rules → Must not Overlap & Must not have gaps, next, finish, click 'yes' to validate. *pgs. 121-125 Building a Geodatabase 8.3*

Add data to ArcGIS
Open an ArcGIS session and add data (insert → data frame, + icon) – order is important!
Add Wetland Geodatabase in MiGeoref projection (select feature dataset)
Add 4 corresponding DOQQ's (MiGeoref)
Add DRG

Adjust Data Properties
DRG: Right click <.tif> Data Frame → Properties → Display → Transparent: 65-75%
Change Display properties of geodatabase to hollow, outline - bright color.
Open Attribute Table for geodatabase.
Point to Options →
Add field → name: QC_REMARKS type: Text length: 20
Right click inside Data View → Properties → Units → Display → meters

"Heads-Up" Method QC

Zoom in (1:17,500 m) to one corner with all layers turned on. View entire quad systematically zooming from 17,500 to 5,500. Can zoom in further (1:1,000-1:0) when editing. * St. Pete checks at 1: 5,000.

Become familiar with R3 NWI mapping standards and be consistent with those.

In ArcGIS look for the following:

- Wetlands that are missed: check signature on DOQQ and marsh symbols on DRG. Check for new ponds, larger classes that could be split (PFO1 → PFO1 and PSS1), polygonal rivers on DRG, successional and isolated wetlands.
- Wetlands that are over-mapped: the updates were created from old NWI that was mapped in B&W at 1:58,000. The maps are more general then we can make now. Check topological lines on DRG and cut back where necessary.
- Everything lines up: wetlands should line up spatially with the landscape (DRG and DOQQ's), each quad boundary should be spatially accurate, quad edges should indicate a seamless product.
- Attributes: add 'x' to new ponds, add 'h' to impounded water bodies and their associated flooded wetlands. PUBf is NOT allowed. These should be changed to PUB_x, where _ is a water regime.
    - Pf attribute: this is a farmed wetland and should be used when a previous wetland existed, when there are marsh symbols on DRG and/or when there is a proper signature on the photo/DOQQ. Signature is a dark spot against a red background. Farming row lines are usually visible. These should not be confused with PEMA which has a white signature and is sometimes barely visible.
- Consistency! Overall, all quads should have the same wetlands delineated (i.e. ponds are not the only type of wetland the PI focuses on). As for attributes, all PFO1C wetlands should have the same signature.

<u>Editing</u>

If there is a change to be made, edit on screen and make a note of the change in the QC_REVIEW field of the NWI feature class table.

- Attributes – Region 3 standards should be observed. Example: for consistency, keep the G water regime in PUBGx. The PUBf code is NOT allowed and should be queried and changed to PUBx at the end of the QC process.
- Line work – The topology editing bar should be used in conjunction with the editor toolbar in ArcGIS. After areas are edited where shared geometry occurs, zoom into the edited area and validate the topology in the current extent. If there is an error, undo the change or fix the error. Refer to Editing in ArcMAP/ArcGIS 8.3 help

Photo Interpretation

The 1999 CIR photography is used to verify spatial relationships and photo signatures that were observed on the DOQQ's. In addition, all of the properties that were checked during "heads-up" interpretation will still be evaluated and edited when necessary.

<u>Set-Up</u>

- Turn DRG <.tif> layer off.
- *Change the background color:* Right click on the data view → Properties, navigate to Frame tab, background, down arrow / select black, apply
- *Rotate Frame:* While in Properties, navigate to general tab, rotation: 90, apply, ok
- Place stereo pair on DTS in overlapping position.
- Adjust ArcGIS scale (~1:30,000 or use continuous zoom) and line up of photos with digital image.

<u>PI</u>

*** Every photograph must be checked***

Work systematically so entire quad is checked for accuracy and consistency.

Note: Since the photography is more modern then the DOQQ's, some features that occur on the photography (i.e. new ponds) are not on the DOQQ's. These changes can be easily compared on the photos by turning on the <.sid> layer while performing PI with the DTS.

Documentation

Since we are in transition with recording the Regional QC comments, documentation has been done two ways; one, attached directly to the data table and then printed to document specific changes in the quad and two, in the metadata/text file.

1. After quad is completed, print a summary of the changes and comments including general observations for the quad and/or comments on specific photos.

In feature class table: Open table, highlight QC_REMARKS and right click, summarize, check attribute (first) and shape area (min). Path the output. It not necessary to open the table.

Open Microsoft Excel: Navigate to Data → Import external data → import data.
Path to the location of the summarized table, open, ok.

Insert and delete columns for preference. Add the quad name, state, date completed and total number of polygons. Add a comment section and report observations if any.

Print and retain copy.

2. Document QC changes in text file document.

After completion of a quad, open the text file associated with that quad (located in Final Data_UTM).

Edit the file: copy and paste the following lines into the file and edit the sections that change (noted in bold type):

Regional QC Process:
Date: 6/5/03
Photo Date (month/year): 04/1999
Photo Scale: 24,000
Emulsion: CIR
DOQQ Date (month/year): 04/1993
*Technology: ArcGIS 8.3 PI and "Heads-up" combination
Cluster Tolerance: 0.0000659363 meters (default)
Topology Rules: Must Not Overlap, Must Not Have Gaps
Total # of Polygons checked: 48
Total # of Polygons: 866

Save the file in a location where the geodatabases are being stored after Regional QC (ex. From Final_Quads_UTM to Final_ Quads_Migeo).

Finally

The progress of Regional QC has been kept digitally in the <basedata/quads> shapefile table.
After the QC of a quad is finished, edit the table to change the field named: Progress to complete. Stop editing.

Questions/Comments:

Who is going to do all of the projection conversions on the geodatabases from MiGeoref back to NAD 83 UTM Zone 16?

Will this process be modified in the future so the Regional QC will not have to make any conversions?

There are shapefiles that have been through QC that need to be converted into geodatabases. This process requires the quad shapefile (basedata/for project area) and the wetland quad shapefile be in the same projection. Then there is processing and concerting.

Are we going to edit/fix all of the polygonal rivers that were not delineated before submitting to St. Pete?

The boundary of each quad was found to have an error according the topology rule “Must not have Gaps” but upon close inspection (zoom 1:0), no gaps are present. Should we make these edges “exceptions?

Who will perform the QA/QC tool on the data after Regional QC? Is it necessary? Should we wait to perform that tool until after the Regional QC process?