NPS Vegetation Mapping Inventory Program

Final Product Guidelines

Guidelines for Creating Final Products

Updated 9/29/2016

INTRODUCTION

The attached guidelines are designed to standardize and thus facilitate the rapid turn-around of Vegetation Mapping Inventory Program (VMI) final products and get them online as quickly and efficiently as possible.

While it is recognized that there will always be exceptions that will have to be dealt with on a case by case basis, the NPS VMI staff have discovered that adherence to this model of data organization and formatting of final products accelerates the turn-around for project data web posting and as such, makes the data available to NPS staff, natural resource scientists, federal agencies and the public in a timely manner.

We understand the degree of effort that is required to generate a high-quality, standardized vegetation map under the NPS Vegetation Mapping Inventory Program. We recommend you allow sufficient time and effort to produce final products adhering to the product specification in this document.

To develop final reports for vegetation mapping projects, investigators should consult with project key officials and follow the appropriate NPS guidelines. The final report will address vegetation classification and description, vegetation mapping, and accuracy assessment. It will include a full description of project methods, results and a summary discussion. The reports should be published in the NPS NRR series or another technical report series.

After the report, maps, databases, and other digital products have been reviewed and accepted as final by the project key official, they will be reviewed by the NPS National Mapping Vegetation Inventory Program (VMI) and placed on the NPS website. In order to facilitate this effort, please follow the file format and naming convention guidelines provided below. Many projects were initiated prior to the issuance of these guidelines by VMI. In those cases, investigators should consult with park, network, and/or VMI staff to determine how best to meet the new guidelines.

Any questions, or request for clarification should be addressed to Tammy Cook, VMI biologist/project manager (Tammy_Cook@nps.gov).

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Tammy_Cook@nps.gov

Final Products For VMI Project Closeout

These guidelines are organized to help you though the process of VMI project closeout. In this document you will see:

- Page 2: “What products need to be delivered for project closeout?” Here is an outline of the products you are required to deliver as closeout.
- Page 3 - 4 : “What do you mean by this list of products?” Product file
- *details* and organization can be found here.
- Page 5: “What do I name the file?” Here is the file naming reference list.
- Page 6 : “How do you want the files organized?” This page will give you a nice graphic to follow.
- Page 7- 9: Other potentially helpful information, such as tricks for creating the massive report or making a vegetation map poster are here.

Keep in mind:

Final Map Specification: Maps are produced in Universal Transverse Mercator (UTM), NAD83 datum with a minimum mapping unit of 0.5 hectares. The vegetation maps must meet the National Map Accuracy Standards for positional accuracy and the minimum class accuracy goal across all vegetation and land cover classes of 80%.

Checklist Of Products In The Final Product Package

The Capital Roman Numbers (I-IV) correspond to primary file folders that should be delivered to VMI.

Field Data

- Field Plots Points Graphic (.pdf)
- Field AA Points Graphic (.pdf)
- Plots Database (MDB or ACCDB): zip file with database and metadata
- MS Excel format of Physical Descriptive Data for Plots
- MS Excel format of Species List Data for Plots
- Field Photos collected during PLOTS and AA (.zip)

Geospatial Data:
Geodatabase with MXD and layer file (zip), containing:

- Vegetation Points
- Spatial Veg Data - polygons
- Spatial Boundary Data and other ancillary data
- Imagery
- Metadata

Aerial Photography or Imagery

- Orthophoto Mosaic Graphic (.pdf)
- Spatial Orthophoto Data (.zip)
- Flight Line Index – if applicable
- Metadata

Report: (.pdf)

- Published Vegetation Report, containing the following items:
    i. Executive Summary
    ii. Description of the classification, mapping and AA methodology and results with discussion
    iii. Vegetation Descriptions with CEGL codes
    iv. Vegetation Dichotomous Key
    v. Map Class Interpretation Key (with crosswalk to NVC codes)
    vi. Plot Form and Accuracy Assessment Field Form
    vii. Species List
- MS Excel Contingency Table
- High-resolution vegetation map - poster
- Low-resolution vegetation map

Supplemental: – this folder can be used to store any additional data products or enhancements that the project team considers informative and useful!

Product Details

Field Data Folder

- Graphic File**:** The pdf file name is the *parkname* and the type of geospatial data being shown, such as Plot locations.
- Graphic files (.pdf). The pdf file name is the *parkname*aa. Example: apisaa.pdf
- Microsoft Access PLOTS Database with Metadata: Databse should contain Field Data for Plots, Accuracy Assessment, Physical Descriptive and Species Listing Data. Create zip file of access database with metadata. Name of file is: *parkname*data.mdb.
- Physical Descriptive Data for Plots - The *parkname*plots file is extracted from the
- *parkname*data.mdb database. The file name is *parkname*plots.xls.
- Species Listing Data for Plots - The *parkname*_spcov file is extracted from the
- *parkname*data.mdb database. The file name is *parkname*_spcov.xls
- Field Photographs collected during PLOTS and AA: Contained within the PLOTS database are references to field photos collected as part of the project.
- We would like a .zip file called "*parkname*_fieldphotos". The files within the .zip usually contain jpeg, gif, or pdf format. Please do not exceed 500MB on each file. If so then create more than one .zip file and call it field_photos1.zip, field_photos2.zip and etc. * Please make sure that the field photo files are identified to link to a ground location in PLOTs (e.g. Plot (or AA) Number_Cardinal Direction.jpg)

Geospatial Data Folder

- Spatial Vegetation Data: The ZIP files should contain the following: FILE GEODATABASE of the vegetation point and polygon feature classes, layer file (for Symbology), and MXD. Also include Boundary feature class, Imagery, and associated attribute data. All data must be in UTM NAD83.
- Geodatabase should contain metadata for all feature classes
- Include a crosswalk table of map classes to NVC hierarchy
- Zip File should be called parknamegeodata.zip.

Aerial Photography or Imagery Folder

- Graphic File: The pdf file name is the parkname and the type of geospatial data being shown, such as Orthophoto.
- Spatial Data (.zip): This is a digital file of the land cover (aerial) imagery data used in this project. All geospatial data must be in UTM NAD 83. In most cases this is a CIR mosaic or an orthophoto.
- Aerial Photo Flightline Index – parknamephotos.pdf. A PDF file of a flightline index linking the flightline numbers to the aerial photos and listing the aerial photos by numbers. Not all of the aerial photos are shown, just every other one on each flightline.
- Graphic File: This is a PDF file for each aerial photograph, using a unique photo number on each photo. Example (flight line# - print#): 2-3.pdf, 6-11.pdf, 18-20.pdf, and 301-108.pdf.
    viii. IMPORTANT – If the original roll film for the imagery flight mission can be obtained, the VIP can arrange to have the roll film transferred to the USGS EROS Data Center where a permanent archive record will be created. This will remove the need for PDF's for each image.
    ix. If a hard copy photos are the only data available and the park coverage contains too many photos to reasonably scan to PDF, please contact the VMI to discuss options.

Report Folder

- Vegetation Report – ONE REPORT: Create a PDF full report (parknamerpt.pdf).
    x. Report MUST contain: Vegetation Description, Vegetation Key, Map Class Descriptions, Photos of Map Classes, Photo-interpretation Key, Accuracy Assessment Methods and Results.
    xi. Use the NPS Natural Resource Publication Management for report formatting. There are 5 series. Most VIP reports fall under the Natural Resources Report Series (NRR).
- Final vegetation maps, one poster (high resolution) and one low resolution map
- Accuracy assessment contingency table

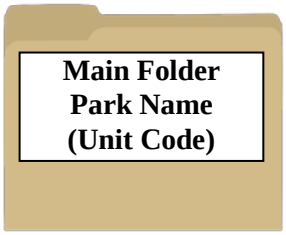
Supplemental

- Any additional data products can be put in this supplemental folder.

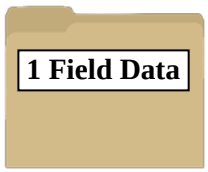
Quick Reference –File Naming Standards

- NO capital letters used in naming each file.
- The following is a list of standard naming conventions:
  - Field Data
    - *parknameplots.pdf (plot locations)*
    - *parknameaa.pdf (AA locations)*
    - *parknamedata.zip (Plots DB, and metadata)*
    - *parknameplots.xls*
    - *parkname_spcov.xls*
    - *parkname_fieldphotos.zip – containing photos referenced in the PLOTS DB.*
  - Geospatial Vegetation Information
    - *parknamegeodata.zip (File geodatabase, .lyr file, .mxd); all feature classes (map polygon, plots/AA points, Imagery, Boundary, etc) must have metadata!*
  - Aerial Photography
    - *parknameortho.pdf*
    - *parknameortho.zip*
    - *parknamephotos.pdf*
    - *1-02.pdf or 11-13.pdf or 4-5.pdf depending on the unique photo number.*
  - Report
    - *parknamerpt.pdf*
    - *parkname_aamatrix.xls*
    - *parknamevegmap.pdf*
    - *parknamevegmap_poster.pdf*
  - Supplemental
    - This folder can be used to store any additional data products

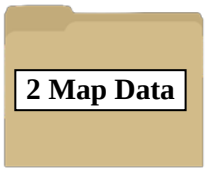
Folder Structure Graphic



SUBFOLDERS



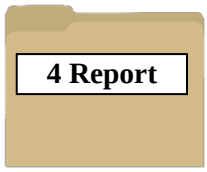
- *parknameplots.pdf (plot locations)*
- *parknameaa.pdf (AA locations)*
- *parknamedata.zip (Plots DB, and metadata)*
- *parknameplots.xls*
- *parkname_spcov.xls*
- *parkname_fieldphotos.zip – containing photos referenced in the PLOTS DB.*



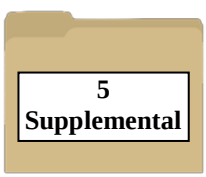
- *parknamegeodata.zip*



- *parkname*ortho.pdf
- *parkname*ortho.zip
- *parkname*photos.pdf
- 1-02.pdf or 11-13.pdf or 4-5.pdf depending on the unique photo number.



- *parkname*rpt.pdf
- *parkname*_aamatrix.xls
- *parkname*vegmap.pdf
- *parkname*vegmap_poster.pdf



Bucket location for any additional files that the team feels are valuable and informative to retain for the project

Other Helpful Information for File Creation

- Metadata Tools: Here are a few sites that can help you write your metadata:
  i. **https://www.fgdc.gov/metadata/geospatial-metadata-tools**
  ii. **https://edg.epa.gov/EME/**
  iii. **Metadata Wizard: https://www.sciencebase.gov/catalog/item/50ed7aa4e4b0438b00db080a**

- Instructions for PDF Conversion of Vegetation Mapping Project Reports:

PDF conversion is much easier if the Word document you are trying to convert is as small as possible. Most graphics are unnecessarily large. To reduce them, left click on them, cut, and then choose "Picture (JPEG)" from the "Paste Special" dropdown under the Edit menu. The graphic/photo should go from having little dark handles to having green or white circles for handles. Sometimes all you get is a black square, in which case you have to trick Word by choosing something else from the Paste Special menu until you get a format that will, when pasted as a JPEG, look like your original graphic/photo.

Depending on the number of photographs and graphics in your document, you can reduce the size by an order of magnitude.

In creating the parknamerpt.pdf file, you will generally have to break it into sections no bigger than 50MB in order for the machine not to hang up while converting/tagging.
Creating the tagged document takes quite a while (at least 10 minutes per chunk) and it is not a good idea to be doing anything else on the computer while the conversion is going on.

1) When all the sections have been converted successfully, run through each section and make sure there are no gross errors like extra or missing pages, or errors in formatting or page breaks, or strange colors invading the figures.
2) Once all these have been fixed, either in Word and reconverting, or in Acrobat, rejoin the sections using the "Insert Pages" command under the Document menu.
3) Once you have a single document, check through the entire thing and make sure there are no missing or extra or blank pages, the formatting looks good, etc.
4) Rebuild the TOC at the front of the document to repair the reference errors created when you broke it into sections.
5) Go through the document page by page with the TouchUp Toolbar open (Tools -> Advanced Editing -> Show TouchUp Toolbar)
6) Activate the TouchUp Reading Order button and on the menu that opens, make sure all of the options are checked. Each page will then appear as a series of numbered, Xed or grayed-out boxes.
7) On each page, make sure of the following:
   i. All text, including titles, figure captions and table headings, is in gray text boxes
   ii. Figures are in figure boxes
   iii. Tables are in Table boxes

iv. The numbers in the boxes make sense as to their reading order

8) If not, and especially if the formatting is a mess with extraneous structures and numbered boxes, use the "Clear Page Structure" button on the Reading Order TouchUp menu to start over.
9) Activate the TouchUp Reading Order tool, highlight the text or table or figure (all of it, trying not to overlap adjacent structures much or at all) and select "Text" or "Table" or "Figure" buttons as appropriate from the Reading Order TouchUp menu. Don't bother with any of the other choices. They just complicate things.
10) You can fix the order of things by clicking on the "Show Order Panel" button on the Reading Order TouchUp menu, scrolling to the right page number, and using your mouse to drag the various elements around (grab the little colored boxes on the left; the text doesn't drag!)
11) Tables and Text boxes do not need tags. Figures (photos and graphics) do. To create tags for these:
    i. Select the TouchUp Object Tool from the TouchUp Toolbar.
    ii. Right click in the figure you want to tag.
    iii. Select "Properties" from the bottom of the menu
    iv. Select the "Tag" Tab from the properties menu and enter your tag text in the "Alternate Text" box.
    v. Select "English US" from the Language dropdown menu below the Alternate Text box.
    vi. Use these standards for tagging figures:
        - For scenic photos, enter a 1 to 4-word description of what the photo illustrates: "Yampa River Canyon"
        - For graphics, enter "Figure XX map" or "Figure XX graphic" or "Figure XX chart" – as appropriate
        - For photographs with captions, enter "Figure XX photo"
        - For photographs without captions, as in the appendices, enter a descriptor, like "Acer negundo Woodland photo" or "Riparian Shrubland Complex aerial photo example"
        - If there are several photos for a figure, enter the text as recommended above, then a number that reflects the reading order number: "Bromus tectorum Herbaceous Vegetation photo 1".
12) When all of this is done and you have checked back through the document to make sure nothing was forgotten, *then* fix the bookmarks and links as stipulated in the guidelines and finally, run the accessibility check.
13) Finally, for both PDF reports, while the document is open, click on the "Reduce File Size" option under the Document menu. You'll be amazed at how much your document shrinks.

Suggestions for creating a Poster of the Final Vegetation Map:

1. In ArcMap, use the final vegetation map feature class to create a layout using one of the NPS Graphic Identity Program standard map templates. You can download the templates at: http://science.nature.nps.gov/im/inventory/veg/Best_Examples.cfm. Each download file contains directions on how to load and use the templates.

2. Use either the D or E size, landscape or portrait template (.mxt), as appropriate. (Size D = 22 x 34 inches; Size E = 34 x 44 inches)

3. Please be sure that the black NPS banner is displayed at the top of the page. Follow general map creation rules, for example, be sure to include a scale bar, north arrow, projection information, map author, map creation date, etc.

4. In ArcGIS, EXPORT the layout to a PDF using the following settings:

File name: xxxxvegmap_poster.pdf (where xxxx = 4-letter park acronm)
Save as type: PDF
/Options
General Tab:
Resolution: 600 dpi (or less if file size is too large using 600 dpi) Output Image Quality (Resample Ratio): Normal - Best
Ratio: 1:1 Format Tab:
Destination Colorspace: RGB
Check box for: Compress Vector Graphics Image Compression: Deflate
Picture symbol: Rasterize layers with bitmap markers/fills Check box for: Convert Marker Symbols to Polygons Check box for: Embed All Document Fonts
Check box for: Clip Output to Graphics Extent

For maps with large extents or that use a DEM backdrop, you may need to lower the DPI and/or output image quality settings to obtain a manageable file size.

A PDF file is requested so that it can be reproduced and printed at various sizes without running into issues with resizing and loss of resolution that could be encountered with JPEG or other image formats.

5. The goal of the high resolution map is to create a printable layout that can be displayed as a poster.

6. Consider also making a low resolution file export while you are in layout map!