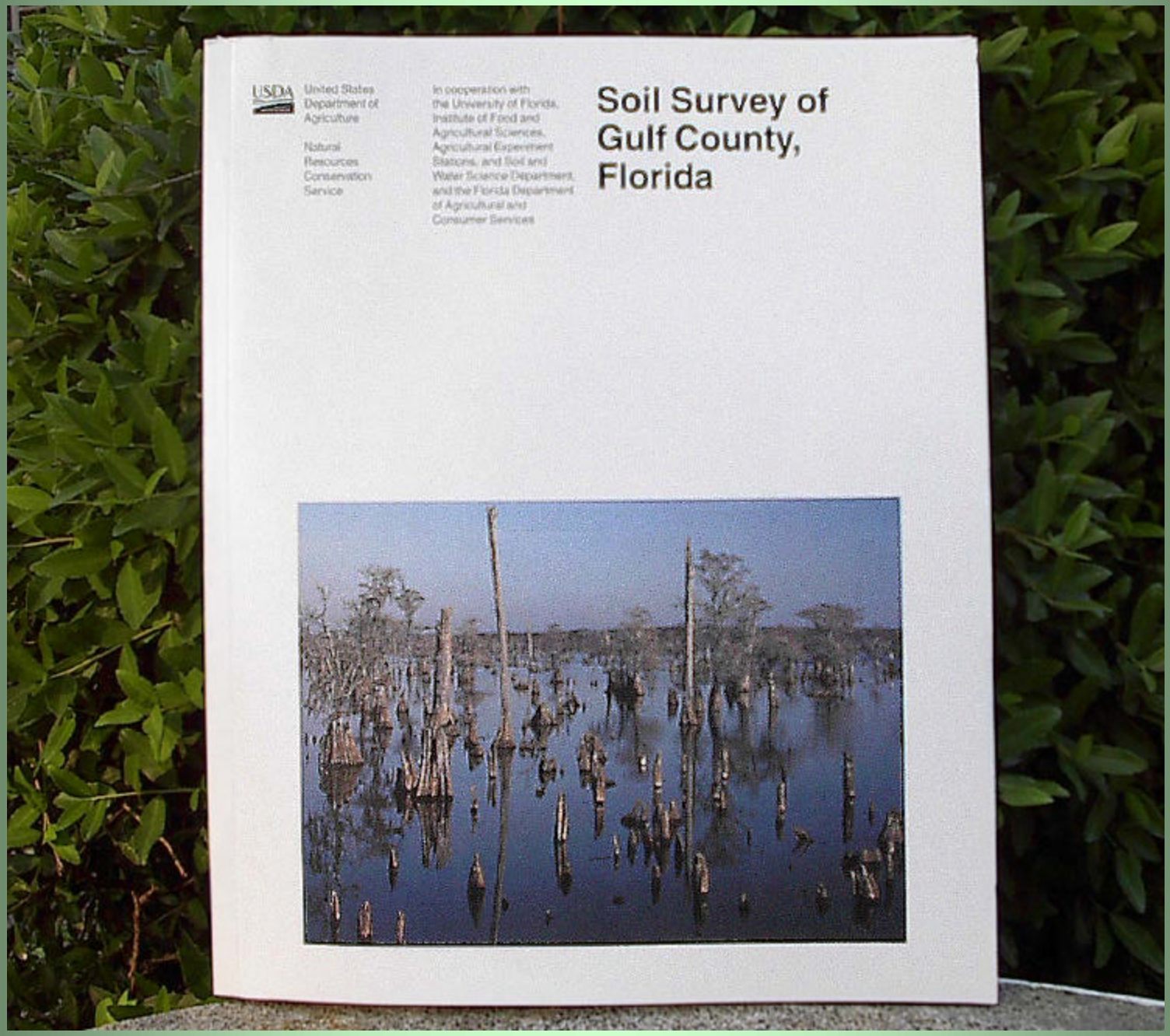
# A Comparison of Traditional and Emerging Soil Survey Methods on Southern Pinelands

Joseph Schuster, Karen Wynne, and Eric Davis

erc Ecological Resource Consultants, Inc.


USDA
United States Department of Agriculture
Natural Resources Conservation Service
In cooperation with the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil and Water Science Department, and the Florida Department of Agricultural and Consumer Services
Soil Survey of Gulf County, Florida

1. A color value, moist, of 3 or less and a color value, dry, of 5 or less (crushed and smoothed) in the Ap horizon or in the upper 15 cm after mixing; *and*

2. A base saturation (by $NH_4OAc$) of less than 50 percent in some part within 100 cm of the mineral soil surface.

**Humic Endoaquepts**

KAII. Other Endoaquepts that have a color value, moist, of 3 or less and a color value, dry, of 5 or less (crushed and smoothed) either in the Ap horizon or in the upper 15 cm after mixing.

**Mollic Endoaquepts**

KAIJ. Other Endoaquepts.

**Typic Endoaquepts**

**Definition of Typic Endoaquepts**

Typic Endoaquepts are the Endoaquepts that:

1. Do not have, within 150 cm of the mineral soil surface, any sulfuric horizon, a horizon 15 cm or more thick that has all of the characteristics of a sulfuric horizon, except that it has a pH between 3.5 and 4.0, or sulfidic materials;

2. Do not have a lithic contact within 50 cm of the mineral

(2) [(Al plus ½ Fe, percent extracted by ammonium oxalate) times 60] plus the volcanic glass (percent) is equal to 30 or more;

5. *Either* have less than 0.2 percent organic carbon (Holocene age) at a depth of 125 cm below the mineral soil surface and a regular decrease in organic-carbon content (Holocene age) between a depth of 25 cm and either a depth of 125 cm below the mineral soil surface or a densic, lithic, or paralithic contact, whichever is shallower, *or* have a slope of 25 percent or more;

6. Have fragic soil properties:

a. In less than 30 percent of the volume of all layers 15 cm or more thick that have an upper boundary within 100 cm of the mineral soil surface; *and*

b. In less than 60 percent of the volume of all layers 15 cm or more thick;

7. Do not have, in one or more horizons between the A or Ap horizon and a depth of 75 cm below the mineral soil surface, *one* of the following colors:

a. Hue of 7.5YR or redder in 50 percent or more of the matrix; *and*

(1) If peds are present, either chroma of 2 or more on 50 percent or more of ped exteriors or no redox

# Forest Land Surveys Based on Soil Code

# Soil and the Growth of Forests

T.S. Coile, 1952

A -Alfisols and Ultisols with Bt Horizons <20” deep

B - Arenic and Grossarenic Alfisols and Ultisols

C - Spodosols with Argillic Horizons

D - Spodosols without Argillic Horizons

E - Soils that are sandy throughout

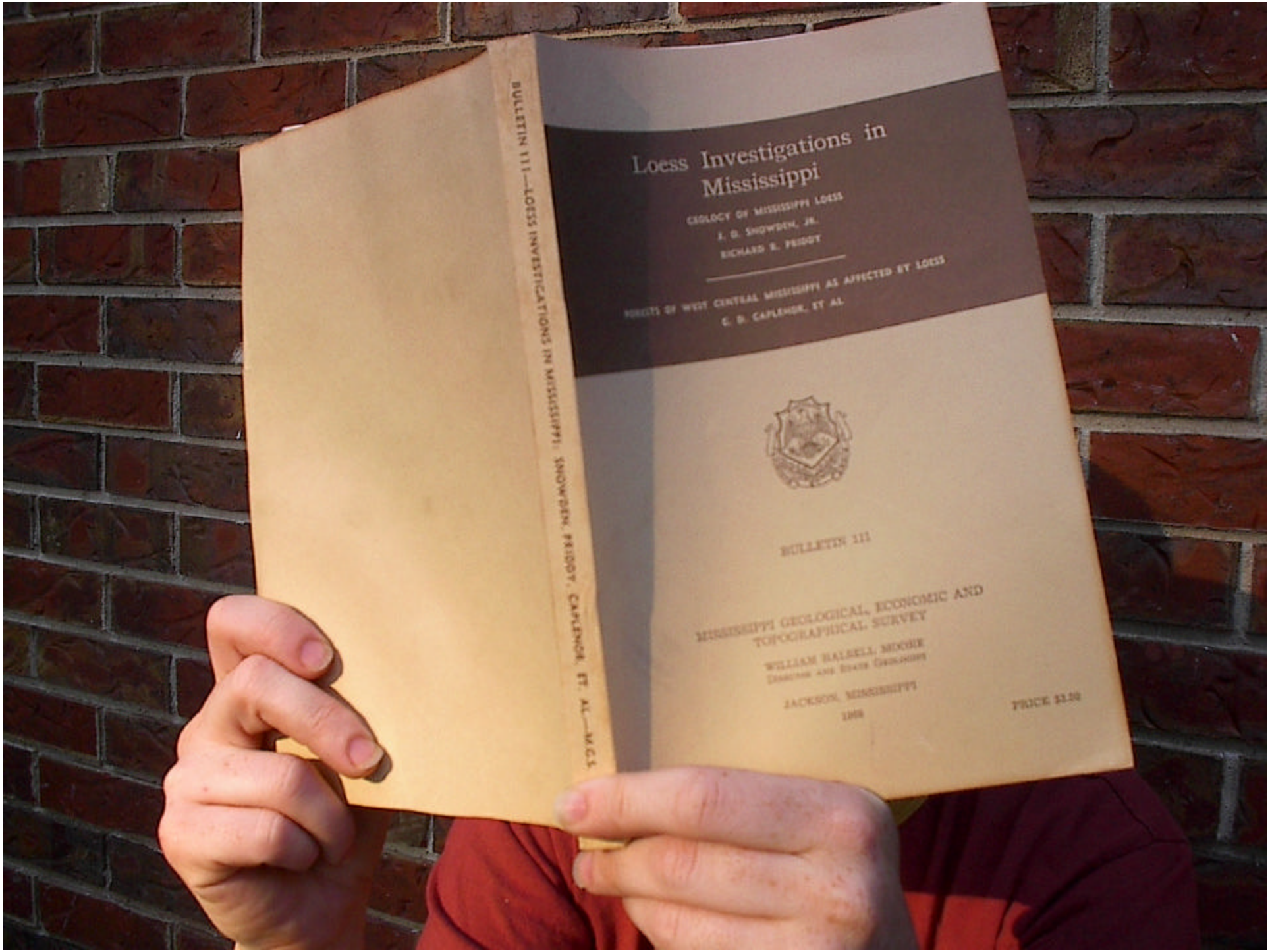
F - Soils formed in deep loess

G - Organic Soils

# Code Elements:

- Depth to Horizons
- Texture
- Drainage Class
- Geology
- Landscape Position
- Productivity
- Modifiers

# A23ad6/DHx


Loess Investigations in Mississippi
GEOLOGY OF MISSISSIPPI LOESS
J. D. SNOWDEN, JR.
RICHARD R. PEIRCE
FORESTS OF WEST CENTRAL MISSISSIPPI AS AFFECTED BY LOESS
C. D. CAPLENOR, ET AL
BULLETIN 111
MISSISSIPPI GEOLOGICAL, ECONOMIC AND TOPOGRAPHICAL SURVEY
WILLIAM BALSELL MOORE
JACKSON, MISSISSIPPI
BULLETIN 111—LOESS INVESTIGATIONS IN MISSISSIPPI. SNOWDEN, PEIRCE, CAPLENOR, ET. AL—M.G.S.

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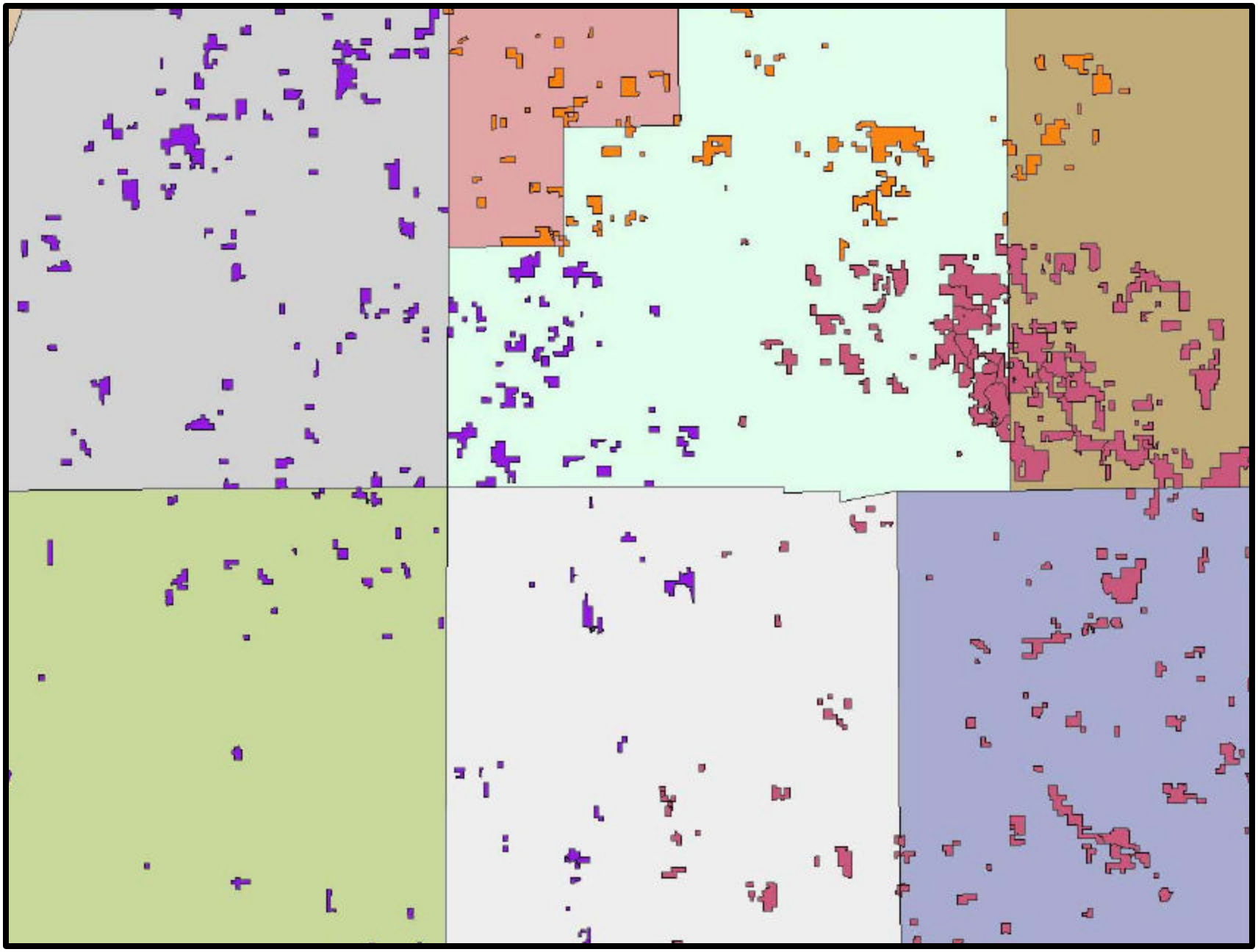
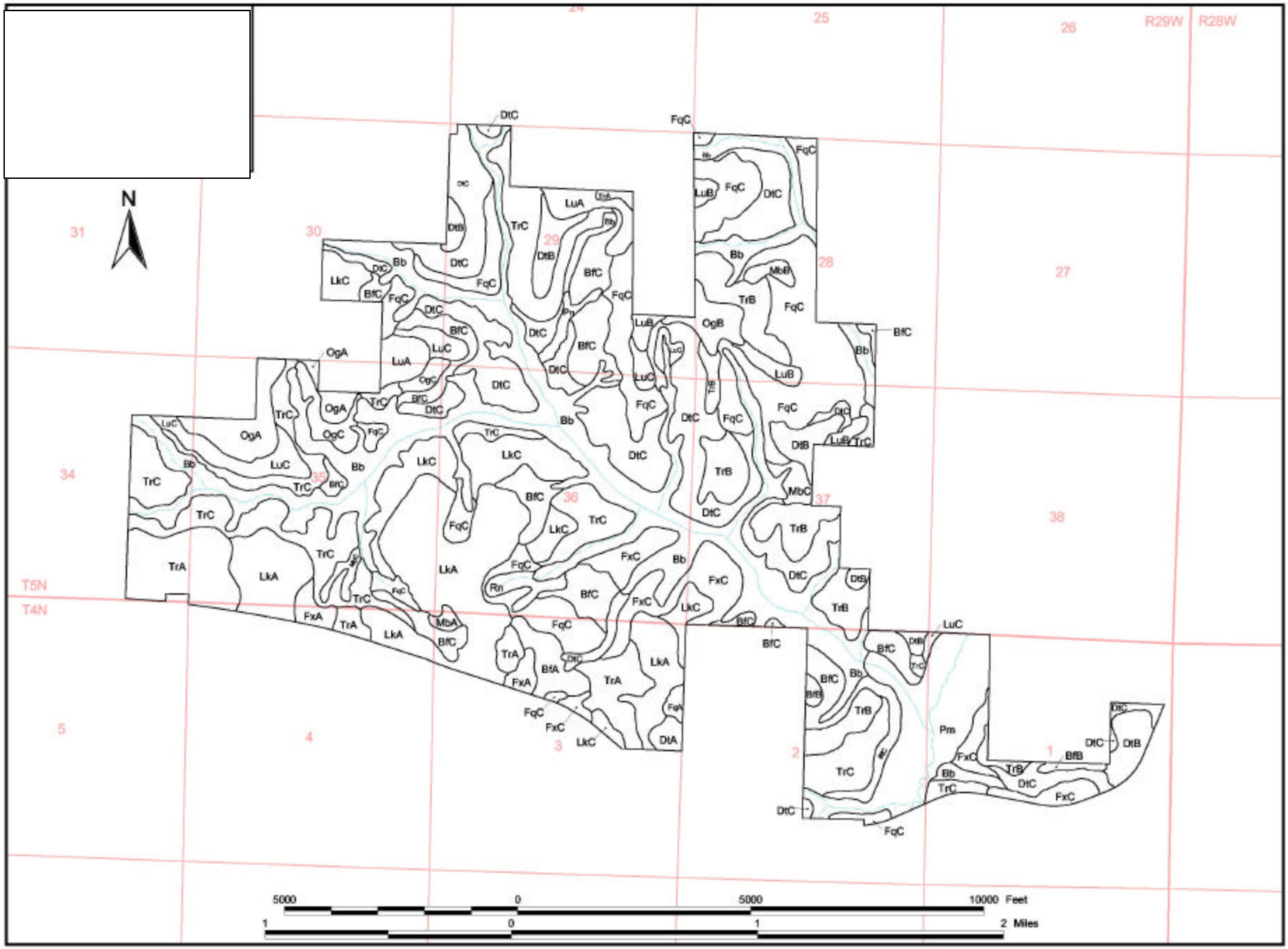


# Forest Land Surveys Based on Soil Series



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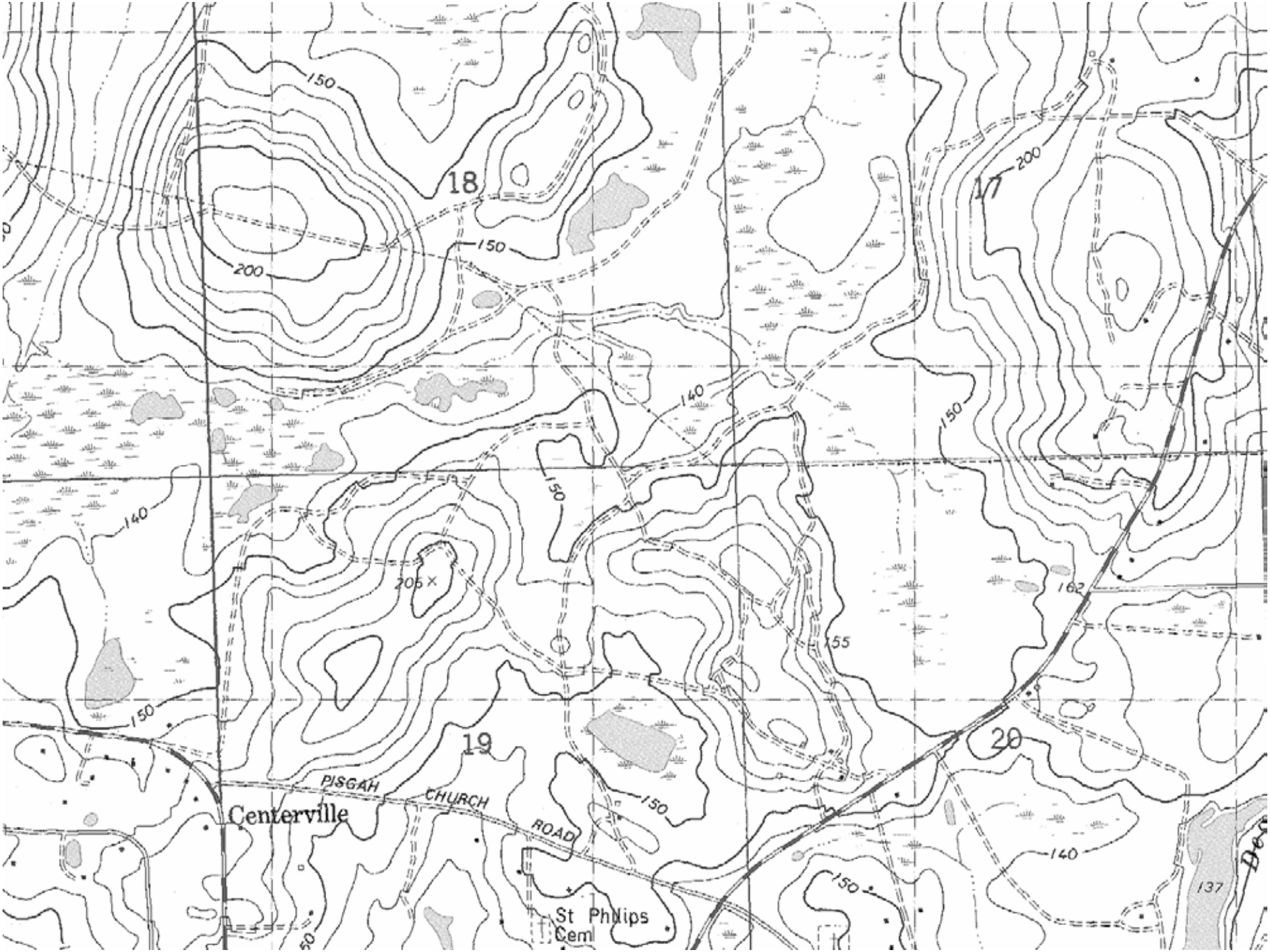

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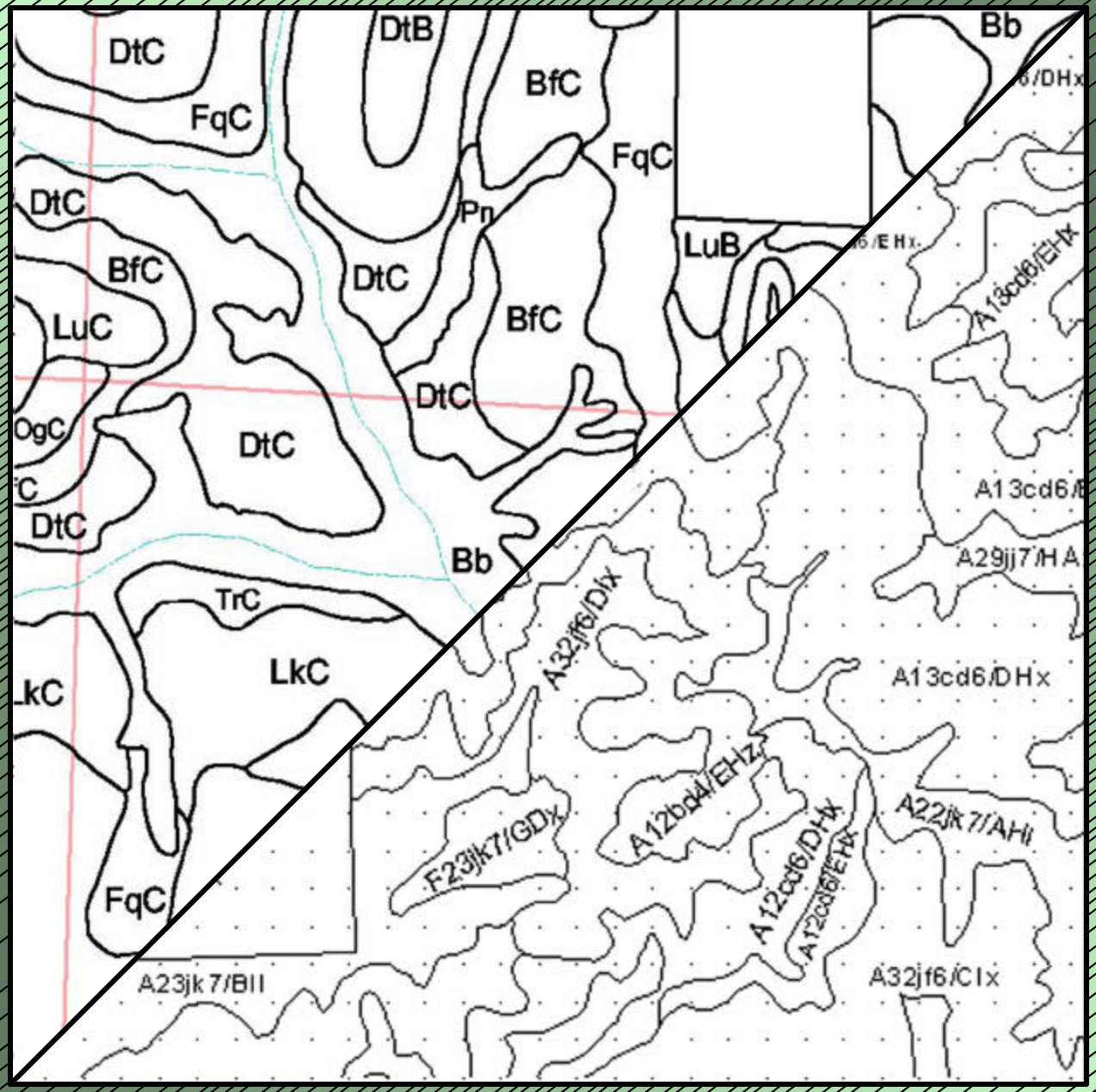
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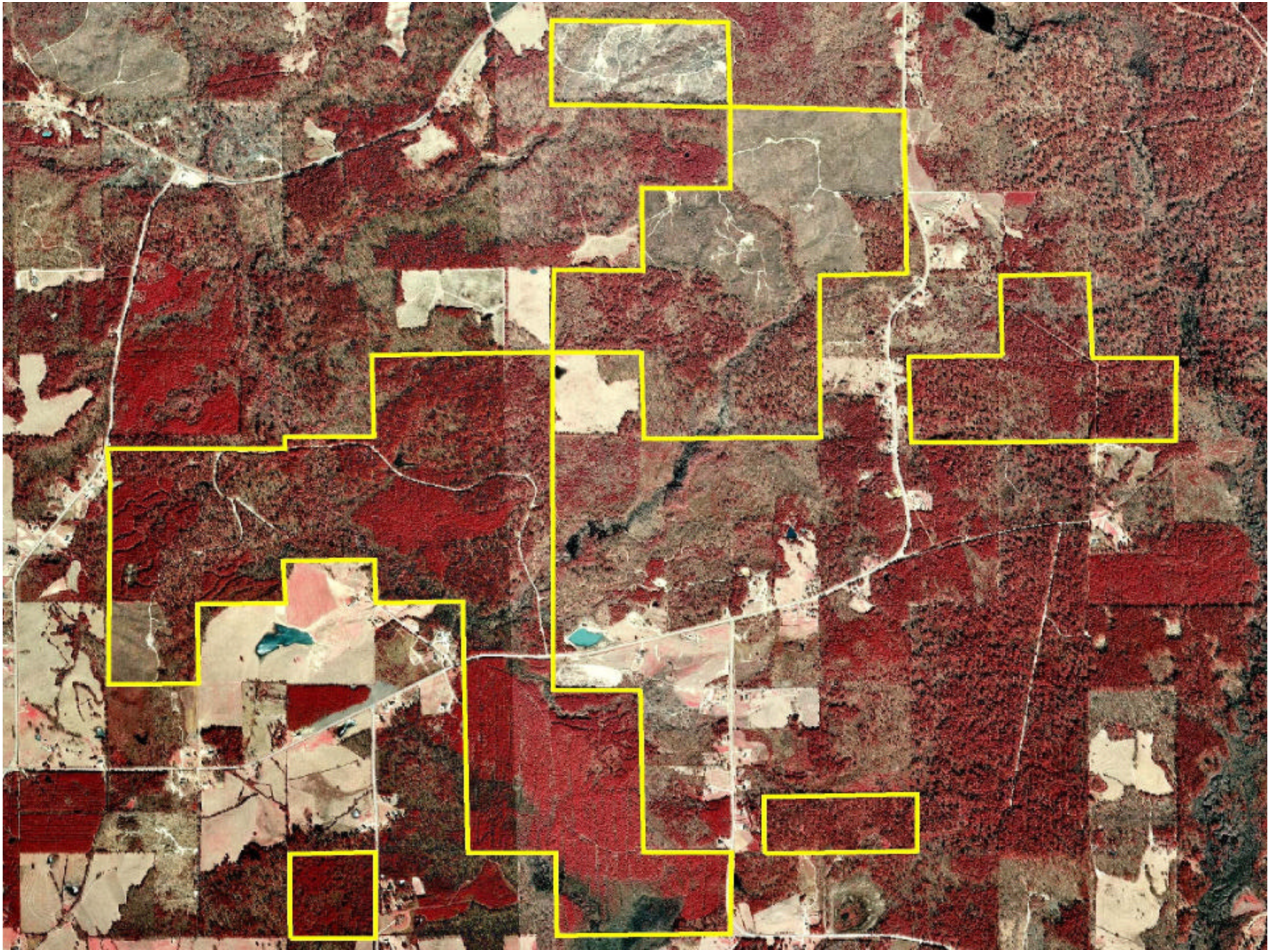
- Low Investment
- Only Data Needed for Silvicultural Interpretations



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LABINS

Link to 1999 DOQQ FTP Site

DEPARTMENT OF ENVIRONMENTAL PROTECTION FLORIDA

## DOWNLOAD 1999 DOQQs

The Department of Environmental Protection's Bureau of Survey and Mapping is providing the resources for the surveying community to gain access to the 1999 Digital Ortho Quarter-Quads (DOQQ) via download.

- File Specifications:
  - Projection: UTM
  - Datum: NAD83
  - Units: Meters
  - Image Format: MrSID

- MrSID is a proprietary file format that compresses large images to a fraction of their original file size without quality loss. ESRI's ArcView supports MrSID format. For more information on MrSID, visit the LizardTech website.

- It is possible that a folder may be empty (see information below concerning directory structure). We expect to have 530 of the 1,057 here by the middle of Summer 2001. (Note that a vast amount of the South Florida images will not be ready for 14 - 16 months.)

- **If you don't see the quads you want**, please check our DOQQ Library Status to see if we have received the files in our office. (Note the column titled "1999 Library Status".) We may not receive all quarter-quads in the same shipment. We are receiving information regularly

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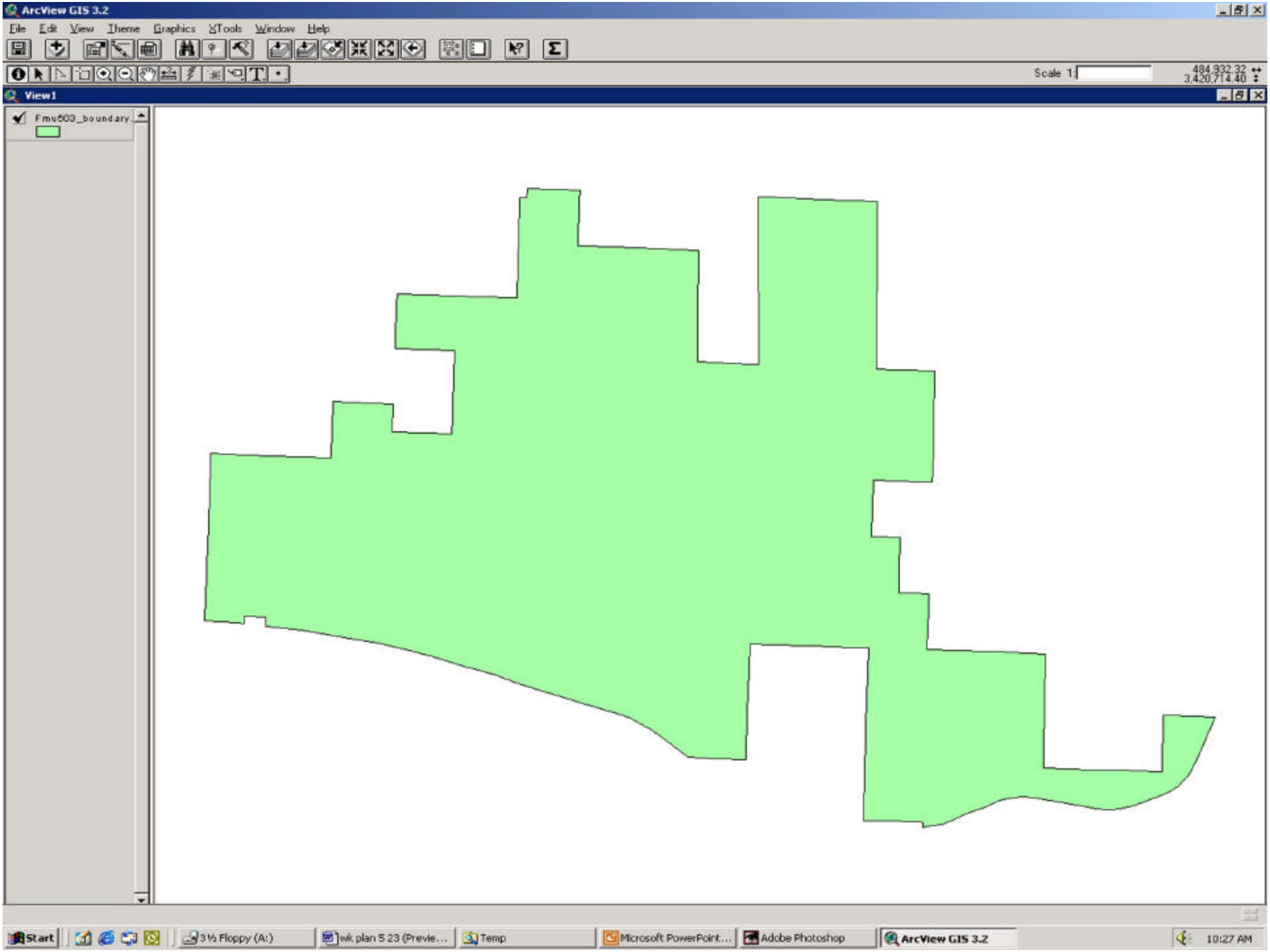
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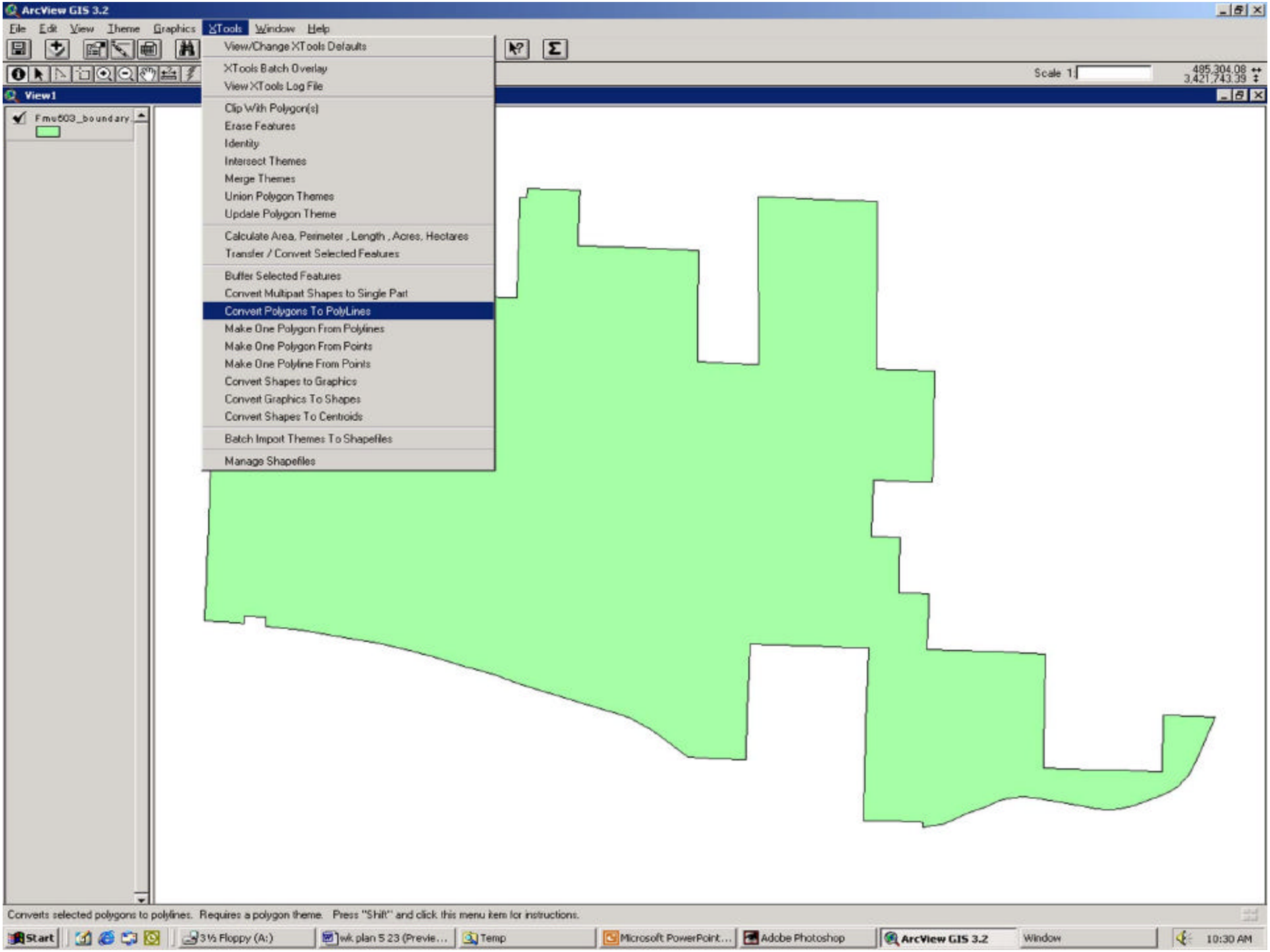
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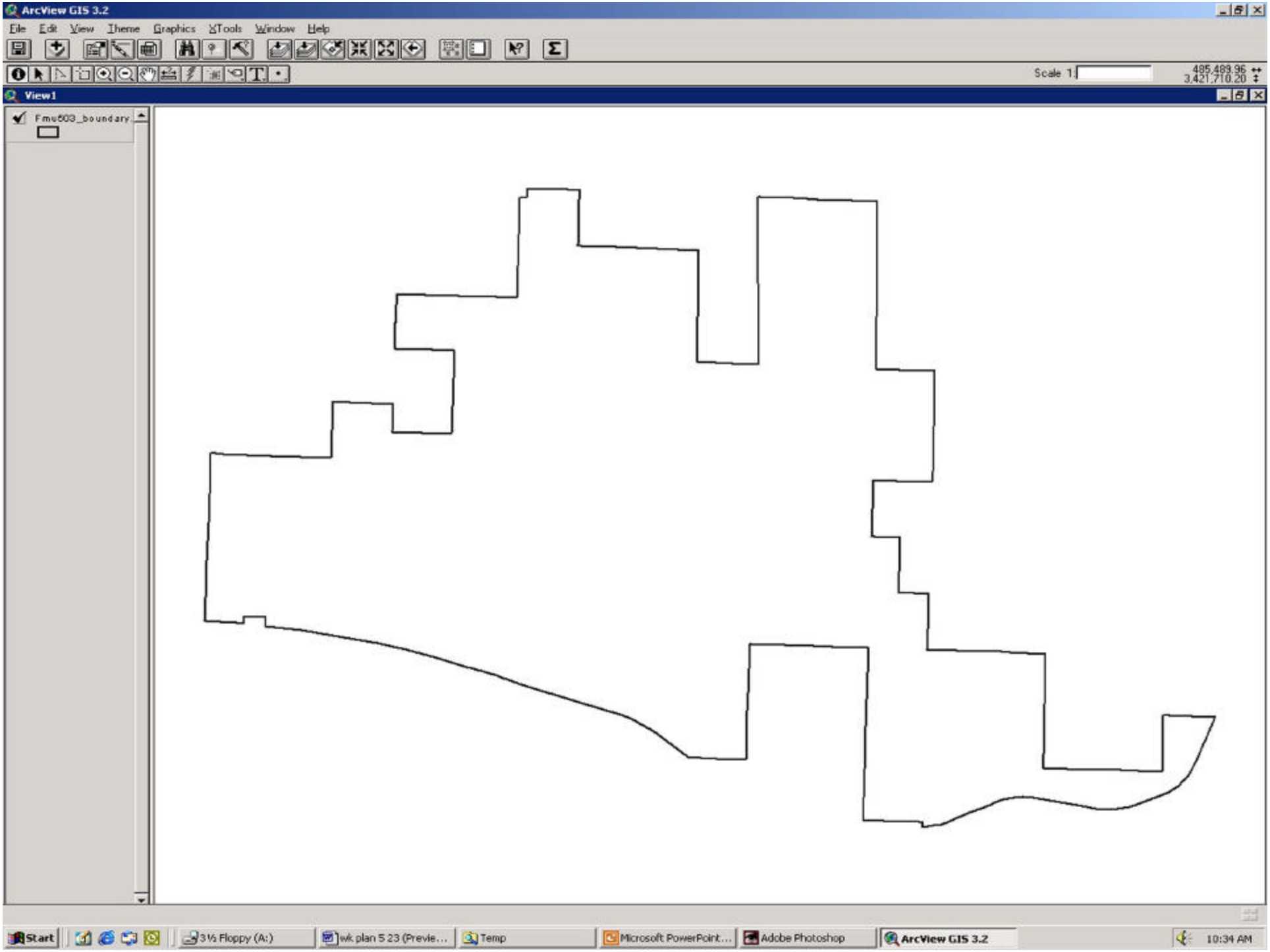
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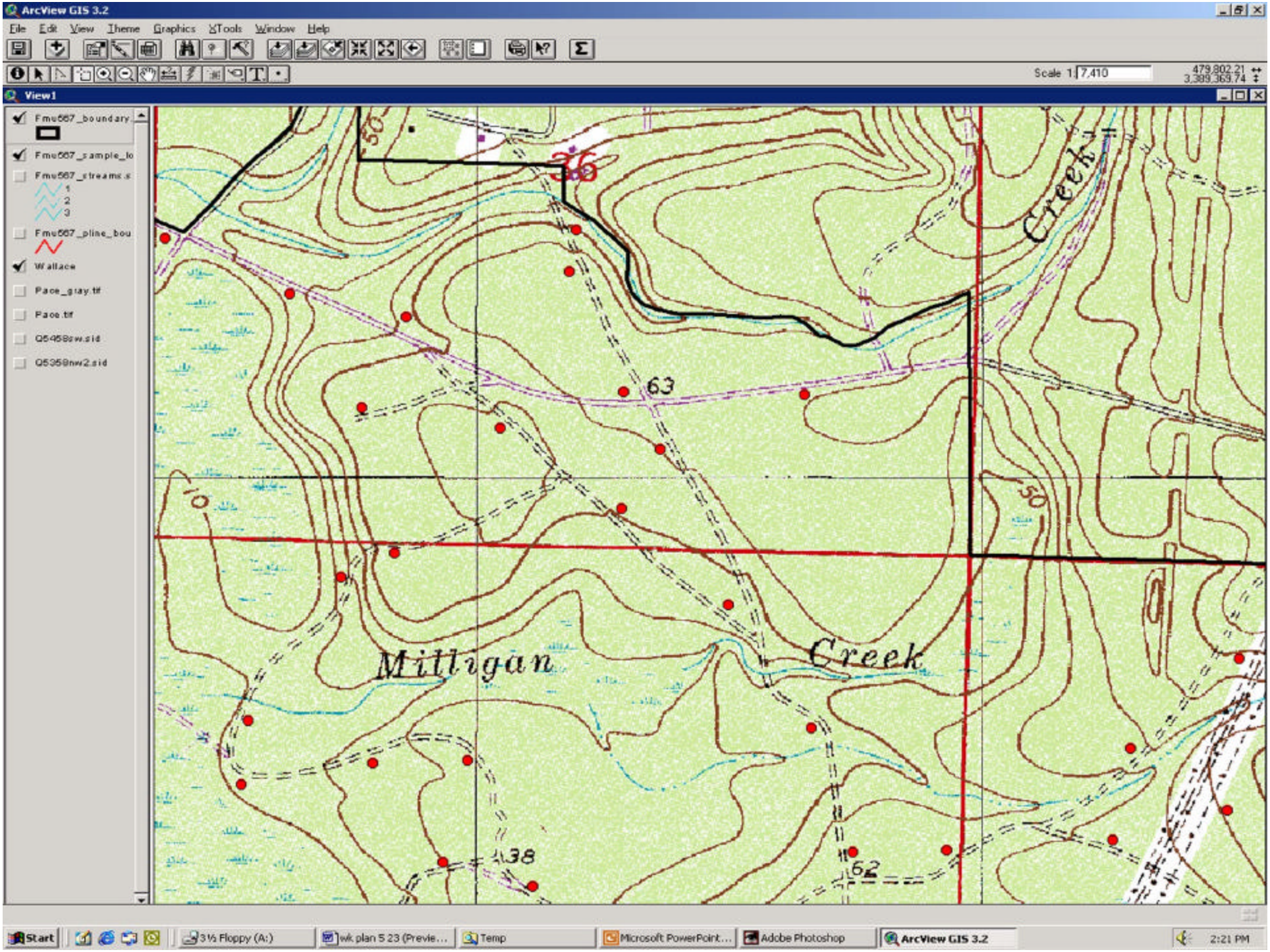
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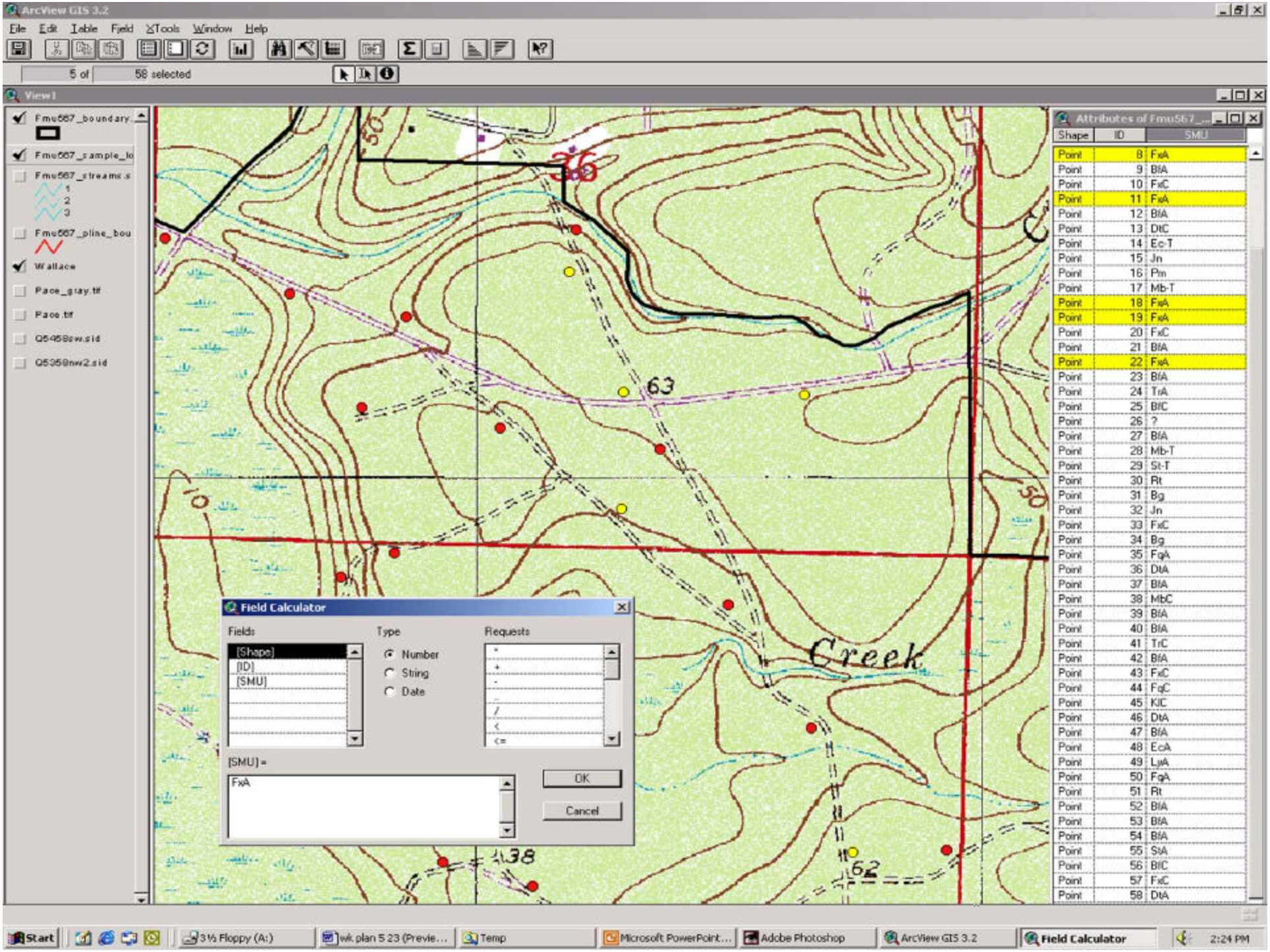
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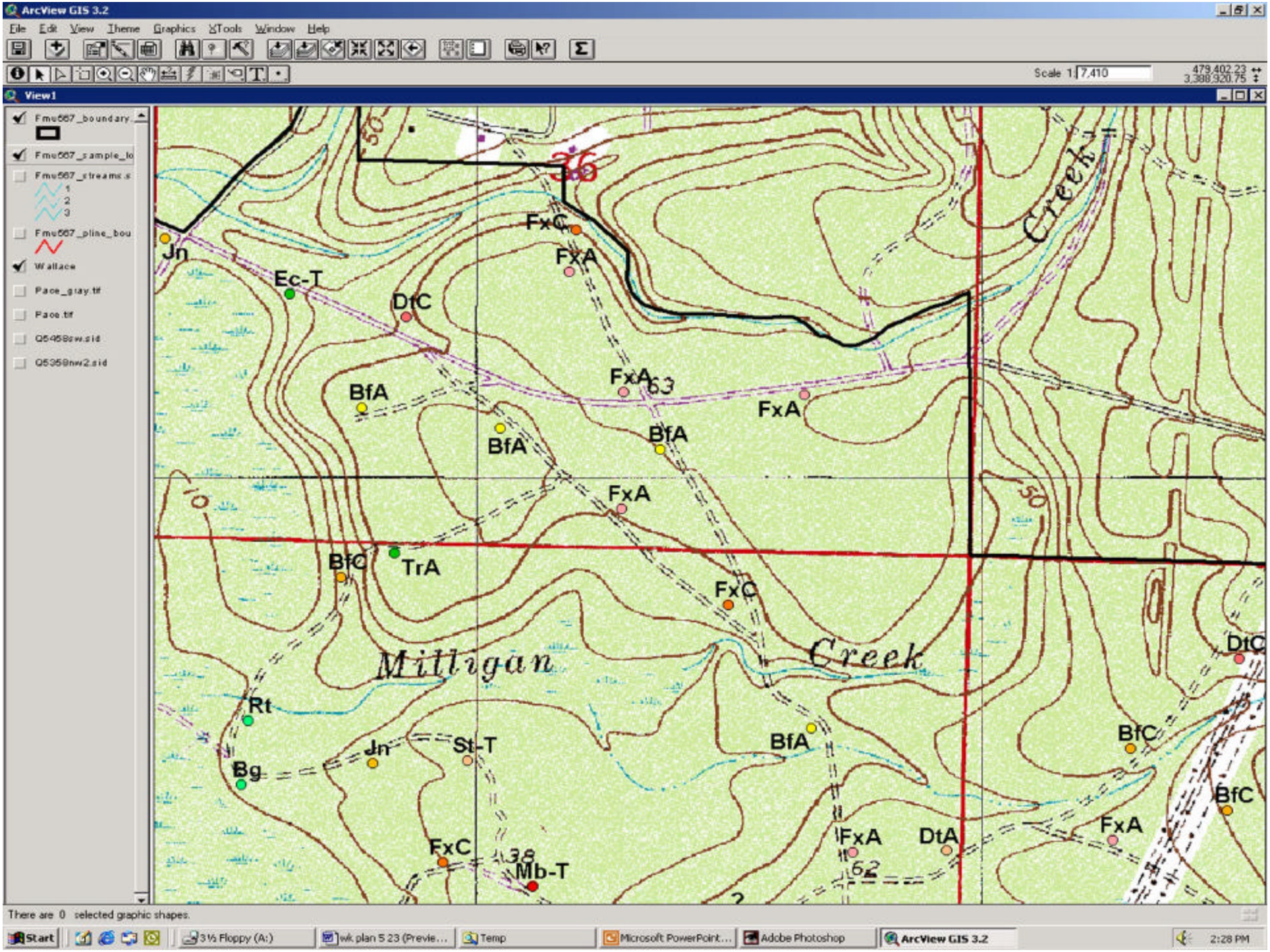
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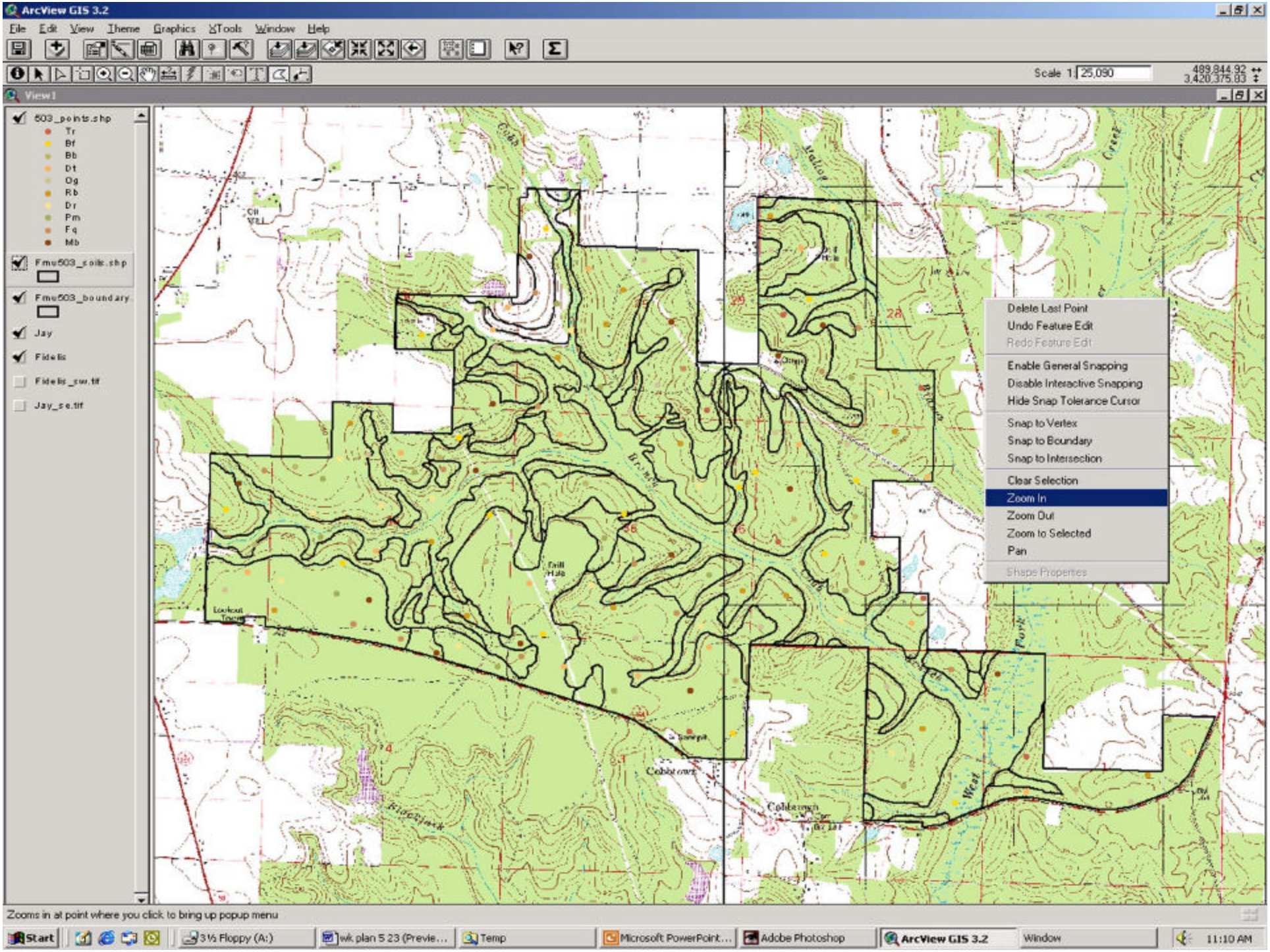
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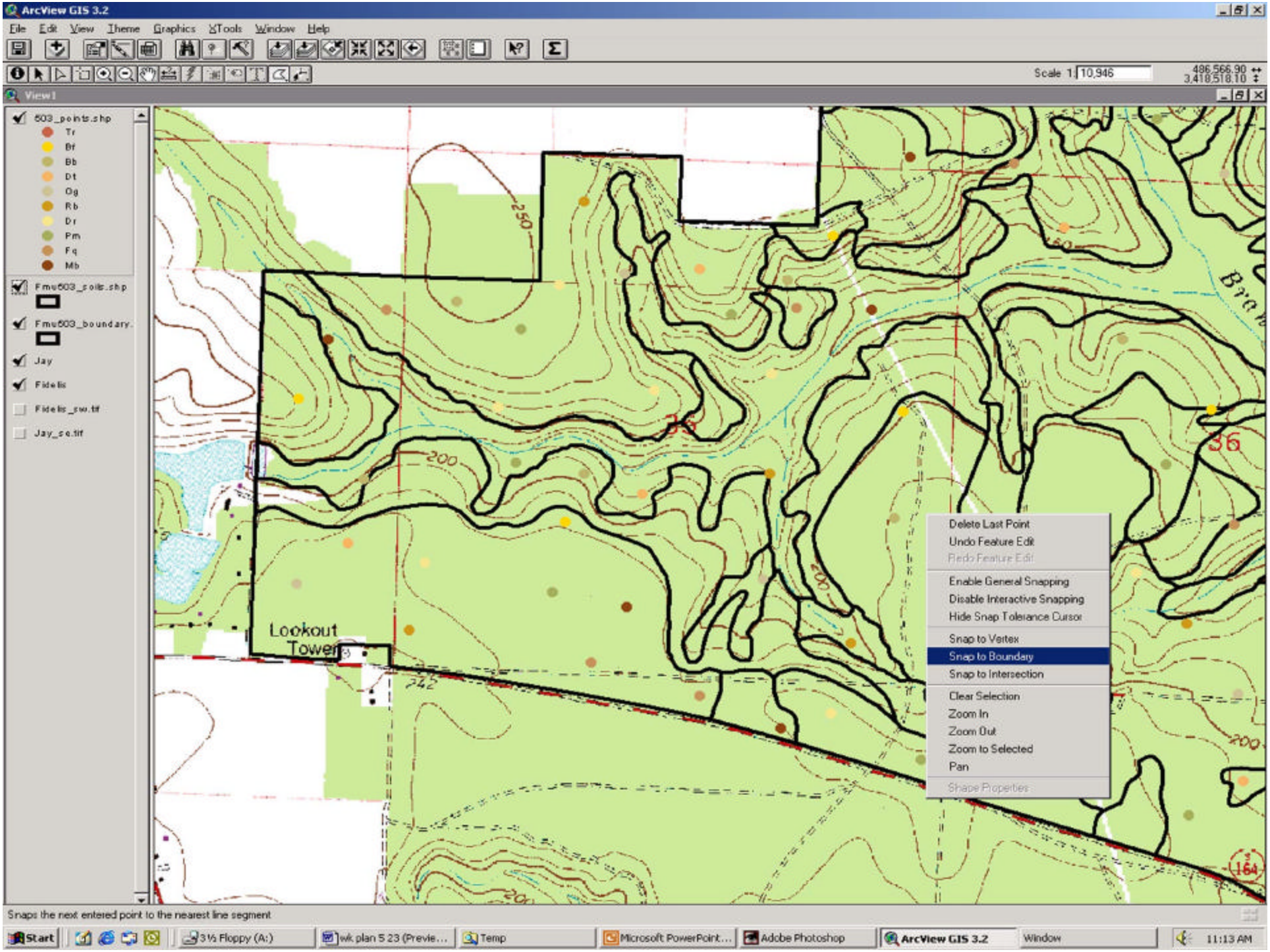
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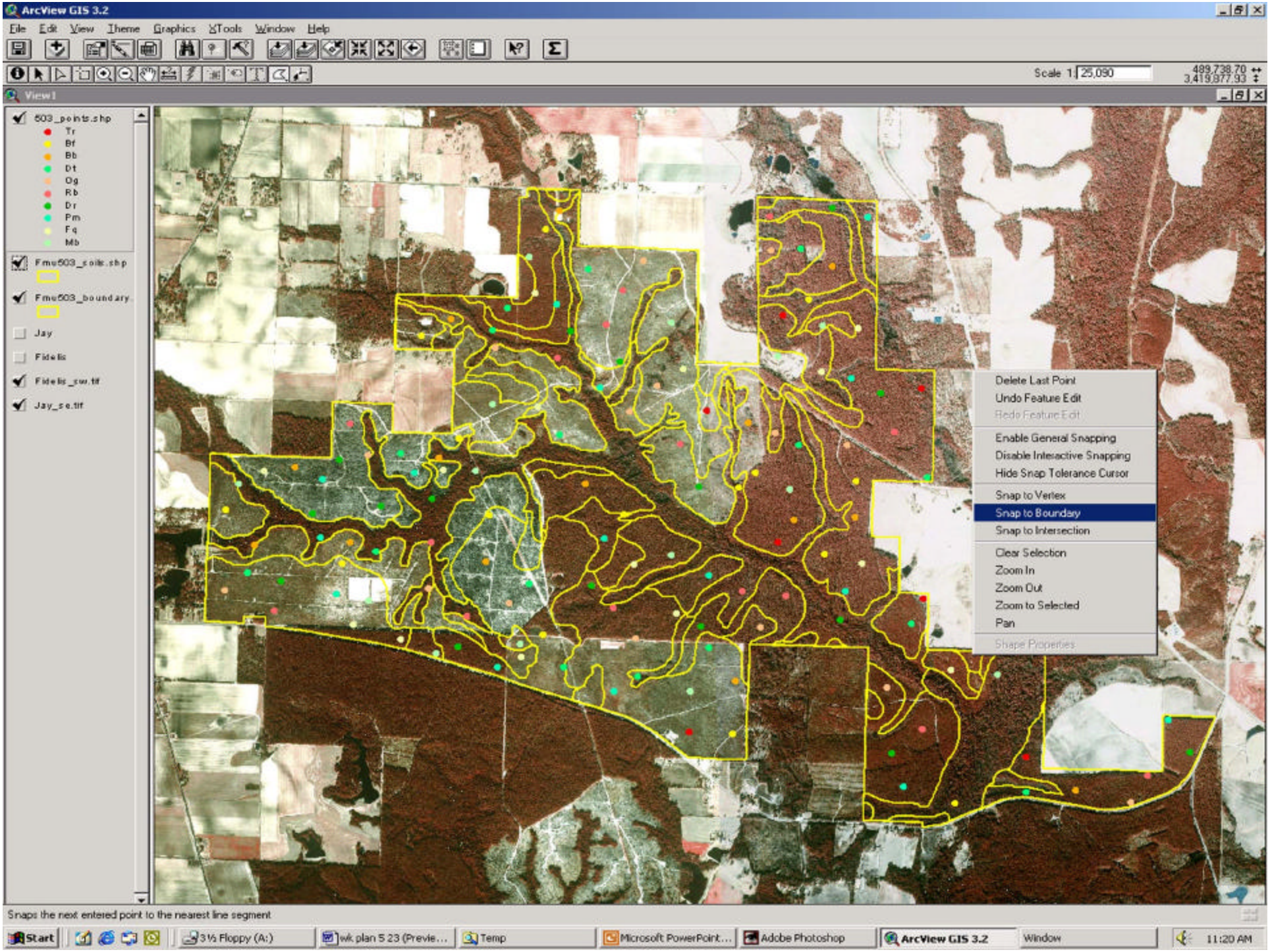
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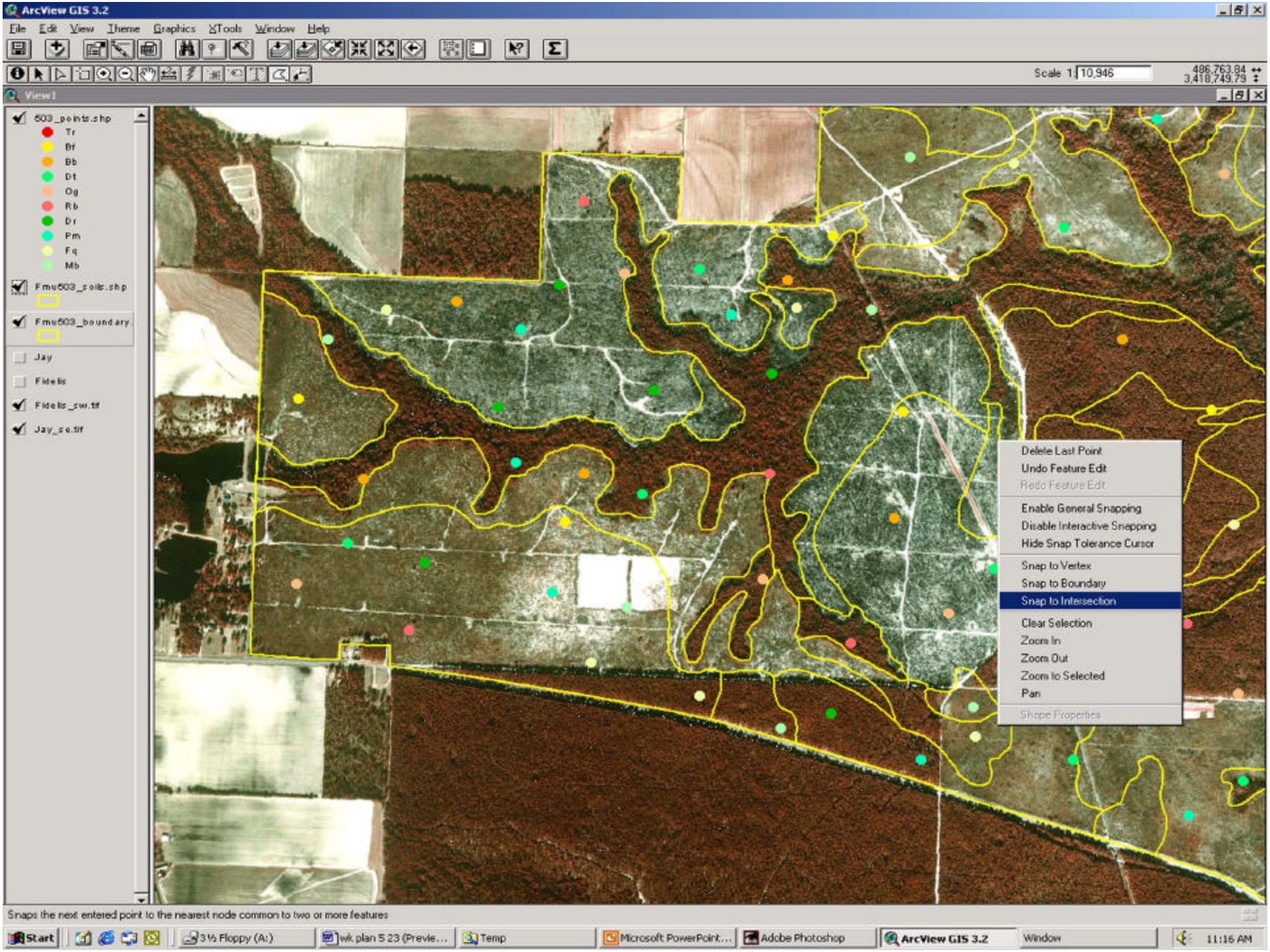
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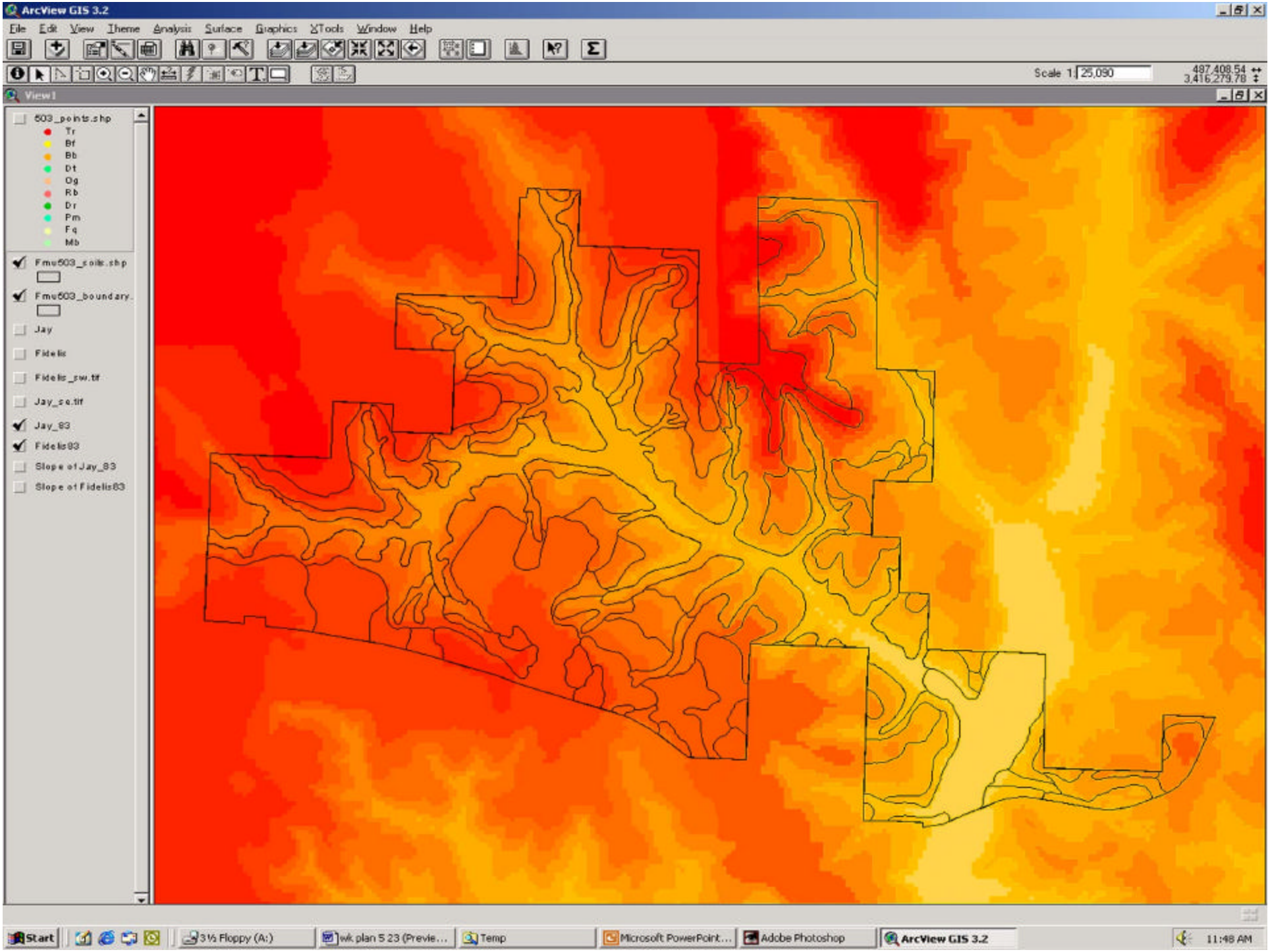
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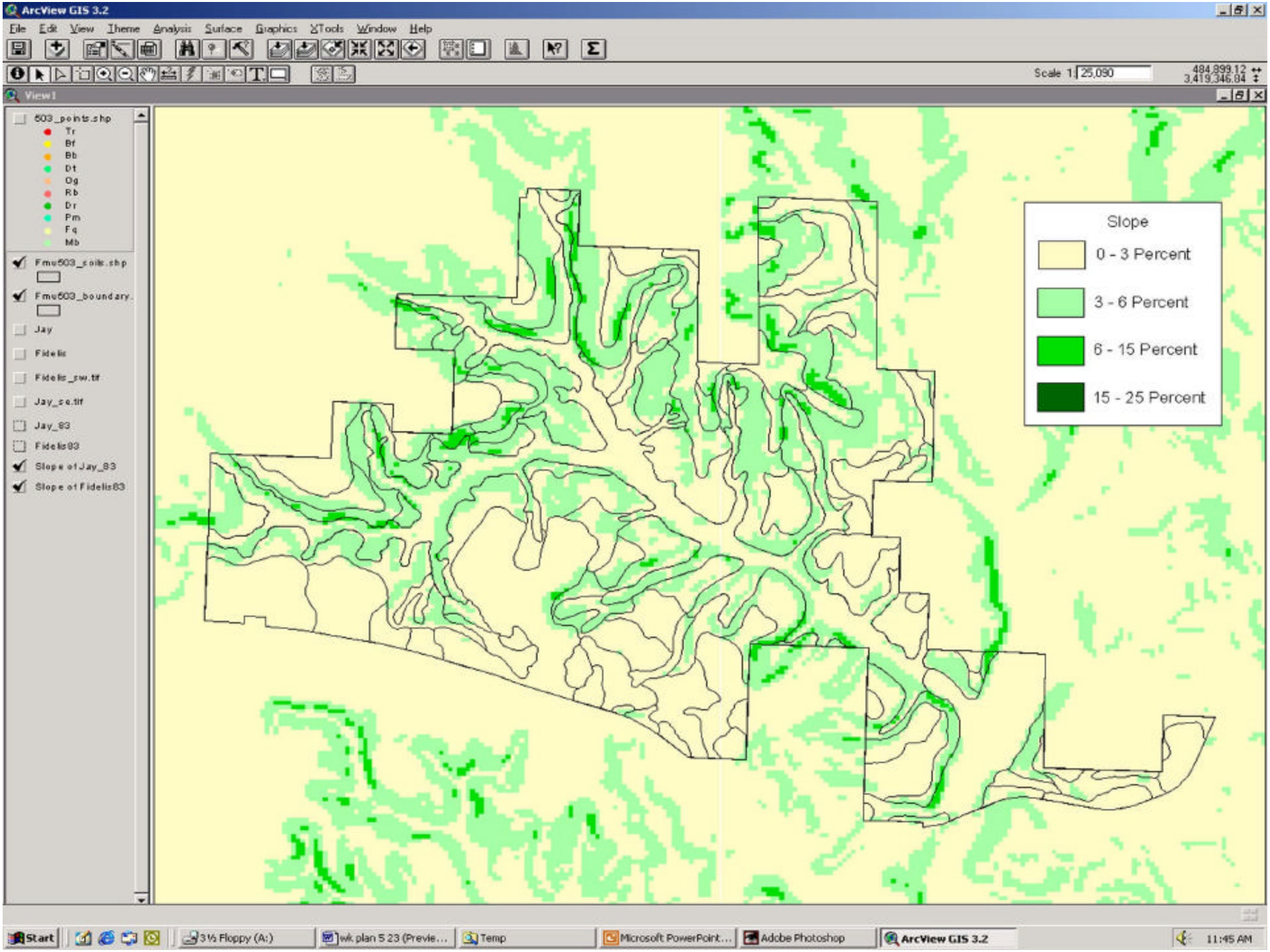
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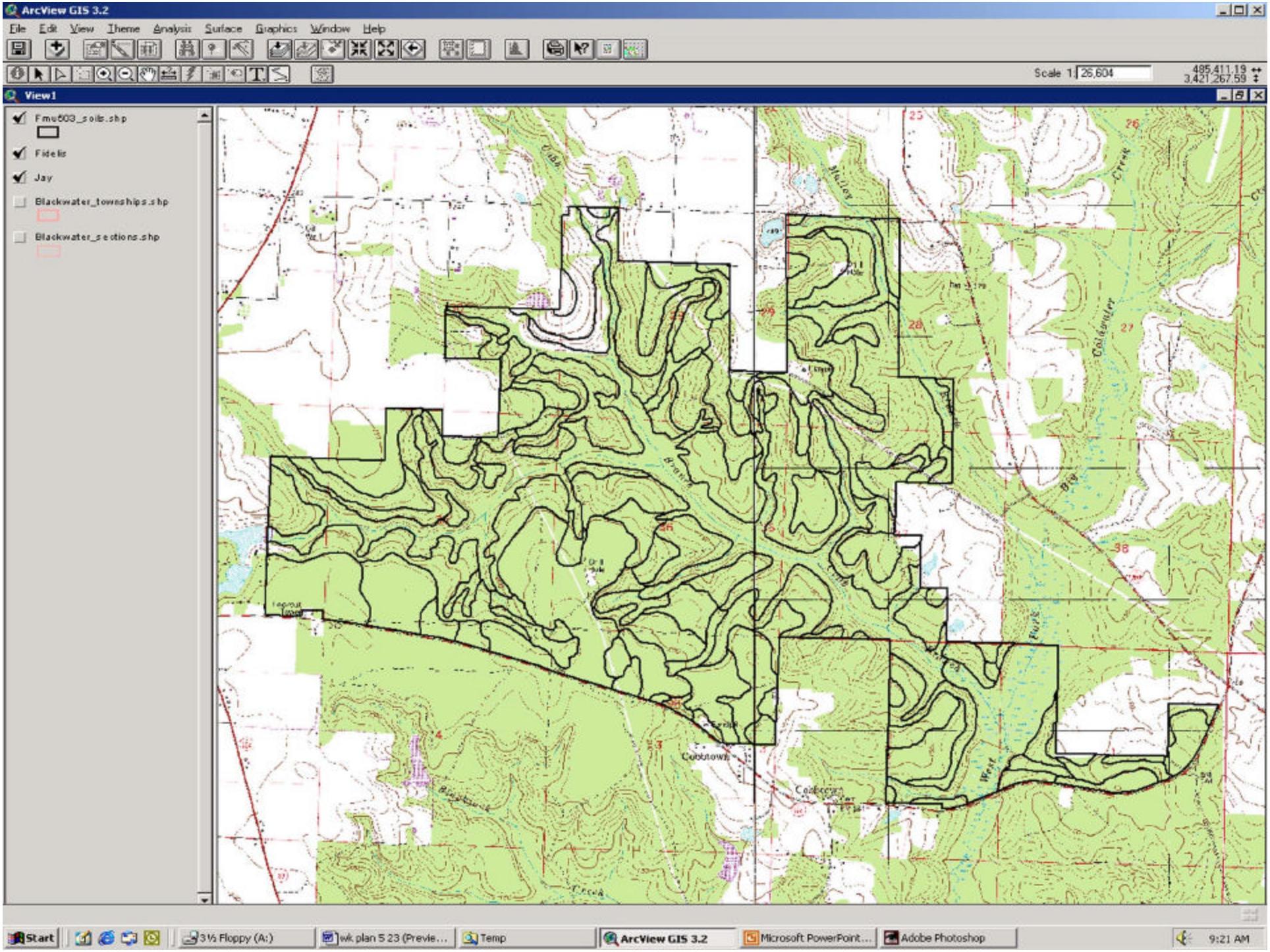
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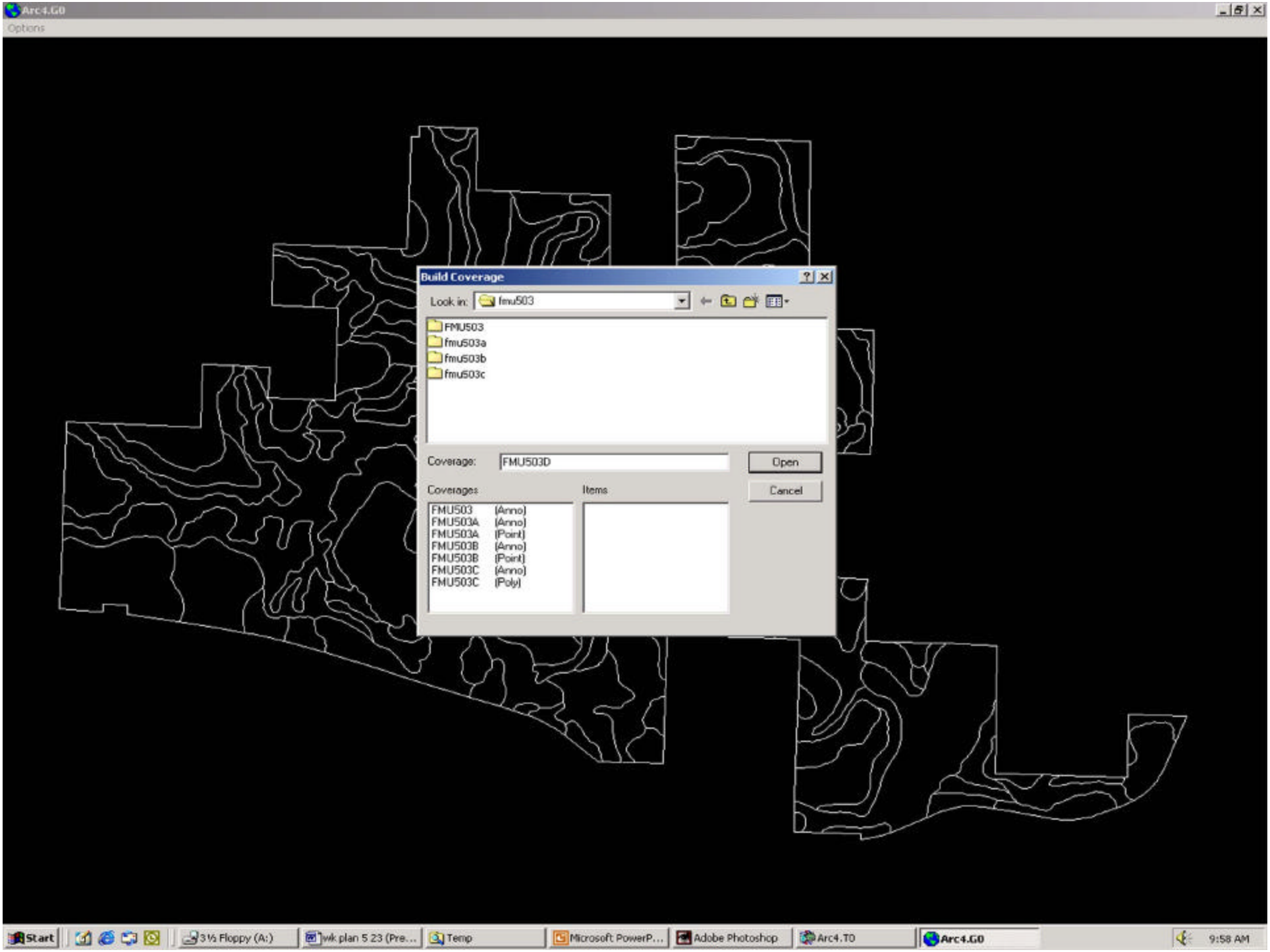
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9:58 AM

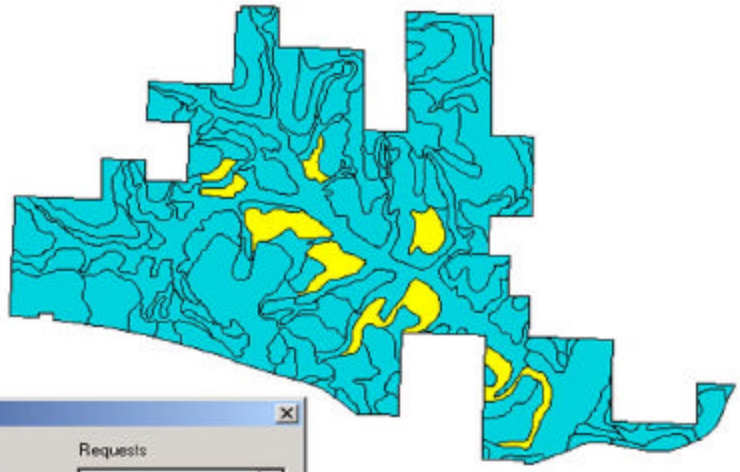
ArcView GIS 3.2

File Edit Table Field Window Help

8 of 119 selected

View1

- Fmu503_soils.shp
- Fidelis
- Jay
- Blackwater_townships.shp
- Blackwater_sections.shp



Field Calculator

Fields: [Shape], [Area], [Perimeter], [Fmu503c_], [Fmu503c_id], [SMU], [Label]

Type: Number, String, Date

Requests: *, +, -, ..., /, <, <=

[SMU] =

DtC

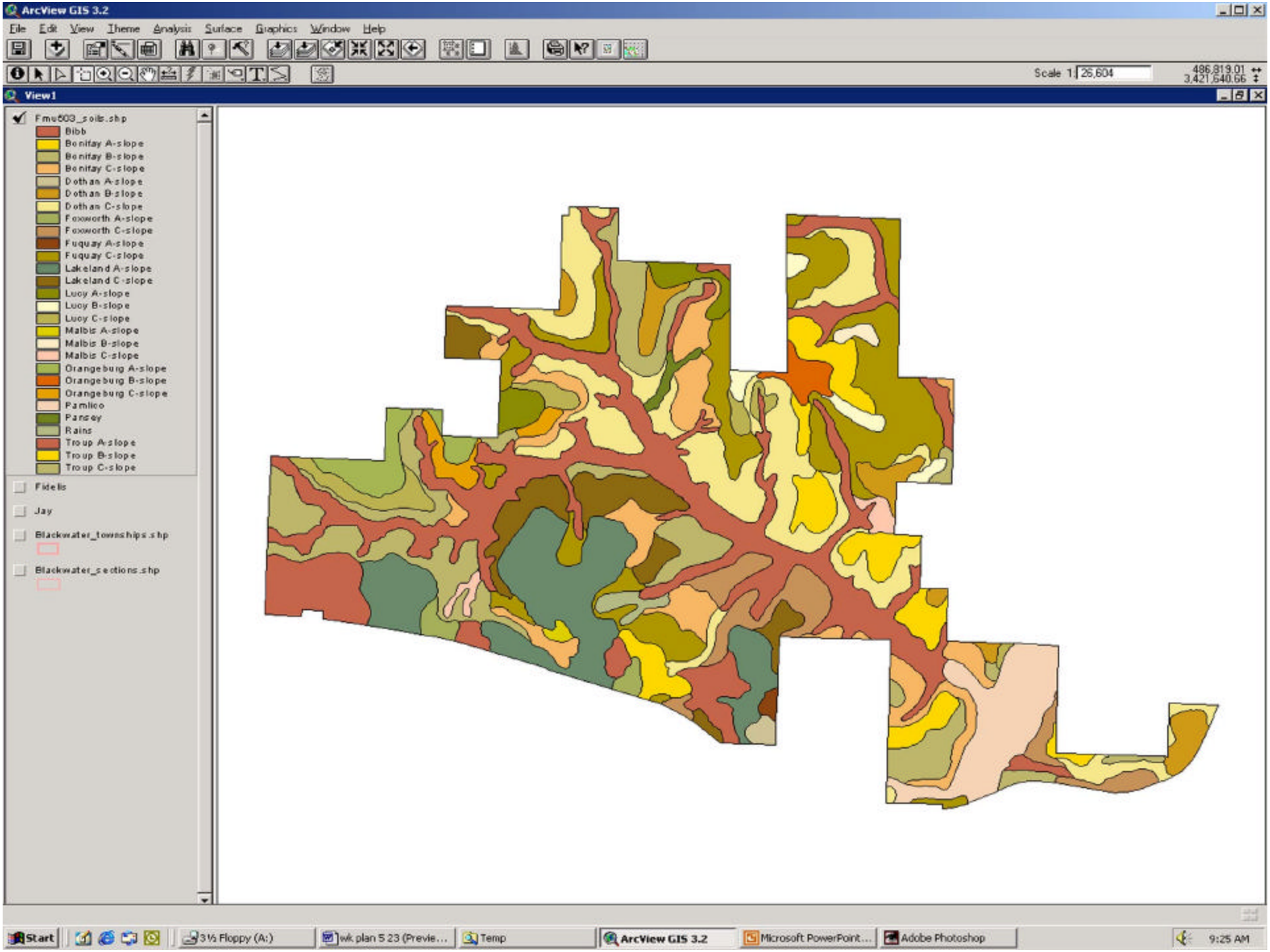
OK

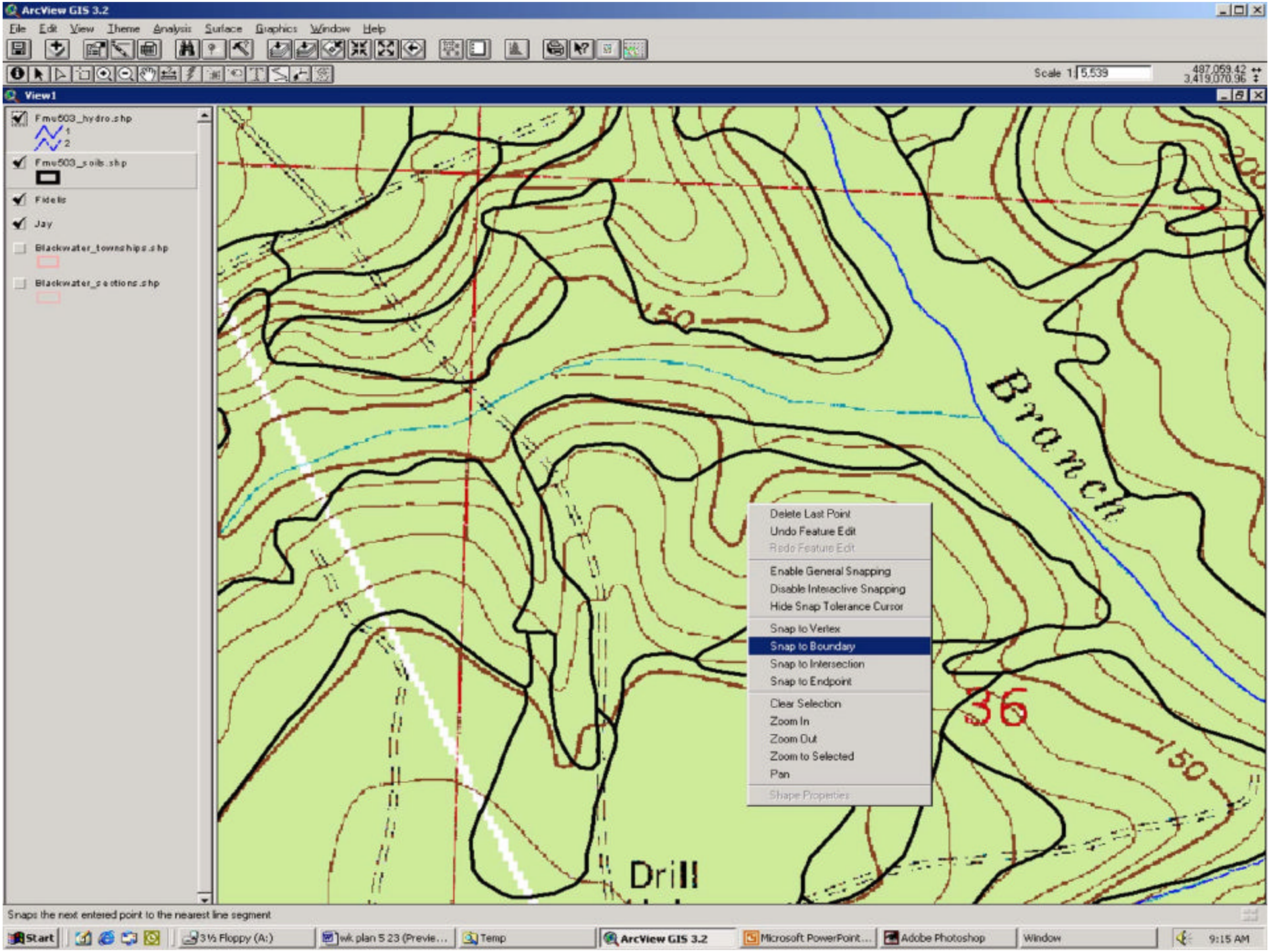
Cancel

Attributes of Fmu503_soils.shp

| Shape | Area | Perimeter | Fmu503c_ | Fmu503c_id | SMU |
|---|---|---|---|---|---|
| Polygon | 51630.607192 | 1329.569862 | 27 | 0 | DtC |
| Polygon | 51445.214445 | 1397.676803 | 28 | 0 | Bb |
| Polygon | 12988.187503 | 776.851160 | 29 | 0 | BtC |
| Polygon | 54270.825975 | 1228.064370 | 30 | 0 | LuC |
| Polygon | 85859.535705 | 1157.309047 | 31 | 0 | LuA |
| Polygon | 33279.422074 | 893.798152 | 32 | 0 | LuC |
| Polygon | 45740.599502 | 1208.485803 | 33 | 0 | LuB |
| Polygon | 36345.665916 | 909.296465 | 34 | 0 | OgC |
| Polygon | 176536.766493 | 2524.537196 | 35 | 0 | OgA |
| Polygon | 145682.866470 | 4420.901515 | 36 | 0 | TrC |
| Polygon | 52304.987697 | 1456.889204 | 37 | 0 | OgA |
| Polygon | 86571.486651 | 2261.139408 | 38 | 0 | OgC |
| Polygon | 47028.053523 | 1133.245054 | 39 | 0 | DtC |
| Polygon | 23592.116125 | 781.490030 | 40 | 0 | TrC |
| Polygon | 224213.940426 | 2735.577059 | 41 | 0 | DtC |
| Polygon | 20483.513761 | 984.825380 | 42 | 0 | DtC |
| Polygon | 24124.867486 | 870.119830 | 43 | 0 | TrC |
| Polygon | 87033.655302 | 1669.931583 | 44 | 0 | DtB |
| Polygon | 137424.029234 | 2800.265486 | 45 | 0 | LuC |
| Polygon | 25816.103084 | 788.771414 | 46 | 0 | LuB |
| Polygon | 40516.900385 | 1391.263195 | 47 | 0 | TrC |
| Polygon | 22243.117438 | 677.042222 | 48 | 0 | FgC |
| Polygon | 128298.004744 | 1584.586205 | 49 | 0 | TrC |
| Polygon | 113401.086913 | 1524.596608 | 50 | 0 | TrB |
| Polygon | 192358.953912 | 2367.743568 | 51 | 0 | LkC |
| Polygon | 173187.282495 | 3022.973513 | 52 | 0 | LkC |
| Polygon | 22964.296967 | 723.993429 | 53 | 0 | BtC |
| Polygon | 49504.281527 | 1275.620428 | 54 | 0 | MbC |
| Polygon | 90968.005852 | 1811.452986 | 55 | 0 | BtC |
| Polygon | 771244.516745 | 6717.843057 | 56 | 0 | LkA |
| Polygon | 45761.013537 | 1257.318730 | 57 | 0 | FgC |
| Polygon | 148814.106646 | 2110.544358 | 58 | 0 | TrC |
| Polygon | 354463.674883 | 7471.540734 | 59 | 0 | TrC |
| Polygon | 139273.242074 | 3187.261712 | 60 | 0 | DtC |
| Polygon | 124079.321964 | 1832.281737 | 61 | 0 | TrB |
| Polygon | 58556.554678 | 1114.590089 | 62 | 0 | LkC |
| Polygon | 321424.808040 | 2503.986403 | 63 | 0 | TsA |
| Polygon | 99225.275720 | 1663.274445 | 64 | 0 | FxC |
| Polygon | 238959.198503 | 2011.009637 | 65 | 0 | LkA |
| Polygon | 219377.827955 | 3881.937122 | 66 | 0 | FxC |
| Polygon | 180327.653445 | 3554.718873 | 67 | 0 | FgC |
| Polygon | 105301.161675 | 1669.274948 | 68 | 0 | BtC |
| Polygon | 98111.721365 | 1562.684836 | 69 | 0 | TrB |
| Polygon | 17173.887958 | 492.440638 | 70 | 0 | DtB |
| Polygon | 63859.010417 | 1741.281035 | 71 | 0 | Rn |
| Polygon | 33567.319773 | 1018.153667 | 72 | 0 | FgC |
| Polygon | 50847.595101 | 1062.370470 | 73 | 0 | FxA |
| Polygon | 63494.710039 | 1505.969427 | 74 | 0 | LkC |
| Polygon | 69446.079575 | 1789.709478 | 75 | 0 | BtC |
| Polygon | 46820.747674 | 1598.375631 | 76 | 0 | DtC |
| Polygon | 21358.957428 | 640.385243 | 77 | 0 | MbA |

Start | 3½ Floppy (A:) | wk plan 5 23 (Previe... | Temp | ArcView GIS 3.2 | Microsoft PowerPoint... | Adobe Photoshop | Field Calculator | 9:35 AM


ArcView GIS 3.2
File Edit View Theme Analysis Surface Graphics Window Help
Scale 1: 26,604
486,819.01
3,421,640.66
View1
Fmu503_soils.shp
Bibb
Bonifay A-slope
Bonifay B-slope
Bonifay C-slope
Dothan A-slope
Dothan B-slope
Dothan C-slope
Foxworth A-slope
Foxworth C-slope
Fuquay A-slope
Fuquay C-slope
Lakeland A-slope
Lakeland C-slope
Lucy A-slope
Lucy B-slope
Lucy C-slope
Malbis A-slope
Malbis B-slope
Malbis C-slope
Orangeburg A-slope
Orangeburg B-slope
Orangeburg C-slope
Pamlico
Pansey
Rains
Troup A-slope
Troup B-slope
Troup C-slope
Fidelis
Jay
Blackwater_townships.shp
Blackwater_sections.shp
Start
3½ Floppy (A:)
wk plan 5 23 (Previe...
Temp
ArcView GIS 3.2
Microsoft PowerPoint...
Adobe Photoshop
9:25 AM


ArcView GIS 3.2
File Edit View Theme Analysis Surface Graphics Window Help
Scale 1: 5,539
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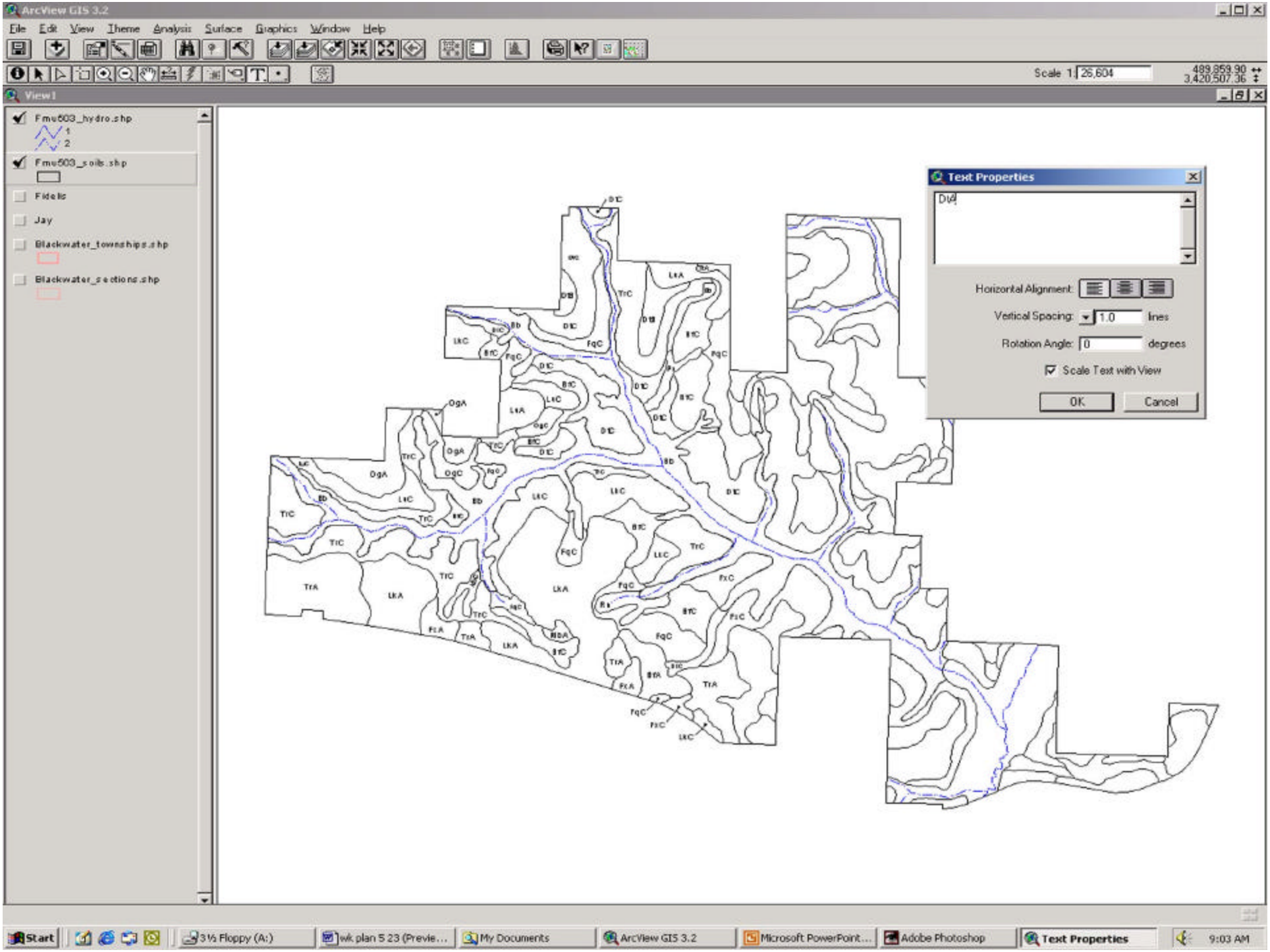
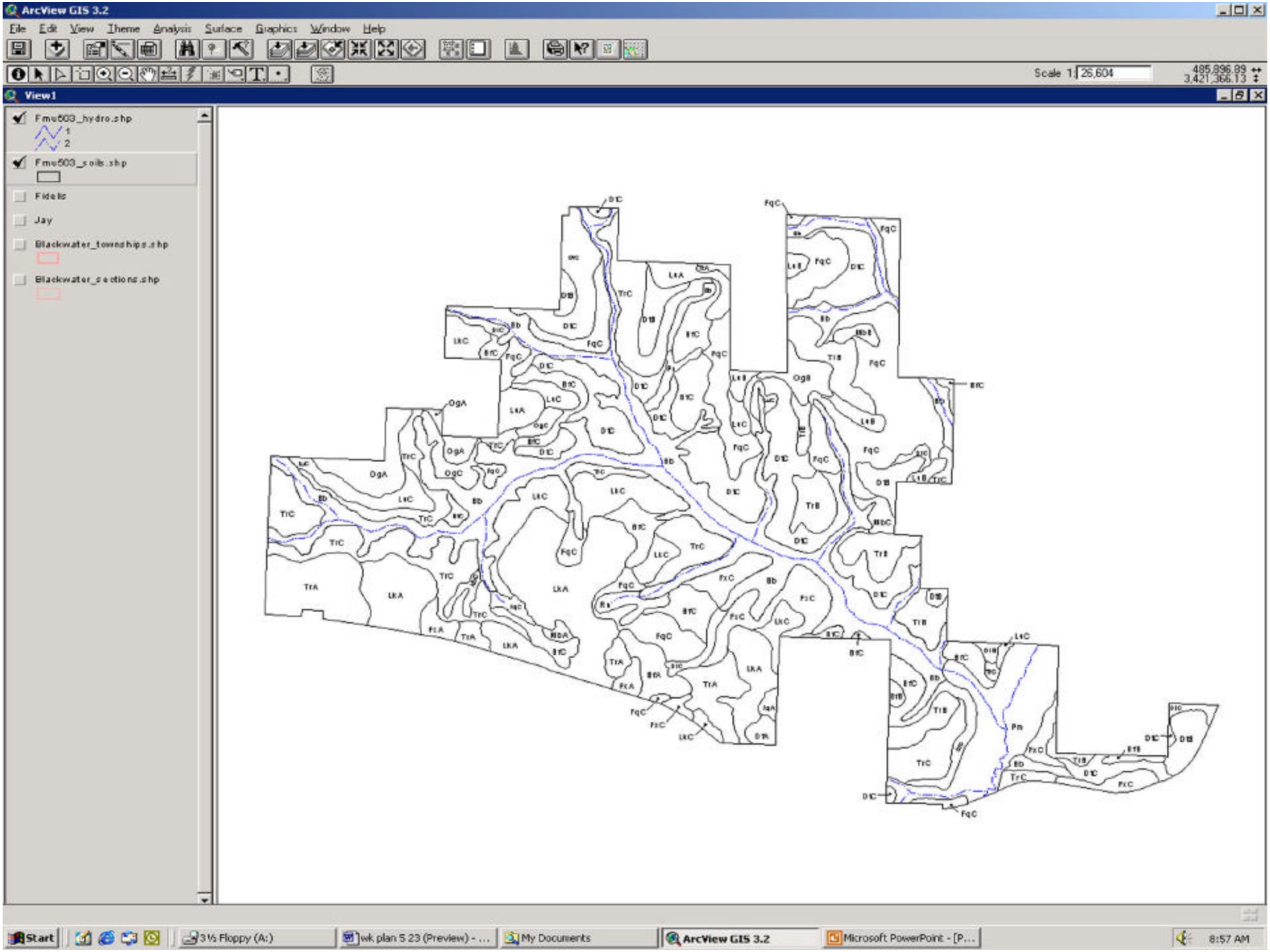
3,419,070.96
View1
Fmu503_hydro.shp
1
2
Fmu503_soils.shp
Fidelis
Jay
Blackwater_townships.shp
Blackwater_sections.shp
Branch
150
36
Drill
Delete Last Point
Undo Feature Edit
Redo Feature Edit
Enable General Snapping
Disable Interactive Snapping
Hide Snap Tolerance Cursor
Snap to Vertex
Snap to Boundary
Snap to Intersection
Snap to Endpoint
Clear Selection
Zoom In
Zoom Out
Zoom to Selected
Pan
Shape Properties
Snaps the next entered point to the nearest line segment
Start
3½ Floppy (A:)
wk plan 5 23 (Previe...
Temp
ArcView GIS 3.2
Microsoft PowerPoint...
Adobe Photoshop
Window
9:15 AM


ArcView GIS 3.2
File Edit View Theme Analysis Surface Graphics Window Help
Scale 1: 26,604
489,859.90
3,420,507.36
View1
Fmu503_hydro.shp
1
2
Fmu503_soils.shp
Fidelis
Jay
Blackwater_townships.shp
Blackwater_sections.shp
Text Properties
DIA
Horizontal Alignment:
Vertical Spacing: 1.0 lines
Rotation Angle: 0 degrees
Scale Text with View
OK
Cancel
Start
3½ Floppy (A:)
wk plan 5 23 (Previe...
My Documents
ArcView GIS 3.2
Microsoft PowerPoint...
Adobe Photoshop
Text Properties
9:03 AM


ArcView GIS 3.2
File Edit View Theme Analysis Surface Graphics Window Help
Scale 1: 26,604
485,896.89
3,421,366.13
View1
Fmu503_hydro.shp
1
2
Fmu503_soils.shp
Fidelis
Jay
Blackwater_townships.shp
Blackwater_sections.shp
Start
3½ Floppy (A:)
wk plan 5 23 (Preview) - ...
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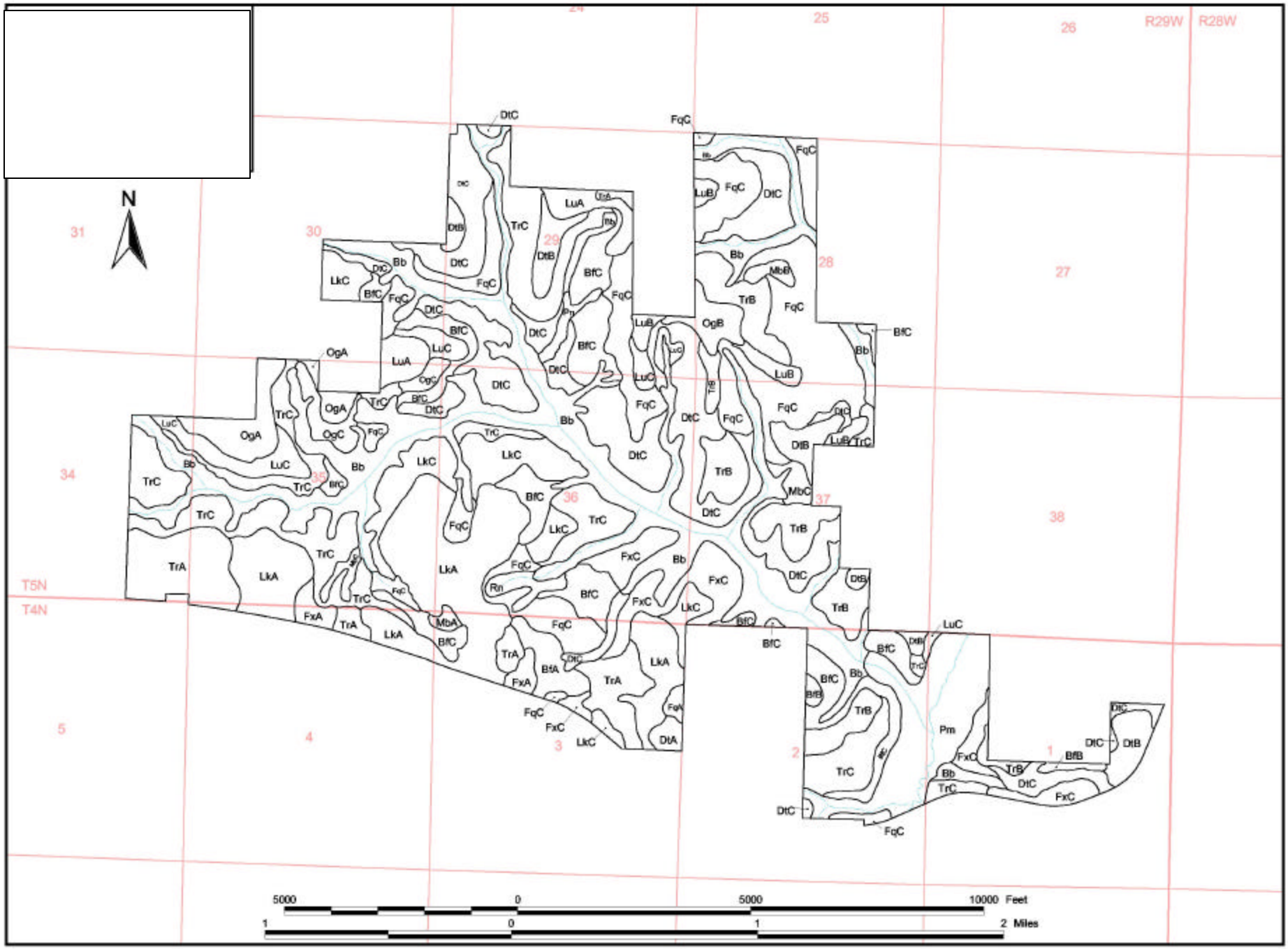
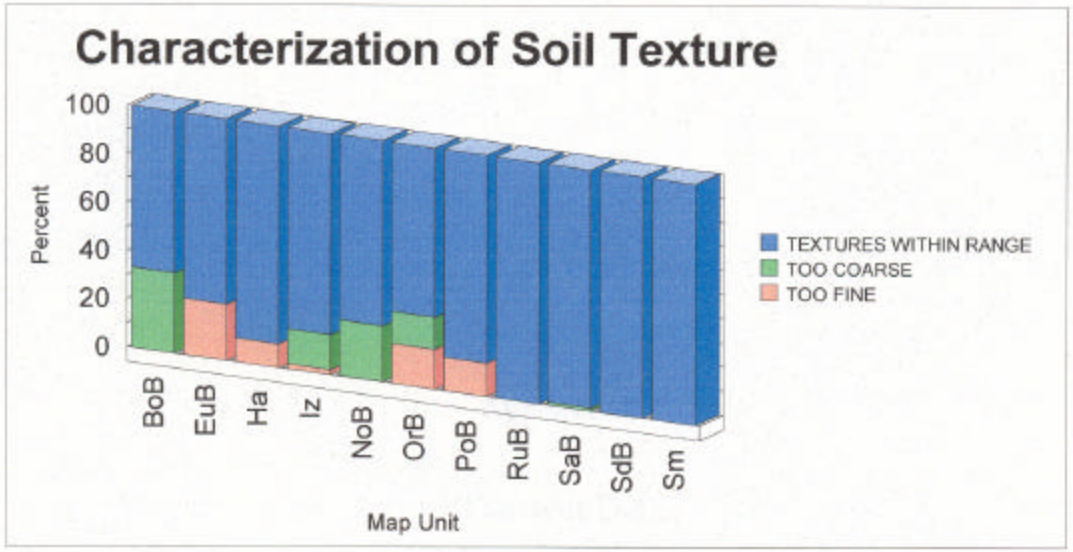
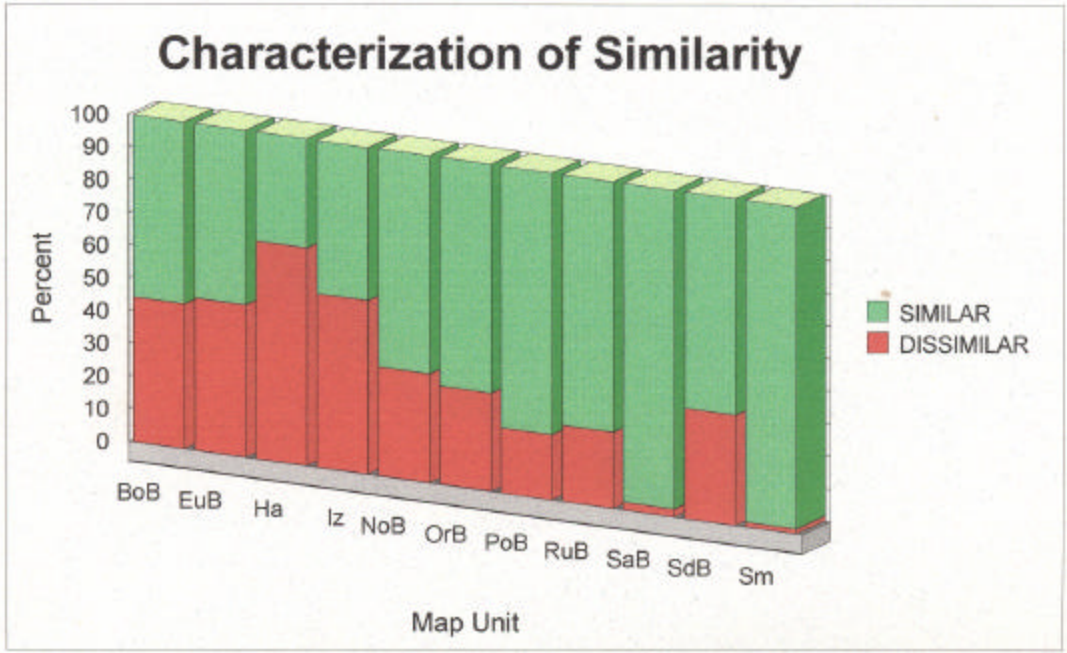
ArcView GIS 3.2
Microsoft PowerPoint - [P...
8:57 AM

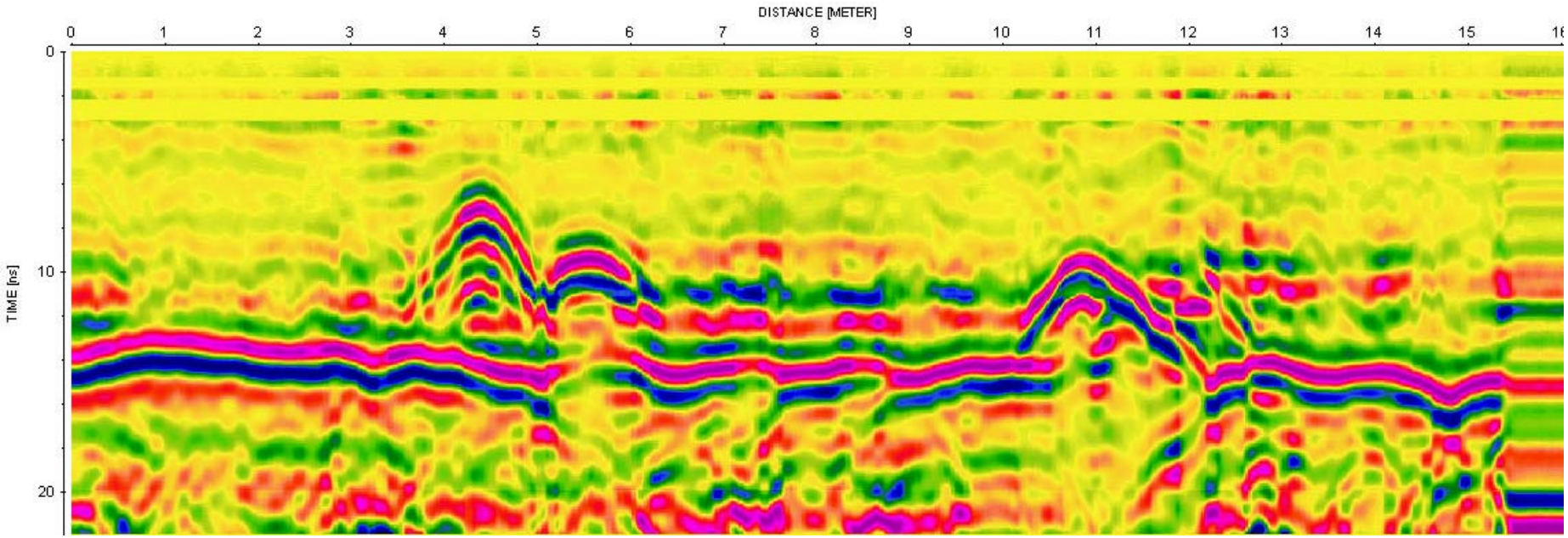


N
R29W
R28W
T5N
T4N
5000
0
5000
10000 Feet
1
0
1
2 Miles


Characterization of Soil Texture
Percent
100
80
60
40
20
0
BoB
EuB
Ha
Iz
NoB
OrB
PoB
RuB
SaB
SdB
Sm
Map Unit
TEXTURES WITHIN RANGE
TOO COARSE
TOO FINE


Characterization of Similarity
Percent
100
90
80
70
60
50
40
30
20
10
0
BoB
EuB
Ha
Iz
NoB
OrB
PoB
RuB
SaB
SdB
Sm
Map Unit
SIMILAR
DISSIMILAR

**GSSI SIR2000**
**Ground Penetrating Radar**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TIME [ns]
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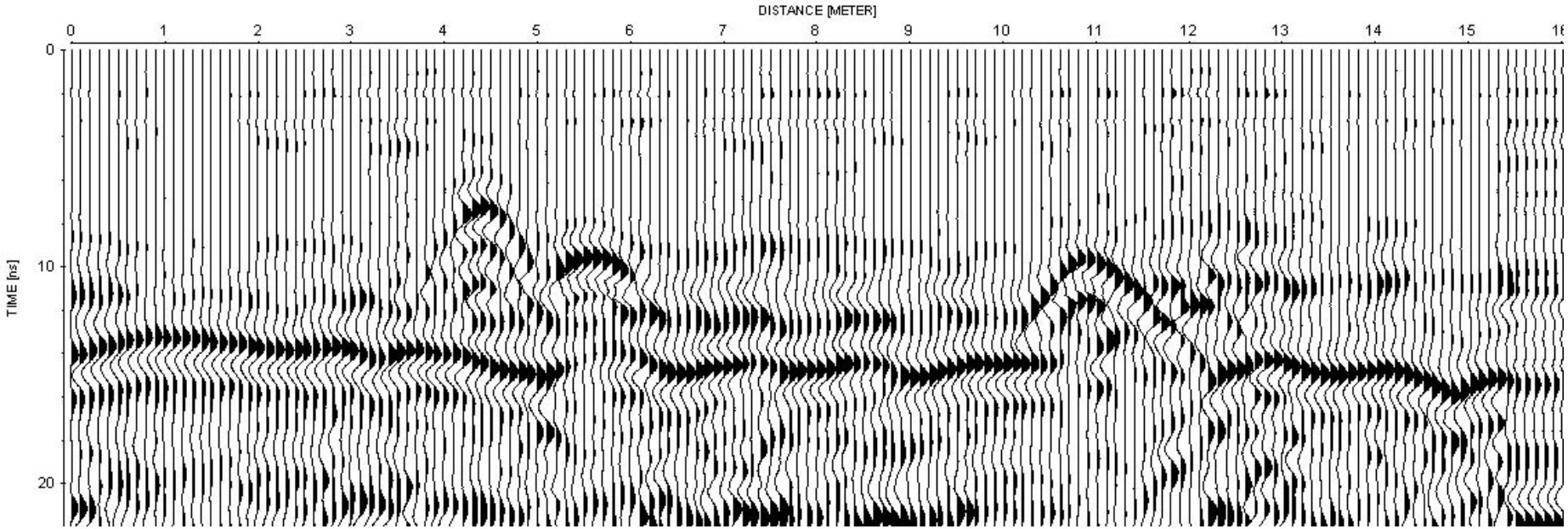
10
20


DISTANCE [METER]
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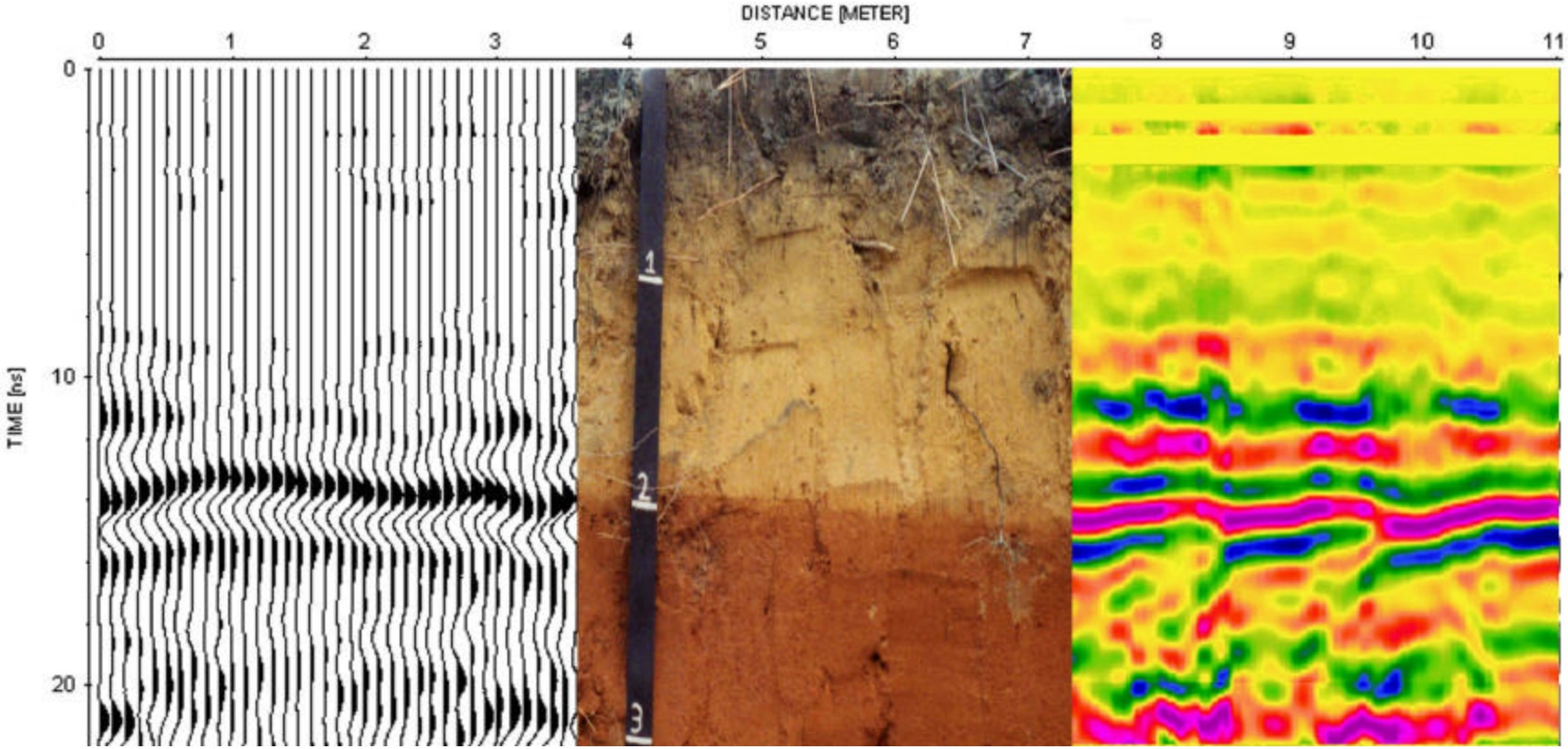
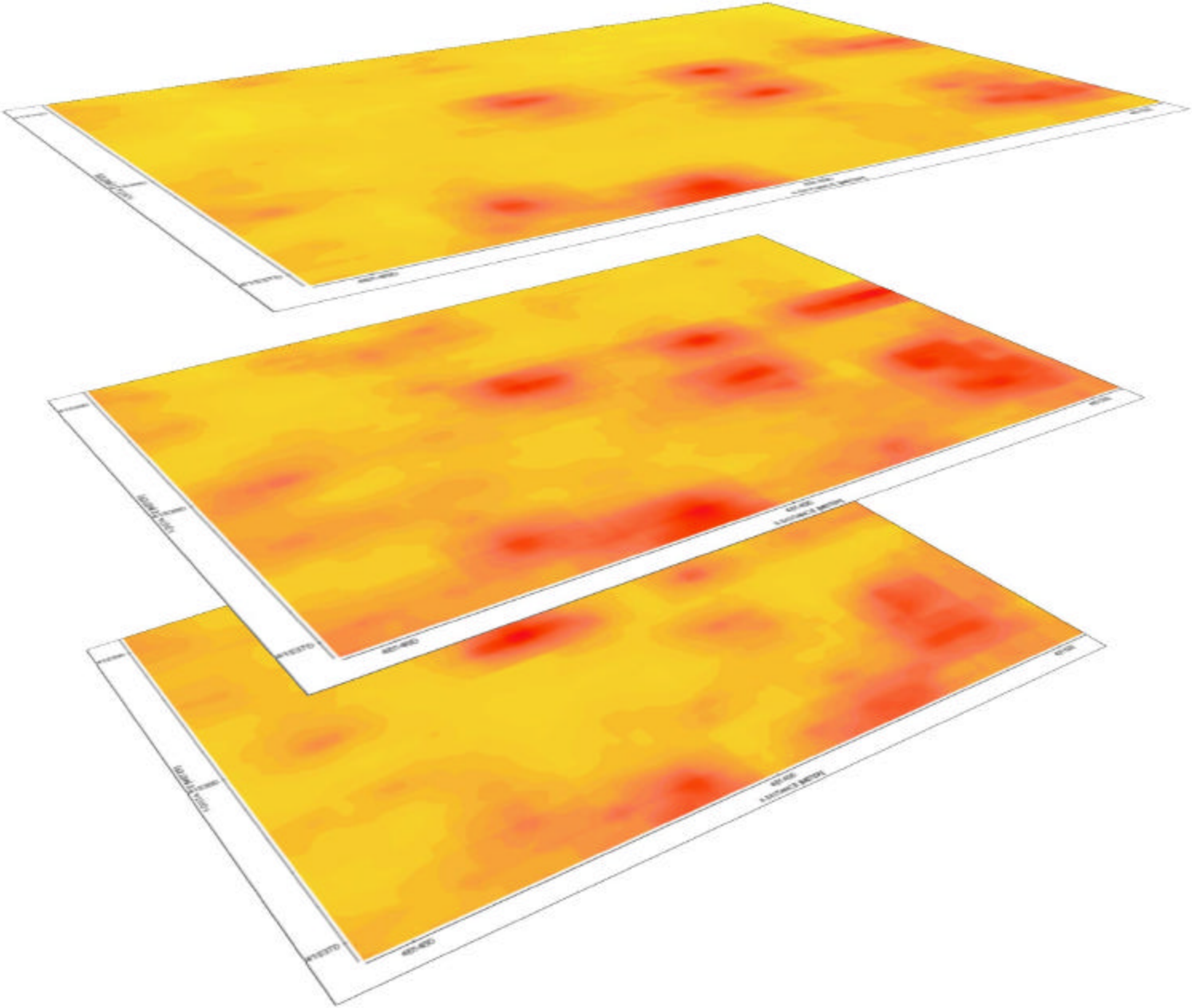
TIME [ns]
0
10
20


DISTANCE [METER]
0
1
2
3
4
5
6
7
8
9
10
11
TIME [ns]
0
10
20
1
2
3



# Code Based Systems

# vs

# Soil Series Based Systems

Focus on Landscapes

For

Final Output

More Emphasis on

Geology, Parent Material,

and

Geo Training

# Heads-Up Digitizing

GIS in **ALL** Soil Survey Offices

# Emerging Technologies

# Ask the Client