

Spatial Data Viewer (SDV) Version 1.1 Training

June, 2011

Instructor – Cathy Cole, GISP

Welcome & Introductions



- Greeting
- Incidentals
- Ground rules

SDV Training Schedule

- Objectives
 - Provide Hands-on training for SDV
- Estimated Time
 - Approximately 4 hours
- Method of Instruction
 - Show & Tell
 - FAQ
- Materials
 - PowerPoint
 - SDV Tool

Training Expectations

- SDV Training materials provided by GIS Unit
- SDV “hands-on” Training workshop
- Workshop demonstrates the SDV tool
- SDV Spokesperson
- Enhance ability to guide & support others
- Network

SDV Training Demonstration

SDV Training Outline

Introduction to SDV

- Display Window
- Contents Window
- Ribbons
- ArcExplorer button
- Map Groups
- Tools
- SDV Resource Center
- Scenario

SDV Training

SDV Components

ArcGIS Explorer

Tabs

Ribbon

Tools/Controls

ESRI help

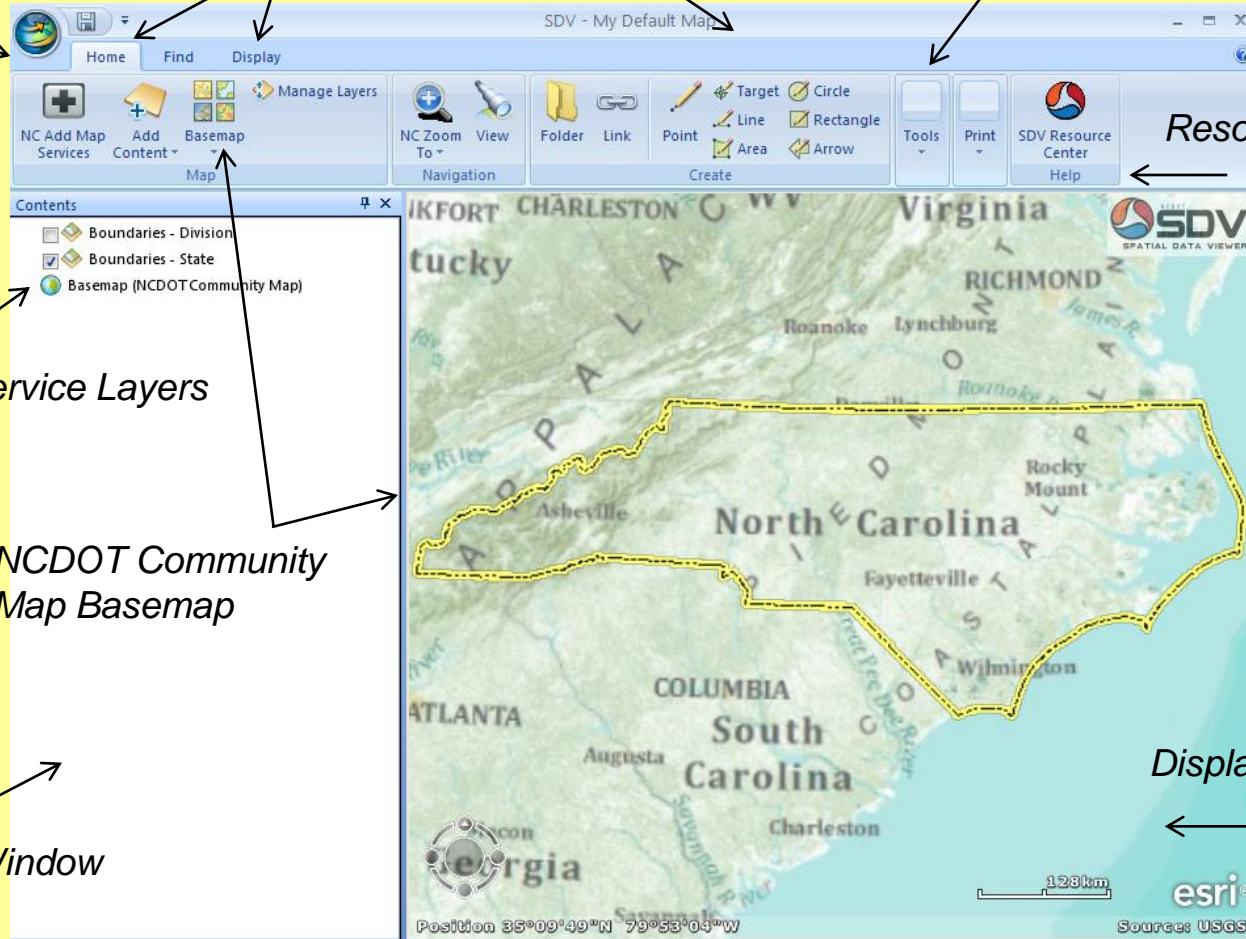
Resource Center

Preloaded Service Layers

NCDOT Community Map Basemap

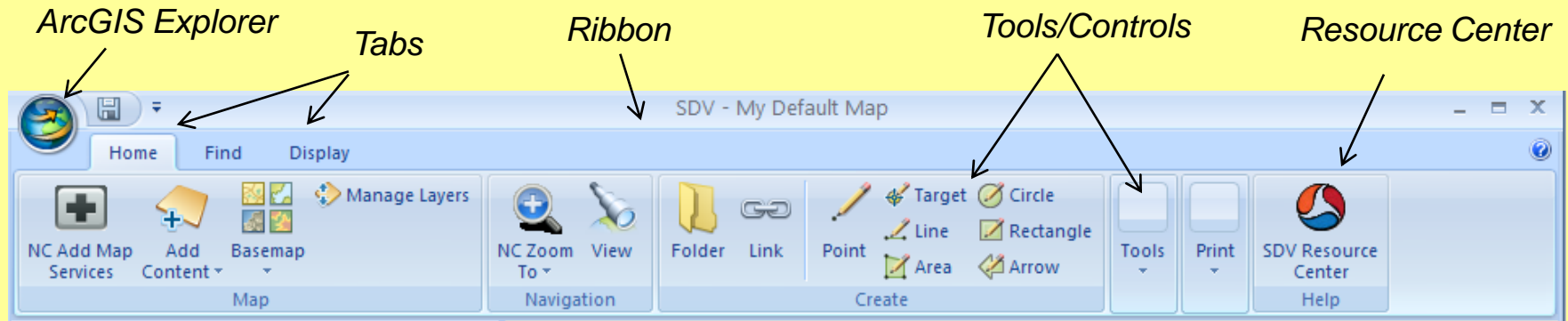
Contents Window

Display Window

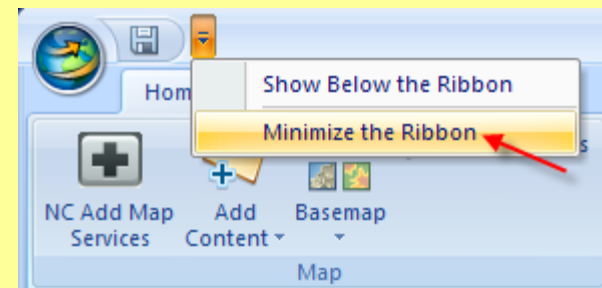


SDV Training

SDV Ribbon



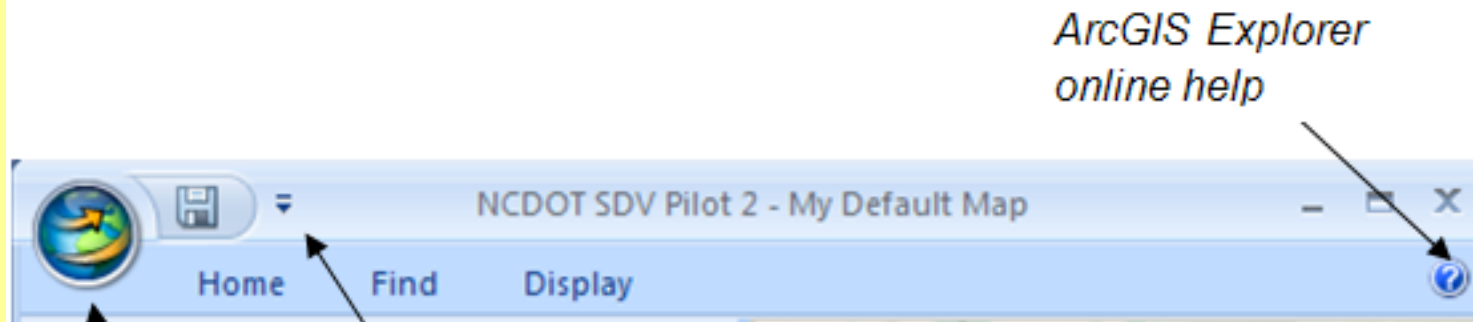
- To minimize The Ribbon right-clicking on it and select "Minimize the Ribbon," or select the "Minimize the Ribbon" option in the dropdown list to the right of the [ArcGIS Explorer button](#) and the save icon



SDV Training

SDV Ribbon

Other resources of interest along the Ribbon:



ArcGIS Explorer button

Quick Access Toolbar (only a Save icon is visible by default)

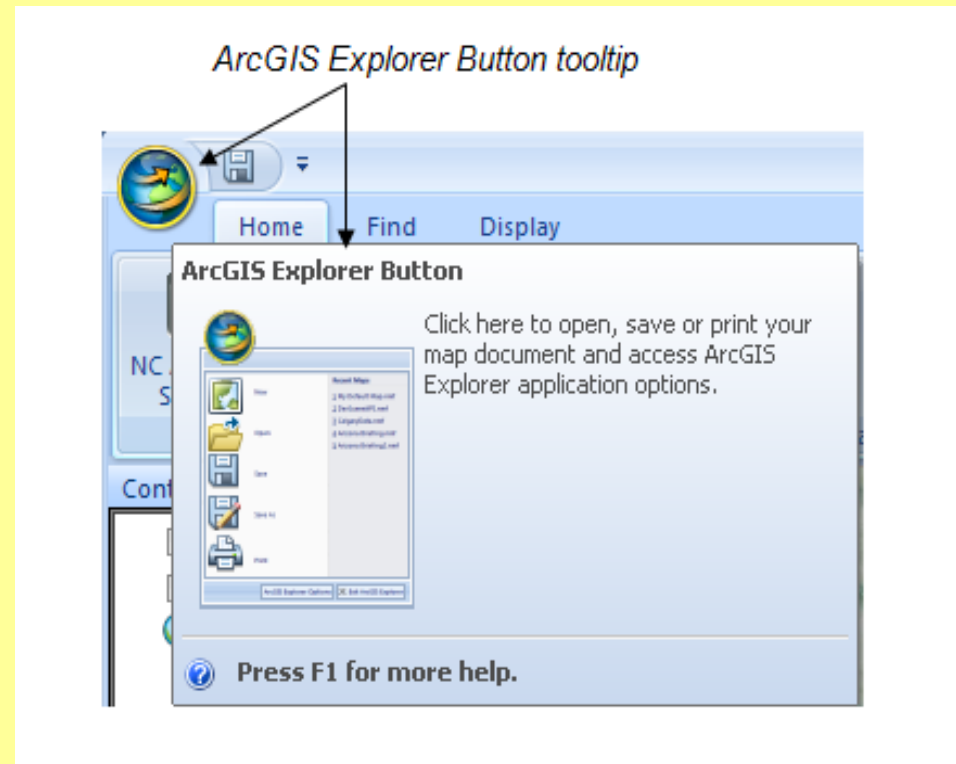
*ArcGIS Explorer
online help*

The Online Help button brings up ArcGIS Explorer online help.

SDV Training

ArcGIS Explorer Icon

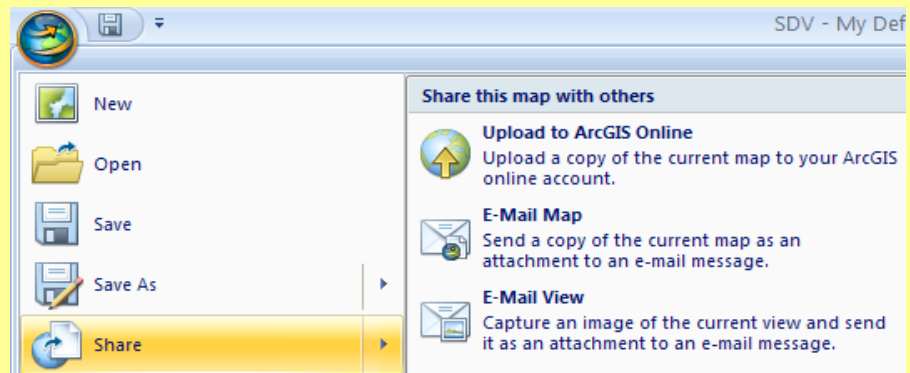
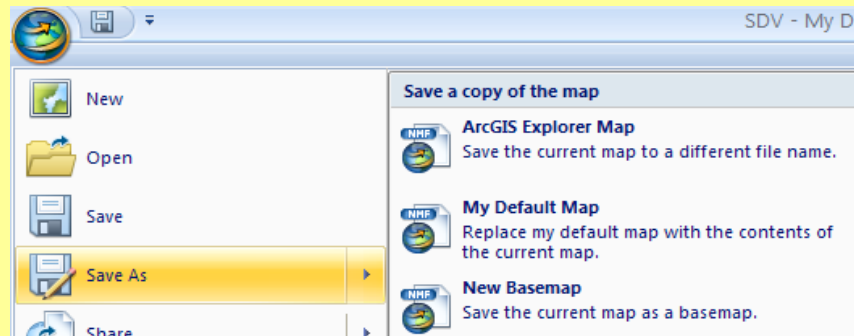
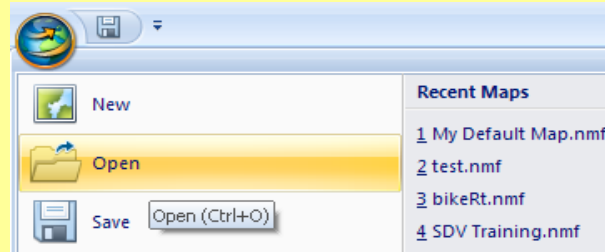
- New
- Open
- Save
- Save As
- ArcExplorer Map
- My Default Map
- New Basemap
- Share
- Upload ArcGIS Online
- E-mail map
- E-mail view
- Print



SDV Training

ArcGIS Explorer Icon

- Open
- Save As
- Share



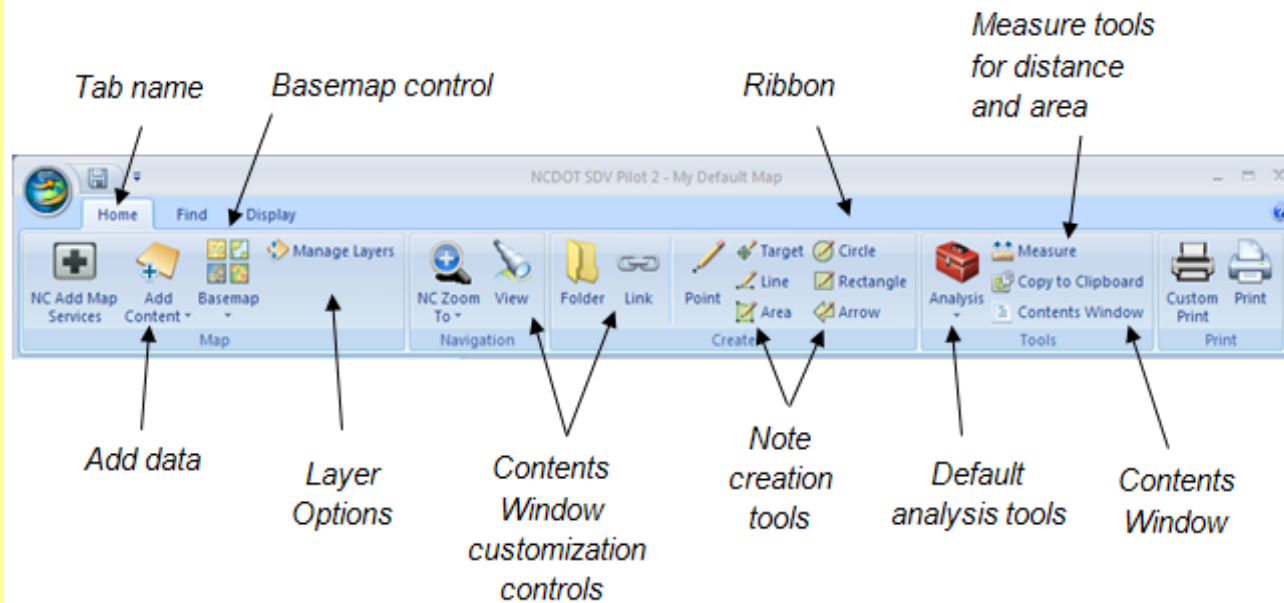
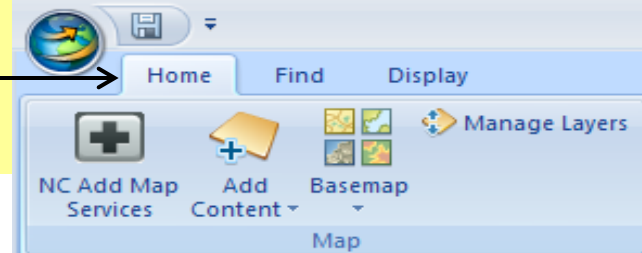
SDV Training

SDV Tabs

Home Tab

There are 3 initial tabs on the Ribbon:

Home tab, which carries tools and functions common to all datasets:



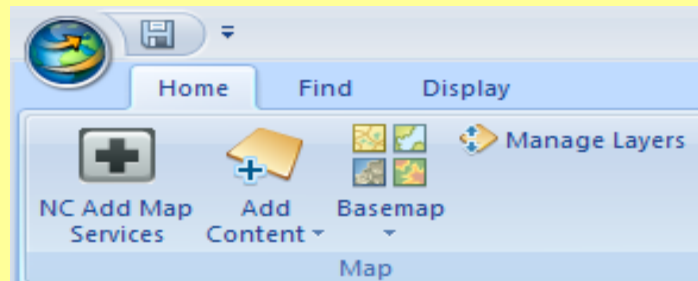
SDV Training

SDV Tabs

Home Tab

Map Group

- NC Add Map Services
 - Add SDV map services to the Contents Window
- Add Content
 - ArcGIS online, layers, Map Content files, KML files, GIS Services, shapefiles, raster data, Geodatabase, text files, GPS data, Image overlays
- Basemap
 - NCDOT, ESRI's World Topo, Bing, My Basemap
- Manage Layers
 - Change layer position, remove, clear cache

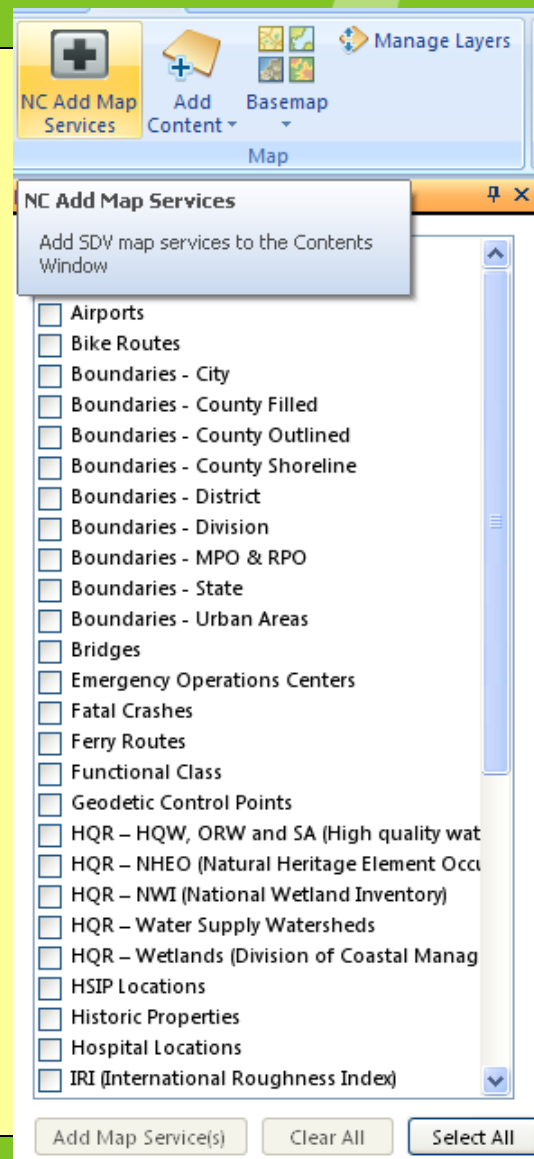


SDV Training

NC Add Map Services

- Over 40 map services
- New ones under development
- Guided by Business Unit
- SDV Resource Center announcements
- Send suggestions to:

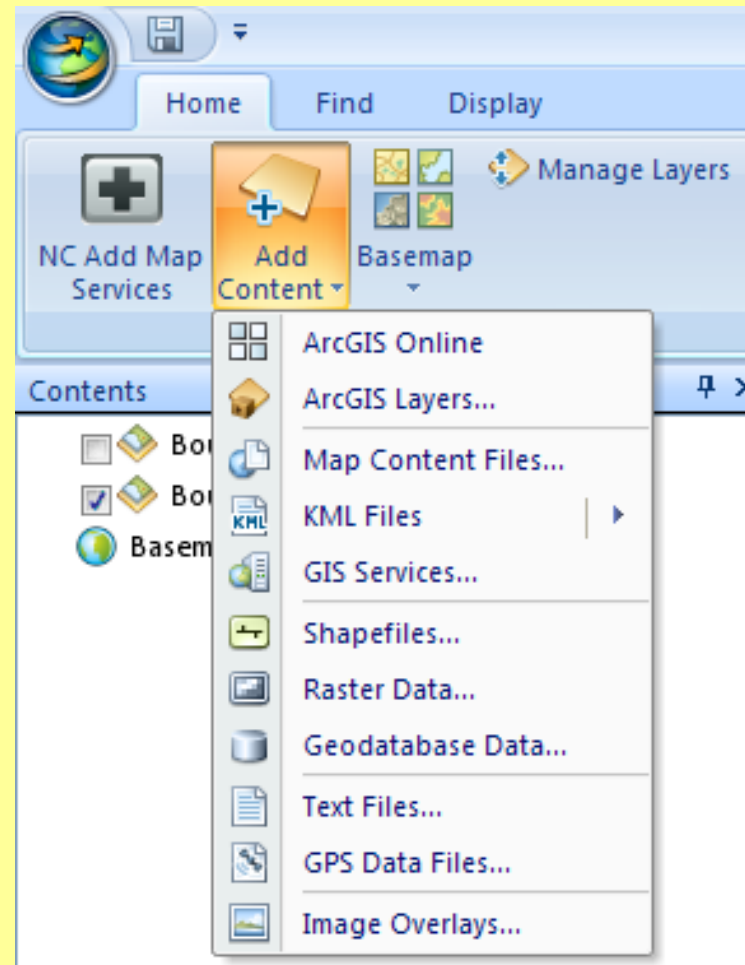
SDVHelp@ncdot.gov



SDV Training

Add Content

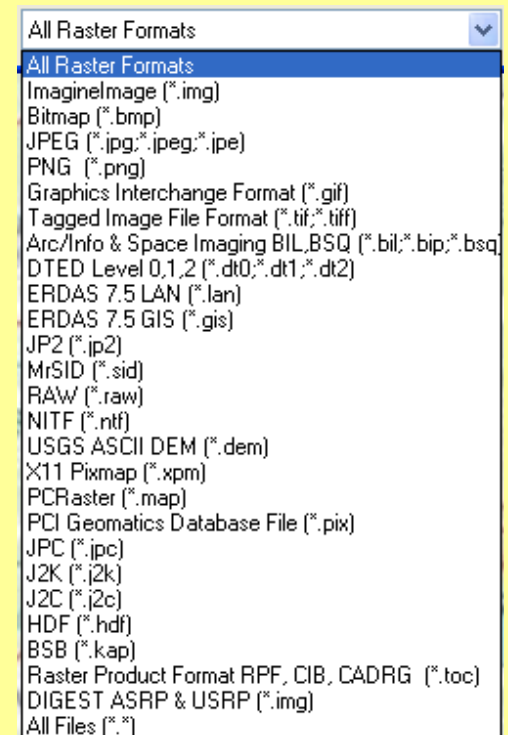
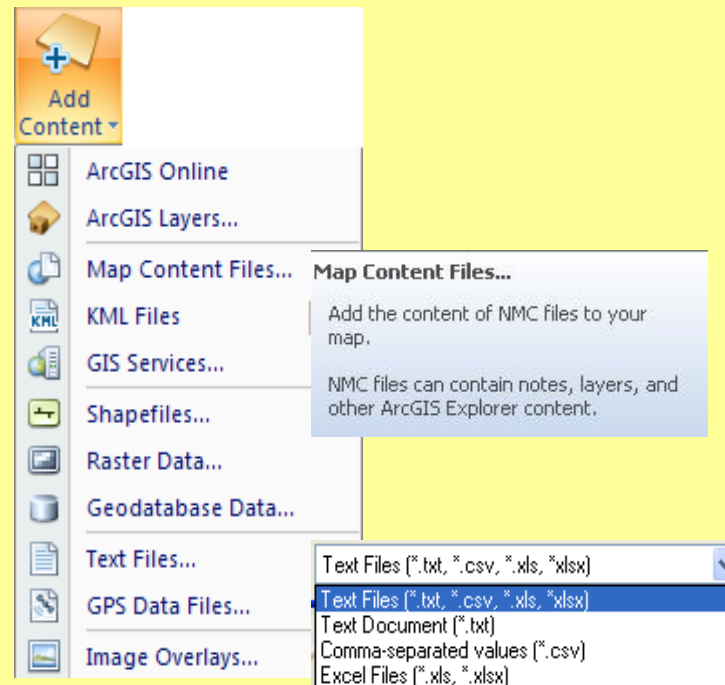
- ArcGIS layers
- KML Files
- Shapefiles
- Geodatabase
- Rasters
- Text
- GPS data
- Overlays



SDV Training

Add Content

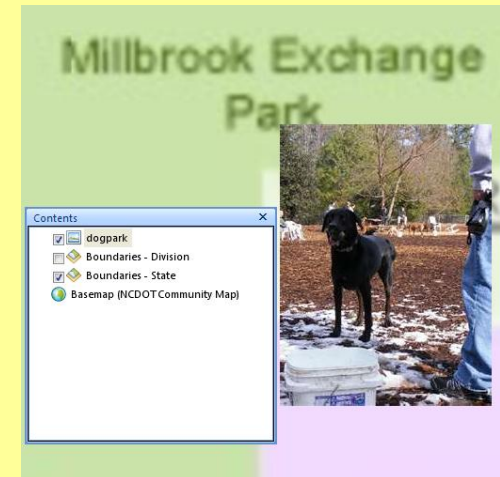
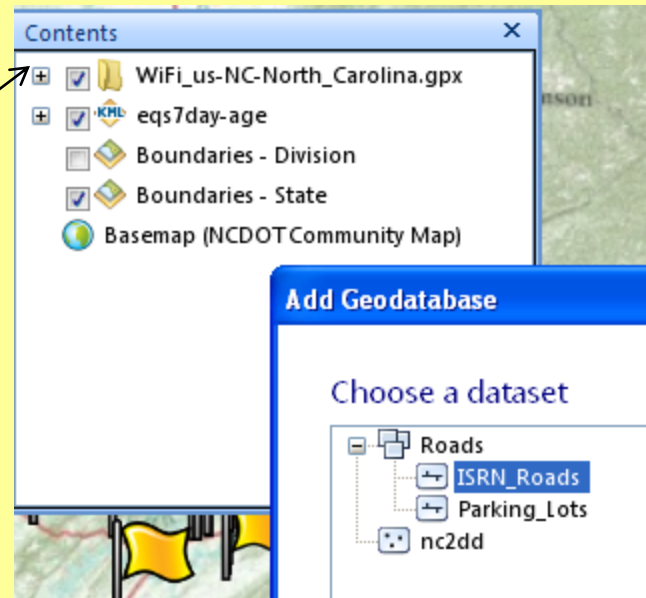
- ArcGIS layers
- KML Files
- Shapefiles
- Geodatabase
- Rasters
- Text
- GPS data
- Overlays



SDV Training

Add Content

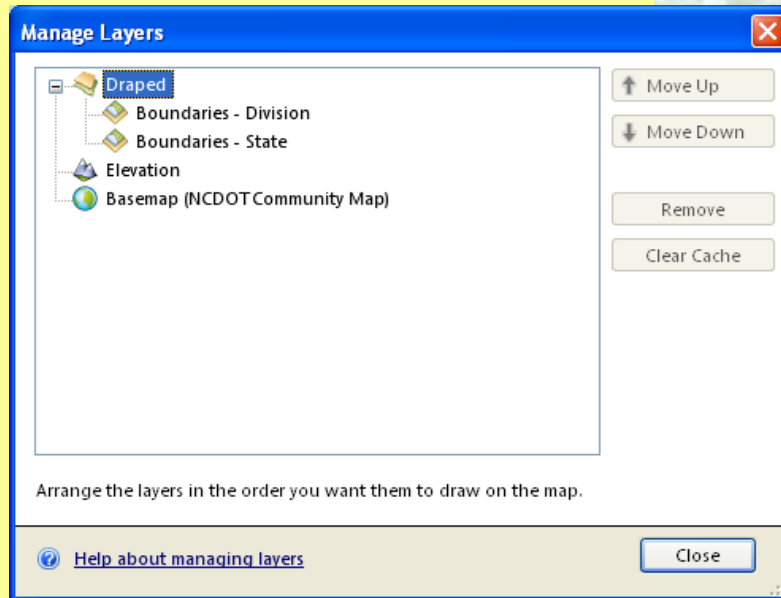
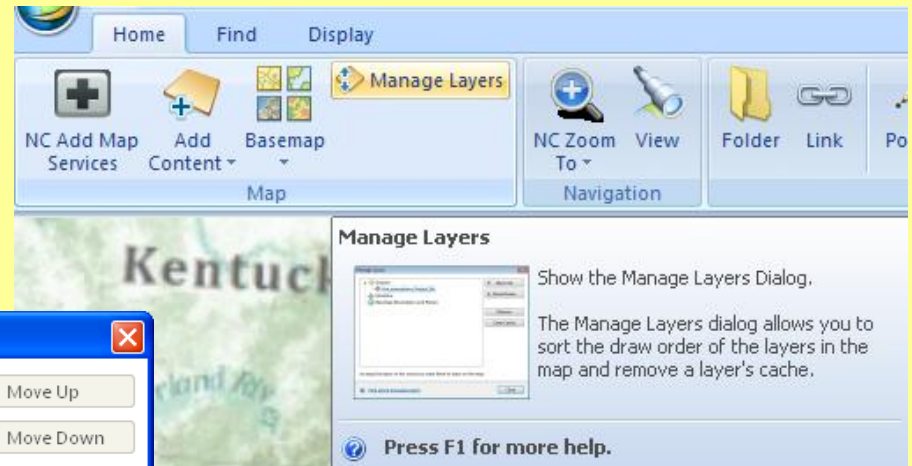
- ArcGIS layers
- KML Files (<http://earthquake.usgs.gov/earthquakes/shakemap/>)
- Shapefiles
- Geodatabase
- Rasters
- Text
- GPS data
- Overlays



SDV Training

Manage Layers

- Change draw order
- Remove cache



SDV Resource Center



SDV Help

- Hover over tool for description



SDV Resource Center

Go to the SDV Resource Center



SDV Home - Windows Internet Explorer provided by NC Dept. of Transportation

http://gisi01.dot.nc.net/SDVResourceCenter/

NCDOT INTRANET
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SDV
SPATIAL DATA VIEWER

Providing access to North Carolina transportation-related geospatial information

Home Services and Data Help Support Contact Us

Welcome to the SDV Resource Center

The Spatial Data Viewer (SDV) is the NCDOT GIS Unit's unique solution to providing GIS-oriented maps, data, and tools to organizations interested in transportation-related geospatial information.

SDV is a lightweight desktop application utilizing Esri's free ArcGIS Explorer software supported by internal and external maps and data. SDV's purpose is to serve as a viewer for the most current 2D datasets published by the NCDOT Enterprise. With SDV, the enterprise can obtain access to the data and maps important to the business of NCDOT.

Announcements

May 2, 2011
Map Services for DOT Storm Damage and Cleanup Areas are now available!

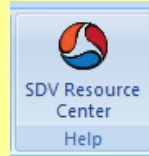
February 28, 2011
NCDOT GIS launches SDV V1.0!

Coming Soon

Training opportunities coming to your area soon!

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SDV Resource Center



Map Services


and


Map / GIS Service

Layer type served out to users via ArcGIS Server, based on potentially several different layers containing specific feature symbology, labeling, and scaled views that cannot be changed by the user.

Data Layers

- Map Service Layers
- Shapefiles
- Geodatabase layers
- ArcGIS layers
- ect..


NCDOT INTRANET
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NCDOT Portal


Providing access to North Carolina transportation-related geospatial information

Home Services and Data ▾ Help Support ▾ Contact Us

Services and Data

Map Services

Data Layers

Tool Data

Basemaps

Map Services

The following is a list of map services available in SDV.

****Click on link to view data layer metadata.**

Map Service	Description	Data Layers**
AADT Linear Segments	Statewide AADT Volume Groups segments	ROAD_AADT_EST_ARC
AADT Count Stations	Statewide average daily traffic count stations	ROAD_AADT_CNT_STATION_POINT
Airports	Statewide airport locations	AIRPORT_POINT
Bike Routes	Statewide bicycle routes and Local suitability/routes	ROAD_BICYCLE_ROUTE_ARC
Boundaries - City	Statewide municipal boundaries	BOUNDARY_MUNICIPAL_POLYGON
Boundaries - County Filled	Statewide county polygon boundaries	BOUNDARY_COUNTY_POLYGON
Boundaries - County Outlined	Statewide county line boundaries	BOUNDARY_COUNTY_ARC
Boundaries - County Shoreline	Statewide county polygon boundaries, with shoreline	BOUNDARY_COUNTY_SHRLN_POLYGON
Boundaries - District	Statewide NCDOT District boundaries	BOUNDARY_DOT_DISTRICT_POLYGON
Boundaries - Division	Statewide NCDOT Division boundaries	BOUNDARY_DOT_DIVISION_POLYGON

<http://gisi01.dot.nc.net/SDVResourceCenter/home.aspx>



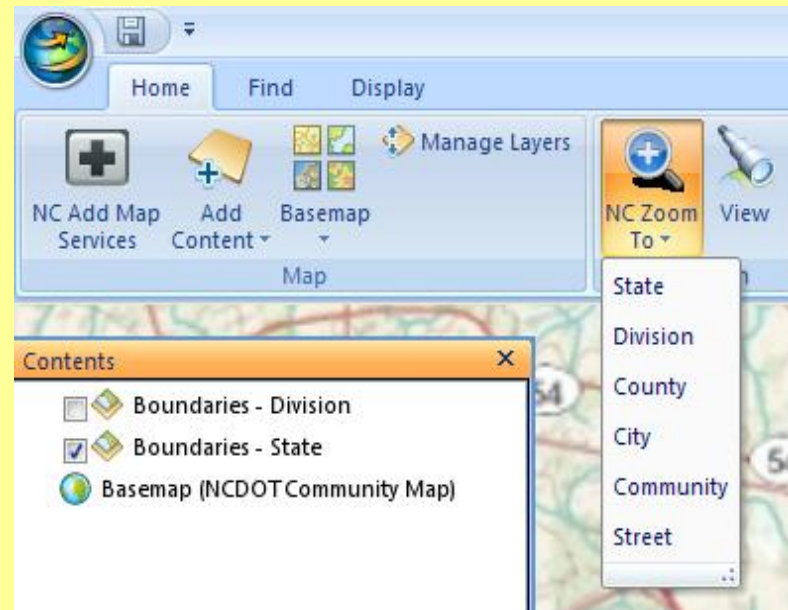
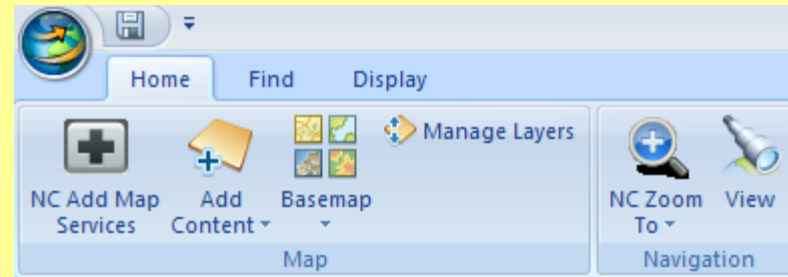
The screenshot shows a web browser window titled "SDV Training Support - Windows Internet Explorer provided by NC Dept. of Transportation". The address bar shows the URL "http://gisi01.dot.nc.net/SDVResourceCenter/Training.aspx". The browser interface includes a menu bar (File, Edit, View, Favorites, Tools, Help), a search bar with "Bing", and a toolbar with icons for home, print, and page settings. The page content features the "NCDOT INTRANET" header with the NCDOT logo and the text "NORTH CAROLINA DEPARTMENT OF TRANSPORTATION". Below this is the "SDV SPATIAL DATA VIEWER" logo and the tagline "Providing access to North Carolina transportation-related geospatial information". A navigation menu includes "Home", "Services and Data", "Help", "Support", and "Contact Us". The "Support" section is expanded, showing a list of links: "System Requirements", "FAQs", "Known Issues", and "Training" (highlighted in orange). The "Training" section contains the text "Obtain training materials used during the SDV training." and a link for "SDV Training Power Point Presentation". The footer of the page includes copyright information for NCDOT and links to "NCDOT Home", "NC.gov", "Accessibility", and "Privacy Statement".

SDV Training

Home Tab

Navigation Group

- NC Zoom To
 - State, Division, County, City, Community, Street
- View
 - Create a view of map to return to

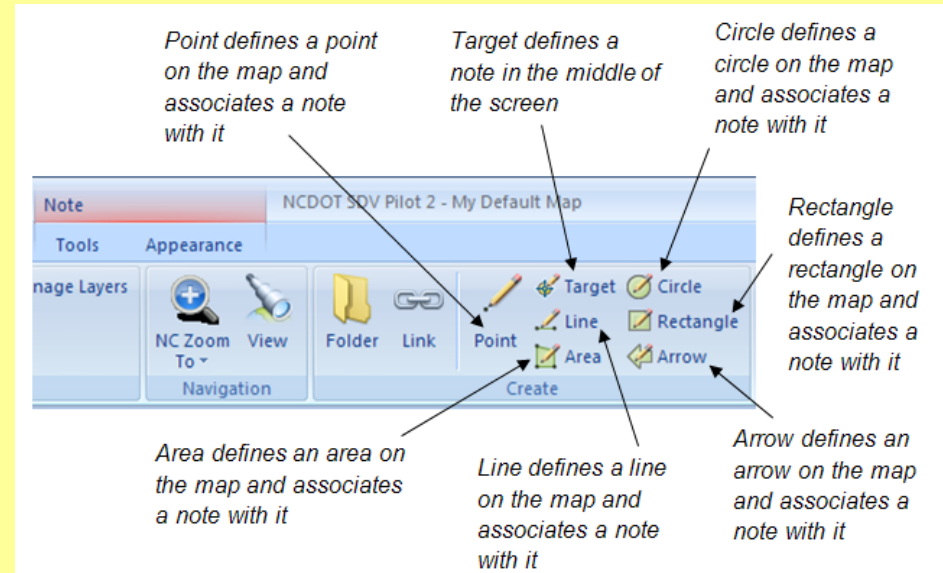
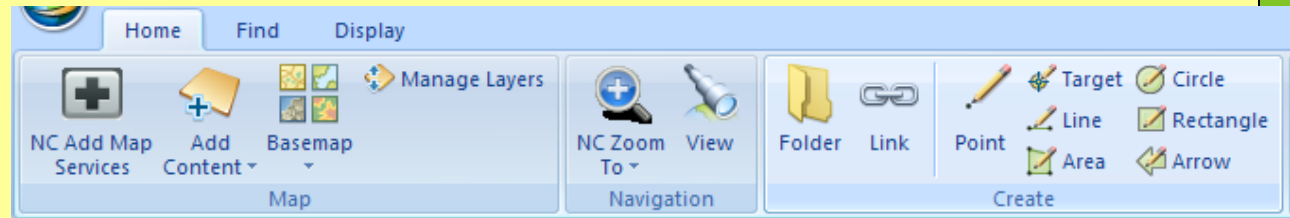


SDV Training

Home Tab

Create Group

- Folder
- Link
- Point
- Target
- Line
- Circle
- Rectangle
- Area



SDV Resource Center

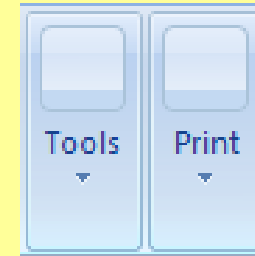
<http://gisi01.dot.nc.net/SDVResourceCenter/Notes.aspx>

SDV Training

Home Tab

Tools Group

- Analysis
- Measure
- Copy to Clipboard
- Contents Window



SDV Resource

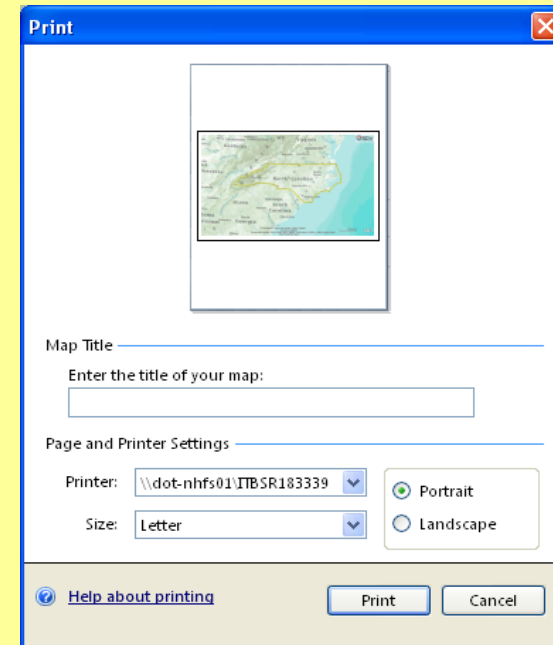
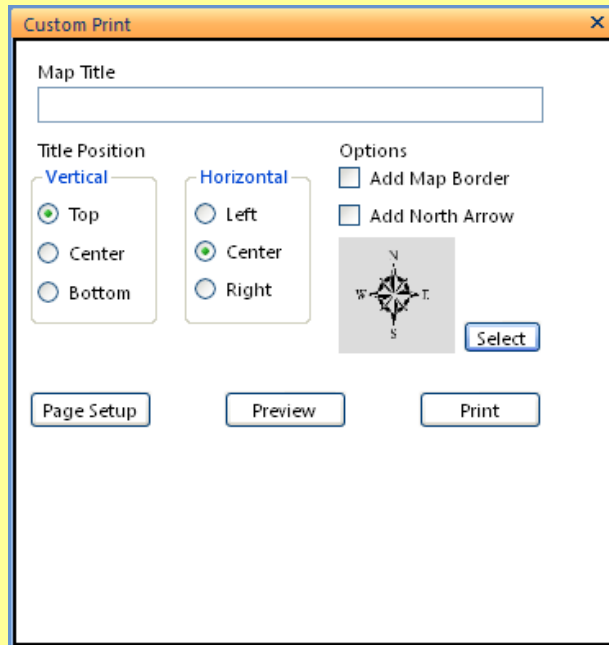
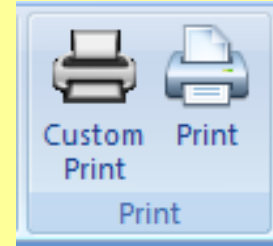
<http://gisi01.dot.nc.net/SDVResourceCenter/MeasureToolHighlights.aspx>

SDV Training

Home Tab

Print Group

- Custom Print - Map title, border, North Arrow
- Print - Map title, printer, size, orientation

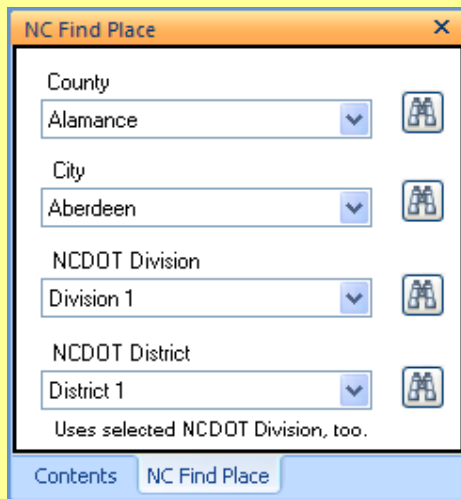


SDV Training

Find Tab

Find Group

- NC Find Place
 - County, City, NCDOT Division, NCDOT District
- NC Find Structure
 - County, Route, TIP Number, Bridge Number



NC Find Place

County
Alamance

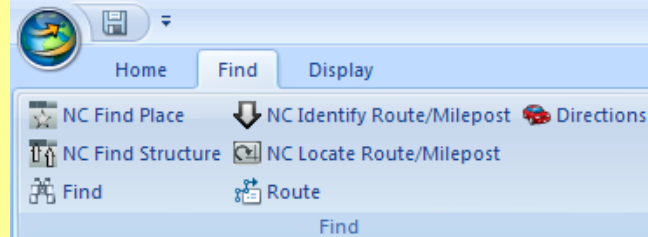
City
Aberdeen

NCDOT Division
Division 1

NCDOT District
District 1

Uses selected NCDOT Division, too.

Contents NC Find Place



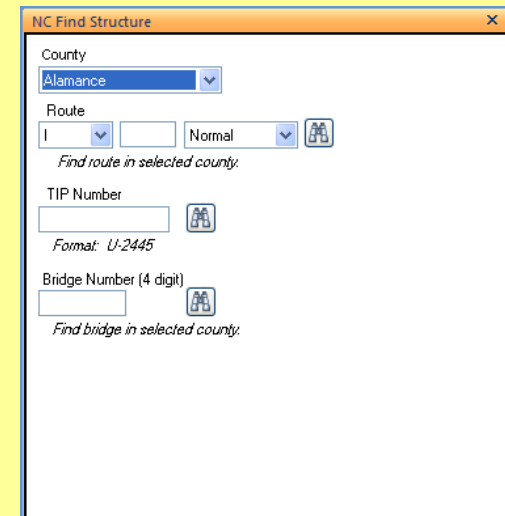
Home Find Display

NC Find Place NC Identify Route/Milepost Directions

NC Find Structure NC Locate Route/Milepost

Find Route

Find



NC Find Structure

County
Alamance

Route
I Normal

Find route in selected county.

TIP Number

Format: U-2445

Bridge Number (4 digit)

Find bridge in selected county.

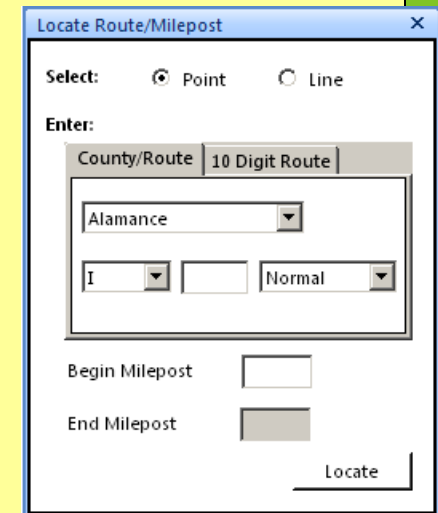
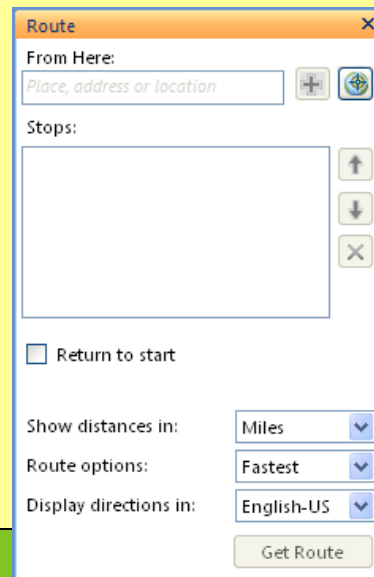
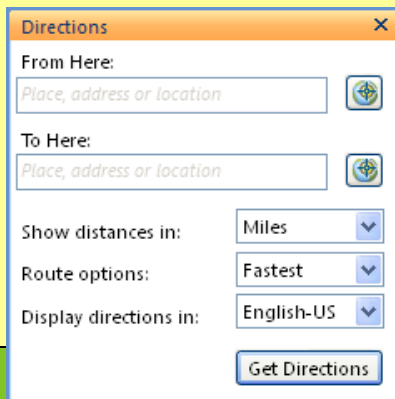
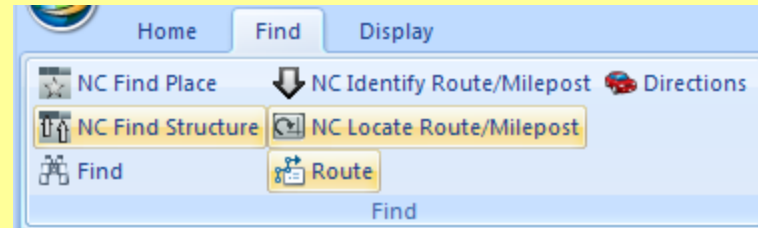
SDV Training

Find Tab

Find Group - continued

Find

- NC Identify Route/Milepost
 - provides a mechanism to identify a route and its milepost information at a specified point
- NC Locate Route/Milepost
 - Route
 - Directions

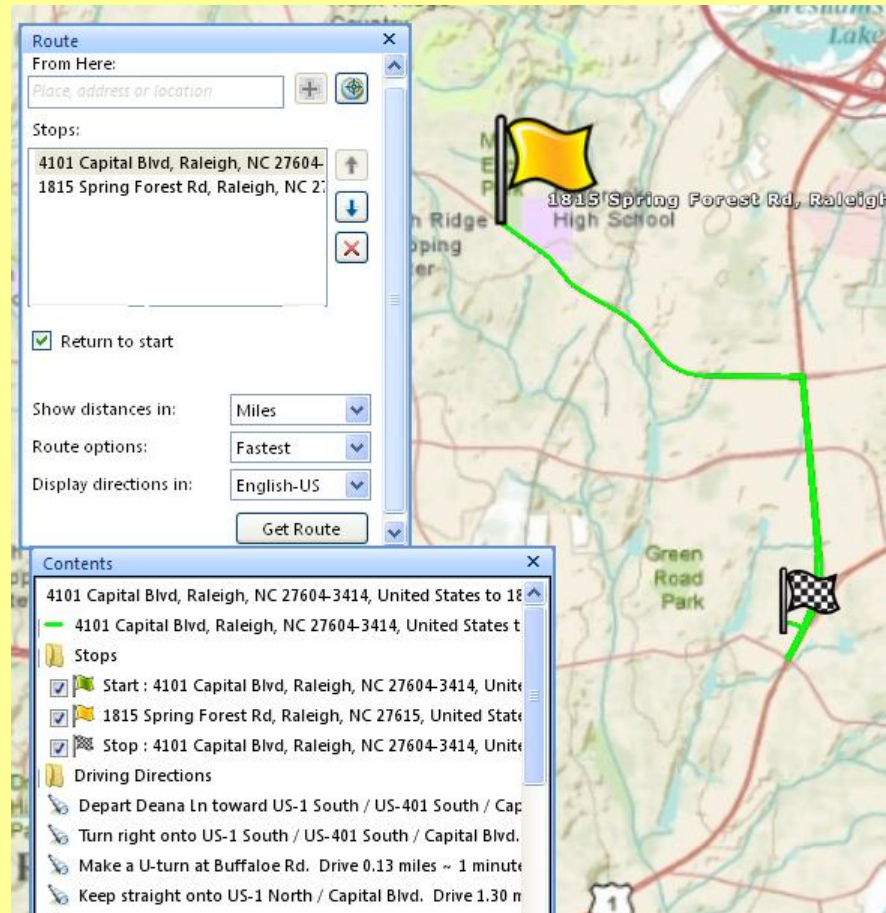
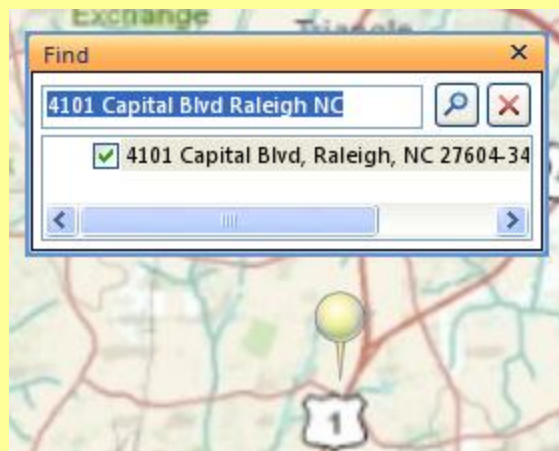


Find Tab

Find Group - continued

Find

- Find
- Find Route

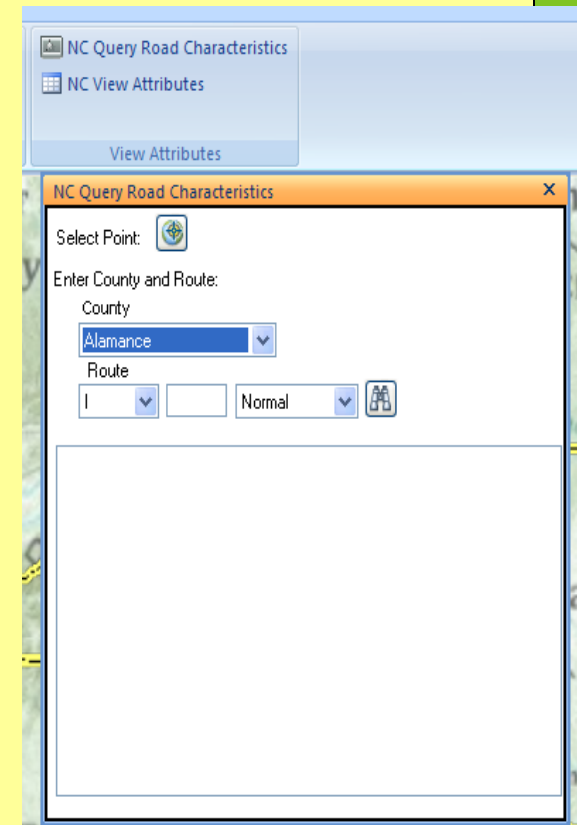
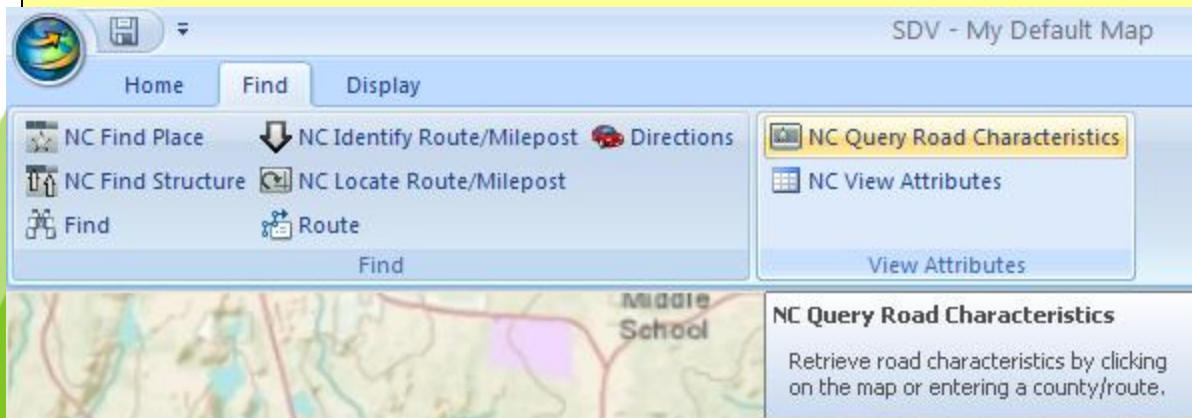


SDV Training

Find Tab

View Attributes Group

- NC Query Road Characteristics
 - Retrieve road characteristics
- NC View Attributes
 - View feature layer attributes

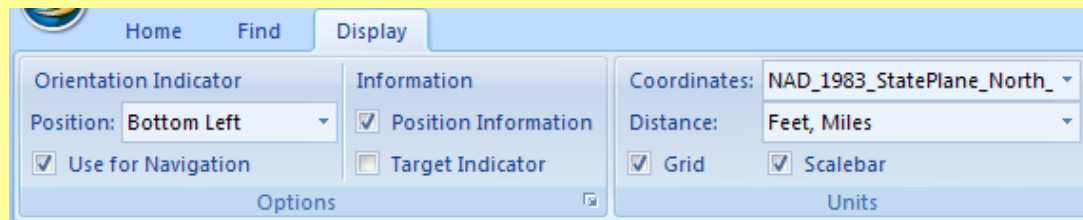


SDV Training

Display Tab

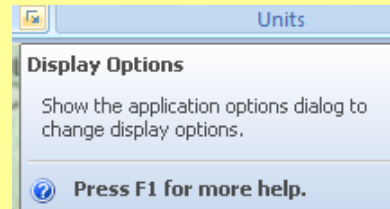
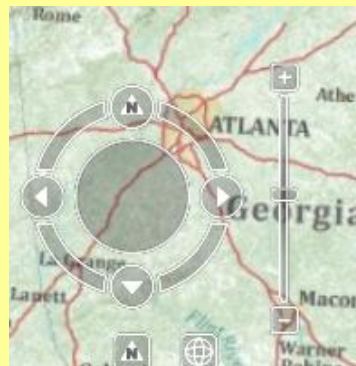
Options Group

- Orients the zoom/pan tool to move around the Display Window



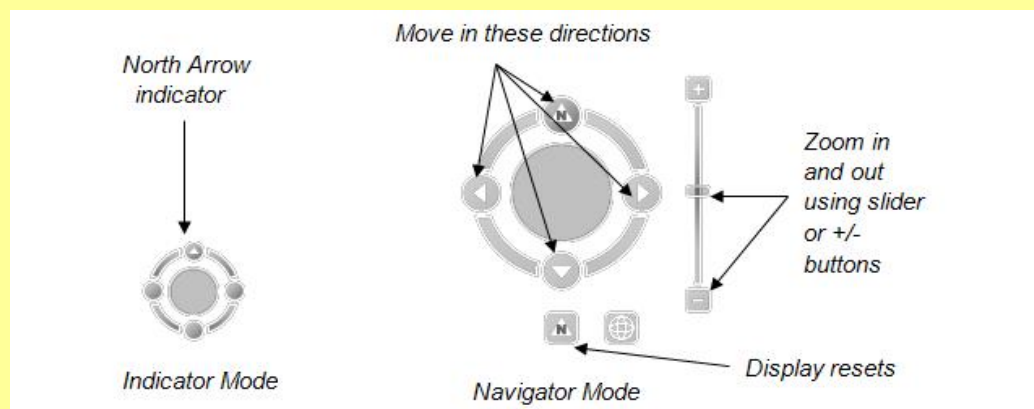
Units Group

- Select coordinate system, units of measurement
 - Select Grid, Scalebar

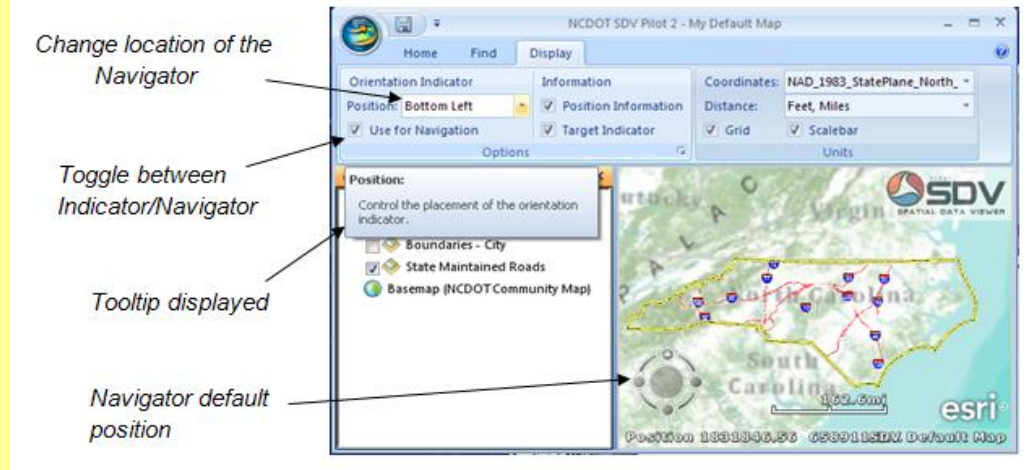


SDV Training

Display Tab Navigator



The Navigator can be repositioned and turned on or off using controls under the Display tab.



Change location of the Navigator

Toggle between Indicator/Navigator

Tooltip displayed

Navigator default position

NC DOT SDV Pilot 2 - My Default Map

Home Find Display

Orientation Indicator

Information

Coordinates: NAD_1983_StatePlane_North

Distance: Feet, Miles

Position: Bottom Left

Use for Navigation

Position Information

Target Indicator

Grid

Scalebar

Units

Options

Position:

Control the placement of the orientation indicator.

- Boundaries - City
- State Maintained Roads
- Basemap (NC DOT Community Map)

SDV SPATIAL DATA VIEWER

esri

Position 1881346.56 -65301181M Default Map

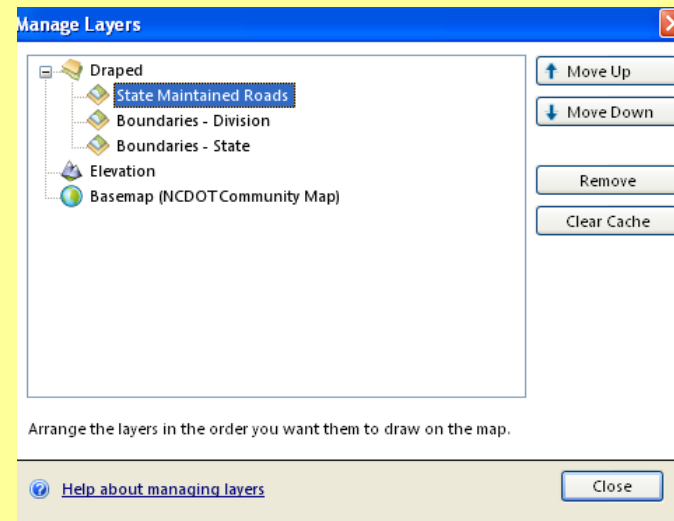
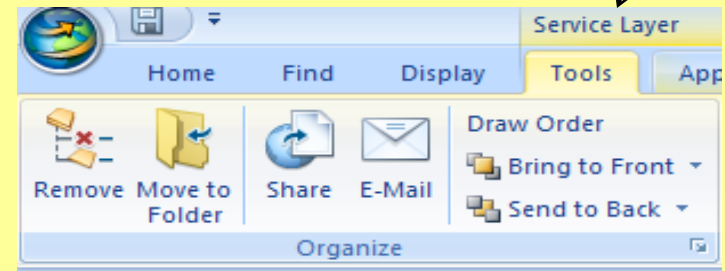
SDV Training

Tools Tab

Visible when Layers or Notes are selected in Contents Window

Organize Group

- Remove
- Move to Folder
- Share
- E-Mail
- Draw Order
 - Bring to Front
 - Send to Back

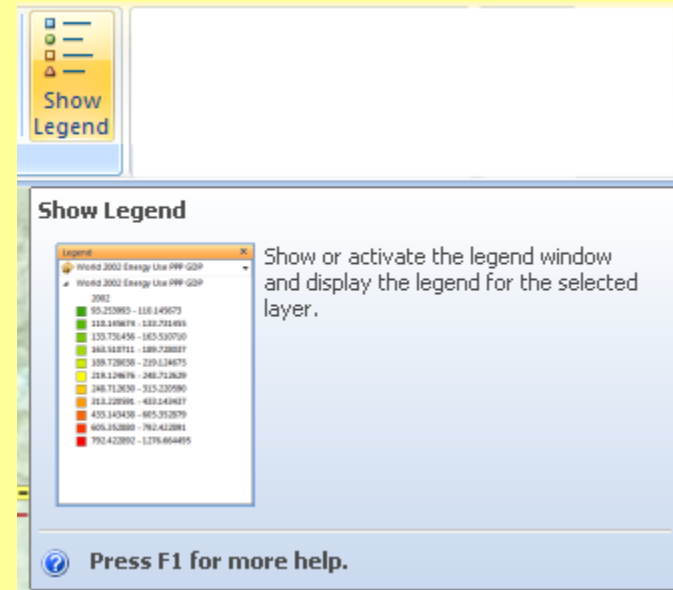


SDV Training

Tools Tab

View Group

- Go To
 - Zooms to selected content layer
- Set Default View
 - Bookmarks the map
- Show Legend
 - Shows features of selected content layer



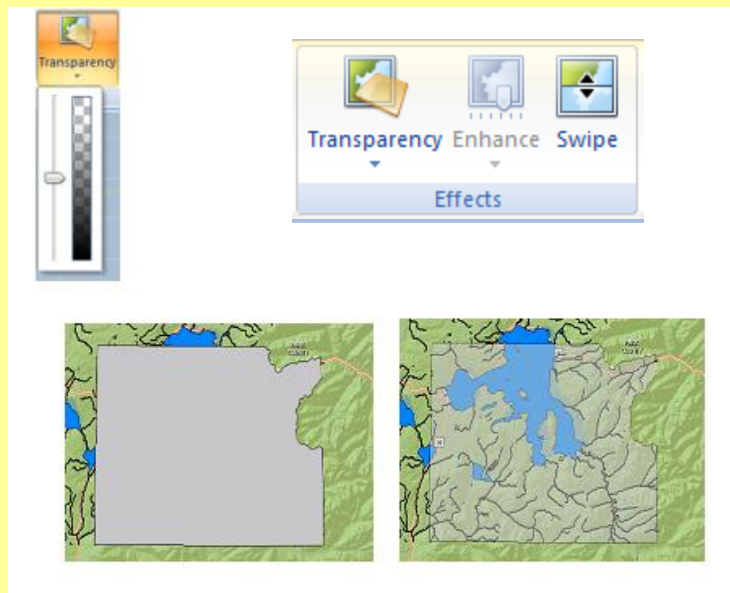
SDV Training

Tools Tab

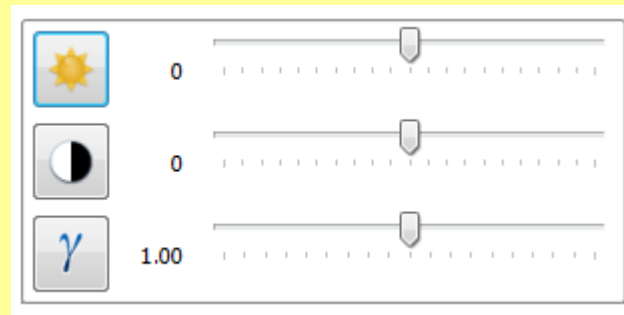
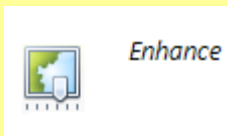
Effects Group

- Transparency
- For selected layer

(Also accessed from Appearance tab)



- Enhance
- For image



SDV Training

Tools Tab

Effects Group

- Swipe
 - For selected layer



Swipe

Use Swipe to reveal layers beneath the layer you chose to swipe and, depending on how you've set the [Layers options](#), the layers above it. This button makes it easy to quickly see what is underneath a particular layer without having to turn it off in the *Contents* window or reorder layers.

To reveal layers beneath the layer you've selected

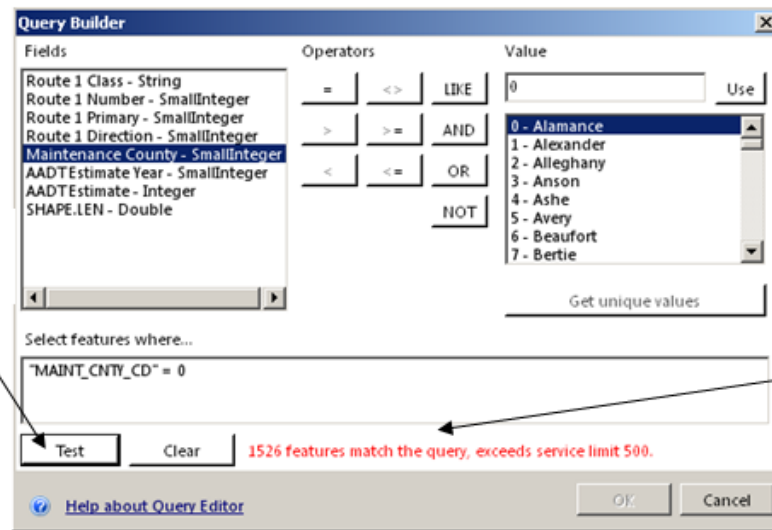
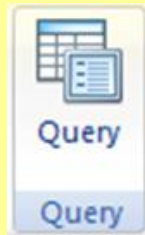
Choose the layer or group layer you want to swipe from the *Contents* window, then move the cursor over the map. You'll notice that the cursor changes based on whether you are resting the mouse pointer on the top, bottom, left, or right of the map. This lets you choose the direction in which you want to swipe the layer. Hold down the left mouse button and drag in the direction indicated by the mouse pointer.

SDV Training

Tools Tab

Query Group

- To query a selected layer from the Contents Window
- Access SDV Resource Center for Help

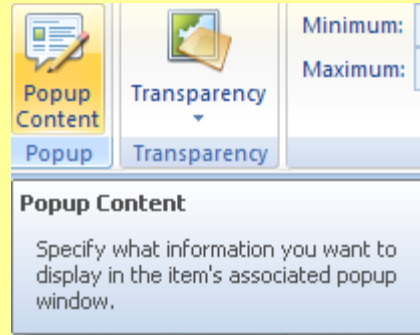


SDV Training

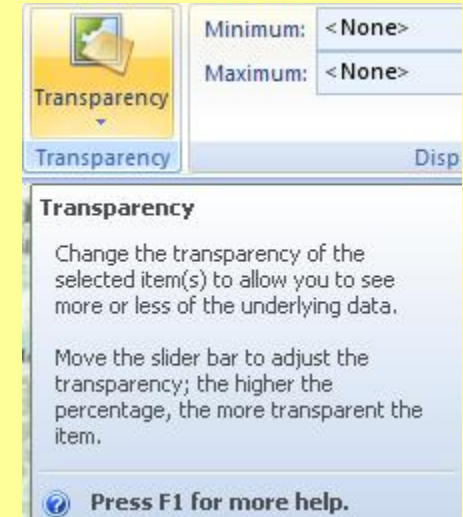
Appearance Tab

Popup Group

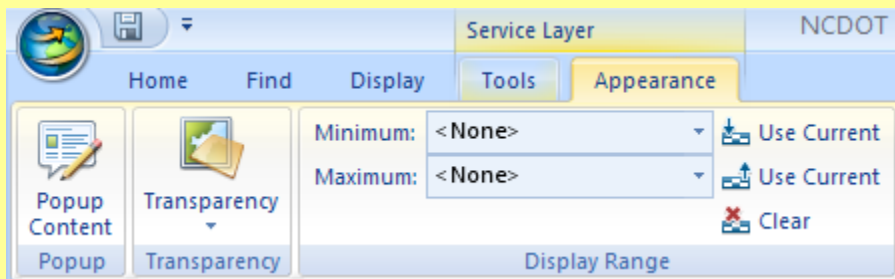
- Provides information about item selected



Transparency Group



Display Range Group



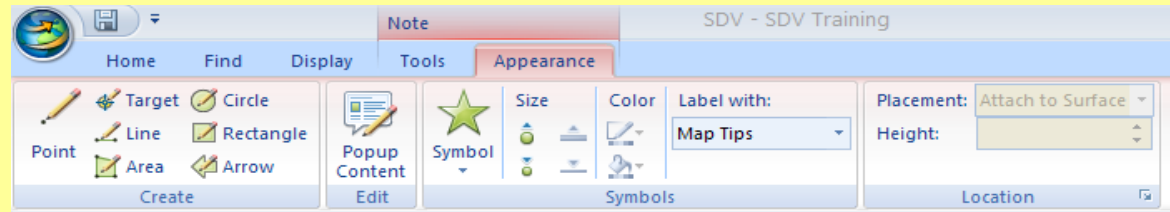
Use Current

Use the current map display to set the maximum zoom level.

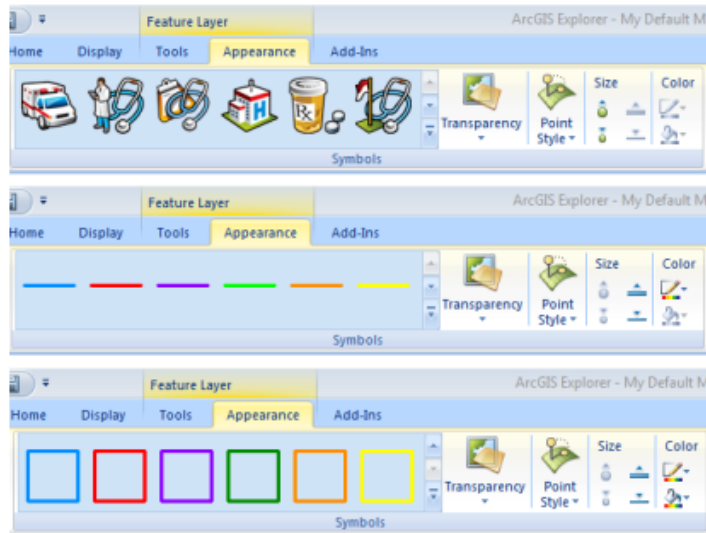
SDV Training

Appearance Tab

- Change the display options
- Notes
- Symbols
- Labels



The *Appearance* tab includes a *Symbol* group that contains various controls for selecting symbols to draw the GIS data with and controls for modifying properties of the symbol. Notice the different galleries for points, line, and areas (polygons):



SDV Training

FACILITATE

- Measure
- Access NC and NCDOT data
- Share information

FUNCTIONALITY

- More NC map services
- More NC tools
- SDV Resource Center -
<http://gisi01.dot.nc.net/SDVResourceCenter/>

FUTURE

- Suggestions go to SDVHelp - sdvhelp@ncdot.gov

TRAINING

- Training other users helps everyone

SDV Training

Collapsed Bridge Scenario

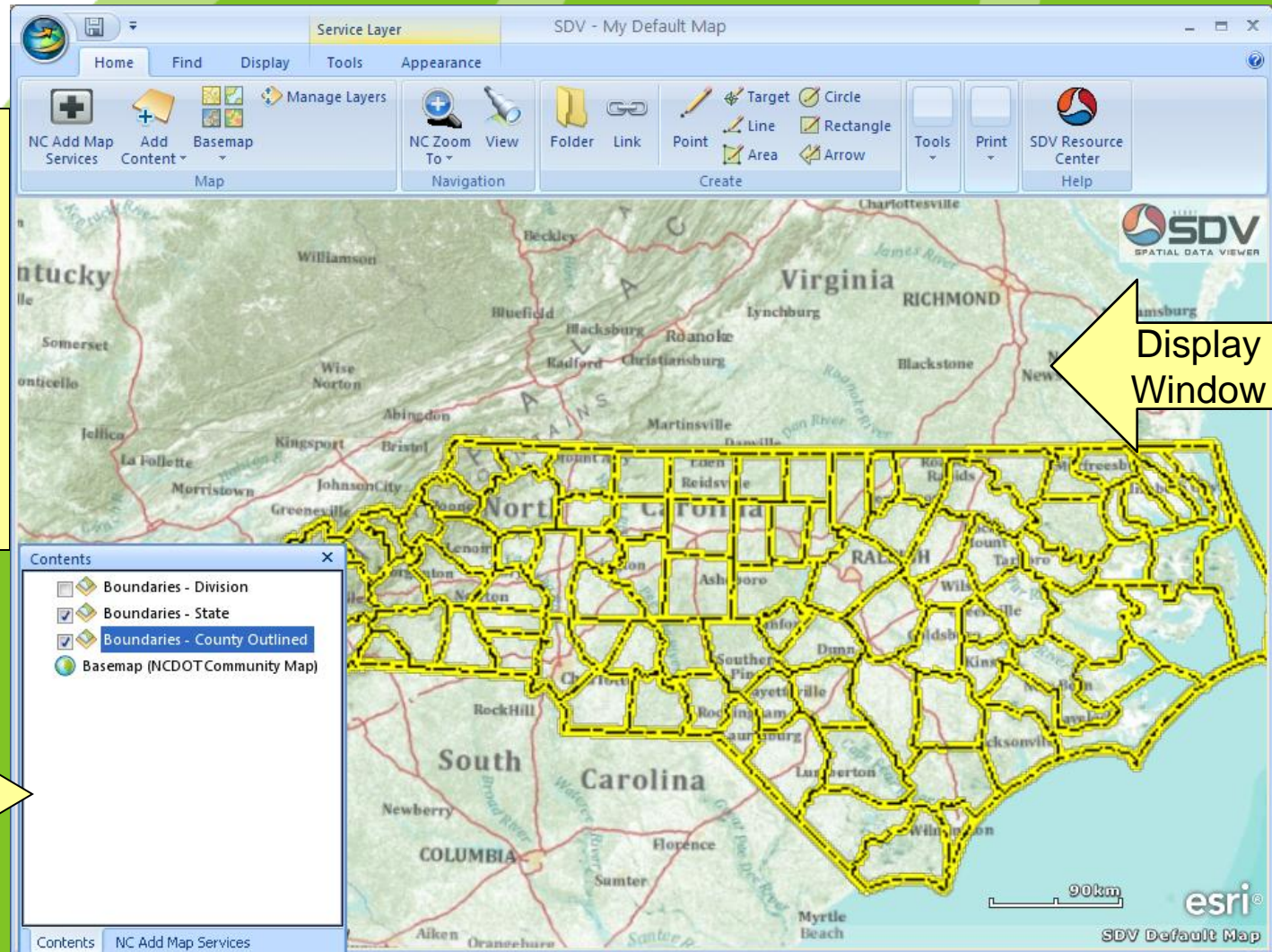


SDV Training

- **Collapsed Bridge Scenario**
 - Add Map Services
 - SDV Resource Center
 - NC Find Tools
 - Query Tools
 - Zoom to incident area (mouse, NC Zoom, navigation tool)
 - Change Basemap
 - Find road characteristics, bridge, pavement, & fatal accident data
 - View attributes of collapsed section
 - Create note for area in question
 - Email the map
 - Add external data to the map
 - Measure area around collapsed bridge, distance to alternate route
 - Add North Arrow, Print preview Map, save as PDF

SDV Training

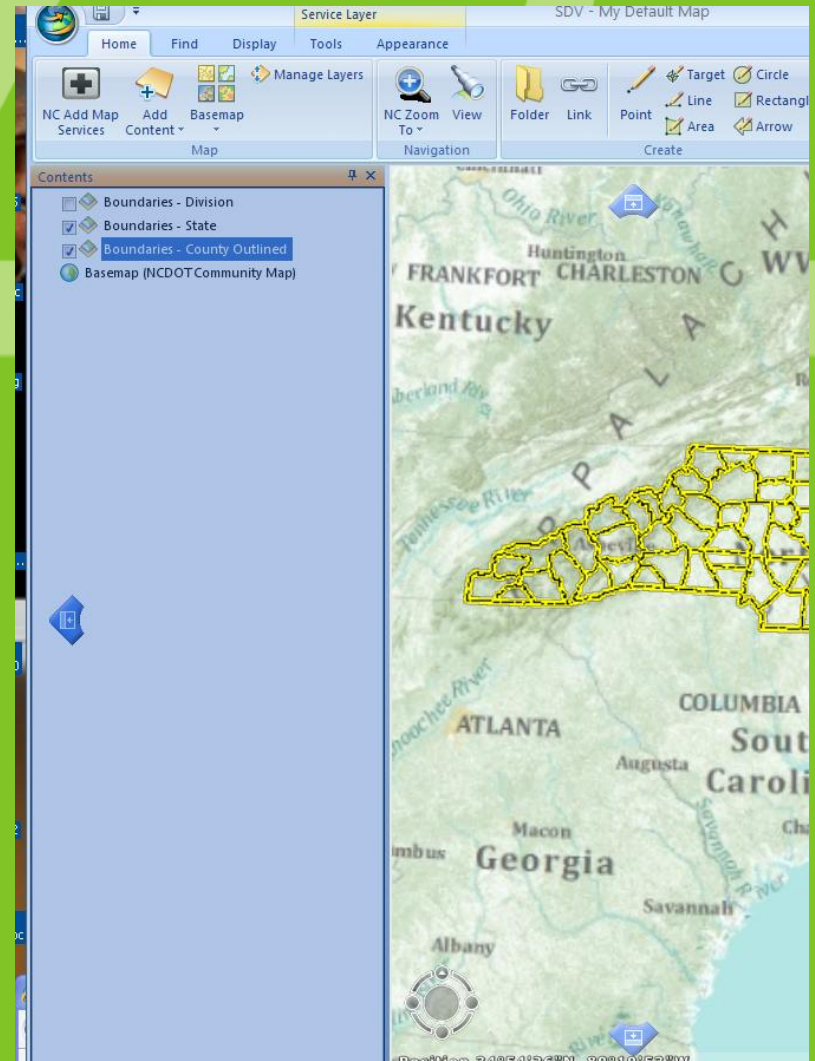
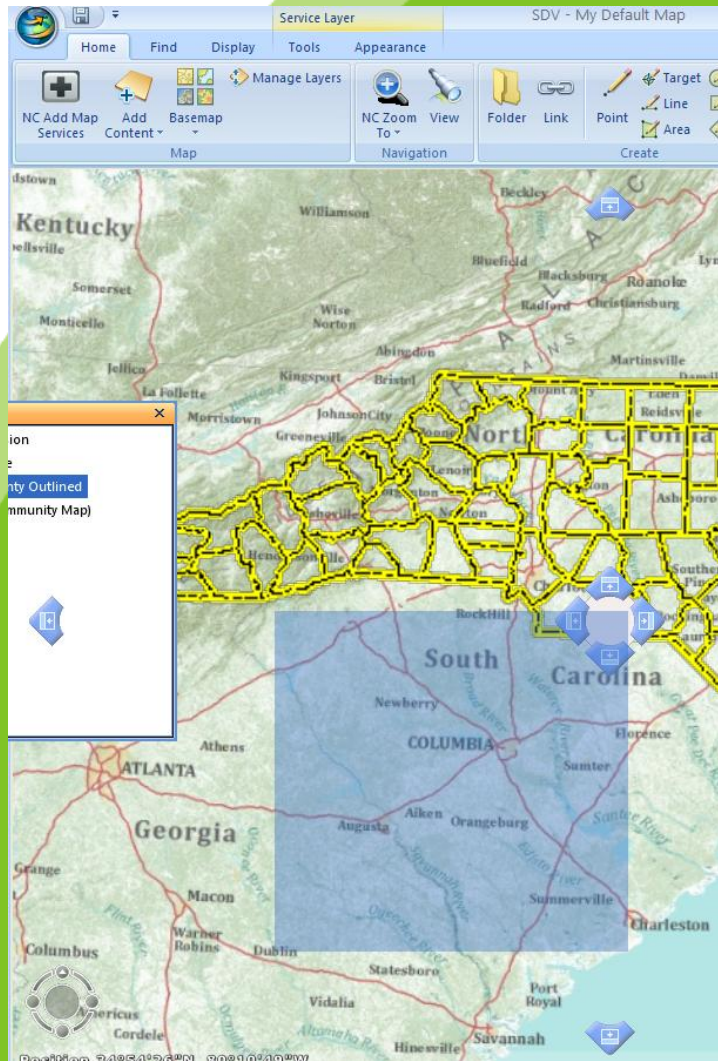
- Open SDV
- Add NC Map Service
- Select layer



Contents Window
(docking)

Display
Window

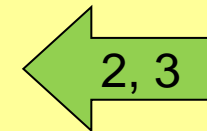
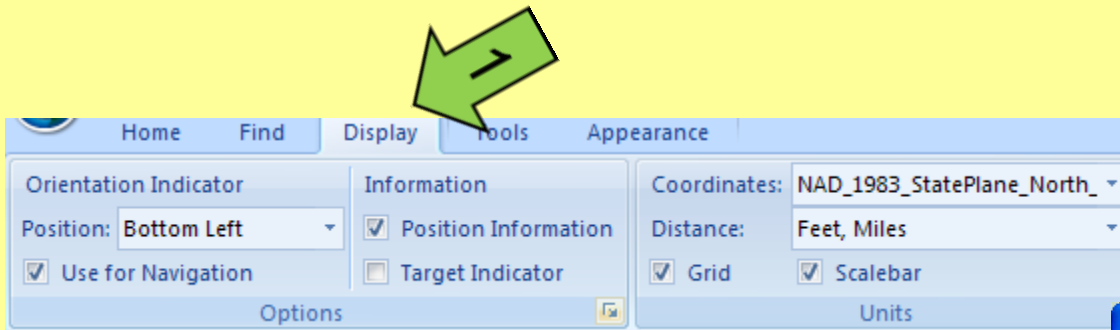
SDV Training



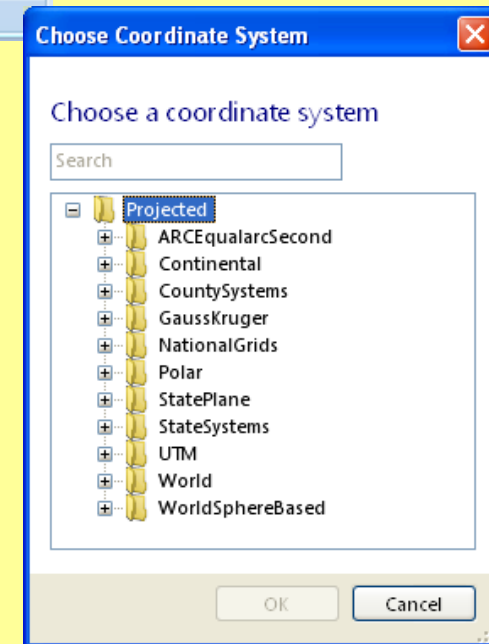
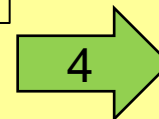
Docking

SDV Training

To change the map coordinate system:



1. Click Display tab
2. Click the coordinates dropdown
3. Click <More>
4. Choose the correct coordinate system



SDV Training

Coordinate Systems

 Feedback

 E-mail this topic

 Print this topic

About Coordinate Systems

A coordinate system is a fixed reference framework superimposed onto the surface of an area to designate the location of features within it. The positions of objects on the earth's spherical surface are measured in geographic coordinates. While latitude and longitude can locate exact positions on the surface of the earth, they are not uniform units of measure; only along the equator does the distance represented by one degree of longitude approximate the distance represented by one degree of latitude. To overcome measurement difficulties, data is often transformed from three-dimensional geographic coordinates to two-dimensional projected coordinates.

[Learn more about Map Projections](#)


Coordinate systems (either geographic or projected) provide a framework for defining real-world locations. In ArcGIS Explorer, the coordinate system is used as the method to automatically integrate the geographic locations from different datasets into a common coordinate framework for display and analysis.

To work with coordinate systems in ArcGIS Explorer

ArcGIS Explorer provides two property sheets that allow you to work with coordinate systems and geographic transformations, one for 2D Coordinate Systems and the other for 3D Coordinate Systems.

In the 2D Coordinate System property sheet you can choose the coordinate system as well as the geographic transformation(s) to use when projecting layers to the map coordinate system when your map is in 2D Display mode. In the 3D Coordinate System property sheet you can select the geographic transformation(s) to use when projecting layers to the map coordinate system when your map is in 3D Display mode.

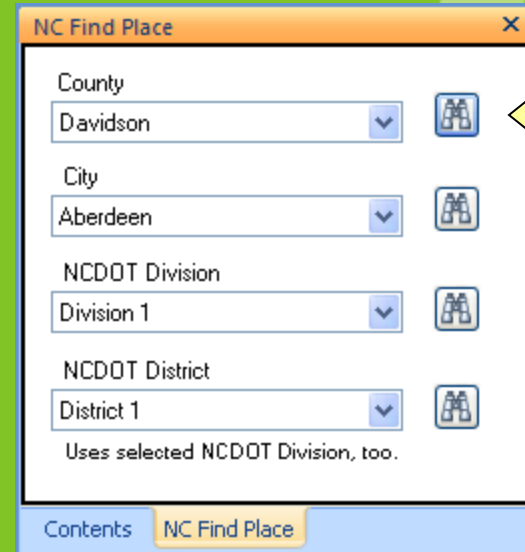
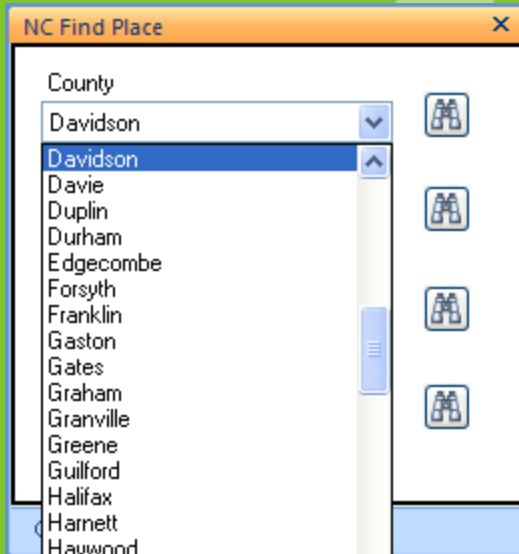
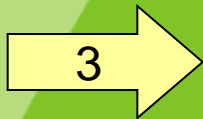
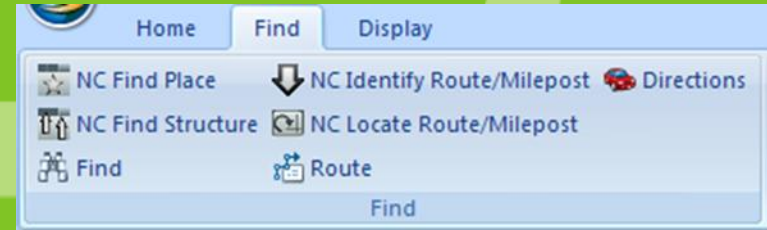
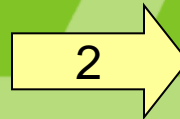
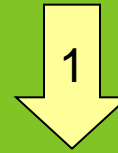
To display the Coordinate System properties

1. Click the *ArcGIS Explorer Button* .
2. Click *Map Properties*.
3. Choose *3D Coordinate System* or *2D Coordinate System*.

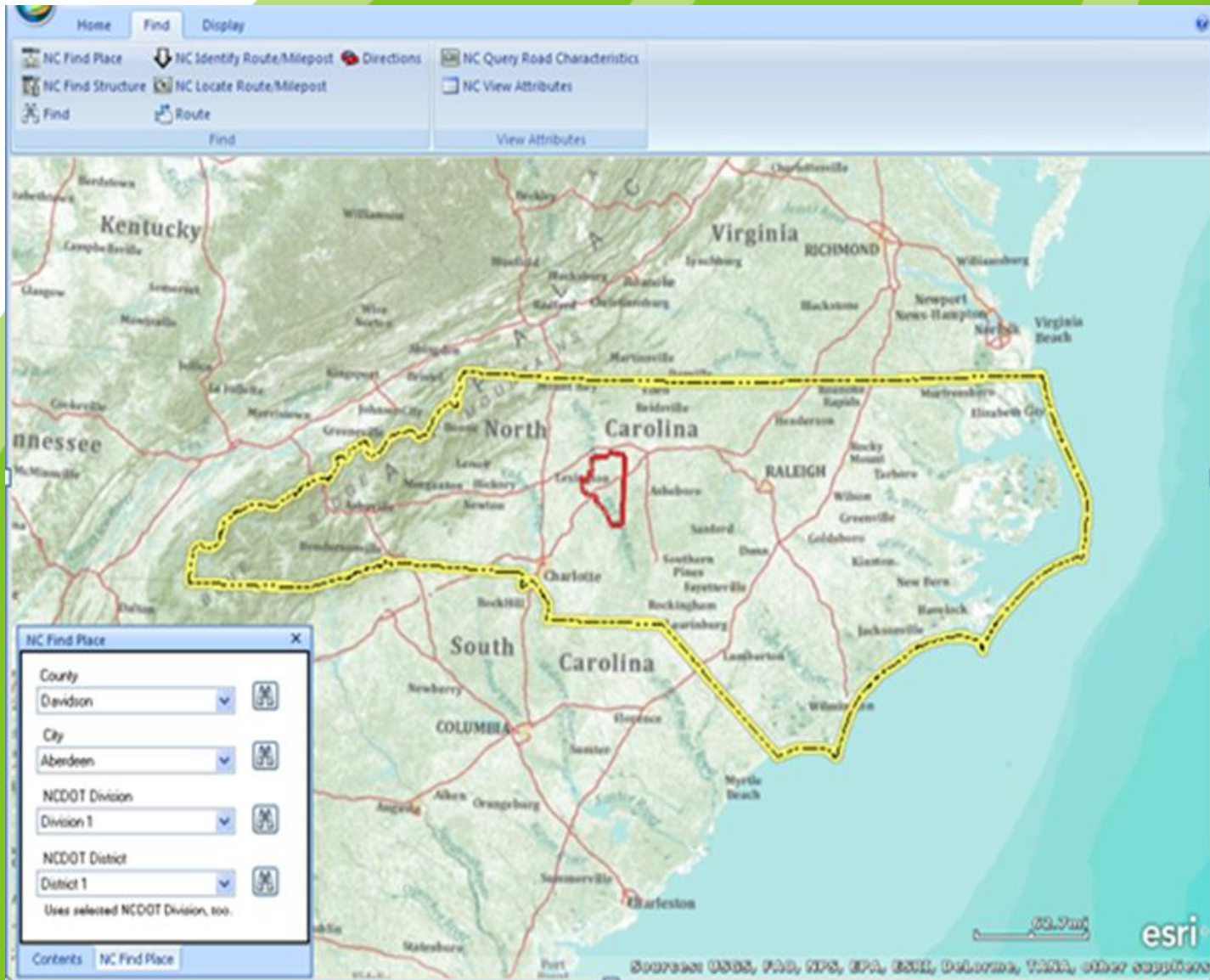
SDV Training

Find Davidson County

1. Click Find tab
2. Click NC Find Place
3. From the County drop down list choose Davidson County
4. Click the search button

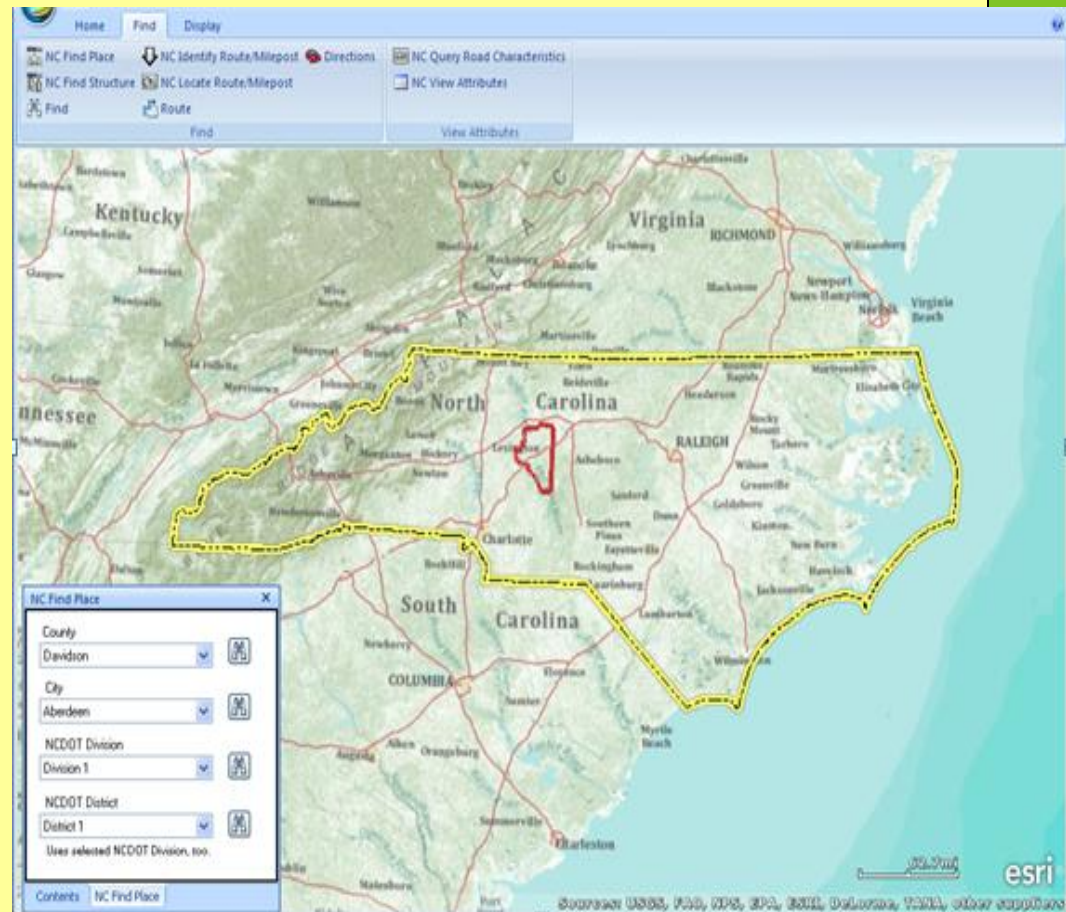
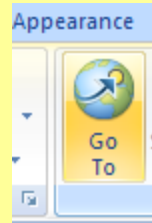
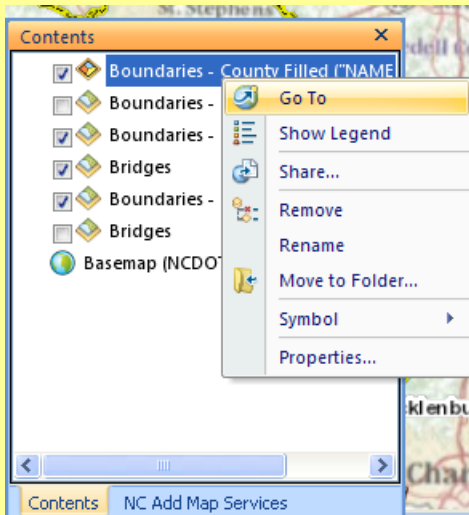


SDV Training



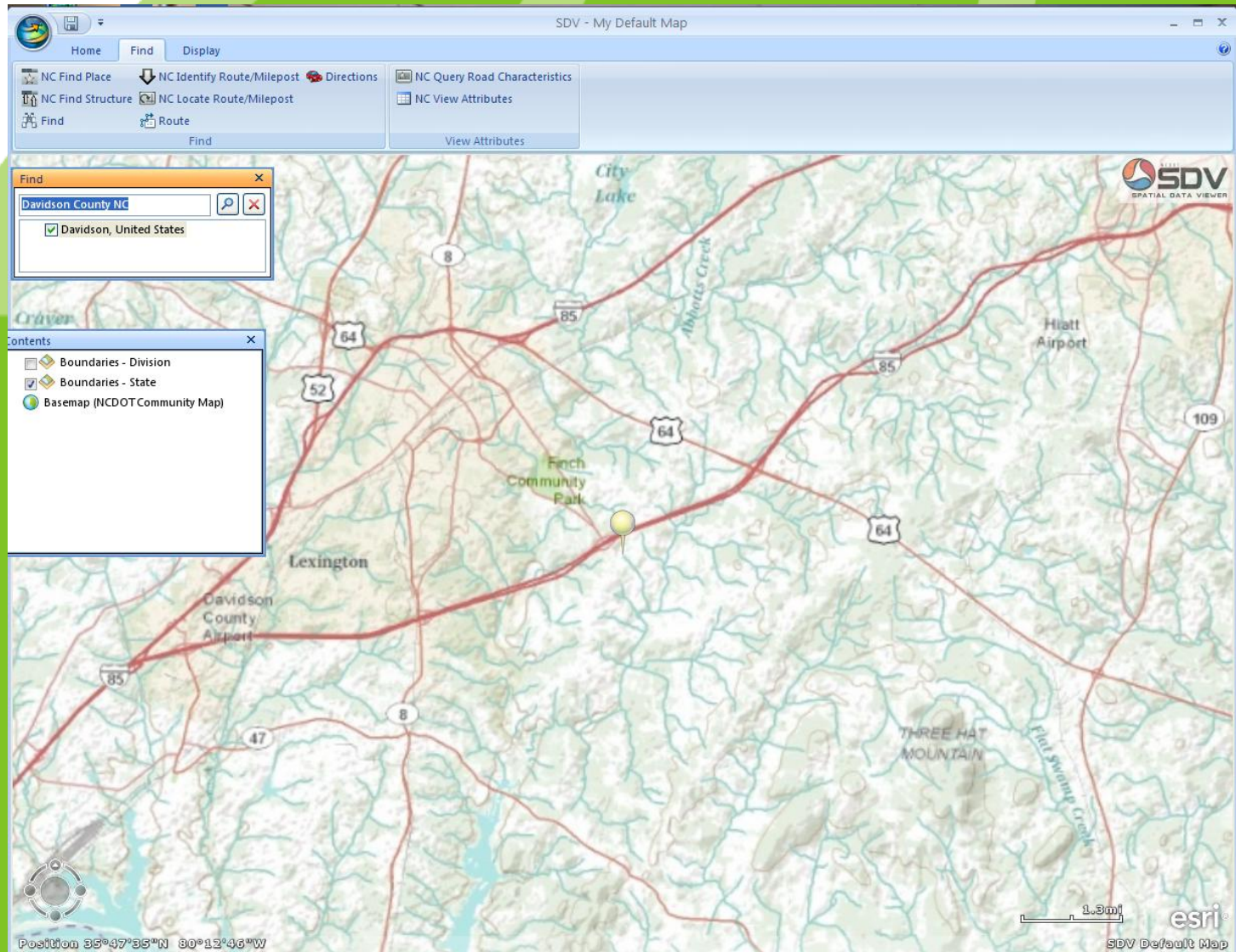
The screenshot displays the SDV Spatial Data Viewer interface. At the top, there are tabs for 'Home', 'Find', and 'Display'. Below these are several tool buttons: 'NC Find Place', 'NC Identify Route/Milepost', 'Directions', 'NC Query Road Characteristics', 'NC Find Structure', 'NC Locate Route/Milepost', and 'NC View Attributes'. A 'Find' button is also present. The main area is a map of North Carolina, outlined in yellow, with a red rectangle highlighting a specific area in the western part of the state. A search window titled 'NC Find Place' is open in the bottom-left corner, showing dropdown menus for 'County' (Davidson), 'City' (Aberdeen), 'NCDOT Division' (Division 1), and 'NCDOT District' (District 1). The search window also includes a 'Contents' tab and the text 'Uses selected NCDOT Division, too.'. The map includes labels for neighboring states (Kentucky, Tennessee, Virginia, South Carolina) and major cities (Raleigh, Charlotte, Columbia, Charleston). The Esri logo is visible in the bottom-right corner of the map area.

- County is located, now zoom in
 - Right Click, Go To
 - Scroll button on mouse
 - GO To Icon under Appearance tab



SDV Training

You can also use the FIND option to get to general area



SDV Training

Additional Tools:

Find Display

NC Identify Route/Milepost

NC Locate Route/Milepost

Route

Find

NC Identify Route/Milepost

Click on a route to identify the route and milepost at that location.

NC Identify Route/Milepost



NC Locate Route/Milepost

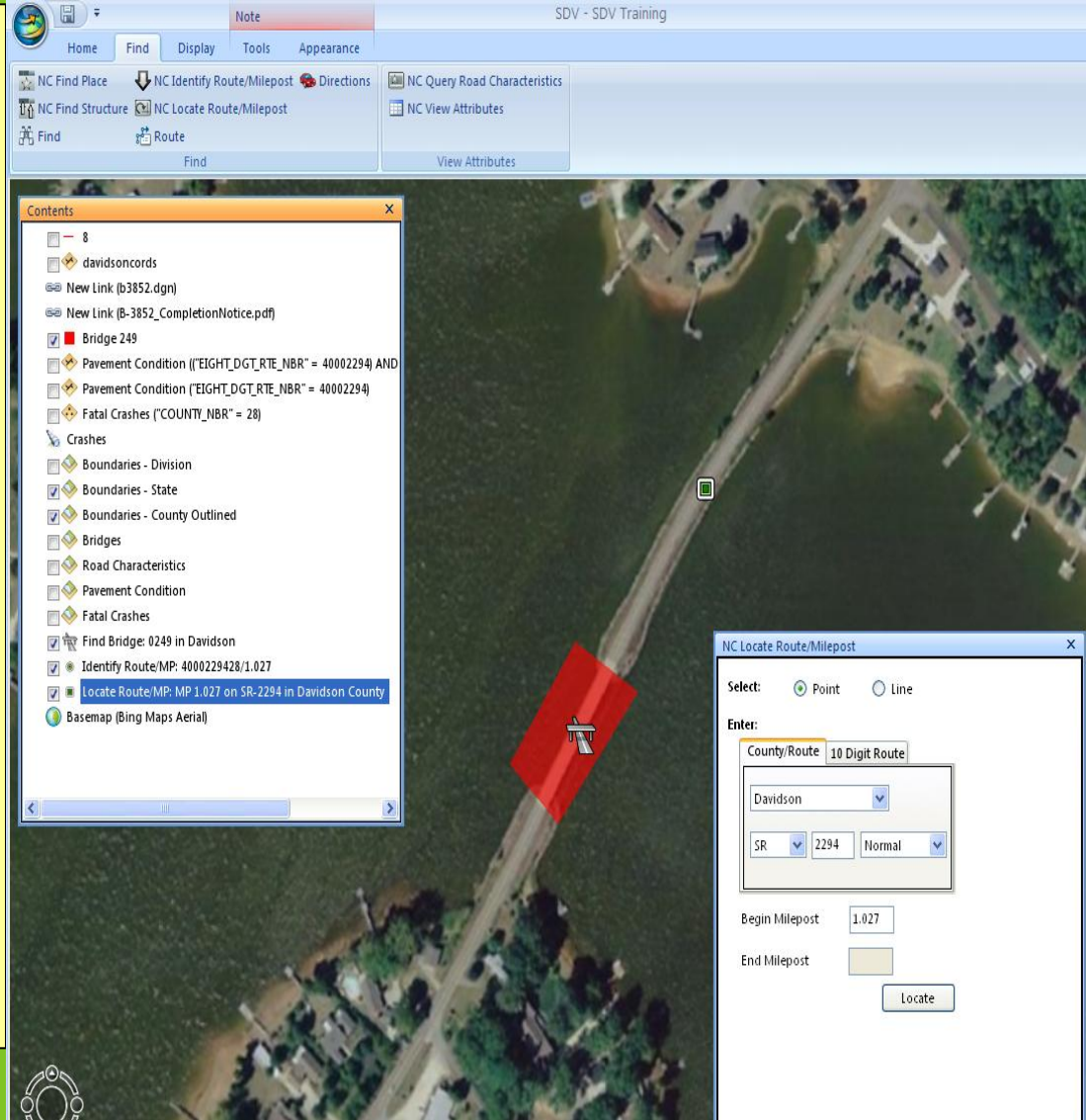
NC Locate Route/Milepost

Route

Find

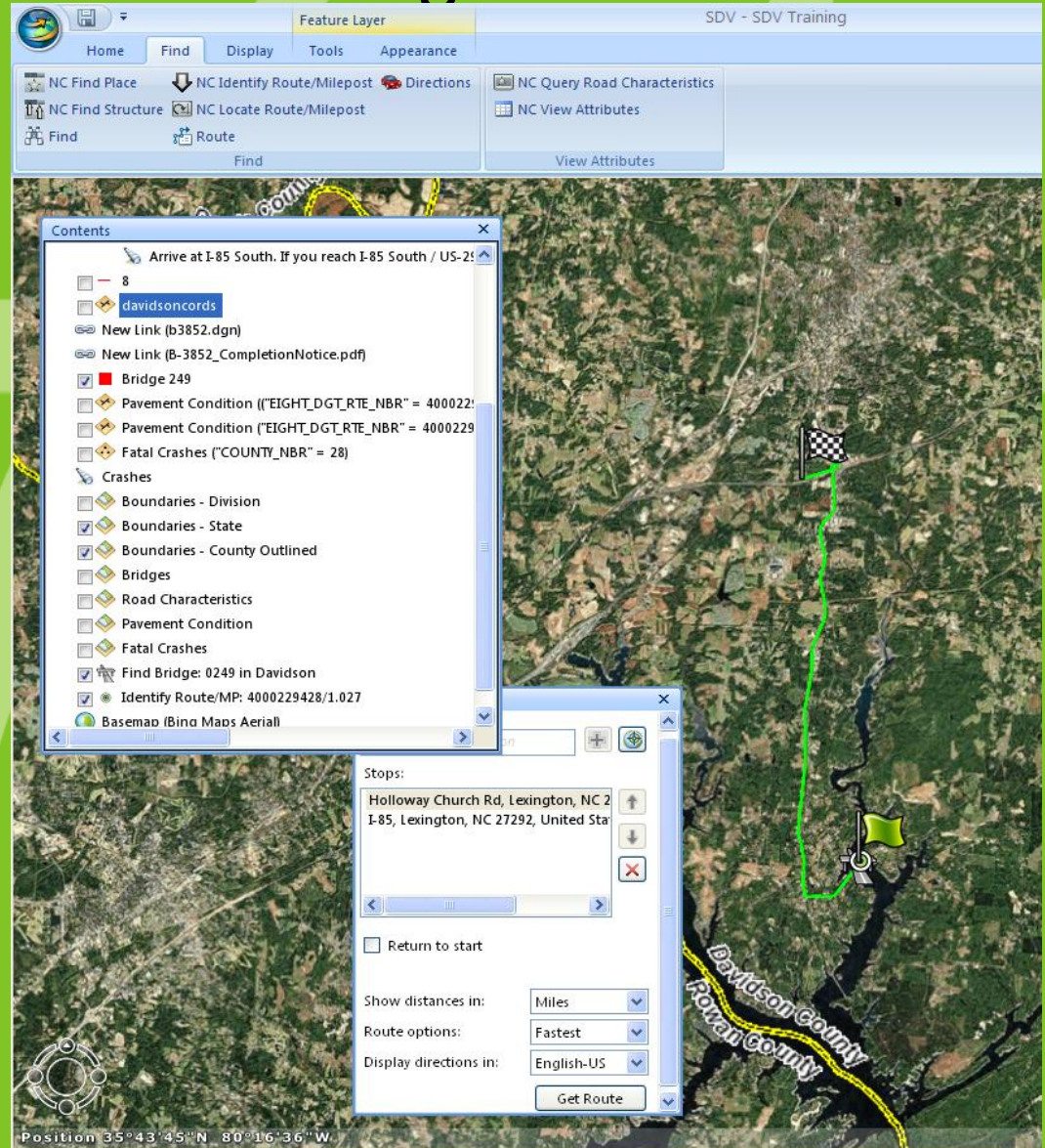
NC Locate Route/Milepost

Locate a route and milepost on the map.



The screenshot shows the SDV software interface. The 'Contents' pane on the left lists various layers, including 'Bridge 249', 'Pavement Condition', 'Fatal Crashes', 'Boundaries', 'Bridges', 'Road Characteristics', and 'Basemap'. The map displays an aerial view of a road with a red arrow pointing to a specific location. The 'NC Locate Route/Milepost' dialog box is open, showing the 'Select' options (Point and Line), the 'Enter' section with 'County/Route' set to 'Davidson' and '10 Digit Route' set to '2294', and 'Begin Milepost' set to '1.027'. The 'Locate' button is visible at the bottom of the dialog box.

SDV Training

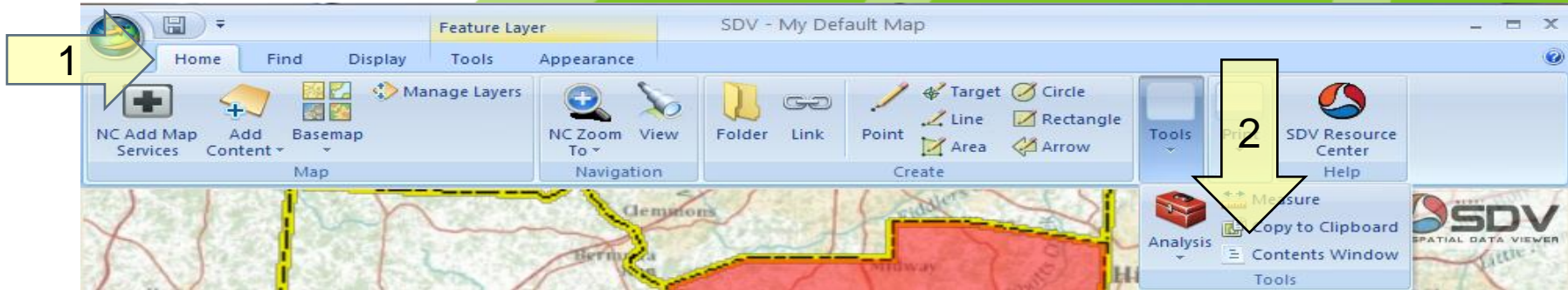


Additional Tools: Route

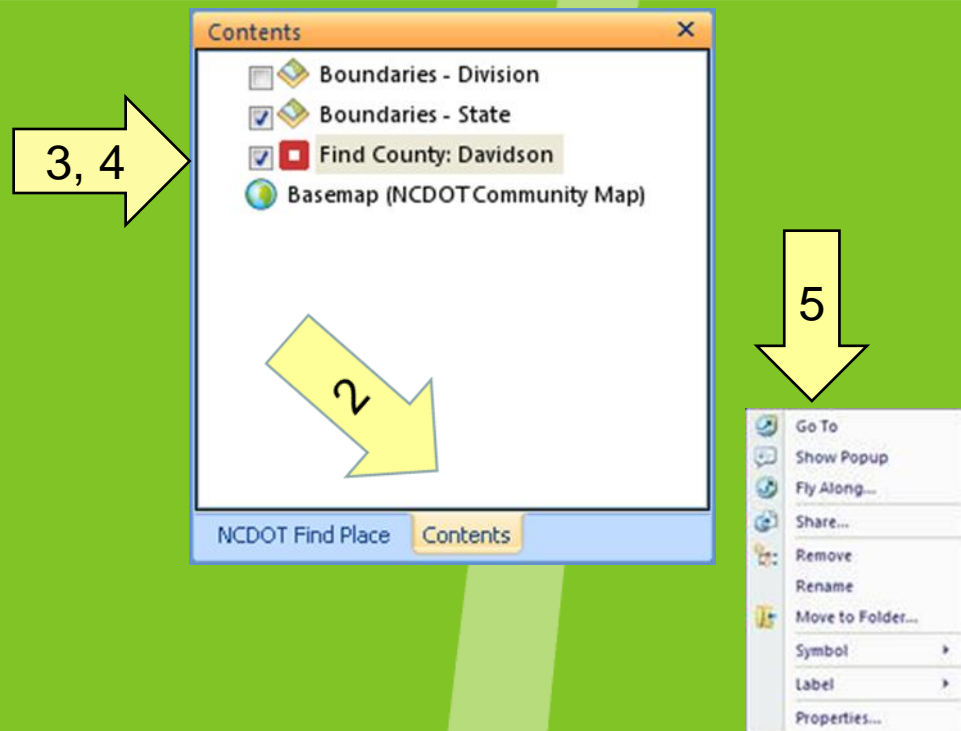
Find the route and driving directions for a collection of locations on the map.

Press F1 for more help.

SDV Training



1. Click Home tab
2. Click Contents Window (there are 2 ways to get there)
3. Check the Find County: Davidson option box
4. Right click on Find County: Davidson
5. Click "Go to"
6. Or Double Click Find County: Davidson
7. SDV zooms in to county

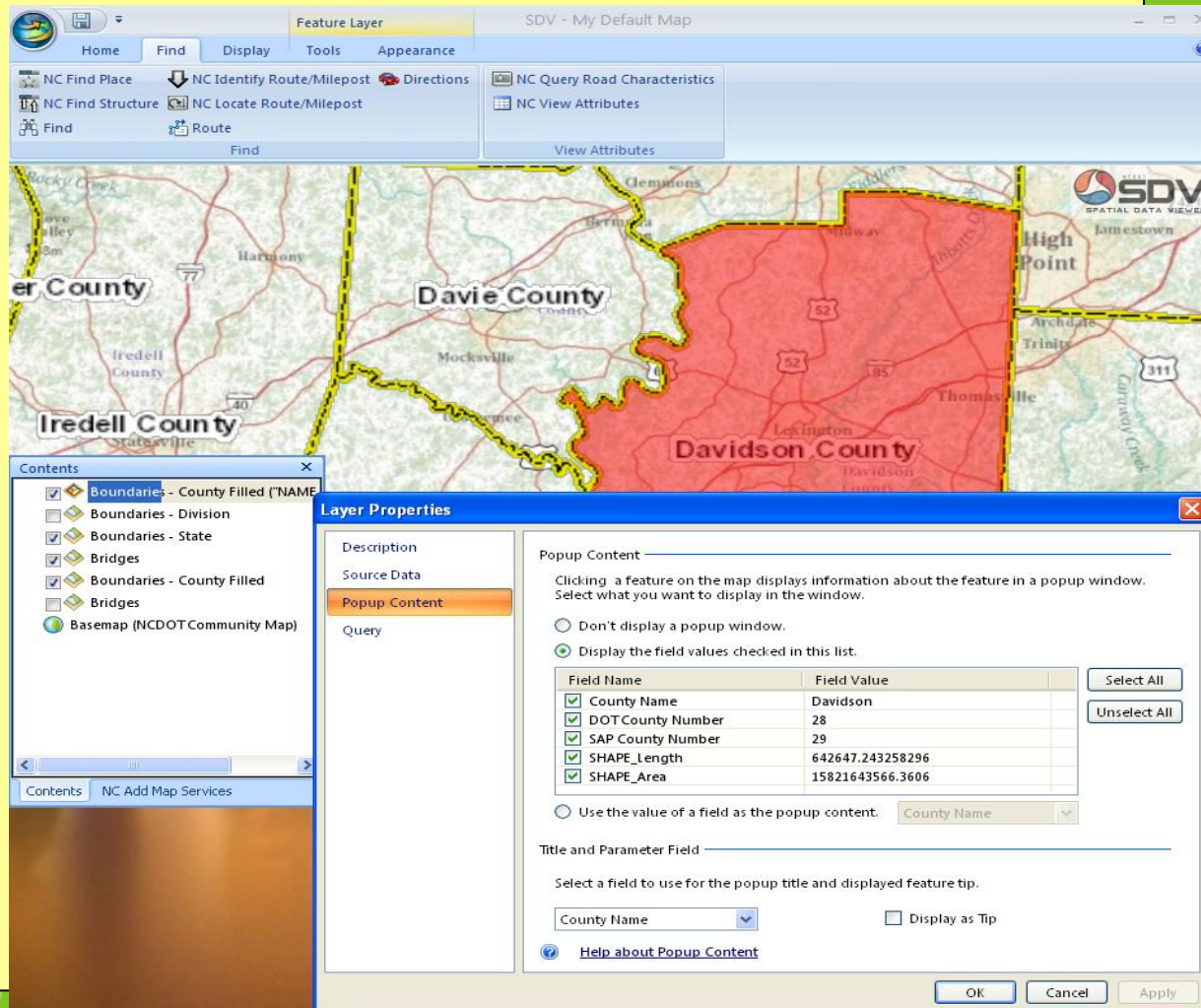


SDV Training

- To view Layer Properties
 - Right Click Layer

Layer Properties

- Description
- Source Data
- Popup Content
- Query



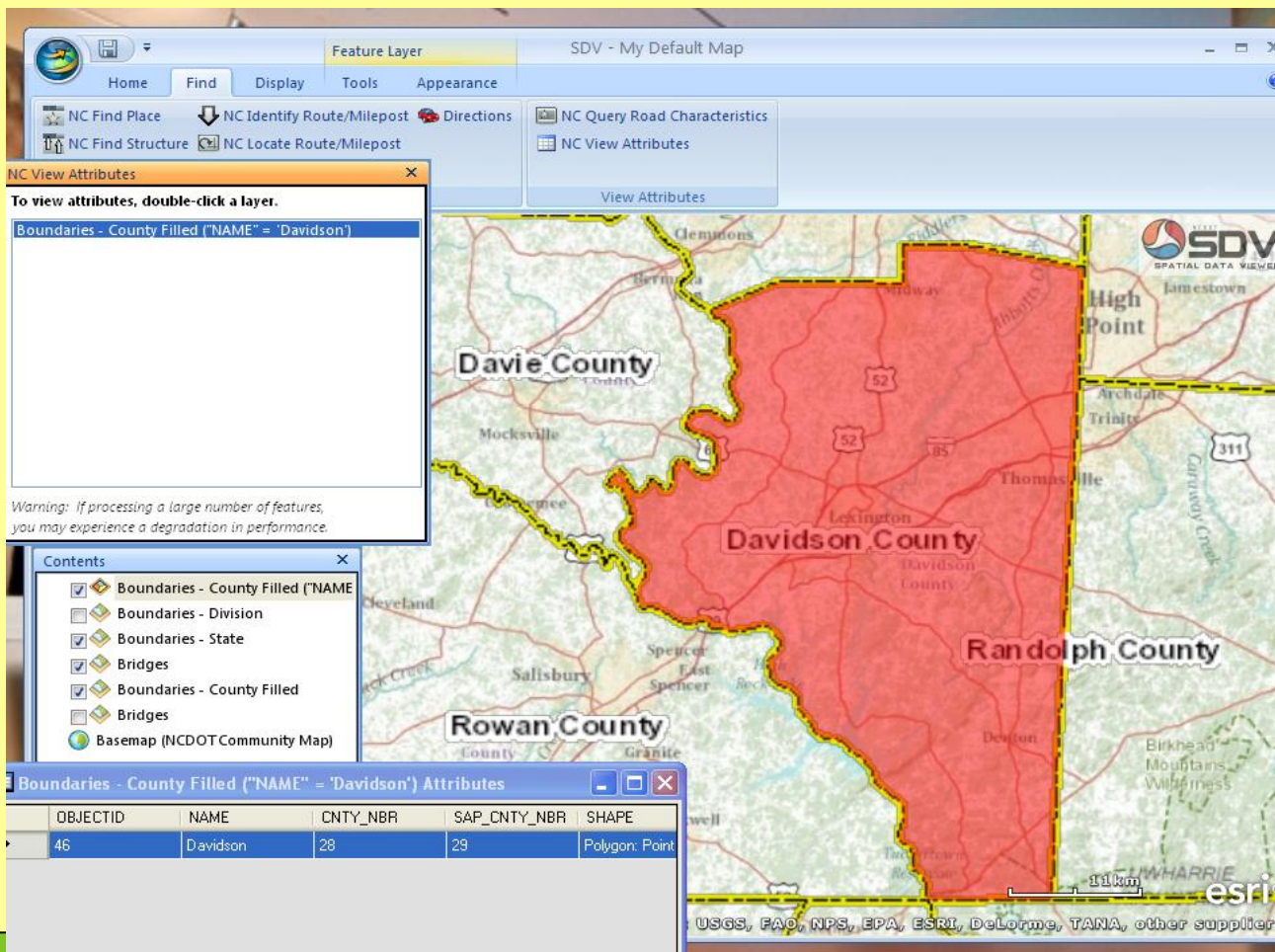
The screenshot shows the SDV - My Default Map application. The map displays several counties, with Davidson County highlighted in red. The 'Layer Properties' dialog is open for the 'Boundaries - County Filled' layer. The 'Popup Content' tab is selected, showing a table of field values and options to display them in a popup window.

Field Name	Field Value
<input checked="" type="checkbox"/> County Name	Davidson
<input checked="" type="checkbox"/> DOT County Number	28
<input checked="" type="checkbox"/> SAP County Number	29
<input checked="" type="checkbox"/> SHAPE_Length	642647.243258296
<input checked="" type="checkbox"/> SHAPE_Area	15821643566.3606

Below the table, the 'County Name' field is selected as the popup content. The 'Title and Parameter Field' section has 'County Name' selected as the field to use for the popup title and displayed feature tip.

SDV Training

- To view Attributes after Selection
 - Click NC View Attributes



The screenshot shows the SDV software interface with the 'NC View Attributes' dialog box open. The dialog box contains the following text:

To view attributes, double-click a layer.

Boundaries - County Filled ("NAME" = "Davidson")

Warning: If processing a large number of features, you may experience a degradation in performance.

The 'Contents' panel shows the following layers:

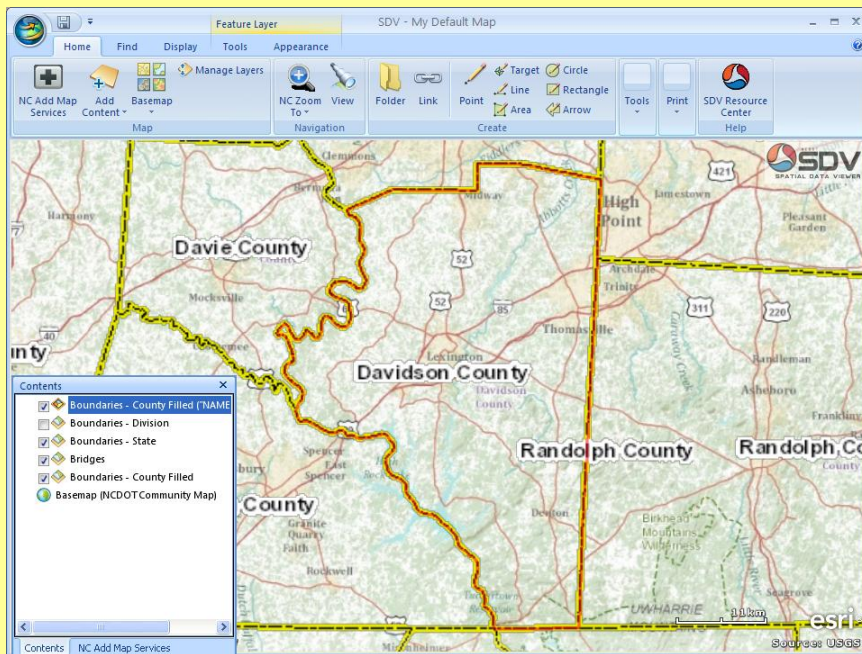
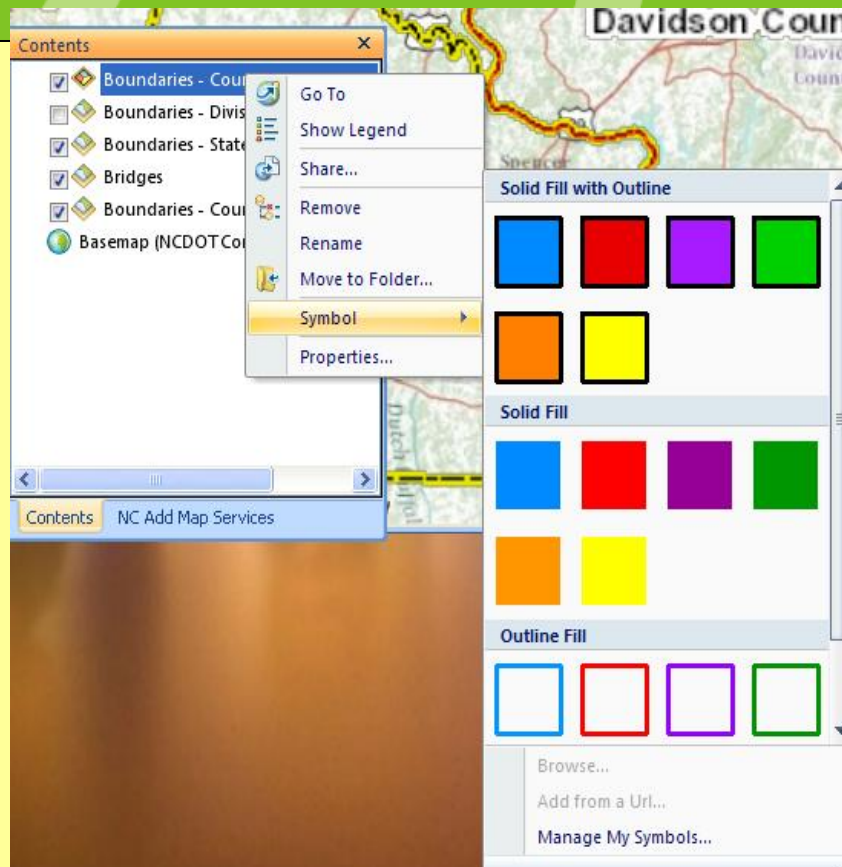
- Boundaries - County Filled ("NAME" = "Davidson")
- Boundaries - Division
- Boundaries - State
- Bridges
- Boundaries - County Filled
- Bridges
- Basemap (NCDOTCommunity Map)

The 'Attributes' table for the selected feature is as follows:

OBJECTID	NAME	CNTY_NBR	SAP_CNTY_NBR	SHAPE
46	Davidson	28	29	Polygon: Point

SDV Training

- To Change appearance of layer
 - Right Click Layer
 - Scroll to Symbol
 - Select from options



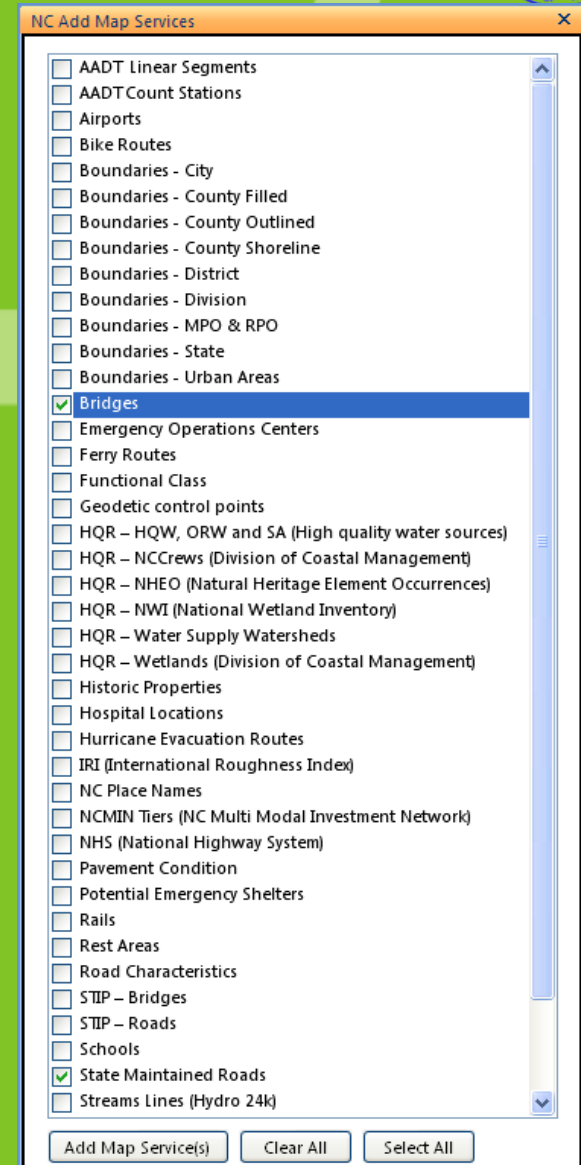
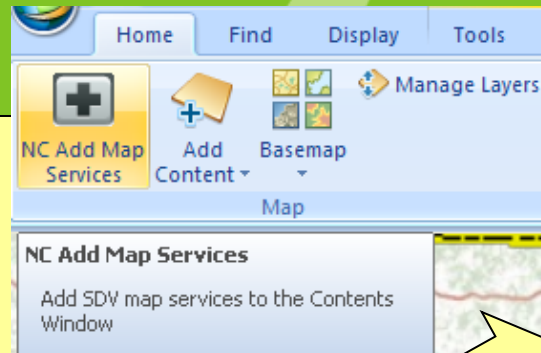
SDV Training

1. NC Add Map Services

2. Click box for layers of interest

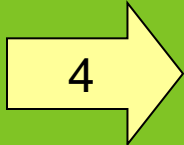
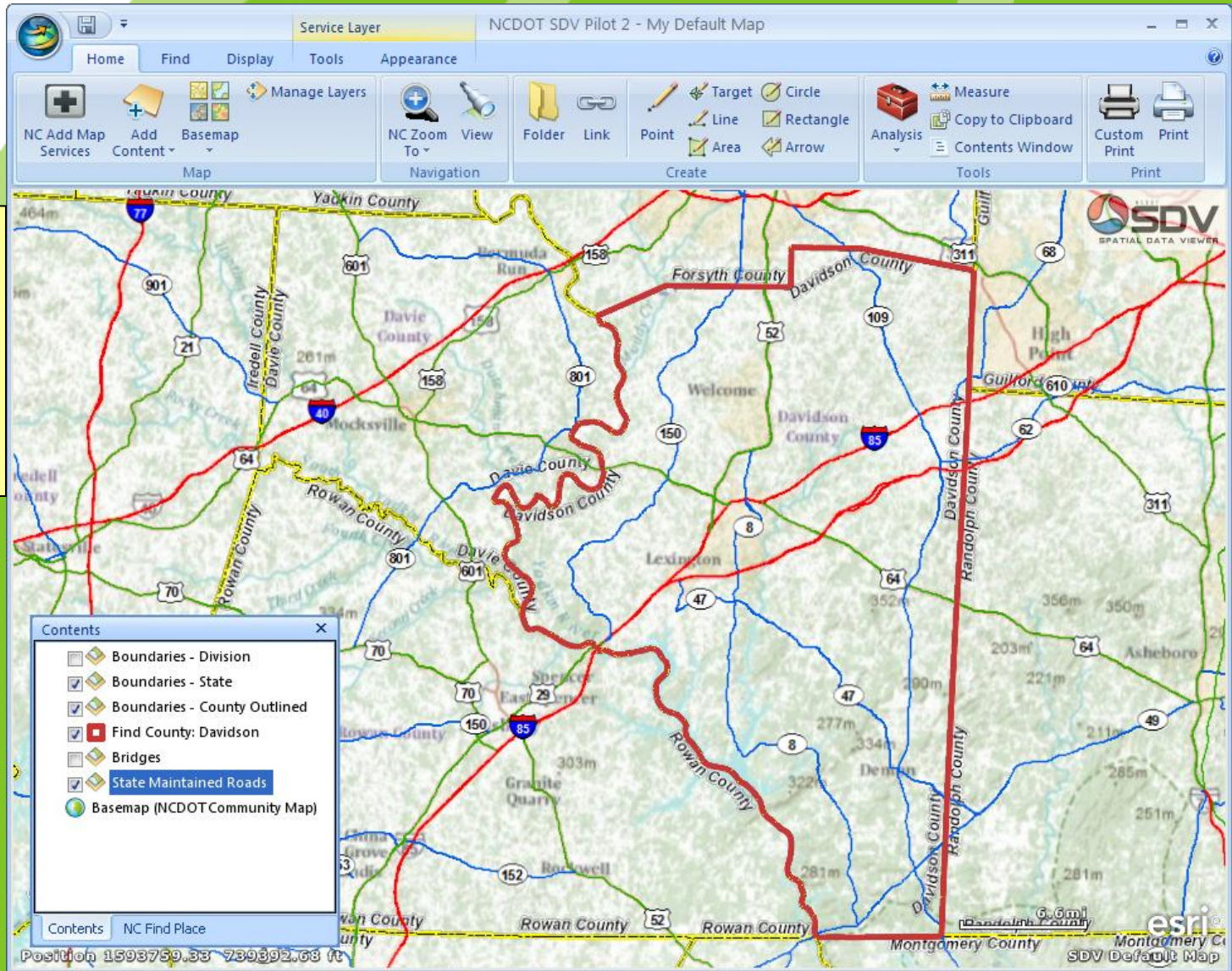
3. Click Add Map Service(s) button

4. Click the map service checkbox in the Contents Window (con't on next slide)



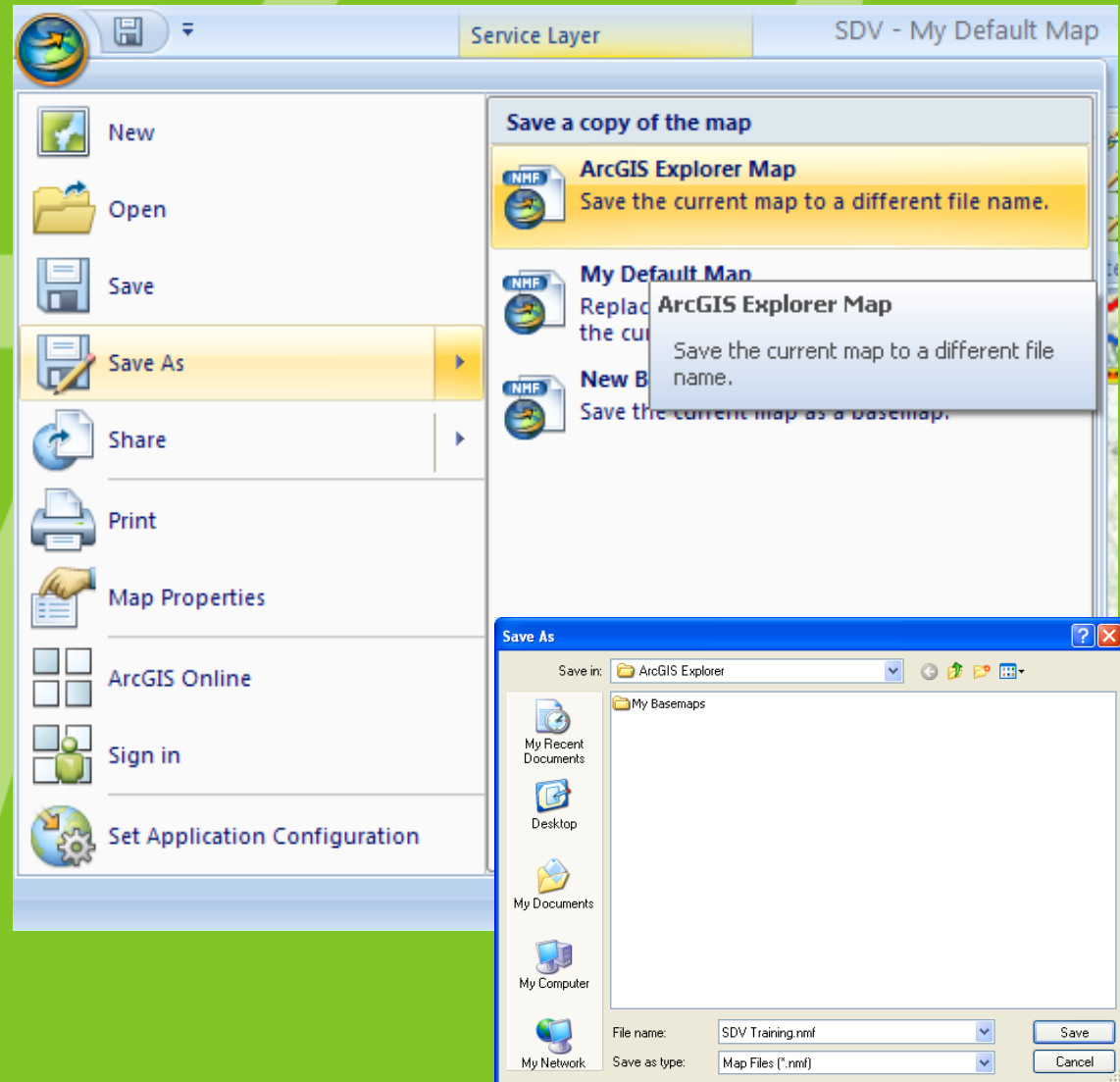
SDV Training

4. Click the map service checkbox in the Contents Window




Save Map


1. Click AGX Icon
2. Click Save As
3. Click ArcGIS Explorer Map
4. Navigate to folder
5. Type name
6. Map Name Changes




About ArcGIS Explorer Options

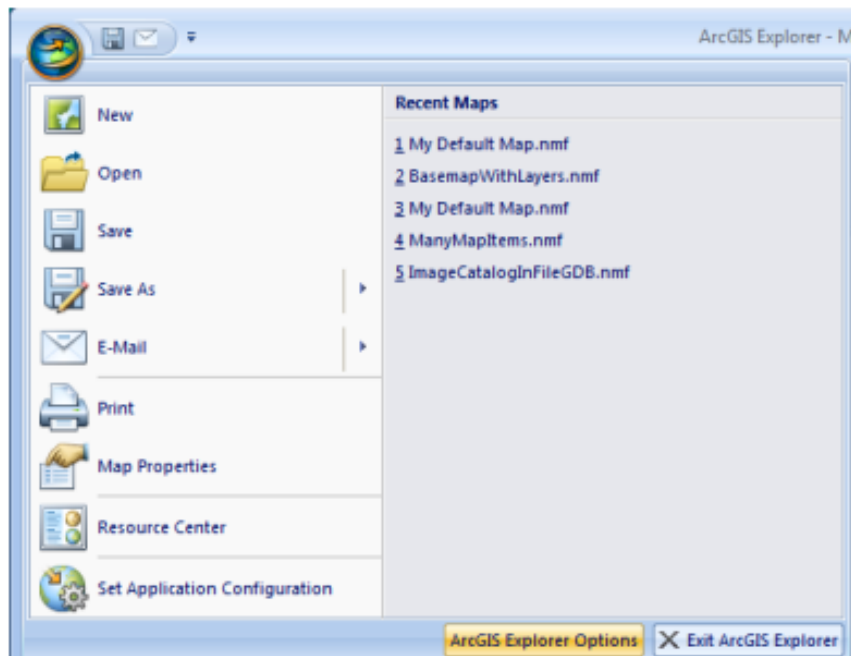
 Feedback

 E-mail this topic

 Print this topic

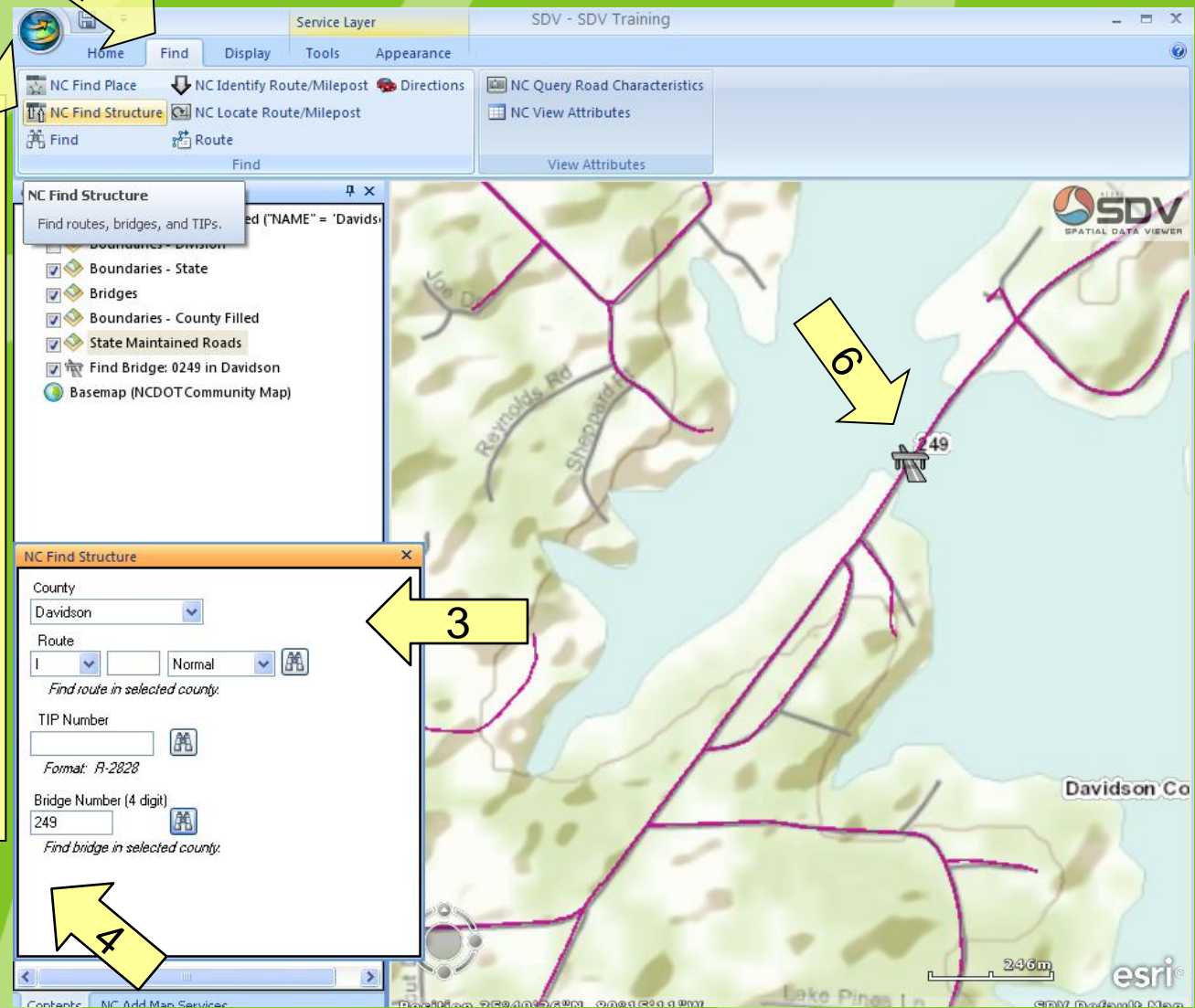
You can set options that apply to the application and are retained from session to session.

To display the *ArcGIS Explorer Options* dialog, click the *ArcGIS Explorer Button* , then click the *ArcGIS Explorer Options* button:



SDV Training

1. Click Find Tab
2. NC Find Structure
3. Enter County
4. Enter Bridge Number
5. Click Find symbol
6. Point is symbolized on map
7. Double Click to zoom to result

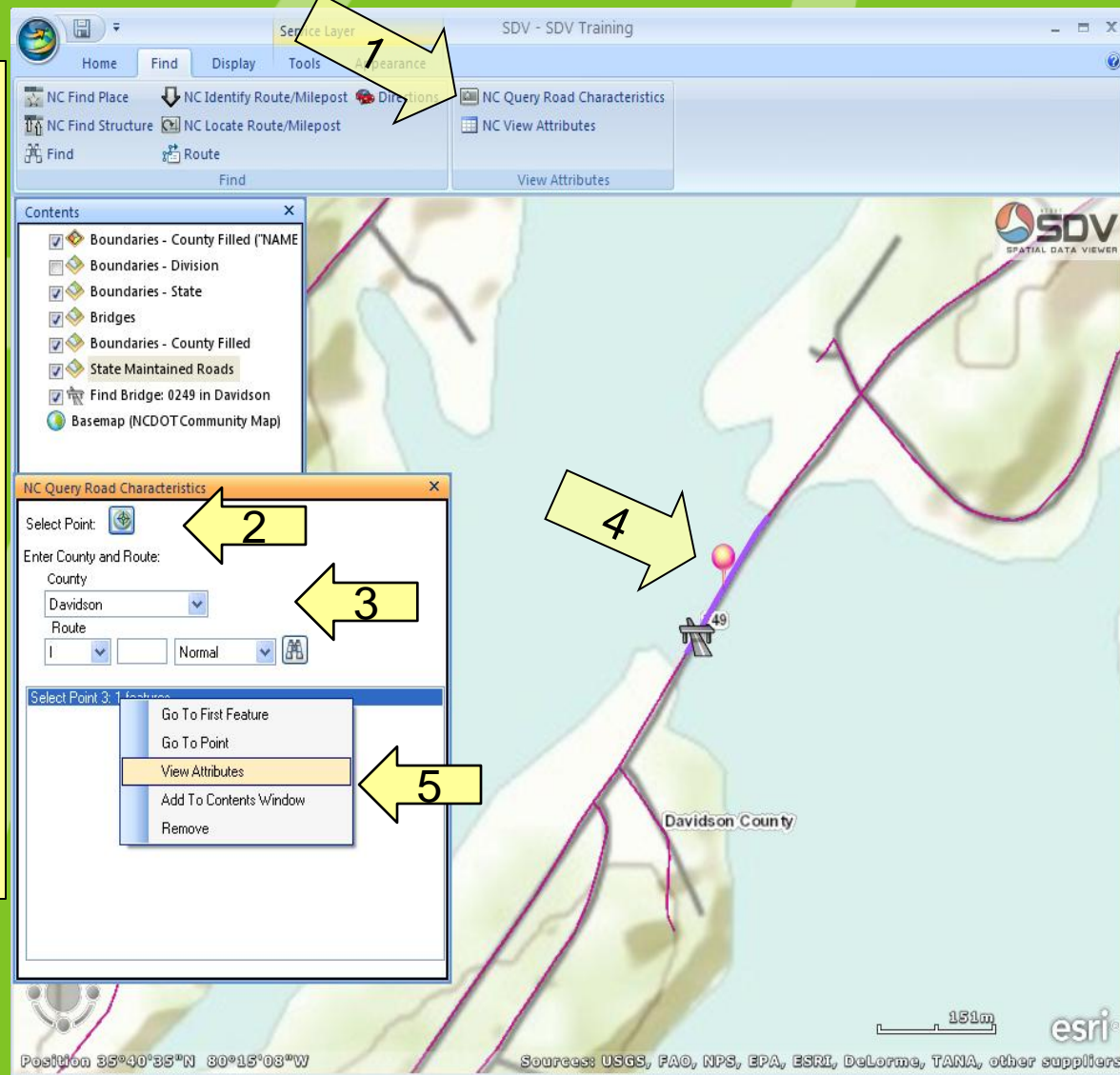


The screenshot shows the SDV - SDV Training application window. The 'Find' tab is active, displaying a search menu with options like 'NC Find Place', 'NC Identify Route/Milepost', 'Directions', 'NC Query Road Characteristics', 'NC Find Structure', 'NC Locate Route/Milepost', 'NC View Attributes', and 'View Attributes'. The 'NC Find Structure' dialog box is open, showing search criteria: County (Davidson), Route (I), TIP Number, and Bridge Number (249). The map displays a network of roads in purple, with a specific bridge labeled '249' highlighted. A yellow arrow points to the bridge on the map, and another points to the 'Find Bridge' search field in the dialog box.

SDV Training

View Road Attributes

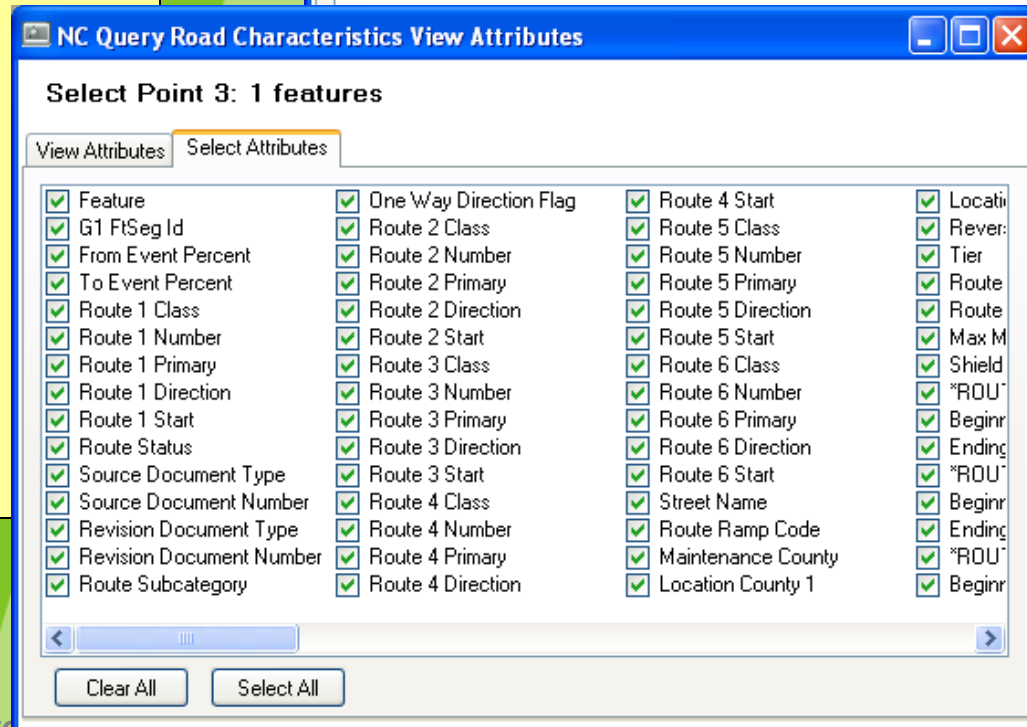
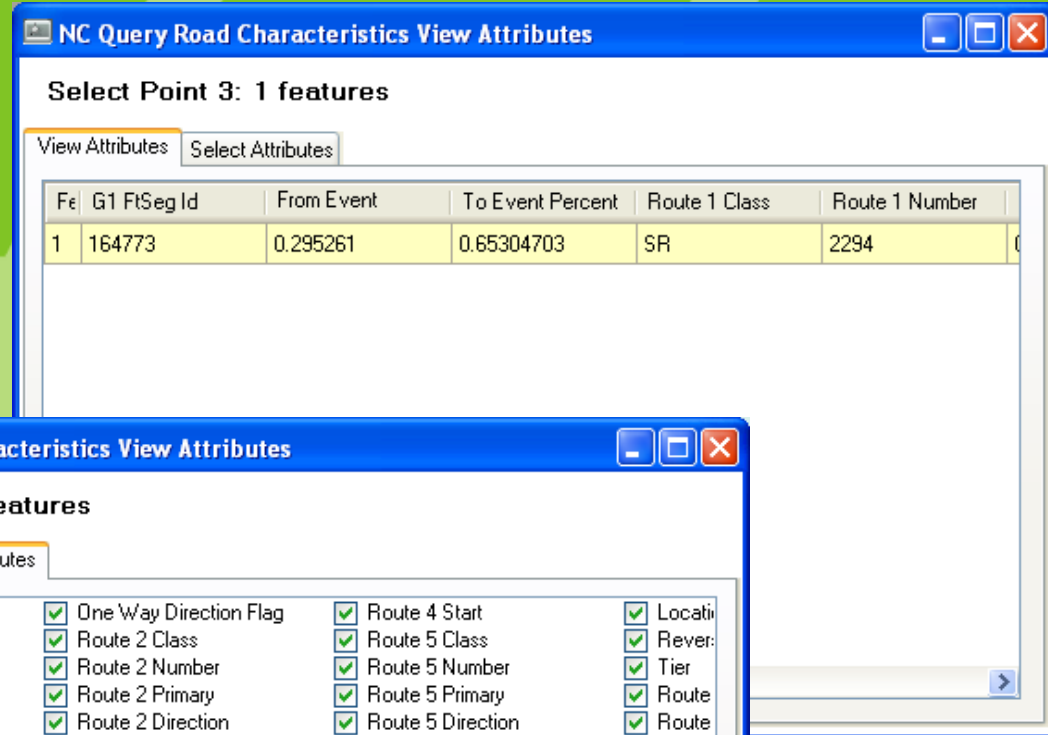
1. Click NC Query Road Characteristics
2. Select Point
3. Enter Davidson
4. Click on Road where bridge collapsed
5. When feature is selected, right click feature, View Attributes



The screenshot shows the SDV - SDV Training application window. The 'Tools' menu is open, and 'NC Query Road Characteristics' is highlighted with a yellow arrow labeled '1'. The 'Contents' window on the left shows various layers, including 'Boundaries - County Filled', 'Bridges', and 'State Maintained Roads'. The 'NC Query Road Characteristics' dialog box is open, with 'Select Point' set to a red pin on the map, 'Enter County and Route' set to 'Davidson' and 'Route' set to '1', and 'View Attributes' selected in the context menu. A yellow arrow labeled '2' points to the 'Select Point' button, '3' points to the 'County' dropdown, '4' points to the red pin on the map, and '5' points to the 'View Attributes' option in the context menu. The map shows a road network in Davidson County, North Carolina, with a red pin on a road feature. A scale bar indicates 151m, and the ESRI logo is visible in the bottom right corner.

View Attributes

- Feature Selected
- Or, Select Attributes from the database and view only fields needed



SDV Training

To Query

1. Click Tools Tab
2. Click layer from Contents Window
3. Click Query
4. Click field, operator, and value
5. Click Test
6. Click OK
7. Notice symbology change

The screenshot shows the SDV interface with the following components:

- Service Layer:** SDV - SDV Training
- Contents Window:** Lists layers including Boundaries, Bridges, State Maintained Roads, and Basemap.
- Query Builder:**

Fields	Operators	Value
Route 1 Class - String	=	2294
Route 1 Number - SmallInteger	<>	
Route 1 Primary - SmallInteger	>	
Route 1 Direction - SmallInteger	>=	
Route 1 Start - SmallInteger	<	
Length 3D - Double	<=	
Route Status - String		
Source Document Type - String		
Source Document Number - Str		
Revision Document Type - String		
Revision Document Number - Str		
Route Subcategory - String		
Select features where...		
"RTE_1_NBR" =		2294
- Map:** Shows Davidson County with a highlighted road (Route 49) and a bridge.

Click Selected Road

icon pops up

Select SR option

View Attributes

The screenshot shows the SDV - SDV Training application interface. The main window displays a map of a road network. A search window titled "9 feature(s) found" is open, showing a list of features under "State Maintained Roads", with "Secondary Road" selected. A contents window is also open, showing a list of layers with "State Maintained Roads ('RTE_1_NBR'" checked. An information icon (i) is visible on the map, and an attribute table for "Secondary Road" is displayed on the right side of the interface.

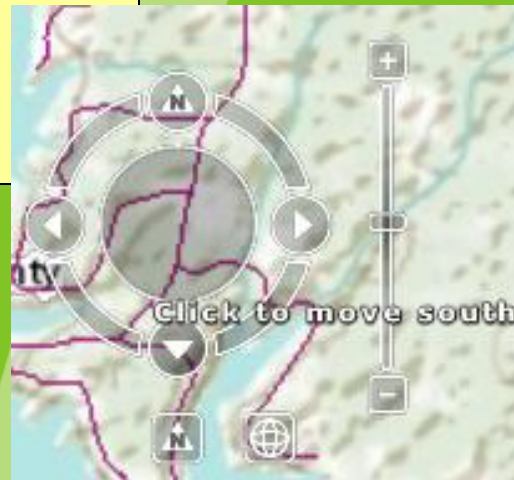
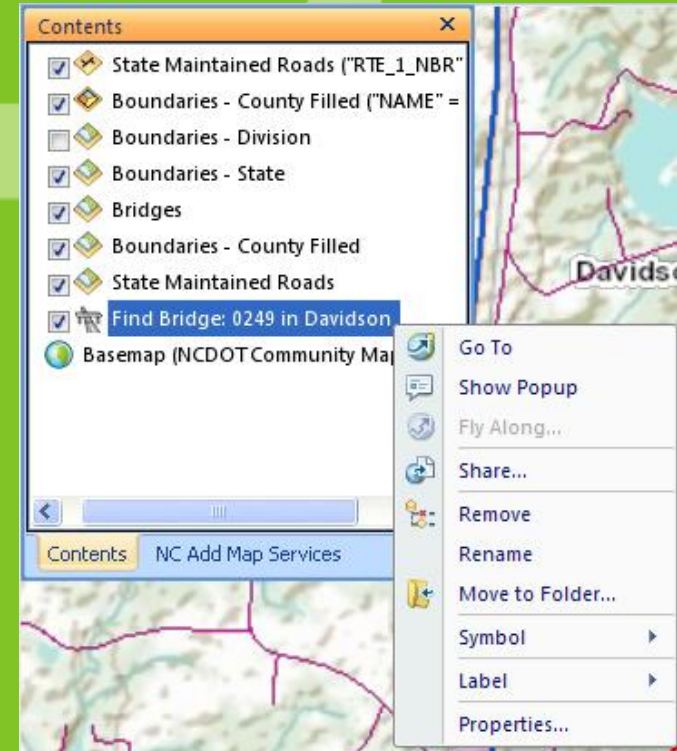
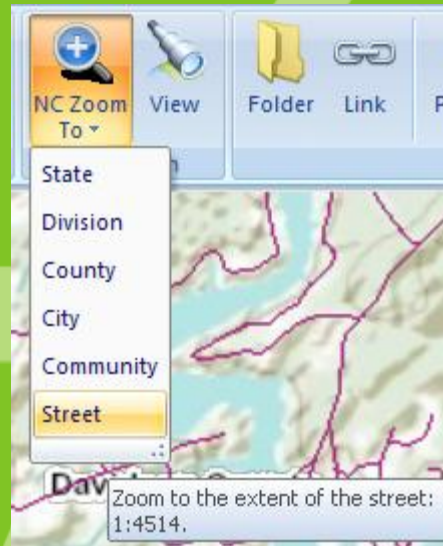
Secondary Road	
Route 1 Class	Secondary Road
Route 1 Number	2294
Route 1 Primary	Normal
Route 1 Direction	Inventory
Route 1 Start	Not start
Length 3D	0.66
Route Status	System
Source Document Type	Not-Verified
Source Document Number	Null
Revision Document Type	Not-Verified
Revision Document Number	Null
Route Subcategory	2-Lane Undivided
One Way Direction Flag	Both directions
Route 2 Class	NA
Route 2 Number	0
Route 2 Primary	NA
Route 2 Direction	NA
Route 2 Start	NA
Route 3 Class	NA
Route 3 Number	0
Route 3 Primary	NA
Route 3 Direction	NA
Route 3 Start	NA
Route 4 Class	NA
Route 4 Number	0
Route 4 Primary	NA
Route 4 Direction	NA
Route 4 Start	NA
Route 5 Class	NA

SDV Training

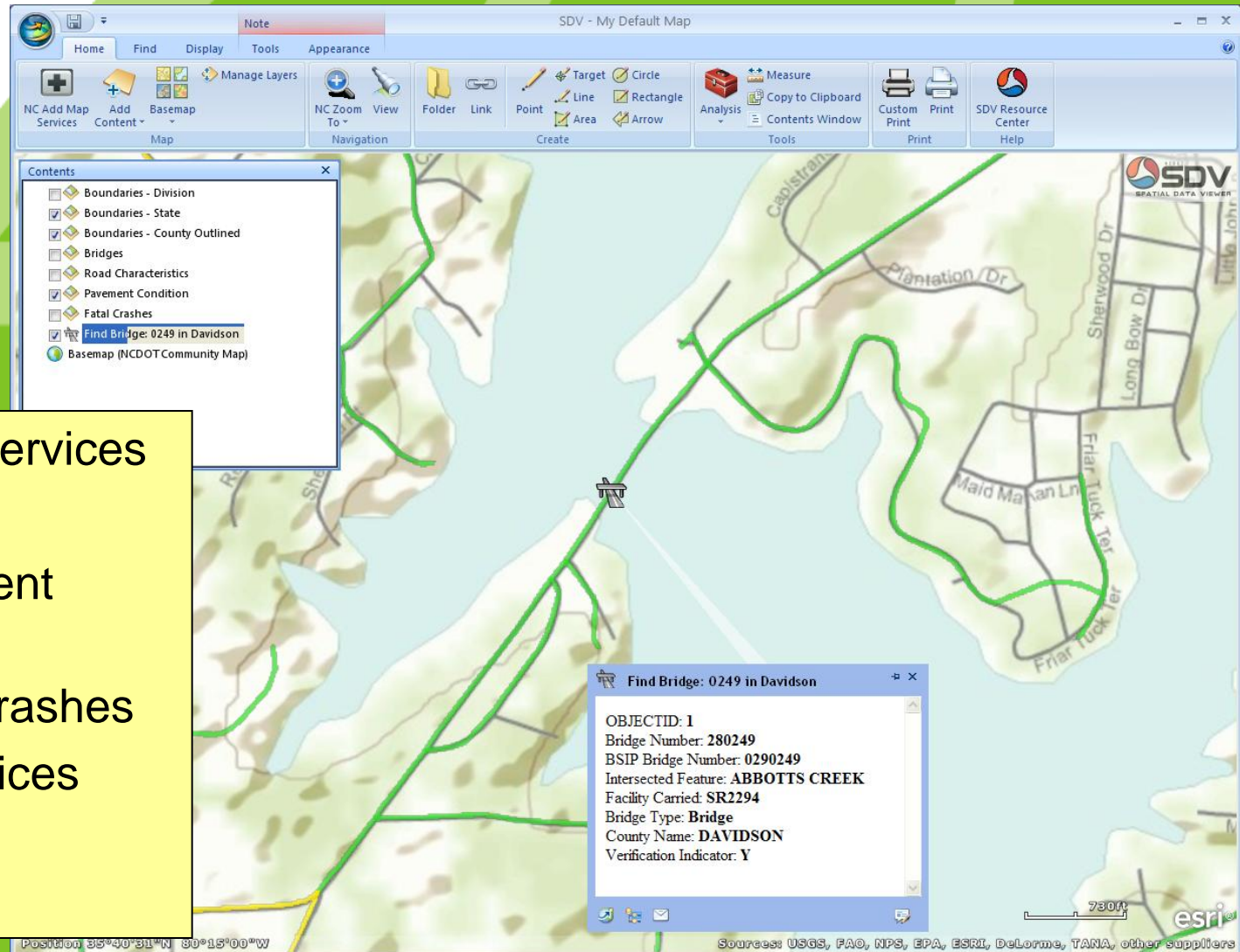


Zoom Tools

1. NC Zoom To Street
2. Mouse -Scroll
3. Go To option
4. Orientation Indicator



SDV Training



SDV - My Default Map

Home Find Display Tools Appearance

NC Add Map Services Add Content Basemap Map

NC Zoom To View Navigation

Folder Link

Create Point Line Area Target Circle Line Rectangle

Analysis Measure Copy to Clipboard Contents Window

Custom Print Print SDV Resource Center Help

Contents

- Boundaries - Division
- Boundaries - State
- Boundaries - County Outlined
- Bridges
- Road Characteristics
- Pavement Condition
- Fatal Crashes
- Find Bridge: 0249 in Davidson
- Basemap (NCDOT Community Map)

Find Bridge: 0249 in Davidson

OBJECTID: 1
 Bridge Number: 280249
 BSIP Bridge Number: 0290249
 Intersected Feature: ABBOTTS CREEK
 Facility Carried: SR2294
 Bridge Type: Bridge
 County Name: DAVIDSON
 Verification Indicator: Y

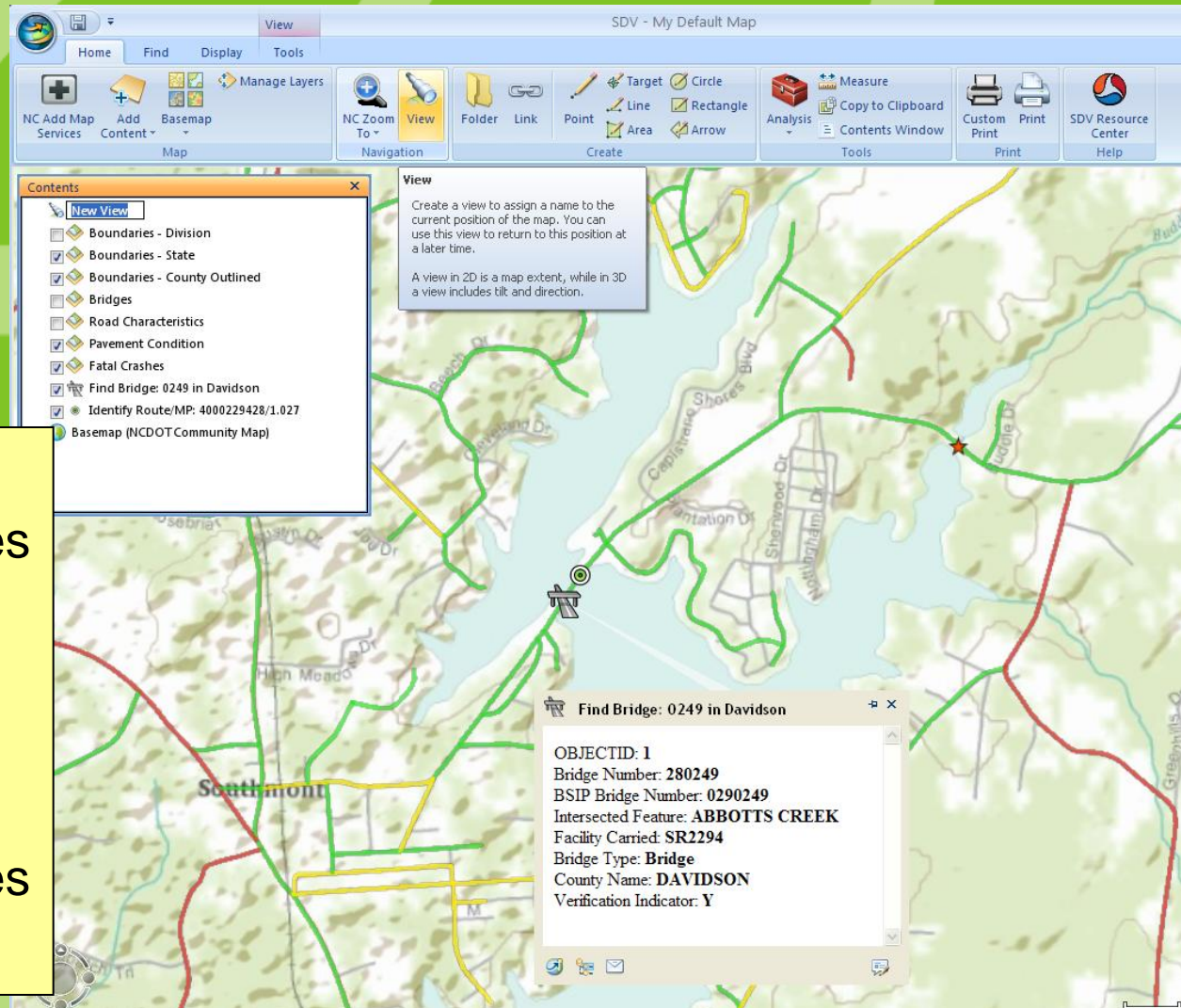
Position 35°30'31"N 80°15'00"W

Sources: USGS, FAO, NPS, EPA, ESRI, DeLorme, TANA, other suppliers

Add more Map Services

1. Home tab
2. Select Pavement Condition
3. Select Fatal Crashes
4. Add Map Services

SDV Training



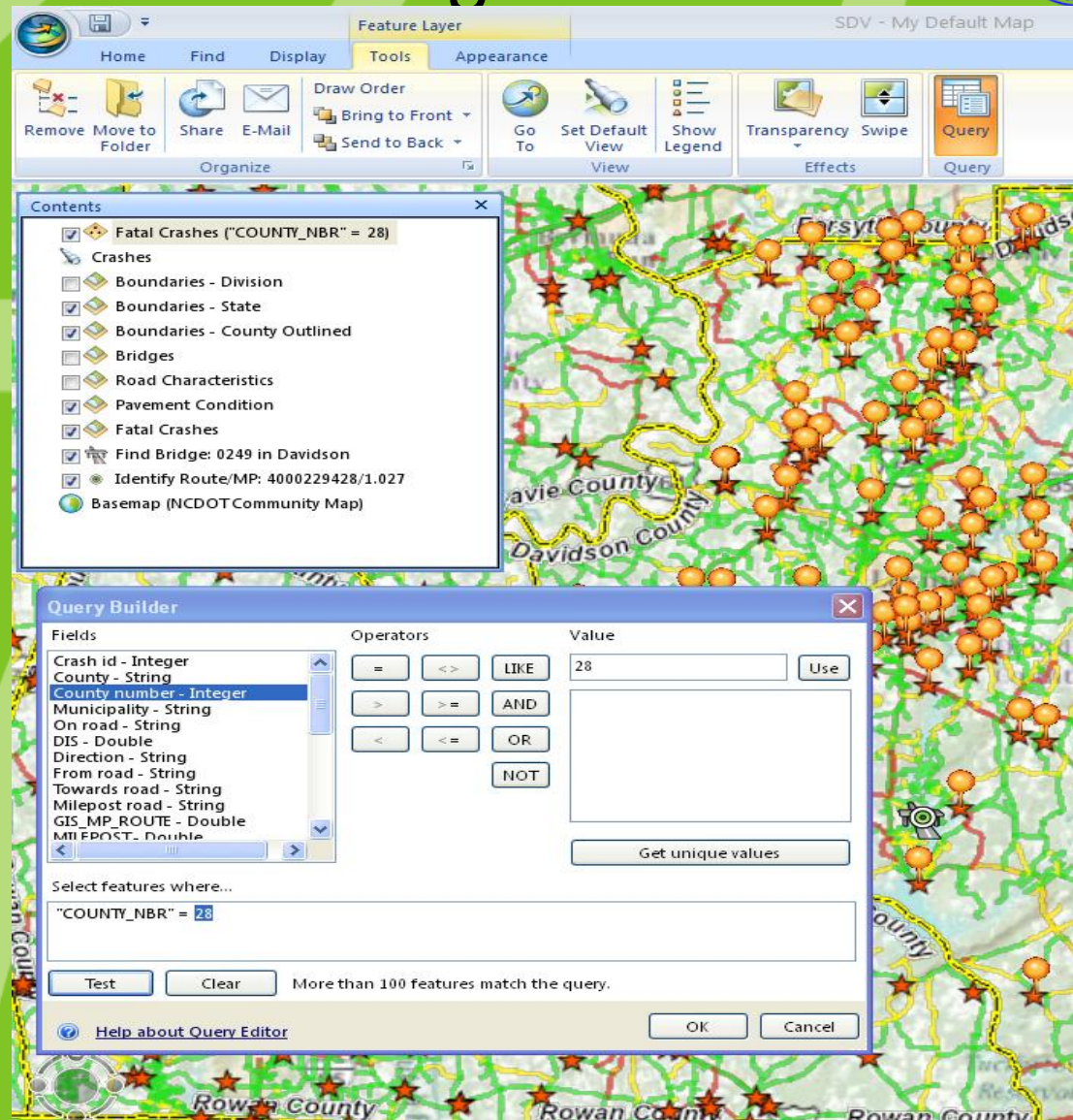
Perform more analysis

1. Click on Fatal Crashes
2. Click on Pavement Condition
3. Select View in Navigation Group
4. Save View as Crashes

SDV Training

Perform more analysis

1. Click on Fatal Crashes
2. Click Query in Tools tab
3. Write statement
4. Test and say OK

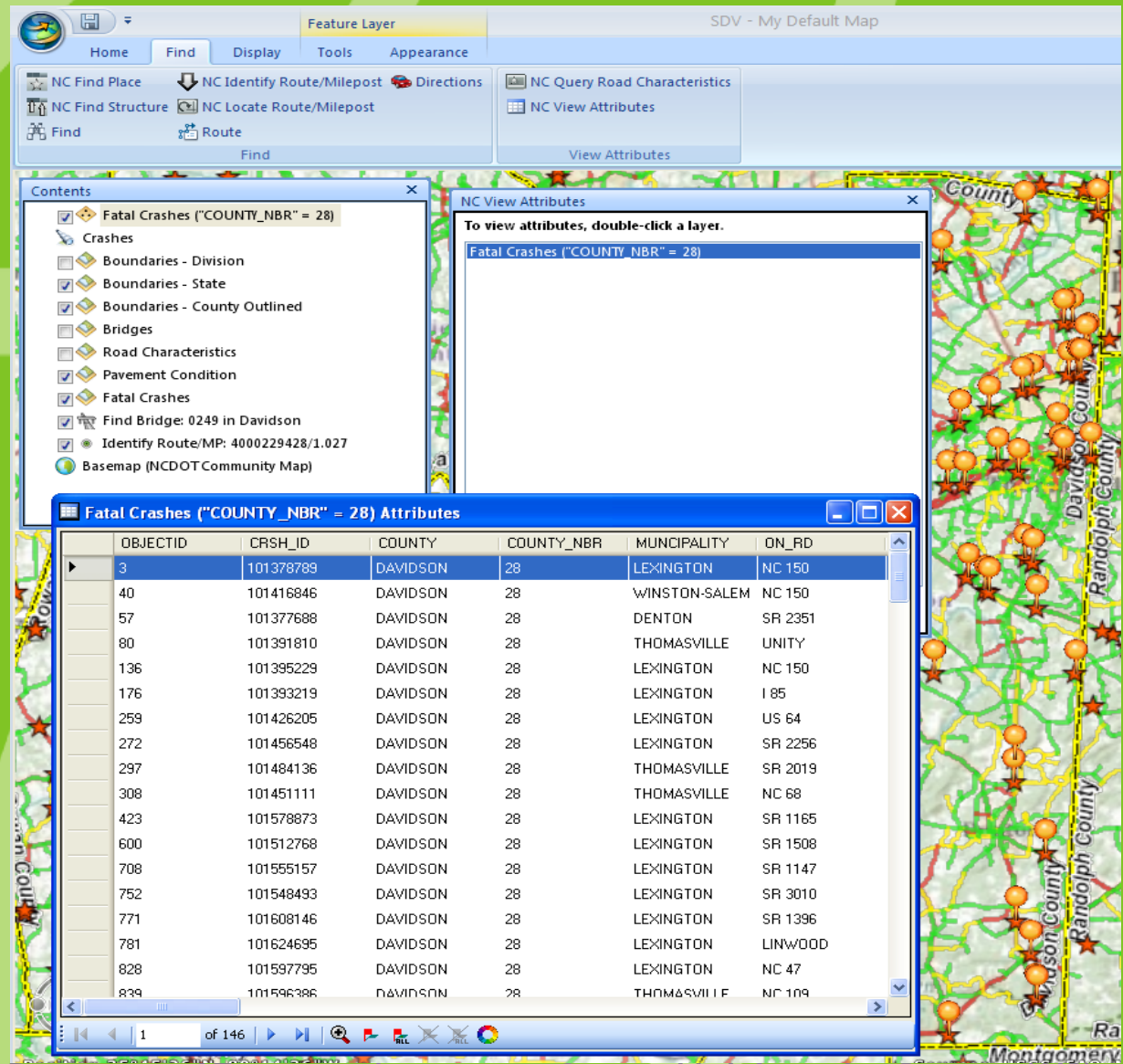


The screenshot shows the SDV software interface. The 'Contents' panel on the left lists several layers, with 'Fatal Crashes ("COUNTY_NBR" = 28)' selected. The 'Query Builder' dialog is open, showing a list of fields on the left, including 'County number - Integer'. The 'Operators' section shows the '=' operator selected. The 'Value' field contains '28'. The 'Test' button is highlighted, and a message at the bottom indicates 'More than 100 features match the query.' The background map shows a network of roads with orange markers representing fatal crashes in Davidson County.

SDV Training

Review Attributes

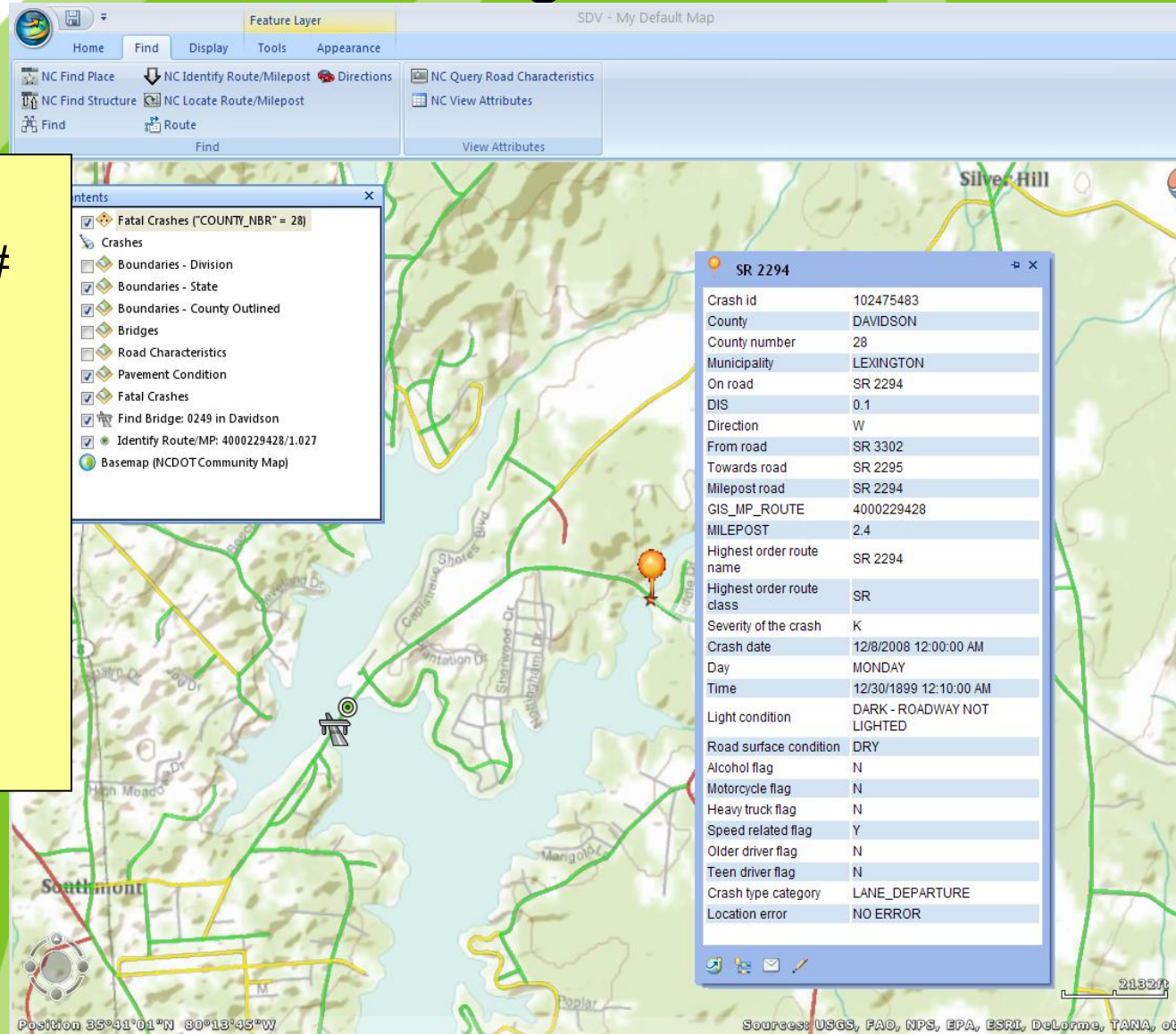
1. Click Find tab
2. Double-click the results from the query
3. Attributes table becomes available
4. Have any fatal crashes occurred on SR-2294?



The screenshot shows the SDV interface with the 'Find' tab selected. The 'Contents' pane shows a query for 'Fatal Crashes ("COUNTY_NBR" = 28)'. The 'NC View Attributes' pane shows a table of attributes for these crashes.

OBJECTID	CRSH_ID	COUNTY	COUNTY_NBR	MUNICIPALITY	ON_RD
3	101378789	DAVIDSON	28	LEXINGTON	NC 150
40	101416846	DAVIDSON	28	WINSTON-SALEM	NC 150
57	101377688	DAVIDSON	28	DENTON	SR 2351
80	101391810	DAVIDSON	28	THOMASVILLE	UNITY
136	101395229	DAVIDSON	28	LEXINGTON	NC 150
176	101393219	DAVIDSON	28	LEXINGTON	I 85
259	101426205	DAVIDSON	28	LEXINGTON	US 64
272	101456548	DAVIDSON	28	LEXINGTON	SR 2256
297	101484136	DAVIDSON	28	THOMASVILLE	SR 2019
308	101451111	DAVIDSON	28	THOMASVILLE	NC 68
423	101578873	DAVIDSON	28	LEXINGTON	SR 1165
600	101512768	DAVIDSON	28	LEXINGTON	SR 1508
708	101555157	DAVIDSON	28	LEXINGTON	SR 1147
752	101548493	DAVIDSON	28	LEXINGTON	SR 3010
771	101608146	DAVIDSON	28	LEXINGTON	SR 1396
781	101624695	DAVIDSON	28	LEXINGTON	LINWOOD
828	101597795	DAVIDSON	28	LEXINGTON	NC 47
839	101596386	DAVIDSON	28	THOMASVILLE	NC 109

SDV Training



SDV - My Default Map

Feature Layer

Home Find Display Tools Appearance

NC Find Place NC Identify Route/Milepost Directions NC Query Road Characteristics
 NC Find Structure NC Locate Route/Milepost NC View Attributes
 Find Route View Attributes

Contents

- Fatal Crashes ("COUNTY_NBR" = 28)
- Crashes
- Boundaries - Division
- Boundaries - State
- Boundaries - County Outlined
- Bridges
- Road Characteristics
- Pavement Condition
- Fatal Crashes
- Find Bridge: 0249 in Davidson
- Identify Route/MP: 4000229428/1.027
- Basemap (NCDOT Community Map)

SR 2294

Crash id	102475483
County	DAVIDSON
County number	28
Municipality	LEXINGTON
On road	SR 2294
DIS	0.1
Direction	W
From road	SR 3302
Towards road	SR 2295
Milepost road	SR 2294
GIS_MP_ROUTE	4000229428
MILEPOST	2.4
Highest order route name	SR 2294
Highest order route class	SR
Severity of the crash	K
Crash date	12/8/2008 12:00:00 AM
Day	MONDAY
Time	12/30/1899 12:10:00 AM
Light condition	DARK - ROADWAY NOT LIGHTED
Road surface condition	DRY
Alcohol flag	N
Motorcycle flag	N
Heavy truck flag	N
Speed related flag	Y
Older driver flag	N
Teen driver flag	N
Crash type category	LANE_DEPARTURE
Location error	NO ERROR

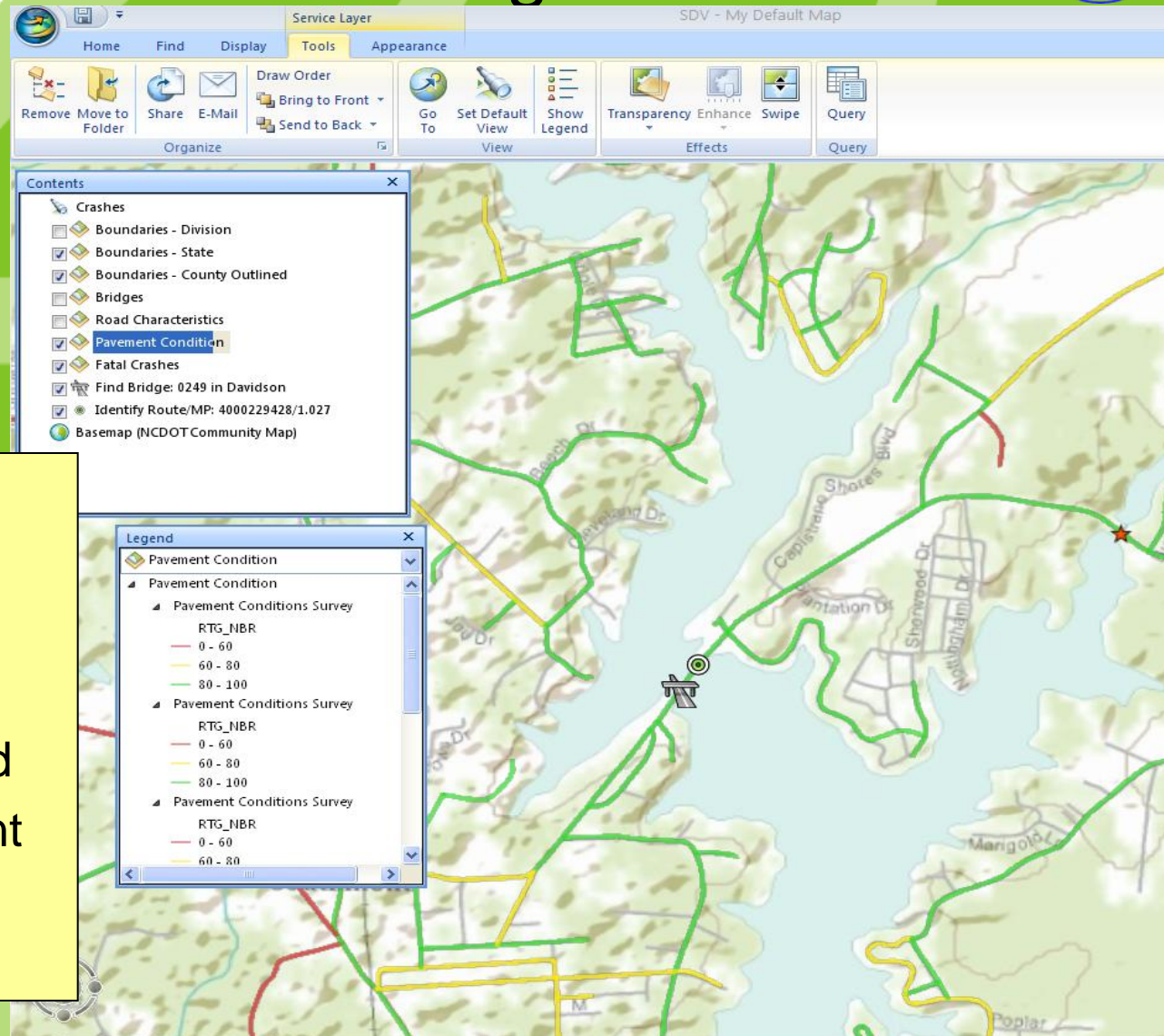
Position 35°41'01"N 80°13'45"W

Sources: USGS, FAO, NPS, EPA, ESRI, DeLorme, TANA, etc

Review Attributes

1. Zoom in to bridge # 249
2. Double-click the closest fatal accident symbol
3. Attributes table becomes available
4. Was this a teen driver?

SDV Training



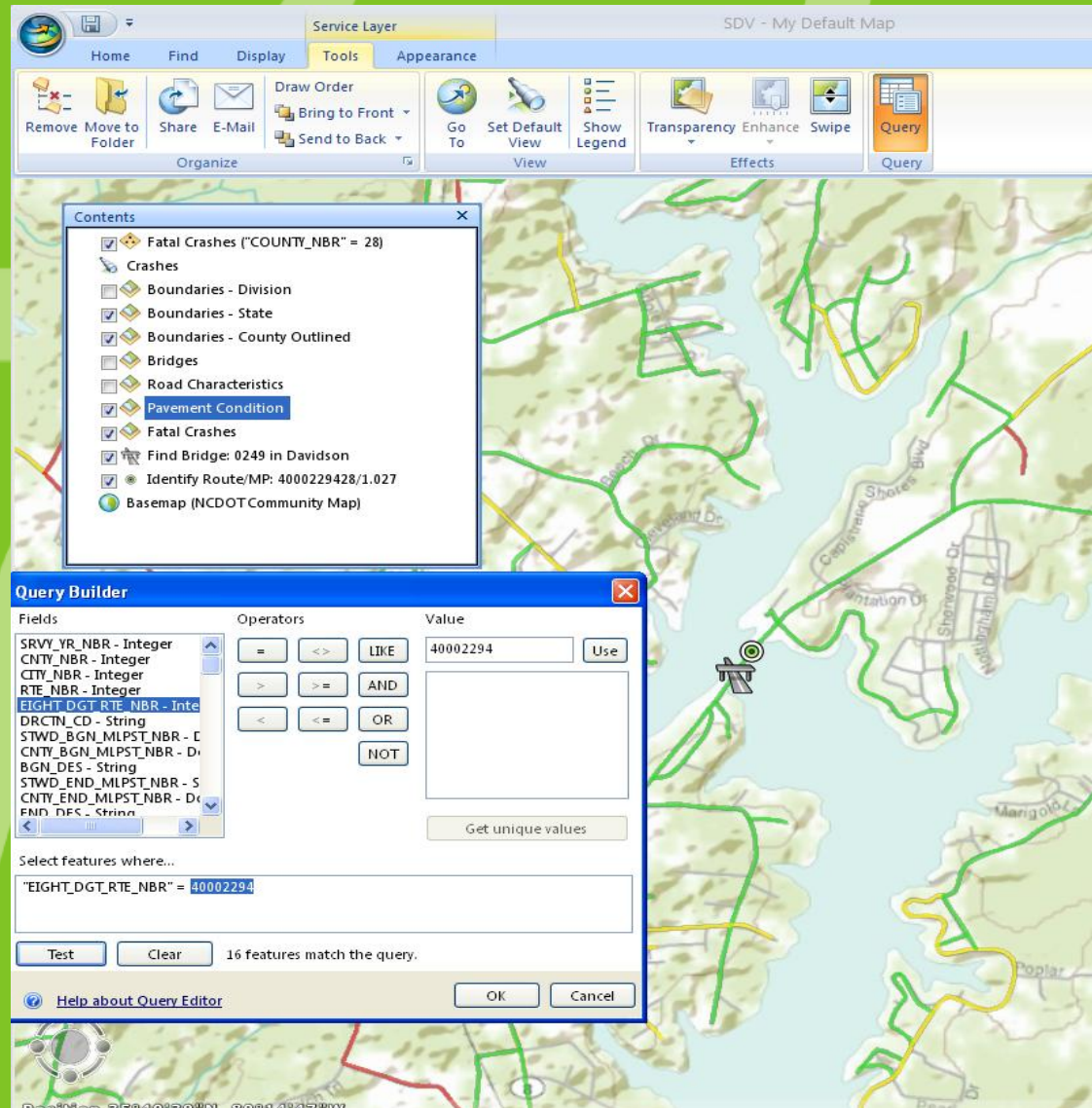
Perform more analysis

1. Click on Pavement Condition
2. Click Tools Tab
3. Select Show Legend
4. Determine Pavement Condition

SDV Training

Perform more analysis

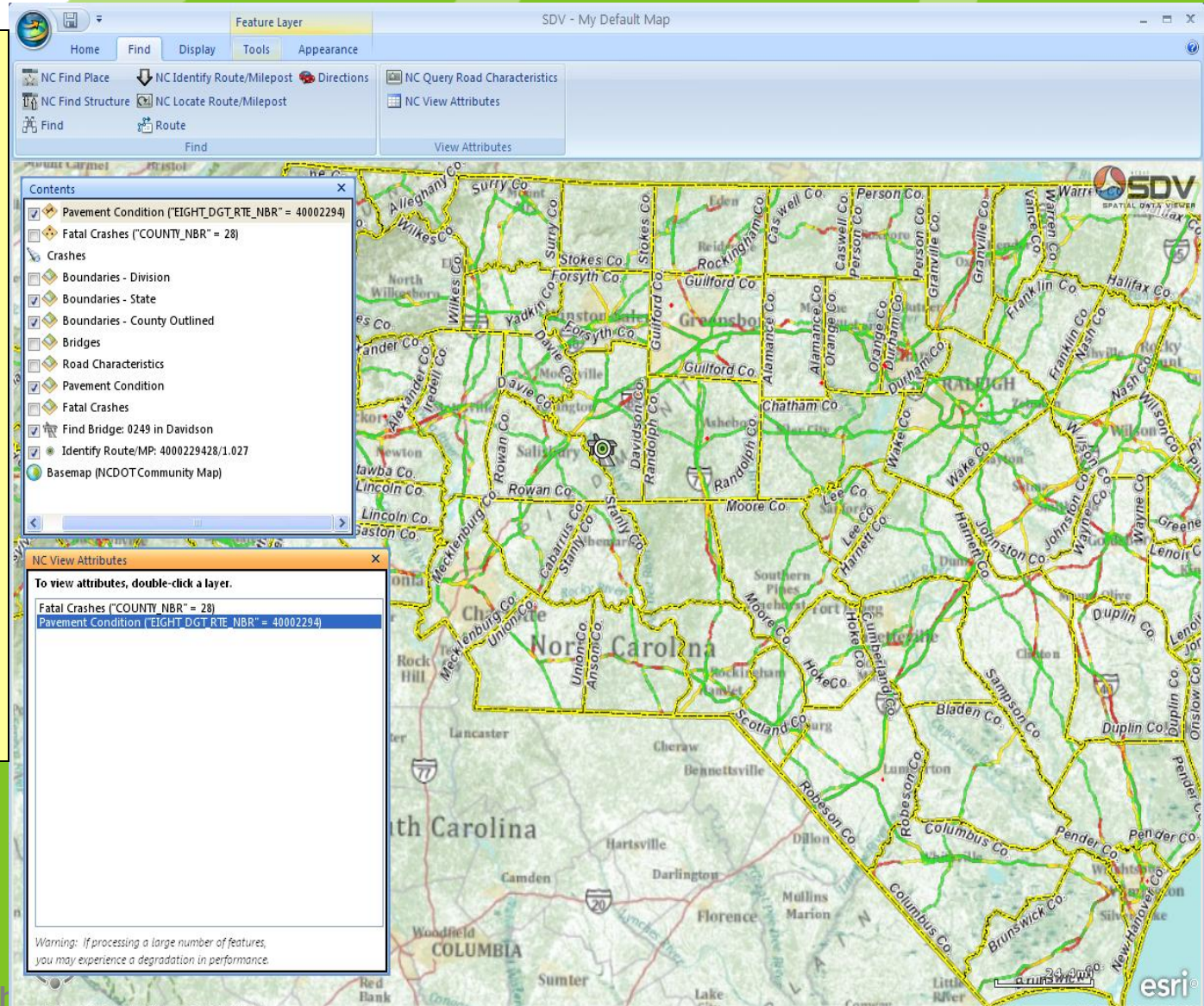
1. Click on Pavement Condition
2. Click Tools Tab
3. Query
4. Use the EIGHT_DGT_RTE_NMR to write SQL (hint – the number is already in Contents Window)
5. Click Use,
6. Click Test
7. Click OK



The screenshot shows the SDV - My Default Map interface. The 'Contents' window is open, listing various layers. The 'Pavement Condition' layer is selected. The 'Query Builder' window is also open, showing a query for 'EIGHT_DGT_RTE_NMR' with the value '40002294'. The query is: "EIGHT_DGT_RTE_NMR" = 40002294. The 'Test' button is highlighted, and the message '16 features match the query.' is displayed.

Map Zooms out – Why?

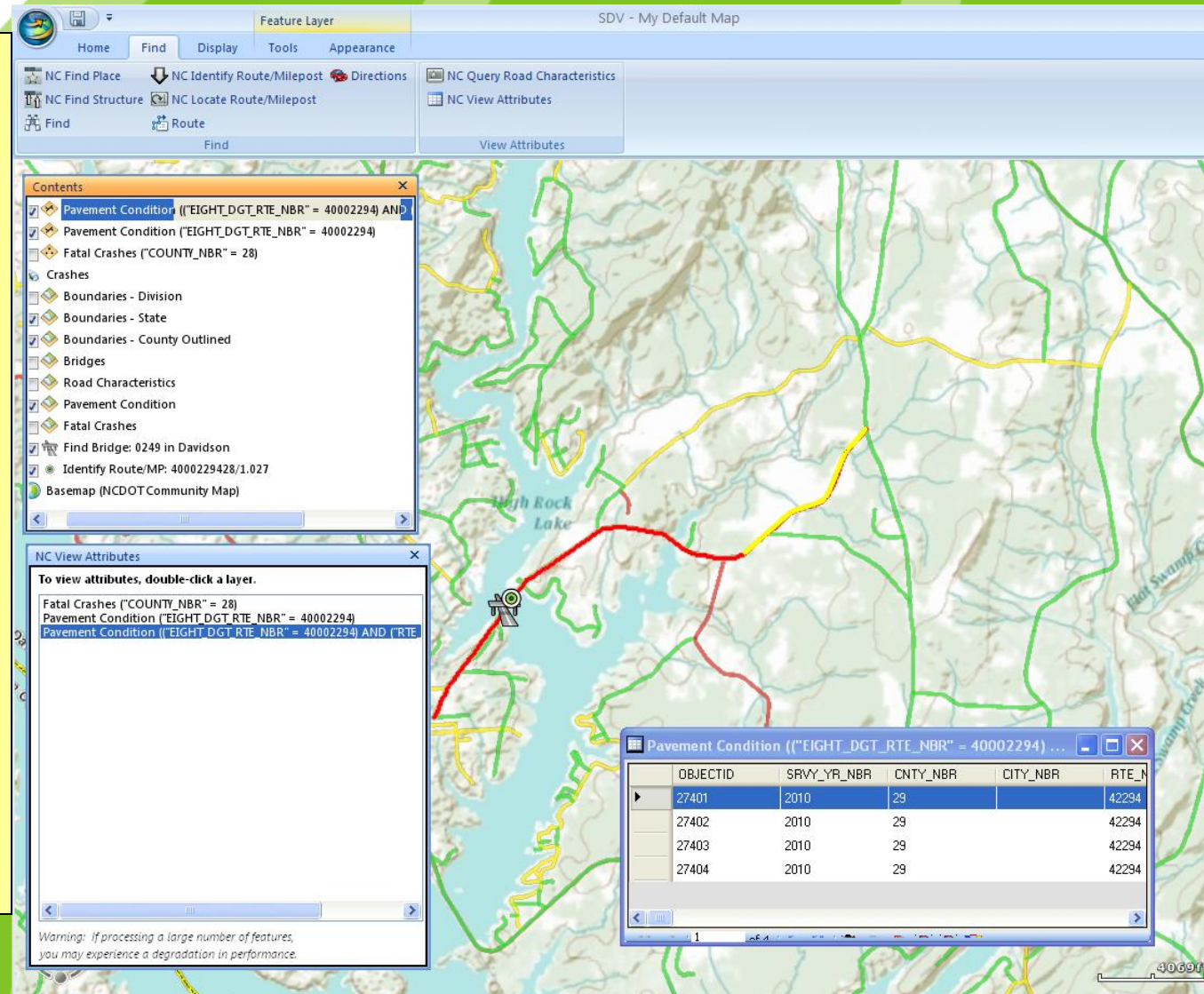
1. Click on Find
2. Click NC View Attributes
3. Double-Click Pavement Condition
4. Notice the CNTY_NBR field



The screenshot shows the SDV Spatial Data Viewer interface. The main map displays a network of roads in North Carolina, with county boundaries outlined in yellow. The interface includes a toolbar at the top with options like Home, Find, Display, Tools, and Appearance. A 'Contents' panel on the left lists various layers, including 'Pavement Condition', 'Fatal Crashes', and 'Boundaries'. A 'NC View Attributes' panel is open, showing a list of attributes for the selected 'Pavement Condition' layer, with the 'CNTY_NBR' field highlighted. A warning message at the bottom of the attributes panel states: 'Warning: If processing a large number of features, you may experience a degradation in performance.'

Query the query

1. Click on Pavement condition results
2. Find Tab, Query
3. Use RTE_ID and string
4. Use & Test
5. Click Find
6. Double-click NC View Attributes
7. Examine results- Symbology & data

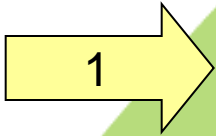


The screenshot shows the SDV interface with a map of North Carolina. The 'Contents' window on the left lists several layers, including 'Pavement Condition' with a query string: `(("EIGHT_DGT_RTE_NBR" = 40002294) AND ("RTE_ID" = 40002294))`. The 'NC View Attributes' window is open, showing the same query string. A table window titled 'Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294) ...' displays the following data:

OBJECTID	SRVY_YR_NBR	CNTY_NBR	CITY_NBR	RTE_NBR
27401	2010	29		42294
27402	2010	29		42294
27403	2010	29		42294
27404	2010	29		42294

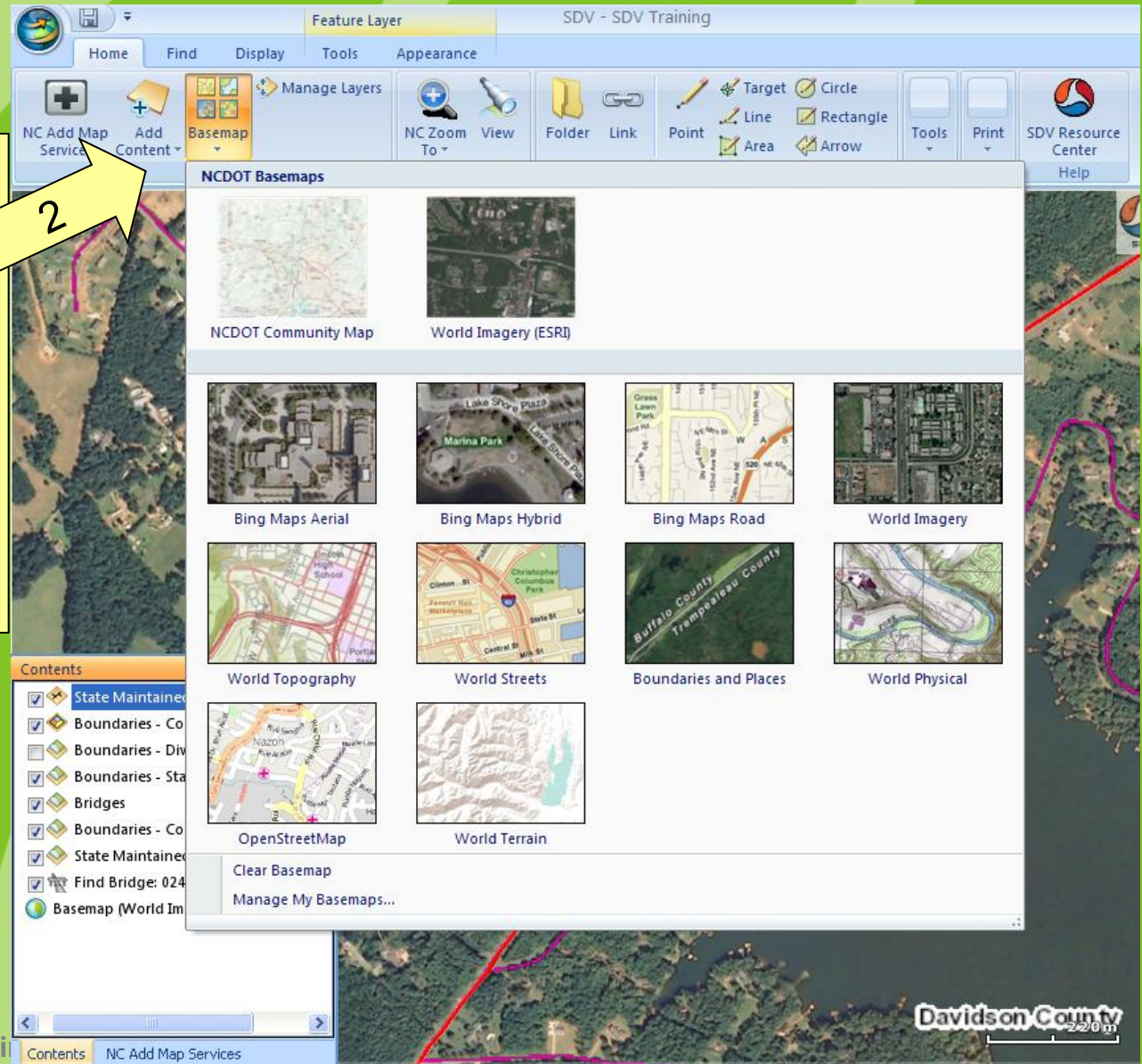
Warning: If processing a large number of features, you may experience a degradation in performance.

SDV Training



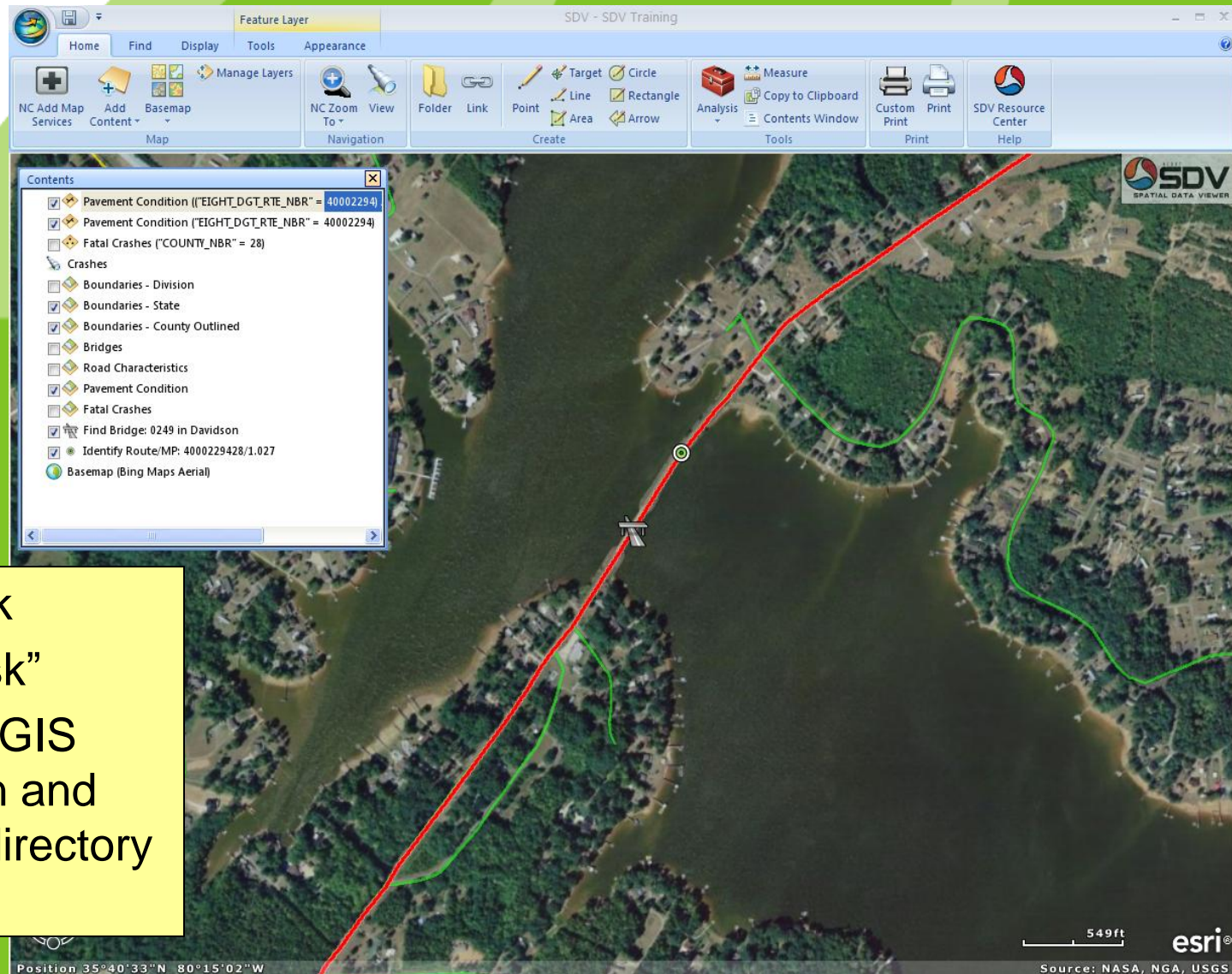
Change Basemap

1. Click Home tab
2. Click Basemap button
3. Click ESRI World Imagery

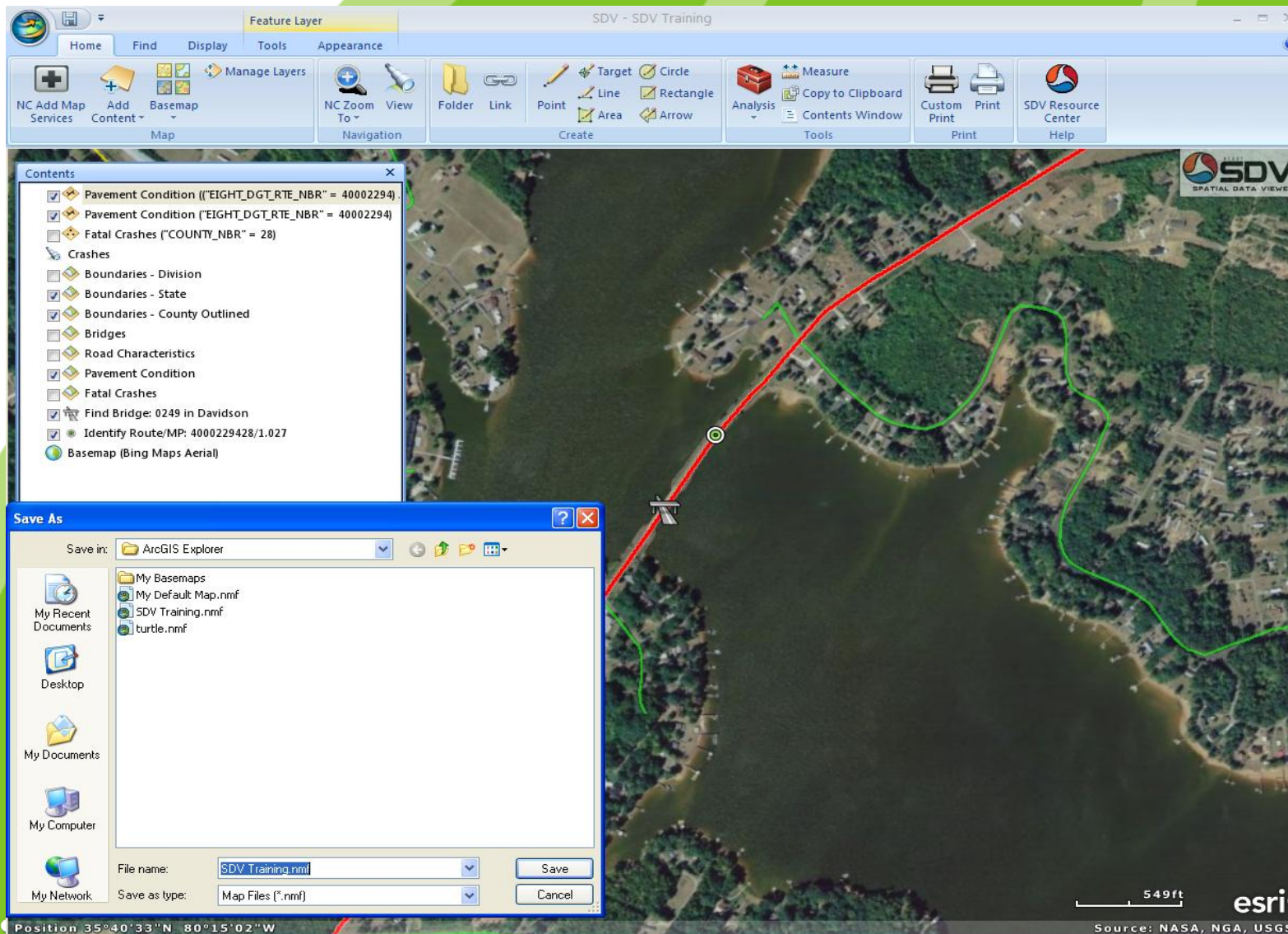
The screenshot shows the SDV software interface with the 'Basemap' menu open. The 'Home' tab is selected in the top menu bar. The 'Basemap' button in the toolbar is highlighted. The 'NCDOT Basemaps' menu is displayed, showing various map styles including 'NCDOT Community Map', 'World Imagery (ESRI)', 'Bing Maps Aerial', 'Bing Maps Hybrid', 'Bing Maps Road', 'World Imagery', 'World Topography', 'World Streets', 'Boundaries and Places', 'World Physical', 'OpenStreetMap', and 'World Terrain'. The 'World Imagery (ESRI)' option is selected. The 'Contents' panel on the left shows a list of layers, with 'Basemap (World Im)' at the bottom. The 'NC Add Map Services' button is also visible in the toolbar.

SDV Training

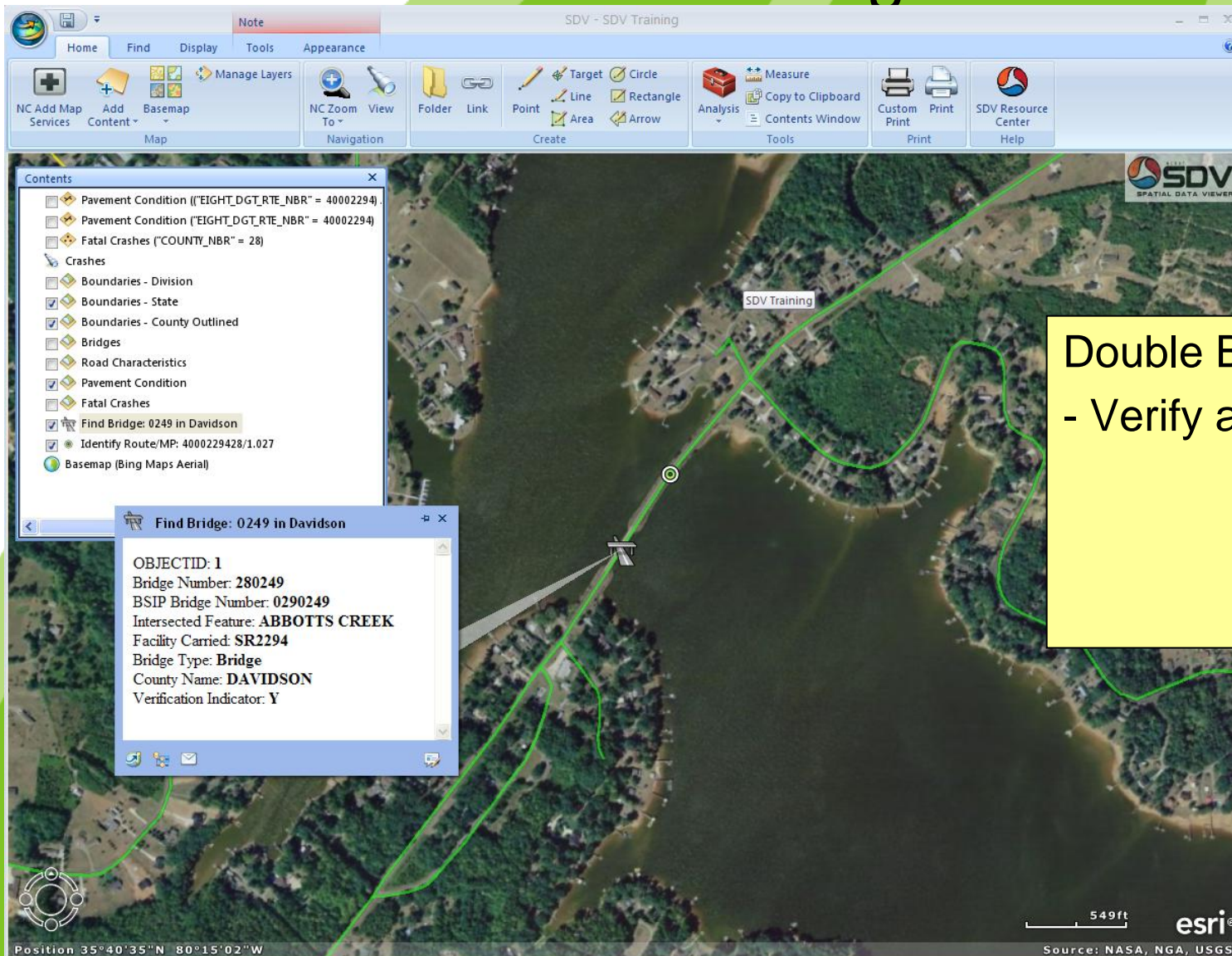


Save Your Work
 1. Click on “disk”
 2. Click on ArcGIS Explorer icon and navigate to directory

SDV Training



The screenshot displays the SDV Training application window. The title bar reads "SDV - SDV Training". The interface includes a menu bar with "Home", "Find", "Display", "Tools", and "Appearance". Below the menu bar is a toolbar with various icons for map management, navigation, and analysis. A "Contents" window is open on the left, listing several layers such as "Pavement Condition", "Fatal Crashes", and "Boundaries". The main map area shows an aerial view of a road network with a red line and a green line. A "Save As" dialog box is open in the foreground, showing the file name "SDV Training.nmf" and the save type "Map Files (*.nmf)". The dialog box also shows the save location as "ArcGIS Explorer" and lists recent documents. At the bottom of the window, there is a status bar with the position "35°40'33\"



Contents

- Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294)
- Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294)
- Fatal Crashes ("COUNTY_NBR" = 28)
- Crashes
 - Boundaries - Division
 - Boundaries - State
 - Boundaries - County Outlined
 - Bridges
 - Road Characteristics
 - Pavement Condition
 - Fatal Crashes
 - Find Bridge: 0249 in Davidson
 - Identify Route/MP: 4000229428/1.027
 - Basemap (Bing Maps Aerial)

Find Bridge: 0249 in Davidson

OBJECTID: 1
 Bridge Number: 280249
 BSIP Bridge Number: 0290249
 Intersected Feature: ABBOTTS CREEK
 Facility Carried: SR2294
 Bridge Type: Bridge
 County Name: DAVIDSON
 Verification Indicator: Y

Position 35°40'35"N 80°15'02"W

549ft esri®

Source: NASA, NGA, USGS

Double Bridge Icon
 - Verify attributes

Contents

- Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294)
- Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294)
- Fatal Crashes ("COUNTY_NBR" = 28)
- Crashes
 - Boundaries - Division
 - Boundaries - State
 - Boundaries - County Outlined
 - Bridges
 - Road Characteristics
 - Pavement Condition
 - Fatal Crashes
- Find Bridge: 0249 in Davidson
- Identify Route/MP: 4000229428/1.027
- Basemap (Bing Maps Aerial)

Find Bridge: 0249 in Davidson

OBJECTID: 1
 Bridge Number: 280249
 BSIP Bridge Number: 0290249
 Intersected Feature: ABBOTTS CREEK
 Facility Carried: SR2294
 Bridge Type: Bridge
 County Name: DAVIDSON
 Verification Indicator: Y

Position 35°40'35"N 80°15'02"W

Scale: 549ft

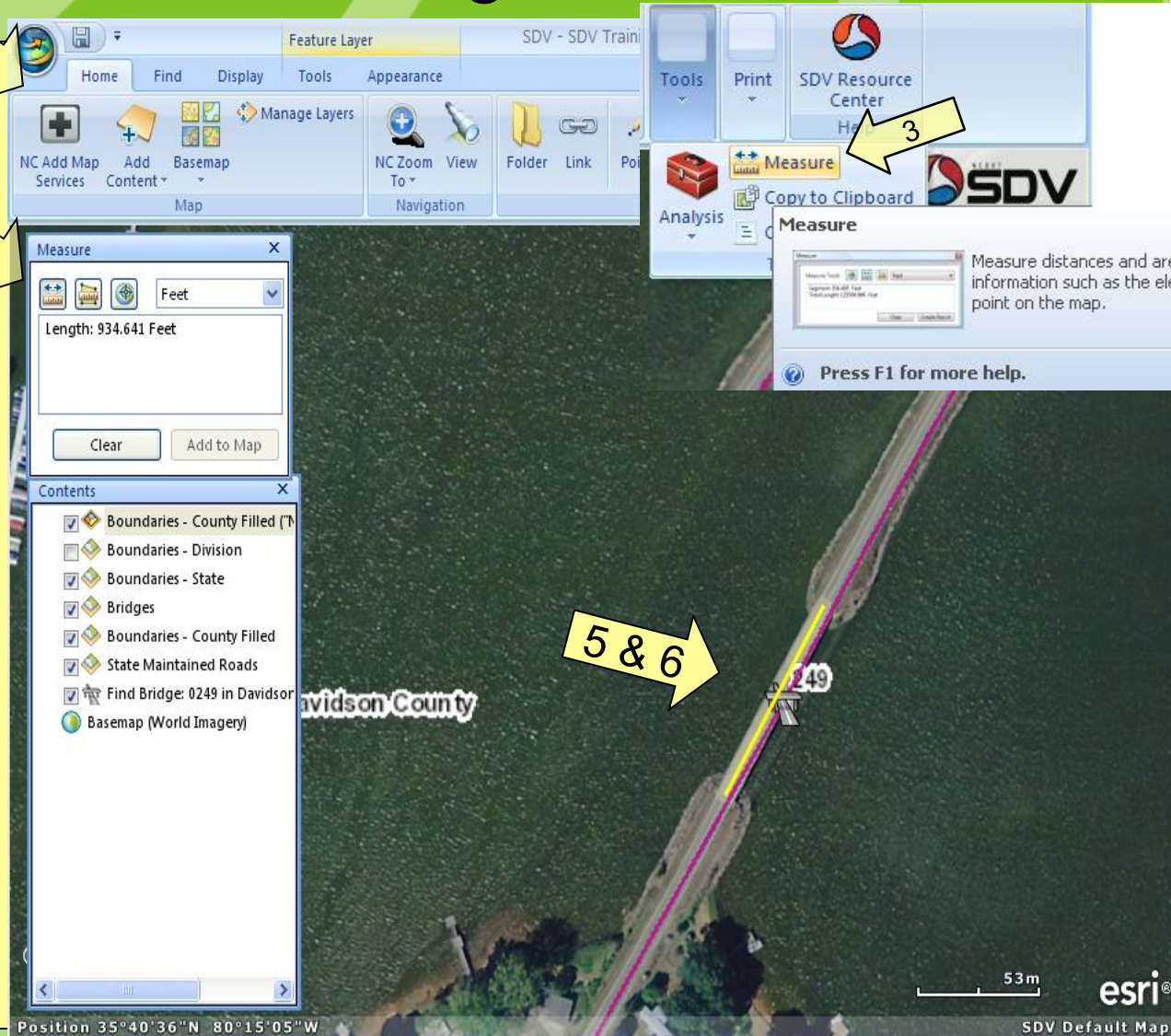
Source: NASA, NGA, USGS

Double Bridge Icon
 - Verify attributes
 Use "GO TO"
 option

SDV Training

Measure Collapsed Bridge

1. Click Home tab
2. Click Tools
3. Click Measure tool
4. Click the first button for length and the middle button to measure area and select unit of measurement
5. Click, draw line, then double click to finish
6. Measured area gets hi-lighted



SDV - SDV Train

Home Find Display Tools Appearance

NC Add Map Services Add Content Basemap Map

NC Zoom View To Folder Link

Measure

Length: 934,641 Feet

Clear Add to Map

Contents

- Boundaries - County Filled (T)
- Boundaries - Division
- Boundaries - State
- Bridges
- Boundaries - County Filled
- State Maintained Roads
- Find Bridge: 0249 in Davidsor
- Basemap (World Imagery)

Davidson County

249

53m

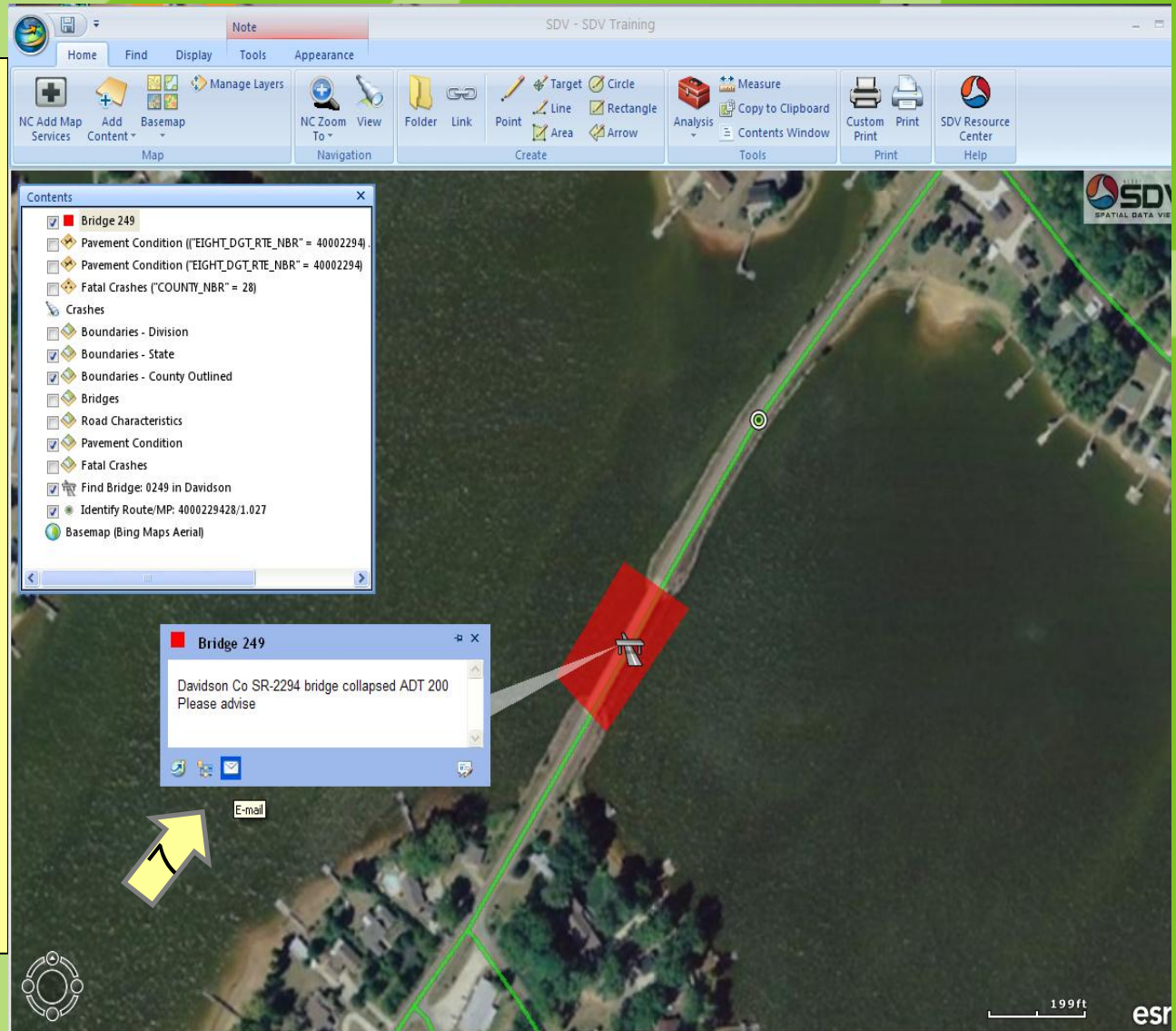
esri®

SDV Default Map

Position 35°40'36"N 80°15'05"W

Create a Note

1. Click Note tab
2. Click Area under Tools tab
3. Click on the map to outline the area of concern
4. Finish the area by double clicking
5. Add information to the note window
6. OK
7. Click Email



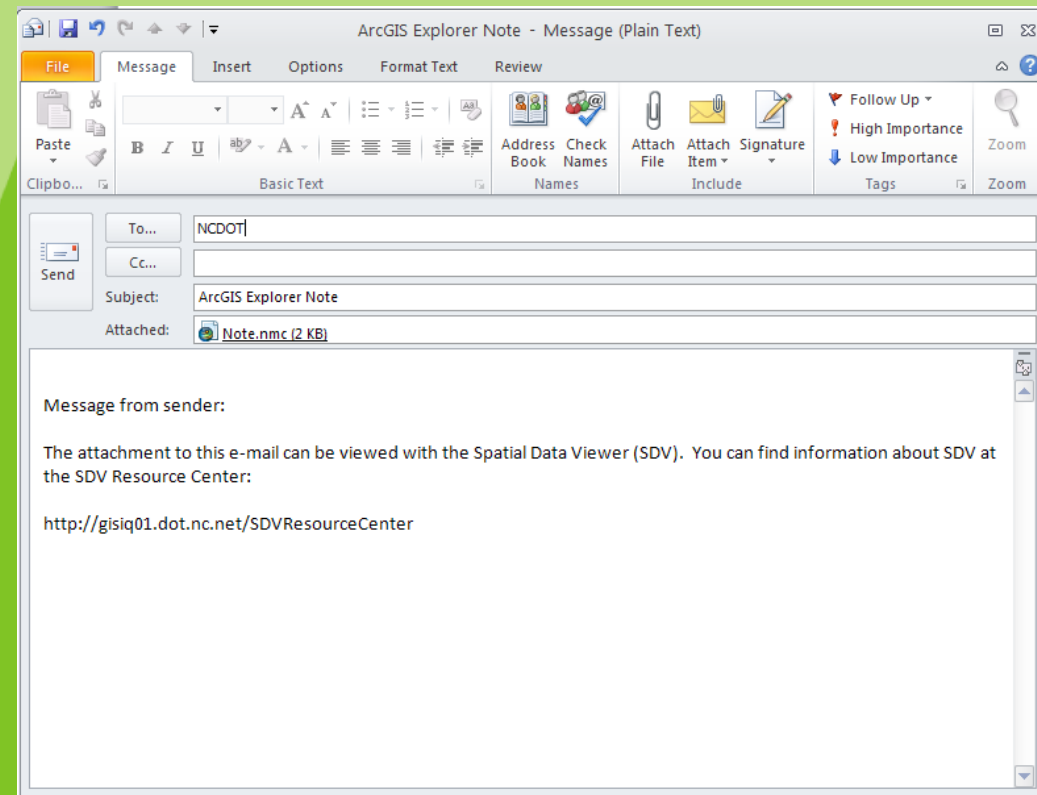
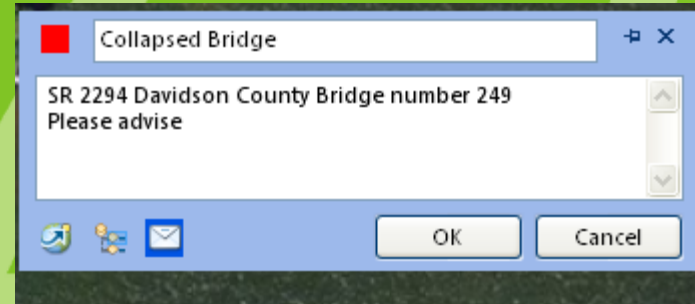
The screenshot shows the SDV - SDV Training application window. The interface includes a menu bar (Home, Find, Display, Tools, Appearance) and a toolbar with various tools like 'NC Add Map Services', 'Add Content', 'Basemap', 'Map', 'NC Zoom View To', 'Navigation', 'Folder', 'Link', 'Point', 'Line', 'Area', 'Arrow', 'Target', 'Circle', 'Rectangle', 'Measure', 'Copy to Clipboard', 'Contents Window', 'Custom Print', 'Print', and 'SDV Resource Center Help'. A 'Contents' panel on the left lists layers such as 'Bridge 249', 'Pavement Condition', 'Fatal Crashes', 'Crashes', 'Boundaries - Division', 'Boundaries - State', 'Boundaries - County Outlined', 'Bridges', 'Road Characteristics', 'Pavement Condition', 'Fatal Crashes', 'Find Bridges: 0249 in Davidson', 'Identify Route/MP: 4000229428/1.027', and 'Basemap (Bing Maps Aerial)'. A red polygon is drawn on the map, and a note window titled 'Bridge 249' is open, containing the text: 'Davidson Co SR-2294 bridge collapsed ADT 200 Please advise'. A yellow arrow points to the 'E-mail' icon in the note window. A scale bar at the bottom right indicates 199ft.

SDV Training



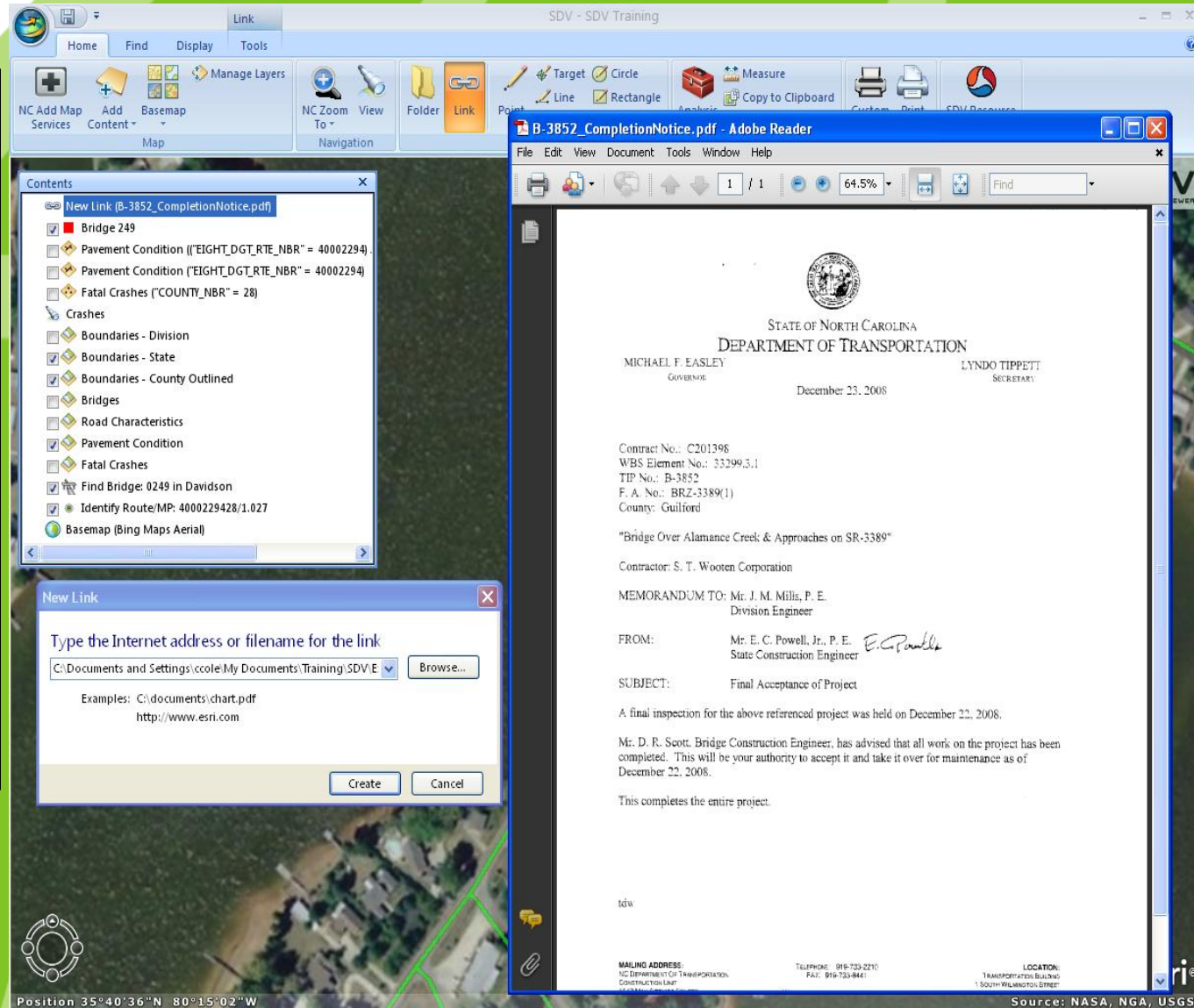
Sending E-Mail Options

1. Click E-Mail icon on note
2. ArcGIS Explorer button
3. Click Share
 - E-mail Map sends a map package, others will need the same access to the data
 - E-mail View sends a jpg
 - You can also right click the mouse and select Share option



Add a link to documents

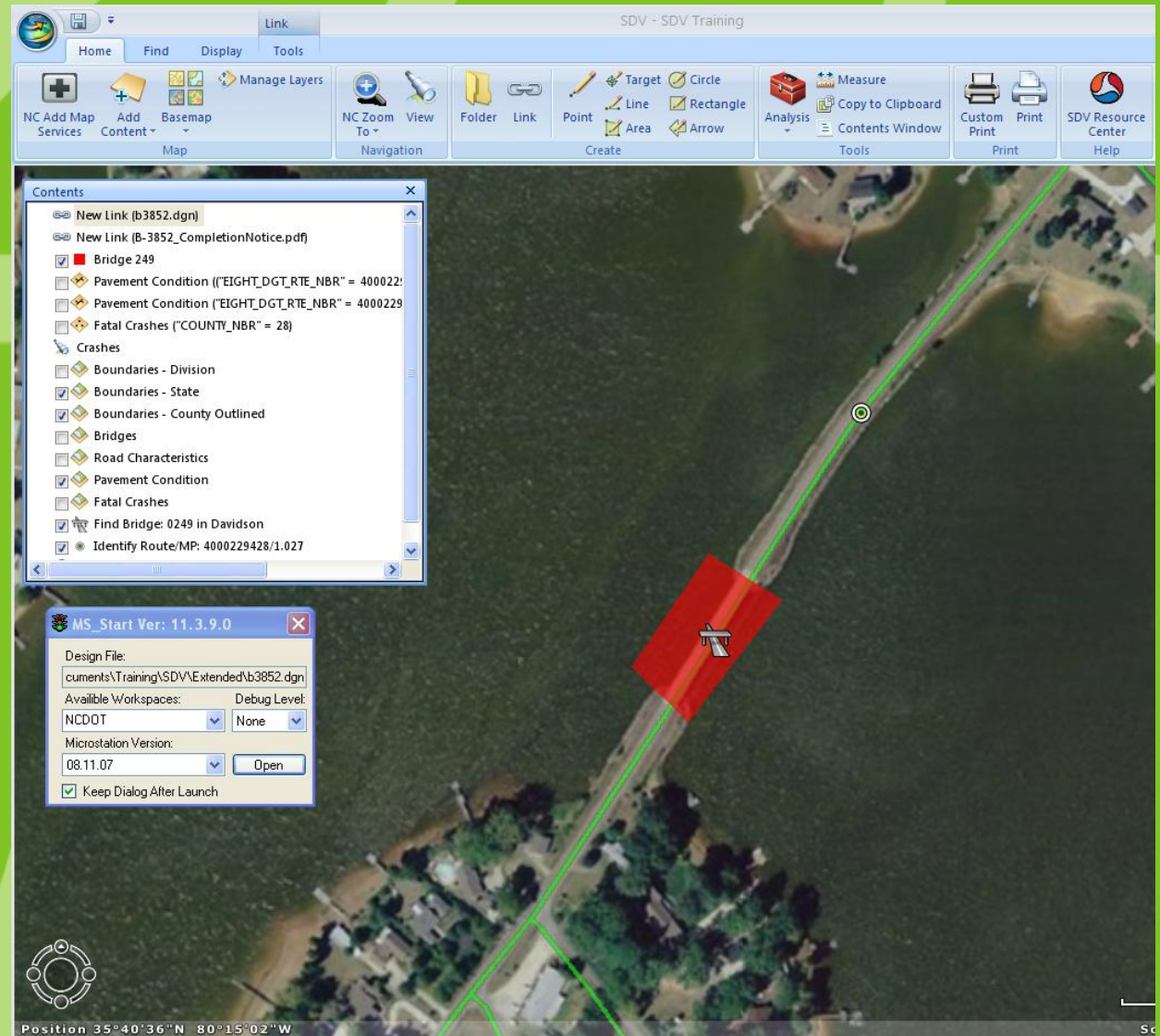
1. Click Link icon
2. Navigate to correct directory
3. Click on the new link in the Contents Window
4. Rename link



The screenshot shows the SDV - SDV Training application window. The toolbar includes a 'Link' icon (a chain link). The 'Contents' window on the left shows a tree view of layers, with a new link 'New Link (B-3852_CompletionNotice.pdf)' at the top. The 'New Link' dialog box is open, showing a text input field with the path 'C:\Documents and Settings\coole\My Documents\Training\SDV\E' and a 'Browse...' button. Below the input field are examples: 'C:\documents\chart.pdf' and 'http://www.esri.com'. The 'Create' and 'Cancel' buttons are at the bottom. An Adobe Reader window is open on top right, displaying a document titled 'B-3852_CompletionNotice.pdf'. The document is a memorandum from the North Carolina Department of Transportation, dated December 23, 2008, regarding a bridge project. The document includes contract information, contractor details, and a final acceptance statement.

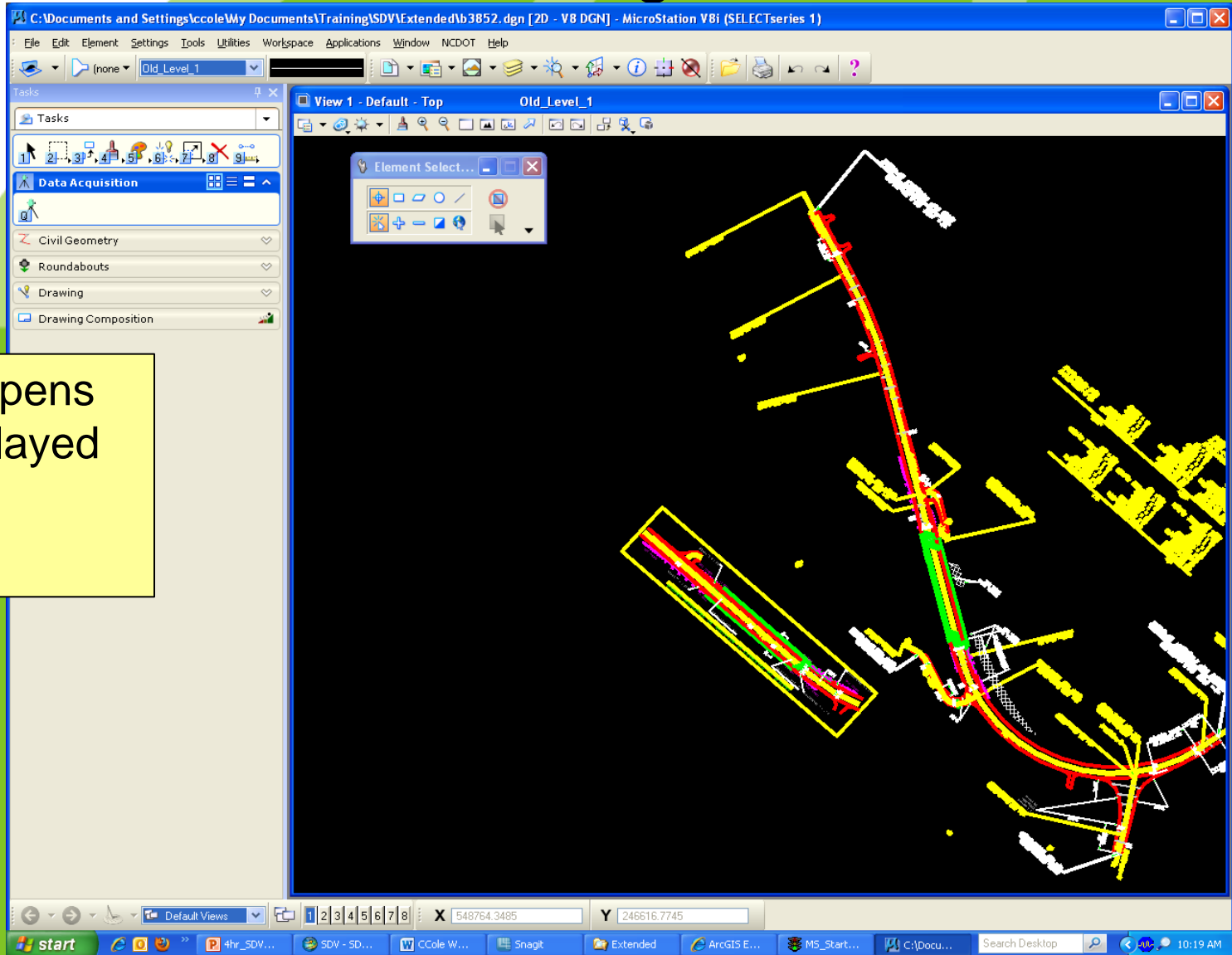
Add Link to .dgn

1. Click Home Tab
2. Click Link
3. Navigate to directory for .dgn
4. Double-click link to .dgn in Contents Window
5. Open new dialog



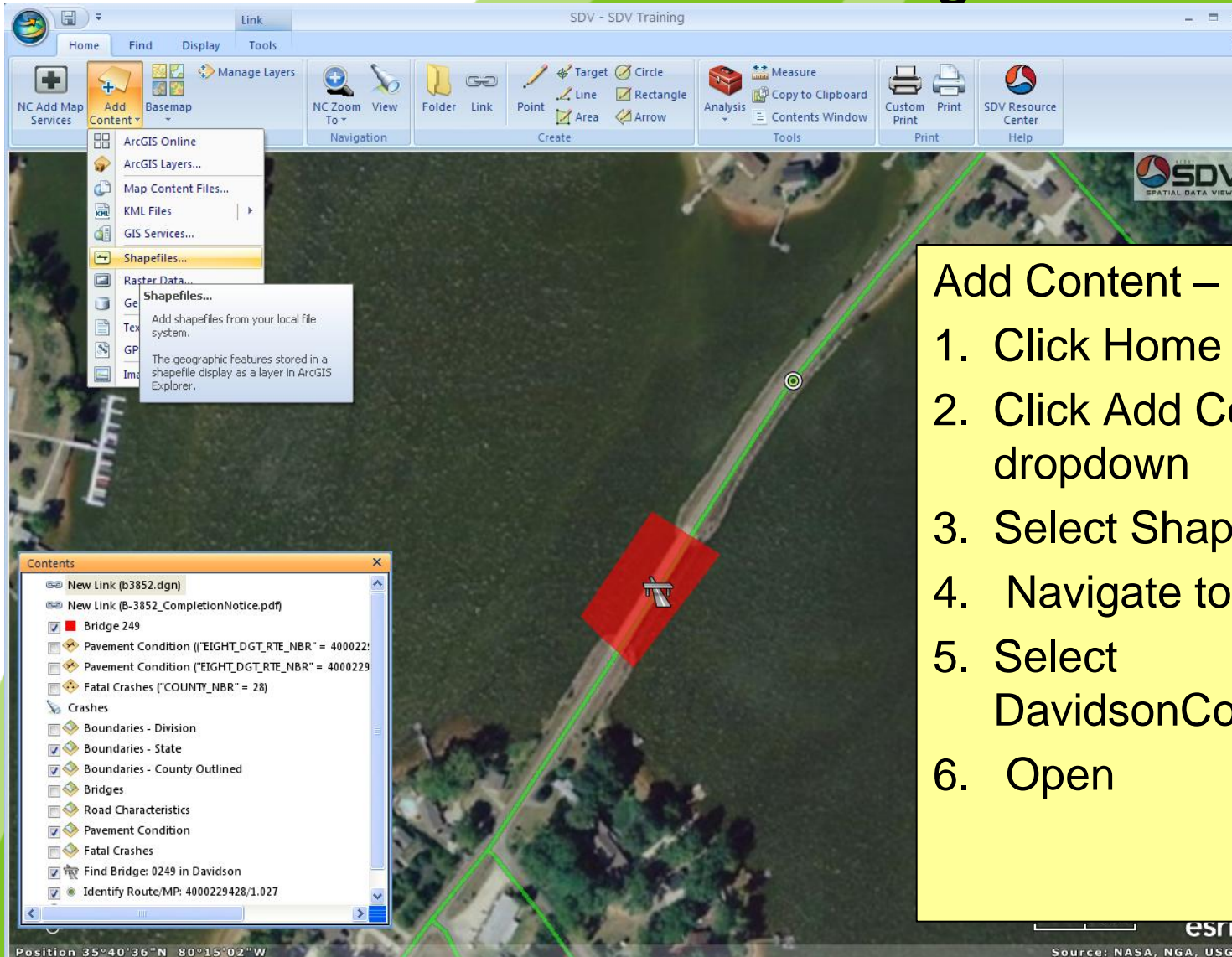
The screenshot shows the SDV - SDV Training application interface. The main window displays a map with a red rectangular area highlighted. The Contents window is open, showing a list of layers including 'New Link (b3852.dgn)', 'New Link (B-3852_CompletionNotice.pdf)', 'Bridge 249', 'Pavement Condition' (with various filter criteria), 'Fatal Crashes', 'Crashes', 'Boundaries - Division', 'Boundaries - State', 'Boundaries - County Outlined', 'Bridges', 'Road Characteristics', 'Pavement Condition', 'Fatal Crashes', 'Find Bridge: 0249 in Davidson', and 'Identify Route/MP: 4000229428/1.027'. A dialog box titled 'MS_Start Ver: 11.3.9.0' is open, showing the Design File path: 'cuments\Training\SDV\Extended\b3852.dgn', Available Workspaces: 'NCDOT', Debug Level: 'None', Microstation Version: '08.11.07', and an 'Open' button. The dialog box also has a 'Keep Dialog After Launch' checkbox checked. The status bar at the bottom shows the position: '35°40'36"N 80°15'02"W'.

SDV Training



Microstation opens with .dgn displayed

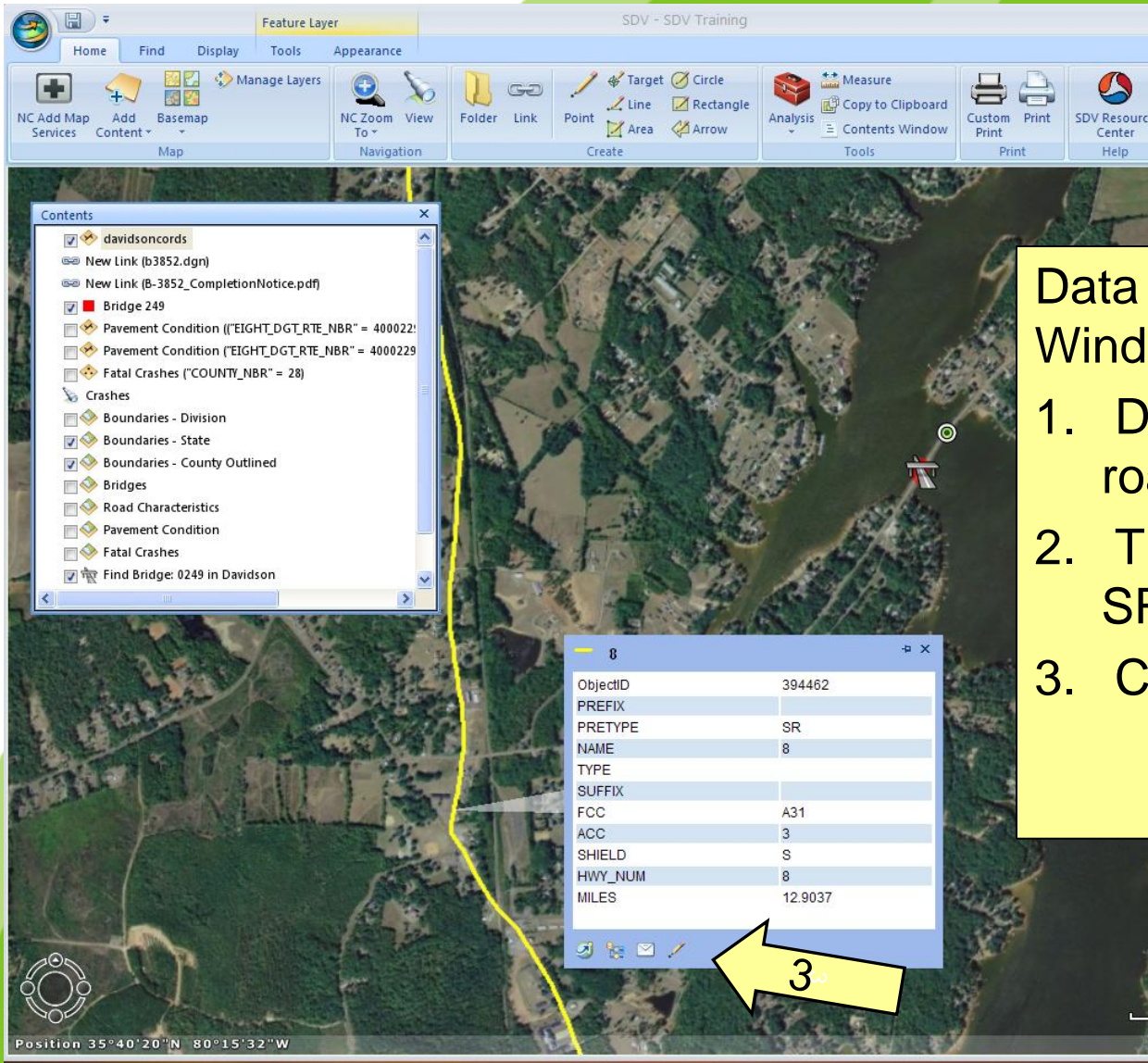
SDV Training



Add Content – External Data

1. Click Home tab
2. Click Add Content dropdown
3. Select Shapefiles
4. Navigate to directory
5. Select DavidsonCoRds.shp
6. Open

SDV Training



The screenshot shows the SDV software interface. The 'Contents' window on the left lists various layers, including 'Find Bridge: 0249 in Davidson'. A yellow line highlights a road on the map. A data popup window for 'SR 8' is open, showing the following details:

ObjectID	394462
PREFIX	
PRETYPE	SR
NAME	8
TYPE	
SUFFIX	
FCC	A31
ACC	3
SHIELD	S
HWY_NUM	8
MILES	12.9037

A yellow arrow labeled '3' points to the email icon in the popup window's toolbar.

Data is added to Contents Window

1. Double-click the major road closest to bridge 249
2. The closest major road is SR-8
3. Create note, send email

SDV Training

The screenshot displays the SDV (Spatial Data Viewer) interface. The main window shows a map with various layers. A 'Contents' pane on the left lists layers such as '8', 'davidsoncords', 'New Link (b3852.dgn)', 'New Link (B-3852_CompletionNotice.pdf)', 'Bridge 249', 'Pavement Condition ("EIGHT_DGT_RTE_NBR" = 400022)', 'Fatal Crashes ("COUNTY_NBR" = 28)', 'Crashes', 'Boundaries - Division', 'Boundaries - State', 'Boundaries - County Outlined', 'Bridges', 'Road Characteristics', 'Pavement Condition', and 'Fatal Crashes'. A 'Properties' pane at the bottom left shows details for the selected layer '8':

ObjectID	394462
PREFIX	
PRETYPE	SR
NAME	8
TYPE	
SUFFIX	
FCC	A31
ACC	3
SHIELD	S
HWY_NUM	8
MILES	12.9037

An 'ArcGIS Explorer Note - Message (Plain Text)' window is open, displaying the following text:

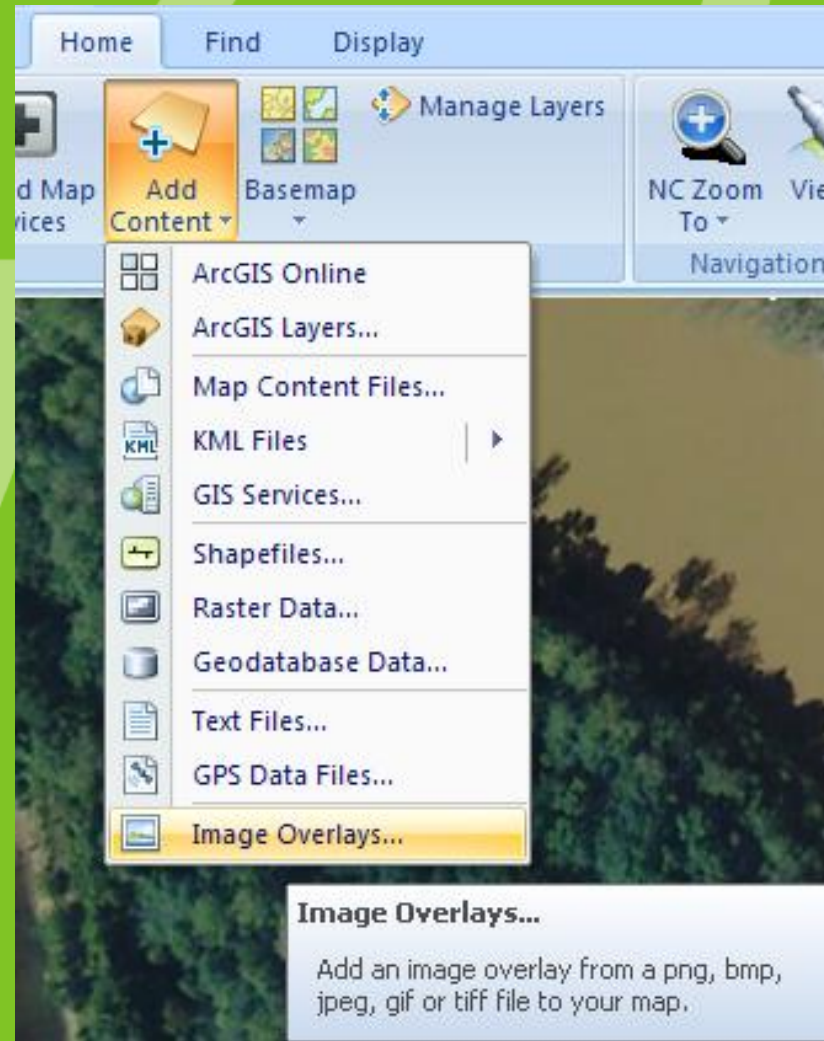
Closest major road is SR8
 Message from sender:
 The attachment to this e-mail can be viewed with the Spatial Data Viewer (SDV). You can find information about SDV at the SDV Resource Center:
<http://gis01.dot.nc.net/SDVResourceCenter>

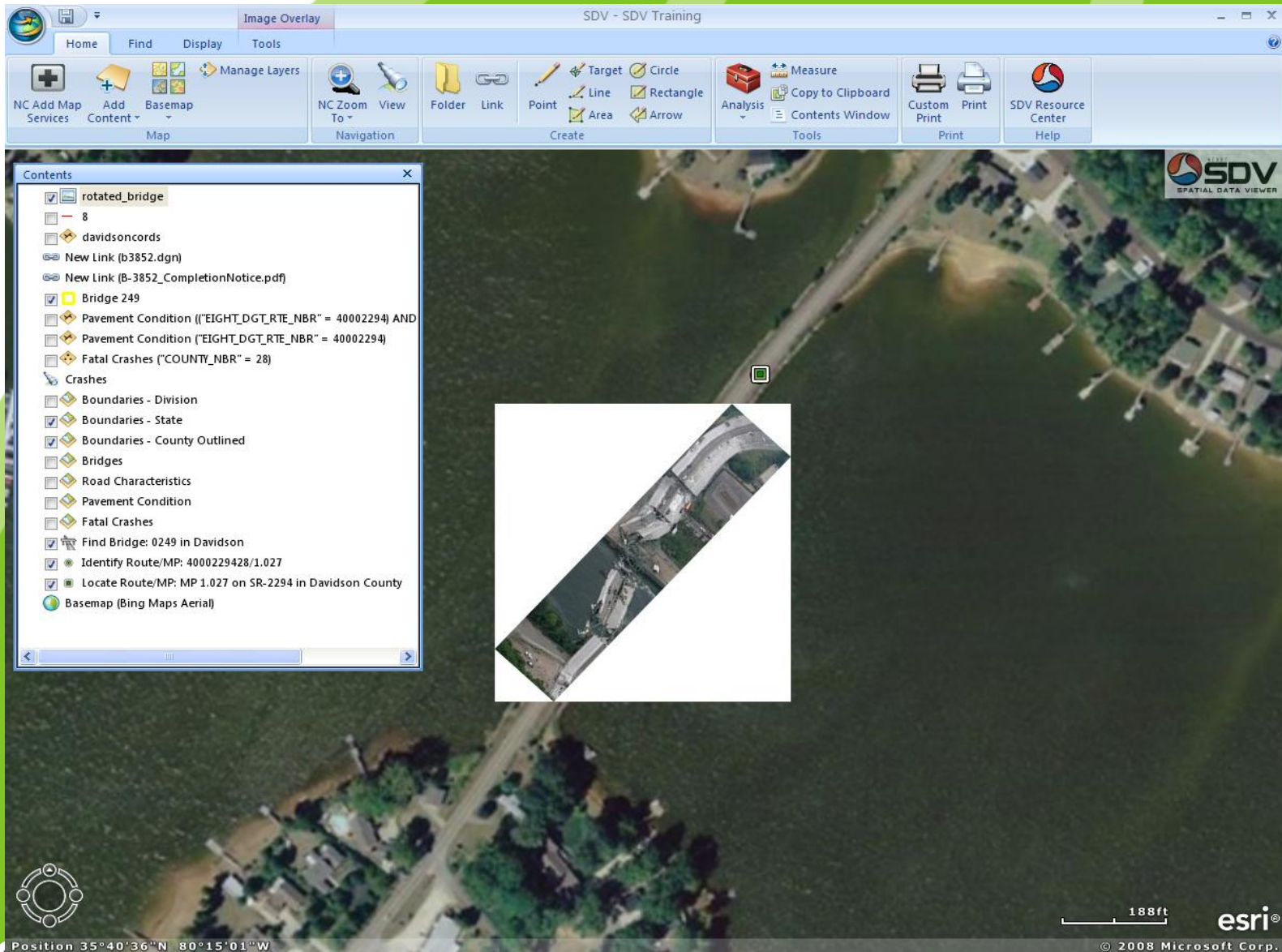
The interface also shows a toolbar with various tools like 'Add Map Services', 'Navigation', 'Create', 'Measure', and 'Print'. The status bar at the bottom indicates the position: 35°40'20"N 80°15'32"W, a scale of 1197ft, and the source as USGS.

SDV Training

Add Content – External Data

1. Click Home tab
2. Click Add Content dropdown
3. Select File type and path





The screenshot displays the SDV Spatial Data Viewer interface. The main window shows an aerial map with several data layers overlaid. A 'Contents' pane on the left lists the following layers:

- rotated_bridge
- 8
- davidsoncords
- New Link (b3852.dgn)
- New Link (B-3852_CompletionNotice.pdf)
- Bridge 249
- Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294) AND
- Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294)
- Fatal Crashes ("COUNTY_NBR" = 28)
- Crashes
- Boundaries - Division
- Boundaries - State
- Boundaries - County Outlined
- Bridges
- Road Characteristics
- Pavement Condition
- Fatal Crashes
- Find Bridge: 0249 in Davidson
- Identify Route/MP: 4000229428/1.027
- Locate Route/MP: MP 1.027 on SR-2294 in Davidson County
- Basemap (Bing Maps Aerial)

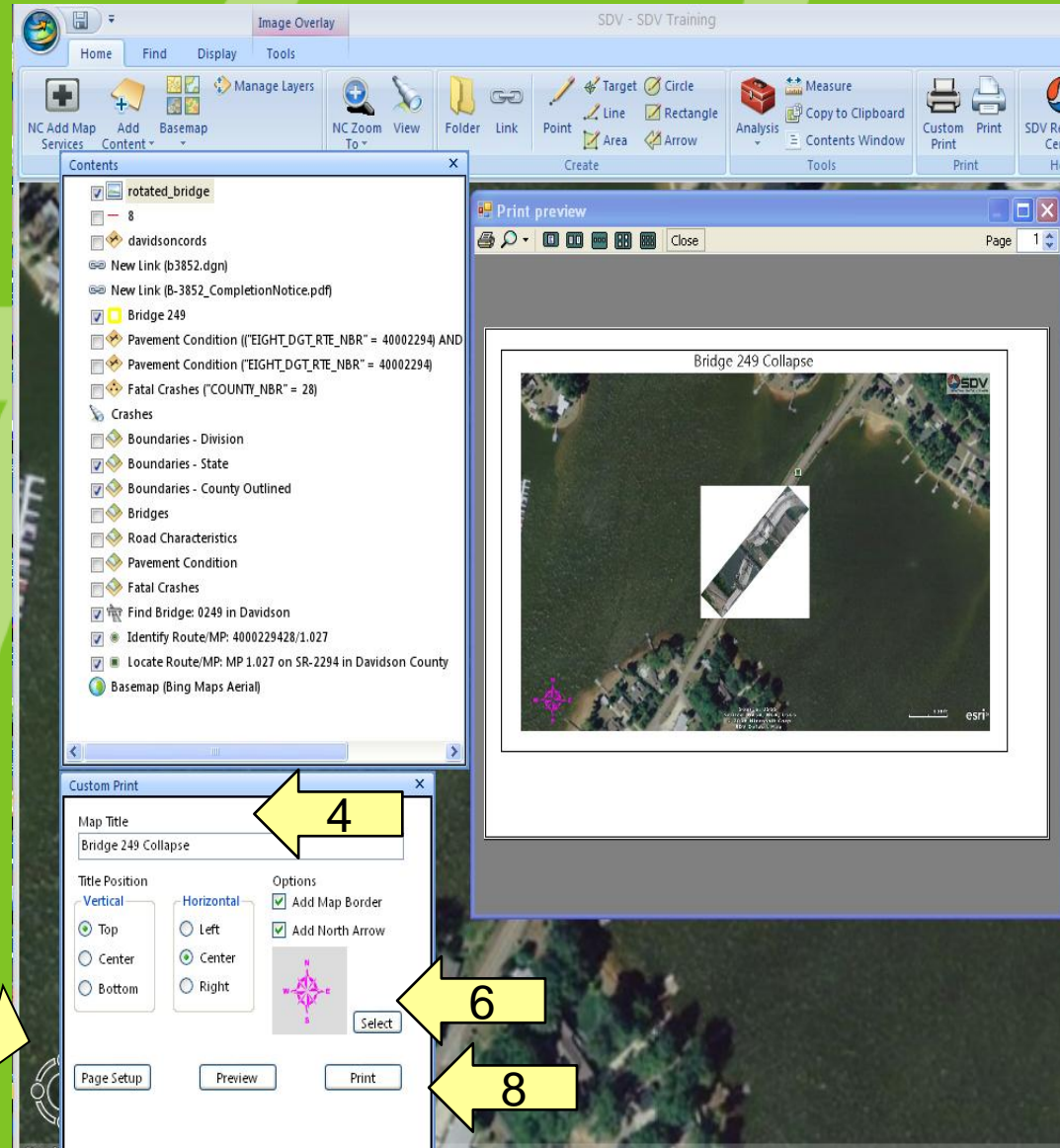
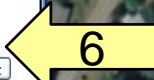
The interface includes a toolbar with various tools such as 'NC Add Map Services', 'Add Content', 'Manage Layers', 'Navigation', 'Create', 'Tools', and 'Print'. A scale bar at the bottom right indicates 188 feet. The status bar at the bottom shows the position: 35°40'36"N 80°15'01"W. The Esri logo and copyright information (© 2008 Microsoft Corp.) are also visible.

SDV Training

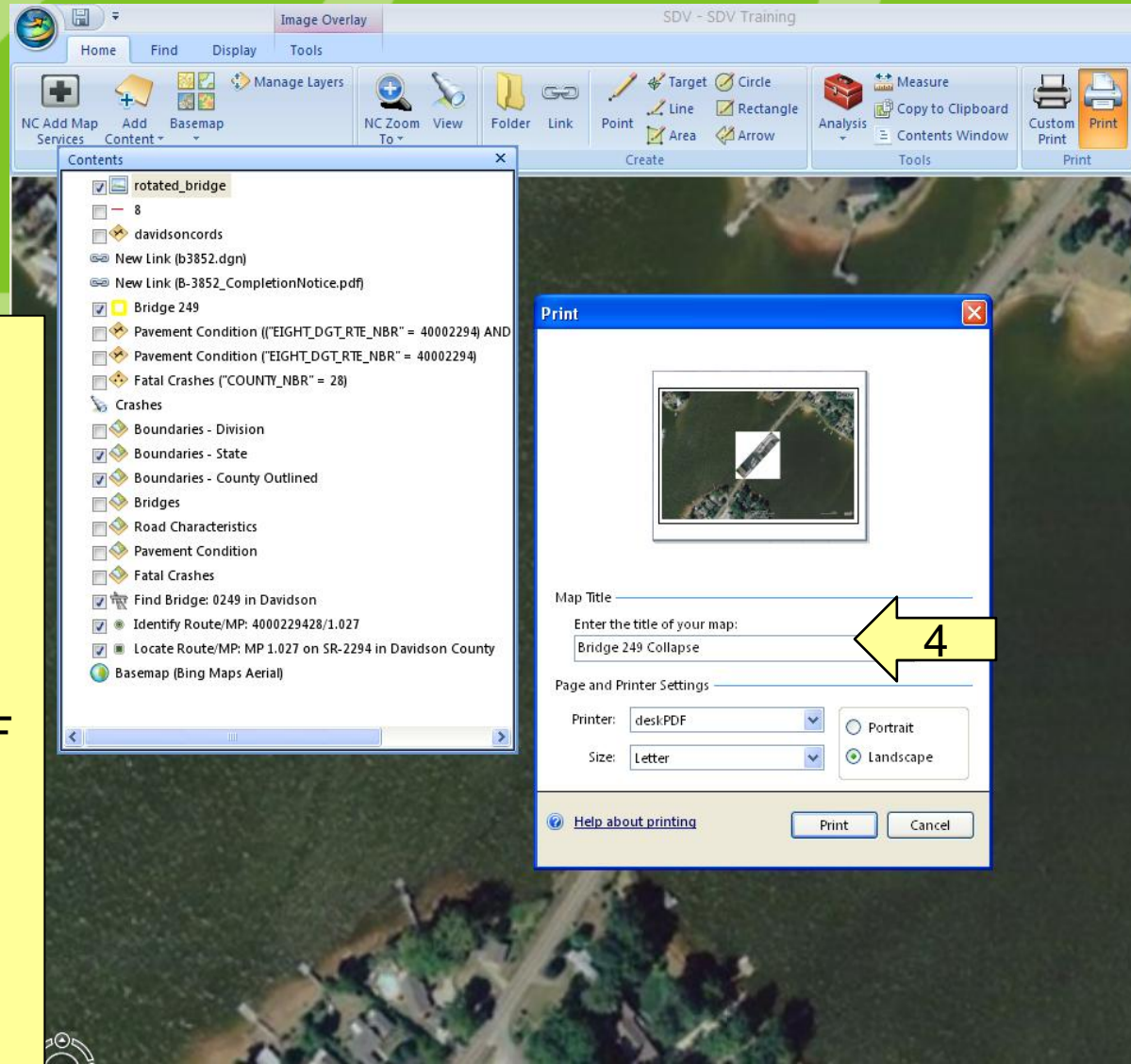
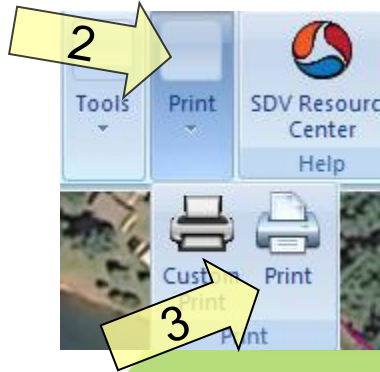


Print the Map using Custom Print

1. Click the Home tab
2. Click Print
3. Click Custom Print
4. Enter Map title
5. Select page options
6. Select North Arrow
7. Choose page settings
8. Click print preview or print



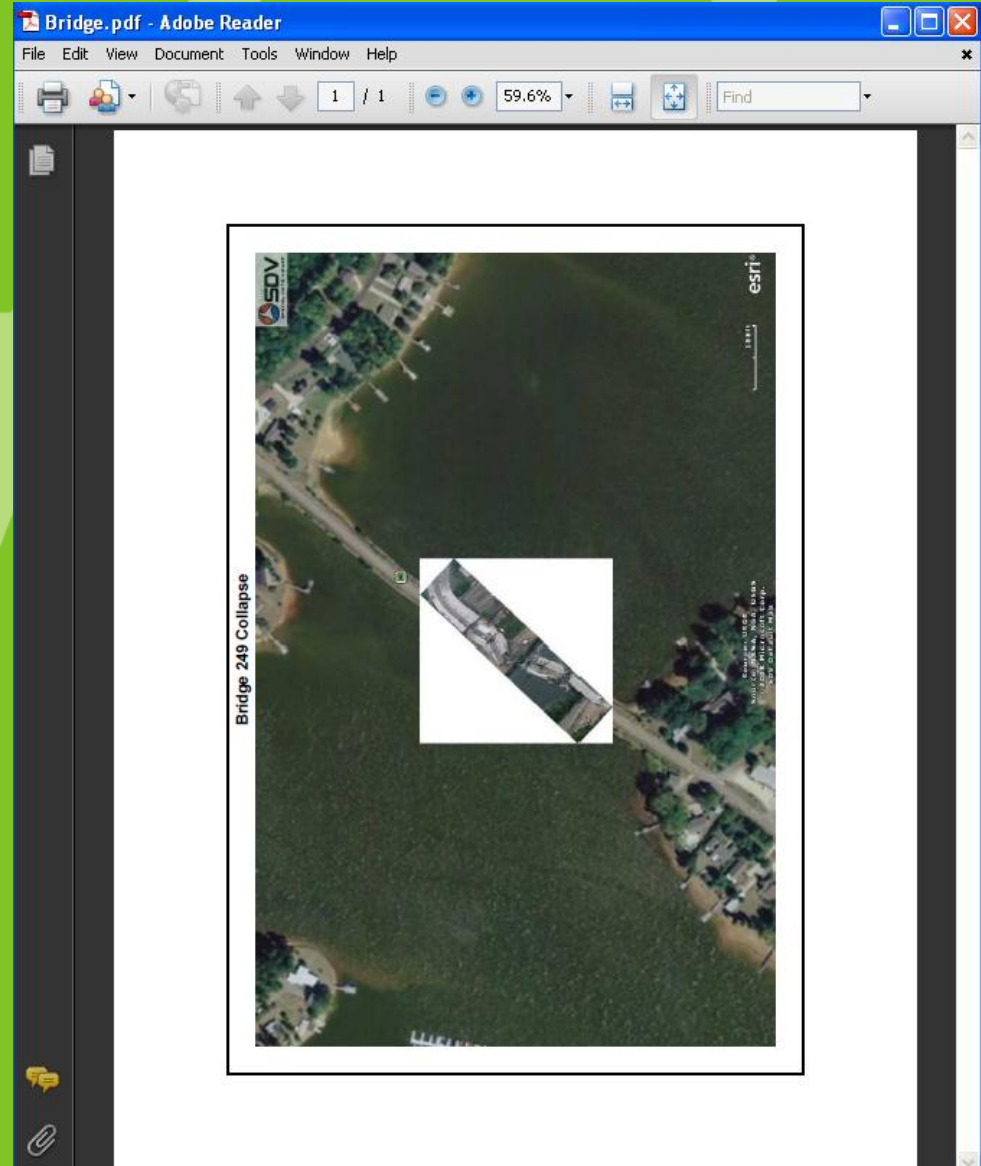
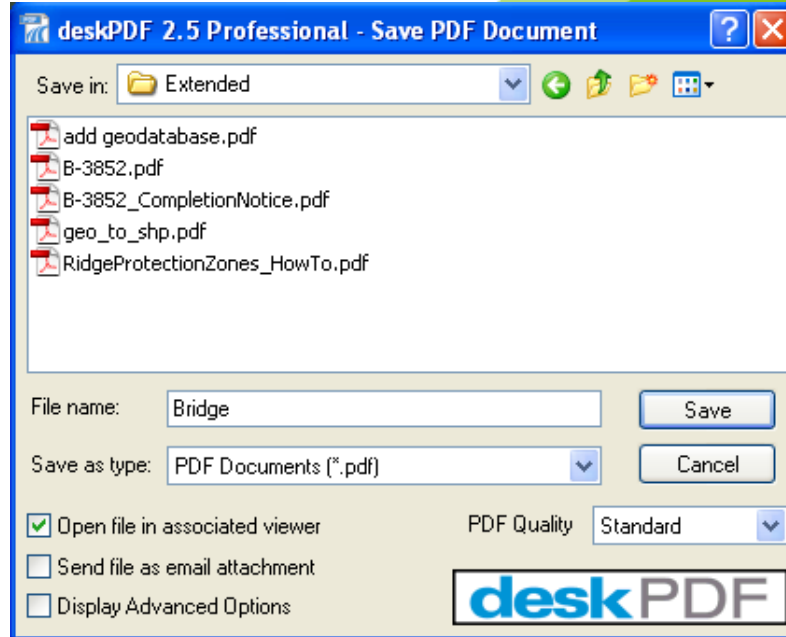
SDV Training



Print the Map using Custom Print

1. Click the Home tab
2. Click Print
3. Click Print
4. Enter Map title
5. Change printer to deskPDF
6. Select size
7. Choose page settings
8. Click print preview or print

SDV Training



SDV Training Questions?



Thank you!

Resource Center –
<http://gisi01.dot.nc/SDVResourceCenter/home.aspx>

SDV Help Desk
SDVHelp@ncdot.gov