

**Geodatabase Creation & Integrated with Spatial Data Structure**

**Practical**

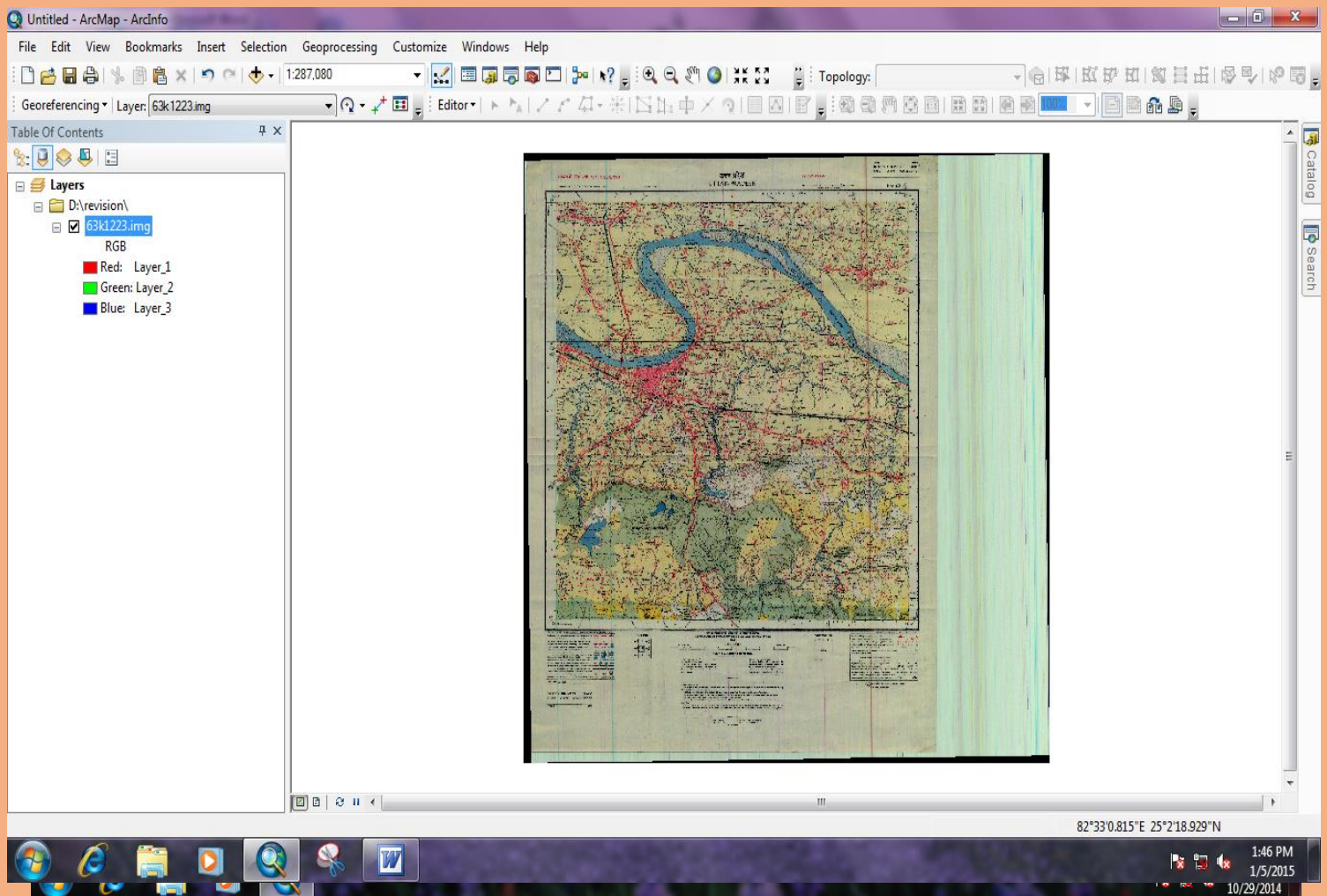
**Semester: II**

**PG Diploma in RS & GIS**

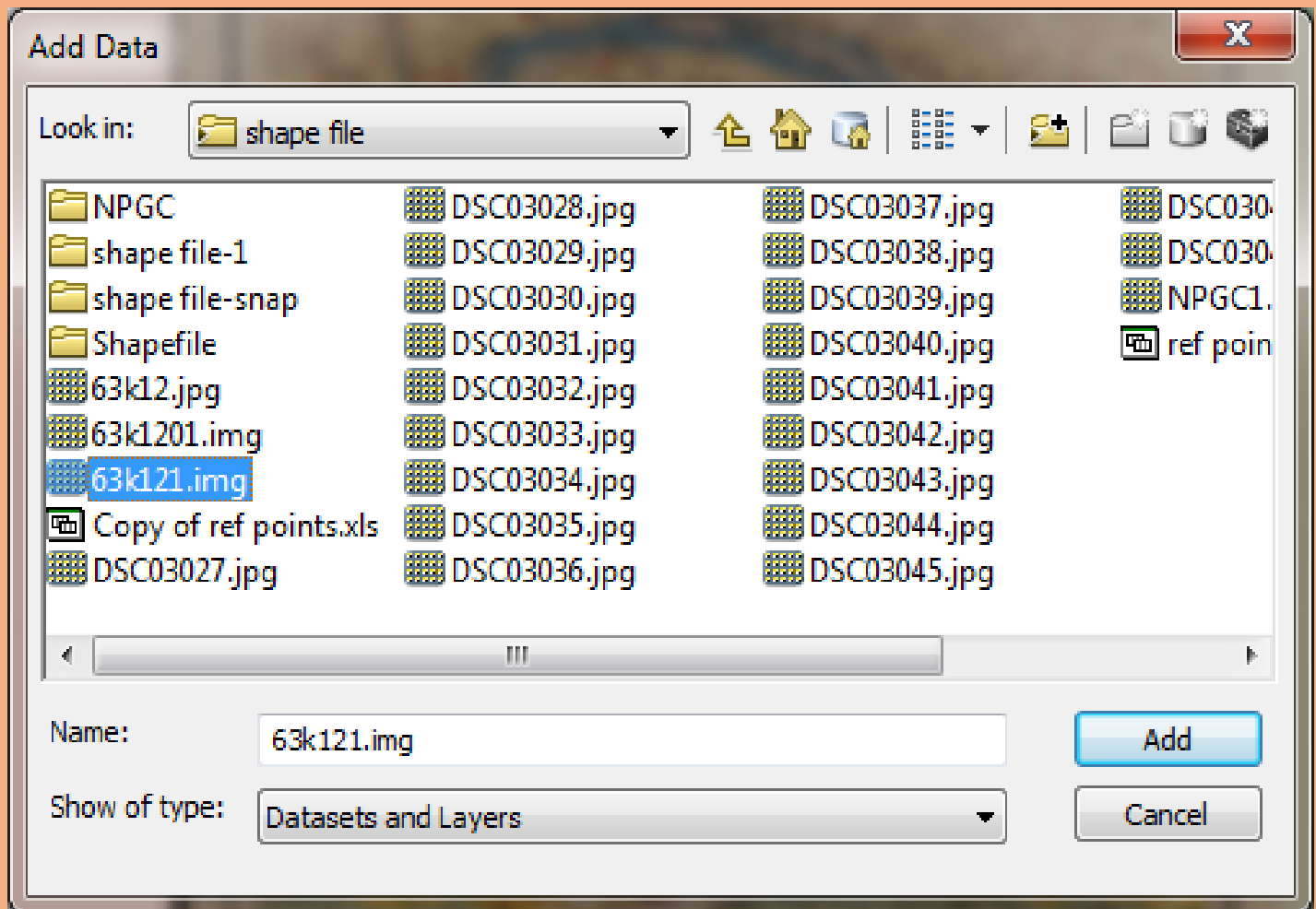
**Dr. SHYAMA PRASAD MUKHERJEE UNIVERSITY, RANCHI**

# Creating Shape File

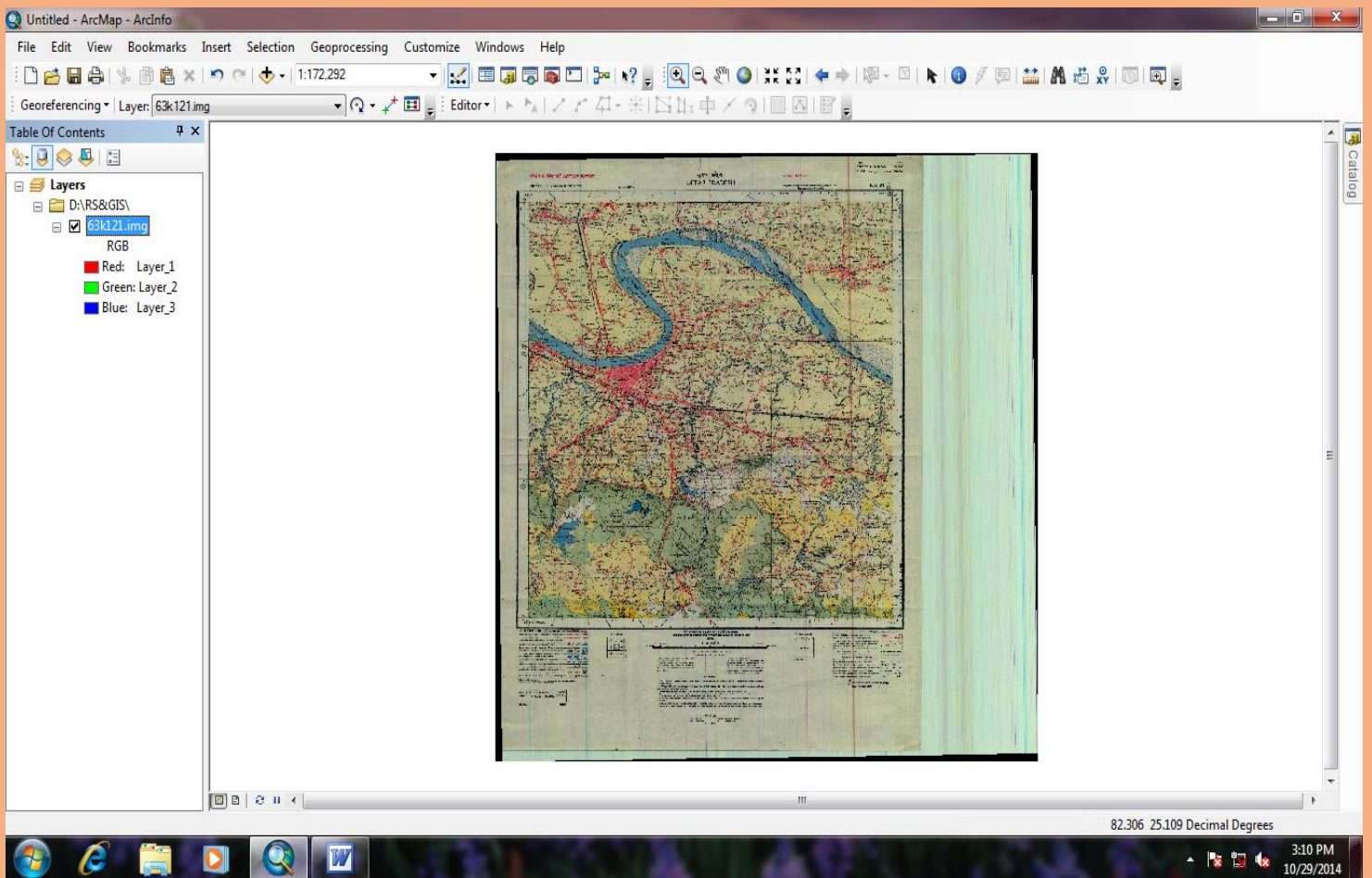
**Go to Menu Bar → File Menu → Add Data  
option → select Add Data option**



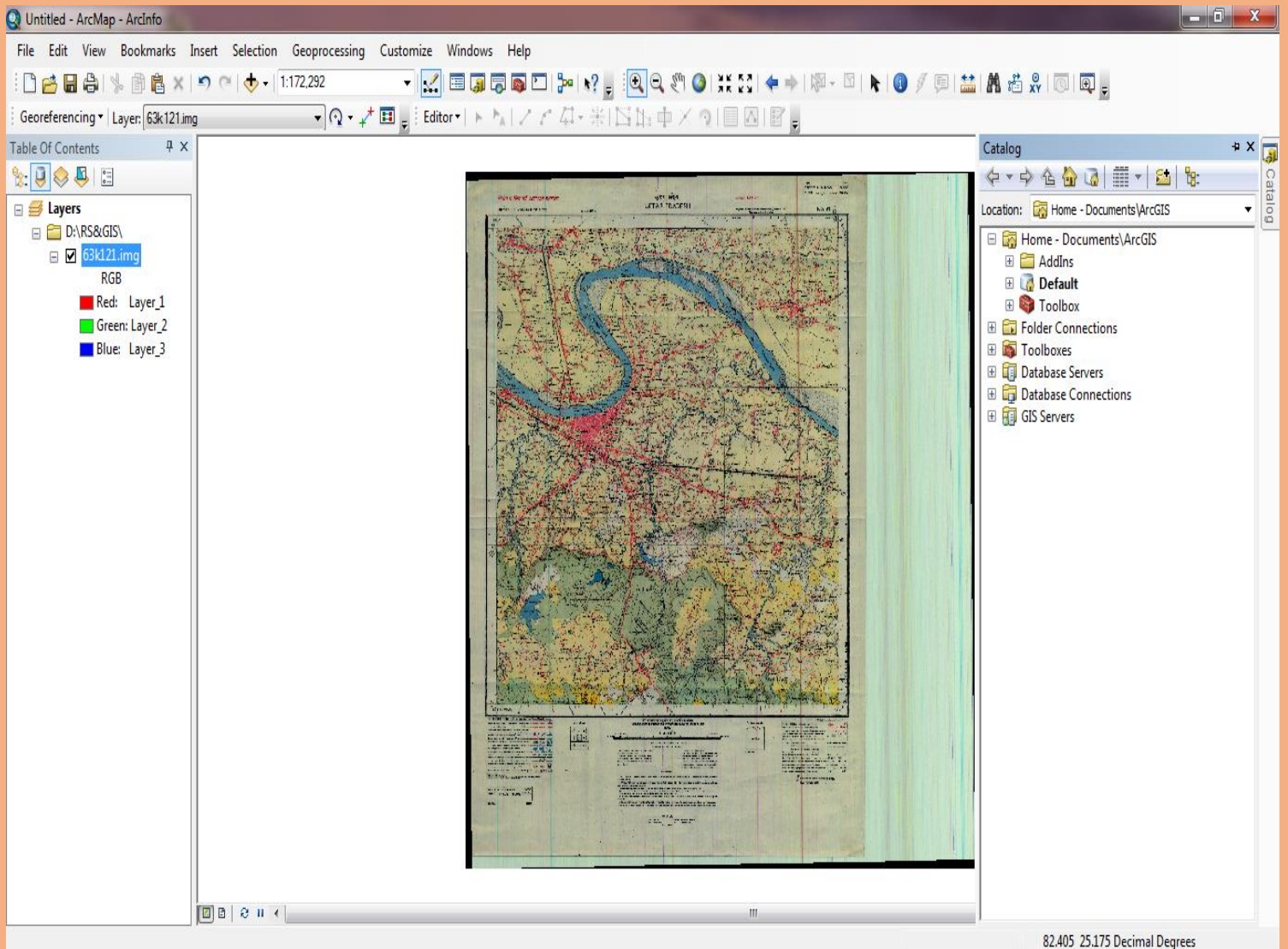
**New *Add Data* window will open → now select the image which is already referenced.**



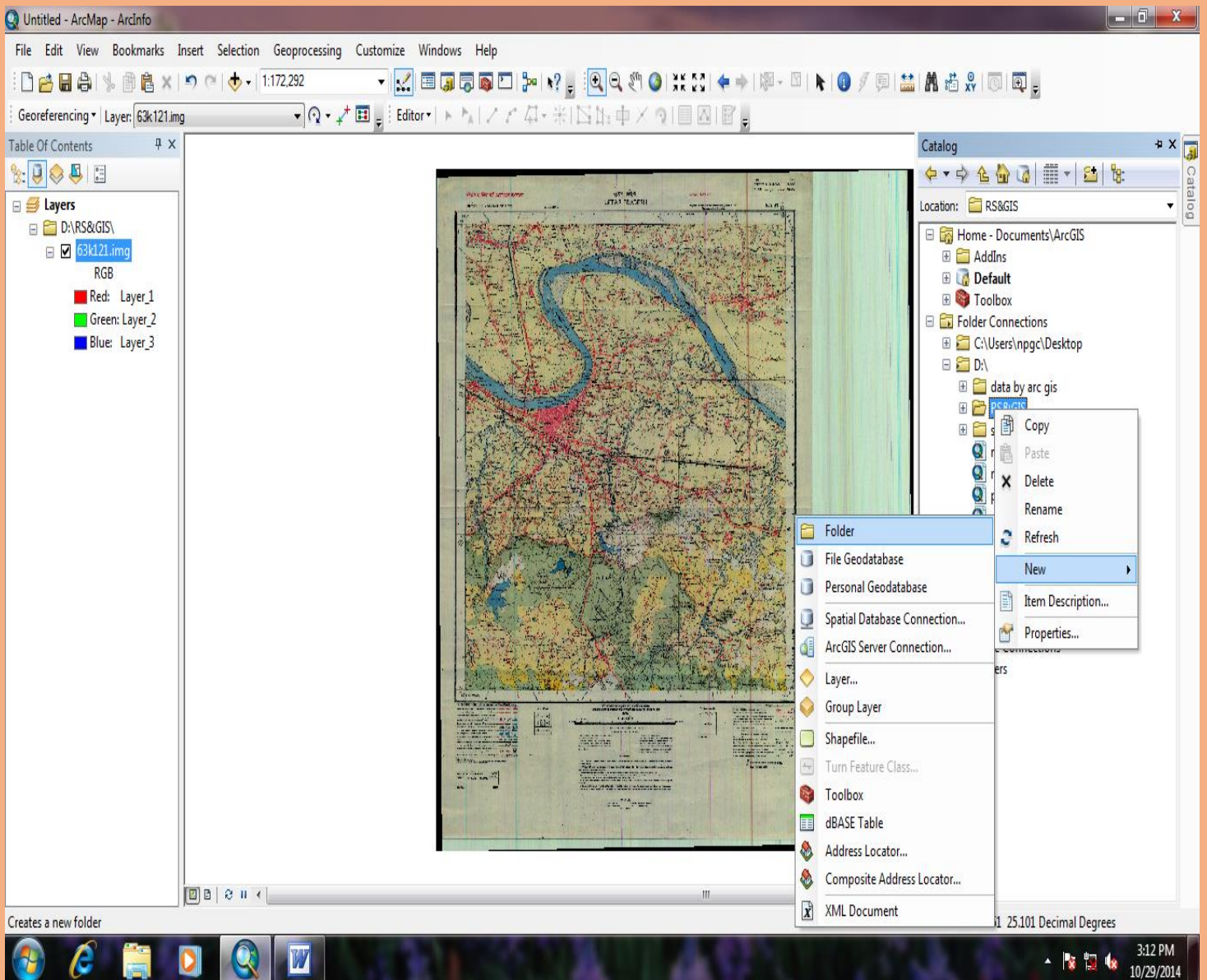
# Image is added on GIS Software



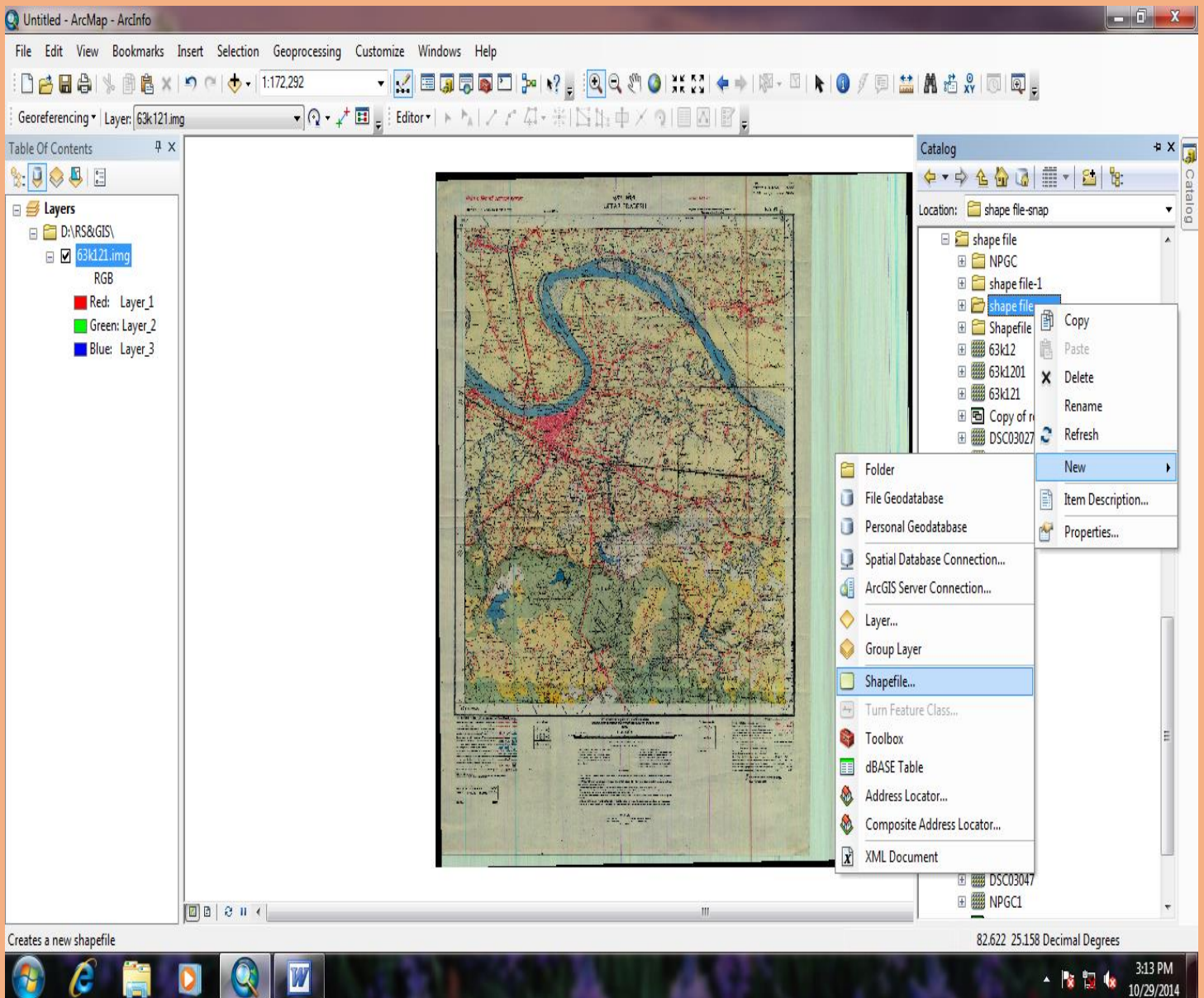
## Now Go to *Catalog Window*



**Now Go to *Folder Connections* option in *Catalog Window* → select folder → select option *NEW* → select *Folder***



After creating Folder again select *New* option → Go to *Shapefile* Option



## ***Create Point Shapefile Feature***

**When we select Shapefile option, *Create New Shapefile* Window will open → Give *name* in *Name* option → select *Feature Type (Point)***

**Create New Shapefile**

Name:

Feature Type:

Spatial Reference

Description:

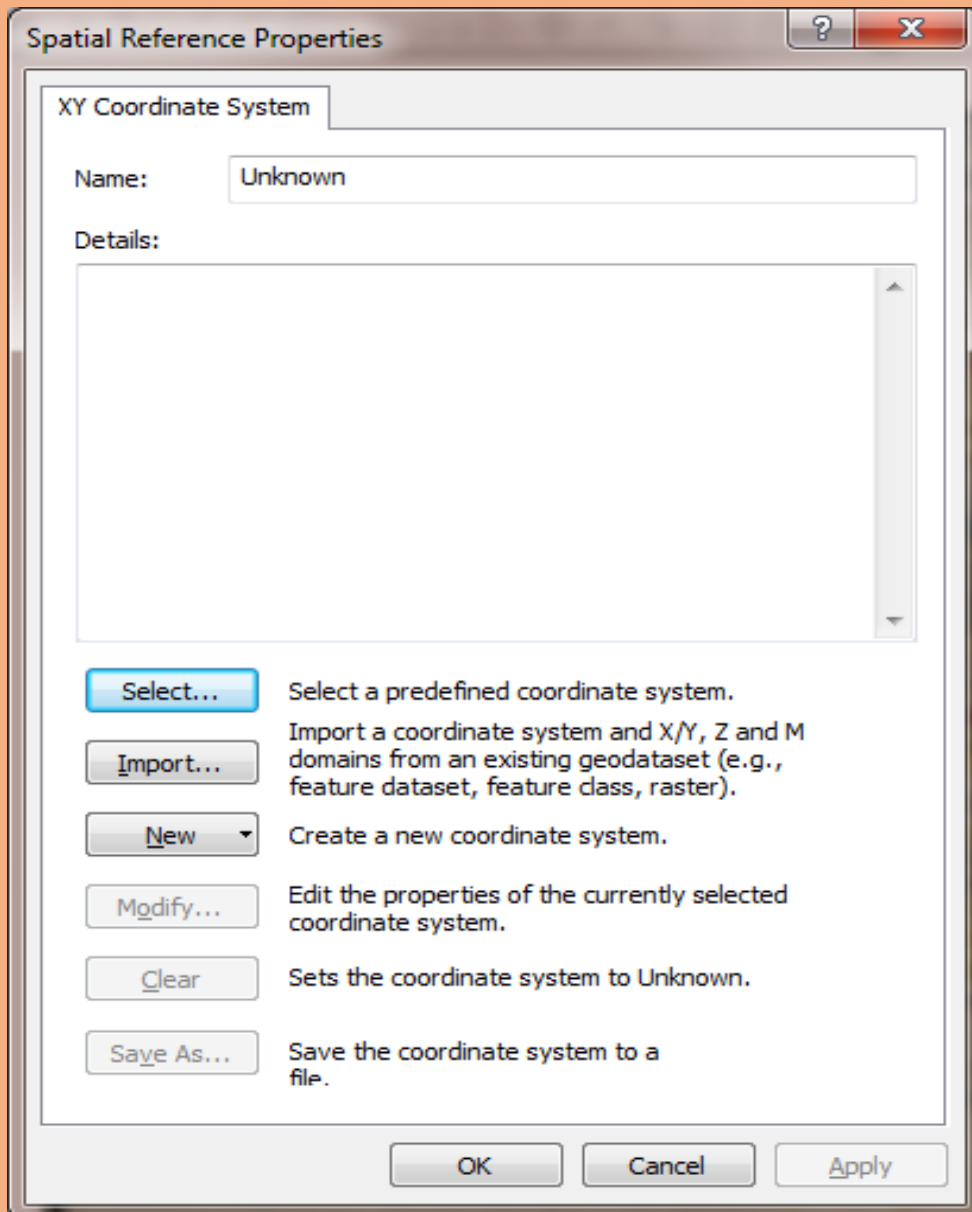
Show Details

Coordinates will contain M values. Used to store route data.

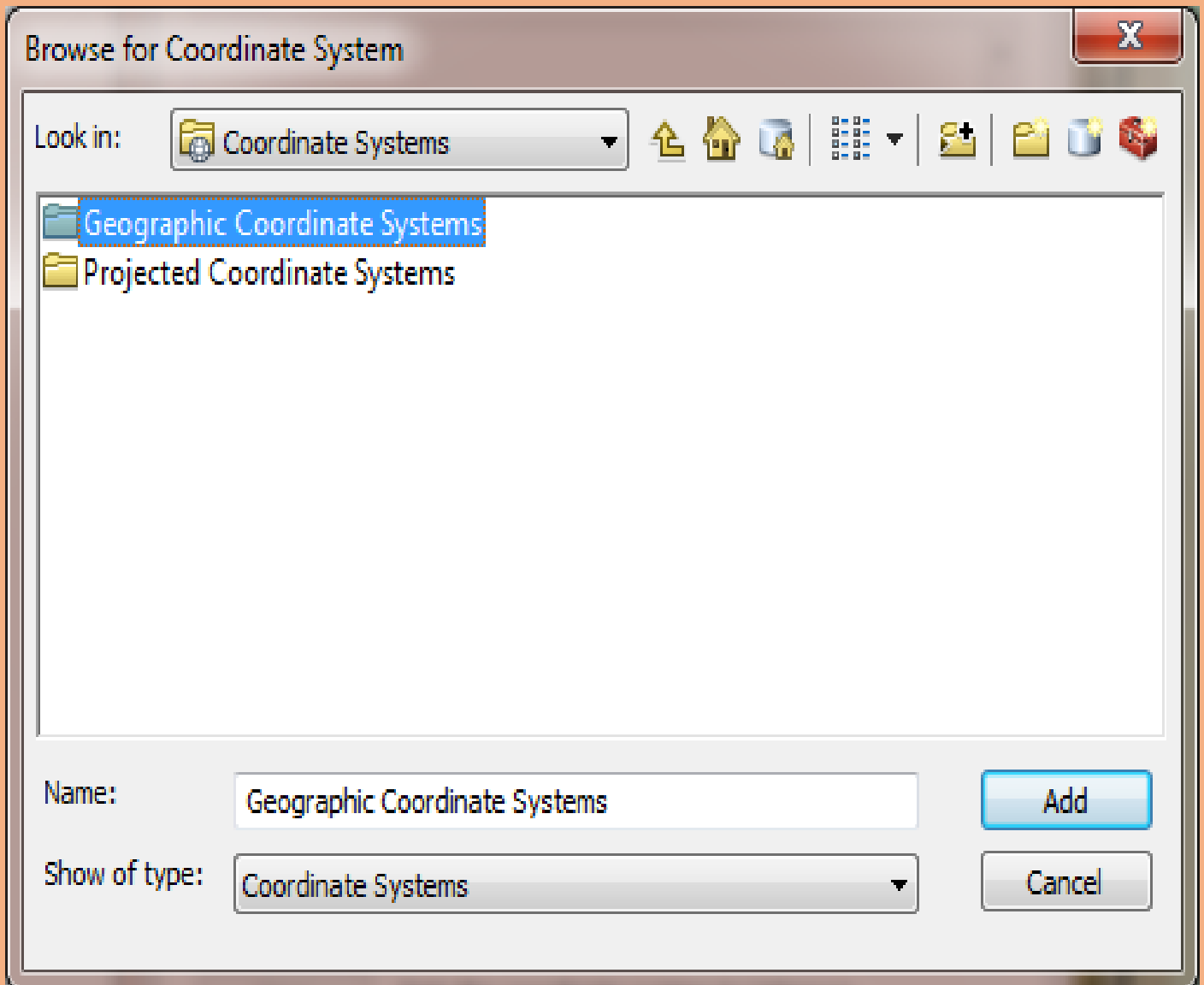
Coordinates will contain Z values. Used to store 3D data.



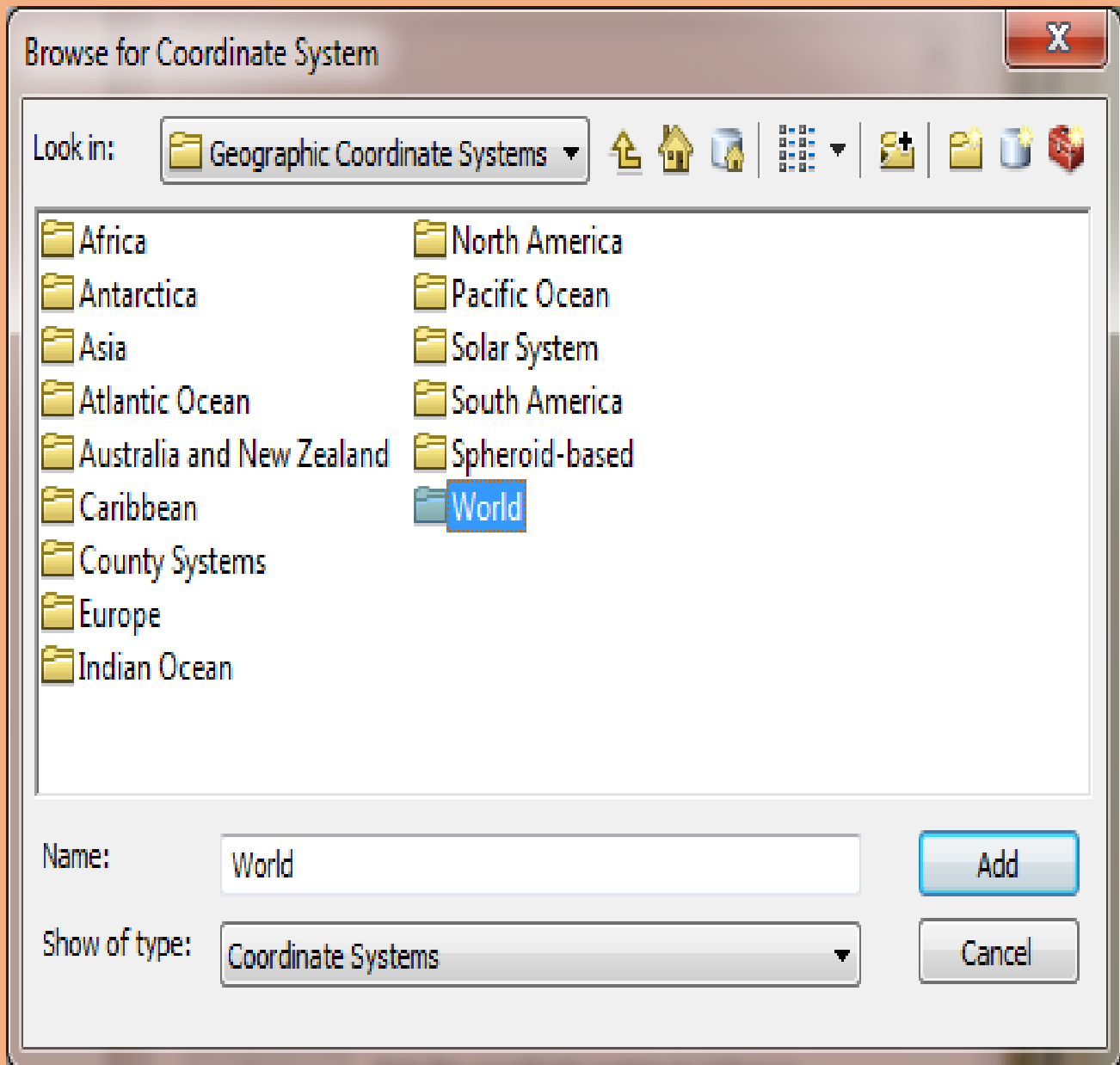
Goto **Edit** option → new **Spatial Reference Properties** window will open → now select **Select** option



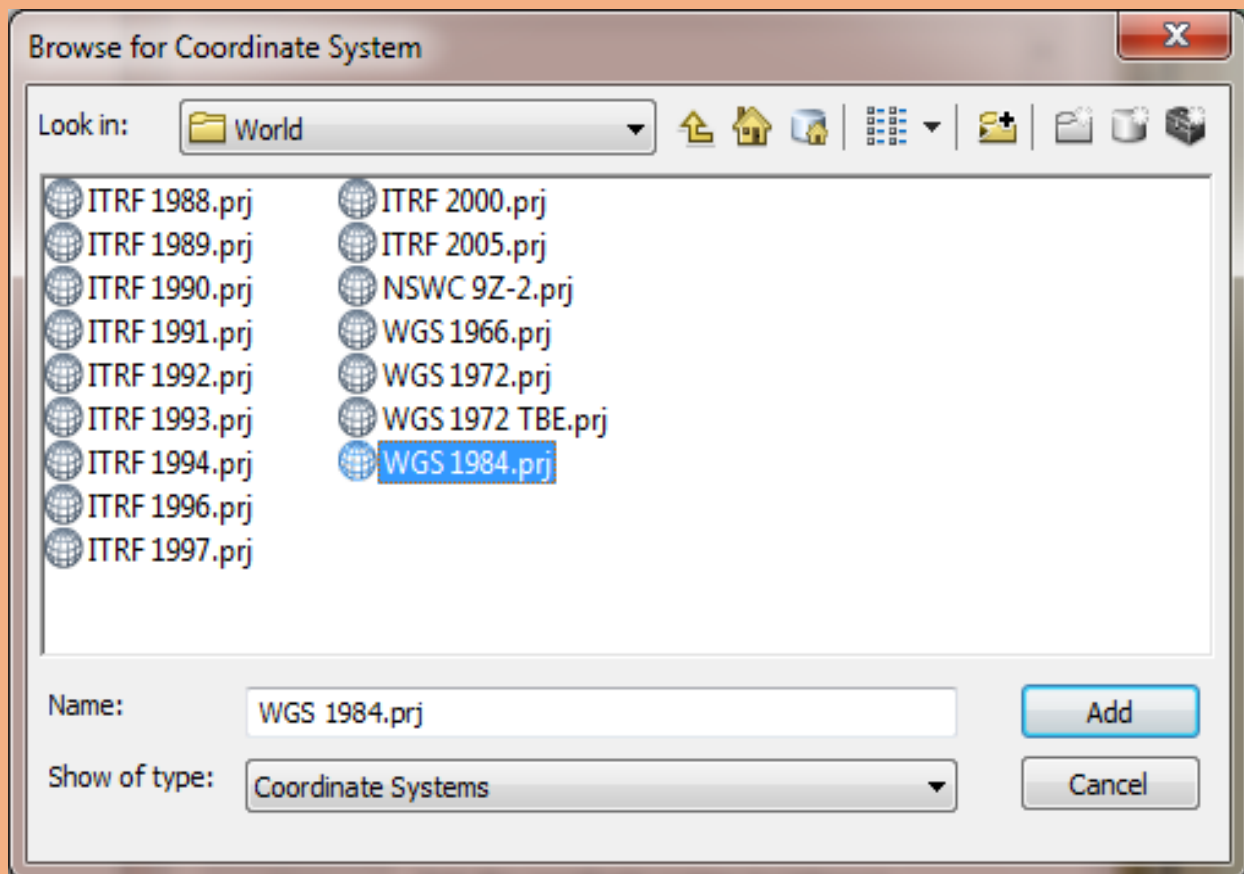
New **Browse for Coordinate System** window will open  
→ select Geographic Coordinate Systems option →  
select **Add** Button



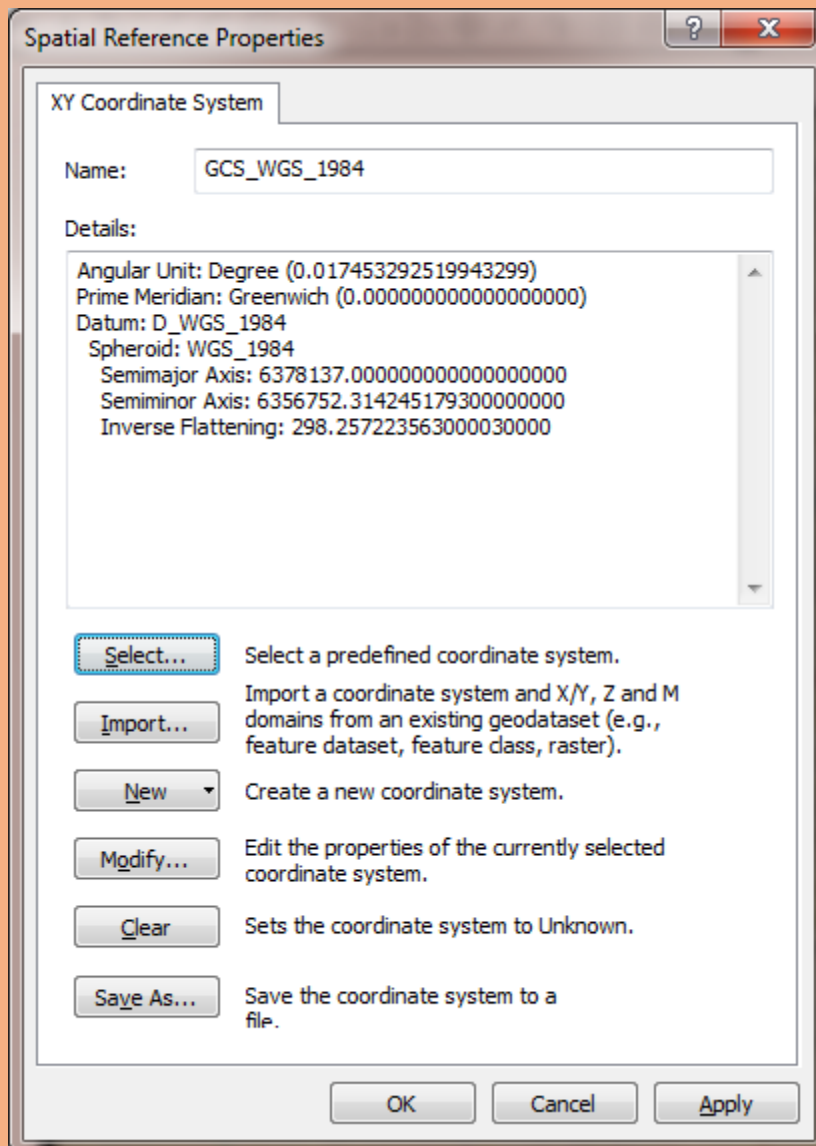
**After selecting *Geographic Coordinate Systems* →  
Now Select *World* option → select *ADD* Button**



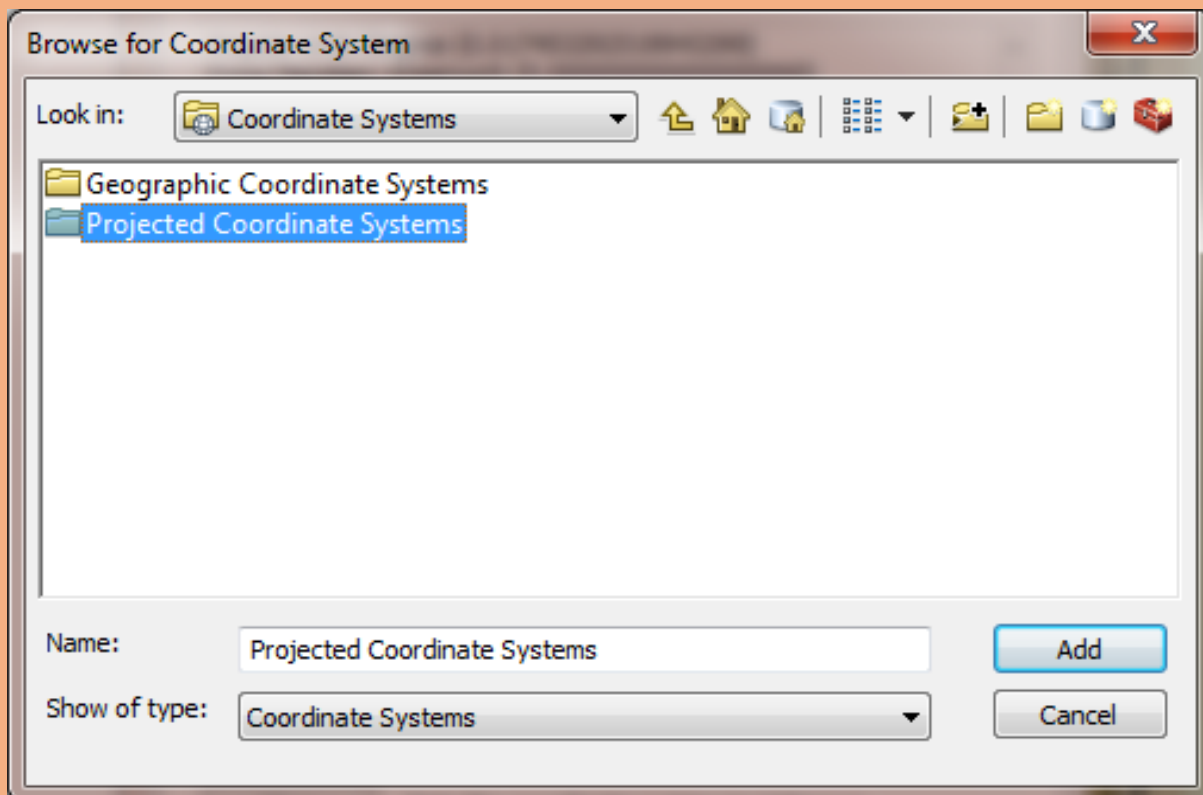
**After Selecting World option → select *WGS1984.prj* → select *ADD* Button**



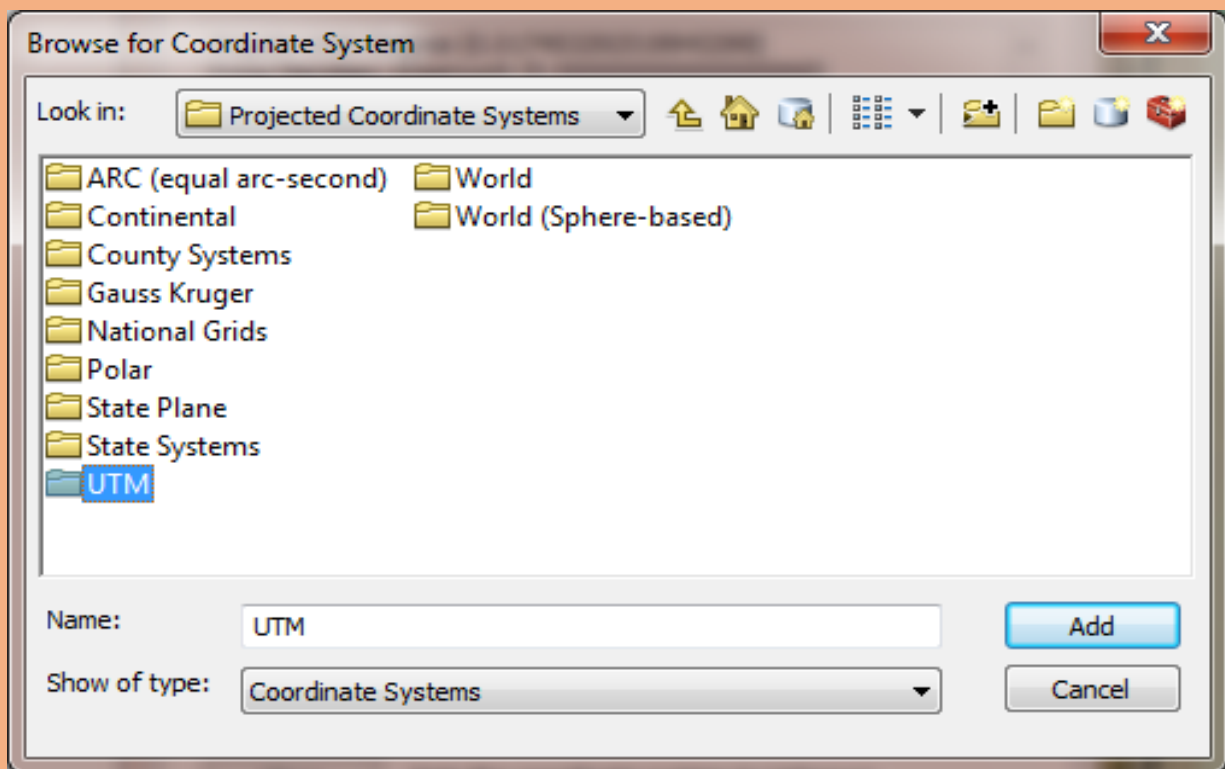
Again *Spatial Reference Properties* Window will open →  
again select *Select* option



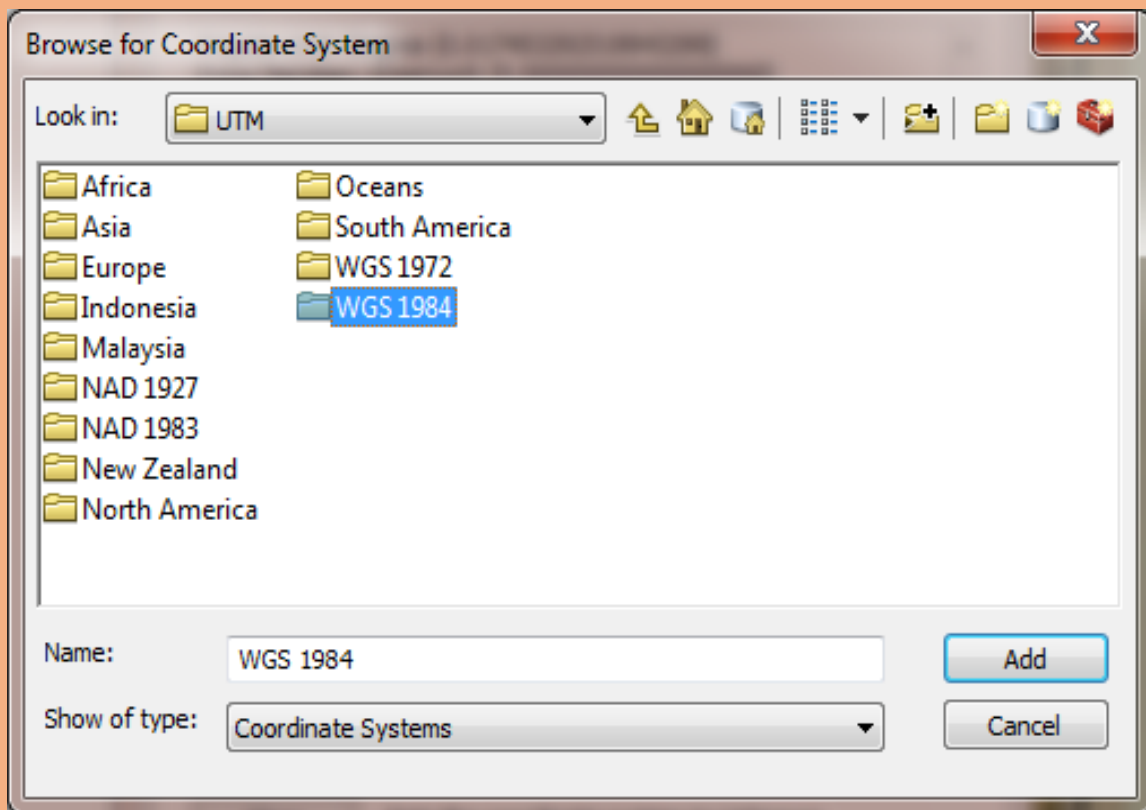
Now select *Projected Coordinate Systems* → select **ADD** Button



**After selecting *Projected Coordinate Systems* → select *UTM* option → select *ADD* Button**

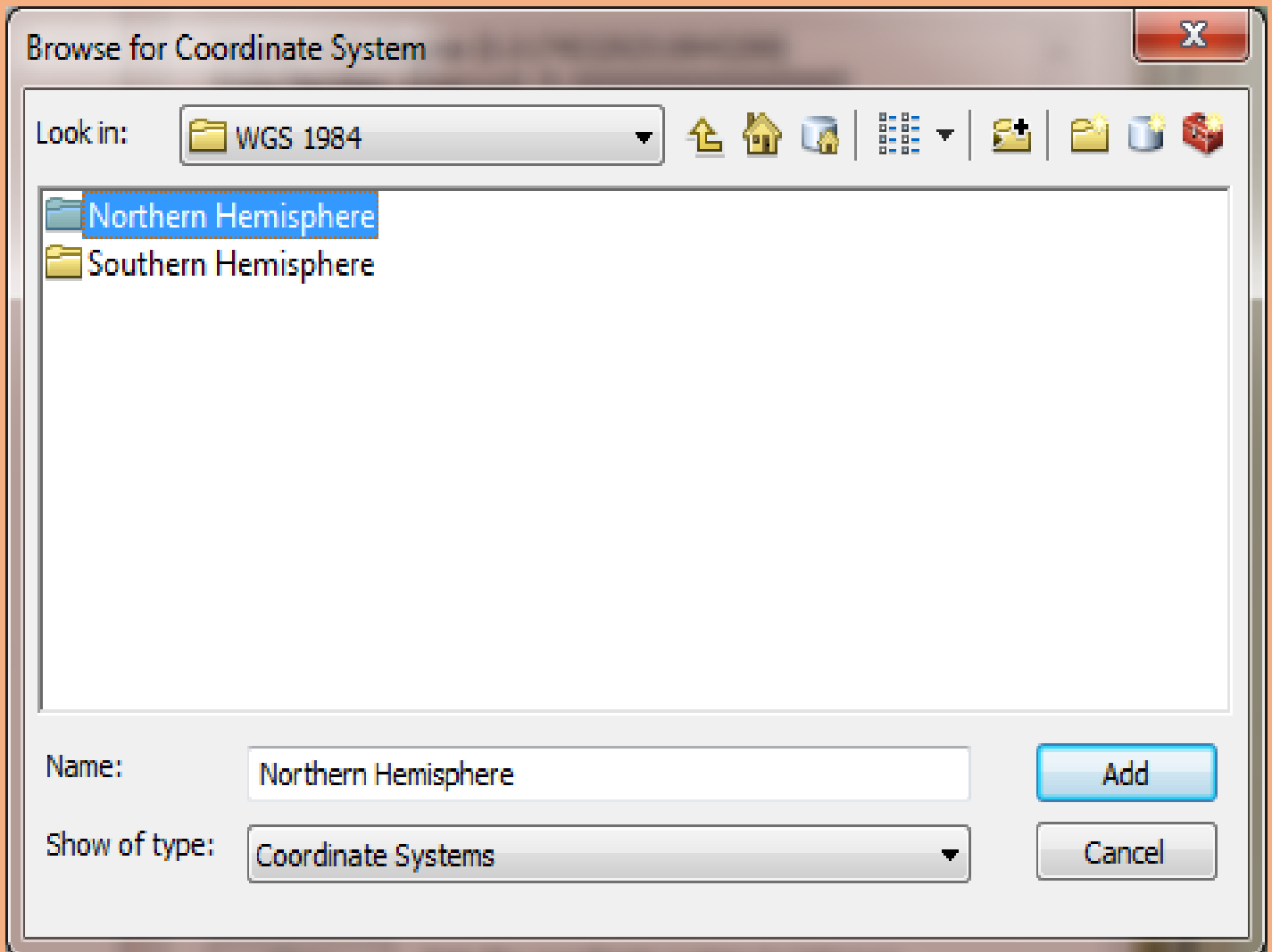


**After selecting UTM → Select WGS 1984 → select  
ADD Button**

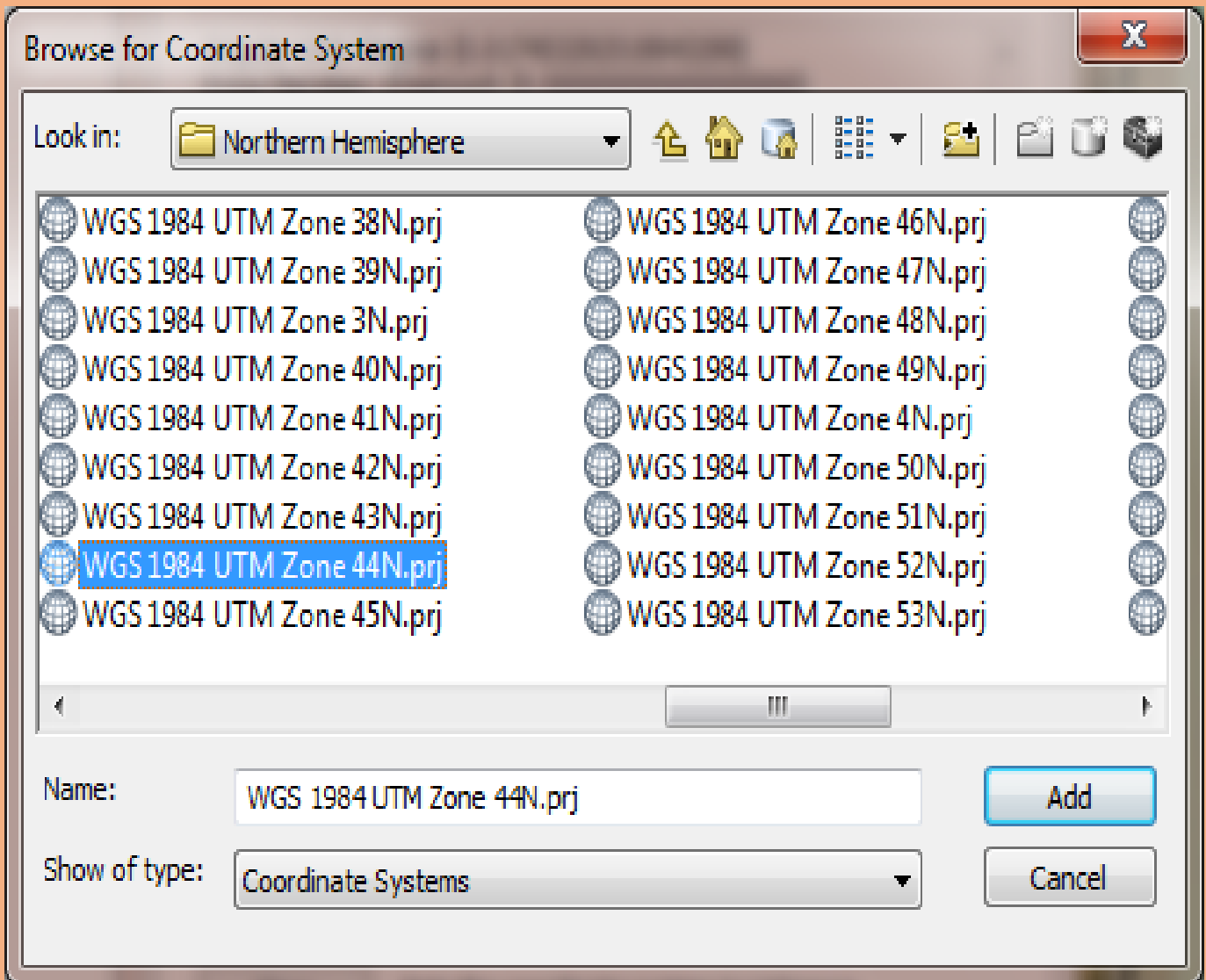




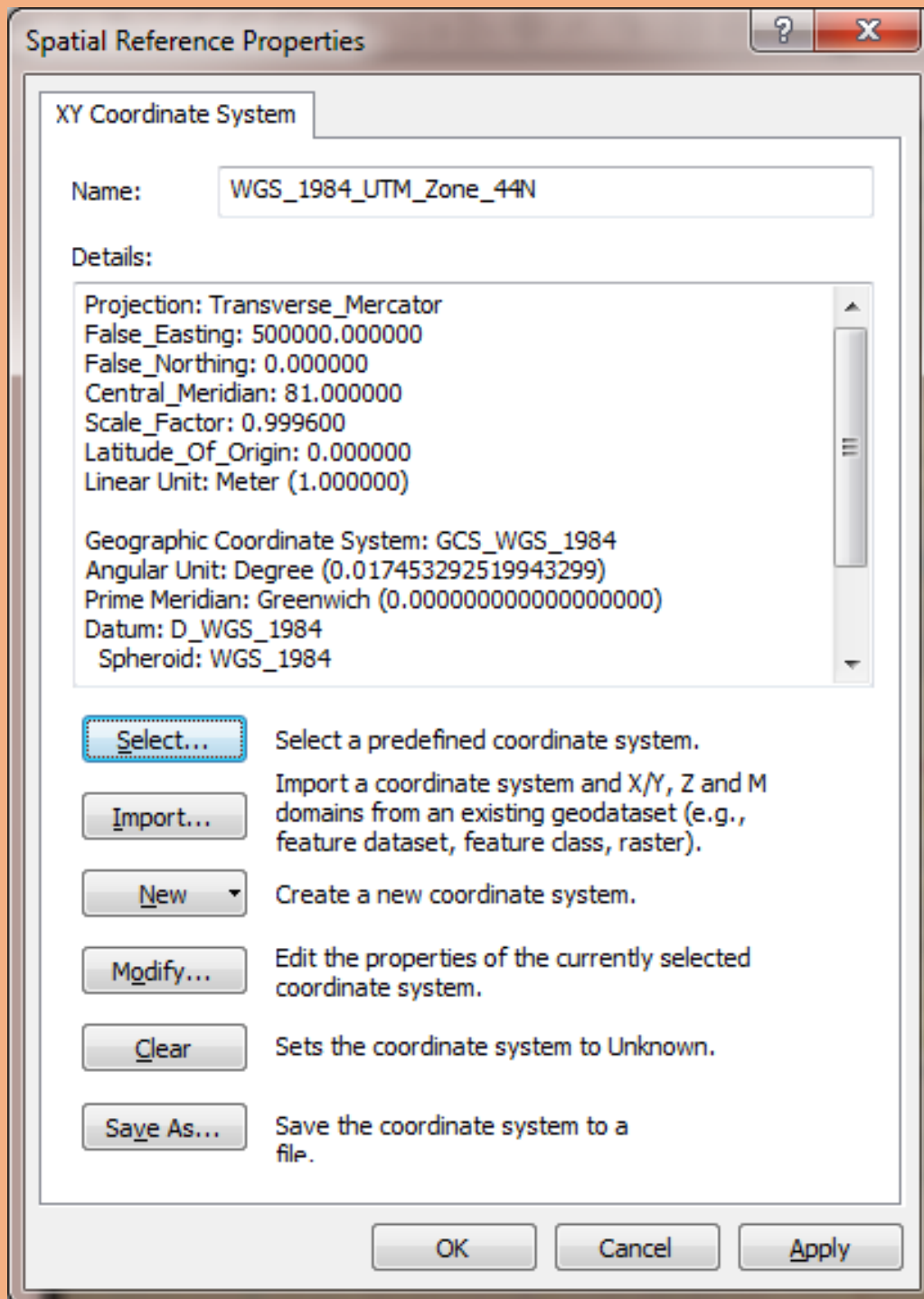
**Now select *Northern Hemisphere* option → Select *ADD* Button**



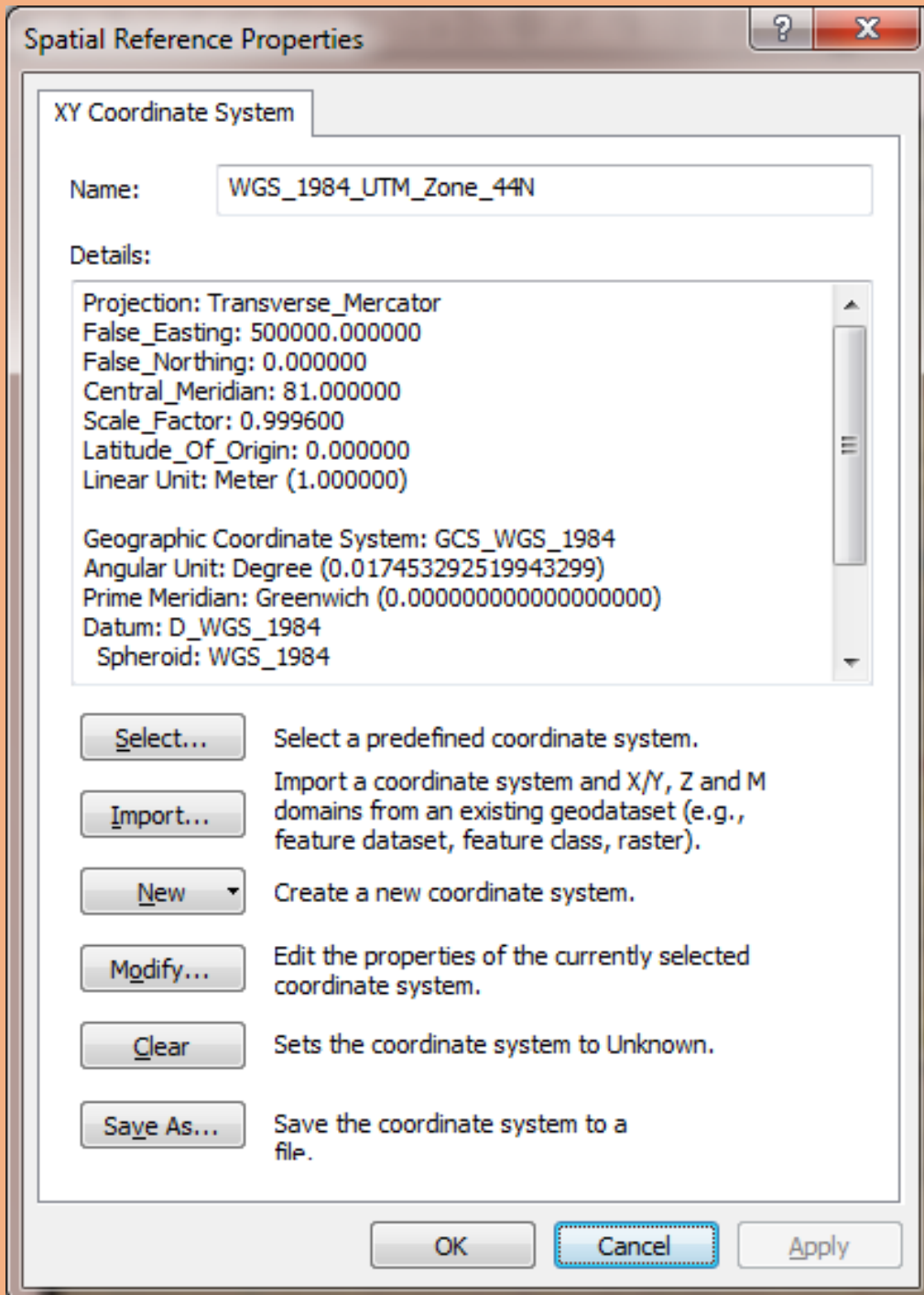
**After selecting Northern Hemisphere option → select  
*WGS 1984 UTM Zone 44N.prj***



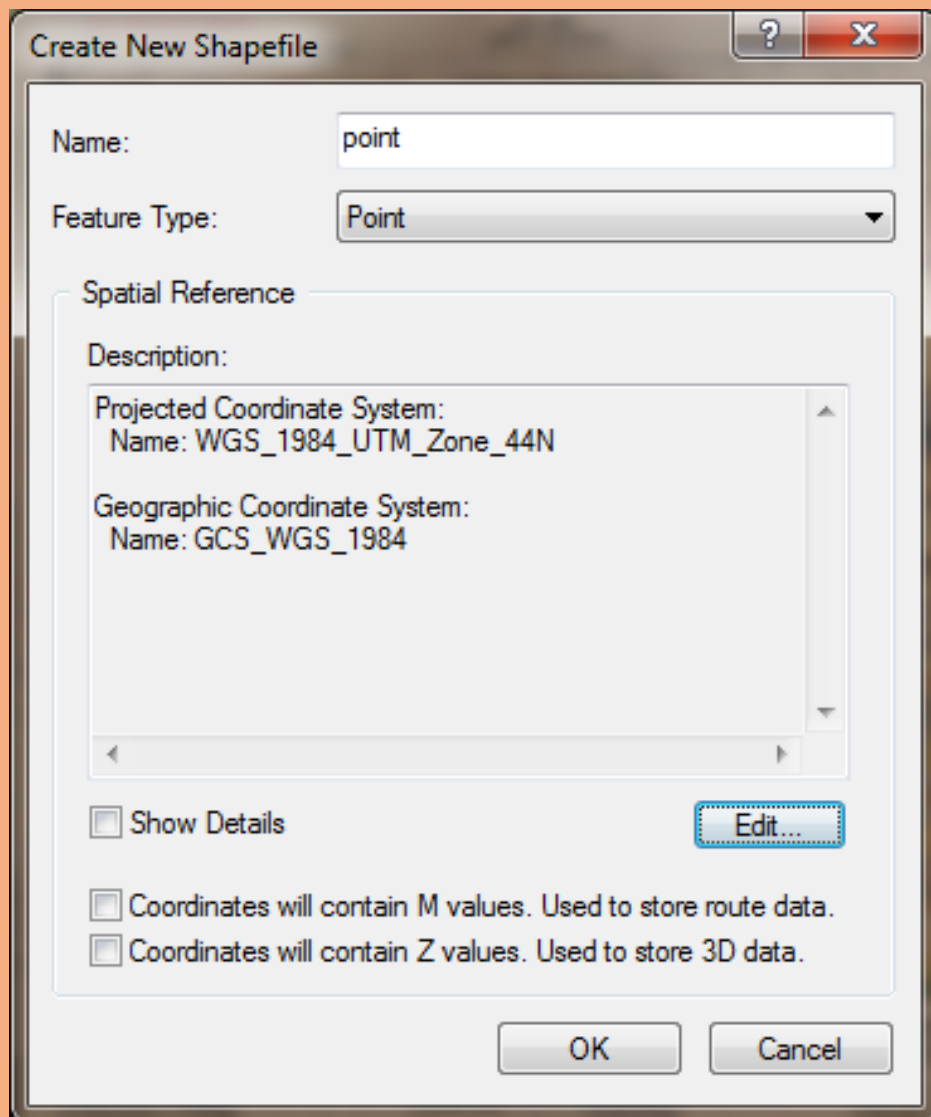
**Again Spatial Reference Properties window will open which contain both Geographic Coordinate System and Projected Coordinate System.**



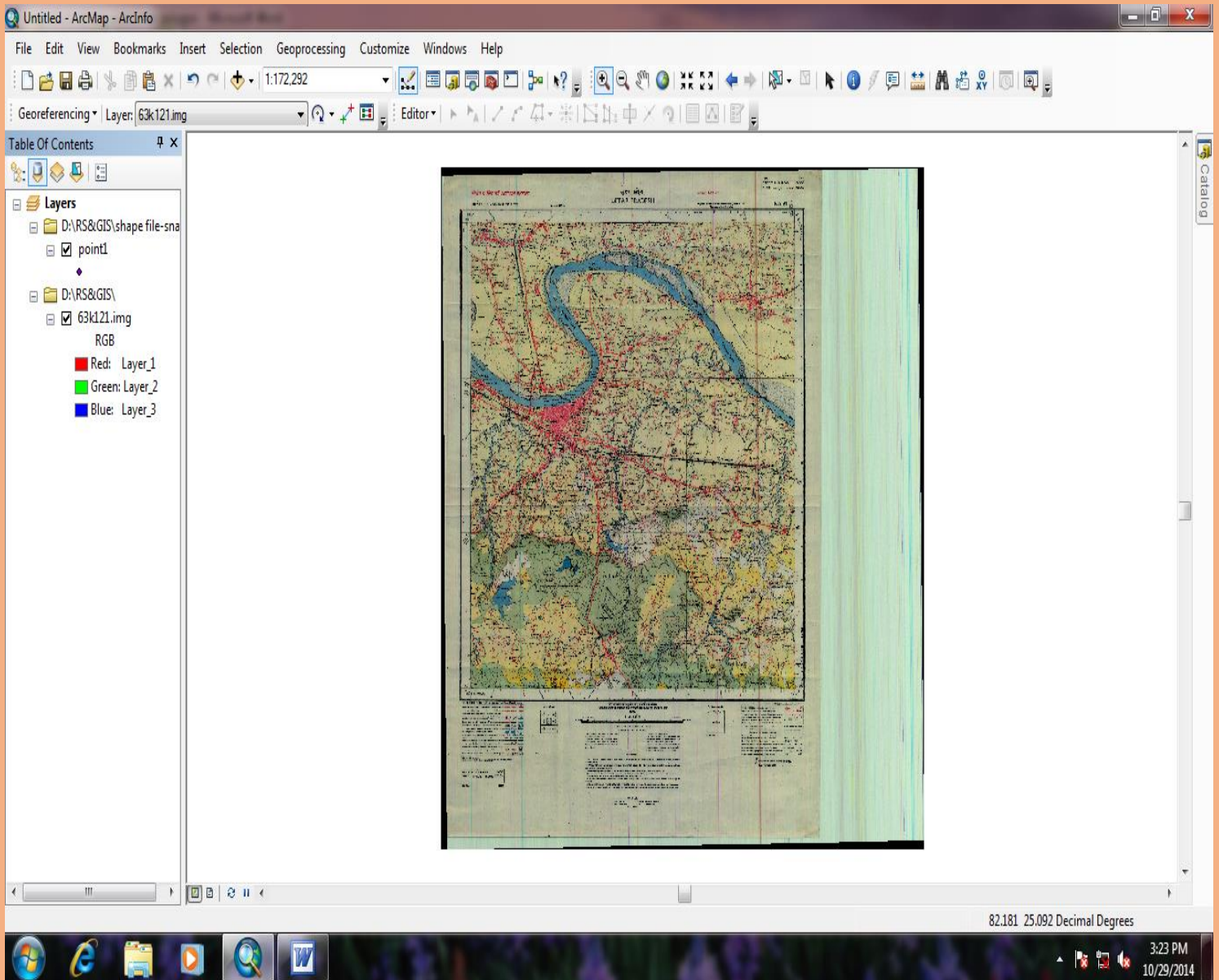
Select *Apply* → select *OK*



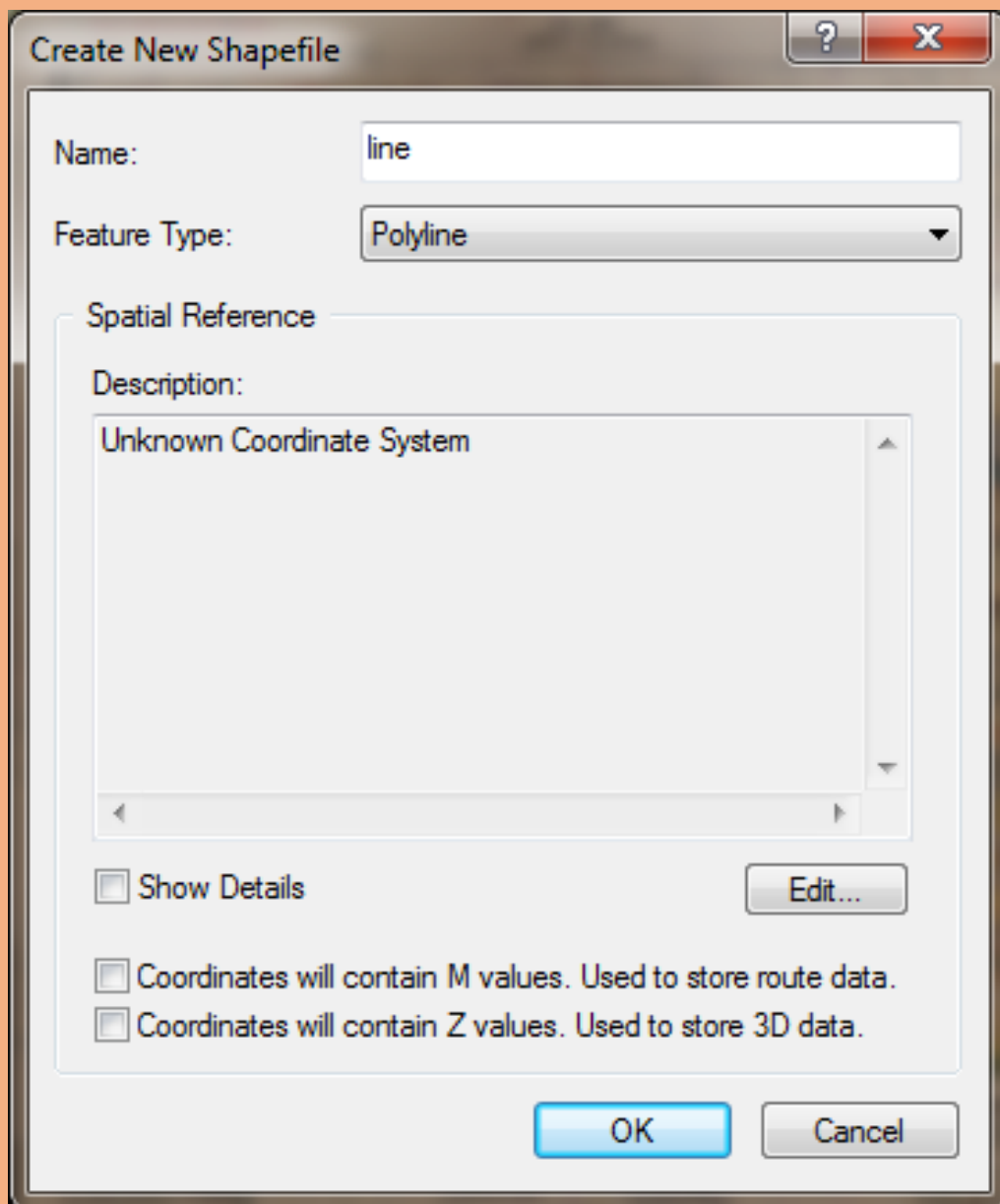
**Again *Create New Shapefile* Window will open which displays the *Projected and Geographic Coordinate System* in Description box → select *OK* Button**



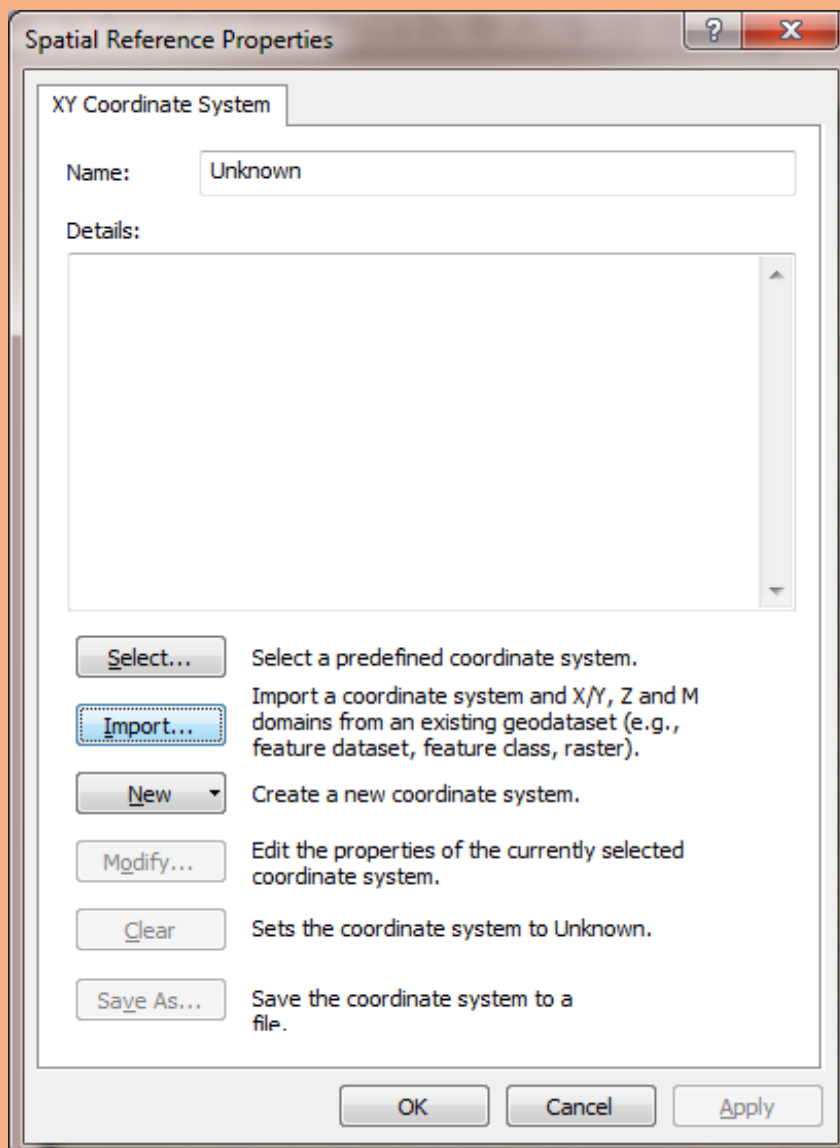
## *Point Shapefile Feature is formed and display in Table Of Contents Window*



Now create *Line Shapefile Feature* → same above process of selecting shapefile give name in *Name* option ( ) → select *Feature Type (Polyline)* → go to *Edit* option → select *OK*

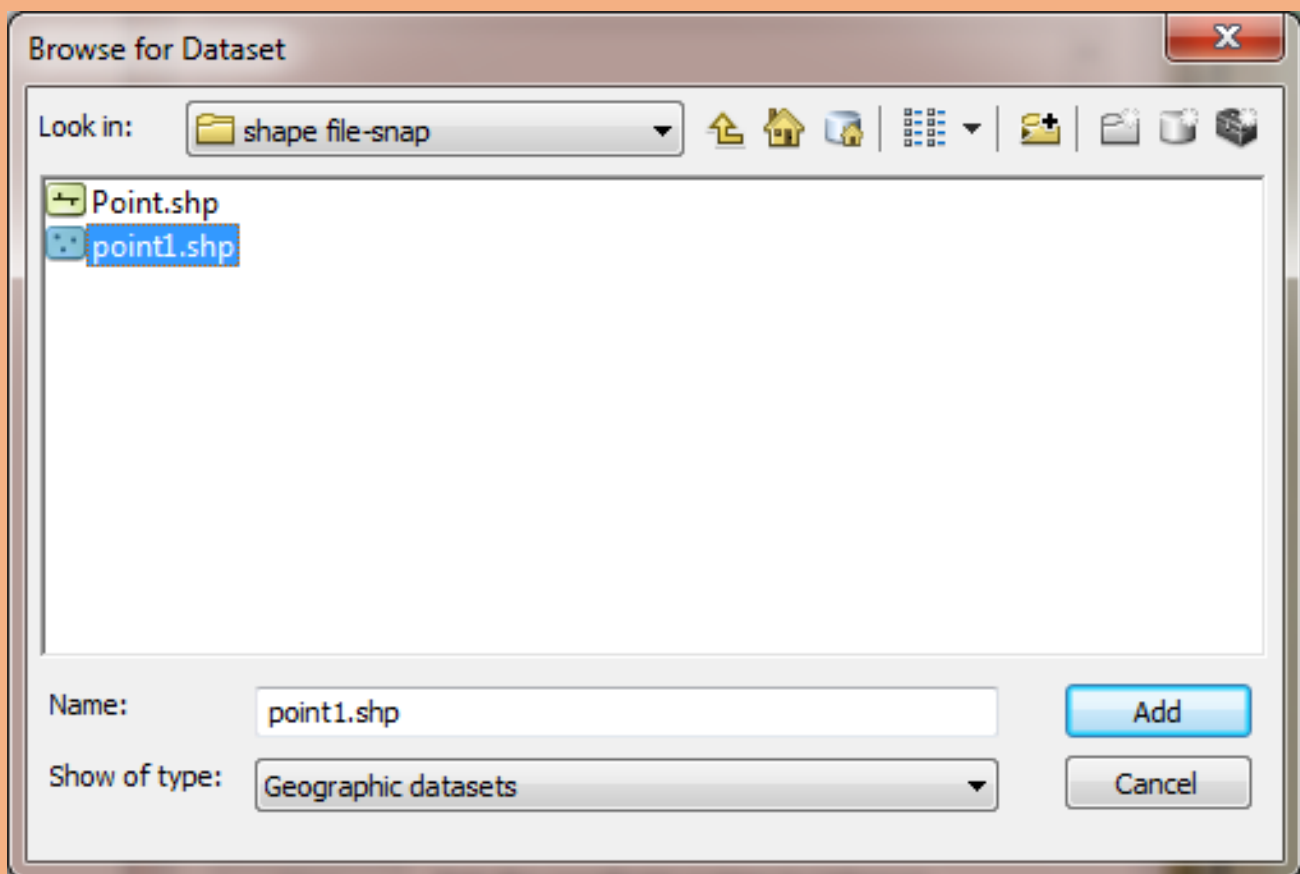


**New *Spatial Reference Properties* window will open → select *Import Option***

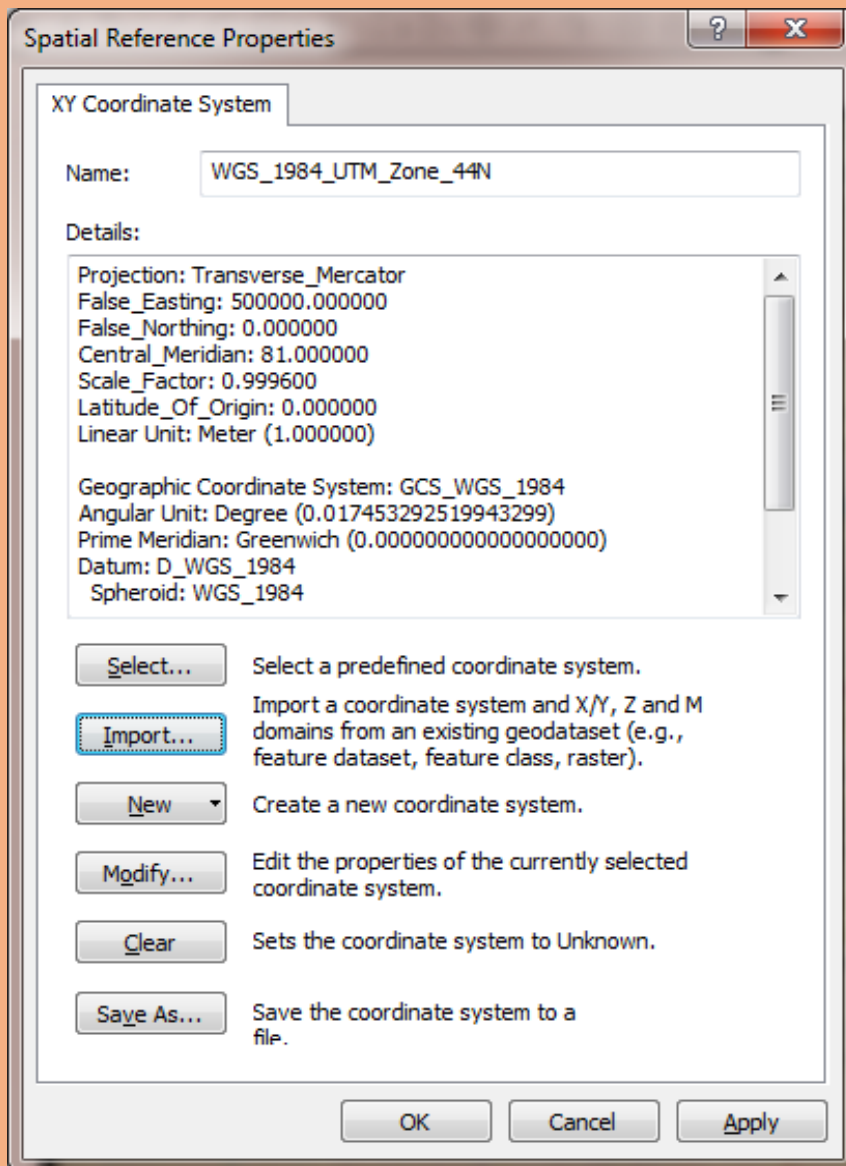




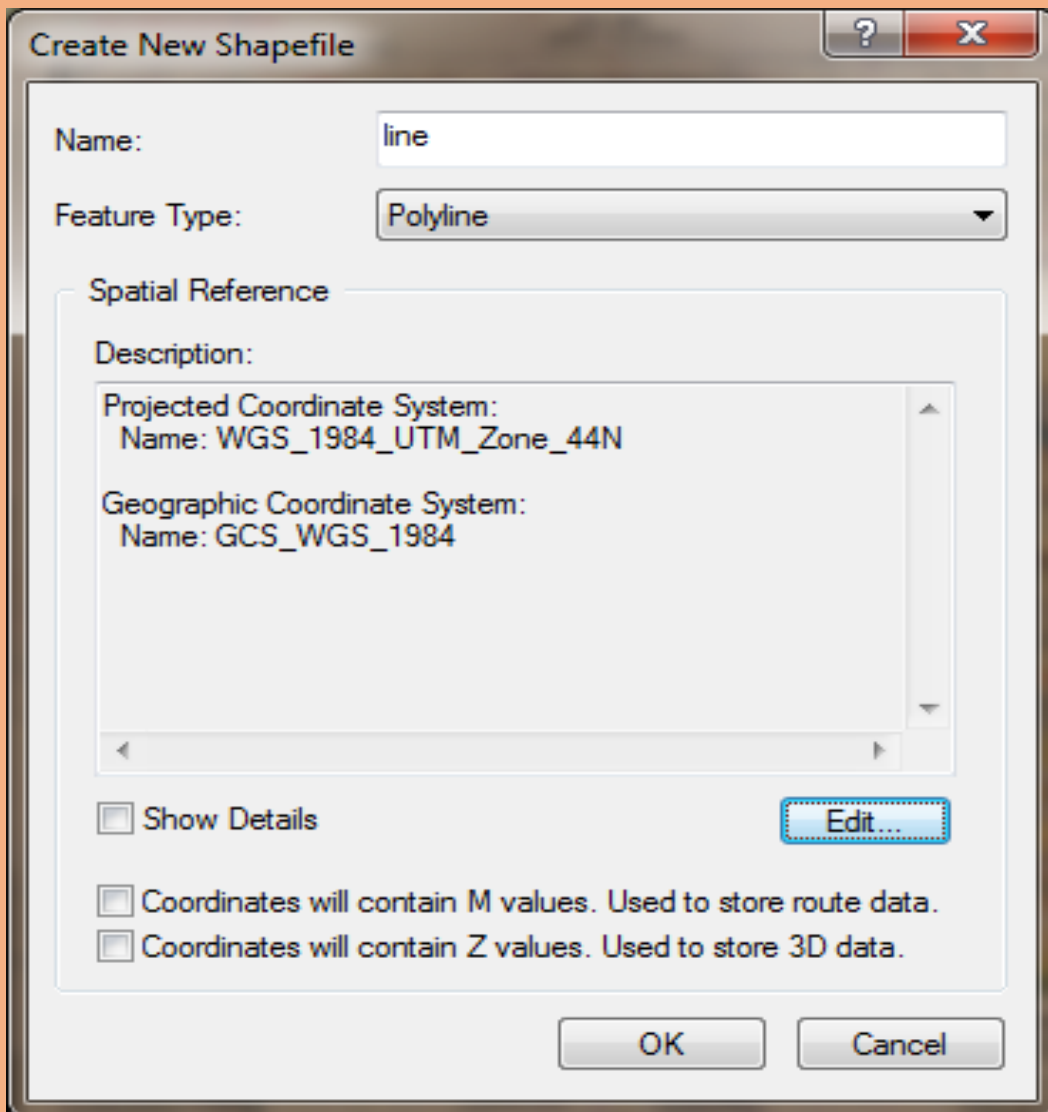
**New *Browse for Dataset* window will open → select already saved shapefile of *point* → Select *ADD* button**



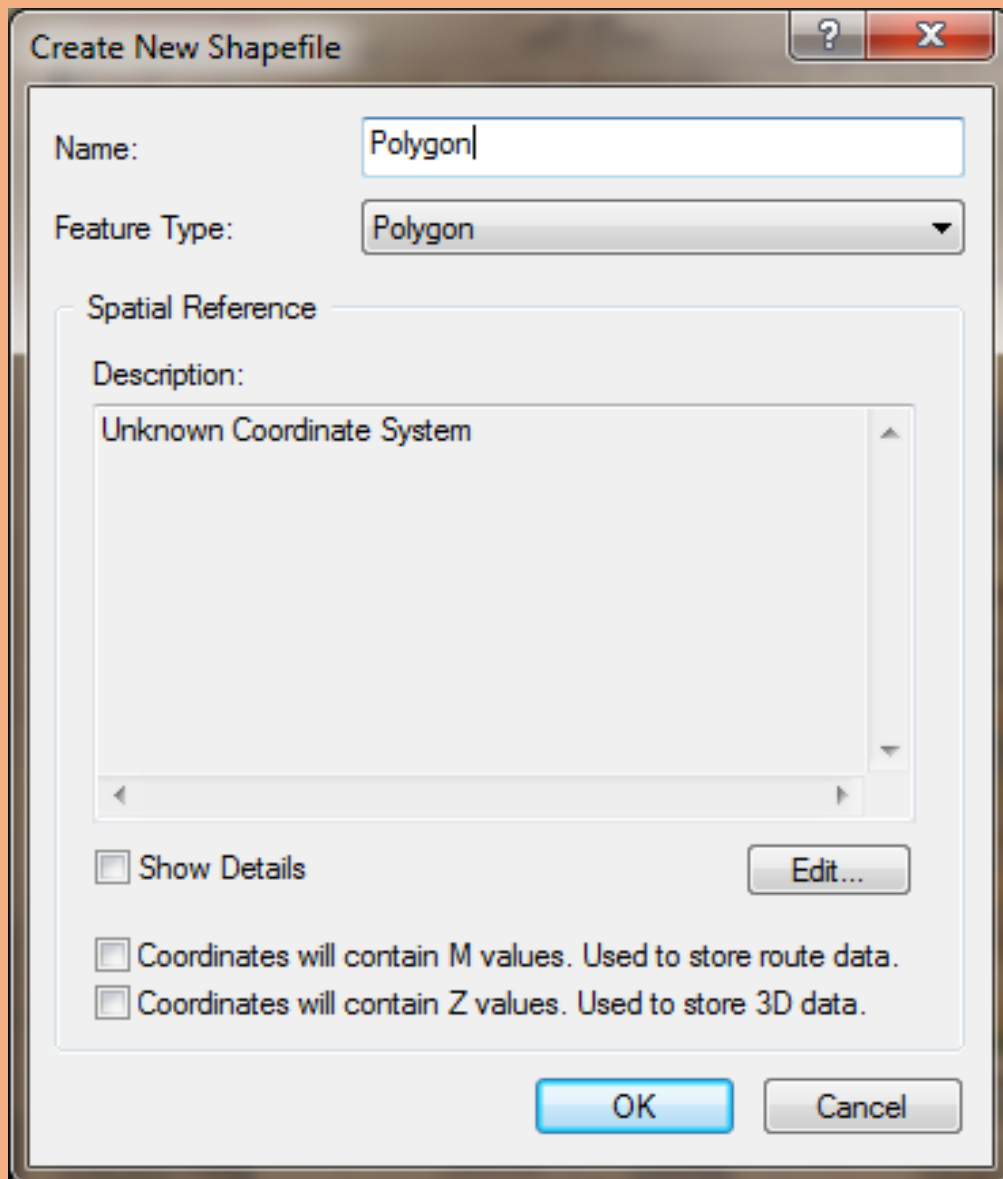
After adding point features →  
Again *Spatial Reference Properties* window will open which  
shows same *Projected and Geographic Coordinate System* →  
select *Apply* option → select *OK*



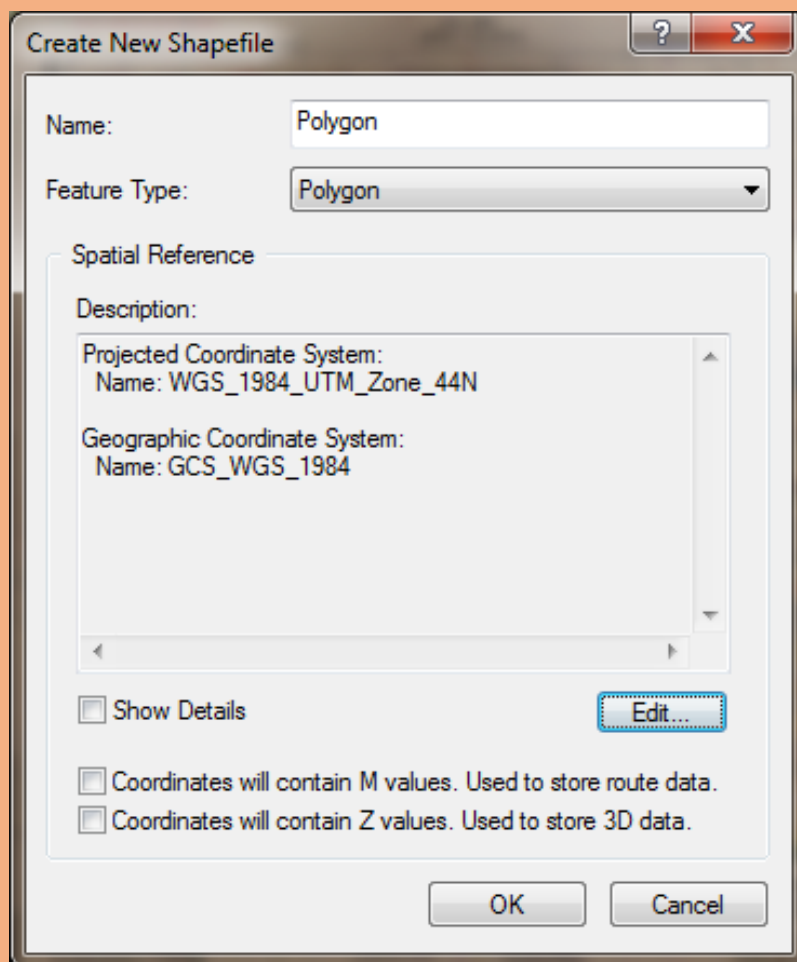
**Again *Create New Shapefile* window will open (same Projected and Geographic System in Description box as same as in Point Shapefile) → Select *OK***



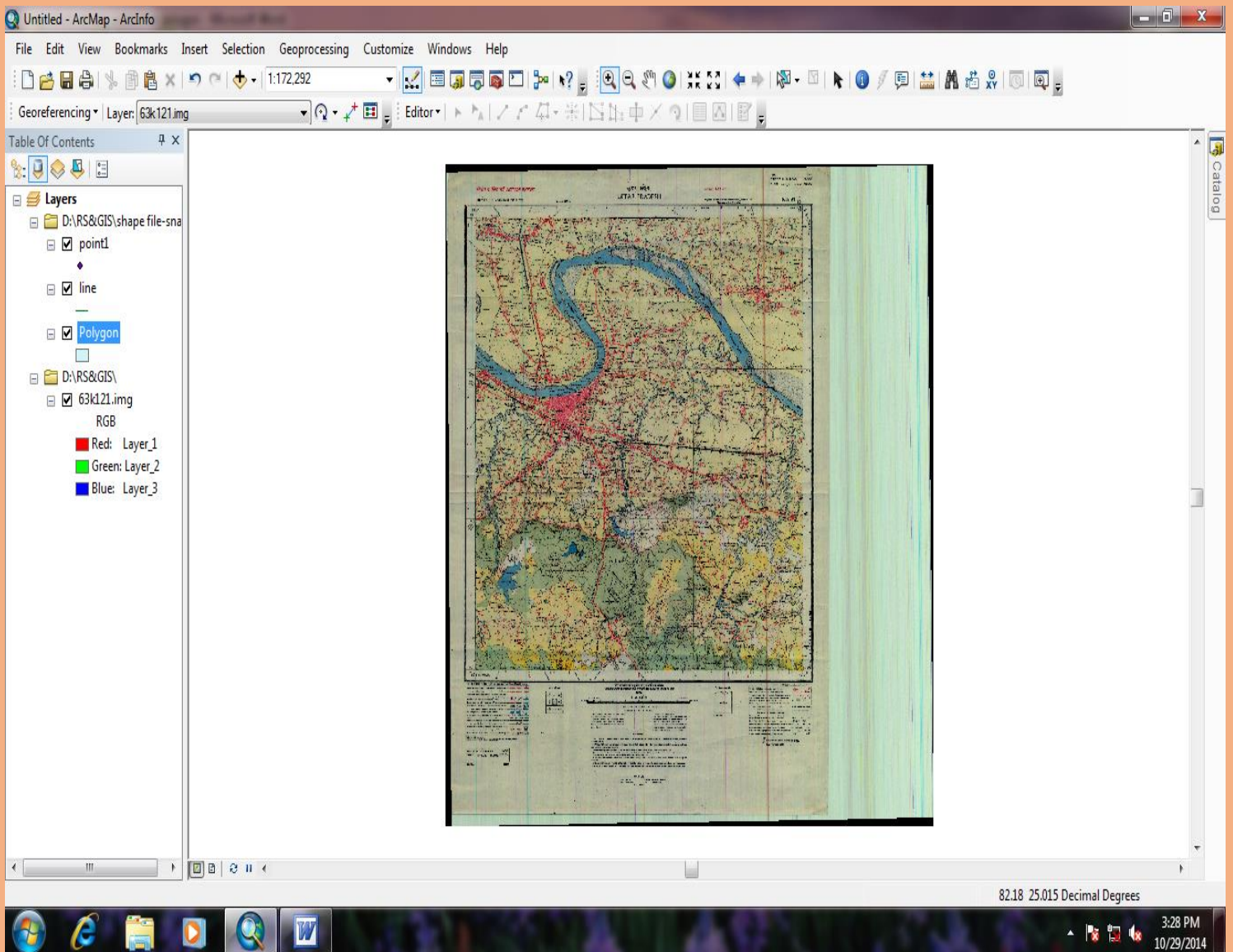
**Same process of selecting shapefile in  
And giving name and Selecting Feature Type (Polygon) →  
go to Edit option →  
Select *OK***



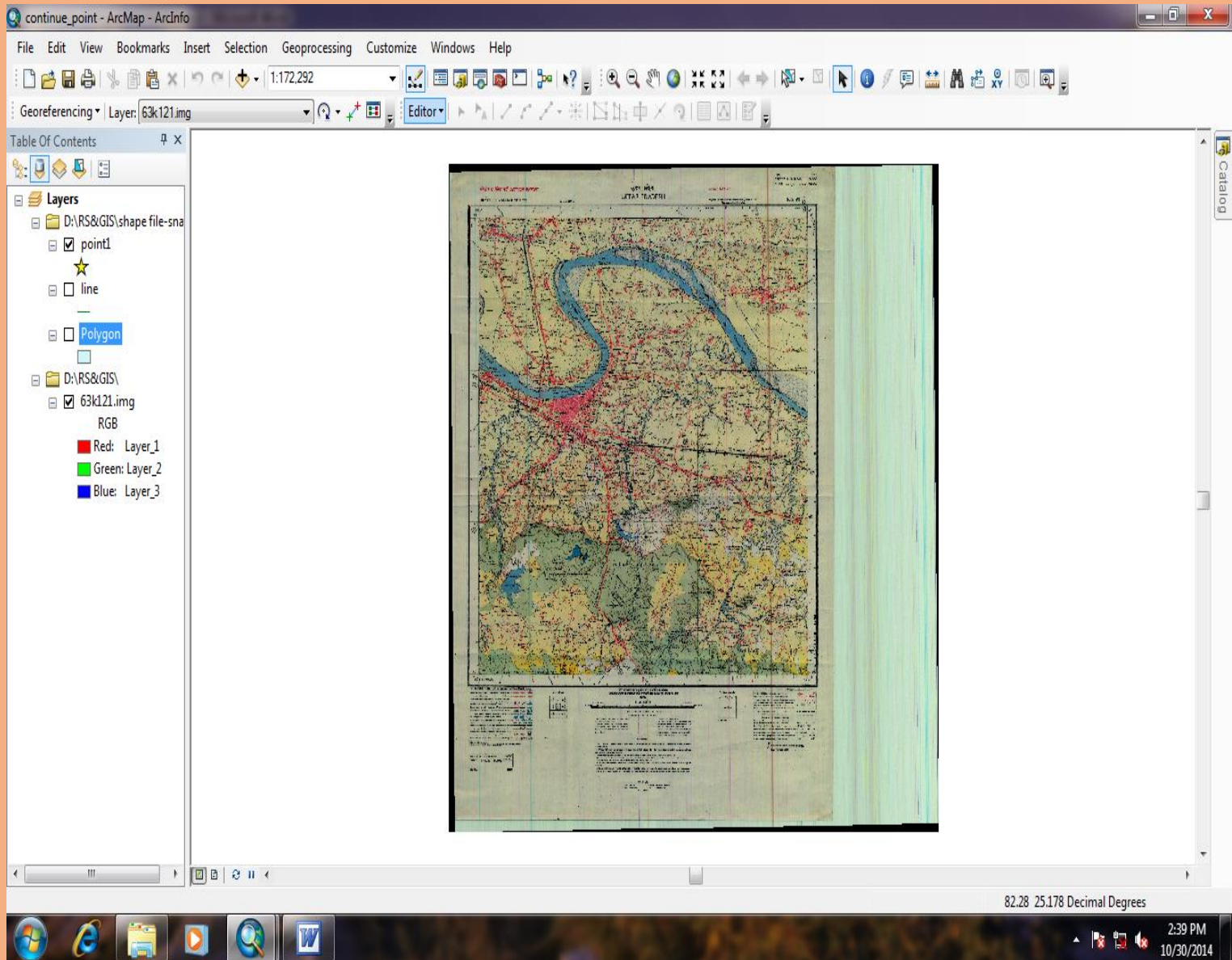
**Repeat the same process of *Import* the feature from Point shapefile → select *Apply* → select *OK* →  
Now we can see the same Projected and Geographic Coordinate System in Description Box → select *OK***



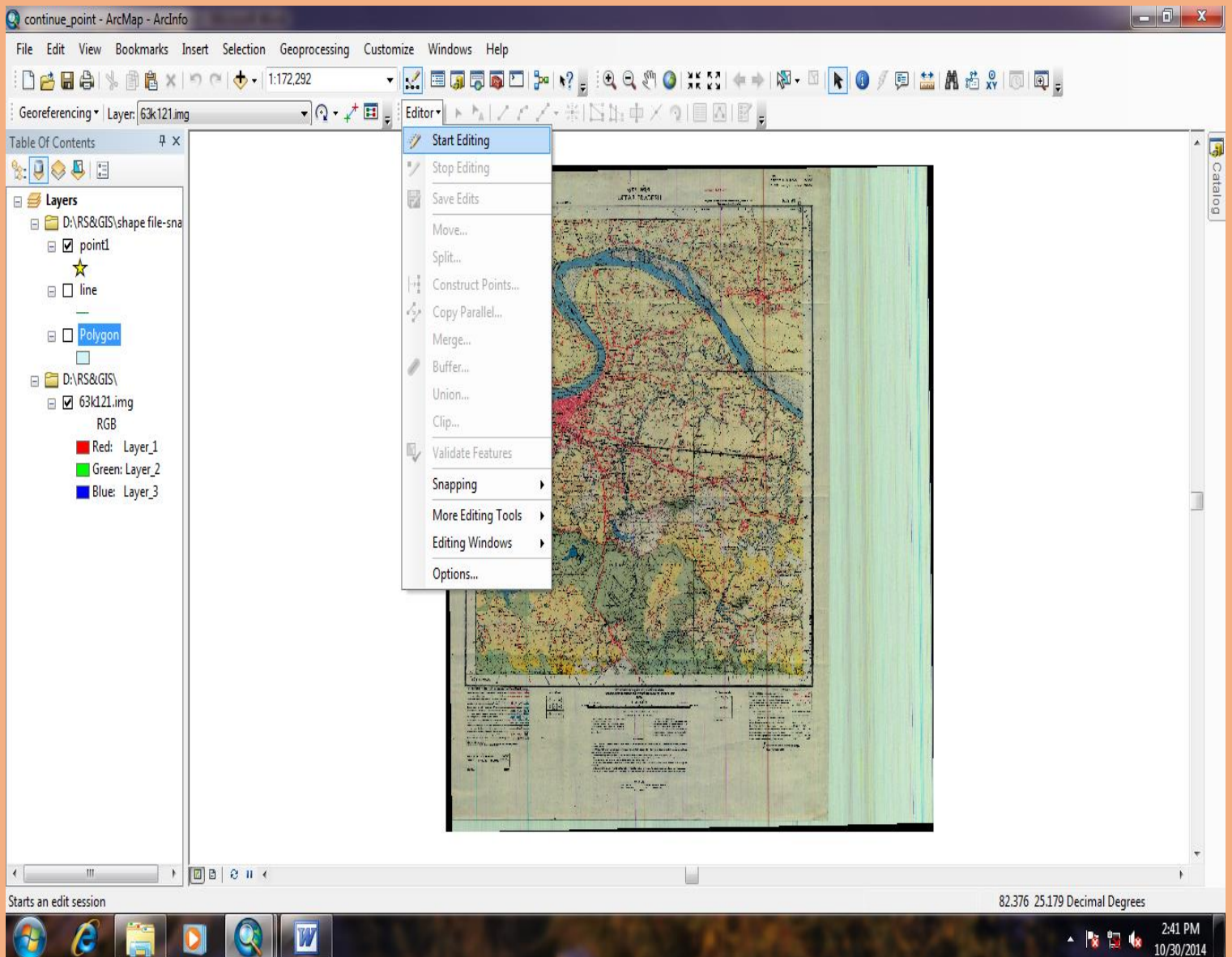
**Now we can see that all three Features of shapefile  
*Point, Line and Polygon* are formed**



Go to *Editor Bar* and select *Editor Option*

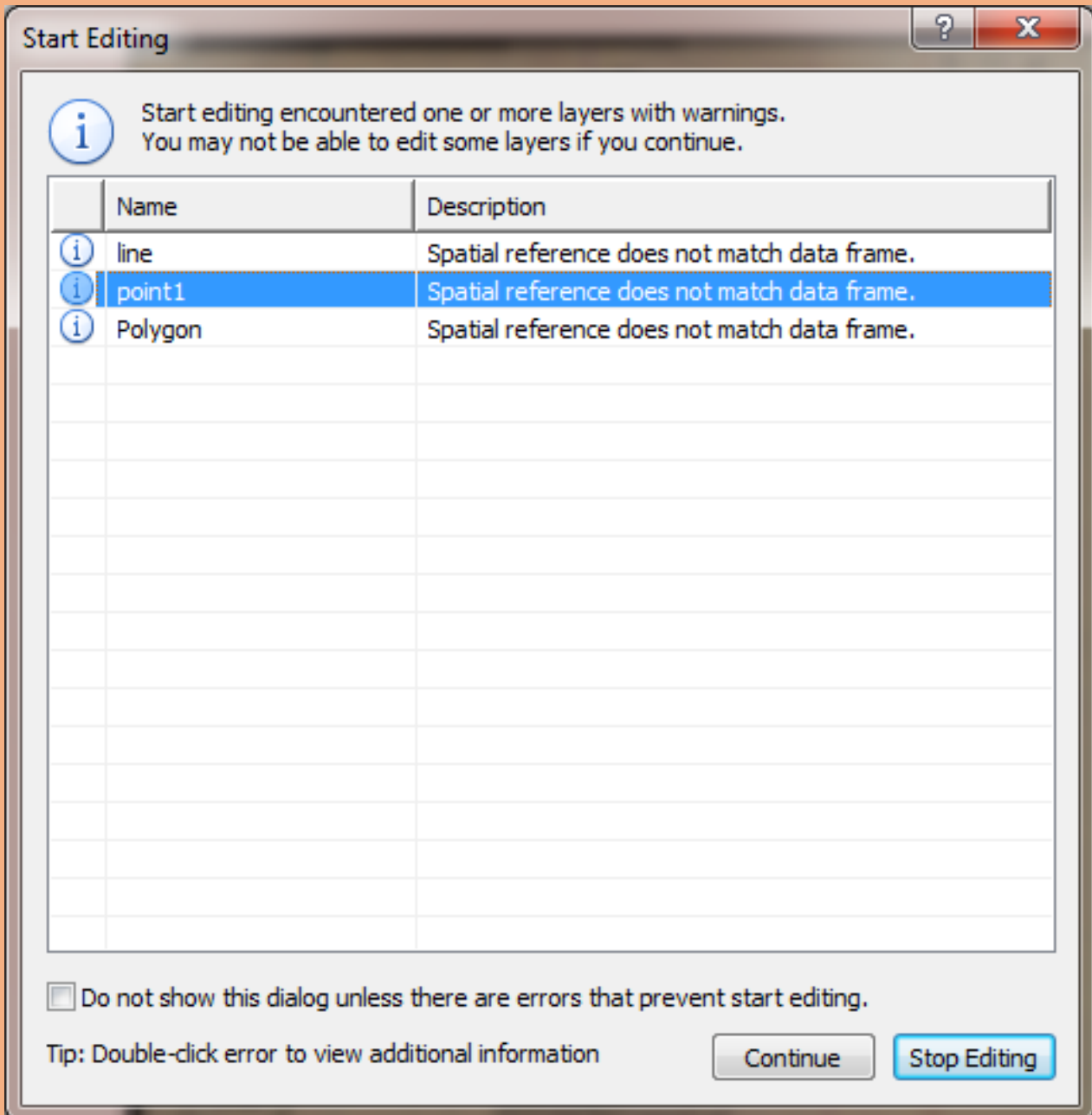


After selecting *Editor* Option → select *Start Editing* Option



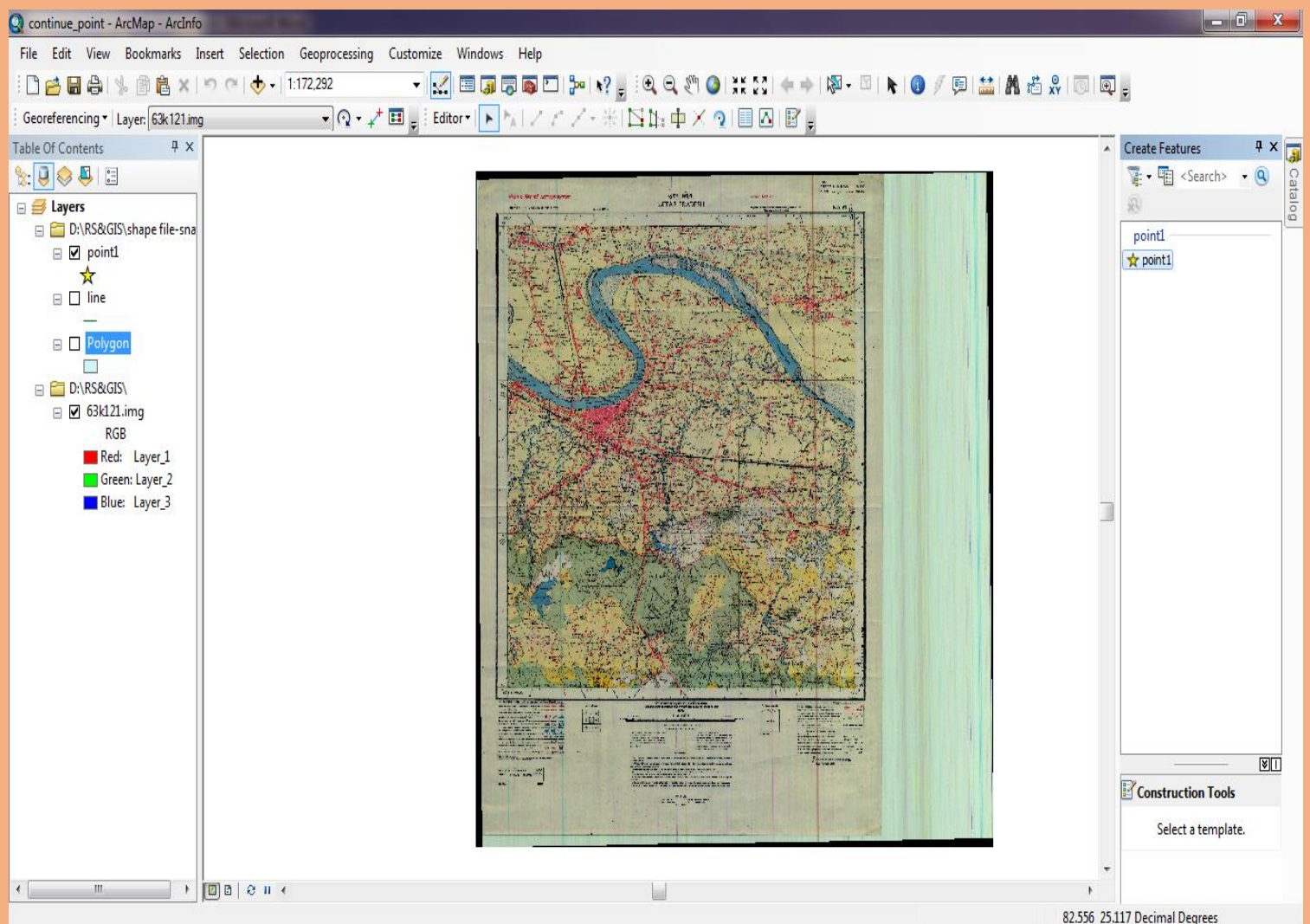


**As we start editing new *Start Editing* Window will open → we can choose the desired option for editing on Toposheet (example: Point option is selected)**

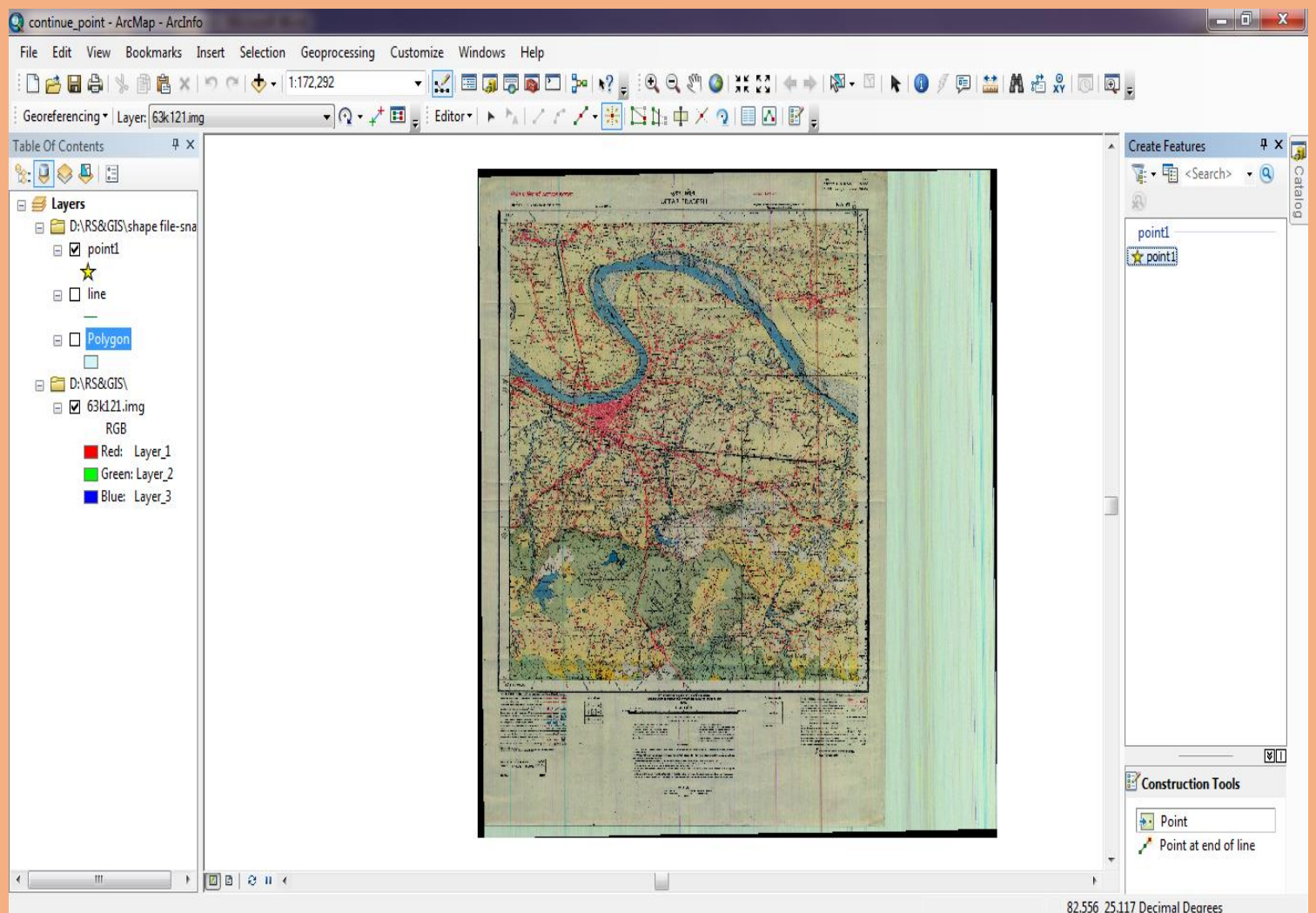




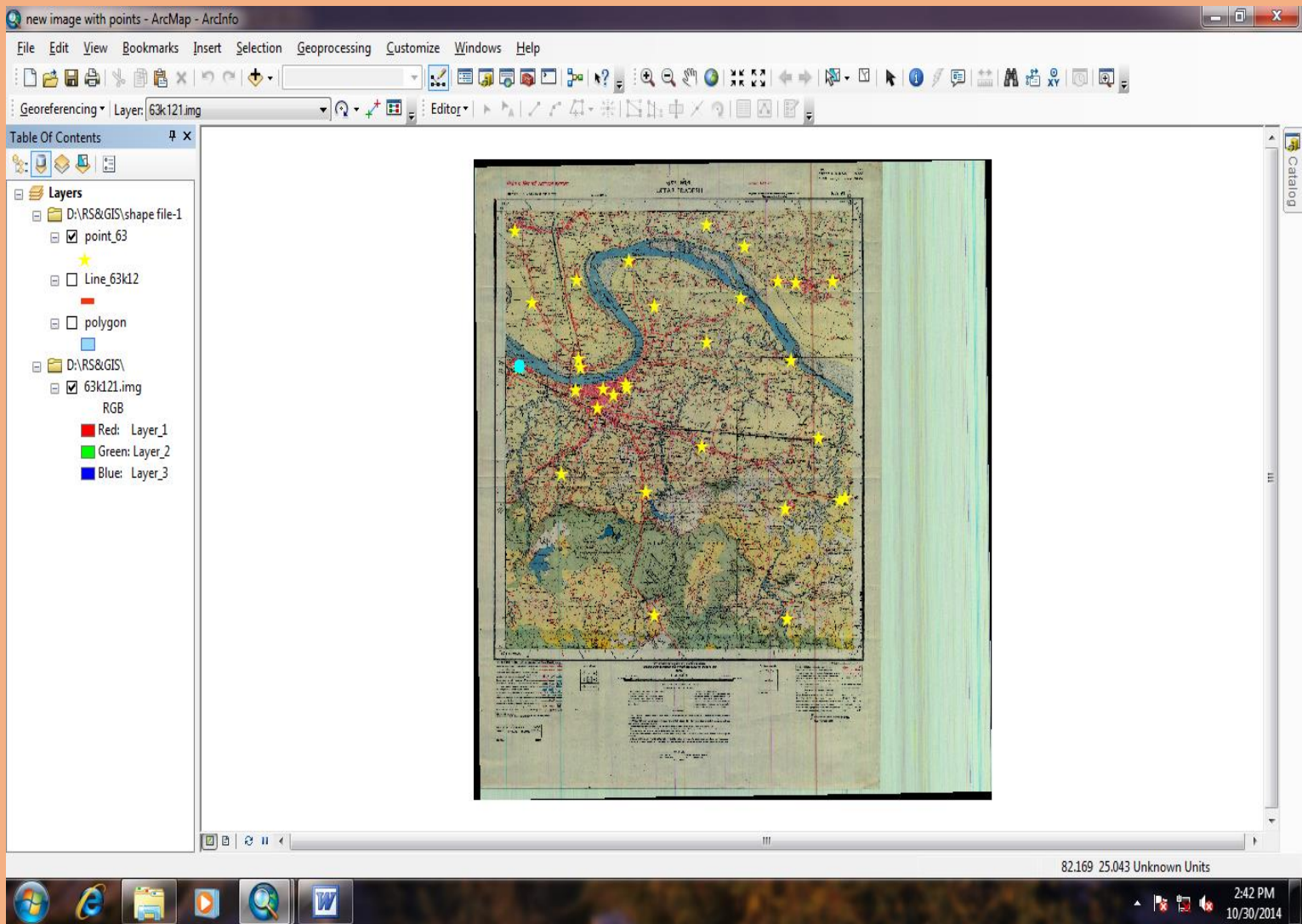
Again main page of ArcMap will open and we can see on right side of the screen *Create Feature* Window will open



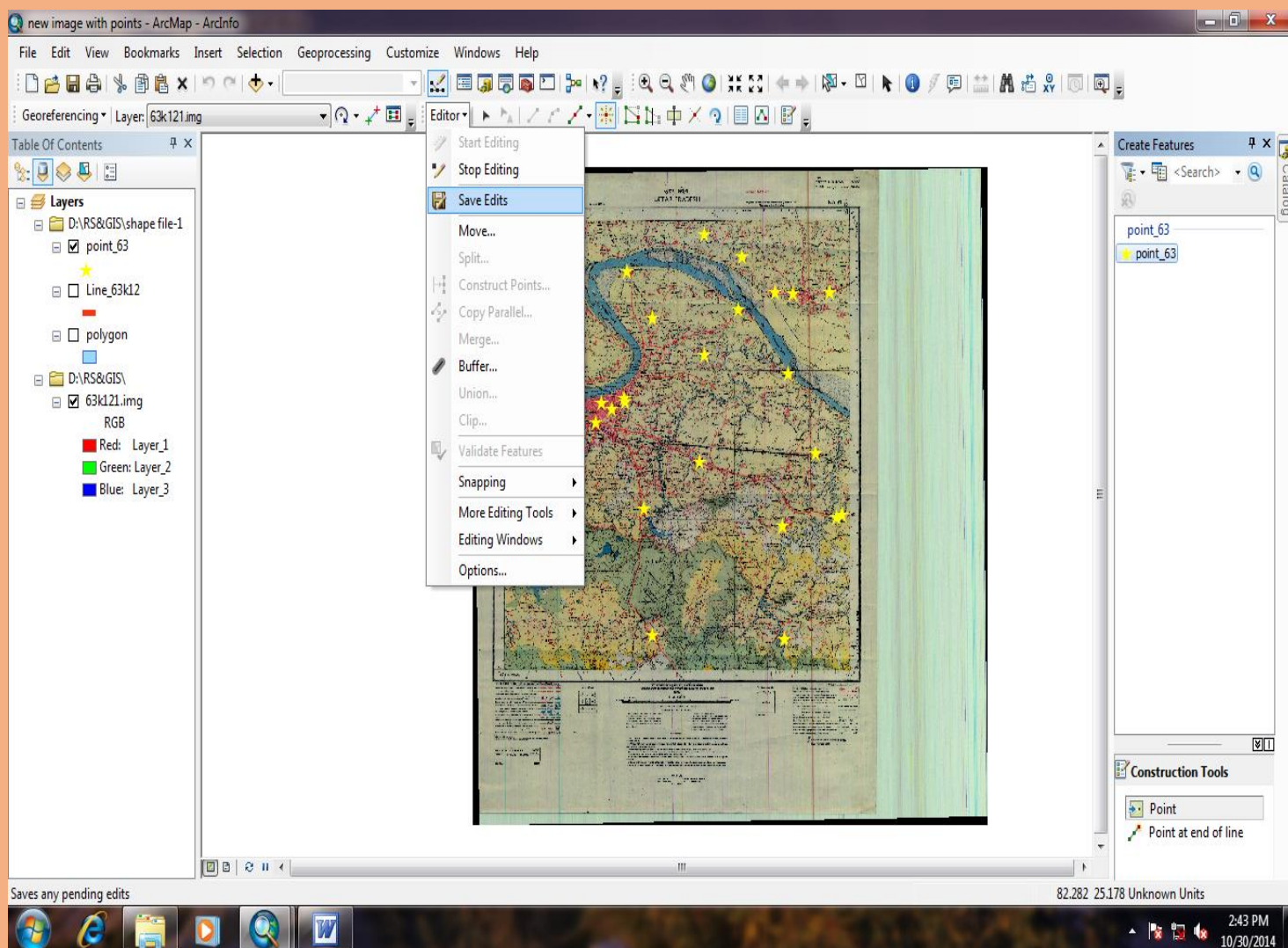
**Now Select *Point* Feature in *Create Feature Window*  
(as soon as we choose the option *Construction Tool* is  
highlighted below in *Create Feature* window)**



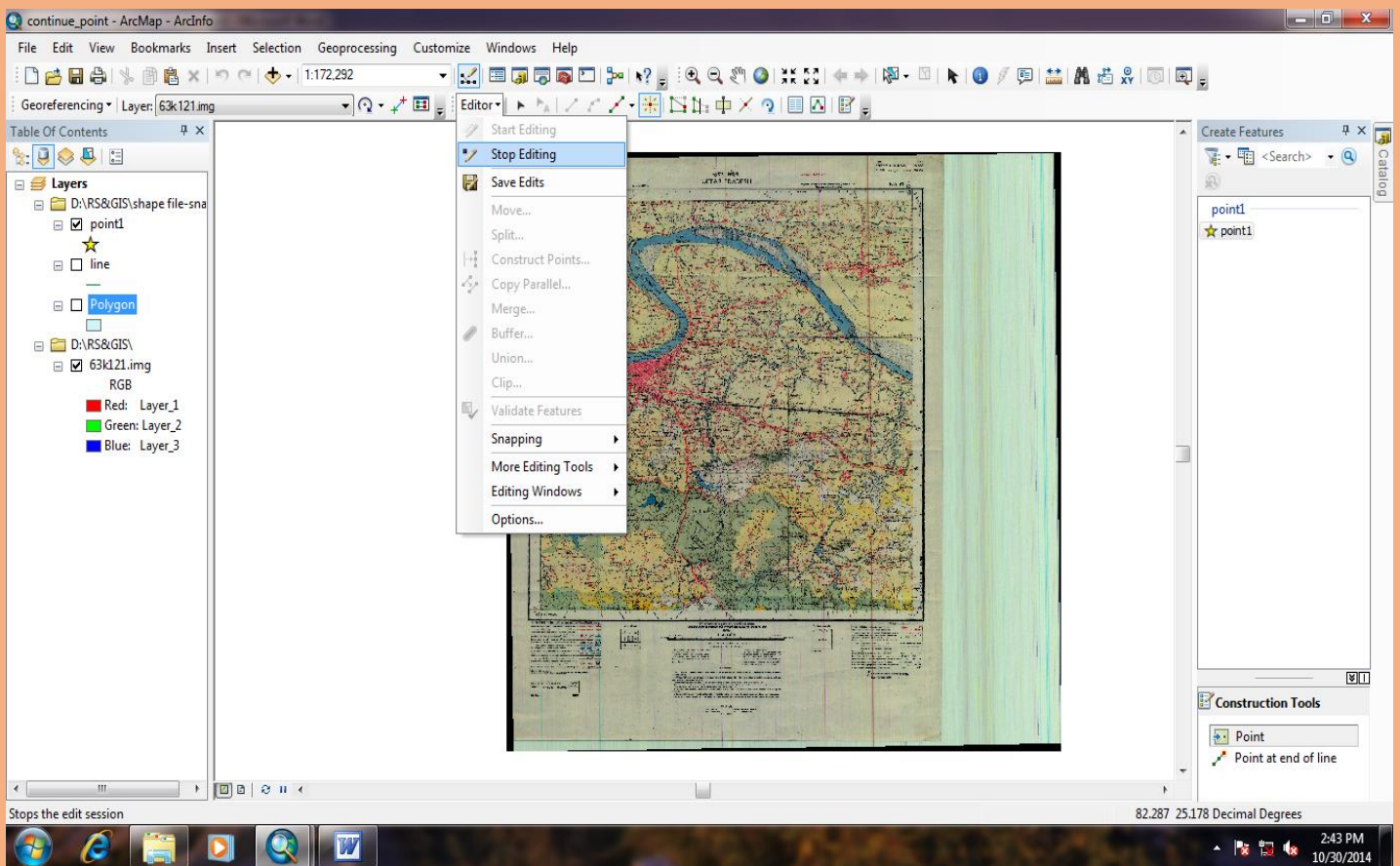
**After selecting Point Option from Construction Tool we can mark several Points on Toposheet**



**After selecting all *Points* on Toposheet → again go to *Editor Bar* and choose *Editor Option* and Select *Save Edits* to save all marked points.**



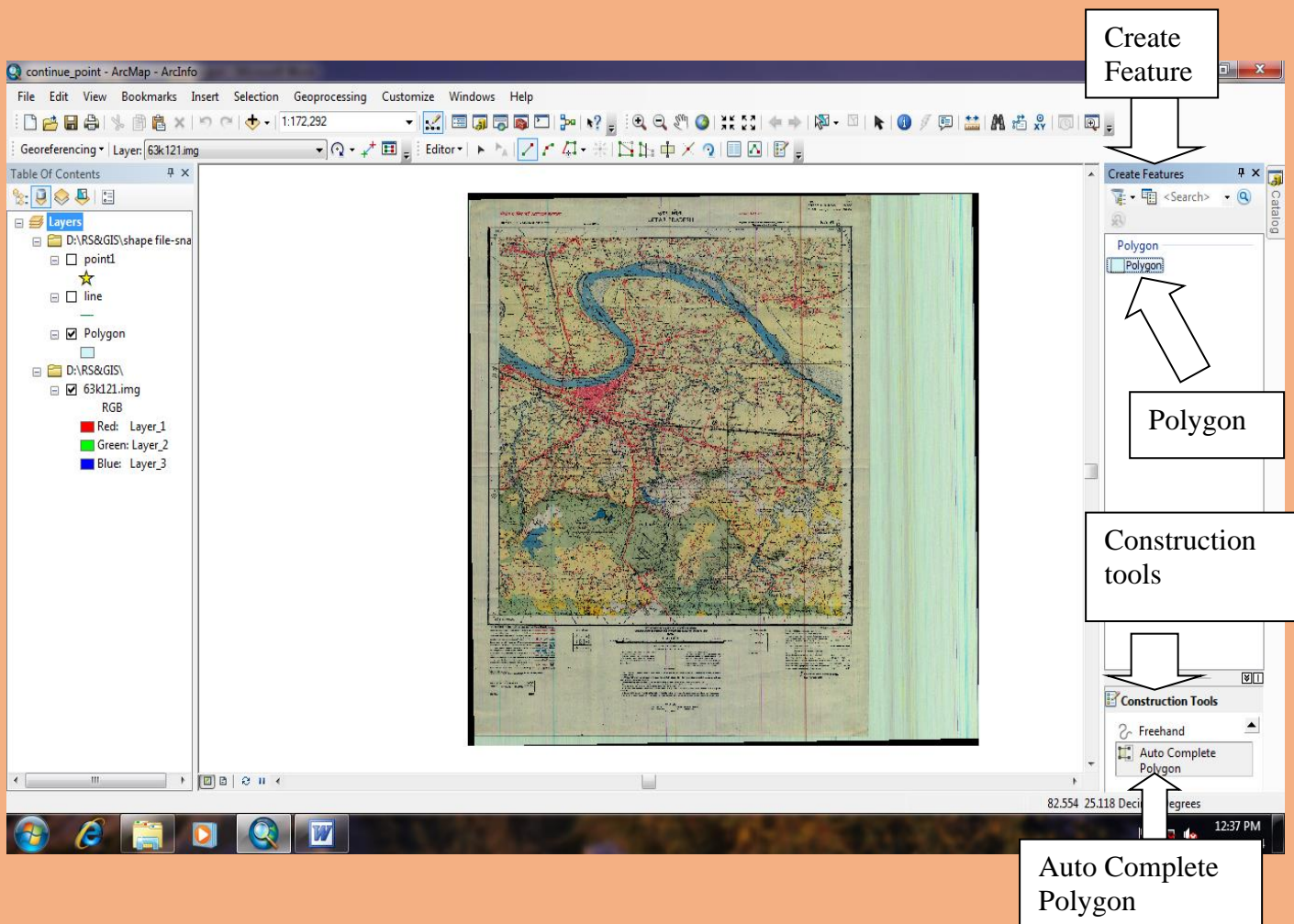
After saving all marked point → go to **Editor Bar** and  
Select **Editor Option** → select **Stop Editing**



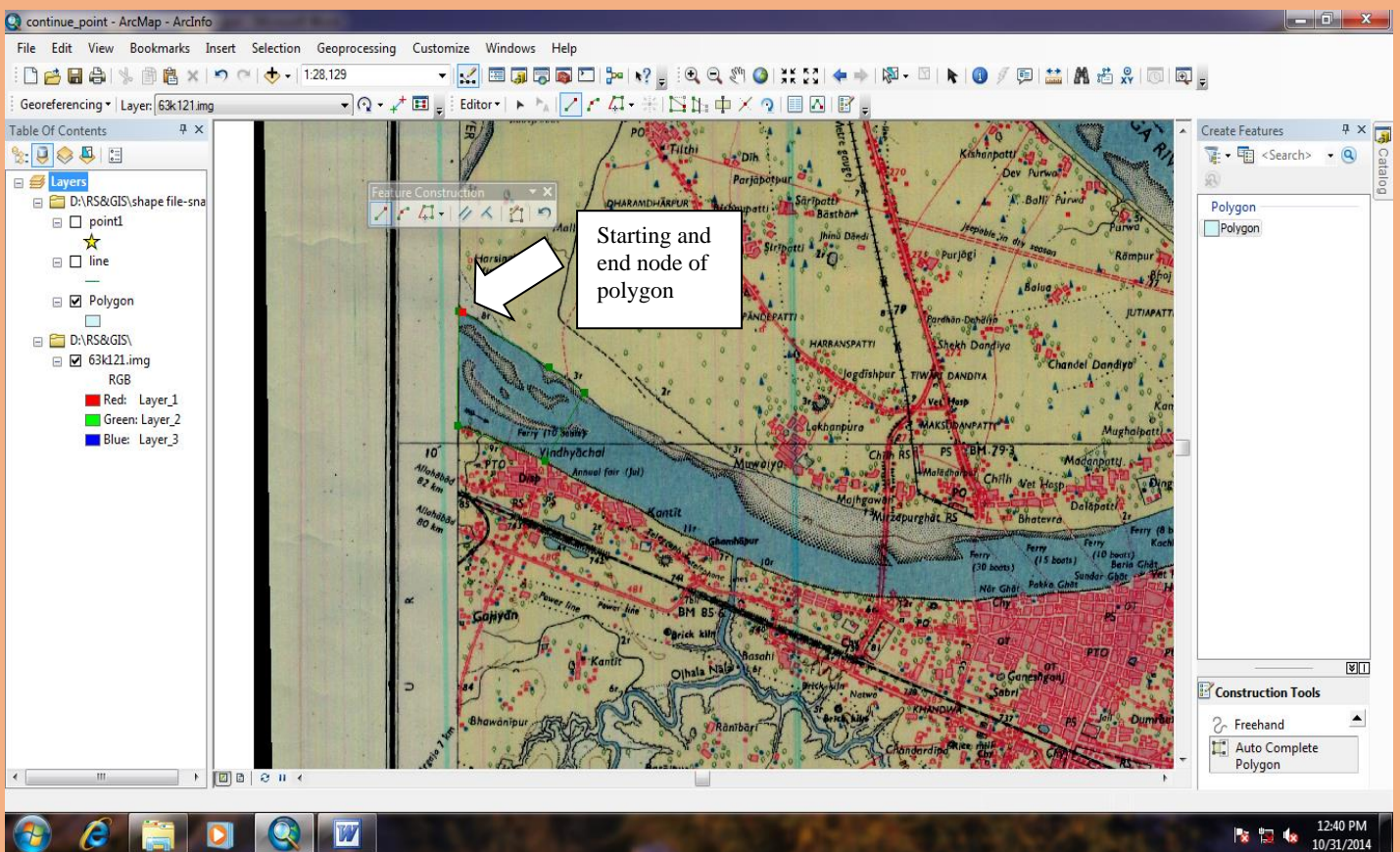




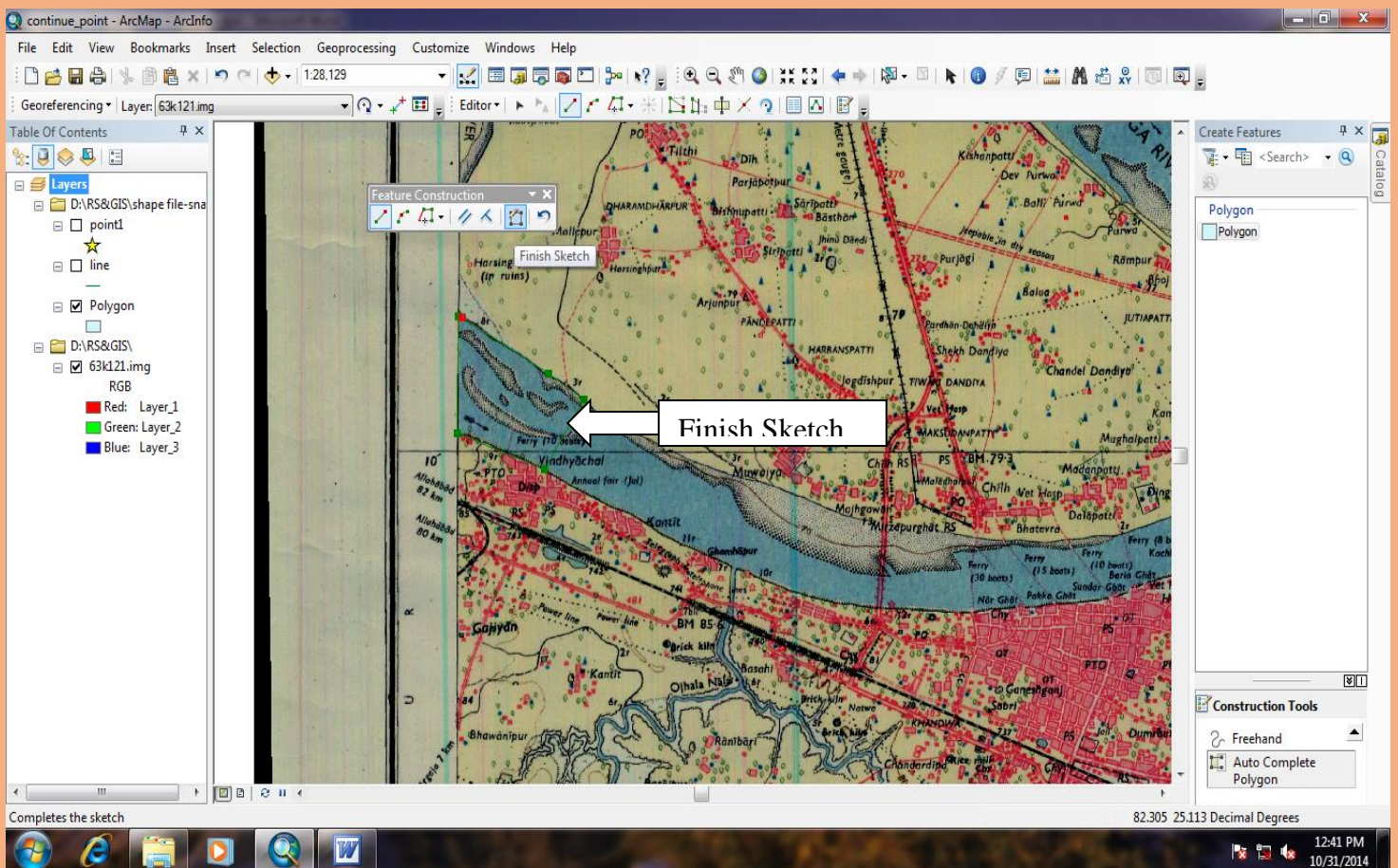
**Go to *Create Feature Window* → Select *Polygon* option → Go to *Construction tools* → Select *Auto Complete Polygon***



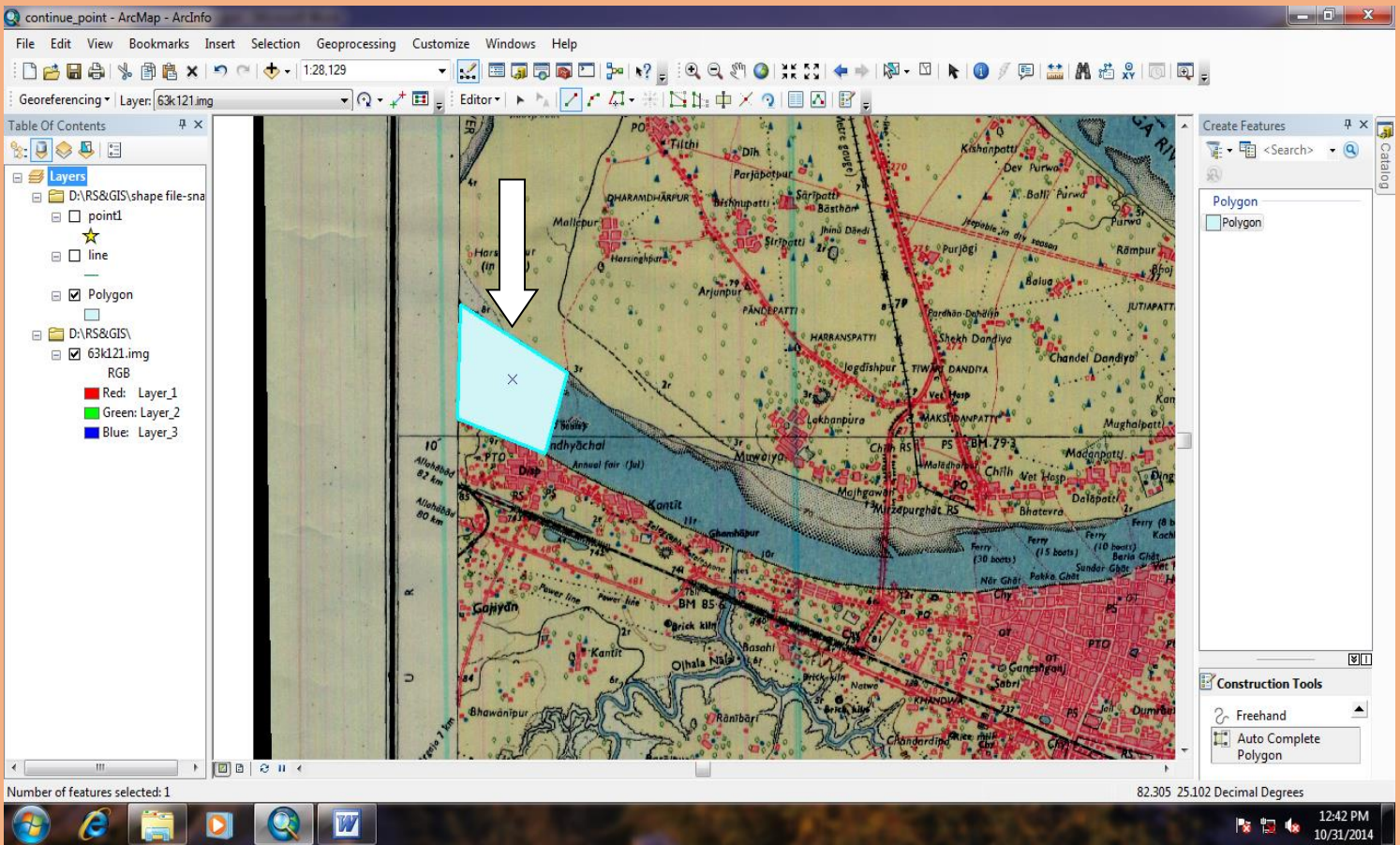
Mark 1<sup>st</sup> polygon within two nodes and intersect it will get a polygon.



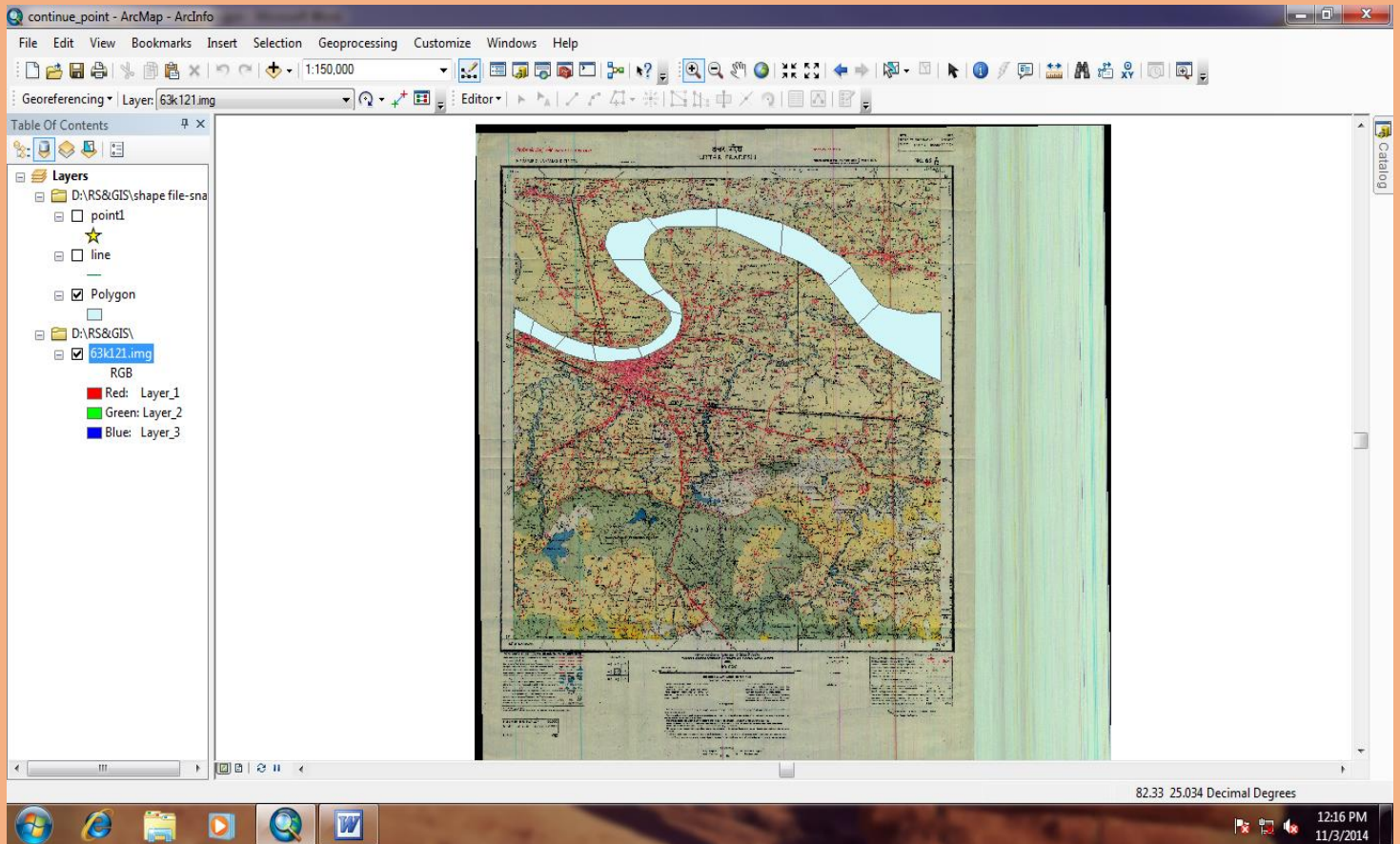
**We can finish the sketch by function key *F2* and or by *Feature Construction* box *Finish Sketch* option**



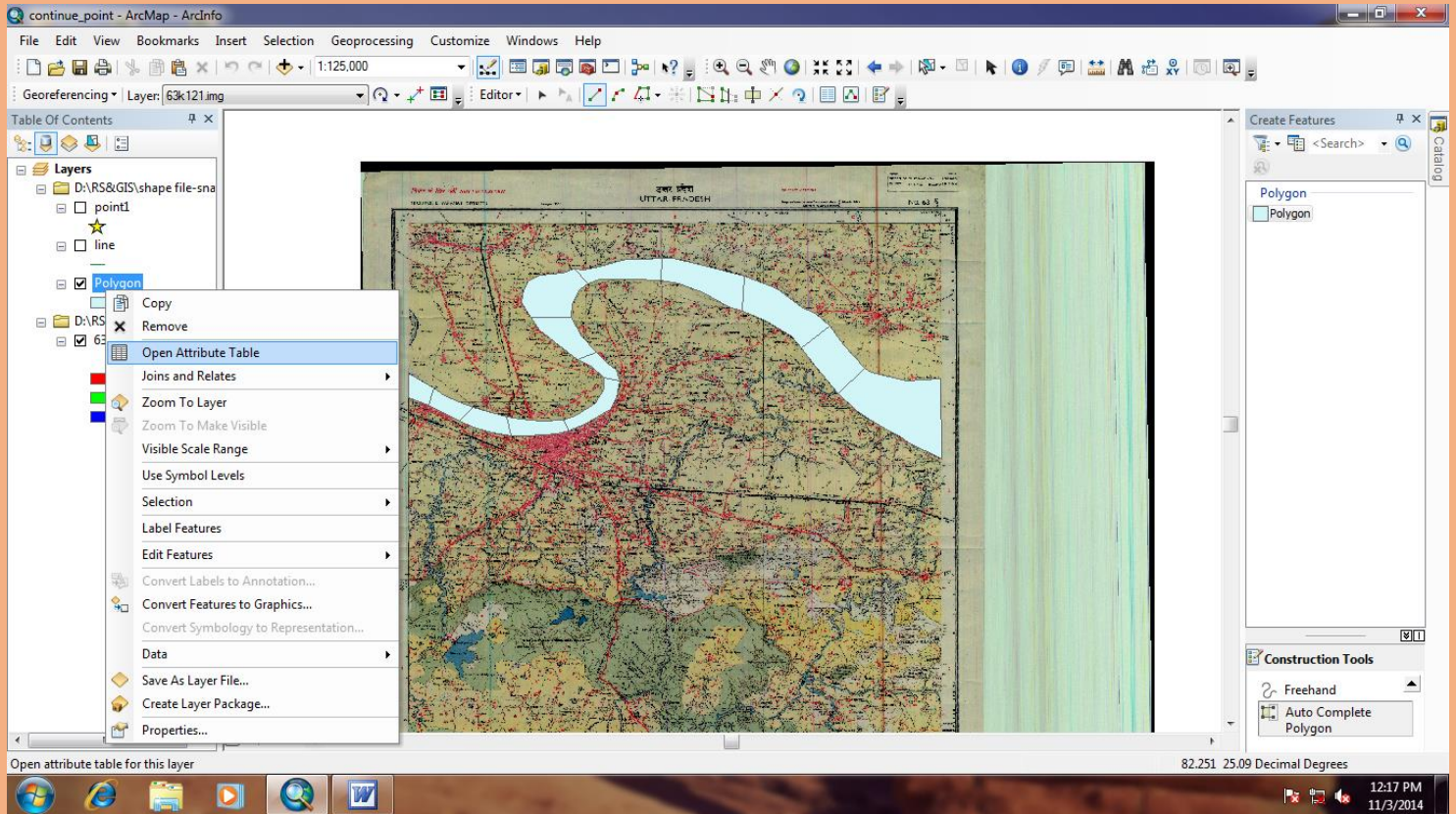
This is the final view of polygon after finish sketch



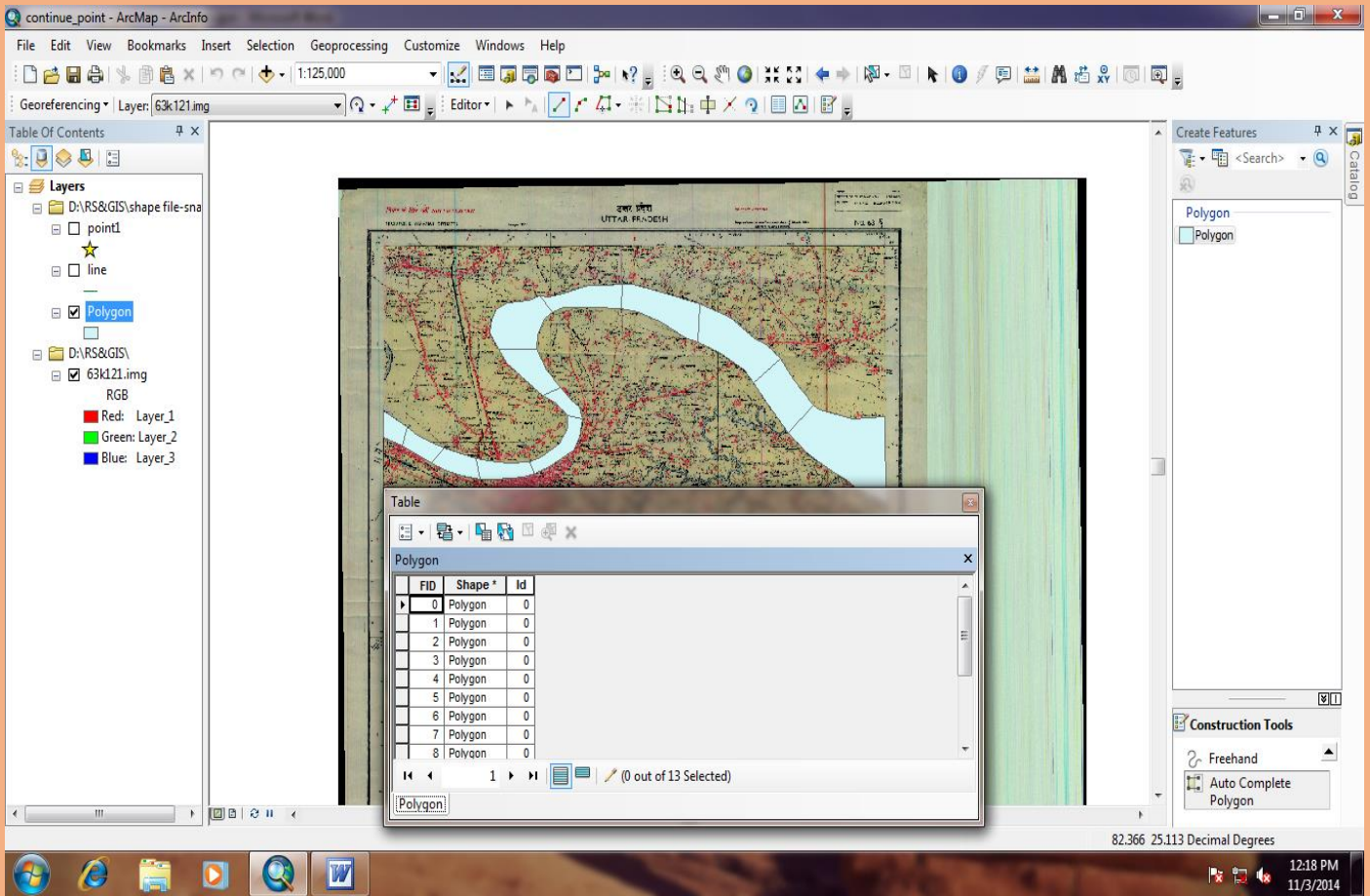
## View of complete polygon on River



**Go to *Table Of Contents* → Polygon option → go to *Open Attribute Table***



**New *Table* Window will open (It shows all the polygon, which cover the river)**



Go to first option in Table Window → select *Select All* option

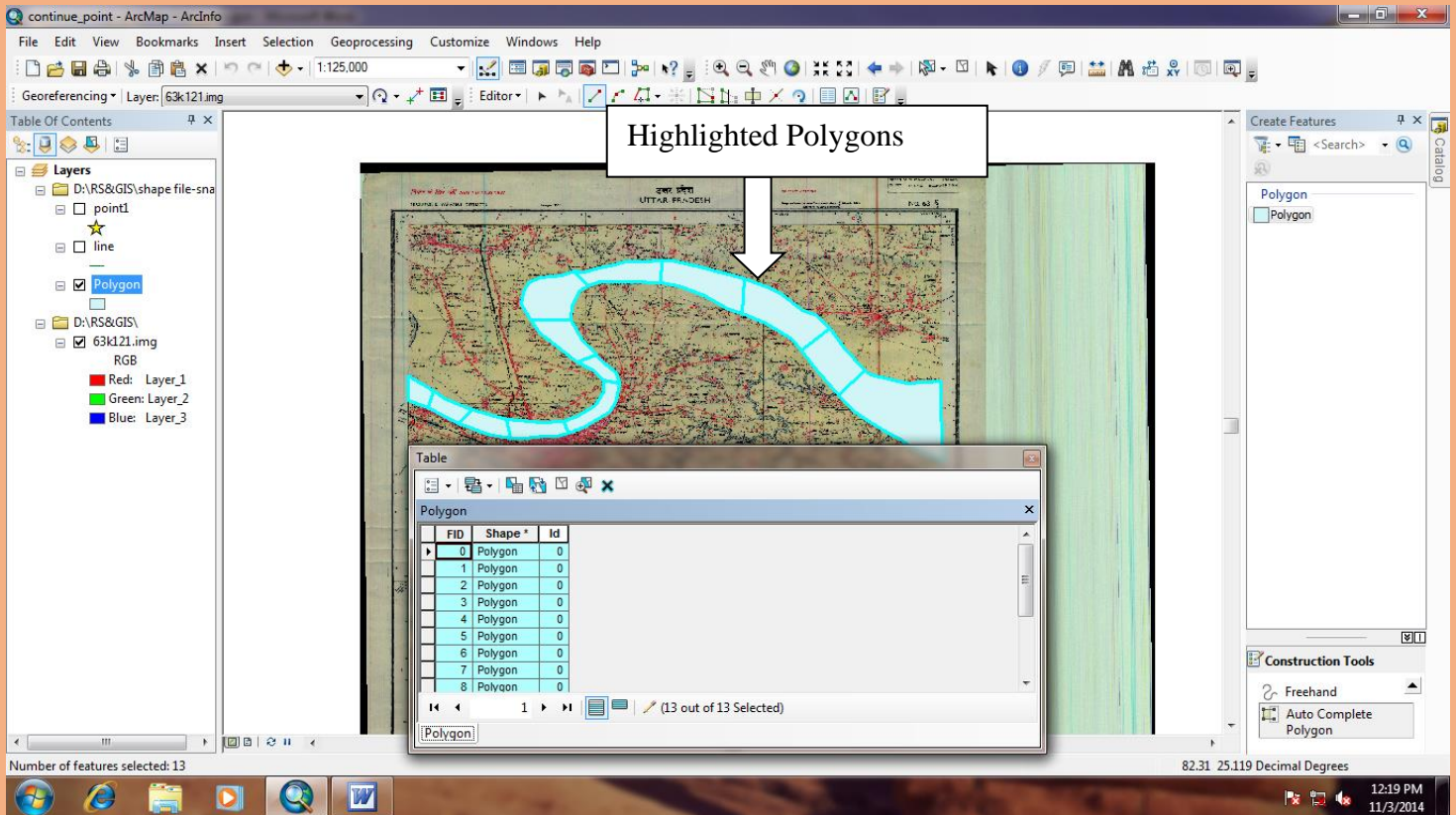
The screenshot shows the ArcMap interface with the 'Table Window' context menu open. The 'Select All' option is highlighted. The background map shows a polygon feature. The 'Table Window' displays a table with the following data:

FID	Shape	Id
0	Polygon	0
1	Polygon	0
2	Polygon	0
3	Polygon	0
4	Polygon	0
5	Polygon	0
6	Polygon	0
7	Polygon	0
8	Polygon	0

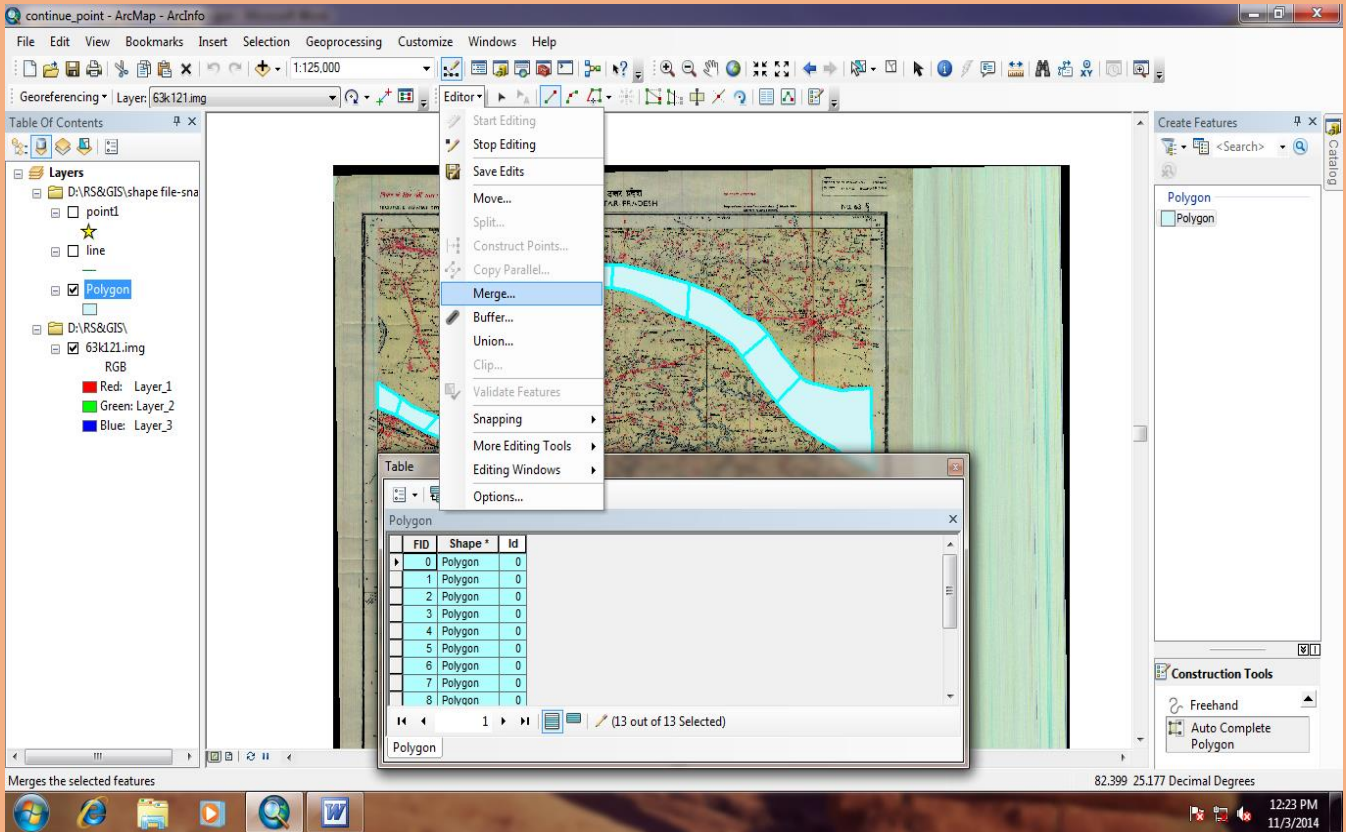
The status bar at the bottom indicates 'Select all records' and '(0 out of 13 Selected)'. The system tray shows the time as 12:18 PM on 11/3/2014.



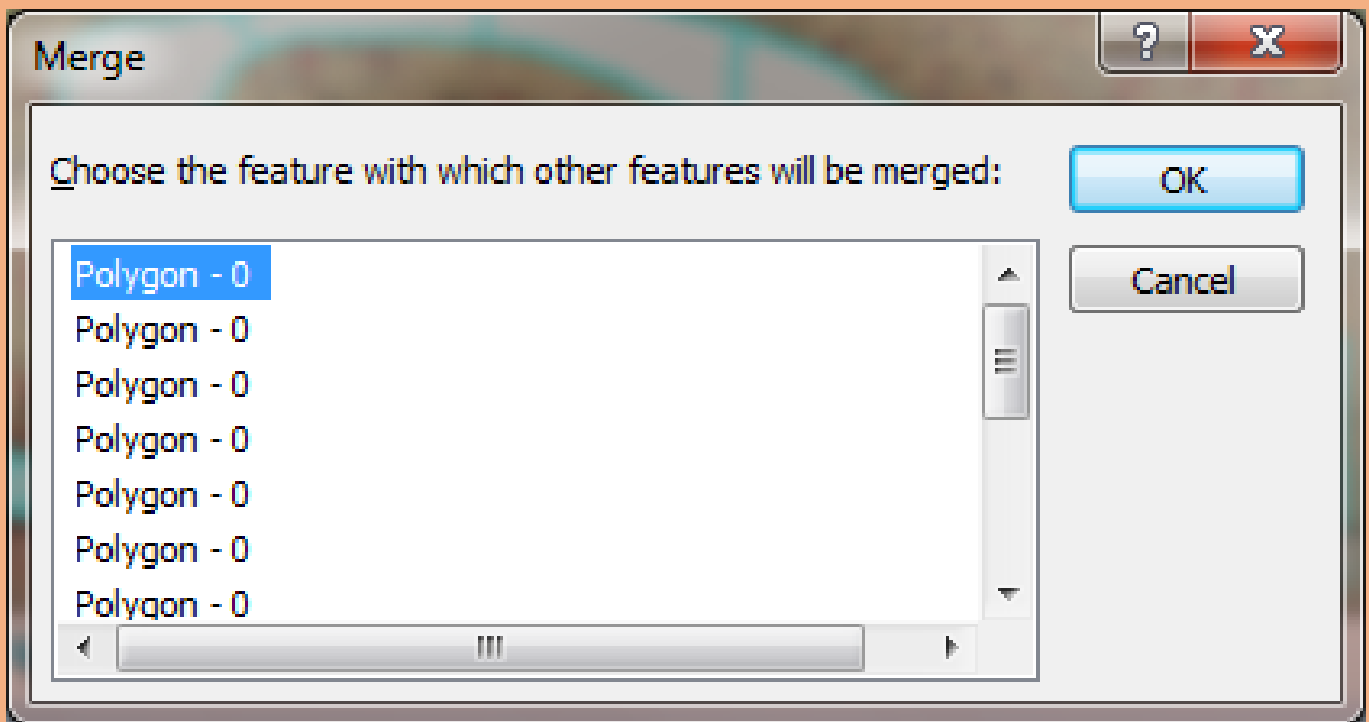
As soon we select Select All option → all the polygon will get highlighted



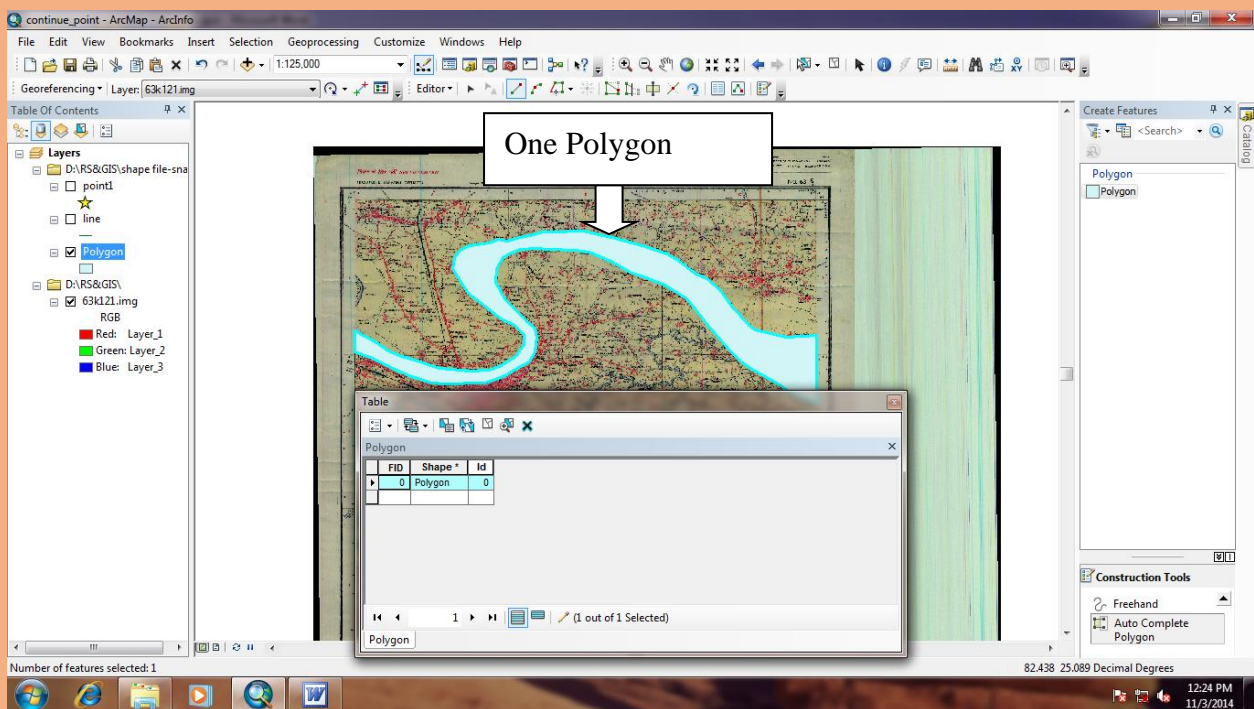
Now go to *Editor Toolbar* select *Merge* Option



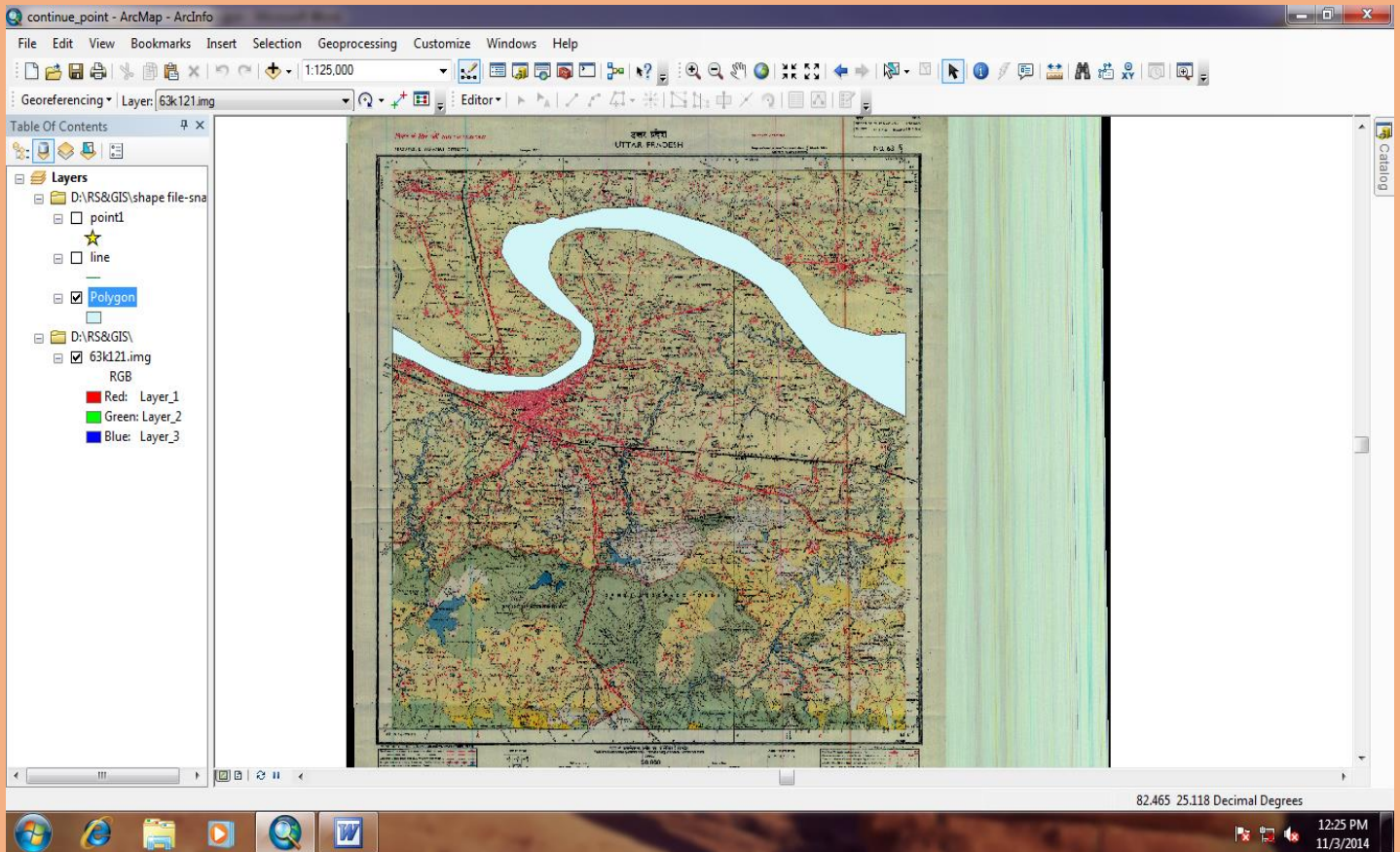
**After selecting *Merge* option → new *Merge* window will open → It ask for merging all polygon into one polygon → Select one option and then press *OK* button**



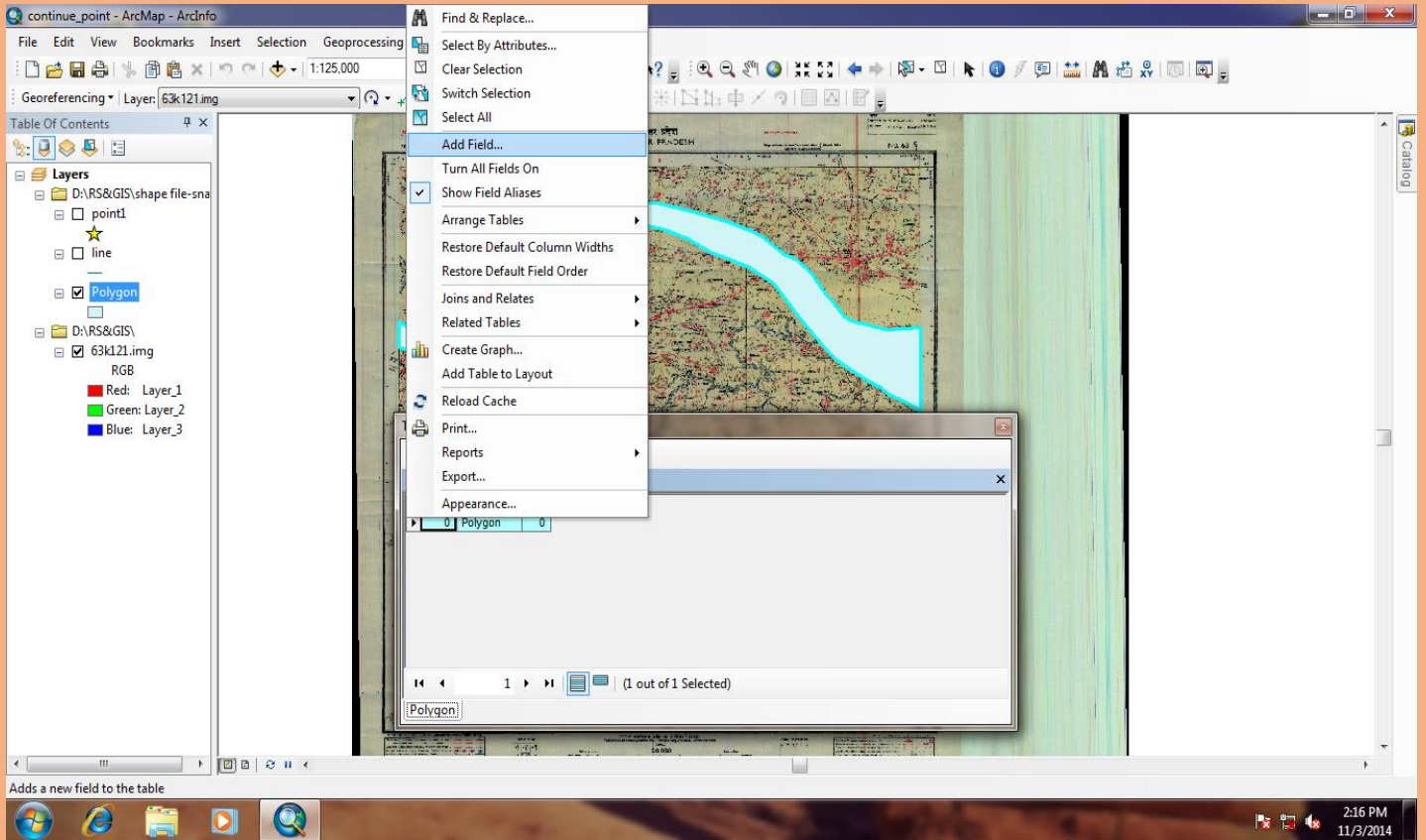
**Result is that all the polygon are merged and turn into one polygon**



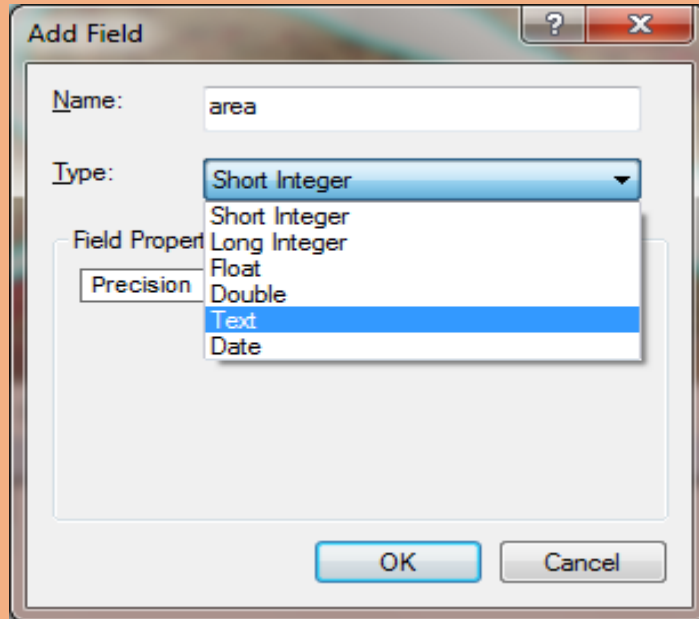
**This is the output after merging all the polygons.**



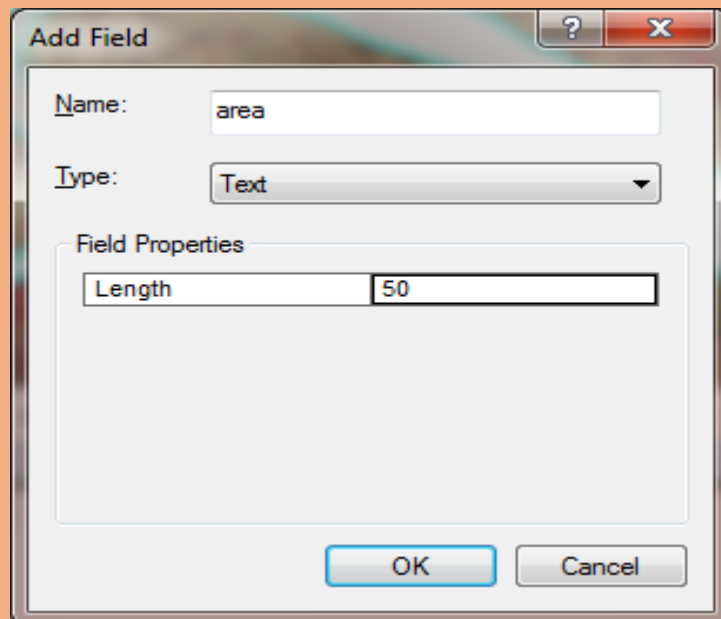
**Again go to *Open Attribute* option → new Table window will open → select first option – go to *Add Field* option**



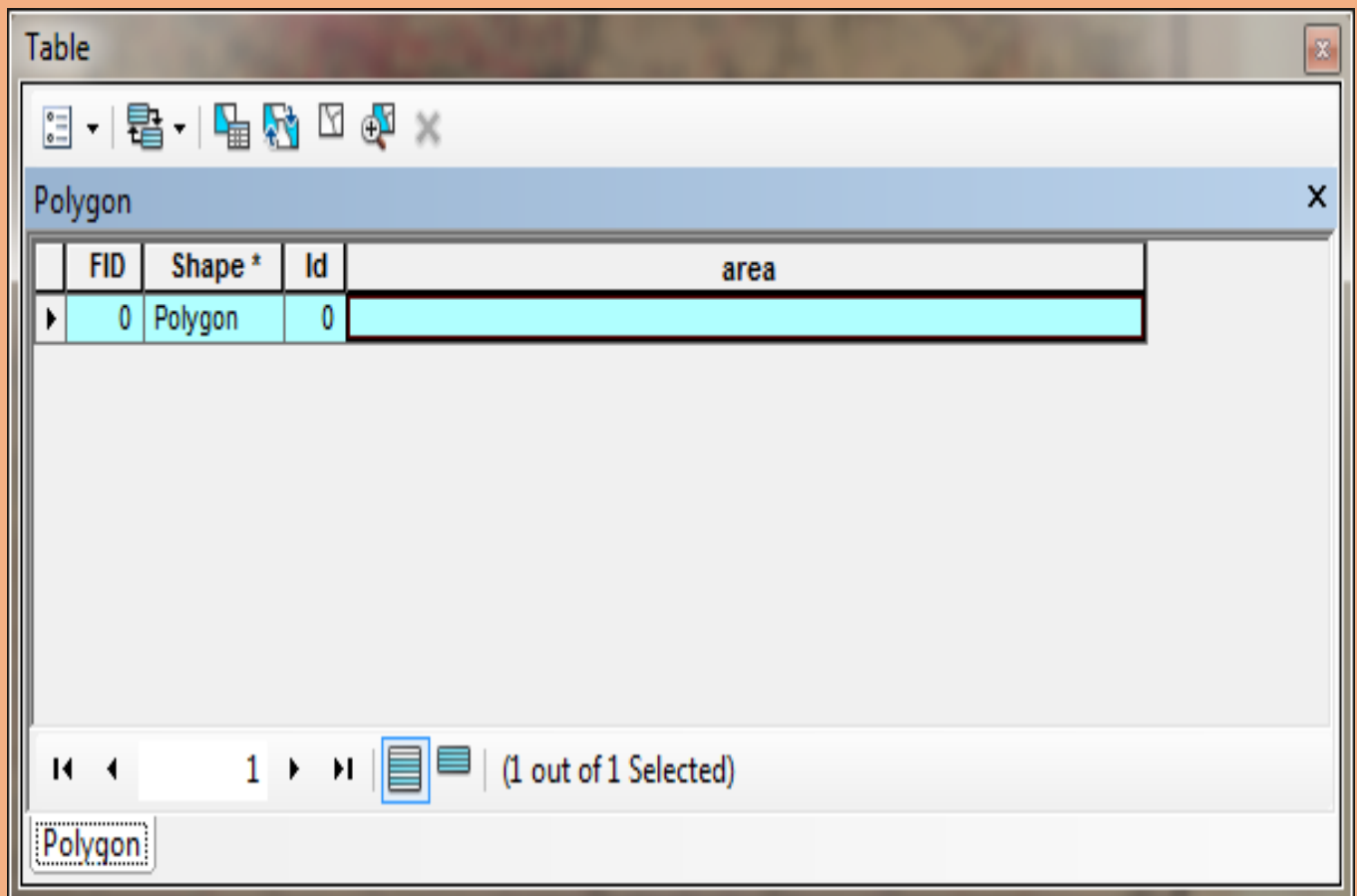
**New *Add Field* window will open → give name in *Name* option → go to *Type* option select *Text* option → press *OK***



**Output view after entering the values**



**New Field will be added in Attribute Table (area).**



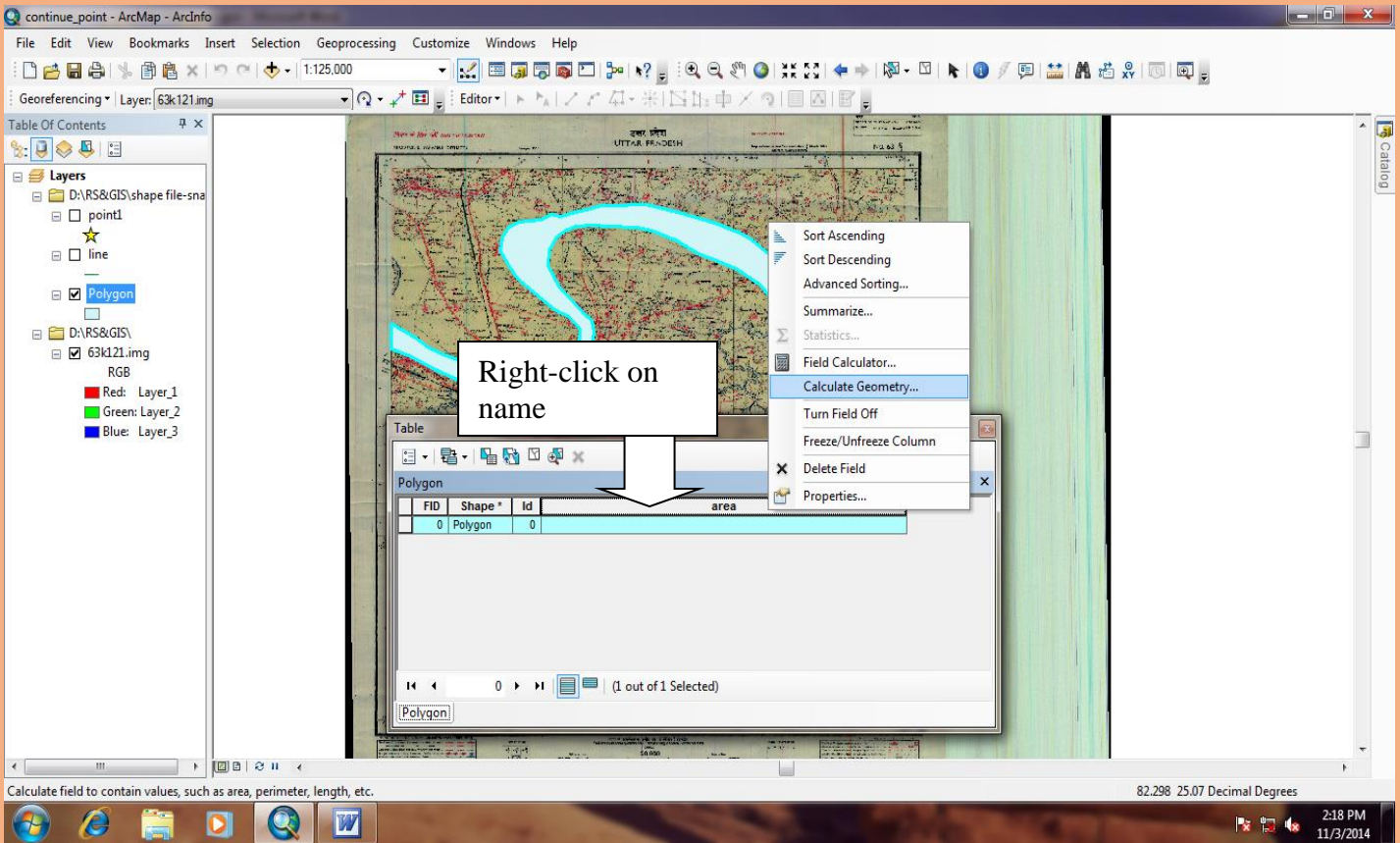
The screenshot shows a window titled "Table" with a toolbar at the top. Below the toolbar is a header bar labeled "Polygon" with a close button. The main area contains a table with the following structure:

	FID	Shape *	Id	area
▶	0	Polygon	0	

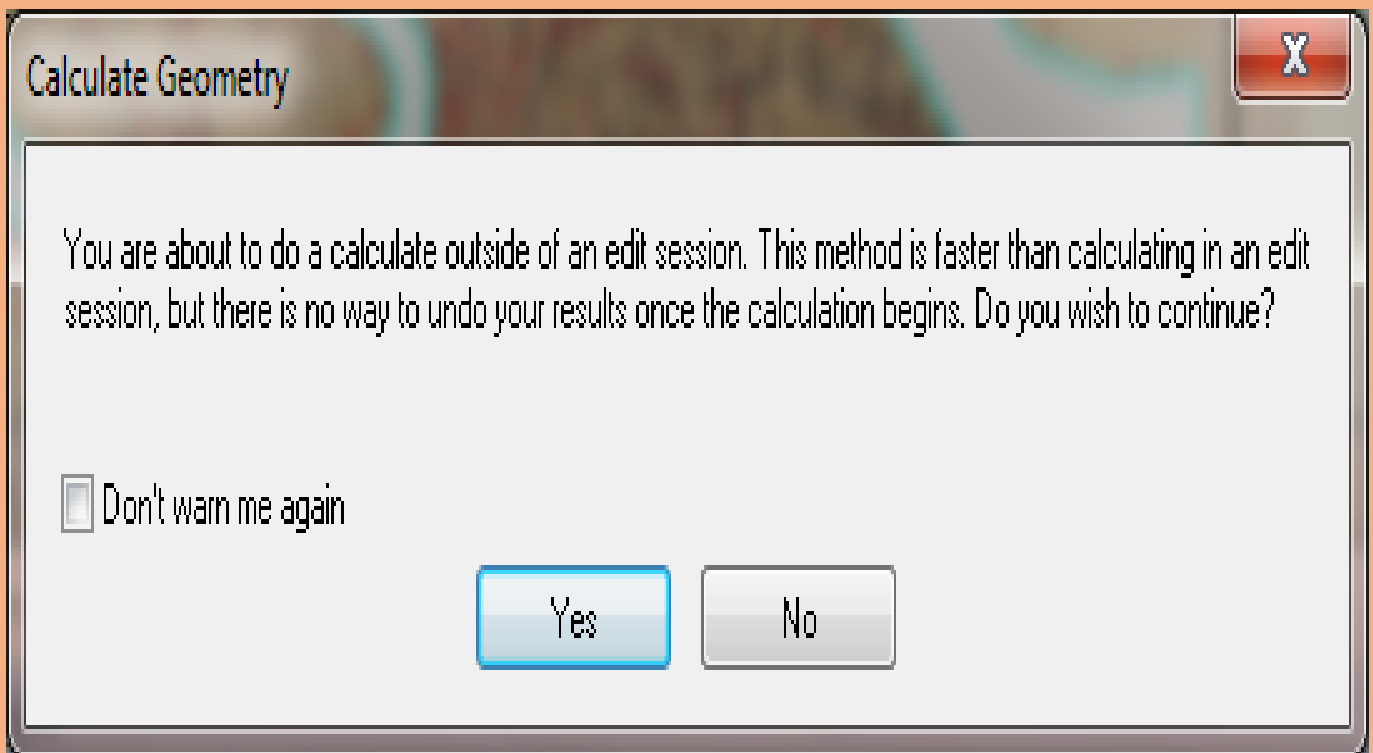
At the bottom of the table, there is a status bar with navigation icons, the number "1", and the text "(1 out of 1 Selected)". Below the status bar is a text box containing the word "Polygon".



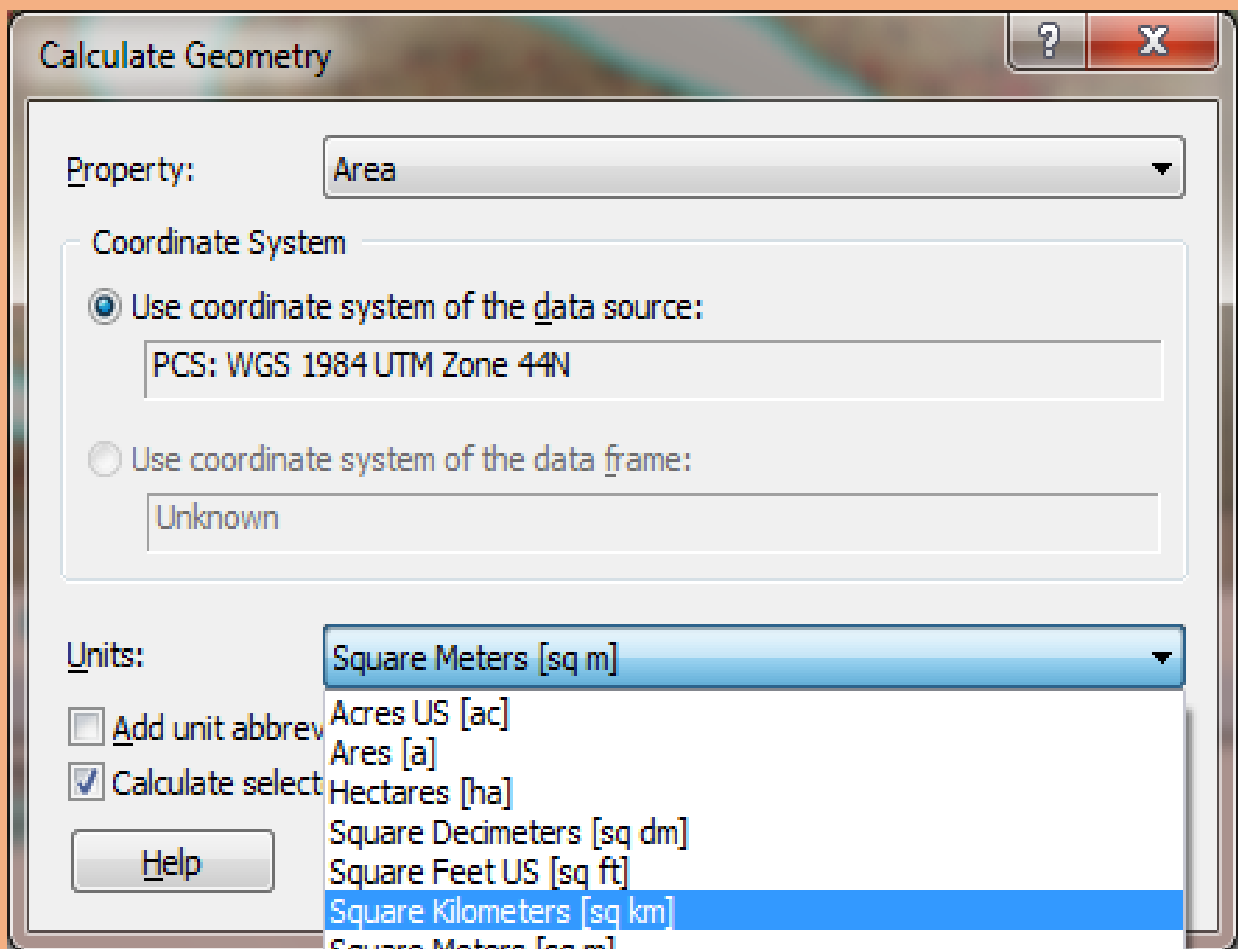
**Right-click on the upper side of the field or on the field where name is highlighted → select *Calculate Geometry* option**



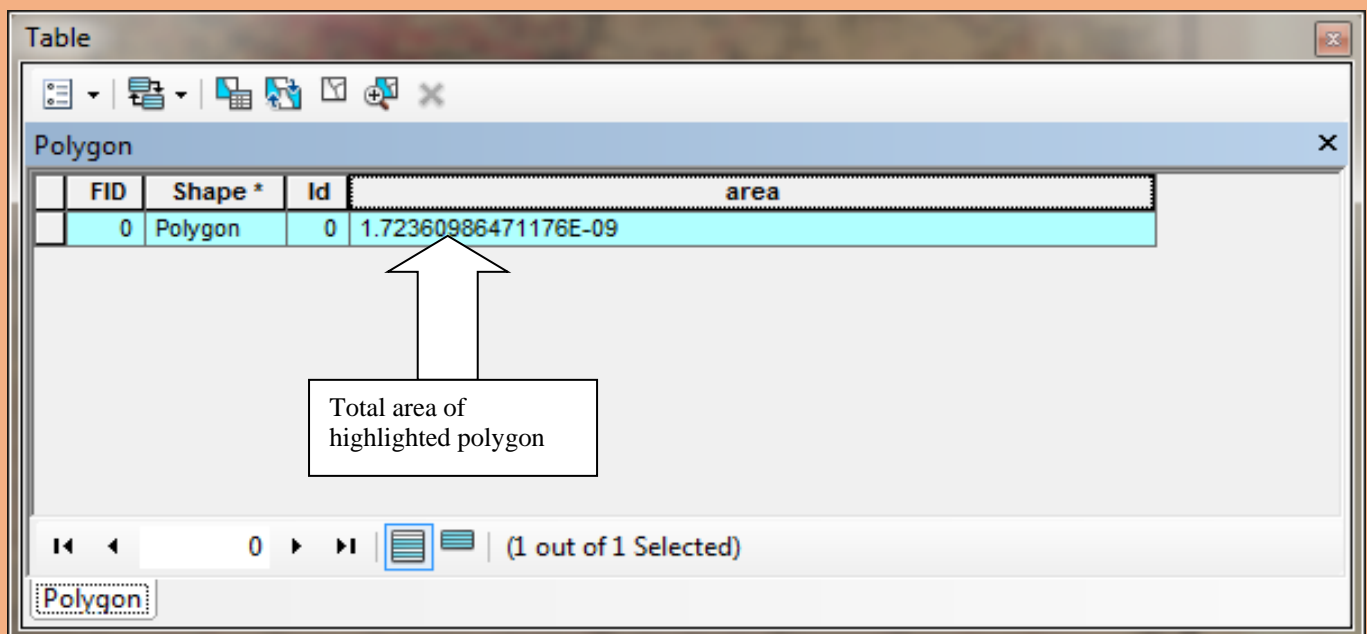
**New *Calculate Geometry* window will open to calculate the geometry of highlighted polygon → press *Yes* button**



**New *Calculate Geometry* window will open → go to *Units* option → select desired area (*Square Kilometers [sq km]*) → press *OK* Button**



## Output value of Total Area



The screenshot shows a software window titled "Table" with a toolbar at the top. Below the toolbar is a header bar labeled "Polygon". The main area contains a table with the following data:

FID	Shape *	Id	area
0	Polygon	0	1.72360986471176E-09

An arrow points from a text box below the table to the "area" cell of the first row. The text box contains the text "Total area of highlighted polygon". At the bottom of the window, there is a status bar with navigation icons, the number "0", and the text "(1 out of 1 Selected)". A label "Polygon" is visible in the bottom-left corner.

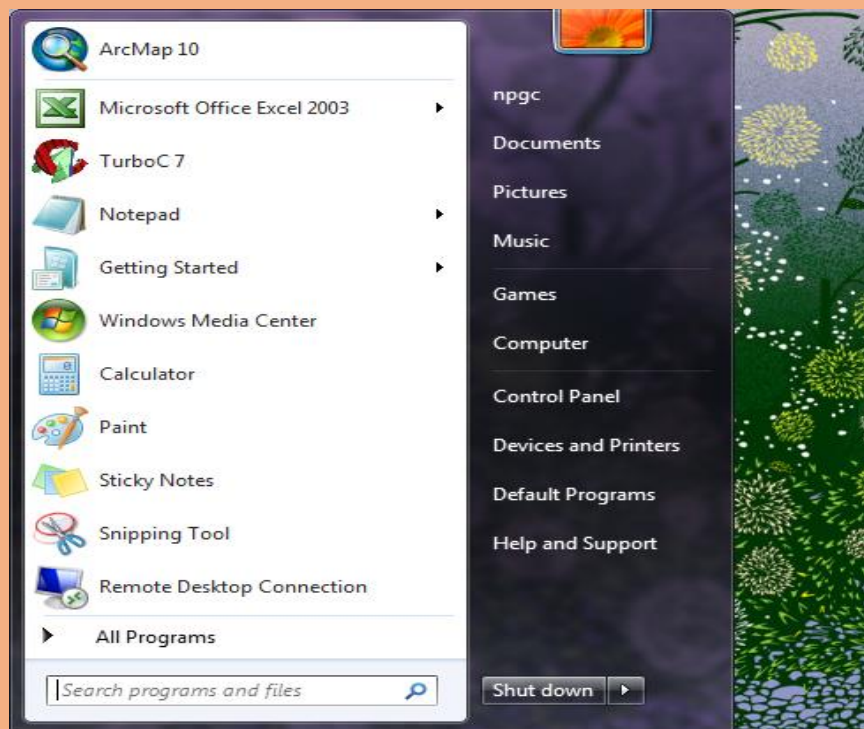
# Creating PGDB

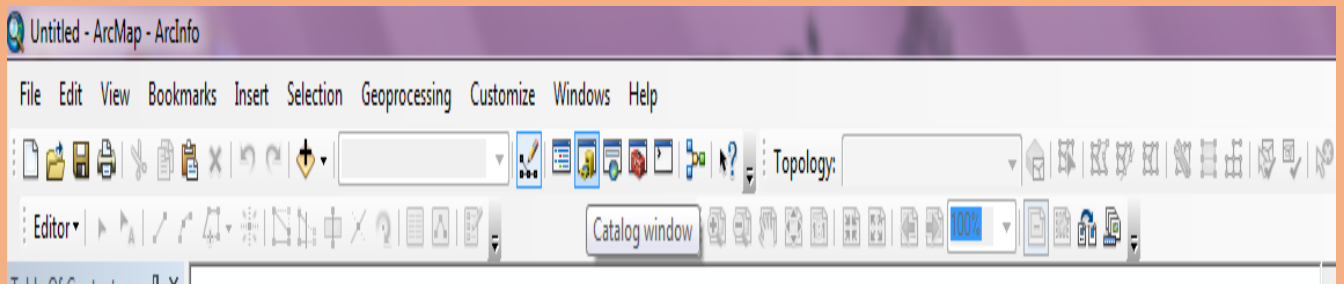
Step\_1- Go to start



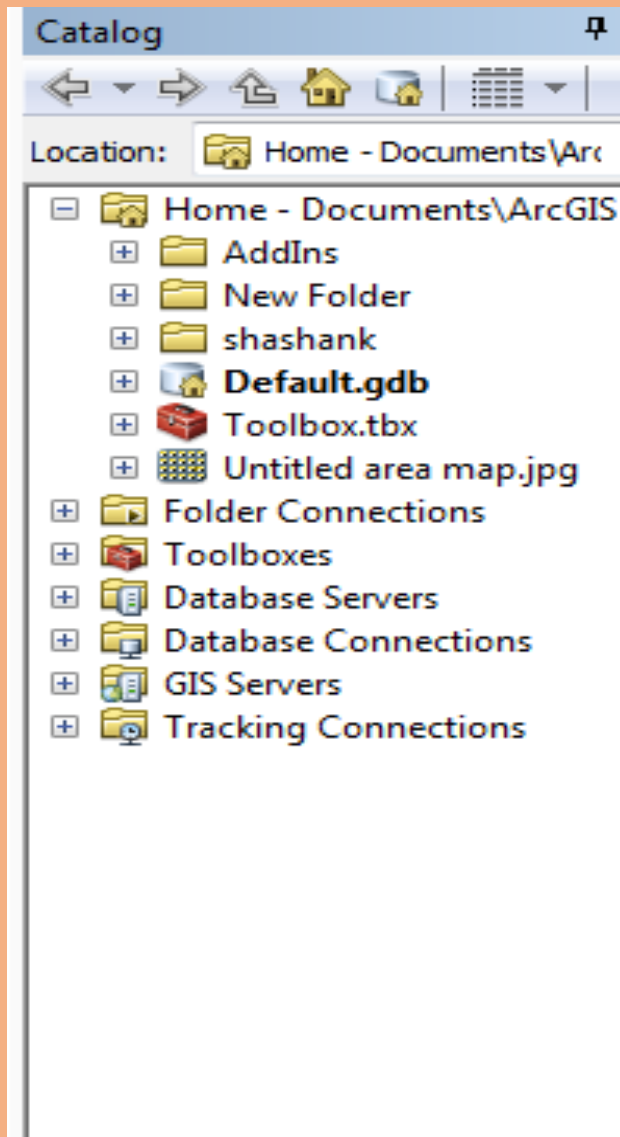
Start menu

Open Arc GIS- go to arc Catalog

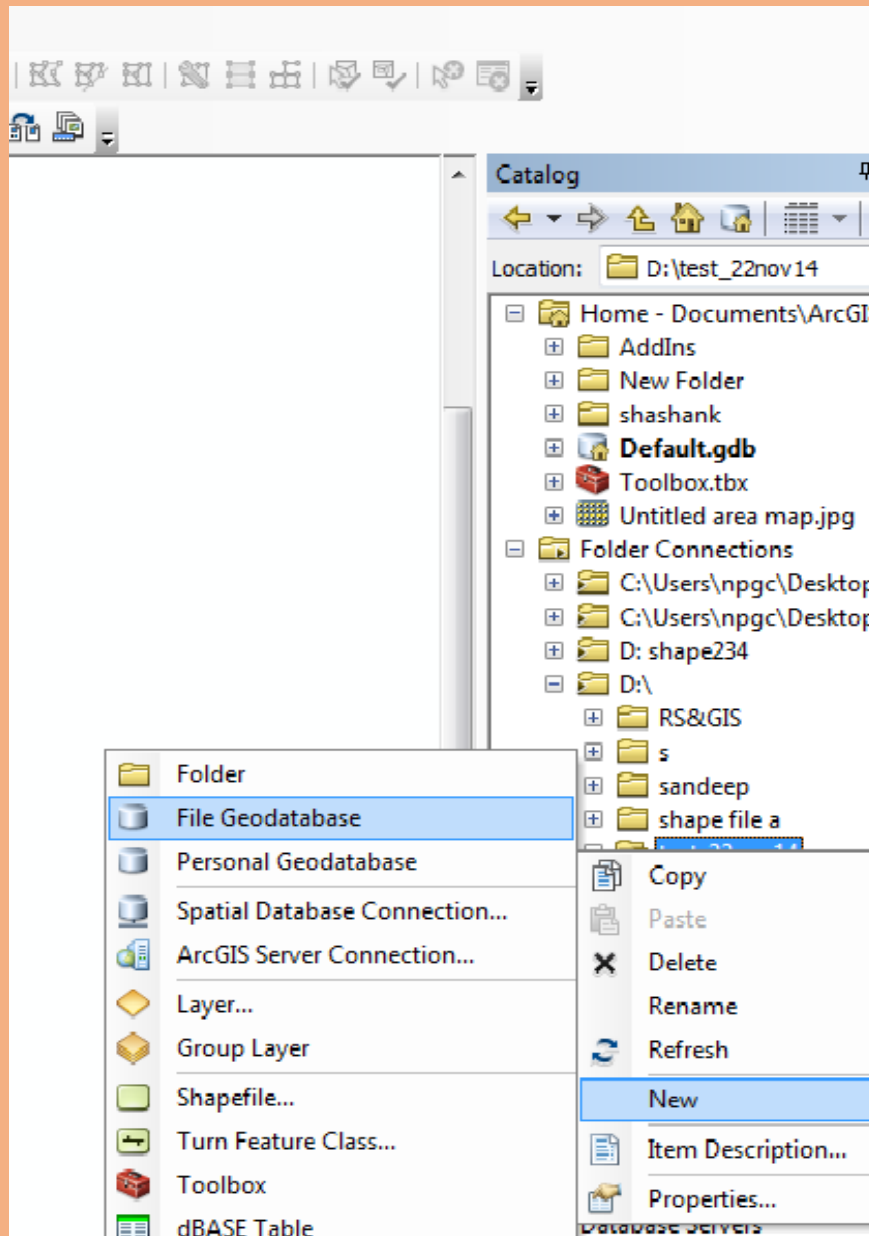




Arc catalog window will open

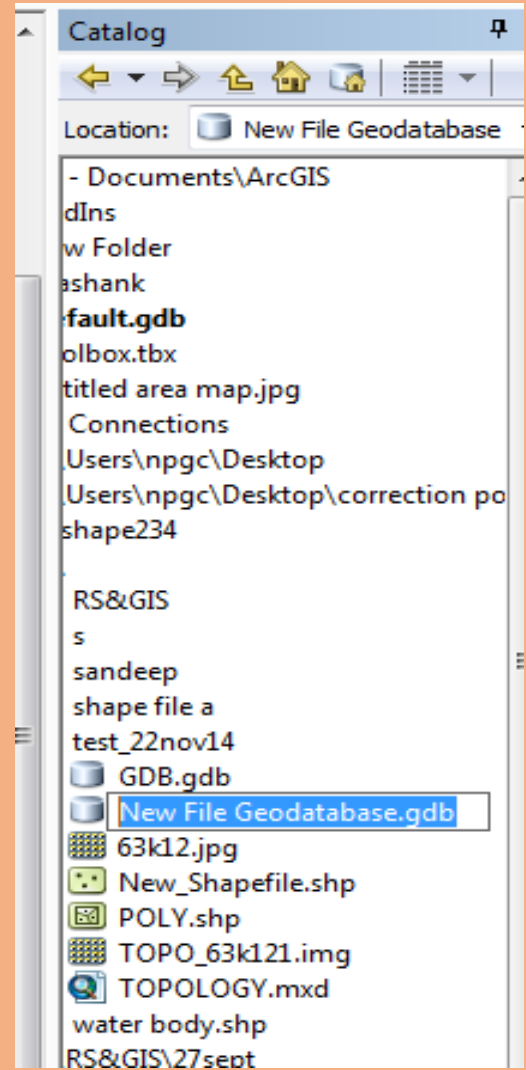
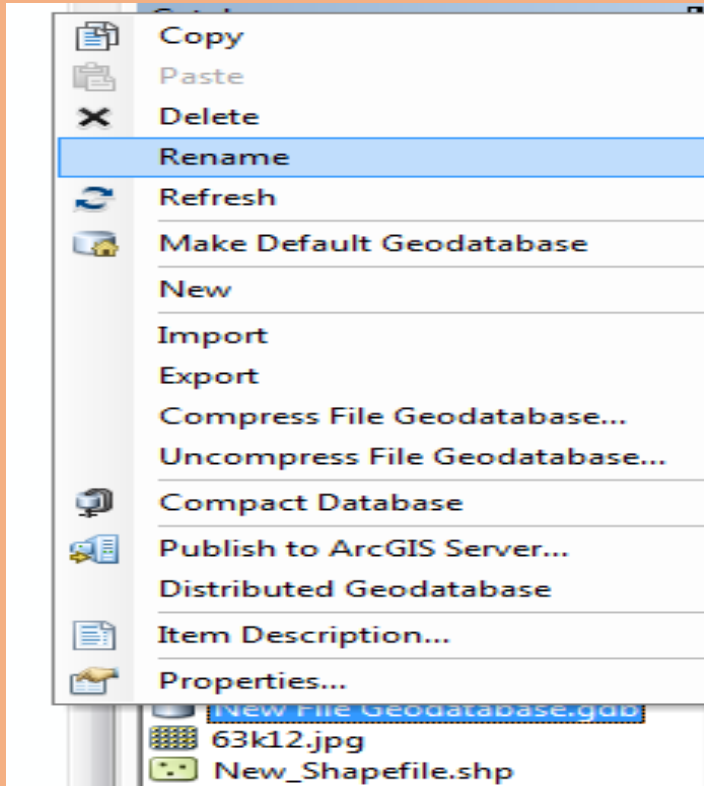
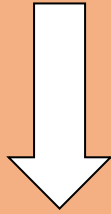


Go to folder connection- D:\test\_22nov14



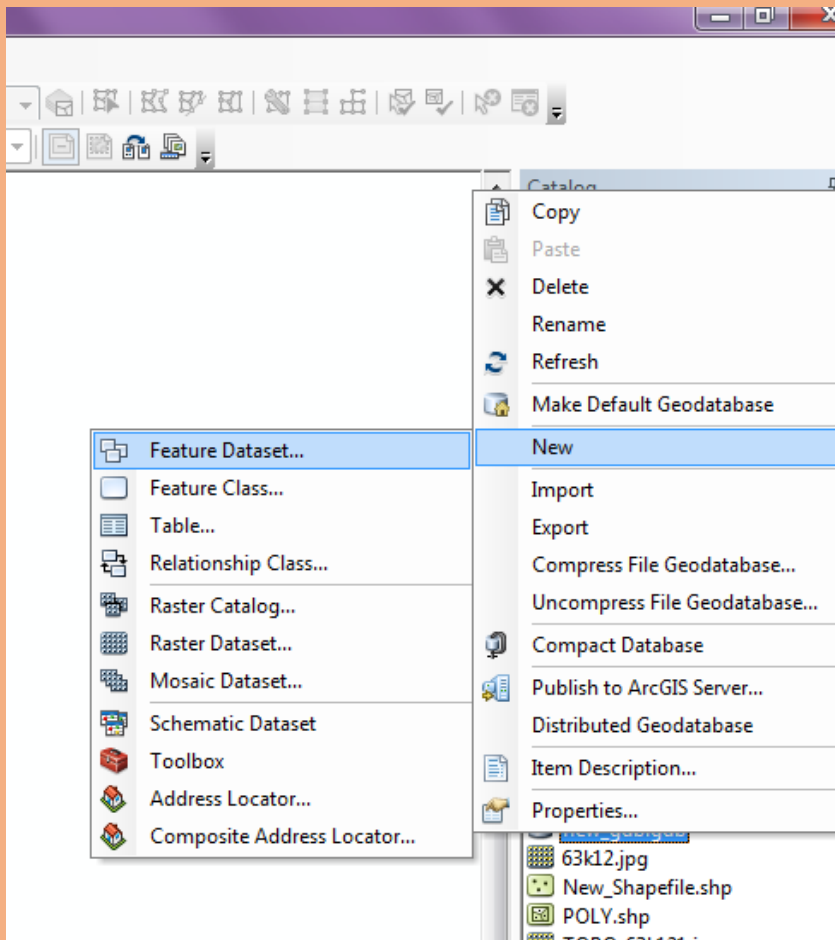
Right click on selected file → go to *New* → go to file geodatabase

# Rename the GDB

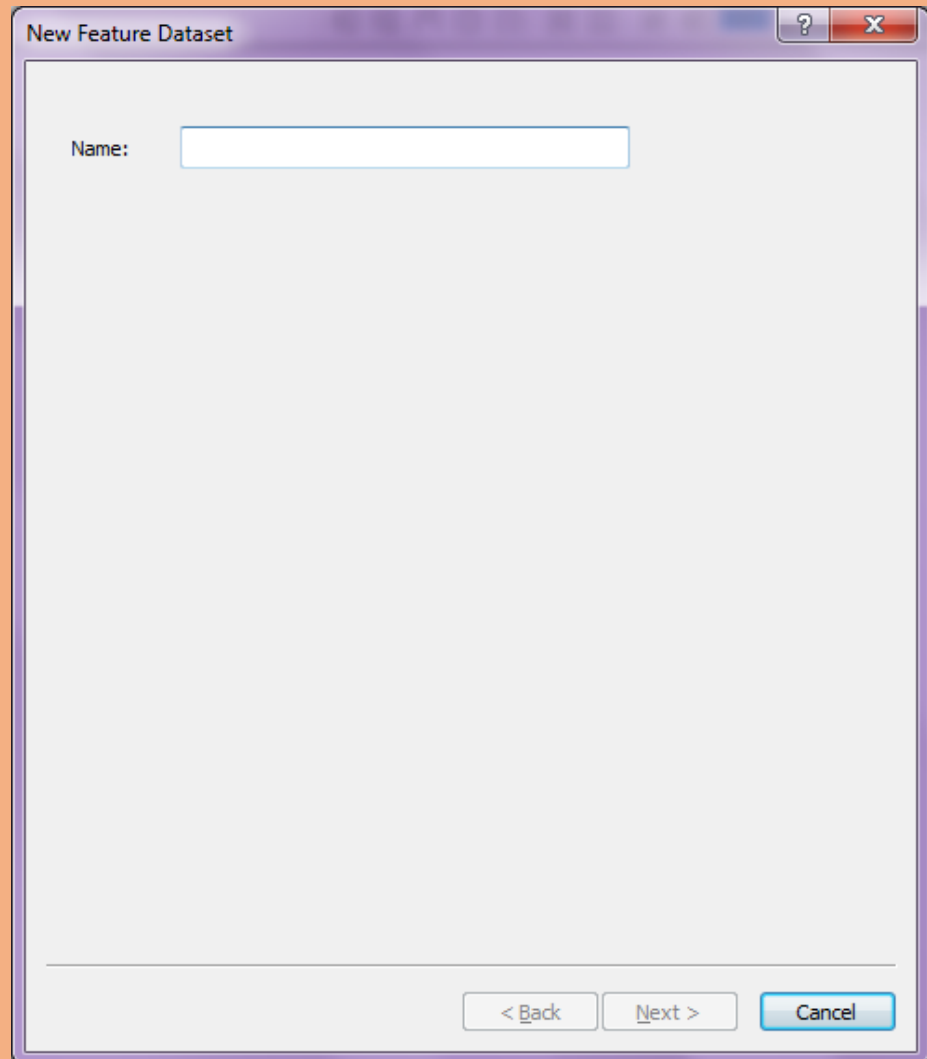




Right click on new GDB → go to *New* → go to *Feature Dataset*



*New Feature dataset* window will open put name →  
click next new window will open for coordinates system

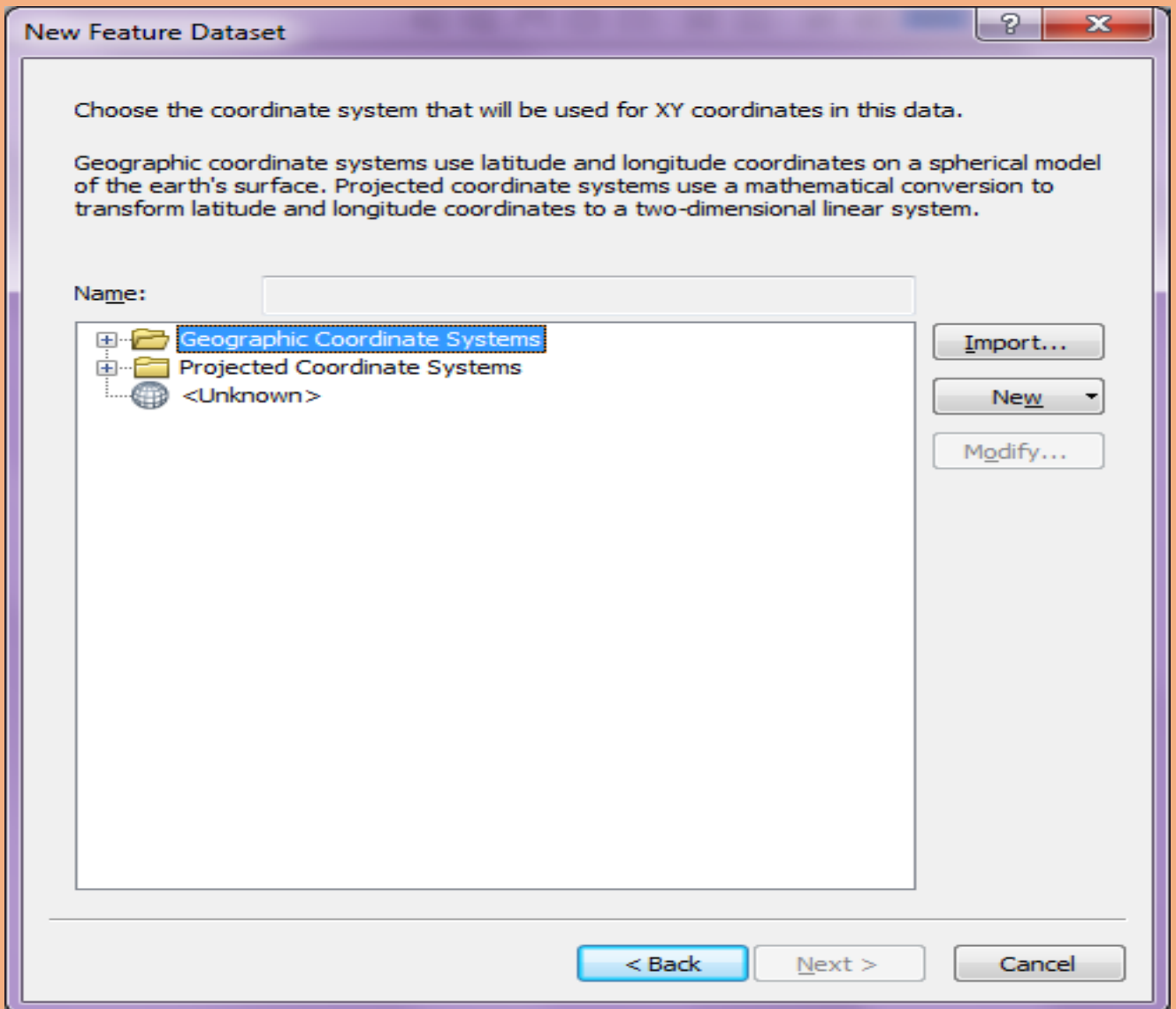


New Feature Dataset

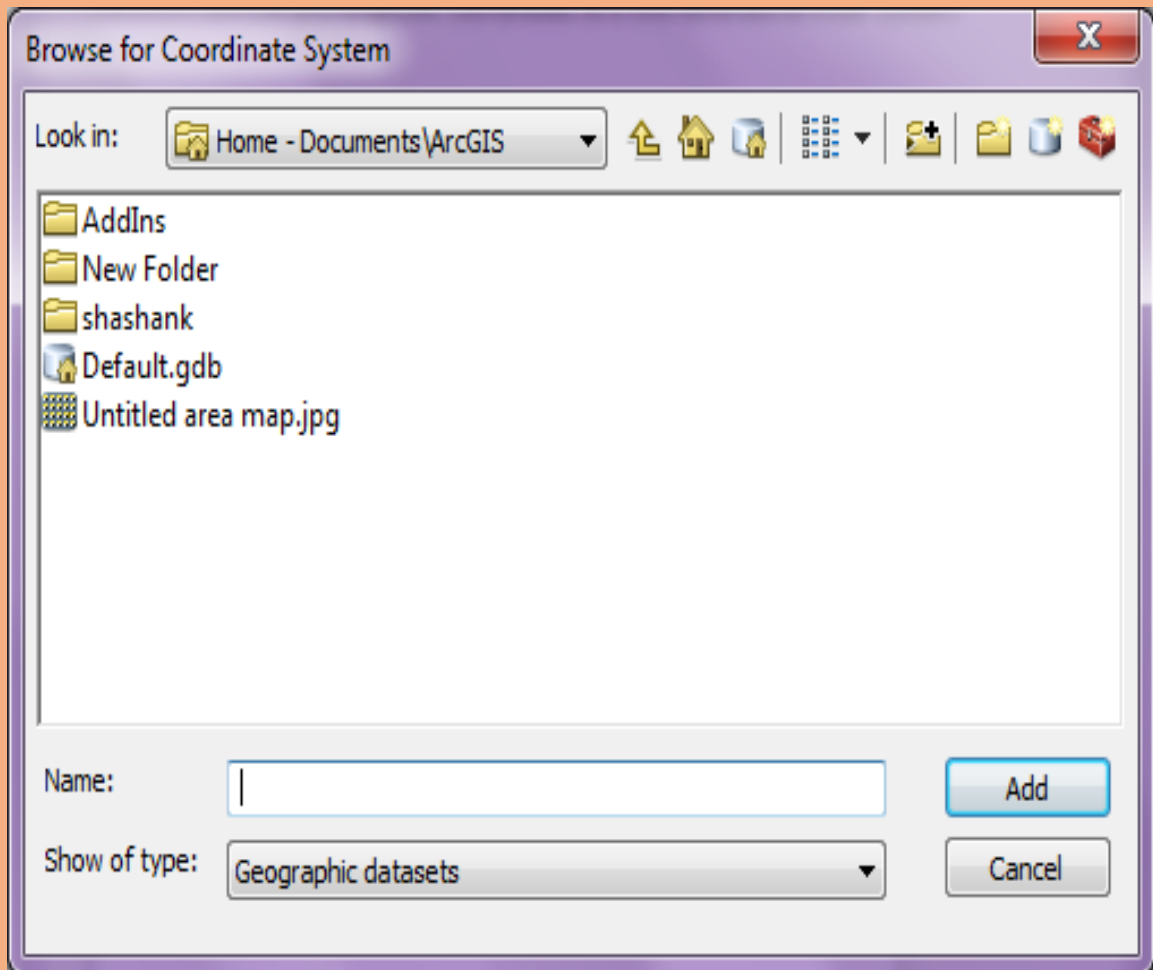
Name:

< Back   Next >   Cancel

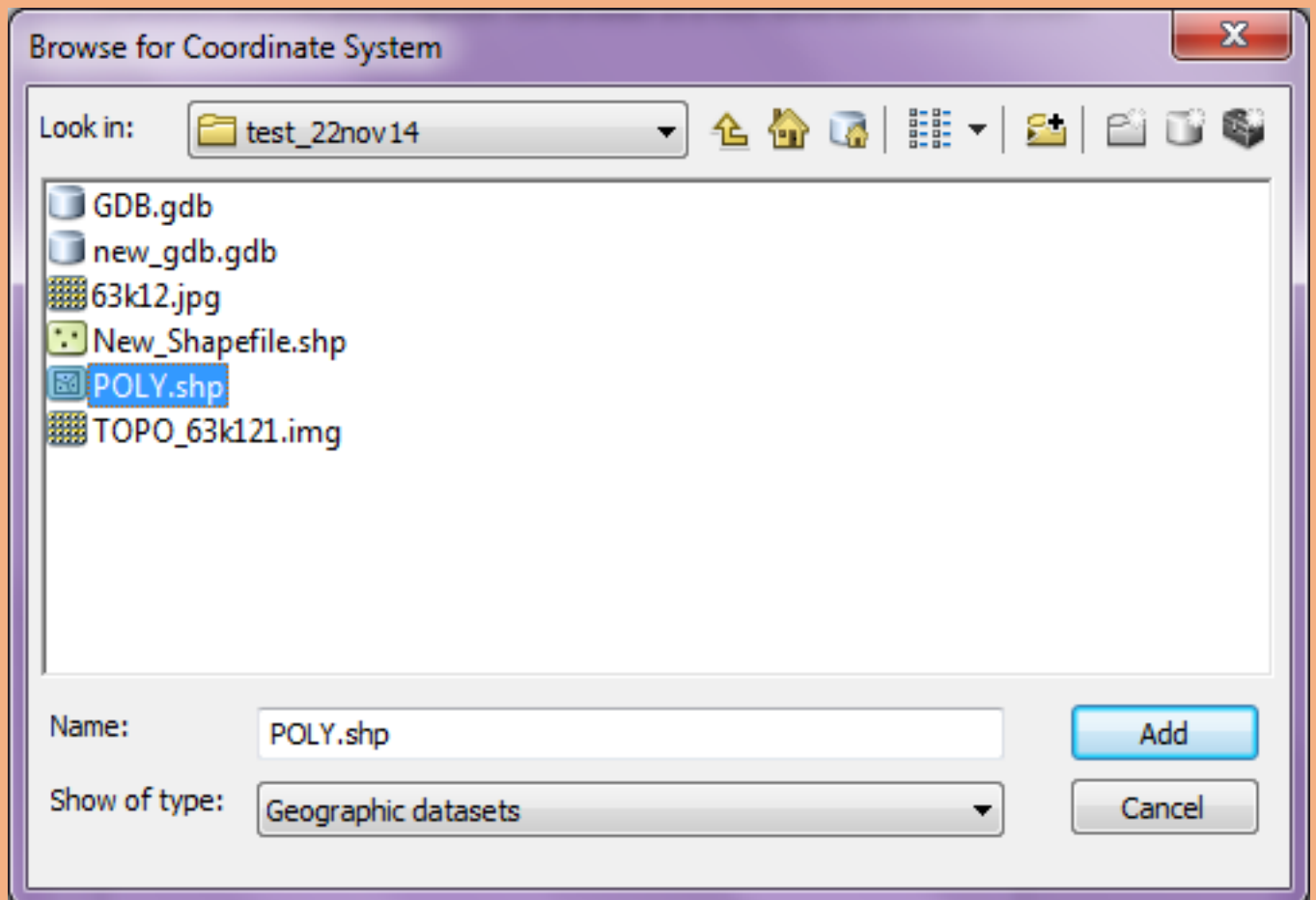
New window will open for coordinates system



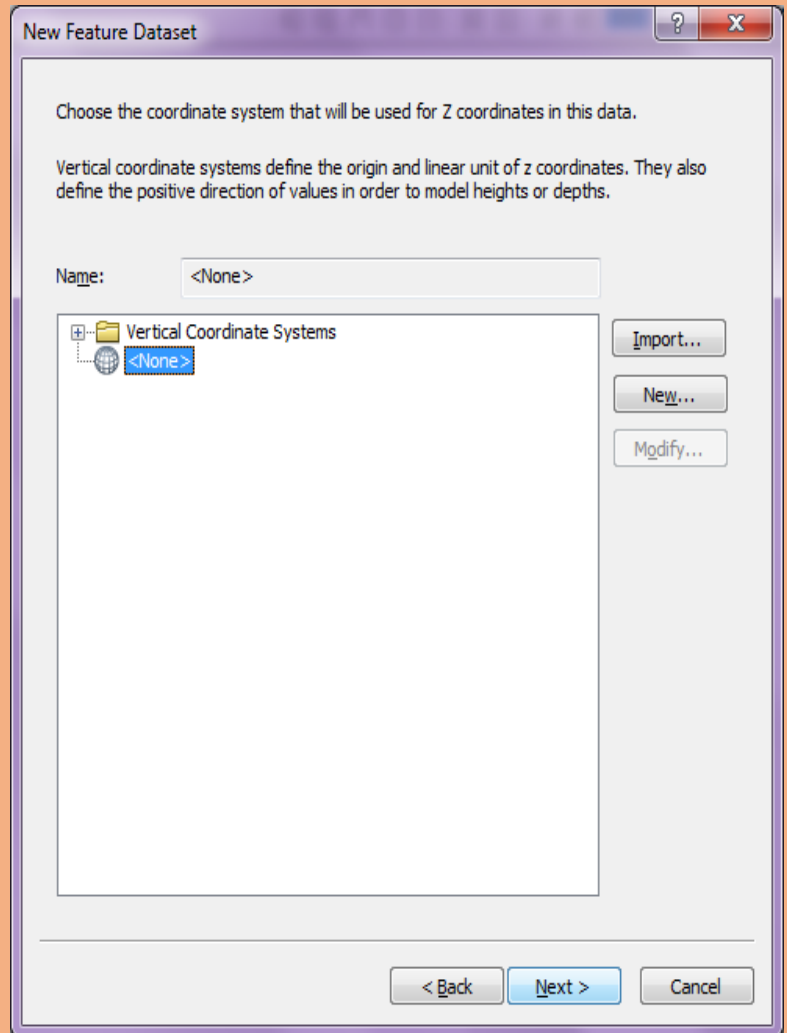
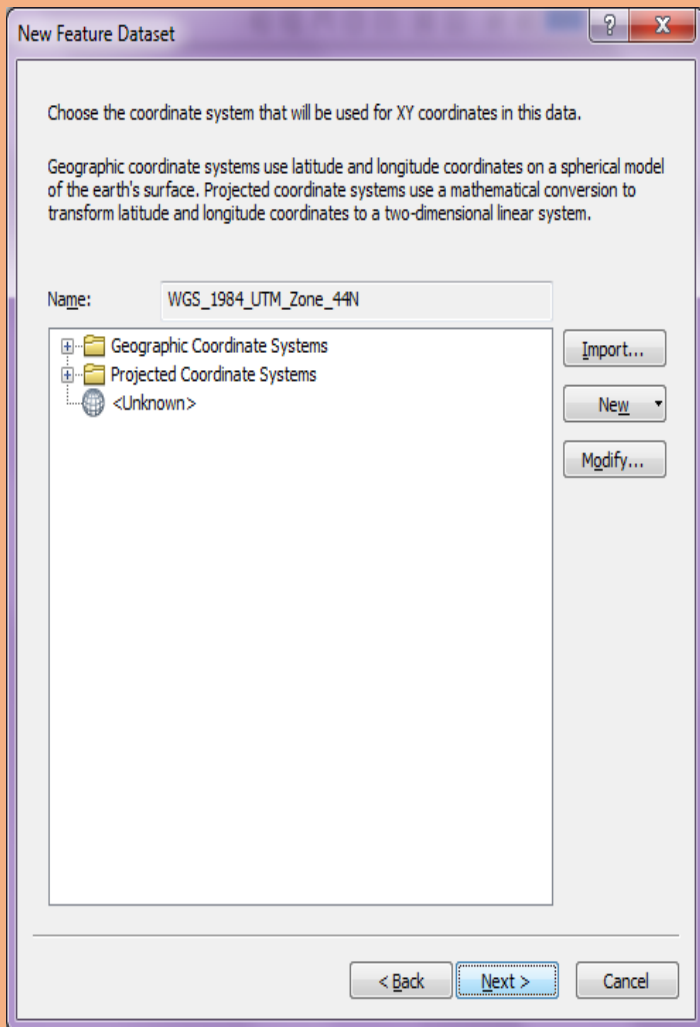
Click import → new window will appear → browse for coordinates



Select predefined shapefile → for coordinate system



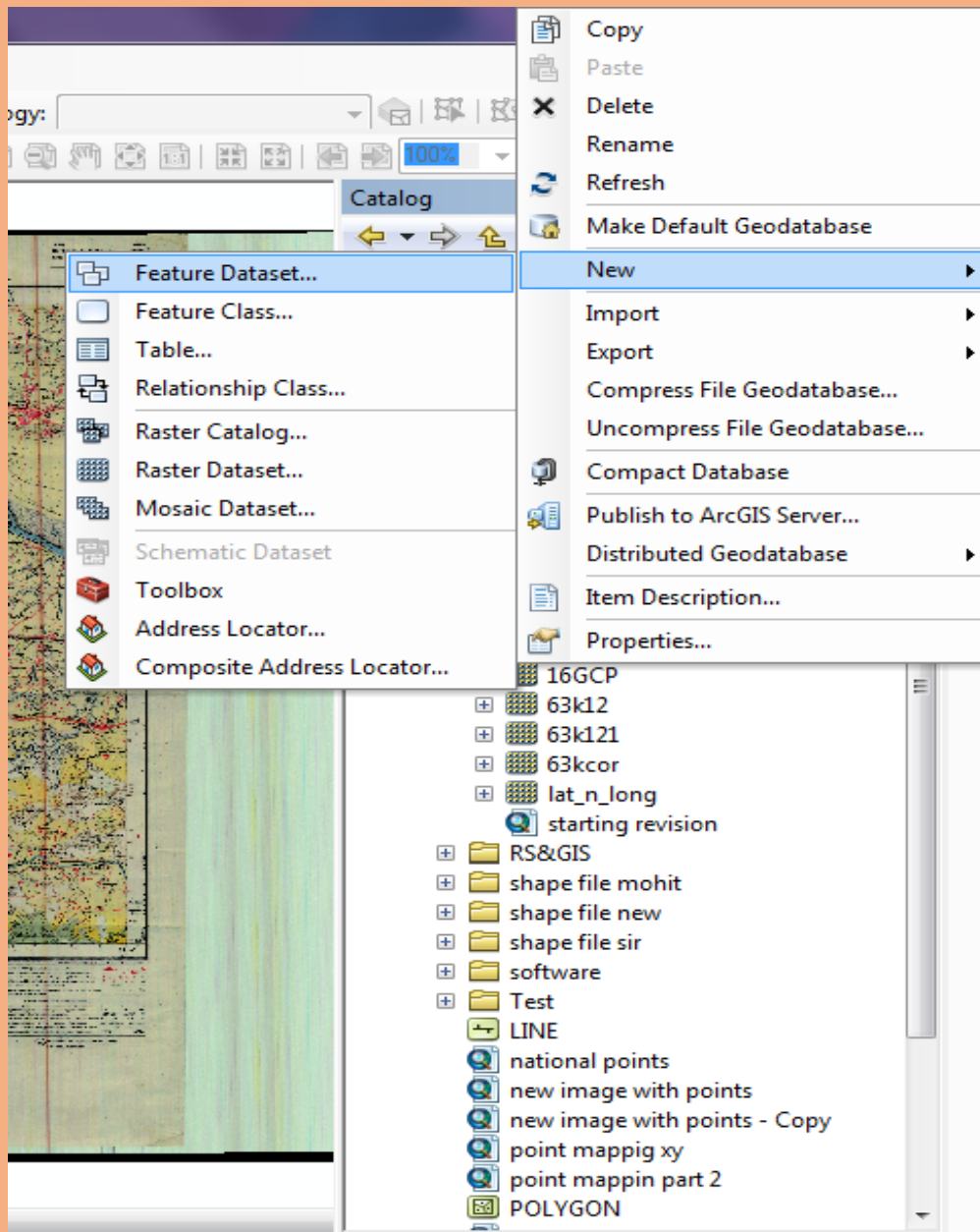
Select add → click next → again next



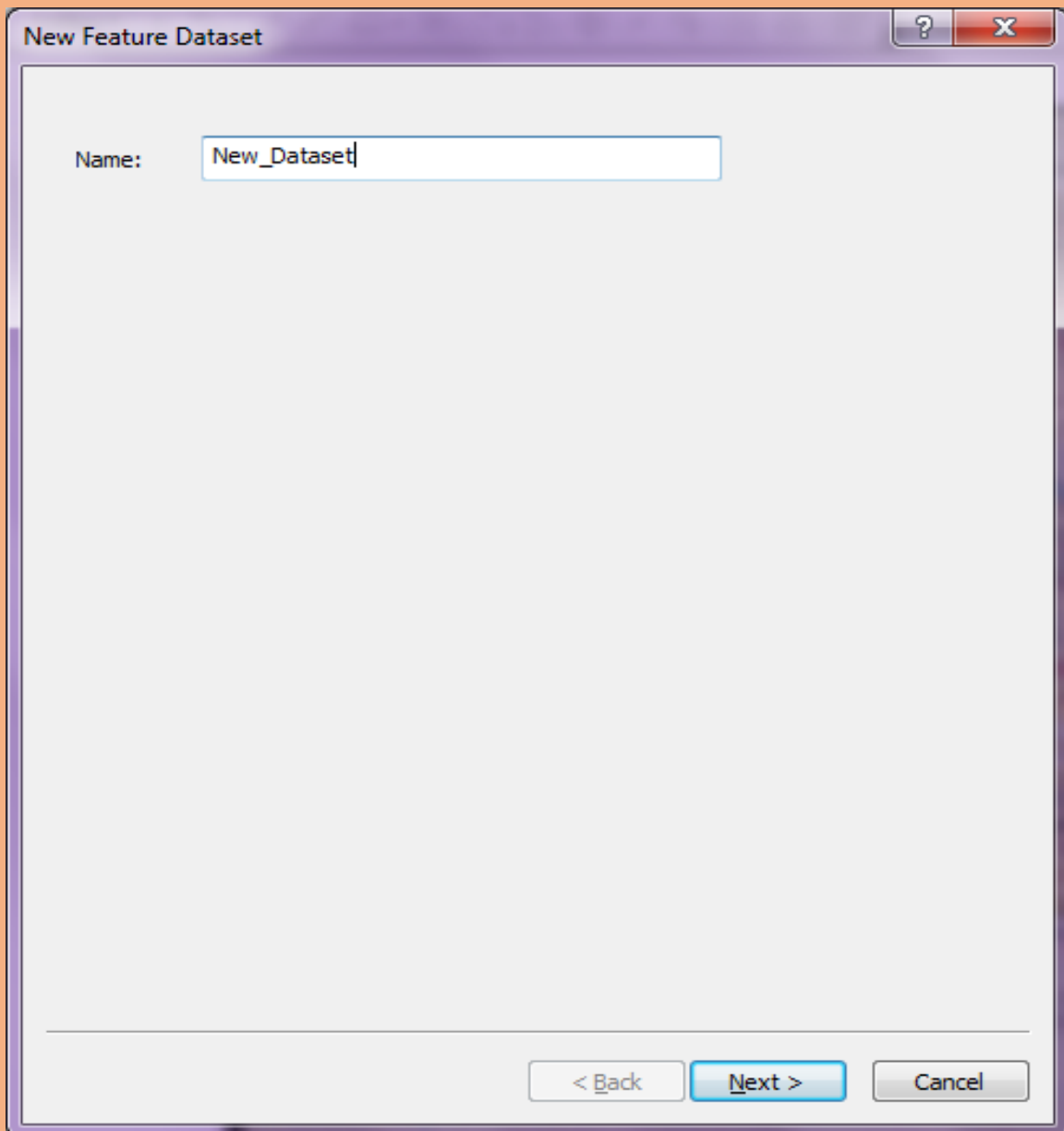
## Creating New Feature Dataset in PGDB

Again click on folder name → select *New* option → select

*Feature Dataset* option

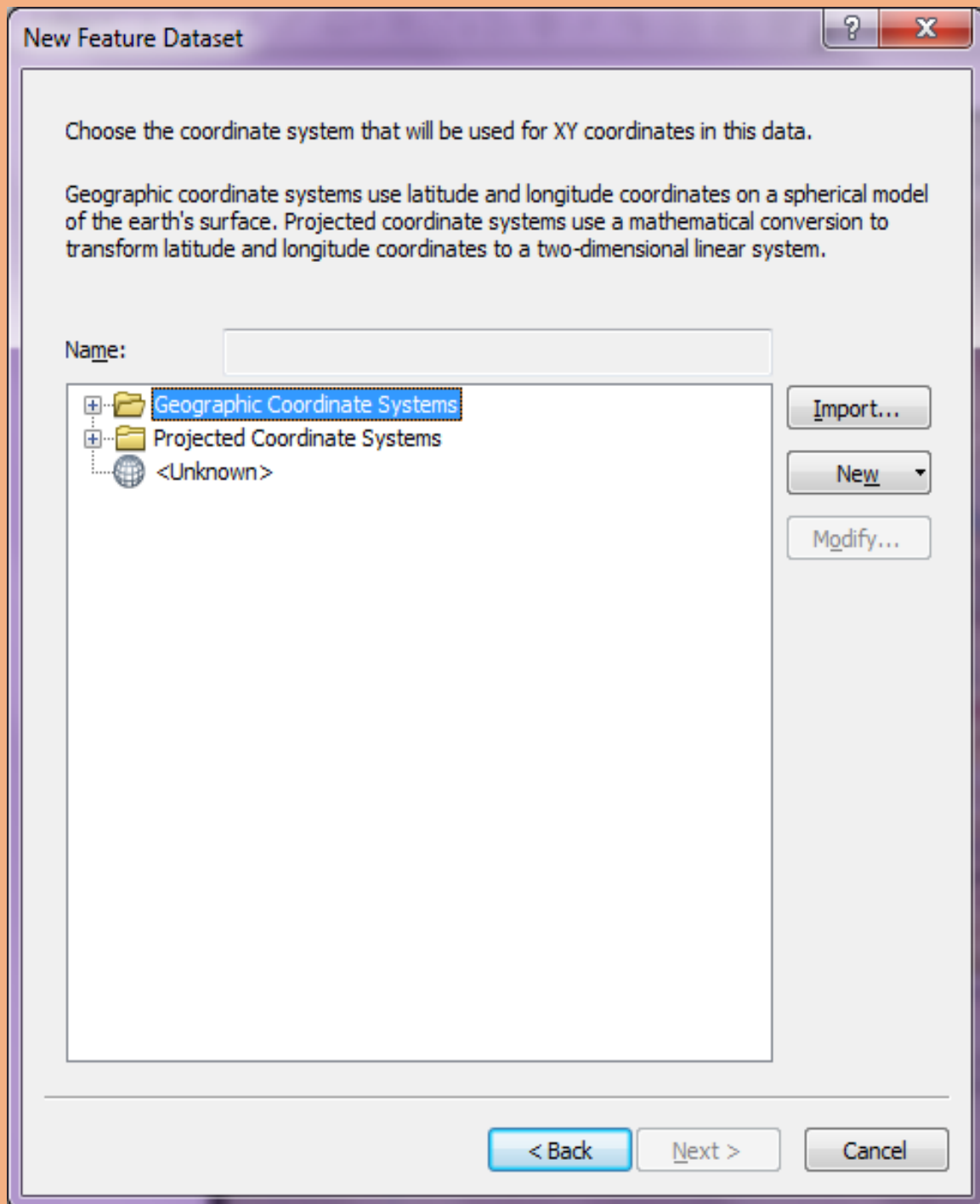


New *Feature Dataset* window will open → give name in the *Name* option → press *Next*

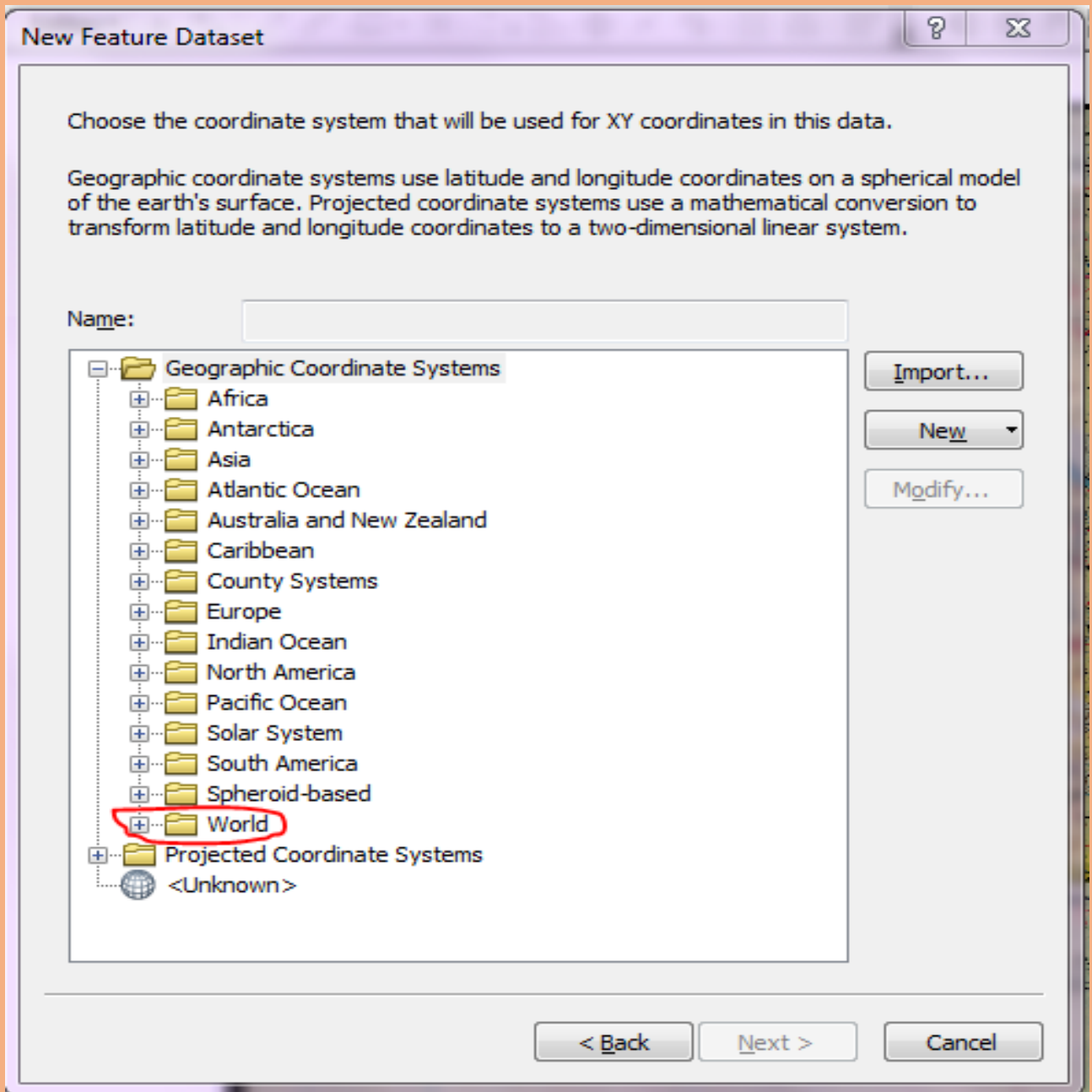




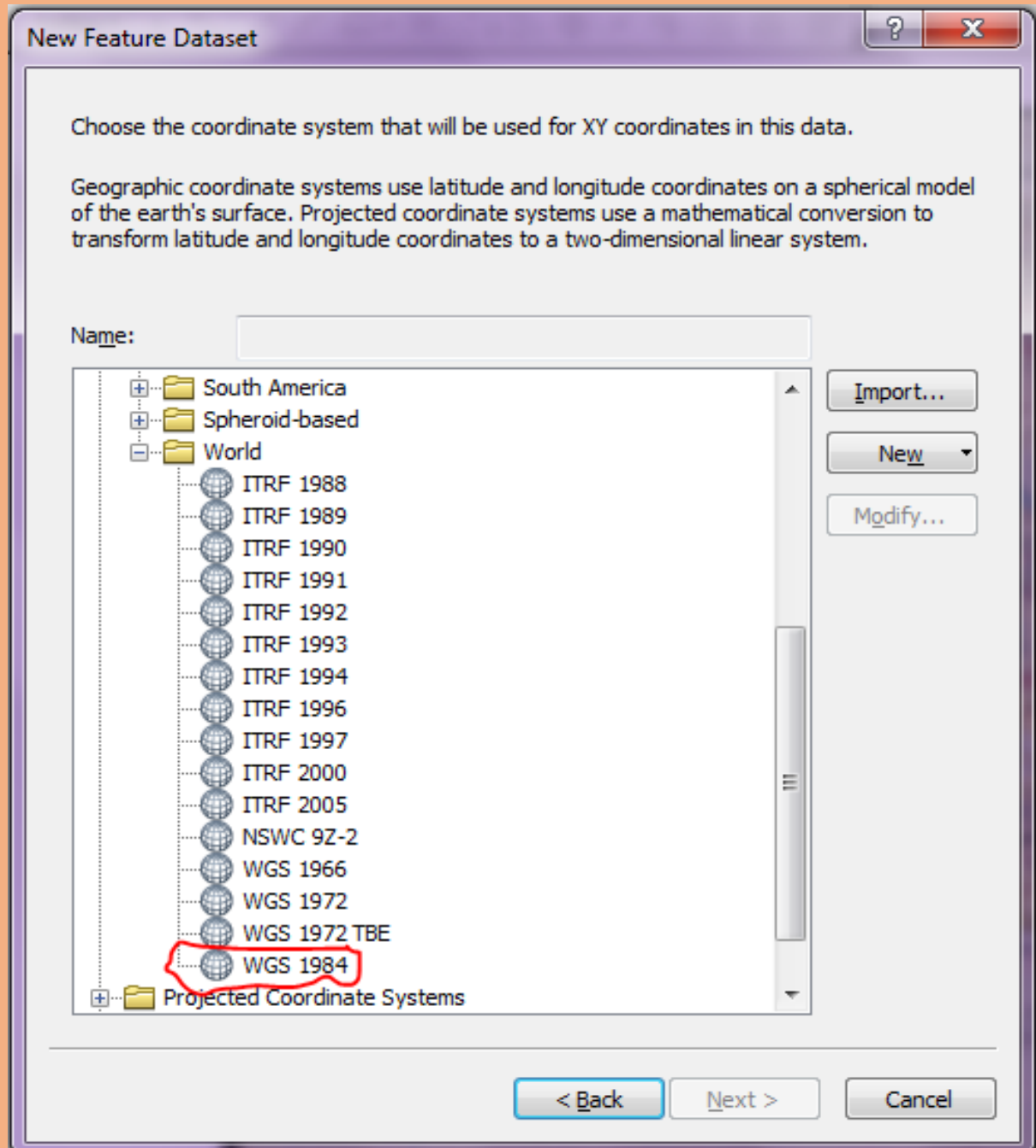
## Go to *Geographic Coordinate Systems*



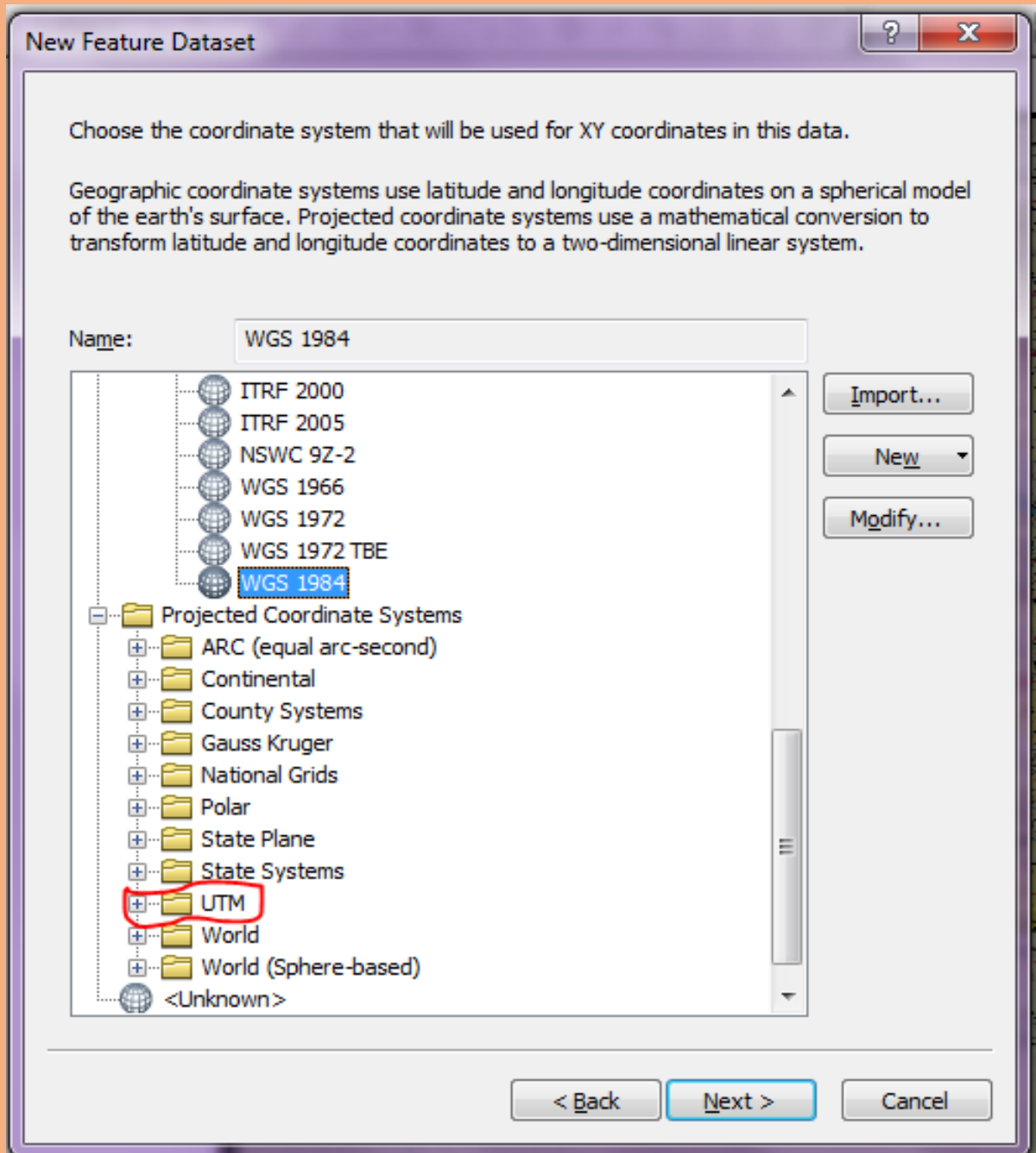
## Go to *World* option in Geographic Coordinate Systems



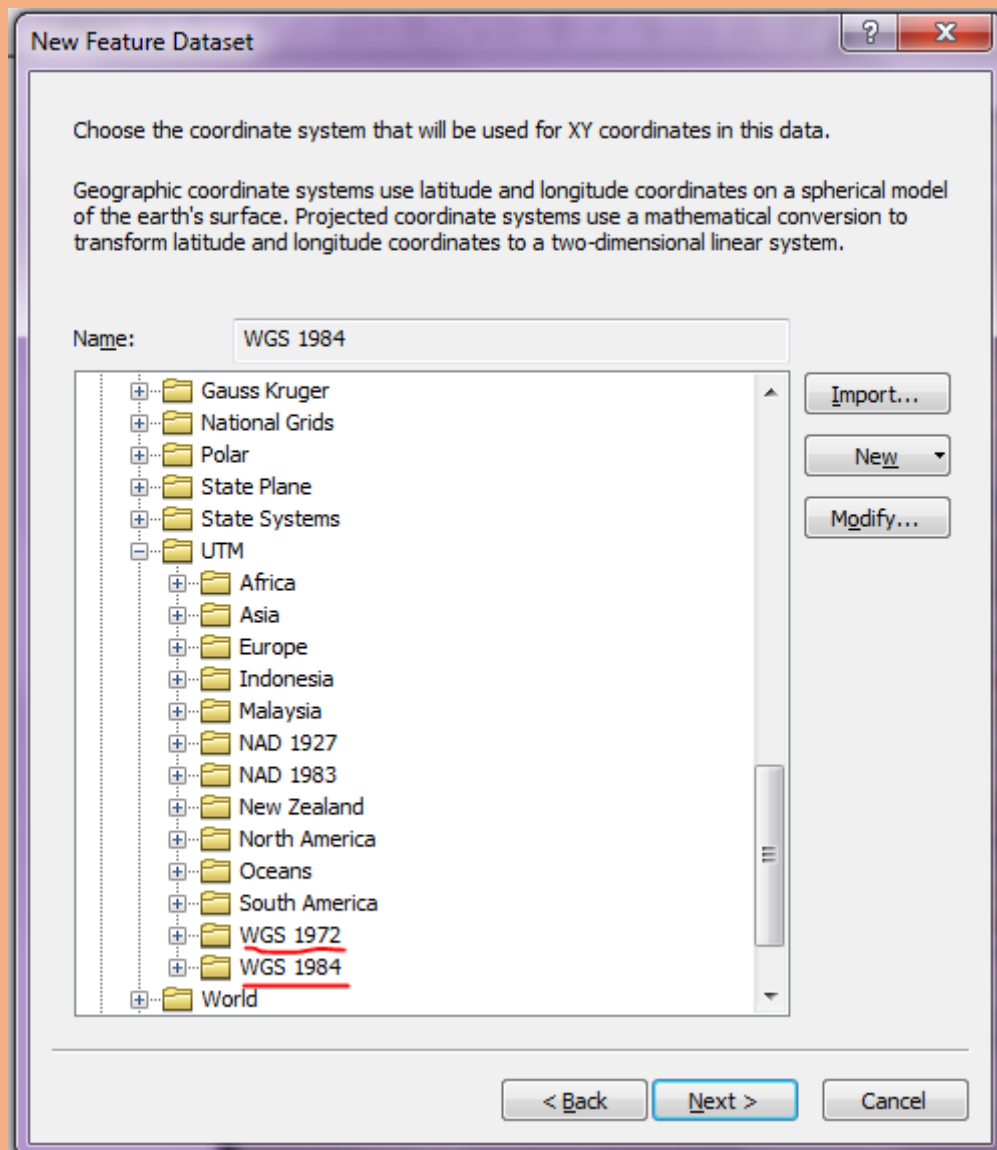
Now select *WGS 1984* in World folder



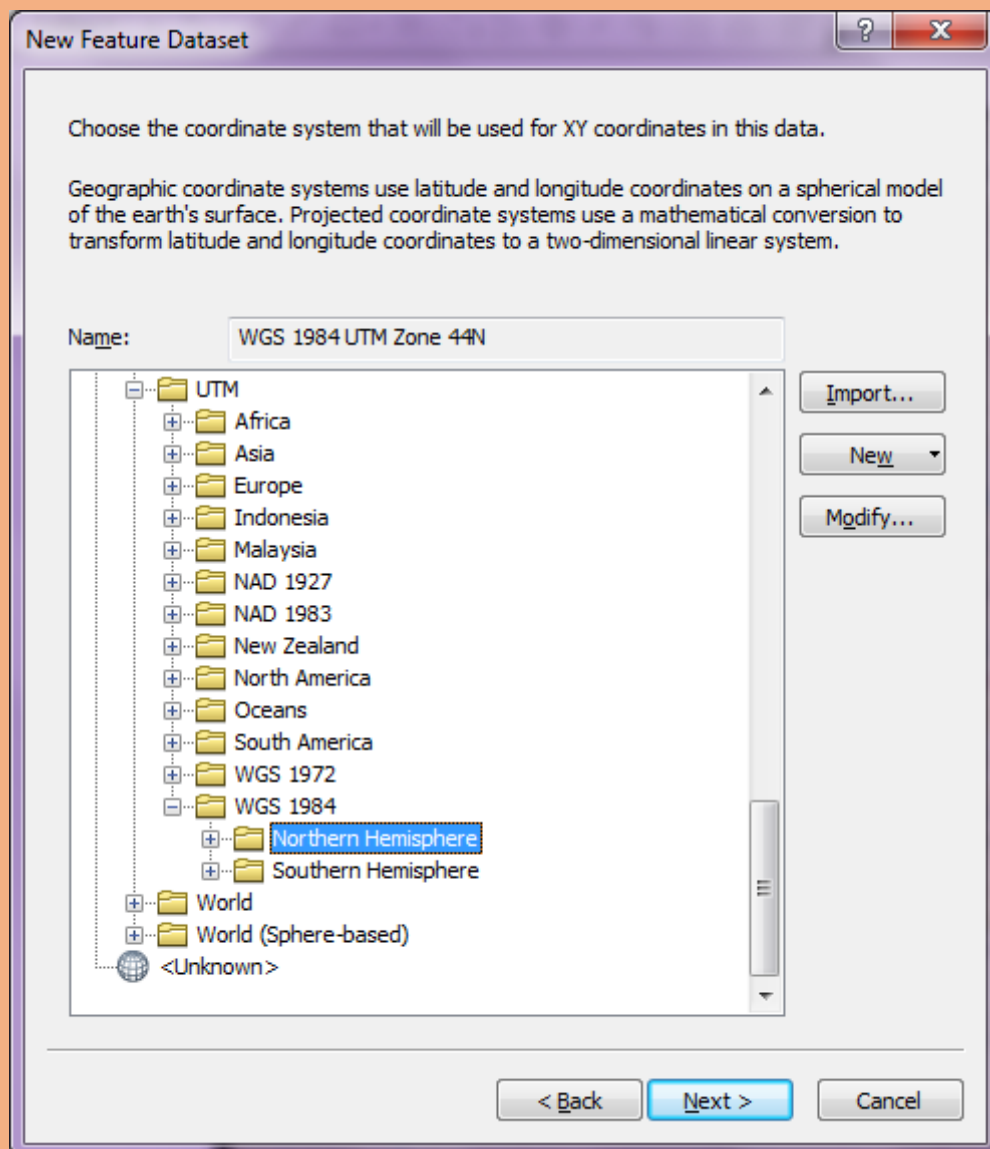
Now select *Projected Coordinate Systems* → select *UTM*



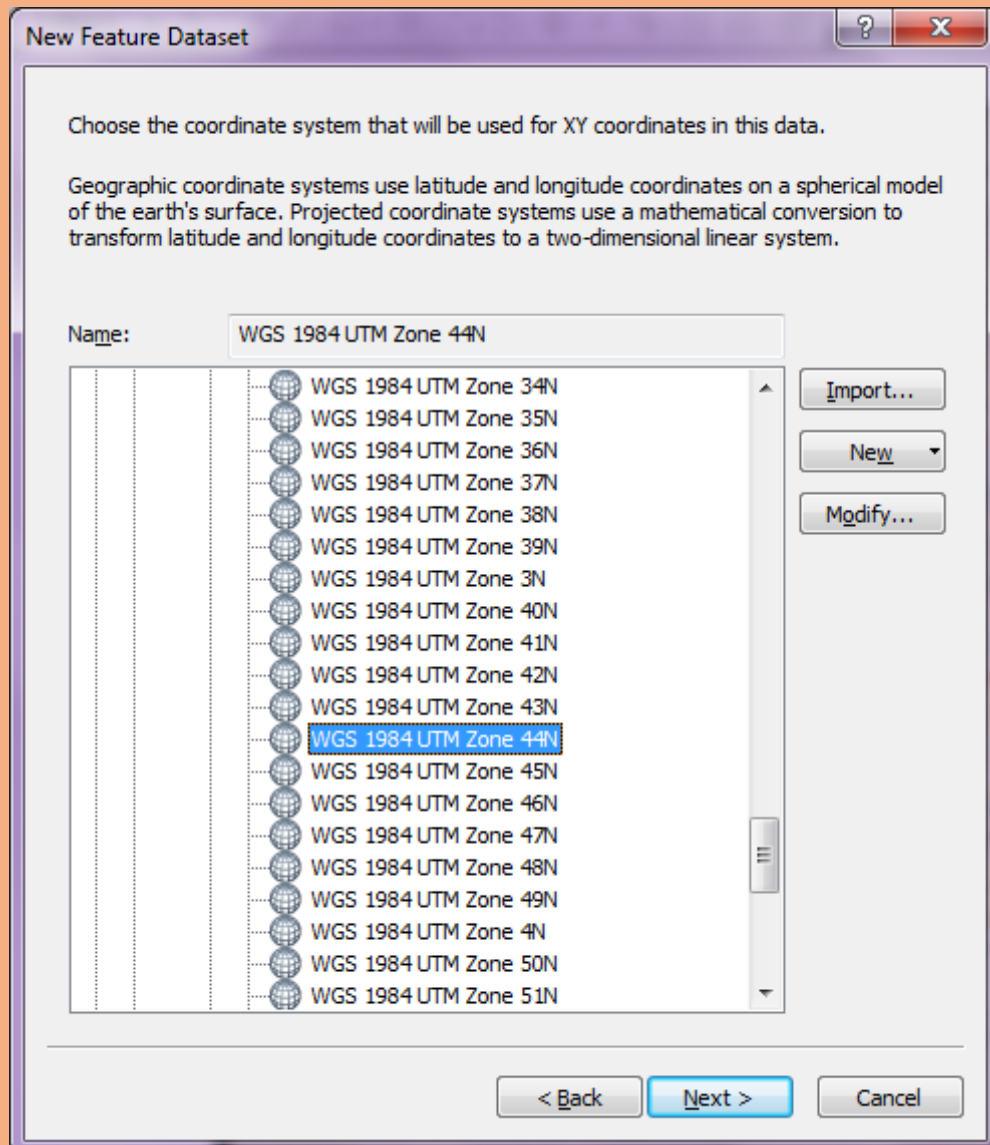
## Select *WGS 1984* in UTM



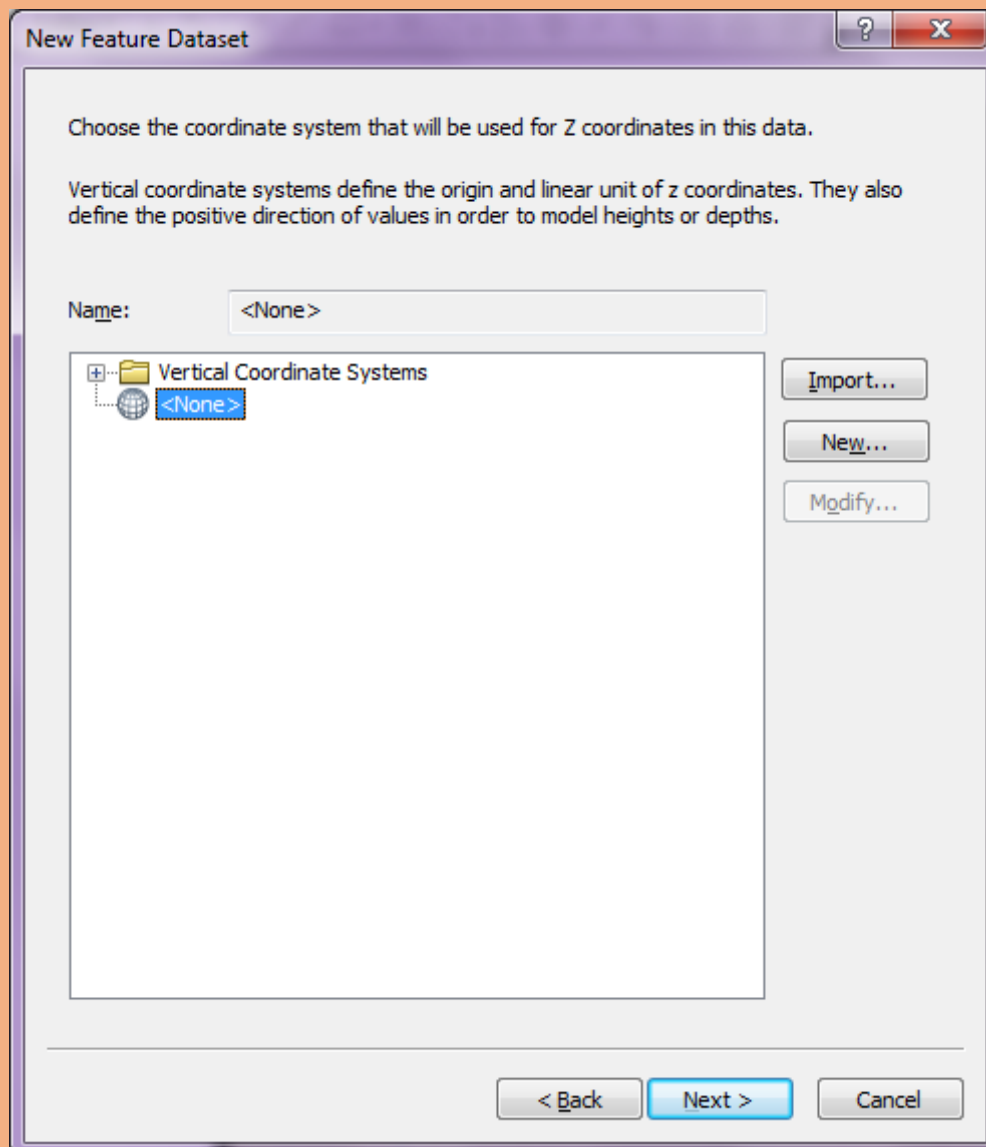
Select *Northern Hemisphere* in WGS 1984 folder



Select *WGS 1984 UTM Zone 44N* in Northern Hemisphere Folder → press *Next*



Again press *Next*





New window will open → Select finish

New Feature Dataset

XY Tolerance

The XY tolerance is the minimum distance between coordinates before they are considered equal. The XY tolerance is used when evaluating relationships between features.

0.001 Meter

Z Tolerance

0.001

M Tolerance

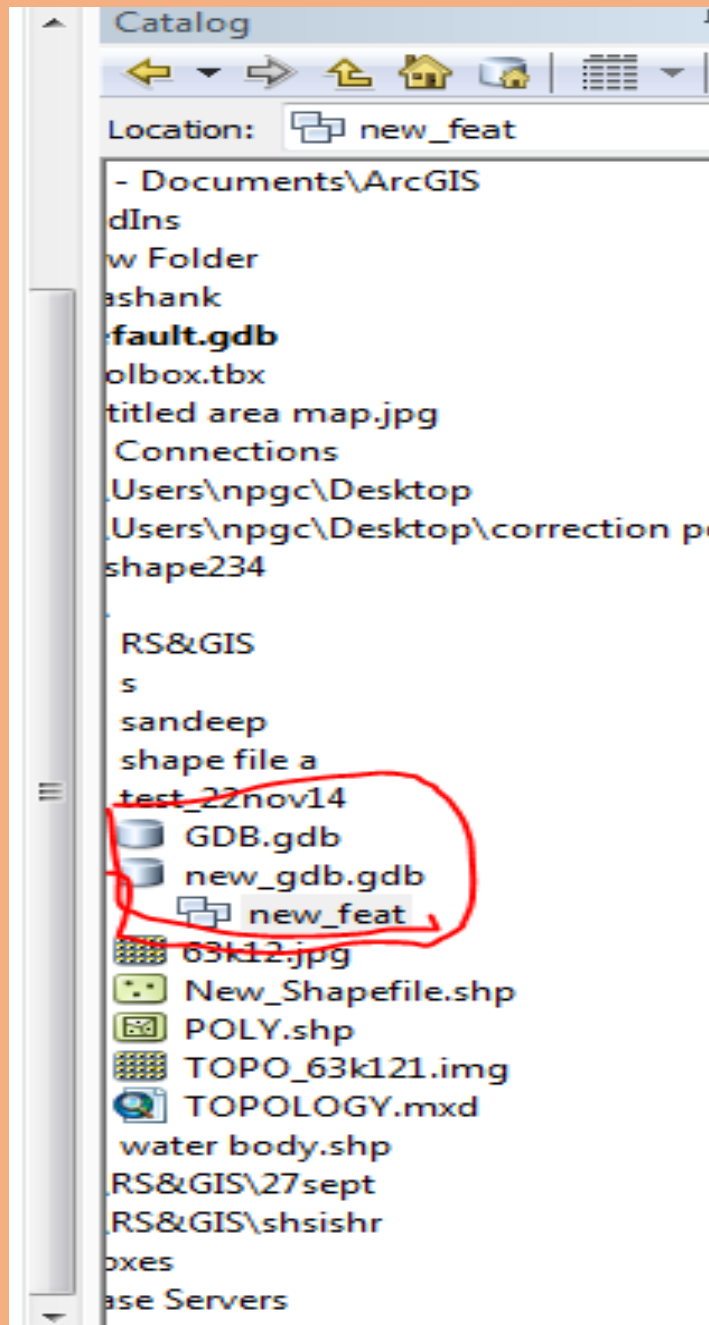
0.001 Unknown Units

Reset To Default About Setting Tolerance

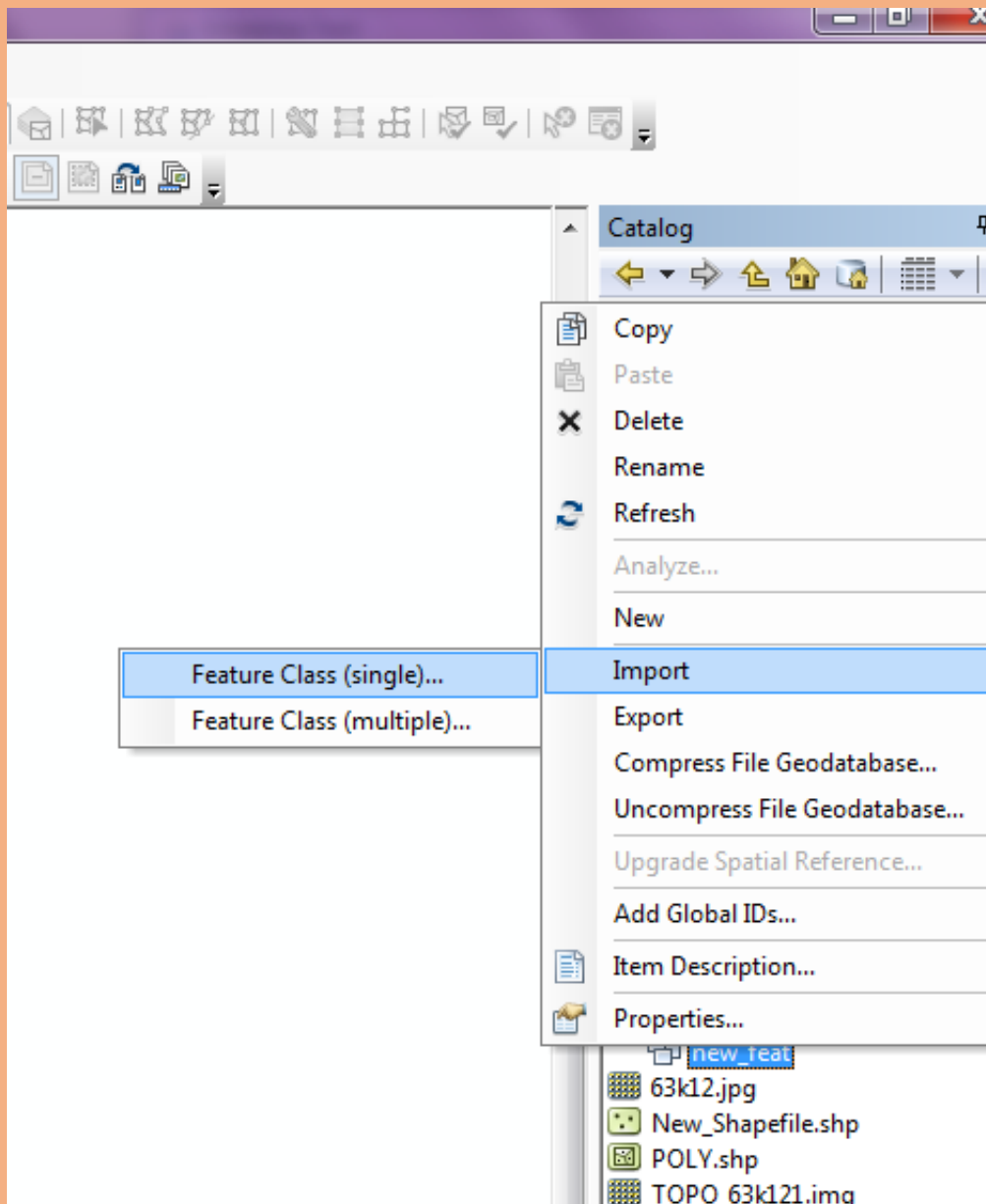
Accept default resolution and domain extent (recommended)

< Back Finish Cancel

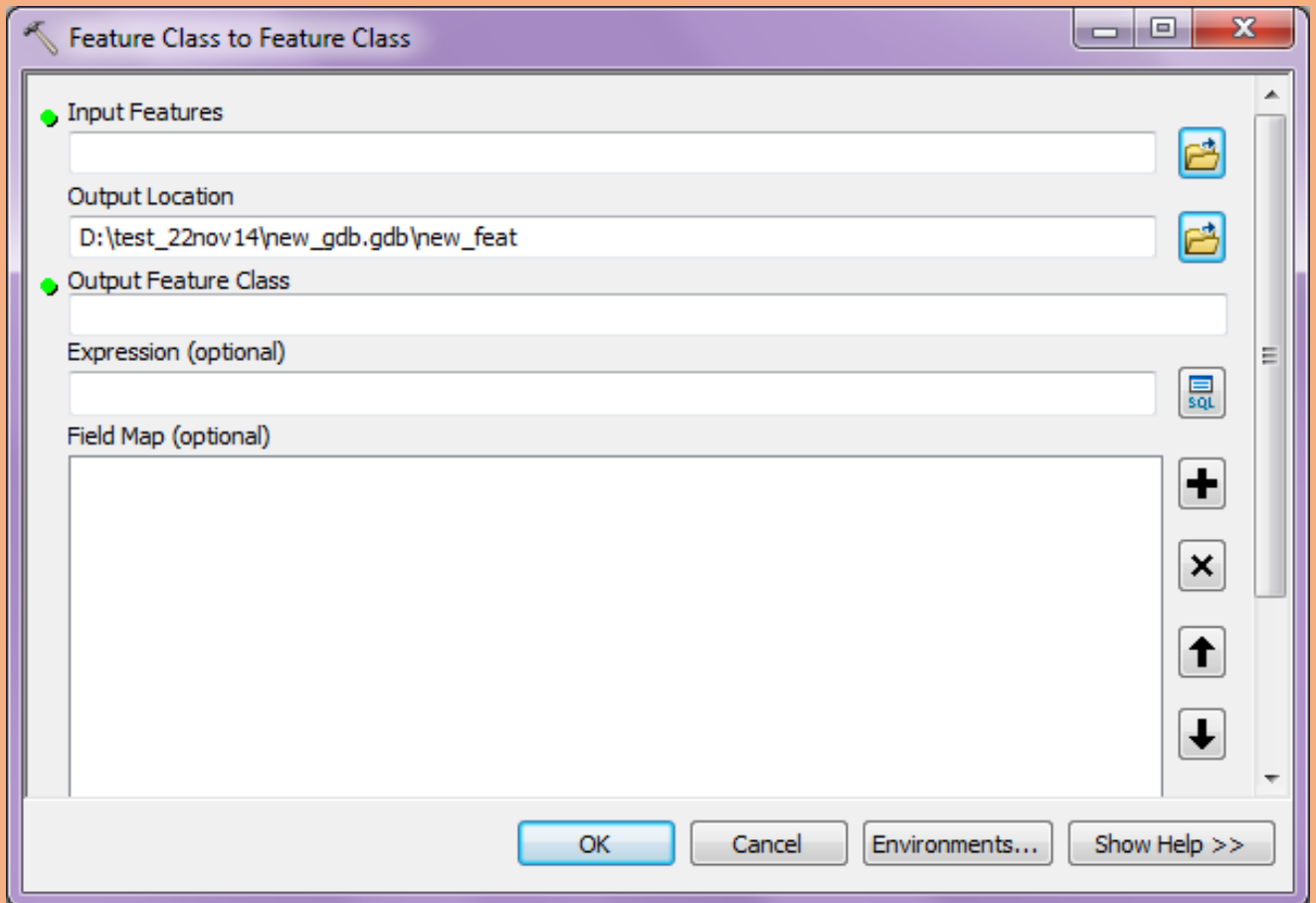
New data set feature file will create in GDB



Right click on new Data set feature file (name....) → go to import → select feature class (single)

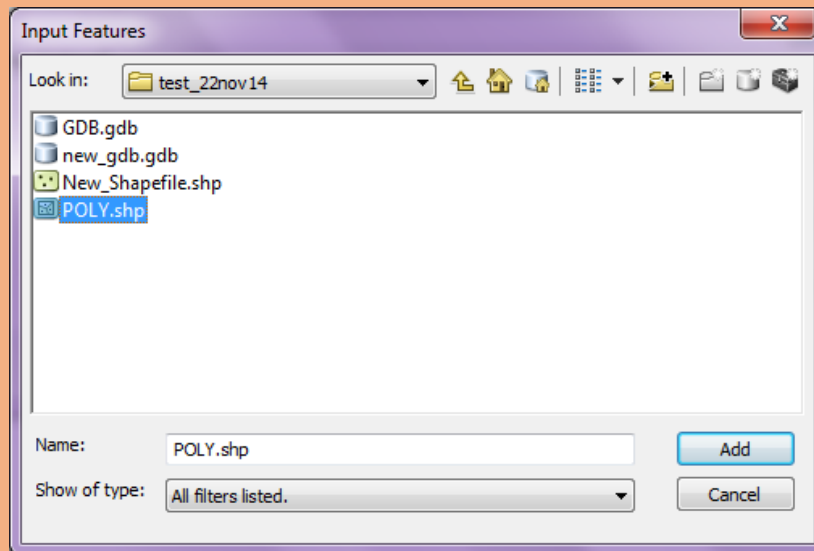


Feature class to feature class window will open

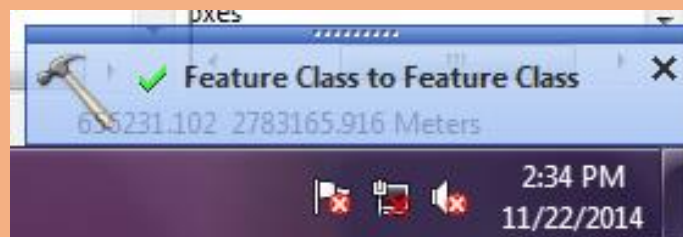


Go to *Input Feature* option → browse the folder

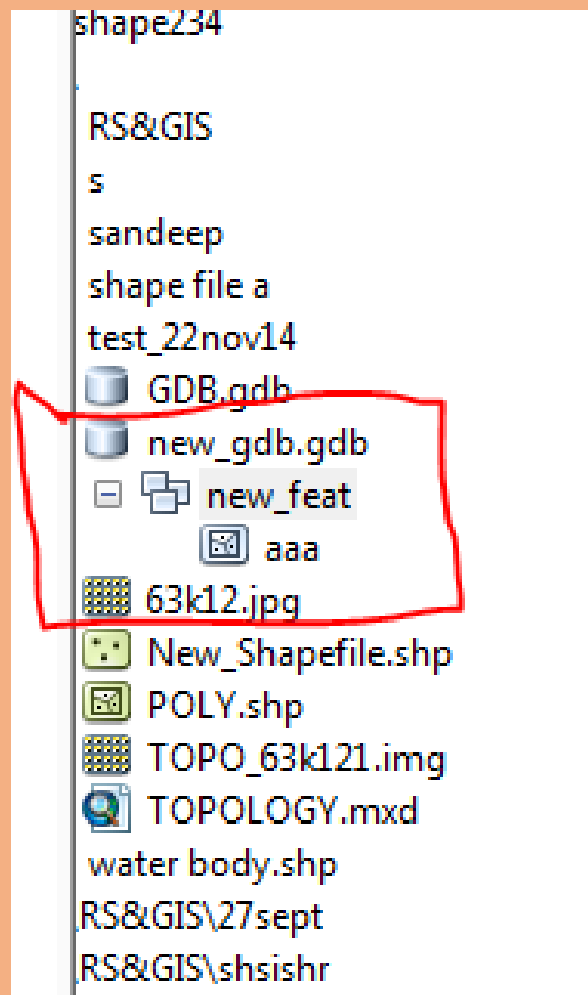
New *Input Features* window will open



Select saved shapefile → add → go to output feature class → put the name(any...) → ok → wait for your process right bottom corner

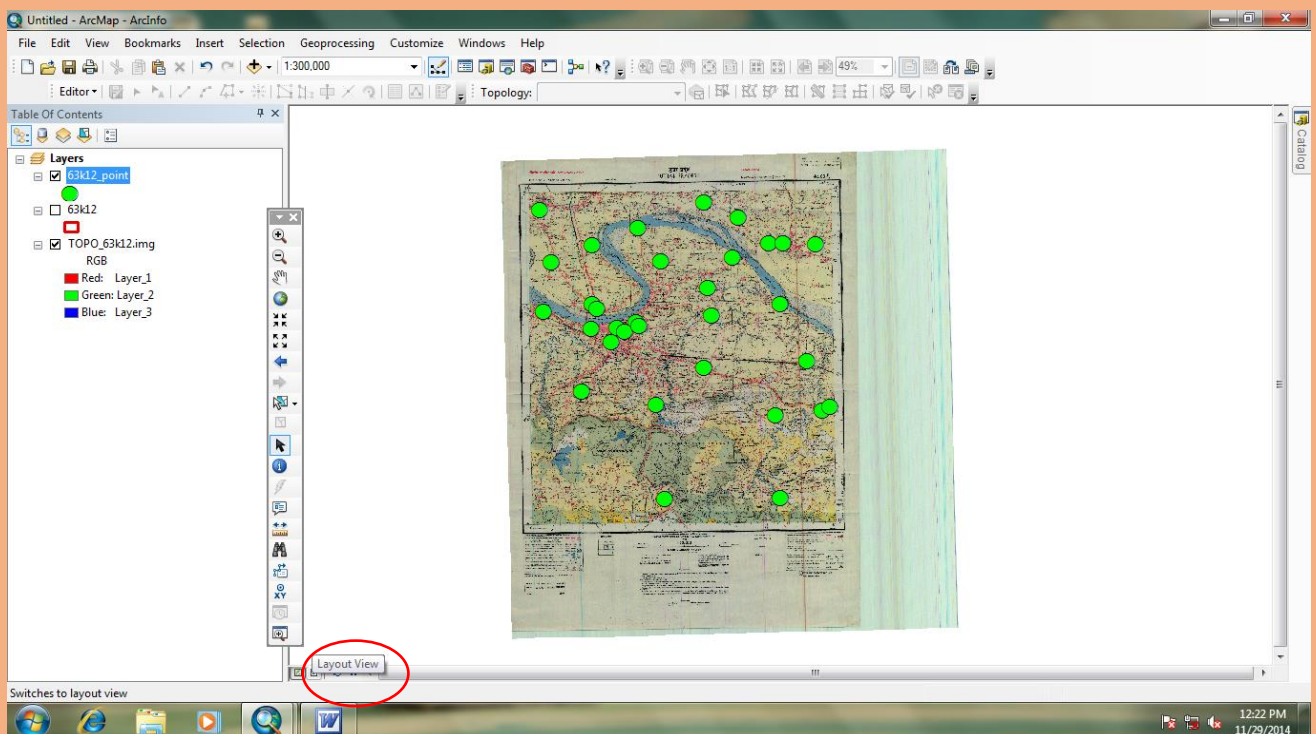


File will show in catalog window

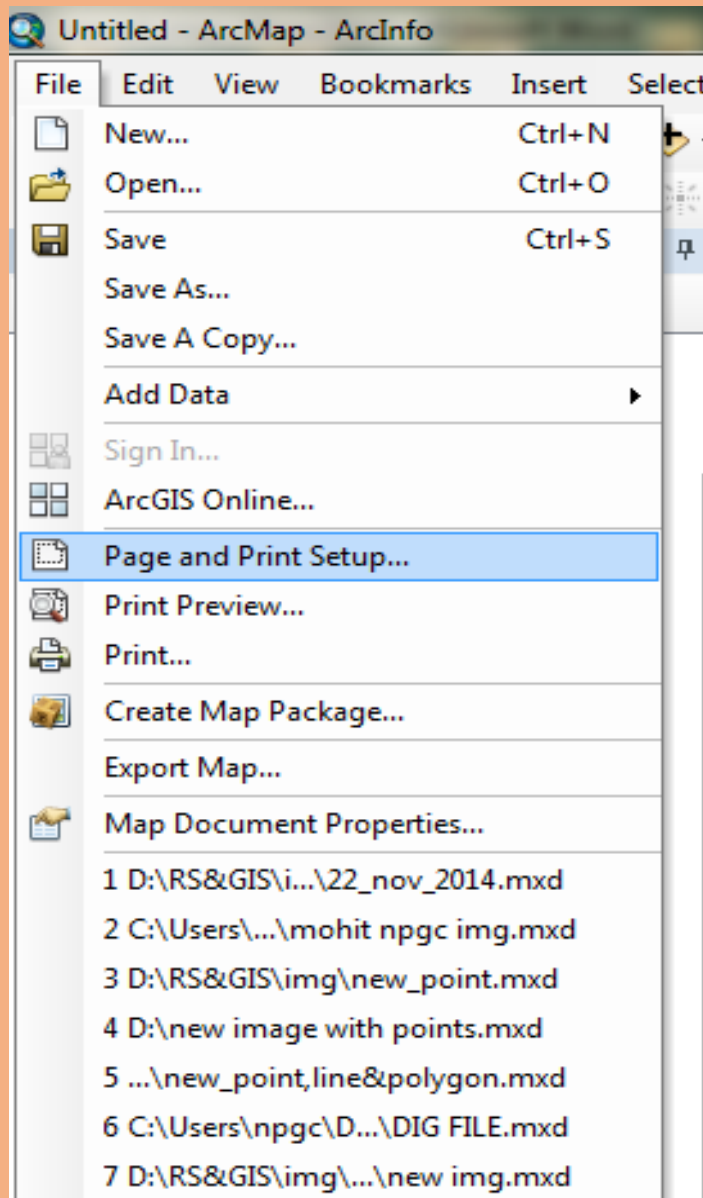


# MAP MAKING

Open arc GIS → add shapefile → go to screen window → go to layout view (left bottom corner)

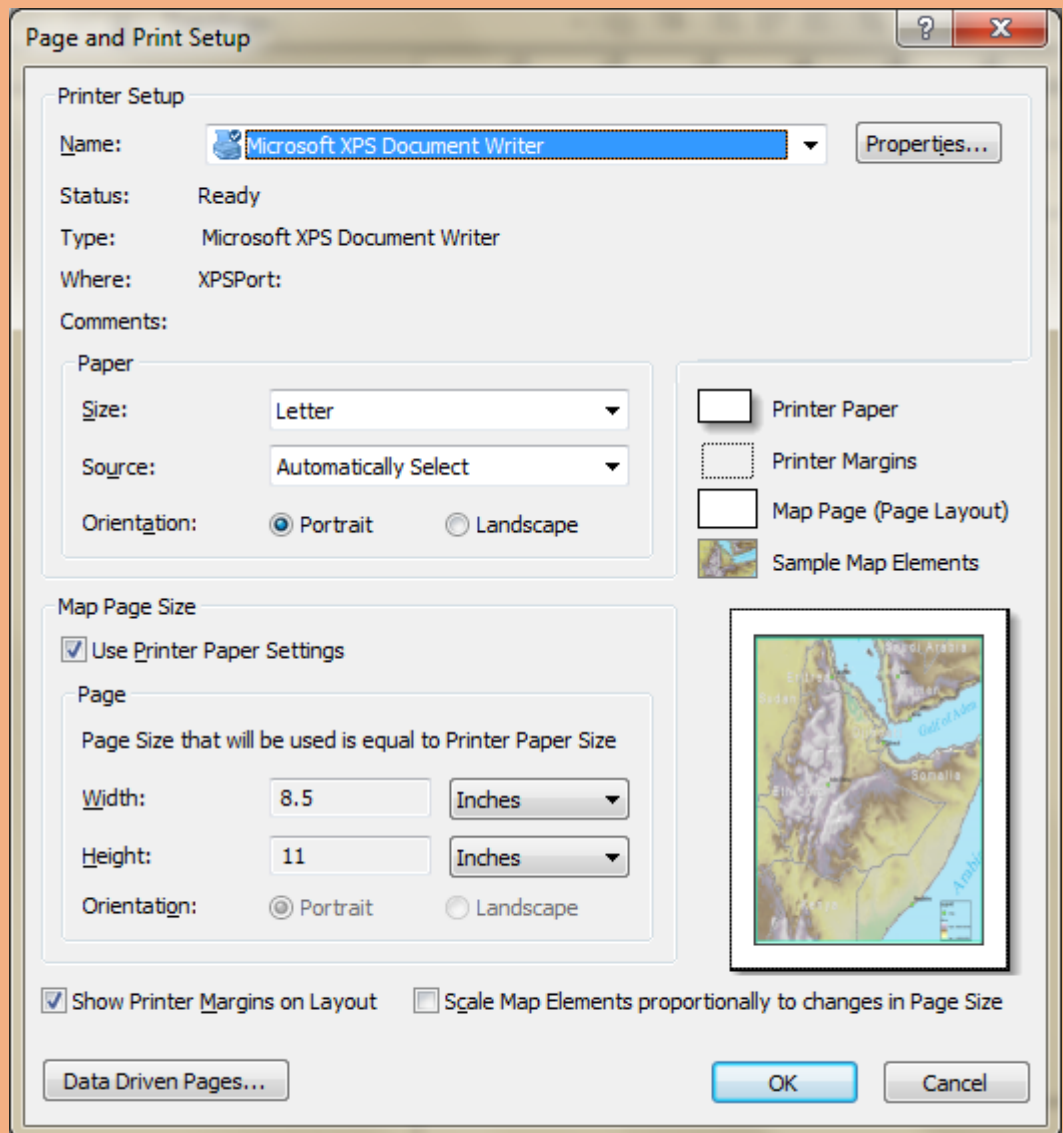


Select lay out view- a new layout view window will show on the screen--- go to file menu—select page & print setup---

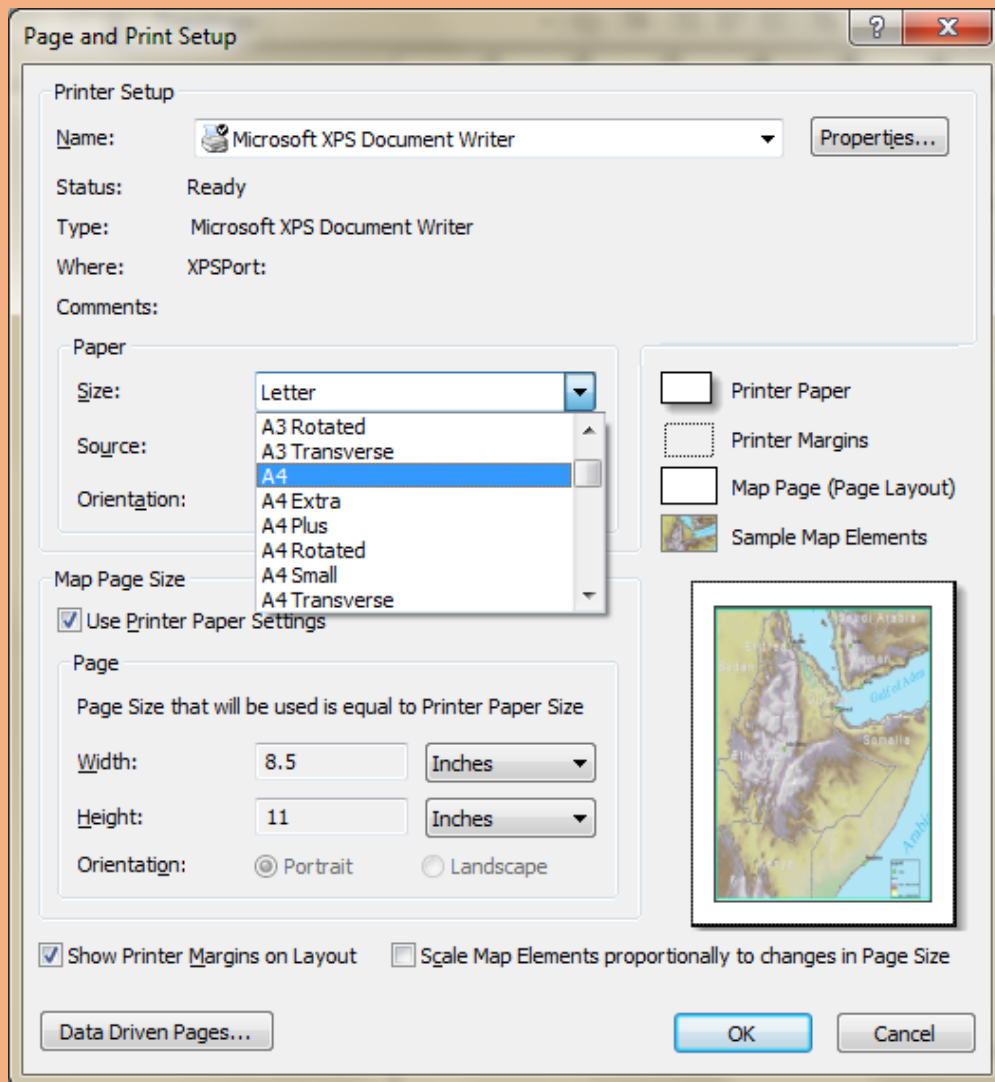




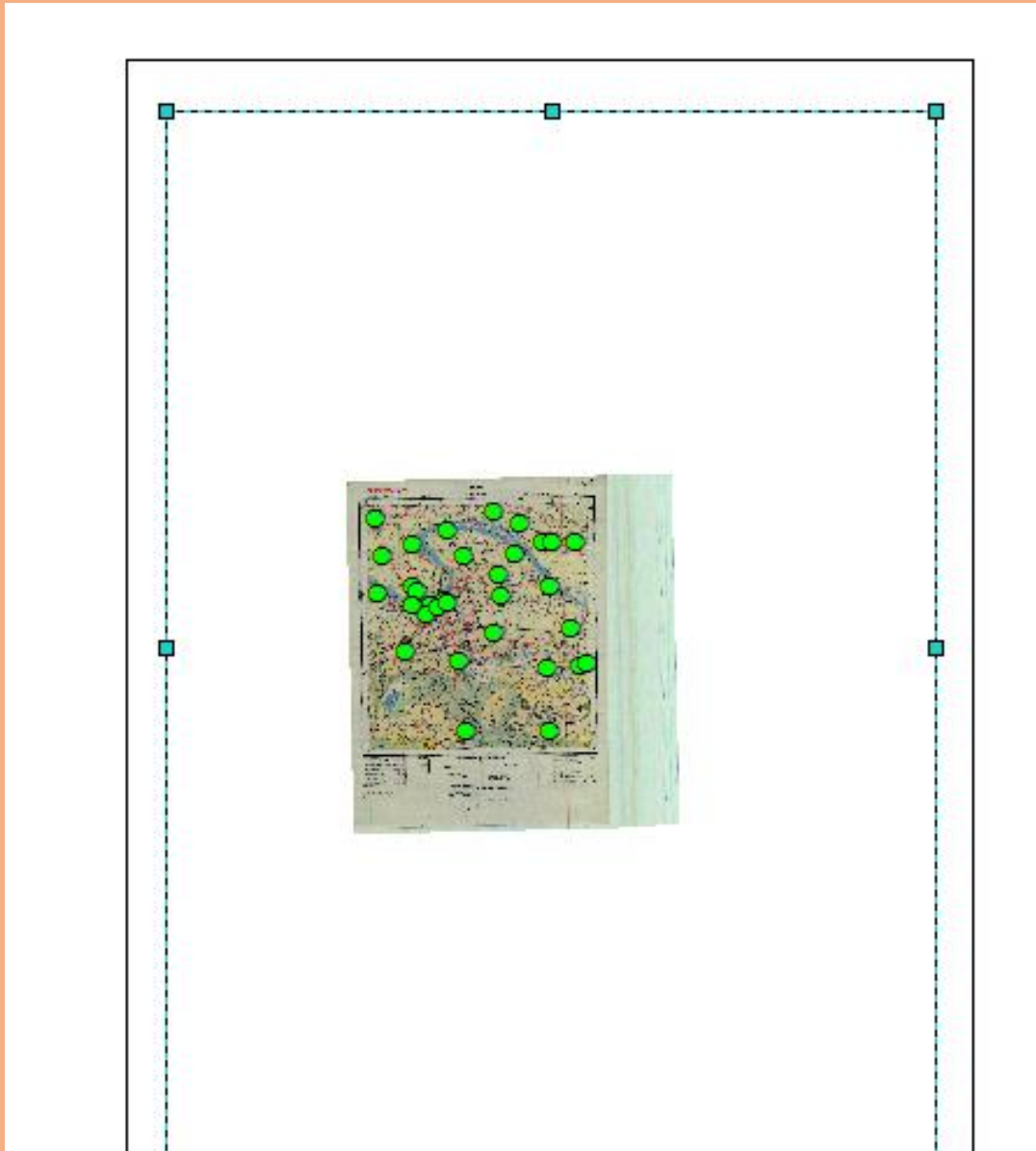
Page & print setup window will open



Select paper size as your Printer—select orientation (Land Scene/Portrait)--ok



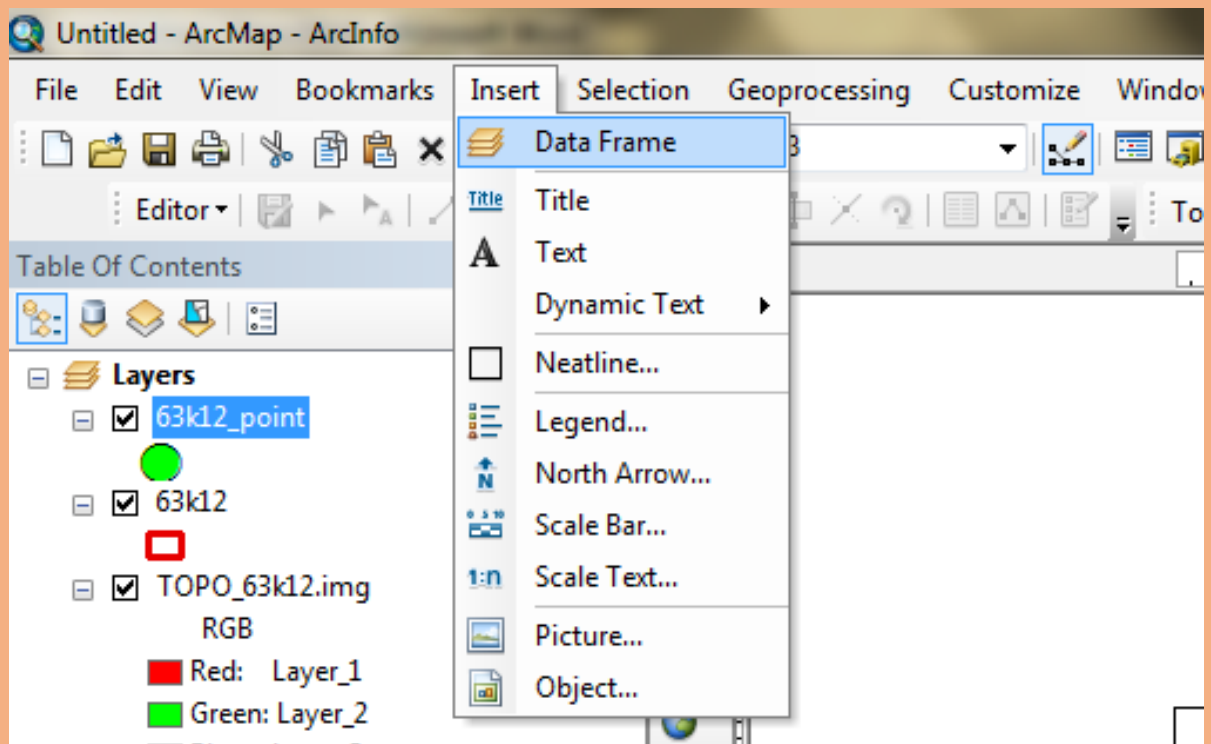
Adjust the cursor & Border on showing Window



## Map Layout window(for work on the map layout)

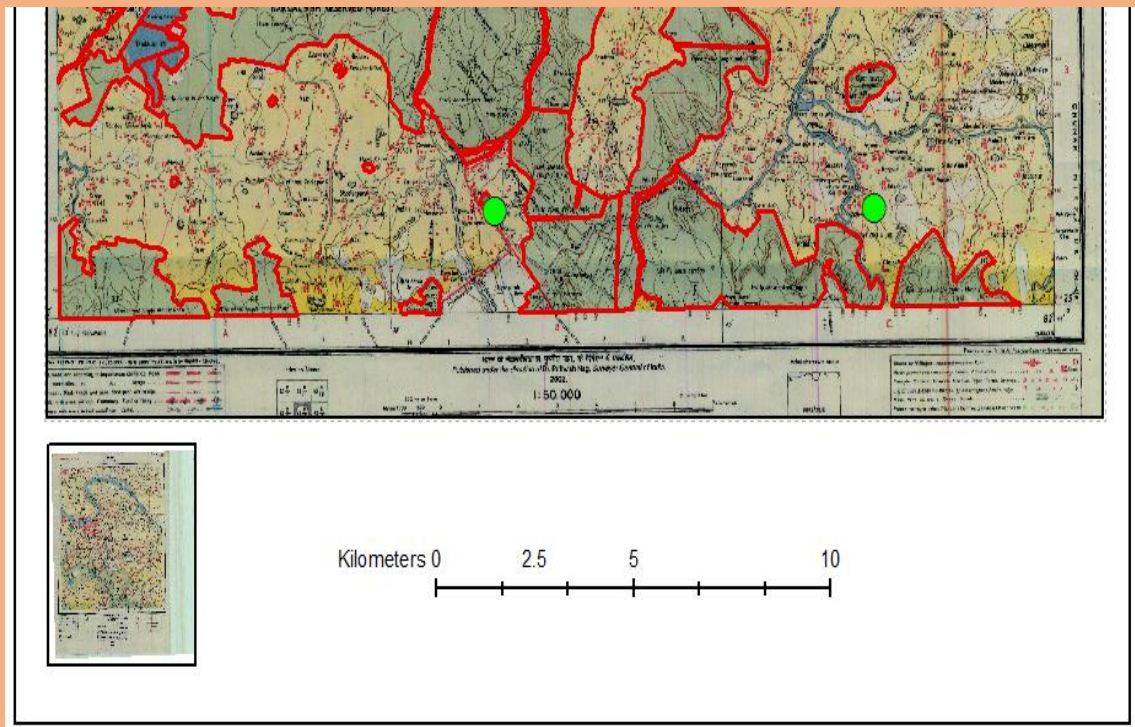


Go to Menu bar—click on insert menu —select title--Add  
– Heading/Title— ADJUST POSITION ON MAP  
LAYOUT---



Again go to insert menu—select north arrow—adjust  
position on map---

Select layer frame for scale--Again go to insert menu—  
select scale bar—adjust position on map---



Again go to insert menu—select legend – new legend  
window will open—select the option ---next1---next2---  
next3---next4—finish--adjust position on map---

Go to file ---- select export--- export map window will  
open—select save as type--- jpeg/pdf--- save