

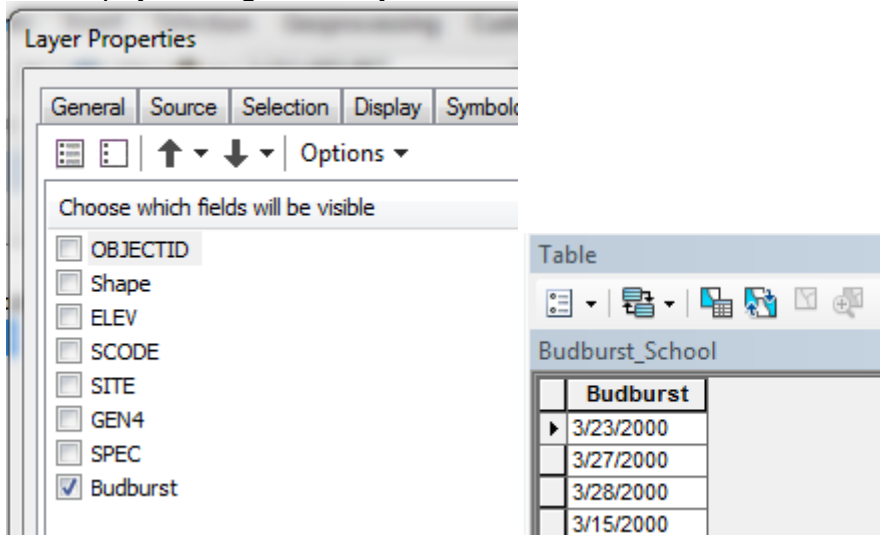
KEY Week#2 GIS Problems

Spring Budburst

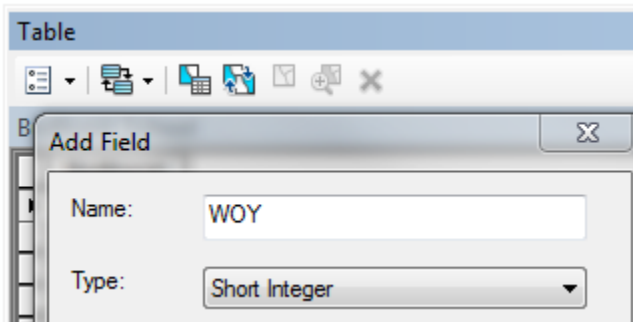
Download the geodatabase container **GLOBE_Schools_budburst.mdb** from http://dverbyla.net/nrm338/blackboard_data/

OBJECTID *	Shape *	ELEV	SCODE	SITE	GEN4	SPEC	Budburst
10	Point	142	MobjjYs	PHN-01	POPU	ALBA	2/28/2000
28	Point	495.8	B6Ov5n3	PHN-01	FAGU	SYLV	2/28/2000
15	Point	223	d5UPWR	PHN-07	ACER	SACC	3/3/2000
7	Point	704	GmLec5k	PHN-01	OLEA	EURO	3/8/2000
50	Point	150	aJUahGC	PHN-01	BETU	PEND	3/11/2000
19	Point	1098	EibE2L9	PHN-01	POPU	NIGR	3/12/2000
4	Point	253	pWouwA	PHN-01	ACER	SACC	3/15/2000
35	Point	51	5m4Y5ji	PHN-01	BETU	PEND	3/16/2000
40	Point	48	QfxG3LP	PHN-11	BETU	PEND	3/20/2000
5	Point	98	VLGb4kx	PHN-01	POPU	FEM	3/21/2000
41	Point	50	QfxG3LP	PHN-06	BETU	ALBA	3/21/2000
49	Point	27	QfxG3LP	PHN-01	BETU	PEND	3/21/2000
29	Point	172	RjkPtGQ	PHN-02	XXXX	YYYY	3/23/2000
13	Point	520	hiJvU5K	PHN-01	CAST	SATI	3/23/2000

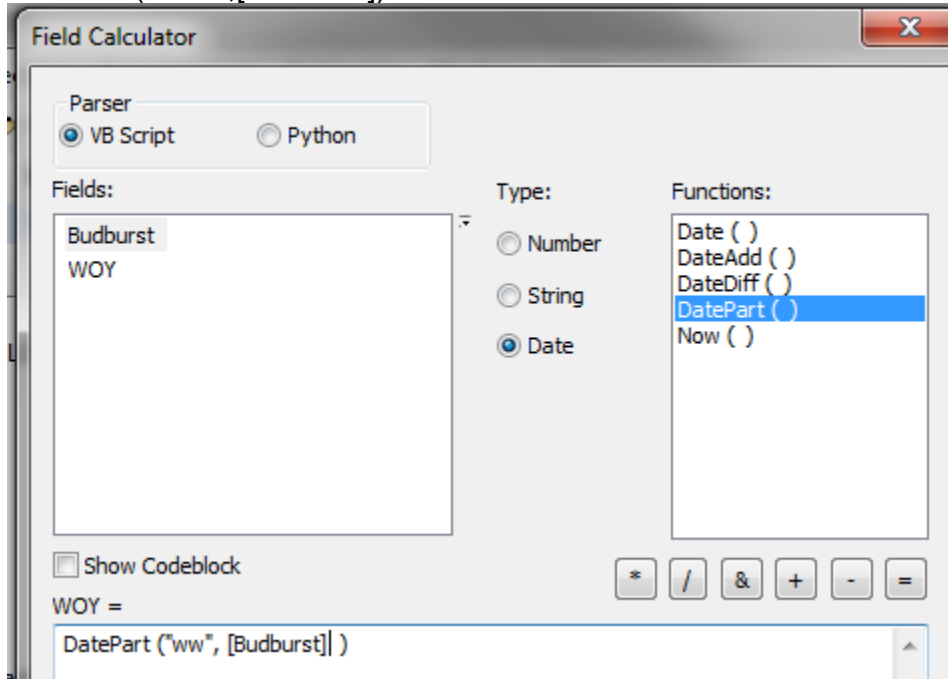
To simplify, change visibility of fields in table:



Add a short integer field that will represent week of year...



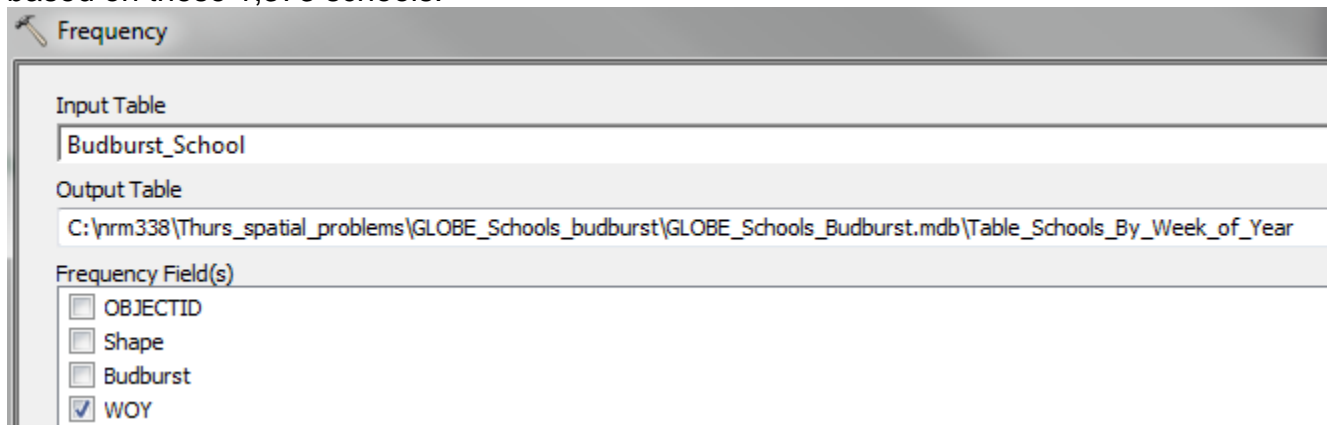
then calculate week of year for each point using the field calculator and DatePart("ww",[datefield]) function.



Sort ascending and descending to check:

Budburst	WOY	Budburst	WOY
1/12/2006	2	12/17/2004	51
1/7/2010	2	12/15/2004	51
1/5/2005	2	12/13/2008	50
1/13/2009	3	11/11/2009	46
		10/28/2006	43

Use the **Frequency** geoprocessing tool to develop a table of week of year of spring budburst based on these 1,373 schools.



FREQUENCY	WOY
268	18
176	16
136	17
128	15
119	14
95	19
91	13
67	12

So the top three weeks for budburst were weeks 18, 16, 17 which are in April

Hiking Loop

You are going to hike the Pinnel Mountain trail.

Download the geodatabase container **Pinnell_Mtn_Trail.mdb** from http://dverbyla.net/nrm338/blackboard_data/

You want to develop a map showing every mile along the hiking trail. You also want to know how many miles it would be to bike on the Steese Highway from the start trailhead to the end trailhead.

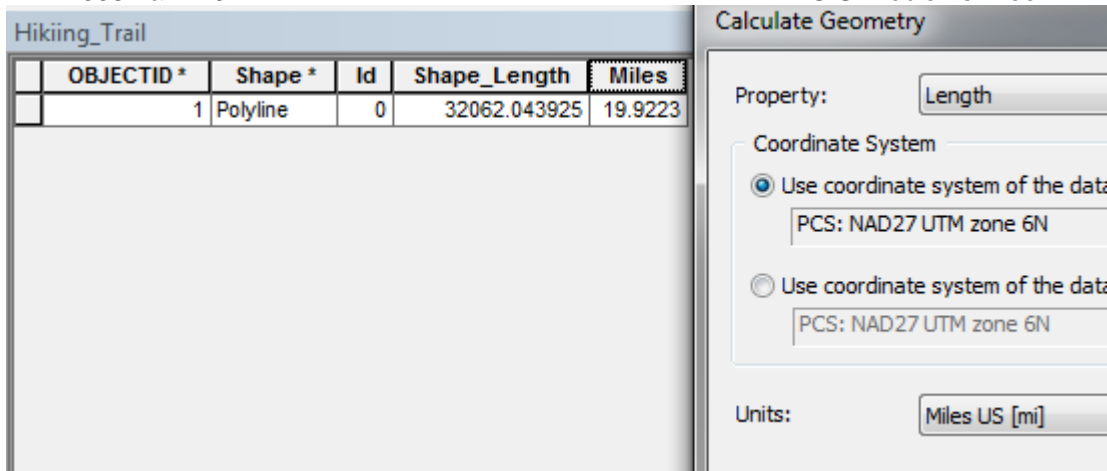
Create a view showing every mile along your hiking route.
First Dissolve your 10 trail lines into one continuous trail line.

The screenshot shows a table named 'Hiking_Trip' with the following data:

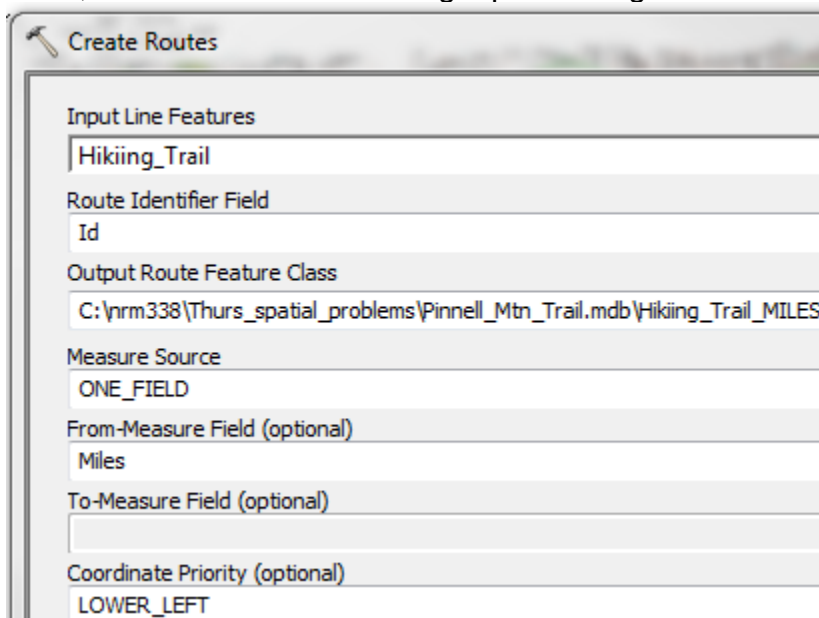
OBJECTID *	Shape *	Id	Shape_Length
1	Polyline	0	2460.009978
2	Polyline	0	3438.902888
3	Polyline	0	4633.468479
4	Polyline	0	2251.541764
5	Polyline	0	6252.226975
6	Polyline	0	3534.031717
7	Polyline	0	3429.313622
8	Polyline	0	3427.504587
9	Polyline	0	2321.842333
10	Polyline	0	313.201583

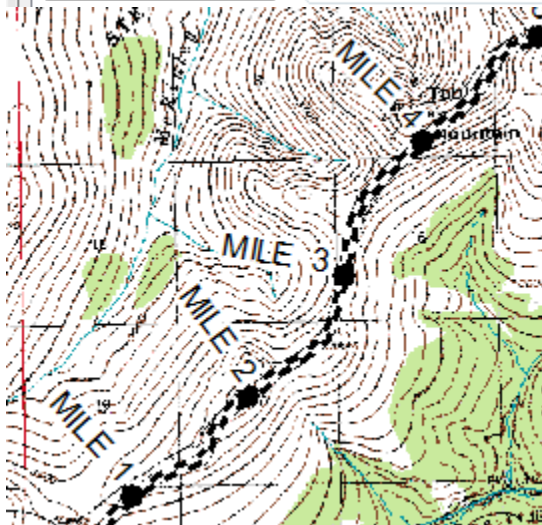
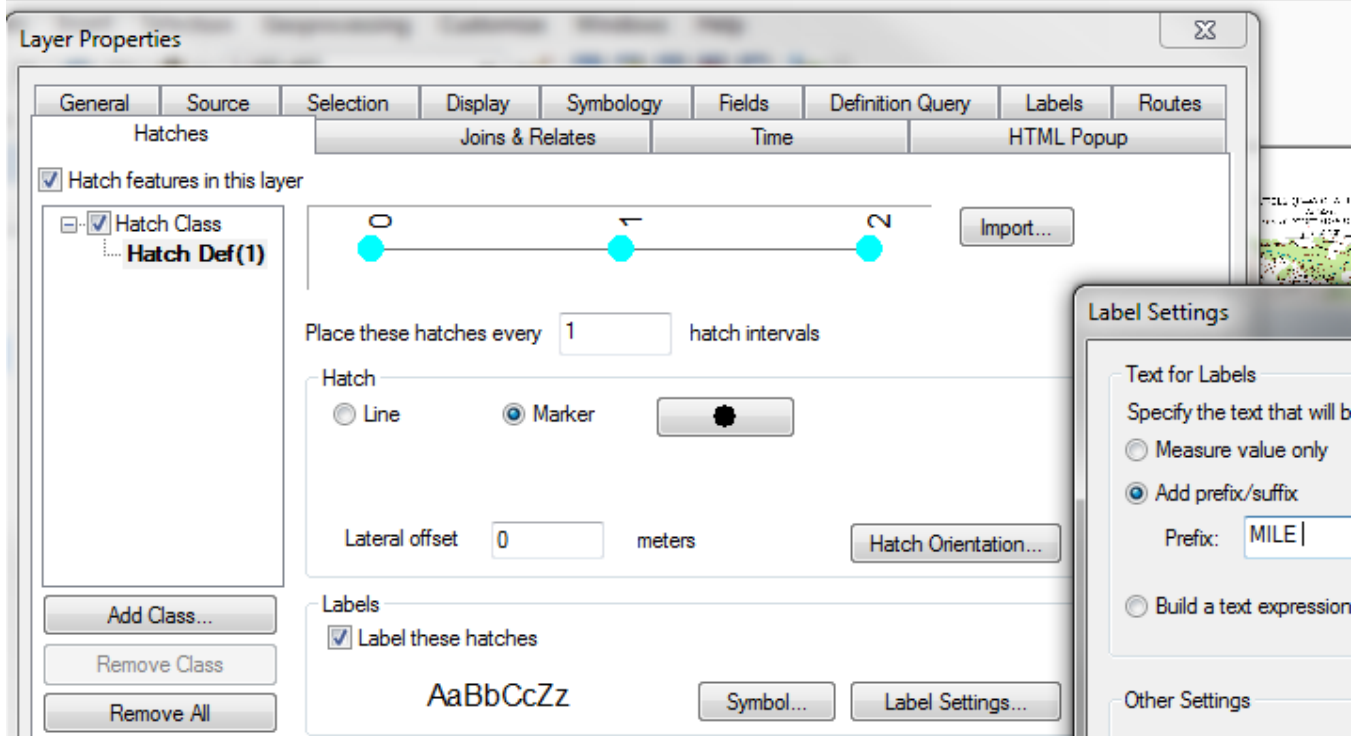
Below the table is the 'Dissolve' tool dialog box. The 'Input Features' field contains 'Hiking_Trip'. The 'Output Feature Class' field contains 'C:\nrm338\Thurs_spatial_problems\Pinnell_Mtn_Trail.mdb\Hiking_Trail'. Under 'Dissolve_Field(s) (optional)', the 'Id' field is selected with a checkmark, while 'OBJECTID' and 'Shape_Length' are not.

Second, add a field and compute the length of the line in Miles.



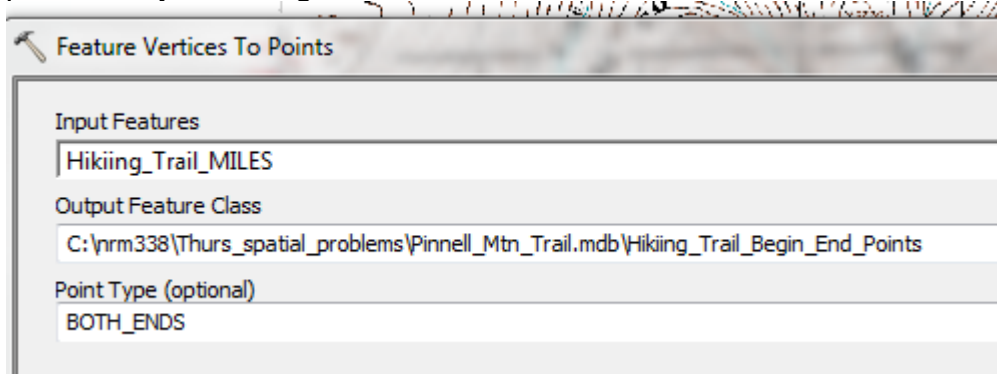
Third, use the **Create Routes** geoprocessing tool to create a measured line in miles.



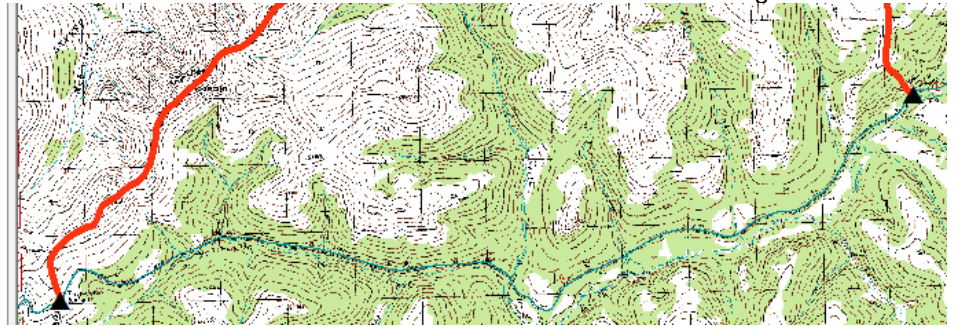


Determine the length in miles along the Steese Highway from the hike starting and ending points.

First, use the **Feature Vertices to Points** geoprocessing tool to get the beginning and ending point from your hiking trail.



- [-] Pinnell Mountain Trail
 - Hiking_Trail_Begin_End_Points
 - Hiking_Trail_MILES
 - Hiking_Trail
 - Steese_Highway
 - TopoMap.tif
- [-] Yukon River Gradient



Second, Dissolve your highway lines into one continuous highway line.

Steese_Highway_Line

OBJECTID *	Shape *	ROAD_NAME
1	Polyline	Steese Hwy

Then use the geoprocessing tool **Split Line At Point** to cut the highway with your hiking trail begin and end points.

Steese_Highway_Line

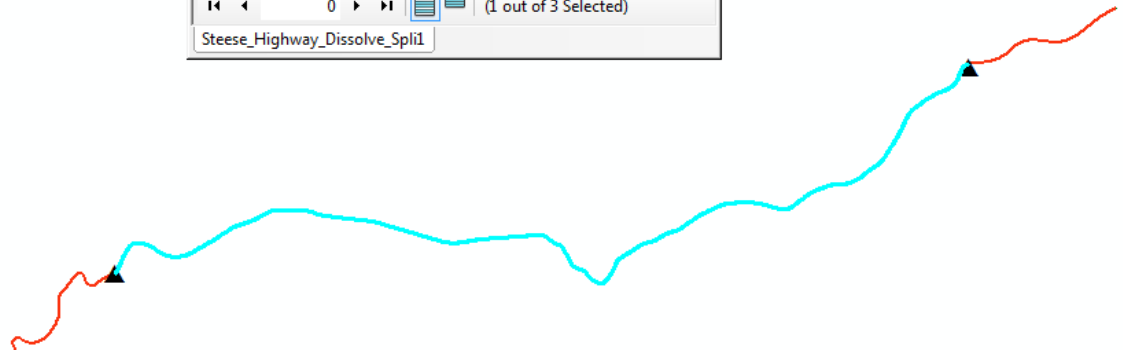
Hiking_Trail_Begin_End_Points

Steese_Highway_Split

100 Meters

Shape *	ROAD_NAME
Polyline	Steese Hwy
Polyline	Steese Hwy
Polyline	Steese Hwy

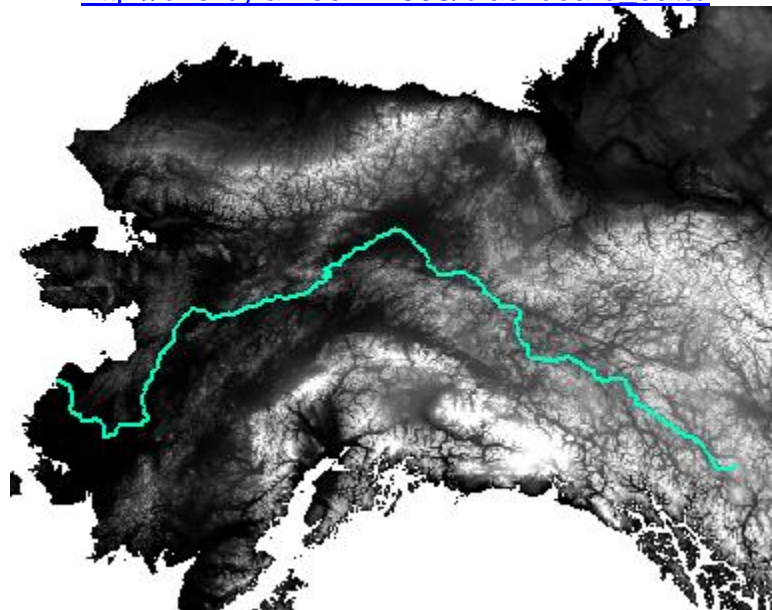
Steese_Highway_Dissolve_Spli1



Steese_Highway_SPLIT				
	Shape *	ROAD_NAME	Shape_Length	BIKE_MILES
	Polyline	Steese Hwy	3933.87889	<Null>
	Polyline	Steese Hwy	4582.80958	<Null>
▶	Polyline	Steese Hwy	23862.406851	14.8

Yukon River Gradient

Download and unzip the file **Yukon_River.zip** from http://dverbyla.net/nrm338/blackboard_data/



Determine the percent slope gradient along the Yukon River. First, **Dissolve** your river lines into one continuous Yukon River line.

Dissolve

Input Features: Yukon_River

Output Feature Class: C:\nrm338\Thurs_spatial_problems\YukonRiver\Yukon_River_Line.shp

Dissolve_Field(s) (optional): FID, NAME

Yukon_River_Line			
FID	Shape *	NAME	
0	Polyline	Yukon	

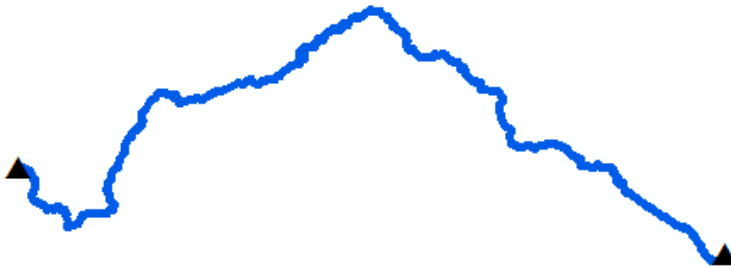
Second, use the **Feature Vertices to Points** geoprocessing tool to get the river beginning and ending points.

Feature Vertices To Points

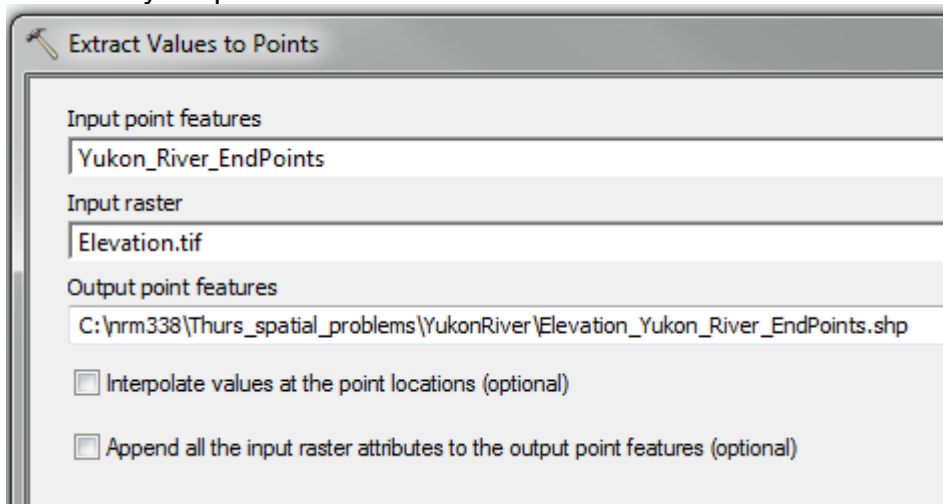
Input Features: Yukon_River_Line

Output Feature Class: C:\nrm338\Thurs_spatial_problems\YukonRiver\Yukon_River_EndPoints.shp

Point Type (optional): BOTH_ENDS



Next, use the **Extract Values to Points** geoprocessing tool to extract the pixel elevation values to your points.



Elev_EndPoints			
Shape *	NAME	RASTERVALU	
Point	Yukon	1446	
Point	Yukon	1	

So the elevation loss from the beginning to ending point is 1445 meters...
Compute the gradient as the rise/run * 100...

Shape *	NAME	River_Meters	DropElev	Gradient
Polyline	Yukon	2931891.50619	1445	0.05%

Measured Line in Steps

Assume the distance from the ONEILL building to the Reichardt Building is 2000 steps.



Download and unzip the file ***campus.zip*** from
http://dverbyla.net/nrm338/blackboard_data/


Using the table birds_seen.txt, create a data frame showing the location of the birds observed along this route.

bird_seen_steps.txt			
	Steps	Species	Distance
	455	Robin	-15
	810	Kestrel	150
	1433	Junco	-20
	1433	Ruffed Grouse	35

- 1) Dissolve to create one line
- 2) Add field representing length of line in steps

Walk_Dissolve					
	FID *	Shape *	Code	Shape_Length	Steps
	1	Polyline	0	675.223311	2000

- 3) Create measured line in steps.

 Create Routes

Input Line Features
Walk_Dissolve

Route Identifier Field
Code

Output Route Feature Class
C:\nrm338\Thurs_spatial_problems\campus\Walk_Measured_Steps.shp

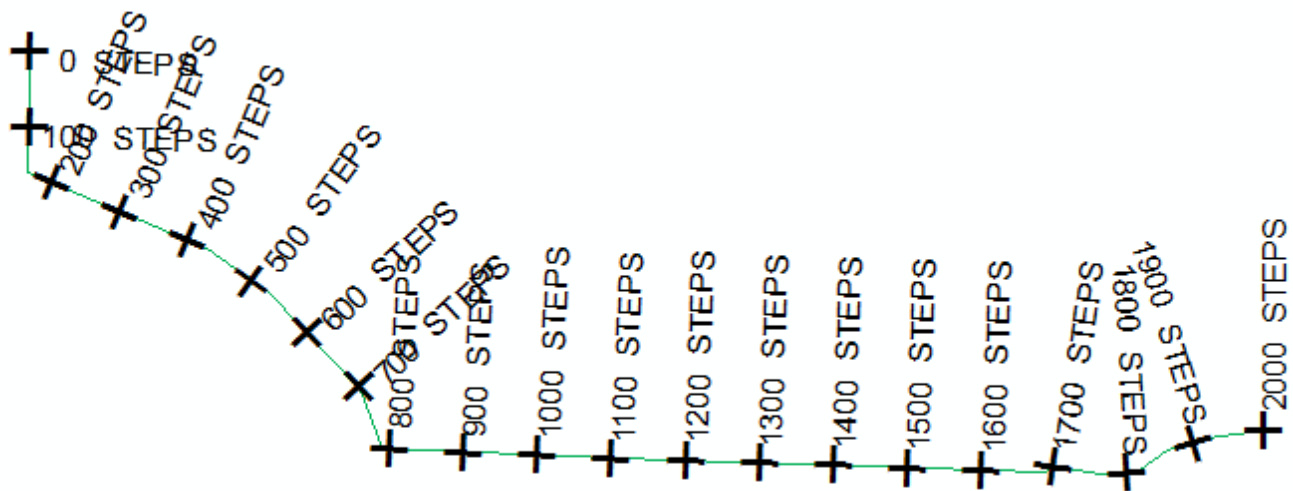
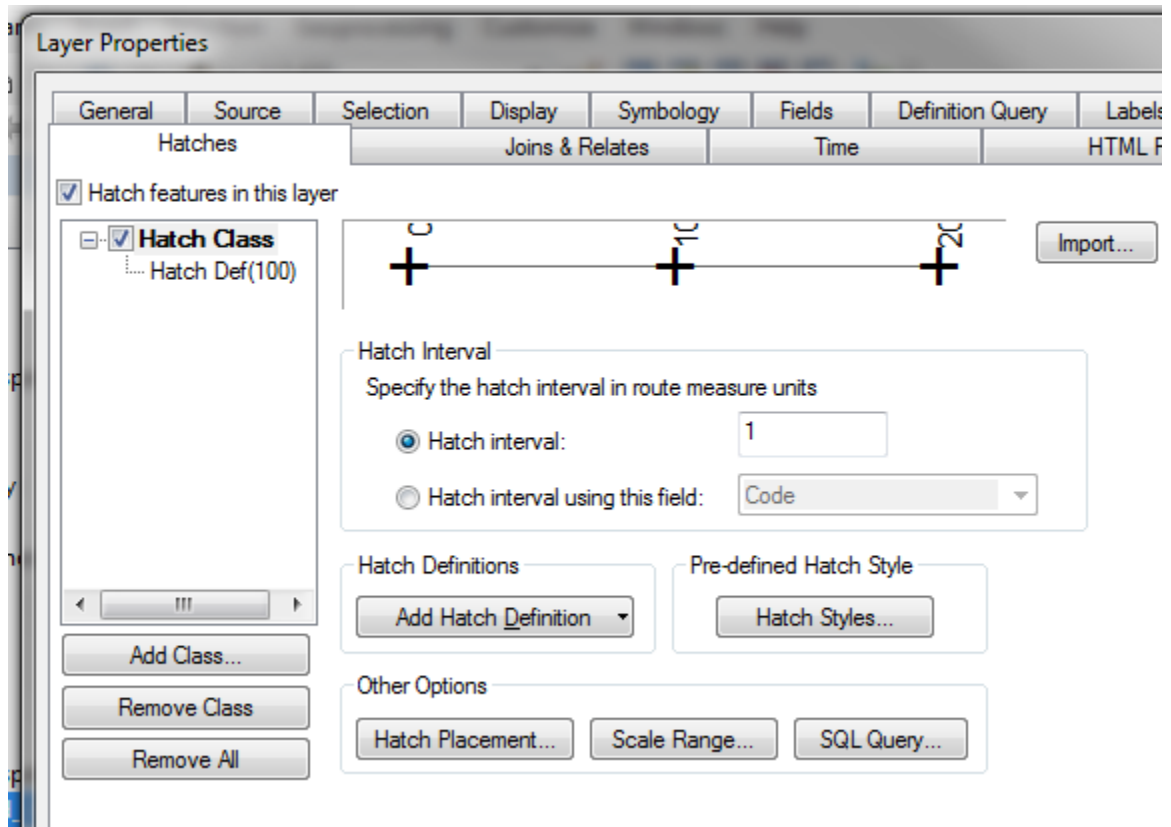
Measure Source
ONE_FIELD

From-Measure Field (optional)
Steps

To-Measure Field (optional)

Coordinate Priority (optional)
UPPER_LEFT

- 4) Hatch line to visually check out steps:



5) Display location of birds seen along walk.

bird_seen_steps.txt

ID	Steps	Species	Distance
0	455	Robin	-15
0	810	Kestrel	150
0	1433	Junco	-20
0	1433	Ruffed Grouse	35

1 (0 out of 4 Selected)

bird_seen_steps.txt

Walk_Measured_Steps

FID	Shape *	Code *
0	Polyline M	0

Make Route Event Layer

Input Route Features
Walk_Measured_Steps

Route Identifier Field
Code

Input Event Table
bird_seen_steps.txt

Event Table Properties

Route Identifier Field
ID

Event Type
POINT

Measure Field
Steps

To-Measure Field

Layer Name or Table View
Bird_Locations

Offset Field (optional)
Distance

