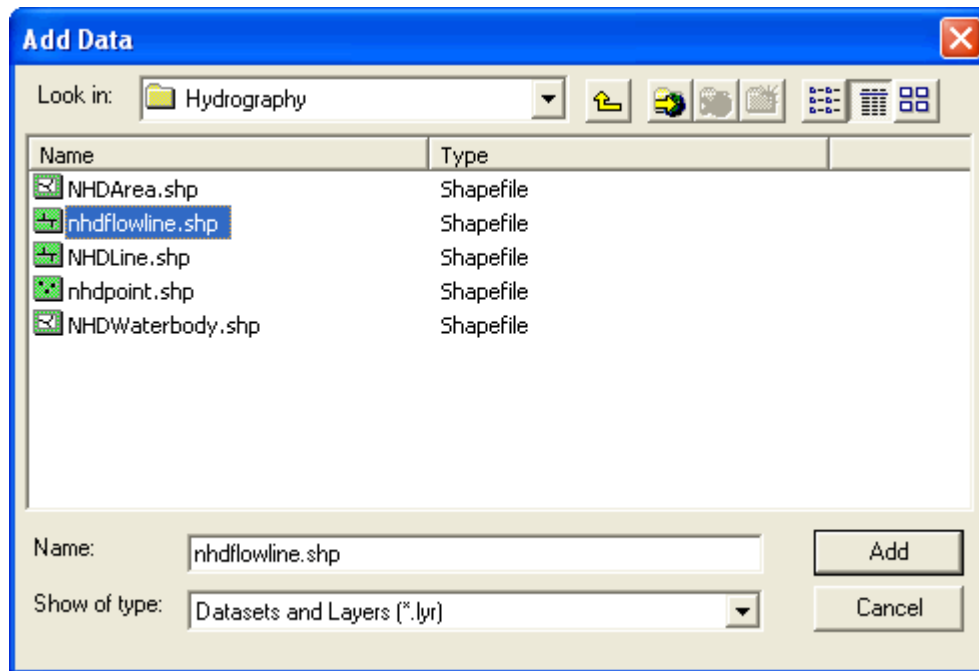
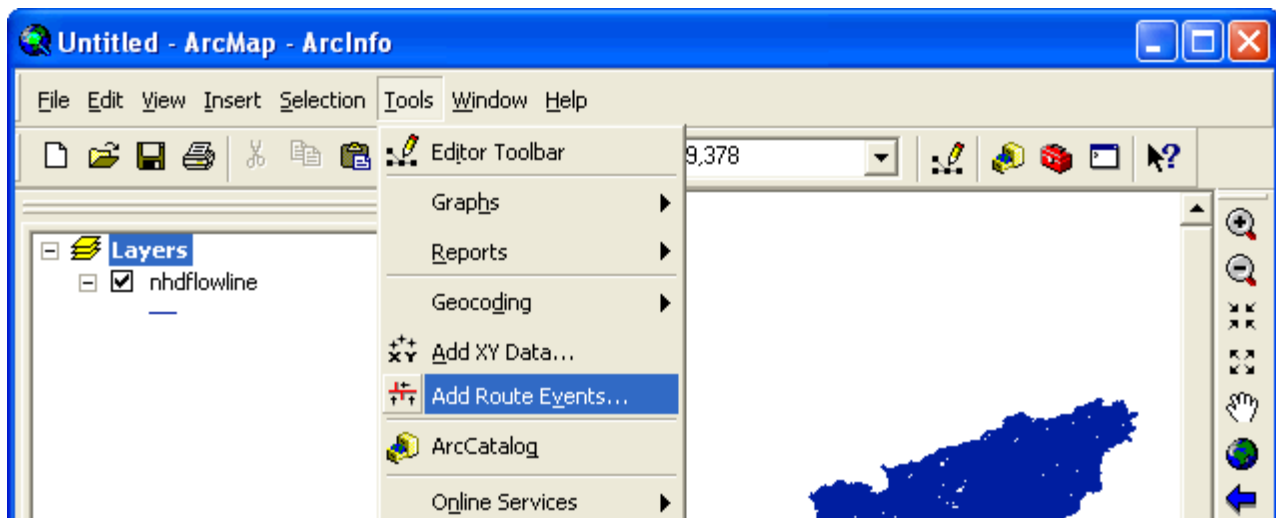


Exercise # 5: NHDPlus Network Analysis – Last Updated on 4/30/2008

1. Start ArcMap.
2. Using ArcMap,
 - a. Use the **File, Add Data** menu. In the **Add Data** dialog, navigate to the \NHDPlus06\Hydrography folder, select NHDFlowline.shp, and click **Add**.



3. To load the exercise events into the map, use the **Tools** menu choice “Add Route Events”.



- Use the **Route Reference** pull down to select the NHD route feature class which is **NHDFlowline**
- Use the **Route Identifier** pull down to select the NHD route identifier which is **ReachCode**.
- Use the **Event Table Folder** button to browse to the \NHDPlus06 folder and select **Discharge_Points.dbf**.
- Use the **Route Identifier** pull down to select **RCH_CODE** as the route identifier in the event table.
- Select the “Point Events” option.
- Use the **Measure** pull down to select **P_Meas**.
- Leave the remaining items at their default values.
- Click **OK**.

Add Route Events

Route events are objects with locations measured along routes. A table containing route events can be added to the map as a layer.

Specify the routes referenced by the events in the table

Route Reference: nhdfowline

Route Identifier: REACHCODE

Specify the table containing the route events

Choose a table from the map or browse for another table.

Event Table: E:\NHDPlusExercises\NHDPlus06\...

Route Identifier: RCH_CODE

Choose the type of events the table contains:

Point Events: Occur at a precise location along a route

Line Events: Define a discontinuous portion of a route

Choose the measure field for point events:

Measure: P_MEAS

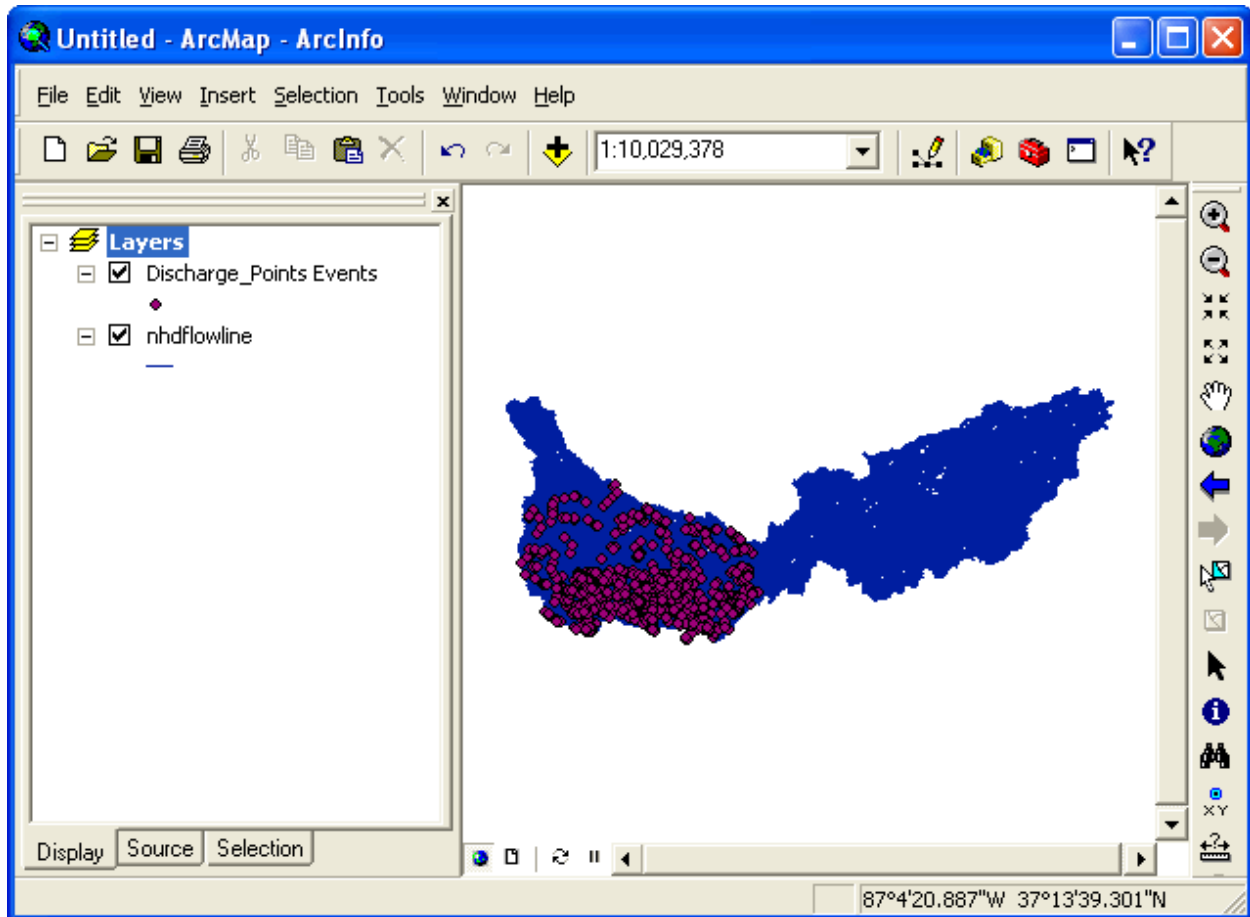
Choose the offset field. Events can be offset from their routes.

Offset: <None>

Warn me if the resulting layer will have restricted functionality

Advanced Options... OK Cancel

- i. A new feature class called Discharge_Points Events will be added to the map.



- j. Repeat step 4a to load the Impaired Waters linear events to the map. Impaired Waters represent stretches of the stream network that have been monitored and found to be impaired. The event table is located at \\NHDPlus06\Impaired_Waters.dbf. Change the event type to Line Events.

Add Route Events

Route events are objects with locations measured along routes. A table containing route events can be added to the map as a layer.

Specify the routes referenced by the events in the table

Route Reference: nhdflowline

Route Identifier: REACHCODE

Specify the table containing the route events

Choose a table from the map or browse for another table.

Event Table: E:\NHDPlusExercises\NHDPlus06\I

Route Identifier: RCH_CODE

Choose the type of events the table contains:

Point Events: Occur at a precise location along a route

Line Events: Define a discontinuous portion of a route

Choose the measure fields for line events:

From-Measure: F_MEAS

To-Measure: T_MEAS

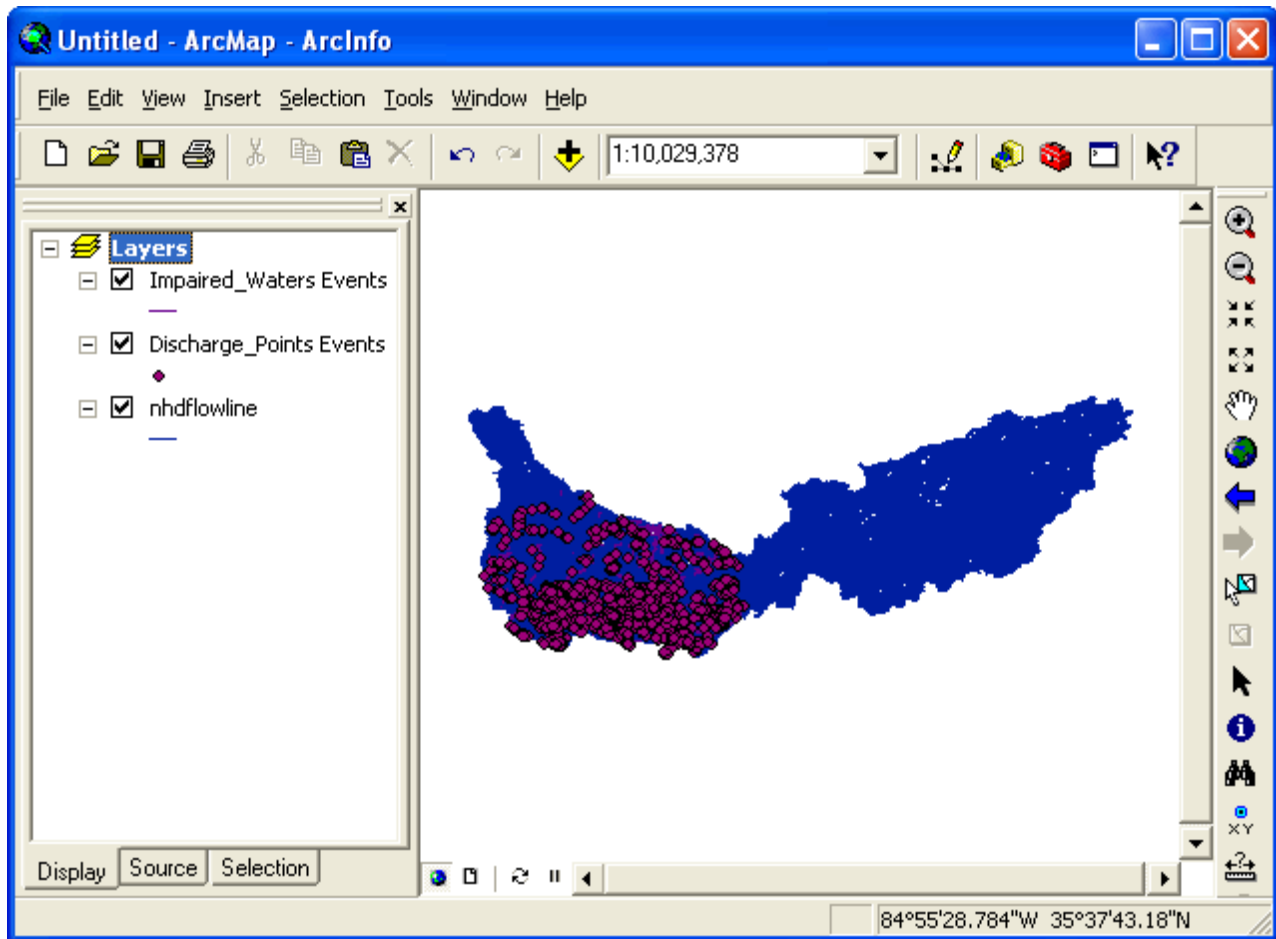
Choose the offset field. Events can be offset from their routes.

Offset: <None>

Warn me if the resulting layer will have restricted functionality

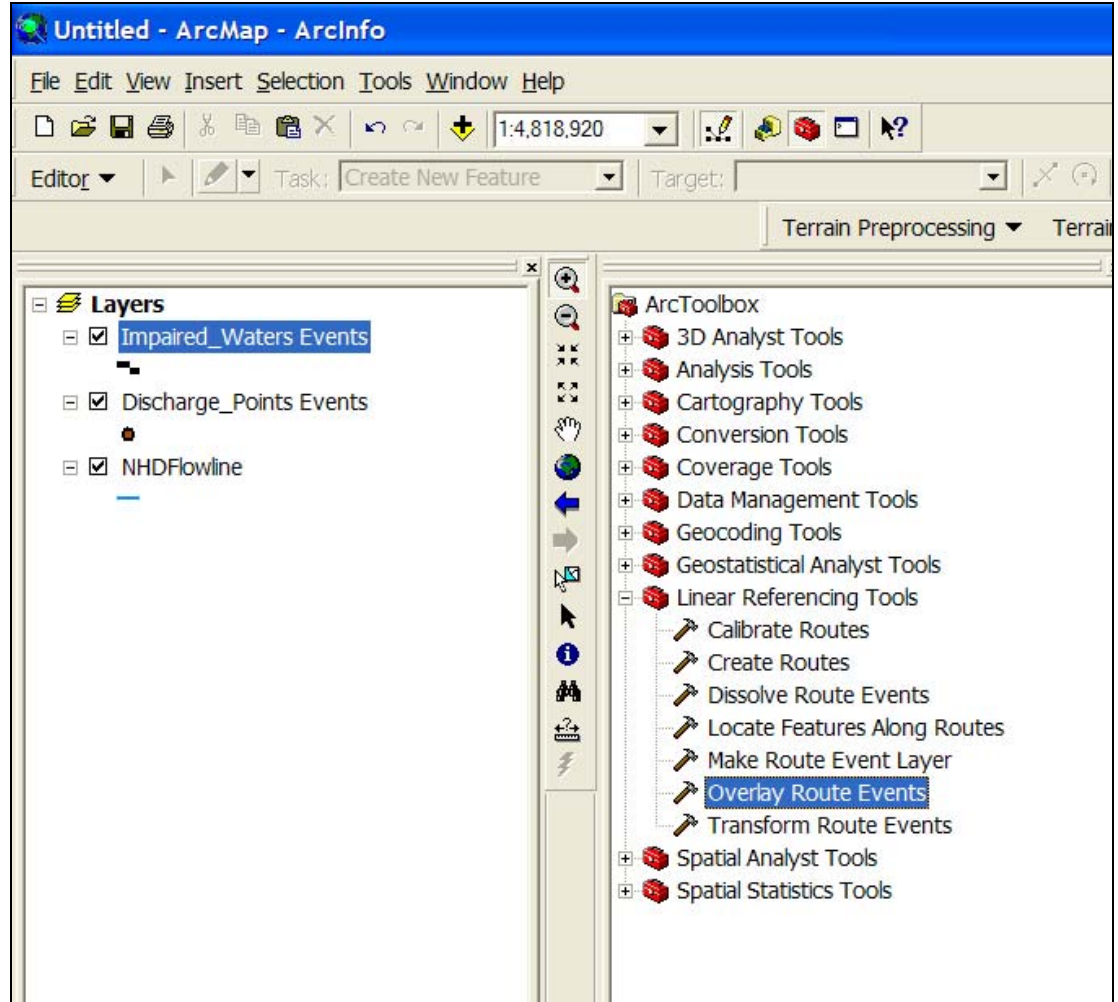
Advanced Options... OK Cancel

When Impaired_Waters Events are in the map, you may wish to symbolize them to make them more visible.



4. We are now ready to perform an analysis. The question that we want to answer is -- Which Discharge Points are located on Impaired Waters? We will do this with a tool in ArcToolbox.

- a. Double click on **Overlay Route Events**



- b. In the **Overlay Route Events** dialog,
- i. Use the **Input Event Table** pull down to select **Discharge_Points Events**.
 - ii. Use the **Route Identifier Field** pull down to select **RCH_CODE**.
 - iii. Use the **Event Type** pull down to select **POINT**.
 - iv. Use the **Measure Field** pull down to select **P_MEAS**.
 - v. Use the **Overlay Event Table** pull down to select **Impaired_Waters Events**.
 - vi. Use the **Route Identifier Field** pull down to select **RCH_CODE**.

Overlay Route Events

Input Event Table
Discharge_Points Events

Input Event Table Properties

Route Identifier Field
RCH_CODE

Event Type
POINT

Measure Field
P_MEAS

To-Measure Field

Overlay Event Table
Impaired_Waters Events

Overlay Event Table Properties

Route Identifier Field
RCH_CODE

Event Type
LINE

From-Measure Field
F_MEAS

To-Measure Field
T_MEAS

Type of Overlay
INTERSECT

Output Event Table
D:\NHDPlusExercises\NHDPlus06\ImpairedWater_Discharges.dbf

Output Event Table Properties

Route Identifier Field
RCH_CODE

Event Type
POINT

OK Cancel Environments... Show Help >>

- vii. Use the **From-Measure Field** pull down to select **F_MEAS**.
- viii. Use the **To-Measure Field** pull down to select **T_MEAS**.
- ix. Use the **Type of Overlay** pull down to select **INTERSECT**.
- x. Use the **Output Event Table** **Folder** button, to browse to the \NHDPlus06 folder and name the output event table **ImpairedWater_Discharges.dbf**.
- xi. Use the **Route Identifier Field** pull down to select **RCH_CODE**.
- xii. Use the **Measure Field** pull down to select **P_MEAS**.
- xiii. Allow all other options to take their default values.

Overlay Route Events

From-Measure Field
F_MEAS

To-Measure Field
T_MEAS

Type of Overlay
INTERSECT

Output Event Table
D:\NHDPlus06\ImpairedWater_Discharges.dbf

Output Event Table Properties

Route Identifier Field
RCH_CODE

Event Type
POINT

Measure Field
P_MEAS

To-Measure Field

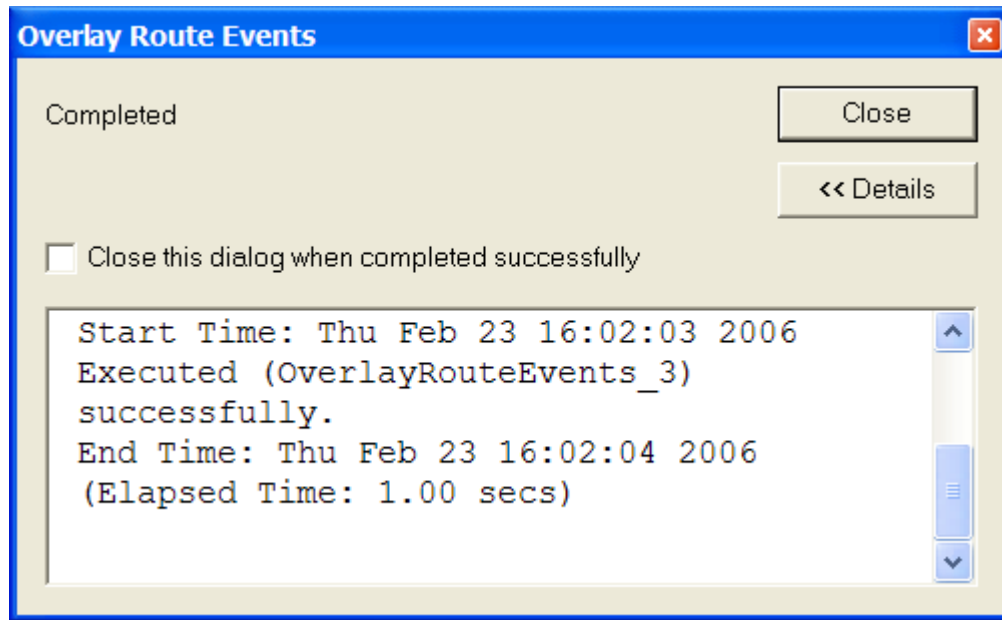
Keep zero length line events (optional)

Include all fields from input (optional)

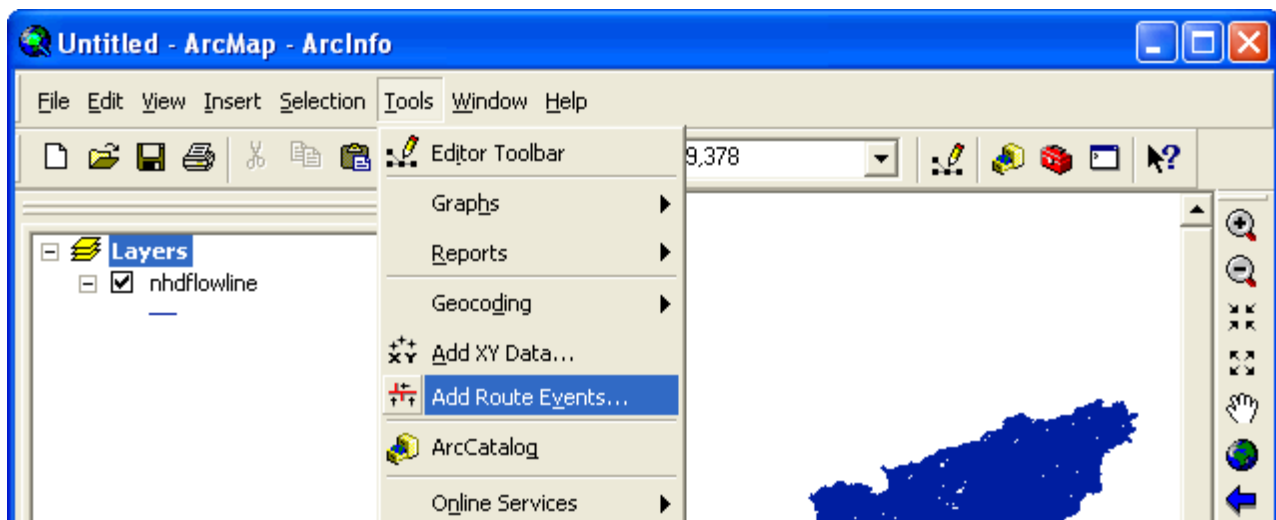
Build index (optional)

OK Cancel Environments... Show Help >>

- xiv. Click **OK**. The **Overlay Route Events** will execute. When the word “**Completed**” appears in the dialog, click **Close**.



- c. We have just created a new point event table that contains all of the Discharge Points that fall on Impaired Waters. To add the new event table to the map, use the **Tools** menu choice “Add Route Events”.



- d. Use the **Route Reference** pull down to select the NHD route feature class which is **NHDFlowline**
- e. Use the **Route Identifier** pull down to select the NHD route identifier which is **ReachCode**.

- f. Use the **Event Table Folder** button to browse to the \NHDPlus06 folder and select **ImpairedWater_Discharges.dbf**.
- g. Use the **Route Identifier** pull down to select **RCH_CODE** as the route identifier in the event table.
- h. Select the “Point Events” option.
- i. Use the **Measure** pull down to select **P_Meas**.
- j. Leave the remaining items at their default values.
- k. Click **OK**.

Add Route Events

Route events are objects with locations measured along routes. A table containing route events can be added to the map as a layer.

Specify the routes referenced by the events in the table

Route Reference: nhdflowline

Route Identifier: REACHCODE

Specify the table containing the route events

Choose a table from the map or browse for another table.

Event Table: D:\NHDPlusExercises\NHDPlus06\...

Route Identifier: RCH_CODE

Choose the type of events the table contains:

Point Events: Occur at a precise location along a route

Line Events: Define a discontinuous portion of a route

Choose the measure field for point events:


Measure: P_MEAS

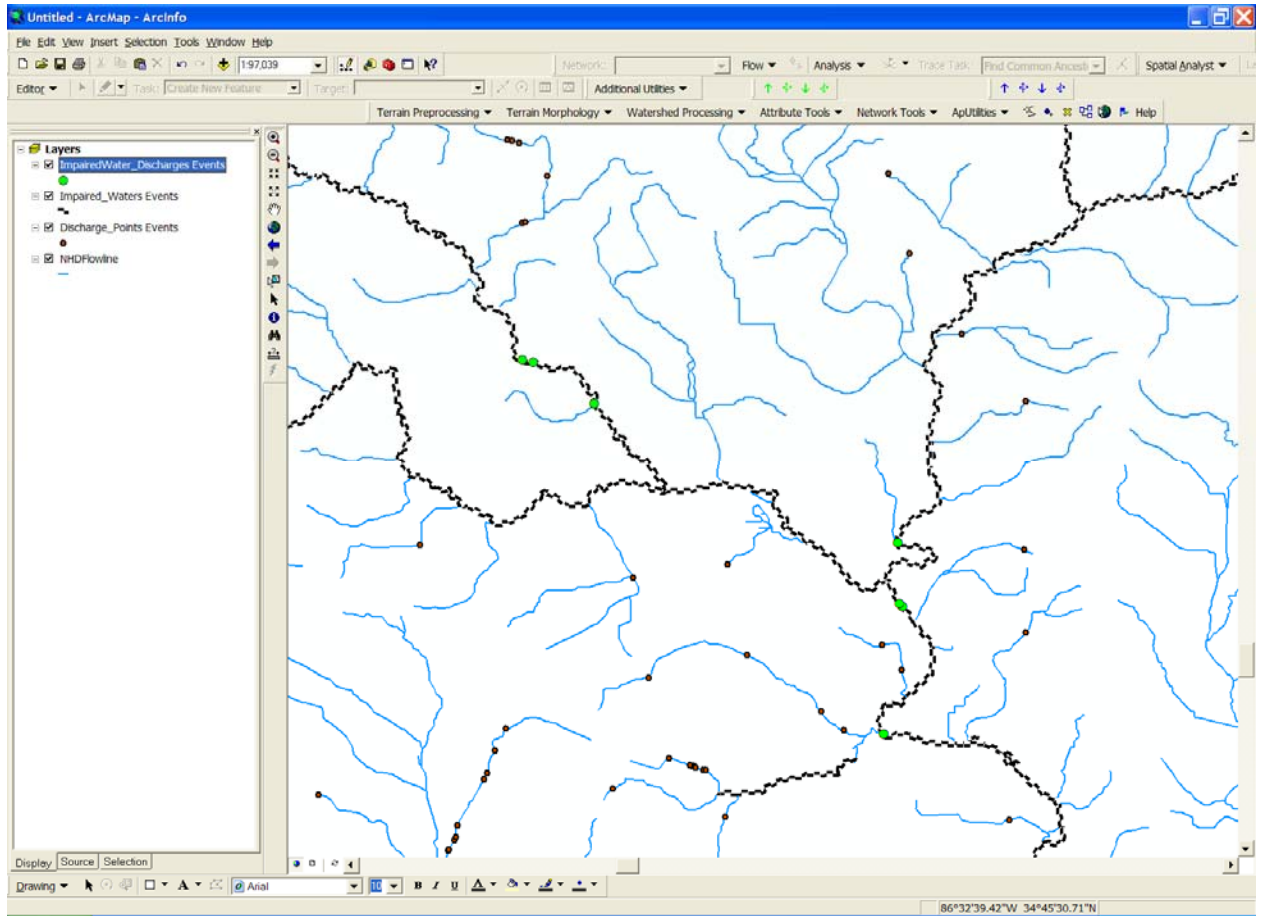
Choose the offset field. Events can be offset from their routes.

Offset: <None>

Warn me if the resulting layer will have restricted functionality

Advanced Options... OK Cancel

- l. The ImpairedWater_Discharges Events is now added to the map. You may wish to symbolize these events to make them more visible and then zoom-in  to see that, in fact, these are the Discharge Points that fall on Impaired Waters.



This is just one of many analyses that can be done with the NHDPlus network and data that has been linked to the network.