

Instructions for creating a Stream Network using USGS DEMs
(modified from MORAP “Fixing areas of low stream density in the NHD” instructions 5/02)

ArcView

Add Extensions

File

Extensions

Check Spatial Analyst, Hydro Modeling (sample), Hydro Modeling v 1.1

Add NHD drainage

Change projection

Convert NHD drainage to a grid

Make NHD drainage active

Analysis

Convert to Grid

Cell Size: 60

Output Extent: Same as drain

Pick Field for Cell Values: Drain#

Reclassify NHD grid

Make NHD grid active

Analysis

Classify

Number of Classes: 1

Data = 10

No Data = 0

Add DEM to view

Set Map Extent

Make reclassified NHD active

Analysis

Properties

Analysis Extent: Same as drain

Analysis Cell Size: Current Value

Analysis Cell Size: 60, Enter

(It's ok if the program changes “same as drain” to “current value” after clicking ok)

Calculate NHD area

Make Reclass of NHD active

Analysis

Map Calculator

DEM – Reclass of NHD grid

Evaluate

Fill Sinks

Make “Map Calculation 1” active

Hydro
Fill Sinks

Run Flow Direction

Make "Filled Map Calculation" active
Hydro
Flow Direction

Run Flow Accumulation

Make "Flow Direction" active
Hydro
Flow Accumulation

Create Stream Network

Make "Flow Accumulation" active
Hydro
Stream Network as Line Shape
Enter Minimum Number of Cells: 200
Select Flow Direction Grid Theme: Flow Direction

To View Stream Network

View
Properties
Projection
Do you want to attempt to project this data? Yes
Category: Projections of the World
Type: Geographic

ArcCatalog

Convert Shapefile to Coverage

Navigate to saved <NHD name net> file
Right click on file
Export
Shapefile to Coverage
Output Coverage: Navigate to C:\Workspace\HUC # folder
Name <HUC net>

Copy and paste coverage to C:\Workspace

ArcInfo

List Coverages in Workspace

Arc: abbreviations on
Arc: works <8 digit HUC>
Arc: lc (list coverages)

Create a copy of <NHD name> file

Arc: copy <NHD name> <NHD name copy>
(ex: "copy mverdi mverdicopy")

Buffer the HUC file <HUC name>

Arc: buffer <HUC name> <HUC name buf> # # 50 0.1 line round
(creates a buffer around the HUC and saves it as “HUC name buf”, ex:
mverdibuf. Note: Space between HUC name buf> and #)

Add the Stream Network to the outside of the NHD buffer

Arc: identity <stream network> <HUC name buf> <HUC name id> line 2.0 join
(creates “HUC name id”, ex: mverdiid)

See if buf and id files were successfully added to the workspace

Arc: lc

Open ArcEdit

Arc: ae

ArcEdit

Ae: ec <id>
(edit coverage “HUC name id” file)
Ae: de arc
(draw arcs for id file)
Ae: bc <buf> 4
(sets back coverage as the “HUC name buf” file in blue)
Ae: be arc
(background arcs for buf file)
Ae: display 9999 3
Ae: drawe arc
Ae: draw

Delete arcs in high density areas and ones outside of the watershed

Ae: ef arc
(edit feature arc)
Ae: sel all
Ae: Select polygon
(Draw a polygon around high density areas and areas not in the watershed.
9 to end.)
Ae: ds
Ae: delete
(This will reduce the number of arcs that will snap to the id file)
Ae: save

Delete arcs inside buffer

Ae: ef arc
Ae: asel <buf># GT 1
(Selects arcs inside buffer. Note: no space between <buf> and #)
Ae: ds
(Draw selection)
Ae: delete

Delete small “nub” arcs

```
Ae: ef arc
Ae: select length LT 100
    (selects arcs less than size 100)
Ae: ds
Ae: delete
    (This will reduce the number of arcs that will snap to the id file)
Ae: save
```

Snap remaining stream network arcs to id file

```
Ae: mape sel
Zoom in to one arc
Ae: snape <id> node <HUC name> arc add
    (Define a tolerance circle same size as buffer)
Ae: asel all
Zoom to full extent
Ae: snap
Ae: save
Ae: clean
Ae: ef arc
Ae: sel all
Ae: put <HUC name>
Do you want to append? y
```

Open <HUC name> and clean

```
Ae: ec <HUC name>
Ae: clean
    (Fix regions with unclosed rings)
Ae: drawe arc
Ae: draw
Ae: removeback <buf>
Ae: draw
Ae: save
```

Fix disconnects

```
Ae: ec <HUC name>
Ae: showdis
Ae: save
```

Fix eyeball loops (loops on main rivers)

```
Ae: fixloop
```

Code loops

```
Ae: codeloop <HUC name>
```

Remove extra nodes

```
Ae: ec <HUC name>
Ae: ef arc
Ae: sel all
Ae: unsplit none
Ae: save
```

