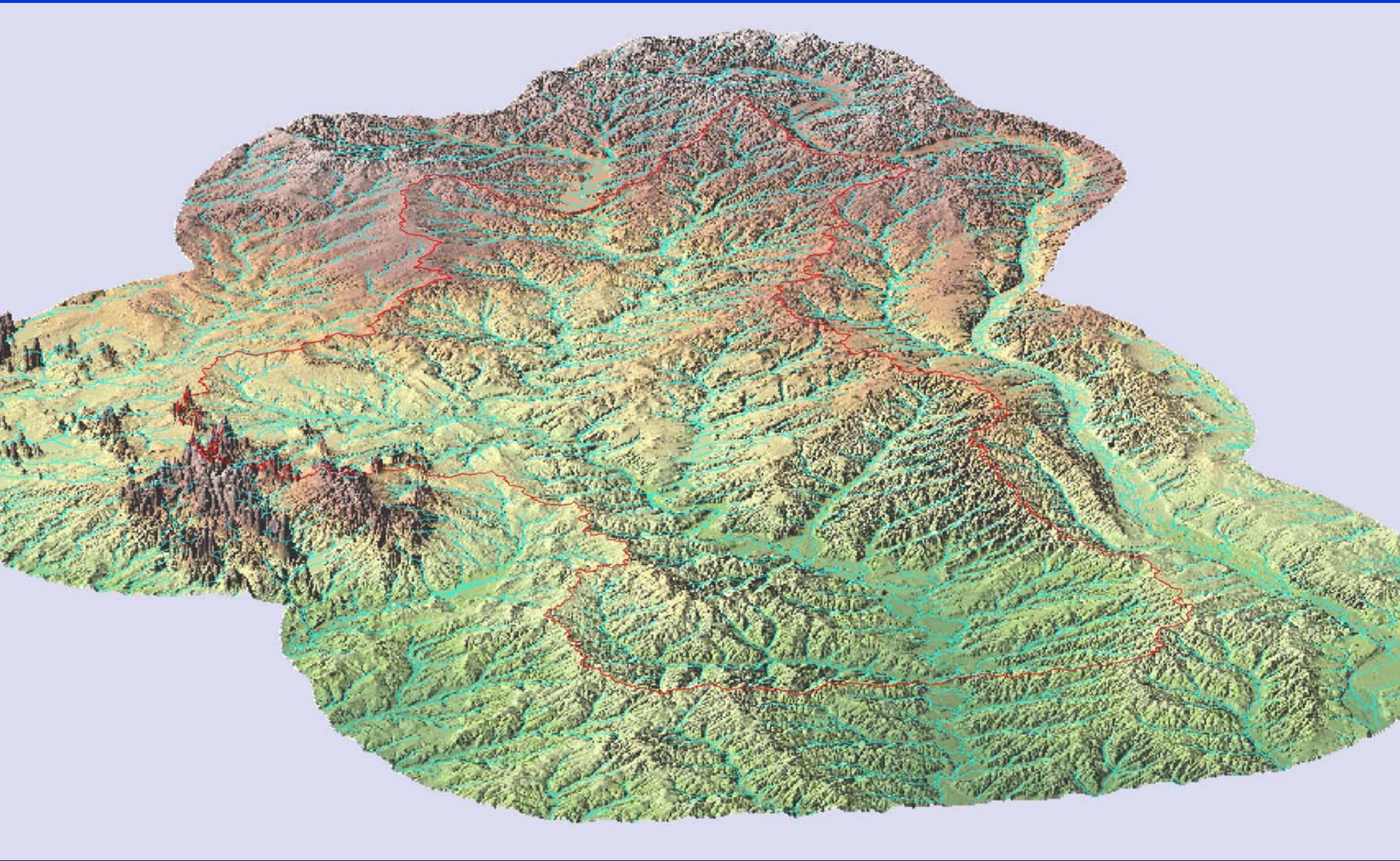
NED-H Stage 1 Methodology



“Semi-blind” processing

NED-H Stage 1

- Processing overview
- Derived layers
  - Raster
  - Vector
- Processing steps
  - Example HUC 11140103
- Special cases

NED-H Stage 1 Methodology

- Data layers being developed on a Cataloging Unit basis
  - 2,267 Cataloging Units in U.S.
  - Provides manageable size files for distribution to cooperators
- Arc/Info AML-based

Prerequisite data

- NED DEM
- DRG/DOQ
- Digitized HUCs
- NHD/DLG streams

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NED-H Dataset Layers - Raster

- Hydrologically conditioned DEM
- Flow direction grid
- Flow accumulation grid
- Shaded relief
- Difference grid

Secondary grids, provided via formula/button(?)

  - Slope
  - Aspect
  - Compound Topographic Index

NED-H Dataset Layers -Vector

- "Synthetic" streamlines
- Reach catchments
- Seed points
  - Potential seeds
  - Actual seeds used to mimic HUC
    - Nationwide seed coverage
  - Reach-catchment seeds
- Sinks polygon coverage
- NED metadata polygons

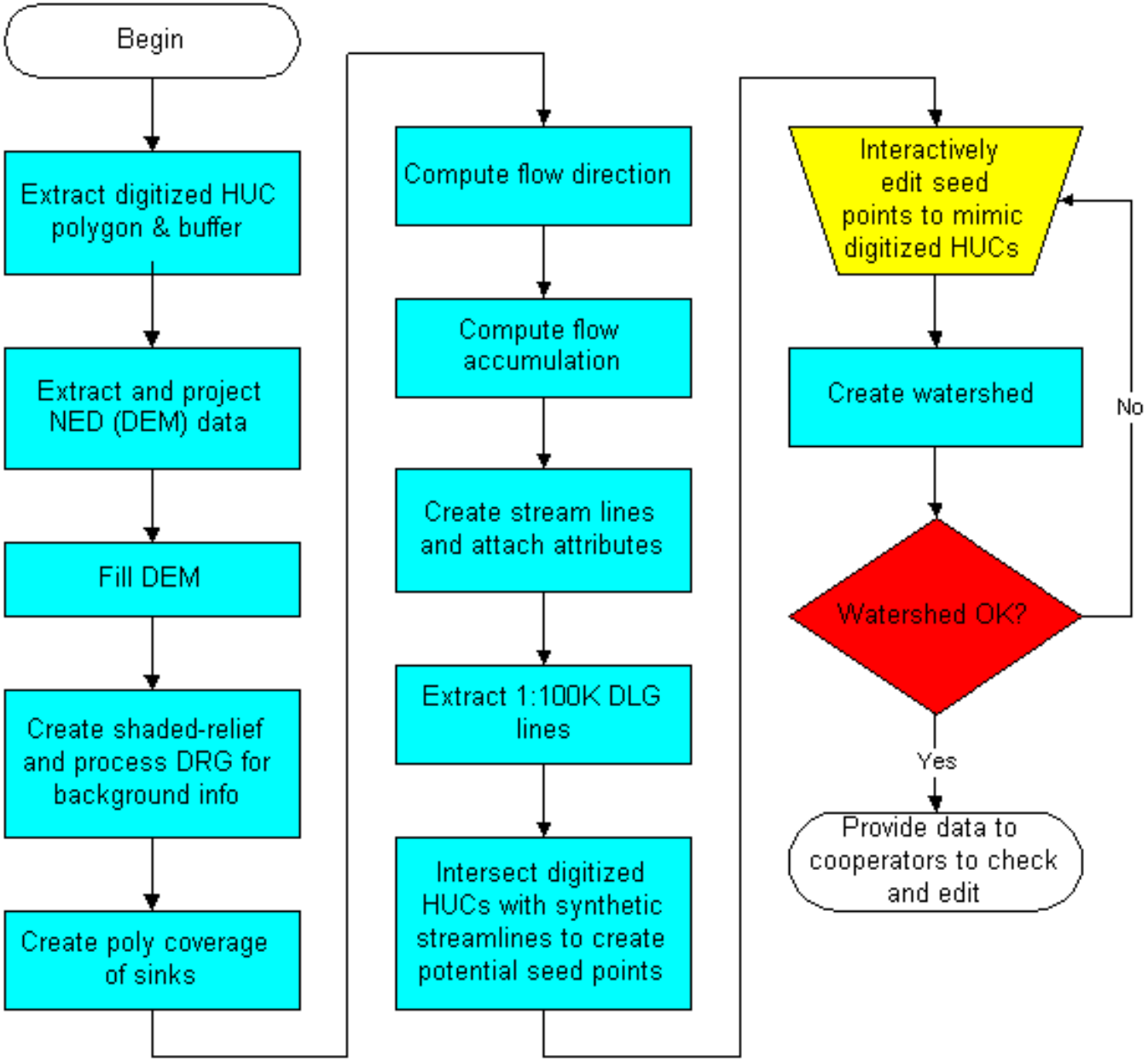
Processing Steps

- Extract digitized 1:250K HUC polygon
- Buffer polygon 25,000 meters
- Extract NED tiles and project into Albers
- Fill sinks
  - Create polygon coverage of sinks
- Create flow direction grid
- Create flow accumulation grid

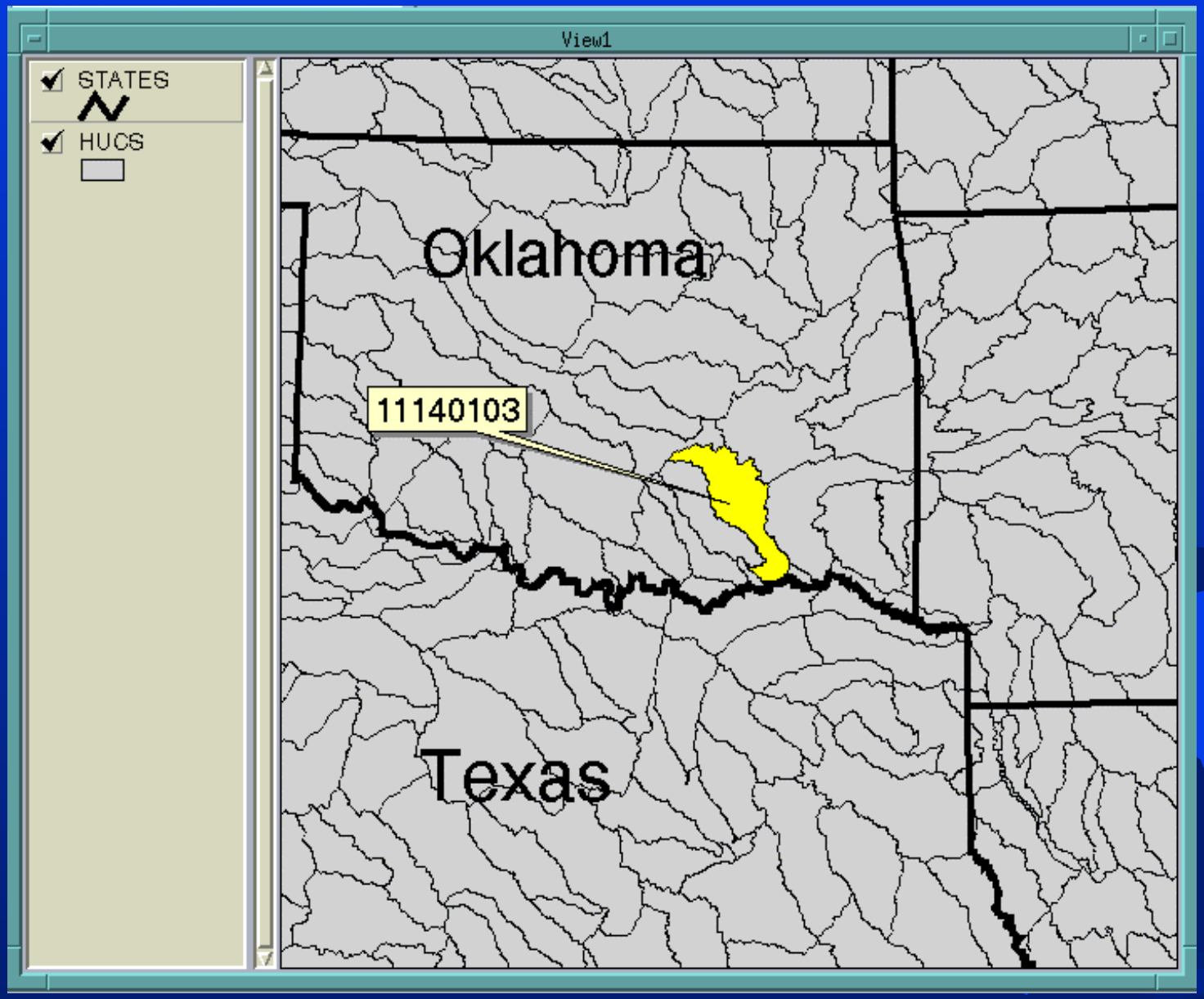
Processing Steps (continued)

- Create synthetic streamlines
  - Attach flow accumulation and other attributes
- Extract 1:100K DLG stream lines (or NHD)
- Generate potential watershed seed pts by intersecting synthetic streams with WRD HUCs
- Interactively edit seed pts (add/move/del)
  - Verify that seeds match those of adjacent HUCs
- Create watershed (mimic original HUC)
- Fix gross blunders in watershed

NED-H Stage 1 Processing Steps



Example Watershed Location



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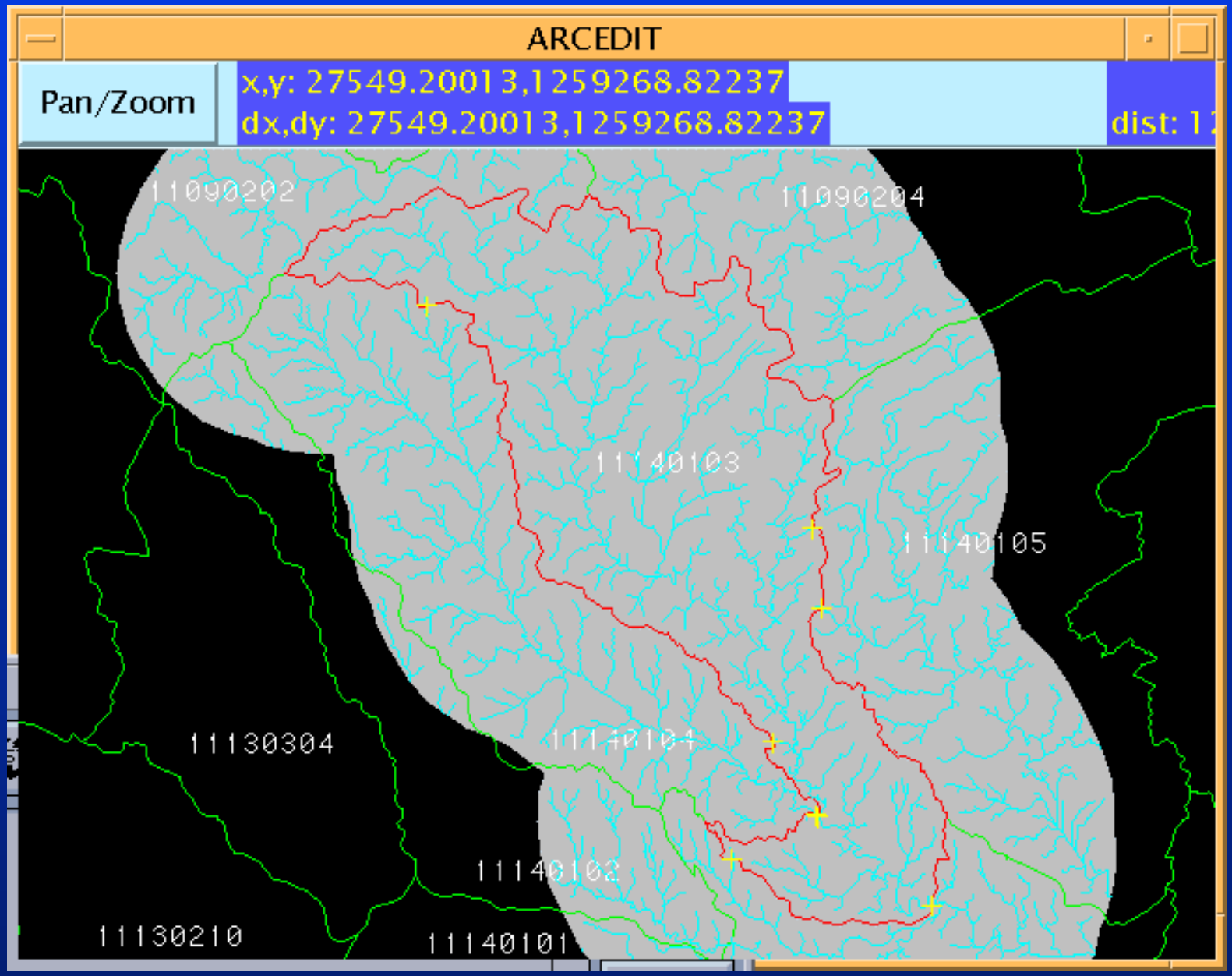
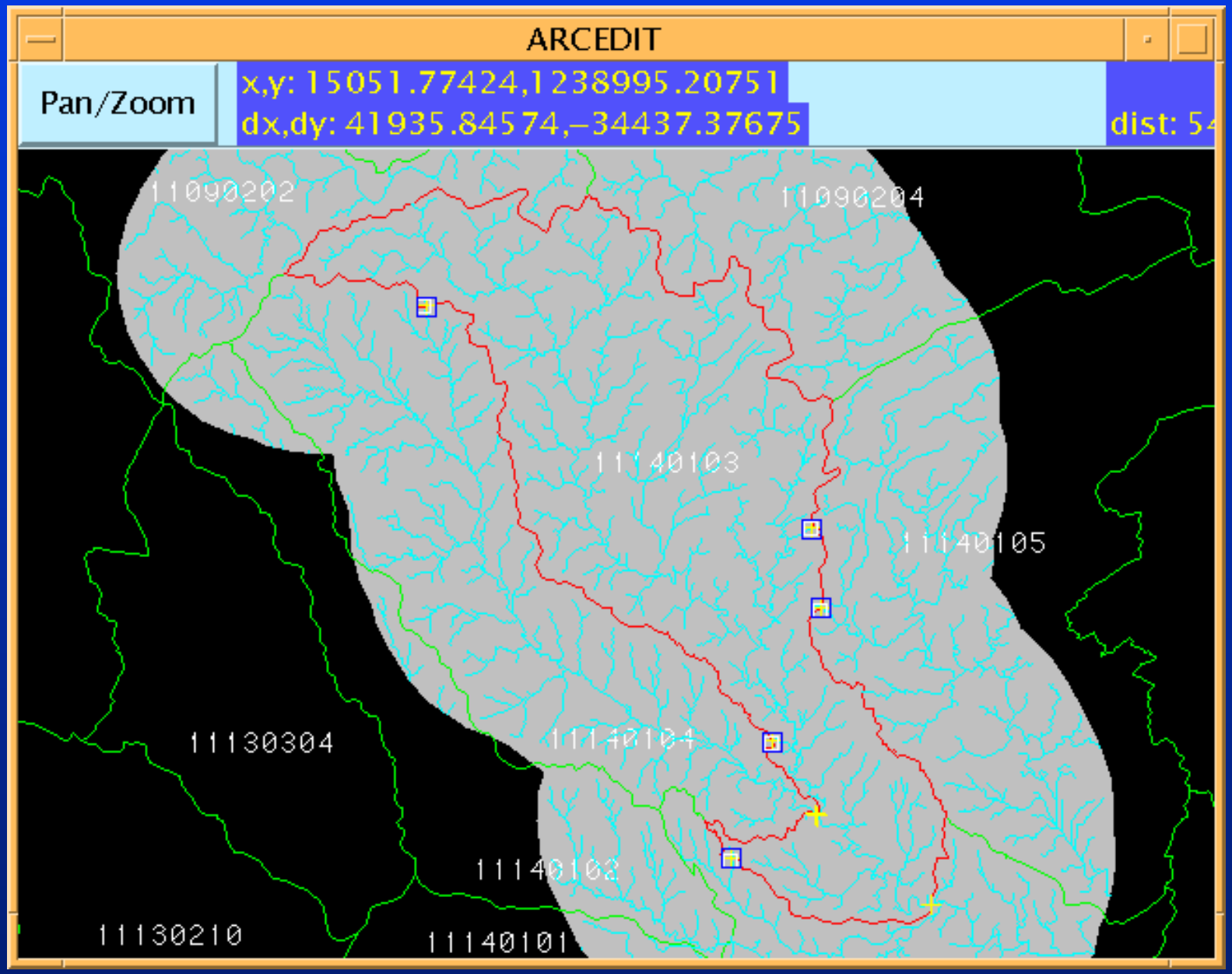
otential Seed Points

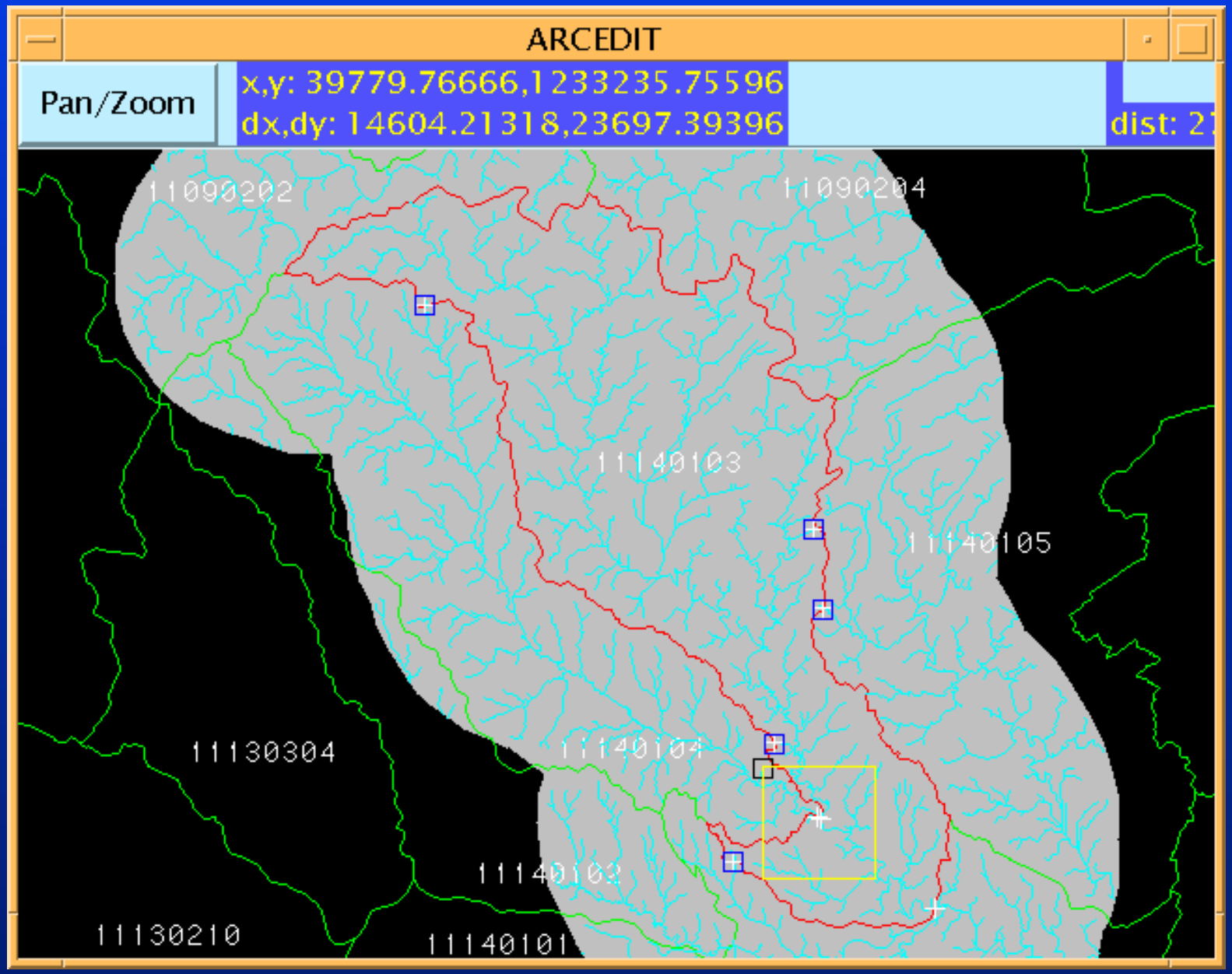


lue points to be deleted

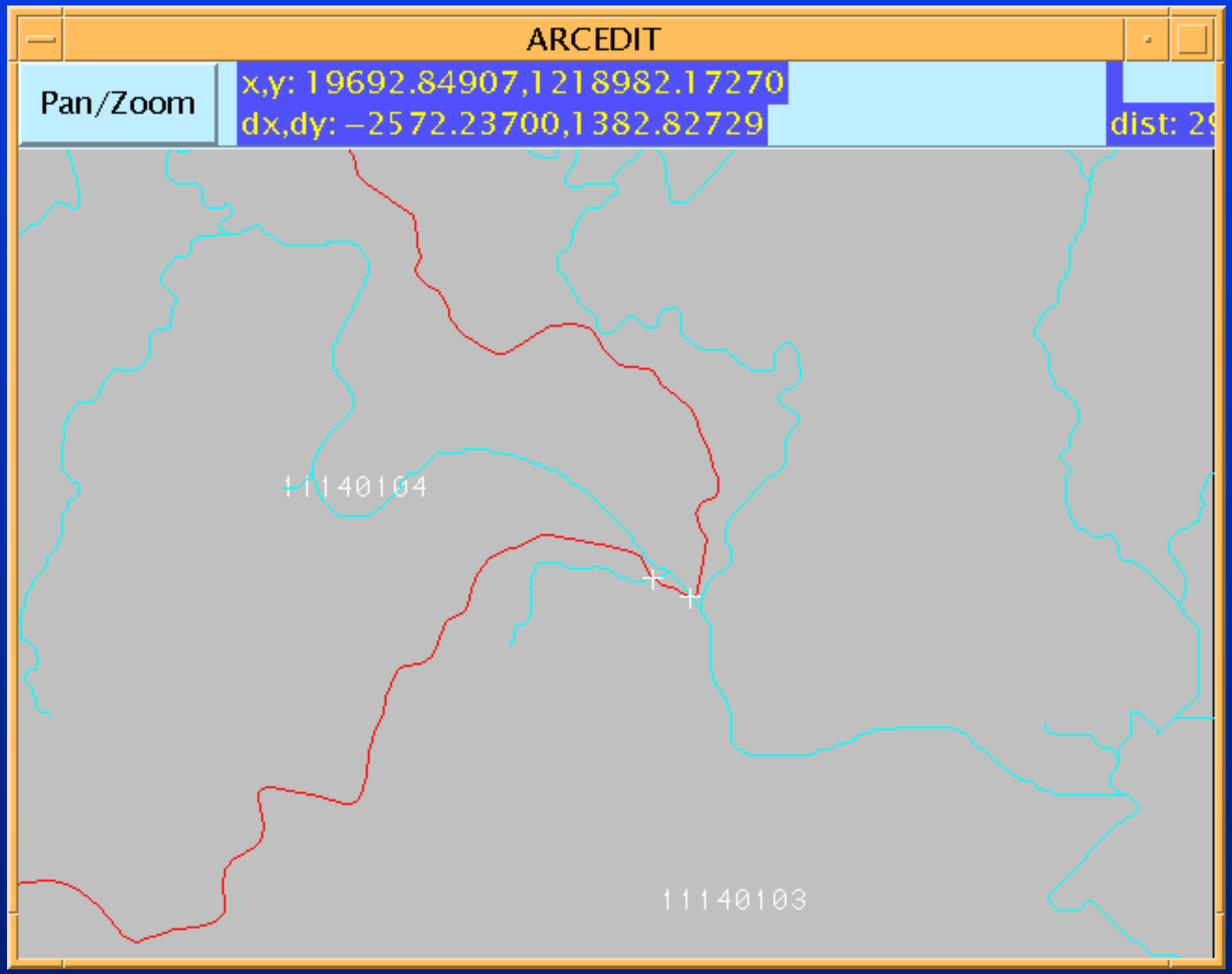


ake sure points stay deleted

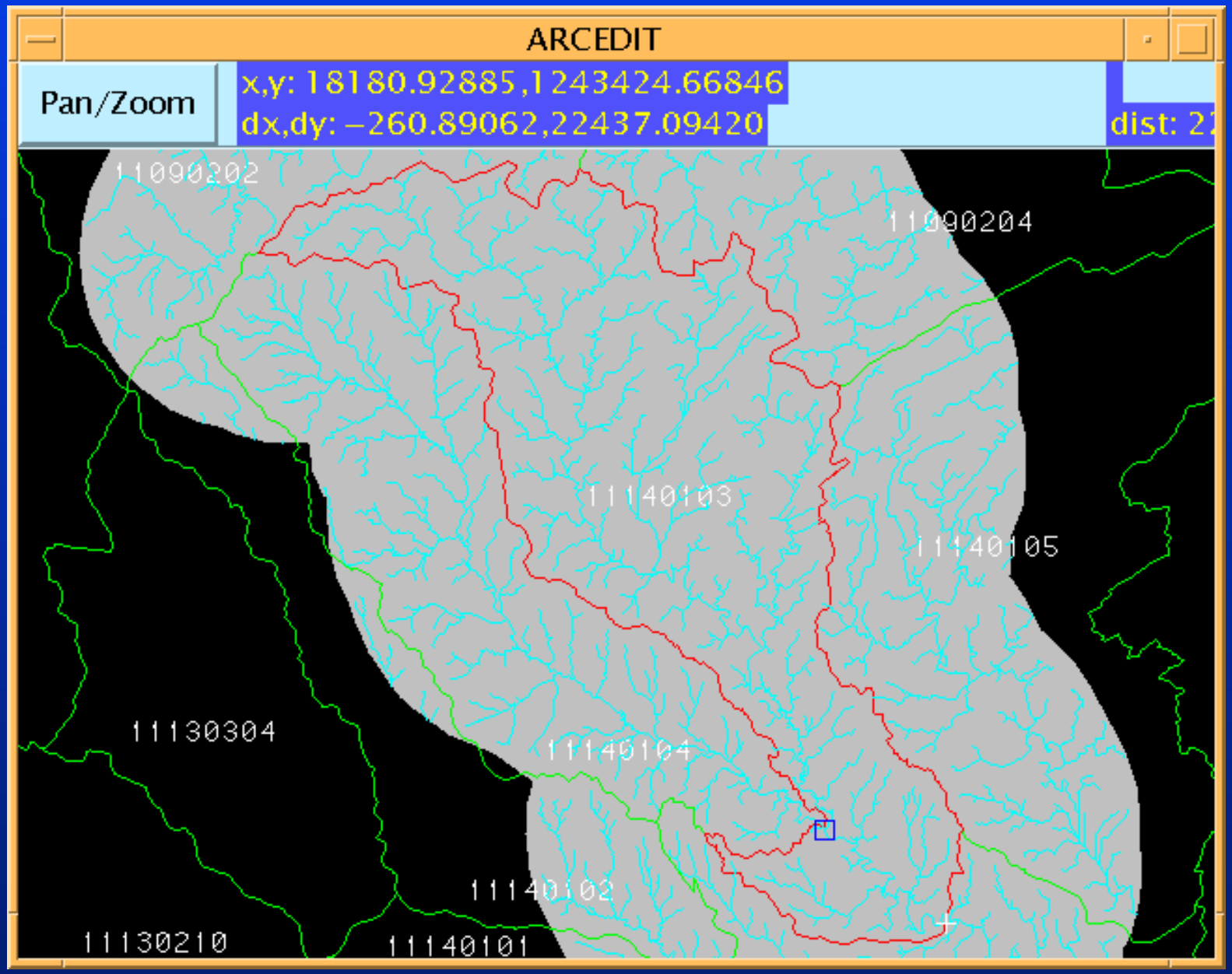
oom in to area in yellow box



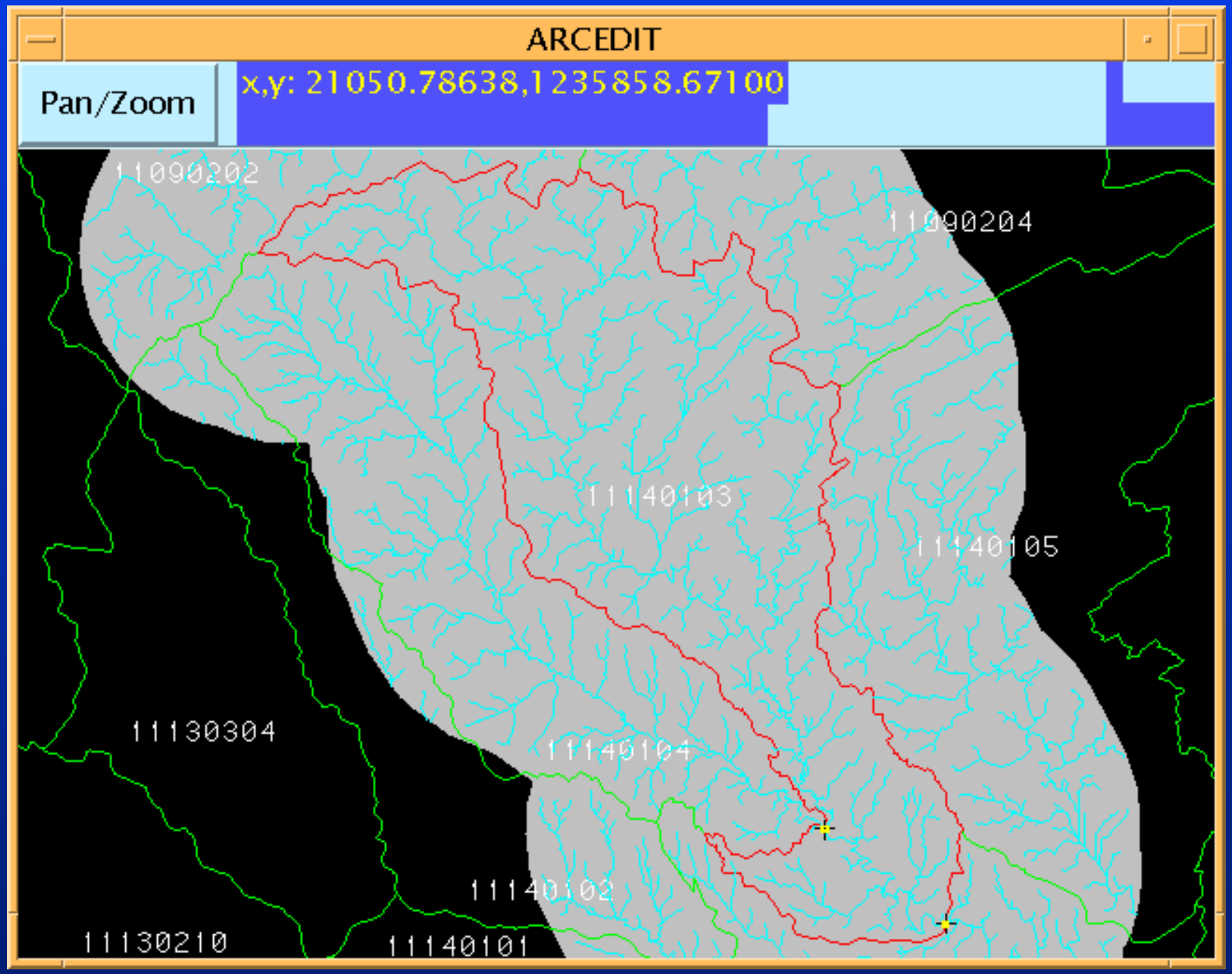
elete point on short tributary

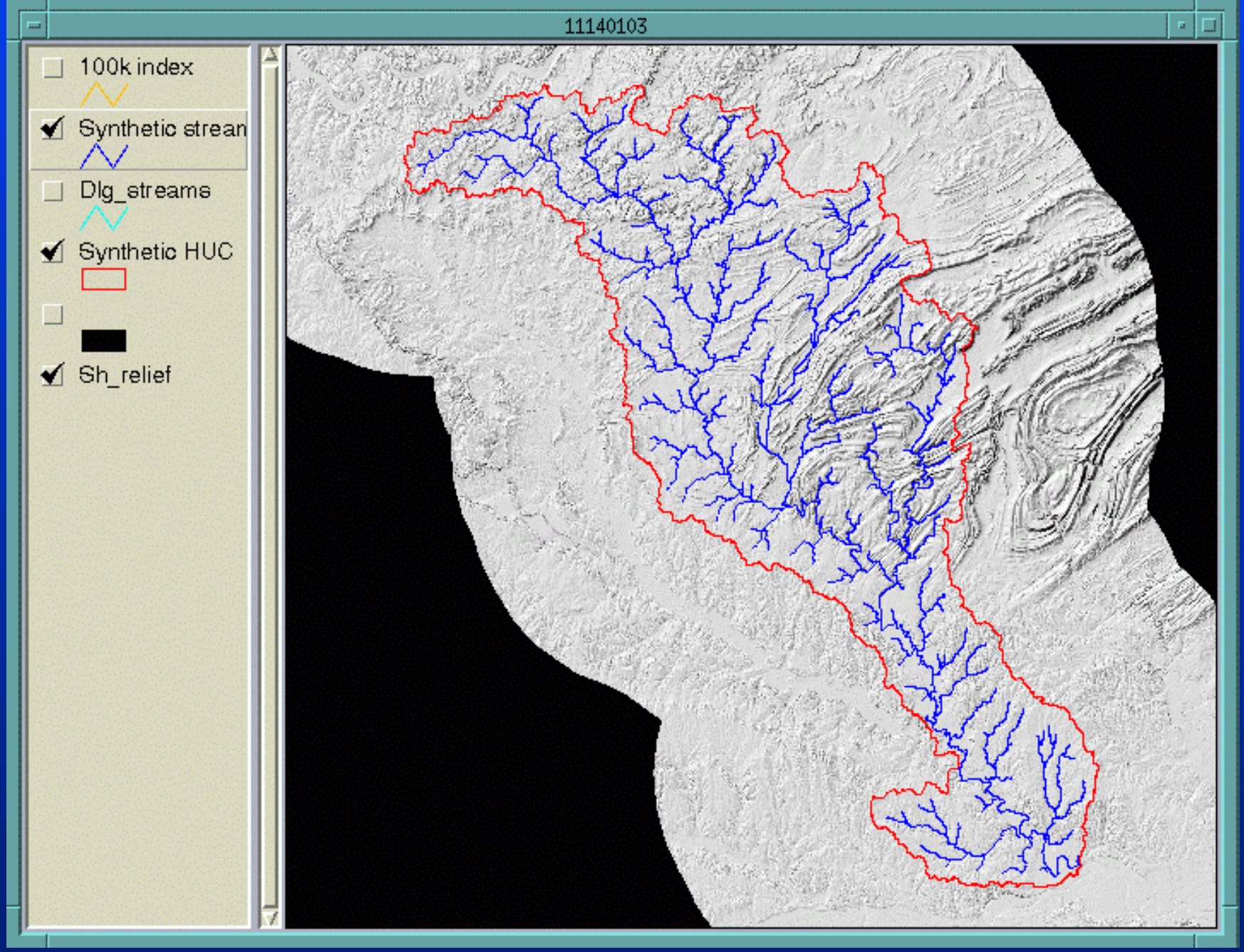


elect blue point and calc huc# = 11140104



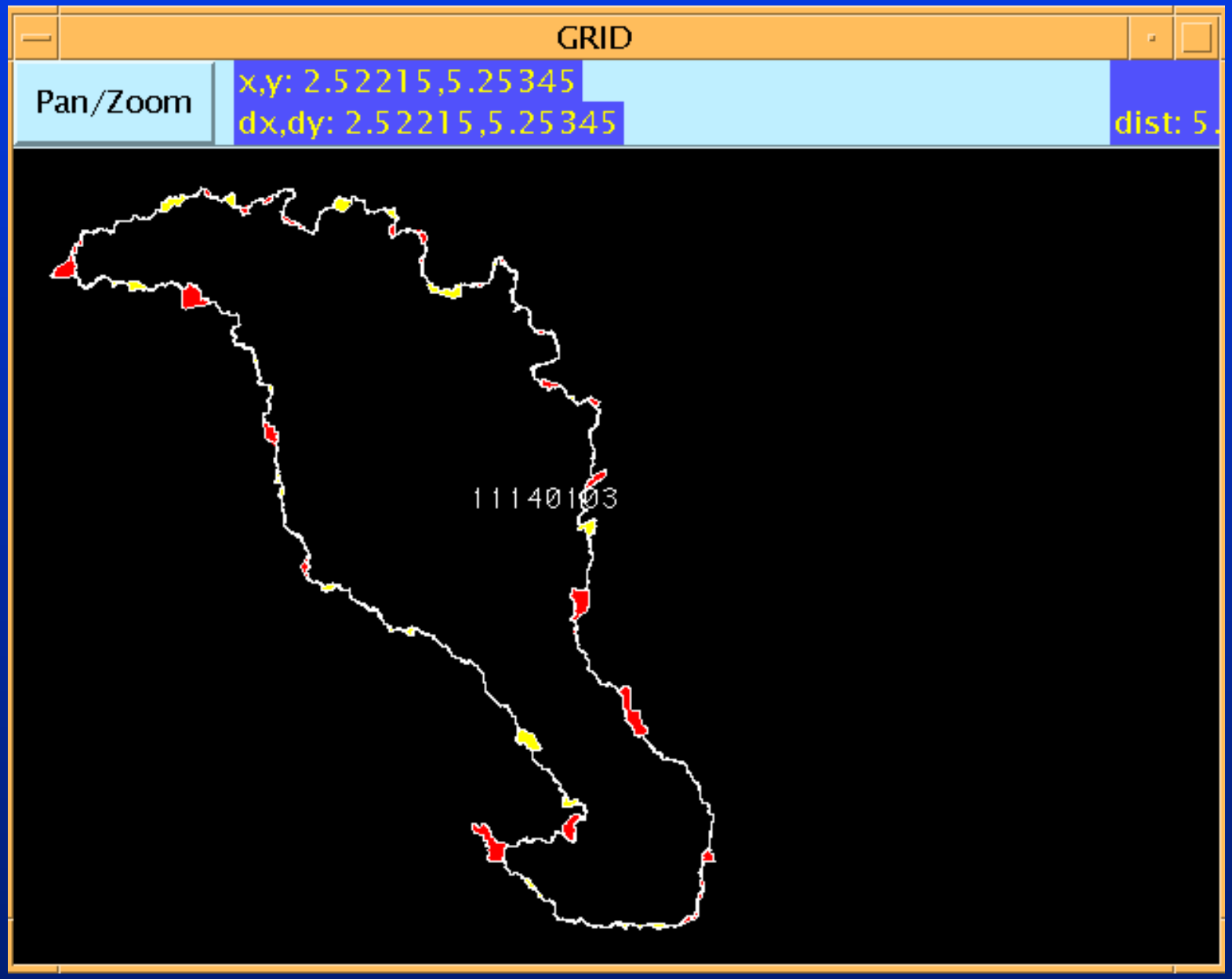
Watershed seed points





NED-H Synthetic Streamlines & Basin Boundary

Mapped vs. Generated Hydrologic Unit Boundaries



Mapped vs. Generated Hydrologic Unit Boundaries

```
blue
Mapped CU area: 3719241216.0000000 m**2
Generated CU area: 3674466000.0000000 m**2
Percent (Generated over Mapped): 98 %

Drainage Basin Boundaries (CU 11140103)
Total Length of CU Boundary: 673680 m
Length of Generated Basin Boundary in 1000 m buffer: 648712 m
Percent Agreement: 96 %

Cataloging Unit Dimension: 1.703210634823
DEM-Derived Unit Dimension: 0.8096306196187

Errors of inclusion shown in yellow
Errors of exclusion show in  red

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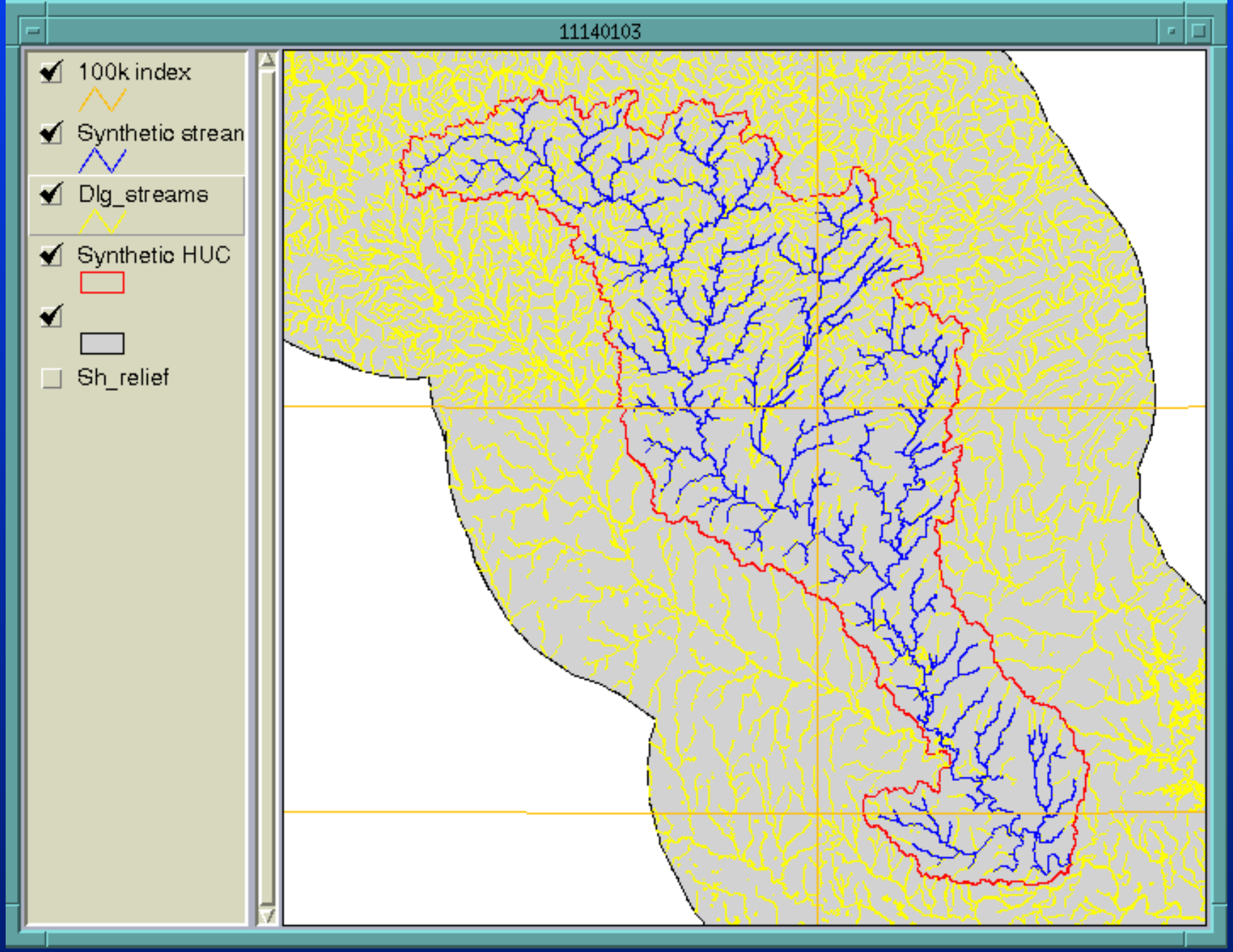
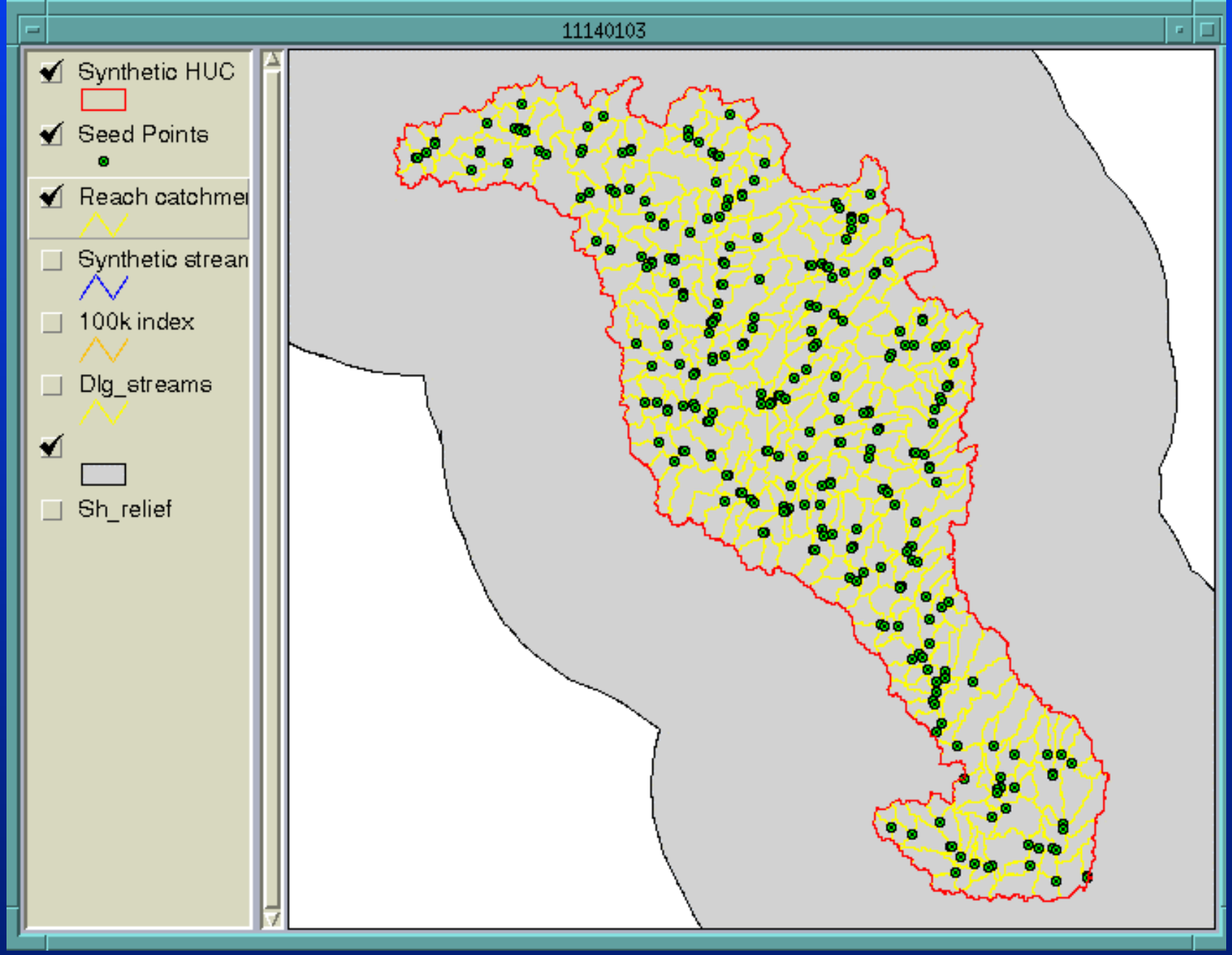
Mapped vs. Generated Hydrologic Unit Boundaries



Drainage Density Differences Between NED-H & DLG



Reach Catchments

Storage, browse, and delivery

- Data to be stored in SDE
- ArcIMS will be used to provide web-based browsing and ordering/downloading

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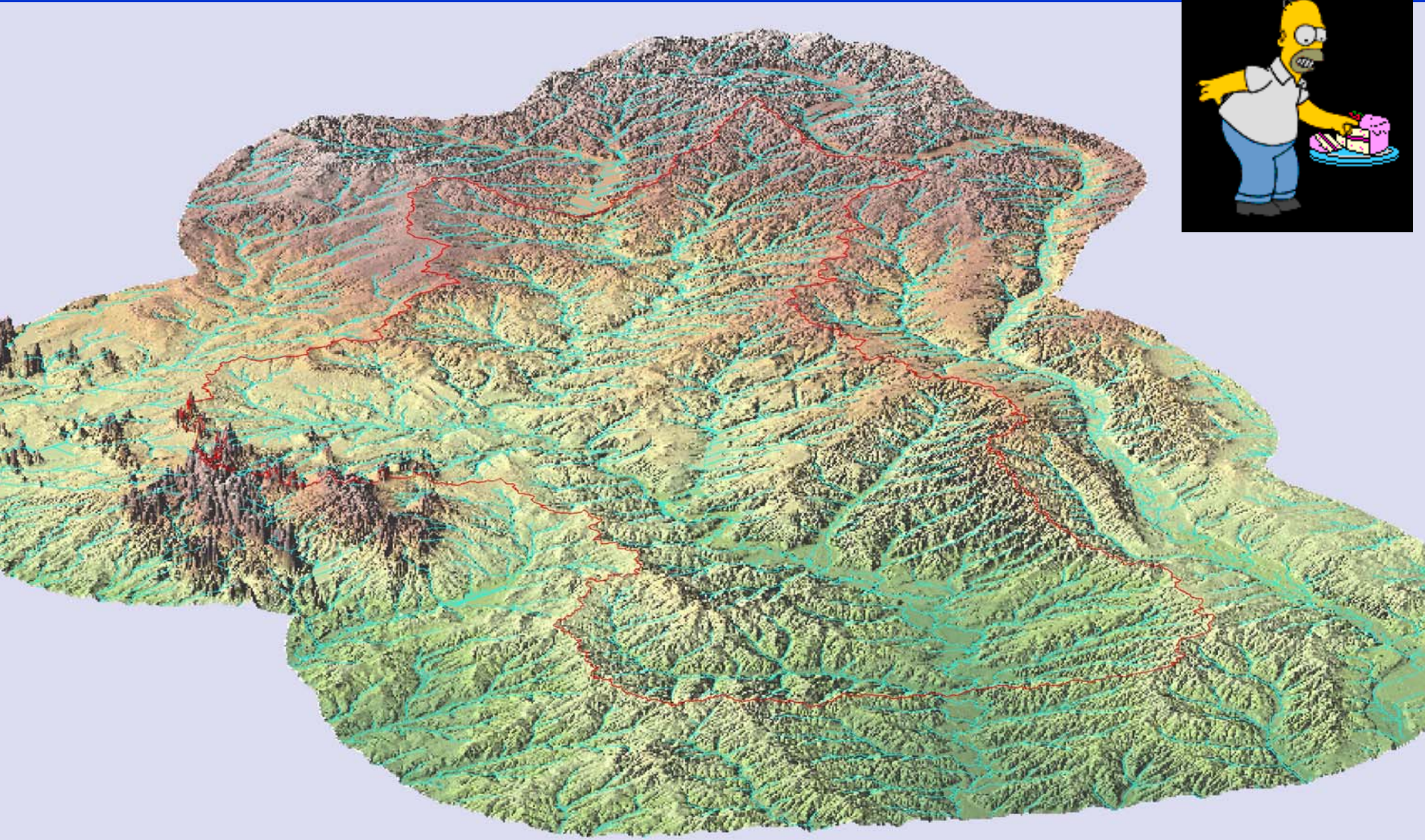
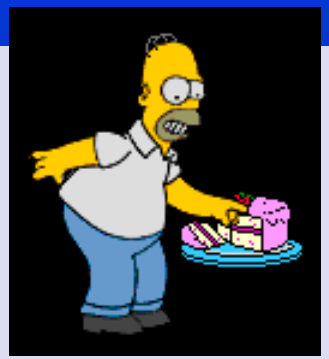
Special cases

- Flat areas
- Coastal areas
- Divergent flow

✓ Use grid-to-grid "snapping" for proper overlay

- Man-made hydrologic control, e.g.
  - Roads
  - Culverts
  - Levees
  - Canals
- High-resolution elevation data (10-Meter DEM, Lidar, etc.)

USG
science for a changing