

Australian Hydrological Geospatial Fabric (Geofabric) Tutorial

Use the Pfafstetter table to extend
catchment attribution

Version 2.1 – November 2012



Australian Government
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1 Introduction

This tutorial replaces the tutorial “Extending AHGFCatchment attribution”. The content provides additional explanation about Hydrology Reporting Regions and Australian Water Resource Council (AWRC) information.

1.1 Surface Catchments

The feature classes included in Surface Catchments are designed to represent geographic surface boundaries that have a hydrological relationship to other surface water features included in Surface Network. There may be cases where it is desirable to extend the supplied set of AHGFCatchment attributes with supplementary attribution. One such set of supplementary attribution that some users may find useful has been included with Surface Catchments in the form of a table named NCBPfafstetter.

This tutorial describes the steps required to extend and use the AHGFCatchment attribute table of Surface Catchments with supplementary attribution.

The supplementary attribute table NCBPfafstetter, provides information to allow the AHGFCatchment features to be used with the Pfafstetter coding system.

1.2 Hydrology Reporting Regions

Hydrology Reporting Regions is derived from aggregations of contracted catchments from the Hydrology Reporting Catchments. The purpose of Hydrology Reporting Regions is to provide a stable set of reporting boundaries at both the national and regional scale.

It contains two levels of hydrological reporting regions. The first delineates national level drainage divisions and the second delineates regional level river regions across Australia.

It is envisaged that these units can be more generally used as the standard for hydrological reporting at the national and regional scale and thus replace Geoscience Australia’s River Basins (1997) defined by the AWRC.

We recommend the use of Hydrology Reporting Regions boundaries at national and regional level as this data has been derived from a drainage analysis of the topography.

For more information about these datasets, please refer to the Geofabric Product Guide:

<http://www.bom.gov.au/water/geofabric/documentation.shtml>

1.3 AWRC information and the NCB Pfafstetter table

AWRC boundaries are based on topographic maps and major watershed lines captured by State and Territory authorities at varying scales in the early 1960s.

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For projects where the AWRC boundaries are used, the NCB Pfafstetter table can be approximately mapped back to AWRC¹ basins. The numbers and names of AWRC River Basins, Water Regions and Drainage Divisions in the NCB Pfafstetter table reflect the numbers and names which occupy the majority of the NCB catchment unit, that is, the highest percentage spatial overlap between the Geofabric and AWRC datasets.

¹ Geoscience Australia (1997). Australia's River Basins: Metadata statement.

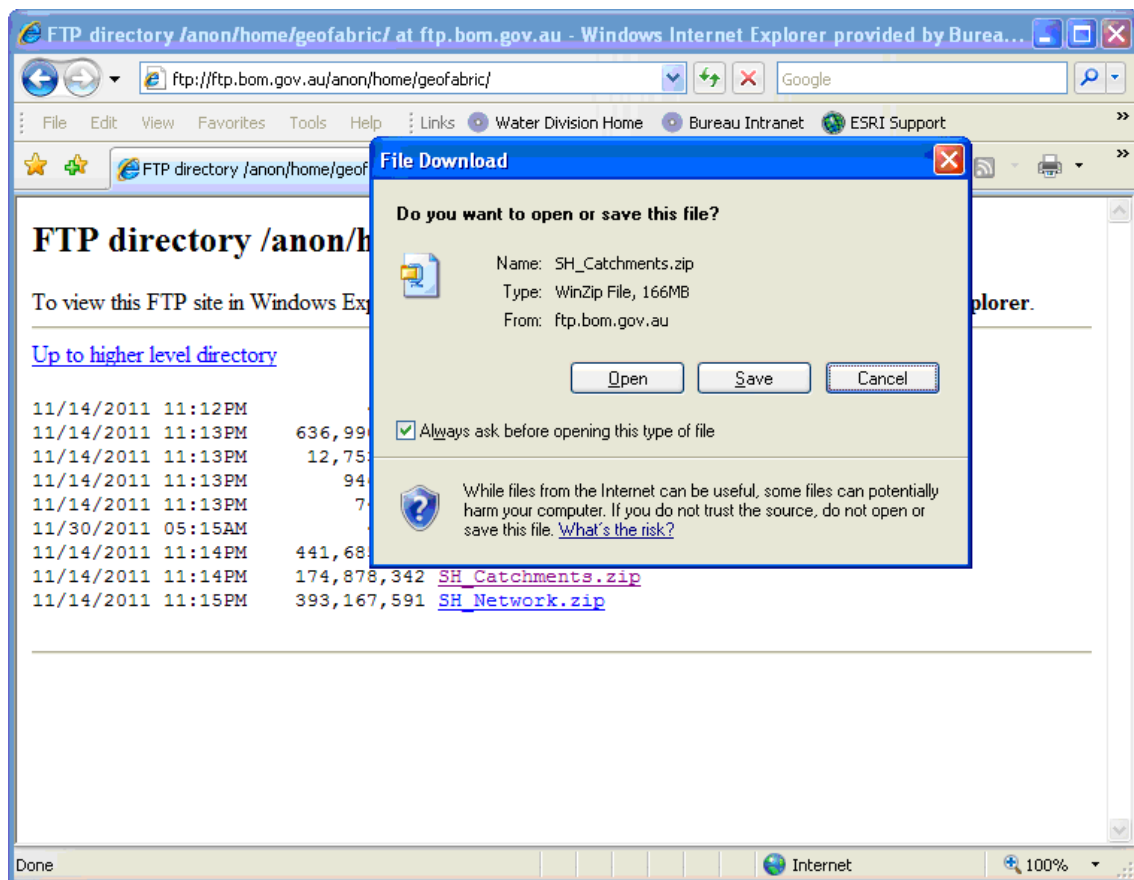
Located at <http://www.ga.gov.au/meta/ANZCW0703005427.html>

2 Tutorial

2.1 Download Geofabric File Geodatabases

2.1.1 Surface Hydrology Catchments

1. From the [Bureau of Meteorology Geofabric](#) website browse to Downloads and select [Download the Geofabric data from the Geofabric FTP site](#). Select the SH_Catchments ZIP file and save this to disk.



2. Unzip the downloaded file, making sure that the resulting folder ends with gdb (e.g. the contents of the SH_Catchments ZIP file should be unzipped to a folder called SH_Catchments_GDB).

2.1.2 Hydrology Reporting Regions

1. Repeat the above process by selecting HR_Regions.zip.
2. The HR_Regions.zip file should unzip to a folder called HR_Regions.

2.1.3 Surface Hydrology Network

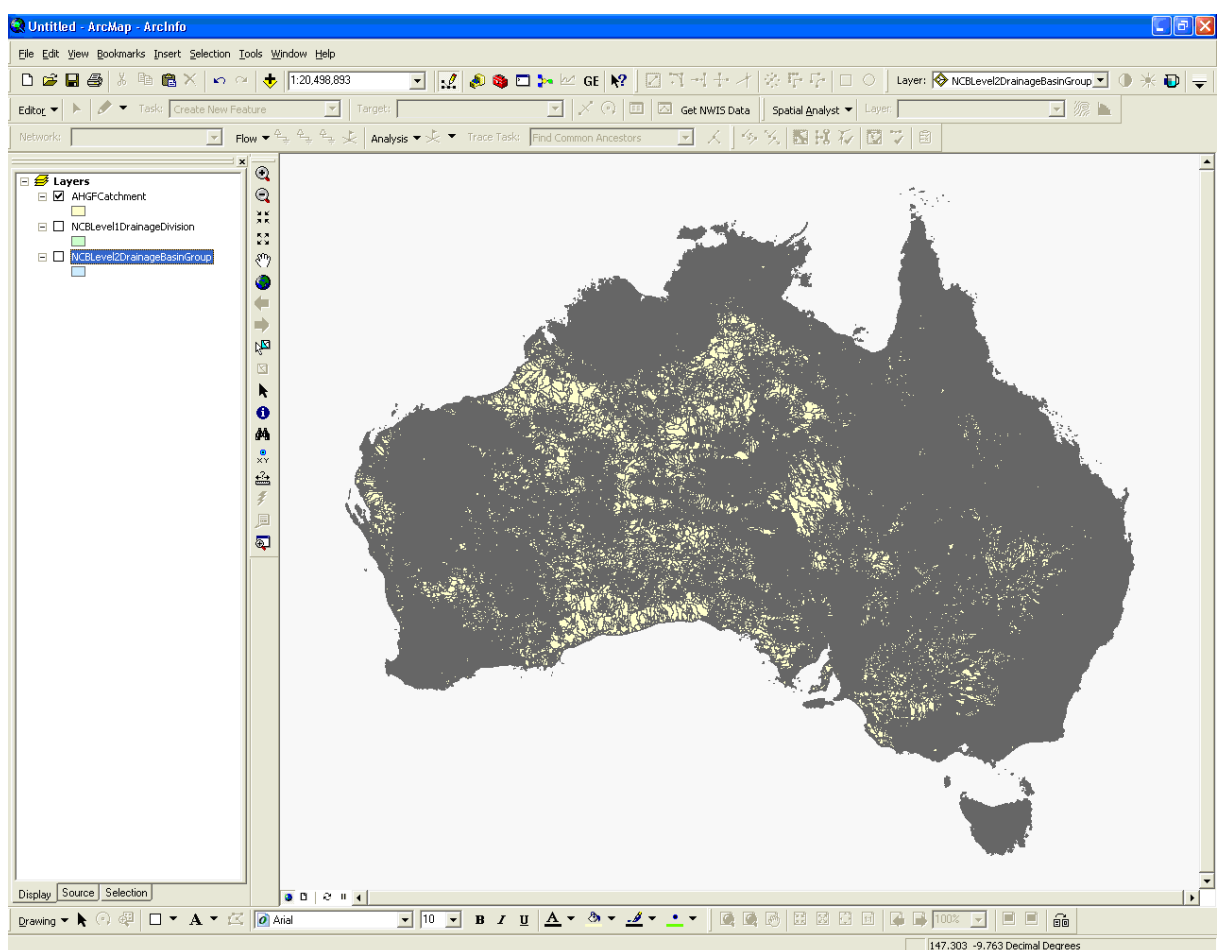
1. Repeat the above process by selecting SH_Network.zip.
2. The HR_Regions.zip file should unzip to a folder called SH_Network.


2.2 Using the NCB Pfafstetter table

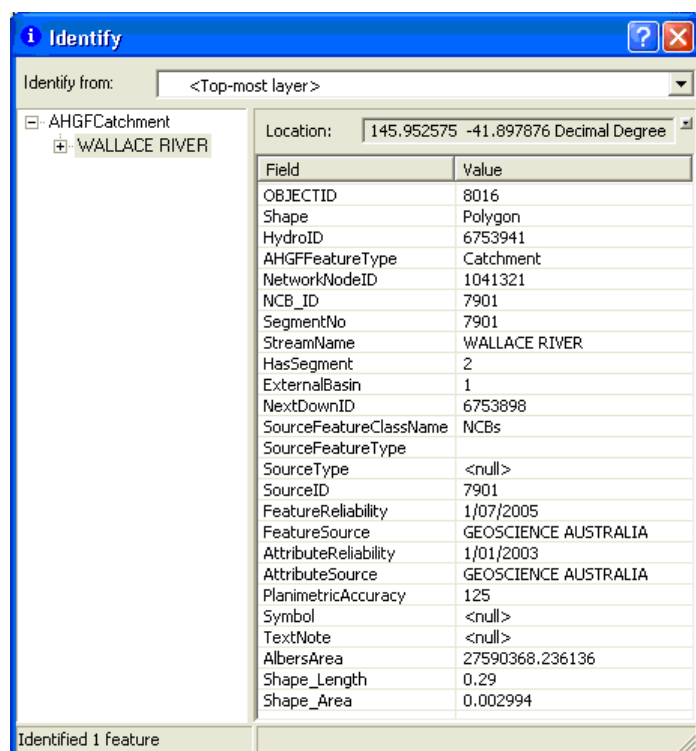
This section shows how to access the NCB Pfafstetter attributes from AHGFCatchment using the Geofabric's supplied relationship class.

2.2.1 Access NCB Pfafstetter attribution via the supplied relationship class

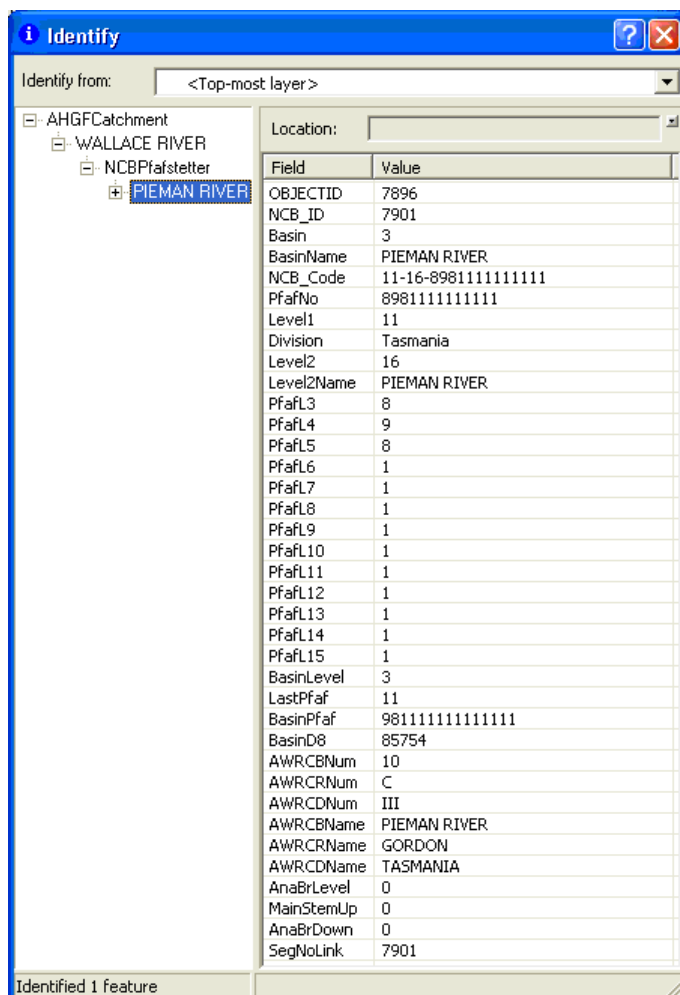
1. Consider the extended Pfafstetter attribution via utilisation of the supplied relationship class (CatchmentIsExtendedByPfafstetter). To do this, start an ArcMap session and add in the SH_Catchments feature dataset and NCBPfafstetter table from File Geodatabase downloaded in step 2.1.
2. Click on the Display tab of the content pane to change to feature view.



3. Zoom in to an area of choice and select the Identify tool (). Click on a single AHGFCatchment feature to view its attribution.
4. This screenshot was generated from version 9.3.1 of ArcGIS Desktop for Windows. This version of the product contains a known issue that stops relationship class labels from being displayed in the Identify window.



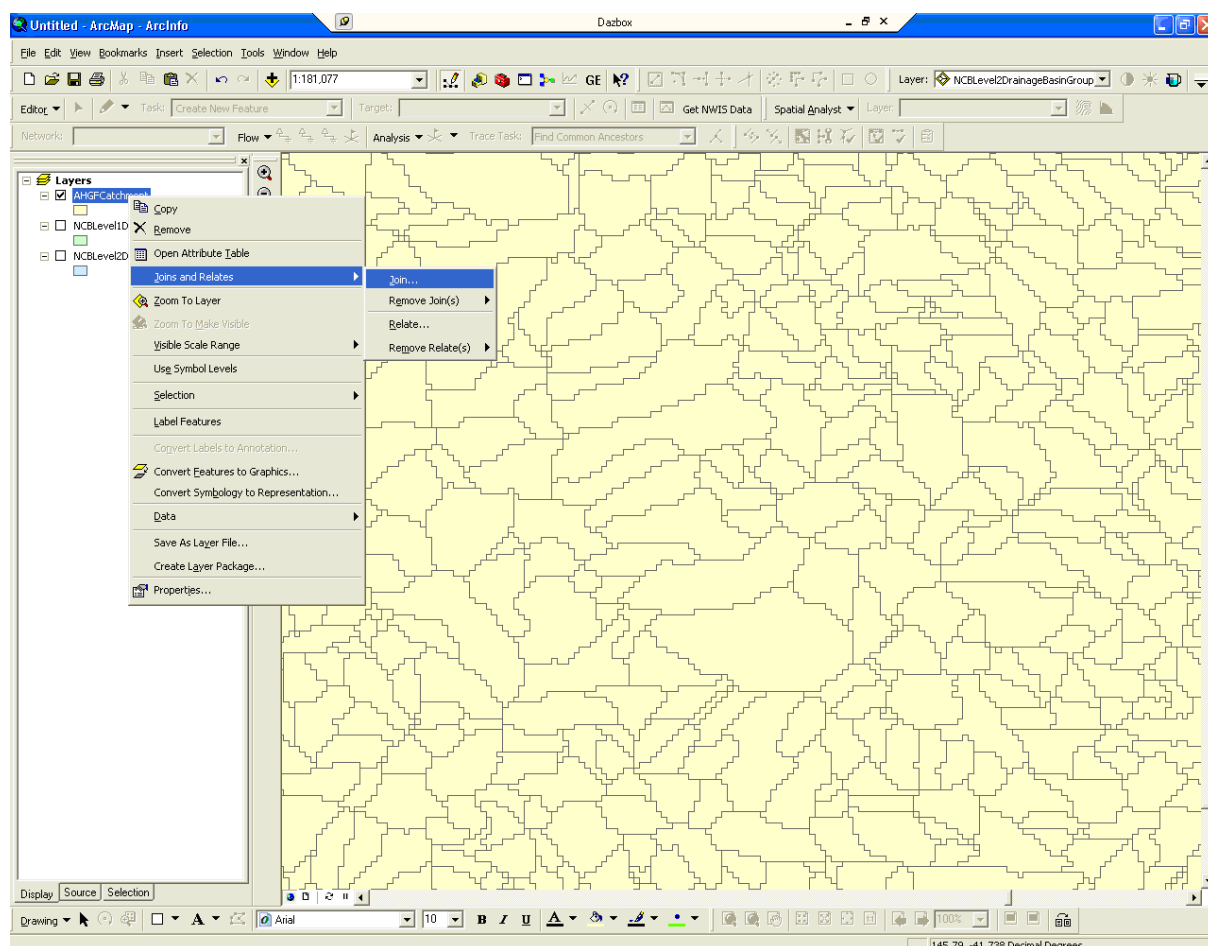
- To view the feature's related attribution, expand two levels of plus icons (+) and click on the related record to reveal the corresponding NCBPfafstetter attributes.



2.2.2 Join NCBPfafstetter attribution to AHGFCatchment

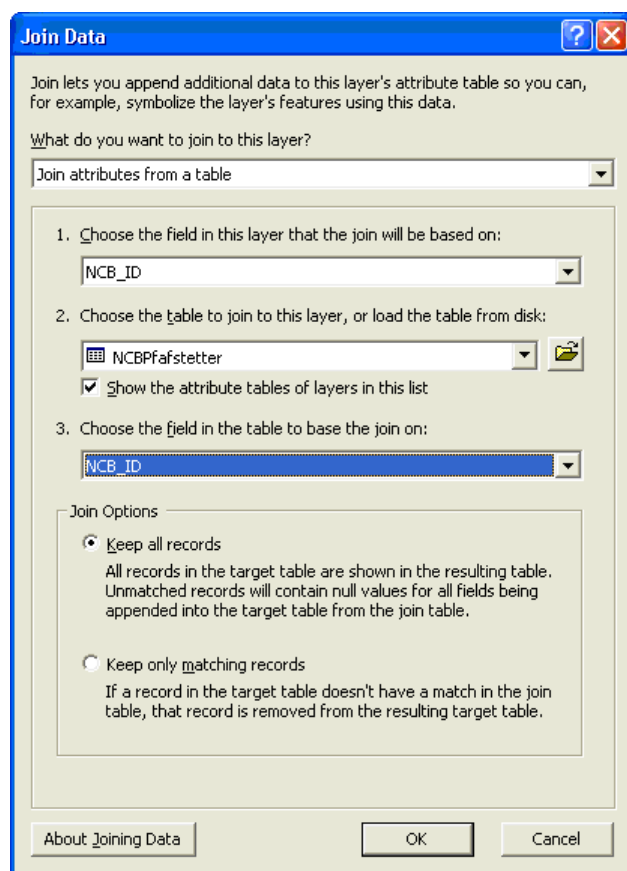
This step performs a simple table join to extend the AHGFCatchment attribution with the NCBPfafstetter attributes.

1. In ArcMap, right-click on the AHGFCatchment feature class and choose Joins and Relates>Join....



2. In the Join Data dialogue box, choose Join attributes from a table for the What do you want to join to this layer? option, then make the following selections and click [OK]:

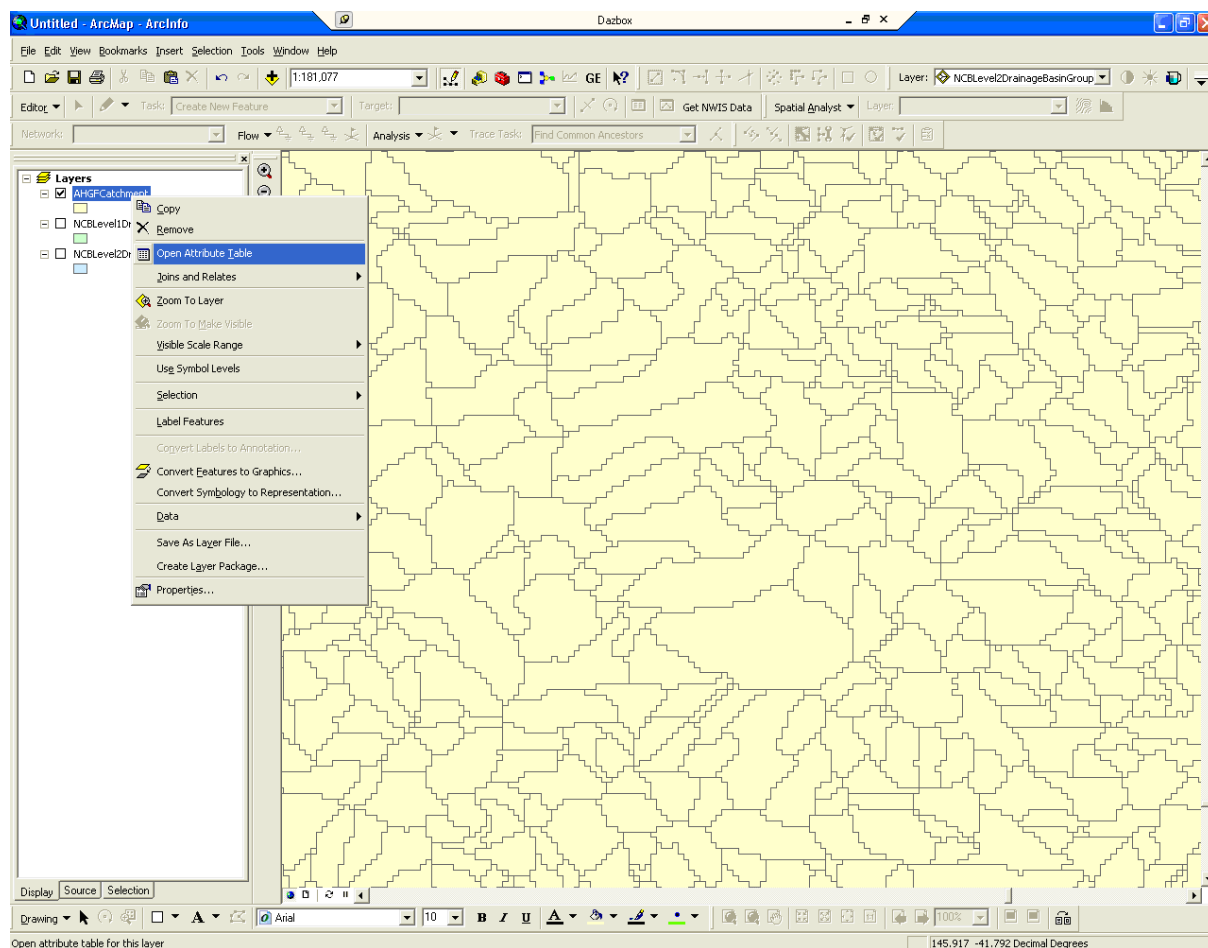
- 1. NCB_ID.
- 2. NCBPfafstetter.
- 3. NCB_ID.
- Join Options: Keep all records.



3. Click [OK]

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4. Right-click on the AHGFCatchment feature class, choose Open Attribute Table, and scroll to the right to see the new attributes that have been joined to the AHGFCatchment attribute table.



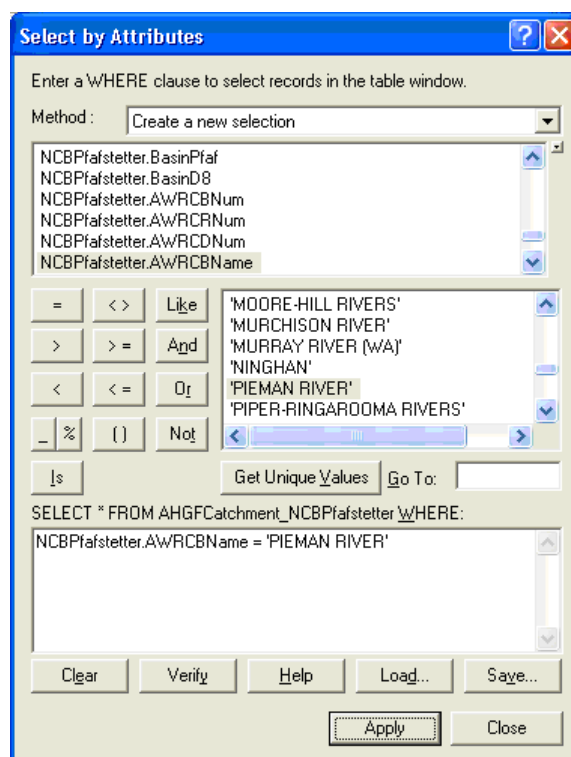
2.3 AWRC information and the NCB Pfafstetter table

The numbers and names of AWRC Basins, Regions and Divisions are included in the NCBPfafstetter. However, the names and numbers only indicate the AWRC areas which occupy the majority of the NCB Catchment unit.

2.3.1 Select a AWRC basin

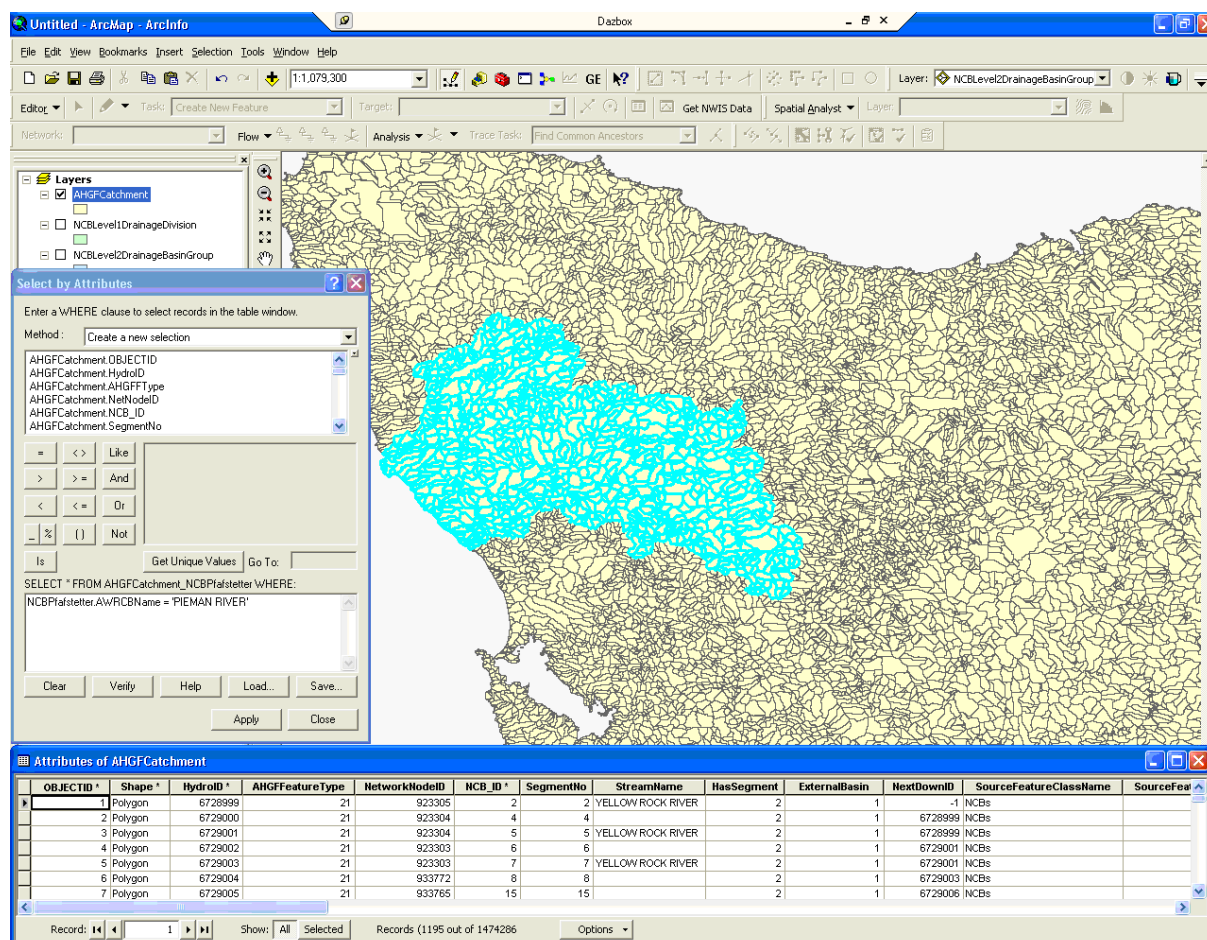
Use the newly joined attribution to make a selection set of all AHGFCatchment features belonging to a particular Australian Water Resources Council basin:

1. On the AHGFCatchment attribute table, click [Options] then choose Select By Attributes from the attribute table window.
2. Construct a WHERE clause that selects all AHGFCatchment features that are mapped to a given AWRC basin name (e.g. NCBPfafstetter.AWRCBName = 'PIEMAN RIVER').



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3. Click [Apply] and examine the resulting selection set.



Note: The sets of AHGFCatchment features (extended with the NCBPfafstetter table) forming AWRC basins are only approximate mappings back to AWRC² basins. This mapping is based upon the highest percentage spatial overlap.

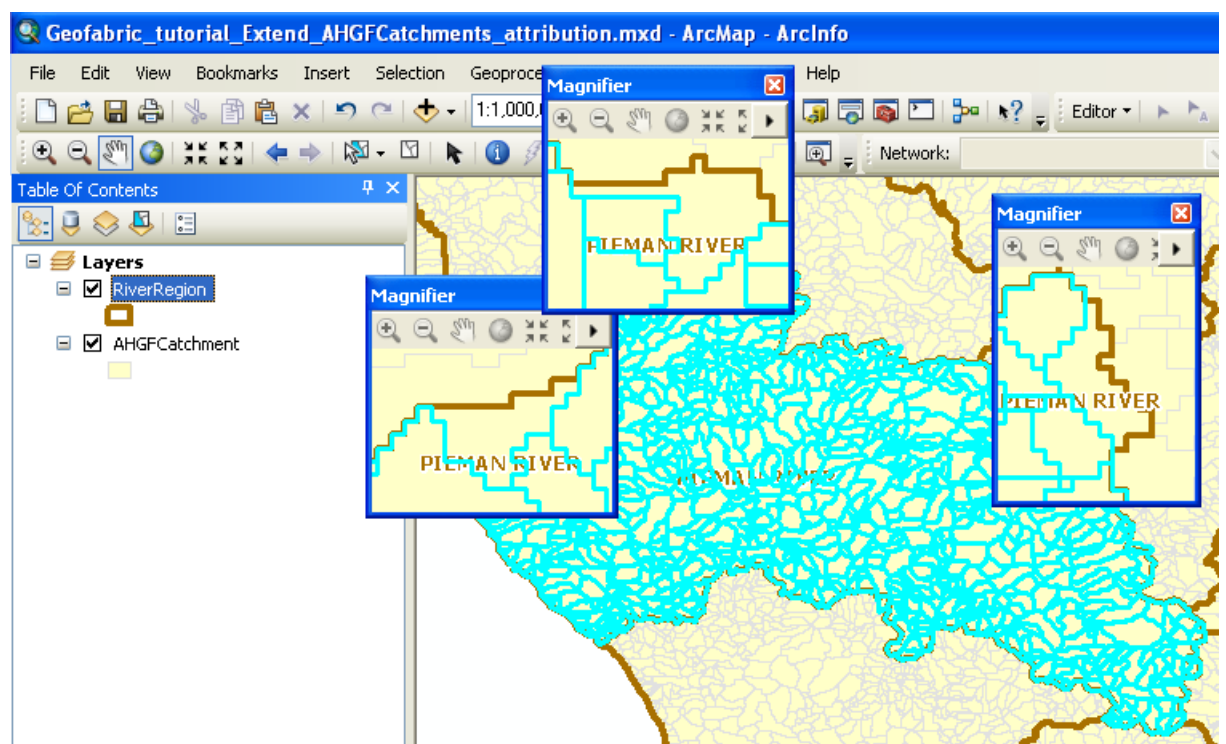
² Geoscience Australia (1997). Australia's River Basins: Metadata statement.

Located at <http://www.ga.gov.au/meta/ANZCW0703005427.html>

2.3.2 View the corresponding Geofabric River Region

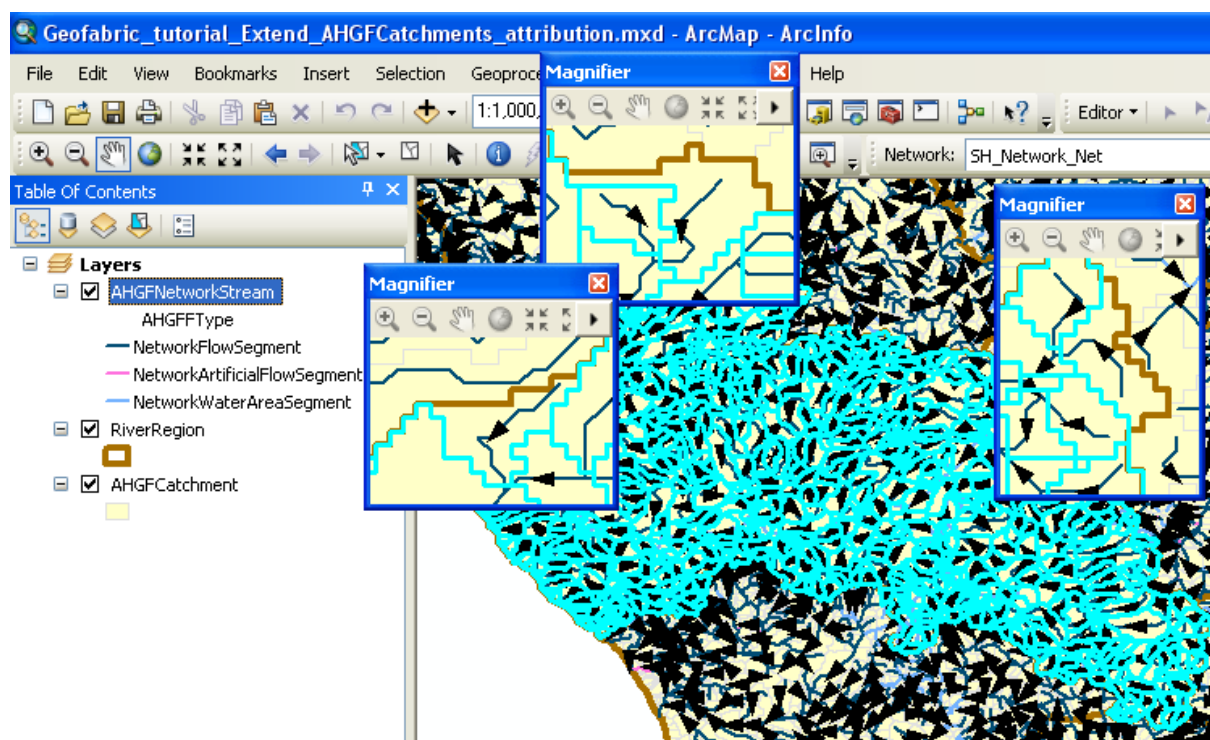
This section shows an example of the difference between the hydrological reporting boundaries in the above AWRC example and the same boundary defined in Geofabric's River Region feature class. Adding AHGFNetworkStream to the display will aid in understanding the difference between the two datasets.

1. From the Hydrology Reporting Regions FGDB, add the River Region feature class.
2. Note how the boundaries between the selected AHGFCatchment features, when mapped to both a AWRC Basin Name and the Geofabric River Region, differ in 3 places, magnified in the ArcMAP magnifier windows at their locations below.



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3. From the Surface Hydrology Network FGDB, add the AHGFNetworkStream feature class. This shows how the Geofabric River Region boundary correctly reflects the drainage in these 3 areas - flow arrows have been added to AHGFNetworkStream to illustrate this.





Through the *Water Act 2007*, the Australian Government has given the Bureau of Meteorology responsibility for compiling and delivering comprehensive water information across Australia.

For more information

Visit our website at www.bom.gov.au/water

Send an email request to waterinfo@bom.gov.au



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