
7 Examples of Use

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This section summarizes the steps to retrieve and manipulate HydroBase data for a number of common cases. It is assumed that a SQL Server HydroBase database is being used, or, if using a Microsoft Access database, that the **Tools...Options...Water District Filter** settings have been set appropriately for the HydroBase database that is used.

See also the training materials available from the **Help...View Training Materials** menu.

7.1 Viewing Historical Streamflow Data

Perform steps similar to the following to view historical streamflow data (see also **Section 4.4**):

1. Select the **Data...Stations** menu to display the **Stations Data** window.
2. Select the water division/district of interest. Select a division to list more stations.
3. Select **Stream - Streamflow** as the data type.
4. Select the **Time Step** as appropriate.
5. Select appropriate **Where** values. Querying for all data may be acceptable. Often, if some part of the station name is known, use a substring (e.g., specify **Where | Station Name | Contains | platte**).
6. Press the **Get Data** button. If the query criteria are matched, one or more stations will be listed in the **Station Data** window.
7. Select one or more stations from the list.
8. Press the **Time Series Graph**, **Time Series Table**, or **Time Series Summary** button to query and display the time series data in the selected format.

See also the TSTool software for viewing historical streamflow data.

7.2 Viewing Real-time Streamflow Data

Real-time streamflow data can be viewed using the **Station Data** display (described above) or the **Tools...Time Series Plots** tool, as described below. Real-time data are typically only available in the HydroBase on the State of Colorado's servers. Ideally, real-time data would be identified as 5-minute, 30-minute, etc.; however, the HydroBase design does not currently allow this approach and therefore real-time data are treated as irregular time series.

7.2.1 Viewing Real-time Streamflow Data Using the Station Data Window

The steps for viewing real-time streamflow data are very similar to viewing historical data:

1. Select **Data...Stations** to display the **Station Data** window.
2. Select a **Data Type** of **Stream - Streamflow** and a **Time Step** of **Irregular**. Optionally, use the **Where** information query specific real-time stations. Press **Get Data** to query HydroBase. Select one or more stations and press the **Time Series Graph** button. This will query the time series data. In some cases, even though the time series are listed, data are not available, and errors will result – in these cases, remove the offending time series from the list selected for graphing.

7.2.2 Viewing Real-time Streamflow Data Using the Time Series Plots Menu

Time series products allow graphs to be defined once and then be displayed again later (with the current real-time data available at that time). This is useful if the same graph is viewed repeatedly. The following steps illustrate how to use a time series product to display real-time streamflow data:

1. Select the **Tools...Time Series Plots** menu.
2. Select **New** and enter an identifier for the new time series product. A blank graph window and its associated time series product properties window will be shown.
3. From the list of stations listed in the **Station Data** window (e.g., from the steps described in **Section 7.2.1** above), select one or more rows and drag the rows onto the layout window in the **Time Series Product Properties** layout area. A pause may occur as the data are retrieved. The graph window should then refresh to display the graph.
4. Repeat steps 1 and 2 as needed to identify more stations and time series.
5. In the **Time Series Product Properties** window, change graph properties as desired and press **Apply**.
6. In the graph window, press the **Save** button to save the plot definition.



See the **TSView Time Series Viewing Tools Appendix** for more information.

You can also use the TSTool application or the CDSS web site to view real-time data.

Time series products can also be used with historical data and time series from different windows (e.g., diversions, reservoirs) can be combined on the same graph.

7.3 Viewing Streamflow Station Data Using the Map Interface

The following procedure illustrates the use of the map for querying streamflow station information. This description is appropriate only if map data are available and are displayed (see **Tools...Options...Map**). For example, select a division of interest during login.

1. Follow steps 1-7 in **Section 7.1**, which will result in a list of stations being displayed in the **Station Data** window. Note that when the **Data...Stations** menu is initially selected the map layers should automatically adjust so that only station layers are enabled.
2. In the **Station Data** window, press the **Show on Map** button. This causes the stations layer used by the map to be searched. Matching stations are selected (default select color is typically yellow or pink) and the map extents are adjusted to zoom in on the selected stations.
3. To label the stations, select the stations layer in the map layer list (table of contents), right-click on the stations layer, and select the **Properties** menu item. Then select the **Label** tab in the **Properties** dialog. Use the **Label Field(s)** choice to indicate the data that should be used for a label. Specify the **Label Format** if necessary to remove spaces (e.g., use %s to remove spaces from a string field). Select the **Label Selected Features Only** checkbox if desired. Press **Apply** or **OK** to cause the labels to be shown on the map.
4. If the map is in **Zoom Mode**, zoom to station of interest.
5. Making sure that the streamflow layer is still selected in the layer list, change to **Info Mode**  and click near a station (or draw a box around several stations). A dialog will appear showing information about the station, from the geographic data.
6. Change to **Select Mode**  and draw a box around one or more stations. This causes the **Station Data** window to start a query using the box coordinates as additional **Where** information. Note that the original **Where** information in the **Station Data** window are also used and may need to be changed (for example, remove previous constraints). If the geographic data and HydroBase are using the same data, the stations that were selected on the map should be listed in the **Station Data** window. Sometimes differences occur because of differences in the versions of the database and spatial data files.
7. Repeat similar steps for other query criteria.

The above procedure illustrates selecting map features from the tabular displays and displaying results in the tabular display by first selecting on the map. The two activities can be performed independently as appropriate.

See the **GeoView Mapping Tools Appendix** for a full description of map features.

7.4 Viewing Diversion Data

To view diversion (headgate) data:

1. Select the **Data...Structures** menu to display the **Structure Data** window.
2. Select the water division/district of interest. Select a division to list more stations; however, because there are a large number of structures, displaying all structures in a division can be slow (see below for information about limiting the query).
3. Select **Where | Structure Type | Matches | Headgate** as the structure type to query, or query all structures types if desired (do not select **Structure Type** in a **Where**).
4. Select appropriate additional **Where** values. Because there are a large number of structures, querying for all structures may not be acceptable. Often, if some part of the structure name is known, use a substring (e.g., specify **Where | Structure Name | Contains | smith**).
5. Press the **Get Data** button. If the query criteria are matched, one or more structures will be listed in the **Structure Data** window.
6. Select one structure from the list and select a view from the choices next to the **Display View** button. A good overall summary for a structure is provided by the **Structure Summary** view. Use the **Diversion Coding/Reservoir Releases** view for diversion records (time series).
7. Optionally, select additional views to display in the **Structure Data** window.

7.5 Viewing Structure Water Rights



To view water rights data:

1. Select the **Data...Water Rights** menu to display the **Water Rights Query** window.
2. Select the **Water Division/District** of interest. Because there are a large number of water rights, displaying the water rights for an entire division may be very slow. Optionally, limit the query as described below.
3. Select **Net Amounts** as the **Water Rights Type**.
4. Select appropriate **Where** values. Because there are a large number of water rights, querying for all water rights may not be acceptable. Often, if some part of the station name is known, use a substring (e.g., specify **Where | Water Right Name | Contains | smith**).
5. Press the **Get Data** button. If the query criteria are matched, one or more water rights will be listed in the **Water Rights Query** window.
6. Optionally, to format as a text report, press the **View Report** button after selecting a report format from the list of choices. The data will be requeried if necessary because the sort order for the report may not match the sort order for data that are currently displayed.
7. Select one water right from the list and press the **View** button to see the water right in detail.

Water rights can also be viewed using the **Water Rights** display view in the **Structure Data** window.

7.6 Viewing Diversion Structure Data Using the Map Interface

The following procedure illustrates the use of the map for querying diversion information. This description is appropriate only if map data are available and are displayed (see **Tools...Options...Map**). For example, select a division of interest during login.

1. Follow steps 1-5 in **Section 7.4**, which will result in a list of diversions being displayed in the **Structure Data** window.
2. In the **Structure Data** window, press the **Show on Map** button. If the diversions layer is not shown on the map, it will automatically be turned on (a noticeable pause will result, as the map is redrawn). The diversion layer used by the map is then searched. Matching stations are selected and the map extents are adjusted to zoom in on the selected diversions.
3. To label the diversions, select the diversions layer in the map layer list (table of contents) and press the **Properties** button under the legend. Then select the **Label** tab in the **Properties** dialog. Use the **Label Field(s)** choice to indicate the data that should be used for a label. Specify the **Label Format** if necessary to remove spaces (e.g., use %s to remove spaces from a string field). Select the **Label Selected Features Only** checkbox if desired. Press **Apply** or **OK** to cause the labels to be shown on the map.
4. If the map is in **Zoom Mode**, zoom to diversion of interest.
5. Making sure that the diversions layer is still selected in the layer list, change to **Info Mode**  and click near a diversion (or draw a box around several diversions). A dialog will appear showing information about the diversion, from the geographic data.
6. Change to **Select Mode**  and draw a box around one or more diversions. This causes the **Structure Data** window to start a query using the box coordinates as an additional **Where**. Note that the original **Where** information in the **Structure Data** window are also used and may need to be changed (for example, remove previous constraints). If the geographic data and HydroBase are using the same data, the diversions that were selected on the map should be listed in the **Structure Data** window.
7. Repeat similar steps for other query criteria.

The above procedure illustrates selecting map features from the tabular displays and displaying results in the tabular display by first selecting on the map. The two activities can be performed independently as appropriate.

See the **GeoView Mapping Tools Appendix** for a full description of map features.