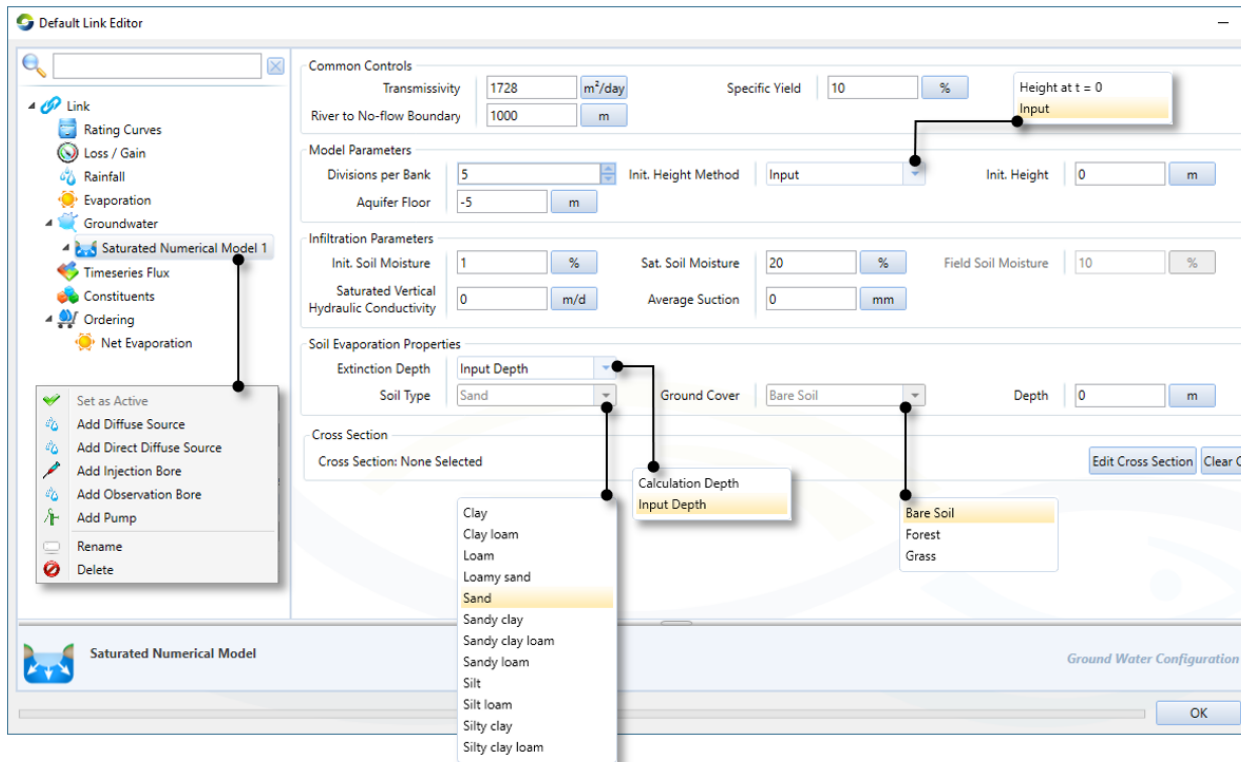


Groundwater Numerical Model for 1-Dimensional Flow - GN1D

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User Interface



Description of Components

Cross Section

Specifying the topology of the river link via a cross-section is the first step in setting up the GN1D model.

Edit Cross Section	Opens the cross-section editor
Clear Cross Section	Deletes the cross-section.

Refer to the [Cross Section Editor](#) user guide for details.

Common Controls

These parameters are common with the GAT (Groundwater Analytical Tool) saturated connection model.

Transmissivity	<p>The rate at which groundwater flows horizontally in an aquifer. The transmissivity T for horizontal flow of an aquifer with saturated thickness d and horizontal conductivity K_{sat} is:</p> $T = K_{sat} d$ <p>For an unconfined aquifer, d is the average saturated thickness.</p>
Specific yield	<p>A ratio indicating the volumetric fraction that an aquifer will yield when all water is allowed to drain out of it under the force of gravity:</p> $S_y = \frac{V_{wd}}{V_T}$ <p>V_{wd} is the volume of water drained</p> <p>V_T is the total volume of the aquifer material</p>
River to No-flow Boundary	The distance from the left and right hand river banks to the groundwater no-flow boundary

Model Parameters

Additional parameters saturated zone, which are required for the finite difference scheme.

Divisions per Bank	The number of subdivisions per bank.
Aquifer Floor	The z-coordinate of the aquifer basement (no-flow boundary). Uses the coordinate system defined by the cross section.
Init. Height Method	<p>The method by which the initial groundwater table height is calculated. The two options are:</p> <ol style="list-style-type: none"> Input - The initial groundwater table height is set by the user using the Init. Height field. Note that the groundwater table height is relative to the coordinate system of the cross section. Height at t = 0 - The initial groundwater table height is set to the initial river stage.

Infiltration Parameters

Unsaturated zone parameters

Init. Soil Moisture	The initial soil moisture content of the unsaturated zone as volumetric fraction of the total volume.
Sat. Soil Moisture	<p>The saturated soil moisture content as a volumetric fraction.</p> <p>Field soil moisture is the amount of water that will be retained in the soil if it is allowed to drain under the force of gravity. It can be calculated as:</p> <p style="text-align: center;">Field Soil Moisture = Sat. Soil Moisture – Specific Yield</p> <p>Field soil moisture is displayed in the user interface but is not editable.</p>
Field Soil Moisture	<p>Field soil moisture is displayed in the user interface but is not editable.</p> <p>Field soil moisture is the amount of water that will be retained in the soil if it is allowed to drain under the force of gravity. It can be calculated as:</p> <p style="text-align: center;">Field Soil Moisture = Sat. Soil Moisture – Specific Yield</p>
Saturated Vertical Hydraulic Conductivity	The saturated vertical hydraulic conductivity.
Average Suction	The average suction at the wetted front.

Soil Evaporation Parameters

Parameters for setting the maximum depth at which evapotranspiration can occur.

Extinction Depth	<p>Sets the method by which the evapotranspiration extinction depth will be calculated. The extinction depth is the maximum depth below the ground surface at which evapotranspiration can occur. The two options are:</p> <ol style="list-style-type: none"> Calculation Depth - The evapotranspiration extinction depth is calculated from Soil Type and Ground Cover. Input Depth - The evapotranspiration extinction depth is set by the user via the Depth field.
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