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Dept: Civil Engineering

Mat No: 17/ENG03/052

Course: Basic Hydrology - CVE 302

Assignment II

Q.1 Write Briefly On any 5 Software Used in Carrying Out the Hydrologic Study of a place.

A:

1. QGIS:

QGIS (Quantum GIS) is the most popular Geographical Information System (GIS) tool with an impressive trajectory and a vibrant community. It also even has a particular ecosystem of complements called "plugins". QGIS is a completely open source alternative that reduces the cost barriers since it does not need a paid license and can be executed on any O.S

2. iRIC:

iRIC (International River Interface Cooperative) is a software with the purpose of offering a very complete 3-dimensional simulation environment of the riverbed and it's results can be exported and used to analyze, mitigate and prevent disasters through the forecasting and the visualization of the results of the river simulation.

3 MODFLOW:

This code is used for hydrogeological modelling and performs groundwater modelling based on finite differences developed by the United States Geological Survey (USGS). It can simulate groundwater 2D and 3D flux and the principal physical processes related to the groundwater regime such as recharge, evapotranspiration, pumping, drainage, etc.

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4. SAGA GIS:

SAGA GIS is a Geographical Information System (GIS) platform oriented to spatial analysis. SAGA GIS is a simple but powerful tool, with big library focused on spatial analysis and characterization of basins. The interpolation options in SAGA GIS are better implemented than in other free and commercial software

5. HEC - RAS:

The numerical model HEC-RAS (Hydrologic Engineering Center - River Analysis System) is a river modelling software developed by the US-Army Corps of Engineers. This model uses the gradient and topography to evaluate the flow depth, velocities and flooded zones. It is also useful to calculate sediment transport in the river and water temperature.

Q.2

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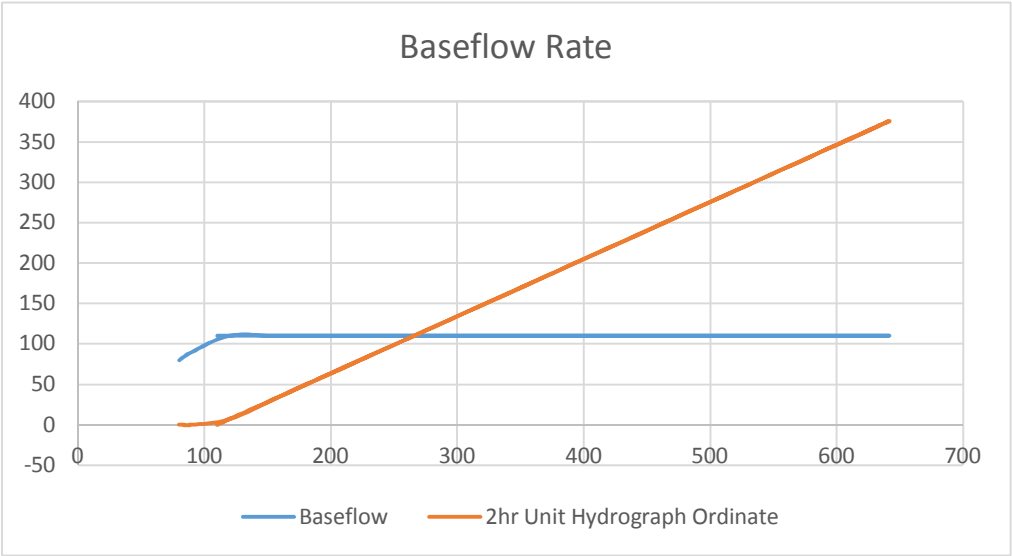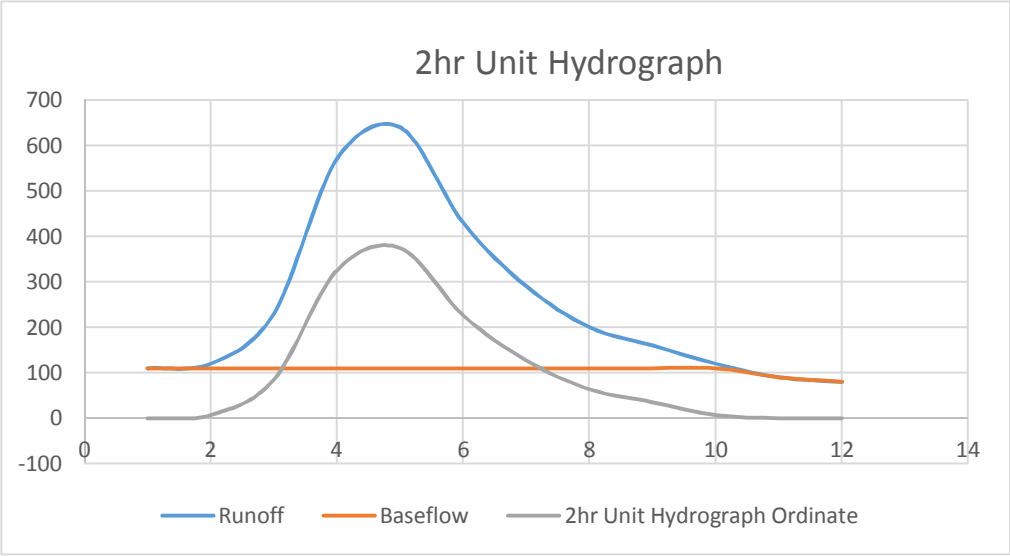
Time	Runoff	Baseflow	Direct Runoff	Depth of Direct Runoff	2hr Unit Hydrograph Ordinate
1	110	110	0	1.415	0
2	120	110	10	1.415	7.067137809
3	230	110	120	1.415	84.80565371
4	570	110	460	1.415	325.0883392
5	640	110	530	1.415	374.5583039
6	430	110	320	1.415	226.1484099
7	290	110	180	1.415	127.2084806
8	200	110	90	1.415	63.60424028
9	160	110	50	1.415	35.33568905
10	120	110	10	1.415	7.067137809
11	90	90	0	1.415	0
12	80	80	0	1.415	0