We changed all the parameter values to zero except the degree of saturation. This is similar to making the basin an impervious basin. Thus we actually observed the change in the basin hydrograph as though the same basin were impervious.

We are now in the final step where the individual basin hydrographs are routed downstream through the channel network. Observe that the "*->" has moved from 6 to 7, indicating that you should now choose Choice: 7 from the menu.

The final step shows you the hydrographs at stream junctions previously identified by the icons. If the animation configuration has been set, then twenty animation maps are displayed to the user, one for every other time step. The hydrograph at the stream junctions should look like Figure 10 and the animation maps are displayed one-by-one on the right-hand side frame (not shown here):

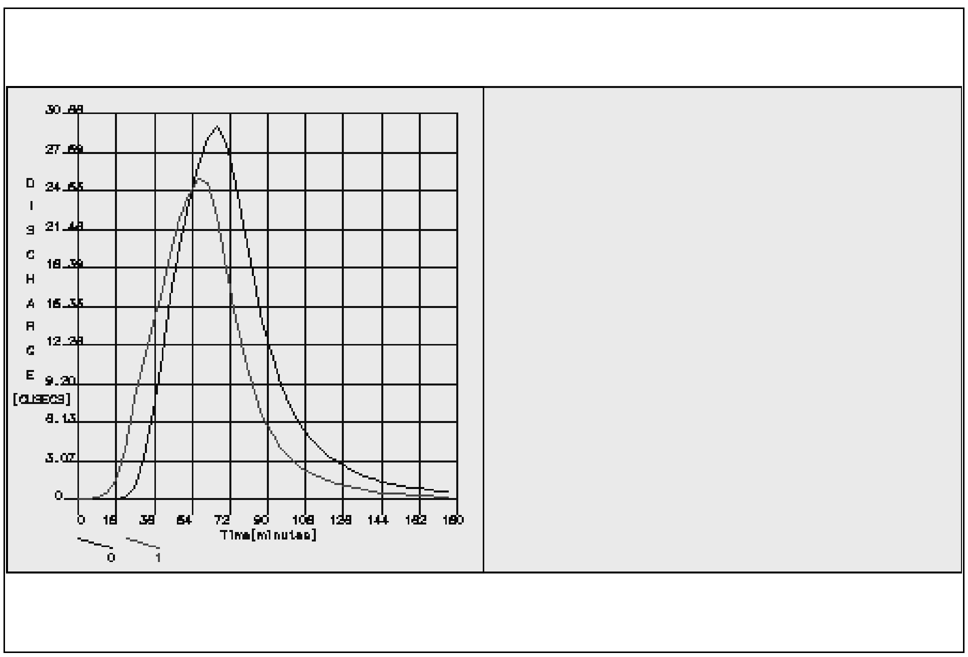

Figure 10. Hydrographs at stream junctions.

You should now see "Done" written above "Choice". At this point you can choose to go back or you can select Choice: 8 in the menu to stop this session.

5 RESULTS

The results of **r.water.fea** are stored for you to later transfer files to other analysis packages and to revisit the same project. They are in the *$LOCATION/r.water.fea/<project_name>* directory. You have just finished working on the *my_project* project. You can view the list of files by typing:

```
GRASS 4.2 > ls -l $LOCATION/r.water.fea/my_project
total 1251
-rw-r--r--  1 login          66 Jul 20 15:26 basin_info
-rw-r--r--  1 login         137 Jul 22 11:55 control
-rw-r--r--  1 login       67728 Jul 20 15:43 coordinates
-rw-r--r--  1 login        1313 Jul 21 09:45 disch.basin
-rw-r--r--  1 login        1221 Jul 21 09:46 disch.junction
-rw-r--r--  1 login     1041461 Jul 21 09:30 disch_file
-rw-r--r--  1 login          53 Jul 20 15:26 input.basin
-rw-r--r--  1 login      137235 Jul 20 15:43 input.file
-rw-r--r--  1 login           0 Jul 22 12:35 timedata
drwxr-xr-x  2 login         512 Jul 22 12:35 timefiles
```

All the files of interest in this list are described in the user's manual program pages. Note that the *disch_file* occupies a large space which is only created if the animation configuration is set.

Removing Project Files

All the files related to the project in the sample session can be removed by using the following:

```
GRASS 4.2 > rm -r $LOCATION/r.water.fea/my_project
```

This will remove only the files created by the program **r.water.fea**. The maps created by this program can be removed by using the GRASS **g.remove** program as shown below:

```
GRASS 4.2 > g.remove rast=fea.my_project.basin,fea.my_project.stream
```

Similarly the flow depth animation maps can be removed by using the GRASS **g.remove** program.

6 Recommended Reading and References

Mein, R. G., Larson, C. L., (1971), "Modeling the infiltration component of the rainfall-runoff process," Water Resources Research, University of Minnesota, September.

Segerlind, L. J., (1984), *Applied finite element analysis*, 2nd ed., John Wiley and Sons, New York, N. Y.

Stephenson, D., Meadows, M. E., (1986), *Kinematic hydrology and modeling*, "Development in water science," 26, Elselvier Science Publishers B. V., Amsterdam, Netherlands.

Vieux, B. E., Bralts, V. F., Segerlind, L. J., Wallace, R. B., (1990), "Finite element watershed modeling: one dimensional elements", J. of Water Resources Planning and Management, vol. 116, no. 6, pp.803-819.