

Carson National Forest Flow Contribution to the Rio Grande

Streams on the Carson NF are a major contributor to the flow in the Rio Grande. The Rio Chama and Upper Rio Grande sub-basins contain $\frac{3}{4}$ of the Carson NF by area. In those two sub-basins the Carson NF covers just 27.8 and 31.4 percent of the total area, respectively, yet streams on the Carson NF contribute 40.3 percent of the total runoff in the two sub-basins¹.

The map below (Figure 1) shows the location of perennial streams at the plan scale. Stream segments that leave the forest (outflow) are colored dark blue and their average flow (cubic feet of water per second-cfs) is shown highlighted in white. Streams that enter the forest (inflow) are colored brown and their average flow is shown highlighted in black. The net streamflow contribution by the Carson NF is equal to outflow - inflow (858.7cfs). The total streamflow at the outlet of the Upper Rio Grande sub-basin is 2131.6 cfs. Therefore, the Carson NF's contribution accounts for 40.3 percent of this total. Upstream from the Carson NF the Chama River contributes 241.6 cfs and the Rio Grande contributes 967.1 cfs to their respective sub-basins. Thus, in the watershed segment to which the Carson NF contributes runoff the portion that originates on the forest is even higher (93% = $858.7 / [2131.6 - 241.6 - 967.1]$).

¹ $858.7 \text{ cfs (net contribution)} / 2131.6 \text{ cfs (total flow at Upper Rio Grande sub-basin outlet)} = 40.3\%$. Streamflow is based on modeling developed by Horizon Systems. Available for download: <http://www.horizon-systems.com/NHDPlus/index.php>.

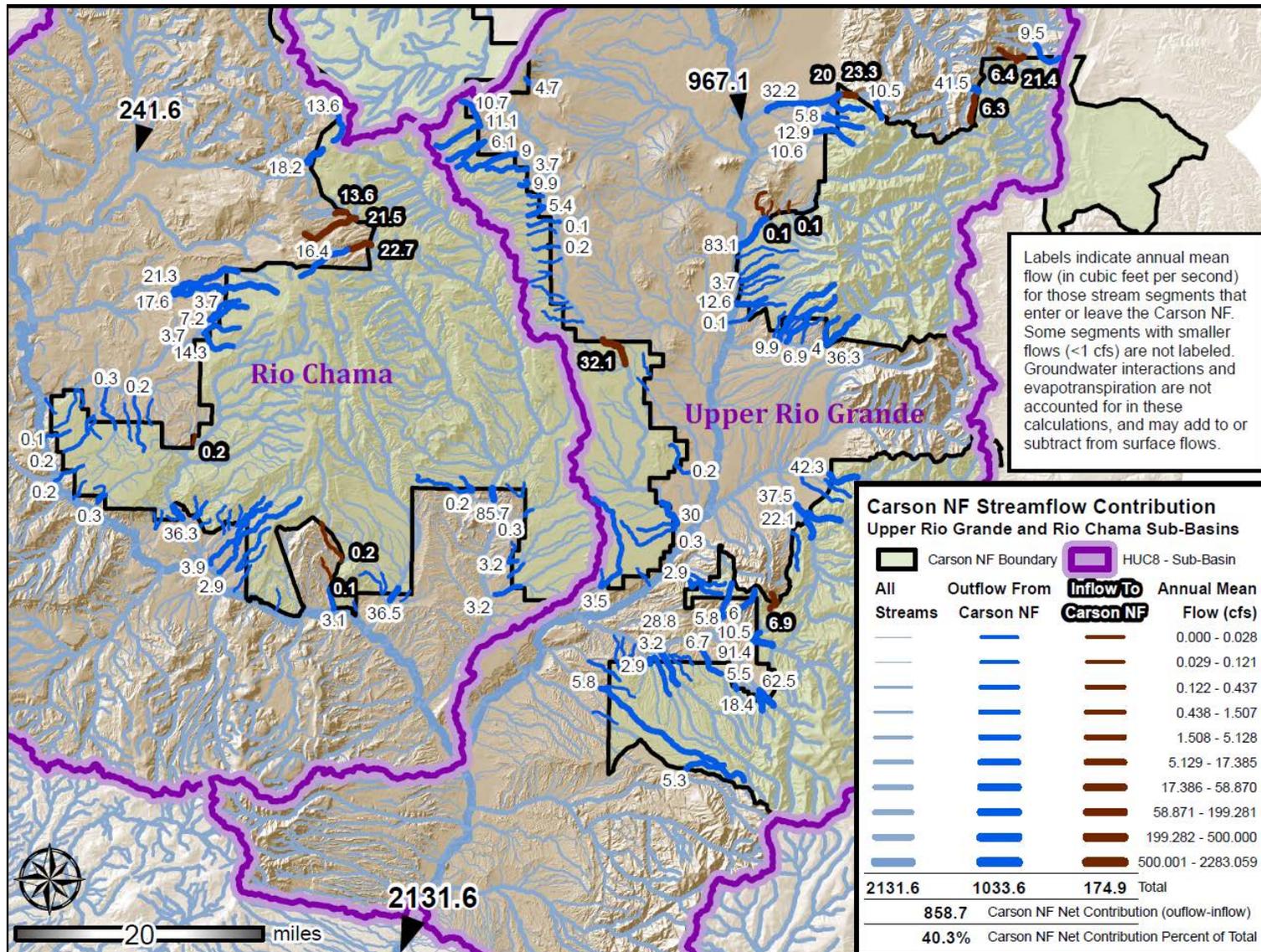


Figure 1. Contribution of streamflow by the Carson NF to the Rio Grande at the outlet of the Upper Rio Grande sub-basin.