

the navigation of the river, dependant upon the clouds, an intermediate feeder between Cumberland and dam No. 6, will (to make the improvement perfect) be indispensable, even at the very first opening of the navigation of the new canal; and accordingly whenever the directors are prepared to extend their operations, the *intermediate feeder* ought, in this view, to be one of the very first works let: for the idea of putting the canal into complete use through the medium of the Cumberland dam alone, must, it seems to me, in the face of the facts set forth, be necessarily abandoned: though a considerable Spring and Autumn trade might be thus maintained.

I will now briefly discuss the several plans which have been suggested for the intermediate feeder, and in the very outset it may be observed, that such seems to be the extraordinary deficiency of water in the North Branch during droughts, as to establish an absolute necessity for the introduction of this intermediate feeder, *at or near* the mouth of the South Branch; and hence, in this aspect, throws out of the question the plan of introducing a supply below the tunnel; as there would be no means of feeding the  $10\frac{1}{2}$  miles of canal, between the South Branch and the mouth of Athy's hollow, where the proposed feeder, from the Pawpaw Bend, was designed to enter the canal upon its 61st level; unless indeed a costly reservoir was formed upon Town creek, to make up the deficiency of supply from Cumberland which would every summer be found to prevail; and the cost of this reservoir being added to that of a feeder in the Pawpaw Bend, *as incident thereto*, would swell its expense so far above that of any of the other plans for accomplishing the same object, as absolutely to inhibit its adoption.

The plans suggested for the "intermediate feeder" are *five* in number, which I will name in succession descending the river and annex a few observations to each :

1st plan proposed for the intermediate feeder, viz: by erecting a dam upon the South Branch and forming about 2 miles of feeder upon its left bank, to pass the North Branch by an aqueduct, and introduce a supply of water upon the 68th level, at a level coincident therewith, and just above Lock No. 68, in the South Branch ferry road.

This was the plan contemplated in 1835 when the definitive location of the canal from the South Branch to the Great Capon, was made by me under the direction of the late chief engineer, and for its execution the topography of the South