

Navajo Wash

January 20, 1920.

Mr. Walter Runke,
Superintendent Western Navajo Indian Agency,
Tuba, Arizona.

My dear Mr. Runke:

I have your letter of January 14th in reference to the irrigation of Wash Farm, Moencopi Valley.

I am quite familiar with the conditions confronting you in this work and know that you have a hard problem unless the conditions are just right.

Your great difficulty is the large amount of silt carried in the Moencopi Wash at all periods of high water and when you try to run this muddy water into the canal, the velocity is suddenly checked, owing to the canal being on a lower grade than the stream and this silt is deposited in large quantities.

You suggest that if you were fitted up with a good pumping outfit, it would be of great help to you because it would increase the amount of forage and food stuff raised on the farm.

You do not say from what source the water would be pumped. If it were pumped from the Wash, you would have the same muddy water to contend with in the ditches leading to the land and the only other source of water would be from wells. Personally, I am quite doubtful of the possibility of securing sufficient underground water to be of any value owing to the geologic formation. If you have tested this out, however, and found that there is a considerable body of water that might be developed by wells, it is possible that this would solve your problem.

When the upper end of the canal was built, a small gate was placed some 1600 feet down the canal from the headgate, to be used as a waste weir and it was thought that by opening this gate at any time that there was a run of very muddy water in the stream, it

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might be possible to keep the head sections sluiced out.

From what I have seen on visits to Tuba since then, I am under the impression that these gates have never been used for the purpose. I have looked up the records in this office regarding the original installation and believe that with the expenditure of a reasonable amount of money, a new set of gates could be put in at this point, which could be placed two or three feet below the present canal ~~in~~ grade and a set of gates placed across the canal. From the waste gates a deep ditch could be dug to the stream, entering it below the falls, which would give us as much drop as we wanted. With this amount of fall in the canal, the velocity of the water would be equal to that in the main stream and by running a large head of water in at the headgate and out of the waste gate, the upper section of the canal could be kept clean. As the water cleared up and had less silt in it, the waste gates could be closed until the opening was sufficient to carry all of the water going into the canal. This would raise the surface of the water at this point until it would enter the lower end of the canal. With the waste gates open there would still be a large amount of water going out through the small opening which should be sufficient to carry out most of the silt, while the top of the water carrying a comparatively small amount of silt would go on down the canal. Thus by leaving the headgates open and controlling the amount of water going down the canal at the waste gate, it would be possible to avoid getting much silt into the canal and all that came in through the head gates would be washed out through the waste gates. If this plan were followed out the waste gates would never be entirely closed, excepting at such times as the stream was low and the water going down would be clear.

In order to utilize all of the water of the main stream, the notch in the present dam would be filled with a small concrete wall which would do away with the ~~inside~~ *building* of the earth dam. The heavy flow through the waste gates would take care of the silt that came to the headgates but it would be necessary to leave this open in the dam unless we left only one a couple of feet across that would draw water from right in front of the headgate to help keep it ~~open~~ in case the headgates were shut down for any reason.

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I shall be pleased to hear from you further on the pumping question and if it is found that the pumping would be impracticable on account of the water supply and if this plan will meet with your approval, I will be glad to send a man out there as soon as the roads are in good condition for traveling, to make the exact surveys and measurements necessary to plan for this structure, and get its approval by the Chief Engineer.

If the project is approved, I have sufficient funds now to complete it without asking for other authority.

yours very truly,

HFR*L

Supervising Engineer

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