

W H C DEPARTMENT OF THE INTERIOR,  
Appropriation, etc. OFFICE OF INDIAN AFFAIRS,

WASHINGTON. February 28, 1910. H

Mr. H. F. Robinson,  
Albuquerque, New Mexico.

Dear Sir:

Your letter of February 22 to hand.

The appropriation of \$10,000.00 from the fund "Support of Indians in Arizona and New Mexico" will be acted on within a few days and you will be notified.

A letter from Hallstrom at Parker states that he has finished his last well at that point and that he will have a week's blacksmithing and will then be ready for detail elsewhere.

I have talked over the matter of water development at Leupp and on the Oraibi Wash <sup>[with Prof Gregory (1)]</sup> and he believes that it will be advisable to start in at those points, beginning at Leupp and working on up towards the Chin Lee, sinking wells at favorable points en route. His full report will be mailed you shortly and the preliminary report within a few days.

Hallstrom claims he will need his complete outfit, <sup>f</sup> He is going to perform work in that isolated region and has four or five hundred dollars worth of additional equipment now stored at Hemet, California, which it would be advisable to purchase and have shipped to Leupp together with a car-

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load of 12-inch and 8-inch stove-pipe casing, with the necessary starters, etc. It might be well to include 100 feet of 16" casing for reason hereafter stated. I would suggest 12" wells for Leupp and it is probable that it would be advisable to order sufficient 12-inch pipe to put in three wells in case the first one should prove to be a success. Mr. Gregory estimates that we will not be able to go to a greater depth than 150 feet at Leupp. At other points it is our opinion that 8" wells would be sufficiently large. In this connection, I have talked over the matter of arranging these board wells so that water could be obtained from them by the old fashioned sweep in case it was not deemed advisable to install wind-mills. The following plan seems to me to have merit, namely: Sink a 16" casing down to a depth of 40 or 50 feet, assuming your water level is not over 30 ft. below ground level, and then put your 8" casing inside and down as deep as you deem wise, subsequently cutting same off at a safe distance above bottom of 16" outside casing if the soil is such as will admit of this plan. The advantage of such arrangement would be that a bucket could be made of 15" pipe with a flap valve in the bottom and water could be elevated by means of the sweep or windlass device, thus obtaining the advantage of a permanent type of well in combination with the primitive method of operation. Such a well would of course also be suitable in case of the wind mill installation.

Professor Gregory seems to doubt the feasibility of wind mills on the Navajo Reservation, fearing sand storms would cut out the bearings in time. He also doubted the Indians' ability to care for such mills. I tell him that it is not our idea that these mills would be entrusted to the care of Indians but that a good additional farmer would be placed in charge of a series of such mills with a proper kit for repairs, whose duty it would be to make frequent inspections.

Upon receipt of your authority, you had better arrange matters with Hallstrom and order the rig shipped to Sunshine at once and have the pipe and additional supplies shipped from Los Angeles.

Very respectfully,



Chief Engineer.

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