

The Gookin Report
on
The Box Canyon Dam

W.S. Gookin & Assoc.
article from
The Wickenburg, Arizona Sun

October 3, 1968

The Gookin Report On The Box Canyon Dam

W. S. GOOKIN & ASSOCIATES
CONSULTING ENGINEERS, GEOLOGISTS AND HYDROLOGISTS
616 GREATER ARIZONA SAVINGS BUILDING
112 NORTH CENTRAL AVENUE
PHOENIX, ARIZONA 85004
August 23, 1968

Robert Kirby, Town Manager
Wickenburg

Wickenburg, Arizona 85358
Robert Kirby:

I recall that on May 23, 1968 this office was authorized to proceed to investigate the possibility of a dam and recreational area at Box Canyon as proposed in your letter of May 9, 1968. This is our report on our report on our investigation and analyses to date.

Initially we considered utilization of the dam site explored by the Bureau of Reclamation in connection with their proposed development of irrigation in the area of Wittmann, Arizona. It is our conclusion that this site would not be suitable for a recreational area by reason of cost. While we have not made a recent estimate of cost, the Maricopa County Flood Control District investigated this dam site as set forth in their Report of 1963 and found the cost to be seven million six hundred thousand (\$7,600,000.00) dollars. Obviously the costs have increased since that time and it is our opinion that the Town of Wickenburg should look for a smaller scale development.

The site investigated by the Bureau of Reclamation does not lend itself to a smaller dam because one of the principal features of this site is that a dam to the height of two hundred forty-six (246) feet made it possible to have a natural saddle northeast of the dam site as a spillway. If the height of the dam were reduced it would be necessary to make other provisions for a spillway. Therefore, the total cost would not necessarily decrease if the dam was lowered.

Moreover, core drillings at the Box Canyon Dam site indicates a depth to bedrock of approximately one hundred (100) feet. The cost of excavating to bedrock at this site would not decrease as the height of the dam decreased. This is not coupled with the problems of providing a spillway such a narrow section combined to indicate an alternative site should be sought.

We have made field inspections of the area and believe that a better site for recreation purposes exists approximately three thousand (3,000) feet upstream from the Box Canyon Dam at a point where there is a rising flow of water indicating the possibility of a rock outcropping at a shallow depth. We do not know whether this is in fact bedrock or whether it be underlain with unconsolidated material. In order to be safe we have assumed that the rock outcropping is not bedrock. We have further assumed that in constructing a dam at this site we would not attempt to excavate or to seal to bedrock but in lieu thereof we would provide an upstream blanket in the channel thereby lengthening the percolation path to the point where there would be no danger of piping under the dam. We have further assumed we would provide a concrete lined "slip-jump" spillway north of dam adequate to handle a flood with capacity of approximately seventy-eight thousand (78,000) cubic feet per second. This spillway would be designed as to direct the flow into the main channel of the river some six hundred (600) feet downstream to the toe of the dam. We have included in our estimate the cost of a fifteen (15) foot high Firestone Neoprene Rubber Dam Gate. In time of flood this gate would be inflated to increase the capacity of the spillway. The dam itself would be approximately one hundred (100) feet in height above streambed and would impound a lake with a total area of five hundred ninety (590) surface acres when full. The total capacity of the reservoir when full would be about twenty thousand (20,000) acre feet. We have assumed that once the reservoir was filled it would thereafter operate as a run of the river reservoir. The only water used by this project would be that evaporated from the water surface. It is estimated that the total annual evaporation from the reservoir when full would be approximately four thousand (4,000) acre feet per year. On the basis of the stream flow records developed by the Bureau of Reclamation in their Project Planning Report (#3-8b. 1-0), it would appear that the annual runoff at the dam site would be adequate to replace the water lost by evaporation in all but the driest years. Therefore, it is our opinion that the underflow of the

river, unaccounted for in some of the Reclamation figures, would augment the surface flow sufficiently to maintain a uniform reservoir level even in the driest years. This would make the Hassayampa Development unique in this area. Most of Arizona's reservoirs are multi-purpose and subject to fluctuating water surfaces. Stability of the water surface would greatly enhance the recreational value of this development. A very attractive shoreline development of a type rendered impossible by fluctuating water surfaces would be possible here. Such shoreline development would greatly increase the potential income.

It was the conclusion of the Bureau of Reclamation in their report on the Hassayampa Project that the larger development would not interfere with downstream water rights. Obviously if this be so, the smaller project with minimal consumptive uses would likewise have no effect.

The Reclamation Report on the Hassayampa Project indicates that there are borrow pit areas adjacent to the dam site which would yield adequate material for construction for the earth fill dam. We have made a rough cost estimate and believe that the dam, as planned, could be constructed for a cost of approximately two million seven hundred thousand (\$2,700,000.00) dollars. Should it develop that the rock outcropping at the dam site is in fact bedrock this cost could be reduced. The foregoing estimate does not include the cost of the recreational facilities adjacent to the lake. It would be necessary to provide boat launching ramps, picnic tables, fireplaces, fencing, residential quarters for a caretaker, ramadas, roads to the various recreational areas, toilet facilities, parking areas, and a well or wells to provide potable water.

It is believed that the existing road to the area would suffice and that no additional monies would be required for that purpose as a part of this project. However, the road is now unpaved. The increased traffic occasioned by a recreational development would justify further improvement and paving. It is our understanding that the road in question is not now a part of the Yavapai County Highway system. We have been unable to ascertain who does the maintenance. The road is obviously graded from time to time. This road has been used as a public thoroughfare for many years. If it is in fact not a part of the Yavapai County Highway system, we would assume that the county would be willing to take such steps as may be necessary to acquire the roadway and as funds permit would pave this road at no cost to the Wickenburg Development.

We would estimate that the total cost of this development would be about three million (\$3,000,000.00) dollars.

As to the economics of such a development, attention is directed to the fact that the Patagonia Recreational Association is currently constructing a dam in the vicinity of Patagonia which will, upon completion, cost approximately one and one fourth million (\$1,250,000.00) dollars, and will develop a reservoir area of less than one half of that which would be created by the Hassayampa Development. The Patagonia Dam is generally considered by recreationalist to be a model of the potential for this type of development. The Hassayampa Development would serve a much larger population and would have many times the recreational potential of the Patagonia area.

Discussions with representatives of the Arizona Game and Fish Department, State Park Department, the Farmers Home Administration, and Congressional representatives indicates considerable enthusiasm for the Hassayampa potential. We have investigated various sources of financing. It is our present belief that the Farmers Home Administration is the best vehicle for obtaining federal funds for financing a project of this type in this amount. The Farmers Home Administration is authorized to loan up to four million (\$4,000,000.00) dollars with a forty (40) year repayment period. The rate of interest of such a loan varies dependent upon a formula but once established for a given loan remains fixed. Currently the rate is five (5%) percent. Moreover, it is our understanding that the Farmers Home Administration is able to make advances from such a loan to pay the cost of engineering, etc., prerequisite to securing the services of a contractor for construction. There is a possibility that the Farmers Home Administration could provide a grant for a development of this type if it were sponsored by a non-profit corporation. The monies available for grants from this

(This Report continued on next page)

Mon 12 1 1968

source are very limited and I am not optimistic about this possibility, although I would certainly try to obtain a grant from this source.

There is a further possibility that a grant might be obtained to supplement a loan of the Farmers Home Administration by application to the Bureau of Outdoor Recreation under the Land and Water Conservation Program. The Land and Water Conservation Program is ideally suited to the Wickenburg Development but the principal problem here is the amount that is available. Last year the Land and Water Conservation Program only had five hundred thousand (\$500,000.00) dollars available for the entire State of Arizona. It is my understanding that this year these funds will be three hundred ninety thousand (\$390,000.00) dollars. Even so I think that we should explore this avenue. In granting monies under the Land and Water Conservation Program, the Bureau of Outdoor Recreation requires that all federal funds be matched with non-federal funds. The Bureau of Outdoor Recreation would not permit the use of a loan from the Farmers Home Administration as matching funds for Land and Water Conservation funds. However, the Arizona Outdoor Recreation Coordinating Commission, which is a state agency, also has funds available for grants of the type we are here considering. Currently they have six hundred thousand (\$600,000.00) dollars available for the State of Arizona. These funds could be used to match Land and Water Conservation funds. It would be my opinion that the Town of Wickenburg should seek a grant from the Land and Water Conservation Program and should simultaneously seek a grant from the Arizona Outdoor Recreation Coordinating Commission using the monies from the latter source to match the monies from the former source. Inasmuch as the Arizona Outdoor Recreation Coordinating Commission is a designated state agency to administer the Land and Water Conservation funds, coordination of these applications would not be as complicated as would initially appear. The Bureau of Outdoor Recreation must deal through a political subdivision of the state. This means that the entity receiving the grant would have to be the Town of Wickenburg.

The Town of Wickenburg should view the Patagonia Recreational Association activities with interest, as it is believed that this creates a pattern which might advantageously be used as a guide. It is suggested that the next step to be taken by the Town of Wickenburg be to arrange for a representative committee to confer with Mayor Waggoner of the Town of Patagonia, who is also Chairman of the Patagonia Recreational Association. We have contacted Mayor Waggoner in this connection and he has assured us that he would be most happy to welcome such a committee and to consult and advise with them in the light of his experience.

It is further suggested that the Town of Wickenburg organize a Recreational Association. The Recreation Association in the case of the Town of Wickenburg would serve a three-fold purpose: (1) It would demonstrate to the lending and granting agencies that there is an interest in this development which transcends the boundaries of the Town of Wickenburg. (2) It would provide a source of revenue to the Town of Wickenburg from residence outside the town limits. (3) Stimulate an interest in the project sponsored by the Association.

In the Patagonia Development the Association was the contracting agency with the Farmers Home Administration for the loan. If the Farmers Home Administration were to be the only agency participating in this development, it would be possible for the Wickenburg Recreation Association to follow the same pattern. If, however, it develops that we are able to take advantage of the grants from the Bureau of Outdoor Recreation and/or Arizona Outdoor Recreation Coordinating Commission, then, it would be necessary for the Town of Wickenburg to be the contracting entity. The Recreational Association would, in the latter event, become an auxiliary to the Town for this purpose.

In the case of the Patagonia Development a Recreational Association with a membership of three hundred (300) and a membership fee of ten (\$10.00) dollars was organized and sufficed to sponsor the Patagonia Development. The membership was subsequently expanded to around four hundred (400). Inasmuch as the Patagonia Development was less than one-half the cost of the Wickenburg Development, it is recommended that the Wickenburg Recreational Association contemplate a membership and an admission fee which would in combination yield at least ten thousand (\$10,000.00) dollars. Because the population served by the Wickenburg Development would be so much greater than that served by the Patagonia Development, it is believed that such a requirement would not be excessive. If the Association were to be the contracting agency with the Farmers Home Administration at least two-thirds of the members must be rural residents. In this instance rural residents are defined as residents outside of municipal-

ities with a population in excess of five thousand five hundred (5,500) persons. In forming a Recreational Association, the Town of Wickenburg should first prepare proposed Articles of Incorporation and By-Laws. It would be necessary to secure the services of an attorney for this purpose. The Association should develop a proposed plan which need not be a refined engineering plan, but should be in sufficient detail to permit the Farmers Home Administration to understand the overall scope of the proposal. It is believed that the engineering studies which have been prepared by this firm would suffice as a basis for making application to the Farmers Home Administration. The Farmers Home Administration would then review the proposed Articles of Incorporation and By-Laws and would study the proposed plans. The Farmers Home Administration would suggest changes, if appropriate, as a basis for approval of the Articles of Incorporation, By-Laws, and generalized plan of development. The Recreational Association could then proceed with the incorporation, adoption of By-Laws, and the preparation of a formal application for funds.

If on the other hand the Town of Wickenburg were to be the contracting entity it would not be necessary to have the Farmers Home Administration approval of the Articles of Incorporation, By-Laws, etc. Other than this the procedure would be the same in either event. Before this application could receive favorable consideration by the Farmers Home Administration, it would be necessary for the contracting entity to demonstrate the contribution which the contracting entity is prepared to make in furtherance of the project. There is no specific legal requirement covering the amount of this contribution. It must be sufficient to demonstrate to the Farmers Home Administration that the residents of the area have a real and active interest in the development. This contribution could include all monies heretofore spent for legal and engineering advice and could also include costs of rights-of-way or leasehold interests. In developing the proposed plans it is necessary that the engineer include a generalized proposal and preliminary cost estimate for the dam and a description and rough cost estimate of the recreational facilities such as picnic tables, fireplaces, ramadas, boat docks, launching ramps, roads around the lake, fences around the Recreational Area, a home for the caretaker, etc.

Before approval of the loan, the Farmers Home Administration would need: (1) To know the ownership pattern of the reservoir and lake frontage; (2) To know the amount of government and private land involved; (3) Assurance that title, easements, or long term leases could be obtained for the land surrounding the reservoir; and (4) Some sort of security such as a mortgage or leasehold interest on the land required for the rights-of-way. We do not know at this time what appropriations will be available for this loan. Present indications are that the Farmers Home Administration will not have enough monies to make all of the loans which are requested. There is further indication that priority for loans and grants will be given sewerage, sewage disposal and development of domestic water supplies. However, in the case of Patagonia toward the end of the fiscal year surplus monies became available which could not be committed to projects with a higher priority, and the Patagonia Recreation Association received monies because it was in a position to proceed. It would be desirable to place the Wickenburg Development in a similar situation in the hope that our ability to proceed might expedite commitment of loan funds.

We have in mind that the first funds would be advanced for investigation and planning because we cannot be in a position to develop firm design and detailed specifications until a survey, core drilling material investigation, economic analyses, etc. have been completed. Loans and/or grants for construction would come at a later time. In summary: (1) It is our opinion that there is a potential for a feasible recreational development on the Hassayampa River in the vicinity of the Box Canyon Dam site; (2) It is probable that a loan and grant of federal monies can be obtained to cover the cost of such development; (3) We believe that the application for a loan should be made to the Farmers Home Administration; (4) total cost of the development would fall within the limitations and authorizations of the Farmers Home Administration; (5) An attempt should be made to work jointly with the Farmers Home Administration and the Bureau of Outdoor Recreation under the Land and Water Conservation Fund Program to the end that grant monies might be obtained; (6) A committee should contact the Patagonia Recreational Association; and (7) Organization of a Wickenburg Recreational Association should be immediately instituted following the pattern of the Patagonia Recreational Association.

Sincerely, W. S. GOOKIN & ASSOCIATES

