

WATER AS A FACTOR IN CREDIT  
FROM THE FEDERAL LAND BANK VIEWPOINT

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The Federal Land Bank of Wichita was established in 1917 to help meet the long term credit needs of farmers and ranchers in the four state area of New Mexico, Colorado, Kansas and Oklahoma. Next year - 1967 - marks the 50th year of lending activity. Present outstanding loan balance is about \$375 million, and current figures indicate that somewhere around \$100 million will be loaned to farmers and ranchers in this four state area during 1966.

Funds for lending are obtained through the sale of bonds issued jointly by the twelve land banks in the nation. The bonds are secured by first mortgages as collateral and are not insured, endorsed or guaranteed in any way by the Federal Government. It is important that the bank's lending activity be on a sound basis in order to keep the continued interest of the investment markets of the country.

The land bank has long recognized the importance of irrigation in the economy of agriculture, and has found it advantageous to maintain an engineering section to study the many aspects. This section is charged with the responsibility of investigating the numerous factors involved in the supply, distribution and cost of irrigation water and the organizational structure of the units making delivery of the water as well as such factors as drainage, flood frequencies, etc; and making recommendations to the bank.

With this introduction I would like to outline some of the types of investigations made and how they are used in the appraisal of farms for lending purposes. One of the best ways to estimate or predict what will likely happen in the future is to study what has happened in the past. This applies to a study of an irrigated area whether it be the drainage area of a major stream, a pump irrigated area, or a new irrigation project just being developed below a large reservoir. A review of the available records is usually the starting place for any irrigation study, and usually the longer the period of record, the more accurate the result. In this connection I think it only proper to give credit to state and federal offices such as the State Engineer, Geological Survey, Bureau of Reclamation, Extension Service, etc., as well as universities for the many excellent technical and basic data reports published on the subject of water and its use. Without this information it would be difficult, if not impossible, for an agency like the land bank to be of service in some areas.

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Let us first consider gravity rights originating from surface streams in Colorado or New Mexico. A series of ditches diverting from a stream may have the same legal status yet have a wide range of values based on the availability during the irrigation season. As a guide to appraisers in the valuation of irrigated land a system of water supply classification has been devised for designating different degrees of adequacy of water supply. These are based on the quantity of irrigation water normally available as related to crop production of the most profitable crops for which the land is adapted. The classifications are designated as Class I, II, III and IV with subdivisions each under Class II and III. In working up a report on a particular district the first step is usually a tabulation of all court decrees granted in the order of their priority. Published stream flow records, diversion records of water commissioners or ditch riders, and ditch company delivery records are studied. The larger ditch companies usually have fairly complete records of diversions and deliveries on which a supply classification can be based. On small private and partnership or community ditches there are seldom sufficient diversion records to gauge a supply classification, and stream flow records supplemented with field observations and experience are used. Under many ditches the element of time the priority is available is the controlling factor rather than the quantity of water delivered. Such factors as return flow to the stream and the location of a ditch on the stream may also influence its classification. Water deliveries are usually shown in acre-feet per acre for land holding the customary right under the system. In the event the water right offered with the security varies from the customary right, the proper delivery per acre or per share can readily be calculated.

The appraiser is provided with information on the normal water supply classification for decreed rights and also with the assessments normally made against the water company stock or ditch to maintain the system. This information is needed in order to make a comprehensive estimate of net returns. A register of land sales is also maintained in each area, and the water supply classifications enable the unit sales value to be broken down into the sale price of land with various adequacy of water supplies. Most of the bank's surface water reports were made some years ago and now we just attempt to update or revise them as changes take place in ditch organizational status or water supply features.

One factor that may alter the classifications established is the number of new Bureau of Reclamation projects organized in Kansas, Colorado and New Mexico within the last few years. Some of these projects provide supplemental water to land that was already irrigated with a short supply and some irrigate new land that was formerly unproductive or farmed as dry land. There is usually a desire on the part of land owners in a new irrigation district for recognition

of the potential water supply as early as possible in the development period. The Definite Plan Report on a new project is studied to determine the probable water supply and costs to be expected, and the new project is compared to other projects on which information has been collected. A long period of record is available on such projects as Elephant Butte at Las Cruces, and Grand Valley and Uncompahgre Projects in Colorado, and the lending experience of the land bank has been very favorable. Appraisals can usually be made on a semi-irrigated basis to cover leveling and developing costs as soon as water is available to a farm in a new district. Appraisal levels are then increased during the development period as crop production and water costs become stabilized, and by the end of the time allotted to development full irrigation value can be considered. If the new water provided by the district is supplemental on land already developed and irrigated, the full supply can often be considered as soon as the district becomes operative.

The development of pump irrigation in the many underground water areas in the district has occupied much of our study time for the last 10 or 15 years. The expansion of pump irrigation in western Kansas and Oklahoma and eastern Colorado as well as many areas of New Mexico has been tremendous. There are reported to be three million irrigable acres in western Kansas alone, of which something like one million acres are presently developed for irrigation. Such factors as the modern turbine pump, introduction of natural gas for fuel, aluminum surface pipe and underground pipe to transport water from the well to the place of use have made it feasible to lift water from 300 to 400 feet where previously around 200 feet was considered the economic limit. Another factor that has contributed to the expansion of irrigation has been the shortage of available land accompanied by the steady rise in the price of land. This has been largely a result of the trend toward larger units and greater mechanization. An operator may have 4 to 6 quarter sections of dry farm land or one irrigated quarter with several dry land quarters, and still be able to handle another quarter section or so with little or no additional investment in machinery and equipment. It may be possible to put down a well and develop irrigation on a quarter section already owned rather than to look for additional dry land that may be some distance away from the present operation. The irrigation development can often be completed at less expense than the purchase of the additional land, and at the same time stabilize yields and permit greater diversification. Pump irrigation is even being utilized in areas of eastern Kansas and Oklahoma, where the average rainfall is 40 inches and more, to offset occasional periods of short supply during July and August. The application of possibly a foot of supplemental water during this period stabilizes crop yields and enables full utilization of fertilizer applications.

Studies of irrigation in pump areas involve keeping abreast of cropping trends and yields, water requirements, water efficiencies and cost trends as well as estimating water level declines and future life expectancy of water supplies. As we all know, such yields as 2 to 2½ bales of cotton and 100 bushel corn and grain sorghum per acre have become commonplace, but studies also indicate costs have increased to the point where the margin of profit becomes small with yields much less than these.

In considering a long term loan in an area supplied from underground water, it becomes necessary to make an estimate on the life expectancy of the water supply. This is done by plotting the trend in water level declines based on annual well level measurements made by State and Federal agencies supplemented by measurements that we may make in some areas. In estimating future declines an allowance must then be made for future development. This becomes largely a matter of judgment in areas where there is little control over the number of wells that may be drilled. The problem is made much easier in areas of New Mexico that have been declared as closed basins by the State Engineer. This establishes a limit on the ultimate development in the area and future trends can be projected with better accuracy. In closed basin areas the appraiser is supplied with maps showing the depth to water table and the average declines to be expected based on the trend over the past 10 or 15 years or whatever period of record is available. We also attempt to provide contours showing the remaining thickness of saturated sediment where this may become a factor during the life of a loan. In the Mimbres and Animas Valleys of southwestern New Mexico the depth of valley fill is considerable and the saturated thickness map is not so important; however, in the Portales Valley in eastern New Mexico, where the 'red bed' is rather close to the surface and the saturated thickness is limited, this information becomes important.

The land bank is by its very nature rather conservative in the approach to appraisal levels during the development stages of a new area. After the cropping trends and markets have become fairly stable the area may be approved for limited lending with a 10 to 15 year term. When the area has approached its ultimate development, or has been declared a closed basin, it is usually approved for irrigated lending for a longer term. A 20 year term is usually the maximum term under irrigation where all the water is supplied by pumps.

It appears certain that the expanding trend in irrigation development will continue as the role of agriculture becomes even more important in this age of increasing population. I think we must admit that many problems exist - if this were not the case - there would be little need for our being here for this conference. The

limiting factor could well be the life expectancy of that all important commodity - water.

The land bank is constantly making appraisal studies to determine what changes should be made in value levels, loan terms, or other features to better serve farmers and ranchers. We feel we have been quite successful in the evaluation of water rights, and this has been possible only through the close cooperation of the many people involved in the various phases of the water problem.