

TR-21
1969



**A Study of Institutional Factors Affecting Water
Resource Development in the Lower Rio Grande
Valley, Texas**

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A STUDY OF INSTITUTIONAL FACTORS AFFECTING
WATER RESOURCE DEVELOPMENT IN THE
LOWER RIO GRANDE VALLEY, TEXAS

By

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TECHNICAL REPORT NO. 21

September 1969

This study was partially supported by the
Office of Water Resources Research,
Department of the Interior,
P.L. 88-379, Project B-025-TEX.

ACKNOWLEDGMENTS

This study was supported by the Natural Resource Economics Division of the Economic Research Service, USDA, and the Office of Water Resources Research, USDI, through the Water Resources Institute, Texas A&M University.

We wish to express our appreciation to James Atherton, Ted Kuntz and Ivan Hansen of the Economics Research Service and to L. J. Lann and E. W. Buchtein of the Soil Conservation Service for their reviews of the preliminary manuscript. Dr. A. B. Wooten of the Department of Agricultural Economics and Sociology also offered valuable assistance and encouragement.

Any errors or omissions are the responsibility of the authors. This research report does not conclude the studies of institutional factors influencing water developments in the Lower Rio Grande Valley. Future studies will benefit from suggestions and corrections directed to the authors.

ABSTRACT

Despite numerous studies of and plans for the use of land and water resources of the lower Rio Grande Valley for efficient agricultural production, development has lagged and the production potential has not been realized. Institutional factors--political, legal, economic and cultural--have often been obstacles to the construction of needed water facilities and good management of lands in irrigation. Change in some of these institutions and the introduction of new, more appropriate institutional arrangements can facilitate land and water development and use so that greater efficiency in productive operations is achieved.

A very important legal institution is the water right, yet there has existed considerable confusion about rights in the Valley. Water rights need to be clarified as to origin, extent and legality. Certainty in this right is necessary to optimum levels of development of irrigation. This can be accomplished by completion of court action which has proceeded through this decade.

To achieve efficiency in water use, rights should be made negotiable. Some trading or leasing of rights is practiced now on an informal basis. A change or clarification of water law to permit purchase and sale of rights would facilitate exchange so that water would be used in higher value uses.

To achieve better management of water in irrigation, it is recommended that rehabilitation of irrigation systems be continued on an accelerated basis. This would include reconstruction of many canals and ditches to include concrete linings, construction of storage areas off the river where feasible, and certainly installation of water meters at points of delivery to users.

To provide for more orderly and efficient planning for and further development of irrigation systems, it is recommended that some consolidation of special districts be accomplished. It seems possible that a single master district might be a logical goal for the many irrigation districts.

Drainage problems could be attacked by a single or small number of irrigation districts that would take on this responsibility, or one or more special drainage districts could be organized for this purpose.

These and other recommendations are the product of this study.

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CHAPTER I

INTRODUCTION

The Lower Rio Grande Valley, located in the southernmost part of the state, is a highly developed urban, industrial, and agricultural region. It includes the land and water of most of three counties--Hidalgo, Willacy, and Cameron--and covers about 3000 square miles of land. The irrigated areas, most of which are contiguous, constitute one of the largest single concentrations of irrigated land in the State. It is also the most intricately organized, densely settled, and intensively farmed area in Texas.¹ It is one of three areas in the United States capable of producing citrus fruits and certain vegetables. In 1964, 780,126 acres were cultivated, of which approximately 80 percent were irrigated.² In the same year, cash from sales by farmers exceeded 97 million dollars, of which 64 million came from field crops, 12 million from vegetables, and 4 million from fruits and nuts.³ Sales from all livestock make up the remaining farm sales. Irrigation is essential to provide maximum production obtainable with the mild climate and fertile soils of the Valley. Water is supplied almost entirely by pumping from the Rio Grande.

¹William F. Hughes and Joe R. Motheral, Irrigated Agriculture in Texas, Miscellaneous Publication 59, Texas Agricultural Experiment Station, September, 1950, p. 29.

²Tate Dalrymple, The Water Situation in the Lower Rio Grande Valley of Texas, McAllen, Texas, September, 1965, p. 2.

³U. S. Bureau of Census, United States Census of Agriculture: 1964, Texas Counties, Preliminary Report, Cameron, Hidalgo, and Willacy Counties.

More than 100,000 people were employed within the region in 1964. Farming activities directly account for approximately one-fourth of all employment in the region. If food processing is included, the agricultural group employs as much as one-third of the total. However, sales by local farmers and food processing firms are only one-fifth of the total sales of the local economy. Nevertheless, the combined farming and food processing groups is second only to general trade among the local industry groups in terms of sales, and this comparison is for a year when agricultural production was fairly low in the Valley.⁴

This area is often referred to as the Lower Rio Grande Valley and most Texans call it "The Valley." For convenience, it is referred to hereinafter as the Valley.

The Problem Situation

While the area is very productive of crops such as cotton, grain sorghums, vegetables and citrus, it suffers from some problems of resource use. These include an inadequate supply of water, inefficient use of existing water supplies, and inadequate drainage. It has only been in the past two decades that these problems have materially affected the Valley. Today they are of major concern and must be resolved if the Valley is to continue to prosper.

⁴Robert B. Williamson, The Lower Rio Grande Valley of Texas, Bureau of Business Research (Austin, Texas: University of Texas Press, 1966), pp. 51-53.

In the Valley, various private and governmental organizations and a few individuals have recognized a need for adjustment in resource use. There have been many studies that indicate what action should be taken; in fact, the Valley is considered one of the most highly studied areas in the State. People are now concerned with possible procedures for initiating said action. They are concerned with forming appropriate organizations and getting the active cooperation and participation of existing organizations. Essential to a program for action and organization for administering a program will be recognition and effective adjustment of institutional factors affecting resource use. These factors include existing and proposed laws and statutes, organizations which control water, governmental agencies, commodity markets, customary farming practices, etc. These are institutions which are related to the action or adjustment that must be taken. They are critical to further development of the Valley.

Institutions

Roland R. Renne defines institutions as "well-established social structures within which men do collectively the thing which seems right and proper, in regard to some fundamental interest in life."⁵ Barlowe states that "the various aspects of group, collective, or social action which influences and controls individual behavior may

⁵Roland R. Renne, Land Economics (New York: Harper and Brothers, 1947), p. 103.

be described as institutions or as institutional factors."⁶ Commons defines an institution as "collective action in control, liberation, and expansion of individual action."⁷ The broad scope of institutions was pointed out by Walton H. Hamilton when he wrote: "Institution is a verbal symbol which, for want of a better word, describes a cluster of social usages."⁸

Institutions tend to be considered reasonably permanent formal or informal social structures arising from group rather than individual action. Institutions represent established arrangements in society and established ways of doing things. They involve rules which prescribe our individual rights and conduct in groups or society.⁹ Some institutions have more significance than others, but each institutional factor usually plays an important role in guiding human behavior. Each institution is a part of our social organization, and each is subject to modification as conditions dictate. Institutions exist to serve common purposes among individuals; they may also restrict or hinder the achievements of individuals or groups.

⁶Raleigh Barlowe, Land Resource Economics (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1958), p. 318.

⁷John R. Commons, Institutional Economics (New York: The Macmillan Company, 1934), p. 5.

⁸Walton H. Hamilton, "Institution," Encyclopedia of the Social Sciences (New York: The Macmillan Company, 1932), Vol. 8, p. 84.

⁹Ibid., p. 176.

A broad institutional framework always affects man's use of natural resources. Contained within this broad framework are such things as the role our cultural environment and social forces play in influencing the behavior of individuals, groups, or communities. Also included are cultural attitudes, customs and traditions, habitual thoughts or practices, legal arrangements, government activities, religion, and other similar factors.¹⁰ To understand how various institutions function requires knowledge of their development since many institutions develop with time.

Objectives

The objectives of this study were:

- (1) to identify, classify, and examine existing institutional arrangements in the Lower Rio Grande Valley which potentially affect management and development of water resources and to describe their historical development,
- (2) to analyze the particular way in which the identified institutional arrangements acted as obstructing or facilitating elements in management and development of water resources in the Valley,
- (3) to suggest a social organization which could act to correct the existing resource use problems, and
- (4) to estimate the impact of the identified institutions upon further development in light of the suggested organization.

¹⁰Barlowe, op. cit., p. 316.

Procedure

The initial step was to identify the institutions important to water development and use in the Valley. This was accomplished by careful examination of the history of land and water development in the Valley, review of earlier studies of land and water use problems, and scrutiny of data and information descriptive of present economic and social organization of the agricultural industry in the Valley.

After the institutions were identified they were classified according to their essential characteristics. For example, leasing arrangements were classed as economic institutions, water laws as political institutions, etc. Classification was useful to the study of relevant institutions as it suggested the use of appropriate theories, laws, concepts and criteria of the various disciplines involved.

The next step was to describe the identified institutions and discuss their historical development. General information concerning the Valley was available from past studies and other existing literature. Personnel of various state and federal agencies with responsibilities in the Valley (the Water Development Board, the Water Rights Commission, the Soil Conservation Service, the Corps of Engineers, the Bureau of Reclamation, and the International Boundary and Water Commission) were interviewed to obtain information that they held in files and as personal recollections of events and experiences in the Valley. They were very helpful.

The next step was to obtain data from persons in the Valley. Information on land values, crops, and local customs was obtained from interviews with local businessmen who were closely associated with the Valley's problems. Such persons as attorneys involved in the present water dispute, city managers, local newspapermen, members of local civic organizations, and bank officials were interviewed. From the information assembled, a description of the institutions was derived.

After the institutions were described, their impact was estimated. This involved the determination of their present relationships to and effects on resource use in productive enterprises. Information about physical problems was available from publication of governmental and private agencies that had studied resource use in the Valley since the early 1900's and from current surveys of land and water use problems by the Soil Conservation Service, Bureau of Reclamation, Texas Water Development Board and the International Boundary and Water Commission. Relationships of institutions to these problems were estimated by considering (1) organization of resources in productive activity--the allocative processes, ownership, rights, management, etc., and (2) the use of resources in various enterprises--resource combinations, commodities produced, physical efficiency of resource use, factor prices, product markets, etc. Knowledge of physical and economic use of land, water, labor and other resources and of the relationships of institutional factors to development and use permitted estimation of the probable effect of various institutions on further resources development, if nothing is done to change established institutional relationships.

Some changes in certain institutions which have caused problems in development and use of resources were suggested and impact of the changes was estimated. Alternative forms of political organization of people in the Valley to facilitate the correction of various physical problems of resource use were examined. Some changes in resource allocation and pricing policies were considered. Suggestions for adjudication of water rights were made. Advantages and disadvantages of the proposed changes were discussed at some length.

C H A P T E R I I
DESCRIPTION OF THE AREA

Location of the Area

The area to which this study relates is the three county area of the Lower Rio Grande Valley in the southernmost part of Texas. It is bounded on the east by the Gulf of Mexico and on the south by the Rio Grande, which forms the international boundary between the United States and Mexico. The Lower Rio Grande Basin is a smooth, nearly flat, almost featureless plain. It comprises a land area of approximately 1,932,160 acres within the boundaries of Cameron, Hidalgo, and Willacy Counties.¹

Climate

The climate of the Valley ranges from semi-arid to subhumid, with long, hot, humid summers and mild, dry winters. Precipitation in the region averages 17 inches per year in the westernmost part and around 27 inches near the coast. The periods of heaviest rainfall are generally in September and October, with a secondary concentration in May and June. The weighted normal precipitation for the area is 24 inches.²

¹U. S. Bureau of the Census, op. cit., p. 1.

²The Climate and Physiography of Texas, Report No. 53, Texas Water Development Board, Austin, Texas

Temperatures throughout the year average 74°F., with a range in the central portion from a January average minimum of about 51°F. to an August average maximum of around 97°F.³ The average frost-free growing season ranges from 330 days at Brownsville to 310 days near the west end of the area.⁴ Severe cold spells causing extensive damage to crops are infrequent. However, as in 1949, 1951, and 1962, severe freezes occurred causing damage to citrus trees and/or fruit and destroying vegetable crops.⁵

Soils

Fertile soils are among the most important natural resources in the Valley. Along the Rio Grande are found the alluvial soils formed by river silt. This band of alluvial soils widens toward the coast and extends, at some locations, twenty miles or more north of the river. The alluvial soils range from sandy to clay in texture but most are classified as clays. Generally, the alluvial soils are quite fertile and suitable for crops such as cotton, vegetables, grain sorghum, and other crops; however, near the coast heavy clay subsoils cause poor drainage, and salinity is a problem. Most of the alluvial cropland is irrigated.⁶

³Williamson, op. cit., p. 14.

⁴U. S. Department of the Interior, Bureau of Reclamation, Plan for Development, Valley Gravity Project, Rio Grande (Lower) Basin, Texas, Project Report No. 5-0619-3, December, 1948, p. 2.

⁵Williamson, op. cit., p. 14.

⁶Ibid., p. 11.

Immediately north of the alluvial soil belt is an area of darker-colored, mainly loamy soils which starts in the southwest corner of Hidalgo County and widens toward the coast to include parts of both Cameron and Willacy counties. These soils hold moisture well and are especially productive. The clays and clay loams are used mainly for cotton, grain sorghum, and vegetables, and the sandy soils are used for citrus, as well as for vegetables, cotton and other crops. Most of this land is also irrigated.⁷

Further north the soil is the light-colored, sandy-loam soil of the upland plains. Here some crops are grown, but most of the area is used for grazing. Very little of this land is irrigated.⁸

Water Supply

The Valley's water resources are vital to the area's agricultural economy. The past abundance of water has encouraged irrigated farming and permitted high levels of agricultural production, but a declining water supply has tended to restrain growth of agriculture and industry.

Groundwater provides a rather small portion of the total water used in the Valley. There are about 1,500 irrigation wells, numerous domestic wells, and some industrial and public wells. The total pump capacity of the wells is about 2,200 acre-feet per day.⁹ However, the

⁷Ibid., p. 12.

⁸Ibid.

⁹Dalrymple, op. cit., p. 17.

water is generally of poor quality and used mainly for irrigation rather than for municipal and industrial purposes. The water is used for irrigation as a supplemental supply to be used when surface-water supplies are inadequate to meet the existing needs.

Surface water provides the major supply of water for the Valley. Rainfall plus the United States' share of the water flow in the Rio Grande are the main sources of surface water, with precipitation playing a minor role. The estimated United States' share of Rio Grande water at a long-run average annual rate is about 1.7 million acre-feet measured at the Falcon Dam site. Past variations in the yearly flow have ranged from more than 3.5 to less than 0.6 million acre-feet. Falcon Reservoir, completed in 1953, has a controlled capacity for water conservation and flood control of about 3.3 million acre-feet, with the conservation portion accounting for more than 2.8 million acre-feet. The Texas share of these amounts is 58.6 percent. Falcon Reservoir has helped greatly to regulate the flow of the Rio Grande and has reduced losses of water associated with periods of high flow.

Up the Rio Grande, near Del Rio, Amistad Dam and Reservoir is under construction. When completed in 1969, it will have a total capacity of about 5.3 million acre-feet. Conservation storage space will amount to 3.5 million acre-feet, of which 56.2 percent will be Texas' share. This dam will provide additional control of the river and storage area for flood waters.

Population

The total population of the three-county area, according to the 1960 census, was 352,086. The total population of the area increased by more than 50 percent during the 1940's. During the past fifteen years, the Valley population growth rate has declined; the increase in population between 1950 and 1960 was only fifteen percent.¹⁰

Migration to the Valley from Mexico is an important cause of population increase. In 1960, over two-thirds of the region's population had Spanish surnames, and 44 percent of the total population was of foreign stock (that is, foreign-born or children of foreign-born parents).¹¹ During the 1955-60 period, more than 15,000 people from other parts of the United States moved to the Valley and nearly 10,000 came to the Valley from Mexico or other foreign countries. This equals a gross immigration of 25,000 persons per year from outside Texas.¹²

The increase in population before 1930 was due to the rapid development of citrus orchards and vegetable production, which provided employment opportunities. The increase since 1930 has been due to the expansion of industries, particularly those which process agricultural products. Nearly all of the inhabitants live within the irrigated

¹⁰U. S. Bureau of the Census, United States Census of Agriculture: 1964, Texas Counties, op. cit., Cameron, Hidalgo, and Willacy Counties.

¹¹Ibid.

¹²Williamson, op. cit., pp. 18-19.

area of the Valley, which is less than one-half of the total area of the three counties.¹³

Cities

Cities in the Valley have grown rapidly in the last twenty years. Their growth should continue in the future with projected populations for 2020 being three times the present for most cities. The oldest city in the area, Brownsville, is also the largest. The 1960 population was 48,040 with the 2020 projected population being 130,200.¹⁴ Its port, the terminus of the Intra-Coastal Canal reaching to New Orleans, does a large export business.

Harlingen and McAllen are the next largest cities with populations of 41,207 and 32,728, respectively. Both of these cities are commercial centers. Other cities in the Valley with populations greater than 15,000 are Edinburg, San Benito, and Weslaco.¹⁵

¹³U. S. Department of the Interior, Bureau of Reclamation, Report on Alternative Plans for Diversion and Distribution of Rio Grande Flow Below Falcon Dam in Texas, op. cit., p. 8.

¹⁴State of Texas, Water Development Board, Proposed Water Resource Development in the Rio Grande Basin, August, 1966, p. 3.

¹⁵Ibid.

C H A P T E R I I I
H I S T O R Y O F D E V E L O P M E N T

Early Development

The Lower Rio Grande Valley has a rather lengthy history of development by Europeans and their decendants. In 1749, Colonel Jose de Escandor established the first settlement for the Spanish Crown on the south or right bank of the Rio Grande. These settlements were used by Spain to secure its claim to the territory which was based upon exploration and partial settlement two centuries earlier. Settlement expanded slowly until land grants were issued.¹ Ranching was the primary economic activity in the area.

Fort Brown was established in 1846 and the town of Brownsville shortly thereafter. Irrigation farming began in 1876, but very little expansion occurred until a railroad was built into the Lower Valley in 1904.² Rail service made large irrigation projects feasible by providing a fast method for moving agricultural commodities. Numerous land companies were formed, and great energy and ingenuity was illustrated by the sales campaigns of these companies. Excursion trains were used by the land promoters to bring large numbers of prospective land buyers from the north to the Valley. The mild weather, flourishing groves, and profusion of flowers in mid-winter proved irresistible

¹U. S. Department of the Interior, Bureau of Reclamation, "Plan of Rehabilitation for Mercedes Division," Lower Rio Grande Rehabilitation Project, Amarillo, Texas, January, 1956, p. 7.

²Hughes and Motheral, op. cit., p. 29.

to many people.

The first major irrigation systems in the Valley were established around 1905 by large land and irrigation companies. These companies built the irrigation system, cleared and divided the land, and sold the land to "homeseekers" brought to the Valley on excursion trains. The construction of extensive irrigation projects accelerated in the 1920's and continued through the early 1930's. Much of the development was paid for by the thousands of persons who bought small vegetable and citrus farming tracts.

Land and water companies did not last long; many were bankrupt by 1915. Beginning in 1914, farmers organized irrigation districts, issued bonds, bought water rights owned by the development companies and took over the companies' activities. After 1914, increased irrigated acreage came about through expansion of existing districts or creation of new districts.³ Irrigation districts are more fully discussed in Chapter VII.

Agricultural Development

Before large scale irrigation was introduced into the Valley, the cattle industry predominated. After irrigation was started, cattle production almost ceased to exist. In recent years, there has been an increase in livestock production in the Valley. This accompanied an increase in forage crop acreage. However, few Valley farmers specialize in livestock production

³Hughes and Motheral, op. cit., pp. 29-30.

In the spring of 1902, rice was planted near Brownsville as an experimental crop. When the crop was harvested, it was of the very highest quality and the yields per acre were amazing. Prospects looked so good that a \$25,000 rice mill was constructed in the city of Brownsville. The Valley had everything required to grow rice: rich soil, plenty of fresh water, lots of sunshine, and a long growing season. However, without warning the rice crops withered and died. Due to the abundance of water, salt and alkali in the subsoil floated to the surface killing all plant life. This brought the rice industry to an abrupt conclusion.⁴

Sugar cane had been cultivated in the Valley for many years, but in 1911, the industry began to expand rapidly. New land was brought into production and much northern capital was invested. Production reached a peak about 1914, after which severe competition from foreign countries and water and insect problems caused the industry to gradually disappear.

Don Macedona Vela planted the first citrus in the Valley in the early 1880's. The earliest successful citrus planting was done by Charles Volz in 1908.⁵ However, until about 1917, citrus in the Valley was primarily valued for ornamental purposes. In 1920, the

⁴John R. Peavey, Echoes from the Rio Grande (Brownsville, Texas: Springman - King Company, 1963), pp. 50-53.

⁵Texas A&M University, Texas Agricultural Extension Service, Guide for Citrus Production in the Lower Rio Grande Valley, B-1002, December 1963, p. 3.

industry achieved recognition when about 124,000 trees were reported in the area. Early plantings were mainly white seedy grapefruit and seedy oranges. In 1931, red grapefruit was perfected and widely planted. By 1949, there were 14,000,000 trees; however, the 1951 freeze killed 80 percent of them, bringing citrus production to an abrupt halt. Most trees planted after the freeze were red grapefruit. Again in 1962, 30 percent of the trees were destroyed. By 1967, the number of trees in the Valley had been increased to 6,347,900.

Cotton production also began in the early part of the century. However, it was not widely planted due to insect problems which were not reduced until 1946, when the United States Department of Agriculture began its Pink Bollworm Control program. Also, reduction of citrus acreage, due to the severe freezes of 1951 and 1962, greatly stimulated cotton production. In fact, it was thought that these freezes would hurt the Valley's economy for many years, but cotton filled the gap. Cotton production rose from 30,000 bales in 1920 to 600,000 bales in 1951. The production in recent years has been around 400,000 bales.

Vegetables have always been produced in the Valley in considerable quantities. The short growing period for vegetables permits a farmer to harvest them and produce a second crop, usually cotton or forage. However, development has been restricted historically by freezes, inadequate transportation, and problems of marketing these crops.

Sorghums have a rather short history in the Valley. They are of increasing importance, being used for grazing and cover crops as well as cash crops.

CHAPTER IV

PRESENT STATUS

Present Agricultural Economy

Sales of farm products have amounted to about 35 percent of total income of the Valley. This wealth, primarily dependent on irrigation water from the Rio Grande, creates additional wealth in the Valley (1) by requiring services, farm equipment and machinery, and other products necessary for production; (2) by supplying products for the food processing industries and distributors; (3) by supporting local commercial establishments; and (4) by constituting a valuable asset to the State and National economies and governments.¹ In 1964, there were 507,928 acres of irrigated cropland harvested.² The International Boundary and Water Commission estimates that 80 percent of the land cultivated is irrigated.³ Irrigation water is the key to the Valley's success.

In recent years, approximately 40 percent of the cultivated cropland has been planted in cotton in the Valley.⁴ Cotton production

¹State of Texas, Texas Water Commission, Water Supply Limitations on Irrigation From the Rio Grande in Starr, Hidalgo, Cameron and Willacy Counties, Texas, Bulletin 6413, November, 1964, p. 1.

²U. S. Bureau of the Census, United States Census of Agriculture: 1964, Texas Counties, op. cit., Cameron, Hidalgo, and Willacy Counties.

³Dalrymple, op. cit., p. 2.

⁴Texas Water Commission, Bulletin 6413, op. cit., p. 21.

reached a peak after the 1951 and 1962 freezes. Acreage allotments have reduced acreage and have been an important factor in limiting production. Cotton farms in the Valley are usually larger than citrus or vegetable farms, but the investment per acre is lower. In the past ten years, cotton has been one of the region's most important foreign exports and a major source of cash farm income.

Citrus fruits, primarily grapefruit and oranges, are widely produced in the Valley; the area is third in the nation in citrus fruit production. However, between 1957 and 1963, citrus occupied only ten percent of area cropped in the Valley.⁵ This was due to killing freezes which occurred in 1951 and 1962. In 1964, the value of fruits and nuts sold was \$3,732,623, of which 88 percent came from Hidalgo county. Sales from fruits and nuts accounted for 3.8 percent of the value of farm products sold.⁶

Specialized citrus farms are usually small, but require a large investment in land, trees and equipment per acre. Valley citrus requires irrigation, and the long-run water requirements average higher than for other major types of agriculture. Trees in the Valley yield less than those in California and Florida, but operation costs are lower in the Valley. The profit potential of citrus production in

⁵Ibid.

⁶U. S. Bureau of the Census, United States Census of Agriculture: 1964, Texas Counties, op. cit., Cameron, Hidalgo, and Willacy Counties.

the Valley compares favorably with that of other areas. Therefore, except for future recurring freezes, conditions appear to be favorable for a recovery of citrus production in the region.

Approximately one-third of the vegetables harvested in Texas are grown in the Valley. It is one of the leading vegetable-producing areas of the nation.⁷ The major vegetables harvested in the area are onions, carrots, tomatoes, peppers, lettuce, and cabbages. In 1964, over 12.5 million dollars worth of vegetables were sold in the Valley. Of this 70.3 percent was grown in Hidalgo county. Vegetable sales account for approximately 12.9 percent of the value of all farm products sold in the Valley.⁸

A common Valley practice is to produce both irrigated vegetables and cotton on the same land during the year. Irrigation is required on almost all vegetable farms, and these farms require a relatively high investment in land and fixed capital per acre. Labor costs are relatively high, but water requirements are generally lower per acre than for citrus. The outlook for total vegetable sales in the Valley during the next two decades is for production to remain near recent (1964) levels.⁹

⁷Williamson, op. cit., p. 68.

⁸U. S. Bureau of the Census, United States Census of Agriculture: 1964, Texas Counties, op. cit.

⁹Williamson, op. cit., pp. 69-70.

The livestock industry is becoming more important in the Valley. Feed lot operations are expanding rapidly due to available grain and silage. More than 100,000 steers are fattened in feed lots in the Valley each year.¹⁰ In 1964, livestock sales totaled \$12,172,950, accounting for 12.5 percent of the total value of farm products sold.¹¹ It is expected that, with reasonably good cattle prices, there will be substantial increases in the region in both beef cattle production on dryland pasture and cattle feeding on irrigated pasture during the next twenty years.¹²

Grain sorghum, the only other agricultural product of major importance, has also increased in importance and they appear to have a good future. In recent years, approximately 300,000 acres of grain sorghum have been harvested each year. Of this, a fifth or more is irrigated. Expansion is expected for grain-sorghum production due to recent increases in storage and port facilities and the growth of the Valley's cattle industry.¹³

¹⁰U. S. Department of Agriculture, Soil Conservation Service, "Work Plan for Watershed Protection, Flood Prevention, and Agricultural Water Management" (tentative plan), Los Fresnos Resaca Watershed, May, 1966, p. 7.

¹¹U.S. Bureau of the Census, United States Census of Agriculture: 1964, Texas Counties, op. cit., Cameron, Hidalgo, and Willacy Counties,

¹²Williamson, op. cit., p. 84.

¹³Ibid.

Table 4-1.--Value of Farm Products Sold by Source, Lower Rio Grande Valley, 1964.

Item	Value	Percent
Field Crops	\$64,321,173	66.1
Vegetables	12,583,751	12.9
Livestock (other than poultry and dairy)	12,172,950	12.5
Fruits and Nuts	3,732,623	3.8
Miscellaneous	<u>4,476,704</u>	<u>4.7</u>
Total	\$97,287,201	100.0

Source: 1964 Census of Agriculture, Cameron, Hidalgo, and Willacy Counties, Texas.

Present Farm Problems

Some of the major problems of agriculture in the Valley include periodic irrigation water shortage, poor drainage and high soil salinity, and inefficient use of existing water supplies. These problems pertain to resource use and greatly affect Valley productivity.

The Rio Grande is the primary source of water for municipal, industrial and irrigation uses. It has not failed to provide needed water supplies for cities and industries and it has been a reasonably adequate source of water for irrigation. There are variations in flows of the river which can be significant however, and there may be some decrease in annual flow in recent years. Table 2.1 shows the

annual discharge of the river and a 10-year running average of discharge.¹⁴

The magnitude of the variations in flow is illustrated by the annual discharge for the 20 year period 1944-64. A drought in the early 50's reduced the flow to 444 thousand acre-feet, in 1952. The highest annual discharge was 3,326 thousand acre-feet, in 1954. The period of recorded flow of the river is too short to allow any conclusion about a decrease in flow. Some decrease in this 1900-64 period is evident, but the drought of the 50's may significantly affect this observation.

The water supply problem is compounded by the increase in cultivated acres in the Valley. The International Boundary and Water Commission estimates that in any one year the land irrigated will be, on the average, about 80 percent of the cultivated area. Actually, this may vary greatly for any one year, but it is the best estimate available. In 1944, 527,870 acres were cultivated; in 1954, 657,743 acres were cultivated, and in 1964, 780,126 acres were cultivated in the Valley. About 780 thousand acres were cultivated as of April 24, 1965.¹⁹

Domestic, municipal, and industrial water requirements have increased and will continue to increase in the future. In 1962, 71,502

¹⁴Dalrymple, op. cit., p. 10.

¹⁹Dalrymple, Ibid.

Table 4-2--U. S. Share, Rio Grande at Falcon Reservoir, 1900-64

Year	Annual Discharge	10-year Running Average	Year	Discharge	10-year Running Average
	Ac. Ft.	Ac. Ft.		Ac. Ft.	Ac. Ft.
1900	2,827	-	1933	1,727	1,823
1901	1,266	-	1934	933	1,763
1902	1,106	-	1935	3,389	1,846
1903	1,758	-	1936	2,137	1,899
1904	2,248	-	1937	1,108	1,893
1905	2,555	-	1938	2,095	1,958
1906	2,822	-	1939	1,201	1,977
1907	1,593	-	1940	1,458	1,959
1908	1,707	-	1941	3,142	2,122
1909	1,588	1,947	1942	2,224	1,941
1910	1,238	1,788	1943	1,210	1,890
1911	1,148	1,776	1944	1,499	1,946
1912	1,087	1,774	1945	1,183	1,726
1913	1,632	1,762	1946	1,451	1,657
1914	3,150	1,852	1947	1,139	1,660
1915	1,660	1,763	1948	1,776	1,628
1916	1,354	1,616	1949	2,225	1,738
1917	1,362	1,593	1950	1,087	1,694
1918	1,173	1,539	1951	838	1,463
1919	3,675	1,748	1952	444	1,285
1920	2,901	1,914	1953	596	1,224
1921	1,051	1,905	1954	3,326	1,407
1922	2,380	2,034	1955	1,310	1,419
1923	1,833	2,054	1956	478	1,322
1924	1,530	1,892	1957	2,000	1,408
1925	2,558	1,982	1958	2,030	1,433
1926	1,613	2,008	1959	1,460	1,357
1927	1,166	1,988	1960	1,200	1,368
1928	1,441	2,015	1961	1,330	1,417
1929	1,010	1,748	1962	825	1,456
1930	1,660	1,624	1963	680	1,464
1931	1,498	1,669	1964	1,750	1,306
1932	4,025	1,833			

acre-feet was supplied for domestic, municipal and industrial uses.²⁰

Based on forecasts made in 1965 by the Bureau of Business Research, municipal and industrial water requirements for the anticipated population levels would be around 84,000 to 89,000 acre-feet per year for the three-county area during the mid-1980's.²¹ Any water required for increased municipal and industrial use will result in a reduction in the water supplies available for irrigation use.

Falcon Reservoir, through its regulation of the river's flow and its ability to reduce flood water losses, assures a more dependable water supply and a more stable economy in the Valley. Amistad Dam, when completed in 1969, should further control the river's flow. However, the water resource is limited and will support the increasingly large irrigated acreage only part of the time. During a severe drought, the 3.5 million acre-feet of conservation storage provided by Falcon and the soon to be completed Amistad Reservoir cannot provide an adequate water supply for a large acreage. With recurrence of the hydrolic events and conditions of the period 1900-56 and with existing storage and other control facilities, a full water

²⁰State of Texas, Texas Water Commission, Bulletin 6413, op. cit., p. 4.

²¹Williamson, op. cit., p. 119.

supply could be made available to irrigate Valley cropland in the amount of:

600,000 acres for 95 percent and 70,000
acres for 2 percent of the time;
650,000 acres for 89 percent and 70,000
acres for 2 percent of the time;
700,000 acres for 70 percent and 70,000
acres for 2 percent of the time;
750,000 acres for 63 percent and 70,000
acres for 2 percent of the time;
800,000 acres for 47 percent and 70,000
acres for 2 percent of the time.²²

The assumptions necessary to the above statement greatly reduce the applicability of these data relative to predictions of the future. However, the statement is indicative of the risks of water shortage for irrigation as it may occur through time.

The second major problem, inefficient use of existing water, is a result of inadequate distribution facilities and poor management of the available water. Some canals, laterals and irrigation systems lose a significant amount of water through seepage.²³ Canal seepage is primarily caused by lack of concrete lining. Much water is lost during irrigation of crops by relatively uncontrolled application of water via furrow and border irrigation. With little or no measurement of water actually applied, over-irrigation often occurs. Customary irrigation practices have been used for many years, but modification to increase efficiency is needed. "The rehabilitation of the irrigation supply and distribution systems would materially increase

²²Texas Water Commission, Bulletin 6413, op. cit., p. 45.

²³U. S. Department of Agriculture and Cooperating Agencies, "Plan of Work for Comprehensive Study of Lower Rio Grande Basin," Oct., 1966, p. 5.

the efficiency of irrigation practices in the area."²⁴

The salinity problem in the Valley is a function of soil conditions, drainage, and quality of irrigation water.²⁵ The content of soluble salt in the Valley soils and the area's poor natural drainage have been problems for some time. However, the soils generally respond to leaching by rainfall and by extra irrigation, but a characteristically high water table and poor surface and subsurface drainage does not aid the treatment or correction of salinity problems.

Inadequate surface drainage is due to lack of drainage ditch outlets and the ineffectiveness of existing drainage facilities. Most of the existing ditches are too small and are in poor condition.

However, the most pressing drainage requirement of the Valley is construction of an adequate system of main drain outlets, as without such outlets there is little the individual land owners or districts can do to overcome their problems.²⁶

Subsurface drainage suffers principally from too few facilities such as covered tile drains and deep open drains. Like surface drainage ditches these will require suitable outlets, and there are few of these available.

Latest estimates made by the Soil Conservation Service indicate there are 931,800 acres that would benefit from drainage in the three

²⁴U. S. Department of Agriculture and Cooperating Agencies, op. cit., p. 7.

²⁵Texas A&M College System, Texas Agricultural Experiment Station, Irrigation Potential of Selected Areas in Texas, 1957, p. 104.

²⁶U.S. Department of the Interior, Bureau of Reclamation, Report on Alternative Plans for Diversion and Distribution of Rio Grande Flow Below Falcon Dam in Texas, op. cit., p. 26.

county area. Surface drainage only is needed on 473,400 acres and 13,200 acres need only subsurface drainage. Both surface and subsurface drainage is needed on 445,200 acres.²⁷ "The Bureau of Reclamation has estimated that at least 70 percent of the Lower Valley is in need of a detailed drainage system including a master system and properly designed field drains."²⁸ As part of a recently undertaken comprehensive study, the Soil Conservation Service is studying means of solving the drainage problems in this area.

Producers in the Valley are also faced with a legal problem. Due to a severe drought during the 1950's and increased acreage brought under irrigation at this time, a suit to determine water rights was filed in the district court. It involved the State of Texas, et. al. and Hidalgo County Water Control and Improvement District #18, et. al. The purposes of this litigation were to determine who had a valid water right, to determine how much water each landowner could claim, and to limit the further expansion of irrigation by ending the issuance of more water rights. A decision has been handed down by the court but due to an appeal it may be another year before a final decision is reached. A more thorough discussion of the legal problem can be found in Chapter VI.

²⁷ Unpublished Lower Rio Grande Comprehensive Study, U. S. Department of Agriculture, 1968.

²⁸ Texas A&M College System, Texas Agricultural Experiment Station, Irrigation Potential of Selected Areas in Texas, *op. cit.*, p. 106.

Obstacles to Problem Solution

It has been pointed out that the Valley is very productive and should continue to be so in the future. It was also noted that producers of agricultural commodities in the Valley face some serious problems related to resource development and management. These problems have existed for some time, but there has been no Valley-wide attempt to correct them. This lack of action is of concern because the Valley has been intensively studied and numerous proposals for resource development exist. Since 1896, there have been investigations, reports and surveys of the Valley by various groups and individuals. These studies were made on soils, drainage, water supply, irrigation, and flood control. They were made by Federal, State, County, and Local agencies, irrigation and drainage districts, authorities, and private engineering firms and individuals.

Since the problems are recognized and the studies have resulted in several proposals for correction of the existing problems, why has there been no adoption of the proposals? An important reason for lack of adoption is the obstacle of particular institutional factors. These institutional factors act as deterrents to the adoption of suggested proposals. The following are examples of institutions which have long been influential in the Valley:

(1) Drainage facilities have usually been the responsibility of the irrigation districts, but most districts have neglected or have

not made adequate and complete plans to deal with the problem.²⁹ They have provided drainage facilities which have served their districts' lands but have given little consideration to the needs of the Valley. Their limited understanding of the drainage problem and their narrow concept of responsibility for service of their collective constituents has led them away from any cooperative effort to accomplish effective drainage of lands. Customary practice and inertia thus combine to aggravate this problem.

(2) The policies of Water Control and Improvement Districts relative to distribution of water and payment for delivery of water are well established. In most districts, irrigation water is delivered to farms without measurement while charges are based on a fixed amount which is assumed to have been used. At each delivery a debit of one-half to one acre-foot is made against the land's annual water allotment, regardless of how much is used. This policy leads to excessive applications of water in many cases. Over-irrigation contributes to a high water table and the salinity problem

(3) The state's policy regarding the issuance of water rights has allowed extravagant claims and led to excessive irrigation acreage, relative to water. It has contributed significantly to the problems associated with current water rights adjudication. Water rights issued for excess acreage, relative to available water, have made court proceedings long and expensive. These deficiencies in the State's water policy are excellent examples of the problems institutional procedures

²⁹U. S. Department of the Interior, Bureau of Reclamation, Plan for Development, Valley Gravity Project, op. cit., pp. 33-34.

can create.

As these examples illustrate, institutional factors are important because of the continuing influence they exert upon economic and social behavior.

CHAPTER V
CLASSIFICATION OF VALLEY INSTITUTIONS

In order to effectively study institutional factors they must be identified within some meaningful classification. For this study, the following classification will be used. It is relatively straightforward and is readily applicable to institutions affecting water resource development in the Valley.

Institutional factors are grouped into five classes: (1) Legal, (2) Political, (3) Cultural, (4) Economic, and (5) Religious. Within each class there are many specific factors. Some are ordinarily very important; others have negligible influence on man's affairs.

Barlowe identified legal institutions as rules and regulations recognized as binding by man and nations.¹ They are collective action in control of human behavior and include statutes, ordinances, administrative regulations, judicial interpretations and decisions and some customs which have gained the sanction of legal authority. The political and governmental class of factors includes the policies and regulations, the powers and duties of federal, state, local and special governmental units. Important specific factors include taxes, eminent domain, police power, spending power, and proprietary power. The class of factors identified as cultural contains a wide range of institutions

¹Barlowe, op. cit., p. 325.

and includes customs, habits, traditions, tastes, preferences, goals and attitudes. These factors often greatly influence the economic and political institutions and always have great impact on human behavior. Economic institutions are numerous and are forces of significance in the operation of our economic system. They include fiscal policy, taxes, public and private property, inheritance, contract, vested rights, competition, monopoly leasing arrangements, etc. They are "social arrangements by means of which business and economic life are organized, directed, conducted and regulated."² Several of these factors are important in the Valley. Religious institutions have been important to resource development and use in the past but have negligible significance today. They will not be considered in this study of the Valley.

The following chapters are devoted to discussion of institutional factors in the Valley which presently or potentially affect water resource development. The discussion contains a review of the development of land and water resources and the impact of institutions on resource use, and an estimate of the effects of institutional factors on plans for further development or redevelopment of resources in the Valley.

²Vernon A. Mund, Government and Business, McGraw-Hill Book Company, New York, 1953.

C H A P T E R VI
LEGAL INSTITUTIONS

Introduction

A discussion of legal institutions relating to water resources is essentially a discussion of "water rights." Therefore, water rights will be the primary topic of this chapter. An attempt will be made to clearly present the legal situation as it exists today, a history of its developments, and a summary of the recently enacted Water Adjudication Act. Also included will be a definition of water rights and a discussion of the importance of water rights to Valley agriculture.

What Constitutes a Water Right

The Texas Water Rights Commission states that "a water right is a right to the use of water accorded by law."¹ A necessary element of the right to use is the right to divert the water--to take possession and reduce it to physical control. As a "right" to do things is involved, the term has legal significance. The present law is concerned with both the taking of water from natural sources and the use made of water.² A water right is considered real property.

The rights people enjoy in the use of surface water differ from the interest they may hold in surface lands or minerals. It is a

¹State of Texas, Texas Water Commission, Rules, Regulations, and Modes of Procedure, 1964 Revision, p. 3.

²Wells A. Hutchins, "Water Rights for Agriculture," Paper Presented at Meeting of American Association for the Advancement of Science, Berkley, California, December 27, 1954, p. 1.

right to take and use a recurring resource. When water is plentiful, it is treated as a free good; but when it is scarce, conflicts of interest develop and rules become necessary.

Importance of Water Rights

Developing and distributing water, preparing land for irrigation, and applying water to land involves a large investment. Water must be consistently available if this large investment is to produce a significant return. However, the farmer is not a free agent in using whatever quantity of water he requires from a stream. Whether or not he can take water for irrigation depends upon his water right. Similarly, the amount he may take and the time he may take it depends on the nature of the water right.³ Water rights also determine preferences or priorities and afford legal protection to those who divert and use water pursuant to their rights. Ownership of water rights is becoming more and more important with the present increased use and development of water resources.

History of Water Rights⁴ in Texas and the Valley⁴

In the law of New Spain, which was continued substantially unchanged after the Mexican Revolution, water rights were created by

³Hutchins, "Water Rights for Agriculture," op. cit., p. 1.

⁴This record is based upon and follows closely the history of water rights recorded in the Brief of Appellant, Cause No. 261, The State of Texas, et. al. v. Hidalgo County Water Control and Improvement District No 18, et. al., the Court of Civil Appeals, Corpus Christi, Texas.

the sovereign. Colonial administration was his exclusive prerogative, and the King's will was law. In 1520 he created the Council of the Indies to administer his colonies. An important function of the Council was to provide for the effective disposition and use of lands and waters of New Spain. To this end many laws (decrees) were adopted which expressed the intentions of the King. In 1680 the former laws were codified into the Recopilacion de las Leyes de las Indias.⁵

The Recopilacion shows that in New Spain he intended that waters from rivers were for the common use of all men unless and until there was a title from the King. A system of water judges was established for the colonies to apportion water according to need. Colonial officials were authorized to make grants of both lands and waters; and land classification, to distinguish irrigable, non-irrigable and pasture lands, was a distinct quality of the laws.

Grants of water rights to the colonists of New Spain were sometimes made in the same act and by the same instrument which granted the land, sometimes by a separate act and instrument. Some grants of water were made to an individual; others named several grantees, i.e. land owners along a canal system. But all Spanish grants had the following characteristics: they named the streams from which

⁵"State of Texas, et. al. v. Valmont Plantations, et. al.," Southwestern Reporter 2nd., Vol. 346, Southwestern Publishing Company, St. Paul, Minnesota, 1961.

the diversions were to be made, they named the grantees and the locations of their lands, and they specified the quantities of water to which the rights attached. Numerous grants of water were made by the Spanish King, but no grants along the Lower Rio Grande have been claimed or found.

Mexico, after gaining her independence from Spain, continued the same system of water laws that existed during the colonial period.⁶ The states of Coahuila, Texas and Tamaulipas adopted an administrative classification of lands similar to that of Spain. In their colonization statutes it was provided that lands granted would be identified as irrigable, arable or pasture. The states charged most for irrigable lands, and only the lands so classed, carried a right of irrigation when granted. None of the lands along the lower Rio Grande are known to have been classed as irrigable.

Texas perpetuated Spanish and Mexican laws in its statutes prior to 1889. Our first colonization statute, adopted in 1837, was modeled after Mexican colonization statutes and directed the classification of lands as irrigable or otherwise.⁷ For lands granted by the republic, prices were set at \$7.00 for irrigable land, \$5.00 for arable land, and \$2.40 for pasture land.

⁶Ibid.

⁷H. P. N. Gammel, The Laws of Texas, Vol. 1, Gammel Book Company, Austin, Texas, 1898, p. 1407.

In 1840, Texas adopted the common law of England as the rule of decision and repealed the laws of Mexico, except ". . . such laws as relate exclusively to grants and the colonization of lands in the State of Coahuila and Texas, and also such laws as relate to the reservation of Islands and Lands, and also of Salt-Lakes, Licks, and Salt-Springs, Mines and Minerals of every description; made by the General and State Governments."⁸ Thus, Texas preserved the Spanish and Mexican law relative to the administration of land and waters.

The act of 1837 was amended in 1845 to provide for differential prices for lands acquired by emigrants who arrived in Texas after 1835. No other changes in the colonization act were made. It is significant that neither the act or the amendment provided for any right of irrigation by reason solely of the ownership of land riparian to a stream. Indeed many of its provisions were inconsistent with any implied legislative recognition of such right.⁹

Texas' first general statute on the specific subject of irrigation was adopted in 1852. It provided for the regulation of community irrigation works and the construction of new systems in much the same way that Mexican law provided for administration of communal irrigation systems. The authority for regulation of community

⁸H. P. N. Gammel, The Laws of Texas, Vol. 2, Gammel Book Company, Austin, Texas, 1898, p. 178.

⁹A. W. Walker, Jr., "Legal History of the Riparian Right of Irrigation in Texas Since 1836," Proceedings, Water Law Conference, School of Law, University of Texas, 1959, p. 42.

irrigation works was given to the county courts. The statute adopts "ancient usage and the law of the state" as the court's guide in their regulative activities. The Supreme Court has said that this statute was designed to carry on the familiar Mexican irrigation practices.

"But in a country or state where water is useful for agricultural purposes, and where the sovereign power grants, for a nominal consideration, water for the purpose of irrigation, these maxims ('The water runs, and let it run' and 'Everyone has a right to have the advantage of a flow of water in his land without diminution or alteration') do not apply; instead thereof we must substitute, 'water irrigates, and let it irrigate.'¹⁰

Certainly the provisions of the Act indicate that the legislature thought that it had an unrestricted power to regulate the use of water for irrigation purposes.¹¹

During the period of 1854 to 1879 there were several special acts of the legislature granting individuals, cities, and corporations authority to construct dams and other works for power generation, irrigation and other uses. Eight of these acts granted certain shares of the flow of streams for use on any land that could be irrigated without any requirements that it be riparian to the stream and without provision for the protection of rights of riparian land owners.¹² These special acts provide further evidence

¹⁰"Tolle V. Correth," Texas Reports, Vol. 31, p. 362, State of Texas, 1868.

¹¹A. W. Walker, op. cit., p. 46.

¹²A. W. Walker, op. cit., p. 48.

of the opinion of the legislature that it had absolute control over the diversion and use of water for irrigation purposes, both as to the amounts diverted and as to the place of use.

So it appears that in the era between the Texas Revolution and the adoption of the Irrigation Act of 1889, "Texas had a statutory procedure which was a continuation of the Spanish-Mexican system of specific grants from the sovereign for lands previously granted, of administrative classification as irrigable, and community ditches regulated by the 'ancient usage.'"¹³

By 1889 much of Texas had been opened up for settlement. Agriculture had become an important part of the state's economy and there was considerable interest in the promotion of farming and ranching. Because much of the central and western area was semi-arid and droughts were a recurring problem, irrigation was found to be beneficial. In recognition of the value of supplemental water in crops production, Governor Ross asked the 21st legislature to consider the adoption of an appropriation system, similar to that of California.

The rule of prior appropriation had grown up in the western states as early settlers there had found need for water and started taking the water of streams. It came to be understood among these appropriators that the first to take and use water held the superior right to continue such an appropriation, and that subsequent, upstream

¹³Brief of the Appellant, Cause No. 261, The State of Texas et. al. v. Hidalgo County Water Control and Improvement District No. 18, et. al, the Court of Civil Appeals, Corpus Christi, Texas.

appropriators could not interfere with established uses. Territorial and state courts came to recognize this priority and there arose in the western states holdings and statutes affirming the prior appropriator's rights, even against the sovereign. The various jurisdictions (state, territorial and federal) even began to provide for the cataloging of rights and for procedures to acquire new rights of use of unappropriated waters.

The legislature responded to Governor Ross' request by adopting the 1889 Irrigation Act.¹⁴ This statute made it possible for one to acquire a water right and to fix his priority by actually diverting water to a beneficial use and filing with his county clerk a statement descriptive of the diversion, the irrigation works and the use. The statute conferred on any prior appropriator who followed this procedure a right to continue to divert and use water for the beneficial purpose.

Of considerable importance was the further provision of the 1889 Irrigation Act that "the unappropriated waters of every river or natural stream within the arid portions of the state, as described in the preceding section of this act, are hereby declared to be the property of the public, and may be acquired by appropriation for the uses and purposes as hereinafter provided."¹⁵ The legislature thus

¹⁴H. P. N. Gammel, The Laws of Texas, Vol. 10, Gammel Book Company, Austin, Texas.

¹⁵Ibid.

reinforced its contention that it had the authority to control diversion and use of surface waters, and that it alone could prescribe the procedure for acquiring rights of possession and use of these waters.

In 1895, the legislature rewrote the 1889 law, to explain in greater detail the intention of that body to control the waters in the arid portions of the state and to encourage their use by individuals and organizations of users by providing for acquisition of rights of use.¹⁶ The provisions for appropriation were carefully spelled out in the Act. An appropriator had to file the statement of appropriation and build the works of diversion. His statement was to include his name, the name of the stream from which water was to be diverted, the location of canals and ditches and the number of acres to be irrigated. The right was perfected by taking water into the diversion system and delivering it to the place of use. The appropriator was defined as the diverter. It was not required that he own land to be served by the right.

This Act was important to developers of land and water for irrigation in the Lower Rio Grande Valley. Rights to irrigate over half the land presently used for irrigated farming were perfected under this statute. Rights were acquired by individuals and by land development or irrigation companies. Many distribution systems were

¹⁶H. P. N. Gammel, The Laws of Texas, Vol. 10, Gammel Book Company, Austin, Texas.

created to serve water users in the Valley. Present day successors in title to those early rights holders continue to operate the systems and serve the users.

Of course the unregulated, appropriative system could not last long. The 1889 and 1895 Acts allowed appropriators to take what they could and to claim what they envisioned as prospective irrigation developments. Grand schemes to organize land and water resources in irrigation projects led to a rapid appropriation of the major portions of water supplies in some areas. It was soon apparent that some greater regulation of water appropriation was necessary. In response to this need for control, the Texas legislature adopted the 1913 Irrigation Act.¹⁷ This statute created by the Board of Water Engineers, gave this board the responsibility of recording and filing records of existing appropriative rights, terminated the system of ex parte filings, and required permits for all appropriations begun after the effective date of the act. Further important provisions of the act included the appropriation of all waters of Texas streams (except those to which prior vested rights were attached), the grant of authority to the Board to prescribe, among other things, the source of water, quantity of water, and purpose and place of use of water for which a permit would be issued, and the provisions for the sale, by an appropriator, of permanent water rights (i.e. water

¹⁷H. P. N. Gammel, The Laws of Texas, Vol. 16, Gammel Book Company, Austin, Texas.

service contracts) to land-owners and other users. The act also described in detail the procedure for acquiring a permit from the newly created Board.

The permit system adopted in the 1913 Irrigation Act was revised considerably in the Act of 1917 and one feature of the later act was found to be unconstitutional. In Board of Water Engineers v. McKnight, the Supreme Court ruled that the powers of adjudication granted to the Board could not be constitutionally conferred by the legislature.¹⁸ But in Mott v. Boyd, the Supreme Court held that the sections relating to permits were valid. So the main concepts and principles of the Act have been unchanged to the present.

The Valley Water Case

A difficult problem in water development in the Valley was the uncertain status of the water rights of all diverters of water from the Rio Grande. The first effort, in 1952, to adjudicate water rights through court action was abandoned when the Cameron County Trial judge was disqualified because of an interest in land. After the dismissal of the case, the Rio Grande Voluntary Water Company was organized to attempt voluntary distribution of water. The company failed due to severe drought and because all parties did not participate.

The next try at adjudication was begun in 1956 in Hidalgo County. When the trial began, three local district Judges, for constitutional

¹⁸Hutchins, The Texas Law of Water Rights, pp. 118-120.

reasons, disqualified themselves. Judge Braggs of Corpus Christi was then appointed. He took the river waters into judicial custody, appointed a Special Water Master, and declared use of water without permission to be contempt of court. Judge Braggs did not have the time to try the case; therefore, Judge Blalock was appointed, but was defeated for re-election. Judge J. H. Starley of 143rd Judicial Court in El Paso, the ninth Judge to sit in the case, heard the majority of the testimony and handed down the decision.¹⁹

An essential issue of the law was the extent of the vested riparian right relative to the use of water for irrigation. This issue was severed from the main case and tried separately. The trial court held that although it was the opinion that the Spanish and Mexican grants did not carry with them riparian rights of irrigation, it was bound by the case of *Motl v. Boyd*, and held that the grants along the Lower Rio Grande did carry with them the implied rights of irrigation.²⁰ The court of Civil Appeals reversed the judgment of the trial court, holding that the grants did not carry with them the implied rights of irrigation. The judgment of the court of Civil Appeals was affirmed by the Supreme Court in 1962.²¹

¹⁹"The State of Texas, et. al, v. Hidalgo County Water Control and Improvement District, et. al.", 93rd District Court of Hidalgo County, Texas, August, 1966.

²⁰"State of Texas v. Valmont Plantations", Vol. 355, Southwestern Reporter, 2nd., p. 502.

²¹Ibid.

Judge Starley's decision, handed down in August, 1962, directly involved forty-two special water districts and approximately 2,500 individuals. Included were 850,000 acres of irrigable farmland and a population of half a million. It took eleven months to hear the evidence, more than ninety lawyers appeared before the court, and 25,000 pages of testimony were prepared. So far, the case has cost the State of Texas more than \$300,000; court costs have been more than \$800,000; and the legal cost to the litigants has been estimated at from five to ten million dollars.²²

Judge Starley, in his water rights decree, established as law the "First in time is first in right" doctrine. The basic creed of the doctrine was honored by recognition of superior rights and the assignment of priorities in the use of Rio Grande water.

First: Municipal and Domestic Waters, including such as may be utilized by industrial plants. The court declared a reserve of 60,000 acre-feet per annum of water available for the use of the cities and other urban areas, and that if at any time the storage supply available shall decrease to that quantity, then all other uses shall cease.

Second: Irrigation Waters, water rights for irrigation purposes shall be divided into five categories.

Class I or First Priority Classification---given to land developed under the concept of Certified Filings which the court has found and declared to have been established under the Acts of 1895 and 1913. Approximately 465,631 acres of land, being all in Cameron and Hidalgo Counties, received a Class I priority.

²²Corpus Christi Sun, April 22, 1966.

Class II or Second Priority Classification---
 given to land developed under permits obtained from the State Board of Water Engineers between the effective date of the Irrigation Act of 1913 and the Treaty date of November 8, 1945. Approximately 137,317 acres of land, including Starr County, received a Class II priority.

Class III or Third Priority Classification---
 given to land receiving water applications on November 8, 1945. These lands receive this priority by virtue of the Treaty. Approximately 28,008 acres in the Valley received a Class III priority.

Class IV or Fourth Priority Classification---
 given to those permits granted by the State subsequent to the Treaty date of November 8, 1945. Approximately 12,641 acres of land in Hidalgo County received a Class IV priority.

Class V or Fifth Priority Classification---
 given to lands which had developed some use of water subsequent to the date of the Treaty and prior to the actual beginning of physical construction of Falcon Reservoir in December of 1950. Approximately 29,018 acres of land in Cameron and Hidalgo received a Class V priority.²³

The court was unable to define "surplus water" and did not attempt to adjudicate the related rights. "They are severed and left to such recourse as may be available to them." The court found that the maximum amount of water which could be applied to beneficial use for agriculture is 2.5 acre-feet per acre per annum. Therefore, this is the maximum irrigation allowance.²⁴

The court adopted as its basis of priority the weighted or Dalrymple system. Under this system, unallocated water will be

²³The State of Texas et. al. V. Hidalgo County Water Control and Improvement District, op. cit.

²⁴Ibid.

periodically divided into equal parts per acre for each priority class, after deduction for the 60,000 acre-feet reserve. Priority I will then be given 1.7 times as much per acre as Priority V, Priority II 1.5 times as much, Priority III 1.3 times as much, and Priority IV 1.1 times as much as Priority V. This system results in all lands receiving water at each allocation; therefore lands with low priorities are assured at least some water each year.²⁵ Since 72 percent of the acreage is in the top group, lower priorities are not at a great disadvantage.

The judgment of the trial court has been appealed and it may be months or even years before all the issues are resolved. Meanwhile the Special Water Master appointed by the Court is still in control of the United States' share of water in Falcon Reservoir.

Water Rights Adjudication

Until very recently, the statute books of Texas remained barren of any special procedures for settling water rights controversies.²⁶ To add to this problem, there was no mechanism for enforcing compliance with permits issued by the Texas Water Rights Commission except when complaints were brought by other water users.²⁷ Garland Smith stated

²⁵Ibid.

²⁶Corwin W. Johnson, "Adjudication of Water Rights," Texas Law Review, XLII, No. 2, December, 1963, pp. 1-2.

²⁷The Texas Research League, A Pattern of Intergovernmental Relations for Water Resource Management in Texas, Vol. IV, Austin, Texas, 1966, p. 33.

that a situation existed in Texas whereby an administrative agency issued water rights in unspecified quantities, but there was no procedures to control development and no way to insure or determine that development had taken place.

In short, for over half a century, the gate has been open where a private individual could come in and take from the State whatever he wanted, and no policeman has been on duty, and no inventory made of what has been taken or what is left to the State. One thing is quite certain, claims to water probably exceed the available supply on practically every stream in Texas.²⁸

Why has water adjudication been so difficult and why has the problem not been dealt with before? The explanation is most likely to be found in the peculiar nature of water rights litigation. Water disputes usually occur when there is a water shortage. If court action is slow the shortage will usually disappear and with it the pressure for adjudication. Litigation also usually involves large numbers of persons. To allocate stream flow by judicial decision, all users must be litigants. This is virtually impossible. Also necessary to adjudication is a voluminous quantity of data describing the river basin and water use. By the time necessary facts are established, the controversy has usually become moot.

There has been general agreement that a comprehensive stream adjudication act was needed; however, agreement ended at this threshold. There were questions concerning the appropriate type of tribunal. Three suggestions were presented:

²⁸Garland F. Smith, "A Water Court as an Alternative to Administration Adjudication," Proceedings-Water Law Conference, Austin, Texas, May 20-21, 1966, p. 43.

1. a special water court or courts;
2. the Texas Water Rights Commission;
3. a combination of the Texas Water Rights Commission and the existing courts.²⁹

There were three suggested procedures to be followed which were closely related to the tribunal. The procedures were:

1. ordinary trial before a three-judge special water court without a jury;
2. administrative determination by the Texas Water Rights Commission with optional resort to the courts; and
3. a combination of preliminary determination by the Texas Water Rights Commission coupled with a mandatory final decree by a district court.³⁰

All three solutions were considered by the Water Laws Committee of the Texas Bar Association, which recommended the kind adopted in 1967.

On April 13, 1967, Governor John Connally signed the Water Adjudication Act presented by the Legislature.³¹ Under the new Act, when the adjudication is required or requested, the Texas Water Rights Commission will hold public hearings. From these hearings, the Commission will enter a preliminary determination. All parties to the adjudication may contest the preliminary determination, and following further hearing on the contests, a final determination will be entered by the Commission. The Commission must file a copy of its final determination together with a copy of all evidence and testimony considered with a district

²⁹Bouldin, op. cit., p. 15.

³⁰Ibid.

³¹"Governor Connally Signs Water Adjudication Act," Texas Water, Vol. 23, No. 7, April, 1967, pp. 1-3.

court for judicial review. The results of the judicial review are made known in a final decree. To enforce the final decree, water masters will be appointed by the Commission. This Act applies to all water impounded, diverted, or used for other than domestic and live-stock purposes. The Act became effective on August 28, 1967.³²

Since the Act has not been tested, it is impossible to evaluate its effectiveness. However, it is a step in the right direction. It is apparent that the State must assert some effective degree of control over its waters. This Act gives the Water Rights Commission increased power and authority and should enable it to effectively control the use of Texas water.

³²State of Texas, Congress, State, Water Rights Adjudication Act, 60th Texas Legislature, 1967, S. B. No. 92 second printing, p. 3-4.

C H A P T E R VII

POLITICAL INSTITUTIONS

Governmental institutions at all levels influence the Valley's use and development of water resources. Active at the Federal level are the following: The International Boundary and Water Commission, The Bureau of Reclamation, the Corps of Engineers, and the Soil Conservation Service. The State governmental agencies dealing with water use and regulation are the Texas Water Rights Commission and the Texas Water Development Board. At the local level, the county and city governments have some influence. In addition, within the Valley there are thirty-eight special water districts. All of these are governmental entities with various powers and authority.

As originally planned, each governmental agency was to perform certain functions, cooperating and coordinating its activities with those of other agencies. However, with so many agencies at work in a three-county Valley area, some duplication of effort and overlapping of authority exists and causes conflict.

Despite a few conflicts, the Valley has received tremendous benefits as a result of various agencies' activities. Individuals have often lacked both capital and ability to deal with problems of resource development. Needed works and facilities have been provided by well organized and adequately financed agencies. They have also often provided the management of water systems so important to agriculture.

Governmental agencies will surely continue to play their respective roles in the Valley. It is necessary therefore to understand their policies, procedures and goals so that future efforts in land and water development will make use of their capabilities. The following is a description of several important governmental agencies.

Federal Agencies

There are several federal agencies active in the Valley. Included are the Bureau of Reclamation, the Corps of Engineers, the International Boundary and Water Commission, the Soil Conservation Service, and the Economic Research Service.

Bureau of Reclamation, U. S. Department of the Interior

The Bureau of Reclamation was created by the Reclamation Act of 1902. It was organized to survey, evaluate and construct irrigation works to reclaim public lands in the sixteen western states. Texas was not named in the original Act, but in 1906, Congress expanded it to include the State of Texas. The Bureau's first activity in Texas was the Elephant Butte Dam Project.¹

After the 1945 Treaty with Mexico, the Bureau of Reclamation considered several plans and combinations of plans for construction of storage dams on the Rio Grande. The results were presented in Project Report No. 5-0619-3, the Valley Gravity Project, dated December, 1948. Three plans, the Low Line, High Line, and Grangeno plans, were evaluated. They were comprehensive plans which were

¹Jackson, op. cit., pp. 22-23.

directed toward satisfying the irrigation and drainage needs of the Valley. After the investigation, the Low Line Plan was recommended and submitted to the water users. It received an over-all favorable vote; however, several irrigation districts essential to the proposal's success were not in favor of it. Therefore, the project failed due to lack of approval and cooperation.² The Bureau has made several other studies concerning water available to the Valley, but these only presented data and made few recommendations. The agencies' engineers designed Falcon Dam and Power Plant on the Rio Grande near Laredo.³

The Bureau is presently active in the rehabilitation of water distribution and drainage facilities of various irrigation districts in the Valley. The Bureau provides technical and financial assistance to districts under authority of its Small Project Act, the Lower Rio Grande Rehabilitation Project, Texas, and other programs administered by that Agency. Rehabilitation of distribution and drainage facilities of four irrigation districts as part of the reclamation program is virtually completed. The Bureau completed rehabilitation of facilities of the LaFeri District (Cameron County Water Control and Improvement District #3) and is scheduled to complete rehabilitation of facilities of the Mercedes District (Hidalgo and Cameron Counties Water Control and Improvement District #9). The

²U. S. Department of the Interior, Bureau of Reclamation, Report on Alternative Plans for Diversion and Distribution of Rio Grande Flow Below Falcon Dam in Texas, op. cit., pp. 13-16.

³Burleigh, op. cit., p. 64.

Donna District (Hidalgo County Water Improvement District #1) and the Harlingen District (Cameron County Water Improvement District #1) have essentially completed rehabilitation of their facilities with loans provided under the small Reclamation projects part of the Bureau's program.⁴

The loan application for Cameron County Water Control and Improvement District #5 (El Jardin District) has been approved, and funds to start construction have been included in the Bureau's 1968 budget. Loan applications have been received from Cameron County Water Control and Improvement District #4 (Santa Maria District) and Cameron County Water Control and Improvement District #13 (Arroyo Gardens District). Loan applications from Cameron County Water Improvement District #2 (San Benito), Cameron County Water Control and Improvement District #19 (Adams Garden), and Hidalgo and Willacy Counties Water Control and Improvement District #1 (Willacy) are currently being reviewed.⁵ It is very probable that the Bureau will continue its rehabilitation activities in the Valley.

Facilities constructed by the Bureau are generally of good quality; however, authorization of the Bureau does not include drainage except in relation to irrigation, and the drainage facilities constructed are usually designed to handle only the excess waters of the irrigation district. They do not contribute a great deal to the drainage of the entire Valley. The Bureau uses a two-year design criteria

⁴Ibid.

⁵Leon W. Hill, "The Reclamation Program in Texas," Texas Water, Vol. 23, No. 7, April, 1967, p. 2.

that may be inadequate for future development.

Corps of Engineers, U. S. Department of the Army

The Corps of Engineers is primarily responsible for flood control and navigation. It has a river basin orientation without regard to state lines and with little consideration of the broader area needs for balancing surplus supplies of one basin with deficit needs of another. This approach has resulted in problems of coordination among states and created some legal problems when the basin extends to more than one state.⁶

There are no existing Corps' projects for major drainage and flood control in the Valley.⁷ The Corps' only activity affecting the Valley is a master plan for hurricane-flood protection for the entire Texas Gulf Coast which is now being developed and is expected to be completed in 1973.⁸

International Boundary and Water Commission

The International Boundary and Water Commission is a joint agency of the governments of the United States and Mexico. In 1930, the Commission was authorized to develop an international plan for flood control. In a joint report dated September 3, 1932, the Commission proposed construction of interior floodways in both the United States and Mexico, construction of levees along both sides of

⁶The Texas Research League, Vol. IV, op. cit., pp. 16-17.

⁷U. S. Department of Agriculture, Soil Conservation Service, "Work Plan for Watershed Protection, Flood Prevention and Agricultural Water Management" (tentative plan), Pancho Viejo Watershed, March, 1966, p. 18.

⁸State of Texas, Water Development Board, Proposed Water Resource Development in the Rio Grande Basin, op. cit., p. 28.

the river, and construction of two diversion dams to divert water into the floodways and reduce the channel flow at Brownsville to approximately 30,000 second feet. Each country was to support portions of the excess water through its interior floodways. Both governments approved immediate construction of the floodways and levees, but construction of the diversion structures was delayed until the diversion of the Rio Grande waters between the two countries was agreed to in the Treaty which became effective November 8, 1945.⁹

The International Boundary and Water Commission has constructed the following floodway system on the United States' side of the Rio Grande:¹⁰

1. The Main floodway beginning at the river and extending across the southern part of the Hidalgo County to the vicinity of Mercedes. It is about thirty-eight miles long and is capable of diverting 112,000 cubic feet per second from the river;

2. The North floodway, which extends northward from the Main floodway. It is approximately forty-six miles long and extends across the northwest corner of Cameron County and the southern part of Willacy County to the Laguna Madre;

3. The Arroyo Colorado which merges with the Main floodway and extends across Cameron County to the Laguna Madre. It will carry approximately 50,000 cubic feet per second; and

4. The Pancho Viejo floodway, about twenty-seven miles long, which can convey about 5,000 cubic feet per second to the Laguna Madre from a point on the river ten miles above Brownsville.

⁹U. S. Department of Agriculture, Soil Conservation Service, "Work Plan for Watershed Protection, Flood Prevention, and Agricultural Water Management," Pancho Viejo Watershed, op. cit., p. 16

¹⁰Ibid., p. 30.

Falcon Dam, with a storage capacity of 3,280,700 acre-feet was completed by the Commission in April of 1954. The cost of construction to the United States was \$35,000,000.¹¹ Construction of Anzalduas diversion dam has been completed and is used to divert water into Mexico and control the river's flow. The Commission is presently constructing Amistad Dam located between Del Rio-Ciudad Acuna and the mouth of Devil's river. All three dams are under the supervision of the International Boundary and Water Commission. These structures caused modification of the internal floodway system on the United States' side of the river. These modifications consisted of dividing the flows of the Main floodway between the North floodway and the Arroyo Colorado by construction of a weir in the Arroyo Colorado that will allow a maximum of 16,000 cubic feet per second to pass down the Arroyo Colorado floodway and 60,000 cubic feet per second to pass down the North floodway. Use of the Rancho Viejo floodway was discontinued.¹² The works were primarily constructed for flood protection and are of limited use as sub-surface drains. They are of insufficient depth for lateral drains other than surface drains.¹³

The Commission presently serves only in an advisory capacity in the regulation of the flow and diversion of Rio Grande water. All re-

¹¹International Boundary and Water Commission, United States and Mexico, "Falcon Dam and Power Plant," (Phamphlet).

¹²U.S. Department of Agriculture, Soil Conservation Service, "Work Plan for Watershed Prevention, and Agricultural Water Management," Rancho Viejo Watershed, op. cit., pp. 17-18.

¹³U.S. Department of the Interior, Bureau of Reclamation, Report on Alternative Plans for Diversion and Distribution of Rio Grande Flow Below Falcon Dam in Texas, op. cit., p. 26.

leases from Falcon and control of diversions are under the control of Tate Dalrymple, Special Water Master, 93rd District Court. The Commission advises the Water Master as to the United States' share of the water in Falcon; however, the Water Master specified when and how much water is to be released¹⁴

Soil Conservation Service and Economic Research Service, U. S. Department of Agriculture

The Soil Conservation Service has constructed approximately twelve hundred small upstream reservoirs and flood-retarding structures in Texas in cooperation with local sponsors, the State Soil and Water Conservation Board and local soil and water districts. There are plans for many more. The Soil Conservation Service has also participated in studies of the State and published the Texas Soil and Water Conservation Needs Inventory and Drainage Survey Report, Texas in 1962. In these, the Valley received some special attention due to the resource use problems it faces.

In cooperation with the Economic Research Service, the Soil Conservation Service is now engaged in a comprehensive study of the Valley to (1) appraise the agricultural, urban, rural, and watershed needs of the study area, and (2) to participate in the formulation of a plan for the coordinated and orderly control, regulation, management, and use of water and related land resources of the area.¹⁵

The study will encompass the following:

1. Identification and design of an interrelated system of structural measures for water control and water resource

¹⁴Interview with H. W. Calvert, Supervising Hydrolic Engineer, Anzalduas Dam, International Boundary and Water Commission, August 18, 1966.

¹⁵U. S. Department of Agriculture, and Cooperating Agencies, op. cit., p. 8.

development and a pattern of related land use and treatment whereby long range basin needs are identified.

2. Identification of those elements of the over-all water management and control system and land use required to satisfy immediate needs.
3. Identification of those elements of the plan which could be carried out by the Department of Agriculture and other Federal, State, and local agencies under existing authorities, and also those potential projects that could be developed with amended or new authorities.
4. Participate in the preparation of a report presenting the problems, potential solutions, development opportunities, including alternatives, and an analysis relating to uses of water and land resources.¹⁶

Participation of the U. S. Department of Agriculture in the comprehensive study of the Valley was requested by the Texas Water Development Board, the Texas Water Rights Commission and the Texas State Soil and Water Conservation Board. These agencies based their requests for the study on needs recognized by the Soil and Water Conservation Districts and Commissioners Courts of the three counties.

State Agencies

The State of Texas has two agencies primarily responsible for water supervision and regulation. These are the Texas Water Rights Commission and the Texas Water Development Board.

Texas Water Rights Commission

The State Board of Water Engineers was established in 1913, by statute, with authority to hear applications, grant permits for water projects and appropriation of water, and to determine the amount of

¹⁶U. S. Department of Agriculture, and Cooperating Agencies, op. cit., p. 9.

water available for appropriation. The Board also had the responsibility for determining the feasibility of proposed federal projects. These were the principal duties and responsibilities of the Board until 1957.¹⁷ During this forty-four year period, from 1913 to 1957, the Board of Water Engineers was primarily a quasi-judicial administrative court.¹⁸

Prior to World War II, management of water resources was not considered to be of major importance. Water permits were granted very liberally, particularly where the applications were uncontested, and the amount of water under State permits now exceed the available supply.¹⁹ The State's role in water development, exercised through the Board of Water Engineers, was almost passive.²⁰

In 1957, the Board of Water Engineers was given three additional functions. They were:

1. To prepare and submit to the legislature a statewide report of the water resources of the State.
2. To negotiate with the United States for the development and acquisition of conservation storage in reservoirs constructed by the United States.

¹⁷Menton J. Murray, "Functions of the Texas Water Rights Commission and the Texas Water Development Board," Proceedings of the 10th Annual Water For Texas Conference, Texas A&M University, November, 1965, p. 72.

¹⁸The Texas Research League, The Structure and Authority for State Leadership of Water Development in Texas, Vol. 1, Austin, Texas, 1965, p. 16.

¹⁹The Texas Research League, Vol. 11, op. cit., p. 9.

²⁰The Texas Research League, Vol. 1, op. cit., p. 16.

3. To cancel water permits or certified filings which have not been put to a beneficial use in ten years.²¹

The new duties initiated water management and water development as State responsibilities; however, no money was provided to invest in storage space. The Texas Water Development Board was also established in 1957 by Constitutional Amendment and Enabling Act.

In 1962 the State Board of Water Engineers was renamed the Texas Water Commission. In 1965 the Water Commission was reorganized and renamed the Texas Water Rights Commission. This laid the foundation for the separation of Planning and Water Rights Administration. The primary functions of the Texas Water Rights Commission are as follows:

1. Hold public hearings and grant permits for water use, project construction, and inter-watershed transfer.
2. Analyze existing certified filings and permits and reduce or cancel those which have not been put to beneficial use.
3. Receive and compile water use reports relating to permits.
4. Approve the creation of special water districts as required by statute.
5. Approve the feasibility of water district projects for which bonds are to be issued, and to supervise and inspect the projects constructed by such water districts.
6. Approve the feasibility of federal projects.²²

The recently passed Water Rights Adjudication Act gave the Commission further responsibilities and authority for administration of water rights. It makes possible the adjudication of water rights in water-

²¹Murray, op. cit., p. 75.

²²The Texas Research League, Vol. II, op. cit., pp. 30-31.

sheds or river basins. The procedure is: (1) hearings will be held on all claims and a preliminary determination will be entered by the Commission, (2) the preliminary determination may be contested and further hearings held by the Commission, and (3) the Commission will enter a final determination, which will be filed with all evidence and testimony considered with a district court for judicial review. The judicial review will be final. Where conflicts result, water masters will be appointed by the Commission.²³ This adjudication Act has not been tested; therefore, it is not possible to evaluate it at this time.

With this new adjudication act, the Water Rights Commission has broad regulatory power; however, sufficient funds must be budgeted to properly implement the responsibility. Funds have not been available in the past.²⁴ Also, communication and efficiency must be improved along with enforcement of laws and permits. In the Valley, the people feel too far away from Austin for the Commission to function properly. The Commission must declare its intentions to find solutions to the distressing problems of water rights and demonstrate its capability to serve the water users in the Valley.

Texas Water Development Board

In 1957, the Texas Water Development Board was established and

²³Texas, Congress, Senate, Water Rights Adjudication Act, op. cit., p. 2.

²⁴F. R. Booth, "Water Rights Administration in Texas," Texas Water, Vol. 22, No. 7, April, 1966, p. 7.

was responsible for administering a \$200 million bond program which involved loans to local governments for projects having no other available financing.²⁵ The Board did not make the plans, but provided funds for approved plans. In 1965, a new law modified the planning authority of the Water Rights Commission. The new law provides that the Water Development Board's first function is to make a comprehensive State Water Plan. Prior to 1965, this was a function of the Texas Water Commission. The present functions of the Water Development Board are as follows:

1. Manage the Texas Water Development Fund.
2. Make water project loans to political subdivisions of the State.
3. Purchase storage space in local, state, and federal projects.
4. Develop additional storage space.
5. Prepare a State Water Plan.
6. Collect surface and underground water data, provide for topographic mapping, and perform related functions.
7. Delineate underground water reservoirs and receipts and record well logs from well drillers.
8. Approve a waste injection well permit.
9. Participate as an ex officio member of the Water Pollution Control Board.
10. License water well drillers.
11. Function as the State Reclamation Engineer.²⁶

The Water Development Board is presently involved in the formula-

²⁵The Texas Research League, Vol. I, op. cit., p. 17.

²⁶The Texas Research League, Vol. II, op. cit., pp. 29-30.

tion of a comprehensive Texas Water Plan. This is the first attempt to examine the entire State in the light of water availability and requirement projected into the next century. A preliminary report has been made and public hearings have been held over the state. The plan has received both criticism and praise. Whether it is accepted or not, it has brought to the attention of the public the fact that the State has a water problem and some actions must be taken if the State is to continue to have an adequate water supply.

Local Government Agencies

In the Valley, there are many local governmental agencies which have some influence on water use and development. At the county level, the Commissioners Court has considerable influence. Each of the city governments through its consumptive use of water exerts some influence on water development. The most significant local agencies are the special water and drainage districts. There are thirty-four districts in the Valley controlling approximately 90 percent of all the irrigation water.²⁷ Those districts represent and serve individual farmers and have influence with them. They are intricately organized and generally function independently.

County Commissioners Court

The Commissioners Court is the branch of government at the county level responsible for any use or development of water resources. The

²⁷Hughes and Motheral, op. cit., p. 30.

Commissioners Court has the power to create water districts of various types geographically contained within their county boundaries. Created districts must be confirmed by public election. The three county Commissioners Courts have created 25 of 34 active Valley irrigation districts.²⁸

Each county is divided into 4 precincts with a commissioner responsible for each precinct. The Court consists of those four commissioners plus the County Judge; all are elected officials. One of their responsibilities is the maintenance, in cooperation with the State Highway Department, of public roads. They are also responsible for the design of certain culverts and ditches. There have been instances where the designed culverts and ditches were inadequate to provide sufficient drainage.²⁹ The Hidalgo County Commissioners also serve on the Board of Hidalgo County Drainage District #1.³⁰ In Cameron and Willacy Counties, this close coordination between drainage districts and commissioners does not exist. In the future, the Commissioners may be more influential in the construction and maintenance of drainage facilities because they have, or can acquire by special election, tax revenues for flood control and drainage, and

²⁸State of Texas, Texas Water Rights Commission, Unpublished Material in Water Use Files.

²⁹U. S. Department of Agriculture, Soil Conservation Service, "Work Plan for Watershed Protection, Flood Prevention and Agricultural Water Management," Arroyo Colorado Watershed, op. cit., p. 19.

³⁰Interview with Milton D. Richardson, County Judge, Hidalgo County, April 20, 1967.

they have machinery and labor which can be used in construction of drainage works.

City Governments

The Valley's city governments have little influence on water resource use and development, except that almost all cities use water pumped from the Rio Grande for consumptive purposes. Water is usually pumped for the cities by various irrigation districts. The districts impose a pumping fee varying from two cents per thousand gallons depending on the distance pumped. Most of the cities had contracts with certain districts for their water supply. The cities did not have a written or legal water right; however it appears that the districts feel that they have a moral obligation to supply to cities water needed for domestic purposes. Water used on lawns is usually purchased directly from the districts. They usually have canals running through the cities.

As was noted previously the Court of Civil Appeals, Corpus Christi, wherein the appeal of the Valley water case is being heard, will include in its final order a finding that cities named in a stipulation have a water service right from the serving districts in amounts as reflected in orders of the Texas Water Rights Commission. This will insure service by the districts.

Water Control and Improvement Districts

Special districts are frequently used in the development, protection, and administration of land and water resources. These districts range from irrigation, drainage, levee, weed control, grazing, and

soil conservation districts used in rural areas to the water, sanitation, park development, and other metropolitan districts used by or around cities. Each of these types of districts requires state enabling legislation; and each involves ad hoc units of government vested with specific administrative, taxation and other powers.³⁴ The primary types of special districts in the Lower Rio Grande Valley are irrigation and drainage districts. Of the numerous political and governmental institutions in the Valley, the special districts have the most influence over the various uses of water resources.

In Judge Starley's decision, he recognized that thirty-two Water Control and Improvement Districts in the Valley have rights to Rio Grande water, and two other WCID's were recognized as having surplus water rights. However, the court left the topic of surplus water unsettled. Judge Starley determined that the thirty-four districts occupied an area of 727, 640 acres, and he granted a right to irrigate to 614,386 acres of land within the districts.³⁵

Water Control and Improvement Districts may be created through special statute by the Legislature or under general statutory authority by county commissioners courts, municipal governments, or the Texas Water Rights Commission. Most of the Valley districts were

³⁴Barlowe, op. cit., p. 512.

³⁵The State of Texas v. The Hidalgo County Water Control and Improvement District No. 18, et. al., the 93rd District Court of Hidalgo County, Texas, August, 1966.

created when various land and irrigation companies experienced financial difficulty and sold their systems. The districts also acquired title to the water rights issued to the land and irrigation companies. These water rights attach to the land, but legal title is held by the district. Of the thirty-four WCID's in the Valley, fifteen hold title to Certified Filings, five hold title to both Certified Filings and permits, and six hold title to only permits, and eight districts do not have a written water right.³⁶

Water Control and Improvement Districts are quasi-governmental organizations and possess power of eminent domain, power to contract with the United States, and the power to levy and collect taxes. The power of eminent domain is primarily set out in Articles 7880-125 and 7880-126, VATS. Districts have the power to acquire all lands, materials, borrow and waste grounds, easements, right-of-way, and everything deemed necessary to the accomplishment of their purposes. Districts can acquire said property by gift, grant, purchase, or condemnation.³⁷ The power is plenary (that is, it is full and complete) and may be exercised both within and without the boundaries of the district.³⁸

³⁶State of Texas, Texas Water Rights Commission, Unpublished material, Water Use Files, op. cit.

³⁷Vernon's Civil Statutes of the State of Texas, Annotated, Article 7880-125, Vol. 21 (Vernon Law Book Company, 1954), p. 534-536.

³⁸U. S. Department of the Interior, Bureau of Reclamation, "Plan of Rehabilitation, El Jardin District," op. cit., p. 5.

Article 7880-53 authorizes districts to contract with the United States for the purpose of providing for the investigation, construction, extension, and operation and maintenance of any Federal reclamation project of benefit to the District and authorized under the National Reclamation Act of June 17, 1902. Article 7880-147U expressly authorizes and empowers the water control and improvement districts to borrow money and to receive grants and other aid from the government of the United States.³⁹

Water Control and Improvement Districts are vested with the power to raise funds for maintenance and operation costs and for the payment of interest on any principal of their outstanding obligation. The three sources of receipts for districts are as follows:

1. unlimited ad valorem property taxes to be levied upon all taxable real and personal property within their respective areas,
2. unlimited acreage assessments, or flat rates, to be levied against each acre of land under irrigation, and,
3. unlimited water charge for any water delivered to land for irrigation purposes.⁴⁰

The power to levy and collect taxes is contained in both Articles 7880-53 and 7880-147U; VATS.

In most cases, a five-member board of directors, elected for a two-year term, is in charge of district administration. Direct

³⁹Vernon's Civil Statutes of the State of Texas, Annotated, Article 7880-125, Vol. 21 (Vernon Law Book Company, 1954), pp. 534-536.

⁴⁰E. H. Davis (ed.), Sun and Soil Plus Water, An Economic and Financial Analysis of the Lower Rio Grande Valley Prepared for the Lower Rio Grande Authority, Texas, October, 1952, p. B-6.

management is carried out through a General Manager. He is appointed by the Board and is responsible for administering, operating, and maintaining District properties. In addition to the manager, each district usually employs an engineer and tax assessor plus the necessary clerical aid. District managers are among the most influential persons in the Valley. They are a very knowledgeable group and generally have held their positions for many years. They hold very specialized jobs, and the turnover is slow.⁴¹ The Board makes major decisions for the districts, but they rely heavily upon the manager's opinion. Most of the managers are well-educated and progressive and will be instrumental in any type of Valley development.

Districts deliver water to landowners within the district, and the water users must make application for delivery in person. Most districts supply domestic and livestock water free of charge, while a toll charge must be paid for delivery of irrigation water. All landowners within the district receive like treatment and are furnished water on the basis of acreage irrigated. All districts derive their water supply from the Rio Grande. Of the thirty-four districts, twenty-two have their own pumps on the river and some have second, third, and fourth lift pumps.⁴²

⁴¹Interview with Sam Gerral, Farm Editor, Valley Morning Star, Harlingen, Texas, August 15, 1966.

⁴²State of Texas, Texas Water Rights Commission, Water Use Files, op. cit.

To finance the districts' operation, taxes are levied. Ad Valorem taxes are levied for the payment of bonded indebtedness. Operations and maintenance taxes, or "flat rate" taxes are assessed for the maintenance of a district. This latter tax will range from \$2.00 to \$6.25 per acre in individual districts, with the average charge being about \$3.50 per acre. The districts also levy a toll charge on water each time water is delivered. Rising labor costs have caused this charge to increase in recent years. These charges range from \$1.00 to \$5.00 per acre irrigated, the average charge being approximately \$2.24 per acre per irrigation. Data were not readily available which would describe the Ad Valorem taxes. It appears that they would vary greatly since the debt per acre ranges from \$153.80 to \$1.08 in individual districts.⁴³

Though the districts are essential and most are well-organized, there are a few problems. Some district managers are very independent; this results in instances of lack of cooperation among districts. There is also a tendency for managers and boards of directors to plan for and manage the district's irrigation and drainage facilities as if the district existed in isolation from lands around it. This has frequently resulted in under-designed drainage facilities, inadequate for the collective needs of the Lower Valley. The coordination of district activities will be difficult, but essential, to further development.

⁴³Ibid.

Drainage Districts

As previously mentioned, irrigation districts have provided the majority of the drainage facilities in the Valley. Drainage districts have not been influential and in most cases have only been responsible for maintenance of existing facilities. The only exception is Hidalgo County Drainage District #1; it is the only drainage district in Hidalgo County and the only one owning its own equipment. The Hidalgo County district has constructed some facilities; the existing facilities are in relatively good condition. This district contains most of the irrigated acreage in Hidalgo County.⁴⁴

There are four drainage districts in Cameron County; however, only one operates in an effective manner. Drainage District #1 is completely inactive. District #2 is operated by the city of Brownsville and provides no agricultural drainage.⁴⁵ District #4 contracts for the necessary construction and maintenance of its facilities since it does not own any equipment. District #3 has provided most of the drainage facilities for Cameron County Water Improvement District #2; however, the district contracts for construction of new facilities and only provides maintenance for existing facilities. In general, the drainage districts of Cameron County have minor in-

⁴⁴U. S. Department of the Interior, Bureau of Reclamation, Plans for Development, Valley Gravity Project, op. cit., pp. 28-30.

⁴⁵Ibid.

fluence and only provide and maintain a small portion of the drainage facilities.

The drainage districts have the same powers as irrigation districts and presently levy taxes to provide funds for maintenance and construction of facilities. They will continue to provide some services, but their help will be limited. The district in Hidalgo County is the only one that has plans for expansion of its facilities. Although drainage districts do not exert much influence, they are governmental agencies which must be considered in planning for further development.

Soil and Water Conservation Districts

There are two Soil and Water Conservation Districts in the Valley. They have been organized to provide technical assistance to farmer-members in the application of conservation measures to lands within their boundaries.

These districts are governmental subdivisions of the state, organized under the provisions of HB 444, 47th legislature. They do not have the powers of other special districts, but they have those that are necessary to their operation. They can own or administer property to carry out provisions of the act; they can make and execute contracts with governmental or private agencies and individuals; they can develop plans for conservation of soil resources and require agreement of landowners and occupiers as a condition for financial and technical assistance available from the district and other sources. But they have no powers of taxation or eminent domain and have not

sought to obtain them.

Each of the districts in the Valley occupies an area which includes several watersheds and parts of two counties. The Southmost Soil and Water Conservation District is composed of Cameron County and the southern half of Hidalgo County. Willacy-Hidalgo Soil and Water Conservation District is constituted of Willacy County and the northern portion of Hidalgo County. The two districts thus include all the lands of the Lower Valley within their boundaries and their conservation activities have been region-wide in scope.

A significant activity of the soil and water conservation districts has been the preparation of plans for watershed development. Work plans for three watersheds in Cameron County--Arroyo Colorado, Los Fresnos Resaca, and Rancho Viejo--are complete. Application for federal assistance in development is being sought under provisions of PL 83-566, the Watershed Protection and Flood Prevention Act. The work plans provide for proper land use, flood prevention and agricultural water management. Emphasis is placed on flood control and drainage; rehabilitation of irrigation facilities is not a purpose of the soil and water conservation districts and they do not plan for it.

The soil and water conservation districts could play a significant role in further development of land and water in the Valley. They have authority, under the provisions of SB 316 to contract with cities, counties, water control and improvement districts and other political subdivisions to construct and maintain dams, flood

detention structures, canals, drains, levees and other improvements for flood control and drainage related to flood control. If it is decided that land and water development will be organized within watersheds, soil and water conservation districts could be important as sponsoring agencies and coordinators of the work.

C H A P T E R VIII
CULTURAL INSTITUTIONS

Legal and governmental institutions are organized forms of collective or group actions that have an influence on individual behavior. However, this influence is often equaled, if not exceeded, by the less formal controls exerted by cultural institutions.¹ Unwritten rules, the habits, or the whole body of practices or conventions which become the usual practices of usages regulating the social life of a group are so familiar that their significance is frequently underestimated or escapes observation altogether. Cultural institutions are often considered to be either customs or traditions. Custom represents an established way of doing things,² and it is one of the most important of all forces exerting informal control.³ The areas of collective action covered by custom and law or government overlap in many respects; but they are by no means contiguous. Laws cover many matters not affected by custom; and custom in turn involves many practices not yet covered by law. Most customs originate as rational decisions. Some practice is found to be good for a particular set of circumstances and is accepted; it is followed by many persons and a precedent is established. Others may later accept that practice without question because of the prestige it has acquired with time.

¹Barlowe, op. cit., p. 327.

²Ibid.

³Renne, op. cit., p. 132.

Customs often have both a direct and indirect affect upon use and development of land and water resources. Many farmers cling to customary cultural and crop rotation practices even when improved practices are brought to their attention. Adherence to customs often leads to inefficiency in production and loss of potential income. Rental and ownership arrangements are also affected by customs.⁴

Traditions are actually customs that have been established over a long period of time. Traditions have usually been handed down from previous generations; customs may be habitual courses of action developed within a given generation. A certain amount of sentimentality and emotional allegiance centers on traditions, giving them unusual economic and social significance.⁵

Even though the Valley is a recently developed area, the effects of cultural institutions are present. Customary or habitual practices were developed and adopted under conditions that no longer exist. They are now out-of-date and contribute to the Valley's problems. In the Valley, customary ways of doing things influence water application and use, land ownership, labor use, and crop preference. These customs have important economic impact, as the following discussion will indicate.

⁴Ibid.

⁵Ibid.

Customary Uses of Water for Irrigation

There are several methods of water application, each with its advantages and disadvantages. The method used determines how efficiently the water is applied. The Valley suffers from both a water supply problem and a drainage problem; therefore, the method of water application is very important. In turn, any customs or habits affecting water application are significant to further development or redevelopment of the Valley.

The water in Falcon Dam that is available for irrigation is allocated to the land areas for which water rights exist. These rights have recently been determined by court action as previously noted. The amounts delivered to land depend, of course, on the water supply, and they can be changed through the year if supply is significantly altered by rains and runoff. As water is released for the irrigation of land areas, the annual allotments are reduced until they are exhausted or until the irrigation season ends. The accounting procedure involves water credits to land areas, usually within irrigation districts, and then debits as water is used, up to the point when the accounts carry small or zero balances.

There are periods when the supply of water is so great that so-called no-charge water is released from the reservoir. It may be captured by districts that have storage facilities and used later on, or it may be used as it is available with no debit against the annual allotments to the various land areas.

Water accounts for lands within Water Control and Improvement Districts are kept by the district manager. The yearly allotments

to district lands are credits in the accounts. Whenever water is used for irrigation, the accounts are debited, usually by a fixed amount. This amount may be one-half acre foot, one acre foot or any other quantity which the district's board approves. To qualify for delivery of water for an irrigation, the account for the land to be irrigated must carry a balance at least equal to the debit which will be made. This method of accounting for water use prevails where there are no actual measurements of water delivered to a land area. Few districts have measuring devices; therefore the system of accounts must make use of arbitrarily set debits or deductions from the annual allotments.

Charges for water delivered and used for irrigation of crops are similarly set by directors in each Water Control and Improvement District. Cameron County WCID #2 charges \$2.00 per acre irrigated, and there is no measure of water used on each acre. At each irrigation the water account for the land area is debited at the rate of one acre foot per acre irrigated. Hidalgo and Willacy Counties WCID #1 also charges \$2.00 per acre irrigated. At each irrigation, one-half acre foot of water is deducted from the water account for each acre irrigated. Hidalgo County WCID #16 charges \$3.00 per acre for row crops and \$2.00 per acre for crops grown in strips. One-half and one-quarter acre feet respectively are deducted from the water account for the land area. In this district canal riders keep records of hours of irrigation and farmers are charged for "extra" use. Cameron county WCID #1 uses the same system, but it

levels charges for water "waste" as estimated by canal riders.

Donna Irrigation District, Hidalgo County #1, uses portable water meters to accurately determine the amount of water applied. However, farmers pay \$1.75 per acre irrigated and use any amount of water desired. The amount they use is deducted from their allocation. Hidalgo County Water Control and Improvement District #7 and Hidalgo County Water Control and Improvement District #1 charge by the hour. District #7 charges \$1.25 per hour assuming it required 3 1/4 hours to receive an acre-foot of water. District #1 charges \$2.00 per hour allowing 3 1/2 hours for each acre-foot of water.

Furrow irrigation is the predominant method of water application in the Valley, although border irrigation is practiced in many of the citrus orchards. These methods for applying water are suited to the topography, the source and amount of water available and the kinds of crops grown. It appears that the problems of irrigation are caused not by the methods of application but by inadequate control of the water applied and poor drainage. The water of the Rio Grande is not of desirable quality. Soluble salt content ranges from 550 to 1,250 parts per million, with content depending on season and flow of water. The Bureau of Reclamation has estimated that irrigation waters add 2.1 tons of salt to each acre of Valley soil each year while drainage flow takes away only about 1.2 tons per acre per year.⁶

⁶Texas A&M Research Foundation for the Bureau of Reclamation, Department of the Interior, Irrigation Potential of Selected Areas of Texas, Project Report 138, 1957, p. 104.

Unmeasured delivery and application of water has tended to cause over-irrigation, or application of larger quantities of water than are needed by growing plants. Poor drainage and a naturally high water table cause soils to become water-logged. Salts build up and crop yields are reduced. In some instances crop production is no longer possible.⁷

While there is awareness of problems of over-irrigation, salt build-up and crop losses, action to correct these conditions has been slow. As previously noted, some districts have introduced meters for measuring water delivered to lands being irrigated. This has contributed to improved management of water. Other districts have rehabilitated their facilities, including the drainage systems, to correct deficiencies which contribute to salt build-up and other soil problems. The customary ways of soil cultivation and water application still prevail in most of the Valley, however, and their influence will continue to be felt.

Traditional Landownership

The first land promoters attempted to get people from the northern states to buy Valley lands for investment or retirement purposes. As a result, many small tracts of land were sold. These lands were only inhabited by the owner during the winter months or whenever said owners took a vacation. The other group of people who bought land

⁷Southmost Soil and Water Conservation District and Cameron County Commissioners Court, Work Plan for Watershed Protection, Flood Prevention and Agricultural Water Management, Rancho Viejo Watershed, Cameron County, Texas, March 1966.

in the Valley recognized its productive potential. They were primarily interested in the income derived from landownership, not the mild climate. Today the Valley is still characterized by many small farms owned by non-Valley residents.

In 1964, 9.8 percent of the farms in Cameron County, 11.8 percent of the farms in Hidalgo County, and 2.6 percent of the farms in Willacy County were less than ten acres in size. A total of 48.6 percent of Cameron County farms, 53.3 percent of Hidalgo County farms, and 20.5 percent of Willacy County farms were less than fifty acres in size.⁸ Table No. 8-1 gives the breakdown of farms according to size. From the table it is evident that in Cameron and Hidalgo Counties the small farm (less than fifty acres) predominates. In Willacy County, 51.9 percent of the farms are greater than 220 acres in size. The majority of these farms are dry land farms with some grazing area. Most of the small farms are primarily citrus and vegetable.

Hidalgo County Water Control and Improvement District #1, in which citrus is the predominant enterprise, has 800 district landowners; only 80 live in the Valley. Most of the groves are managed by caretakers. Mr. J. D. Bogue, Executive Vice-President and General Manager of Texas Citrus Mutual, estimated that 80 percent of the groves were owned by non-residents. E. E. McDonald, manager of Hidalgo County Water Control and Improvement District #6, estimated that 80 to 85

⁸U. S. Bureau of the Census, United States Census of Agriculture; 1964, Texas Counties, op. cit., Cameron, Hidalgo, and Willacy Counties.

Table 8-1. Farms by Size in Cameron, Hidalgo, and Willacy Counties, 1964.

Size of Farm	Counties		
	Cameron	Hidalgo Percent	Willacy
Less than 10 acres	9.8	11.8	2.6
10-49 acres	38.8	41.5	17.9
50-100 acres	12.1	11.5	11.7
100-219 acres	16.1	12.3	15.9
220-500 acres	12.5	12.6	27.6
500 acres or more	10.6	10.2	24.3

Source: U. S. Bureau of the Census, United States Census of Agriculture; 1964, Texas Counties, Cameron, Hidalgo, and Willacy Counties.

percent of the district landowners were non-Valley residents. In Hidalgo County Water Control and Improvement District #1, 65 percent of the landowners are non-residents, and they own 65 percent of the land. Most of these non-resident owners are grove owners. Francis A. Vaughn, Manager, Cameron County Water Improvement District #2, which is predominantly planted in field crops, estimated that only 25 percent of the landowners were non-resident. In Hidalgo and Willacy Counties Water Control and Improvement District #1, 40 percent of the landowners are non-resident. These are only estimates of the degree of residency; however, they were made by men very closely associated with the Valley.

With careful examination of the data in Table 8-2, it is possible to visualize 40 percent or more of all landowners as non-

Table 8-2. Farm Operators by Tenure, Cameron, Hidalgo, and Willacy Counties, 1964.

Farm Operators by Tenure	Counties		
	Hidalgo	Cameron	Willacy
	Percent		
Full owners	43.2	54.0	30.0
Part owners	39.5	30.0	50.0
Managers	2.1	5.0	1.6
Tenants	15.2	11.0	18.4

Source: U. S. Bureau of the Census, United States Census of Agriculture; 1964, Texas Counties, Cameron, Willacy and Hidalgo Counties.

residents. Many tracts of land operated by part owners could be owned by non-residents. Also, lands operated by managers or tenants could be owned by non-residents. H. B. Sorensen, who is closely associated with the Valley and its operation, estimated that non-resident ownership ranges from 30 to 40 percent depending on the county and area within the county.⁹ This appears to be the most authoritative estimate, and it corresponds with those given by Valley people.

From data compiled by Boyd Andrews, it appears that there is a trend toward more non-resident ownership. According to a sample of the land sales in Hidalgo County, 43 percent of the buyer were not from that county. Thirty-four (34) percent of the out-of-county buyers were from other states; however, only 23 percent of the farms sold

⁹Interview with H. B. Sorensen, Marketing Specialist, Texas Agricultural Experiment Station, College Station, Texas, June 21, 1967.

were sold by people residing outside Hidalgo County.¹⁰ Therefore, non-residents bought 43 percent of the farms sold, but only sold 23 percent, resulting in an increase in the number of farms owned by non-residents. These data pertain to only one county, but they do give some indication of trends in landownership.

Based on personal interviews with Valley residents, it appears that non-residents own relatively small tracts, usually planted in citrus. Non-residents hold land primarily for investment or retirement and are often not interested in spending money to improve their facilities. There will be instances when their lack of cooperation will act as an obstacle to further development. However, most irrigation districts require the landowner to live either on the land or in the county in order to vote on proposals. This will reduce the influence of non-resident ownership in planning for further development of water and land resources in the Lower Rio Grande Valley.

Usual Crop Preferences

The Valley is usually associated with citrus and vegetable production because of its mild climate. It is the third largest citrus-producing area in the United States. Even though citrus is important from a national viewpoint, its contribution to the value of agricultural products sold in the Valley is very small. Field crops, primarily cotton, are the most important agricultural products in the Valley.

¹⁰Unpublished data, F. B. Andrews, Resource Development Specialist, Texas Agricultural Extension Service.

Table No. 8-3 gives the breakdown of farms by type of product produced.

As Table No. 8-3 illustrates, field crop farms are the most prominent, especially in Cameron and Willacy counties. In Hidalgo, which has more citrus than any of the three counties, the trend has been toward fewer fruit and nut farms. The over-all trend since 1945 has been away from the specialized farm to the miscellaneous or unclassified farms. These miscellaneous farms usually are a combination of enterprises including fruits and nuts, vegetables, field crops, and livestock. These are diversified farms and offer the operator a degree of insurance from low prices on certain commodities. There are now more cattle in the Valley than in the last fifty years. They are being fattened on irrigated pasture which grows on land not used for citrus or field crops. This is another example of diversification. In summary, the Valley is moving toward more diversified farms with fewer farms specializing in only one crop. The trend will probably continue.

If the Valley has a traditional crop, it is citrus. Through the years, periodic freezes have all but destroyed the citrus trees; however, after each freeze, new trees were planted. Valley people like citrus because it has the potential of a high return. The big disadvantage is the initial cost and the period of time from planting to production. Also, there is the risk caused by adverse weather. Trees must be four to five years before they become productive.¹¹

¹¹H. B. Sorensen, "Some Factors in Appraisal of Citrus Groves," Journal of the Rio Grande Valley Horticultural Society, Vol. 15, 1961, p. 38.

Table 8-3. Farms by Type, Cameron, Hidalgo, and Willacy Counties, 1949, 1959, and 1964.

Farm by Type (Percent)	Counties								
	Cameron			Hidalgo			Willacy		
	1949:	1959:	1964:	1949:	1959:	1964:	1949:	1959:	1964:
	Percent			Percent			Percent		
Field Crops	71.2	60.6	51.2	46.9	49.8	29.0	87.9	79.9	72.0
Vegetables	3.3	.3	5.1	4.3	1.9	6.0	.4	.8	1.1
Fruits & Nuts	3.4	2.8	1.2	19.1	8.8	6.6	.6	2.4	0.0
Miscellaneous & Unclassified	18.0	30.2	35.6	22.9	32.6	45.5	8.0	11.8	17.2
All Livestock & General	4.1	6.1	6.9	6.8	6.9	12.9	3.1	5.1	9.7

Source: U. S. Bureau of the Census, United States Census of Agriculture; 1949, 1959, 1964, Cameron, Hidalgo, and Willacy Counties.

Cotton has always been the main cash crop in the Valley; and, although it has suffered recently due to allotments and low prices, it is still the most valuable Valley crop.¹² Vegetables have always been a traditional crop since they can be double-cropped with cotton or grain sorghum.

Bill Green, Manager of the Donna Irrigation District stated that the people in the Valley "can't afford to let custom dictate." He agrees with most Valley residents that there is no customary Valley crop. Valley farmers are presently planting more grain sorghum and less cotton. Also, farmers are diversifying their activities. It does not appear that traditional crops will be a factor in planning of

¹² Texas A&M University, Texas Agricultural Experiment Station, Effects of Changes in the Price of Cotton and in Levels of Cotton Allotments on Aggregate Farm Production in the Lower Rio Grande Valley of Texas, MP-802, March, 1966, pp. iii-v.

further development.

Labor Uses

Until recent years, the Valley has had an abundance of unskilled labor needed for various farming activities. This labor supply came from a large resident population and the workers residing in Mexico. The labor was relatively cheap, costing approximately fifty cents per hour in the early 1950's. The federal hourly wage law, affecting agricultural products which were sold and shipped out of the state, became effective in 1949. This contributed materially to increased labor costs in the packing of both citrus fruits and vegetables. During the fifties, there was a tremendous change in the wage scale in the citrus and vegetable producing area. The recent decision to increase the Federal minimum wage to \$1.25 per hour for agricultural workers is causing farmers and processors to look for labor-saving devices. Also, the termination of the Bracero work program with Mexico has caused labor shortages and wage increases.¹³

Due to the higher hourly wage and relatively scarce labor, operations are closely-watched, and labor-saving devices have been installed. Also, only the better, more efficient workers were kept on the payroll. As a result, total labor costs per unit were the only expenses that

¹³H. B. Sorensen, "Labor Requirements for Harvesting Texas Vegetables," Paper presented at the Handling and Processing Section, Southern Region, American Society for Horticulture Science, Southern Agricultural Workers Association, New Orleans, Louisiana, January 31, 1967 (Mimeographed), pp. 1-2.

showed a decrease during the period 1950 to 1960.¹⁴ The use of less labor and more machinery is a common phenomenon in the Valley. The new irrigation systems are primarily underground concrete pipe with turnout valves for each tree row. This system has many advantages over the open ditch. The labor required for the open ditch method is considerable and the work involved is unpleasant.¹⁵

With the ever-increasing wage rate and the reduction in the number of workers from Mexico, further mechanization and use of labor-saving devices will occur.¹⁶ This has already occurred in Florida and California, but the Valley has been slow to adopt these new methods primarily because labor was inexpensive. The small operator who is unable to purchase the necessary equipment may be hurt.

¹⁴H. B. Sorensen, "Changes in Cost of Packing Grapefruit: 1950-51 Season Versus 1959-60 Season." Journal of the Rio Grande Valley Horticultural Society, Volume 16, p. 71.

¹⁵Texas A&M University, Texas Agricultural Extension Service, Guide for Citrus Production in the Lower Rio Grande Valley, op. cit., p. 9.

¹⁶Ibid.

CHAPTER IX
ECONOMIC INSTITUTIONS

Almost all institutions have a degree of economic significance; therefore, the number of economic institutions could be quite large. Many institutions of legal origin, such as private property and sanctity of contracts, are often considered economic institutions due to the vital role they play in our economic system. Such institutions as public fiscal policy, taxes, eminent domain, price controls, and acreage allotments are usually considered to be governmental control; however, they have a measurable impact upon economic life. Richard T. Ely listed the following: public and private property, inheritance, contracts and their conditions, vested rights, personal conditions, custom, competition, monopoly, authority, and benevolence.¹ There are many more institutions with some degree of economic significance.

It would obviously be very difficult to adequately describe and evaluate all the economic institutions affecting land and water development in the Valley. Therefore, only four such institutions were considered. They were judged to be very important to past and future actions to develop and use water. They are (1) Water Management Policies of Conservation and Improvement Districts, (2) Markets for Agricultural Commodities in the Valley, (3) Land Values, and (4) Taxes on land and Improvements.

¹Richard T. Ely, Property and Contract in Their Relation to the Distribution of Wealth (New York: The Macmillan Company, 1914), pp. 52-55.

Water Management Policies

Reference has been made to the policies of Water Conservation and Improvement Districts relative to distribution of and charges for water delivered to land areas (farms) within their boundaries. Upon request for delivery of water, diversion to the specified land area is accomplished and the landowner irrigates. The charge for the delivery must be paid in advance. It is a toll set by the board of directors of the district and it applies without exception to all deliveries of irrigation water. The toll is expressed as a charge per acre foot, e.g. \$2.50/ac. ft. It reflects for the most part the district's variable costs incurred for storage, diversion and delivery of the acre foot of water.

Throughout the Valley the toll is quite low and in many districts the toll plus the taxes levied are not more than \$10 per acre foot of water. This important factor of production costs little enough that its use is permitted on virtually any crop that a farmer wishes to grow. Delivery costs are so low that there is little incentive to conserve the water used in irrigation. There is waste and consequent inefficiency in water use. The policies of the districts regulating water deliveries and tolls thus contribute to uneconomic allocations of land and water to low value crops and to inefficiencies in the distribution and application of water.

These policies are defended on the grounds that (1) water is not really owned by the districts that pump, store and distribute it and (2) the toll is a payment for storage and delivery of water,

not a charge for the water itself. While districts usually hold title to water rights, the rights attach to the land. The district is thus obligated to deliver water to land areas within its boundaries when the land users decide that the rights to use should be exercised. The district can collect only a service charge or toll.

The water right has posed a serious problem for managers of districts who are concerned about efficiency of resource use. There has not been any way to market water or to administratively price water so as to achieve conservation and higher use. The only improvement in management that has been possible is physical measurement of deliveries via water meters. Some district managers and boards of directors are pressing for this change and will probably be able to introduce measured water deliveries at an early date.

Markets in the Valley

Markets for the crops produced in the Valley have a definite influence on land and water use. Decisions which are made annually about what and how much to plant are strongly influenced by recent and expected future prices. The organization and function of markets can significantly affect these prices.

Citrus and Vegetable

There are two outlets for citrus fruits and vegetables in the Valley. They may be sold as fresh produce or they may be sold to processors, for canning, freezing or drying. Approximately 75 percent of the citrus fruits are marketed as fresh produce. They are

shipped into all parts of the United States at harvest. Approximately 80 to 85 percent of the Valley's vegetables are sold fresh. Although the alternative of marketing through either outlet is available to most producers, the choice is rarely exercised. Individual producers are usually committed to one outlet or the other. Furthermore, the channels of trade are separate for each outlet.²

The marketing of fresh produce is always affected by a sense of urgency due to the perishable character of the products. Large volumes must be moved to market in brief periods of time. Supplies are highly variable, not only within a season but also from year to year. Weather and lack of coordinated production by many growers cause both shortages and surpluses. Growers usually sell or contract their crops to shippers. In the Valley, there are 23 to 25 shippers, depending on the season, who handle roughly 85 percent of all citrus produced in the Valley. The 35 to 40 vegetable shippers in the Valley handle 90 percent of the area's produce. They buy most of their products under some type of contract with the growers. Contracts vary greatly in nature; some contain no more than an agreement to buy with no mention of price or time of harvesting. These give the shipper an advantage over the grower. However, many large growers have contracts stating both the price and time of harvest. These growers are influential enough to obtain a fair price, based on the expected future price, for the

²Food From Farmer to Consumer, Report of the National Commission on Food Marketing, June, 1966 (Washington: U. S. Government Printing Office, 1966).

product they intend to produce. When price is not contained within the contract, the shipper pays the local market price at the time of harvesting. The harvesting date is important because a shipper may need a certain commodity immediately; therefore, he may harvest an immature crop, resulting in less product per acre harvested and a lower return to the grower. Many contracts are based on tonnage irrespective of quality.

The canning industry in the Valley handles approximately 25 percent of the citrus and 15-20 percent of the vegetables. Most of the commodities canned come from packing shed eliminations, crops maturing late, or from last crop pickings. Some of all crops produced in the Valley are processed there. Most of the processors operate multi-purpose plants and handle more than one commodity.

Citrus and vegetables grown in the Valley are distributed throughout the United States and Canada. The West South Central Region, which includes Texas, Oklahoma, Arkansas, and Louisiana, received 33 percent of the total citrus, but only 11 percent of the vegetables. Table 9-1 gives the distribution of both citrus and vegetables.

The citrus and vegetable products produced in the Valley have often been of lower quality than those produced in Florida and California. For this reason, Federal marketing orders were established for citrus, onions, lettuce, and tomatoes. The orders are

used primarily to improve quality.³ Only the marketing order for lettuce contains provisions for acreage controls. The improvement in quality should enable the Valley to compete more effectively with Florida and California, resulting in higher prices.

Table 9-1.--Percent Distribution by Market Destination of Citrus and Vegetables Produced in the Lower Rio Grande Valley, 1965.

Area	Citrus	Vegetable
	percent	percent
New England	.08	6.9
Middle Atlantic	1.57	18.3
East North Central	13.93	18.4
West North Central	20.18	13.8
South Atlantic	.26	9.3
East South Central	4.64	9.8
West South Central	33.38	11.0
Mountain	10.55	1.7
Pacific	12.50	8.0
Canada	2.01	12.7

Source: H. B. Sorensen, "Marketing Texas Fruit and Vegetables," Paper Presented at the National Commission on Food Marketing Hearing, McAllen, Texas, June 11, 1965, pp. 6-8.

³Gordon R. Powell, "Expanding the Market for Texas Fruits and Vegetables," Fruit and Vegetable Market Order Workshop Proceedings, Held in McAllen, Texas, September 9-10, 1964, Departmental Information Report 64-5, Department of Agricultural Economics and Sociology, Texas A&M University, Experiment Station and Extension Service Cooperating, pp. 106-112.

There is a rather obvious need for organization to improve the growers' market position. Through the years, several cooperatives have been set up but most have been abandoned. The Valley is characterized by independent growers and shippers who seem unwilling to cooperate or organize. Until these individuals recognize the need for cooperation and actively participate in some form of organized marketing, growers will be at a competitive disadvantage.⁴ There are efforts being made to organize both shippers and growers. One growers' organization (Texas Citrus Mutual) attempts to provide market data and crop estimates. The South Texas Citrus Committee is an organization of both growers and shippers which promotes marketing and collects marketing data related to citrus. Both organizations are fairly new, but have experienced some degree of success.

In summary, the citrus and vegetable market facilities in the Valley appear to be adequate to handle physical supplies, but marketing procedures and arrangements leave much to be desired. Sales of fresh citrus need to be expanded and outlets for processed fruit should be developed. There have been instances of severe loss resulting from lack of available markets. Other factors needing attention are product quality and production controls. Once these improvements are realized, the Valley can be more competitive with other producing areas in both quality and price.

⁴W. E. Paulson, Cooperative Vegetable Marketing Associations of the Lower Rio Grande Valley, Circular No. 74, Texas Agricultural Experiment Station, Agricultural and Mechanical College of Texas, January, 1935, pp. 3-4.

Cotton and Grain Sorghum

In recent years, approximately one-half the cultivated cropland in the Valley has been planted in cotton. Sixty percent of the cotton has been irrigated. Cotton is the major cash crop. Important groups serving the cotton-farming industry are cotton brokers, cotton gins, and cottonseed-oil mills. There are now fewer than 90 active gins in the region, compared with nearly 150 in the peak production year of 1951. There are four cottonseed-oil mills in the Valley. Cottonseed accounts for approximately ten percent of the cash sales of cotton farmers in the region.⁵ The remainder of the value of cotton sales is represented by cotton shipments out of the region, primarily to buyers in the United States, but including a significant amount of foreign exports. Because cotton is not a perishable commodity and production and sale are controlled by government price and acreage control programs, there are fewer market problems than for citrus fruits or vegetables. It is generally agreed that cotton markets are adequate. Cotton allotments have a significant effect on aggregate farm production, resource requirements, and income in the Valley.

In 1963, grain sorghum production and sales were below previous levels; however, returns from grain sorghum production are substantially higher than those ten to fifteen years earlier. Expansion is expected for grain sorghum production. Recent increases in storage and port facilities in the region will tend to encourage grain

⁵Williamson, op. cit., pp. 77-81.

sorghum production for external sale, and the growth in the local cattle industry should lead to increased demands for feed grain. Markets for grain sorghum appear to be good and expanding.

Cattle and Calves

Cattle and calf sales were running around eighteen million dollars in the early 1960's. Improved pasture plus cropland used for pasture amounted to nearly 120,000 acres, of which 44,000 acres were irrigated. Approximately twenty to thirty percent of the beef cattle and calves on farms in the region are on irrigated pastures.⁶ Cattle production expanded rapidly until low prices reduced this activity. However, the demand for beef appears to be high, and reasonably good cattle prices are likely to prevail over the long term. Substantial increases in the region's beef-cattle production is expected. The expansion will increase the demand for grain sorghum and reduce some cotton production.

Market Influence on Resource Use

Several opportunities for improvement in organization and function of markets in the Valley are evident. Constructive changes could positively affect prices of certain commodities and they might significantly affect the quantities of produce which could be sold.

Adjustments and improvements in the marketing of citrus fruits will probably encourage producers to plant new trees. An expansion of the acreage of orchards will result in an increase in water use,

⁶Ibid., p. 82.

since requirements for trees are among the highest of all crops in the Valley. Changes in the marketing of certain vegetables would cause their production to be expanded. Vegetables also require relatively large quantities of water. There would be changes in the allocation and use of land and water resources in the area.

Price fluctuations throughout the growing season cause growers to vary their application of both water and fertilizers. When predicted prices appear to be high, more water is applied in an attempt to improve output. Expected low prices have the opposite effect. Improved markets and more stable prices will increase water use in the Valley. This increased use should be considered in planning for the further development of the Valley.

Land Values

The nature of farming activity in the Valley is changing. Operations have increased in size of land area, size of investment, and degree of mechanization. The number of farms in the region has decreased from 9,316 in 1950 to 5,169 in 1964. The average farm size has risen from 133 acres to 250 acres. The average value of Valley farms, including land and buildings, had increased in 1959 to \$321, or nearly 5.7 times the value in 1940.⁷ The 1965 per acre land price was \$365.⁸

⁷Ibid., p. 64.

⁸Andrews and Wooten, op. cit., p. 9.

While the average land value is \$365 per acre, land values vary greatly within the three-county Valley area and within each county. Irrigated land in Cameron County that has been leveled varies in value from \$300 to \$600. This land is usually considered to be suitable for citrus production. The second lift, or sandy land of Hidalgo County ranges in value from \$300 to \$750. Producing orchards on this land sell from \$700 to \$2400 per acre. Irrigated land in Willacy County varies in value from \$250 to \$350 per acre with dry land acreage being worth approximately \$90 per acre.

The Lower Rio Grande Valley is one of the few areas in the State in which land prices are closely related to agricultural production and net income. Between 1960 and 1963, per acre land prices decreased 19 percent due to two successive years of severe weather. Between 1963 and 1965, the price of land per acre increased 21 percent as a result of increased yields and net income.⁹ Increasing land prices will, therefore, have a definite effect on crops planted. As land prices increase, some lower income producing crops will be abandoned and high income producing crops will be planted. In most instances, more water is required per acre for high income producing crops such as citrus. Some of the land is being bought by non-residents who prefer citrus. These purchases have increased land values and affected land and water use.

Taxes

The power to tax is entrusted to several entities in the Valley. Besides the State ad valorem tax, an individual tract of land may be

⁹Ibid., p. 32.

subject to ad valorem taxes levied by five different public organizations--the county, and school, irrigation, drainage and navigation districts.¹⁰ Texas State government property taxes are levied at a rate of \$.42 per \$100 of assessed property value in the Valley. County government property tax rates per \$100 assessed value are \$1.40 in Cameron County, \$1.15 in Hidalgo County, and \$.89 in Willacy County. Since assessments in the three counties range from 10 to 30 percent, the adjusted tax rates per \$100 market value of property are \$.09 in Willacy County and \$.35 in Cameron and Hidalgo Counties.¹¹

Some of the districts levy service charges rather than taxes. Several irrigation districts only use ad valorem taxes to reduce outstanding debts. However, approximately 85 percent of the districts do have outstanding debts and do levy a property tax. The tax rates vary greatly from district to district.

In estimating cost and returns in citrus production, a charge of \$10 per acre per year is usually made for water district tax, state, county, and school taxes. This cost is the same for groves of all ages.¹² The tax on citrus acreage is usually higher than on other cropland due to higher land value assessments. The influence of the tax rate on resource use is important since taxes are a cost of production.

¹⁰Hughes and Motheral, op. cit., p. 32.

¹¹Williamson, op. cit., p. 43.

¹²Ibid.

Taxes in the Valley are considered by many residents to be high. Therefore, any proposals that will require tax revenues will meet objections. Planners for further developments of the Valley's water resources must be aware of present tax levels and of probable resistance to further tax increases.

CHAPTER X

IMPACT OF INSTITUTIONS

The four preceding chapters identified and described the institutions in the Lower Rio Grande Valley which have affected development in the past and which have the potential to affect future resource development. The purpose of this chapter is to discuss the impact of the institutions upon future development.

Invariably, when plans are made to change or adjust water uses and to construct additional water facilities, rights are infringed upon, new demands are placed on public agencies, traditions are upset, customs are defied, etc. Institutional factors have often caused developers, whether public or private, to change courses of action, alter schemes for development, or compromise their interests to satisfy the demands of the social environment. For this reason, before any further development of the Valley's water resources is begun, the probable influence of institutions should be clearly understood.

Legal Problems

To obtain water for irrigation, a valid water right is necessary. By decree, Judge Starley 93rd District Court, recognized and established rights of lower Valley users, and he assigned priorities in use of Rio Grande water. The court's decision is being appealed and no changes in administration of water will be realized until the appeal is heard. A problem of allocation continues to exist, since the Rio Grande below Falcon Dam is over-appropriated. Claimed water rights call for an annual diversion of more than the available water supply.

This problem of rights must be resolved if efficient use of water is to be realized. As long as there exists the prospect of shortages for crops production, because of over-appropriation, optimum quantities of productive factors such as fertilizers, seed, labor, etc., will not be employed. Potential, economic yields will not be realized and net returns to producers, processors and others in the Valley will suffer.

Role of Governmental Agencies

Governmental agencies at all levels have been essential to the development of water resources in the Valley. Agencies of the federal government have constructed flood control facilities and have added in the rehabilitation of both drainage and irrigation facilities. It is expected that these activities will be continued in the future. A continuing problem will be coordination of effort which would yield a comprehensive drainage system and some redevelopment of irrigation facilities for more efficient distribution of water. Along with improved organization of water users at local levels, there may be necessary some changed authority for cooperative work among the federal agencies.

The two state agencies responsible for water use and water rights have had only minor influence on past development. They have had only negligible authority to deal with problems of development and use of water, and they have been so understaffed that their services have not been readily available.

Reorganization of the Water Rights Commission and the Water Development Board under the provisions of SB-145 and SB-146, 59th Legislature, and the new authority of the Water Rights Adjudication Act should enable these agencies to play a much larger role in water development and use in the Valley. The Water Rights Commission is now significantly involved in rights and adjudication in the Valley. The Water Development Board is now engaged in the planning for development of the state's water resources. This plan now calls for a diversion of water from east Texas into the southwest part of the state. This could be a most significant development, affecting the water supply and future land use in the Valley.

At the local level, there are a vast number of governmental agencies affecting water use. Some of their activities have been very well-planned and executed; others have not been as constructive. The County Commissioners Court is responsible for construction of many drainage facilities. Since the Commissioners Court has the power of taxation and eminent domain plus equipment for construction of new facilities, their influence will likely increase in the future.

Municipal and industrial use of water will be a factor to consider in planning for further development. With the predicted population increases, cities will be major users of Rio Grande water; the increased use will reduce the available water for irrigation purposes.

The thirty-four water conservation and improvement districts are the most influential governmental agencies in the Valley. They control 90 percent of the irrigated acreage and exercise the powers of taxa-

tion and eminent domain. In the past, these districts have been responsible for the majority of the water resource development in the Valley. Their impact on future development will be great and their cooperation absolutely essential. Lack of cooperation will act as an obstacle to further development.

Drainage districts have been relatively unsuccessful in the Valley; however, their presence must be considered. Four drainage districts are now functioning to provide flood control and drainage in their areas. They could form the nuclei for larger districts, or some reorganization of the three county area into one or more new districts could serve to improve drainage facilities. These districts have the same powers as irrigation districts and they can be quite instrumental in solving some land use problems.

The two soil and water conservation districts in the Valley have helped their members to develop plans for watershed protection, flood prevention, fish and wildlife development and agricultural and non-agricultural water development. They have recently assumed leadership in developmental activities through their sponsorship, along with the Commissioners Court, of comprehensive studies of land and water use problems in the Valley. They will be influential in determining the course of future actions to further develop land and water resources.

The activities of the numerous local governmental agencies have been similar in one important characteristic. All have strongly oriented their activities to the particular purposes for which they were organized and the areas which they serve. For example, the

water control and improvement districts have been principally concerned with irrigation--the facilities, the diversion and distribution of water. Many have given some attention to drainage but only as problems exist within their respective districts. The soil and water conservation districts have been concerned with more general problems of land and water conservation, but they are organized within watersheds. The singular purposes of these agencies and their varying political boundaries have not allowed effective participation in Valley--wide developmental efforts which would solve land and water use problems. Resources development has tended to be piece-meal and often inefficient. Obstacles of limited cooperation and coordination of efforts must be overcome to realize desired solutions to drainage - flood control - water use problems.

Customary and Traditional Practices

Even though the Valley has only been producing agricultural products on a commercial basis for approximately fifty years, it is subject to the influences imposed by customary or traditional practices. The accounting procedure for water adopted and followed by the majority of the irrigation districts causes water waste and contributes to the over-all drainage problem. The lack of measurement of water deliveries and the application of indeterminate amounts contributes to inefficiency and complicates planning for water utilization.

A high ratio of non-resident land ownership has been customary in the Valley for many years. This could cause a serious problem when efforts to gain approval of proposals for irrigation system rehabili-

tation or control of floods are made. Non-resident owners may not understand the land and water use problems and may thus be disinclined to vote for taxes necessary for works and facilities. It may be that these people will not vote, however. Voting records of residents and non-residents are not available for use as guidelines in making judgment about this.

No customary crop exists in the Valley although citrus fruits are preferred by many producers. It appears that economic conditions--local marketing arrangements, competitive relationships with other regions, market prices, etc.--have dictated the kinds and amounts of crops planted. This will likely continue to be the case.

The Valley has always had an abundance of relatively cheap labor; however, this situation has changed. Due to recent wage increases and the reduction of labor available from Mexico, farming operations have been adjusted to use more machinery and new production practices.

The obstacles to further development caused by custom and tradition are important, but they can be resolved.

Problems of Economic Institutions

Markets, water management policies, land values and taxes were economic institutions identified as important to land and water use in the Valley. Changes in the organization and function of the fruit and vegetable markets in the Valley to improve the competitive position of the area are needed. Without improvements such as better coordina-

tion among growers and shippers, expansion of fresh fruit markets, quality control, etc. resource development will have little economic impact.

The efficiency with which water is used in the Valley is going to depend on significant changes in the allocation of water among uses and users. Low cost water will continue to be used on low value crops. It is wasted in its application and consequently output from this scarce resource is considerably less than that which is possible.

Rising land values also affect land uses. Their chief effect is to drive the lower value crops out of production. New taxes, for irrigation rehabilitation, drainage and flood control are likely and will probably meet with considerable resistance. Since these taxes add to costs of production, benefits of land and water development must be significant, and reliable information about costs and benefits of development must be available to affected persons.

Summary

The Valley has been developed by a group of people, mostly from diverse backgrounds, who have consistently demonstrated a high level of independence. Their attitude toward water use, development, and control has been conservative. They have resisted many suggestions for improving water use. This has made plans for improvement or further development difficult to accomplish. The people are becoming aware of their problems, and they may have incurred enough loss or discomfort to cause serious interest in plans to correct them.

CHAPTER XI

SUGGESTED SOLUTIONS

Water users in the Valley face several problems related to water resource use and development that must be solved if they are to continue to prosper. The problems are periodic water shortages, inefficient use of existing water supplies, and inadequate drainage. Institutional factors have contributed to the formation of these problems and have acted as obstacles to their correction. The impact of institutions upon development and further development has been estimated. It is now necessary to determine ways to counter the adverse effects of certain institutional factors and to suggest means to aid in the solution of the problems now facing water resource development.

Solutions to Technical Problems

Of concern in the solution to the Valley's problems are methods of altering the direct use and handling of both irrigation and drainage water. Emphasis, in solving the physical problems of water use, should be placed on the improvement of facilities.

The Bureau of Reclamation has completed the rehabilitation of irrigation and drainage facilities of several irrigation districts in the Valley. Rehabilitation has been instituted to reduce seepage losses from canals and laterals, reduce temporary water shortages, provide drainage relief, reduce annual operating and maintenance costs, reduce per-acre diversion requirements, and thereby permit more efficient use of the limited water supply available from the

Rio Grande.¹ Rehabilitation is proposed for several other districts and, based on the Bureau estimates of benefits derived,² it should be implemented in all districts. Rehabilitation seems to be a necessary step in attaining more efficient use of water.

The Soil Conservation Service has designed a drainage system for the Valley which is feasible from an engineering standpoint. The system will provide proper land use and treatment in the interest of soil and water conservation, drainage, and flood protection. Benefit-cost data are not available for the project; however, the system will adequately drain the area. It is assumed that the plan represents an optimum solution to problems of flood control and drainage.

These solutions to technical problems have been proposed by the various federal and state agencies. Evaluation of their plans is not the purpose of this study. It is assumed that the plans are feasible and will benefit the Valley's economy through adjusted resource use and further development. In the balance of this report alternative plans for organization and administration to achieve the objectives of flood control, drainage, alleviation of water shortages, and improved efficiency in irrigation are presented.

Solutions to Organizational and Administrative Problems

Valley residents have long been aware of various plans for development which would, if adopted and implemented, result in increased water

¹U. S. Department of the Interior, Bureau of Reclamation, "Plan for Rehabilitation, Mercedes Division," op. cit., p. 2.

²Ibid., p. 2.

use efficiency and a reduced drainage problem. However, the plans have lacked both the approval of those affected and the appropriate organization for instituting the needed improvements. Alternatives in the organization for and administration of improved irrigation and drainage systems are presented here along with their associated advantages and disadvantages.

Water Rights

To solve the problems related to diversion and use of the Rio Grande, the suit which started in the 93rd District Court (The State of Texas et. al. v. Hidalgo County Water Control and Improvement District) and which is now being appealed must be finally decided. A decision will settle the questions about rights to water in the Rio Grande, and if the court's water master is not perpetuated, the authority of the Water Rights Adjudication Act of 1967 can be employed to appoint a permanent water master. He would be responsible for all releases of water from Falcon Reservoir and would strictly regulate and supervise all diversion of water from the river by districts and other rights holders.

Water Use

As previously mentioned, water management methods used in the Valley do not contribute to efficient water use. Water is delivered upon request and the user's water account is debited one-half to one acre-foot of water per delivery. Unmeasured quantities are used on crops, resulting in some under-irrigation, some over-irrigation of plants. To accurately determine the amount of water applied per irrigation,

it is recommended that meters be used to measure the water delivered. The Donna Irrigation District, one of the most successful and progressive, uses meters and has found them to benefit both the district and the farmers. The farmer pays a service charge and his allotment is debited for the exact amount used. Water can be applied more often and in smaller quantities. This change in practice will make better use of water and alleviate problems of high water tables and soil salinity. Accurate measurement of water delivered should be beneficial to all users in the Valley.

It has also been pointed out that the costs for delivery of water to a farm are ordinarily quite low. These costs include actual delivery charges or tolls and taxes levied by the districts. Water is frequently used to irrigate low value crops and in some cases it is wasted by over-irrigation and runoff. To encourage more efficient use of water, it is recommended that water rights be negotiable. Water rights could be leased on an annual basis or sold on a permanent basis. It seems possible that Rule 605 of the Texas Water Commission might be interpreted to allow for rights transfers. Amendments of existing water rights "to change the place of use when it is determined that there will be no increased use of water and will not operate to the injury of any lawful user of water" are possible.³ The procedure might be simplified considerably. This would encourage open exchange of rights and promote efficiency in the use of water.

³Rules, Regulations and Modes of Procedure, Texas Water Commission, 1964.

To illustrate the effects of negotiable rights, suppose two farmers have valid water rights to certain volumes of water, and wish to consider whether it might be beneficial to each if they traded their water rights for other resources, probably dollars. Suppose that the least valuable increment of farmer A's periodic entitlement is worth \$10 at most to him, but farmer B would be willing to pay up to \$50 for that right--a disparity of \$40 between the two marginal values. If A transfers his right to B, both will be better off in terms of their own preferences. The next increment, due to scarcity, will be more valuable to A, but less valuable to B. The water might be worth \$15 to A and \$45 to B. The two will stop trading when the last unit of water is valued equally.⁴ Each will have benefited from the transfer of rights.

In this hypothetical situation, it is apparent that farmer B employs water in more productive uses than farmer A. It has been noted that this is the case in the Valley, that the value of water in certain uses, such as citrus fruit and vegetable production, exceeds the value of water in other uses. Marginal values tend to be unequal and optimum returns to water are thus not realized. Negotiable rights and resultant transfers of water to higher uses will increase the efficiency of use of this scarce resource. Not only will the users benefit from transfers of rights, but so also will the agricultural economy benefit.

⁴Jack Hirshliefer, James C. Dehaver, and Jerome W. Milliman, Water Supply (Chicago: The University of Chicago Press, 1960), p. 38.

Water Control and Improvement Districts

There are presently 34 Water Control and Improvement Districts in the Valley responsible for diverting and delivering water to farmers and providing other related services. The districts own and maintain almost all of the irrigation facilities in the Valley. These districts vary in age with the oldest being created in 1914 and the newest in 1951. The size of the districts vary from 84,663 acres to 714 acres. The adequacy and conditions of the irrigation facilities are highly variable. Though the districts vary greatly and do have some problems, they have been responsible for irrigation development in the last thirty years. The districts are usually adequately financed and administered. The larger districts are progressive and are attempting to improve both their facilities and their use of water. Smaller districts are usually less progressive, lacking both funds and management for further development. The improvement in water use that does occur in the Valley is on an irrigation district basis. Further, improvements in facilities for handling irrigation water and improvements in water application and pricing techniques may be on a district basis. But it cannot be expected that a distribution system composed of 34 districts in various stages of development will function efficiently. Some changes are needed.

A large master district would reduce some of the problems associated with a multi-organizations system. A district of this type would be a creation of the commissioners court or of the legislature. It would operate under the provisions of Article XVI, section 59,

Constitution of the State of Texas. It could be constituted of the existing Water Control and Improvement Districts or it could simply replace them. Likewise, it could be administered by representatives of existing districts or by board members elected by water users.

The master district would act to regulate and control the diversion and distribution of water among districts or individual water users. It would be responsible for negotiations with the court appointed water master for releases from Falcon Reservoir and for diversion from the river to points of storage or use. It could serve as a retail distributor of water or leave that function to member districts.

A master district, representing the interests of users and existing district organizations could bargain effectively for water supplies diverted from other areas. It could encourage consolidation of small, underdeveloped districts and promote rehabilitation of systems for greater efficiency in distribution. Funds for development would be more readily available to a large organization. Other practices that would conserve water, such as metering of water deliveries, could be uniformly adopted if sufficient authority were vested in a master district. In time of water shortage, the district could provide for transfer of water from one area to another, if sale of water rights made such transfer legal and feasible. Such transfers would result in the greatest marginal return from each input of water, thus increasing efficiency of use and benefits to users in the Valley.

In summary, the master district would be an agency governed and

controlled by the water users. It would have rather extensive powers and responsibilities. It would serve to unify the operations in the Valley and it would contribute to the over-all efficiency of the irrigated economy.

Another organizational possibility would be to reduce the number of irrigation districts, by combining the smaller districts with larger ones. The smaller districts are often unable to generate enough funds to finance further construction or rehabilitation of irrigation facilities. Combination would enable them to receive such benefits as rehabilitation of facilities and improved water management. Fewer districts would make coordination and cooperation more easily obtained. Combination has several advantages, but it will be extremely difficult to convince landowners in the small districts that they will receive additional benefits, especially when the district is owned by one or two individuals. It appears that this combination would be difficult to accomplish.

In light of the present conditions, improvements in organization and administration appear to be most likely through a master district. It is difficult to acquire uniformity and over-all efficiency with administrative responsibility divided among 34 organizations. A master district should produce considerable benefits for all landowners, but it would reduce the authority of the individual districts, causing conflicts difficult to resolve. The autonomy of districts will be jealously guarded by some and the jobs of managers and trustees will be protected. District managers will

have to want a superior organization such as the master district; they will have to be convinced of its usefulness before it can be instituted by Valley--wide approval and legal action. A concerted educational and promotional program will be essential to the required approval.

Drainage

The flood control structures and drainage facilities that exist in the Valley were installed and are administered by four drainage districts and numerous water control and improvement districts in the three county area. Some of the drainage districts work actively to provide needed ditches and outlet structures, using their own equipment and a hired work force. Others attempt only to maintain facilities that they now have in place. Much of the land in Cameron and Willacy Counties is not in a drainage district. Facilities for drainage constructed by irrigation districts have generally been inadequate and incomplete, having been designed to handle only the surplus waters of the land area within the district. There is a rather obvious need for a flood control - drainage system which would serve all lands in the three county area. Such a system has been designed by engineers of the Soil Conservation Service. Their work was discussed in Chapter VII.

To accomplish the objectives of flood control and drainage, a new or revised political organization of people in the Valley will probably be necessary. The large number and variety of organizations

now having responsibility and authority for drainage are not conducive to good administration of a complete drainage system. Several organizational possibilities appear to be possible. Each deserves consideration.

Four drainage districts exist presently and each has constructed some drainage facilities. These could be expanded and their drainage systems further developed, and new districts could be organized to include lands not taken into the four districts. These districts would have the necessary powers, such as taxation, eminent domain, and contractual powers, to provide new facilities and administer their systems. There are, however, disadvantages to such organizations. District boundaries do not now correspond to those of water control and improvement districts, soil and water conservation districts or counties. They also do not correspond to the boundaries of watersheds in the Valley. There would have to be a high degree of cooperation with other districts, especially the water control and improvement districts that now have some drainage ditches and outlets. Agreement as to administration of such sub-systems would be vital; drainage districts should probably take them over and integrate them into the larger system.

Irrigation districts have the same powers as drainage districts and have control over most land needing drainage. Many districts have the necessary construction equipment and they have constructed some facilities for drainage. However, construction of a Valley drainage system by individual districts will be difficult to coordi-

nate, especially if one or two districts will not cooperate. Also, it is difficult for district members to comprehend the over-all drainage problem since they have been primarily concerned with lands within their districts.

A master irrigation district, constituted of existing water control and improvement districts, could assume the responsibility for flood control and drainage for all the lands within its boundaries. The drainage problems are closely tied to irrigation so the coupling of developmental and administrative responsibilities for an irrigation system and a drainage system would be quite logical. However, not all lands needing drainage would likely be included in a master irrigation district, unless the district was deliberately organized to include all of the three county area. A further problem would arise in the acquisition of drainage facilities now owned by drainage and water control and improvement districts. Provisions for purchase of facilities and equipment, including the assumption of debts, would be difficult to develop.

Drainage facilities constructed and administered on a watershed basis would be closely related to drainage and water flow patterns. This relationship alone is a strong argument for organization within watershed boundaries, since design of drainage facilities is dependent on water flow and drainage patterns. Engineers would probably appreciate such an organization. However, watershed boundaries are different from those of irrigation and drainage districts. Also, there is no organization at the watershed level with the required

powers for administration. The legislature could create drainage districts with boundaries corresponding to watersheds. This would require enabling legislation. Also, the facilities of the existing drainage districts would have to be purchased. Even though drainage by watersheds would be advantageous, the lack of established administrative organizations is a difficult problem.

The three counties have the administrative organizations, (Commissioners Courts), the legal authority and power, the hired labor and equipment, and the willingness to undertake the construction and administration of a drainage system. Counties, like master districts, would probably have to acquire all existing drainage facilities and develop them further to create a usable drainage system. Intercounty cooperation would be essential to provision of adequate outlet works for drainage of surplus waters to the Gulf. The cost of purchasing facilities and the cost of new construction would require that new taxes be levied. Voters who do not directly feel the need for flood protection will tend to resist new county taxes. Approval of a flood control-drainage system in each county might be difficult to obtain.

The Valley Conservation and Reclamation District (See Appendix C), embracing all the lands lying within the boundaries of Cameron, Hidalgo, and Willacy Counties, was created in 1933 for the purpose of drainage of overflowed lands and other lands needing drainage. The district has the powers and responsibilities of a drainage district and normally would be administered by the three county judges. The district has been inactive for several years; however, the enabling legislation is still in effect. The district is a centralized type of organization

and can provide drainage for the entire area. Since the district contains all lands in the three-county area, there will be no conflict between the district's and other agencies' boundaries. A district of this type and size could plan for the over-all drainage for the Valley through a single administrative agency which will reduce conflicts associated with cooperation and coordination. Even though the district has not been active and has been forgotten by many, it appears to have several advantages--existing organization, needed powers, established administration (Commissioners Court), centralized type organization, Valley-wide authority, and administration through a single agency. The main objective will come from districts and individuals that have drainage systems. They may resist integration into a Valley-wide district, and will certainly be concerned about acquisition of their facilities.

Of critical importance to the organization of people to accomplish flood control and effective drainage of agricultural lands will be the presentation of the plan for the system. The local sponsors of the planning effort will make the decision, and they will be concerned about (1) the political expediency of one form of presentation as compared to another and (2) the kind or type of federal assistance that will be sought.

The plan can be presented in its entirety, as a complete and integrated whole which will provide for flood control and drainage of all lands in the three-county area. If it is presented in this way, people might be inclined to favor a single, region-wide drainage

district. The Valley Conservation and Reclamation District might be revived as an administrative agency. Authority for federal assistance in such a comprehensive development would probably have to be obtained by special legislation, although provisions of PL 87-639 might allow for such a development. PL 87-639 provides for simultaneous authorization of two or more projects in sub-basins where coordination and timing of development is critical. Special legislation is usually secured when simultaneous authorization of a system of projects is desirable.

The plan could be presented as a system composed of separable components, with the components identified as watersheds or even as counties. This presentation might be more appealing to county administrators or special district managers or others who have vested interests in certain areas or political entities. If implementation on a watershed basis is proposed, the provisions of PL 83-566 would allow appropriate federal assistance. Implementation on any other separable component basis would require the authority of PL 87-639, or special legislation. If the plan was to be approved with financing from local and state sources of revenue, federal cost-sharing would not be a factor important to presentation of the plan or organization to implement it.

Financing of the planned development will be important and it will affect the way people organize to accomplish the development. But perhaps more important to organization will be the economic, social, and political implications of the plan. Careful consideration should be given to its presentation. The alternatives for implementation

should be defined and the presentation most likely to win approval of the plan for development should be chosen.

Summary

Valley residents must face the fact that the water supply is limited, the available supply is not being used efficiently, and that there is a severe drainage problem. Even though the situation is getting worse, few corrective attempts have been made. Stuart Chase states that "in a democratic society, real action occurs only when enough people suffer sufficiently to fight for it."⁴ People must realize that for their property to maintain its value and productivity, its use must be planned. When the people understand how inefficiently the water resource is being used, and how costly the floods and poorly drained lands have been, it is reasonable to suppose that their institutions will be altered to a point where, with the consent of the people, effective action can be taken.

⁴Stuart Chase, Rich lands, Poor Lands, (New York: McGraw-Hill Book Company, 1936), p. 292.

A P P E N D I X A

Water Formula Under Judge Starley's Decree

Priority No. 1	465,631 Acres X 1.7 Parts =	791,572 Parts
Priority No. 2	137,317 Acres X 1.5 Parts =	205,975 Parts
Priority No. 3	45,524 Acres X 1.3 Parts =	59,181 Parts
Priority No. 4	12,641 Acres X 1.1 Parts =	13,905 Parts
Priority No. 5	36,061 Acres X 1.0 Parts =	<u>36,061</u> Parts
		1,106,694 Total Parts

Priority No. 1 Formula $\frac{\text{Acre-Foot Available X 1.7 Parts}}{\text{Total Parts (1,106,694)}} = \text{Acre-Foot Per Acre}$

Illustration

U. S. Share of Water in Falcon on April 27, 1966	1,260,000 Acre-Feet
Less Reserve for Municipal Use	<u>60,000 Acre-Feet</u>
	1,200,000

Priority No. 1	$\frac{1,200,000 \text{ Ac. Ft. X 1.7 Parts}}{1,106,694}$	= 1.84 Ac. Ft. Per Acre
Priority No. 2	$\frac{1,200,000 \text{ Ac. Ft. X 1.5 Parts}}{1,106,694}$	= 1.62 Ac. Ft. Per Acre
Priority No. 3	$\frac{1,200,000 \text{ Ac. Ft. X 1.3 Parts}}{1,106,694}$	= 1.41 Ac. Ft. Per Acre
Priority No. 4	$\frac{1,200,000 \text{ Ac. Ft. X 1.1 Parts}}{1,106,694}$	= 1.19 Ac. Ft. Per Acre
Priority No. 5	$\frac{1,200,000 \text{ Ac. Ft. X 1.0 Parts}}{1,106,694}$	= 1.08 Ac. Ft. Per Acre

A P P E N D I X B

Hidalgo County Water Improvement District #1 (Donna)

Donna Irrigation District surrounds the city of Donna and fronts on the river. The district was created by statutory law on December 15, 1914. The district's claim to water is based on the ownership of Certified Filing 317, originally issued to Arroyo Canal Company in 1902. The district operated its own pumping plant and second lift pumps. The district supplies water to the city of Donna, Hidalgo County Water Improvement District #6, Cactus Petroleum Company, and the Permian Petroleum Company. The charge of \$1.25 per acre irrigated is levied by the district plus a flat rate of \$3.00 per acre. The district's debt is \$101.85 per acre. Judge Starley found the district to contain a gross of 42,722 acres of which 37,607 were claimed for irrigation. The court gave the district the right to irrigate 37,675 acres.

Hidalgo County Water Control and Improvement District #1

Hidalgo County Water Control and Improvement District #1 surrounds the city of Edinburg. It was created by the Hidalgo County Commissioners Court on December 7, 1925. The district's claim to water is based on the ownership of Certified Filing 318, originally issued to the Valley Reservoir and Canal Company in 1909. The district operates its own pumping plant and supplies water to the city of Edinburg and Hidalgo County Districts #13, #15, and #17. A flat rate charge of \$3.00 per acre irrigated is levied by the district. Judge Starley found the district to contain 40,562 gross acres of which 34,746 were claimed for irrigation. He gave the district a right to irrigate 34,746 acres.

Hidalgo County Water Improvement District #2 (Pharr-San Juan)

Hidalgo County Water Improvement District #2 surrounds the cities of Alamo, San Juan, and Pharr. The district was created by the Hidalgo County Commissioners Court on July 12, 1920. The district claims a water right under Certified Filing 100, originally issued to the Louisiana-Rio Grande Canal Company in 1912. It operates its own pumping plant and second lift. Water is supplied to Pharr, McAllen, San Juan, and Alamo. Judge Starley found the district to contain a gross of 72,588 acres of which 65,430 were claimed for irrigation. The district received the right to irrigate 65,000 acres.

Hidalgo County Water Improvement District #3
(McAllen)

Hidalgo County Water Improvement District #3 is a small area extending both north and south of McAllen. It was created by the Hidalgo County Commissioners Court on March 14, 1921. It claims a water right under Certified Filing 320 originally issued to the Hidalgo Irrigation Company. The district operates its own pumping plant and supplies water to McAllen. The charge of \$2.25 per acre irrigated is levied by the district plus a flat rate of \$3.00 per acre. Judge Starley found the district to contain a gross of 8,561 acres of which 8,355 were claimed for irrigation. It received the right to irrigate 7,941 acres.

Hidalgo County Water Improvement District #5
(Progresso)

Hidalgo County Water Improvement District #5 is located just south of Weslaco between the river and the floodway. The district was created by the Hidalgo County Commissioners Court in May, 1925. It claims a water right under Certified Filing 830 originally issued to W. T. Adams. The district operates its own pumping plant and supplies water to no one else. A charge of \$2.00 per acre irrigated is levied by the district plus a flat rate of \$6.25 per acre. The district's debt is \$14.95 per capita. Judge Starley found the district to contain a gross of 6,348 acres of which 5,689 were claimed for irrigation. He gave it a right to irrigate 5,693 acres.

Hidalgo County Water Improvement District #6
(Engleman)

Hidalgo County Water Improvement District #6 is in an area located in two parts adjacent to the northern boundaries of the Donna and Mercedes Districts and north of the city of Elsa. It was created by the Hidalgo County Commissioners Court on March 18, 1929. The district claims a water right under Permit #1091-A originally issued to Mestenas Water Company in 1928. Water is supplied to the district by the Donna District. A charge of \$2.50 per acre irrigated is levied by the district plus a flat rate of \$3.75 per acre. The district's debt is \$14.32 per acre. Judge Starley found the district to contain a gross of 10,534 acres of which 9,238 were claimed for irrigation. He gave it a right to irrigate 9,238 acres.

Hidalgo County Water Control and Improvement District #6
(Goodwin)

Hidalgo County Water Control and Improvement District #6 is located one mile west of Mission in the northwest corner of the Lower Valley. It was created by the Hidalgo County Commissioners Court on February 21, 1927. The district claims a water right under Certified Filing 812 and Permits #989 and #918. It operates its own pumping Plant and also four lifts. It supplies no water to cities but does have a domestic allotment. A charge of \$4.00 per acre-foot irrigated is levied by the district plus a flat rate of \$3.75 per acre. The district's debt is \$1.08 per acre. Judge Starley found the district to contain a gross of 22,564 acres of which 21,118 were claimed for irrigation. He gave it a right to irrigate 21,059 acres.

Hidalgo County Water Control and Improvement District #7

Hidalgo County Water Control and Improvement District #7 is located west of Edinburg and six miles north of Mission. It was created by the Texas Water Rights Commission on January 10, 1929. The district claims a water right under Certified Filing 319, originally issued to Mission Land Improvement Company, and Permit #473, originally issued to the United Irrigation Company in 1920. The district operates jointly with Hidalgo County Water Control and Improvement District #14 a pumping plant and supply canal. An irrigation charge of \$1.25 per hour per acre is levied by the district plus a flat rate of \$3.00 per acre. The district's debt is \$36.81 per acre. Judge Starley found the district to contain a gross of 20,965 acres of which 19,732 were claimed for irrigation. He gave it a right to irrigate 19,732 acres.

Hidalgo County Water Control and Improvement District #11

Hidalgo County Water Control and Improvement District #11 was dissolved, but no date is available. It is believed that it was consolidated with Hidalgo County Water Control and Improvement District #1, but there is no proof of this.

Hidalgo County Water Control and Improvement District #12

Hidalgo County Water Control and Improvement District #12 was organized in 1929 and contained roughly 60,000 acres. However, it was dissolved by court order.

Hidalgo County Water Control and Improvement District #13

Hidalgo County Water Control and Improvement District #13 was created by the Hidalgo County Commissioners Court on May 25, 1936. It has no water right and buys its water from Hidalgo County Water Control and Improvement District #1. Judge Starley found the district to contain a gross of 2,319 acres of which 2,019 were claimed for irrigation. He gave it a right to irrigate 1,942 acres.

Hidalgo County Water Control and Improvement District #14

Hidalgo County Water Control and Improvement District #14 surrounds the city of Mission. It was created by the Hidalgo County Commissioners Court on October 24, 1931. The district claims a water right under Certified Filing 319, originally issued to Mission Land Improvement Company. It owns and operates jointly with Hidalgo County Water Control and Improvement District #7 a pumping plant and supply canal. The district supplies water to Hidalgo County District #18 and #19. A charge of \$1.25 per hour is levied by the district plus a flat rate of \$2.50 per acre. The district's debt is \$78.60 per acre. Judge Starley found the district to contain a gross of 14,103 acres of which 13,452 were claimed for irrigation. He gave the district a right to irrigate 13,452 acres.

Hidalgo County Water Control and Improvement District #15

Hidalgo County Water Control and Improvement District #15 is located north of the city of Edinburg. It was created by the Hidalgo County Commissioners Court on October 28, 1941. The district derives its water right under two Permits -- #1136, originally issued to J. T. Franklin in 1930, and #1328, originally issued to L. M. Bentsen in 1942. The district purchases water from Hidalgo County Water Control and Improvement District #1. The net debt of the district is \$77.37 per acre. Judge Starley found the district to contain a gross of 38,660 acres of which 30,872 were claimed for irrigation. He gave the district a water right to irrigate a total of 29,289 acres.

Hidalgo County Water Control and Improvement District #16

Hidalgo County Water Control and Improvement District #16 is located adjacent to the western boundary of the Goodwin District. It was created by the Hidalgo County Commissioners Court on January 8, 1946. The district derives its water right from Permit #1318, issued to the district in 1949. The district operates its own pumping plant and has a right to a part of the unappropriated storm

and flood waters of the Rio Grande. A charge of \$3.00 per acre irrigated is levied by the district plus a flat rate of \$4.00 per acre. The net debt of the district is \$153.80 per acre. Judge Starley found the district to contain a gross of 13,579 acres of which 12,640 were claimed for irrigation. He gave it a right to irrigate 12,640 acres.

Hidalgo County Water Control and Improvement District #17
(Showers Tract)

Hidalgo County Water Control and Improvement District #17 is located five miles west of Mission and south of District #16. It was created by the Hidalgo County Commissioners Court on April 22, 1947. The district has no water right. It has no pumping facilities and obtains water from Hidalgo County Water Control and Improvement District #1 and Hidalgo County Water Control and Improvement District #6. Judge Starley found the district to contain a gross of 1,990 acres of which 1,018 were claimed for irrigation. He gave it a right to irrigate those 1,018 acres.

Hidalgo County Water Control and Improvement District #18
(Hawkins)

Hidalgo County Water Control and Improvement District #18 is located on the Rio Grande south of Mission. It was created by the Hidalgo County Commissioners Court on September 4, 1951. The district has no water right. It secures its water from Hidalgo County Water Control and Improvement Districts #7 and #14. A charge of \$2.50 per acre irrigated is levied by the district plus a flat rate of \$2.00 per acre. The net debt of the district is \$43.59 per acre. Judge Starley found the district to contain a gross of 2,202 acres all of which were claimed for irrigation. He gave it a right to irrigate said acres.

Hidalgo County Water Control and Improvement District #19
(Shivers)

Hidalgo County Water Control and Improvement District #19 is located on the Rio Grande south of Mission. It was created by the Hidalgo County Commissioners Court on October 28, 1941. The district claims a water right under Certified Filing 319, originally issued to the Mission Land Improvement Company. The district operates its own pumping plant on the Rio Grande. A charge of \$5.00 per acre irrigated is levied by the district plus a flat rate of \$3.00 per acre. The net debt of the district is \$57.01 per acre. Judge Starley found the district to contain a gross of 5,023 acres of which 4,710 were claimed for irrigation. He gave it a right

to irrigate 4,710 acres.

Valley Acres Water District

Valley Acres Water District is located eighteen miles northwest of Harlingen. It was created by Statutory Law on May 18, 1951. The district claims a water right under Certified Filing 27. It obtains water through the facilities of Hidalgo and Willacy Counties Water Control and Improvement District #1. The net debt of the district is \$77.32 per acre. Judge Starley found the district to contain a gross of 10,202 acres of which 9,000 were claimed for irrigation. He gave the district a right to irrigate 9,000 acres.

Willacy County Water Improvement District #1 (Teniente)

Willacy County Water Improvement District #1 is located about ten miles west of Raymondville. It was created by the Willacy County Commissioners Court on May 22, 1948. The district has no water right. There has been no data on the district since 1964. Judge Starley found the district to contain a gross of 1,939 acres of which 1,798 were claimed for irrigation. He refused to rule on the district since the water they would be receiving would be considered surplus.

Willacy County Water Improvement District #2 (San Martin)

Willacy County Water Improvement District #2 is located nine miles southeast of Raymondville. It was created by the Willacy County Commissioners Court on June 13, 1951. The district does not have a water right, but purchases water from the Willacy District under the provisions of a surplus water contract. Judge Starley found the district to contain a gross of 714 acres of which 674 were claimed for irrigation. Starley refused to rule on the district since they would be receiving surplus water.

Hidalgo and Willacy Counties Water Control and Improvement District #1 (Willacy)

Hidalgo and Willacy Counties Water Control and Improvement District #1 surrounds the city of Raymondville and extends west into Hidalgo County. It was created by Statutory Law on January 9, 1930. The district claims a water right under Certified Filing 574 and Permit #1110, the latter originally issued to Willacy County Water Control and Improvement District #1. The district

operates its own pumping plant plus a second lift. It supplies water to Valley Acres Water District and Willacy County Water Improvement Districts #1 and #2. The district's irrigation charge is \$1.75 for gravity and \$1.50 for sprinkle per acre irrigated. The debt is 16.26 percent of the assessed valuation. Judge Starley found the district to contain a gross of 75,710 acres of which 69,910 were claimed for irrigation. He gave it a right to irrigate 69,052 acres.

Hidalgo and Cameron Counties Water Control and Improvement District #9
(Mercedes)

Hidalgo and Cameron Counties Water Control and Improvement District #9 is located between the Donna and La Feria Districts. It was created by the Board of Water Engineers on November 5, 1927. The district claims a water right under Certified Filing 27, originally issued to the American Rio Grande Land and Irrigation Company in 1906, and Permit #400, originally issued to the West Texas Abstract and Guarantee Company in 1919. The district owns a pumping plant and supplies water to the cities of Weslaco, Elsa, Edcouch, Mercedes, and La Villa. A charge of \$2.00 per acre irrigated is levied by the district plus a flat rate of \$2.75 per acre. The net debt is \$131.72 per acre. Judge Starley found the district to contain a gross of 84,663 acres of which 74,478 were claimed for irrigation. He gave it a right to irrigate 68,327 acres.

Cameron County Water Control and Improvement District #1
(Harlingen)

Cameron County Water Control and Improvement District #1 surrounds the city of Harlingen and extends fifteen miles northward from the river. It was created by the Cameron County Commissioners Court on May 13, 1914. The district operates its own pumping plant and supplies water to the city of Harlingen. The district claims a water right under Certified Filing 509, originally issued to the Harlingen Land and Water Company. A charge of \$1.50 per acre, per irrigation plus a flat rate of \$4.00 per acre are levied by the district. The net debt of the district is \$105.51 per acre. Judge Starley found the district to contain a gross of 54,387 acres of which 42,011 were claimed for irrigation. He gave it a right to irrigate 40,133 acres.

Cameron County Water Improvement District #2
(San Benito)

Cameron County Water Improvement District #2 surrounds the cities of San Benito and Rio Hondo and is adjacent to the city of Harlingen. It was created by the Cameron County Commissioners Court on August 15, 1916. The district claims a water right under Certified Filing 161, originally issued to the San Benito Land and Water Company in 1914. The district operates its own pumping plant and supplies water to the city of Rio Hondo, the Central Power and Light Company, Cameron County Water Control and Improvement District #13, and to the city of San Benito on an emergency basis. A charge of \$2.00 per acre irrigated is levied by the district plus a flat rate of \$3.00 per acre. The district is debt-free. Judge Starley found the district to contain a gross of 67,631 acres of which 48,629 were claimed for irri-

gation. He gave it a right to irrigate 58, 196 acres.

Cameron County Water Control and Improvement District #3
(La Feria)

Cameron County Water Control and Improvement District #3 surrounds the cities of Santa Rosa and La Feria. It was created by Statutory Law as a Conservation and Reclamation District. It claims a water right under Certified Filing 739, originally issued to the La Feria Mutual Canal Company in 1914. The district operates its own pumping plant plus a second lift. A charge of \$2.50 per acre irrigated is levied by the district plus a flat rate of \$4.00 per acre. The district's net debt is \$159.73 per acre. Judge Starley found the district to contain a gross of 34,245 acres of which 30,645 were claimed for irrigation. He gave it a right to irrigate 30,645 acres.

Cameron County Water Control and Improvement District #4
(Santa Maria)

Cameron County Water Control and Improvement District #4 surrounds the city of Santa Maria and is located between the river and the Main Floodway. It was created by Statutory Law on May 25, 1929. The district claims a water right under Certified Filing 453, originally issued to the Santa Maria Irrigation Company in 1914. The district operates its own pumping plant and acquires its water from eighteen wells. A charge of \$2.00 per acre irrigated is levied by the district plus a flat rate of \$3.75 per acre. The net debt is \$18.51 per acre. Judge Starley found the district to contain a gross of 4,561 acres of which 3,615 were claimed for irrigation. He gave it a right to irrigate 4,073 acres.

Cameron County Water Control and Improvement District #5
(El Jardin)

Cameron County Water Control and Improvement District #5 is located southeast of Brownsville and includes part of the port of Brownsville. It was created by the Cameron County Commissioners Court on August 4, 1919. The district claims a water right under Certified Filing 137, originally issued to the Indiana Cooperative Canal Company in 1914. The district operates its own pumping plant. A charge of \$2.50 per acre irrigated is levied by the district plus a flat rate of \$4.00 per acre. It also has a drainage charge of \$1.00 per acre, per irrigation. The net debt of the district is \$7.95 per acre. Judge Starley found the district to contain a gross of 24,257 acres of which 18,912 were claimed for irrigation. He gave it a water right to irrigate 20,349 acres.

Cameron County Water Control and Improvement District #6
(Los Fresnos)

Cameron County Water Control and Improvement District #6 begins on the outskirts of Brownsville and extends northward for thirteen miles. It was created by the Cameron County Commissioners Court on January 17, 1922. It claims a water right under Certified Filing 443, originally issued to the Brownsville Land and Irrigation

Company. The district operates its own pumping plant and supplies water to Cameron County Water Control and Improvement Districts #10, #11, #12, and #13. Judge Starley found the district to contain a gross of 24,000 acres of which 19,760 were claimed for irrigation. He gave it a right to irrigate 21,912 acres.

Cameron County Water Control and Improvement District #7

Cameron County Water Control and Improvement District #7 was created in 1927. Since no water use reports are available, it is assumed that the district is inactive or has been dissolved.

Cameron County Water Improvement District #10 (Rutherford-Harding)

Cameron County Water Improvement District #10 is located between Cameron County Water Control and Improvement District #6 and Cameron County Water Improvement District #11. It was created by the Cameron County Commissioners Court on June 18, 1928. The district claims a water right under Permit #937, originally issued to A. L. Harris and Bruce Gentry in 1926. The district secures its water from Cameron County Water Control and Improvement District #6. Judge Starley found the district to contain a gross of 6,978 acres of which 4,085 were claimed for irrigation. He gave it a right to irrigate 2,000 acres.

Cameron County Water Improvement District #11 (Bayview)

Cameron County Water Improvement District #11 is located ten miles northeast of Brownsville. It was created by the Cameron County Commissioners Court on June 18, 1928. The district has no water right. It purchases all of its water from Cameron County Water Control and Improvement District #6. A charge of \$2.00 per acre irrigated is levied by the district plus a flat rate of \$5.00 per acre. The district's net debt is \$2.42 per acre. Judge Starley found the district to contain a gross of 12,062 acres of which 7,424 were claimed for irrigation. He gave it a right to irrigate 7,424 acres.

Cameron County Water Control and Improvement District #12 (Kempner)

Cameron County Water Control and Improvement District #12 is located just north of the Los Fresnos District. It was created by the Cameron County Commissioners Court on September 22, 1928. The district claims a water right under Certified Filing 443. It pur-

chases its water from Cameron County Water Control and Improvement District #6. Judge Starley found the district to contain a gross of 1,120 acres of which 1,025 were claimed for irrigation. He gave it a right to irrigate 1,025 acres.

Cameron County Water Control and Improvement District #13
(Arroyo Gardens)

Cameron County Water Control and Improvement District #13 is located seventeen miles north of Brownsville. It was created by the Cameron County Commissioners Court on October 30, 1928. The district has no water right. It purchases water from Cameron County Water Control and Improvement District #6. A charge of \$2.00 per acre irrigated is levied by the district plus a flat rate of \$4.00 per acre. The net debt of the district is \$52.55 per acre. Judge Starley found the district to contain a gross of 7,208 acres of which 6,762 were claimed for irrigation. He gave it a right to irrigate 3,650 acres.

Cameron County Water Improvement District #15
(McLeod-Hood)

Cameron County Water Improvement District #15 is located just west of the city of Rio Hondo. It was created by the Cameron County Commissioners Court on April 2, 1929. The district claims a water right under Permit #1118, originally issued to S. Finley Ewing in 1929. The district operates its own pumping plant and derives its water from Cameron County Water Control and Improvement District #1 and from surplus waters. A charge of \$2.25 per acre irrigated is levied by the district plus a flat rate of \$4.50 per acre. The net debt is \$24.56 per acre. Judge Starley found the district to contain a gross of 1,828 acres of which 1,750 were claimed for irrigation. He gave it a right to irrigate 1,750 acres.

Cameron County Water Improvement District #16
(Rice Tract)

Cameron County Water Improvement District #16 is located between the Rio Grande and the city of San Benito. It was created by the Cameron County Commissioners Court. It claims a water right under Permit #993, originally issued to A. D. Hattan in 1927. The district operates its own pumping plant and supplies water to some areas outside the permit area. A charge of \$1.00 per acre irrigated inside the district and \$2.50 per acre irrigated outside the district is levied plus a flat rate of \$3.00 per acre. The net debt is \$8.34 per acre. Judge Starley found the district to contain a gross of 2,207 acres of which 1,785 were claimed for irrigation. He gave it a right to irrigate 1,785 acres.

Cameron County Water Improvement District #17
(Sans-Porter)

Cameron County Water Improvement District #17 is located south of San Benito and west of the Russell Tract. It was created by the Cameron County Commissioners Court in 1930. The district has no water right. It obtains water through the facilities of Cameron County Water Improvement District #16. Judge Starley found the district to contain a gross of 1,623 acres of which 1,525 were claimed for irrigation. He gave it a right for 1,525 acres.

Cameron County Water Improvement District #18
(Monte Grande)

Cameron County Water Improvement District #18 was organized in 1929 and derived its water from Cameron County Water Improvement District #2. It is now inactive.

Cameron County Water Control and Improvement District #19
(Adams Gardens)

Cameron County Water Control and Improvement District #19 is located west of Harlingen between the La Feria district and the Harlingen district. It claims a water right under Permit #1188, originally issued to the district in 1931. The district operates its own pumping plant. A charge of \$3.00 per acre irrigated is levied plus a flat rate of \$3.75 per acre. The net debt is 6.33 percent of the assessed valuation. Judge Starley found the district to contain a gross of 9,544 acres of which 7,600 were claimed for irrigation. He gave it a right to irrigate 7,600 acres.

Cameron County Water Control and Improvement District #20

Cameron County Water Control and Improvement District #20 is located south of the San Benito District and extends to the river west of the Los Fresnos district. It was created by the Cameron County Commissioners Court on August 3, 1951. It was formerly Cameron County Water Improvement District #8; however, it was dissolved in 1950. There is reason to believe that District #20 is still active, but the Texas Water Rights Commission lacks the records to prove this.

Cameron County Water Control and Improvement District #21

Cameron County Water Control and Improvement District #21 is located directly north of Cameron County Water Control and Improvement District #13. It was created by the Cameron County Commissioners Court on April 7, 1931. The district has no water right. It obtains water from Cameron County Water Improvement District #2. Judge Starley found the district to contain a gross of 4,365 acres of which 1,203 were claimed for irrigation. He did not give the district a water right.

Cameron County Drainage District #1

Cameron County Drainage District #1 is located in the southern part of Cameron County. It contains parts of Cameron County Water Control and Improvement District #6, #5, Cameron County Water Improvement District #10, and #11. It was created in 1929 by the Texas Legislature. The district contains 81,136 acres. The district is now inactive.

Cameron County Drainage District #2

Cameron County Drainage District #2 is located in the southern most part of Cameron County and surrounds the city of Brownsville. It was created by the Cameron County Commissioners Court in February, 1912. The system is presently operated by the city of Brownsville and provides very little farm drainage.

Cameron County Drainage District #3

Cameron County Drainage District #3 is located northwest of Cameron County Drainage District #1 and contains all of Cameron County Water Improvement District #2 and parts of Cameron County Water Control and Improvement District #21, Cameron County Water Control and Improvement District #13, Cameron County Water Control and Improvement District #6, and Cameron County Water Improvement District #12. It was created by Statutory Law in 1929 and contains 100,000 acres more and less. The system has operated continuously since 1912. The district maintains the system and contracts with Cameron County Water Improvement District #2 for construction.

Cameron County Drainage District #4

Cameron County Drainage District #4 is located immediately north of Cameron County Drainage District #1 and it contains part of Cameron County Water Control and Improvement District #6. The district was created by the Cameron County Commissioners Court in 1923 and it contains 11,600 acres, more or less. A tax of fifty cents per acre is levied for maintenance. Construction is contracted for by the district.

Hidalgo County Drainage District #1

Hidalgo County Drainage District #1 was created by the Hidalgo County Commissioners Court and is presently managed and controlled by the Commissioners Court. The district contains all lands in Hidalgo County. The district is only concerned with main ditches and has equipment for both construction and maintenance. The irrigation district within the drainage district are responsible for lateral drains. A tax is presently levied by the district for the construction of \$100,000 worth of new districts. This is the only district that has experienced success.

A P P E N D I X C

Art. 8280-104 Revised Civil Statutes of Texas

COPY

EXHIBIT 10.Received
October 13, 1933,
at
Executive Department

S. B. No. 69

AN ACT

creating "Valley Conservation and Reclamation District" embracing the counties of Cameron, Hidalgo, and Willacy: defining powers and purposes for which said district is created; providing for appointment of Directors and defining their powers and duties; authorizing said district to contract with and to receive grants from the United States Government or any of its agencies or departments and with the State of Texas and its agencies and departments; making an appropriation to defray expenses of surveys, etc., authorizing State Departments of Reclamation and Health and the Texas Rehabilitation and Relief Commission to cooperate with aid and assist said District, and declaring an emergency. _____

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

Section 1. That "Valley Conservation and Reclamation District," embracing all the lands lying within the boundaries of Cameron, Hidalgo and Willacy Counties, State of Texas, is hereby created and established as a defined conservation and reclamation district, for the purpose of the drainage of its overflowed lands, and other lands needing drainage. _____

Said District is hereby declared to be a governmental agency and a body politic with all the powers, rights and duties granted to and/or imposed upon drainage districts under the existing laws of the State of Texas with reference to such districts and with such other powers as are now, or may be hereafter conferred upon similar districts, except as herein otherwise provided. _____

Section 2. The management and control of said "Valley Conservation and Reclamation District" is hereby vested in a Board of Directors, which Board shall be composed of three (3) persons who shall have the same powers now conferred by law on the Commissioners of drainage districts, and such other powers and duties as are conferred by this Act. Those three (3) persons who are now the County Judges, respectively, of Cameron, Hidalgo and Willacy Counties, and their successors in office, are hereby appointed and constituted the Board of Directors of the District hereby created, and their respective terms of office as Directors of said District shall coincide with their respective terms of office as the County Judges, respectively, of said counties. Those persons hereby appointed Directors shall be succeeded as such Directors by their respective successors to the office of County Judge, and so on thereafter. Such Directors shall serve without compensation for their services as such Directors.

Section 3. In addition to the powers hereinbefore granted, the District hereby created is hereby authorized and empowered to negotiate for, and receive donations or grants of money and/or services or other aid from the government of the United States and/or the State

of Texas and/or any of the agencies, departments or instrumentalities thereof, and to apply all such moneys, services and aid to the carrying out of the purposes for which said District is created. _____

Such District is hereby further authorized and empowered to enter into a contract or contracts with the Government of the United States, and/or the State of Texas, and/or any department, agency or instrumentality thereof with reference to the receipt and application, or use, of any moneys or other aid granted, and to comply with the rules and regulations of such governmental bodies, departments, agencies or instrumentalities with reference to the receipt and/or application or use of any moneys or other aid granted, provided, no such contract be inconsistent with, or prohibited by, the Constitution or laws of the State of Texas. _____

Said District is hereby further empowered to cooperate with all existing and further public and private corporations, and/or private persons, in said three (3) counties of Cameron, Hidalgo and Willacy, who have, or may hereafter construct or maintain drainage facilities, within or without the territory of such District, by permitting the use by such public or private corporations, and/or private persons, of the drainage facilities of such District. _____

Section 4. The Board of Directors shall meet and organize within ten (10) days after this Act shall become effective, in so far as the same shall affect the District hereby created. _____

All the provisions of the law relating to the organization and function of drainage districts in this State and delegated to the

Commissioners' Court by such laws are hereby delegated and vested in said Board of Directors, and said Board shall comply with all such laws in their organization and in the further operation of the District hereby created. The District hereby created shall be governed in all respects by the general laws of the State of Texas now applying to drainage districts where the same are not inconsistent or in conflict herewith. _____

Section 5. The District hereby created is forever prohibited from creating any debt or issuing any bonds or other evidences of indebtedness or levying any taxes except for cost of right-of-way and maintenance, and then only when authorized by a majority vote in each separate county. _____

Section 6. There is hereby appropriated, and there shall be paid to said District, out of the general fund not otherwise appropriated, the sum of Fifteen Thousand (\$15,000.00) Dollars, which said sum shall be used for defraying the expenses of making engineering surveys, plans and specifications, for the compilation of other necessary data, and for the payment of necessary and proper expenses incidental to the negotiations for securing aid and assistance from said Governmental bodies hereinbefore mentioned, and in connection with the organization of said District. _____

Section 7. The State Department of Reclamation is hereby authorized and instructed to co-operate with the District hereby created and/or the Federal Government or any Department agencies of instrumentality thereof in the making of surveys, the drafting

of plans, estimates and specifications for a drainage system for said District and/or in the supervision of the construction of said work. _____

The State Department of Health is hereby authorized and directed to cooperate with said District by furnishing advisory assistance on such features of the work as pertain to sanitation, and by supplying said District with all available data bearing on sanitary benefits to be derived from the construction of the drainage system in connection with any application said District may make for assistance by said Governmental body hereinbefore mentioned. _____

The State Rehabilitation and Relief Commission is hereby authorized and directed to furnish such unskilled labor for the construction work of such District as may be available under the authority of said Commission. _____

Section 8. The fact that the creation of "Valley Conservation and Reclamation District" will result in material benefits and improvements to the territory included therein, and in the increase of taxable values of the property therein; and, that a large portion of the territory comprised within said District is now subject to overflowing and floods resulting from the excessive rainfall caused by the recent hurricanes, creates an emergency and apparent necessity, requires that the Constitutional Rule which requires bills to be read on three several days be suspended and such rule is hereby suspended, and that this Act shall take effect from and after its passage, and it is so enacted. _____

Edgar E. Witt

President of the Senate

I hereby certify that S.B. No. 69 passed the senate, October 9, 1933, by the following vote: 22 Yeas 6 Nays. October 12, 1933, Senate concurred in House Amendments, by the following vote: 28 Yeas, 1 Nay. _____

Bob Barker

Secretary of the Senate

Coke Stevenson

Speaker of the House of
Representatives

I hereby certify that S.B. No. 69 passed the House of Representatives, with Amendments, October 12, 1933, by the following vote: 90 Yeas, 33 Nays. _____

Louise Snow Phinney

Chief Clerk of the House
of Representatives

Approved:

Date, October 23, 1933.

Miriam A. Ferguson
Governor.

Filed in the Office of the
Secretary of State,
This 23rd Day of October, 1933,
A. J. Power.

Assistant Secretary of State.

10:30 a.m.

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