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AN HISTORICAL OVERVIEW OF THE EVOLUTIONS OF INSTITUTIONS
DEALING WITH WATER RESOURCE USE AND WATER RESOURCE
DEVELOPMENT IN UTAH
1847 THROUGH 1947

by

John Swenson Harvey

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Economics

UTAH STATE UNIVERSITY
Logan, Utah

1989

DEDICATION

This work is dedicated to my grandfather Mr. Leo Paul Harvey (Born: May 1, 1896, Died: January 1, 1986). As both an irrigator and water administrator he worked to improve Utah's environment, water resources, and public institutions.

ACKNOWLEDGEMENTS

The Utah Department of Natural Resources, acting through the Division of Water Resources has funded this report. This work has been conducted under the direction of Dr. Charles S. Peterson. I would like to express my gratitude to Dr. Peterson for his help, encouragement, and patience. Also I wish to thank my family, particularly Ruth P. Harvey.

John Swenson Harvey

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ABSTRACT

An Historical Overview of the Evolutions of Institutions
Dealing with Water Resource Use and Water Resource
Development in Utah
1847 through 1941

by

John Swenson Harvey, Master of Science
Utah State University, 1989

Major Professor: Dr. Charles S. Peterson
Department: Economics

This thesis studies the development of social and legal institutions that have controlled the pattern of water development in Utah from 1847 to 1947. The thesis is divided into three parts to facilitate the study of the diverse influences on water development. The first part deals with the Mormon church and pioneer influences and private development during the late 1800s. The second begins with statehood and records the changes in the state's institutions up to 1947. The third part is a summary of the entire process. It relates pioneer, private, and state influences to each other and the current (1989) water management structure to the 1947 structure.

(236 pages)

INTRODUCTION:

UNDERSTANDING THE CHALLENGES AND THE PROCESS

Water resources, their use, and their administration have been at the center of attention for much of Utah's history. This thesis seeks not only to record the emergence of the public policies, agencies, and institutions, which are utilized to administer Utah's water resources, but to explain the forces which created them.

Purpose of the Thesis

The aim of this study is to outline the evolution of the legal and social institutions involved in the state of Utah's water resource administration and management. The method of analysis will be to examine successive time periods in Utah's history, to identify the forces that produced changes in social and legal water institutions, and, within this context, to evaluate the success or failure of the changes. The purpose is not to suggest alternative methods or to criticize particular laws or institutions, but to explain the process of administration as it moved toward the present system. The year 1847 marked the beginning of permanent settlement and the management of water resources. This thesis begins with that year. By 1947 -- one hundred years later -- the essential components of the system in present use (1989) had been developed; this study concludes

at that date.

An Overview of Institutions

There exists a body of law, institutions, and social customs that regulate the development and use of water resources in Utah. The social and legal aspects of this structure are interwoven. Each contributes to the effectiveness of the other. Because of its important role in the initial phases of Utah's settlement, the Mormon church set the first water policy and provided the initial administrative framework. When more rigorous controls and guidelines were needed than could be provided through the direct application of the church's administrative machinery, public institutions were established, many of which reflected Mormon social values and the church's institutional structure. Over the years individual water users, communities, the Mormon church, the State of Deseret, the Territory of Utah, privately acting individuals with primarily profit motives, the federal government, and the State of Utah have all contributed to the development of water policy and the institutions by which it has been administered.

Although Mormon pioneers had a variety of temporal objectives, their most pressing practical need was the development of methods that would enable them to survive in an arid environment. Thus pressed they developed social

institutions and methods of settlement that enabled them to extend their influence over a large geographical area. Few factors figure more largely in this than did the values and practices by which they utilized water. Included were such principles as the priority of the public interest, beneficial use, collective development, and wide distribution of water and its benefits.

In the early years of settlement (and beyond in newly settled areas) church institutions sufficed. As the demands on limited water supplies intensified, legal institutions developed. The territorial legislature influenced the pattern of water development and determined the administrative structure until 1896. Shortly after statehood the Office of the State Engineer and the Board of Land Commissioners were established. These were the beginnings of a long effort to improve and clarify the proper role of the state in the administration, allocation, and development of water resources.

The Utah Environment

Water administration in Utah has been profoundly influenced by the scarcity of water. Encompassing portions of three drainage basins, the Colorado River Basin, the Great Basin, and a small portion of the Snake River Basin in the northwest corner of the state, Utah has averaged only about 13 to 14 inches of rainfall annually. Added to

limited moisture has been the problem of poor seasonal distribution. Rain or snow falls most heavily during the winter months when the need for water is least. During the warmest periods of the growing season the environment has almost always provided the least moisture. These characteristics made it necessary to develop agricultural systems based on both irrigation and eventually dry farming techniques. Industry, cities, and other users also found it necessary to develop special programs and facilities to meet their water requirements.

The Mormons

The Mormons were the first, and remain the primary, settlers of the Utah area. Their water development and settlement policies, and the motivations behind them, form the foundation of Utah water policy.¹ Their unique migration to Utah was brought about by pressures elsewhere

¹Hubert Howe Bancroft, History of Utah, 1540-1887 (San Francisco: The History Company Publishers, 1890), pp x-xi. To explain why he treated the Mormon religion in more depth than he usually treated religion in histories Bancroft maintained that it was a more integral part of the story than elsewhere, he said that:

. . . inasmuch as doctrines and beliefs enter more influentially than elsewhere into the origin and evolution of this society, I give a history of the rise and progress of those doctrines. . . .

The Settlement of this section sprung primarily from the evolution of a new religion, with all its attendant trials and persecutions. To give their actions without their motives would leave the work obviously imperfect; to give their motives without the origin and nature of their belief would be impossible.

in the United States. Early in their history Mormons showed a remarkable tendency to locate as a cooperative group. This instinct for gathering was maintained as they moved to the Utah area. Upon arrival they settled Salt Lake City as a group. Agriculture in arid regions has always involved substantial startup costs, which require heavy financial or physical investment. Because of the circumstances the Mormons had no choice but to opt for the practice of cooperative effort to provide the startup investment. Out of these early cooperative experiences grew the fundamental ideas concerning the role of water and its possibilities.

PART I

1847-1896

CHAPTER I

PIONEER WATER ADMINISTRATION: 1847 THROUGH 1865

Beginning the Process

The first years of Mormon settlement saw the development of what may be called a pioneer pattern of water administration. Mormon pioneers arrived with few economic resources other than their own potential for hard work and their resolve to establish an independent commonwealth. In this circumstance successful colonization depended directly upon a collective effort to develop and administer water resources for the common good. Water management was introduced in July of 1847 as an essential element of pioneering. During the next five years water resource use remained under the close direct administration of the church.

Throughout the next sixty years new colonizing groups settled a succession of out-of-the-way spots. In each case these people reverted temporarily to the practices of pioneer water administration as the spread of settlement ran beyond the institutions of political government and the market economy. Each time, the new settlers relived many of the elements of the first pioneer experience. A trek was made. Hard-pressed pioneers arrived. With few means, faced by the needs of survival, and with little immediate concern

for speculative development or market production, generations of pioneers repeated the process of cooperative development as they claimed, diverted, and applied water to their fields. The experiences of successive colonies ingrained habits of mutual responsibility and cooperative effort in the Utah character that have influenced the administration of water ever since.¹ All subsequent water management developments have been superimposed upon the foundation established by pioneer water users.

Adapting to an Arid Environment; Cooperation and Common Ownership

The most immediate concern of Utah's first pioneers, when they arrived in the Great Salt Lake Valley in July of 1847, was to begin the process of farming. Food had to be provided if they were to survive. Drouth and isolation were facts of the environment; integrity of the group and self

¹George Lofstrom Strebel, "Irrigation as a Factor in Western History, 1847-1890" (Dissertation, University of California, Berkeley, 1965), pp 162-171. Also see Charles S. Peterson, Take up Your Mission; Mormon Colonizing Along the Little Colorado River 1870-1900 (Tucson: University of Arizona Press, 1973), pp 176-191; Leonard J. Arrington, Feramorz Y. Fox, and Dean L. May, Building the City of God: Community and Cooperation Among the Mormons (Salt Lake City: Deseret Book Company, 1976), pp 41-78. For general treatments see Klaus J. Hansen, Quest for Empire: The Political Kingdom of God and the Council of Fifty in Mormon History, (East Lansing: Michigan State University Press, 1970), pp 121-146; and Joel E. Ricks, Forms and Methods of Early Mormon Settlement in Utah and the Surrounding Region 1847 to 1877, (Logan Utah: Utah State University Press, 1964), pp 41-104.

sufficiency (because of the desire for an independent commonwealth) were desired goals. With these factors in mind pioneer leaders stressed agriculture as the first industry. As the process of Mormon expansion progressed, agricultural possibilities dictated the characteristics and location of Mormon colonies.²

In most places agricultural development was difficult. The Mormon settlers were faced with an arid environment where it soon became apparent sufficient water would not be provided naturally to raise crops to maturity.

Farming in such an environment required that new agricultural techniques be developed. The first pioneers, who arrived in late summer, found that it was impossible to break the soil in its natural state. Only after the waters of City Creek were diverted onto their proposed fields was it possible to plow.³ Later, Salt Lake City "irrigators" followed the same practice in preparing the land of the "big field," a 12,000-acre piece of land much of which was brought under irrigation in the next few years.⁴ Other

²Andrew Love Neff, History of Utah: 1847 to 1869 (Salt Lake City, Utah: Deseret News Press, 1940), Chapters IX and XII, pp 89-112 and 207-237. Also see Hubert Howe Bancroft, History of Utah, Chapters X, XI, and XII, pp 252-274, 275-287, and 288-304.

³George Thomas, The Development of Institutions Under Irrigation: With Special Reference to Early Utah Conditions (New York: The Macmillan Company, 1920), p 18.

⁴Andrew Love Neff, History of Utah, p 264; also Hubert Howe Bancroft, History of Utah, pp 285-286; also Leonard J. Arrington, Great Basin Kingdom: An Economic History of the Latter-day Saints 1830-1900 (Lincoln: University of Nebraska

water sources were tapped within a year or so as irrigating villages developed at Mill Creek, Cottonwood, Fort Union, and South Willow Creek (later Draper) within Salt Lake Valley and at Ogden, Utah Lake, Sanpete Valley, and elsewhere. Thus in the very beginning of settlement the availability of water resources dictated where the Mormons stopped and what they did, forcing them to change their methods of farming and alter many social practices. Cooperation, central church coordination, small diversified farms, and collective irrigation became integral components of the pioneer mode of agricultural (water) development.⁵ The environment was an obstacle that the settlers had to overcome. It also imposed upon them developmental limits they had to acknowledge in order to survive. Although at the time water that could be used for irrigation purposes

Press, 1966), p 52.

⁵Ibid., p 129. Concerning cooperation and central planning Arrington states:

It should be noted that the enterprises planned by the Mormons in the 1850's were financed by contributions from the legislature, the church, and private individuals, and thus were 'mixed' enterprises. . . . Representing an attempt to utilize the skill of European converts, the goal of every enterprise was that of building the Kingdom and achieving economic independence. The boldness of the church's design in attempting to provide the economic foundations for a commonwealth is clearly evident. That in each case the church eventually assumed responsibility and control was due partly to the lack of private capital, and partly to the belief that all institutions in Mormondom ought to be under the influence of the Priesthood.

seemed relatively abundant, the pioneers realized that successful settlement would occur only where water resources were available.⁶

Because of the razor thin survival margin in the pioneers' new surroundings, effective use of all the resources available was important to the success of the settlement experiment. In order to minimize contention and to channel efforts towards the common goal of establishing communities, the leaders of the church applied firm discipline in establishing Mormon colonies. From the beginning scattered settlement was denounced. Leaders called for group settlement and cautioned against the pioneers' dispersing their labor's efforts.⁷ The goal was

⁶Ibid., p 44.

As Fremont pointed out, however, the region did contain a number of valleys at the western base of the Wasatch where colonies could be planted. While these appeared to be hopelessly dry, for the most part, they could be irrigated with a magnificent array of mountain streams which flowed from the Wasatch and distended plateaus further south. The well-drained alluvial soil in the valleys was fertile, and the valley plains were sufficiently broad to support a considerable population.

⁷Ibid., p 45. Arrington partially quotes Heber C. Kimball, speaking on August 22, 1847, as recorded in Howard Egan, Pioneering the West 1846 - 1878 (Richmond, Utah: Howard R. Egan Estate, 1917), p 127.

That this pattern of central planning and collective labor was ideally designed for the geography and conditions of settlement in the Great Basin was something which came to be appreciated later: It confirmed to the Mormons that their way was God's way. But before this was recognized -- indeed, in the first camp meeting held in the Salt Lake Valley -- leaders and followers reached a consensus that they would not

community development. To facilitate this approach, Brigham Young, the church president, early on denounced speculation in land and declared that there would be no private ownership of the timber or water resources.⁸ It was hoped that by establishing the institution of common ownership (or non-capitalistic ownership) of the water the settlers would use it in ways that would protect the interest of the overall community.⁹

The early church leaders believed that by promoting cooperative institutions the beneficial use of water and other resources would be generally promoted and joint or community projects would be encouraged. The benefits (and also the risks) would be spread among the entire community rather than to a few individuals.¹⁰

'scatter' their labors -- that they would combine and concentrate their efforts and work cooperatively -- that a Kingdom built in any other way was a fraud -- a 'Kingdom of the world.'

⁸Ibid., p 52.

⁹To understand the contrast of the Utah cooperative system to the private profit oriented system in other areas refer to Douglas R. Littlefield, "Water Rights during the California Gold Rush: Conflicts over Economic Points of View," Western Historical Quarterly 14 (October 1983), pp 415-434.

¹⁰Leonard J. Arrington, Great Basin Kingdom, p 62. In commenting on the unique aspects of Mormon cooperation Arrington states:

Yet, Mormon economic institutions were unique in the contemporary American West. To be sure, there was the same hunger, the same improvisation, the same struggle for success, as in all Western settlements. But the unity, homogeneity, joint action, and group planning all stamped the Mormon frontier as unique -- as a contrast with the

The Pioneer Institution

Within a few months after the 1847 arrival of the Mormons, an embryonic system of water resource development had taken form. Among its characteristics were appropriation, irrigation, full development, attachment to the land, ownership in common, and a large degree of central church coordination. Within five years these attributes were sufficiently established to be recognized as what may be called the pioneer mode of water administration.¹¹ This pioneer mode was repeatedly applied by newly arriving settlers in the Utah area for the next six decades.¹² At the

scattered, specialized, exploitative, 'wide open' mining, cattle, lumber, and homestead frontiers with which historians have familiarized us.

George Thomas, Institutions Under Irrigation, p 19. In describing the canal building practices of early Utah settlers Thomas states:

The fundamental thing to understand is that the canal in early Utah was, as a rule, a community or cooperative undertaking because not only the welfare but the very existence of the community depended upon its success.

Arthur Maass and Raymond L. Anderson, ...and the Desert Shall Rejoice: Conflict, Growth, and Justice in Arid Environments (Cambridge, Massachusetts, and London, England: The MIT Press, 1978), p 334.

Irrigation companies in Utah are organized typically as mutual irrigation companies. Originally the irrigation systems were voluntary cooperative ventures run principally by village officials, who were almost always functionaries in the local ward of the Mormon church.

¹¹Leonard J. Arrington and Dean L. May, "A Different Mode of Life," Agricultural History Volume XLIX Number 1 (January 1975), pp 3-20.

¹²Milton R. Hunter, Brigham Young: The Colonizer (Santa Barbara and Salt Lake City: Peregrine Smith, Inc, 1973), pp 158-159. Hunter quotes John Taylor and Joseph F. Smith

same time the more established areas refined the pioneer mode and developed more formal legal institutions.¹³

The characteristics of the pioneer mode of water administration and utilization included the following:

First, pioneer irrigation spread ahead of the formal

writing to William B. Preston, date December 26, 1882. Letter located in Fremont Stake Manuscript History. They endorse Brigham Young's colonizing policies. Emphasis added.

In all cases in making new settlements the Saints should be advised to gather in villages, as has been our custom from the time of our earliest settlement in these mountain valleys. . . . They can . . . cooperate for the good of all. . . .

It would be well . . . for you . . . to visit the country and make such locations of settlements as may be desirable and as the circumstances may require, and have your town lots surveyed by a competent person and such arrangements made for this kind of settlement as you . . . may deem advisable. In doing this, however, it would be well not to interfere with homestead entries, or to embarrass new settlers too much, but to have it positively understood that this method must be adopted in your settlements.

We know of no reason why the methods that have been pursued in the past on these matters are any less applicable to the Saints in Idaho or Wyoming than they have proved to be in Utah and Arizona.

While the families are gathering in settlements there can be no disadvantage in having the farms outside, within easy reach, as the peculiarities of the country may admit, the same as in older settlements. A spirit to spread far and wide out of sight and reach of the authorities of the Church, must be discountenanced. As all Latter-day Saints must yield obedience to the laws of the Gospel, and the order of the Kingdom of God, and a methodical comprehension and intelligent system be inaugurated that we may gain influence (and not lose strength) by strengthening the cords of the Stakes of Zion. . . .

¹³Leonard J. Arrington, Great Basin Kingdom, Chapters II through VII passim.

law when cooperating groups of colonists established towns.¹⁴

Second, pioneers blended practices based in their common law heritage with concepts of what later became known as appropriationism in water development, allocation, and administration.¹⁵

Third, the pioneer mode relied heavily on direction from church leaders for the initial colonizing decisions,

¹⁴Settlement utilizing the pioneer mode continued through the first six decades of settlement, therefore even though there were many legal and social changes taking place in the territory the initial experiences of new settlers with water administration remained remarkably similar.

¹⁵Morton Horwitz, Transformation of American Law: 1780-1890 (Cambridge: Harvard University Press, 1977) pp 31-43. Also see Donald J. Pisani, "Enterprise and Equity: A Critique of Western Water Law in the Nineteenth Century," Western Historical Quarterly Volume XVIII Number 1 (January 1987), pp 28-29; and Arthur Maass and Raymond L. Anderson, The Desert Shall Rejoice, p 325. Speaking of this blending the authors state:

It was obvious to the Utah settlers that the riparian doctrine of English common law used in the eastern United States, which gave water rights only to lands adjacent to the streams, was not suited to irrigation farming and it was promptly discarded. . . . At the same time, because all settlers were members of the same religious order that had come to establish new cooperative communities, the Mormons could agree that no users or groups of users should be allowed to enjoy exclusive rights to water to the disadvantage of other users in similar circumstances. Thus, while Utahans adopted a system of appropriation in place of riparian rights, they deemphasized absolute priority of use, which is a typical characteristic of the appropriation doctrine, and proportionate sharing became an important principle for appropriating and allocating water. . . . Beneficial use was declared to be the basis, the measure, and the limit of a water right. . . . and no man could gain a right to more than he could use in a beneficial manner.

which included the locations of potential water development.¹⁶

Fourth, disagreements were settled by mediation within the community (often church officials were against utilizing federal courts for adjudicative proposes).

Fifth, pioneer systems of water distribution and the methods employed in using the water in the fields were simple in nature and scope. As applied, they may be said to have made an extensive or superficial rather than intensive or exhaustive use of water resources.

The Importance of the Repeated Pioneer Experience

Dealing with irrigation created a common experience for Utah's pioneers. Whether a settler opened up a new area in 1847 or 1887 made little difference in the initial experience each had with water development, because the essential elements of the colonizing process remained unchanged even though there were many social, legal, and political changes in the established areas of the territory. After gathering to Utah, later groups of settlers were directed to start new settlements throughout the Great Basin and beyond. The pioneer pattern of water development and administration was relied upon. New sites were selected,

¹⁶Local leaders and their followers planned and implemented the specific projects needed to fulfill their call to settle a new area by building a functioning water system along with other necessities.

companies of people were called and prepared for colonization, and upon arrival at the location the settlers worked as a group. Most canals, fields, and other resources were initially designed and built by common action, although management of specific farms (or plots of ground within the community field) was private.¹⁷ Even as settlement became more individualistic after the turn of the century, conditions of environment and remoteness required that new groups of settlers be self-sufficient for a time (utilizing the pioneer customs) before the more sophisticated apparatus of government and economy were introduced.

The cooperative process was utilized as the pioneer's chief method of settlement.¹⁸ Groups worked together to

¹⁷For at least twenty years ownership denoted only occupation, control, and a claim to a future title because legal titles were unavailable until the federal land offices were opened in 1869.

¹⁸Leonard J. Arrington, Great Basin Kingdom, p 63.

The Mormon response to the problems imposed by the settlement of the Great basin -- a response which becomes ever clearer in succeeding decades -- suggests that Mormon economic policies bore a greater resemblance to those of the ante-bellum northeast than did the economic policies of the West during the years when the West was won. Isolated as they were from American thought currents after 1847, and under the necessity of continued group action to solve the many problems which plagued them, the Mormons were not affected by the growing accommodation to the private corporation, rugged individualism, Social Darwinism, and other concepts which account for the rise of laissez-faire after 1850. It may yet be conceded that the well-publicized conflicts and differences between the Mormons and other westerners and Americans were not so much a matter of plural marriage and other reprehensible peculiarities and superstitions as of the

overcome the obstacles of isolation and aridity to accomplish the (Mormon) goal of territorial control and permanent settlement.

Cooperative Groups and Projects

The experience of Utah's first pioneers was useful in determining a method of water administration. Water supplies were developed and delivery systems were built by communities, whether entire towns worked together (as some did on the Virgin or Santa Clara Rivers) or joined in neighborhood groups to develop tiny drainage systems (as farmers at Midway or on Daniel's Creek in Heber Valley did).¹⁹

In pioneering situations water decisions and administration were handled mainly by the personal efforts of local church leaders. These leaders, usually the ward bishops or the stake presidents, took the initiative in project development and water administration. It was such figures who worked with general church authorities to plan water development and with surveyors to lay out development

conflicting economic patterns of two generations of Americans, one of which was fashioned after the communitarian concepts of the age of Jackson, and the other of which was shaped by the dream of bonanza and the individualistic sentiments of the age of laissez-faire.

¹⁹Craig Woods Fuller, "Development of Irrigation in Wasatch County," (Thesis, Utah State University, Logan, Utah 1973), pp 83-87.

patterns. They were the ones, who in an effort to coordinate resource distribution, population, and the costs of development, figured out land allotments and assigned land and water rights as settlers arrived. They mobilized the effort of construction, working through repeated failures to keep a work force on the project by means of church calls, promotion in the Dessert News, exploitation of family connections, and through endless rounds of local meetings in which divergent interests were accommodated and unified.²⁰

Even more important were the customs and values that pertained to the rank-and-file pioneers. For them contributing labor on the developing system was often the medium through which water rights were established. This in turn became the most crucial element in transforming a portion of the public domain into usable (semi-private) property. For each of them community was necessary for survival. In each was a strong sense of the public weal (or at least a desire to cooperatively build the kingdom).²¹ Where pioneering in water development was concerned the method was cooperative, the aim was community development. Building the kingdom called for self-restraint and personal sacrifice. Through joint effort settlers brought water to

²⁰Leonard J. Arrington, Great Basin Kingdom, pp 53 and 92.

²¹Ibid., p 45.

fields that would have been beyond the most heroic individual effort. These experiences prepared new groups for the challenges of water administration that lay beyond initial settlement.

Pioneers also developed cooperative water distribution systems. Within a short time the first water master had been appointed at Salt Lake City.²² Soon water masters for each of the city's nineteen wards worked to coordinate delivery through ditches that lined city streets, delivering water for gardens and domestic purposes. Elsewhere water masters, informal mutual irrigation companies, and a variety of other service agencies looked after a system's interests and coordinated routine upkeep and emergency repairs.

To accommodate the ideal of maximum service to the community from water resources the institution of the water turn was developed. Rather than affording a constant flow, water rights were translated into "streams" or "heads" of water delivered to successive individual landowners in staggered (often eight-and-a-half day) rotations.²³ This

²²George Thomas, Institutions Under Irrigation, pp 99-110.

²³Ibid., p 26. Also Arthur Maass and Raymond L. Anderson, The Desert Shall Rejoice, p 344. Emphasis added.

In Utah Valley most of the irrigation companies use a rotation system to distribute water to farmers. This system was developed in the early days as a more economical and convenient method than continuous flows, which would have resulted in streams that were too small to be usable in many cases and in each farmer's having the nuisance of constant water management.

allowed an efficient amount of water to be utilized in a sequence that enabled irrigators to pass around the inconveniences of night and Sunday watering. As in the development of water resources, local church officials were called upon to ensure the fairness of the distribution system, placing the authority of their position squarely behind the customary procedures by which water distribution worked and mediating controversy when procedures broke down.²⁴

Blending Legal Institutions with Experience

A natural development which followed cooperative institutions in the construction and administration of water systems, was the concept of a community water right. The Mormon pioneers had a social heritage that dealt with water issues based on the common law system. The common law water right allowed an individual to use water only so long as the other landowners adjacent to a stream did not suffer a diminishment of their access to the stream. By contrast, the very nature of irrigation called for water to be used consumptively. With limited exceptions it is impossible to return irrigation water undiminished in flow to the stream. Rather it is led to the desired place of use and consumed.

The pioneer leaders did not, however, throw out the

²⁴Leonard J. Arrington, Great Basin Kingdom, pp 46, 89-91.

entire common law treatment. Portions of the heritage were adapted to work in an arid environment. No one individual could divert and use water in an amount that would injure or weaken the community. The individual was recognized as having a right to utilize (consume, but not waste) the water resource, but the same right was accorded to other members of the community. In this sense the community's interest in water right was recognized as superior to the individual right. Speaking of this community approach to irrigation and water use in the Utah Valley area, Maass and Anderson state that:

When the first settlers diverted streams for irrigation, the water they abstracted was considered the property of the community of farmers that built the ditches or of the larger municipality. Individual rights were not recognized as such, each settler's interest being considered part of the community right.²⁵

In theory at least, no single individual could profit at the expense of the community.²⁶ Thus, out of the pioneer experience developed customs, traditions, laws, and social practices that asserted that the individual water user had the right to use water but that he had a responsibility to use it in a manner consistent with the public interest. Just as important to the pioneering process was the corresponding idea of the responsibility of the community to

²⁵ Arthur Maass and Raymond L. Anderson, The Desert Shall Rejoice, p 343. Emphasis added.

²⁶ Leonard J. Arrington, Great Basin Kingdom, Chapter VI.

cooperate and work as a unit to provide a physical system of distribution and a method of administration for that system that allowed the individual water users to put the water to use.²⁷

Nevertheless, community water rights came to be recognized in order of priority by the county courts and the territorial legislature. Those communities that were senior in settlement had superior rights. These town's councils and church leaders controlled the area's water resources. As soon as it became apparent that local water resources were utilized as fully as was practical with the limited economic and technical means available, new colonies were established in other areas.

Community rights led to a standard of beneficial use that in its attention to the public interest was akin to the earlier common law practices. Individual water users within the community were expected to use the water resources allotted to them in a manner that contributed to the betterment of the community. This emphasis was later reflected in the functioning of the county courts under the direction of the territorial legislature.

²⁷For excellent discussions of the development of water law and the forces which shaped it see Robert G. Dunbar, Forging New Rights in Western Waters (Lincoln: University of Nebraska Press, 1983), p 82. Also Donald J. Pisani, "Enterprise and Equity," pp 28-29 is helpful.

Mixing Local Authority with Centralized Coordination and Decision Making

Central church leaders used their authority to coordinate the pattern of water development. Settlement of any kind was not possible without water. Through colonization Mormon leaders established control of water resources throughout Utah and the surrounding areas.²⁸ However, once the group of settlers arrived local institutions assumed primary responsibility for the construction of a water system. Just as important was the fact that local institutions implemented a system of water distribution once a facility was constructed. As mentioned above, the institution of community ownership and the water turn were utilized at the local level in the delivery of water.

Each new colony went through similar experiences with regard to water distribution. Local church leaders used their influence to ensure that water would be utilized for the community benefit. They also directed the process which

²⁸Milton R. Hunter, Brigham Young: The Colonizer, p 72.

The Fact that Governor Young established San Bernardino, California, in 1851, Las Vegas, Nevada (Territory of New Mexico), in 1855, and Lemhi on the Salmon River in Idaho (Oregon Territory), in 1855 -- all founded outside Utah after Congress had reduced the size of the "State of Deseret" -- is evidence that he intended not to be thwarted in his plans to control by colonization as expansive a country as possible in the Great West. But this control he intended to achieve through a legitimate, peaceable method of land settlement.

chose the type of water projects to be built. They then used their ecclesiastical influence to mobilize work forces, sustain momentum in the face of floods, droughts, and other reverses, and to distribute water to the overall benefit of the community. These collective pioneering experiences influenced perceptions of what the proper role of the community and community leaders should be. Later these experiences influenced the role of the territory and state in water resource development and administration.²⁹

A mix of church (both central and local), territorial government, and individual layers of control with respect to water began to be felt in administration and allocation by the late 1850's. As mountain valleys became more fully settled church and legal practices were blended. There developed legal and social institutions based on the pioneer experience which regulated relations between the government, church leaders, communities, and the individual users.

²⁹ Leonard J. Arrington, Great Basin Kingdom, p 53. Speaking of early Mormon water organizing practices Arrington says:

When a group of families found themselves in need of water (or additional water) to irrigate their farms and gardens, the bishop arranged for a survey and organized the men into a construction crew. . . . Upon completion of the project the water would be distributed by a ward water master. . . . The labor necessary to keep the canal in good repair was handled the same way, in accordance with assignments made in regular Sunday services or priesthood meetings.

Church Mediation of Conflict With Respect to Water Rights

As we have seen, the Mormons gathered in an isolated zone. In the initial years the church hierarchy was utilized as a substitute for the adjudicative systems they had left behind. Local institutions had to be developed to fill the needs of pioneers with respect to a legal system. The area of water rights was an area where Mormons were establishing new systems of water ownership and use. Adjudicative substitutes were also necessary that would function in a manner consistent with the principles implied by broad community rights. Fairness and beneficial use characterized the decisions of church mediation boards and courts with respect to water use.³⁰

In the earliest years of settlement, village isolation made it impractical for conflicts to be settled by any means

³⁰Leonard J. Arrington, and Dean L. May, "A Different Mode of Life," pp 18-19. Speaking of the church court system as it applied to water the authors state:

The small number of cases involving disputes over water which have survived in the records of bishops' courts or high council courts would suggest that the great majority of disputes were handled informally by the bishops. . . . Few records were kept of such events, but those which have survived make it abundantly clear that church courts were courts of equity rather than law. There was no great effort to determine and follow precedent or to preserve records for the purpose of providing precedents for later cases. . . . It would appear that disputes brought before the church courts were settled on the simple basis of what "looked like justice" to the church leaders.

other than appeal to local authority. In addition the Mormons, as a body, were soon involved in bitter conflicts with the federally appointed district courts, and the Mormon leaders made it clear that taking anyone to "law" was to place the Mormon community under a threatening outside influence that could not be tolerated in a vital interest such as water rights. As a result disagreeing parties often turned to church leaders to settle water controversies.³¹

The first recourse of contestants were the local leaders (bishops or perhaps stake presidents). If these were involved in the controversy, as they often were, appeal could be had to higher church tribunals. As the only jurisdiction to begin with, church courts continued to settle key issues, as in the 1882 Compromise Point ruling in which church president John Taylor delivered a decision which essentially settled the relative nature of Salt Lake and Utah Valley water rights in Utah Lake.³² This characteristic of the pioneer mode had been reflected in the actions of the territorial legislature when in 1852 the control of water resources was placed in the hands of the county courts, a multiple powered agency comparable to the

³¹Ibid., pp 53 and 60.

³²For an excellent treatment of the process leading up to John Taylor's intervention and the effects of his ruling see Charles S. Peterson, with John Lamborn, "Agriculture in Salt Lake County 1890 to 1915" (Prepared under contract with the Henry Wheeler Living Historical Farm, 1980), pp 28-29.

modern county commissions.³³ The county court was locally manned and less specifically a judicial institution than the federal district court of the territorial era.

Development of a Policy of Regional Colonization/Water Development

As mentioned earlier, during the era of initial settlement water resources (which would be sufficient to irrigate crops) appeared to be relatively abundant.³⁴ However, pressure and demands on the (usable) land and water resources quickly increased. These pressures induced changes in Mormon land and water policy at different rates throughout the territory. In Salt Lake Valley in 1848 the policy of no private ownership of water and timber was altered and the policy of restricting the sale of land resources began to give way. Although United States land offices did not exist in the area (in 1848) and remained unavailable until 1869, private plots of ground were distributed among the settlers. Water resources were tied to the lands of their use by canal systems which collected them and by prior use commitments. This marked a change in attitude and a change in water resource and land institutions. Land had become a private resource, and since

³³Cited in George Thomas, Institutions Under Irrigation, p 57.

³⁴Leonard J. Arrington, Great Basin Kingdom, p 44.

water was tied to either a specific plot of land or to a specific settlement, it became subject to a greater degree of both community and individual control.

This change in water and land policy was brought about by the pressures associated with an increasing population in the established regions. Nevertheless from 1847 to 1870 the technology of water development and use was extensive (or superficial) in nature. Rather than developing water resources in the established areas to more fully utilize their potential, settlers were directed to new areas where unappropriated water was available and they had relatively easy access to it. Newly settled areas used diversion dams and canal systems when and where irrigation was necessary to raise crops. These structures allowed for only a low level of utilization of the water. Only after the region's population increased and the demand for water resources grew did more intensive (or exhaustive) investment in water projects become common.

To support the extensive type of water use and to secure the Great Basin for the saints, a wide program of exploration and colonization was necessary. Church leaders sent out exploration parties as soon as the settlement process started. Some of the early areas of exploration were Great Salt Lake, Utah Lake area, and the Ogden area. On one such foray in 1847 Parley P. Pratt was sent south to determine the possibilities of settlement in Utah Valley.

He returned with information on the lakes and rivers to the south of great Salt Lake. By 1850 through the use of such exploration the important or major rivers, lakes, and drainage systems were known to the Mormon leaders. The Jordan, Weber, Bear, Sevier, and the Humbolt rivers had all been explored and recommendations about the feasibility of locating settlements along made to church leaders.³⁵

Out of these explorations grew two patterns or types of colonization. First, central church leaders collected information and directed settlers towards key areas. These settlements were made for many reasons. Among them was the desire to physically control the region.³⁶ But it was also a recognition that natural resources had to be collected from all over the region. The present day Iron County was settled for the iron deposits found there. The Utah Lake area was initially settled to provide fish to supplement beef in the early Utah diet. Each area to which colonists were directed was considered to be important to church and

³⁵Ibid., pp 42-44.

³⁶Milton R. Hunter, Brigham Young: The Colonizer, p 70. Concerning Brigham Young's motivations for stressing colonization Hunter states that:

. . . the religious motive dominated Brigham's empire building aspirations. He planned to gain control over a vast territory and to hold that territory by right of colonization. His dream of a commonwealth was one wherein the Saints were the original settlers and remained in the majority after the colonies matured.

territorial interests for some reason.³⁷

The second type of settlement followed a pattern of initial private exploration and development. If an area had been opened by independent or individual efforts and proved able to support a settlement, then central church leaders directed more saints to the region or area to colonize it. The town of American Fork, first known as Lake City, was originally established by ranchers. Upon seeing that settlement was feasible, the church leaders directed settlers to American Fork to ensure that the church's interests (that of controlling the region's development) were represented and protected.³⁸

Ogden was one of the first areas of secondary settlement. Early explorers reported that it had an excellent potential for settlement. They also reported that mountainman Miles Goodyear had a ranch in the area. Private (independently acting) settlers traveled to the area and purchased the rights to the area from Goodyear and established the beginnings of a settlement.³⁹ To secure the area and maintain their independence as a group, Mormon officials then encouraged colonists to settle there. Population in the area increased from that time on. In 1849

³⁷Leonard J. Arrington, Great Basin Kingdom, pp 84-95.

³⁸Wayne L. Wahlquist, "Settlement Process in the Mormon Core Area, 1847-1890," (Thesis, University of Nebraska, Department of Geography, Lincoln, Nebraska 1974).

³⁹Leonard J. Arrington, Great Basin Kingdom, pp 47-48.

people were directed to the present day Utah county area. By 1851 American Fork, Lehi, Payson, Pleasant Grove, and Springville were settled. In 1849 the Sanpete area was settled and in 1850 settlers were directed to Iron county. By 1850 fifty settlements had been started in the Great Basin area, thirty-six of which were located along the western edge of the Wasatch range.⁴⁰ This expansion continued so that by 1890 more than 400 towns from Canada to Mexico and from the Salt Lake area to California had been established by Mormon colonization efforts.⁴¹ So successful was this policy of seeking out all places of potential settlement that in 1888 the author's of the Report of the Utah Commission wrote "that the Mormons 'have not only settled but have filled all of tillable Utah.'" The commission continued:⁴²

. . . those who hold the valleys and appropriate and own the waters capable of use for irrigation, own and hold Utah, and nature has fortified their position more strongly than it could be done by any Chinese Wall or artificial defense.

⁴⁰Ibid., p 88.

⁴¹Ibid.

⁴²William Mulder, Homeward to Zion: The Mormon Migration from Scandinavia (University of Minnesota Press, Minneapolis, 1957), p 191. Partially quoting the Utah Commission to the Secretary of the Interior, Report of the Utah Commission to the Secretary of the Interior, September 24, 1888 (Washington, D. C.: Government Printing Office, 1888), p. 16.

The Results of the Pioneering Institution

The pioneer mode of water administration and colonization provided a common base of experiences from which Utah's citizens would later formulate a system of water administration. The motivation or justification for most of the actions of the territorial legislature which concerned water use from 1852 to statehood can be understood as the results of the pioneer experience. The pioneer institution or mode gave people with a background of humid experience a process by which they could survive in an arid environment. Attitudes about the importance of community interests also continued to influence Utahns after statehood was achieved as successive developments focused on the utilization of water for the greatest public good.

CHAPTER II

ESTABLISHING LOCAL CONTROL: TERRITORIAL AND LOCAL
INSTITUTIONS, 1852 THROUGH 1865

Pioneer practices of water utilization continued in many of the outlying (and/or newly settled) areas of Utah until the time of statehood. Central church authorities continued to influence the pattern of water development by directing church members to colonize new areas and by participating in the site selection process for new settlements. Local church and community leaders then had to determine the kinds of water projects to be attempted and develop systems of supervision and distribution to allocate the water. Users organized mutual irrigation companies to manage water cooperatively on hundreds of local streams with their common interest in a workable water system binding them together.¹

¹Wells A. Hutchins, Mutual Irrigation Companies in California and Utah (Washington D.C.: Government Printing Office, 1937), p 15.

The colonization policy of the Mormons involved the establishment of many small communities throughout the State, generally separated from each other by miles of desert or mountain range and therefore largely self-contained. The major activities of these communities were on a highly cooperative basis. Irrigation was and always has been one of their major activities; it is one of the few original industries remaining essentially cooperative and giving no indication of receding from that principle. The actual form of the cooperative irrigation enterprise has changed from time to

Response to the Arid Environment

Throughout this period (1852-1865), Utahns continued to learn about the restrictions an arid environment placed upon possible uses of water. By a process of experimentation both social and technological adaptations evolved. False steps were many. There were grand designs for water in Utah. The most visionary of these called for a vast system of canals and river traffic to link the territory with the rest of the nation, thereby allowing potential settlers to travel much of the overland distance to Utah by barge. Internally, Brigham Young and other church leaders actively promoted the concept of water transportation by a canal that would join Utah and Salt Lake valleys commercially and provide a heavy-duty lading system to move granite stone from quarries in Cottonwood Canyon to the temple site.²

The more grandiose of these designs were the result of transplanting to an arid environment a people whose values and practices had evolved in a humid climate. The full implications of the changes that scanty water resources imposed were not immediately apparent to the early settlers or their leaders. It took years of experience and study for outlooks and habits acquired in humid homelands to be fully

time, but not its substance.

²Leonard J. Arrington, Great Basin Kingdom: An Economic History of the Latter-day Saints 1830-1900 (Lincoln: University of Nebraska Press, 1966), pp 112.

replaced by a total comprehension of the restrictions of the arid environment.³ Through trial and error, Utah's people learned the limits of their environment.

Particularly important were the legal and social regulations that evolved. Prior rights, full development, community interest, cooperation, distribution according to law, and beneficial use were novel terms that took on specific meanings as time passed. From them new social and legal institutions developed to deal with the problems of life in an arid environment. The fact that the arid environment forced change in social and legal institutions was by no means unique to Utah, but the particular system that developed in response was especially fitted to Utah conditions and people.

In 1850, Congress organized the Territory of Utah. Brigham Young was appointed as governor, and a locally elected bicameral territorial legislature was chosen. This government soon became involved in water issues. Among the enactments of the legislature was the designation of the county courts as the public agency with primary administrative responsibility for water resources. The legislature authorized the county judge and a board of selectmen to distribute rights to water resources and gave them the responsibility of ensuring that water was used for

³Leonard J. Arrington and Dean L. May, "A Different Mode of Life," Agricultural History Volume XLIX Number 1 (January 1975), p 11.

the good of the community. The law read:

The County Court has control of all . . . water privileges, or any water course, or creek, to grant mill sites, and exercise such power as in their judgement shall best . . . subserve the interest of the settlements in their distribution of water for irrigation or other purposes.⁴

With this delegation of authority to the county courts, only general guidelines were supplied by the territorial legislature. The county court was to function as a board of experts in questions of allocation and administration.

Court duties with respect to water resources were classified under two headings: (1) duties directing the use of water toward the public interest; and (2) duties related to the settlement of disputes which arose among water users.

Irrigation experts and historians have regarded the county court legislation as especially wise because on-site inspection, common sense, and community interest were to be utilized rather than legal precedents. The courts did, of course, honor the legal institution of priority that the arid environment had imposed upon the settlers.⁵

Under this arrangement, water filings and applications were judged according to community benefit. Those which did

⁴Cited in George Thomas, The Development of Institutions Under Irrigation: With Special Reference to Early Utah Conditions (New York: The Macmillan Company, 1920), p 57.

⁵Arthur Maass and Raymond L. Anderson, ...and the Desert Shall Rejoice: Conflict, Growth, and Justice in Arid Environments (Cambridge, Massachusetts, and London, England: The MIT Press, 1978), p 350.

not measure up were rejected or modified according to merit. Those which did meet the local courts standard or idea of community benefit were approved and efforts were made to ensure their success. While it was straightforward in concept and broad in implication, this law was a fortuitous beginning that laid a better groundwork than many realized. The county courts functioned extremely well as water allocators and as water administrators.⁶ They also dealt with conflicting claims with dispatch and practical understanding of the issues at hand. When comparing the county court system to later institutions, irrigation historian George Thomas stated that:

The method was inexpensive and prompt. Seldom did a case remain six months before it was brought before the court for final settlement. It did not bankrupt farmers nor require the services of highly paid lawyers to get their water difficulties passed upon by a competent court. The principles applied were those of community welfare. . . . Under this system of control and regulation very few disputes found their way into the district or Supreme Court. . . .⁷

The county court legislation was an attempt to supply legal institutions to deal with problems that surfaced as people and communities competed for water. In this law, the legislature attempted to take the best attributes of the pioneering method and mold them into an integral part of an evolving public system of water law and practice. Important

⁶George Thomas, Institutions Under Irrigation, Chapter V.

⁷Ibid., p 91.

among these attributes were the law's recognition that: (1) some centralization (in this case the county level) of the allocative process was desirable; (2) development and administration by those closest to the resource made for practicality; and (3) the public interest could be served by direct action of the government.

The language of the initial county court law seems to suggest that the legislature of 1852 intended for all administrative decisions to move through the courts. As things developed, however, certain other public institutions shared authority over water with the county courts. Even more important was the fact that in all counties except the central Wasatch Front counties (Box Elder, Cache, Davis, Salt Lake, Utah, and Weber) the county courts played only a limited role in water allocation and almost no adjudicative role because the outlying area (and new) settlements relied on the pioneer method of administration. This would suggest that only when competition for water became common did people turn to the county courts. Water historian and engineer Thomas points out that this selective use and nonuse had the effect of blending the values and practices of the pioneering mode with the regulation by the county courts in the daily practices of many Utahns. Settlement and project decisions and some questions of distribution and organization were coordinated by central and local church authorities, while some questions concerning allocation and

adjudication (between established towns or projects) came increasingly under the purview of the county courts.

In Wasatch Front counties the judges and selectmen of the county courts granted rights to use water for purposes ranging from irrigation to milling operations and transportation. They also dealt with disputes related to the right to use water. In their deliberations, they were guided by community interest as they followed the concepts of beneficial use and prior rights. The county court selectmen visited the area of a proposed project or of a dispute. There they collected information and evidence and then decided on a proper course of action.

As time went on, the courts of the Wasatch Front counties also exercised their influence in the role of developer or as a source of development funds. In this role county governments joined the central church officials and local interests as developmental agencies. For example, the Salt Lake County Court funded the construction and administration of several diversion dams and irrigation canals in the south and west parts of the county in the years after 1870. Although it was expected that the money would be paid back, much of it was not, thus establishing a clear (though unintended and unwanted) precedent for government subsidy in the interest of works that were held to have broad public value.⁸ It is important to note that

⁸Ibid., pp 53, 67-69, and 78-82.

most canals were constructed and controlled by those who would themselves utilize the water. The county courts rarely granted private-for-profit oriented water companies the right to use water resources solely for the purpose of reselling the water to other users. Rather, they granted the ultimate users the right to build their own irrigation systems and advanced some of the help necessary to ensure success. To a lesser extent, the Davis, Utah, and Weber county courts also helped develop projects and directly influenced many more. Most other county courts were less active, but most still eventually had an important influence on the pattern of water development through the exercise of their adjudicative powers.

The Role of the Territorial Government

Another method of directing the pattern of water development the territorial government used during this time of institutional experimentation was empowering cities to control water within and beyond their boundaries.⁹ Generally city councils were authorized to administer water within the city boundaries and the surrounding areas. It is through these charters of authority that cities such as Salt Lake City, Provo, and American Fork came to play an

⁹For a summary of the early actions of cities see Arthur Maass and Raymond L. Anderson The Desert Shall Rejoice, p 349; and George Thomas, Institutions Under Irrigation, pp 92-115.

important role in water development. These charters allowed the cities to plan and develop water resources for municipal and later industrial uses. Although later laws changed the amount and type of control cities exercised, they continued to influence and direct water development activities in the Utah territory and later the state.¹⁰

The territorial government also issued water rights directly to a few water-use corporations. For example, in January of 1853, the Provo Canal and Irrigation Company was incorporated by the legislature. This was significant because the legislature also granted the company the right to divert half the waters of the Provo River to be used for irrigation, navigation and power purposes.¹¹

In some cases, the territorial government also granted the control of water resources directly to individuals. This practice had been started by the early church leaders, continued by the state of Deseret, and ratified by the territorial government and county courts. Thomas provides two examples of an exclusive right to determine the type of use allowed for an entire river system awarded to Ezra T. Benson and Brigham Young by the general assembly of the

¹⁰Examples of this influence in a later time period are the plans for area water development promoted by Salt Lake City Engineer A. F. Doremus. He proposed several canal systems and even interbasin transfers to secure water for Salt Lake City. See p 65.

¹¹The company was incorporated and the rights granted by the legislature on January 17, 1853. George Thomas, Institutions Under Irrigation, p 48.

State of Deseret, which were later ratified by the territorial legislature. The legislature also granted partial rights to prominent churchman Willard Richards, who received one-third of the water in American Creek, an arrangement that, in view of his ecclesiastical position, was probably made in the public interest of settlers there.¹²

To the extent to which they were truly intended as private grants, these appear to have run counter to the stated policy of the county court law. The 1852 law gave jurisdiction over the division of the water resources to the county courts because they were viewed as being a public resource. But the grants to individuals were based on the premise that water resources could be controlled privately. Such grants certainly had an impact on the types of water projects attempted and on the distribution of the benefits. However, as later laws (particularly the law of 1880) clarified the water rights of individuals, the earlier individual grants lost much of their special significance.

Beyond the legislature's role in drafting water law and issuing a relatively small number of grants to cities and individuals, the territorial government was not active in water development projects. Both development and administration were left to the county courts and to municipal and private grantees. The most important influence of the territorial government, thus, was in

¹²Leonard J. Arrington, Great Basin Kingdom, pp 46-47.

allowing the systems it established to function. The grants of control to specific cities of the water resources within their boundaries or the resources in the surrounding region which supplied the city with water allowed cities to take an active role in ensuring that their citizens and the surrounding settlers would have an adequate water source.

Changes in Water Utilization and Institutions:

Extensive to Intensive

As the territory's population grew in the years after 1852, unclaimed and easily available water resources became increasingly scarce. Although settlement was extended by the church's colonization programs, population growth in the Wasatch Front counties focused the mounting demand in developed areas. Together with contiguous areas in Box Elder, Cache, and Sanpete counties, the Wasatch Front counties were also the area of the most intensive agricultural use.¹³

As a result, water use became more exhaustive. Although irrigation was the object of greatest use (and continues to be), municipal and industrial uses also had to be provided for. Institutions (such as the county courts,

¹³Wayne L. Wahlquist, "Settlement Process in the Mormon Core Area, 1847-1890," (Thesis, University of Nebraska, Department of Geography, Lincoln, Nebraska 1974), pp 101-133 and 290-303. Also Wayne L. Wahlquist, Population Growth in the Mormon Core Area: 1847-1890 in R. H. Johnson, ed., (Provo: Brigham Young University Press, 1978), pp 107-133.

water masters, and local usage laws) developed which attempted to make the use of water for irrigation and other purposes more efficient. Salt Lake City investigated different methods for ensuring delivery of good water for culinary and garden use. Reservoirs were constructed and wooden pipes installed to the city's central area. Other improvements included the redesign of distribution systems. The object was to cover a larger amount of land.¹⁴

Social institutions also evolved. The office of water master was established as a public position in 1852. The law which gave control of water resources to the county courts also directed that water masters be appointed to supervise delivery systems. Under the authority of the county courts, all water systems appointed water masters. These people were paid from tax revenues, water assessments, or directly by the water users. The master's responsibility was to regulate the flow of water in the canals, keep the ditches in good repair, supervise water turns, report to the county court, and, in cooperation with local municipal and church leaders, coordinate assessment work.

A related practice that had developed prior to 1852 but which was legally incorporated into the water master institution, was that of the water turn. Rather than allow

¹⁴On Salt Lake City and County irrigation development see Charles S. Peterson, with John Lamborn "Agriculture in Salt Lake County 1890-1915," (Prepared under contract with the Henry Wheeler Living Historical Farm, 1980) Chapter 2, especially pp 53-58.

users to utilize a given amount of water on a steady basis, users were given a right to a portion of a stream (usually called a head of water or an irrigating stream) for a fixed time period. This allowed irrigation to proceed in a just and orderly fashion.¹⁵

In time, people learned that the rights of individual water users had to be respected. The rhythms and obligations of water use became their rhythms and their obligations. Turns were taken in order and the water surrendered at the appointed time. The rights of the community had to be respected as well, water supplies had to be protected, and the main canal systems had to be kept in good repair. The use of water resources was directed towards settlement; this was in contrast to the profit-oriented efforts of much of the water development taking place elsewhere in the arid West.¹⁶ While economic

¹⁵George Thomas, Institutions Under Irrigation, p 26. Also see Arthur Maass and Raymond L. Anderson, The Desert Shall Rejoice, p 343.

¹⁶Leonard J. Arrington, and Dean L. May, "A Different Mode of Life," pp 16-17. Speaking of the Mormon pattern of irrigated life the authors state:

Three social achievements of the Mormons facilitated their success in irrigated agriculture. They built residential houses in a central village, with farming lands located in blocks outside of the settlement. This settlement pattern maximized the opportunities for social contact needed to plan and execute cooperative construction of canals and other irrigated works. Not only building the building of irrigation works, but the equitable apportioning of water among the users on a given stream required the exercise of the cooperative spirit for which the Mormons were noted. Finally Mormons demonstrated

considerations influenced Mormon efforts, speculation and corporate development were subordinated to the integrity of the community. What have been termed pioneer values in this study continued to underlie much of the approach to water throughout the 1852 to 1865 period.¹⁷

As the local communities developed and water users became more interdependent, there was a perceived need for new legal institutions to function as local development and administration organizations. A step in this direction was the irrigation district law of 1865.¹⁸ Under the terms of the law, districts were to be quasi-public institutions with power to organize people and capital for the development of large complex projects. Districts were to be formed by election and functioned in much the same manner as a corporation. Officers were elected by the membership and water masters hired and paid for by the membership. Assessments were made according to the amount of land

remarkable ingenuity in devising institutions for the control and apportioning of water. The appointment of water masters and their function in managing each ditch, or "sect" as the Mormons called them, and the forsaking of the ancient law of riparian rights in the control of water for the law of appropriation. . . .

¹⁷Leonard J. Arrington, Great Basin Kingdom, p 129; and Arthur Maass and Raymond L. Anderson, The Desert Shall Rejoice, p 344.

¹⁸Territory of Utah, Journals of the Legislative Assembly of the Territory of Utah, of the Fourteenth Annual Session, for the Years 1864-65 (Great Salt Lake City: Henry McEwan, Public Printer, 1865), p 118.

benefited. In establishing the district law the territorial legislature had again attempted to adapt the pioneering mode's values of cooperation to the new circumstances of heavier demand and complex projects.

However, the irrigation district law had serious shortcomings. One problem was how to deal with district members who did not pay for the cost of water development. The law provided few remedies that the irrigation districts could use to force compliance with their regulations and assessments. It was impossible for districts to take a lien on property because water users themselves did not own the land they farmed. This was because the federal government had not yet established land offices in the area, and none of the water users had title to the land. The only recourse the law offered the irrigation districts was to withhold water deliveries from participating farmers who did not pay assessments. The same situation also made it impossible to bond for the purpose of raising money for the construction of desired development. This fault led to a chronic shortage of capital facilities in some districts. Only the personal financial and physical resources of district members could be utilized. Outside sources of funding could not be employed using bonding measures.

The combination of these problems and the fact that many individuals continued to depend on the pioneer mode of water development or were in groups which functioned under

the county courts limited the use made of irrigation districts. Thomas states that there may have been as many as 100 irrigation districts in the years immediately after the law was passed. However, by the end of the 1860s or early '70s almost all the districts founded under the 1865 law had disbanded because of the above-mentioned problems and legal rulings that made their continued cooperation difficult.¹⁹

Administration and Allocation

Between 1852 and 1865 new layers of administration and organization were superimposed upon the existing systems. To the pioneer mode of water utilization were added the official functions of the county courts, the municipal rights of some cities, and the irrigation districts. These new institutions were the result of a better understanding by the people of the realities of the arid environment, growing pressure on the fixed water resources, and the more intensive methods of utilizing water resources. Social and legal relationships were more carefully defined and allowed water users to group together, either formally or informally. New or modified institutions or methods of water utilization which had grown out of the practices and experiences of the people during the earliest years of

¹⁹George Thomas, Institutions Under Irrigation, pp 121-126.

settlement were legally established. Water masters, water turns, and irrigation districts are examples of institutions which developed out of the peoples' experiences and practices that were promoted by the legislature and the county courts. The use of the above institutions allowed for water resources to be used more exhaustively and efficiently. Yet water resources were still controlled at many different levels, local leaders were either county officers acting in official capacity, church leaders called to establish a city in a given area, or local leaders elected by water users in the area.

CHAPTER III

NEW STEPS TO DEFINE THE SOCIAL AND PHYSICAL ATTRIBUTES OF WATER 1870 THROUGH 1895

Introduction

During the twenty-five years before statehood Utahns worked to resolve a number of social and physical problems inherent in the development of water and its use. Among the most pressing problems was the need to advance beyond rule-of-thumb understanding of the physical properties and social (informal versus formal) control of water. With science blossoming nationally and the West serving as a vast laboratory for the natural sciences and a practicum for institutional structuring, Utah made significant steps in developing technology and analytical techniques related to water and experimented with political and economic organizations necessary to its management. Scientists on field trips from Washington and eastern educational institutions influenced Utah as they worked out the methods of their disciplines and created bureaucracies to serve them. Less involved than the territory in the bitter conflict of the "Mormon problem", city governments looked to their own needs and were among the first to respond to the scientific awakening that was going on. With culinary and

industrial needs as well as responsibility for irrigation in their own environs, the larger cities were among the first to see the need to define the physical and social aspects of water more closely.

By contrast the territorial government was slow to embrace change. Still locked in a tradition of pioneer development and county administration as a means of keeping control at home, the territory made only halting steps to redefine its role in water management. After the district act of 1865 the impulse to update institutions apparently lay dormant until 1880. That year the legislature made changes that favored individual interests over community and gave water a dimension as private property.¹ With some prospects of help from new legislation and improved technology, private interests played a growing role. Promoters became active in the early 1870s in the wake of the transcontinental railroad, helped push the legislation of 1880 through, and came into their own in large private projects after 1885.

The territorial legislature continued to make policy but did little in the way of administration and adjudication. Although until the late 1880s the Mormon majority easily controlled the legislative branch, Mormon

¹Territory of Utah, Journals of the Legislative Assembly of the Territory of Utah, of the Twenty-Fourth Session, for the Year 1880 (Salt Lake City: T. E. Taylor, Public Printer, The Deseret News Steam Printing Establishment, 1880), p 290.

leaders seemed reluctant to let the issue of water control get squarely into the sector of territorial government as demonstrated by the inaction of the legislature.² Similarly Mormons were loath to push for either scientific and political definitions or for substantial centralized governmental administration, their policy of self determination (central and local church) being better served by the dispersion of control characteristic of pioneer irrigation customs and direct county administration.³ The pages of this chapter will assess the effort to apply scientific methods to the definition of the nature and function of water, the role of growing cities, the law of 1880, and experiments with speculative or corporate management of water resources.

Scientific Definitions

The application of scientific measurement of natural resources had begun at least as early as the explorations of Lewis and Clark. A wide variety of Utah surveys had

²Elwood Mead, Irrigation Institutions: A Discussion of the Economic and Legal Questions Created by the Growth of Irrigated Agriculture in the West (New York: The Macmillan Company, London: Macmillan & Company Ltd., 1903), p 224. After discussing the 1852 law, the 1880 law, the 1897, and the 1901 law Mead states:

This brief outline includes all the laws which have been enacted to govern the acquirement of water rights in Utah.

³Leonard J. Arrington, Great Basin Kingdom: An Economic History of the Latter-day Saints 1830-1900 (Lincoln: University of Nebraska Press, 1966), Chapter VIII passim.

followed including two early expeditions by John C. Fremont. After the Treaty of Guadalupe Hidalgo, Utah explorations of note included those of Captain Howard Stansbury and Lieutenant John Gunnison in 1849-50, the railroad reconnaissances of John Gunnison and John C. Fremont in 1853, and three important Utah War explorations by Lieutenant Joseph Ives, Captain John Maccomb, and Captain J. H. Simpson. As historians Wallace Stegner and William Goetzman explain, the impact of these military surveys fueled the engines of Manifest Destiny and defined the boundaries of the American empire. But the scientific method remained beyond the capacities of most Americans, including those who settled Utah.⁴ As a result local exploration, while notably practical, collected little empirical data.

This began to change in the years after 1870 as the various branches of the natural sciences developed. Scientific institutions including the Department of Agriculture, museums, universities, and the U. S. Army contributed to this process. However where the definition of Utah's water resources were concerned none were more important than John Wesley Powell's U. S. Geographical and

⁴Two good treatments of this idea are: Wallace Earle Stegner, Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West (Houghton Mifflin Company Boston: The Riverside Press Cambridge, 1954); and William H. Goetzman, Exploration and Empire: The Explorer and the Scientist in the Winning of the American West (New York: Knopf, 1946).

Geological Survey of the Rocky Mountain Region. As Wallace Stegner put it, the breakthrough of the scientific method constituted "the second opening of the West."⁵ Powell's pioneering application of science to the classification of land and the measurement of water in relation to irrigation was absolutely central to the development of water administration in Utah. Brilliant himself, Powell attracted an extraordinary cadre of scientists, most of whom made Utah studies their stock in trade. Between them they did much to define the character and use of Utah resources. Notable among Powell's assistants were his brother-in-law A. H. Thompson, G. K. Gilbert, and C. E. Dutton, each of whom contributed to Powell's bench mark Report on the Lands of the Arid Region of the United States, with a More Detailed Account of the Lands of Utah.⁶

First published in 1878 the Lands of the Arid Region is usually noted for its proposal to make the land policy of the West conform to the region's topography. Visionary and in many ways impractical, this scheme stirred Westerners to distrust and work against Powell's ideas. The report is valuable mostly for the idea that resource utilization should be based on sound scientific premises. Also the

⁵Wallace Earle Stegner, Beyond the Hundredth Meridian.

⁶John Wesley Powell, Report on the Lands of the Arid Region of the United States, with a More Detailed Account of the Lands of Utah, (Washington D.C.:Government Printing Office, 1878).

chapters concerned with the relationship of water to land, climate, and people were equally innovative and much more important in their impact on the evolving administration of water. True for the arid regions generally, this was especially true for Utah. To help understand how water should be used an array of empirical measurements were taken. Some of these dealt with the rise of the Great Salt Lake in the decades after Mormon settlement. Others with the effects of elevation, geological provinces, and the Great Salt Lake upon meteorology, precipitation, and water's potential for use. In addition to surveying all of Utah's major drainage systems, the Lands of the Arid Region took the cooperation of the Mormon pioneering method into account and remarked on the willingness of irrigators in Utah to accede to the arbitration of both church leaders and the county courts. Both the Mormon church and its members were favorably presented at a moment when their reputation nationally was at an all time low.⁷

From the first the Lands of the Arid Region was a primer for the application of science to resource utilization. Doubtlessly it helped formulate the responsibilities of the state engineer's office and otherwise helped lay the ground work for understanding water. But perhaps of equal importance was the fact that Powell and his surveyors employed a sizeable group of Utahns

⁷Powell, Lands of the Arid Region, Chapter 2.

in the process of taking measurements and collecting the data upon which the report was based. Many of these were lay people whose contact with the ideas behind Powell's approach influenced Utah attitudes towards water management at the grass roots level.⁸ Other Utahns who worked with Powell were trained figures of some public importance. For example John R. Park, who helped collect data on the Great Salt Lake, was the president of the University of Deseret and one of the most influential educators in the territory. Territorial surveyor Jesse W. Fox and county surveyors like Cache County's James H. Martineau were also in a good position to appreciate the change in approach represented by Powell's method. Equally suggestive to Utahns in the late 1800s were Powell's advanced ideas about impoundment potential for extending the utility of water and his discussions of the physical relationships of water duty including such thorny issues as where right of use attached when water rose in the High Uintas, passed through Provo River, Utah Lake, and the Jordan River into Great Salt Lake. Issues as return flow, seepage, water's viscosity, and the influence of pressure and gravity began to be understood in scientific terms. Gradually Utah's administrators, judges, and water users alike began to understand water's complexity and the transcending need for measurement and definition.

⁸The reverse is also true, that these people and their customs of cooperation influenced Powell's thinking as well.

The Role of Cities

Among the quickest to respond to the implications of science for water administration were city engineers and others connected with urban government. This came, however, after the mid 1870s as both urban needs and developing technology galvanized city fathers into action.

Earlier the territorial legislature had acted on its preference for local administration of water when it turned responsibility and authority over to city councils to supply and control water matters. Representing a shift of control from the ward bishops, this role began with the incorporation of Salt Lake City in 1851 and continued as charters incorporating cities were granted until about 1875.

Although all incorporated cities appeared to have received this authority, only Salt Lake City, Ogden, Provo, Logan, American Fork, and a few others asserted their authority in dealings with the cooperative local water companies and the county courts in an active way.⁹

The charters authorized cities to govern not only the water within city limits but the fields appurtenant to the city. Under this arrangement the city council's role was similar to that of the county courts in many respects. Charged to "subserve the public interest for irrigation,

⁹Most of what follows depends upon George Thomas, The Development of Institutions Under Irrigation: With Special Reference to Early Utah Conditions (New York: The Macmillan Company, 1920), Chapter VI.

domestic or other purposes" councils considered petitions for water, examined development sites, heard remonstrances, granted rights, and as power sources and culinary needs mounted, examined priority of use patterns and issued what amounted to decrees. They were also jealous of their prerogatives sometimes resisting the creation of irrigation districts overlapping city systems, and at other times making irrigation districts answer to the city.¹⁰

Cities were frequently generous in their administration. They often levied taxes on all property, thus providing something of a subsidy for irrigators and other water users. In a capital-short society the pioneer system had made labor on a new settlement's developing irrigation network the currency necessary to acquire land and water rights. From this common experience of small community based irrigation works it was not a long step for the more developed cities to undertake to sponsor public irrigation and water systems. Ogden and one or two other cities took the lead in building canal systems and exacting general taxes to finance them.¹¹ Cities also appointed water masters who in turn appointed assistant masters either according to ward boundaries or particular ditch systems.

¹⁰George Thomas, Institutions Under Irrigation, pp 92-116.

¹¹A description of construction and financing of early Ogden canals (as well as others cities' canals) is given by Thomas, *Ibid.*, p 68-70.

Users petitioned for water each year and were given a turn according to a prevailing rotation system. Water rights were distributed "as shall best serve the public interest" and were allotted:¹²

among the applicants entitled to a portion of said water with respect to time and quantity of water, according to the extent of land specified in the respective applications.

Other ordinances divided water according to the amount "available in proportion to the quantity of land" or "such manner and quantities as shall be just."¹³ Until at least 1880 newcomers were often given resources even in the larger cities. As Thomas puts it the issue was not whether one "had worked for the water but did he need it, and would the dividing with him actually and seriously injure some one else."¹⁴ As it was in the informal irrigation companies, upkeep was handled by a labor tax that fell directly upon water users plus a cash assessment to purchase equipment and pay water masters.

As long as farmers represented a substantial proportion of the citizens, city councils worked well as agencies of irrigation administration. Later as industry and need for culinary water became more important, Salt Lake City and Ogden got out of the direct management of irrigation

¹²Ibid., pp 110-111.

¹³Ibid. p 111.

¹⁴Ibid.

systems. However, both still held substantial water rights and traded for others as quality, ability to deliver, and other factors required. Even when Thomas wrote in the early 1920s, the farmer controlled city councils of American Fork and Provo were still very much involved in direct administration of irrigation.

The role of the territorial government in management of culinary water was always indirect at best. On the other hand, cities elaborated their charge in furnishing water to cope with a mounting need for culinary and industrial water of high quality. A factor for all municipalities was the question of contamination. This was accentuated after 1885 by overgrazing in watersheds adjacent to cities. In 1892 the so-called "Seven Mile Limit" law was passed restricting grazing in city watersheds.¹⁵ Because customary use was often well established, it was a law often more honored in the breach than in fact. While more acute than most, Salt Lake City's contamination problems and the solutions that developed are instructive. Upwards of a half million sheep were trailed along present Twenty-first South Street and through Emigration and Parley's canyons each spring and fall. Ultimately the creation of the Wasatch and the Salt Lake forest reserves and application of Forest Service

¹⁵State of Utah, Council and House Journals of the Thirtieth Session of the Legislative Assembly of the Territory of Utah, 1892 (Salt Lake City: Press of Irrigation Age, 1892), p 820.

regulations brought the issue under control. City fathers who represented the livestock interests protested, however.¹⁶ With stock fouled water an increasing issue, Wasatch Front cities worked to develop safe and efficient domestic water systems. In the larger municipalities city engineers were among those most directly involved in Utah's emerging patterns of water administration. In an effort to give some form to the shift of cities from managers of irrigation water to those of broader interests, attention will here be paid to the development of culinary water in Salt Lake City and County.

During the last third of the 19th century wells, ponds, springs, streams, and canals were utilized. Of course from earliest settlement water had always had its culinary duties. In some communities custom and law provided for "dipping hours." Coupled with statutes making it mandatory to keep all livestock off the public domain and pastures through which ditches ran during the night, dipping hours were usually restricted to the early morning when it was hoped water would be at its cleanest.¹⁷ Even in Salt Lake City many continued to take drinking water from streams and canals. This was especially so in the so-called

¹⁶See Charles S. Peterson and Linda E. Speth, "A History of the Wasatch-Cache National Forest," Submitted to the Wasatch Cache National Forest September 25, 1980, pp 40-42.

¹⁷A. K. Larson, "I Was Called to Dixie" the Virgin River Basin: Unique Experiences in Mormon Pioneering (Salt Lake City: Deseret News Press, 1961), pp 611-615.

"clodhopper" or "westend" wards beyond 7th West which were dotted with ponds and accessed the Jordan River by several waterways. In addition to their culinary roles waterways were popular for boating and skating while ponds, including one called "Jim Brown's hole", were heavily used for swimming, fishing, and baptismal purposes.¹⁸

Throughout Salt Lake county ponds became extremely popular. Some irrigators used them to avoid night watering.¹⁹ More saw their potential for aesthetic and recreational use. Groves and playgrounds were developed in connection with some as at Calder's Farm and Fuller's Hill on 11th East and Bast's Pond on the west side.²⁰ In addition well-to-do families like James Henry Moyle maintained small lakes for family use. Earl H. Ottley, for example, remembered his family pond in the Cottonwood district which had been developed by his grandfather for trout fishing and ice harvest.²¹ By the younger Ottley's boyhood kids fished for the lazy "carp, sunfish, perch and suckers" that sunned themselves on its shallow bottom during the summer. In good winters they skated from it along a swale to the Jordan and

¹⁸Charles S. Peterson, with John Lamborn, "Agriculture in Salt Lake County 1890 to 1915," (Prepared under contract with the Henry Wheeler Living Historical Farm, 1980), pp 49-50. The following section on city developments depends very heavily upon this work.

¹⁹Ibid., p 51.

²⁰Ibid.

²¹Ibid., pp 52-53.

Salt Lake City Canal which they could then follow for five miles to Sandy.²²

Much more important than such bucolic uses was the development of municipal water systems in Salt Lake City. The city was among those interested in pushing to develop a series of canals tapping Utah Lake after 1870. When completed in the early 1880s the Jordan and Salt Lake City canal freed water from City Creek and other mountain streams to culinary and city use.²³ By 1889 City Creek had been developed to provide culinary water to some 15,000 people through 1,018 taps. In all, the city had "25.3 miles of water-mains" and supplied "water to about half the town."²⁴

During the 1890s the city moved aggressively to develop springs and other adjacent streams. As recorded by Charles S. Peterson the following report of A. J. Pendleton, "water commissioner" gives some sense for the work:²⁵

. . . an additional supply of . . . half a million gallons per day [was acquired] from the following sources. In the right hand fork, [of City Creek] Lamb's canyon cleaned out four springs and placed their flow and the increase was 200,300 gallons in twenty-four hours. In the left hand fork opened seventeen springs and the weir placed in the creek showed an increase of 200,300 gallons This is a

²²Ibid.

²³Ibid. p 25. Charles S. Peterson provides an excellent description of this canal and the lands and people who depended on it in.

²⁴Ibid., p 54.

²⁵Irrigation Age Vol. 4 (January 1893). As cited in Charles S. Peterson, with John Lamborn, "Agriculture in Salt Lake County," p 55.

natural reservoir where a large quantity of water could be stored at a small expense Have cleared the stream in the left hand fork for a distance of two miles and had the accumulation of rubbish burned. Have also opened springs at Peter Olsen's ranch on the summit and caused an increase of 21,000 gallons. On Youngberg's ranch opened spring No. 1 and increased 12,900 gallons in twenty-four hours, and spring No. 2 increased 65,900 gallons making the total of water developed 500,400 gallons in twenty-four hours. In the main canyon have cleared and strengthened the creek, and in places where it was practicable, have turned it away from obnoxious corrals, and when the creek ran close to the road turned it back to its original channel, away from the drainage of the road.

In 1892 A. F. Doremus, Salt Lake City's engineer, presented a major plan for city water development. Proceeding from the assumption that Utah Lake was Salt Lake City's proper reservoir, he proposed to increase its supply by diking the lake, and damming and dredging the channels of the Jordan. This added supply of Utah Lake water was to be traded through exchange agreements with local irrigation companies for water from mountain streams then serving the land along the east base of the mountains.²⁶ Prompted by growing speculative interest in commercial water development Doremus also offered a plan to tap the Uinta Mountains directly by developing a syphon from the Weber Drainage near Kamas in Summit County and bringing a highline conduit into

²⁶Ibid., p 56, and also see Fisher Stanford Harris, 100 Years of Water Development: A Report Submitted to the Board of Directors of the Metropolitan Water District of Salt Lake City, The Board of Commissioners of Salt Lake City Corporation, and the Citizens of Salt Lake City. (Salt Lake City, Utah: 1942), pp 5-19.

Salt Lake Valley.²⁷

While this larger scheme was decades in development, Salt Lake City did put many of the more local aspects of Doremus' plan into effect. As Peterson records, the city built a million gallon reservoir near Capitol Hill.²⁸ A settling tank of similar capacity was built at the mouth of Parley's Canyon, this tank connected to a 5 million gallon reservoir on 13th East which was also fed by a million gallons a day piped from a collecting trench a half mile up Emigration Creek.²⁹ By 1900 contractors like Patrick J. Moran were regularly making city water works construction part of their operation. Perhaps the most ambitious was the Big Cottonwood Conduit which was large enough for a man to walk in and ran 8 miles from the canyon mouth to the city.³⁰

By 1915 municipal systems had become a factor to recognize throughout Salt Lake Valley. Salt Lake City boasted that its water works were valued at \$6,300,000 and that its 254 miles of pipe served 18,259 people. Bingham, Murray, and Sandy each had municipal water systems as well. Each claimed 3 miles of pipe and respectively valued their

²⁷Ibid., and Charles S. Peterson, with John Lamborn, "Agriculture in Salt Lake County", p 56.

²⁸Ibid., p 55.

²⁹Ibid., p 57

³⁰See Shirley Howell Forester, "Family History of Rayomon Earl Wayman and Beth Eatie Wayman" typescript Utah Historical Society, 1.

systems at \$32,000, \$42,000 and \$20,000. Bingham had 450 users, Murray 235, and Sandy 1,000. Midvale also claimed a water system but reported no pipe or users served.³¹

Changing Conceptions of the Role of Water and the Law of 1880

Passed on February 10, 1880 "An Act for Recording Vested Rights to the Use of Water and Regulating their Exercise" shifted water from the realm of public interest to that of private property.³² As the formal name indicates the Act of 1880 was also a response to the growing recognition of the complexity of Utah's water systems. It was also an effort to bring order to what was becoming a chaotic situation through the measurement of streams, recognition of vested rights, and the recording of the rights thus determined. Under its terms, priority of appropriation by individuals, rather than the granting authority of the public agency (county court or city council), became the primary factor in the allocation of water.

Apparently claim by private appropriation had been a not uncommon practice even in the era when rights were

³¹State of Utah, Facts and Figures Pertaining to Utah 1913-14 compiled by State Bureau of Immigration, Labor and Statistics, (Salt Lake City: 1915), pp 426-430.

³²Territory of Utah, Journals of the Legislative Assembly of the Territory of Utah, of the Twenty-Fourth Session, for the Year 1880 (Salt Lake City: T. E. Taylor, Public Printer, The Deseret News Steam Printing Establishment, 1880), p 290.

granted by the county court or city council upon petition. This practice was given legal form in several acts of the mid 1860s which regulated the distribution of water and placed "it within the control of the irrigators themselves."³³ This arrangement, together with continuing grants by the county courts, led to over appropriation of streams, whose flow was only roughly understood, and to a growing frustration with the fragmented and unrecorded nature of county administration. It was hoped that the Act of 1880 would bring this situation under control.

Yet the law was not as effective as the legislature had hoped in bringing about the decrease in chaos regarding water rights and use. Indeed, irrigation historian George Thomas, writing in the 1920s, scathingly referred to it as "retrograde" legislation.³⁴ Thomas's chief complaint was that it altered the public interest in water from one of ownership and full partnership in all transactions to one of supervision or a police power only.

Under previous practice and law, most (used) water resources had been appurtenant to specific plots, companies or regions; in effect they had been public resources (controlled by the county courts or local custom) to which

³³Utah Compiled Laws, p 879. [but no year] As cited in Charles Hillman Brough, Irrigation in Utah (Baltimore: The John Hopkins Press, 1898), p 41.

³⁴George Thomas, Institutions Under Irrigation, pp 139-151.

private rights were obtained only by confirmation by the proper public agency. By the Act of 1880 water resources became private property transferable from one piece of land to another or from one person to another, further unappropriated water could be acquired by individuals without the type of public supervision required under past law and practice. In practice many of the territory's citizens were unaffected by the act (just as they had initially been unaffected by the 1852 county court act) because they continued to rely on older customs. However, these points alone certainly do not imply that the law was a "step backwards" as Thomas felt.³⁵ Rather the judgement should be based upon the long term consequences: specifically its (1) impacts on the future water administration framework of Utah, and (2) the changes in development practices it induced.

The Act of 1880 did away with the county court's role in water resource planning or its direct development decision making role. However, the select men of each county were designated as water commissioners. They were directed to make and record observations of stream flow, determine average seasonal flow, receive and determine claims to water rights and on receipt of proof of a "right to the use of water having vested" issue certificate of ownership, oversee a fair distribution of water in the

³⁵Ibid.

respective counties, hear and decide disputes, and file copies of their findings with county recorders.³⁶ As can be seen the county courts were still heavily involved in water administration. Under these terms it was no longer their primary duty to enforce a beneficial use of public waters, rather it was intended that they would provide (1) a means of settling disputes between different appropriators, (2) provide for record keeping, and (3) collect pertinent water resource use and availability information. Commissioners now issued certificates to applicants on evidence of their having filed upon, diverted, and used water. If no one stepped forward to protest during a time of public advertizing they certified the claim. One result was that filings absurd in their size or purpose were certified without thought for future needs or without consideration of the public's interest.³⁷

When complaints later developed the commissioners were the first board of inquiry investigating "vested" rights, which (by definition) accrued from the diversion of unappropriated water and continuous use for seven years.³⁸

³⁶Ibid., pp 56, 139-141.

³⁷Ibid., p 148.

Here was the weakest part of the act. . . . Under the system inaugurated in 1880 excessive grant were made if it did not at the time interfere with the rights of other claimants.

³⁸Territory of Utah, Journals of the Legislative Assembly of the Territory of Utah, of the Twenty-Fourth Session, for the Year 1880, p 290.

Law suits were provided for under the law but only as a second recourse when litigants were dissatisfied with the determination of the commissioners.

While its provisions to measure streams and develop records were commendable, the law of 1880 failed to make either financial or institutional arrangements to develop technical data. The selectmen who became commissioners were elected laymen. Few counties could hire an engineer. Most had certainly never conceived that such an officer was necessary.

With the Mormon controversy approaching its bitter peak the all-Mormon legislature had neither inclination nor money to get the territorial government involved. Consequently, the territorial government remained outside the realm of water administration. Counties, cities, and a growing number of private interests made for an increasingly decentralized water development picture.

Notwithstanding its individualistic nature, the act gave legal form to the practice of measuring and distributing streams by fractions of the total flow which marked it clearly as being in the cooperative Utah tradition. Although the Powell surveyors and probably many Utahns were using measurement by miners' inches or cubic feet per second, no new system of measurement was mandated. Yet as technically unsatisfactory as the customary measurement by division of streams in fractions was, it did

allow water to be divided pro rata to all primary users in case of shortage.³⁹ Rather than letting some bear the full burden of drouth, as happened under systems that adhered strictly to the first-come-first-served doctrines of prior appropriation.

Another important contribution of the Act was its definition of water rights in two classes, primary and secondary. Primary rights included those rights acquired up to when the sum of rights equaled the average stream flow at low-water. Secondary rights were acquired to water in excess of the average low-water flow, but were subject to satisfaction of primary rights. When supplies more than met primary needs but did not fully meet secondary needs, the existing amount was divided pro rata to secondary rights, somewhat mitigating the harshest features of pure priority. The act of 1880 defined only the two categories but subsequent court actions extended the right structure to tertiary rights and beyond, thus the Act laid an important groundwork for future Utah water law precedents.⁴⁰

Many issues came before the water commissioners (county selectmen) in the years after 1880. Although their potential for administration was limited by the lack of

³⁹Arthur Maass and Raymond L. Anderson, ...and the Desert Shall Rejoice: Conflict, Growth, and Justice in Arid Environments (Cambridge, Massachusetts, and London, England: The MIT Press, 1978), p 325.

⁴⁰George Thomas, Institutions Under Irrigation, p 143; and Elwood Mead, Irrigation Institutions, p 228.

scientific data (or the means to collect it), commissioners continued to apply rule-of-thumb information and wide practical experience wisely. According to Thomas they did enduring work when called on to adjudicate individual water rights. Hundreds of streams were "rudely measured or judged as to their flow and the water assigned to the respective users."⁴¹

Judging the act of 1880 based upon changes in practice and legal structure it is clear that it articulated an important foundation for future water law, as well as introduced the economically significant notion that water should be allowed to seek its highest valued use. By separating land and water titles and allowing water to be sold separately the potential for economic efficiency in water use was dramatically improved. The act did not provide for any centralized territorial control or administration, no methods promoting scientific management of water resources were mandated, but it privatized water ownership which contributed to mounting complexity as for-profit or corporate enterprise became involved in water development in Utah.

Private Water Companies: Utah's Water Administration Experiment

Corporate water administration reached high tide in the

⁴¹George Thomas, Institutions Under Irrigation, p 100.

three decades following 1880. Generally viewed as an unsuccessful, if indeed not unsavory episode, corporate water management was part of American free enterprise in its most rugged form. During this era the United States emerged as a financial and industrial power. Railroading, timbering, ranching, mining, and irrigated real estate speculation enjoyed and suffered from volatile boom-bust cycles. In California and Colorado especially corporate development was significant.

In Utah, as elsewhere, the pace of land and water development increased as population grew, creating pressure for the private development of water and land resources rather than the cooperative development which had been favored by the isolated Mormon commonwealth.⁴² These pressures were expressed at two levels as far as water administration was concerned, the emergence of incorporated farmers' companies on the one hand and for-profit corporations on the other. Both the mutual companies and the speculative corporation are the focus of the pages that follow. To understand the differences between the two organizations the evolution of the mutual irrigation company will be dealt with first.

⁴²Population figures for the era are 1870 - 86,786, 1880 - 143,963, 1890 - 207,905, 1900 - 276,749, taken from Table 3, p 168.

The Mutual Irrigation Company

Starting as a cooperative effort among pioneers, what can be termed local irrigation companies had functioned since 1847. As we have seen Mormon colonizing and church subsidy gave form and pattern to this process. Once communities were on site water had to be managed locally, first within the church organization itself and later in the county court era by cooperative effort of water users. Water users of this early era lived in a self-contained environment which enabled informal user associations to work. It was a great experiment in community effort. It covered a broad geographic area but at the individual irrigation level was adapted according to the natural dictates of Utah's environment and the technical and social means of the people. The cooperative effort established a multitude of small systems. Bound by a common interest and mutual respect, in early territorial times participants in these companies operated without benefit of incorporation, after the Act of 1880 most eventually incorporated. These neighborhood irrigation organizations were well suited to management of ongoing local enterprises, but natural conservatism and the local nature of the common problems that bound members together made them poorly suited to

develop larger projects.⁴³

When the Act of 1880 provided for incorporation of water companies, however, Mormon strategy shifted. Previously their defense from gentile influence had been in isolation and informal cooperation. Private profit oriented enterprise had been viewed as a threat to Mormon isolation, carrying as it did, an invitation to non-Mormon infiltration.⁴⁴ In the late 1800s an emerging political strategy looked increasingly to the law and legal procedures. Legal provision for water as property was a step toward a new economic policy in which the church would eventually embrace free enterprise wholeheartedly.⁴⁵

⁴³For a good description of mutual irrigation companies operation and organization see Elwood Mead, Irrigation Institutions, pp 233-239.

⁴⁴George Lofstrom Strebel, "Irrigation as a Factor in Western History, 1847-1890" (Dissertation, University of California, Berkeley, 1965), p 271.

By the end of the civil war when the crusade against polygamy. . . was resumed, the Mormon Church saw their isolation and solidarity seriously threatened. Mining had been started in Utah with the support of gentile capital. With the prospect of the early completion of the transcontinental railroad, Brigham Young and other Church leaders saw an immediate need to implement a program to strengthen the solidarity and self sufficiency of the Mormons. The focal point of all the non-Mormon activity was the 'gentile' commercial interests in the Utah. To inaugurate his extended program of cooperation among the Mormons, Brigham Young declared an official boycott against these commercial interests.

⁴⁵Leonard J. Arrington, Great Basin Kingdom, p 380.

The surrender of the church on issues of polygamy, political control, and economic intervention which followed the Supreme Court decision approving the Edmunds-Tucker Act meant a

With residents of the central counties leading the way, mutual irrigation companies (the local associations by which Utah's farmers administered their developing water systems) everywhere took advantage of the law to incorporate. Incorporation allowed a certain amount of immunity from liability to stockholders, (equity versus debt financing), and it provided an effective means to collect delinquent assessments by sale of capital stock. Updated by incorporation the mutual irrigation companies continued to manage most of Utah's irrigation systems throughout the 19th century and on into the present.⁴⁶

change of direction and diminished acceleration, but not a complete halt in church activity in these fields. . . . And the church did not give anyone to understand that it would discontinue its efforts to promote economic development, although there seems to have been a definite understanding that the old Mormon-Gentile dividing lines would be obliterated. . . . Another factor was producing the same result -- 'the end of the frontier' in the Great Basin and Rocky Mountain regions. . . . Most of the new Mormon colonies founded at the end of the century were near non-Mormon communities. Mormon settlers usually found it necessary to accommodate their ways to those of the Gentiles around them. With 'outsiders' attracted in ever greater numbers to Utah, and with Mormons settling in increasing numbers in non-Mormon communities and neighborhoods, the days of the proud, isolated, self-sufficient Kingdom were at an end.

⁴⁶Wells A. Hutchins, Mutual Irrigation Companies in California and Utah (Washington D.C.: Government Printing Office, 1937), p 2. Speaking of the mutual irrigation companies' importance to Utah Hutchins states:

In Utah irrigation is an indispensable factor in agriculture and has been on a cooperative basis from the first. The average Utah company, generally speaking, does not serve a large area of land; but it is the dominant irrigation organization, and the service it performs is of

The Speculative Corporation as a Water Company

More a development of the decades after 1880 were the corporate water companies. These corporations differed from the mutual companies in that they were organized with private profit for the owners, rather water use per say, in mind. They also differed in that the company, and not the water users (after 1880), owned the water resources. Thus they differed from the water districts in at least two important respects. First, they were not publicly controlled; and second, their service areas were determined by economic considerations rather than elections or public interests. Water was acquired by purchase and individual users were not necessarily responsible for maintenance or distribution. Water was simply delivered to the buyer's fields, ditch systems, or business.

Company projects ranged in size from small locally funded undertakings to projects large enough to involve multiple counties and draw investors from all over the United States and Europe. Their success generally depended on two factors, one environmental and the other social or financial. First, the inherent environmental potential of the project and the related questions of technical

inestimable value to that State.
Also see George Thomas, Institutions Under Irrigation, pp 55-56.

difficulty and the quality of the design and engineering work involved. Second, the level of speculation in the project itself or in the ownership of the lands involved in the project.

Some projects which had sound design and potential still failed because speculators, who provided no revenue to the company, purchased potential farmlands with intent of turning a profit by reselling the land after the project was completed. Companies in this situation were then faced with two options, neither of which was optimal for the company's shareholders. First, it could raise the price of water to participating farmers in an attempt to cover costs; or second, it could sell the completed project to the existing water users or someone else at a loss. Corporations investing in Utah water development were at a further disadvantage because their investors had to make their plans public long before water could be marketed, allowing speculators rather than farmers to purchase the project's lands.

There were few mechanisms to exclude speculators, ensure sales, or force payment for delivered water. As a result speculators, impoverished or recalcitrant farmers, and a variety of competing water uses complicated the task faced by these early corporations. Fundamentally the problem was one of financing and cash flow necessary for construction. Ironically it was the same law (the act of

1880) which allowed companies to purchase, move, and deliver water independent of land that also allowed speculators to buy land under a project without incurring any obligation to purchase water or contribute to the system's upkeep.

The Bear River Canals Project was an early attempt at water development by a private-for-profit corporation. Involving at one time or another water from the Ogden River and well as the Bear River, the project was first conceived of in 1868. Preliminary investigations led promoters to feel a project of such magnitude could not be undertaken without federal aid.⁴⁷ Using railroad land grants as a related precedent, they sought a government subsidy. When this was turned down the project was abandoned until 1883. At this time Alexander Toponce, John W. Kerr, and other local interests known as the Corinne Mill Canal and Stock Company and a promoter named John R. Bothwell launched another effort.⁴⁸ The corporation that was formed from this merger was known as the Bear Lake and River Water Works and Irrigation Company.

When the company was organized in the fall of 1889, rights of way and land titles necessary to construction and commitments for canal use were used to back capital stock valued at \$2,100,000. The Jarvis-Conklin Mortgage and Trust

⁴⁷Ibid., p 204.

⁴⁸Alexander Toponce, Reminiscences of Alexander Toponce, new edition, (Norman: University of Oklahoma Press, 1971), pp 195-285.

Company of Kansas City underwrote the company's bond issue, most of which was sold to investors in Scotland. Samuel Fortier and Elwood Mead, both of whom became big names in western irrigation development, were project engineers. William Garland, a Kansas contractor, began work immediately putting upwards of 7,000 men to work on the project. Garland was only paid according to Fortier's estimates, however; he claimed he had moved much more earth. He soon tied construction up with a mechanics lien on the canal company. After a long period of litigation and financial difficulty (growing from the fact that speculators and farmers controlled much of the land independently and provided no revenue to the company) the company went into receivership.

On September 1, 1894, the company was reorganized as the Bear River Irrigation and Ogden Water Works Company. In its attempt to salvage a usable canal system this company struggled against the same financial problems with landowners and speculators. Inconsistent water delivery, the high cost of water, and the legal problems of the previous company had by this time caused substantial loss of confidence on the part of legitimate water users in the area. These pressures combined to seal the doom of the company. Ultimately the property was sold to the Utah Idaho Sugar Company in 1902 for a fraction of what had been invested. This company was able to successfully complete a

somewhat less ambitious canal system, and marketed land and water at reduced rates.⁴⁹ Over the years immense sums had been expended in advertising the project in the middle West, and a substantial citizenry from Illinois and Iowa as well as Utah had located on the project. Technically it may be said to have been a success. However, its original investors had lost heavily and the problems of not controlling both the land and water resources on a project became apparent through this and similar experiences.

Many other private-profit-oriented Utah projects were even less rewarding. Projects launched concurrently with the Bear River lingered on as developers tried various expedients including utilization of the Carey Act of 1894 and the Newlands Act of 1902 (see next chapter). One of these, the Lake Bonneville Water and Power Company, claimed capital stock of \$3,000,000 and had grandiose plans for developing 250,000 acres in west Millard County. After going through numerous reorganizations and placing high hopes in the Carey Act's provisions, this company's successors ultimately developed and delivered water to more than 23,000 acres (some estimates are as high as 48,000 acres) in the Delta area. Losers were a succession of investors and generations of farmers.⁵⁰

⁴⁹George Thomas, Institutions Under Irrigation, pp 203-217.

⁵⁰Charles Hillman Brough, Irrigation in Utah, p 63-70. Also see Charles S. Peterson's foreword in Robert Alan Goldberg, Back to the Soil: The Jewish Farmers of Clarion,

Little remains of a project involving Indianapolis investors and the Valley City Reservoir Company. Planning to take water from the Colorado River to irrigate a quarter of a million acres in northern Grand County's desert wastes, developers projected a community named Valley City, dammed one of the desert water courses leading into the Colorado, brought a few dozen Indiana families out, and watched helplessly as summer storms produced freshets that destroyed their dam. In the mid 1950s a derelict frame building and one or two Hoosier residents of Moab testified of failed plans.⁵¹

Another project which helped give corporate management of water a bad name was that of the New Castle Reclamation Company. Based on a series of Desert Act land filings in the vast Escalante Desert in Southwestern Utah, the project built a hotel in the midst of mesquite flats, purchased steam tractors, and showed prospective buyers around their project in two of southern Utah's earliest and hardest driven Cadillacs. The company ultimately undertook an unsuccessful effort to divert water from the Santa Clara drainage of the Colorado Plateau to Pinto Creek which flowed

Utah, and their World foreword by Charles S. Peterson (Salt Lake City: University of Utah Press, 1986), p xvi-xx for discussions of irrigation efforts sponsored by corporate enterprise around the state.

⁵¹Charles S. Peterson, Look to the Mountains: Southeastern Utah and the La Sal National Forest (Provo Utah: Brigham Young University Press, 1975), pp 234-235.

into the Escalante Desert and Great Basin. While Salt Lake City and southern Utah investors lost heavily, a few of them hung onto their land claims until ground water technology advanced sufficiently to make the Escalante Desert one of modern Utah's most productive agricultural areas.⁵²

Neither the mutual irrigation companies or the for-profit promotions did much to rationalize the administration of Utah's water resources. The former perpetuated pioneer fragmentation, while the latter introduced a welter of contending claims and failed undertakings. But each in its way was part of the process by which Utah moved beyond the social and economic conditions of the self-contained pioneer environment. Incorporation brought mutual companies into the order of the franchise laws and pointed to potential advantages of territorial water administration and unified territory wide procedures of dealing with water resources. As much as the private property clause of the Act of 1880 contributed to the freewheeling speculation and promotion of the for-profit corporations, that development, too, was an effort to bring one of the elements of administration into a predictable control. The act also permitted individual initiative to play a much larger role in the water development process. Thus, the private efforts of individuals and corporate

⁵²York F. Jones and Evelyn K. Jones, Lehi Willard Jones 1854-1947 (Cedar City: Published Privately, 1972) pp 145-163.

promoters, as well as the incorporation of mutual irrigation companies were significant steps in the evolving structure of water administration.

PART II

DEVELOPMENTS IN WATER ADMINISTRATION AND MANAGEMENT

1890 THROUGH 1947

CHAPTER IV

THE FORCES OF CHANGE

No period in the history of Utah water administration produced institutional developments of greater importance than did the first few years after statehood was achieved in 1896. Fundamental policy changes, institutional structures, and administrative innovations were effected that put the State of Utah squarely in the water management business. It would be gratifying to report that it was a time of unmarred progress, but such was not the case. Indeed Utah's policy makers were slow to undertake change, and when they did they were often halfhearted about it, with the result that a number of adaptations had to be made in the system. To fully understand the changes in Utah's water administration, certain developments at the federal level and the impacts of the water policy of neighboring states need to be examined briefly.

In the years immediately before 1896, events in Utah and the nation set the stage for the direction change took. As we have seen in earlier chapters, the pioneers had developed a grassroots system of water administration that often functioned almost independently of the laws passed by the legislature. Basically irrigators during the territory's last years were relatively well-served by

pioneer water customs and institutions. Most managed their own affairs and were content in the main with arrangements they had made at the local level and with the decrees and rulings set down by church courts and local moderators. Not only did pioneer custom still meet the needs of many, but Utahns had been preoccupied with settling the long and cankered Mormon problem. Unlike some neighboring states where water development had occupied the best minds, Utah had struggled to settle questions of marital relations and the involvement of the Mormon church in affairs of state. By 1890, Utah was losing its claim to water management leadership. After statehood, lawmakers had to hurry to keep up with developments elsewhere.

Indeed, the fact that water policy was adapted at all was due to three major sets of outside development. In considering the corporate efforts to develop the Bear River Canals Project, we have already recognized the impact that speculative corporate development (first allowed in California and Colorado) had upon Utah. At least as important as private capital in promoting changes in Utah's water administration were natural resource management developments at the national level, and policy developments in neighboring states. As satisfied as Utah's small irrigators may have been and as preoccupied with the Mormon problem as policy makers may have been, changes in each of the above mentioned arenas attracted Utah attention, setting

patterns that the new state could not ignore.

At the national level, land and water policy came together in the decades before 1902 as the nation became more aware of what development of the arid West would require. An early step in this process was the Desert Land Act. Passed in 1877, the act was an effort to tie a means of subsidizing the cost of irrigation development to the homestead system. Under its terms, qualified settlers could take up to as much as a section of land but in so doing obligated themselves to get water on it within a specified time period. As it worked out, the Desert Land Act was no panacea to the problems of irrigation development. Indeed, it invited abuse and soon agitation for a better reclamation policy was widespread. One of the earliest voices was that of John Wesley Powell whose Report on the Lands of the Arid Region of the United States, with a More Detailed Account of Land of Utah (1878) proposed fundamental changes in land policy to facilitate irrigation's development. In 1889 Richard J. Hinton submitted a detailed examination of irrigation projects throughout the West and a special committee of the United States Senate set off on a wide tour of the arid regions pursuant to authorizing an irrigation survey under Powell's direction. Simultaneously the Irrigation Congress movement got underway, meeting for the first time in Salt Lake City during 1891. Supported by land promoters, railroad tycoons, irrigation companies, and

Mormon churchmen, but few actual farmers, the Irrigation Congresses drew from Powell, Hinton, and other experts to point out the utter hopelessness of settlers or other single individuals trying to develop water for irrigation agriculture. They called for congress to cede the public lands to the states in the arid regions.

Congress refused to turn over the entire public domain to the states, but it was willing to parcel out substantial chunks of it. To this end, Wyoming Senator Joseph M. Carey introduced a bill authorizing special land grants in arid states and placing the obligation for reclamation upon the states. The states would then enact plans for irrigation development and land distribution which was to go only to actual settlers in tracts no larger than a quarter-section. Passed in 1894, the Carey Land Act did not work well in many states. It was supplemented, but not replaced, by the Reclamation Act of 1902 which placed responsibility for reclamation directly upon the federal government.¹

The important point here is that both the Carey Land Act and the Reclamation Act required action on the part of

¹The literature on this development is large. I have used the widely recognized Paul W. Gates, History of Public Land Law Development, (Washington D.C.: Government Printing Office, 1968), pp 634-698. Also the following are useful; Richard J. Hinton, "Irrigation in the United States. Its Extent and methods, with Digest of Laws Governing Water Supply", Senate Miscellaneous Documents, 49th Congress, 2nd Series, Volume 1, Number 15 (serial number 2450); John Wesley Powell, Report on the Lands of the Arid Region of the United States, with a More Detailed Account of the Lands of Utah, (Washington D.C.:Government Printing Office, 1878).

the arid states. Because of the requirements associated with federal programs, it was necessary for Utah to make changes in its irrigation and water development policy if it wished to benefit from federal help.

More traditional, but also requiring state action, was congress's practice of making land grants to states in the enabling acts that allowed them to draft constitutions and pass from territorial status to full sisterhood in the national union. By 1894, when congress passed the Utah Enabling Act, the arsenal of federal land grants to the states was large, including one for 500,000 acres. The sale of this land was to provide funds for the development of reservoirs for irrigation purposes. Like the Carey Land Act and the Reclamation Act of 1902, the availability of this subsidy for water development had an immediate impact on the development of water policy in Utah.²

²State of Utah, Laws of the State of Utah Passed at the Special and First Regular Sessions of the Legislature of the State of Utah, Held at Salt Lake City, the State Capital, in January, February, March, and April, 1896, also the Enabling Act Passed by Congress and the State Constitution Adopted by Convention May 8, 1895 and Ratified by the People at the General Election, November 5, 1895 (Salt Lake City: Deseret News Press Company, 1896). Section 12 of the Enabling Act for the State of Utah granted 500,000 acres of public land to the state to be used for the purpose of establishing irrigation reservoirs. The section reads in part as follows:

. . .the following grants of land are hereby made to the said state, for the purposes indicated, namely; . . .

For the establishment of permanent water reservoirs for irrigating purposes, five hundred thousand acres; . . .

The said State of Utah shall not be entitled to any further or other grants of land for any

Simultaneously, water policy underwent changes in states adjacent to Utah that also demanded attention from Utah policymakers. This was particularly true of Colorado and Wyoming. Prompted by conflicts growing from untrammelled individualism in water development, both states had tried to set up systems placing the appropriation, distribution, and utilization of water resources under the control of the state. To accomplish this, constitutional and legislative policy had been worked out recognizing the public's interest in water resources and setting up machinery to administer water use and settle disputes.

In Colorado, a system had evolved that undertook to maintain the basic division of power between the branches of government by placing administrative authority with a state engineer and a board of control and by placing dispute settlement authority in the courts. Feeling that hydrological expertise was needed in both functions of government, Wyoming streamlined its system by giving its board of control power to settle disputes as well as allocate and administer water rights.³

purpose than as expressly provided in this Act; and the lands granted by this section shall be held, appropriated, and disposed of exclusively for the purposes herein mentioned, in such manner as the legislature of the State may provide.

The legislature established the Utah State Board of Land Commissioners to dispose of all land grants and manage the monies derived from the sales.

³For a good recent treatment see Robert G. Dunbar, Forging New Rights in Western Waters (Lincoln: University of Nebraska Press, 1983). For a traditional insider's

A major figure in these developments was Elwood Mead, who was first a professor of irrigation engineering at the Colorado Agricultural College, then state engineer in Wyoming, and finally Chief of Irrigation Investigations in the United States Department of Agriculture. Convinced that efficient water management required public ownership, centralized control, and scientific understanding of water's physical properties, he worked tirelessly to establish policy that would apply these principles at every level including the judiciary. His influence on the West generally, and upon Utah particularly, can hardly be overstated. During the years directly following Utah's attainment of statehood, he and his subordinates were in Utah conducting studies and working actively with Utah policymakers to update what by the late 1890s was recognized to be an inadequate system.⁴

In the chapters that follow, the emergence of water development and management institutions by the State of Utah and the success with which they functioned will be examined.

statement see Elwood Mead, Irrigation Institutions: A Discussion of the Economic and Legal Questions created by the Growth of Irrigated Agriculture in the West (New York: The Macmillan Company, London: Macmillan & Company Ltd., 1903).

⁴Ibid.; and George Thomas, The Development of Institutions Under Irrigation: With Special Reference to Early Utah Conditions (New York: The Macmillan Company, 1920); and Elwood Mead, et al., Report of Irrigation Investigations in Utah (Washington D.C.: Government Printing Office, 1903). Also see notes 2 and 3 chapter 5, p 96 and 97.

Three separate arenas of activity will be identified: (1) Administration; by 1903 a framework was in place which allowed the state's appointed officials to exert control over appropriation and distribution of water resources. (2) Development; state officials and agencies participated in planning, building, and marketing water projects through both direct and indirect methods. And (3) Institutions; the legislature established legal institutions that allowed water users to group together for the purpose of solving common problems and financing water resource development. Throughout this analysis it is important to remember that state actions were strongly motivated by the need to develop a system of viable water institutions which would allow its citizens to proceed with the work of reclaiming Utah's arid lands and putting the water resources to work.

CHAPTER V
THE BEGINNINGS OF STATE INVOLVEMENT
1894 THROUGH 1906

The Necessity of Changing Basic Water Institutions

At the time Utah achieved statehood, the opportunities for water development were diverse. However, basic changes in the structure of Utah's water administration and development institutions were necessary for Utah's citizens to take advantage of the possibilities. With the developments at the federal level and in neighboring states, as well as pressures from the investment community prompting them, Utahns became increasingly aware of the need to update the state's water law and the administrative machinery by which water resources were handled. Three related realms of action can be identified. The first, speculative or corporate response to opportunities for private investment has already been considered. In this chapter it will be necessary to analyze the response of the State Board of Land Commissioners and the State Engineer's Office to the new federal reclamation programs and water policy developments of neighboring Colorado and Wyoming.

In addition, it is well to recall the local traditions upon which Utahns built. By 1896 the pioneer method, cooperative groups of water users, mutual irrigation

companies, county selectmen, private corporations, and municipal needs and agreements had all influenced, to varying extents, the development and distribution of water. The cumulative experiences of Utah's citizens from 1847 to 1896 established a foundation upon which state government enacted water laws and created institutions to administer, develop, promote, and encourage the proper use of water resources.

The guiding philosophy during the decade after statehood was that the state should promote both private and public development of water resources to their fullest capabilities. By utilizing both public and private planning and development, it was hoped that the potential of every stream might be realized. Policies which guided state officers in dealing with water reflected a commitment to developing Utah's water resources in line with the philosophy of maximum beneficial use.

Identifying a Role and Establishing a Water Management Policy

That Utah was falling behind in water policy and management began to be apparent as early as 1891 and continued throughout the entire era.¹ Engineers, promoters,

¹Leonard J. Arrington and Dean L. May, "A Different Mode of Life," Agricultural History Volume XLIX Number 1 (January 1975), p 11. Commenting on the applicability of early Utah institutions to other states and territories these authors state:

The Mormon example persuaded other settlers

city fathers, and politicians referred to the dilemma again and again. Typical was Governor Heber M. Wells comment in his 1903 report to the legislature in which he urged Utah's lawmakers to adopt a system of water law which would again place Utah in the position of leadership with respect to the water-rights issues. It was widely recognized, the governor declared:²

. . . that the reputation our people enjoy as pioneers in the use of water for irrigation is not at present equalled by the adequacy and consistency of our laws upon the subject. . . . Of first importance is probably the definition of existing water rights. . .

The governor also noted that the state should take advantage of the federal government's offer to help in the reclamation effort.

In 1894, the Utah Constitutional Convention began the work of drafting policies by which the new state could

that extensive irrigated agriculture was possible, but when settlers from California, Colorado, and other states and territories looked to Utah for detailed instructions on how to build and maintain an irrigation system they were most commonly thrown back upon their own experience and resources. The Mormon system worked well enough for the Mormons in Utah. It was not especially instructive to others.

²Heber M. Wells, "Executive Message of the Governor of Utah to the Legislature of the State of Utah" Public Documents (Salt Lake City, Utah: Skelton Publishing Company, 1905), pp 10-12. Date of address January 13, 1903. The Public Documents series contains all of the annual and biennial reports of the commissions, committees, offices, and boards which the state's legislatures established to administer water in Utah. Hereafter the name of the report will be stated in quotation marks followed by Public Documents followed by the appropriate page number/s.

govern water. The convention brought together delegates with a diversity of experience and opinions regarding water resources. Some were dissatisfied with the 1880 system and felt that the water question should be settled at the convention. Others felt that water issues should be dealt with by the legislature after statehood was achieved. In addition to these differences, there were three distinct opinions regarding the basic issue of water ownership. The first view was that water belonged to the state.

Individuals following this view proposed that the foundation for a system of water rights similar to Wyoming's be included in the state constitution. Delegates of this persuasion brought letters from Wyoming's governor and state engineer explaining the system and expressing support for state ownership and administration of water. The second view was that the federal government owned the water resources and that no provision should be included in the constitution regarding water rights. The rationale was that any rights that currently existed would not be changed by statehood and trying to assert other rights might make the document unacceptable to the federal government. The third view was one that grew out of Utah's 1880 water law.

Delegates supporting this point of view felt that water resources were the personal property of individuals and that if any clause was included in the constitution it should declare the water itself to be the property of those who had

appropriated it.³

In the end, the view of letting the future legislature deal with the major issues was adopted. An article was included in the constitution that said any existing rights to the use of water were recognized, but it remained silent on the issue of ownership. Article XVII reads as follows:⁴

All existing rights to the use of any of the waters in this State for any useful or beneficial purpose, are hereby recognized and confirmed.

Those who were concerned about government ownership of water carried the day; as a result, the convention left many issues unaddressed and made the future job of administering water resources more difficult. The work of defining what a water right was, and developing a system to allocate the remaining water resources was left to a future legislature. The result was that most of Utah's basic water laws are based on the work of the legislature, not upon constitutional declaration.⁵

³The foregoing paragraph is the author's short summary of the records of debate and motions which are included in the State of Utah, Official Report of the Proceedings and Debate of the Convention Assembled at Salt Lake City on the Fourth Day of March, 1895 to Adopt a Constitution for the State of Utah (Salt Lake City, Utah: Star Printing Company, 1898), Volumes I and II, pp 156, 163, 202, 217-218, 226, 244, 272, 299-300, 339, 578, 623, 669-700, 711, 1202-1218, 1232, 1524, 1685, 1795, 1800, 1878.

⁴Constitution of the State of Utah, Article XVII, Section 1.

⁵Utah water law is primarily based on the water law of 1903. That law has never been repealed, rather later sessions of the legislature merely added to and refined it.

Although the constitution's declaration did not alter the legal principles governing water management and administration, it was the first legislative statement about water resource ownership and use since the law of 1880.⁶ It did specify that the right to use water was conditional upon proper use and therefore implied that it could be forfeited by failure to utilize it properly. The latter was an implication, which itself implied that someone, or some authority, could establish standards defining proper or beneficial use.

When statehood was achieved in January 1896, lawmakers immediately confronted questions that involved standards for water use. During the decade that followed, the water resource policy that had prevailed during the last decades of the territory was reversed in at least one important respect. The 1880 law had placed initiative in private hands allowing individual water users to make most decisions regarding water development and water rights. By contrast, the policy which developed in the years after statehood tended toward an assertion that water was a public resource and that only the right to use the water was held by the individual.⁷ In addition, water rights were defined to meet

⁶Elwood Mead, Irrigation Institutions: A Discussion of the Economic and Legal Questions created by the Growth of Irrigated Agriculture in the West (New York: The Macmillan Company, London: Macmillan & Company Ltd., 1903), p 224.

⁷George Thomas, The Development of Institutions Under Irrigation: With Special Reference to Early Utah Conditions (New York: The Macmillan Company, 1920), pp 196-202. Thomas

the mounting demand for water by industrial and urban purposes. New regulations and precedents were also spelled out to govern the adjudication of water rights. Together with the new definitions of rights the state's enlarged role represented a dramatic change with regards to water policy.⁸

During the first two years of statehood (1896-1897) Utah's policy makers passed several water laws and

discusses the laws passed shortly after statehood in these pages, he provides a contemporary analysis of the reasons for and results of these laws.

⁸Clesson S. Kinney, A Treatise on the Law of Irrigation and Water Rights and the Arid Region Doctrine of Appropriation of Waters: As the same is in Force in the States of the Arid and Semi-Arid Regions of the United States, and the Decisions of the United States; and also including an Abstract of the Statutes of the Respective States, and the Decisions of the Courts Relating to those Subjects (San Francisco: Bender-Moss Company, 1912), pp 3608-3608. Kinney explains that:

That appropriators shall have priority among themselves according to the dates of their respective appropriations, so that each appropriator shall be entitled to receive the whole supply to which his certificate entitles him before any subsequent appropriator shall have any right; 'Provided, that whenever the natural flow of any stream shall have receded in volume in the annual low-water stage, then the rights of all users to such flow at such stage, shall be apportioned pro rata among such users. But in times of scarcity, while priority of appropriation shall give the better rights as between those using water for the same purpose, the use for domestic purposes shall have preference over use for all other purposes, and use for agricultural purposes shall have preference over use for any other purpose except domestic use.'

It is made the duty of the water commissioners of their respective water districts to regulate the distribution of water among the various ditches and users thereunder according to the rights of the respective parties. . . .

established three agencies which dealt with water development and administration. In 1896 the Utah State Board of Land Commissioners was created to oversee the equitable and fair disposition of special grants of land, including the reservoir grant of the Enabling Act.⁹ The next year, the authority of the Land Commissioners was enlarged to take advantage of the Carey Land Act terms, another program in the federal government's growing reclamation package.¹⁰

The passage of the 1897 law creating the State Engineer's Office was another important bench mark in the process by which the growing water management role of the state emerged.¹¹ It was also a step toward recognizing that these same officials needed to be directly involved in determining both what the public's interest was and what the proper uses of water resources were.

In addition, the 1897 legislature passed a measure which defined the procedure of obtaining water for

⁹State of Utah, Laws of the State (1896), for the legislation see note 2, Chapter 4, p 91; and see State of Utah, Revised Statutes of the State of Utah in force January 1, 1898 (Lincoln, Nebraska: State Journal Company, Printers, 1897), Title 63, Chapter 8, Sections 2451-2459, pp 551-553.

¹⁰Almost all of the early State Board of Land Commissioners' reports contained information about proposed Carey projects. With the exception of the Delta project none of these survived the planning stage.

¹¹State of Utah, Revised Statutes of the State of Utah (1898), title 63, Chapter 8, Sections 2451-2459, pp 551-553.

irrigation purposes.¹² The goal of this measure was to provide for a complete recording of existing water rights and to establish a process that would also record newly acquired water rights. To achieve this, the law required the potential irrigator to post a notice at both the desired point of use and in the nearest post-office. The law also required him to file a record in the county of the diversion stating the details of the project. Finally, the law required the appropriator to begin work within forty days from the time of the postings and complete it within a reasonable time in order for a water right to be recognized.

The 1897 measures were halting steps that failed to provide the administrative framework the state's citizens needed. The fact that the legislature extended little authority and provided meager budgets initially kept the State Engineer from carrying out several important provisions of the law. In the years that followed, the office of the State Engineer was occupied by strong individuals and its responsibilities and appropriations were increased. However, the procedure of posting notices and filing records did little to solve the problem of over appropriation, because the only means available to stop a potential irrigator on a river system continued to be through legal action.

¹²Revised Statutes of the State of Utah in force January 1, 1898, Title 33, Sections 1261-1288, pp 342-347.

Adding to the 1897 water law framework in 1901, the legislature provided for water commissioners in specified districts to apportion the water resources of the state according to priority of appropriation and beneficial use criteria. This new law built upon the constitutional provision by recognizing primary and secondary rights and other rights in those cases where the courts had defined many classes of water rights.¹³

Thus, by 1901 Utah had provided a system of water resource administration which would, in theory, both protect and administer water rights. The principle weakness of the 1901 system was that it did not provide for the automatic protection of individual water rights. When serious differences occurred, individuals either settled the matter through church or community arbitration (non binding) or resorted to the court system. This led to situations in which the only final legal declaration of rights came through conflict and usually large expense. If there had been some way of restricting potential water users from an already appropriated water source, the system would have been adequate to protect established rights. Unfortunately, no such mechanism existed. Therefore, arbitration and the courts remained the common solution to the problem of excess

¹³State of Utah, Laws of the State of Utah Passed at the Fourth Regular Session of the Legislature of the State of Utah held at Salt Lake City, the State Capital, in January, February, and March, 1901 (Salt Lake City: The Deseret News Press, 1901), Chapter 125, Sections 14 and 15. pp 144.

appropriations.¹⁴

These problems were faced and in some measure solved when the Legislature, acting on a suggestion from the state engineer's office and others, again undertook to define water rights and water institutions in another fundamental water law in 1903.¹⁵ According to this measure, water rights were declared to exist when people used water for a beneficial purpose and when the use did not reduce or infringe upon existing rights. The law of 1903 confirmed the right to use water as property and established the framework of a system to accurately determine who owned the water rights and to record any transfers or acquisitions of such property. Furthermore, the law stipulated that new water rights could only be acquired by petitioning the State Engineer's Office for recognition of the proposed use. The State Engineer had the responsibility to determine if unappropriated water actually existed and if the proposed

¹⁴This shortcoming is demonstrated by the amount of water rights litigation occurring during this period. This litigation is cited in State of Utah, "Second Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1899 and 1900," Public Documents, pp 52-55 as a justification for overhauling Utah's water law along the lines of Wyoming's process.

¹⁵For the provisions of the 1903 law see State of Utah, Laws of the State of Utah Passed at the Fifth Regular Session of the Legislature of the State of Utah held at Salt Lake City, the State Capital, in January, February, and March, 1903 (Provo, Utah: Skelton Publishing Company, 1903), Chapter 100. pp 89-107.

use met the beneficial use criteria.¹⁶ If these conditions were met, he was to grant a water right. Therefore, the law gave the authority to stop excess appropriations to the Office of the State Engineer. This law achieved the goals of the earlier laws in that it provided for existing water rights to be measured, recorded and protected. Once recorded, water rights could not be transferred without a formal deed and without notifying the state engineer and the county that such a transfer was taking place.

The 1903 law also utilized the concept of water commissioners, as provided for by the 1901 law. The State Engineer was to divide the state into water divisions and these divisions into districts and appoint superintendents for the divisions and supervisors for the districts. These state officials were given the responsibility to divide and allocate water resources according to the recorded water rights.

With the passage of the 1903 water right law, the legislature finally provided Utah's citizens with an effective system of water administration. Both present and future water rights were protected. Officers could now be appointed to deal with distribution problems in each area of the state and water rights were well defined. Current water law uses the 1903 measure as its foundation. Evidence of

¹⁶State of Utah, Laws of the State of Utah, (1903), Chapter 100, Sections 6, 13, 36, 39, and 45. pp 89-90, 91-92, 98, 99, and 101.

the soundness of the system has been demonstrated by the results of its operation. The application of the 1903 law has tended to reduce the amount of conflict among water users. The increased certainty relating to the validity of water rights promoted cooperation among water users and an increase in investment into water development.

The Utah State Board of Land Commissioners

In addition to providing a legal foundation, the legislature established agencies to administer water resources in the first years of statehood. A major step in this process was taken in 1896, when the legislature established the Utah State Board of Land Commissioners. This body was charged with promoting the settlement of land in Utah, managing the monies derived from the sale of public lands within the state, and selecting potential reservoir sites around the state and reporting on their possibilities to the governor and legislature.¹⁷ Initially, the Board was comprised of five people, the governor, the attorney general, the secretary of state, and two Utah citizens. In 1899 it was expanded to seven members: the governor, the

¹⁷State of Utah, Laws of the State of Utah Passed at the Special and First Regular Sessions of the Legislature of the State of Utah, Held at Salt Lake City, the State Capital, in January, February, March, and April, 1896, also the Enabling Act Passed by Congress and the State Constitution Adopted by Convention May 8, 1895 and Ratified by the People at the General Election, November 5, 1895 (Salt Lake City: Deseret News Press Company, 1896), Chapter LXXX, pp 238-251.

secretary of state, and five citizens. In 1902 the number was reduced again to five members, when two citizen members were dropped.

Not surprisingly, the Board of Land Commissioners used water development as a primary means of attracting land settlement. A primary element in this was the board's work with the State Engineer's Office to identify potential reservoir sites and promote their development through private or state funded means. It also made potential sites for reservoirs and farm development generally known, publicizing information that could be acted upon by private individuals or by other state officials.

The Board of Land Commissioners controlled the Land Grant Reservoir Fund which grew out of the Enabling Act's grant of 500,000 acres for reservoir development. In practice, this fund was administered by the Land Commissioners to provide start-up money for the development of water resources by individuals throughout the state. Prior to 1907, the Land Grant Reservoir Fund monies could only be used on projects constructed on state lands. That year the law was changed allowing the Commissioners to use the Reservoir Fund for projects involving both state and privately owned lands.¹⁸ This change in policy was a

¹⁸State of Utah, The Laws of the State of Utah Passed at the Seventh Regular Session of the Legislature of the State of Utah which Convened January 14th at Salt Lake City, the State Capital, and Adjourned March 14th, 1907 (Salt Lake City, Utah: Skelton Publishing Company, 1908), Chapter 13, Section 2, p 15. The change which allowed the Land

recognition that much of the most productive land had already been selected, and therefore most projects would have to involve both state and privately owned lands.

The Board of Land Commissioners was also authorized to establish a state farm loan program under which they could invest money from the sale of state land in bonds or first mortgages on improved farms. The law specified that these loans to individual farmers would be used to improve water storage and delivery systems and for farm development in general. This requirement came from the Enabling Act's provision that the reservoir land grant fund monies be used to promote irrigation.¹⁹

Commissioners to loan the land grant funds to private companies reads as follows:

. . . and the State Board of Land Commissioners is hereby authorized and empowered to loan the reservoir land grant fund to corporations or associations within the state of Utah for the construction or completion of reservoirs, whether public or private, at a rate of interest not to exceed five per cent per annum, in such sums, for such securities, and for such periods of time as in its judgement will promote the interests of the state and encourage the construction of reservoirs for agricultural purposes. . . .

¹⁹ Ibid.

Table 1 ²⁰

The Amount of Monies Extended from the Beginning of the State Farm Loan Program to 1920.

=====

| Year | \$ Amount of Loans Extended |
|------|-----------------------------|
| 1897 | \$ 0 |
| 1898 | 0 |
| 1899 | Both 1899 and 1900 combined |
| 1900 | 19,856.00 |
| 1901 | 52,997.66 |
| 1902 | 86,011.00 |
| 1903 | * |
| 1904 | 45,499.00 |
| 1905 | 60,667.00 |
| 1906 | 37,011.00 |
| 1907 | 16,502.00 |
| 1908 | 71,347.50 |
| 1909 | 46,353.00 |
| 1910 | 26,788.00 |
| 1911 | 13,971.00 |
| 1912 | 228,282.00 |
| 1913 | 636,957.70 |
| 1914 | 514,580.00 |
| 1915 | 624,837.00 |
| 1916 | 418,942.00 |
| 1917 | Both 1917 and 1918 combined |
| 1918 | 1,972,032.00 |
| 1919 | 2,005,680.00 |
| 1920 | 1,124,735.00 |

* Yearly total of loans extended unavailable.

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The farm loan program was heavily utilized during the period under study and the decades immediately following. Eventually it made more money available to individual farmers than any other program used by the Board of Land

²⁰All information in Table 1 was taken from the appropriate (relevant years) "Annual Report of the Board of Land Commissioners," State of Utah, Public Documents.

Commissioners or other agencies of the state during the period it was in use. The state's interest in the program had lasting repercussions for water development, because it allowed many farms to undertake individual or small group projects which probably would not have been feasible under private financing. Ultimately, however, the program proved to be of only limited value.²¹

In an effort to promote water development, the Carey Land Act (1894) had provided for funds to be raised for irrigation by offering to make up to 1,000,000 acres of public land available for sale within each participating state.²² Although the Utah State Land Board was actively involved in assisting private developers of water projects under the Carey Land Act, only one Utah Carey Project carried through to the successful sale of both land and water. This was the Delta Project, which involved nearly 50,000 acres in the years around 1910.²³

Very little was accomplished by the State Board of Land Commissioners with regards to irrigation development through

²¹Because the effects of the farm loan program extend to the 1930s this program will be examined in detail in Chapter 7, beginning on p 184.

²²The Carey Land Act was an attempt by the United States Congress to fund reclamation efforts without using general government funds. By giving a grant of land to the states the federal government lost only potential not current revenues. See Chapter 4, pp 90-91 for further details.

²³See section beginning on p 82 for a summary of the Delta project.

direct state-funded projects between 1896 and 1906. Although some money was in the Reservoir Land Grant Fund, its restriction to use on state-owned land limited its utilization, as did previous private development of the more promising sites. In spite of these obstacles, the Board of Land Commissioners, in its first annual report, called the legislature's attention to the potential of sixteen reservoir sites and recommended that funds for the development of the sites be appropriated. The legislature took no action on these recommendations and the reservoir sites were not mentioned in subsequent reports or actions by the board.

It was not until 1907, eleven years after the Board's creation, that bids were let to begin the construction of the first irrigation project funded by the Board of Land Commissioners. The next year work was initiated on a second project.²⁴ (For further detail on these state projects refer to Chapter 6, beginning on p 143.)

Thus, it is apparent that the Board of Land Commissioners' role was to locate (and eventually develop in later periods) potential reservoir sites. Its use of the Reservoir Land Grant Fund for the farm loan program and

²⁴Reports on the progress and problems which occurred on these two projects can be obtained from both State of Utah, "Annual Report of the Utah State Board of Land Commissioners," Public Documents, and State of Utah, "Biennial Report of the State Engineer to the Governor of the State of Utah," Public Documents, for the years 1906 to 1926.

investigations was an effort to apply the federal reclamation provisions then in force. As its title suggests, the board was primarily concerned with land. But in working to promote the utilization of land, it was for two decades one of the state's primary water management agencies. In carrying out its functions, it was controlled by state water policy and interacted with an even more important agency in the management of water, the Office of the State Engineer.

The Office of The State Engineer

The State Engineer's Office was created in February 1897. In May of the same year, Willard Young became the first State Engineer, serving until July 1898. Young's successor, R. C. Gemmell, was appointed on August 1, 1898. The first official actions of the state engineer's office dealt with recording the streamflow statistics collected by the United States Geologic Survey of the rivers, springs, and wells in Utah. The legislature failed to provide funds to enable the new office to take stream measurements itself. The state engineer's office was also responsible for the inspection and approval of plans for all proposed dams over ten feet in height. During the first two years of operation, the state engineer's office approved seven dams, which allowed for the privately financed construction of six reservoirs, one of which incorporated two dams in its

design.

During his brief tenure, Willard Young had directed the office to begin work on a booklet of instructions for water measurement. In it the state engineer's office made tables available that could be used by local water masters to determine volume in ditches or canals without having to resort to complicated computations. Work on this booklet was continued by State Engineer R. C. Gemmell who completed it and had it distributed throughout the state when he made his first biennial report in 1898. Evident in this undertaking was the idea that practical farmers were capable of distributing water effectively as well as the hope that they could gather data that would supplement the United States Geological Survey's reports in the growing files of the state engineer's office.

From 1899 to 1900 the State Engineer's Office was involved in determining the duty of water on Big Cottonwood Creek, a work that was undertaken because the water users requested it.²⁵ The eight canals which drew water from the stream were listed in the biennial report along with the amount of water used and the acres served by each.

²⁵The measurements on the Big Cottonwood Creek were not for the purpose of determining water rights. Rather they were for determining the duty of water. Duty approximated the amount of land that could be serviced by a given unit of water. During this same period similar work was performed on the Logan and Provo rivers. State of Utah, "Third Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1901 and 1902," Public Documents, pp 23-44.

The office was also able to begin collecting and storing information obtained from streamflow measurements done by Salt Lake City's engineer, A. F. Doremus. This data was added to the records already coming in from the United States Geological Survey. The legislature had still not appropriated funds for the state engineer's office to do measurements for itself. In fact, the operating budget had been cut during this time period to a mere \$300 per year.²⁶

In the 1899-1900 biennial report, the State Engineer proposed to the governor and legislature that the water law of the state be amended so that all water rights would have to be recorded in the Office of the State Engineer. He also proposed that the legislature adopt a new system of water law based on the Wyoming system as a model. The State Engineer felt that most of the state's current problems with water right litigation (much of it on the Weber River System) could be solved through the use of such a system.²⁷

²⁶The operating budget was only \$300 in both 1899 and 1900. State of Utah, "Second Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1899 and 1900," Public Documents. See appropriations of the legislature, State of Utah, Laws of the State of Utah Passed at the Third Regular Session of the Legislature of the State of Utah, held at Salt Lake City, the State Capital, in January, February, and March, 1899 (Skelton Publishing Company, 1899), Chapter 87, p 153.

²⁷State of Utah, "Second Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1899 and 1900," Public Documents, pp 52-55; and State of Utah, "Third Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1901 and 1902," Public Documents, pp 21-23.

In 1901, A. F. Doremus assumed the duties of the Office of State Engineer. During the first two years of his tenure, the office approved plans for seven dams, again privately financed. The recording of water measurements was continued. More technically difficult water projects were being attempted. An example which can be cited occurred in 1902, when an unprecedented drought caused the water flowing through the Jordan River to first decrease sharply and eventually stop altogether. The water users met this environmental hardship and protected their crops by installing a pumping station at the mouth of the Jordan River and dredging intake channels which brought the lowered Utah Lake water to the pumping station.²⁸

The Office of the State Engineer was also involved in the work taking place on the Strawberry project. In addition studies were conducted concerning the feasibility of a canal to divert the Grand River (now the Colorado) to supply irrigation water to Grand and San Juan counties. Also considered by the office was a proposal to utilize Bear Lake as a reservoir. The Bear Lake idea was one of the Utah's earliest proposed interstate projects and involved the additional political and technical difficulties of

²⁸State of Utah, "Third Biennial Report of the State Engineer to the Governor of the State of Utah for the years 1901 and 1902," Public Documents, p 10.

interstate water rights.²⁹

In his 1901-1902 biennial report, the State Engineer urged Governor Wells and the legislature to take advantage of the national reclamation legislation which had recently been passed. Also, he requested that Utah's lawmakers continue to refine the state's water law. The legislature responded by establishing the Arid Land Reclamation Fund Commission and in redefining the duties of the Office of the State Engineer during their 1903 session.

The State Engineer also stressed the importance of improving the existing systems of water collection and distribution throughout the state. As measurement projects progressed, the State Engineer's Office became increasingly concerned about the large amounts of water wasted through inefficiencies of the storage and delivery systems then in use.

Recognizing that data gathered by the United States Geological Survey and the local ditch companies was inadequate, the 1903 legislature directed the state engineer's office to determine and record water rights of

²⁹The State Engineer, in his State of Utah, "Third Biennial Report to the Governor of the State of Utah for the Years 1901 and 1902," Public Documents stated that:

The Bear Lake Project, while of great importance to this state, is not wholly a Utah proposition, at least so far as its location is considered."

Much of the land which might have been reclaimed lay in Idaho. Consequently the benefits of the project would accrue to both Utah and Idaho land owners.

the state's river systems. Maps and documents showing these determinations were also to be prepared. The law mandated that all streams be measured and the rights technically determined. The State Engineers's Office was instructed to begin work on those river systems which were most heavily used for irrigation. The Weber River was selected to be the first area of activity. Its water resources were heavily utilized by farmers and there were a considerable number of disputes concerning water rights on the system, the litigation of which was very costly. Indeed, this litigation retarded water development because people were reluctant to invest in water projects with a long-term payoff when water rights were clouded. In part, this litigation was the legacy of the 1880 water law which had allowed relatively easy appropriation of water resources without a supervisory system to provide protection for existing rights other than a court action. Because of the confusion and the cost involved, this litigation had been cited by the previous State Engineer as one reason for embracing the Wyoming system of water law.³⁰

The Weber River study revealed that 1,175 canals were served by the Weber, about three times the number expected. In 1904, measuring devices were installed in almost all

³⁰Wyoming used a system of water law which owed much of its structure to Elwood Mead (see Chapter 4, p 93). Wyoming recognized state ownership of water resources, priority of appropriation, and relied on state supervision and control.

canals in the system. Under the terms of the 1903 law, the few companies or individuals who did not install the devices were referred to the state attorney's office. It was concluded that a substantial amount of the water of the Weber River ran to waste. Of the 1,128,755 acre feet of annual flow the state engineer's office had determined were available, only 366,000 acre feet were then being used, leaving 762,555 acre feet running to waste.³¹

In addition, during the years of 1903 and 1904 the state engineer's office also approved plans for nine privately financed dams, of which two were additions to existing structures. The office also continued its involvement with a Bureau of Reclamation program known as the Strawberry project. The Board of Land Commissioners was interested in determining the project's feasibility and had the work of surveying the streams likely to be involved performed by the Office of the State Engineer.

The State Engineer's Office had considerably higher expenses associated with these increased levels of activity. Some of these increased expenditures were covered by funds from the Experimental Irrigation Contingent Fund. This fund had been established by the legislature in 1903 to pay for

³¹The Weber River study was the state engineer's first attempt at determining water rights. The information collected was recorded in State of Utah, "Fourth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1903 and 1904," Public Documents, pp 6-53.

the expenses of planning reservoirs and irrigation works throughout the state.³² Out of this fund \$23,910.56 were spent. In addition, \$2,136.08 were spent on surveys made in cooperation with the Board of Land Commissioners. These costs were mainly incurred for the Strawberry project, but also included some expenditures for a project on central Utah's Buck Horn Flat. The office collected \$1,242.62 in contingent fees and \$1,638.50 in fees for dam approval and services rendered.

In 1905, Caleb Tanner assumed the duties of the State Engineer. During the three years between the passage of Utah's water law defining the role of the state engineer in recording and granting water rights (1903) and Caleb Tanner's first biennial report (1906), the office received 1,154 applications for new water rights. Included were applications for irrigation, stock watering, power, municipal, and mining purposes. Of these applications, 286 were approved, 335 lapsed due to time restrictions, 47 were withdrawn, and 54 were rejected.³³

The office continued to work on the Weber River in an attempt to clarify, record, and measure the water rights on the river. Caleb Tanner submitted the work performed by the

³²State of Utah, Laws of the State of Utah (1903), Section 73. The experimental Irrigation Contingent Fund established with \$25,000 for the 1903-1904 biennium.

³³State of Utah, "Fifth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1905 and 1906," Public Documents, p 5.

office along with recommendations concerning the awarding of water rights to the district court for ratification.

The State Engineer's Office continued to promote efficiency in water use throughout the state. Among the new methods suggested by Caleb Tanner in the 1905-1906 biennial report were recommendations that existing water-user groups consolidate into larger and more efficient units and that the water delivery systems themselves be improved by lining and redesigning canals and laterals.

The Arid Land Reclamation Fund Commission

In 1903, Utah's legislators responded to the offer of the federal government to fund reclamation work which had been made in 1902 through the passage of the National Reclamation Act. At that time, the Utah legislature established the short-lived Arid Land Reclamation Fund Commission (1903-1905). This commission was assigned the job of identifying potential reclamation projects and working to interest the federal government in building them. The commission began work almost immediately. Among other things, it identified possible projects around the state including one at Utah Lake, one at Bear Lake, and one on the Strawberry River. It also worked to get F. G. Newell, the head of the United States Reclamation Service, to start the work of surveying and planning. As an official delegation, the Utah Reclamation Commission had an advantage over water

promoters from other western states. Other western states were proposing projects, but Utah had led out by establishing a commission designed to attract federal reclamation dollars.³⁴

The biggest problem the Arid Land Reclamation Fund Commission faced was the problem of contested and congested water rights in the proposed areas of their projects. The United States Reclamation Service had been instructed by Congress to follow state laws with respect to water rights and not to initiate projects until water rights were clearly defined and repayment organizations were established with sufficient collateral. The many claims for water resources in Utah's settled areas, combined with the recent changes Utah's water laws had gone through at the time the commission was formed, complicated clear definition of water rights and the organization of water users. During its two years of operation, the commission laid the groundwork and initiated interest in many of the projects the Reclamation Service would later build in the state.

The Role of Other State Officials

Overall leadership in these developments was provided by Utah's first two governors, Heber M. Wells and John C.

³⁴The Commission members reported that they were the only official state delegation in State of Utah, "First Biennial Report of the Arid Land Reclamation Fund Committee for the Year 1903," Public Documents.

Cutler. Senator Reed Smoot also made important contributions. Wells (1896-1905) was one of the principal forces calling for water law reform and was a major force behind the 1901 and 1903 water laws. Cutler followed this reformation by calling for increased levels of joint participation with the federal government in the reclamation process. A dam and reservoir on the Bear River indicate his influence on water development. Smoot, who was originally from Provo, was particularly important in promoting the Strawberry project that did so much to advance his native Utah County.

Urban and Industrial Considerations

In 1890, some 263,473 acres had been under irrigation in the Utah territory. Over the next two decades, irrigated acreage increased to 629,293 in 1900, and 999,410 in 1910.³⁵ This increase in irrigated acreage quantifies the significant reclamation efforts that took place during the time period directly preceding and following statehood. In addition to agricultural demands on water resources, urban and industrial uses of water resources also increased. Population grew from 207,905 in 1890 to 373,351 in 1910.

³⁵Irrigated acreage of Utah obtained from the Eleventh, Twelfth, and Thirteenth United States Bureau of the Census, Census of the United States; Volumes as follows, 1890 Statistics of Agriculture, 1900 Agriculture Part 2, Crops and Irrigation, 1910 Agricultural Reports by States, Nebraska-Wyoming.

The value of manufacturing rose from \$8,911,047 to \$61,989,000 over the same time period.³⁶ The varied nature of water right applications received by the State Engineer's Office up to 1906 demonstrated that water resources were being applied to a broader spectrum of uses in the decade after statehood than at any time before. Agricultural, municipal, and industrial water right applications were all approved by the state engineer in accordance with the 1903 water law.

Although most water development activities of the Board of Land Commissioners centered on agricultural projects, other types of water use were important. The experiences and opinions of these water users also helped shape policy. During the 1896 and 1906 decade, hydroelectric generation was introduced.³⁷ Municipal needs for water supplies increased as city size around the state (particularly Salt Lake City) increased. These developments resulted in new types of water uses and new state water and land development institutions.

As early as 1904, the Weber River water users planned

³⁶Population and value of manufacturing obtained from the Eleventh, Twelfth, and thirteenth United States Bureau of the Census, Census of the United States, Volumes as follows, 1890 Population, Manufacturing industries, 1900 Population, Manufactures, and 1910 Population, Manufactures.

³⁷Boyd L. Dastrup, "Electrification of Utah 1880 to 1915," (Thesis, Utah State University, 1976). This thesis contains information on the usage of water resources throughout the state for hydroelectric generation.

to utilize water for hydroelectric generation as well as its more traditional uses for irrigation, municipal, and industrial needs. Commenting on this proposed use, State Engineer A. F. Doremus observed in his third biennial report that:³⁸

It is difficult to foretell the advantages which this double use of water will bring; but if use for each single purpose is profitable the dual use here contemplated must be doubly so.

The Strawberry project (which was initiated in 1906) also incorporated hydroelectric generation in its design to provide power for construction needs and later to provide power to municipalities located in the vicinity.

Salt Lake City had begun to experience significant water shortages as early as the mid 1880s. One method the city employed to relieve these shortages was to exchange rights in the Jordan River with the rights area farmers had in the mountain streams. This provided the city with higher quality of water and a source from a higher elevation. Both of these factors reduced their costs and made the water more easily available to the city's residents. The first exchange agreement was negotiated between the city and Salt Lake County farmers in 1888. Four later agreements occurred between 1892 and 1905. Between 1919 and 1930, six more agreements were completed between Salt Lake City and

³⁸State of Utah, "Third Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1901 and 1902," Public Documents, p 10.

surrounding ditch companies.³⁹ By this process, the city got the benefit of water it could deliver to the growing population and the farming industry in the area was not crippled by loss of water. Municipal water use did not increase at the expense of irrigation water use. The exchange agreements could take place because the laws of 1880 and 1903 upheld the concept that water (1880 law) and water rights (1903 law) were property which could be bought, exchanged, and/or transferred in the case of cities; and bought, sold, or traded in the case of individuals to different types and places of use.⁴⁰

³⁹Fisher Stanford Harris, 100 Years of Water Development: A Report Submitted to the Board of Directors of the Metropolitan Water District of Salt Lake City, The Board of Commissioners of Salt Lake City Corporation, and the Citizens of Salt Lake City. (Salt Lake City, Utah: 1942), pp 5-19.

⁴⁰The Utah Constitution forbids the selling of water rights or water works by cities in Article XI, Section 6; which reads as follows:

No municipal corporation, shall directly or indirectly lease, sell, alien or dispose of any water works, water rights, or sources of water supply now, or hereafter to be owned or controlled by it; but all such waterworks, water rights and sources of water supply now owned or hereafter to be acquired by any municipal corporation, shall be preserved, maintained and operated by it for supplying its inhabitants with water at reasonable charges: Provided, that nothing herein contained shall be construed to prevent any such municipal corporation from exchanging water rights or sources of supply of equal value, and to be devoted in like manner to the public supply of its inhabitants.

Conclusion

Thus, it is clear the legal status of water rights and water institutions were dealt with and refined many times by the Utah legislature during the ten years following statehood. The result was a system which allowed for water rights to be identified and protected. The legal authority to determine water rights resided in the courts. The responsibility to measure and record those rights resided in the Office of the State Engineer. The state also assumed an increasing role in the promotion and construction of irrigation structures. This was accomplished by taking advantage of federal programs, and by utilizing the Land Grant Reservoir Fund.

The decade saw growth in all types of water uses. These increased levels of use were partly responsible for the increased conflict between water users occurring at the time of and following statehood. Partly as a response to these conflicts and to other pressures from within and without the state, Utah water policy and administrative structure was changed to allow for more public control and management of water resources.

The establishment of the Office of the State Engineer and its activities reflected a developing awareness of the necessity of scientific water management on the part of Utah's law makers and to a lesser degree her citizens. It was also a manifestation of the increased ability of people

to control the environment in which they lived through the application of technology.

The Office of the State Engineer was utilized to ensure that water resources were used in a safe manner. The provision in the 1897 law that all dams over ten feet in height (changed to five feet in height, or dams storing water to a depth greater than ten feet in 1903) had to be approved by the State Engineer illustrates that development was becoming more technically difficult. It was also a recognition of the potential for problems. As a result, the safeguards became more stringent. Water use became more intensive (exhaustive) in nature. Those water resources that could initially be easily controlled and used had long since been appropriated. After statehood, water development projects were generally more technically difficult and therefore usually more expensive.

The creation of the Board of Land Commissioners was a recognition that greater state involvement would be necessary if the continued reclamation of arid lands was desired. The actions of the state in 1903 that created the Arid Land Reclamation Fund Commission extended this recognition of the need for involvement to the federal level. Although the Board of Land Commissioners did not design or build any projects in the 1896-1906 decade, they did work with the state engineer and the Arid Land Reclamation Fund Commission in designing the Utah Lake

Pumping project, the Strawberry project, the Bear Lake project, and the Grand River project. Much of the state's role in these projects was the identification of water development possibilities, arranging work relationships, and planning for a cohesive pattern of water development.

CHAPTER VI
WATER: INSTITUTIONS, MANAGEMENT, AND DEVELOPMENT
1906 THROUGH 1921

Introduction

During the first decade of statehood, Utah's lawmakers and officials had concentrated their water management efforts toward developing an administrative and regulatory framework that defined the state's control over the process of water appropriation and the definition and allocation of water rights. The water rights law of 1903 was the culmination of these efforts, and it has become the basis for current water law. The administrative framework of the State Engineer's Office and the developmental framework of the Board of Land Commissioners together provided a foundation that assisted the state and its citizens in the work of reclaiming water resources and the arid lands in earnest.

During the 1906 through 1921 period, the growth in the amount of water use, land entry, population, and manufacturing continued. Evidence of this increase in water demand is shown by the fact the State Engineer's Office received thousands of water right applications and approved construction plans for a total of eighty-nine dams between

1906 and 1921.¹ The state's water management institutions had to meet these growing demands.

These increasing demands on the resources of the state are reflected in table #2, which lists irrigated acreage for the Utah area from 1850 to 1950. Also listed are the population figures and the value of the output of Utah's manufacturing industries. These figures suggest that the demands for urban and industrial water use, in addition to the growing agricultural use, were placing ever greater burdens on Utah's water supplies during the time period under discussion.

¹Refer to Table 3, Chapter 6, p 168.

Table 2 ²

Acreage, Population, and Value of Manufacturing

| Date | Irrigated Acreage | Estimated Acreage | Population | Dollar Value of Manufacturing |
|-------|----------------------|----------------------|------------|----------------------------------|
| 1850 | (16,333) | [7,849] | 11,380 | 291,220 |
| 1860 | (77,219) | [37,110] | 40,273 | 900,153 |
| 1870 | (118,755) | [57,071] | 86,786 | 2,343,019 |
| 1880 | (416,105) | [199,974] | 143,963 | 4,324,992 |
| 1890 | 263,473 | | 207,905 | 8,911,047 |
| 1900 | 629,293 | | 276,749 | 21,156,183 |
| 1910 | 999,410* | | 373,351 | 61,989,000 |
| 1915 | | | | 87,112,360 |
| 1920 | 1,371,651* | | 449,396 | |
| 1930 | 917,139 | | 507,847 | 207,641,259 |
| 1935+ | 583,183 | | | |
| 1940 | 911,135 | | 550,310 | 167,172,226 |
| 1950 | 1,137,995 | | 689,000 | |

() [] These amounts misstate irrigated acreage. The United States Census listed only improved farm lands -- figures included in () -- during these years. Beginning in 1890 irrigated and improved farmlands were counted separately. The percentage of improved farm land irrigated in 1890 was 48.06% (improved 548,233 acres, and irrigated 263,473). Using that percentage the rough estimates -- in brackets [] -- were obtained.

* The Census Bureau used a different definition for irrigated acreage in 1910 and 1920 than in other years in this table. It included irrigated land from which no crops were harvested during these years. The resulting figures therefore overstate the acreage relative to the other years.

+ The decrease in acreage associated with the Depression is included to show that agricultural prices were so low that farmers simply took land out of production.

²All information contained in Table 2 was taken from the United States Bureau of the Census, Census of the United States; the Eighth-1850, Ninth-1860, Tenth-1870, Eleventh-1880, Twelfth-1900, Thirteenth-1910, Fourteenth-1920, Fifteenth-1930, Sixteenth-1940, and Seventeenth-1950. The volumes relating to agricultural statistics, irrigated crop land, population, and manufactures were utilized.

The process of getting programs in place at a working level had been the necessary activity of the first years of statehood. After a functional administrative and developmental framework was in place, the emphasis could shift to promoting both public and private construction; of course, further institutional developments continued.

Once the foundation was in place, state officials directed their efforts toward two main arenas of water management. First, they continued to refine the institutions which helped water users organize to finance the large projects which were necessary to solve the reclamation and developmental problems confronting water users. Second, public officials became actively engaged in developing water resources. In this state, officials worked as a direct developers, as well as collaborators with the federal government and local water users in joint development efforts. State programs provided funds to private developers through a variety of loan and finance programs. Also part of the state's function were regulation of water rights and supervision of the process by which water was distributed. This chapter will examine the measures the state took to create new institutions to expedite water development on the part of others and the direct role played by the state in the actual process of water development. In order to fully track the efforts and results of the state's initiatives, it will be necessary to

expend the analysis to 1937 at one point. However, this chapter focuses primarily on the 1906 to 1921 period.

Refining the State's Water Management Institutions

The Utah State Conservation Commission

Several important organizational adjustments were made during the period. At the state agency level, another effort was made to set up a coordinating body in 1909, when the Utah State Conservation Commission was established. The duty of this commission was to help integrate the activities of the state's water management officials with the federal programs and private efforts then underway. The State Conservation Commission was an attempt by the state to maximize water development, while at the same time keeping as much of the initiative and control in state hands as possible. Its mandate included the charge to gather data on potential water resource development projects and make it available to the legislature and to other planning and funding agencies and groups.³ The important issue of state-

³On the Utah State Conservation Commission see State of Utah, Laws of the State of Utah Passed at the Eighth Regular Session of the Legislature of the State of Utah which Convened at the State Capital, Salt Lake City, January 11th, 1909 and Adjourned March 11th, 1909 (Salt Lake City: Skelton Publishing Company, 1909), Chapter 103, pp 224-225. The Act reads in part:

Sec. 3 Duties of Commission. That it shall be the duty of said commission to adopt and carry out such policies and measures as will prevent waste of the natural resources of Utah and to co-operate with the national Conservation Commission and with conservation commissions of other states

wide planning for efficient water use was also to be addressed by the commission. With several federal projects underway and with a wide variety of state and private projects in various planning or construction stages, fact finding, planning and coordination were important obligations. From the time of its creation in 1909, the Utah State Conservation Commission joined the Board of Land Commissioners and the Office of the State Engineer as part of the state's water management framework. It continued in this role until 1917, when the legislature repealed the law which created it.⁴

in any way that shall have for its object the conservation of the natural resources of Utah. . .

* Sec. 4 Appropriation. . . . That the sum of \$3000.00 per annum is hereby appropriated to be paid out of the State treasury upon the warrants of said commission. . . .

Second. To place before the legislative and executive departments and the United States, including the National Reclamation Service, data and facts showing the great value of arid lands in Utah when subjected to irrigation, and facts and information for the guidance of legislative and executive departments of the United States in establishing dams, reservoirs, and irrigation systems for the reclamation of arid land in the State of Utah . . . authorized by said Utah State Conservation Commission in the State of Utah. . .

⁴State of Utah, Laws of the State of Utah Passed at the Twelfth Regular Session of the Legislature of the State of Utah which Convened at the State Capital, Salt Lake City, January 8th, 1917 and Adjourned March 8th, 1917 (Salt Lake City: Century Publishing Company, 1917), Chapter 82, p 224.

Drainage Districts

The legislature also established the legal framework under which water users could group together to solve common problems. As early as 1896 an attempt had been made to provide drainage districts. However, because of various flaws in the legislation and perhaps also because irrigable land was still abundant at relatively low prices, landowners during the early period of statehood showed little interest in organizing drainage districts. This early law authorized county commissioners to begin the process of establishing a district when fifty or more landowners petitioned for one. After a public hearing an election could be held. If at least two-thirds of the landowners voted in the affirmative, the district was organized. In 1905 and 1907, the 1896 drainage law was revised to make bonding specifically possible and to restrict the value of bonds that could be issued to four percent of the value of the land within a drainage district.⁵ However, in 1911 in the case of Argyle v Johnson, Utah's supreme court declared the law unconstitutional because one of its provisions deprived absentee landowners, who happened to have property in the

⁵State of Utah, Laws of the State of Utah Passed at the Sixth Regular Session of the Legislature of the State of Utah Held at Salt Lake City, the State Capital, in January, February, and March, 1905 (Provo, Utah: The Skelton Publishing Company, 1905), Chapter 124, pp 233-238.

district, of the right to vote on district business.⁶

In response to the court's ruling, the state's legislators again dealt with the drainage problem in 1913 and 1915, establishing a constitutionally acceptable method by which drainage districts could be formed.⁷ This revision specified that, in addition to the right to bond to finance needed facilities, districts now had the right to levy assessments against property within the district, forming a lien against the property if unpaid. The law also allowed drainage districts to enter into contracts with the federal government. State Engineer Lloyd Garrison, in the "Fourteenth Biennial Report," stressed the necessity of the drainage legislation and pointed out its benefits:⁸

It has been demonstrated in many portions of the state that the installation of a proper drainage system will remove the excess water producing waterlogging, and also make it possible to leach out accumulations of harmful salts with copious applications of irrigation water. Lands so treated have been restored, in many instances, to a condition under which maximum production again was realized.

⁶Argyle v Johnson 1911, 1180 Pac. 487.

⁷State of Utah, Laws of the State of Utah Passed at the Tenth Regular Session of the Legislature of the State of Utah which Convened at the State Capital, Salt Lake City, January 13th, 1913 and Adjourned March 13th, 1913 (Salt Lake City, Utah: Century Publishing Company, 1913), Chapter 95, pp 167-183; and State of Utah, Laws of the State of Utah Passed at the Eleventh Regular Session of the Legislature of the State of Utah which Convened at the State Capital, Salt Lake City, January 11th, 1915 and Adjourned March 11, 1915 (Salt Lake City, Utah: Century Publishing Company, 1915), Chapter 114, pp 206-209.

⁸State of Utah, "Fourteenth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1923 and 1924," Public Documents, pp 29-30.

In the same report, he stressed that many of Utah's landowners could benefit from the organization of drainage districts.⁹

Not less than one-fourth of the area of land brought under irrigation in Utah has been rendered more or less unproductive, due to waterlogging, or accumulation of salts, or both.

Garrison also reported that there were twenty-one completed drainage systems in place by 1923.¹⁰ His predecessor, R. E. Caldwell, in the "Thirteenth Biennial Report" had also commented on the drainage districts that had been organized shortly after passage of the 1913 and 1915 drainage district laws. There were, according to Caldwell, a total of thirty-two drainage districts by 1921.¹¹

Irrigation Districts

In response to the growing need to finance large irrigation and reclamation projects, the Utah legislature also passed an irrigation district law in 1909. Under its terms, organized groups of water users had the authority to tax land and issue bonds.¹² In 1911, the law was amended to

⁹Ibid.

¹⁰Ibid.

¹¹State of Utah, "Thirteenth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1921 and 1922," Public Documents, pp 43-47.

¹²State of Utah, Laws of the State of Utah (1909), Chapter 74, pp 144-168.

allow districts to enlarge existing canals by using district resources or bonding privileges.¹³ The law was further amended in 1913, when the governor was given the right to call for the process of organization to begin.¹⁴ In 1917 the law was changed once again in response to the needs of the Reclamation Service.¹⁵ This simplified the process of organization and allowed districts to be established by fewer people than had previously been required. The 1917 amendments also extended the repayment period on district bonds from twenty to forty years.¹⁶ The legislature, in 1919, further revised the district law to allow districts to rent or lease water to landowners not included in a given district. The 1919 law also allowed land to be added to or withdrawn from the districts in later years, according to

¹³State of Utah, Laws of the State of Utah Passed at the Ninth Regular Session of the Legislature of the State of Utah which Convened at the State Capital, Salt Lake City, January 9th, 1911 and Adjourned March 9th, 1911 (Salt Lake City, Utah: Skelton Publishing Company, 1911), Chapter 53, pp 70-75.

¹⁴State of Utah, Laws of the State of Utah (1913), Chapter 101, pp 194-199.

¹⁵The name of the United States Reclamation Service was changed to the Bureau of Reclamation in 1922.

¹⁶State of Utah, Laws of the State of Utah (1917), Chapter 33, pp 77-101.

the needs of landowners and district members.¹⁷

These successive irrigation district laws were somewhat patterned after California's Wright District Law. They represented a change in the attitude of the law makers of the state towards irrigation districts. Early irrigation districts (beginning with the 1865 measure) had very limited abilities to tax or assess their members. In these early districts, the only recourse in the event of non-payment was to withhold water deliveries. Early usage of irrigation districts had been very limited and few remained in use at the time of statehood.¹⁸

Irrigation district legislation gave water users the ability to enter into contracts with the Board of Land Commissioners for loans. It also established an acceptable organization to enter into contracts with the Reclamation Service on future projects. The district legislation could be used whenever a financially secure repayment organization was needed to represent the water users as a group. This made the Utah State Conservation Commission's job of attracting federal dollars for joint water projects one of

¹⁷State of Utah, Laws of the State of Utah Passed at the Thirteenth Regular Session of the Legislature of the State of Utah which Convened at the Capital in the City of Salt Lake, January 13th, 1919 and Adjourned Sine Die on the 13th Day of March 1919 (Salt Lake: Press of the Gardiner Company, 1919), Chapter 10, pp 15-19.

¹⁸George Thomas Institutions Under Irrigation (New York: The Macmillan Company, 1920), pp 264-273, 126-128, 275-285. These pages contain an excellent summary of drainage and district laws of this period.

matching up interested parties and organizing the potential water users into districts.¹⁹

These advances in the institutional arena were coupled with new ideas and initiatives dealing with the state's role in the development arena as well. Between 1906 and 1921, the Utah State Conservation Commission, the Board of Land Commissioners, and the Office of the State Engineer were involved in the planning and development process. The activities of the last two will be examined in detail in the following sections.

Increased Development Activity

The period after 1906 was a time of great water development effort. The largest and most spectacular undertaking was the Reclamation Service's Strawberry project which was launched in 1906 and completed in 1922.²⁰ Underway at the same time was the Uintah Irrigation project in which the federal government's Bureau of Indian Affairs channeled \$915,000 into irrigation developments on the Uintah Indian

¹⁹State of Utah, Laws of the State of Utah (1909), Chapter 3, Section 4, Second.

²⁰See State of Utah, "Fifth Biennial Report of the State Engineer to the Governor of the State of Utah for the years 1905 and 1906," Public Documents through State of Utah, "Fourteenth Biennial Report of the State Engineer to the Governor of the State of Utah for the years 1923 and 1924," Public Documents; also see the Annual Reports of the United States Reclamation Service, included in the Annual Reports of the Department of the Interior for the same time period.

Reservation between 1902 and 1917.²¹ At the state level, the Board of Land Commissioners and the state engineer helped plan the Strawberry project and participated in various ways in the Uintah Irrigation project.

More important here was the state's increasing involvement in water development. The State Engineer's Office, the Board of Land Commissioners, and the State Conservation Commission worked with individual water users and with irrigation and drainage districts in an attempt to establish priorities and schedule development according to the urgency of need. A significant point to bear in mind is that almost all of the development activities of the period were coordinated or designed by some agency of state government.

In addition to participating in joint projects, the state also committed many of its own resources to the job of developing water and marketing the associated land. The

²¹For an excellent treatment of the Uinta Reservation's water development process, and the individuals who influenced it see Craig W. Fuller, et al. Beyond the Wasatch: The History of Irrigation in the Uinta Basin and Upper Provo River Area, Editor Gregory D. Kendrick. Introduction Charles S. Peterson. (National Park Service Regional Office in Denver, 1989), Chapters 1-3. Also see State of Utah, "Fifth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1905 and 1906," Public Documents through State of Utah, "Eighth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1911 and 1912," Public Documents for general information. For a specific description of the project and the state's role in it see State of Utah, "Seventh Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1909 and 1910," Public Documents, p 133.

Hatchtown and Piute projects on the Sevier River were the most important of the state's direct projects.²² In the pages that follow the state role in these projects will be examined.

The State as the Total Developer

Because they controlled the reservoir land grant fund, the Board of Land Commissioners was the state agency most involved in financing and promoting water projects directly during the early decades of statehood. The technical expertise necessary to carry out the board's proposals was supplied by the Office of the State Engineer. The projects which were undertaken with the state acting as total developer were the Hatchtown and Piute projects.

The state's substantial commitment to these projects was made on the assumption that the sale of the newly available farm lands and water resources would easily repay the direct investment. In addition, it was expected that the increased settlement would induce economic growth. It was assumed that the projects would return to the state many direct and indirect benefits. Unfortunately, the reservoirs

²²Information on the construction and planning of the Hatchtown and Piute projects can be obtained from State of Utah, "Fifth Biennial Report of the State Engineer to the Governor of State of Utah for the Years 1905 and 1906," Public Documents through State of Utah, "Ninth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1913 and 1914," Public Documents. Also, State of Utah, "Annual Report of the Board of Land Commissioners," Public Documents for the same period.

and associated canals returned only a small fraction of their direct costs. This caused substantial losses to the reservoir land grant fund, and badly discredited the Board of Land Commissioners as water developers.

The Hatchtown Project

In important ways the Hatchtown project was the first fruit of a bold new state initiative in the water development arena. This movement into direct development came as Utah's legislature increased the level of the state's responsibility for water development. The Hatchtown project was initially bid in early 1907 and construction began later that year. It was originally designed to bring 13,500 acres under irrigation and cultivation at a planned construction cost of \$74,000. Actual costs were considerably higher, with expenditures rising to \$126,282 by 1908 and to a total of \$179,828 when the project was completed in 1910.²³

The Hatchtown story was one of continuing difficulty. Four years after the completion of the project, leakage, which had begun soon after the dam was completed, became critical. On May 25, 1914, the spring runoff proved to be too much for the dam structure. The complete collapse of the dam revealed serious structural problems with the site.

²³State of Utah, "Eighth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1911 and 1912," Public Documents, p 12.

After careful investigations by the Office of the State Engineer, it was concluded that problems with the site would preclude reconstruction. Similarly, other sites in the area also proved to be unsuitable. The Board of Land Commissioners was forced to abandon the storage components of the project.

The state now found that it faced serious social and economic problems as a result of its role in designing and promoting the structure. To meet its direct obligations to settlers who had invested in the project, the land commissioners had to use money from the reservoir land grant fund to repurchase the land and water rights. Through legislative action, the state also compensated individuals with general state funds who had lost property as a direct result of the flood. The total loss to the reservoir land grant fund was \$252,137. Of this sum, \$179,828 were in original construction costs and \$72,309 in repurchase payments.²⁴

Once again in possession of most of the land and water rights, the state now made an effort to salvage some type of a usable project. Using the original canals and newly designed diversion structures, a smaller project seemed possible. Both the land and water rights for this smaller project were sold to private investors and farmers, who

²⁴State of Utah, "Biennial Report of the Board of Land Commissioners of the State of Utah for the Years 1911 and 1920," Public Documents, pp 6-7.

organized the Panguitch Land and Irrigation Company. The new owners agreed to a purchase price of \$84,381. They paid \$9,000 as a down payment and agreed to pay interest of 5 percent on the remaining balance over a ten year period.²⁵ For this sum, they were to receive the irrigation works that had been constructed and most of the water rights to the system. The state retained some water rights in hopes that it would be able to sell additional land.

In effect, the state had provided the canals, at slightly less than cost, and donated most of the water rights for the land under them to the new owners. The state's reservoir land grant fund stood to lose a substantial amount of principle on the transaction. But it was felt at the time that the benefits to be derived from successfully reclaiming the land overrode the seriousness of the loss.²⁶ Unfortunately, the new owners of the project did not meet the required payment schedule. In fact, only the initial down payment was received. In 1923, the state declared the original contract void and repossessed the rights to the land and water.

²⁵State of Utah, "Biennial Report of the Board of Land Commissioners for the Years 1919 and 1920," Public Documents, p 7.

²⁶Since the projects had been undertaken with the goal of promoting settlement and putting the available water resources to beneficial use, it must have been generally felt that getting settlers on the land was more important than recovering the cost of the projects since the governor, legislature, and citizens allowed the sale.

Of course, neither the land nor the water rights were of value to the state if they were not used for the intended purpose. Since the rights and structures could not be moved, the state worked to resell the rights as soon as possible. In 1926, a second contract was drawn up with much the same people as had earlier contracted with the state. The selling price was reduced to \$30,000, with a \$3,000 down payment, with five percent interest to be collected over a twenty year period.²⁷ Unfortunately, problems soon arose concerning legal title to water rights in the area. The result of the litigation was that the second contract went into default. Again the state received only the down payment.

In an effort to minimize its losses and to force the water users to pay for the water rights and irrigation structures, the state sought legal action against the Panguitch water users. The courts appointed a third party to administer the water rights and supervise the project. The courts also directed the farmers to pay the land board reasonable amounts on their debt until the project had been amortized. Due to depressed agricultural conditions in the late 1920s followed by the Depression of the 1930s, no

²⁷State of Utah, "Fifteenth Biennial Report of the State Land Board of the State of Utah for the Years 1925 and 1926," Public Documents, p 9.

payments were received after the litigation was concluded.²⁸ Therefore, even though the Board of Land Commissioners owned the system, no money was returned to the reservoir land grant fund during the late 1920s and 1930s to repay the project's cost.

The Hatchtown project can only be classified as a total failure. The wide array of problems, including difficult environmental circumstances, technical difficulties, and the Depression proved to be too much for the state's development framework. The state was badly discredited as an agency of water development by the time it was able to end its association with the project.

The Piute Project

Only slightly less disastrous was the state's involvement in the Piute Storage and Irrigation project which was bid in 1908. Construction started the same year. Considerably larger than the Hatchtown project, it was designed to bring 20,000 acres of land under cultivation. Construction cost was initially estimated at \$150,000. But expenditures rose quickly as structural problems with the site were encountered and design changes were made that

²⁸State of Utah, "Twenty First Biennial Report of the Land Board of the State of Utah for the Fiscal Years of 1937 and 1938," Public Documents, p 8. The Land Board members reported the amount of principle lost on all of the projects. The total indebtedness was excused by legislative action in 1937.

expanded the project to irrigate nearly 40,000 acres. By 1914, when the project was partially completed and operations begun, it had cost \$1,018,000, a huge sum in that period.²⁹

From the first, the Piute system was known for washouts on its long canals requiring that many of them be redesigned. In the process, the scope of the project was considerably expanded. New canals to service these expansions brought larger amounts of land under cultivation and increased the project's final cost. After the completion of the project in 1920, the Board of Land Commissioners recommended selling it to an association of water users. The anticipated advantages to the state of this proposal were (1) the state could collect the payment for its investment from one entity rather than from each individual farmer, and (2) the state would no longer be responsible for the maintenance or for the administrative problems of distribution. The proposal was approved and a contract negotiated based on the state's actual costs of \$1,018,000 (less payments received) plus the five percent interest the legislature mandated to be collected from its initial completion in 1914. The total value of the contract was \$1,300,272. A down payment of \$130,000 was required,

²⁹State of Utah, "Annual Report of the Board of Land Commissioners to the Governor of the State of Utah for the Year 1914," Public Documents, p 8.

with yearly payments of about \$99,000 for twenty years.³⁰

The Piute project's new owners were responsible for the collection of payments, maintenance of the reservoir and canals, and for organizing water users into a self-governing body. The Office of the State Engineer continued to contribute technical expertise to help the projects owners with this responsibility.

Problems soon appeared with the arrangement. The first was that the project's owners made a down payment of only \$65,000 rather than \$130,000 in 1920. However, rather than declaring the contract void, the Land Commissioners decided to extend an extra year to the water users to raise the unpaid half of the required down payment. Unfortunately, the ill effects of falling agricultural prices and a legal dispute concerning water rights combined to cause total default on the remaining payments. In addition to being faced with low prices for their commodities, the project's new owners soon became the target of legal action. This came about when other water users in the area claimed they were diverting more water than they had rights for. As a result of losing this legal challenge, the Piute water users maintained they had been misled concerning the project's water rights. Consequently, they were not willing to make

³⁰The terms of the contract are given in State of Utah, "Biennial Report of the Board of Land Commissioners for the Years 1919 and 1920," Public Documents, pp 7-8. The only payment received was one half of the required down payment.

the payments the original contract required.³¹

The Hatchtown and Piute Projects

Thus, both the Hatchtown and Piute projects not only failed to bring about the economic growth which had been hoped for, but they failed to return to the reservoir land grant fund even the monies which had been extended to cover their respective construction costs. This depleted the fund by both the principal involved and the accumulated interest. The question can be asked, why were the projects undertaken in the first place? The Board of Land Commissioners originally planned to spend \$5.48 and \$7.50 per acre of irrigated land under the Hatchtown and Piute projects respectively. After cost overruns and acreage adjustments, the state spent \$18.67 per acre on the ground irrigated before the Hatchtown Dam washout, and after the washout (because of the decrease in irrigated acreage) the cost per acre climbs to near astronomical heights, between \$252.14 and infinity.³² Per acre final costs on the Piute project

³¹The reports of both the Board of Land Commissioners and the State Engineer from 1910 until 1937 contain many descriptions of the activity on this project. Contracts and legal actions are included in the Board of Land Commissioners' reports.

³²William M. Timmins, "The Failure of the Hatchtown Dam, 1914," Utah Historical Quarterly Volume 36 Number 3, pp 263-273 claims that no additional land was brought under irrigation after the washout. If this is true the cost per acre approaches infinity. The Board of Land Commissioners claimed that some additional land was brought under irrigation by the existing canal system utilizing only diversion structures. Under these assumptions the lower

were \$32.50.³³ At the time these project were contemplated, the average value per acre of improved farmland, with functional irrigation systems and farm buildings in place, was only \$34.³⁴ Initially, the state planned to spend somewhat less than the cost of buying land to "produce" more useable land. However, by the time the projects were completed the state had spent considerably more money than the land was worth. This contributed to the repayment difficulties faced by the farmers under the project.

Thus, the projects were failures on two counts, first the defaults caused the state to lose a substantial portion of the reservoir land grant fund, and second, the projects produced irrigated land at a greater cost than the value of that land in production. After the dismal experiences associated with these two projects, the state's water management officials ceased acting in the role of direct developer. The main responsibility for financing and building water projects was shifted from the state budgets to other parties interested in water development.

cost figure per acre of \$252.14 is obtained.

³³Using the state's selling price (the legislature specified the price had to equal the costs) of \$1,300,272 and the acreage figure of 40,000 acres.

³⁴United States Bureau of the Census, Thirteenth Census of the United States taken in the Year 1910, Volume VII, Agriculture 1909 and 1910, Nebraska - Wyoming, (Washington D. C.: Government Printing Office, 1913), p 720. Underlining by author.

The Reservoir Land Grant Fund

Smaller, but in the same class because of the seriousness of the financial difficulties involved, are certain other land grant financed projects and activities. Notably these included the farm loan program, which will be discussed in the next chapter, and two substantial water projects in central and eastern Utah. Over the years, the Land Commissioners had invested money from the reservoir land grant fund in the bonds of the Central Utah Water Company in Millard County and the Carbon Water Company in Carbon County. By 1928, the amount that was in arrears for the Central Utah Water Company was \$461,154, and the Carbon Water Company payments were \$122,300 behind for a total of \$583,454. At the time, there was little hope that either the interest or the principal would be returned to the reservoir land grant fund.³⁵

All in all, the picture was bleak. On the Hatchtown and Piute projects costs had first escalated and then buyers had defaulted. The Central Utah and the Carbon Water companies were in default, and the Board of Land Commissioners had to deal with problems of bad loans and

³⁵The initial cost of the bonds is not available. However, in 1928 the value of the unpaid principle and interest on the bonds of the two companies was: Central Utah Water Company \$461,154; and the Carbon Water Company \$122,300. State of Utah, "Sixteenth Biennial Report of the Board of Land Commissioners for the Years 1927 and 1928," Public Documents.

debts associated with the farm loan program during the closing stages of the time period under discussion and on into the next decades. As a result, the state's reservoir land grant fund was significantly short of money for water development.

The Legislature's Response

The State Land Board attempted to minimize losses by working to keep farms in operation after Depression economics caused farmers to fall behind on their payments. The balance of the farm loan account steadily decreased after 1928, and the program itself was discontinued in 1933. By that time, the state had adopted a policy of foreclosure and resale of delinquent properties in an attempt to replenish the reservoir land grant fund. The board also refinanced the Carbon Water Company and assumed control of its assets in 1932.³⁶

Due to mounting financial deficits and political pressure growing from the Land Board's various water development programs, the legislature took action in 1937. It dealt with the financial problems of the Piute project owners and the Central Utah and Carbon Water companies by excusing their debts to the state upon the payment of \$1 to

³⁶An account of the foreclosure on the Carbon Water Company's assets is in State of Utah, "Twentieth Biennial Report of the State Land Board for the Years 1935 and 1936," Public Documents, p 12.

the state of Utah by each organization.³⁷ Thus, the legislature had written off the debts incurred for the construction of the projects, allowing them to continue to operate in a condition where only their ongoing and maintenance costs needed to be covered by the new owners to remain operating.

The total cost to the state of Utah in the direct water development experience was substantial. In addition to the direct costs mentioned above, the state's reservoir land grant fund lost the interest from the date of investment to 1937. The direct cost plus interest of the two state projects and the two private companies in 1937 is estimated to have been \$4,405,789.³⁸

To calculate the loss to the state's reservoir land grant fund, the payments the state received with interest need to be deducted from the above figure. The sources from which payments were received were as follows:

³⁷State of Utah, Laws of the State of Utah Passed at the Regular Session of the Twenty-Second Legislature Convened at the Capital in the City of Salt Lake January 11th, 1937 and adjourned Sine Die on March 11th, 1937 (Kaysville, Utah: Inland Printing Company, 1937), Chapters 154, 155, 156, pp 266-267.

³⁸This figure is only for the expenditures from the reservoir land grant fund. The present value of costs of the Hatchtown project are computed only through 1925, at that time the court assigned a third party to run the project and the state's relationship with the project was at an end. The reason for not stopping the interest charges on the Central Utah Water Company's bonds is that the Land Board assumed ownership only under the condition that the bonds would still be honored. (See note 39 below for the net loss to the land grant funds).

(1) Payments made on the Piute project before selling the project to the water users in 1920. These were effectively zero because they had been deducted by the state officials in the selling price of \$1,300,272.

(2) Payments made by the Piute project's owners after 1920. The state only received one payment of \$65,000 before the Piute project owners quit making payments altogether.

(3) Two down payments made by the Hatchtown project buyers, of \$9,000 and \$3,000, made in 1919 and 1923 respectively.

(4) Bond payments by the Central Utah and Carbon water companies. The bonds are valued at their 1928 balance in the above cost figure. After 1928 no payments were received by the Land Commissioners.

(5) The token payments on their respective debts made by the Piute project's owners, the Central Utah Water Company, and the Carbon Water Company of \$3 in 1937.

After deducting these payments and their accumulated interest from the total cost, an estimate of the loss sustained by the reservoir land grant fund when the debt was excused is \$4,229,206.³⁹

³⁹The estimated loss was calculated as follows:

A. From the cost data at the time of completion or investment the following figures are obtained.

Hatchtown cost

| | | |
|--|---------------|---------------|
| \$ 179,828 (1910) | value in 1937 | \$ 373,849.50 |
| (interest calculated only until 1925, see note 35) | | |

Piute cost

The state's experiences in the role of total developer can only be classified as being close to total failures.⁴⁰ In the activities associated with the role of providing money for private development, the state experienced mixed results. When it provided money to co-operating groups of water users by purchasing water district bonds and securities, the state also failed; however, prior to 1928 it

| | | | |
|--|--------------------------------------|---------------|-----------------------|
| | 1,018,000 (1914) | value in 1937 | 3,126,811.18 |
| Bond cost | | | |
| | 583,454 (1928) | value in 1937 | 905,128.65 |
| Current value of costs in 1937 | | | <u>\$4,405,789.32</u> |
| B. Deducting payments with interest | | | |
| Hatchtown | 9,000 (1919) | value in 1937 | 21,659.53 |
| | 3,000 (1923) | value in 1937 | 5,939.79 |
| Piute | 65,000 (1920) | value in 1937 | 148,981.19 |
| Bond | no payments were received after 1928 | | |
| Payments from the three water companies | | | |
| Panguitch, Central Utah, and Carbon | | | 3.00 |
| current value of payments in 1937 | | | <u>176,583.51</u> |
| C. Net loss of Reservoir Land Grant Fund | | | |
| | in 1937 | | <u>\$4,229,205.81</u> |

⁴⁰To get a perspective of the problems encountered during this period see: O. W. Israelsen, Drainage and Irrigation, Soil, Economic, and Social Conditions, Delta Area, Utah: Division 1, Drainage and Irrigation Conditions. Utah State Agricultural Experiment Station Bulletin, 255, (Logan, Utah: Utah State Agricultural College, 1935). And D. S. Jennings, and O. W. Israelsen, Drainage and Irrigation, soil, economic, and Social Conditions, Delta Area, Utah: Division 2, Drainage and Irrigation Conditions. Utah State Agricultural Experiment Station Bulletin, 256, (Logan, Utah: Utah State Agricultural College, 1935).

realized some limited success through the farm loan program and the practice of lending money to fund private profit oriented development. In its third role, that of joint ventures with the federal government and local water users, the state promoted the most successful projects of the time period. It is to these successful efforts that we now turn our attention.

Joint Projects and State Activities

Faced with the problems associated with state designed, financed, and promoted water development Utah's governors, the legislature, and various water development agencies sought new alternatives. The two roles which were endorsed between 1906 and 1921 were (1) a joint relationship with the Reclamation Service, and (2) the practice of funding non-state directed development through a series of loan programs. The joint relationship with the federal government will be the subject of this section. The funding of cooperative and profit oriented development will be discussed in the next.

In an attempt to enhance the role of the state as a joint partner with the federal government in water development, Utah had taken various steps to ensure that its interests would be represented. The 1903 legislature established the Arid Land Reclamation Fund Commission. As mentioned in the last chapter, this commission's major

responsibility was to attract federal dollars for water development.⁴¹

In 1903, this commission, the Board of Land Commissioners, the Office of the State Engineer, and the United States Reclamation Service combined efforts to begin the work of planning the Strawberry project. In 1906 construction was initiated. The Strawberry project was the federal government's first reclamation project in Utah and one of the first in the nation. The project involved an interbasin transfer of water by means of a tunnel 19,000 feet long. Bored through the mountain ridge separating the Great Basin and the Colorado River drainage system, this tunnel delivered water to central Utah's Diamond Fork Creek, which emptied into Spanish Fork River. The tunnel was capable of carrying 500 cubic feet of water per second. Water was drawn from a storage reservoir built on the Strawberry River. The reservoir's dam was 71 feet in height and 490 feet in length. Also included in the project was a structure 1300 feet in length and 37 feet in height around the rim of the reservoir where the natural basin elevations

⁴¹State of Utah, Laws of the State of Utah (1903), Chapter 71, pp 60-61.

were of insufficient height.⁴²

The reservoir and tunnel allowed Utah Valley water users to have access to water from the Colorado River Drainage Basin. The water was used to reclaim both new land and to supplement existing supplies. All told, the project supplied water to a total of 60,000 acres. The project was designed by both state and federal officials, but the project funding came from the federal government. The reclamation service played the dominant role in construction. Initially, the water users agreed to pay back the costs of construction over a ten-year period after completion. The federal government did not require interest to be paid on the contract. As a result of the financial hardships caused by the Depression, repayment was eventually extended to a period of forty years, as it was on other federal reclamation projects.⁴³

The water users were organized into the Strawberry

⁴²See State of Utah, "Sixth Biennial Report of the State Engineer to the Governor of the State of Utah for the Year 1907 and 1908," Public Documents and State of Utah, "Eight Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1911 and 1912," Public Documents. Particularly p 158 in the "Sixth Report" for a good account of the work in progress.

⁴³Two works which give excellent accounts of the project, the individuals involved, the state's activities and the projects long-term effects are: Thomas Alexander, "An Investment in Progress: Utah's First Federal Reclamation Project," Utah Historical Quarterly Volume 39, p 286. And David Merrill, and Donald L. Snyder, "An Historical Mitigation Study of the Strawberry Valley Project, Utah." Prepared for the Bureau of Reclamation, Upper Colorado Region, Salt Lake City, Utah. 15 July 1982.

Valley Water Users Association. This group was legally responsible to repay the project's debt to the government. Utilizing the water district laws and the provisions of the national Reclamation Act of 1902, farmers were able to organize in such a way that each was liable for only the amount of debt assigned to their individual farm. The federal government had originally wanted to hold the entire project's farmlands as collateral. However, the individual farmers did not want to be in a position where profitable farming operations could be repossessed or assessments raised because other unprofitable farming operations were unable to meet their payment obligations. This twist of both the repayment organization's and the individual farmer's responsibility was a Utah innovation. It allowed for the water-users association as a group to make a lump payment. It left this association with the responsibility to deal with individuals who did not meet the repayment schedule. In this way, only the individual who failed to meet the repayment schedule would be in danger of losing water and/or land rights.⁴⁴

Through this partnership, state officials were able to

⁴⁴The Reclamation Service originally wanted to hold title for all the water rights served by the project until it was paid for, however: the contract was modified so that each water user was individually liable. The contract is reprinted in United States Reclamation Service, Fourth Annual Report of the Reclamation Service, 1904-1905 (Washington D.C.: Government Printing Office, 1906), pp 333-334.

reduce the state's financial risk associated with water development to zero. Yet it retained some control over the pattern of development, as its water management officials worked with the reclamation service designing projects. The state's commitment did not extend beyond the normal operating budgets of the state's water management officials. Further, there was no commitment on the state's part to guarantee repayments, fund structural repairs, or provide for the operating expenses of projects. The state's water management officials' specific roles relating to the Strawberry project were:

- (1) Through the Arid Land Reclamation Fund Commission (and later the Utah State Conservation Commission) it coordinated the many different interests involved in the project.

- (2) Through the Office of the State Engineer it certified that sufficient water rights were available to enable the project to succeed.

- (3) It influenced and monitored development as the State Engineer participated in the design process.

- (4) It utilized institutional organizations to help the water users organize into an acceptable repayment associations.

The state also played something of a support role for the federal government in water development undertaken by the Bureau of Indian Affairs. This agency was engaged in

building irrigation structures on the Uintah Indian Reservation from 1902 through 1917. Total federal investment in these efforts was \$915,000.⁴⁵ The majority of this construction money was paid to Anglo-American farmers, who were themselves attempting to establish irrigated agriculture in the area. Uinta Basin farmers were able to fund much of their own irrigation development by working for the Indian Bureau. Since white settlement on the reservation had not been allowed until late 1905, most farmers were in the first few years of their settlement operations and made a very willing work force for the Indian Bureau. In addition to this monetary help, settlers were also able to partially utilize the Reservation's Indian irrigation canals for their own fields. Many of the canals and water rights eventually functioned under the settlers' rather than the Indians control.⁴⁶

Since the projects were on an Indian reservation and

⁴⁵Craig W. Fuller, et al. Beyond the Wasatch: The History of Irrigation in the Uinta Basin and Upper Provo River Area, Editor Gregory D. Kendrick. Introduction Charles S. Peterson. (National Park Service Regional Office in Denver, 1989), Chapter 2.

⁴⁶Ibid., See Chapters 1 and 2 for a general description of the policies, and p 30.

Clearly, Mormon farmers benefited most from the irrigation system designed and built to promote agricultural self-sufficiency within the Uintah Indian Reservation. The Utes, on the other hand, became the unwilling financiers of an expensive irrigation system which few Indians wanted or ultimately used. . . . Rarely has a major federal irrigation, however, been so quickly deflected from its original intent.

involved federal dollars, the state's water development officials had less input into the design and planning of Uinta projects than they had with other federal projects in the state. However, because congress instructed the Bureau of Indian Affairs to follow state law in water matters, the Office of the State Engineer did control the process by which water right applications were recorded in the area during and following the federal survey and construction periods.⁴⁷ The Office was therefore well informed about the type and amount of water development being attempted in the area, both from federal funded projects and privately initiated efforts. As a result, the water rights of Utah's non-Indian citizens were protected at the distinct disadvantage of Indian rights.⁴⁸

⁴⁷Ibid., p 23. Partially quoting Act of 21 June 1906, ch. 3504, 34 Stat. 357, Public Law 258, (Uintah Reservation)

The Act of June 21, 1906, provided that all Indian Irrigation Service 'systems be constructed and completed and held and operated, and water therefore appropriated under the laws of the State of Utah.'

⁴⁸Ibid., pp 22-23.

From the time of allotment in 1905 until 1922, Government agents, engineers, and the Uintah Indians fought a State of Utah water rights system which was stacked against them. . . . In many instances, the effort of whites to obtain reservation water actually preceded allotment. On the western side illegal canals had been constructed. On the eastern side, settlers crowded against the reservation and then applied for the right to divert water.

Private Efforts and State Funding

The role of the state as a financier and inspector of private efforts must now be examined. In 1907, the legislature had changed the laws regulating the reservoir land grant fund to allow loans to private corporations or associations engaged in the process of building reservoirs and irrigation canals.⁴⁹ The 1907 guidelines allowed the Land Commissioners to exert general control over all water development structures financed with funds it controlled. Other laws provided that the State Engineer's Office had to approve all construction plans for reservoirs. The combination of these two provisions meant that the state assumed a large measure of control over the type of irrigation and storage structures, and the placement of such structures being built.

This arrangement enabled the state to shift the risks associated with construction and promotion to private

⁴⁹State of Utah, Laws of the State of Utah (1907). The change which allowed the land commissioners to loan the reservoirs funds to private corporations or associations reads as follows:

. . . and the State Board of Land Commissioners is hereby authorized and empowered to loan the reservoir land grant fund to corporations or associations within the state of Utah for the construction or completion of reservoirs, whether public or private, at a rate of interest not to exceed five per cent per annum, in such sums, for such securities, and for such periods of time as in its judgement will promote the interests of the state and encourage the construction of reservoirs for agricultural purposes. . . .

parties, yet the state still had the power to influence the type of storage structure which would be built. A further advantage to lending money rather than functioning as the developer was that the state eliminated the open-ended commitment which ballooned the cost of the Hatchtown and Piute projects.

In 1907 and 1908, the Board of Land Commissioners loaned money from the reservoir land grant fund to four separate water development companies. The Mammoth Reservoir was funded with a loan of \$100,000. The Sevier Bridge Reservoir was extended a loan of \$70,000. The Otter Creek Reservoir project received a sum of \$7,500. And the Koosharem Reservoir Company borrowed \$10,000. Thus, a total of \$187,500 was extended by the board under the guidelines of the 1907 law during the biennium following its passage.⁵⁰

In addition, many state approved reservoir projects were privately funded. These reservoirs were mostly designed for irrigation or other agricultural purposes. However, municipal and hydroelectric generation facilities were also approved. The State Engineer's Office also approved hundreds of water right applications. Six separate classifications of water rights were recognized. These were: (1) domestic and municipal, (2) irrigation, (3) power,

⁵⁰State of Utah, "Sixth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1907 and 1908," Public Documents, p 96.

(4) mining, (5) stock watering, and (6) miscellaneous.⁵¹ The varied nature of these classifications reflected a growing economy that had many uses for water. The State Engineer's Office averaged more than 1,000 water right applications per biennium during the first ten years of the period under study. To demonstrate the amount of activity in the area of claiming and using water resources, the State Engineer's Office in 1914 included in the "Ninth Biennial Report" a summary of the action on water right applications received up to that date. A total of 2,395 water right applications were in good standing, and 3,579 had been rejected, withdrawn, or had lapsed.⁵² As can be seen, many applications were never perfected. However, the large numbers show that there was a great deal of interest in water development.

⁵¹Classifications are given in State of Utah, "Tenth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1915 and 1916," Public Documents, pp 178-180.

⁵²State of Utah, "Ninth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1913 and 1914," Public Documents, p 191.

Table 3 ⁵³

Water Applications, Dams Approved, and State Engineers

| Biennium | Construction Plans Approved | Number of Water Applications | State Engineer Dates Served |
|----------|--------------------------------|---------------------------------|-----------------------------------|
| 1897-98 | 7 | na | Willard Young May 97-July 1898 |
| 1899-00 | 3 | na | R. C. Gemmell Aug 98-June 1901 |
| 1901-02 | 7 | na | A. F. Doremus |
| 1903-04 | 9 | un | 1901-March 1905 |
| 1905-06 | 6 | 1154* | Caleb Tanner |
| 1907-08 | 8 | 1080 | 1905-March 1913 |
| 1909-10 | 3 | un | |
| 1911-12 | 5 | 1289 | |
| 1913-14 | 23 | 1040 | W. D. Beers |
| 1915-16 | 14 | 1076 | 1913-May 1917 |
| 1917-18 | 10 | 858 | G. F. McGonagle |
| 1919-20 | 6 | 775 | 1917-April 1921 |
| 1921-22 | 14 | 495 | R. E. Caldwell 1921-July 1924 |

na No applications were required before 1903, see note (*) below.

un Unavailable. Applications were received during this biennium but no report was given on the number.

* This is the number of applications received between the passage of the 1903 law and the end of the 1905-06 biennium.

Of the eighty-nine reservoir plans approved by the State Engineer's Office through 1922, four were funded by loans from the Board of Land Commissioners. The private

⁵³All information contained in Table 3 was taken from State of Utah "First Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1897 and 1898," Public Documents through State of Utah, "Thirteenth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1921 and 1922," Public Documents.

efforts of individual companies apparently resulted in the construction of many of the others.⁵⁴ These private efforts came at a time when the state's own efforts at direct development were meeting with little success. The success of the reservoir loans to private companies is indicated by the fact that most of these projects paid back the money and provided the services for which they were designed.⁵⁵

The total effect of the private, local, state, and federal efforts was an increase in the amount of irrigated acreage and an upgrading of the existing irrigation facilities throughout the state. The Utah Bureau of Statistics reported in 1915 that there were over 500 reservoirs in Utah, 6,000 miles of canals, 2,000 miles of laterals, and over 650,000 acre feet of storage capacity. The bureau also reported that over \$20,000,000 had been spent by Utahns on irrigation structures and water

⁵⁴Jay M. Bagley, "Utah's Water Development Framework". Prepared for a series of symposiums proposed by Governor Scott Matheson, March and April, 1979. Private reservoir locations are displayed on a map of the state on p 11.

⁵⁵Of the four privately designed and sponsored dams which were funded by the land grant loan program one, the Mammoth Reservoir, washed out. This resulted in a great loss and the owners were unable to repay the fund. At the time of the default, the balance owed was \$95,254.60 (1920). Since the original loan was for \$100,000 in 1907, the owners apparently had only been able to repay a little more than the interest. The Land Board was able to find willing buyers for the remains of the dam and its water rights. Details of these transactions are found in State of Utah, "Biennial Report of the Board of Land Commissioners for the Years 1919 and 1920," Public Documents, p 8.

facilities up to that time.⁵⁶

Policy Results of the 1906 to 1921 Period

The experiences from 1906 to 1921 with which the state's water management officials and law makers had to deal shaped water policy for many years to come. By the end of this period, state officials had virtually completed their involvement with the direct development projects, the Strawberry project, and the privately owned projects financed by the reservoir land grant fund. In the process, the state's public officials had learned important lessons that have been remembered in most subsequent periods as water policy has been formulated.

The state had established its right to be involved in specifying what a water right was, in developing institutions for granting and protecting that water right, and in setting up institutions to oversee the distribution of water resources based on the defined and recorded water rights. State law makers, through the earlier 1903 law, had decreed that the public owned the water resources and appointed the State Engineer's Office to oversee and protect the right of use of individual water users. The legislators had also implemented a system in which most of the major water development decisions were heavily influenced by the

⁵⁶State of Utah, "Eleventh Annual Report of the Utah State Bureau of Statistics for the Year 1915," Public Documents.

state's water development officials. By placing major water development decisions more in the realm of the public interest rather than purely in the private sphere, the constitutional provision requiring beneficial use could be strictly upheld. State officials dealing with major water development questions were charged to ensure that these questions were answered with the public's interest in mind.

It was also recognized that state agencies could not afford to both make the development decisions and have the financial responsibility for funding the desired developments. Though the officials sought to exert influence over, or, in some cases, control the water development decisions, at the same time they shifted the financial risk associated with those decisions onto other parties interested in water development. Those parties could be private corporations, associations of water users, or other levels and branches of government. Most notably, the federal government's resources were utilized to bear risk. However, local city and county governments also played a role through funding projects locally which were approved through the state's offices. Local groups of water users or private companies were also utilized to pay for desired water development projects.

CHAPTER VII

A TIME OF EVALUATION: DEFINING STATE AND FEDERAL
RESPONSIBILITIES 1921 THROUGH 1935

Introduction

By 1921, the state of Utah had functioned extensively in four separate arenas of water management. First, through the State Engineer's Office, it had established an effective administrative and regulatory framework. Second, irrigation and drainage districts had provided the means for joint action on the part of farmers and other water users and gave them power to bond, levy taxes, and condemn property. Third, the state had experimented with state-sponsored water development through the direct projects of the State Land Board and through lending programs which funded the private initiatives of individual farmers and various mutual irrigation companies, districts, and corporate entities. And fourth, it had worked with the United States Reclamation Service and other federal agencies to build large federally-funded storage and distribution systems.

The state's success in these water management programs was varied. In the realm of administration and regulation, the Office of the State Engineer was functioning well by 1921. The Board of Land Commissioners was still working to

wind up its affairs with the Hatchtown and Piute projects but had otherwise withdrawn from any direct roles in water management. As the decade progressed and during the 1930s, its indirect role as financier of small water improvements through the state's farm loan program was doing relatively well but faced mounting troubles.¹

Between the years 1909 and 1919, the bonding and taxing features written into the irrigation and drainage district laws enabled water users to organize effectively for local projects. The result was that irrigation and drainage districts were much used, although not invariably successful institutions. Indeed, by the early 1920s many districts confronted overwhelming difficulties. For example, an irrigation district organized on the Blue Bench in Duchesne County resulted in a continuing round of challenges and led ultimately to failure. The district issued bonds that were at first ignored by buyers. After 1921, the Jessie Knight Construction Company took an interest in the project originally proposed by the district. This Company led an unsuccessful effort to build a technically difficult delivery system. Unable to irrigate their farms or retire their bonded debt, farmers left the Blue Bench area. In an effort to cut its losses, the Knight company took over the farms in the district during the 1930s; and ultimately,

¹See Table 4, p 188.

after a futile struggle, failed itself in 1949.² Drainage districts at Delta went through a succession of reorganizations as reclamation costs there escalated and generations of farmers failed.³ Millard County took over many farms for unpaid taxes. Similarly, irrigation projects like the Bonneville District in Davis County, which proposed to pump water from the Jordan River to the benches above Bountiful and Centerville, first enjoyed brisk sale of their bonds as buyers counted on Mormon integrity and resourcefulness. The district suffered a total loss of credibility as drought and water right problems caused them to default.⁴

Yet the drainage and irrigation districts were indispensable tools which featured not only in the problems of water development but in its successes as well. For example, land owners in Cache Valley organized an irrigation district to pursue the Oneida project which ran the full gamut of slow sale of bonds, charges of malfeasance, and years of near bankruptcy. The project ultimately became a

²Blue Bench files, Jessie Knight Collection, Brigham Young University Library.

³Merrill Kay Ridd, "The Influences of Soil and Water Conditions on Agricultural Development in the Delta Area, Utah," (Dissertation, Northwestern University, Department of Geography, Evanston, Illinois 1963).

⁴See Charles S. Peterson's introduction to Craig W. Fuller, et al. Beyond the Wasatch: The History of Irrigation in the Uinta Basin and Upper Provo River Area, Editor Gregory D. Kendrick. Introduction Charles S. Peterson. (National Park Service Regional Office in Denver, 1989).

financially and technically superior system after the Amalgamated Sugar Company rescued it with infusions of cash.⁵

Reassessing the Role of the State in Water Development

In the arena of water development, the state's officials had met both failure and success in the years prior to 1921. As the sorry course of events with the Hatchtown and Piute projects unfolded, it had become increasingly clear by the mid 1920s and 1930s that the state had failed in its direct development efforts. State subsidies to private projects in the form of bonds and direct loans for reservoirs also met with difficulties. Although the state was highly selective in the nature of the private projects to which it gave aid, some of them experienced difficulties similar to those met on the Delta and Bonneville districts. Because of these difficulties and the availability of other development alternatives, the state subsidy programs were eventually discontinued.⁶ The individual state-funded development efforts of the farm loan program also met serious problems after initial success.

The most successful water development projects during

⁵Charles S. Peterson, "Irrigation's Development and Patterns of Life in Utah," Utah Science (Summer 1985), p 42.

⁶The Board of Land Commissioners was the main agency through which subsidies could flow. All of the Board's programs relating to water development were eventually discontinued.

the beginning decades of statehood were those primarily sponsored by the developmental institutions provided by the federal government. The most notable of these were the Bureau of Indian Affairs' Uintah Irrigation project and the Strawberry project. For the Uintah project, the state's role was not one of direct involvement, but water right applications for the project and surrounding areas still flowed through the state engineer's office. Although the Uintah Irrigation project left much to be desired from the standpoint of Indians, the Bureau of Reclamation's efforts were seen as a success. For the Strawberry project, the state acted as both a partner in the planning process and as a coordinator between the federal government and local water-user associations. As the Strawberry project approached its completion (1922), the state's poor record made it ever more clear that the water development role of the state needed to be redefined.

As it became apparent that future water development would be increasingly more complicated and costly, state agencies relied more on the federal government as developer and financier. As a consequence, state efforts to participate directly in development were de-emphasized. The state continued in its role as the regulator and planner for water use. In addition, it established policy and organizations that would help attract federal dollars. These organizations facilitated the coordination of

development efforts in Utah as well as met new needs in the area of urban water and flood control.

Changing Management Framework

It is important to be aware that the process by which the federal government became a primary force in water development took place over many years. We have seen how early federal land laws prompted the establishment of the State Land Board and other early agencies. While in one sense this contributed to the development of the state's water managing machinery, in another it heralded the growing importance of the federal government.

Indeed, the state may be said to have begun the process of withdrawing from direct development of water as early as 1903, when the Arid Land Reclamation Fund Commission was established as a response to the Reclamation Act of 1902.⁷ The Arid Land Commission had an unsure beginning. The commission functioned for only two years before it was abolished. On the other hand, it had identified projects that were later built by the Bureau of Reclamation.⁸

The next portent of the state's growing reliance on the federal government for direct water development was the establishment of the Utah State Conservation Commission in

⁷State of Utah, Laws of the State of Utah (1903), Chapter 71, pp 60-61.

⁸The Strawberry being the most notable project proposed by the Utah Arid Land Reclamation Fund Commission.

1909.⁹ Modeled in some degree after the Arid Land Commission, the State Conservation Commission had been frankly aimed at increasing Utah's ability to attract federal reclamation and water development dollars to the state.¹⁰ Governor William Spry stressed this point in 1909 in his executive address to the legislature:¹¹

There is need of a more careful conservation of the natural resources of our country. The creation of a State commission for that purpose is now a necessity; which commission should co-operate with the federal government and inquire into the condition of our natural resources; prevent as far as possible the waste and destruction of the natural wealth of the State, and promote the greatest good to the greatest numbers in the use thereof; . . . conserve and develop the water supply, and generally do everything possible in the way of conserving the natural resources of the State and the nation.

Between 1917, when the Conservation Commission was abolished, and 1921, the state apparently had no agency that was directly charged with the overall responsibility of water development, planning, and promotion. World War I diverted attention until 1919, but also created a time of abnormal prosperity and optimism in Utah agriculture and industry. After the war ended, but before this buoyant mood had deteriorated in the face of hard-times and drought,

⁹State of Utah, Laws of the State of Utah (1909), Chapter 103, pp 224-225.

¹⁰Ibid., Section 4. pp 224-225.

¹¹William Spry, "Executive Message to the Eight Session of the Legislature of Utah," Public Documents, p 37. Date of address January 12th, 1909. Emphasis added.

people began to think about the waters of the Colorado River. California and other lower basin states, which were claiming prior rights to the river's water, were recognized as threats to any rights Utah might have to the Colorado's water. These waters were in the main unused, unfilled, and unplanned for.

Utah's position was precarious. Although the Strawberry project and numerous lesser diversions had transferred a limited amount of Colorado Basin water into the Great Basin, little had been done in the way of overall planning or development to take advantage of Utah's full share of the Colorado River. As the movement that led to the Colorado River Compact took form, Utah's were once again prompted to think about questions of basin-wide and even state-wide water planning.¹²

The Utah Water Storage Commission

A number of factors were involved in the establishment of the Utah Water Storage Commission in 1921.¹³ On the one hand, the Storage Commission was a response to an outside

¹²Since the Colorado River flowed through many states and two countries, cooperation on any type of a water project involving the River was essential.

¹³On Utah Water Storage Commission see State of Utah, Laws of the State of Utah Passed at the Fourteenth Regular Session of the Legislature of the State of Utah which Convened at the Capital in the City of Salt Lake, January 10th 1921 and adjourned Sine Die on the 10th Day of the March, 1921 (Salt Lake City: Arrow Press, 1921), Chapter 71, pp 187-188.

challenge to water resources within the state's boundaries. Without extensive developments on the Colorado Plateau, Utah could claim water from the Colorado River only by the fact that it fell in the state and ran through it. On the other hand, earlier failures made it clear that participation in the actual projects of water development was costly and often of limited utility.

With respect to organizing water development activity, Utah Water Storage Commission was the successor to the Utah State Conservation Commission of 1909. Like the earlier institution, its role was to work with private and federal interests to prioritize potential projects and get them underway. It consisted of the state engineer and six citizens appointed by the governor. It was empowered to investigate the "full and proper development and utilization" of the state's water and to conduct surveys, render plans, and make estimates of costs. Legislative fiat also directed it to "co-operate in all water development" with "any county or counties, city, state, federal, or other agency" interested in water development. Finally, in a clause that reveals the legislature's concern for outside challenges to its water, the Commission was directed to within a year create a master plan for water development and propose a "definite program" to put it into effect.¹⁴

Thus, the Utah Water Storage Commission had the

¹⁴Ibid.

responsibility to prioritize water development possibilities, plan for the best use of water resources, and bring regional and federal interests into harmony with state goals. Among other things, it identified water users with the potential to pay back the costs, and served as a negotiator between them and the Bureau of Reclamation. Between 1921 and 1941, it approved and coordinated all Utah projects undertaken by the Bureau of Reclamation.¹⁵

In addition, it helped solve problems that surfaced as water development progressed. As an example it was asked to investigate alleged wrong doings by the Bonneville Irrigation District's managers and work towards an equitable solution to the members complaints.¹⁶ Members of the commission also sat on the Colorado River Commission that evolved from the interstate compact that was concluded in 1922.¹⁷

¹⁵The Commission's project clearance role is demonstrated in the "Biennial Report of the Utah Water Storage Committee," contained in State of Utah, "Twenty Second Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1939 and 1940," Public Documents. It states that all projects completed in the state by the Bureau of Reclamation were first cleared by the storage commission.

¹⁶The Bonneville complaint to the Utah Water Storage Commission is explained in the "Report of the Utah Water Storage Commission," contained in State of Utah, "Fifteenth Biennial Report of the State Engineer to the Governor of Utah for the Years 1925 and 1926," Public Documents, Chapter IX, p 34.

¹⁷The governor appointed the state engineer to be Utah's delegate to the conference where the Colorado Compact was drafted. After the Utah Water Storage Commission was created in 1921 it was also given the responsibility of

During its twenty years of activity, the Storage Commission worked with the Bureau of Reclamation to investigate and initiate activity on many projects. The Utah Water Storage Commission lost no time in getting started. In reporting on the commission's work in 1924, State Engineer Lloyd Garrison said:¹⁸

The chief duty of the Water Storage Commission has been to cooperate with the United States Bureau of Reclamation in the work of investigating and making reports upon reclamation projects in this state.

The following projects were built by the Bureau of Reclamation after being approved by the Storage Commission: the Hyrum, Ogden River, Moon Lake, Sanpete, Provo River, and Current Creek projects.¹⁹ Four of these were made possible because the Storage Commission (and other Utah officials) was able to convince the federal government to direct special funds from the Federal Emergency Administration of Public Works Fund towards Utah projects. The Hyrum and Ogden River projects were started in 1934, and the Sanpete

working with the federal government and other states to promote a Colorado River project.

¹⁸State of Utah, "Biennial Report of the Utah Water Storage Commission," contained in the "Fourteenth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1923 and 1924," Public Documents, p 56.

¹⁹Information concerning these project's construction and the details of the interaction between the Utah Water Storage Commission and Bureau of Reclamation are contained in State of Utah, "Twenty First Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1937 and 1938," Public Documents, pp 78-97.

and Moon Lake projects followed in 1935. These projects were financed with work program funds administered by the Bureau of Reclamation, which had originated in programs designed to fight the national economic depression.²⁰

In addition, investigations were conducted and recommendations for future construction made for the Big, Otter, and the Woodruff projects located in Rich County; the Beaver, Porcupine, and Newton projects in Cache County; the Lower Weber River and Balley Watts projects in Davis and Weber Counties; the Price River-Gooseberry-Emery project which involved Carbon, Emery, Utah, and Sanpete Counties; the Blue Bench project located in Duchesne County; the Ouray project located in Uintah County; the Sheep Creek project located in Daggett County; and most extensively the Colorado River-Great Basin project involving the Uintah, Duchesne, Utah, Sanpete, Sevier, Millard, Juab, and Salt Lake Counties.²¹ In addition to the functions of water management carried on by the Storage Commission, regulatory, administrative, and indirect developmental roles were carried out by the Board of Land Commissioners and the state

²⁰"Biennial Report of the Utah Water Storage Commission," contained in State of Utah, "Nineteenth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1933 and 1934," Public Documents, p 46.

²¹State of Utah, "Twenty First Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1937 and 1938," Public Documents, pp 78-97.

engineer's office.

The Board of Land Commissioners

By 1921, the Board of Land Commissioners was a mature agency. With respect to water development, its duties were progressively diminished in the years that followed. Indeed, no new direct development projects were initiated under the Board of Land Commissioners after 1908. The only Board involvement in direct development after the end of World War I was that associated with minimizing losses on the Hatchtown and Piute projects. The Board of Land Commissioner's role as a funding agency for private water development also decreased in importance as time passed. Board activities were eventually limited to the protection of the state's interests in land development, mineral rights, and resource ownership.

However, because of the farm loan program the Board of Land Commissioners still had indirect impacts on water development and land reclamation in the years after 1921. Its role in this context can be best understood by reviewing the stages of the farm loan program. During the earliest years, from 1897 to perhaps 1910, it was successful. It was used mainly to finance improvements on individual farms, including irrigation systems. Loans were small and interest charges low. The farm loan program thereby promoted growth of Utah's agricultural sector. Initial success led the

legislature to expand the farm loan program in 1911.²² That year the Board of Land Commissioners was instructed to give farmers first preference in the Board's allocation of funds. For the next fifteen years the board followed a liberal lending policy of requiring very little capital and by 1926 it had some \$5,820,000 in outstanding loans. Although the rising complexity of development as project size increased detracted from the effectiveness of this small loan procedure, the 1911 to 1926 period may also be judged to have been fairly successful. Problems eventually developed because the reservoir land grant funds on which the farm loan program depended were overextended, and because many recipients defaulted on repayment or made only partial repayment.²³

In the years after 1926, the farm loan program faced serious problems. Times were hard economically, agricultural prices poor, dependable crops like alfalfa seed were blighted, and a long era of diminished moisture was beginning. Irrigation and drainage districts also faced numerous difficulties that impacted on the welfare of individual district members. These districts were

²²State of Utah, Laws of the State of Utah (1911), Chapter 71, Section 1, p 100.

²³Information on repayment was listed in State of Utah, "Annual Report of the Board of Land Commissioners for the Year 1911," Public Documents through State of Utah, "Annual Report of the Board of Land Commissioners for the Year 1928," Public Documents.

recipients of Reservoir Land Grant Fund loans and included individuals who borrowed from the fund. All told, farmers found it increasingly difficult to repay loans. Although the Board was keenly aware of mounting difficulties by 1926, it continued to expand its loans until 1928, when it had nearly \$6,000,000 outstanding.²⁴

By 1930, the state farm loan program was in deep trouble. As the Board took farms on bad loans, it became apparent that money had been let on insufficient collateral.²⁵ Although the state repossessed most of the farms involved in the program, during the Depression years it had to resell them at a substantial loss rather than face the prospect of losing everything if it held onto the land.²⁶ In spite of its best efforts to move repossessed farms and otherwise maintain its cash flow, the board became the largest landowner in some agricultural areas. Finally, in 1933, the farm loan program was discontinued altogether. It was not recommended that it be resumed until 1941.²⁷

²⁴State of Utah, "Annual Report of the Land Commissioners for the Year 1928," Public Documents, also see table #4 p 188.

²⁵State of Utah, "Annual Report of the Land Commissioners for the Year 1933," Public Documents reports on the loan activity of the year.

²⁶State of Utah, "Annual Report of the Land Commissioners for the Year 1933," Public Documents reports on the process used to foreclose on and resell the bad loan properties, it also estimates the losses incurred.

²⁷In State of Utah, "Annual Report of the Land Commissioners for the Year 1933," Public Documents stated that losses and difficulties were so great that the

In addition to the above problems, structural limitations of the program caused difficulties. The farm loan program was designed to aid the individual farmer or, in cases of cooperation, small groups of individuals. The program worked well only when easily accessible, unappropriated water resources were available; then a farm loan could finance a simple diversion adequate to meet the irrigator's needs. However, as the water resources of the state became more fully appropriated, making water resources relatively more scarce, the irrigation and reclamation projects required for successful agriculture became technically more difficult, more expensive, and larger in scope. Water development projects had to either collect excess water from large areas or use long term storage. Individuals could no longer build projects capable of capturing the widely dispersed unappropriated water resources. Because individual improvements could only utilize existing supplies more efficiently, the farm loan program, as a water development institution, was no longer adequate. Thus the program was discontinued, not only because of financial losses, but because the state's water management officials realized that different water development institutions were needed. Table 4 records the

collateral for 912 loans were repossessed and the program was discontinued. State of Utah, "Biennial Report of the Land Commissioners for the Years 1941 and 1942," Public Documents suggested restarting the loan program, the legislature declined to do so.

program's success during the early years of the period under study and its later problems.

Table 4 ²⁸

The Value of New Loans and the Total of Loans Outstanding (when available) from 1921.

| Year | \$ Value of New Loans | \$ Value of Total Loans Outstanding |
|--------|-----------------------|-------------------------------------|
| 1921 | 664,350 | |
| 1922 | 727,385 | |
| 1923 | 1923 1924 combined* | |
| 1924 | 2,657,651 | 5,597,884 |
| 1925 | 1925 1926 combined* | |
| 1926 | 636,760 | 5,820,180 |
| 1927 | 755,894 | |
| 1928 | 470,000 | 5,962,524 |
| 1929 | 513,800 | |
| 1930 | 968,500 | 5,915,014 |
| 1931 | 105,900 (437,900) | |
| 1932** | 142,600 (469,84) | 5,854,069 |
| 1933 | 49,400 (64,700) | |
| 1934 | 300 (27,700) | 5,629,923 <2,178,861> |
| 1935 | 0 | |
| 1936 | 0 | 4,513,065 <2,714,045> |
| 1937 | 0 | |
| 1938 | 0 | 4,336,297 <2,568,695> |
| 1939 | 0 | |
| 1940 | 0 | 3,893,564 <1,267,007> |
| 1941+ | 0 | 1,110,559+ |
| 1942+ | 0 | 960,933+ |
| 1943+ | 0 | 898,529+ |
| 1944+ | 0 | 434,006+ |
| 1945+ | 0 | 360,490+ |
| 1946+ | 0 | 313,413+ |
| 1947+ | 0 | 286,463+ |
| 1948+ | 0 | 254,068+ |

* Figures reported are for the total loans extended during the biennium.

²⁸All information contained in Table 4 was taken from State of Utah, "Annual Report," Public Documents and State of Utah, "Biennial Reports," Public Documents of the Board of Land Commissioners, the Land Commissioner, the Land Commissioners, 1923 through 1948.

** No new farm loans applications were accepted after November 1, 1932.

() Dollar amount of existing loans which were refinanced during the year. The total amount extended would include the new loans plus the refinanced ones. For 1931 total loans equaled \$543,800 -- \$105,900 in new loans and \$437,900 in refinanced loans.

<> The recorded dollar value of the total outstanding farm loans which the state had repossessed and either leased or idled. These loans were not refinanced. The state could find no takers. The state owned the land because they could not sell it for what they had invested. By 1940 the state had repossessed a total of 912 farms located throughout the state, and had only been able to sell about half of them. The result of this action was a loss of \$740,288 in principal from the reservoir land grant fund.

+ After 1941 the number and value of loans owned by the state was no longer reported separately.

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The Office of the State Engineer

The Office of the State Engineer was also a mature agency by 1921 with well established duties. Nevertheless, there were certain changes in emphasis that related to the growing complexity of water management that should be referred to in this chapter. Among the contributions of the Office was its emphasis on a scientific or technological approach to water utilization that set the stage for intelligent water use in the state generally. It continued to collect data, to serve as the agency of record for water applications and rights, and to regulate private use of water. Yet its duties remained basically unchanged, expanding in scope rather than function after 1921.

The administrative and regulatory duties performed by the Office of the State Engineer increased as the water resources in the state became more fully appropriated. The administration and proper regulation of the resource became more difficult. The decrease in readily available unappropriated water resources prompted State Engineer George M. Bacon to write in the "Eighteenth Biennial Report": "It is a matter of common knowledge that practically all of the public waters of the state of Utah are appropriated."²⁹ After 1915, the number of water applications received by the state engineer's office per year steadily fell until the passage in 1935 of legislation requiring ground water users to file water applications.³⁰ The decreasing number of water right applications was a reflection of the fact that there was less unappropriated water available for new water users, and that feasible water projects were becoming more complex and expensive.

²⁹State of Utah, "Eighteenth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1931 and 1932," Public Documents, p 10.

³⁰State of Utah, Laws of the State of Utah (1935), Chapter 105, Section 1, 100-1-1, 100-3-1, 100-5-12, pp 104-105, 200.

Table 5 ³¹

Water Applications, Dams Approved, and State Engineers

| Date | Number of Water Applications | Number of dams Approved | State Engineer Dates Served |
|---------|------------------------------|-------------------------|------------------------------------|
| 1921-22 | 495 + | 14 | R. C. Caldwell 1921- July 1924 |
| 1923-24 | 411 + | 7 | Lloyd Garrison 1924- April 1925 |
| 1925-26 | * + | 8 | George M. Bacon |
| 1927-28 | * + | 0 | 1925- April 1933 |
| 1929-30 | * + | 0 | |
| 1931-32 | 452 + | 0 | |
| 1933-34 | 387 (28) | 7 | T. H. Humpherys |
| 1935-36 | 719 (310)^ | 6 | 1933- Aug 1941 |
| 1937-38 | 653 (232) | 13 6# | |
| 1939-40 | 1137 (690) | 14 6# | |

* Number of applications per year unavailable. However, in 1925 the Utah Supreme Court ruled that water rights could only be obtained by application, as a result, those who had not filed (most commonly on the Weber River Drainage System) had to file applications.

() Number of water right applications which were for ground water rights in each year.

+ During these years there were a total of 32 ground water applications filed, though the law did not require it. Between 1903 and 1934 a total of 60 ground water right applications were filed.

^ In 1935 the legislature specifically required ground water users to file applications with the state engineer.

Twelve plans for dams previously built were received. They were merely filed for record. Therefore, during 1937-38 and 1939-40 there were respectively only six and seven sets of construction plans approved for new dams.

³¹ All information contained in Table 5 was taken from State of Utah, "Thirteenth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1921 and 1922," Public Documents through State of Utah, "Twenty Second Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1939 and 1940," Public Documents.

The state engineer's main problem during the 1920s was water user resentment over the control of appropriation. Some water users felt that the power granted to the Office was unconstitutional and refused to recognize the state engineer's actions. In the landmark case of Deseret v Hooppiania of March 1925, the Utah State Supreme Court upheld the law which required water applications to be filed with the Office.³² Further, it specified that the application process was the only way to secure a right to use water within the state. This ruling firmly cemented the role of the state in the administrative and regulatory arena of water management.

After the late 1920s, the office was no longer called upon to design storage reservoirs and canals for other state agencies. Although the Office of the State Engineer participated in the planning and design of projects with the Bureau of Reclamation, it was not responsible for the final design nor for approving the structures involved.

Only in the area of flood control did the design duties of the office expand. During the late 1920s, the office

³²The Utah Supreme Court upheld the constitutionality of the law which specified that the Office of the State Engineer could grant water rights, further it held that the only way to receive a water right was through the office. Deseret v Hooppiania, 66 Utah 25, 239 Pac. 479 (1925). Cited in State of Utah, "Fifteenth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1925 and 1926," Public Documents. Also State of Utah, Digest of Utah Water Law, Volume 1 (Salt Lake City, Utah: Office of the State Engineer, 1948), pp 59-61.

designed flood control structures for the Board of Land Commissioners; and after 1937, for the Utah State Soil Conservation Committee as well.

The Office of the State Engineer (along with the Utah Water Storage Commission) also worked with the Bureau of Reclamation and surrounding states to design the projects utilizing Colorado River Basin water. Necessary to these types of projects was the adjudication between the neighboring states and the federal government of the ownership and rights to the waters of the Colorado River. In 1921, Utah's governor appointed State Engineer R. C. Caldwell to represent Utah in the Colorado River Compact negotiations. (The United States, California, Colorado, Nevada, New Mexico, Utah, and Wyoming ratified the Compact in 1922. Arizona did not ratify the Compact until 1944.)

Summary: State Offices, Activities, and Policies

After the first three decades of statehood, Utah's legislators and water management officials had concluded that the state should encourage water development, land reclamation, and related economic growth by seeking federal dollars for specific projects that would enhance the efficiency of water use throughout the state, and severely restricted the use of state funds for private efforts. After 1921, the state concentrated its efforts towards expanding its role in the joint federal/state/private

development process, refining the institutions with which water users could organize to solve their problems, and funding some private initiatives. Working with the federal government on jointly-planned projects was the preferred developmental role. But for a few years the state continued to fund private companies and individual farmers with loans from the reservoir land grant fund.

State water management officials spent much of their time finishing and administering projects and programs that had been implemented or started earlier. As described in chapter 6, the state was unfortunately forced to continue work on the Piute project until 1937, because of legal obligations, and also on the Hatchtown project after repossessing project assets.

The Utah Water Storage Commission and the Office of the State Engineer, however, did not let new water development lag during this time period. The Utah Water Storage Commission worked to increase Utah's share of federally sponsored and designed reclamation projects. To a significant degree, the Bureau of Reclamation projects of the period were the result of this continued effort to develop the state's water resources. The State Engineer's Office worked on the engineering and technical problems presented by the Piute and Hatchtown projects until the state's involvement with these projects ceased. The State Engineer also served on the Colorado River Commission and as

a member of the Utah Water Storage Commission. In relation to the office's duties dealing with the private sector, the state engineer approved the plans for fifty-seven reservoirs and accepted thousands of water right applications.

The Board of Land Commissioners contributed to the development process as it made monies from the reservoir land grant fund available to individual farmers and private reservoir companies. After 1928, the land board worked to minimize the losses that outstanding private obligations caused to the reservoir land grant fund. Initially, the land board had remained willing to loan monies to interested parties who proposed workable plans for large reservoir and canal systems. However, as the effects of the Depression made themselves felt, this source of funding was discontinued.

Policy Developments

The state's water policy, after 1921, was a refinement of earlier developments and attitudes. Institutions were created that allowed the state to become more involved in the planning and design of federal projects and more attractive for such projects. The Utah Water Storage Commission, the irrigation and drainage districts, and the water users associations all helped Utah compete for project funding, which the federal government was willing to provide. This policy shifted the financial risk of the

projects to either the federal treasury or the users of the water projects themselves. Yet it still guaranteed that the state, primarily through the state engineer and the Utah Water Storage Commission, would be heavily involved in the planning, design, and prioritization of water development. This involvement allowed water management officials to influence much of the pattern of water development throughout the state.

CHAPTER VIII

IMPORTANT POST 1935 THROUGH 1947 EVENTS REFINING THE BASIC
STRUCTURES: SERVING UTAH'S WATER USERS BETTER

Introduction

After the Utah legislature established the Utah Water Storage Commission in 1921, it did little in the way of experimenting with new types of water development institutions. The only major change occurred in 1941 when the Publicity and Industrial Development Board assumed the duties of the Storage Commission.¹ By 1947, however, the legislature saw the value of having a separate agency involved with water development and created the Utah Water and Power Board for that purpose.²

Rather than depending on new institutions, the state relied on fine tuning existing relationships and laws. Change was mainly focused on institutions that allowed water

¹State of Utah, Laws of the State of Utah, 1941, Passed at the Regular Session of the Twenty-fourth Legislature Convened at the Capital in the City of Salt Lake January 13th, 1941 and Adjourned Sine Die on March 13th, 1941 (62 West Second South Salt Lake City, Utah: Arrow Press Inc., 1941), Chapter 40, p 67.

²State of Utah, Laws of the State of Utah, 1947, Passed at the Regular Session of the Twenty-seventh Legislature Convened at the Capital in the City of Salt Lake January 13th, 1941 and Adjourned Sine Die on March 13th, 1941 (62 West Second South Salt Lake City, Utah: Arrow Press Inc., 1947), Chapter 141, Sections 1-15, pp 444-449.

users to group together to build desired projects. Just as in the early years of statehood when the water district laws were developed to meet the conditions of the time, institutions were created to take full advantage of federal programs and the state of resource development. It is to these efforts, new laws and institutions, that we will turn our attention in this chapter.

Legal Changes

After 1930, the only major change in the legal status of water rights occurred in 1935. Prior to this time, ground water rights had been determined under a mix of common law precedents and local custom, rather than under the prior appropriation doctrine.³ Responding to a Utah State Supreme Court's decision in the case of Wrathall v Johnson, the legislature included ground water under the law governing the use of water resources throughout the state and directed that it be treated equivalently to all other types of water resources.⁴ All laws and principles that guided other water matters would also be applied to ground

³Before 1935 ground water was treated in a manner akin to riparian waters. For an excellent treatment of the development of western water rights in general see Robert G. Dunbar, Forging New Rights in Western Waters (Lincoln: University of Nebraska Press, 1983).

⁴Utah Supreme Court Case of Wrathall v Johnson, 86 Utah 50, 40 Pac. 2d 755 (1935). State of Utah, Laws of the State of Utah (1935), Chapter 105, Section 1, 100-1-1, 100-3-1, 100-5-12, pp 104-105, 200.

water. Ground water administration and distribution became duties of the Office of the State Engineer. This resulted in an increase in the area of responsibility but not in a change in the philosophy of the office or the law. This change in the legal status of water was prompted by the decrease in the easily appropriated water resources of the state and by a recognition of ground water's growing importance. While this increased the complexity of the state engineer's job, it integrated all water allocation decisions into one office.

State Agencies

The Office of the State Engineer

By 1930, the State of Utah had developed a comprehensive and effective system for the administration and distribution of water resources. The State Engineer's Office, created in 1897, was now issuing permits for and administering water rights, maintaining records of water flows, and inspecting and approving water structures. In addition, the office had a significant work load dealing with the increasing number of ground water applications.⁵

⁵The understanding of ground water and the problems involved was well developed by the 1930s. For an excellent treatment see: Willard Gardner, T. R. Collier, and Doris Farr, Groundwater: Part 1, Fundamental Principles Governing Its Physical Control Utah Agricultural Experiment Station Bulletin, 252 (Logan, Utah: Utah State Agricultural College, November 1934). Also see O. W. Israelsen, W. W. McLaughlin, Drainage of Land Overlapping an Artesian Ground-water Reservoir: Progress Report Utah Agricultural Experiment

The office was also kept busy by fulfilling the engineering requirements of state agencies. The office was busy dealing with the problems and challenges of designing flood control structures. In 1937, the State Soil Conservation Committee assumed responsibility for flood control but relied upon the Office of the State Engineer for technical support.⁶

Ground water issues, applications, and flood control design accounted for much of the office's activity in the years after 1935. The extent of the duties of the state engineer's office are shown in table #6.

Station Bulletin, 242 (Logan, Utah: Utah State Agricultural College, November 1932).

⁶State of Utah, Laws of the State of Utah (1937), Chapter 166, Section 2, pp 213-214. Also see State of Utah, "Biennial Report," Public Documents of the State Engineer's Office and the Soil Conservation Commission for the years following 1937. Prior to 1937 the responsibility had rested with the State Land Board and the Utah State Conservation Commission.

Table 6 ⁷

Water Applications, Dams Approved, and State Engineers

| Date | Total Applications | Ground Water Applications | Dams Approved | State Engineer Dates Served |
|---------|-----------------------|------------------------------|------------------|--------------------------------|
| 1935-36 | 719 | (310) | 6 | T. H. Humpherys |
| 1937-38 | 653 | (232) | 13 6* | 1933- Aug 1941 |
| 1939-40 | 1137 | (690) | 14 6* | |
| 1941-42 | 1317 | (972) | 0 | Ed H. Watson |
| 1943-44 | 1325 | (828) | ** | 1941 - |
| 1945-46 | 2120 | (1492) | ** | |
| 1947-48 | 2477 | (1711) | ** | |

* Previously built dams. Plans were merely filed not approved.

** Number of dams approved unavailable. The "Biennial Reports" for these years often say that no construction plans for dams of appreciable size were approved during the period. However, it is clear small dams were approved during these periods.

The Utah State Soil Conservation Committee

In response to flooding problems, Forest Service projects, and a variety of New Deal programs, the legislature established the Utah State Soil Conservation Committee in 1937.⁸ The Utah Soil Conservation Committee

⁷All information in Table 7 was taken from State of Utah, "Nineteenth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1933 and 1934," Public Documents through State of Utah, "Twenty-Sixth Biennial Report of the State Engineer to the Governor of the State of Utah for the Years 1947 and 1948," Public Documents.

⁸Serious flooding occurred in the state throughout the 1920s and 1930s. This prompted the state government to work on flood control institutions. The legislature specifically directed the newly created Soil Conservation Committee to

concentrated its efforts mainly on the construction of flood control structures and on projects designed to rehabilitate or protect watersheds. It was recognized by urban water users particularly that the watershed protection was essential to guarantee clean and usable drinking water and to protect communities and property from flood damage.⁹ The committee worked with the Forest Service, the United States Soil Conservation Service, other state and federal agencies, and water users in this effort. The legislature directed the new agency to concentrate its efforts on soil and water conservation. This separation of development and conservation mirrored the separation of these duties at the national level.

The Committee also functioned as the representative of the local soil conservation districts, which were also authorized in 1937.¹⁰ These grassroots organizations were a source of support for the Committee's work throughout the

directed the newly created Soil Conservation Committee to deal with the flooding problem in 1937. See State of Utah, Laws of the State of Utah (1937), Chapter 116, section 2, pp 213-214. In addition the Forest Service and the United States Conservation Service were active in land rehabilitation and water shed protection.

⁹Cities were particularly concerned about water shed protection, both for the prevention of floods and for providing quality drinking water for their citizens. Charles S. Peterson and Linda E. Speth, "A History of the Wasatch-Cache National Forest," submitted to the Wasatch Cache National Forest September 25, 1980. pp 40-42, 49, 54-55.

¹⁰State of Utah, Laws of the State of Utah (1937), Chapter 166, pp 213-214.

state. In turn, the Committee insured that the interests of the soil conservation districts were adequately presented to the federal Soil Conservation Service and other federal and state committees and agencies.

The water management organization of the state was not substantially changed with the addition of the Soil Conservation Committee. Rather, the Committee allowed the state to better deal with soil/water problems which had existed for many decades, principally, summer flooding and water shed protection.¹¹ In 1923, summer "mudrock" flooding caused serious damage in many northern Utah communities. Similar damage was inflicted again throughout communities in northern Utah in 1930, 1936, and 1937.¹²

In addition to flooding problems, water quality was becoming an issue for Utah's growing cities. As populations increased, overgrazed or abused watersheds compromised the provision of adequate amounts of clean water. The establishment of the Soil Conservation Committee was a recognition that water resources could not be utilized effectively unless the sources for the water resources (the water sheds) were protected.

¹¹Ibid. See also State of Utah, "Biennial Report of the Soil Conservation Committee for the Years 1937 and 1938," Public Documents, and State of Utah, "Biennial Report of the Soil Conservation Committee for the Years 1939 and 1940," Public Documents.

¹²Charles S. Peterson and Linda E. Speth, "A History of the Wasatch-Cache National Forest," pp 224-240.

Acting on this premise, the Soil Conservation Committee worked to increase the number of water and land resource conservation projects being built. In this endeavor, it worked closely with the Forest Service, the Civilian Conservation Corps, the United States Soil Conservation Service, the State Engineer's Office, city governments, and local water users organized into conservation districts.

The Publicity and Industrial Development Board

As mentioned earlier, the Utah Water Storage Commission was replaced by the Publicity and Industrial Development Board in 1941.¹³ As a result of the changing and varied nature of water development and as a reaction to extensive economic and industrial development planning throughout the entire United States in connection with the war effort, the Utah legislature felt the need for the state to provide a water development institution with the ability to represent a broad spectrum of water development interests. Although the Utah Water Storage Commission had functioned as a state-wide water planning agency and had recognized that there were many legitimate uses for water, the agricultural land reclamation drive had been the focus of the majority of its energies and projects. The Publicity and Industrial Development Board provided a more diversified water

¹³State of Utah, Laws of the State of Utah (1941), Chapter 40, p 67.

development institution. Through it the growing needs for usable water resources were made known as the Utah economy expanded. The industrial enterprises which were being located along the Wasatch Front needed vast quantities of water. Utah's population in the growing Wasatch Front cities needed additional water resources. Traditional agricultural needs also continued to be critical as wartime demands touched both farming and livestock. These trends in population, industrial growth, and agriculture are shown below in table #7.

Table 7 ¹⁴

Population, Value of Manufacturing, and the Percentage of the Population Involved in Farming

| Date | Population | Value of Manufacturing | Percentage of Population Farming |
|------|------------|---------------------------|-------------------------------------|
| 1920 | 449,396 | na | 31.26 |
| 1930 | 507,847 | 207,641,259 | 22.83 |
| 1940 | 550,310 | 167,172,226 | 19.09 |
| 1950 | 689,000 | na | 11.75 |

na Not available.

The Publicity and Industrial Development Board was relatively inactive in terms of promoting new projects to utilize Utah's water resources. The federal government's

¹⁴United States Bureau of the Census, Census of the United States, 1920 through 1950. Information regarding the percentage of the population on farms was taken from the Utah Agricultural Statistics, 1981.

resources were, of course, directed toward the war effort. Little attention or money could be spared for water development and little new work was accomplished during the Board's short tenure.

There are at least two alternative explanations for the creation of the Publicity and Industrial Development Board and of the goals which it was hoped the new agency would accomplish. The difference in these views can be accounted for by examining the perceived purpose of the state's water development and planning agencies during the period.

One point of view was that there was little planning and engineering work left to be done in the field of water development. Rather, the major work left was to publicize the possibilities of water development, hence the move to a publicity board.¹⁵ This position would be aimed at convincing the federal government or others to finance and implement existing plans. Possibly it was also felt that after twenty years of water data collection and planning by the Utah Water Storage Commission that the possibilities had been identified.

The second view, one which is better supported by the actions of the board and the activities of the water users in the state, is that the water planning for the state needed to be tied into the economic planning and industrial

¹⁵Jay M. Bagley, "Utah's Water Development Framework," pp 29-30.

development of the state. Utah officials researched and published many studies which set long-range goals for industrial, manufacturing, mining, and agricultural growth in each area of the state. These studies were an inventory of possibilities. They allowed the state water planners to estimate where growth in water demand was likely to occur. The planning and technical problems which were brought about by moving water planning responsibilities to the Publicity and Industrial Development Board were increased, rather than being put on the back burner as the first view might have suggested.

Perhaps as a response to the slow down in the number of projects, or possibly to the perceived decrease in status or accessibility to policy makers, traditional Utah water users did not work well with the Publicity and Industrial Development Board. To better represent their unique interests, the Utah Water Users Association was formed in 1944.¹⁶ One of this association's chief goals was to return the process of water planning and development to an agency that was solely concerned with water development. In response to lobbying by this group and others, the

¹⁶For a recounting of the steps leading up to the formation of the Utah Water Users Association and the establishment of the Utah Water and Power Board see Clarence Barker, The Utah Water and Power Board, Twenty Years of Achievement, 1947 to 1967. (Salt Lake City, Utah: Department of Natural Resources, 1968). Pages unnumbered in document.

legislature created the Utah Water and Power Board in 1947.¹⁷ This Board functioned in much the same role the earlier Utah Water Storage Commission had filled.

The Utah Water and Power Board

The Utah Water and Power Board was a non-partisan citizens board with policy setting power. It consisted of seven democrats and seven republicans, each from one of the seven river districts throughout the state (one of which was elected by the Board to be its Chairman), and the State Engineer. The Board was charged with seeing that every stream and source of water throughout the state was utilized to its full capacity. In addition, it was instructed to work with the federal government, other agencies, water user associations, towns, cities, and any other group concerned with Utah's water resources and development plans.¹⁸

The legislature provided the Board with a revolving fund to be used to give financial assistance to projects which were beyond individual or private means. These projects were anticipated to be too small for the Bureau of Reclamation to consider but still considered to be of value to the state's overall water development plans. As this assistance was repaid, the monies became available for other

¹⁷State of Utah, Laws of the State of Utah (1947), Chapter 141, Sections 1-15, pp 444-449.

¹⁸Ibid.

projects. During the twenty years of its operation, the Board's revolving fund allowed over 250 projects to built without any defaults.¹⁹ (In 1967 the responsibilities of the Utah Water and Power Board were transferred to the Board of Water Resources, and the Division of Water Resources was created to serve as staff to the Board. At the same time, the Division of Water Rights was created with the State Engineer as division director. Both of these divisions were placed within the administrative framework of the Department of Natural Resources.)

Changing Organizational Institutions

After 1930, the state's law makers also worked to provide effective organizational institutions to allow local water users, cities, and counties to work together on water projects. In 1935, the legislature passed the Metropolitan Water District Act. This provided a mechanism for cities (or groups of cities) to fund the work of building water collection and delivery systems to serve the needs of their citizens.²⁰ The act conveyed bonding and taxing power which allowed the cities to raise funds. It also allowed the

¹⁹Clarence Barker, The Utah Water and Power Board. Many of the larger projects completed during the twenty year period are reviewed in detail and summary statistics are given of the number of projects and the total amount expended.

²⁰State of Utah, Laws of the State of Utah (1935), Chapter 110, pp 204-219.

districts to enter into contracts, which helped some cities fund their water works through federal and state government sources.

In 1937, the legislature provided for conservation districts to be established throughout the state.²¹ The Utah State Soil Conservation Committee acted as the governing board of the state's conservation districts and directed their efforts. By providing for the state to be organized into soil conservation districts, the work of flood control and land preservation could be more easily accomplished.²²

To help water users finance complex water development projects, and to obtain payment from (or shift the cost to) indirect or non beneficiaries, the Utah legislature in 1941 passed the Water Conservancy Act.²³ This act provided a mechanism for funding the larger projects under consideration by state water management officials and the Bureau of Reclamation. This act allowed water users to not only group together, but conferred the power to tax all land included within district boundaries. These boundaries were determined by election. This provision differed from earlier district laws in that property of indirect

²¹State of Utah, Laws of the State of Utah (1937), Chapter 116, pp 213-214.

²²Ibid., p 214. The act specifies that the state committee cooperate with local districts in solving problems and seeking funding.

²³State of Utah, Laws of the State of Utah (1941), Chapter 99, Sections 1-41, pp 206-221.

beneficiaries was explicitly included in the districts. This was a manifestation of changing attitudes towards water districts, particularly so with respect to who should be included and therefore pay for water development. The law continued to allow water districts to issue bonds to spread out the cost of development over long periods of time. The districts paid for water projects by two means: first, by marketing the water to cities, farmers, business, and other water districts, and second, by allowing taxation of both direct and indirect beneficiaries included within the district boundaries.

The Water Conservancy District Act was patterned after the federal model of the repayment organizations utilized on Bureau of Reclamation projects and the National Conservancy Act of 1940. This state act was designed to meet the organizational requirements of the Bureau of Reclamation. As the Bureau of Reclamation investigated and eventually built many of the complicated projects contemplated by Utah's water planner's, it became apparent that additional sources of funds to repay the costs of water development would be needed. These projects involved multiple use developments designed to not only reclaim land but to increase the capacity of cities to deal with growing populations and to make water available to any water users who wished to utilize it. The Water Conservancy District Act met these requirements.

As with earlier water/irrigation/drainage districts, one of these three new district institutions (the metropolitan water districts, conservation districts, and water conservancy districts) could be utilized by associations of water users when large financially secure repayment organizations were needed to contract with the construction agencies. The new districts made potential water development projects more appealing to the Bureau of Reclamation and other funding sources. Consequently, the job of the Utah's water development officials was made considerably easier.

Conclusion

The 1935 through 1947 period was one of fine-tuning the state's water administration apparatus. The period witnessed the last institutional experiment with the state's primary water development agencies. Through the Publicity and Industrial Development Board, the state's lawmakers attempted to group general development with water development. The water users, however, rejected the board and called for a return to the previous structure of a separate state agency concerned with water development. Additionally, the influence which state officials could exert over general water development was increased in 1935, when the state supreme court decided that ground water resources were to be treated under the same laws as all

other water resources and placed them under the jurisdiction of the Office of the State Engineer.

During this period, major efforts were undertaken to deal with the problems of erosion, flooding, and water quality. By establishing the Utah State Soil Conservation Committee and passing the associated district act to allow local organization, the legislature created institutions which worked to solve the above mentioned problems. Working with the State Engineer and others, these entities built projects and promoted policies which dealt with solving water related problems.

The legislature also worked to facilitate organization of associations and districts of water users to manage and finance water development. The passage of the Metropolitan Water District Act and the Water Conservancy Act were steps which enhanced the ability of Utah water users to interest the federal agencies in funding Utah projects.

PART III

OVERVIEW: THE HISTORY OF UTAH'S WATER MANAGEMENT

INSTITUTIONS 1847 THROUGH 1947

CHAPTER IX

UTAH: 1847 THROUGH 1947 UTILIZING COMMON GOALS TO DEVELOP WATER RESOURCES

The Pioneer and Territorial Experience

Utah's first water administration and development institution was the church-directed and -sponsored method of pioneer cooperative colonization. This method initially involved community development of water resources and involved directed efforts of all community members. Private ownership of land and water rights was eventually adopted as the system evolved. The values that grew out of this method of development became a part of a collective experience for most of the communities within the state. Pioneer water management emphasized church coordination, community cooperation, collective rights, arbitration of conflict, small holdings of land resources, and water rights appurtenant to the land. With slight modifications, the pioneer method was applied by successive waves of settlers/colonizers as the church directed settlement spread over much of the Great Basin and beyond.

Typically, church leaders appointed a local leader who would oversee the distribution and development of water resources in new colonies. The central church often assisted in planning for water utilization and subsidized

initial development projects. Projects were typically small, temporary diversion structures combined with canal and lateral systems that would be expanded as populations increased. The pattern and methods of settlement promoted by the pioneer method left an indelible mark on the laws of both the territory and the state. Utah's water users are required to use water resources in a manner consistent with the interests of the community or area. The foundation for this policy was the cooperative experiences of the settlers/colonizers as they developed water systems in Utah's arid valleys. They utilized cooperative institutions which placed priority on community rights.

The territorial government established the second major form of water administration in 1852. This was the county court system of water administration that for decades complemented and overlapped pioneer cooperation rather than supplanting it. The county court system utilized on-site inspection and common sense methods to allow the three-member courts to allocate and distribute water resources throughout the territory. Although the system was not utilized in all areas of the state (because the pioneer/church administration functioned to the satisfaction of most water users in outlying areas), it established legal safeguards for the public interest. The government had the right to be involved in the process of water administration.

The early territorial legislature also experimented

with the process of granting the control of water to specific individuals or groups. For example, the right was often granted to use water for milling purposes. In 1853, the legislature granted full control of the Provo River to the Provo River Canal and Irrigation Company. Direct legislative grant was the less commonly used method of water distribution and development. Most settlers and communities relied on church directed or county court directed development. Through the application of these two institutions, the concepts of prior appropriation and beneficial use were developed.

In 1865, the legislature added an irrigation district law to the county court system to promote development. The law allowed water users to group together for the purpose of building and maintaining water delivery systems. However, these irrigation districts enjoyed only limited success. Due to the inability of the districts to bond for assets or to tax members to raise funds to pay the bills and the effects of some adverse legal decisions by the courts, this form of organization was rarely utilized until after the first decade of the twentieth century.

The 1852 county court system functioned until 1880. At that time the territorial legislature changed the system so that the county courts became recorders of water rights, rather than grantors of those rights. The legislature also adopted the concept of prior appropriation by individuals

rather than communities. This concept was combined with the idea that water resources would be treated as private property. The result of all these changes was an upsurge in private profit-oriented water projects and developments.

In 1880, the legislature also separated the land and water titles. This allowed more freedom in water appropriation and greatly facilitated the transfer of both land and water rights. The concept of a water right as a separate and valuable piece of property emerged in this law. Partly as a result of these changes and partly because of over appropriation, the number of water rights which were contested in the district courts increased substantially. Along with separating the land and water titles, the legislature authorized water users to form mutual irrigation companies. This was a legal formalization of community cooperation with the added characteristics of fixed membership and legally defined responsibilities and rights.

Statehood Developments

Legal Developments

Between 1880 and 1903, water resources that had been individually appropriated throughout the state were treated as private property. In 1903, the state legislature passed a law stating that the waters of the state were the property of the public. The right to use the water, however, was treated as private property by the 1903 law; water rights

could be bought, sold or traded independently. The law defined a water right as the right of use, and gave legal substance to the ideas of beneficial use, priority water rights, and prior appropriation. In 1935, the legislature indicated that ground water should be treated by the law in the same manner as all other water resources.

Agencies

During the first few years of statehood, the Board of Land Commissioners and the Office of the State Engineer were created; these offices were the state's first efforts to provide state institutions to administer and develop water. The Board of Land Commissioners functioned as a development institution, while the Office of the State Engineer evolved into an administrative institution. Later actions of the state also established promotional institutions. Both the Arid Land Reclamation Fund Commission (1903 to 1905) and the Utah State Conservation Commission (1909 to 1917) were created to increase Utah's ability to attract federal funding for projects considered important by Utah law makers. These projects utilized joint development processes where the federal government provided much of the financial backing and technological input, but cooperated in the planning phase with the state engineer and various other state planning agencies.

Recognizing the need for state-wide water planning to

bring the goals and objectives of the many different water resource administration, development, and promotional institutions into harmony, the legislature established the Utah Water Storage Commission in 1921. In addition to fulfilling the role of promotion that the Arid Land Reclamation Fund Commission and the Utah Conservation Commission had earlier played, the commission also functioned for twenty years as the prime water planning and prioritizing agency concerned with Utah's water development.

As the growing economy and population demanded new water resources, more efficient systems were necessary. In response to urban and industrial needs along with federal developments, the legislature shifted the responsibilities of the Utah Water Storage Commission to the newly established Publicity and Industrial Development Board in 1941. This board approached water planning and development from the broad context of economic and industrial planning and development. It conducted and published studies on the potentials for growth in the Utah economy, and attempted to identify those areas where water shortages could be the limiting factor to continued growth. The Industrial Development Board then worked to have the water resources in these areas developed.

In 1944, water users organized the Utah Water Users Association. This organization was designed to represent the interests of more traditional water users. One of its

first goal was to have a separate agency established to deal specifically with water planning and development. In response to lobbying from this group and others, the legislature in 1947 established the Utah Water and Power Board.

The Utah Water and Power Board was concerned with much the same problems as its predecessors: promoting the full beneficial use of all the streams and sources of water in Utah, and organizing water developers throughout the state into effective water lobbying groups which could bring funding for water projects with them, or which could influence the Bureau of Reclamation to fund their project. In addition, the board was also given a revolving fund with which they could finance development directly.

Special Districts and Institutions

As early as 1897, the legislature had made an attempt to provide for drainage districts. By 1913, it had provided workable drainage district legislation. In 1909, the legislature passed an irrigation district law which was refined many times until 1919. These districts were attempts by the state to provide institutions for privately or locally motivated water development.

After 1930, the state made legal provisions for a variety of developmental institutions. In 1935, 1937, and 1941, respectively, the legislature established metropolitan

water districts, conservation districts, and water conservancy districts. These new water development institutions allowed Utah's cities, towns, businesses, and farmers to group together to finance increasing complex water projects. These institutions enhanced the state's ability to attract outside dollars for water development and to organize the water users more efficiently throughout the state.

Water Development Motivations

The impetuous for water development in Utah has, in some sense, remained unchanged from the earliest days. In others, it has changed radically. The underlying goal for most of the water development in Utah has been to provide water resources to those areas where it was needed for some type of human consumption or use that would benefit the citizens of the state. As the technical abilities of the water developers increased, the projects became more complex. Motives remained substantially unchanged, however, in the sense that human needs were being met. Yet motivations also changed radically in that the focus or purpose of development shifted from settlement/colonization (building communities and extending control) to profit/loss decision-making (building sources of income), and finally to provide for a broad spectrum of urban, industrial, and agricultural needs.

The earliest Utah settlers did not analyze many different projects and built only those which were most profitable. Rather, they were concerned with immediate survival. This remained true for each of the successive colonizing groups which were sent to open new areas for the six decades following the first settlement. In such situations, water development was judged against the yardstick of subsistence, not the gauge of profitability. Only as the society gained a strong foothold in the new environment and their technical skills increased, could the profit motive come to predominate. This change resulted in the 1880 legislation that opened the way for private profit oriented development.

Motivation for water development in Utah, for the most part, has not come from the investment or speculative sectors of the economy. Mostly Utah's water development projects have been motivated by a need to meet the growing number and quantity of uses by agricultural, industrial, and urban demands. Further, the citizens and political leaders of the state, from even the earliest days of settlement, seem to have been motivated by a desire to in some sense develop the water resources of the state to their fullest potential. This development effort was directed at supporting the growth (or geographical expansion in the case of Utah's colonization efforts) of the economy and population.

Common Determinants of Water Development Policy

All of the legislation establishing territorial and state courts, commissions, boards, and offices concerned with water administration, development, and management have included the injunction to seek the full or beneficial use of the water resources. Quite literally, the common motivation which has served as a thread of continuity throughout all the time periods studied in this paper, is that the exhaustive and beneficial use of all the water resources which the state's citizens could claim and put to use should be actively encouraged, simply because the water resources were available. This philosophy of maximum beneficial use has functioned as standard for the society. This goal was the cornerstone of the foundation upon which the territory and the state built their policies.

Sources of Change in Water Policy

Changes in motivations have come from the uses to which water resources were put. Community cooperation gave way to private individualism, which in turn gave way to public ownership and state supervision. Community, home building, and settlement/colonization motivations gave way to profit oriented motivation. Private motivations in turn partly gave way to reclamation (providing new homes and farms) efforts that were augmented by the process of managed growth and planning throughout the economy. Reclamation

motivations were replaced to some degree by the multiple use criteria, which has more recently been employed by the Bureau of Reclamation.

The State's Policies

The efforts directed towards water development have been channeled through many agencies and institutions. During the first decades of these efforts, the state lost substantial amounts of money from the land grant reservoir funds, since then state officials have usually acted to maximize the activity directed towards water development, while at the same time, minimizing the risk that state budgets bore directly. Money and resources derived from the federal government, groups of waters users, private profit oriented companies, cities' taxing abilities, and any other source which could be utilized to promote water development, have been mobilized to promote the cause of water development in Utah. Underlining all of this activity has been a belief or philosophy that all of the state's water resources must be utilized if the Utah is to prosper.

Conclusions

The influence of the pioneering mode of water development firmly cemented into the Utah mentality the idea that community rights and concerns were of importance in the water development framework. This concern eventually has

evolved into a condition where the rigors of the prior appropriation system are tempered by the concepts of beneficial use and shared risk. In times of shortages, rights are grouped into classes: municipal needs will be dealt with first followed by descending classes of water rights. Within each class of use, water users are entitled only to the amount of water they must have to sustain the use, not necessarily the full amount they are accustomed to. The practice of tempering the effects of the prior appropriation system is not unique to Utah. But with respect to the particulars of the process used to do it, Utah's institutional practices are unique. These attributes come from Utah's early experiences under both the pioneer/church method and the (1852) county court system. At that time (as today), water resources were considered public resources; also, community rights were recognized.

The state's agencies have continued to work towards the full utilization of water resources by serving as an organizer of the diverse groups associated with water development and by acting as a source of funds for privately or locally designed water projects, using the revolving fund first established in 1947. The current Department of Natural Resources, the Division of Water Rights headed by the state engineer, and the Division of Water Resources are all direct descendants of earlier state institutions. The actions and methods employed by the state have been refined

as conditions demanded, but the goal of complete use has remained essentially the same.

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