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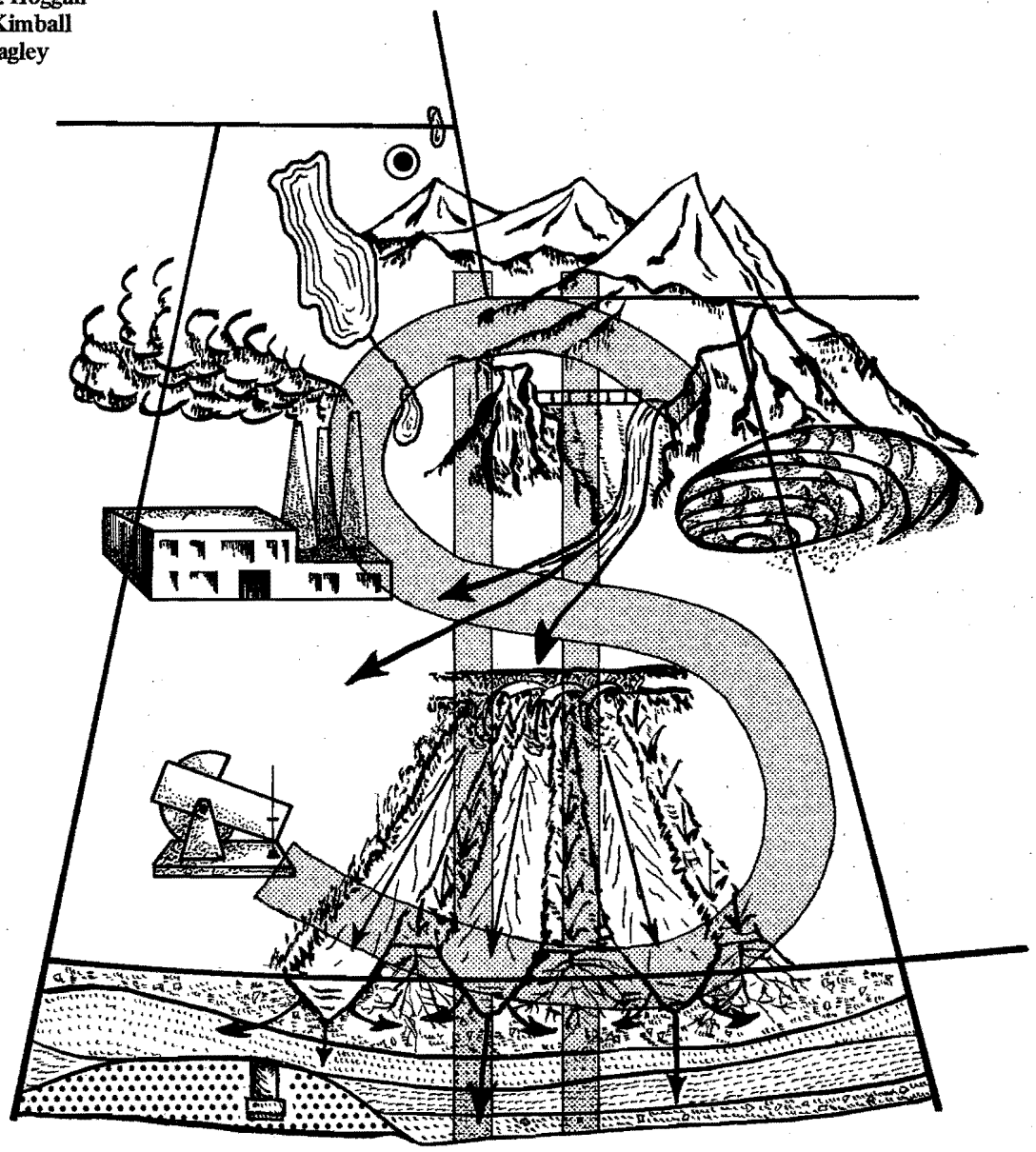

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Utah State University
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WATER RESOURCES PLANNING SERIES
UWRL/P-80/07

A PRELIMINARY STUDY ON EXPANDING AND FINANCING STATE WATER DEVELOPMENT

by

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ABSTRACT

The effects of recent energy price increases, domestic inflation rates, financial market fluctuations, and changing public attitudes toward federally sponsored water resource development and management have brought economic and financial considerations to the forefront of Western water management issues.

Recently enacted federal policies place increased responsibility on the states and localities for the development and management of their water resources. A response common to many of the western states has been to strengthen traditional, and often small, water financing and development programs. In creating and sustaining such a posture, however, state governments must address the important questions pertaining to the economic and financial impact of greater state involvement, the distributional impacts of state taxing and lending programs, and the state social goals relating to such managerial involvement.

The traditional and recently expanded water development programs of the State of Utah have been reviewed in the light of such management issues. The demand for state financing of water projects was addressed through an examination of economic indicators and an inventory of potential projects. State options for obtaining capital financing also were examined. This review indicates that increased financing activity and the potential for increased concentration of water development project benefits to specific social groups have created a need for greater clarity in the legislative mandate and greater accounting and visibility of water project impacts through the use of improved economic and social evaluation procedures. Moreover, in the absence of such safeguards, the continued investment of state funds might be considered premature and not always in the best interest of the state's residents.

ACKNOWLEDGMENTS

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INTRODUCTION

Importance of Examining Financing Need for Water Resources Development

Changing Socio-Economic Patterns. The stage is set for some dramatic changes in Utah's economy that may significantly reorient water use patterns. Greatly increasing demand for industrial water is anticipated as the nation exerts a heavier reliance on Utah's vast mineral resources to help meet the mounting need for domestic energy production. Greater demand for municipal water is also anticipated for people needed in energy production, other industries, and commerce. Pressure on outdoor recreation resources will continue to increase from larger populations both inside and outside of the state. In addition to all this, the proposed siting of the MX missile system in Utah and Nevada could create some high priority demand for water in and near the huge military complex. Although agriculture has always been a major industry in Utah and still accounts for the greatest single consumptive use of water, industrial and military growth, urbanization, and the utilization of Utah's abundant outdoor recreational resources have gained significantly in relative prominence. Thus, it becomes appropriate to reevaluate traditional water management policies and programs and to assess their adequacy and effectiveness in meeting these changing water use conditions.

Diminished Federal Role in Water Development Financing. While the costs of water projects are rising rapidly, the amount of federal money made available for project construction in the nation is declining. In less than a decade, costs of some major projects have more than tripled while construction outlays by the major construction agencies have dropped substantially. For example, as reported recently by a federal official, Corps of Engineers outlays for construction of water projects in constant dollars have dropped from $2.5 billion in 1967 to $1.5 billion in 1977. A similar decline has been experienced by other construction agencies. The total cost estimated to complete water projects under construction is approximately $20 billion. An additional $13.2 billion is estimated for projects authorized but not started (Beard 1978).

In this setting, an emerging trend in federal policy has been to shift a larger share of water development costs to nonfederal entities. Recent water policy recommendations made by the Carter Administration (Carter 1978), would require states to pay up to 10 percent of the front end costs of new water projects not yet authorized. Other parts of the President's water policy also reflect an increasingly conservative approach to federal investment in water projects. These include a reexamination and tightening of project evaluation procedures, an audit of the financial conditions of major water projects, and a call for "full-funding" of all new water project starts.

One of the principal aims of the new policy initiatives is to reduce federal investment in uneconomic water development projects. One assumption is that nonfederal entities are more encouraged to pursue development when a substantial portion of the costs are borne by the federal government. Consequently, the pressure for development may be expected to diminish when the nonfederal share of costs increases.

Water Financing and State Growth Strategies. Because water is such a key factor in any state growth strategy, it is appropriate to consider the use of state financing to nudge water development in directions consistent with established social and economic objectives. A determination of the magnitude and character of water development financing needs provides a meaningful input to an overall coordinated planning and budgeting process. Such an assessment constitutes an important basis for constructive reaction through the state political process.

Role of Government in Water Project Financing

The social justification for governmental intervention in water resources development financing seems to be on two principal grounds: 1) To achieve a social welfare goal (i.e., to rectify some undesirable social imbalance by a redistribution of income) by 2) rectifying private money market failures or imperfections which result in an absence of credit to an important social/economic sector.

Income Redistribution and Social Goals. Where income redistribution is the primary justification for using governmental credit, economic efficiency standards are given little weight as a basis of awarding credit

with the achievement of specified social well-being goals becoming the major criterion of eligibility.

The income redistribution objective is made manifest in governmental financing in a variety of ways. One of the most common is to limit repayment liability to "the ability to repay." The difference between total project costs and amount repaid by the recipient of the credit must come from nonbeneficiaries (i.e., other taxpayers). Another common income transfer measure employed in governmental financing programs is to charge borrowers less than the normal market rate of interest. To the extent that interest rates are reduced or foregone, this constitutes a subsidy to the borrower which can be expected to improve his profit margin and, hence, his relative social well-being. Again, the difference between market interest rates and rates charged by government constitutes a transfer of income from nonparticipants in the project benefits. An extraordinary extension of the repayment period produces similar income redistribution effects.

Rectifying Capital Market Imperfections. The market imperfection most commonly alluded to as justification for governmental financing is that the flow of project benefits from which repayment must depend extends over a much longer time period than commercial financiers are willing to extend credit. Where the repayment period must be unduly shortened, economic benefits are simply not generated at a fast enough rate to meet required repayment levels. This condition thwarts the capability of borrowers to compete for funds in the private market even though there may be high likelihood that the long term benefits will actually accrue and the project can demonstrate economic viability. There are instances, also, where water development projects present peculiar collateral problems that create difficulties in obtaining capital through normal money markets.

Where governmental financing is based on justifiable corrections to market imperfections, project evaluation to determine feasibility and eligibility rely primarily on economic efficiency criterion. Loans are not made to finance development which cannot show an excess of benefits in relation to costs incurred. The only social welfare consideration in using governmental credit to overcome a money market defect is that the market deficiency may work to the disadvantage of particular economic sectors and the governmental intervention can place them on a borrowing par with other segments of society. As a continuing test of the market disadvantage, some governmental lending agencies require that loan applicants show proof of having been denied credit through conventional banking channels before being considered for a governmental loan.

Legislative and Administrative Guides and Objectives in State Financing of Water Projects

Utah's interest and concern about water project financing goes all the way back to constitutional debates and deliberations pertinent to statehood. By about 1880, as "run of the river" development had approached its limit, further expansion of the agricultural base was dependent on the construction of dams and reservoirs. These major structures required financing at levels the traditional small cooperatives found difficult to obtain. In 1896, a Land Board Reservoir Fund was established under which several early water projects were financed. The state interest in aiding water development was reconfirmed in 1909 by legislation which empowered a Board of Land Commissioners to loan funds for reservoir development. These early programs of state financing were not unqualified successes in the sense that debts were faithfully and completely paid. However, the projects built through these programs have continued to operate and are important features in state water management today.

As the Federal Reclamation Service came into being in 1902 and created the potential for federal financing, Utah turned its emphasis toward collaboration and appraisals of development opportunities with the expectation that financing would be largely from federal sources. Although state financing authorizations were not actually rescinded, they were essentially inoperative by the early 1920s. State initiative in water project financing was revived in 1947 with the establishment of the Utah Water and Power Board and the creation of a Revolving Construction Fund.

The state role in water development financing has expanded in the ensuing years as additional legislative appropriations of development capital have been made to the Revolving Construction Fund periodically, and two additional revolving development funds have been established. From the language of enabling legislation, from governors' statements with respect to the programs, and from available policy and procedural guides eminating from the Board of Water Resources/Division of Water Resources, Utah's currently operating financing programs seem to be justified on a mixture of social welfare (income transfer) and economic efficiency grounds.

In his 1947 message to the legislature, Governor Maw alluded to "the inability of farmers to pay the initial costs of constructing dams and other improvements" and urged the legislature "to initiate a financing program for small water projects." In parallel, legislators saw the development of Utah's remaining water supplies as a way to 1) eliminate deficiencies in the water

supply for agriculture, 2) prevent the high unemployment in Utah's labor force, and 3) prevent a return to the economic stagnation of the prewar years (Senate Journal 1947). Recognition of farmers "inability to pay" for water improvements may signify some economic disadvantages associated with the agricultural sector which justified some kind of economic assistance. On the other hand, the senate seemed to be looking for ways to stimulate economic improvement and stability generally, with water development investments triggering a profitable flow of direct and indirect benefits. The stated goal of the 1947 Act which created the Water and Power Board and set up the revolving construction fund was that "... underground waters and waters of the small streams of the state, and the lands thereunder, ... be made to yield abundantly and increase the income and well-being of the citizens of the state." The revolving fund was established "... to the end that every mountain stream and every water resource within the state can be made to render the highest beneficial service." These statements of purpose suggest an expectation that direct and indirect benefits flow to citizens generally from any water resources development, and that in a growing but water scarce economy water demands inevitably outstrip water availabilities so that every drop of water need ultimately be controlled and managed. Except for some language in the 1947 statute recognizing "low prices and lack of markets for farm products," and "... lack of late season water supply and consequent lack of financial strength" of water users in small communities (which may be implying a need for income transfer to the agricultural sector), there is no specific justification for state financing in welfare terms. No welfare objectives are advanced in justification of the "no interest" feature of the 1947 financing program. Rather reference to the fact that federal reclamation programs embody the "no interest" principle seem to say that whatever rationale had been used to justify the federal policy should surely be applicable to the new state financing program.

The 1947 Act provides that "... such fund be so administered that no project will be built except upon expert engineering, financial, and geological approval." This language implies that a set of technological and economic feasibility criterion akin to an economic efficiency objective was intended in operating the state financing program. The statutory language outlining the selection of projects to be constructed with Board funds indicates that some kind of screening of projects proposed by sponsors was required to satisfy the Board that the project "will conserve water resources of this state for the best interest of the citizens of the state," after which "the Board shall cause plans and cost estimates of such projects to be prepared." Such general language concerning the selection and award process leaves much latitude for interpretation as to what distribution of project costs and benefits constitutes "the best interest of the citizens of the state." In any particular instance, either income redistribution or money market corrections might be defended as being in the best interest of the citizens of the state.

The Utah Board of Water Resources (formerly the Utah Water and Power Board) is responsible for setting out operating principles and policies in accordance with legislative mandate. Some of the following "guiding principles" (Hoggan 1969) have been adopted by the Board over the years:

1. Determine expected and available water supply for the state.
2. Rank priorities in water uses according to their relative importance in achieving the greatest economic and social gain for the state.
3. Encourage high levels of water use efficiency.
4. Improve irrigated land use.
5. Consider water quality in development decisions.
6. Provide water for fish, wildlife, and recreational uses.
7. Recognize and consider flood control potentials in water resources development projects.
8. Stabilize local water supplies for irrigation.
9. Recognize the state's groundwater resources as a source of supply for water development projects.

These "guiding principles" were reaffirmed in 1978. The Board of Water Resources approved the following set of goals and objectives to guide the programs of the Water Resources Division of the Department of Natural Resources:

1. Maintain a legal and institutional framework which encourages the highest economic use of water.
2. Encourage intensive use of land and water resources to provide increased employment.
3. Aid in stabilizing existing rural communities.
4. Preserve and/or enhance recreational wildlife areas (Utah Division of Water Resources 1978).

CHAPTER II
ASSESSMENT OF THE DEMAND FOR STATE WATER DEVELOPMENT FINANCING

An important question to be addressed in the assessment of need for water development financing is what indicators and predictors should be used to determine actual demand. Two primary indicators are discussed in this chapter. The first is population growth supplemented by an evaluation of activity levels in various economic sectors, and the second is an inventory of water development projects under active consideration within the state.

Population Growth Trends and Economic Sector Activity

The underlying assumption in estimating demand from an analysis of population growth trends and growth in the various economic sectors is that water supply is a basic need that must be provided to support growth.

As an example of the statistics which might provide an indication of the need for water development, Table 1 shows expected increases for municipal and industrial water by decade to 2020. This is based on the assumption that 0.25 acre-feet is a reasonable per capita consumptive use rate (Kirkpatrick, Saunders, and Eckhoff 1975) and price elasticity of demand may be neglected. In the more densely populated Wasatch Front Counties, a lower rate of 0.24 acre-feet was used to reflect the reduced urban irrigation demand of individuals living in multiple unit dwellings. These increases will be met by transfers from other uses and/or development of new supplies.

Supplementing population growth statistics with evaluations of activity levels in various economic sectors provides some clarification as to where the financing burden might logically fall. For example, past state water financing programs have placed priority on the agricultural sector. Whether or not this sector will continue to justify high priority for state financing in the face of possible major emphasis on energy and industrial development will likely

Table 1. Projected increases in municipal-industrial water requirements (acre-feet) in Utah.

Area	Year				
	1980	1990	2000	2010	2020
Wasatch Front	258,722.4	309,055.2	366,784.8	422,824.8	478,754.4
Increase		50,332.8	57,729.6	56,040.0	55,929.6
1976 Supply	257,480.0				
Cumulative Net Increase	1,242.4	51,575.2	109,304.8	165,344.8	221,274.4
Rural Utah	89,475.0	103,257.0	126,760.0	148.782.5	167,502.5
Increase		13,782.0	23,503.0	22,022.5	18,720.0
1976 Supply	102,308.1				
Cumulative Net Increase	12,833.1	948.9	24,451.9	46,474.4	65,194.4
Utah Total	348,197.4	412,312.2	493,544.8	571,607.3	646,256.9
Increase		64,114.8	81,232.6	78,062.5	74,649.6
1976 Supply	359,789.0				
Cumulative Net Increase	11,591.6	52,523.2	113,755.8	211,818.3	286,467.9

Source of population estimates: Hansen et al. (1979).

receive reevaluation by planners and policy makers.

Table 2 shows that while the total population of Utah has increased, farm population has decreased significantly both as a percentage of total population and in absolute numbers. Since 1936, the number of farms and farmers have decreased steadily. Farm size, however, has increased, thus maintaining the number of acres farmed.

Using information from the 1974 Census of Agriculture, Anderson (1979) observes that since 1940 the number of Utah farms has been cut in half and that two thirds of all Utah farm operators are working off the farm. These "part-time" farmers accounted for nearly one half of the farms in Utah and they obtain 75 percent or more of their income from nonfarm sources. These trends in the agriculture sector might suggest some reevaluation of earlier program justifications and policy guides.

Another important economic activity with a large potential demand for water is energy resource extraction, processing and production. As the cost of imported energy supplies has increased, national attention has turned to the development of the vast energy resources located in the arid Western states. Utah has large reserves of coal, oil, oil shale, and tar sands in the Uintah Basin and Colorado Plateau Regions. The availability of suitable water supplies in these regions will be a key factor in energy development.

In some locations, new supplies for energy can be developed from groundwater sources and/or from Utah's share of the Colorado River; however, in many locations water resources are already fully appropriated and transfers of water rights from existing uses will be necessary. A prime source for such transfers, of course, will be irrigated agriculture. Acquisition of water for the large thermal electric power project known as the Intermountain Power Project is a good example. Needless to say, the value of water in energy production is extremely high, and energy companies can afford to pay a high price for the necessary water supply.

In Utah, there will be a significant increase in thermal electric generation to meet the needs of a growing Utah population and industrial sector. Although the location and time schedule for many of the new power plants that will be required are speculative, several projections of water requirements for thermal electric power are presented in Table 3.

Projecting the development schedule for Utah's energy resource is difficult. The

Table 2. Utah farm population trends.

Year	Number of Farms	Average Acreage per Farm	Percent of Farm Land to Total Land	Total Population	Farm Population	
					Number	% of Total
1920.....	25,662	196.8	9.60	451,000	141,000	31.3
1930.....	27,159	206.7	10.67	508,000	116,000	22.8
1940.....	25,411	287.4	13.85	550,000	105,000	19.1
1950.....	24,176	449.4	20.62	689,000	81,000	11.8
1960.....	17,811*	712.4	24.08	891,000	65,000	7.3
1970.....	13,045*	867.2	21.53	1,059,000	38,000	3.6

*Taken from 1959 and 1969.

Table 3. Thermal electric water requirements in Utah (1,000 AF).

Source of Projection	1975	1980	1985	1990	2000
Westwide Study	18.0				
Western Systems Coordinating Council			80.0		148.0
Utah State Study Team					
High Range		30.0			178.0
Low Range		20.0			86.0
Southwest Energy Study				150.0	

urgency with which development will take place is largely dependent on national response to energy conservation efforts and on the actions of international energy suppliers. Accompanying water requirements are equally difficult to project both in terms of amount and time. To date energy developers have secured private sources of funding to obtain needed water and have not represented a need for state financing programs.

These projections indicate increasing demand for water in all counties of the state. However, demand for state water development financing does not necessarily follow directly from these estimates. Gross projections of population growth do not indicate what kind of facilities will be needed or how much they will cost; whether or to what extent the projects to meet specific water needs represent any legitimate need for financial assistance from state sources; what proportion of projected needs are likely to be met by transfers from existing uses; and what additional supplies will have to be developed and transported from remote locations to meet the need. In other words, projections of water demand based upon projections of population and economic growth fail to provide detail on how the demand will be met and what the implications are for the various levels of public financing. Population projections provide an indication of overall demand, but by themselves do not provide the necessary detail to convert the projections into amounts of money needed for water development or what the appropriate mix of private and public financing might be. Appropriation of money to finance water development on the basis of these general indicators may result in an excessive and premature investment of state funds.

Project Inventory Approach to Capital Financing Demand Assessment

An inventory of water projects under active consideration within the state is another means of assessing capital financing requirements for water development. For the state programs, total financing needs include funds for cost sharing on federal projects, for providing state assistance on local projects, and for constructing state owned and operated projects.

The validity of an estimate based on an inventory of potential projects depends upon each project's feasibility--technically, economically, environmentally, and institutionally. If all of these factors have been carefully evaluated, and only those projects that meet minimum standards and are likely to be built are included in the inventory, then the estimate of capital needs based thereon would be realistic. Otherwise, needs may be overestimated.

Assessing a project's feasibility is rather complex, particularly with respect to environmental, social, and political factors. Nevertheless, analysis of engineering soundness, economic costs and benefits, environmental impacts, and social implications should be made to the greatest extent practical utilizing standards and techniques that are available. Without these feasibility analyses, the prospects for implementing project plans are nebulous and uncertain.

Water has been developed in the State of Utah by a variety of public and private entities: the Bureau of Reclamation (now the Water and Power Resources Service), the Soil Conservation Service, the Agricultural Stabilization and Conservation Service (financial assistance to farmers and farm groups), the Utah Division of Water Resources, and corporate entities created specifically for the purposes of water development. To this list may be added the individual homeowner and farmer who have designed and financed numerous small private projects. Projects completed under the various programs in Utah are reviewed here to provide background of past water development activity.

Federal water development activities in Utah fall into two main categories. The first category includes storage and distribution projects in which the federal agencies take a major role in planning, financing, constructing, and sometimes in operating. Such projects are constructed under the programs of the Water and Power Resources Service and the P.L. 566 Watershed Program and the Resource Conservation and Development Program of the Soil Conservation Service. Projects completed in Utah under these programs are listed in Tables A1, A2, and A3 of Appendix A. The second category of federal activity includes projects which are primarily local but receive funding through a federal program. In these projects the planning, administration, construction, and operation are directed by a local organization. Such projects are supported by the Soil Conservation Service REAP-ACP program, grant and loan programs of the Farmers Home Administration, the Economics Development Administration, the Four Corners Regional Commission, and the Department of Housing and Urban Development. Lists of projects funded by these programs in Utah are presented in appendix Tables A4, A5, A6, A7, and A8.

Summaries, by county, of projects completed under two state water development programs, the Revolving Construction Fund, and the Cities Water Loan Fund are shown in Tables A9 and A10 (Appendix A). In each of these programs, the State of Utah has provided capital for locally initiated water development projects. Details of these two funds and the state's new Resource Conservation and Development Fund are discussed later in this chapter.

An examination of Tables A1 through A10 would indicate that a considerable amount of governmental financial assistance has been provided for both large scale and small scale water projects in Utah in recent years.

Demand for state capital to cost share on federal projects. The U. S. Water and Power Resources Service has constructed all of the major federal water projects in Utah. Although numerous reservoir sites have been identified and some preliminary studies have been completed, the Central Utah Project (CUP) is the only active major project of the Service in the state. The Bonneville Unit, the Uintah Unit, and the Upalco Unit of CUP have been authorized and are under construction. Construction started on the two latter units in 1979.

As a result of delays that have been encountered in the appropriation of federal money to complete the CUP, some legislators and other public officials, at one time or another, have suggested the possibility of state financing to accelerate construction. However, since the project is currently going ahead under federal funding, and there is uncertainty as to whether state funding for the project will ever be required, no projection of state funds to complete the CUP is included in this analysis.

The Corps of Engineers has planned one major multipurpose project in Utah, the Little Dell Lake Project ($52.8 million) near Salt Lake City. The local share of costs on this project will be provided by Salt Lake City for municipal water supply, and no requirement for state cost sharing is anticipated.

Six PL 566 projects are under construction in Utah, and six others are in the planning stage (Tables A11 and A12, Appendix A). Planning applications have been submitted for several others.

PL 566 watershed improvement projects require cost sharing by local sponsors--soil conservation districts, irrigation companies, counties, etc. State funds are not required: however, local sponsors may in some cases obtain funding from the State Revolving Construction Fund to help cover their share of project costs. The use of state funds on PL 566 projects is rare and the magnitude is not large. Consequently, no attempt will be made to identify state capital financing needs by an analysis of potential PL 566 projects. Rather, the state financing need that may exist for these projects will be covered by an examination of the revolving construction fund itself and the total demand for its funds imposed by the full range of local water organizations which are eligible to apply.

With the possible exception of some indirect state participation in PL 566 projects just mentioned, an inventory of federal water development activity in the state reveals that there is essentially no identifiable demand for the state to cost share on any active federal projects.

Demand for state capital to assist local projects. The state's Revolving Construction Fund described in detail later in this chapter under water development programs, provides financial assistance for a large number of local water projects. For example, the monthly report of August 31, 1979, shows 25 projects requesting $15.6 million of state funds approved for investigation (Table A13, Appendix A) and 27 projects involving $7 million of state funds authorized, but for which no funds have been committed (Table A14, Appendix A).

The situation with Utah's Cities Water Loan Fund is somewhat similar. Applications approved for investigation as of August 31, 1979, are shown in appendix Table A15; projects approved, but for which no funds had been committed are shown in Table A16.

The backlog of approved but unfunded projects in Tables A14 and A16 results not necessarily from lack of funds in the revolving accounts, but may be due to other factors. Funding may be held up pending completion of plans and specifications, right-of-way acquisitions, water rights matters, and delays in issuing bonds.

Appropriations are sought periodically from the legislature to increase the size of these revolving funds and avoid delays in starting approved projects because of the lack of funding availability. The amounts appropriated to these two accounts since the dates of their creation are shown in appendix Tables A17 and A18.

The Revolving Construction Fund and the Cities Water Loan Fund under the policy criteria used for eligibility until recently have been adequate to meet the demands for water development funds for the types and sizes of projects serviced by these accounts under their current modes of operation. The supplemental appropriations that have added to these revolving funds generally have been sufficient to provide funding for all eligible projects deemed to be feasible by Board standards.

Demand for state capital to fund potential large scale projects. On the heels of the 1976-77 drought, the State of Utah in 1978 expanded its water development financing programs to provide money for water projects costing $1 million or more. This was done through the issuance of $25 million in water bonds to fund any of 10 identified large scale projects (Table 4) and establish a new Resource Conservation and Development (revolving) Fund.

The Utah State Legislature, Study Committee on Energy and Natural Resources

Table 4. Water projects authorized in 1978 water bond legislation.

	Project	Estimated Cost
1.	Long Park Hydroelectric Generation Project (Daggett County)	$ 6,000,000
2.	White River Dam and Hydroelectric Generation (Uintah County)	26,700,000
3.	Mill Creek Development (Grand County)	3,600,000
4.	Recapture Dam (San Juan County)	3,350,000
5.	Browns Draw Dam (Duchesne County)	3,000,000
6.	Ouray Park Dam (Uintah County)	1,105,000
7.	Muddy Creek Dam (Emery County)	11,000,000
8.	Smith-Morehouse Dam (Summit County)	4,500,000
9.	Kolob-Cedar City Project (Iron County)	16,000,000
10.	Indian Head Reservoir (Carbon/Wasatch Counties)	4,000,000
	TOTAL	$70,355,000

(1977) identified 23 "imminent and feasible" water projects, not including the Central Utah Project, which "need to be completed." Each of these potential state projects was estimated to cost in excess of $1 million, and the total for all was estimated at approximately $261 million (Table 5).

Only preliminary studies and rough cost estimates had been completed on many of these projects by the state at the time of the bond legislation, and thus both the cost and feasibility of these projects is uncertain. The 10 projects named in the 1978 legislation seem to be a list of identified possibilities from which selections will be made for actual funding on the basis of feasibility studies to be completed after passage of the bond legislation.

The list of 23 potential projects was used to help justify the $25 million in water bonds issued by the state, but not all of the 10 projects authorized by the bond bill were taken from this list. Three of the 10 were introduced by the Board of Water Resources during meetings prior to passage of the bill. A key factor in the selection of the 10 was that sponsors had to be identified for each project included. Apparently, commitments could be obtained for only 7 of the projects identified initially in the list of 23 projects.

An examination of the list of 10 projects (Table 4) reveals that a desire to distribute the funds among geographical areas also may have been one of the factors in the selection. The 10 projects are located in 9 different geographical areas.

In the report of the Division of Water Resources, "State of Utah Water-1978" 22 potential state water development projects (including 10 water bond projects) are identified. Seven additional projects were identified in interviews with state water officials in the fall of 1979. The status of investigations for these projects as of September 1, 1979, is shown in Table 6. Not all of the projects identified in 1977 (Table 5) appear on the list as some projects had already been dropped from consideration.

A second water bond issue for $25 million was authorized by the legislature in 1980. Although no specific projects were designated in this authorization, the Division of Water Resources identified 19 potential projects requiring funding (Table 7). This list contains some new projects that do not appear on either of the other two aforementioned lists.

In the absence of feasibility analyses for many of the projects that have been identified, a realistic estimate of future demand for development capital associated with this list of projects is impractical.

Water Development Financing Programs in Utah

In making an assessment of demand for state financing of water development, it may be useful to outline the current array of financing programs, both state and federal, that provide capital for various water development purposes. The intent of such an examination is to determine if these programs, viewed together, have gaps and overlaps in meeting the needs of various water users and to see if any trends or problem areas are evident which would indicate a need for state action. In the sections which follow, federal and state programs first are described briefly, and then an analysis is made of the various programs in an overall context.

Table 5. Potential water projects identified by the Division of Water Resources, August 1977.

Project Name	Type of Project	County	Cost (Million Dollars)
BEAR RIVER BASIN			
South Cache	M&I, Flood Control, Irrig., Power	Cache	67.0
Plymouth	Irrig.	Box Elder	20.0
Cub River	Irrig.	Cache	3.0
Bonneville Bench (Honeyville)	Irrig., Power	Box Elder	20.0
Upper Bear Development	Irrig., Power	Rich	10.0
WEBER RIVER BASIN			
Layton Canal Extension	M&I, Irrig.	Davis	2.3
Smith & Morehouse Dam	Irrig., M&I, Flood Control	Summit	10.0
GREAT SALT LAKE DESERT AREA			
South Willow Dam	Irrig.	Tooele	2.0
Western Desert Develop.	Irrig., Power	Tooele, Beaver, Millard	1-10
UPPER COLORADO RIVER BASIN			
Mill Creek Dam	Irrig., Flood Control	Grand	3.5
Recapture Creek	Irrig., Flood Control	San Juan	1.5
Bluff Bench	Drip Irrig.	San Juan	3.0
White River Dam	Irrig., Energy Develop.	Uintah	12.0
Fremont Dam (Aldrich Alt)	Irrig., Power	Wayne	3.5
Muddy Creek Dam	Irrig., Power	Emery	5.0
White River Dam	Irrig., M&I	Carbon	3.0
Energy Corridor (Pipeline & Reservoir)	Power	Emery	50.0
Browns Draw Dam	Irrig.	Duchesne	1.5
Sand Wash Dam	Irrig.	Emery	1.0
LOWER COLORADO RIVER BASIN			
Warner Valley Water Project	Power, M&I, Irrig.	Washington	27.0
North Fork Virgin River	Irrig., M&I	Washington	2.0
SEVIER RIVER BASIN			
Gunnison Dairy Dam	Off Stream, Irrig. Power	Sanpete	2.0
Skutumpah Dam	Off Stream, Irrig. Power	Sevier	2.0
TOTAL			261.3

Table 6. Status of large scale water projects in Utah as of September 1, 1979 (Checks indicate completion of step).

Project	Concept Development	Preliminary Investigation	Engineering Feasibility	Water Rights/Legal Feasibility	Economic Feasibility	Financial Feasibility	Environmental Impact Statement	Sponsor Identification	Authorized by Board	Funds Appropriated	Construction Contract Let
Smith & Morehouse	✓	✓									
Mill Creek Dam	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Recapture Dam	✓	✓		✓	✓	✓	✓	✓			
White River Dam	✓	✓	✓		✓			✓			
Muddy Creek Dam	✓	✓		✓	✓	✓		✓	✓		
Indian Head Dam	✓	✓	✓					✓			
Browns Draw Dam	✓	✓	✓	✓	✓	✓		✓	✓		
Long Park Power	✓	✓			✓	✓		✓			
Ouray Park Dam	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Kolob Reservoir	✓	✓						✓			
South Cache Project	✓	✓	✓	✓	✓						
Cub River Project											
Bonneville Bench (Honeyville)	✓	✓									
Woodruff Narrows	✓	✓	✓		✓	✓		✓	✓	✓	
Oneida Narrows	✓	✓			✓						
Layton Canal Extension	✓	✓			✓	✓		✓	✓		
South Willow Dam	✓										
Bluff Bench	✓	✓	✓	✓		✓		✓			
Fremont Dam	✓	✓									
Warner Valley	✓	✓	✓	✓	✓	✓	✓	✓			
Yellow Creek	✓										
North Ogden-Pleasant View	✓	✓									
Plymouth Dam	✓	✓									
Snake Valley Development											
Energy Corridor	✓										
Sand Wash	✓										
North Willard Bay	✓										
Beaver Creek											
Narrows Dam (Gooseberry)	✓										

*Potential state supported projects identified by the Division of Water Resources, each estimated to cost in excess of $1 million.

Federal Programs

Introduction. Federal financing for water development is provided through 1) cost sharing on federal or federally assisted projects, 2) grants, and 3) loans. These three forms of financial assistance originate in numerous legislative authorizations and are administered through a multitude of different agencies and programs. Although technical and financial assistance for planning are important elements of the overall federal program, only those programs which provide financing for the construction and improvement of water systems through cost sharing, grants, and loans are of interest in this report.

Policies for cost sharing have been established over a long period of time by unrelated congressional actions and uncoordinated administrative determinations. As a result, policy inconsistencies exist among federal agencies with similar water programs, among water development purposes within a single agency program, and within single agency programs for a single development purpose (Laughlin 1970). Similarly, grant

Table 7. Potential projects identified by the Division of Water Resources in justification of the 1980 water bond legislation.

Project	County	Est. Cost	Anticipated Expenditures F.Y. 80-81	F.Y. 81-82	F.Y. 82-83
White River Dam & Hydro	Uintah	$25,000,000	(Being Funded by 1978 Bonding Program until 1983)		
Roosevelt Dam	Duchesne	1,500,000	35,000	100,000	1,500,000
Weber-Box Elder Dev. Proj.	Weber	3,000,000	500,000	500,000	500,000
Monticello Dev. Project	San Juan	2,500,000	40,000	70,000	2,000,000
Big Creek Dam	Rich	1,100,000	50,000	50,000	1,000,000
Warner Valley Project	Washington	5,000,000	-	-	Unk
Bonneville Bench Project	Box Elder	1,500,000	-	50,000	500,000
Smith-Morehouse Project	Summit	4,700,000	Unk		
Kolob-Cedar City Project	Iron	5,000,000	-	Unk	
Grantsville Dev. Proj.	Tooele	5,000,000	25,000	70,000	Unk
Muddy Creek Dam	Emery	9,000,000	Unk		
Indian Head Dam	Carbon	4,000,000	-	-	Unk
South Cache Project	Cache	17,500,000	-	-	Unk
Narrows Dam	Sanpete	4,000,000	-	-	Unk
Kanosh Dev. Project	Millard	2,000,000	25,000	50,000	Unk
Escalante Dev. Project	Garfield	3,000,000	25,000	75,000	Unk
Lower Fremont Dam	Wayne	16,500,000	-	-	Unk
Enterprise Ir. Co.	Washington	800,000	800,000		
Layton Canal	Davis	1,400,000	1,000,000	400,000	
	Legal Costs		40,000	2,000	1,000
	Office Salaries & Benefits		100,000	150,000	150,000
	Travel		4,000	6,000	7,000
	Capital Outlay		10,000	10,000	8,000
Others (Data Processing, Testing, etc.)			10,000	10,000	10,000
Total Anticipated Expenditures by Fiscal Year			$2,664,000	$1,543,000	$5,676,000
Total Expenditures F.Y. 80-81 - F.Y. 82-83 = $9,883,000					

and loan programs vary widely in features and requirements. Overall, federal money is made available for water development under a diverse and inconsistent array of alternative arrangements. Discussion of various arrangements is presented here according to purpose for those purposes relevant to water development in the State of Utah. Some details of each program are presented in Table 8.

Irrigation. Federal financial assistance for irrigation development is provided through: 1) federal and federally assisted major water projects, 2) cost sharing and loan programs to improve farm irrigation systems, and 3) programs which have a primary concern for protection and improvement of the environment. The programs providing construction financing have evolved over a long period of time as results of such broad national concerns as the settlement of the west, providing an abundant and low cost food supply, improved utilization of natural resources, assistance to individual farmers, and protection of the environment. Ten specific programs are shown in Table 9.

Estimated annual funding levels are shown for these programs in Table 7. Because of the widely varying requirements and rules of these programs and differences among states as to need, there are significant differences in the amounts of funds states receive. Funding levels in Utah for several of the programs are presented in the discussion which follows.

Table 8. Financial assistance programs for water development.2

Program	Range of Project Costs ($)	Water Users				Eligible Users			Form of Support			Remarks
		Irrigation	Culinary (incl. lawns wtr)	Industrial	Other[1]	State agencies	Local organizations	Individuals	Cost Sharing	Grants	Loans	
Bureau of Reclamation												
Federal Reclamation Projects	35,000,000 to 832,000,000	✓	✓	✓	✓	✓	✓		✓			Multiple Purpose Projects
Irrig. Sys. Rehabilitation and Betterment	20,000 to 30,000,000	✓					✓				✓	Federal Reclamation Projects only
Irrig. Distribution System Loans	400,000 to 41,000,000	✓	✓	✓			✓				✓	Federal Reclamation Projects only
Small Reclamation Projects	200,000 to 10,000,000	✓	✓	✓	✓							Multiple Purpose Projects
Soil Conservation Service												
Watershed Protection and Flood Prevention	20,000 to 13,000,000	✓			✓	✓	✓			✓		Watersheds of 250,000 acres or less
Resource Conservation and Development	2,000 to 250,000	✓	✓		✓	✓	✓			✓		Authorized RCD areas only
Agricultural Stabilization and Conservation Service												
Agricultural Conservation Program	Up To 10,000	✓			✓			✓		✓		On agricultural land only
Farmers Home Administration												
Resource Conservation and Development Loans	2,400 to 250,000	✓	✓		✓		✓				✓	Authorized RCD areas only
Watershed Protection and Flood Prevention Loans	7,230 to 5,000,000	✓				✓	✓				✓	Approved PL 566 watersheds only
Soil and Water Loans	3,300 to 100,000	✓			✓			✓			✓	Farming partnerships and domestic corps also are eligible
Irrigation and Drainage and Other Soil and Water Conservation Loans	32,000 to 612,000	✓			✓		✓				✓	Public bodies and non-profit corps. are eligible
Farm Ownership Loans	18,830 to 100,000	✓	✓					✓			✓	
Water and Waste Disposal Systems for Rural Communities (Loans)	50,000 to 20,000,000		✓				✓				✓	Limited to rural communities

Table 8. Continued.

Program	Range of Project Costs ($)	Water Uses				Eligible Users			Form of Support			Remarks
		Irrigation	Culinary (Incl. lawns wtr)	Industrial	Other 1/	State Agencies	Local Organizations	Individuals	Cost Sharing	Grants	Loans	
Farmers Home Administration continued												
Water and Waste Disposal Systems for Rural Communities (Grants)	5,000 to 1,000,000		✓				✓			✓		Limited to rural communities
Low to Moderate Income Housing Loans	45,200 to 571,000		✓					✓			✓	Limited to rural areas
Industrial Development Grants	7,000 to 769,023			✓		✓	✓				✓	Limited to rural areas
Economic Development Administration												
Economic Development-Grants and Loans for Public Works and Devp. Facilities	5,000 to 7,138,000		✓	✓		✓	✓			✓	✓	Economically depressed areas
Economic Development-Public Works Impact Project	600,000 or Less		✓			✓	✓			✓		Economically depressed areas
Section 304 Grants	1,000 to 976,000		✓	✓		✓	✓			✓	✓	Economically depressed areas
Four Corners Regional Commission												
Four Corners Supplements to Federal Grant-In-Aid	1,000 to 300,000	✓	✓			✓	✓			✓		
Department of Housing and Urban Development												
Community Development of Block Grants--Discretionary	First Year of Program 1977		✓			✓	✓			✓		Urban Communities
Community Development of Block Grants--Entitlement	Determined by Formula		✓				✓			✓		Urban Communities
New Communities Loan Guarantees	7,500,000 to 50,000,000		✓	✓			✓				✓	
Utah Division of Water Resources												
Revolving Construction Fund		✓					✓				✓	< $1,000,000
Cities Water Loan Fund			✓				✓				✓	
Resource Conservation and Development Fund		✓	✓	✓	✓	✓	✓				✓	> $1,000,000

1/ Covers other uses such as hydropower, flood control, water quality control, outdoor recreation, and fish and wildlife enhancement. Consult program descriptions in catalog of domestic public assistance (U.S.) for details.

2/ Source: Catalog of Domestic Public Assistance.

Table 9. Federal programs which provide financial assistance for irrigation development.

Program	Agency	Estimated Annual Funding ($1 million)	Type of Financial Assistance			Eligible Entities			Eligible Measures						Remarks
			Cost Sharing	Grants	Loans	State Agencies	Local Organizations	Individuals	Water Storage	Conveyance (Structural)	Conveyance (Management)	On Farm (Structural)	On Farm (Management)	Environmental Protection	
USDI															
Construction Program	WPRS	505.0	✓				✓		✓	✓	✓			✓	
Small Rec. Pr. Act	WPRS	18.7			✓		✓		✓	✓				✓	
Rehab. Betterment	WPRS	8.0			✓		✓			✓					
Dist. System Loans	WPRS	5.7	✓		✓		✓			✓					
USDA															
ACP	ASCS	18.1	✓					✓		✓		✓		✓	
Emerg. Cons. Meas.	ASCS	10.1	✓					✓				✓		✓	
Watershed P&FP	SCS	5.2	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Project areas
Assoc. Loans	FmHA	4.5			✓		✓		✓	✓					
RC&D	SCS	3.7	✓		✓		✓		✓	✓	✓			✓	Project areas
Soil & Water Loans	FmHA	28.8			✓			✓	✓			✓			

Source: U. S. Department of the Interior

The only program for direct federal construction of major water projects for irrigation is under the U.S. Water and Power Resources Service. Although this program currently provides about $505 million annually, the amount varies considerably from year to year. The program has been extremely active in Utah. Numerous projects have been built, and some large scale elements of the Central Utah Project are currently under construction. Planning has been done for several other projects.

Water and Power Resources Service sponsored projects have become controversial in recent years. Environmental groups, advocates of economy in government, and others have become critical of reclamation programs. As a result, prospects for new project authorizations in Utah under this program are believed to be poor.

Construction costs allocated to irrigation on federal reclamation projects generally are repaid without interest during a 50 year-period. All the funds, however, do not come from irrigators. Revenues from hydroelectric power and nonagricultural water uses have also been applied to repay irrigation facility construction costs. According to a recent estimate (National Water Commission 1973), power revenues pay about 60 percent of construction costs allocated to irrigation. On many projects, irrigation water users pay only 10 to 15 percent of the total allocated irrigation construction costs, including interest. The proportion of allocated construction costs assigned for repayment by irrigators is based on their capacity to pay and varies greatly among projects.

The Soil Conservation Service administers two programs which cost-share with local organizations in constructing and improving water storage and distribution systems. These are the Watershed Planning and Flood Protection Program and the Resource Conservation and Development Program. Approximately $16 million of federal funds were spent in these programs in Utah in 1978.

Several other federal programs cost-share with individual irrigators in the installation of irrigation improvements. Under the Agricultural Conservation Program (ACP), states receive allotments based upon conservation needs and acreage of private farm ownership. Total assistance and number of participating farms are shown for the 10 year period, 1967-77, in Table A4 (Appendix A). It is estimated that 75 percent of these ACP funds are for water system improvements. Only agricultural producers are eligible to participate in the program, and funds cannot be used for cost-sharing with other federal agency programs. The maximum annual payment per individual is $2500, per group project the maximum is $10,000. The federal cost-share under this program varies from 50 percent to 75 percent, except during emergencies when it may rise to 80 percent.

Several federal programs provide loans to individuals and organizations to finance irrigation system improvements. Available loan funds nationally total about $65 million annually. Distribution system loans and rehabilitation betterment loans are available to irrigation districts operating federal projects. Irrigation organizations throughout the 17 Western States are eligible for small reclamation project loans.

The Farmers Home Administration administers two major loan programs. One provides soil and water loans to irrigators for on-farm measures and the other provides loans to irrigation associations. Farmers Home also administers loans to help finance the local share of costs in Resource Conservation and Development projects and Small Watersheds projects.

Municipal, industrial, and individual (rural) water supply. Early legislative attempts to define a federal role in providing for municipal and industrial (M&I) water supply culminated in the Water Supply Act of 1958 (Public Law 85-500). This act authorized the addition of M&I storage capacity to major federal reservoirs constructed for other purposes. In the years following, other acts have established programs of cost sharing, grants, and loans for M&I water supply development. Many of these programs are directed to the needs of rural communities and cities of relatively small population. They are administered by agencies in the Departments of Agriculture and of Housing and Urban Development and in the Economic Development Administration.

Under the Water Supply Act of 1958, nonfederal interests are required to pay the full cost of the capacity added for M&I supply except in PL 566 projects and certain grant programs. Payments of costs incurred for meeting anticipated future demand may be deferred until the additional capacity is actually used, but interest payment must be made after 10 years even if the capacity has not been used by that time.

In Utah, M&I water supply has been developed in multiple purpose reclamation projects such as the Central Utah Project. The conservancy district is the nonfederal institution which has been used to manage and allocate water for all uses from these projects. The state and other nonfederal entities generally have not purchased M&I storage in federal reservoirs as has been done in California and a few other states.

Additional storage capacity for M&I supply may also be included in small watershed projects (PL 566) of the Soil Conservation Service. The Rural Development Act of 1972 authorizes the federal government to bear up to 50 percent of the costs for current M&I storage needs in these projects.

Municipalities and other local entities have participated in a number of PL 566 projects in Utah.

The U. S. Department of Housing and Urban Development currently administers two block grant programs and a loan guarantee program which cover among other things, the development of water supply systems. The funding of HUD grant programs in Utah is shown in Table A8 (Appendix A).

The Farmers Home Administration of the Department of Agriculture assists communities and individuals in rural areas to develop water supplies through several grant and loan programs. Some of these provide funding for irrigation system improvements as well as for domestic needs, and the details of these programs were presented in the preceding section on irrigation.

Grants for up to 50 percent of the construction cost of water facilities may be obtained under Farmers Home Administration programs. Loans may be obtained only in instances in which private financing is unavailable. Cumulative total of Farmers Home Association loans and grants for community water systems in Utah are shown in Table A5.

The Economic Development Administration in the U. S. Department of Commerce administers a financial aid program to increase incomes in depressed areas. Some of this aid is provided for improving water and sewer services under the assumption that these facilities provide jobs, reduce unemployment, and thus promote economic growth. The program generally serves nonmetropolitan areas, but grants and loans may be made to large cities. EDA loans and grants to various entities for water system improvements in Utah through 1977 are shown in Table A6.

The Four Corners Regional Commission (FCRC) provides significant amounts of financial aid in Utah, some of which is used for the development of water systems. The Commission is a federal-state organization established in 1967 to increase employment and economic growth in the underdeveloped regions of the "Four Corner" states of Arizona, Colorado, New Mexico, and Utah.

The Supplemental Grant Program of the FCRC helped fund 86 projects in Utah from 1968-1973. Total grant funds for these projects, many of which were for water development, amounted to over $5 million. As an example, supplemental grants awarded in Utah from 1974-1976 are shown in Table A7.

State Water Development Financing Programs

Revolving Construction Fund. The Revolving Construction Fund (RCF), which has been in existence since 1947, has been used for financing small projects which were presumed to be beyond the ability of the private entrepreneur to finance, yet smaller than those projects typically considered under the programs of the U. S. Water and Power Resources Service. Although the enabling legislation permits funding of municipal water systems and other nonagricultural projects, the main use of the fund has been for irrigation projects.

Since the Utah Constitution prohibits the lending of state credit for any nongovernmental activity, the state through the Board of Water Resources builds water projects by advancing construction funds to local sponsors and enters into a "purchase agreement" to allow them to buy the projects from the state.

The funding eligibility generally has been limited to mutual irrigation or water companies, conservancy districts, and water user associations that have a fairly high level of financial integrity. In some instances the Board has provided financial assistance to a single family unit where other groups could not be involved in the water resources to be developed. As a matter of present operating policy, individuals are given a low priority for water development financing under this program, and because of limited money, it is very unlikely that future funds will be advanced to individual users.

The Revolving Construction Fund has enjoyed periodic legislative funding additions. By 1977, the Utah legislature had appropriated an aggregate $17 million to the fund which by virtue of its "revolving" character provided almost $23 million in development capital for 392 projects. Typical projects include construction of small reservoirs, lining of canals, drilling of wells for agricultural and culinary purposes, installation of pipeline distribution systems, repair of irrigation facilities, and construction of some culinary water systems. In many cases, federal grants and private sponsors contributions have been combined with the Revolving Construction Fund capital, and these sources have provided an additional $25,868,914 for investment in water development projects.

Projects are considered for funding from this revolving fund upon application by project sponsors. Generally the projects are considered on a "first come first served" basis and funding is provided for projects deemed feasible as funds become available in the revolving account. Applications go through a process of 1) initial screening by the Board, 2) investigation of feasibility, 3) authorization, and finally 4) commitment of funds.

Water development capital has been made available interest free. This interest foregone subsidy (or state cost-share) has

been considered by some state water officials to be justified as a payment for the social, or "public," benefits that spin off from water projects. As indicated in the policy declaration of the act creating the fund, the interest-foregone subsidy was also justified on the social ground that low returns limited agriculture's "ability to pay."

The Board of Water Resources has been given a great deal of discretion in determining which projects are to be funded under the RCF. The Board has consistently held that each project should be considered on its own merits, and that individual Board members should exercise their knowledge, background, and judgment in the decisions made. The appraisal and comment of the Board member from whose region the proposed project is located carries considerable weight in the decision process. Evaluation of economic feasibility has generally been of less concern than the financial feasibility or repayment capability. Repayment capability has often been enhanced by the acquisition of financial assistance under programs of the U.S. Department of Agriculture.

Cities Water Loan Fund. A second revolving fund, the Cities Water Loan Fund (CWF), was created in 1975 in response to the need of communities in energy development impacted areas to develop culinary systems to supply water to much larger populations and of many other small communities to improve their culinary systems to meet increasingly stringent health standards. This fund enables the state to exercise its credit on behalf of communities thus affected.

The financing mechanism of this fund differs from that of the Revolving Construction Fund in that incorporated cities and towns are subentities of the state and must retain ownership of their projects at all times to comply with state statutes which forbid municipalities to alienate the title to their water rights. Thus, the sponsors are required to pass a bond issue to cover the costs of the project and create a legal lien upon the necessary tax and/or water revenues. The state then purchases the bonds from the community to provide the community with capital for needed improvements.

Between 1975 and 1979, this fund helped finance 71 projects, including development of distribution systems, natural springs, storage tanks, treatment plants, and wells. The fund purchased over $9.9 million of bonds for projects costing over $25 million. Of the remaining cost, nearly $12 million has been covered by federal grants and loans and $3.1 million by sponsor's contributions. Since the fund has only been in operation a short time, there have been only a few repayments to begin the revolving process. The fact that this fund, like the Revolving Construction Fund, provides money on an interest free basis is undoubtedly a factor in determining the level of demand for its resources.

Water Resources Conservation and Development Fund. A third fund, the Water Resources Conservation and Development Fund (WRCDF), was created in 1978 in the wake of an 18-month drought and federal water policy initiatives interpreted as threatening western water development. The drought heightened public sensitivity to the importance of a stable water supply, and threats to reduce federal funding for major federal water projects led state leaders to reduce Utah's reliance on federal sources for financing water development.

The Water Resources Conservation and Development Fund differs from the Revolving Construction and Cities Water Loan Funds in two important aspects. First, the new fund involves the state in underwriting much larger projects having the potential for contributing to the achievement of broader social objectives. Second, projects under the WRCDF must pay interest on the borrowed capital. While establishing the principle of repayment with interest, the enabling legislation left the Board of Water Resources with discretion to set the interest rate to obtain a reasonable rate of return based upon economic and financial analyses.

Initial funding for WRCDF came from $25 million in general obligation bonds issued by the state in the fall of 1978. Another $25 million was authorized in 1980. Money also will be added to the fund by subsequent appropriations and by earmarked revenues from power and water sales. Assignment to the fund of a portion of the state income from federal mineral lease payments is also under consideration by the legislature and governor.

Implications for State Financing Initiatives

Basic characteristics of the financial assistance programs for water development are outlined in Table 8 (page 13). An examination of this table reveals that several of the programs apply to the same users. For example, seven financial assistance programs of the federal government and two of the state programs provide loans to local organizations for irrigation development. There appears to be considerable overlap and duplication between the two state water development funds and these several federal programs. However, variations in requirements for eligibility and other factors need to be weighed before an accurate judgment can be made in this regard.

A study performed by the State of Utah Legislative Auditor General (1977) concluded that federal funds were not being sought prior to using state funding for water projects because of several unique characteristics of federal programs. These character-

istics, which vary among programs, include 18-month lag between time of application and funding, restriction of funding to projects related to economic development, restriction of funding to only agricultural producers, restriction of funding to irrigation companies, restriction of funding to projects located in specific geographical areas of the state, and restriction of funding to only those projects which receive funding from another federal agency. Since the state has not required project sponsors to apply for federal funds prior to applying for state funds, it is unlikely that many would, not only because of the aforementioned restrictions, but also because of the lower financing costs available to sponsors receiving state water development funding. In contrast to the state's zero interest policy for the RCF and CWLF, many of the federal programs require repayment with interest.

There are no formal organizational arrangements for coordinating the financing of water projects in the state through the numerous federal and state programs in existence. Project sponsors must seek out and apply for funds under each of the programs they wish to utilize. There is no coordinated information system to assist them in determining where funds are available in the various programs. However, advice and assistance are available in each of the agencies.

The lack of an overall coordinative mechanism for water project funding in the state is a deficiency that ought to be corrected. And, as discussed elsewhere in this report, projects should be evaluated in an overall context to assure that investment of public money, no matter what the source or whatever the combination of financing programs utilized, meets minimum investment criteria.

In light of the unique characteristics of each of the federal and state financing programs, a determination of the adequacy of these programs in total to meet the demands for development in all water use categories is a complex problem. Because of program differences, comparisons are not exact. Demand for funding under each program obviously has elasticity that is affected by differences in financing costs, delays in processing applications, and eligibility restrictions.

In the absence of an indepth comparative analysis of all water development funding programs in the state, it is difficult to judge whether existing programs and existing levels of funding, taken in an overall context, have unused capacity or would require expansion to meet various levels of demand that might be identified.

CHAPTER III
SOURCES OF CAPITAL FINANCE
FOR AN EXPANDED STATE ROLE

Long Term Debt

In contrast to federal practice, which relies largely on appropriations of tax revenues for capital outlays, long term debt traditionally has been the major source of capital finance for state and local governments.

The Bond Market. The prospects for the state obtaining future amounts of debt capital depend greatly upon bond market conditions, the attractiveness of specific bond issues, and, of course, the financial status and history of the state in meeting its credit obligations.

The reception of the market to new issues of municipal bonds depends not only on the attractiveness of the issues, but also on the relative availability and attractiveness of competing long-term investments opportunities such as corporate bonds and treasury bills. Other factors that may affect the demand for municipal bonds include the effects of inflation and recession on the investors, and the impacts of governmental policies designed to fight inflation and recession.

During the years 1950 through 1974 state and local bond issues were approved between 50 and 90 percent of the time in elections. Issuance of state and local debt gradually rose to an annual rate of over $8 billion in 1974. Then in 1975, in a recessionary economy following the Viet Nam war, rumors began circulating that New York City would not be able to meet its obligations on maturing debt issues. In the crisis of confidence that emerged during that year, only 29 percent of the debt issues presented to voters nationwide, totaling less than $3.5 billion, was approved.

The market in general made a rapid recovery from this crisis. By 1977, state and local governments in total had amassed nearly $14 billion in surpluses, thus reversing deficits of 1974 and 1975. These surpluses resulted not only from improved financial management (a possible by-product of the New York City crisis) but also from increased incomes generated in a period of economic recovery. In 1977, a record $44 billion of municipal bond issues was approved, although the percentage of general obligation bonds slipped to 40 percent (as contrasted to over 50 percent prior to 1975). Public confidence was increased by the federal assistance given to New York City and the decisions of several courts restraining the city from engaging in ex post facto modification of original bond covenants. Perhaps the most important legacy of the New York City experience is the reforms in the borrowing procedures of state and local governments it has induced including the development of more and better information on proposed bond issues.

The June 1978 passage of the Jarvis-Gann initiative (Proposition 13) in California brought perhaps even greater potential for disrupting the municipal bond market. This action, which limits the property tax in California, and threatens to spread to other states, has serious implications for the municipal bond market. Recognizing that tax revenues needed to service bonds are jeopardized, the Moody's Investors Service in mid-April 1978 declined to rate a $40 million issue by the Irwindale Community Redevelopment Agency. Consequently, the bonds sold at 7.5 percent instead of 6.5 percent for a similar A-rated bond (Roscoe 1978). State and local governments not only will find borrowing costs higher, but may be unable to raise funds through general obligation bonds and will have to turn to less secure revenue bonds where these are feasible.

In the future, Utah and other states that would like to participate more actively in water development may be caught in a financial squeeze brought about by voter-imposed tax limitations and increasing costs (both interest costs and construction costs). Although larger jurisdictions and those that use their bonding capacity more cautiously can, and will, remain competitive in the bond market due to their size, their ability to generate revenue, and their experience with bond issues; others will not be able to compete. The trend toward greater use of revenue bonds can be expected to continue. However, revenue bonds, though ideally suited for certain water projects such as hydropower, are impractical for other projects. Revenues from a water supply project, for example, may be delayed until off-site distribution facilities are constructed, and then will grow, but slowly as demand grows.

Although bond ratings provided by rating services are subject to change, the outstanding bond issues of Utah are currently given the highest possible rating by Moody's

Investors Service and Standard and Poor's Corporation. This would seem to indicate, other things being equal, that long term debt remains a feasible source of capital finance for future water development.

Legal limitations. Most states have constitutional limitations on general obligation debt. Many state constitutions limit the amount of debt that may be incurred in terms of a maximum dollar amount, proportion of property values, proportion of tax collections, or proportion of debt redemption. Some states, having no monetary limits, may create debt only by popular referendum or by a two-thirds majority vote in both houses of the legislature. In a few states, no debt, with some exceptions related to purpose or type, may be incurred without a constitutional amendment. Legal ceilings on interest rates and maturity limitations (for example, a 20 year maximum) have been significant constraints on long-term borrowing in several states.

Article XIV, Section 1, of the Utah Constitution permits the state to contract debt not exceeding in aggregate at any one time an amount equal to 1.5 percent of the assessed value of the taxable property of the state as shown by the last assessment roll compiled prior to the incurring of such indebtedness. The Supreme Court of the State of Utah has held that the value to be used is the fair cash value of taxable property as reflected by the current assessment roll.

The Legislature has defined assessed valuation in Utah as 25 percent of reasonable fair cash value. The last completed assessment roll for state purposes (1979) indicated an assessed valuation of $5,240,516,524. Thus, the reasonable fair cash value is $20,962,066,000. The 1.5 percent debt limitation provides a borrowing capacity of $314,430,990. In 1978 and 1979, the state issued general obligation bonds in the total amount of $75,115,000. This sum added to the amount of debt outstanding of $80,000,000 left a 1979 net bonding capacity of $159,315,990.

The two $25 million water bond issues, one in 1978 and one in 1979, were within the state's legal debt limit, but two other legal issues emerged.

The first issue pertains to a constitutional prohibition on the use of state credit for projects that are not clearly for the public benefit. This issue was raised with respect to projects that provide water for hydropower production, cooling water supply, and other private and industrial uses. Although official resolution of the issue may have to come from a court test, Title 73 of the Utah Code holds water to be the property of the state and beneficial use the measure of the right granted by the state. Furthermore, Section 73-1-5 provides that "the use of water for beneficial purposes as provided in this title is hereby declared to be a public use," and the court cases cited under this section indicate that private water uses are in effect granted the status of a public use. For example. condemnation action which is ordinarily limited to public entities may be exercised by a private firm to construct a water distribution system.

The second issue is related to the tax exempt status of the bonds. Under Section 103(b) of the Internal Revenue Code of 1954, if more than 25 percent of bond proceeds are used to provide for private-industrial use, the bonds may be considered taxable industrial development bonds. Even though all beneficial uses of water may be public uses under Utah law, the threat of a different Internal Revenue Service interpretation is of concern.

In an apparent effort to avert delays and implications that might arise from the aforementioned legal issues, the Board passed a resolution which provides that construction will not be initiated on any project without first obtaining a ruling from the Internal Revenue Service, or an opinion of Bond Counsel, that the construction of such project or the sale or disposition of any project or the output thereof will not cause interest on the bonds to be subject to federal income taxation.

Taxes and Appropriations

Taxes and project revenues are the two primary sources of funds for paying off the debt created to finance water resources development. If project revenues are sufficient, they can be used to pay the entire debt. If less tax money is available, borrowing capacity is reduced. If more tax money can be applied directly through pay-as-you-go financing, the need to borrow is reduced. Specifically, appropriations of tax proceeds directly to water projects and revolving water development funds have been made by Utah and other states, so the potential for increasing taxes for this purpose is of interest.

Tax paying capacity is very difficult, if not impossible, to assess in absolute terms. The capacity of people to support their government with taxes is determined by many factors including the population's total resources--its income, wealth, business activity, etc.: the demands made upon these resources, including those made by other governmental jurisdictions: and, the quantity and quality of governmental services and the importance people assign to these services as compared with their private wants. In addition to these factors, which can only be used to estimate tax paying capacity through subjective judgments, innumerable, less tangible elements of time and circumstance also influence the level of taxation people deem to be reasonable.

Because of these complexities, any attempt to measure fiscal capacity in absolute terms would be impractical, but a comparison of Utah's capacity relative to other states is useful. Two basic approaches have been used to measure fiscal capacity and make comparisons among states. One utilizes economic indicators, particularly those that relate to income in the state out of which state and local taxes can be paid. The other approach deals with the taxable resources that are available, and the amount of revenue these resources would produce if subjected to various levels of taxation.

Since taxes are generally paid out of current income, unless a state is drawing down its capital stock, the total income being generated within a state is a measure of its capacity to meet public and private needs. Income can be measured either where it is produced or where it is received, but in light of states' ability to export part of their taxes, income produced may give a more accurate measure. To export taxes means that even though a tax is imposed in one state, it in fact reduces the income of someone residing in another state. A business tax imposed on a product at the site of production but passed along in terms of higher prices to consumers in another state is an example. The results of studies made several years ago indicate that although all states export part of their taxes, tax imports generally balance tax exports (Sundelson and Mushkin 1944).

An index of the relative potential of state and local governments to raise revenue through taxation can be found in taxable capacity based upon potential yields of taxes on which state and local governments actually rely. Since the 50 states use many of the same kinds of taxes but in different combinations and with infinite variations in detailed provisions, designing a representative tax system for a yardstick is difficult. One approach is to average currently employed state-local tax structures. The rate of each of the taxes included in the system is set at a level that, when applied to the estimated base for a particular tax, produces an annual amount of revenue for the states in aggregate that is equal to the total annual collections in all the states for this type of tax. Thus, the representative tax system represents a cross section of current tax practice in all the states (including their local governments).

Tax effort, or fiscal pressure, has traditionally been measured by the ratio of state-local tax collections to resident personal income. It also can be measured by the ratio of state-local tax collections to fiscal capacity as measured by the representative tax method. Both of these approaches enable interstate comparisons of relative fiscal positions at a given time, but neglect trends in tax pressure over time.

Regardless of fiscal pressure at a given time, citizens are more likely to perceive a heavier burden in states where tax pressures are rising than in states where the pressure is relatively constant or falling. This perceived pressure may add to the resistance of taxpayers to tax increases. Fiscal tax pressure indexes which include a time dimension are estimated and tabulated in Advisory Commission on Intergovernmental Relations (1977, p. 5, 9). A single measure of "fiscal blood pressure" for each state is given in the form of a ratio of index numbers. The numerator indicates the state's relative position with respect to tax effort in 1975 and the denominator indicates the state's relative change in fiscal pressure from 1964 to 1975. Thus, the median state's fiscal pressure is 100/100.

The index for Utah based upon fiscal capacity measured in terms of resident personal income is 97/8. Based upon fiscal capacity measured by the representative tax method, it is 103/65. Thus, Utah's fiscal pressure is near the median and falling according to this analysis. The policy implication of this is that the potential to increase taxes for worthwhile programs without undue hardships is fair.

There are a number of reasons for caution in interpreting interstate comparisons of tax effort. A low tax effort index does not necessarily indicate the need for more taxes. States of varying stages of economic development or with varying policies for any number of political reasons may choose to allocate resources differently between public and private uses. For example, in less developed states, low tax rates may be offered as an incentive for industries to locate within the state. On the other hand, some states may choose to provide with higher taxes, a higher level of public facilities and services to attract industry.

A number of other points should be considered in making interstate comparisons. Differences among states in urbanization, economic base, amount of unemployment, and other respects are reflected in different desires and requirements for services, and hence divergent tax efforts. The amount of borrowing and collection of user fees and other non-tax revenues by a state during a given period influence its tax effort rank. Only if all states used identical revenue devices would the effect of this variable be eliminated. Also, tax effort indexes are not indexes of severity. They do not take into account differing absolute levels of per capital income.

The mounting resistance to property and other general taxes may be the impetus for shifting more of the burden of water development financing to direct beneficiaries, and this could lead to an expanded application of

user charges for servicing long term debt and accumulating development capital. Federal policies that are exerting pressure on states to pay for a larger share of water project costs may have a similar result. In meeting increased financing responsibilities, states will probably have to consider unconventional sources of revenue such as user charges.

Two types of user charges might be considered by states for financing water development--a full cost charge that would recover development costs through wholesale and/or retail sales of water and hydropower, and a user fee similar to an excise tax which would constitute a basic charge for the use of the resource per se. Utah currently is considering the development and management of some large scale water storage projects which would generate water and power revenues. These revenues would be used not only to repay project costs, but also to contribute to water development funds for constructing subsequent projects. User charges similar to an excise tax have not been imposed by most states including Utah. However, water user charges could produce significant amounts of revenue from major water uses with only modest increases in current prices (Hoggan et al. 1977).

Mineral Lease Revenues

Federal coal reserves located in Utah are the basis of a significant and increasing amount of lease revenue paid to the state. Some of these revenues have been used for water development recently, and it appears that increasing amounts will become available in the future.

Fifty percent of the coal reserves found in the United States is owned by the federal government, and this coal is located primarily in eight states (Table 10). Under the revenue sharing provisions of the Mineral Leasing Act of 1920, 37 percent of lease revenues was paid to the states in which the leased reserves were located. Since there has been relatively little production of federal coal in the past--only about 3

Table 10. Estimate of federal coal reserves and values in principal leasing states for surface and underground deposits.

	Million short tons		Total value of Federal reserve (millions)
	Total reserve	Federal reserve	
Alaska:			
Surface	4,411	4,279	$455,223
Underground	60,629	53,810	
Colorado:			
Surface	500	255	125,050
Underground	39,829	21,111	
Montana:			
Surface	6,897	1,700	----------
Underground	103,940	----------	
New Mexico:			
Surface	2,457	1,450	53,123
Underground	28,239	16,651	
North Dakota			
Surface	2,075	519	344,157
Underground	173,240	43,310	
Oklahoma:			
Surface	111	4	410
Underground	1,529	61	
Utah:			
Surface	150	123	70,820
Underground	11,714	9,605	
Wyoming:			
Surface	13,971	6,705	87,480
Underground	46,357	22,251	

[1]Refers to coal that can be recovered with existing technology and equipment or that may be available in the foreseeable future. Only those coals less than 3,000 ft in depth are included. Strippable coal reserves are adjusted to conform to the stripping ratio which varies by area. Coal that cannot be mined because of proximity to natural or manmade features is excluded.

Source: U. S. Senate, 1975.

percent of the total in 1974--this source of revenue has been relatively small nationwide as it has been in Utah. Utah's share amounted to $3 million in 1974. For many years, none of this money could be used for water development, because the act restricted its use to schools and roads.

In 1977, the federal act was revised increasing the states share of lease revenues to 50 percent and broadening the purposes for which the revenues can be used. As a result of this change coupled with increasing coal production to meet energy demands, mineral lease revenues dramatically increased in the last 2 years. In FY 1979, Utah's annual share increased to $13 million, and it is anticipated that these lease revenues will grow very rapidly in the future. Not only is coal production increasing, but leases are being renewed at much higher lease rates. The previous flat rate of 15¢/ton is being replaced with a rate based on a percentage (8 to 12 percent) of market value. This creates a lease rate of $1.50 ton, a ten-fold increase.

Reflecting the loosening of restrictions on the use of lease revenues in the 1977 federal legislation, the State of Utah revised its allocation of mineral lease funds in 1977. Among other one time allocations of these funds by the legislature in FY 1978 was a $1 million allotment to the Water Revolving Construction Fund. For FY 1979 and thereafter state law now provides that the funds will be allocated 72 3/4 percent collectively to a Community Impact Account, to higher education, and three other small accounts. The remaining 27 1/4 percent which is unallocated by the act is appropriated annually at the discretion of the legislature. In FY 79, $2 million was appropriated to the Cities Water Loan Fund, and an additional 1.5 million to the Water Revolving Construction Account.

It seems apparent that Utah's share of federal coal leasing revenues may be a significant future source of water development capital depending on the discretion of the legislature.

CHAPTER IV
POLICY CONSIDERATIONS IN UTAH
WATER DEVELOPMENT FINANCING PROGRAMS

Legislative Intent

Judging from rather general language in the enabling legislation, statements in Governor Maw's message with respect to the programs in 1947, and available policy and procedural guides and other statements issued by the Board of Water Resources/Division of Water Resources (see page 2), Utah's three financing programs seem to be justified on a mixture of income transfer and economic efficiency grounds.

Revolving Construction Fund

Based on the operating history, the kind of projects financed, and policies followed in the administering of the oldest of the three programs, the Revolving Construction Fund. the social objective has been clearly one of "stabilizing rural agriculture." Most of the credit extended under this program has been in support of irrigated agriculture (or agriculture producers). Statewide distribution of the nearly 400 projects financed under this program indicates a good geographic balance has been achieved. The concept of limiting repayment liability to the borrower's "ability to pay" has had continuing Water Resources Board sanction, but has not been the most prominent justification of the no-interest policy. Rather, the interest foregone subsidy has been more commonly defended as an appropriate allocation of costs in compensation for the indirect benefits accruing to the general public as a result of the development and improved water management. Projects financed under this program (with some significant exceptions) have been typically small, single purpose, and relatively inexpensive. A good geographic spread of many small projects tends to minimize gross distortions in the distribution of both costs and benefits at least among rural publics. The fact that operating policies have sought relatively short repayment periods would indicate that money market deficiencies have not been a primary justification in the awarding of credit under this program. The policy of keeping repayment periods short has 1) accelerated the rate of revolving so that more projects could be initiated in a given length of time, 2) reduced the likelihood that outstanding loans may become quite deviant from current loaning policy, and 3) introduced elementary economic test which discouraged applicants whose projects had low rates or return and required excessively long repayment periods.

The modest financing program, ushered in with the 1947 Utah Water and Power Board, has enjoyed good public support and acceptance over the years. Increased appropriations to the Revolving Construction Fund have not been routinely and automatically made according to budget requests coming from the administering agency, but periodic increases to the fund have indicated adequate legislative endorsement of this particular financing program.

Implicit in the administration of the Revolving Construction Fund has been the notion that Utah farmers generally lacked the ability to pay the full costs of water development and/or that credit for water facilities improvements was not adequately available in the normal money market. Guidelines of policy for administering the Revolving Construction Fund preclude financing of projects which are considered by the board to qualify for "feasible and practical alternate sources of financing." However, the determination of whether alternate sources of financing are feasible or practical seems to be decided on a case by case basis. Generally speaking, all comers have been accommodated subject to funding availability and financial feasibility.

In a relative or absolute sense, farm population, farm earnings, numbers of farms, and amount of land in farms have all steadily declined since 1947. Noting that "part-time" farmers operate nearly half of the farms in Utah, Anderson (1979) poses a question as to whether they should be considered as part of the farm population when calculating price supports. Their welfare is related more directly to availability of nonfarm opportunities and general economic conditions than to prices of farm products. Ownership and use of water in companies which seek financial aid from the RCF is comprised of both full-time and part-time farmers. Any subsidy inherent in the interest-free loan accrues to both kinds of farmers. Anderson observes that "since most small-farm and part-time farmers place a high priority on the country as a place to live and rear their families, public policy should not interfere with their freedom to choose this lifestyle. Neither does it appear necessary, however, for such living to be encouraged through public

transfer payments." The suggestion to be made here is not that all agricultural producers are undeserving of state provided credit. Rather, the suggestion is that if there are transfer payments intended in governmental financing programs, criterion for extending credit should be tailored to direct that assistance to those truly eligible to receive it.

Cities Water Loan Fund

The social justification for the creation of the Cities Water Loan Fund was to provide front end capital for energy impacted areas faced with rapidly expanding demands for water services outstripping their financing capability. The problem has been described more in terms of expenditure and repayment flows unsuited to normal money market requirements than in terms of socially disadvantaged communities justifying income augmentation. Municipalities and industries until recently have been expected to pay full costs of providing needed water supplies. There have been some exceptions based on the fact that small rural water systems are generally more expensive on a per capita basis than large municipal systems. Some federal assistance programs have provided financing to rural communities in the form of low interest loans or grants for domestic water facilities improvements under an egalitarian justification. Utah gave recognition to the income redistribution justification for financing community water facilities by legislative amendment to the Municipal Bond Act which, in effect, permits noninterest bearing loans from the 1975 Cities Loan Fund. This action, taken for the express purpose of utilizing the Cities Loan Fund on an interest free basis, seems clearly based on the income redistribution objective rather than correcting a money market defect.

Judging from the credit awards currently being made from the Cities Loan Fund, energy impaction does not appear to be a decisive element of qualification for receiving credit under the programs at this time. While the financing help has gone mostly to smaller communities, it has not been restricted to energy impacted localities. Thus, while one might infer from operating experience that the income transfer objective is to favor small communities over large ones, there does not seem to be any distinctive criteria for selecting from among the small communities. Perhaps the needs upon which original program justification was based have been, or are being, met with fund balances sufficient to extend the financing availability more generally. Of course, the very nature of a revolving fund presumes that it will operate in perpetuity. None of the legislation creating revolving funds provides for their eventual termination. Presumably if financing needs are met for the purpose justifying the program initially, other justifiable needs will arise to replace them.

Water Resources Conservation and Development Fund

The most recent addition to the state's water financing program, the Water Resources Conservation and Development Fund, injects some explicit new policy dimensions to state financing of water projects but leaves a number of important policy questions open to conjecture. The new WRCDF is based on the premise that there are opportunities to construct rather large projects (over $1 million) that could produce significant benefits to Utah's citizens but which are unlikely to obtain timely financing from either federal or private sources. The WRCDF allows state sponsorship of projects. State sponsorship would be on a highly selective basis with most projects being initiated under local sponsorship as with the other two funds. An important argument for state sponsorship is that some projects with energy producing potential could provide substantial revenue enabling rapid amortization and a continuing source of income that could then be used by the state in support of less economically attractive projects. The role of the state in competing with private power companies in order to generate funds for state programs may be questioned on economic and philosophic grounds. The philosophic issue of the state becoming a producer/entrepreneur of water and power has not been adequately explored and debated; however, such an assessment is beyond the scope of this report.

While loans to be awarded under the WRCDF require that repayment be made with interest, legislative guidelines are inadequate to tell whether interest will be charged at rates sufficient to recover state costs of bonding; or whether there was expectation that projects would produce revenues justifying interest charges above the state costs; or whether rates charged borrowers could be less than state costs for bonding. Operationally, proceeds from the $25 million bond sale do not go directly to the revolving fund. Rather, the $25 million is to be spent on the construction of projects selected from ten specifically named in the legislation. Repayments from these initial projects are to go into the fund and thus become available for the subsequent financing of additional projects. It has been observed that the interest bearing requirement referred to monies loaned from the fund. Therefore, the requirement of interest-bearing loans might not apply to the set of projects to be financed from the initial $25 million. The logic of this is unclear. Perhaps a more plausible explanation is that an overlooked technicality in legislative language permits the dual interpretation. In any event, the fact that interest charges must be assessed is a departure from the RCF and suggests that

projects selected for financing would have to be viable by economic standards. However, if interest rates actually charged borrowers are less than the normal market rate of interest there must be welfare objectives in the program, also. Projects authorized by the Water Resources Board to date specify interest charges considerably less than the state's interest costs on the bonds sold (4 7/8%) which, in turn is considerably less than normal market rates. Hence, there is a definite general taxpayer subsidy involved in the construction of these larger projects. Since these larger projects exhibit significantly different distributions of costs and benefits, the social justification for any income transfers taking place may be more difficult if nonetheless more important to address. There has been no overt state pronouncement that all water users are eligible for water development subsidies. Yet all water purposes are included in many of the multiple purpose projects contemplated within the WRCDF program. Projects supported under WRCDF will have more concentrated social and economic impacts. Thus, the distributional nature of benefits and costs may be considerably more disparate than for the RCF program. It would seem that greater attention must be given to deciding which purposes deserve state financial subsidies and which are undeserving. It is not likely that all water users lack the "ability to pay" the costs entailed in meeting water supply needs.

A trend toward greatly extended periods of repayment is evident in projects being approved for financing under WRCDF. Mention has already been made of the effect of long repayment periods and low discount rates in improving the economic appearance of a project. There is also the possibility that before the long payout period is completed, water transfers may take place in accordance with changing social objectives which may effectively transfer special advantages provided in the terms of the loan. Thus, within a short time after completion, the state subsidies may become capitalized into transferrable assets and transferred as a windfall benefit to ineligible entities. Policies and criterion for granting WRCDF loans should provide for recovery of any interest subsidy which wrongly accrues to unintended beneficiaries.

The enlargement of the state's financing programs must, of course, be in response to justifiable need. Perhaps a comment on the indicators of need or demand for financing of water projects is appropriate. Some of the statements and documents providing the need basis for the WRCDF referenced a list of projects described as "imminent" and "feasible" and which required financing in the neighborhood of $260 million. The criterion for judging these projects "imminent" or "feasible" is not explicitly stated; but generally such terms connote an economic readiness. Since no mention was made of social, environmental, or political justification of the 23 projects, the implication is that the projects are economically sound with financing being the bottleneck. In reality (with exception of those projects involving generation of hydropower and industrial water) the projects listed as viable but finance-limited would fail to generate any demand for federal financing where projects must prove economical with the benefits discounted at 7 3/8 percent. Yet it is apparent from authorization to date that the state intends to proceed with the financing of projects under WRCDF at discount rates well below federal standards and below state costs for bonding. The point of the above comment is that there will always be a higher demand for inexpensive capital. The greater the subsidy associated with a source of capital, the greater the demand on the subsidizing source. Any rational borrower shops for the least costly sources of financing. The normal sequence of search is for grants, no interest loans, low interest loans, and finally, commercial interest rates. There will always be a "backlog" of project applicants. The important question is whether such backlogs constitute a good measure of justifiable demand for state financing. If a project exhibits a good rate of return using normal market rates of interest, sponsors would move forward with development after securing the best possible financing arrangements. For such cases, availability of low cost state financing simply shifts a larger share of the financing burden to the state without actually increasing the number of water projects built, (but with a part of the cost being assumed by the general taxpayer).

Another new policy dimension introduced with the WRCDF is the adoption of a "program account" system of funding projects. Under this system, the benefit-cost criteria is applied to an aggregate set of projects rather than requiring that each project conform to a prescribed economic standard. Thus, projects having questionable economic feasibility may be constructed along with projects displaying good economic justification as long as the aggregate benefit-cost ratio is favorable. This policy violates the principles of economic efficiency. The rationale for constructing noneconomic projects should be justified on other (e.g. social or environmental) grounds, and be made explicit to the public.

Joint Financing

More and more sponsors applying for and receiving financing from state funding programs are also acquiring loans/grants from other sources. This pattern of joint financing is becoming more common because of the advantages both agencies and recipients see in such arrangements. Loaning and granting agencies sense a "leveraging" from their inputs or a reduction in capital at risk in comparison to total benefits expected from the project. Each participating financier is inclined to look at total benefits in

relation to only its own part of the total investment rather than with respect to the aggregate cost to all. Funding recipients are particularly attracted to funding arrangements which include outright grants or which permit a combination of funding sources that minimize the overall cost of capital. This results in the necessity to pay back only a part of the total project costs which improves the recipient benefit-cost ratio.

The decision to build or not to build a project ideally hinges on economic feasibility. However, where grants and subsidies can be secured, a project which cannot meet the criterion for economic/social feasibility in terms of the rate of return on total investment may go forward anyway.

Special Districts

The Water Resources Board is encouraging the creation of water conservancy districts and special service or improvement districts as a condition for extending credit. The distinctive feature of such organizations is their authority to assess ad valorem taxes on all property within district boundaries. The common justification for general taxing authority is that everyone benefits - if not directly, then indirectly - from a water project: and the general tax assures that those who benefit indirectly pay a share of project costs. Regardless of the merits of this justification the assurance of additional revenue to pay project costs has a similar effect on the financial feasibility of a project as an external grant. If the financial package can be put together, there is substantial pressure to build projects even though overall economic feasibility has not been demonstrated. From the project sponsor's point of view, any transfer of resources into project financing from an external source (i.e., interest foregone, taxes collected from nonbeneficiaries, federal grants) reduces the beneficiary repayment obligation and hence increases the desire to proceed with the project.

Project Evaluation and Program Accountability

The Utah Constitution prohibits the state from lending its "credit" for purposes that are not public in nature. The underlying concept of this prohibition is that the general public should not be involuntarily committed through the taxing powers of the state into underwriting private ventures that generate primarily private benefits.

In past years, projects seeking participation in the state's revolving fund program have not been held to rigorous evaluation procedures. Most of these projects have been small impoundments or canal lining projects sponsored by rural irrigation companies. A preliminary feasibility analysis coupled with the sponsor's willingness to repay the principal has been sufficient to secure funding. Although many projects of this character still exist, a current thrust of the state financing program is toward larger projects that provide water for multiple uses.

Although financial and economic feasibility analyses have been adopted for use on the larger projects, no social output analysis has been developed for those projects which might warrant construction even though good economic feasibility is absent. If projects, under the "program account" system are to be constructed, their construction should follow an explicit justification of the economic and social benefits that will accrue from the project. Moreover, these assessments should be made prior to any serious consideration of the individual project as a "legitimate demand" for state resources.

It goes without saying that the justification for state intervention into the financing of water development projects should be made explicitly visible to all Utah taxpayers. They are entitled to know whether their resources are being committed as an investment with an expected return on capital which may permit a future reduction in taxes, or whether the financing constitutes an income redistribution in which expenditures for water development are in support of welfare goals to help some disadvantaged element of society.

If the creation of development funds for financing water development is to fill a financing gap in the private capital market, the nature of that deficiency should be explained. Private capital in large amounts is being amassed regularly for financing projects of all kinds where the rate of return appears sufficiently attractive. Factors concerned with the nature of extended water development payback or peculiar inflationary influences that create capital market deficiencies in water financing should be identified and made explicit in deliberations concerning the allocation of public funds.

Conclusions

Changing economic conditions and the changing character of state financed water development projects is justification for a careful reexamination of present policies. Traditional projects have been small, single purpose, and relatively inexpensive. The direct benefits have been distributed fairly evenly within the local agricultural sector, and indirect and induced benefits have helped to stabilize the social and economic structure of small, rural communities composed primarily of agricultural producers. The cost to nonbeneficiaries has been in the interest foregone on the capital advanced. Emerging projects tend to be more expensive, larger, and develop water for municipal,

agricultural, and energy-related industrial purposes. This suggests that careful consideration should be given to the way the benefits of the interest subsidy are distributed, to the legality and desirability of using state borrowing privileges and preferential tax advantages for the industrial component of multipurpose projects, and to the improvement of project evaluation procedures to identify the total impacts of a project and establish the justification for, and form of, governmental participation. State subsidies present a significant demand stimulus to utilize the water development programs, and also to pressure local legislators into advancing more public funds for such purposes. Thus, the financing program capital requirements take on a highly political complexion which complicates any effort to objectively assess legimate capital needs.

The investment of state money for water development runs parallel to a philosophy that water is a public resource and any use thereof is a public use. Past irrigation projects under the Revolving Construction Fund have distributed benefits fairly evenly among users and promoted a rural stability which gave the projects a public character at least on a local scale. The use of project water for production of energy resources or for industrial processing concentrates the private benefits from the project to a degree that may compromise its public nature. Clearly, all resources have both public and private characteristics and efficient resource use in any productive enterprise generates benefits to the general public in addition to significant private benefits. The important question today is whether the emerging water development projects still generate significant public benefits and distribute these benefits to a broad segment of Utah's populus. Equally important is the question of state involvement in what might legitimately be considered a private sector activity.

In examining the water project financing topic, historically and currently, contradictory resource management philosophies surface. Some feel that the objectives of water development projects are so overriding that the exercise of measuring costs and benefits is unnecessary, that any water development is inherently good, and that regardless of costs, benefits will ultimately flow to exceed them.

The other point of view is that priorities are no less a matter of concern in water management than in other areas, and that effective resource management depends on measuring the costs and benefits of alternative programs and selecting the set of programs and levels of spending that gives the greatest excess of benefits over costs.

The fact that the Utah legislature has consistently appropriated money for water project financing without first reviewing the economic evaluation of specific projects, is often put forth as proof that the legislative intent is to build projects without heavy emphasis on the task of comparing costs and benefits. Yet, the legislature has said that "... no project will be built except upon expert engineering, financial, and geological approval" (UCA 73-10-1) (7) and preference shall be given to projects which "have greater economic feasibility, yield revenue to the state within a reasonable time or will return a reasonable rate of interest based on financial feasibility...[and] in determining economic feasibility...establish a benefit-cost ratio for each project, using a uniform standard of procedure for all projects." (Utah State Legislature HB No. 71, 1978). This is also taken by many to indicate that the legislative intent is to seek solid and well organized information about technical and economic feasibility and only when predetermined criteria are met should projects receive state financing.

If efficient resource management (in the broad sense) is a goal worth striving for, then management of water resources depends heavily on measuring and comparing the benefits from water thus made available. Information about costs and benefits can be used effectively in "go" or "no go" decisions or it can be ignored. In any case, the discipline of measuring benefits and costs reveals much about priorities, distributions of costs and benefits, etc. The electorate and the legislature may be delegating inadvertently to the executive agencies more discretionary power than is in the best interests of the state. A set of state "principles and standards" for project evaluation should be developed and used to test the feasibility of all new projects being considered for funding.

Legislative enactments concerning water project financing are rooted in commendable purposes and seek laudable outcomes. Commonly, however, the broad legislative language and brief or nonexistent legislative history leaves much room for interpretation as important operating policies and implementing rules and regulations are developed. A clarification of legislative intent is needed.

Projected population and economic growth in Utah indicates that changes will occur in water use patterns and some new development will probably be required. Growth projections give an indication of overall demand, but do not provide the necessary detail on how these demands will be met or how to convert the projections into amounts of state money needed for water development. Appropriation of money to finance water development on the basis of these general indicators may result in an excessive and premature investment of public funds.

A large number of potential water projects of various sizes and locations have been identified by the state for funding under state water development programs. However, in the absence of feasibility studies for many of these projects, a realistic estimate of future demand for development capital based on an inventory of future projects is impractical. The $50 million in water bonds sold in 1978 and 1980 was not justified on the basis of feasible projects ready to be built. Most of the funds were in effect "put in the bank" to be drawn upon for projects which subsequently may be determined to be feasible.

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APPENDIX A

Table A1. Completed projects under reclamation program in Utah.

PROJECT NAME	LOCATION	TOTAL COST (YR)	M&I WATER (AF)	AG WATER (AF)
Jensen Unit-CUP	Uintah County	$29,736,000 (73)	18,000	6,000
Vernal Unit-CUP	Uintah County	$10,572,718 (59)	31,683	1,600
Hyrum Lake	Cache County	$ 1,253,912 (34)	----	15,300
Moon Lake	Duchesne-Uintah County	$ 1,800,860 (35)	----	41,580
Newton Dam	Cache County	$ 712,592 (41)	----	5,400
Ogden River	Weber-Box Elder Counties	$ 6,345,528 (34)	----	110,149
Provo River	Summit, Utah, Wasatch, Salt Lake Counties	$38,054,802 (38)	73,454	76,246
Sanpete Project	Sanpete County	$ 433,940 (35)	----	
Scofield Project	Carbon-Emery	$ 945,203 (43)	----	65,800
Strawberry Valley	Wasatch-Utah	$ 3,602,858 (06)	----	270,000
Emery County	Emery County	$16,762,306 (62)	----	58,800
Weber Basin	Weber, Davis, Morgan, Summit Counties	$95,950,214 (52)	48,000	286,050
Weber River	Weber, Davis, Morgan, Summit Counties	$ 2,730,781 (27)	----	73,940
TOTAL	15 counties	$208,901,714	171,137	1,010,865

Table A2. Completed projects under Bureau of Reclamation Small Reclamation Projects program in Utah.

Project Name	Location
Bountiful WSCD	Davis County
Centerville-Deuel Creek	Davis County
Haights Creek	
Haights Creek #2	
Hooper	Weber County
Kays Creek	
Settlement Canyon	Tooele County
South Davis CWID	Davis County
Weber-Box Elder CD	Weber County Box Elder County
Weber-Box Elder #2	Weber County Box Elder County

Table A3. Projects completed under SCS P.L. 566 Watershed Program in Utah.

Project Name	Project Location
American Fork-Dry Creek	Utah County
North Fork Ogden River	Weber County
Green Lakes	Iron County
Miller-Bigelow	Juab County
Santaquin Canyon	Utah County Juab County
Pleasant Creek	Sanpete County

Table A4. Agricultural conservation program assistance in Utah, 1967-1977.

	Year	Participating farms	Total assistance
REAP	1967	5,716	1,383,579
REAP	1968	4,684	1,173,273
REAP	1969	5,147	1,284,467
REAP	1970	4,959	1,127,927
REAP	1971	4,260	1,098,022
REAP	1972	3,682	1,468,189
REAP	1973	112	11,177
REAP	1974	2,670	1,461,669
ACP	1975	1,502	1,062,005
ACP	1976	3,041	1,745,443
ACP	1977	2,296	1,792,335

Table A5. FmHA Loan and Grant program through December 31, 1977) Community Program-Water).

County	Users	Loan	Grant
Box Elder	1,912	$ 1,748,500	$ 892,500
Beaver	---	---	---
Cache	3,391	1,940,800	412,100
Carbon	4,152	2,113,000	---
Daggett	200	160,000	33,000
Duchesne	1,610	967,500	684,000
Emery	1,279	1,279,600	205,500
Garfield	478	365,000	321,500
Grand	---	---	---
Iron	189	179,400	122,500
Juab	269	90,000	102,500
Kane	745	259,200	102,500
Millard	817	636,000	43,000
Morgan	60	72,800	17,700
Piute	359	315,000	372,500
Rich	287	191,000	269,000
Salt Lake	2,147	683,000	47,000
Sanpete	1,990	1,378,500	40,000
San Juan	---	---	---
Sevier	981	567,700	337,500
Summit	754	690,000	---
Tooele	97	48,500	48,500
Uintah	801	802,600	1,079,800
Utah	2,080	169,800	61,700
Wasatch	85	100,000	---
Washington	914	546,300	318,000
Wayne	242	188,000	205,000
Weber	1,469	1,488,500	---
TOTAL	27,308	$16,980,700	$5,715,800

Table A6. EDA Grants for water system improvements through March 31, 1977.

Recipient	Year	Amount
Ute Indian Tribe	1972	$205,000
Price River Wtr. Imp. Dist.	1975	49,000
City of Orangeville, Utah	1967	114,000
City of Green River, Utah	1972	385,000
City of Green River, Utah	1973	113,000
Eureka City, Utah	1968	84,000
Eureka City, Utah	1971	35,000
Eureka City, Utah	1972	9,000
Nephi City, Utah	1971	152,000
Moroni City, Utah	1967	52,000
Ephraim City, Utah	1969	184,000
City of Salina, Utah	1972	370,000
Lindon City, Utah	1968	74,000
Springville City, Utah	1976	715,000
Emery Town, Utah	1967	23,000

Table A7. Four Corners Regional Commission Supplemental Grants for Water System Improvements, 1974-1976.

Project	Total Cost	Basic Grant	FCRC Grant	State/local Funds
1974				
Thompson Culinary System	$ 103,850	$ 47,973	$ 25,000	$ 30,877
Oakley Water Improvements	300,000		240,000	60,000
Roosevelt Culinary System	648,000		150,000	498,000
Ballard Culinary System	269,000	50,000	81,000	138,000
Gunnison Water District System	200,000		150,000	50,000
Johnson Water System	100,000	25,000	35,000	40,000
New Harmony Water System	110,000		20,000	90,000
Henrieville Water System II	15,000		12,000	3,000
Kanab Water System	450,000		300,000	150,000
1975				
Manti Water System	550,000		200,000	350,000
Ouray Park Water System	300,000	147,500	75,000	77,500
Roosevelt Water System II	250,000		200,000	50,000
Junction Water System	400,000	180,000	100,000	120,000
Glendale Water System	232,000	102,500	27,000	102,500
Bicknell Water Improvements	389,000	172,000	92,000	125,000
1976				
Woodruff Water System	161,000	79,000	15,000	67,000
Corrine Water System	525,000	260,000	45,000	220,000
McArthur-Frandsen Canal lining	85,000	8,000	8,000	69,000
Huntington Water System	1,674,000	200,000	154,000	1,320,000
Horseshoe Irrigation System	75,000	18,000	18,000	39,000
Fountain Green Irrigation System	190,000	37,000	37,000	116,000
Price River Water Improvements	3,100,000		500,000	2,600,000
Cannonville Water System	330,800	164,000	86,800	80,000
Ivins Irrigation System	83,000	6,500	50,000	28,500
1976 Transition Quarter				
Portage Culinary System	376,000	185,000	111,000	80,000
Glenwood Sprinkler System	354,000	160,100	45,000	148,000
Long Canal Irrigation System	70,000	35,000	21,000	14,000

Table A8. HUD Block Grant Program summary for Utah.

PROGRAM	YEAR	PROJECTS	GRANT	TOTAL COST
Water & Sewer Facilities	1968	12 (0*)	$2,600,000	$6,209,000
Water & Sewer Facilities	1969	6 (1*)	1,226,000	4,701,000
Water & Sewer Facilities	1970	8 (2*)	2,332,000	5,439,000
Water & Sewer Facilities	1971	6 (1*)	659,000	1,569,000
Water & Sewer Facilities	1972	4 (1*)	783,000	1,637,000
Water & Sewer Facilities	1973	-	----	----
Water & Sewer Facilities	1974	-	----	----
Community Development BC	1975	18 programs*	7,612,000	----
Community Development BG	1976	20 programs*	9,462,000	----

*Number of projects completed outside of Standard Metropolitan Statistical Areas; under the Community Development Block Grant Program, there were 13 programs (1975) and 15 programs (1976) outside the SMSAs.

Table A9. County summary of projects financed through State of Utah Revolving Construction Fund.

COUNTY	NUMBER OF PROJECTS	WATER YIELD (AF)	STATE FUNDS	TOTAL COSTS
Box Elder	22	11,111	$ 1,220,688.	$ 1,862,122.
Cache	15	25,612	1,369,722.	2,312,724.
Rich	5	45,488	1,205,465.	1,558,291.
Weber	14	23,247	709,626.	1,044,587.
Davis	6	3,836	163,701.	233,330.
Morgan	6	2,020	206,464.	318,881.
Summit	11	2,480	638,483.	852,526.
Salt Lake	16	6,728	1,342,666.	9,053,123.
Tooele	13	7,560	780,784.	1,549,903.
Juab	19	23,045	404,121.	692,342.
Wasatch	11	4,597	427,089.	630,884.
Utah	47	41,303	1,710,245.	3,474,757.
Piute	6	4,400	438,752.	572,430.
Sanpete	33	20,681	1,254,598.	2,264,605.
Sevier	10	6,785	601,910.	1,493,846.
Wayne	18	19,582	1,937,570.	2,806,676.
Millard	47	64,020	1,811,595.	2,806,935.
Daggett	3	18,900	174,000.	1,278,797.
Duchesne	7	30,960	939,637.	1,241,139.
Uintah	8	18,810	479,231.	682,648.
Carbon	6	369	133,438.	191,069.
Emery	5	18,219	995,000.	3,846,229.
Grand	2	572	80,000.	252,762.
San Juan	5	4,715	304,306.	356,358.
Beaver	12	14,125	952,053.	2,180,929.
Garfield	9	11,048	281,435.	407,927.
Iron	8	7,915	466,399.	636,193.
Kane	4	3,900	74,141.	129,733.
Washington	23	37,015	1,659,800.	3,900,041.
TOTALS	391	479,043	$22,771,919.	$48,604,787.

Table A10. Projects completed under Utah Cities Water Loan Fund.

LOCATION	CWLF CONTRIBUTION	TOTAL COST	NUMBER OF PROJECTS
Beaver County	$ 690,000.	$ 827,000.	3
Box Elder County	143,000.	781,000.	3
Cache County	64,000.	110,000.	1
Carbon County	500,000.	4,100,000.	1
Daggett County	123,800.	143,800.	1
Davis County	100,000.	140,000.	1
Duchesne County	481,000.	976,000.	4
Emery County	641,000.	2,246,000.	4
Garfield County	40,000.	330,800.	1
Piute County	70,000.	75,000.	1
Rich County	32,000.	161,000.	1
Salt Lake County	80,000.	307,000.	1
San Juan County	150,000.	150,000.	1
Sanpete County	160,000.	170,000.	1
Sevier County	210,000.	225,000.	1
Washington County	300,000.	500,000.	2
TOTALS	$3,784,800.	$11,242,600.	27

Table A11. P.L. 566 projects under construction in Utah.

Name	Location County	SCD	Acres	PL-566 Funds	Total Funds	% Completed[1/]
Glenwood	Sevier	Sevier	65,462	$ 570,785	$ 1,960,026	95
Blue Creek-Howell	Box Elder	N. Utah	115,500	4,397,385	5,786,985	98
Ferron	Emery	San Rafael	191,000	6,879,484	10,015,749	94
Monroe Annabella	Sevier	Sevier	109,125	2,325,574	8,377,893	91
Warner Draw	Washington	Dixie	109,500	6,998,871	9,101,189	86
Hansel Valley	Box Elder	N. Utah	76,200	697,131	1,176,331	51
TOTALS			747,787	$21,869,230	$36,418,173	

[1/] As of October 1978.

Table A12. P.L. 566 projects in planning stage in Utah.

Name	Location County	SCD	Acres	PL-566 Funds	% Completed[3/]
Clarkston Creek	Cache, UT Franklin & Oneida, ID	North Cache	44,108	not determined	70
Muddy Creek	Emery, Sanpete & Sevier	San Rafael	187,260	not determined	50[1/]
Martin Lateral	Duchesne	Uintah Basin	7,993	not determined	2/
Hancock Cove	Duchesne	Uintah Basin	12,107	not determined	2/
Class k-2	Duchesne	Uintah Basin	13,851	not determined	2/
T.N. Dodd Irrig.	Duchesne	Uintah Basin	1,987	not determined	2/

[1/] Being planned by the State Department of Agriculture

[2/] Planning began on October 2, 1978.

[3/] As of October 1978.

Table A13. Revolving Construction Fund construction projects approved for investigation as of August 31, 1979.

	Name of Project	Location (County)	Application No.	Description	Date Approved	Total Estimated Cost
1.	Uintah Water Cons. Dist.	Uintah	D-201	Dam	Aug. 1970	$ 3,000,000.00
2.	Ash Creek Irr. Co.	Washington	D-208	Dam Repair	Feb. 1973	---
3.	North Fields Irr. Co.	Millard	D-219	Ppln. & Sm. Res.	Sept. 1975	60,000.00
4.	Eight Mile Creek Irr. Co.	Millard	D-228	Pipeline	Apr. 1976	100,000.00
5.	Huntington-Cleveland Irr. Co.	Emery	D-230	New Dam	July 1976	1,000,000.00
6.	Willow Creek Irr. Co.	Sanpete	D-254	Culinary System	Jan. 1977	350,000.00
7.	Irr. Co. of West Fork of Grouse Creek	Box Elder	D-281	Pipeline	June 1977	200,000.00
8.	Monarch Canal & Res. Co.	Duchesne	D-354	Canal Lining	June 1978	100,000.00
9.	Oak Creek Irr. Co.	Millard	D-308	Dam & Pipeline	Sept. 1977	2,360,000.00
10.	South Willow Irr. Co.	Tooele	D-232	Reservoir	- -	2,000,000.00
11.	Mayfield Irr. Co.	Sanpete	D-323	Sprinkler Irr. Sy.	Mar. 1978	1,000,000.00
12.	Fremont Irr. Co.	Wayne	D-336	Pipeline	Apr. 1978	---
13.	Hanksville Canal Co.	Wayne	D-338	Ditch Lining	Apr. 1978	90,000.00
14.	Draper Irr. Co.	Salt Lake	D-342	Reservoir & Ppln.	Apr. 1978	1,300,000.00
15.	Putnam Ranch	Rich	D-361	Dam & Pipelines	Feb. 1979	135,000.00
16.	St. George-Washington Canal Co.	Washington	D-365	Desilting Project	Mar. 1979	250,000.00
17.	OakHaven Mutual Water Co.	Wasatch	D-366	Culinary System	Mar. 1979	35,000.00
18.	Terra Water Corp.	Tooele	D-370	Culinary System	Apr. 1979	100,000.00
19.	Sanpete Water Cons. Dist.	Sanpete	D-377	Dam	May 1979	3,000,000.00
20.	Snake Crk. Property Owners Assoc.	Wasatch	D-375	Culinary System	June 1979	125,000.00
21.	West Panguitch Irri. Co.	Garfield	D-376	Sprinkler system	June 1979	90,000.00
22.	Ephraim	Sanpete	D-378	Irrigation Ppln.	June 1979	---
23.	Emery Star Water Co.	Carbon	D-379	Culinary System	June 1979	20,000.00
24.	Hillside Water District Inc.	Carbon	D-380	Culinary Pipeline	July 1979	152,000.00
25.	Lake Creek Irrig. Co.	Wasatch	D-383	Dam Enlargement	Aug. 1979	100,000.00
TOTAL PROJECTS						$15,567,000.00

Table A14. Revolving Construction Fund construction projects authorized as of August 31, 1979.

	Name of Project	Location (County)	Applica-tion No.	Date Approved	By Sponsor	By Division of W.R.	Total Estimated Cost
1.	Mayfield Irr. Co.	Sanpete	F-344	Mar. 1973	$ 10,000.00	$ 39,000.00	$ 49,000.00
2.	San Juan County Water Dist.	San Juan	F-429	Jan. 1974	250,000.00	2,050,000.00	2,300,000.00
3.	Gunnison-Mayfield Irr. Co.	Sanpete	F-455	Jan. 1976	400,000.00	697,000.00	1,097,000.00
				Subtotal	$ 660,000.00	$2,786,000.00	$ 3,446,000.00
4.	Birch Creek Irr. Co.	Sanpete	F-505	Apr. 1977	287,000.00	235,000.00	522,000.00
5.	Cottonwood-Gooseberry Irr. Co.	Sanpete	F-506	Apr. 1977	118,000.00	353,500.00	471,500.00
6.	Fillmore Water Users Assn.	Millard	F-476	May 1977	---	406,000.00	406,000.00
7.	Delta Canal Co.	Millard	F-512	May 1977	22,000.00	64,000.00	86,000.00
8.	Middle Canyon Irr. Co.	Tooele	F-447	June 1977	36,000.00	380,000.00	416,000.00
9.	Deseret Irr. Co.	Millard	F-517	July 1977	107,780.00	258,000.00	365,780.00
10.	Twin Creek Irr. Co.	Sanpete	F-546	Apr. 1978	83,000.00	250,000.00	333,000.00
11.	Dry Gulch Irr. Co.	Duchesne	F-548	May 1978	4,800,000.00	1,600,000.00	6,400,000.00
12.	T.N. Dodd Irr. Co.	Duchesne	F-549	May 1978	384,000.00	132,000.00	516,000.00
13.	Monarch Canal & Res. Co.	Duchesne	F-551	June 1978	6,300.00	18,700.00	25,000.00
14.	Spring Canyon Irr. Co.	Sanpete	F-552	June 1978	20,600.00	62,000.00	82,600.00
15.	Ashley Valley Res. Co.	Uintah	F-556	Sept. 1978	98,000.00	392,000.00	490,000.00
16.	Henrieville Irr. Co.	Garfield	F-555	Sept. 1978	165,600.00	110,400.00	276,000.00
17.	Riverton Meadows Wtr. Usr. Asso.	Salt Lake	F-560	Nov. 1978	12,900.00	38,800.00	51,700.00
18.	Milburn Irr. Co.	Sanpete	F-562	Dec. 1978	56,000.00	169,000.00	225,000.00
19.	Manila Culinary Water Co.	Utah	F-495	Jan. 1979	60,000.00	240,000.00	300,000.00
20.	Pleasant Creek Irr. Co.	Sanpete	F-563	Jan. 1979	85,000.00	255,000.00	340,000.00
21.	Highland Ditch Co.	Box Elder	F-564	Mar. 1979	33,700.00	11,300.00	45,000.00
22.	Melville Irr. Co.	Millard	F-396	Apr. 1979	50,000.00	150,000.00	200,000.00
23.	Corn Creek Irr.	Millard	F-396	Apr. 1979	220,000.00	880,000.00	1,100,000.00
24.	Newcastle Reservoir Co.	Iron	F-570	June 1979	144,000.00	431,000.00	575,000.00
25.	Goshen Irrig. & Canal Co.	Utah	F-572	July 1979	31,000.00	93,000.00	124,000.00
26.	Liberty Irrig. Co.	Weber	F-574	Aug. 1979	123,500.00	371,500.00	495,000.00
27.	So. Morgan Water District	Morgan	F-575	Aug. 1979	35,000.00	52,000.00	87,000.00
				Subtotal	$6,979,380.00	$6,953,200.00	$13,932,580.00
TOTAL PROJECTS					$7,639,380.00	$9,739,200.00	$17,378,580.00

Table A15. Cities Loan Program applications under investigation as of August 31, 1979.

	Name of Unit	Location (County)	Application No.	Approved By Bd. of W.R.	By Sponsor	By Division of W.R.	Total Estimated Cost
1.	Wendover	Tooele	L-226		$ 339,000.00	$ 67,000.00	$ 406,000.00
2.	Glen Canyon	Kane	L-263		220,000.00	50,000.00	270,000.00
3.	Wales	Sanpete	L-266		135,000.00	50,000.00	185,000.00
4.	West Tremonton	Box Elder	L-267		300,000.00	100,000.00	400,000.00
5.	Paradise	Cache	L-272		722,000.00	90,000.00	812,000.00
6.	Clawson	Emery	L-287	Aug. 1978	450,000.00	200,000.00	650,000.00
7.	Salina	Sevier	L-290	Nov. 1978	---	234,000.00	234,000.00
8.	Payson	Utah	L-295	Dec. 1978	350,000.00	200,000.00	550,000.00
9.	Monroe	Sevier	L-300	Feb. 1979	---	1,099,500.00	1,099,500.00
10.	South Jordan	Salt Lake	L-301	Feb. 1979	---	60,000.00	60,000.00
11.	Ephraim	Sanpete	L-304	Apr. 1979	---	---	---
12.	Centerfield	Sanpete	L-305	May 1979	611,600.00	148,400.00	760,000.00
13.	Wellsville	Cache	L-307	June 1979	586,250.00	135,750.00	722,000.00
14.	Clarkston	Cache	L-308	July 1979	620,500.00	118,500.00	739,000.00
15.	Mapleton	Utah	L-309	Aug. 1979	700,000.00	300,000.00	1,000,000.00
16.	Joseph	Sevier	L-304	Aug. 1979	140,000.00	40,000.00	180,000.00
TOTAL					$5,174,350.00	$2,893,150.00	$8,067,500.00

Table A16. Cities Loan Program projects approved but no funds committed as of August 31, 1979.

	Name of Unit	Location (County)	Application No.	Approved By Bd. of W.R.	By Sponsor	By Division of W.R.	Total Estimated Cost
1.	Sunnyside-East Carbon City	Carbon	L-276	June 1978	$1,300,000.00	$ 700,000.00	$ 2,000,000.00
2.	Meadow	Millard	L-227	Aug. 1978	365,000.00	60,000.00	425,000.00
3.	N. Fork Spec. Serv. Dist.	Utah	L-281	Oct. 1978	350,000.00	190,000.00	540,000.00
4.	Spanish Valley Imp. Dist.	Grand	L-286	Dec. 1978	700,000.00	300,000.00	1,000,000.00
5.	Helper	Carbon	L-283	Dec. 1978	637,000.00	398,000.00	1,035,000.00
6.	Garland	Box Elder	L-257	Feb. 1979	225,000.00	225,000.00	450,000.00
7.	Nibley	Cache	L-293	Feb. 1979	274,200.00	115,800.00	390,000.00
8.	Kanosh	Millard	L-288	Feb. 1979	377,900.00	113,000.00	490,900.00
9.	Hyrum	Cache	L-291	Mar. 1979	440,000.00	410,000.00	850,000.00
10.	Hooper Wtr. Imp. Dist.	Weber & Davis	L-282	Apr. 1979	1,060,000.00	500,000.00	1,560,000.00
11.	Stockton	Tooele	L-296	May 1979	530,200.00	132,500.00	662,700.00
12.	Blanding	San Juan	L-294	June 1979	120,000.00	250,000.00	370,000.00
13.	Silver Reef Spec. Serv. Dist.	Washington	L-299	June 1979	10,000.00	120,000.00	130,000.00
14.	Bluffdale	Salt Lake	L-306	Aug. 1979	38,000.00	100,000.00	138,000.00
15.	Lindon	Utah	L-297	Aug. 1979	225,000.00	300,000.00	525,000.00
TOTAL					$6,652,300.00	$3,914,300.00	$10,566,600.00

Table A17. Appropriations to the Revolving Construction Fund as of August 31, 1979.

Revenue			
Appropriations:	1947-1949		$ 1,000,000.00
	1949-1951		None
	1951-1953		500,000.00
	1953-1955		250,000.00
	1955-1957		500,000.00
	1957-1959		1,000,000.00
	1959-1961		750,000.00
	1961-1963		None
	1963-1965		1,000,000.00
	1965-1967		900,000.00
	1967-1969		576,000.00
	1969-1970		300,000.00
	1970-1971		392,000.00
	1971-1972		400,000.00
	1972-1973		1,000,000.00
	1973-1974		1,500,000.00
	1974-1975		1,000,000.00
	1975-1976		1,000,000.00
	1976-1977		1,500,000.00
	1977-1978		3,000,000.00
	1978-1979	(Received 1977-1978 for 1978-79)	2,394,400.00
	1979-1980		2,390,000.00
TOTAL APPROPRIATIONS			$21,352,400.00
Less: Governor's 4% Reduction		$40,000.00	

Table A18. Appropriations to the Cities Water Loan Fund as of August 31, 1979.

Appropriations:	1974-1975	$ 2,000,000
	1975-1976	-
	1976-1977	3,500,000
	1977-1978	1,778,000
	1978-1979	2,000,000
	1979-1980	2,000,000
TOTAL APPROPRIATIONS		$11,278,000
Less: Governor's 4% reduction		$80,000