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LOCAL FINANCING OF SMALL WATERSHED PROJECTS

By

Gordon D. Rose

**A thesis submitted
in partial fulfillment of the requirements for the
degree Master of Science at South Dakota
State College of Agriculture
and Mechanic Arts**

December 1956

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LOCAL FINANCING OF SMALL WATERSHED PROJECTS

This thesis is approved as a creditable, independent investigation by a candidate for the degree, Master of Science, and acceptable as meeting the thesis requirements for this degree; but without implying that the conclusions reached by the candidate are necessarily the conclusions of the major department.

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CHAPTER I

INTRODUCTION

Increased public concern over conservation of soil and water has been the impetus for various government programs designed for the purpose of increasing conservation practices. These programs have varied from those designed to aid the farmer in applying conservation measures on his own farm to programs wherein huge dams have been constructed across some of our major rivers to control their flow. A recent legislative effort along this line was the Watershed Protection and Flood Prevention Act passed in 1954 and amended in 1956. This law is designed primarily to help local organizations fill in the gap between soil and water conservation work on individual farms and the large downstream dams.

Before discussing the law any further, the term watershed should be clarified. A watershed is basically any area that drains into a watercourse. Watersheds can vary in size from small areas draining into gullies, to great basins draining into large rivers. From this it can be seen that most of the earth's land area consists of complexes of watersheds which all eventually drain into the oceans and seas. The Watershed Protection Act, however, is aimed only at the watersheds draining into the smaller creeks and streams which are too far upstream to bene-

fit from the large dams on the main waterways. The size limitations as set by law will be brought out later.

The Watershed Protection and Flood Prevention Act is somewhat different in its approach in that it provides for federal assistance to local groups instead of the federal government acting entirely on its own. The Act definitely stresses local, state, and federal cooperation on watershed projects. It also stresses the local group being the initiating force instead of some federal agency. The federal government will provide technical assistance and funds for construction, but the local group must ask for the aid and must agree to maintain the project once it is completed. ^{1/}

A brief summary of some of the conditions necessary for a local organization to receive help under Public Law 566 includes the following points:

1. The watershed must be smaller than 250,000 acres.
2. The local organization must have the legal authority from the state to carry out, operate, and maintain the needed works of improvement.
3. The state must approve the application for assistance.
4. The benefits of the proposed project must exceed the costs.

^{1/} Facts About the Watershed Protection and Flood Prevention Act, Watershed Planning Branch, Soil Conservation Service, USDA, PA 298, Washington, D. C., January 1957, pp. 2-3.

5. The local organization and the U. S. Department of Agriculture must agree on a watershed work plan.
6. If necessary, the plan must be approved by committees of Congress.
7. Federal funds must then be appropriated to provide the help designated in the plan. ^{2/}

The Soil Conservation Service is the federal agency designated to provide assistance in planning watershed projects. The Soil Conservation Service, upon receiving an application for assistance, goes into the watershed area and makes a study of the problems involved. They then meet with the local and state organizations and decide on a work plan. It should be noted and stressed here that the leaders of the local organization will be called on at every stage of the planning to make decisions based on data found by the assisting technicians. The final work plan, approved by the federal government, is the guide for the local organization to use in developing and protecting the land and water resources of the watershed. It is the basis for all federal help. ^{3/}

Problem

The problem that this paper will deal with lies in the general area of decision making by the leaders of the local group. As water-

^{2/} Ibid., pp. 5-6.

^{3/} Ibid., pp. 7-8.

shed projects must be initiated by the local group, the leaders are responsible for choosing a plan that will satisfy local needs and will still be acceptable to the people in the area. Their decisions will likely have to be based on data collected by the assisting federal agency. However, the Soil Conservation Service data is not comprehensive enough to provide information on some subjects. The particular one to be studied here is the subject of planning for the local financing of the project.

The work plan made by the Soil Conservation Service covers the land treatment and the structural parts of the project. The plan presents the costs and benefits of the project as a whole and sets forth the responsibilities of both the federal government and the local sponsoring organization. The responsibilities of the local organization include obtaining easements, rights-of-ways, and water rights. The local organization must also administer contracts, maintain and operate the completed project, and handle other items coming under the title of general administration.

It is quite obvious that there will be costs involved in carrying out these responsibilities, and therefore, the local organization is going to need the means of raising money to meet them. Along with this will be needed a definite plan which should contain at least a budget and a plan of taxation. Other items that should be considered as they have a bearing on the financing are a plan for obtaining easements and a

maintenance plan.

Technical assistance on this financial planning has not generally been available to the local sponsors. Their decisions on matters pertaining to watershed development have frequently been influenced by fears and misgivings concerning how the easements will be obtained, how the taxes will be assessed and what the size of the budget will be. The basic problem, then, is how to get sound decision making on the local level in watershed development.

Objective

The objective of this study will be to determine what should be included in a financial plan for a local watershed sponsoring organization and at the same time formulate techniques for obtaining the information to be included.

The fulfillment of this objective will be of primary benefit to the organization in Silver Creek. The adoption of such a financial plan will aid the construction of the project and will also aid in insuring the continued existence of the organization. A strong local organization with a solid, well-planned financing system will insure that the benefits of the project will continue to be felt over a long period of time.

A strong, well informed local organization will also be able to properly allocate and utilize the soil and water resources of the watershed. An organization that is ridden with fears, doubts, and

Indecision will be quite the opposite. A watershed development brings the problem of utilization of soil and water resources to the attention of the people in the watershed. If they can analyze this problem intelligently without an undue amount of fear and suspicion, they can solve it in a manner that will provide the best use of the existing resources. The local people in all likelihood, will be faced with several alternatives as to how the project should be developed. They must have accurate, understandable cost-benefit information for each farm to assist them in choosing the method that will provide the allocation and utilization of resources that will be most advantageous to all concerned.

Method

The method used will be a case study of Silver Creek Watershed. A financial plan was prepared for this local group to meet their particular problems. It is assumed that their general problem areas will be somewhat representative of other watersheds, and that the techniques used in preparing this financial plan may be used in other cases. This assumption is made with the realization that no two watersheds will have exactly the same combination of problems, and that the techniques developed here will have to be tried in other cases in order to determine their general value.

Description of Silver Creek Watershed

A brief description of the area and the problems facing the local organization will permit a better understanding of why some assumptions were made and why particular techniques were used in making the financial plan.

Geographically, Silver Creek Watershed is located directly north of Sioux Falls. Highway 77 runs north and south almost through the center of the watershed. It is approximately fourteen miles long and two to three miles in width. The total area equals 20,661 acres or about thirty-two square miles of which nearly one-fourth is subject to annual flooding. The watershed is entirely within South Dakota and is also within the boundaries of Minnehaha County, thus eliminating any problems that might arise from extending across these boundary lines.

At the time this study was begun, there had been very little consideration given to financial planning by the local group which consists of the people having land within the watershed boundaries. It was mentioned that the maintenance for the first year or two might be handled by donations from some of the more well-to-do members of the group, but no long range planning had been accomplished.

The local group had decided to obtain the necessary easements on a donation basis to cut down on their initial costs. All but

one of the easements had been donated. One key individual was definitely unwilling to donate his easement. As there had been no plan for buying the easement, negotiations were at a standstill. This situation will be enlarged on later.

The local group had not yet organized under the state watershed act, but it appeared that it would eventually. Therefore, the financial plan developed in this study conforms with the regulations of this act as it was assumed that not only this watershed group but others following it in South Dakota would organize under its provisions. This limits the scope of this specific plan to South Dakota, but other watersheds in other states may benefit from the more general considerations.

The local group continued to want the easement's donated despite recommendations from the State Experiment Station that they should be purchased. The financial plan was developed for donation, but could be adjusted to meet the situation of buying the easements. The basic idea behind the method for raising the money was that those who benefit should pay according to their benefits.

This financial plan had to be accomplished from secondary data sources entirely and without benefit of consultation with the people in the watershed. The soil conservation district requested that all other interested agencies stay out of the area until the easements were donated. It was felt that the plan could have been better fitted to the

desires and problems of the local people if it could have been discussed with them while it was being formulated. The finished plan was presented to the prospective managers of the proposed watershed district. It is hoped that it will be of service to them in establishing a successful organization.

CHAPTER II

THE BUDGET

One of the first things a board of managers must determine is the total annual expense of the watershed district. The best way to do this is to make up a budget including all items of expense and the amounts involved. Some of these expenses can be found in the watershed work plan, as the Soil Conservation Service does compute figures for annual maintenance, contract administration, and value of easements. These figures are estimates and may need later revision by the managers, but they are adequate for planning purposes. Other items of expense may include office rent, clerical help, and other expenses incurred by the board of managers in the performance of their duties. Another budget item that will be needed is a reserve fund. The South Dakota Watershed Act requires a watershed district to have at least a reserve fund for maintenance, and possibly other reserve funds may be needed. The specific items used in the Silver Creek budget will be presented and explained later in this chapter.

In developing the Silver Creek budget, the following general procedure was used. Budgets for the first four years were developed. The first three represent the years in which construction is to take place. As the expenses will vary between these years, it was felt that a budget should be prepared for each year. The fourth year will be the first year

of full operation of the completed project. The following years should vary only slightly in some items. The total amount in each year's budget was held constant in order to eliminate annual changes in taxation and assessment rates. The total amount was also kept simple as it is easier for the managers to lower their taxing rates than to raise them. The managers can lower the rate of taxation themselves, but to raise it requires a vote by the members of the district. Another reason for the first three years' assessments being as high as the estimate for later years is to build up the reserve funds rapidly during the first years. This is a precaution against possible large scale damage occurring early in the life of the project. It was thought that taxation rates could possibly be lowered after the reserve funds reached a desired amount.

A discussion of each specific item appearing in the budgets will clarify them still further and point out some of the considerations made in their preparation.

Office and Managers Expense

This item is meant to cover the expense of maintaining an office, necessary clerical assistance, and whatever mileage and per diem may be incurred by the board of managers in the performance of their duties. Arriving at a figure for this item was difficult due to the lack of information available. Apparently data have not been collected concerning this item because of the relative newness of the program.

Watershed organizations in other states have limited this cost by using space donated by the local Soil Conservation Service office, County Agent, or bank. Clerical help was obtained from the same source by hiring one of the secretaries on a part-time basis. There is no apparent reason why the organization in Silver Creek cannot make similar arrangements. In view of this possibility, \$500 seemed adequate to cover the expenses under this item.

Maintenance

Maintenance of the completed project by the local watershed sponsoring group is one of the responsibilities definitely set forth in the watershed work plan agreement. The figures used in the budget for this item are taken from the work plan prepared by the Soil Conservation Service. The total average annual maintenance figures comes to \$2310. As can be seen in the budgets, (see Figure 1) the figures are correlated with the construction schedule. During the first year no maintenance is anticipated as the first three flood detention structures will be built during that year. The presence of a figure for this item is because of a restriction on reserve funds in the South Dakota Watershed Act, which will be explained in the next section. The \$210 under maintenance will actually be carried over to start building up a reserve.

The figures for maintenance in the second year's budget include money for maintenance on the structures built the previous

year and also enough to insure a total carry over of \$230 when combined with the maintenance reserve fund. The same is true with the maintenance figure for the third year. The maintenance figure for the fourth year is the average annual maintenance for all works of improvement as determined by the Soil Conservation Service.

There are different methods of carrying out the administration of maintenance. The board of managers can hire all the maintenance work done by some outside agency such as a contractor. This may have to be done if the work required involves very much repair to the structures. This method may not be as satisfactory for handling the more routine maintenance jobs such as mowing weeds and clearing brush, as that type of work does not readily lend itself to a contract type operation.

Another alternative would be to enter into agreements with some of the local farmers. The board of managers could agree to pay farmers on whose land a structure is placed to maintain that structure. This would save the trouble of hiring a contractor every year and would also save some cost in that the managers would not have to go through the process of advertising for bids. The board of managers would have to set up some means of annual inspection of the works of improvement to determine if the required amount of maintenance had been performed satisfactorily. Payment would be made only after the inspection was made.

A method of maintenance that would save money for the district would be the donation of labor, machinery, and time by the farmers of the district. The donations would probably be by the farmers who have structures on their property. This method has one serious drawback in that the board of managers have no way of binding the individual involved to insure that the maintenance is done.

There are certain considerations that the managers must make in determining how the maintenance is to be carried out. The most important is to insure that the maintenance is done properly. This also includes the timeliness of the maintenance. If the maintenance is not kept up every year, serious damage could occur to the works of improvement which would necessitate major repairs or even rebuilding. Whatever the maintenance plan is, it must insure that the maintenance is done properly and kept up from year to year.

Another consideration is cost. The managers are quite naturally interested in how to get the required maintenance done for the least amount of cost. A natural reaction would be to attempt to get the necessary labor, equipment, and time donated by members of the local group thereby eliminating almost all cost. However, it may be better to enter into agreements with some of the local group, whereby they would be reimbursed for maintenance performed. Then, if the maintenance was not performed satisfactorily, the managers

could withhold payment until such time as the maintenance was completed, or they could use the money to hire someone else to do the job. In this manner, the managers could better control the quality of work done and also insure that it was done.

Figure 1. Proposed Budgets for Silver Creek Watershed

First Year

Office and Manager's Expense	\$ 500
Maintenance	210
Maintenance Reserve Fund	20
Contract Administration Expense	500
Reserve Fund for Damages	2010
Easement Payments	200
Land Treatment Maintenance Fund	900
Contingency for Delinquencies	660
Total	<u>5000</u>

Second Year

Office and Manager's Expense	\$ 500
Maintenance	454
Maintenance Reserve Fund	40
Contract Administration Expense	500
Reserve Fund for Damages	1746
Easement Payments	200
Land Treatment Maintenance Fund	900
Contingency for Delinquencies	660
Total	<u>5000</u>

Third Year

Office and Manager's Expense	\$ 500
Maintenance	755
Maintenance Reserve Fund	75
Contract Administration Expense	500
Reserve Fund for Damages	1410
Easement Payments	200
Land Treatment Maintenance Fund	900
Contingency for Delinquencies	660
Total	<u>5000</u>

Figure 1. Proposed Budgets for Silver Creek Watershed (Continued)

Fourth Year

Office and Manager's Expense	\$ 500
Maintenance	2300
Maintenance Reserve Fund	230
Reserve Fund for Damages	210
Easement Payments	200
Land Treatment Maintenance Fund	900
Contingency for Delinquencies	660
Total	<u>5000</u>

Cumulative Totals of Reserve Funds

<u>Year</u>	<u>Maintenance Reserve</u>	<u>Damage Reserve</u>
1	230	2010
2	460	3756
3	690	5166
4	920	5376

Maintenance Reserve Fund

The South Dakota Watershed Act states: "Once constructed, the Managers shall provide for adequate annual maintenance of the watershed project works. They shall adopt an overall project schedule of routine maintenance and prepare Annual Maintenance Budgets for the following calendar year, in which is stated the maintenance work to be done and the estimated cost of such maintenance work including provisions for a reserve fund which shall be maintained at all times and which shall not exceed the average operation and maintenance budget which shall be accumulated by the annual tax levy at a rate not less than eight per cent or more than ten per cent of such annual levy."

In view of the above requirements, a maintenance reserve fund is included in the budget. The Soil Conservation Service figure of \$2310 was rounded to \$2300 and used for the average annual maintenance costs which would make the annual levy for the maintenance reserve fund equal not less than \$134 and not more than \$230. For planning purposes, the higher figure was used as it permitted the reserve fund to be built up at a faster rate. However, the full \$230 can be levied only when the full maintenance budget is used. During the early years when construction is taking place, the maintenance budget will be less so the levy for the reserve fund would have to be less. In the first year when no maintenance was needed, the amount put in reserve

would be nothing.

In keeping with the idea of building up the reserves quickly during the early years of the project it was decided that \$230 should be added in some way to the reserves during each year of low maintenance budgets. Therefore, enough extra was added to the maintenance budgets of the first three years to cause a carryover of \$230 when the extra was combined with the amount allotted for the reserve fund. For example, in the first year's budget there is \$210 allotted for maintenance and \$20 for the maintenance reserve fund. As there will be no maintenance in the first year the \$210 will be carried over and revert to the maintenance reserve fund causing in effect \$230 to be put in reserve. The same is true in the second and third year except the extra was added to the maintenance figures for the particular year. For the fourth and each succeeding year until the fund reached its limit of \$2300 the total \$230 can be allocated to the reserve fund as the full maintenance budget will be in effect.

The purpose of the reserve fund is to provide for a period of exceptionally rainy weather which may inflict major damages on the works of improvements. This fund should be built up as soon as possible in order to prevent such a catastrophe from causing a financial collapse of the watershed district.

Contract Administration

The local sponsoring organization must pay for all costs of administering the contracts for construction of the works of improvement. These costs would include such items as advertising for bids, legal fees, and clerical help. The work plan estimate of contract administration costs totals \$6500. However, when the assistance that the Soil Conservation Service will provide such as preparing contracts and inspections of construction is taken into consideration, it is thought that \$500 per construction year or a total of \$1500 will be adequate to cover the local organization's costs for this item.

There are good reasons for the Soil Conservation Service to provide inspection services. In the first place it is only logical that the agency designing the project should follow through to see it completed according to its specifications. The Soil Conservation Service is completely familiar with the project and has a definite interest in seeing that it is properly built. If a project should not be properly constructed and structures should fail, it would put the Soil Conservation Service in a bad light when it came to developing other projects.

There are also good reasons for the local organization to hire an engineer to represent its interests. As the contracting agency, the local organization definitely has the right to have someone

inspect the structures both in the design phase and the construction phase. The local organization is responsible for the maintenance of the completed structures and will want to be sure that they are structurally sound when they are turned over to them. However, it is realized that this will not be done in Silver Creek nor will it probably be done in other watersheds in the state because of the high cost of retaining an engineer. The Soil Conservation Service has a large enough interest in watershed development to assure the local organization that Soil Conservation Service engineers will make satisfactory inspections.

Reserve Fund for Damages and Easement Payments

Some of the land owners who will have flood detention dams on their land brought up the question of damages occurring behind these structures. They felt that the occasional inundation of pasture and cropland behind these dams would cause damage to grass and crops from siltation and submersion. As the landowners who would suffer these damages are being expected to donate the easements permitting the construction of the structures, there should be some means of paying them for damages caused by these structures.

The reserve fund for damages was created to provide the needed source of money to pay for the above-mentioned damages. This fund would be built up rapidly during the first years of the project. As can be seen by studying the Budgets the amount of money put in

this fund annually tapers down from \$2010 in the first year to \$210 in the fourth year. Barring any damages, the fund should total \$5376 at the end of the fourth year. The fund would continue to increase by \$210 a year until it reached a total that would be predetermined by the board of managers. Then money would cease to be allocated to it until such time as the fund needed replenishing.

A method of administering the fund was also proposed. A per acre rate of payment for damages would be established by the board of managers. A figure of \$10 per acre for 100 per cent damage was proposed. This figure was based on existing rental rates of pasture land in the watershed. In the event of occurrence of damages, the board of managers would either appraise the damages themselves or have them appraised and reimburse the landowner involved. If more than one year was needed to restore the damaged acreage to its original productivity, the payment would be made for more than one year. In addition to this, it was also felt that the landowners should receive an annual payment at the same rate as above to cover the loss of land taken by the structures and borrow pits. These annual payments are actually a consideration for the easement paid in annual installments instead of a single purchase payment.

This plan is not what was recommended to this group. It was recommended that the easements be bought in order to eliminate

future hard feelings resulting from damages caused by structures on donated land. However, the local group preferred not to follow this recommendation and the above method of compensating for damages was developed to meet their desires.

Land Treatment Maintenance Fund

The presence of properly maintained land treatment on the land above the works of improvement is absolutely necessary for the prolonged life of those structures. Land treatment measures are important in controlling excessive runoff and soil erosion, thus preventing siltation in the detention structures and channels. This, in turn, reduces the frequency that the reservoirs and channel must be cleaned of silt.

Because of these reasons, Public Law 566 requires that the local organization secure agreements from the owners of at least 50 per cent of the land in the drainage area above each detention dam in which they agree to carry out recommended soil conservation measures and proper farm plans.^{4/} The state Soil Conservation Service office has stiffened this requirement to 75 per cent of the land in each

^{4/} Sec. 4, Par. 5., Watershed Protection and Flood Prevention Act, Public Law 566, as amended by Public Law 1018.

drainage area. In addition to this the local organization agrees in the watershed work plan agreement to encourage landowners and operators to operate and maintain the land treatment measures for the protection and improvement of the watershed. 5/

It was decided that some incentive should be provided to the upland farmers to encourage them to install land treatment and to maintain it properly. Therefore, a land treatment maintenance fund was provided for. The main idea of this fund is to provide an opportunity for the upland farmer to get back part and possibly all of his watershed general assessment. The suggested administration of this fund is presented in the following paragraphs.

First, the board of managers must establish criteria of eligibility. The suggestion was that the eligible landowners would be those who have land outside the flood plain and have a Soil Conservation Service land treatment plan at least partly established on this land and maintained properly. Full repayment of the landowner's general assessment for watershed purposes would be made if he had land treatment planned for all of his land within the watershed, had it all established, and maintained properly. Partial repayment would be made if land treatment was planned for only part of the land, provided

5/ Silver Creek Watershed Work Plan Agreement, Par. 9.

the portions planned was also established and maintained properly. Partial repayment would also be made if only part of the planned land treatment was established, but it must be properly maintained. The board of managers would have to determine whether the land treatment was properly maintained. This could be accomplished by an inspection by the board of managers themselves or by delegated inspectors located throughout the watershed.

The board of managers will also have to devise some method of determining how much of the individual general assessment to repay. Such a method would have to consider what proportion of the landowner's total watershed acreage had land treatment planned for it, and what proportion of the planned land treatment was applied. If any part of the land treatment was not maintained properly, no refund would be made.

Certain records would have to be kept by the board of managers to assist them in proper administration of the fund. These would have to include total acreages owned by landowners having land outside the flood plains but within the watershed. Records would also have to be kept showing the amount of planned land treatment for each landowner and the amount each landowner had actually applied. It would be the responsibility of each landowner to keep the managers informed as to changes in the status of his land treatment. Another item that would have to ^{be} available to the managers would be the

amount of each eligible landowner's general assessment for watershed purposes.

It is hoped that this fund will accomplish two things. First, that it will provide enough incentive to cause all the necessary land treatment to be applied and maintained in order that the project will function to best advantage. Second, that it will help to ease the situation where the upland farmer feels that he should not be taxed for a project that benefits the flood plain farmer the most.

The estimated amount needed in this fund was determined by adding up the general assessments of all the upland landowners who might be eligible for repayment.

Contingency for Delinquency

This item, the amount of which is 15 per cent of the total of all budget items above it, has a dual purpose. One purpose is to allow for possible delinquencies in payment of taxes to insure enough money is raised. The other purpose is to provide the board of managers with a cushion which would allow adjustment of levies on individuals who feel they are being treated unjustly without having to change all other assessments.

CHAPTER III

EASEMENTS AND RIGHTS-OF-WAY

Public Law 566 specifically requires local sponsoring organizations to acquire without cost to the federal government the land, easements, or rights-of-way needed for the works of improvement to be installed by the federal government. In most cases, easements are used to grant the necessary land rights. These rights should include the full right of the local organization to construct, operate, and maintain structures including the right of use and possession of the structures. The landowner involved still owns the base title to the land but he cannot exercise his rights in any manner that would interfere with the rights given in the easement to the local organization.^{6/}

Problems

Easements and the financing of easements have been a source of trouble in watersheds in other states. One example is the Walnut Creek Watershed in Kansas. Here, the assisting Soil Conservation Service technicians obtained estimates of the value of the needed

^{6/} Watershed Protection Handbook, Sec. 15, I and III.
Soil Conservation Service, U. S. D. A., July 1957.

easements by asking the watershed directors, Soil Conservation District supervisors, and site owners to each make an appraisal of the land needed for each structure. These figures were then averaged and used by the Soil Conservation Service in making up their work plan.

As it turned out, the figures were quite high. The site owners were given the impression that they were to be paid for the easements and that the work plan figures were to be the amounts paid. The flood plain landowners immediately became alarmed at the possibility of having this large amount of money assessed against them. As a result, heavy criticism was leveled at the manner in which the easement appraisals were carried out, which in turn, created one more obstacle to the development of the watershed project. An attempt was made to solve this problem by the enactment of a state law which gives 20 years tax exemption to land upon which easements had been donated for water storage. It is not known at this time whether the problem was solved. ^{7/}

An easement problem was found in Nebraska that was not endangering the project, but it was a type of problem that could possibly disrupt a local watershed sponsoring organization. One landowner

^{7/} Organisational and Financial Problems of Local Sponsors of Public Law 566 Projects in Kansas, Loyd Glover, July 16, 1957, pp. 15-16.

was interviewed that had donated his easement. He had some crop-land in the flood pool and had lost about five acres of oats because of flooding caused by the retention dam. He felt that he had made a mistake in donating his easement and that the operation of the structure had been misrepresented to him. ^{8/} This type of problem could prove very serious to any project in which it became very widespread. The donating landowners could possibly create enough ill feeling toward the local organization and the project to cause the whole thing to be abandoned.

The local organization in Silver Creek has also had easement problems. The easements were to be obtained on a donation basis in order to cut down on the initial expense of the project. In the spirit of neighborliness all the landowners ~~except~~ one donated their easements. This individual envisaged the possibility of considerable damage occurring to his pasture from siltation and extended inundation caused by the occasional filling of the flood pool behind the flood detention structure to be built on his land. The idea of donating an easement for such a structure and then having to stand the losses which might be caused by it did not appeal at all to this particular landowner.

^{8/} The Small Watershed Program in Nebraska, Loyd Glover, October 1956, Revised November, December 1956, and January 1957, pp. 18-19.

This has caused some of the other landowners to reconsider their actions.

It was because of this one individual's reluctance to donate his easement that the reserve fund for damages and the easement payments fund were included in the budget for Silver Creek. The presence of these funds assure the donating landowner that the local organization will not only reimburse him for damages caused by the structure, but will also give him some consideration for the land used by the structure and the borrow pit. Although this is practically the same thing as buying the easements, it does not involve a large initial payment and, therefore, was more acceptable in Silver Creek.

The above examples point out that a local group should not act too hastily when deciding on a method of obtaining easements. The remainder of this chapter will be taken up with discussing the considerations that the local group should make in developing a plan for obtaining easements.

Purchase or Donate

An important decision that the local group must make is whether the easements should be bought or whether they should be obtained by donations. Cost quite naturally is a major consideration in making this decision. A newly organized local sponsoring group is going to want to accomplish their part of the work plan agreement as

cheaply as possible. However, some of these local groups are placing too much emphasis on the cost factor when deciding on a method of obtaining easements. In doing this, the local groups are not giving enough consideration to possible future developments.

A lesson can be learned from the experiences of previously organized watersheds. That lesson is that community spirit disappears quickly when individuals begin to suffer damages from structures built on donated sites. This happened in Silver Creek before the structures were even built. A feeling of community pride and neighborliness is a prime essential in the formation of a watershed project, but it is not reason enough for a landowner to donate the use of his land for a project that is designed primarily to benefit his neighbors. This becomes even more true when that project may inflict damages on the donating landowner. If there is a true neighborly spirit in the watershed, all people concerned will want to carry out the development of the project without causing undue hardship to anyone. For this reason, benefiting landowners should be willing to see that their upland neighbors receive fair consideration for the easements for structure sites.

Buying the easements is a much more businesslike approach to the problem. A plan for buying easements based on a sound appraisal method which considers both the possible benefits occurring to the site owner and the possible damages he might suffer will do much to

create in him a feeling of good will toward the project. The site owner involved will never have cause to feel that he has been unduly wronged because he can see that his rights have been considered in the matter. The local organization will also have a more definite control over the structure site and will be able to enforce special provisions of the easements more readily, such as rights of access to the site. Buying the easements may be costly, but it may be worth the expense to eliminate the possibilities of hard feelings among the site-owners at some future time.

There should also be a definite understanding between the site-owner and the local sponsoring group as to what rights are involved in the easement. The opening paragraph of this chapter mentioned that the landowner retained the base title to the land involved. It is important that this is understood as it means that the landowner must still pay the taxes on the land even though he may be denied the use of it. The boundaries of the site including the flood pool should be exactly determined and described in the easement. If necessary, a survey should be made. The local organization should have rights of ingress and egress over the landowner's property in order to perform maintenance and repair on the structure. It may be wise to go so far as to specifically describe the routes to be used to avoid inconvenience to the landowner. Any special provisions such as the prohibiting of

grazing on the structure should be specifically stated in the easement to avoid any possibility of later misunderstanding.

Appraisal Factors

The buying of easements requires some method of appraisal whereby their value may be determined. In order to carry out an appraisal it is necessary to have a knowledge of the factors affecting the value of the easements. The following paragraphs will bring out some of these factors through the appraisal of a structure site on a hypothetical farm. The structure involved will be a flood detention dam. The farm will be one situated entirely in the upland area of a watershed. Its size will be approximately 320 acres although the total size is not an important factor. The type of farming operation will be a combination cash-grain and livestock type with the owner also being the operator.

Before going any further, a flood detention structure should be explained. Briefly it consists of a dam placed across a waterway in the uplands area of a watershed designed to catch runoff water and allow it to drain out a drain tube through the dam. The whole operation has the effect of slowing the rush of water from the hills thereby reducing the amount of flooding in the lowlands. The appraisal of the site would consist basically of an evaluation of the adverse effects that the dam

would have on the farm compared with an evaluation of benefits derived from it.

The appraisal might begin by considering the amount of land needed for the structure and its accompanying borrow pit and flood pool. The amount of land needed for the actual structure and borrow pit generally consists of only a few acres. However, these acres are a complete loss to the landowner as far as any continued productive use is concerned. In arriving at a value, it is necessary to consider their present use and how the loss of this use will affect the operation of the farm as a whole. If these are cropland acres the loss of production may be more keenly felt than if they were pasture acres. This, of course, would depend on several other factors. It may be that the particular farm is short on pasture and the loss of these acres may have to be made up by converting cropland to pasture or it may cause an adjustment in the farm livestock operation. In all cases, the possible loss in income would have to be considered in arriving at a value. It may be necessary to use the replacement value of such acres as an easement value.

The flood pool may cover a considerable acreage, but the landowner will be denied its use only when it is occasionally covered with water. However, this flooding hazard may necessitate the conversion of cropland in the flood pool to less easily damaged pasture

land. The consideration in this case would have to involve the loss of income caused by the change plus the estimated flood damage to the pasture that would occur during the life of the structure. Another consideration that needs to be made in appraising the flood pool concerns the silt pool. This is a part of the flood pool that will eventually be silted over. This siltation will occur gradually over a period of years and can be roughly predicted. Therefore, it is possible to consider the annual loss of productive acres due to siltation when estimating the damages in the flood pool.

In estimating damages in the flood pool it is necessary to consider both frequency and duration of flooding. Not every storm will cause the flood pool to fill entirely. It is possible to predict the frequency of storms over a long period of years. Therefore, this information plus knowing the rate of drainage through the drain tube of the structure makes it possible to estimate the total damage during the life of the structure. There would then be a basis to reimburse the landowner either by yearly payments or by one lump sum.

On the benefit side of the situation, there may be several possibilities. The structure may be so located with respect to the pasture on the farm as to provide some stock water benefits. It is possible for the landowner to have the structure built to provide him with a permanent pool of water, thereby eliminating the necessity of

his providing the same facilities out of his own pocket. It is somewhat difficult to attach a monetary value to this benefit. If the farm is badly in need of such facilities, the landowner may be willing to donate the actual structure site and the area covered by the permanent pool. However, he would probably want to be reimbursed for the possible damages occurring in the remaining flood pool area. How much of the total site the landowner would be willing to exchange for stock water benefits would depend on the existing need for such facilities.

It would also be possible for a landowner to realize some recreational benefits from a permanent pool behind the structure. These benefits are even more difficult to measure monetarily and would depend greatly upon the value attached by the landowner to such facilities. However, it may be possible for a landowner to realize something by charging a small fee to interested parties for the right to enter his land to make recreational use of the pond. On the other hand, the landowner may desire such a pond for his own recreational use enough to make quite a concession in the price of the easement, particularly if stock watering benefits could also be realized.

Another possible benefit to the landowner may be in the form of flood protection to his own land immediately downstream from the structure. Such benefits appeared possible in Silver Creek, but were not considered by the Soil Conservation Service in determining cost-benefit ratios and also were not considered in determining bene-

fits for the special benefits assessment. Such benefits could probably be measured in a manner similar to determining benefits in the flood plain and could be used in easement negotiations. It may be wiser to use these benefits in this manner, rather than in a special benefits assessment as the landowner may be much more receptive to the idea. If such benefits are accounted for in the easement price, the landowner will be spared of having to pay an assessment every year.

Other factors than these mentioned may also be important, and should be considered in the appraisal. Other type structures may differ in the type of factors affecting their value but the appraisal of the sites should be accomplished in a manner somewhat similar to the one suggested for a flood detention structure.

Appraisal Method

The actual appraisal could be carried out by either one of two possible ways. One method would be for the appraisal to be done by a committee appointed by the board of managers of the watershed district. This committee should probably consist of at least three members. These members should include one person from the flood plain, the particular landowner whose land is being appraised, and a member of the board of managers. The three major interests in the watershed would then be represented. The member of the board of managers on the committee must be a person who is capable of looking at the problem

from the point of view of the entire watershed even though he is personally affected by the decision the committee makes. The landowner should be present in order that he may understand completely how the evaluation of the easement is determined and to represent his own interests. A person from the flood plain of the watershed should also be present to represent the landowners in the flood plain as they will probably pay for the easements being appraised. More members may be added if desired, but the more there are, the longer it will take to accomplish the appraisal.

The other method would be to hire a professional appraiser to do the job. This method would probably require more cash outlay than the committee method, but would be faster and quite objective. Where the committee might spend time arguing over some point, the appraiser could evaluate the various factors as he saw them and place a value on the easement in a much shorter time. The board of managers could then use the appraisal reports as a basis for their negotiations. The landowner could be called in, informed of the factors considered and their evaluations, and then the easement price could be agreed upon.

The important thing in buying easements is that everyone concerned understand fully the method of appraisal, particularly what factors it considers and the amount of consideration given each factor. All the rights needed by the local group should be obtained,

and the landowner giving up the rights should understand completely what he is giving up. Finally, it is strongly recommended that the easements be bought in order to avoid the serious problems that can develop from donated easements.

CHAPTER IV

METHODS OF RAISING REVENUE

The previous chapters have been primarily concerned with determining the amount of expenses that the watershed district will have to meet. This chapter will take up the problem of how to raise the amount of money required to meet these expenses. Again, it is assumed that the watershed will be organized under the provisions of the South Dakota Watershed Act. The general considerations that will apply in all watersheds will be presented, as well as the specific considerations used in determining the method of financing the Silver Creek project.

The South Dakota Watershed Act has provisions for either a general levy or a special assessment based on benefits, or a combination of the two. ^{9/} The Act specifically gives the board of managers the power to levy as much as one mill against the taxable tangible property within the district. ^{10/} In order to make more than one mill general levy or to levy special benefit assessments there must be a favorable vote of 67 per cent of the landowners voting and representing 67 per

^{9/} South Dakota Watershed Act, Sec. 23 (1).

^{10/} South Dakota Watershed Act, Sec. 30.

cent of the land in the district. 11/ Given these powers, the board of managers must determine what method or combination of methods to use in raising the proper amount of money.

General Levy

The general uniform levy is probably the simplest method as far as ease of administration and public understanding is concerned. It would be very simple for the board of managers to set a mill levy against all taxable tangible property in the district since that would in most cases be high enough to raise the necessary amount of money. However, a levy of more than one mill would require a vote which would burden the local organization with the expense and work involved in carrying out an election.

However, exclusive use of the general levy has a basic inequality when used in a watershed situation. It causes the people in the uplands who are not benefiting directly from the project to pay as much toward its upkeep and operation as the people in the flood plain who are the primary beneficiaries. This inequity is also easily understood and would probably spell defeat for any financing plan based entirely on a general levy.

There may, however, be justification for a small general levy. This justification would be found in the benefits that accrue to

11/ South Dakota Watershed Act, Sec. 23 (3).

the district as a whole. These benefits may be in the form of reduced damages to roads, bridges, and culverts which would lower county and township maintenance costs. Such benefits may also be in the form of travel time and convenience gained by not having to detour around flooded areas. There would also be a general enhancement to the district as a whole by having such a project established. The value of the land in the flood plain would be increased because of the reduction in flooding. This would have the long range effect of reducing the tax load on the uplands. These benefits would be very difficult to measure in dollars, but nevertheless, they can be recognized.

Special Benefit Assessment

A special benefit assessment is more complicated but much more equitable. Such an assessment is based on the principle that each landowner should pay according to the proportion that his benefits are of the total watershed benefits. The idea is simple in theory but application in Silver Creek indicated that it is difficult to put into practice. The main difficulty lies in determining each individual's portion of the benefits.

In South Dakota's small watershed projects the only benefit figures available are those determined by the Soil Conservation Service in drawing up the watershed work plan. These are computed by reaches,

which may consist of several farms. The term reach applies to a hydrologic unit of the watershed which is used for planning purposes. Another difficulty with the Soil Conservation Service data is that not all the possible benefits may have been considered. It was found in Silver Creek that the town of Renner would benefit from the project, but Soil Conservation Service had not included benefits for the town as they were not needed to make a favorable benefit-cost ratio. However, in drawing up the financial plan for Silver Creek, estimates were made for some of the benefited areas not found in the Soil Conservation Service work plan in an effort to apportion the benefits as equitably as possible.

The method of apportioning benefits used in developing the financial plan for Silver Creek was devised in an earlier study of this watershed. ^{12/} The method was further tested and appears to be satisfactory with the exception of being rather complicated. It requires quite a bit of time to learn the procedure and even more time to apply it to a whole watershed. Efforts were made to develop shorter methods but the sacrifices in equitability were found to be too great to warrant their use.

^{12/} A Local Cost Sharing Plan for Watersheds Under the Watershed Protection and Flood Prevention Act, a thesis by Henry N. Ziegler, August 1957, Chapter V, South Dakota State College Economics Department.

In describing this method of apportionment it is necessary to first describe the basis upon which the benefits are computed.

The largest benefits, cropland benefits, are computed from a synthetic storm-discharge chart. This chart lists the storm frequencies from one year to one hundred years. Opposite each storm frequency is listed the corresponding discharge rate of water, the area in acres flooded at this discharge rate, and the dollar damage in the area based on depth and duration of flooding. In computing the benefits, the dollar damage occurring in the synthetic watershed with no structures built was compared with the dollar damage that would occur in the same watershed when the entire project was established. This comparison was made for each storm frequency with the resulting decrease in dollar damage being the benefits at the particular frequency. The average annual benefit figure is the sum total of the ^{yearly} benefits for each storm frequency. 13/

Soil Conservation Service breaks these computations down by reach, but not by individual farm. The task of assigning the total benefits in a reach to the individual farms in the reach was done in the following manner. The apportionment of the cropland benefits was accomplished by first determining the amount of land each farm had in

the various flood areas associated with different storm frequencies. Then the previously determined reach benefit figures were broken down on a per acre basis for each storm frequency. These per acre benefit figures were then applied to the acres in each storm frequency area. These results were totaled for each farm to obtain the individual farm benefit figure. Other benefits such as pasture benefits, indirect benefits, other agricultural benefits and enhancement were based on percentages of direct benefits. Either a per acre figure was obtained to apply to the individual farm acres, or a ratio based on the proportion of farm acres to reach acres was used to apportion these benefits. ^{14/}

Taxation Plan for Silver Creek

For Silver Creek, it appeared advisable to suggest a combination of the special benefits assessment and the general levy. The budget indicated that \$5000 would need to be raised every year. The benefits accruing to the district as a whole appeared adequate enough to warrant a 3/4 mill general levy. These benefits would be in the form of reduced damages to bridges, roads, and culverts, reduced inconvenience of travel during time of flooding, and a general overall enhancement of the entire district. Of the \$2000 raised by this method

^{14/} Ibid.

approximately \$900 would possibly be returned to the upland landowners for proper maintenance of land treatment. This would mean that the flood plain landowners would be paying \$1100 of the general levy.

The remaining \$3000 would be raised by the special assessment on the flood plain landowners. Each individual assessment was determined by the previously mentioned method of apportionment. It is easy to see that the people receiving the most benefits are paying the largest share of the cost. If the \$3000 is added to the \$1100 to be raised by the general levy, it can be seen that the flood plain landowners will pay \$4100 of the \$5000 to be raised. The \$900 from the upland landowners will act as an incentive for them to apply and maintain land treatment through the arrangements to pay it back.

Two lists were made up for presentation to the board of managers. (See Appendix). One list contained only the names of the landowners in the flood plain. Opposite each owner's name was the legal description of the benefited land, the amount of benefits, the percentage that the benefit figure was of the total benefits, and how much of the \$3000 would be assessed against the landowner. The other list contained the name of every landowner in the watershed. Opposite each owner's name was the amount of his special assessment, if any, his general levy, and his total assessment. These lists were made up so that it would be easy for the landowners to compare their assess-

ments with their neighbors'. Inequalities would then be brought out and could be adjusted by the board of managers.

Other Watershed Taxation Plans

Other watershed situations may require some varying of the method of determining benefits or of the methods of raising money, or possibly both. In the Wild Rice watershed, north of Britton, South Dakota, it was decided to apportion the benefits on a strict per acre basis and ignore the flow lines which indicate frequency and duration of flooding. The flood plain involved there is almost level and so lent itself very well to this simple method. The flood plain in Silver Creek was such that the apportionment of benefits by this method would have been unfair. Under this simple method all that is required is the division of the total benefit figures by the flood plain acres to determine the per acre benefits. Each landowner's flood plain acreage was then determined and multiplied by the per acre benefit figure to determine his total benefits for his farm. His assessment was then determined by the proportion that his benefits were of the total for the watershed. ^{15/}

^{15/} Proposed Financial Plan for Wild Rice Watershed,
Unpublished, July 1958.

The Scott Creek Watershed District, a pilot project near Alcester, South Dakota, is financing itself entirely by the one mill general levy. Although it is not a fair method, it was used because the project was sold on that basis to the landowners and the board of managers thought it was best not to change from the original plan.

Summary

This chapter has discussed the actual raising of the money needed by a watershed district. The main principle followed was that the project should be financed primarily by the benefiting landowners and that each should pay in accordance with the amount of benefits received. One final point is that the actual collection of levies and assessments is handled by the existing county tax machinery at no cost to the watershed. The board of managers of the district only determine the amount to be raised and whether it is to be raised by general levy, special assessment, or some combination of the two.

CHAPTER V

REACTIONS TO THE PROPOSED FINANCIAL PLAN

The financial plan developed in this study was presented to the board of managers of the proposed Silver Creek Watershed District at a meeting in Sioux Falls. All the various parts of it were explained fully as to why they were included and how they were derived. The plan was presented as a model from which the managers could make their own plan. It was emphasized that although the presented plan contained the various items and methods believed necessary in a sound financial plan for Silver Creek, it was the board of managers' responsibility to provide the plan actually to be used by the watershed district.

The reactions of the group, while not entirely favorable, indicated definite interest in the plan. The opinion was voiced that some of the individual benefit figures were "way off". In view of the method used to apportion them, it is possible that slight errors could occur in the planimetering process but it was difficult to see how any very large errors could occur. In the ensuing discussion, it became clear that certain members of the board of managers were placing much more enhancement value on certain farms than was used in the plan. Perhaps enhancement value should receive more consideration. The

Soil Conservation Service enhancement benefit figures consider only pasture acres that can be converted to crop use after the project is established. It would seem that some existing cropland should also receive enhancement benefits. The reduction in flooding would assure more crops being harvested which would cause the value of the cropland to increase.

One member came out in favor of a uniform special assessment on the flood plain. He seemed to be of the opinion that an assessment based on benefits would never be accepted by the local group. After some discussion, it appeared that he might be objecting more to the assessment figure for his land in the flood plain than to the method as a whole. It was then pointed out that this figure was definitely not final and that the board of managers had the responsibility of adjusting such grievances.

Soon after the meeting at which the plan was presented, petitions for organizing a watershed district were circulated throughout Silver Creek Watershed. This movement for organization soon became entangled in disagreement over the proposed financing methods. The upland owners emphasized that they did not wish to be taxed for a project that was not for their direct benefit. The land treatment maintenance fund, which would allow upland farmers opportunity to regain their general levy, was looked upon as a means of forcing them to apply land treatment measures.

The feeling against a general levy was so great among the upland farmers that they would not agree to organize unless they could be guaranteed that they would not have to contribute to the financing of the watershed. Such a guarantee was impossible to give as the South Dakota Watershed Act definitely gives the board of managers of a watershed district the explicit power to levy a maximum of one mill on the taxable tangible property of the entire district. A compromise was proposed to the upland farmers. This suggested that a small general levy, not more than one-half mill, be used to help the organization get started. The upland farmers would agree to this proposal if it could be guaranteed that the levy would be in force no longer than two years and no general levy of any type would be assessed at any time thereafter. An opinion is now being sought from the Attorney General of South Dakota as to whether or not the state watershed act will permit this type of guarantee.

There are, at the present time, two easements yet to be obtained. One is for a detention dam site, and the other is for about a mile of channel improvement. The easement for channel improvement will be donated readily as the landowner stands to benefit greatly from the project. However, the owner of the dam site will not give his easement until he can be assured that he will be paid for any damage that might be caused by the structure. The flood pool for this particular structure extends over about 60 acres of pasture land which the owner

fears could be damaged severely by inundation. This particular land-owner is aware of the damage payment plan contained in the financial plan presented at the meeting in Sioux Falls. It is not known whether the plan is not understood by him or whether it is just not satisfactory. 16/

This incident points up very well the necessity of careful, serious planning by the local group in determining the method of obtaining easements.

The Soil Conservation Service is now planning to build one flood detention structure in the watershed despite the fact that the local group has not yet organized a watershed district. The purpose of building this structure is to present visible evidence of the worth of the project in the hope that the local group will organize more quickly. This is, of course, aimed primarily at those people in the local group who are tending to hold the project back. Four of the five members of the future board of managers and the soil conservation district supervisors have petitioned for the structure to be built, the state has given its approval, and the Soil Conservation Service has the necessary money. The Soil Conservation District in Minnehaha County will be the contracting agency and will also guarantee the maintenance of the structure by setting aside

16 / Interview with Norman Berg, Assistant State Conservationist, Soil Conservation Service, Huron, South Dakota, July 28, 1958.

the needed amount of money from its funds until such time as the local group is organized and can take over this responsibility. Construction is planned to start this fall. 17/

In view of the present situation in Silver Creek, there is a definite risk in building this structure. The local group may still refuse to organize which would leave the local soil conservation district with a structure to maintain. The Soil Conservation Service is hoping that the local group will be able to visualize the watershed protection that would be possible if all the structures were built and act positively to organize so that the remaining ones can be built. However, it will be very difficult for the local group to see much in the way of benefits from just one structure.

It is very difficult to visualize how the building of one dam will solve the easement and taxation problems described earlier in this chapter. These problems require more permanent solutions. The future board of managers for the proposed district are going to have to realize their responsibilities and make an effort to formulate a financial plan that will meet the expenses of the watershed and at the same time be acceptable to all the people in the watershed. The seriousness of the problem confronting the managers is shown by the fact that the

upland farmers have even gone so far as to threaten petitioning for discontinuance of the project unless they are guaranteed that they will not be taxed.

A thorough analysis should be made to determine why the financial plan presented to the local people was not entirely acceptable to them. Such an analysis will not be attempted here, but some of the more obvious aspects about the nonacceptance of the plan will be discussed. One item of dissent concerns the flood plain landowner's complaints about the special benefit assessment figures. In every case the individual benefit figure far exceeds the corresponding assessment figure. In most cases the flood plain landowner would be receiving approximately \$10 in benefits for every dollar that he paid in the special benefit assessment. Even with the realization of this fact, the flood plain landowners still thought the assessment figures were too high in comparison with the benefits as they saw them.

The method of apportioning the Soil Conservation Service benefit figures may account for slight errors, but errors of any size must be explained by some other reason. The next logical step would be to examine the total watershed benefit figures which were determined by Soil Conservation Service. The procedures used by Soil Conservation Service are similar to those that all federal agencies use in determining cost-benefit ratios for public projects. The speculation would then be

that there is something inherent in the cost-benefit methodology which causes benefits to be overemphasized.

If the watershed benefit figures are accurate then possibly the flood plain landowners have not actually associated their assessment figures with their benefit figures. The assessments can be seen as a definite cash outlay while the benefits may not be so easily recognized. In some cases, the thought of having to pay an assessment may have closed the mind of the flood plain landowner to any attempt at recognizing his possible benefits.

Another aspect of the general nonacceptance is the fact that the upland owners have complained about the proposed general levy even though provisions have been made to repay it to them in the form of a reward for establishing and maintaining land treatment on their farms. The repayment plan has been misinterpreted by the upland owners as a device to force them to apply land treatment. According to Soil Conservation Service, land treatment measures provide enough benefits to the farm on which they are established to more than cover their cost. Therefore, there should be no need for any incentive payments for the establishment of such measures, but an incentive was provided because of the importance of land treatment to the life of the flood detention structure. The general levy seemed justified in light of the general benefits accruing to the watershed as a whole. The

upland owners are either not convinced of the merits of land treatment measures or they do not agree with the idea of general benefits to the entire watershed or possibly both.

CHAPTER VI

CONCLUSIONS

There is a definite need for the small watershed program, but it will never be a success until adequate methods and general principles are made available to the local sponsoring organizations to aid them in properly organizing and financing their respective projects.

The financial plan that a local sponsoring organization finally decides upon should include a plan for obtaining easements. It is recommended that the easements be bought to avoid the misunderstanding and unfairness that seem to arise from donated easements. An appraisal method for establishing the value of the easements should be developed taking into consideration the factors mentioned in Chapter III. It is extremely important that this method be understood and approved by both the landowners who are selling the easements and the flood plain land owners who will have to pay for them.

The financial plan should also include a maintenance plan which provides for maintenance agreements with landowners in the watershed. These maintenance agreements would pay the landowner involved for performing the more routine maintenance tasks such as mowing weeds on the flood detention structures and clearing brush from the channel improvements. More extensive maintenance requiring major repair to the structure would probably have to be done by a contractor.

The important thing is that money be raised to cover maintenance costs to avoid total reliance on donated services. Only by planned, paid maintenance will there be definite assurance that maintenance is performed properly and at the correct time.

Maintenance of land treatment should also be considered in the plan as land treatment is vital to the successful operation of the project. It may be necessary to pay landowners having land treatment to maintain it properly. This is particularly true with respect to such practices as terracing as it is costly to maintain and is often considered by farmers to be a nuisance to farming operations.

Finally, there should be a plan for raising revenue based on the idea that those who benefit the most should pay for the operation of the project in accordance with their amount of benefits. This is the only equitable way of financing this type of project although it is difficult to accomplish. More work must be done on developing a method of apportioning benefits that is simple enough to be used by a local sponsoring group in developing a base for a special benefits assessments. The ways that Soil Conservation Service may be able to assist in developing this method should not be overlooked. An example would be for the Soil Conservation Service watershed planning party to analyze all benefits, not just enough to establish a favorable cost-benefits ratio.

The financial plan presented to the people in Silver Creek might possibly have been better accepted if it had been worked out more closely with them. The local soil conservation district supervisors wished that the plan be made, but they would not permit any contact with the local people as they feared such contact might interfere with the donating of easements. This made it difficult to ascertain the general feeling toward the project and toward methods of financing. The only information gained along these lines was from Extension Service and Soil Conservation Service personnel who were in frequent contact with the local people. It is recommended that, if at all possible, future watershed financial plans be worked out step by step with the local group concerned. In this manner, the local group will understand completely how the plan is made up and why certain things are done as they are. The local people will also be made to feel that they have had a direct part in the making of the plan.

The author sincerely hopes that this study will be of assistance first to the people in Silver Creek and other watersheds in South Dakota, and finally that it might be a small stepping stone to the successful organization of many similar projects throughout the nation.

APPENDIX

**Illustrations of Assessment Lists Presented as Part of
the Financial Plan for Silver Creek Watershed**

**Annual Benefits and Assessments
in
Silver Creek Flood Plain**

(\$3,000)

	Legal Description			Average Annual Benefits	% of total Benefits	Annual Assess- ment
	Pt or all of	Sec.	Twp.			
Aspaas, Nils	W $\frac{1}{2}$ SE $\frac{1}{4}$	8	103	97.17	.32	9.60
Aspaas, Paul	S $\frac{1}{2}$ NW $\frac{1}{4}$	16	103	1.54		
Aspaas, Tom	W $\frac{1}{2}$ NW $\frac{1}{4}$	4	102	277.65	.90	27.00
Bakken, Lena	SE $\frac{1}{4}$ NW $\frac{1}{4}$	9	103	146.38	.47	14.10
Beckman, J.H.	NE $\frac{1}{4}$	28	103	677.72	2.20	66.00
Berry, F.L.	E $\frac{1}{2}$ NE $\frac{1}{4}$ & SW $\frac{1}{4}$ NE $\frac{1}{4}$	16	102			
Bliss, S. S.	E $\frac{1}{2}$ NW $\frac{1}{4}$	16	102	606.67	1.97	59.10
Brekke, M.B.	NW $\frac{1}{4}$ NW $\frac{1}{4}$	33 &		405.87	1.32	39.60
	SE $\frac{1}{4}$ SW $\frac{1}{4}$ & SW $\frac{1}{4}$ SE $\frac{1}{4}$	28	103			
Brende, Em- ma, ETAL	NE $\frac{1}{4}$ NE $\frac{1}{4}$	20 &		195.43	.63	18.90
	E $\frac{1}{2}$ SE $\frac{1}{4}$	17 &				
	NE $\frac{1}{4}$ SW $\frac{1}{4}$ & S $\frac{1}{2}$ SE $\frac{1}{4}$	16	102			
Brende, Gida	S $\frac{1}{2}$ SE $\frac{1}{4}$	16	103	221.95	.72	21.60
Brende, G.S.	N $\frac{1}{2}$ SE $\frac{1}{4}$	16	103	487.81	1.58	47.40
Brende, G.S. and G.L.	NE $\frac{1}{4}$	21	103	309.53	1.00	30.00
Brende, M.P. and Palmer	NW $\frac{1}{4}$ SW $\frac{1}{4}$ & N $\frac{1}{2}$ SE $\frac{1}{4}$	16	102	183.77	.60	18.00
Totals				30,847.27	100.00	\$3000.00

Estimated Annual Assessments for Silver Creek Watershed

	3/4 mill General Assessment on Tangible Property	Floodplain Assessment	Total Assessment
Ackerman, Jack L.	\$.40	\$	\$.40
*Adamsen, Louis B	8.35		8.35
Almie, Edna	.17		.17
Allis, R. L. & Elis.	.89		.89
Anderson, Elmer	.09		.09
+ *Anderson, G.E.			
Anderson, Holger	6.98		6.98
Anderson, Leslie	.28		.28
Aspaas, J.H.	1.26		1.26
*Aspaas, Nils	36.13	9.60	45.73
Aspaas, Ole	5.87		5.87
Aspaas, Paul	4.58		4.58
Aspaas, Tom	3.86	27.00	30.86
+ Avery, Susan & Edith			
Asettine, Grace	.90		.90
Bailey, Clifford Sr.	.09		.09
Bainbridge, Cecil	.09		.09
Baker, Phillip & Edith	1.86		1.86
Bakken, Lena	2.84	14.10	16.94
*Bakken, P.O.	11.55		11.55
Baltzer, Arthur	.09		.09
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Totals	2,014.14	3,000.00	5,014.14

* Eligible for refunds on tangible property. Assessments for maintenance of land treatment measures.

+ Farms on border lines of Watershed, over 1/2 outside.

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