CAPITAL IMPROVEMENT PLAN

FOR

STORMWATER UTILITIES

IN

RAPID CITY, SOUTH DAKOTA

Mayor's Committee
on
Drainage and Flood Control

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EXECUTIVE SUMMARY

The purpose of this report is to recommend a course of action for Rapid City to deal effectively with drainage and flood control problems within the City. This program will address not only the large storm flooding, but also the smaller, more frequent two- to three-inch rains causing lesser drainage problems. The total cost to complete all major drainage and flood control projects is estimated at roughly $49 million. Using only sales tax dollars and factoring in City growth, the current annual amount spent on these projects falls short of the annual inflation on $49 million by over $900,000. Mathematically, the City alone could never complete the projects.

The costs of improvements were split into two categories--one for improvements needed as a result of new development, the other for improvements needed today and based on current developments. The first category was used to establish a fee to be paid at the time of development, which altered the time line for completion from "never" to "whatever the future date of development is" in the area. The development fee is a one-time charge which will range from $100 for a typical residential lot to more than $1,100 per developed acre for a densely-developed, non-residential parcel.

The second category required a fee paid by all users of the drainage system, similar to the monthly utility bill for water or electricity. The fee structure in this report completes all drainage improvements needed for existing development in 25 years and provides for an annual O & M budget for the new facilities. These monthly utility fees range from $2 per month for a typical residential lot to a maximum of $18 per month per developed acre for densely developed, non-residential parcels.

The program described in this report will be implemented under the authority of the Western Pennington Storm Drainage and Flood Management District, addressed throughout this report as the District. Although control of the fees may not be direct under this plan, no fees can be used without the City's formal approval. The benefits of an in-place mechanism for cooperative efforts between jurisdictions is well worth consideration.

The committee that directed the development of this report suggests that the program outlined within be taken to the public for exposure and input prior to any action by the Rapid City Common Council.

I. INTRODUCTION

The residents of Rapid City are no strangers to the devastation of flooding. Major events have been recorded since the first settlers came to Rapid City in the 1800s. Although most of the earlier events were along Rapid Creek, the City's growth has seen more and more flooding problems along the tributaries of Rapid Creek. Early developers transformed the range and forest lands to housing sites and streets with little consideration for the increased potential for flooding. Houses were built next to beautiful little spring-fed streams for the pleasing esthetics. Streets were built across dry gullies with inadequate drainage facilities because "it only flows when it rains hard" or "I haven't seen water run there for 10 years".

Historically, dealing with these occasional inconveniences of Mother Nature meant cleaning out a few basements and backyards or backfilling a washed-out gravel roadway. In short, improvement efforts were little more than reactive clean-up measures to each flood event. However, as the area became more urbanized, the events became more frequent and "inconveniences" became dangerous and expensive flooding problems.

Rapid City's attitude toward flooding changed dramatically in 1972. After the flood that took 238 lives and left millions of dollars of recovery work in its wake, protecting existing development while controlling future development became paramount. The flood hazard area along Rapid Creek was cleared, protective levees constructed, and a floodway ordinance adopted. Although Rapid Creek was the focus of attention, its tributaries within and adjacent to the city were also studied. Figure 1-1 shows the basin boundaries which encompass most of the tributaries affecting Rapid City directly. A 1974 report gave recommendations for improving the floodways of these tributaries and evaluated several methods of funding the improvements. Interestingly, the recommended method parallels closely the proposal presented here. The problem at that time was the lack of legislation allowing actions to carry out that method.

Recent advances toward a comprehensive storm water utility program include the following:

a) In 1988, the City began collecting an additional half-cent sales tax for capital improvements of streets, drainage, and parks projects.

b) The Rapid City Drainage Criteria Manual was adopted in 1989. It presents policies, design procedures, and techniques to be used to control stormwater runoff from urbanized areas. This manual has become the basis for the planning and design of all stormwater or drainage-related facilities within the City and its extra-territorial jurisdiction.

c) From 1989 to the present, drainage basin design plans have been developed for 10 of the 20 tributary areas within Rapid Creek Basin #3. These plans identify improvements needed to comply with the Drainage Criteria Manual as well as the estimated cost of the improvements.

d) As an interim step to a formal fee collection process, the City approved collection of basin improvement fees on new development in areas for which a design plan had

RAPID CREEK BASIN #3

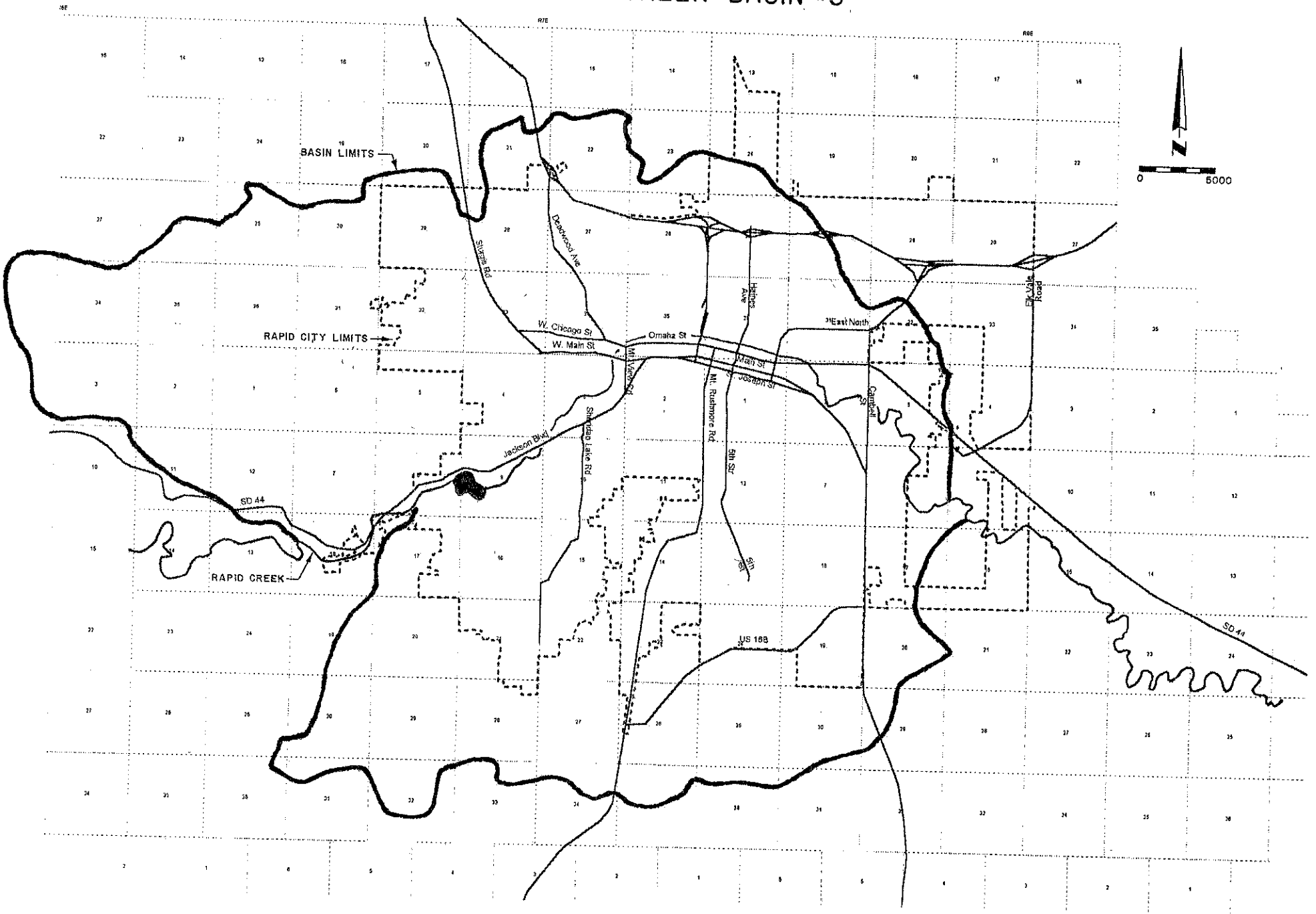

FIGURE I-I

been completed. The intent of these fees was to have developers pay for drainage improvements required by the new development either by direct payment or on-site work in lieu of fees.

These advances have culminated in a resolution by the Rapid City Common Council asking the mayor to appoint a Drainage and Flood Control Committee charged with the following objectives:

1) Estimate the magnitude of Rapid City's drainage and flood control problems.
2) Determine the current rate of progress being made toward solving these problems.
3) Investigate the potential for cooperation with the District in solution of these problems.
4) Develop a program for Rapid City to deal effectively with these problems.

The remainder of this report will address these objectives and lay out a comprehensive storm water utility program to deal with the City's drainage and flood control problems.

II. ECONOMICS

The estimate of costs for needed drainage improvements in Rapid Creek Basin #3 is the total of the improvements in each of the 20 tributaries. Half of these tributaries have completed basin design plans with detailed cost estimates and half of them do not. The costs for those with completed plans is shown below in Table 2-1. These estimates have been adjusted for inflation and completed improvements to date. Also added is the cost of land to be purchased for the additional detention facilities identified in the plans over what exists today.

TABLE 2-1

ESTIMATED IMPROVEMENT COSTS FOR TRIBUTARIES WITH BASIN DESIGN PLANS

SUB-BASIN NAME	STUDY YEAR	SIZE (ACRES)	COST ESTIMATE	UNDEVELOPED AREA COSTS	EXISTING DETENTION ACRES	LAND COSTS	TOTALS
Deadwood Avenue	Mar-89	1,870	$ 840,000	660,000	63	$0	$ 840,000
Downtown Area	Mar-89	1,300	$3,855,000	350,000	17	$0	$3,855,000
South Canyon/Lime Creek	Mar-90	6,140	$2,450,000	1,245,000	39	$440,000	$2,890,000
Arrowhead	Mar-91	4,250	$2,680,000	578,000	40	$220,000	$2,144,000
Haines Avenue	Jan-92	1,180	$5,290,000	938,000	28	$ 75,000	$5,365,000
Red Dale	Mar-92	800	$1,490,000	- 0 -	13	$0	$1,490,000
Mead-Hawthorne	Apr-93	2,637	$9,230,000	1,307,000	50	$ 25,000	$9,255,000
Red Rock Canyon	Apr-93	3,200	$1,140,000	941,000	6	$109,500	$1,250,000
Knollwood	Jan-94	1,162	$6,860,000	1,236,000	36	$0	$6,639,000
South Robbinsdale	Dec-94	1,635	$2,365,000	1,356,000	16	$122,000	$2,485,000
SUBTOTAL							$36,213,000

The cost estimate for the 10 tributaries which do not have basin design plans (Table 2-2) was estimated by comparing similar features, such as size, topography, and percentage of existing development, to the tributaries with plans. This comparison was done in order to determine the necessary acreage for detention facilities as well as the estimate of improvements.

TABLE 2-2

ESTIMATED IMPROVEMENT COSTS FOR TRIBUTARIES WITHOUT BASIN DESIGN PLANS

BASIN NAME	SIZE (ACRES)	COST ESTIMATE	REQUIRED DETENTION ACRES	EXISTING DETENTION ACRES	LAND COSTS	TOTALS
Perrine	1,081	$1,400,000	20		$100,000	$1,500,000
East St. Joe	358	$ 500,000			$0	$ 500,000
Cleghorn Canyon	4,826	$1,750,000	90	1900 acres in	$450,000	$2,200,000
Morningside	853	$1,000,000	12	City	$ 60,000	$1,060,000
Nameless Cave	1,346	$ 400,000	40		$200,000	$ 600,000
Old Lime Creek	1,414	$ 700,000	50		$250,000	$ 950,000
Jackson Boulevard	560	$ 500,000			$0	$ 500,000
Wonderland Drive	813	$ 500,000	12		$ 60,000	$ 560,000
Truck By-Pass	1,870	$2,000,000	45		$225,000	$2,225,000
Landfill	2,490	$2,250,000	50		$250,000	$2,500,000
SUBTOTAL						$12,595,000
GRAND TOTAL (Tables 2-1 and 2-2)	37,785 acres					$48,808,000

The first objective of the Mayor's committee is to ascertain the extent of Rapid City's drainage and flood control problems. In response to this objective, an estimated $48,808,000 will be needed to implement needed drainage and flood control improvements. The second objective, determining the rate of progress in completing these improvements, includes spending an average of $450,000 annually from the half-cent sale tax on drainage projects. Interim Drainage Basin Improvement Fees have raised approximately $75,000 for each of the past two years but have yet to be used for any improvements. Simple division yields a completion time for all improvements of almost 100 years. Applying factors for growth and inflation to these figures shows an even bleaker picture.

Annual expenditure = ($450,000+4% sales tax growth) + ($75,000+2% City growth) = 544,500

Annual Inflation = $48,808,000 x 3% rate of inflation = $1,464,240

Not only does the current annual expenditure fall short of the inflation on the improvements by over $900,000, but there is no current budget for routine operation and maintenance of the facilities already in place.

The almost-$49 million in improvements is based on tributary areas being fully developed. At this time, no tributaries are fully developed, hence, it is realistic to assume that costs attributable to new development be paid by the developer when and if the development occurs. Of course, the impact of increased runoff needs to be accommodated through both the newly-developed areas and areas of existing development.

It is also important to keep in mind that every parcel of ground in the basin is either a contributor to drainage problems, a benefactor of the suggested improvements or, in most cases, both. To establish an equitable method of paying for all the drainage improvements, two fee schedules are suggested. Both fee schedules are scaled so that properties creating more runoff would pay a higher fee. One fee schedule is a monthly utility fee paid by everyone in the Rapid Creek Basin #3 to cover the costs of improvements in areas already developed and the operation and maintenance of the entire system. The other schedule is a development fee to pay for improvements in undeveloped areas of the basin due to the additional runoff created. Table 2-3 shows the cost breakdowns for these two fees as well as an estimate of developable areas remaining in each sub-basin.

TABLE 2-3

UNDEVELOPED AREA IMPROVEMENT COSTS

SUB-BASIN NAME	TOTAL IMPROVEMENT COST	UNDEVELOPED AREA COSTS	EFFECTIVE DEVELOPABLE ACRES
Deadwood Avenue	840,000	660,000	1080
Downtown Area	3,855,000	350,000	200
South Canyon/Lime Creek	2,890,000	1,245,000	1535
Arrowhead	2,144,000	578,000	1300
Haines Avenue	5,365,000	938,000	290
Red Dale	1,490,000	25,000	160
Mead-Hawthorne	9,255,000	1,307,000	690
Red Rock Canyon	1,250,000	941,000	1280
Knollwood	6,639,000	1,236,000	160
South Robbinsdale	2,485,000	1,356,000	550
Perrine	1,500,000	750,000	541
East St. Joe	500,000	50,000	36
Cleghorn Canyon	2,200,000	1,100,000	1448
Morningside	1,060,000	500,000	171
Nameless Cave	600,000	400,000	538
Old Lime Creek	950,000	425,000	707
Jackson Boulevard	500,000	50,000	56
Wonderland Drive	560,000	200,000	244
Truck By-Pass	2,225,000	1,800,000	1122
Landfill	2,500,000	2,300,000	1743
TOTALS	$48,808,000	$16,211,000	13,851

The proposed monthly utility fee is similar to the District's, with some modifications (Appendix F). The following classifications will serve as the rate structure for the drainage fees.

- Single Family Residential: $2/month
- Multi-Family Residential: $1.50 per living unit per month to a maximum of $15 per developed acre per month plus $3 per parcel per month for O & M
- Non-Residential: $8 per developed acre per month plus $5 per parcel per month for O & M
- Vacant: $1 per parcel per month
- Agriculture: Exempt from fees by state law
- Exempt: Street right-of-way; floodway; cemeteries; county property tax-freeze list (age, disability, income), and any other exemption approved by the governing bodies.

Using a parcel study of Rapid City completed by the District and the above rate structure, an estimated $800,000 would be collected annually. Ultimately, twenty percent of this total will be dedicated to system operation and maintenance. Following are several examples of charges generated by the different classifications under the proposed utility fee.

Single-family residential:	$ 2/month - $ 24/year
4-unit apartment building on 1/2 acre:	$ 9/month - $108/year
50-unit apartment building on 2 acres:	$33/month - $396/year
Convenience store on 1 acre:	$13/month - $156/year
Car dealership on 5 acres:	~~$48~~/month - ~~$516~~/year
	45 560

The proposed basin development fee is the same format currently used by the District as documented in Section 5 of the District Drainage Facilities Ordinance adopted February 6, 1995 (Appendix F).

Currently, the Rapid City Building Inspection Division calculates and collects Interim Drainage Basin Improvement Fees at the time a building permit is issued. These Interim Basin Improvement Fees will be replaced by the development fees. Ideally, development fees should be collected in the same manner. Calculation of the fees established by the District Drainage Facility Ordinance are outlined below.

- Development Fee = Basin Facilities Cost x Lot Size x Development Density

- Basin Facilities Cost (from Table 2-3) = $16,211,000 / 13,851 acres = $1,170 per acre

- Lot size is expressed in acres to two decimal points.

Development Density

= 0.25 for very light residential development (fewer than three living units per acre)

= 0.40 for light residential development (more than two but less than nine living units per acre)

= 0.60 for moderate non-residential development (light industrial or commercial development leaving more than 40% of the surface area undisturbed)

= 0.80 for heavy development (more than eight residential living units per acre or non-residential development that leaves less than 30% of the surface area undisturbed)

= 0.95 for very heavy development (leaving less than 10% of the surface area undisturbed)

There is a minimum charge of $100 and a maximum charge of $800 on new, single-family residential construction. There are no minimum charges for expansions or maximum charges for non-single-family residential construction. Developers may choose to reduce these charges by making improvements to the basin that would affect the additional runoff due to the development.

Based on the annual collection rate of fees by the District and interim fees by Rapid City, this development fee could boost revenue by $80,000 per year.

Shown below are several examples of charges generated by the development fee.

Single family on 1/4 acre	$ 117
Single family on 1 acre	$ 292
4-unit apartment building on 1/2 acre	$ 468
50-unit apartment building on 2 acres	$1,872
Convenience store on 1 acre	$1,053
Car dealership on 5 acres	$5,265

As previously stated, development fees will be used for improvements required by new development when it occurs. For this reason, an annual review of the basin facilities cost will need to be completed in order to insure future development will cover costs. This review will take into account completed projects, new detailed tributary studies, and effects of inflation.

The combination of utility fees and sales tax money would be able to complete the required improvements through existing development in roughly 25 years. Table 2-4 illustrates this completion schedule, given the following assumptions.

1. Utility fee reflects 2% per year City growth rate.
2. Utility fees are adjusted for inflation every 5 years.
3. Sales tax reflects 4% per year growth rate.
4. O & M based on 10% of first year utility fees, building 1% per year to maximum of 20%.
5. Improvements costs are adjusted for inflation at 3% per year.

TABLE 2-4

PROPOSED PROGRAM ANNUAL FUNDING

YEAR	UTILITY FEES	1/2 CENT SALES TAX	O & M	CAPITAL IMPROVEMENTS	REMAINING IMPROVEMENTS
1	$800,000	$450,000	$80,000	$32,597,000	$31,427,000
2	$816,000	$468,000	$89,760	$32,369,810	$31,175,570
3	$832,320	$486,720	$99,878	$32,110,837	$30,891,676
4	$848,966	$506,189	$110,366	$31,818,426	$30,573,636
5	$865,946	$526,436	$121,232	$31,490,845	$30,219,696
6	$1,024,587	$547,494	$153,688	$31,126,286	$29,707,894
7	$1,045,079	$569,394	$167,213	$30,599,131	$29,151,871
8	$1,065,980	$592,169	$181,217	$30,026,427	$28,549,494
9	$1,087,300	$615,856	$195,714	$29,405,979	$27,898,537
10	$1,109,046	$640,490	$210,719	$28,735,493	$27,196,675
11	$1,312,223	$666,110	$262,445	$28,012,576	$26,296,687
12	$1,338,468	$692,754	$267,694	$27,085,588	$25,322,060
13	$1,365,237	$720,464	$273,047	$26,081,721	$24,269,067
14	$1,392,542	$749,283	$278,508	$24,997,139	$23,133,823
15	$1,420,392	$779,254	$284,078	$23,827,838	$21,912,269
16	$1,680,608	$810,425	$336,122	$22,569,637	$20,414,726
17	$1,714,221	$842,842	$342,844	$21,027,168	$18,812,950
18	$1,748,505	$876,555	$349,701	$19,377,338	$17,101,979
19	$1,783,475	$911,617	$356,695	$17,615,038	$15,276,641
20	$1,819,145	$948,082	$363,829	$15,734,940	$13,331,542
21	$2,152,412	$986,005	$430,482	$13,731,489	$11,023,554
22	$2,195,460	$1,025,446	$439,092	$11,354,260	$8,572,447
23	$2,239,369	$1,066,463	$447,874	$8,829,620	$5,971,661
24	$2,284,157	$1,109,122	$456,831	$6,150,811	$3,214,364
25	$2,329,840	$1,153,487	$465,968	$3,310,794	$293,436
26	$2,756,666	$1,199,626	$551,333	$302,239	($3,102,721)

At completion of this program, the monthly utility fees would be reduced to a level that could support O & M and a small capital replacement fee for the facilities built.

III. LEGAL ISSUES

Two alternatives for authority to charge these fees were studied in conjunction with this proposal. The first alternative was SDCL 9-48-26 allowing municipalities to charge user fees for drainage facilities just as they do with sanitary sewer and water utilities. Brookings and Sioux Falls have been collecting drainage fees under this authority for more than 10 years.

The second alternative studied was SDCL 46A-10B, which allows the formation of drainage districts with the power to collect fees for the construction, operation, and maintenance of drainage facilities. Rapid City is currently party to a cooperative agreement (Appendix E) establishing the District under this law and has allowed the District to collect fees inside City limits, specifically in areas within the Unnamed Tributary and Racetrack Draw Basins, on the east edge of Rapid City.

The first alternative offers Rapid City the most direct control of fees collected but also limits the collection of those fees to inside City limits. As Figure 1-1 shows, much of the Rapid Creek Basin #3 is outside City boundaries, yet it contributes runoff to the basin. The second option, working with the District, gives the opportunity to collect fees from areas outside city limits but inside the basin. In order to do this, the District would first need authorization from Pennington County, the area's governing body. Pennington County is also one of the other members of the cooperative agreement establishing the District. The second alternative also offers the same avenue of cooperation for planning, constructing, and operating the required facilities for which the funds are collected.

–The issue of control of funds is addressed in the District Drainage Facilities Ordinance (Appendix F) which requires that all moneys collected in a basin be spent on improvements or O & M benefiting that basin. Rapid City would have the final word in the use of any of these funds but, as with any City capital improvements project, requests for this money must be justified and all costs documented. Although control of funds under this scenario may not be direct, the benefits of an in-place mechanism for cooperative efforts between jurisdictions is well worth consideration. Therefore, the recommended alternative for authority to charge fees is under SDCL 46A-10B, working with the District.

The importance of coordinating improvement projects and cooperation from adjoining governmental entities cannot be emphasized enough. The development of a drainage basin is harsh on the physical lay of the land, known as the watershed. The watershed is the area on which rain falls and either soaks into the ground or runs downhill to a major body of water. Water running downstream does not recognize jurisdictional boundaries. As shown on Figure 1-1, rain falling in the upper reaches of this basin begins in Pennington County, flows through Rapid City, and back to Pennington County. An improvement project in either Pennington County or Rapid City is going to benefit both areas. It is clear that if improvements to the basin are made by each jurisdiction independent of the other, duplication of effort could occur as well as the possible creation of more serious flooding problems. Working through the District should help coordinate improvement efforts in these physical basins between the different jurisdictions involved.

Collection of fees and expenditures by the District requires formal approval from the governing body of the affected jurisdiction. That process would require resolutions from the Rapid City Common Council approving the following:

–District's Master Drainage Plan (Appendix A-1) Resolution (Appendix A-2)
–Rapid Creek Basin #3's Master Drainage Plan (Appendix B-1) Resolution (Appendix B-2)
–Assessment of Stormwater Fees by the District (Appendix C)

Upon approval of these resolutions, fees could be collected inside City limits but not in areas of the basin governed by other jurisdictions. Rapid City should follow up with a resolution to those jurisdictions which requests their approval of the District Master Drainage Plan and the assessment of stormwater fees within the balance of this basin. The additional fees generated by this action would accelerate the construction of the proposed facilities. Appendix D contains sample resolutions for this purpose.

Other inter-governmental agreements will have to be formulated to address situations such as collection and management of fees or the funding and administration of improvement projects. New policies will also need to be developed to handle internal issues concerning

planning and prioritization of the drainage improvement plan. Issues involved with these agreements and policies will be discussed in greater detail in the next section of this report.

IV. IMPLEMENTATION

Now that a fee schedule has been identified and the legal issues discussed, how is this program going to work?

Component parts of the program include the financial structure, planning, budgeting, project initiation, project administration, and O & M. Figure 4-1 illustrates the cash flow of drainage fees from collection to the annual audit. It also points out the need for several operating agreements between the different entities involved to establish the financial structure of this plan.

One of these agreements would involve the District and Pennington County initiating the collection of fees on the annual property tax notice. This agreement is in place and only requires a resolution from the City to assess drainage fees (Appendix C). This same resolution also establishes the Basin Facilities Cost which is used for the calculation of development fees. These fees will be collected by the Building Inspection Division at the time of application for a building permit. The next agreement would be between the City Finance Office and the Pennington County Auditor to specify details of funding transfer and source code identification. It is very important that funds collected in a certain basin be spent on improvements for that basin. According to City Finance and County Treasurer personnel, the agreement would be similar to previous arrangements between the two departments concerning special assessments. A third agreement would cover the management and allocation of funds for the District by the City. Under this agreement, the City would manage all basin drainage fees as a single fund, allocate funds as authorized by the District, and provide an audit of expenditures for Rapid Creek Basin #3.

why?

As Figure 4-1 shows, fund allocation authorization is based on funding requests from the participating basins. The funding request will be developed from an annual operating plan which would include construction projects, operations and maintenance activities, and any administration necessary to carry out the yearly plan.

The construction projects would be selected from a five-year construction plan developed by City staff or a committee such as the Mayor's Committee on Drainage and Flood Control. The construction plan would include projects identified in the Drainage Basin Design Plans from each tributary within Rapid Creek Basin #3 and would also include proposed projects from other basins since Rapid City does extend into several others. The District may also ask for cost sharing on projects for District-wide improvements, such as the proposed Flood Warning System.

DRAINAGE FEE FLOW CHART

Under authority of the Western Pennington Storm Drainage and Flood Management District

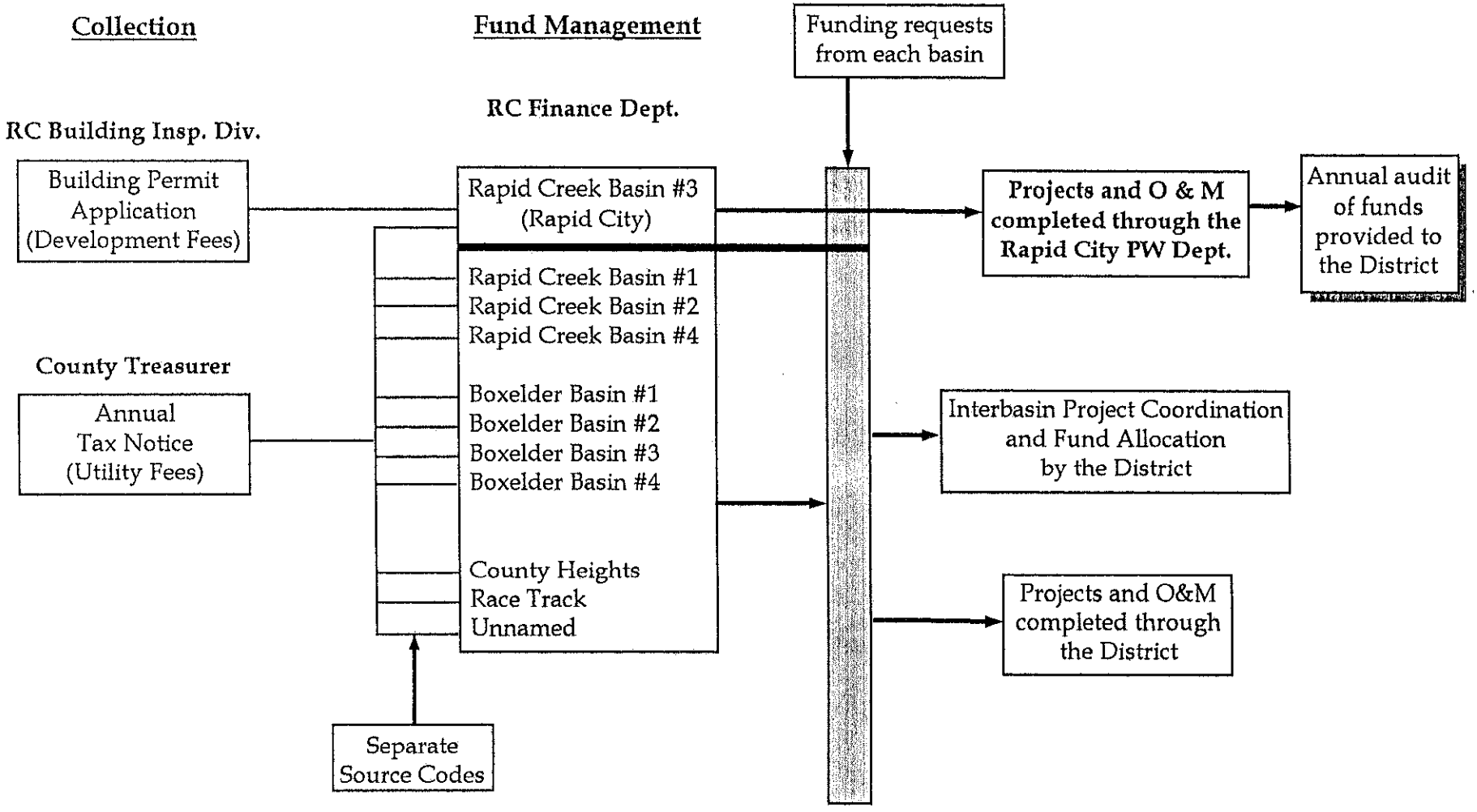

Figure 4 - 1

In order to determine which projects should be completed first, a prioritization process is needed. This process could be as simple as comparing cost-benefit analysis which is required on all projects completed under authority of the District or as detailed as a customized ranking formula which incorporates flood protection criteria important to the City. The following is an example of a ranking formula and criteria developed by the City of Salt Lake to prioritize their flood protection projects:

Formula = B + C + D + E + F + G - (A/H)

Criteria: A = Capital Cost
B = Damage estimate (high-2, medium-1, low-0)
C = Potential loss of life (yes-5, no-0)
D = Commercial building inundation (high-2, medium-1, low-0)
E = Residential building inundation (high-2, medium-1, low-0)
F = Inundation of streets > 2 feet (yes-1, no-0)
G = Water quality objectives met (yes-1, no-0)
H = Approximate area of flooding reduced by project (acres)

The following list shows other factors that may enter into the prioritizing process:

1. High priority infrastructure projects (streets, sewer, water, etc.) requiring drainage improvements.
2. Inter-basin and District-wide project cost-sharing requests.
3. The availability of match funding from other sources for certain projects.
4. The immediate need for replacement of existing facilities as identified during ongoing maintenance activities.
5. Construction sequencing related to budget constraints.

An annual project to handle small "nuisance" flooding problems in the basin would be a small portion of this plan but one which could reap big dividends as far as public perception and acceptance of this program is concerned. This project could address neighborhood flooding problems that are not included in the Drainage Basin Design Plans but which occur frequently and generate a good deal of public input at City Hall (complaints).

The cost of construction projects will be the majority of the annual operating plan, however O & M will be an increasing factor as new facilities are brought on line. This plan recommends that 10% of the utility fees be used for O & M from the very start to catch up on maintenance to existing drainage facilities. This percentage would grow to a maximum of 20% by the tenth year, which is the approximate level of O & M funding experienced by other area communities charging drainage fees. The operating plan should also include an estimate of administrative costs to complete the plan. These costs include collection, management, and allocation of fees; coordination, planning, design, and inspection of projects; and O & M supervision.

The Common Council will approve the budget developed by this operating plan through the City's normal budget process which begins in May with staff-level planning and usually ends in September with formal Council action. The District's formal process of coordination and allocation approval bookends the City's budget process, beginning in

March and concluding in October with an approved billing list sent to the County Data Processing Department for collection of fees for the following year.

Interim meetings and public hearings required by either entity will be coordinated to eliminate duplication of effort. Some of these meetings and hearings will include discussions on the cost sharing and administrative responsibilities for projects involving multi-jurisdictional or District-wide projects. An example of a multi-jurisdictional project would be a metering facility proposed by the City to reduce flows through a residential area inside City limits but which needs to be located in an area several miles upstream of City limits in an area under County jurisdiction. The reduced flows will also benefit landowners near the channel before the runoff reaches the City limits.

This example appears reasonable and the desired results even achievable but imagine the same list of issues to be agreed upon by four different jurisdictions, a situation which exists today. The same runoff that passes through the northernmost portion of Rapid City also affects property in Pennington County, Meade County, and in the City of Box Elder. Working under the umbrella of the District to coordinate this type of agreement is probably the strongest argument for working with the District. The interim meetings will be instrumental in the formulation of an operating agreement covering not only the issues involved in construction of the facility but also the long-term issues of ownership and O & M responsibilities.

While ownership of major regional facilities affecting multiple jurisdictions should be with the District, O & M responsibilities today would have to be contracted out and paid for with fees agreed to by the affected parties. These O & M responsibilities would include inspection of all facilities and required maintenance and repairs ranging from crack sealing on concrete structures to various vegetation control activities along and in natural drainageways. In the future, the District could have its own maintenance crew to take care of their facilities. As far as local improvements, the City should own all major facilities inside city limits. Easements requested in the past have created responsibility, enforcement, and access problems. The operation and maintenance of City improvements will be accomplished with Street Department equipment and personnel. As more and more of the basin improvements are completed, a totally independent crew with its own equipment may be required.

V. BENEFIT/COST EXAMPLE

A requirement of the state law for the use of stormwater fees is that each project must prove that it is economically beneficial. The law states that projects shall be considered if the analysis indicates total benefits greater than the cost of the project.

A portion of a Rapid Creek tributary has been studied in detail with HEC-2 modeling software to determine the extent of flood damages caused by a 100-year storm. The study area lies within the central portion of the tributary and is the first developed area within Rapid City limits that stormwater runoff will encounter on its way to Rapid Creek. Area development consists of residential parcels.

The Drainage Basin Design Plan for this tributary calls for channel improvements, installation of several large culverts, and construction of four small metering facilities and one large metering facility. The estimated cost for these upstream facilities is $1,100,000.

The study examined the effects of a 100-year storm on this portion of the tributary. It appears that the 100-year storm would damage to varying degrees approximately 60 homes within this area. The average value of each of these homes is $50,000. It is estimated that 20 homes will suffer damages 25% of their value; 20 homes will suffer damages that average 50% of their value and are thus eligible for repair under FEMA guidelines, and 20 homes will suffer damages that average over 50% of their value and would not be eligible for repair or reconstruction under FEMA guidelines. In addition to damages to these residential properties, it is estimated that three residential streets will also suffer varying degrees of damage or destruction from floodwaters. Damages to residential and public property are estimated to total $3,350,000.

The construction of the upstream drainage facilities would virtually eliminate damages to homes and streets but would result in approximately $50,000 in erosion damages and cleanup costs within the constructed and existing drainage facilities. Thus, if the construction of $1,100,000 of drainage facilities would prevent $3,300,000 of flood damages, the ratio of benefits to costs would be 3,300,000/1,100,000 or 3:1.

This 3:1 ratio is very conservative in that it does not take into account loss of life, personal injury, economic disruptions caused by closed streets, interrupted services, and displaced families. Benefit/cost ratios from previously established basins within the District range from 4:1 to 6:1.

VI. RECOMMENDATION

The plan presented here lays out a recommended program for Rapid City to deal effectively with its drainage and flood control problems. Prior to acceptance of this plan, the committee suggested a series of public meetings in different areas of the City to inform the public of the plan and improvement projects that would be completed in that specific part of the City. Public opinion and suggestions on the program would be reported back to the Council, along with a final recommendation from the committee on any alterations to the plan. The Council could then choose to pass the resolutions adopting the plan or send it back to committee for changes of their own.

Extensive debate is expected on several issues. The first, of course, will be the levels set for both the monthly utility fee and the development fee. Even committee members had varying opinions on the level of fees to charge. Higher fees were backed by the desire to achieve a safe level of flood protection in as short a time as possible, and concern for citizens on fixed incomes was used in support of lower fees.

The second issue of debate will be the properties exempt from paying drainage fees. There will be several groups of property owners in the City arguing to be put on the exempt list. The committee stance on the issue is "If the property contributes to the problem, the owners should pay their fair share of the improvements cost".

VII. SUMMARY AND EFFECTIVE DATE

The following list is a step-by-step summary of activities required in order to fully implement this program.

1) Rapid City Common Council passes resolution approving the District's Master Drainage Plan.
2) Rapid City Common Council passes resolution approving the Master Drainage Plan for Rapid Creek Basin #3.
3) Rapid City Common Council passes resolution approving assessment of stormwater fees by the District.
4) Establish operating agreement between the District and the City to cover fund management for fees collected.
5) Establish operating arrangement between the City and Pennington County to handle fund transfer and source code identification.
6) Develop annual operating plan which includes construction projects, operation and maintenance activities, and all required administration involved in the completion of the plan.
7) Develop prioritization process to formulate 5-year construction plan.

Activities 1 through 3 will need to be completed before any fees can be collected and Activities 4 through 7 must be completed prior to expenditure of any funds. A realistic timeline for the effective date of this program would be April 1, 1996, which will mean collecting projected annual fees in 1996. An effective date after April 1, 1996, will delay billing through the County system until 1997. Expenditure of funds on major projects would not begin until 1997, giving some additional time for completion of Activities 6 and 7 after the effective date if needed.