

FINANCIAL PROGRAM

The purpose of this appendix is to provide a guide (example) for preparing the Financial Program (chapter IX) for the loan application. The hypothetical case project, as developed in appendix IX is also illustrated in this appendix. The tables used in this illustration are numbered for reference to the hypothetical project and as examples for inclusion in chapter IX.

Interest Charge Requirements

This appendix illustrates preparation of the cost allocation and repayment schedule that an applicant is required to include in the LAR. Applicants should note, however, that the interest payments shown on the payout schedule in the LAR (including RIDC) often differ from those collected during the repayment period. This results from differences between projected and actual construction costs, the interest rate used in the LAR and the rate used in the repayment contract,¹ and projected versus actual water use. Because these changes do occur, the applicant is required to clearly acknowledge in the repayment section of the LAR that the interest rate and repayment plan are subject to change.

The SRPA, as amended, states that loan costs allocated to commercial irrigation are interest free, except for costs associated with excess lands which are interest-bearing. Reimbursable loan costs for all other project purposes, except water service to Federal facilities, such as military bases, must be repaid with interest. This includes costs associated with water service to nonirrigable lands and small suburban tracts which is herein referred to as small-tract M&I service (see definitions in part A of these guidelines). Every project may include interest-bearing purposes. Therefore, it is necessary to include in the loan application estimates of RIDC charges, and annual interest charges on that portion of the unpaid loan obligation which is associated with interest-bearing functions. Recommended procedures for preparing these estimates are discussed below. The objective of these procedures is to assure that:

1. Interest is charged on the loan funded cost of facilities used solely for interest-bearing functions.
2. Interest is assessed against the loan funded cost of commercial irrigation facilities which serve acreages above

¹ The interest rate used in the repayment contract is the rate in effect on the date the contract is executed.

the excess landholding thresholds (excess lands). No interest is assessed against the loan funded cost of "regular" commercial irrigation acreages that are in compliance with the acreage limitation.

3. Interest is assessed against the reimbursable cost of joint-use facilities which are allocated to interest-bearing functions.

The interest rate to be used in the LAR for both the RIDC estimate and the estimate of annual interest charges should be the rate established by the Secretary of the Treasury in accordance with SRPA for the fiscal year in which the final LAR is formally submitted to Reclamation. The LAR must acknowledge that this rate often differs from that in effect when the loan repayment contract is eventually executed.² The appropriate interest rate to use should be obtained from the RLE.

Reimbursable Interest During Construction

Compound IDC is computed on the annual appropriations of Federal funds which will be required during the construction period. Normally, however, only a portion of the IDC is reimbursable because RIDC is not assessed against commercial agricultural lands within excess landholding thresholds.

It is necessary to compute IDC as though the entire appropriation requirement is interest bearing and then determine the reimbursable portion of the IDC by the cost allocation and suballocation procedures subsequently discussed. The determination of RIDC for the combined water supply purpose and the procedure for repayment is explained in the section titled "Separate Repayment of RIDC." Following is the procedure for calculating IDC required for repayment purposes assuming a loan repayment interest rate of 10-5/8 percent:

1. **Step 1.** - Determine the annual Federal appropriation (funding) requirement for each year of the construction period. The sum of these annual amounts must equal the total appropriation requirement shown on the "Summary of Estimated Project Costs" (see table 7.2, chapter VII, as presented in appendix 9). In addition, Reclamation expenditures prior to the loan (less the application fee) are added to the first year appropriation requirement.
2. **Step 2.** - Determine what IDC would be if the entire appropriation requirement were interest bearing. For each

² The interest rate in effect when the contract is executed remains constant throughout the repayment period.

year of the construction period, IDC is computed by applying the appropriate interest rate to the summation of all prior-year appropriations, all prior-year interest charges and one-half of the current-year appropriations. This procedure is illustrated in the following example which assumes a loan repayment interest rate of 10-5/8 percent. The above procedures are illustrated in the following hypothetical (case project) tables which assume a loan repayment interest rate of 10-5/8 percent.

3. Step 3. - Determine the portion of the total IDC amount derived in step 2 which is reimbursable. To do this, it is necessary to first make a "tentative" allocation of costs among the various project purposes. This allocation may be made by the UOF method or the SCRB method. The appropriate method to use is selected on the basis of the following guidelines:

Table 9.1--Interest during construction (\$1,000's)

Year (FY)	Federal fund- ing	1/2 of fund- ing	Sum of prior years funding	Sum of prior years int.	Amount for computing int.	Int.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	15,000 ¹	750	0	0	750.0	79.7
2	4,010	2,005	1,500	79.7	3,584.7	380.9
3	9,996	4,998	5,510	460.6	10,968.6	1,165.4
4	6,100	3,050	15,506	1,626.0	20,182.0	2,144.3
Totals	\$21,606 ²					\$3,770.3 rounded to \$3,770

¹ Includes Reclamation expenditures prior to the loan reduced by the filing fee (\$60,000).

² The total of this column must equal the Federal loan amount in table 7.2.

Case I. - UOF Cost Allocation. - This method of allocating project costs to functions in proportion to water deliveries should be used for all projects which serve irrigation only, or only irrigation and M&I including small-tract M&I. This method is also used on an annual basis to suballocate the combined irrigation and M&I (water supply) costs among the noninterest-bearing commercial irrigation subpurpose and the interest-bearing subpurposes which may include urban and small-tract M&I, and excess lands. When the UOF

allocation procedure is applied on an annual basis, it is referred to as the "rolling allocation."

Case II. - SCRB Cost Allocations. - As explained in chapter VIII of part A, this cost allocation method should be used for any multipurpose project which includes other functions in addition to irrigation and M&I. The total costs associated with irrigation and M&I will be initially determined by the final (post construction) cost allocation, following which irrigation and M&I costs will usually be combined into a water supply purpose. Annual interest charges and RIDC associated with the combined irrigation and M&I purposes will then be determined each year by the annual rolling allocation previously mentioned. Construction costs and RIDC allocated to other functions will remain fixed throughout the repayment period.

The applicant should consult the RLE prior to undertaking a cost allocation of a multipurpose project serving other purposes in addition to irrigation and M&I water. (For further discussion and an example of multipurpose cost allocation, see appendix 12.)

For changing water use situations, applicants should note that, regardless of which method is used for the cost allocation, the actual costs that are allocated to irrigation and M&I and subsequently combined as a water supply function will be suballocated each year during the repayment period by the rolling allocation procedure according to actual water usage among non-interest-bearing commercial irrigation and interest-bearing urban and small-tract M&I, and excess lands. The rolling allocation will determine both the annual interest charges and the annual amortization installments for the RIDC associated with these interest-bearing purposes that are to be repaid each year. The repayment schedule submitted with the LAR should be based on the best estimate of water use among purposes; actual repayment will be based on actual water usage and may differ significantly from the submitted repayment schedule.

It should also be noted that costs allocated to urban M&I can be either, fixed following construction on the basis of total water proportions over the repayment period (if no change in use from irrigation to urban M&I is anticipated), or suballocated by the rolling allocation procedure, in which case irrigation and M&I (including small-tract M&I) should be treated as a combined water supply function. Costs associated with each subpurpose in this latter case would then be suballocated annually in proportion to annual water use. The latter procedure is used in the guidelines example that follows.

Application of Use of Facilities Cost Allocation

Even though a UOF rolling allocation is to be applied to the combined water supply function during the repayment period, initially, it is necessary to make a tentative cost allocation for the following purposes: (a) computing the loan factor, (b) computing the water rates necessary for repayment of both excess lands and M&I, and (c) to provide an approximation of RIDC which is needed for (a) and (b).

The procedure for applying the UOF method of allocating project costs to the respective purposes is illustrated in the following example (tables 9.3 and 9.4). It should be noted that annual OMR&P costs have been omitted from the allocation for simplification. However, these costs are also allocated by UOF procedure in direct proportion to water use. It is emphasized that the UOF method is applicable only to dual-purpose projects which serve irrigation and M&I water. The inclusion in the project of any other purpose such as flood control or recreation will disqualify it from the use of this allocation procedure for the initial cost allocation.

In general, the UOF cost allocation procedure involves the following:

1. **Step 1.** - Determine the "specific" capital costs for irrigation. Capital costs are construction costs plus IDC. The "Specific" capital cost for a project purpose (irrigation and M&I water) is the sum of the individual costs of facilities which serve only that purpose. Specific irrigation facilities, for example, are those which could be deleted from the project without physically impairing the M&I service through the remaining facilities.
2. **Step 2.** - Determine the specific capital costs for M&I water.
3. **Step 3.** - If the sum of these specific costs is less than the total capital costs, the remainder is associated with facilities used jointly for irrigation and M&I purposes. The costs of these dual-use facilities must be allocated on the basis of the total volume of water handled by those facilities for each purpose during the repayment period.

The M&I share of the joint-use facilities added to the cost of specific (single purpose) M&I facilities represents the total amount of the capital costs allocable to M&I water supply. The balance of capital costs would be allocable to irrigation (or irrigation costs can be determined by the same procedure as explained for M&I).

The following tables give the acres served and the water use

(table 9.2); the summary of costs to be allocated (table 9.3); the tentative cost allocation (table 9.4); the estimate of regular (interest-free) irrigation repayment period (table 9.5); the estimated water rate for repayment of excess lands (table 9.6); and the estimated water rate for M&I repayment (table 9.7).

Table 2

Table 9.3--Summary of costs to be allocated¹

Item	Specific	Specific	Joint use	Total
	irrigation	M&I	irrigation and M&I	
	(\$)	(\$)	(\$)	(\$)
1. Grand Mesa Dam and Reservoir			12,884,000	12,884,000
2. Pumping stations	934,000	182,000		1,116,000
3. Distribution reservoirs	1,943,000	196,000		2,139,000
4. Main transmission system	1,186,000		454,000	1,640,000
5. Lateral system	1,389,000	4,000		1,393,000
6. Farm turnouts	678,000			678,000
7. Drainage ²	462,000			462,000
8. Buildings and equipment			644,000	644,000
9. DIRECT COST	6,592,000	382,000	13,982,000	20,956,000
10. Contingencies	1,318,000	76,000	2,797,000	4,191,000
11. Projected cost increase	1,107,000	64,000	2,350,000	3,521,000
12. Engineering and administration	1,082,000	63,000	2,295,000	3,440,000
13. BASE CONSTRUCTION COST ³	10,099,000	585,000	21,424,000	32,108,000
14. Rights of way (ROW) ⁴	214,000	0	2,887,000	3,101,000
15. Water rights	0	0	50,000	50,000
16. Bureau participation ⁵	0	0	300,000	300,000
17. Loan application report	0	0	155,000	155,000
18. TOTAL PROJECT COST ^{2,6,9}	10,313,000	585,000	24,816,000	35,714,000
19. Distribution (%)	(28.9)	(1.6)	(69.5)	(100)
20. Less district contribution ^{6,8}	-4,073,000	-231,000	-9,804,000	14,108,000
21. CONST. COST LOAN OBLIGATION	6,240,000	354,000	15,012,000	21,606,000
22. IDC ^{7,8}	1,089,000	62,000	2,619,000	3,770,000
23. TOTAL ALLOCATED PROJECT COSTS	7,329,000	416,000	17,631,000	25,376,000

¹ From table 7.2 and detailed construction cost estimates (appendix 9).

² Does not include the "direct cost" of deferred drainage facilities (\$179,000).

³ Does not include the projected "base construction cost of deferred drainage facilities (\$301,000).

⁴ Does not include the projected cost of ROW for deferred drainage facilities (\$106,000).

⁵ Reclamation participation was filing fee.

⁶ Does not include the combined cost of deferred drainage facilities and associated ROW (\$407,000).

⁷ From table 9.1, computed for the Federal appropriation requirement.

⁸ Distributed in proportion to the distribution of total construction cost shown above.

⁹ Does not include RIDC (\$489,000).

Table 9.4 -- Tentative cost allocation

Item	Irrigation	M&I	Total
1. Water use (ac. ft.) ¹	2,125,800	356,700	2,482,500
2. Distribution (%) ¹	(85.6)	(14.4)	(100.0)

3. Construction cost loan obligation ²	(\$)	(\$)	(\$)
4. Specific	6,240,000	354,000	6,594,000
5. Joint ³	<u>12,855,000</u>	<u>2,157,000</u>	<u>15,012,000</u>
6. Subtotal Const. Cost	<u>19,095,000</u>	<u>2,511,000</u>	<u>21,606,000</u>
7. Interest during construction ²			
8. Specific	1,089,000	62,000	1,151,000
9. Joint ³	<u>2,243,000</u>	<u>376,000</u>	<u>2,619,000</u>
10. Subtotal IDC	<u>3,332,000</u>	<u>438,000</u>	<u>3,770,000</u>
11. Sum of Construction & IDC			
12. Specific (Items 4 and 8)	7,329,000	416,000	7,745,000
13. Joint (Items 5 & 9)	<u>15,098,000</u>	<u>2,533,000</u>	<u>17,631,000</u>
14. Total allocated project costs	22,427,000	2,949,000	25,376,000
15. Less: Nonreimbursable IDC ⁴	<u>-3,281,000</u>	<u>0</u>	<u>-3,281,000</u>
16. TOTAL PROJECT OBLIGATION ⁵	<u>19,146,000</u>	<u>2,949,000</u>	<u>22,095,000</u>
17. Construction loan obligation ⁶	19,095,000	2,511,000	21,606,000
18. RIDC Obligation ⁷	51,000	438,000	489,000

¹ From table 9.2.

² From table 9.3.

³ Distributed in proportion to total water deliveries over the repayment period (Item 2).

⁴ Irrigation IDC in Item 10, \$3,332,000 x 98.476% from column 7 of table 9.2.

⁵ Useful for estimating the repayment period, M&I water rate, and the loan factor.

⁶ From item 6.

⁷ Item 10 less item 15.

Table 5

254

Table 7 attachment

Financial Program - Repayment Schedule

In this example, a repayment period of 30 years was initially estimated. This period was used in the tentative cost allocation in table 9.4. It will usually require several trial allocations to determine the necessary repayment period and, thus, the total irrigation water quantity in relation to irrigation amortization capacity. The 30-year period is confirmed in table 9.5 as the period necessary for regular irrigation to repay its allocated costs by utilizing 100 percent of irrigation payment capacity of \$14 per acre-foot. Approximate water rates are then computed for 30-year repayment of excess lands (table 9.6) and M&I (table 9.7).

Basis for Rolling Allocation

Since the objective of the rolling allocation is to suballocate water supply costs each year of the repayment period in proportion to actual water use, the costs to be allocated by this procedure are those presented in table 9.3. The tentative allocation in table 9.4, which is based on the total repayment period rather than year by year, serves only to provide an approximate basis to estimate the period needed for regular irrigation repayment and the approximate water rates for excess lands and M&I repayment. After serving these ends, the tentative allocation has no further usefulness and is superseded by the annual rolling allocation.

Annual Interest Charges

The rolling allocation provides the basis to determine annual interest charges on the construction cost loan obligation for M&I and excess lands, and also the annual repayment installments for RIDC for both M&I and excess lands. RIDC will be repaid by annual amortization installments separately from the construction cost loan obligation as subsequently explained.

The M&I portion of the loan obligation is derived in table 9.8, column 6. It consists of the M&I portion of total project water deliveries in any given year, multiplied by the joint cost ratio, plus the specific M&I cost ratio. The resulting M&I portion of the construction cost loan obligation balance at the end of the previous year is the principal amount upon which M&I interest charges are calculated. The M&I portion of the loan obligation for any year can be stated as follows:

$$\begin{aligned} \text{M\&I portion of loan} &= (\text{M\&I water/total project water}) \\ &\times (\text{joint cost ratio} + \text{specific M\&I cost ratio}) \end{aligned}$$

The excess lands portion of the loan obligation is derived in table 9.9, column 8. It consists of the total irrigation portion of total project water deliveries in any given year, multiplied by the joint

cost ratio, plus the specific irrigation cost ratio, multiplied by the excess lands portion of total irrigation water. The resulting excess lands portion of the construction cost loan balance at the end of the previous year is the principal amount upon which excess lands interest charges are calculated. The excess lands portion of the loan obligation for any year can be stated as follows:

Excess lands portion of loan = (total irrigation water/total project water) x (joint cost ratio + specific irrigation cost ratio) x (excess lands portion of total irrigation water)

Separate Repayment of RIDC

As previously mentioned, under the rolling-allocation repayment procedures, repayment of RIDC will be made by annual amortization payments which will include both principal (RIDC) and interest thereon. Since RIDC payments will include both principal and interest, they will be made separately and will not be part of the principal payments on the construction cost loan obligation. RIDC is thus treated as a separate repayment obligation aside from and in addition to the construction cost loan obligation. (For Reclamation accounting purposes, RIDC payments should be treated as other interest charges.)

The appropriate annual repayment amount for RIDC will be determined by the following procedures:

1. **Step 1.** - Calculate total IDC as if the entire amount of loan funds allocable to irrigation and to M&I (or the combined water supply function) is interest-bearing at the repayment interest rate. For this example, total IDC is \$3,770,000 as derived in table 9.1 and included in table 9.3.
2. **Step 2.** - Calculate the uniform annual payment amount needed to amortize the total IDC, as derived in step 1, over the estimated irrigation repayment period at the repayment interest rate. For this example, the uniform annual payment required to amortize total IDC of \$3,770,000 over 30 years at 10.625 percent interest = \$420,914.
3. **Step 3.** - At the end of each year during the repayment period, determine the interest-bearing portion (percentage factor) of the construction loan balance for each interest-bearing purpose. For this example, the M&I portion of loan balance is determined each year in table 9.8 and the excess lands portion of loan balance is determined each year in table 9.9. (These are the same loan portions (percentage factors) that are used to determine the annual interest charges previously discussed.)
4. **Step 4.** - For each interest-bearing purpose (M&I and excess lands in this example) multiply the annual payment amount for total IDC determined in step 2 (\$420,914) by the loan portion (percentage factor) determined in step 3. The result is the annual payment amount of RIDC (principal and interest) for the interest-bearing purpose for the year determined in step 3.

Repayment contracts should state that, in addition to the construction cost loan obligation, there are two other repayment obligations. One is the repayment of RIDC by annual installments, as determined above, and the other is payment of annual interest charges on interest-bearing purposes. (Repayment of RIDC is simply a different combination of annual interest charges.) However, since RIDC can also be viewed as an upfront accumulated investment cost at the time of project completion, some state financial responsibility laws may require that it be stated as part of the total capital loan obligation. Where this may be necessary, the total IDC for water supply should be added to the construction cost loan obligation to state the maximum capital repayment obligation. In such cases it should also be clearly provided in the contract that the IDC increment will be adjusted downward to reflect actual water use by interest-bearing purposes which will ultimately determine the reimbursable portion (RIDC). In no case should the total IDC or the RIDC be included in the construction cost loan balance in the projected repayment schedule.

The following repayment schedule (table 9.10) reflects the major sources of revenue and the outlays of expenditure for each year of the projected repayment period. As explanation of the source and/or derivation of each column of the repayment schedule is provided under "Column Descriptions - Repayment Schedule."

It will be noted that the repayment schedule works out to a 28-year repayment period versus the 30-year period estimated on the basis of the "tentative" cost allocation. The 28-year period results from the rolling allocation and reflects an interest cost differential between the costs allocated in proportion to water use year-by-year and the costs allocated by the 30-year average proportions. The interest cost differential between the two allocations appropriately reflects the interest-free time that changeover-water was in irrigation use before being converted to M&I use.

Table 9.8

Table 9.9

Table 10

Table 10.2

Column Descriptions - Repayment Schedule

- Column 1 - Year of repayment.
- Column 2 - Revenue from regular commercial irrigation. Annual revenue shown in this column is the product of the annual water used for regular (interest-free) irrigation (see table 9.2) x 100 percent of estimated payment capacity of \$14/ac ft. This is the revenue available to pay total water charges including payments on the construction loan obligation.
- Column 3 - Revenue from commercial irrigation of excess lands. Annual revenue shown in this column reflects irrigation payment capacity, plus willingness to pay interest on costs associated with excess lands. The annual revenue amount is the product of the annual water use for excess lands (see table 9.2) x \$40.45/ac ft.
- Column 4 - Revenue from small-tract M&I. Annual revenue shown in this column is the product of annual small-tract M&I water use (see table 9.2) x \$34.08/ac ft (the estimated rate to repay allocated costs with interest in 30 years).
- Column 5 - Revenues from urban M&I. Annual revenue shown in this column is the product of annual urban M&I water use (see table 9.2) x \$34.08/ac ft (the estimated rate to repay allocated costs with interest in 30 years).
- Column 6 - The sum of column 2 and column 3.
- Column 7 - The sum of column 4 and column 5.
- Column 8 - Annual OMR&P cost for commercial irrigation is assigned annually by applying the irrigation portion of total project water (column 4 of table 9.9) to total project OMR&P (\$406,000).
- Column 9 - Annual OMR&P cost for M&I is assigned annually by applying the M&I portion of total project water (column 4 of table 9.8) to total project OMR&P (\$406,000).
- Columns 10 & 11 - Annual payments of \$10,000/yr for 10 years are made to sinking fund accumulating at the compound rate of 9 percent/yr (column 11). Annual payments are assigned to irrigation and M&I in proportion to annual water use as explained in columns 8 and 9 for OMR&P.
- Column 12 - A sinking fund is assumed to be established to accumulate the estimated cost of deferred drainage facilities and associated ROW (\$407,000) at the end of 20 years. A 9 percent interest rate is assumed. The annual payments for deferred drainage are assigned to commercial irrigation.
- Column 13 - The sum of column 8, the irrigation portion of column 10 and column 12.
- Column 14 - The sum of column 9 and the M&I portion of column 10.
- Column 15 - From column 6 of table 9.8.
- Column 16 - M&I interest equals column 15 x previous year loan balance (column 26) x 10.625 percent interest.
- Column 17 - From column 8 of table 9.9.

- Column 18 - Excess lands interest equals column 17 x previous year loan balance (column 26) x 10.625 percent interest.
- Column 19 - The sum of column 16 and 18.
- Column 20 - RIDC payments for M&I = \$420,914 x column 15.
- Column 21 - RIDC payments for excess lands = \$420,914 x column 17.
- Column 22 - The sum of columns 20 and 21.

- Column 23 - Irrigation principal payments equal irrigation revenues (column 6), less irrigation operating expenditures (column 13), less excess lands interest charges (column 18), less excess lands RIDC payments (column 21).
- Column 24 - M&I principal payments equal M&I revenues (column 7), less M&I operating expenditures (column 14), less M&I interest charges (column 16), less M&I RIDC payments (column 20).
- Column 25 - The sum of column 23 and 24.
- Column 26 - The total water supply construction cost loan obligation from table 9.2, line 21, reduced each year by principal payments from column 25.
- Column 27 - The sum of columns 19, 22, and 25.
- Column 28 - The sum of columns 13 and 14.
- Column 29 - The sum of columns 6 and 7.

APPENDIX 12

MULTIPURPOSE COST ALLOCATION AND REPAYMENT

Introduction

The purpose of this appendix is to provide a guide for preparing cost allocations for multipurpose projects by use of the SCRB method. The UOF method should be used for projects which serve only irrigation and M&I water supply purposes as discussed in the guidelines and illustrated in appendix 11. Cost allocation procedures are performed to determine the cost sharing and repayment obligations from construction of projects. This appendix is not all inclusive and is intended to serve only as a guide. The applicant should consult the RLE when preparing SCRB cost allocations for individual projects serving purposes other than irrigation and M&I water. Other project purposes can include any or all of the following:

- a. Flood control,
- b. F&W enhancement,
- c. Recreation enhancement, and/or
- d. Hydroelectric power.

Because the cost sharing and repayment requirements differ by law among the various purposes or functions served by a project, a systematic and impartial process of allocation is required to determine and assign those costs that are clearly identifiable with the purposes which they serve and to equitably apportion the remaining costs which serve two or more purposes.

Definition of Terms

In order to facilitate an understanding of key terms used in the SCRB cost allocation the following definitions are provided:

1. **Separable Costs.** - Separable costs are costs which could be omitted from total project costs if one purpose were assumed to be excluded while otherwise retaining essentially the same project plan and services to all other purposes. Determination of separable costs is concerned with measuring that portion of the costs of a given project which is clearly attributable to the inclusion of a particular purpose when that purpose is considered the last purpose added to complete the project plan. The minimum cost allocated to a purpose is its separable cost.

Separable costs may be broken down as specific or other costs depending on the need for definition. Specific costs are costs of individual physical features clearly identifiable with a single purpose. For example, costs of a campground are obviously specific costs for a recreation purpose; power turbine costs are specific to the power purpose. An example of another separable cost could be a portion of the cost of a dam for a project which serves irrigation, M&I water, and recreation. Part of the dam cost is separable to each purpose in order to provide conservation storage for the water supply and a minimum pool for recreation (i.e., the dam could be downsized if any purpose were omitted).

2. **Joint Costs.** - Joint costs are those remaining after all separable costs have been deducted from the total project cost.

3. **Single-Purpose Alternative Costs.** - Single-purpose alternative costs are the costs of the most comparable single-purpose alternative source which would likely be built under Federal project criteria to provide equivalent service for each purpose, considered individually in the absence of the project. The economic cost is estimated on a basis comparable to that used in the project to be allocated including IDC and annual OM&R costs. A single-purpose alternative may be located at the selected project site, or at other sites, and several alternatives in turn may occupy the same site. It may be of different size or it may be entirely different in physical plan. It should be capable, however, of producing essentially the same benefit in the same geographic area.

The single-purpose alternative is used in the cost allocation to determine the justifiable expenditure (see definition below). Single-purpose alternatives used in cost allocation of SRPA should reflect a likely Federal-type alternative financed using the current SRPA loan repayment interest rate. This permits comparable treatment of all purposes where either the benefits or the cost of the single-purpose alternative for each purpose can be considered as a controlling factor in the allocation process.

4. **Justifiable Expenditure.** - The justifiable expenditure is the lesser of benefits or single-purpose alternative costs for a project purpose. The justifiable expenditure is the maximum which can be allocated to a purpose.

5. **Benefits.** - When the SCRB method of allocating costs is used, the LAR must discuss the benefits obtained from each project purpose, and document the dollar value of the benefits that will be obtained. In complex projects, it is recommended that an economic appendix be prepared to document the derivation of benefits and development of the project cost allocation. The following is a brief discussion of the approach to be used in evaluating benefits. Annual benefits are capitalized using the same interest rate as used to compute single-purpose alternative costs, that is, the current SRPA repayment rate. As noted above, benefits are considered in determining the justifiable expenditures.

a. **Irrigation.** - The benefits of irrigation water development are defined as the increase in net farm income generated by the project water supply. In general, irrigation benefits are determined by obtaining estimates of net farm income under conditions with and without the proposed project expected at the time the project will go into service and subtracting the "without project" estimate from the "with project" estimate. The residual represents the irrigation benefits.

For practical purposes, the farm budgets used to estimate irrigation payment capacity for the applicant can be used as the basis for deriving estimates of net farm income for benefits, with minor revisions. Specific revisions

include: (1) removing the costs for returns for the farm operator's labor, management, and equity, and (2) including, if appropriate, projection of crop yield increases, changes in cropping pattern or farm size, and any associated changes in production costs expected over the life of the project.

SRPA guidelines state that payment capacity be based on the "with project" condition in cases where the water supply (or project improvements) will benefit existing irrigated land. Rather than provide additional farm budgeting for the "without project" condition in order to derive benefits, the applicant should utilize the "with project" budget only, adjusted as discussed above. For example, in the case of supplemental water being provided to an already irrigated area, a payment capacity (on a per-acre basis) would be developed by use of a "with project" farm budget. This budget would be revised to reflect any changed future conditions and the resultant net farm income would be divided by the farm irrigation requirement to determine benefits on a per-acre-foot basis. This per-acre-foot benefit measure is multiplied by the water supply to be provided by the project to derive aggregate benefits. The example provided in this appendix illustrates this application.

b. M&I Water. - M&I benefits should be based on the cost of the most likely alternative single-purpose water supply project that would provide a M&I water supply of a comparable quantity and quality delivered to the same point. The cost should include capital, OM&R, and interest costs that occur during construction. All interest costs should be calculated using the current SRPA repayment rate; a 100-year project life is typically assumed.

c. Flood Control. - Flood-control benefits should be based on the value of damages prevented by flood control features of the project. The benefits should be approved by the COE. The COE should be consulted early in the project analysis stage and prepare or assist in preparing the flood-control benefits.

d. Hydroelectric Power. - Benefits from hydroelectric power generation should be based on the marginal value of energy and capacity created by the project. Marginal value is defined as the cost that the power system would incur to obtain both equivalent energy and capacity if the project was not constructed. It is important that the benefit value include both cost components. Marginal values may be obtained from the utility that will be purchasing the power as required under the Public Utility Regulatory Policy Act, usually referenced as "avoided cost." Other sources of power values may be the state public utilities commission or the Federal power administration responsible for the area which includes the project.

e. F&W and Recreation. - The benefit of F&W and recreation should be based on the number of user days of fishing, hunting, or recreation activity created by the

project. Estimates of benefits for F&W should be reviewed and approved by the Service, while estimates of benefits for recreation should be reviewed and approved by the National Park Service or other Federal or State agency with jurisdiction in the project area. In general, "unit-day values" as discussed in Principles and Guidelines, serve as the basis for valuing user days, although other values based on more sophisticated analysis may be available.

Example of Separable Costs-Remaining Benefits Cost Allocation

The SCRB method is a procedure utilized for allocating costs among project purposes. A basic principle of cost allocation is that the savings derived through the use of the combined facilities for several purposes should be impartially shared among all of the purposes. The assignment of those savings to each purpose is the essence of the cost allocation process.

It is logical to make a direct assignment of separable costs as the minimum allocation to a particular purpose served by such costs. The central problem is to achieve an equitable distribution of joint costs. Project purposes should not be assigned costs in excess of benefits or be assigned costs greater than the cost of a single-purpose alternative that could likely be built in the absence of the multipurpose project. Thus, the lesser of either benefits or the most likely federally-financed alternative costs is the justifiable expenditure or maximum allocation for a purpose. Within these upper and lower allocation limits, savings are shared in allocating costs among the purposes by distributing joint costs in proportion to the differences after subtracting the minimum from the maximum allocation for each purpose.

The following example is an illustration of the SCRB cost allocation. The intent is to provide an understanding of the basic technique rather than an exhaustive compilation of allocation nuances and details. The estimates provided are unique to this example and do not "tie-in" to other appendixes. Derivation of single-purpose alternative costs, separable costs, joint costs, benefits, and cost allocation as previously defined are provided. Cost estimates for the project, for single-purpose alternatives, or for derivation of separable costs are presented in summary form. More detailed estimates, feature-by-feature, should be provided in the LAR. Supporting data for the benefits (i.e., farm budgets) are also not presented, but should accompany the LAR.

Project Description

The hypothetical project is a dam, reservoir, and certain specific facilities which will serve the purposes of irrigation, hydroelectric power, recreation, and F&W enhancement. A 4-year construction period is envisioned, with all features in service at the beginning of the fifth year. Total construction costs (including direct costs, environmental mitigation, cost increases, contingencies, and Reclamation participation) are estimated to be \$21,000,000. The loan application cost is an additional \$100,000, which the applicant will provide. IDC on the construction cost computed at the 9 percent repayment rate, compounded, amounts to

\$4,000,000, as shown below in table 1. Annual OM&R costs for all project facilities totals \$140,000. Irrigation yield is 25,000 acre-feet annually, to be used for supplemental irrigation of 20,000 already irrigated acres. Hydroelectric power generation will be 10,000,000 kWh annually. Annual increased usage by fishermen and hunters is expected to be 50,000 days; visitation for other recreation such as camping, picnicking, hiking, and swimming is estimated at 200,000 days annually. The applicant will provide a \$4,450,000 contribution toward construction from its existing general fund in addition to funding the LAR. Remaining construction costs will be obtained partially by a SRPA loan and partially by Federal grant for one-half of the recreation and F&W enhancement costs.

Table 1.--IDC at 9 percent (\$1,000).

<u>FY</u>	<u>Annual funding</u>	<u>One-half annual funding</u>	<u>Summation of Prior year fundings</u>	<u>Summation of Prior year interest</u>	<u>Amount for computing interest</u>	<u>Interest</u>
1	4,000	2,000	--	--	2,000.	180.
2	5,800	2,900	4,000	180.	7,080.	637.2
3	7,250	3,625	9,800	817.	14,242.2	1,281.8
4	3,950	1,975	17,050	2,099.	21,124.	1,901.1
						4,000.1
					round to	4,000

Repayment will be accomplished through water sales to irrigators based on their payment capacity, revenues from hydroelectric power sales to a public utility, and ad valorem tax receipts.

Single-Purpose Alternatives

Before the allocation of project costs can be performed, estimates of the costs to provide each single-purpose alternative must be performed. In this example, the single-purpose alternatives for each project purpose would be a dam and reservoir located at the same site as the proposed multipurpose project. The size would be varied to achieve the exact benefits provided by the proposed multipurpose project; the recreation alternative reservoir could be sized significantly smaller than the other alternative, since not all benefits (user days) are dependent on water surface area.

Table 2 displays the single-purpose alternative cost estimates (including compound IDC and OM&R) for the example. Annual OM&R is capitalized at 9 percent for 100 years.

Table 2.--Single-Purpose Alternative Costs (\$1,000)

	<u>Irrigation</u>	<u>Power</u>	<u>Recreation</u>	<u>Fish and wildlife</u>
Construction cost	13,000	17,000	8,000	17,000
IDC	3,000	3,400	1,200	1,800
OM&R, capitalized (annual)	280 <u>(25)</u>	600 <u>(55)</u>	890 <u>(80)</u>	500 <u>(45)</u>
Total project cost	16,280	21,000	10,090	19,300

Separable Costs

In addition to single-purpose costs, estimates of the separable costs should be derived. As previously noted, separable costs are costs which could be omitted from the total project cost if one purpose was assumed to be excluded while otherwise retaining essentially the same project plan and services to all other purposes. The derivation of separable costs is provided in table 3; the separable costs for a purpose are determined by subtracting the cost estimate for the multipurpose project without that purpose from the cost estimate of the proposed multipurpose project. These data are presented in summary form; the LAR should present the cost estimates in sufficient detail to clearly identify those features which vary in cost or can be omitted in the "multipurpose project without" cost estimates.

Project Benefits

Multipurpose project benefits will accrue to irrigation, commercial power, recreation, and F&W purposes. Separate assessments of the level of benefits for each project purpose have been prepared.

1. **Irrigation**. - Irrigation benefits were derived by adjusting the payment capacity farm budget. A "without project" budget was not required since the water supply will be used for supplemental irrigation of existing irrigated areas (i.e., no new lands will be developed for irrigation). By adjusting the payment capacity budget for expected increases in crop yields and to eliminate charges for labor, management, and equity, a benefit budget was developed which indicated \$110/acre of net farm income. This compares to \$40/acre payment capacity. Based on a farm delivery requirement of 3.28 acre-feet per acre for the expected cropping pattern, the benefit budget net farm income of \$110/acre can be adjusted to \$33.50/acre-foot. Since the project will supply 25,000 acre-feet annually, project irrigation benefits total \$837,500 annually, or \$9,303,900 capitalized at 9 percent interest over the project life.

2. **Commercial Power**. - A public utility has entered into a contract with the applicant to purchase the 10,000,000 kWh annual power generation for a rate of 40 mill/kWh. Since the 40 mill rate is the avoided cost of acquiring capacity and energy from an alternative source, it is considered a

Table 3. Project Costs, "Multipurpose Without" Costs, and Derivation of Separable Costs (\$1000)

	Proposed Multipurpose Project	Multipurpose Without Irrigation	Multipurpose Without Power	Multipurpose Without Recreation	Multipurpose Without Fish and Wildlife
Construction Cost	21,000	18,500	18,000	17,000	20,500
IDC	4,000	3,825	3,500	3,385	3,990
OM&R, capitalized (annual)	1,555 (140)	1,500 (135)	1,220 (110)	890 (80)	1,335 (120)
Total Project Cost	26,555	23,825	22,720	21,275	25,825

	Total Project *	Irrigation **	Power **	Recreation **	Fish and Wildlife **
Separable Costs:					
Construction Cost	10,000	2,500	3,000	4,000	500
IDC	1,300	175	500	615	10
OM&R, capitalized (annual)	1,275 (115)	55 (5)	335 (30)	665 (60)	220 (20)
Total Separable Costs	12,575	2,730	3,835	5,280	730

* computed as the horizontal summation of individual separable costs

** computed by deducting the "multipurpose without" costs from the costs of the proposed multipurpose project

reasonable measure of benefits. Annual benefits total \$400,000; capitalized benefits are \$4,443,600.

3. **Recreation**. - Recreation benefits of the project amount to \$1,050,000 annually (or \$11,664,600 capitalized) based on an estimated annual increased visitor use of 200,000 days valued at \$5.25 per day. The visitor use does not reflect fishing and hunting use, which are covered under the F&W enhancement purpose. The \$5.25 unit day value was determined according to the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies.

4. **Fish and Wildlife**. - About 50,000 additional fishing and hunting days will be experienced by visitors annually to the project site. Valued at \$5.25 per day, annual benefits total \$262,500 (\$2,916,100 capitalized).

SCRB Allocation

The previous sections have presented:

- a. Project costs,
- b. Single-purpose alternative costs,
- c. Separable costs, and
- d. Project benefits.

Table 4 is the SCRБ cost allocation which utilizes these estimates. The following narrative describes the computational steps used in deriving the allocation.

1. **Total Cost to be Allocated**. - This is the project cost estimate displayed in table 3; contingencies, environmental mitigation costs, and cost increases have been included with the construction costs. Annual OM&R for all cost estimates in this table have been capitalized at 9 percent over the 100-year project life. Note that the IDC in the table is based on the entire construction cost not just the federal appropriation requirement. The total allocated IDC will be separated into reimbursable and nonreimbursable components prior to development of the repayment schedule.

2. **Justifiable Expenditures**. - The justifiable expenditure for each purpose is the lesser of capitalized benefits or the single purpose alternative cost. Annual benefits are capitalized to present values to match project costs; an alternative methodology which yields the same results would be to annualize project costs to match annual benefits. In the example, the justifiable expenditures for irrigation, commercial power, and F&W enhancement are the benefits; the justifiable expenditure for the recreation purpose is the single-purpose alternative cost. Note that the total project justifiable expenditure exceeds total project cost; if this is not the case in an actual LAR, the RLE should be contacted to determine if the allocation procedure should be adjusted.

3. **Separable Costs**. - These costs were developed in table 3 and carried forward to the cost allocation.

Table 4. SCRB Cost Allocation (\$1000)

ITEM	IRRIGATION	POWER	RECREATION	F & W	TOTAL
Total Costs to be Allocated:					
Construction					21,000.0
IDC					4,000.0
OM&R, capitalized (annual)					1,555.0
Total					(140)
					26,555.0
Benefits, capitalized (annual)	9,303.9	4,443.6	11,664.6	2,916.1	
Single-Purpose Alternatives	(837.5)	(400.0)	(1,050.0)	(262.5)	
Justifiable Expenditures	16,280.0	21,000.0	10,090.0	19,300.0	
Total	9,303.9	4,443.6	10,090.0	2,916.1	26,753.6
Separable Costs:					
Construction	2,500.0	3,000.0	4,000.0	500.0	10,000.0
IDC	175.0	500.0	615.0	10.0	1,300.0
OM&R, capitalized (annual)	55.0	335.0	665.0	220.0	1,275.0
Total	(5.0)	(30.0)	(60.0)	(20.0)	(115.0)
	2,730.0	3,835.0	5,280.0	730.0	12,575.0
Remaining Just. Expenditure					
Percent Distribution	6,573.9	608.6	4,810.0	2,186.1	14,178.6
Total	46.4	4.3	33.9	15.4	100.0
Joint Costs:					
Construction	5,100.1	472.2	3,731.7	1,696.0	11,000.0
IDC	1,251.9	115.9	916.0	416.3	2,700.0
OM&R, capitalized (annual)	129.8	12.0	95.0	43.2	280.0
Total	(11.7)	(1.1)	(8.5)	(3.8)	(25.0)
	6,481.8	600.1	4,742.6	2,155.5	13,980.0
Total Allocated Costs:					
Construction	7,600.1	3,472.2	7,731.7	2,196.0	21,000.0
IDC	1,426.9	615.9	1,531.0	426.3	4,000.0
OM&R, capitalized (annual)	184.8	347.0	760.0	263.2	1,555.0
Total	(16.7)	(31.1)	(68.5)	(23.7)	(140.0)
	9,211.8	4,435.1	10,022.6	2,885.5	26,555.0

4. **Remaining Justifiable Expenditures.** - These amounts are derived by subtracting separable costs from the justifiable expenditure amounts; a percent distribution is computed for each purpose based on the remaining justifiable expenditure for that purpose as a part of the total.

5. **Joint Costs.** - The joint costs for the project as a whole (shown in the total column) are computed by subtracting the separable costs from the total costs to be allocated. For each individual purpose the joint costs are allocated by multiplying the percent distribution of remaining justifiable expenditure by the joint costs for the project as a whole. (For example, joint IDC costs for the entire project are \$2,700,000. Recreation would be allocated 33.9 percent of these, or \$916,000.)

6. **Total Allocated Costs.** - For each purpose the total allocated costs are the sum of the separable costs and the allocated joint costs.

Calculation of Grant, Distributed Contribution, RIDC, And Loan Amounts

Table 5 presents the derivation of the grant, loan, and RIDC amounts and illustrates how the applicant contribution should be credited among the project purposes. A row-by-row explanation follows table 5. The allocated construction and IDC costs displayed in table 5 were derived in table 4.

Grants under the SRPA for both recreation and F&W enhancement are the sum of the one-half the separable construction costs, one-half of the allocated joint construction costs, and all of the LAR preparation costs associated with those purposes. In table 5, separable and joint construction costs have been displayed as a single sum from table 4. The IDC associated with the construction cost portion of the grant is considered nonreimbursable. This treatment of IDC does not mean that it is a grant in the normal sense of the word, since no funds are appropriated for IDC. The deduction in table 5 for IDC is made simply to show that no reimbursability is required. Grant amounts for the LAR are credited to arrive at the recreation and F&W loan amounts. In our example, the LAR cost \$100,000; this amount was not included in construction costs, nor does it appear in the allocations. The portions of \$100,000 assignable to recreation and F&W were considered to be based on the same percentages used to allocate joint costs in table 4, 33.9 percent and 15.4 percent, respectively.

In the example, the applicant intends to contribute \$4,450,000 in cash for construction of the project (not including the LAR). In table 5, this amount is distributed to all project purposes based on the relative percentage of remaining allocated construction costs after construction cost grants for recreation and F&W have been deducted. All contributions in an actual LAR should be distributed in this manner unless an outside entity (i.e., the state) has specifically designated funds for one purpose to the exclusion of others, or noncash contributions (i.e., lands or rights) relate specifically to one (or more) purpose to the exclusion of others, or it can be demonstrated that another proposed contribution distribution is financially beneficial for the United States. The

Table 5. Calculation of Grants, Distributed Contributions, RIDC, and Loan Amounts (\$1000)

ITEM	IRRIGATION	POWER	RECREATION	F & W	TOTAL
(1) Allocated Construction Cost	7,600.1	3,472.2	7,731.7	2,196.0	21,000.0
(2) Less Grants			3,865.9	1,098.0	4,963.9
(3) Remaining Construction Cost	7,600.1	3,472.2	3,865.9	1,098.0	16,036.2
(4) Percentage Distribution	47.4	21.7	24.1	6.8	100.0
(5) Less Distributed Contrib. (6) Less Grant-Loan Application	2,109.0	963.5	1,072.8	304.7	4,450.0
			33.9	15.4	49.3
(7) LOAN AMOUNT- CONSTRUCTION	5,491.1	2,508.7	2,759.2	777.9	11,536.9
(8) Allocated IDC	1,426.9	615.9	1,531.0	426.3	4,000.0
(9) Less Grants Credit			765.5	213.2	978.7
(10) Remaining IDC	1,426.9	615.9	765.5	213.2	3,021.4
(11) Percentage Distribution	47.2	20.4	25.3	7.1	100.0
(12) Less Distributed Contrib. (13) Less Nonreimb. IDC	396.0	170.9	212.4	59.1	838.4
	1,030.9				1,030.9
(14) REIMBURSABLE IDC (RIDC)	0.0	445.0	553.1	154.0	1,152.0
(15) Combined Obligation Amount:					
(16) Construction Loan Amount	5,491.1	2,508.7	2,759.2	777.9	11,536.9
(17) RIDC	0.0	445.0	553.1	154.0	1,152.0
(18) TOTAL LOAN AND RIDC AMOUNT	5,491.1	2,953.7	3,312.3	931.9	12,688.9
(19) TOTAL GRANTS			3,899.8	1,113.4	5,013.2

Row Descriptions - Table 5.

- Row (1) - From table 4, cost allocation.
- Row (2) - For recreation and F&W, 50 percent times row (1).
- Row (3) - Row (1) minus row (2).
- Row (4) - For each purpose, row (3) as a percent of the "Total" column; in row (3).
- Row (5) - Applicant contribution in "Total" column; for each purpose, row (4) times "Total" column.
- Row (6) - Portion of LAR assignable to recreation and F&W.
- Row (7) - Row (3) minus row (5) and row (6).
- Row (8) - From table 4, cost allocation.
- Row (9) - For recreation and F&W, 50 percent times row (8).
- Row (10) - Row (8) minus row (9).
- Row (11) - For each purpose, row (10) as a percent of the "Total" column in row (10).
- Row (12) - Entry in "Total" column is IDC associated with applicant contribution, computed as row (5) divided by row (3), times row (10); for each purpose, entry is row (11) times the row (10) entry in "Total" column.
- Row (13) - For irrigation, row (10) minus row (12).
- Row (14) - Row (10) minus rows (12) and (13).
- Row (15) - No entries.
- Row (16) - Row (7).
- Row (17) - Row (14).
- Row (18) - Row (16) plus row (17).
- Row (19) - Row (2) plus row (6).

contribution can not be distributed arbitrarily between interest-bearing and non-interest-bearing purposes to minimize the applicants annual loan payment. Guidance in crediting the contribution should be obtained from the RLE prior to submittal of the draft LAR. The IDC associated with the construction grant is also distributed in the same manner, to derive the amount which is reimbursable for each purpose.

The combined obligation amount derived in table 5 includes both the construction cost loan and RIDC. The loan amount for construction costs is derived by deducting the grants and distributed contribution from the allocated construction costs. The obligation amount for RIDC is derived by deducting the grant IDC, IDC associated with the contribution, and IDC allocated to irrigation from the allocated IDC in table 4. Allocated IDC for commercial irrigation is nonreimbursable by law.

Repayment Schedule

Table 6 is a repayment schedule based on the loan amount and RIDC derived in table 5. Each column entry is explained on the pages following the repayment schedule.

Table 6 differs from the repayment schedule displayed in appendix 11 in that loan amounts for each purpose are fixed at the beginning of the repayment period (i.e., there is no "rolling allocation" among purposes). In this example, the construction cost loan and RIDC are combined into a single obligation amount; this is usually a simpler presentation in cases where the obligations are fixed at the beginning of repayment, but the applicant may wish to segment these components. (Note that under a rolling allocation in which loan and RIDC amounts vary among purposes from year to year, as shown in appendix 11, the loan and RIDC obligations must be displayed separately in the repayment schedules.)

The length of the repayment period for irrigation is estimated in advance by dividing construction costs allocated to irrigation by 100 percent of payment capacity, after OM&R is deducted. Our example developed annual payment capacity to be \$40 per acre for the 20,000-acre project area, or \$800,000. Allocated OM&R and payments to the ERF amount to \$17,654, so the annual amount available for repayment is \$782,346. Based on a loan amount of \$5,491,100, repayment will be accomplished in the eighth year.

Repayment of power costs is based on the sale of energy generation for \$400,000 annually. After a reduction for annual OM&R (\$31,100) and a small charge in early years for the reserve fund (\$1,777), the remaining revenues will repay the power share of the loan and RIDC (\$2,953,700) in 15 years based on the 9 percent repayment rate.

In our example, repayment of the recreation and F&W loan and RIDC shares is achieved through collection of ad valorem taxes. LAR's should clearly identify the preloan level of taxation, the increase in the mill levy made necessary by the loan, any impact the increased mill levy has on irrigation payment capacity, and what the statutory limit in ad valorem taxing authority is. In our example, it is assumed the applicant wishes to repay the recreation and F&W obligation over the same length of repayment period as commercial power, 15 years. At a 9 percent rate of interest for 15 years, the

Column Descriptions - Repayment Schedule (Table 6)

- Column (1) - Year of repayment.
Column (2) - Represents 100 percent payment capacity (\$40 per acre times 20,000 acres) through year 7. In year 8, collections include remaining balance of irrigation portion of loan plus irrigation expenses in column 16. In years 9 through 15 equals irrigation expenses in column 16.
Column (3) - Annual power sales (10,000 kWh times \$0.04 per kWh).
Column (4) - Ad valorem taxes will be collected to pay loan and OM&R costs for recreation and F&W. This column is the sum of columns (18), (19), (31), and (35).
Column (5) - Sum of columns (2), (3), and (4).
Column (6) - Annual OM&R costs allocated to irrigation in table 4.
Column (7) - Annual OM&R costs allocated to power in table 4.
Column (8) - Annual OM&R costs allocated to recreation in table 4.
Column (9) - Annual OM&R costs allocated to F&W in table 4.
Column (10) - Total allocated project OM&R costs in table 4; also, the sum of columns (6), (7), (8), and (9), with rounding error.
Column (11) - Column (6) divided by column (10) times column (15).
Column (12) - Column (7) divided by column (10) times column (15).
Column (13) - Column (8) divided by column (10) times column (15).
Column (14) - Column (9) divided by column (10) times column (15).
Column (15) - The annual emergency reserve fund payment.
Column (16) - Column (6) plus column (11).
Column (17) - Column (7) plus column (12).
Column (18) - Column (8) plus column (13).
Column (19) - Column (9) plus column (14).
Column (20) - Column (10) plus column (15).
Column (21) - For years 1 through 7, loan payment equals column (2) minus column (16); in year 8, loan payment equals remaining balance at end of year 7 in column (22).
Column (22) - Amount in year zero is irrigation loan and RIDC amount from table 5. In years 1 through 7, the ending loan balance is the balance from the previous years less the current payment in column (21).
Column (23) - Year of repayment.
Column (24) - Year of repayment.
Column (25) - Column (27) minus column (26).
Column (26) - Interest rate time previous year's ending loan and RIDC balance in column (28).
Column (27) - For years 1 through 14, loan and RIDC payment equals column (3) minus column (17); in year 15, loan and RIDC payment equals remaining balance at end of year 14 in column (28).
Column (28) - Amount in year zero is power loan and RIDC obligation amount from table 5. In years 1 through 15, the ending loan and RIDC balance is the balance from the previous year less the current principal payment in column (25).
Column (29) - Column (31) minus column (30).
Column (30) - Interest rate times previous year's ending loan balance in column (32).
Column (31) - Loan payment computed to repay loan and RIDC amount in year zero, column (32) over 15 years at the repayment interest rate.

- Column (32) - Amount in year zero is recreation loan and RIDC amount from table 5. In years 1 through 15, the ending loan and RIDC balance is the balance from the previous year less the current principal payment in column (29).
- Column (33) - Column (35) minus column (34).
- Column (34) - Interest rate times previous year's ending loan and RIDC balance in column (36).
- Column (35) - Loan payment computed to repay loan and RIDC amount in year zero, column (36) over 15 years at the repayment interest rate.
- Column (36) - Amount in year zero is the F&W loan and RIDC amount from table 5. In years 1 through 15, the ending loan and RIDC balance is the balance from the previous year less the current principal payment in column (33).
- Column (37) - Sum of columns (21), (25), (29), and (33); also equals column (39) minus column (38).
- Column (38) - Sum of columns (26), (30), and (34); also equals column (39) minus column (37).
- Column (39) - Sum of columns (21), (27), (31), and (35); also equals sum of columns (37) and (38).
- Column (40) - Sum of columns (22), (28), (32), and (36); year zero equals total loan and RIDC amount in table 5.
- Column (41) - Year of repayment.

recreation obligation (\$3,312,300) amortizes at \$410,920 annually and the F&W obligation (\$931,100) amortizes to \$115,610 annually. Additional tax revenues are necessary to cover OM&R and shares of the reserve fund (although, as a practical matter, the applicant will in many cases turn over the recreation and F&W facilities to local or state agencies and require them to provide OM&R costs).

Note in our example that the length of the repayment period differs between irrigation and the other purposes. This occurs frequently since the sources of revenues which must be committed to repayment vary among purposes. In our example, the applicant could have elected to lengthen the repayment period for recreation and F&W to 40 years; the applicant also could have elected to reduce the length of repayment period for any of the purposes, assuming that adequate ability to pay existed without causing financial risk.

The ERF was set at \$8,000 annually for 10 years based on guidelines in chapter 10. In the eleventh year, the power share of the fund was committed to loan repayment. The share of the fund for recreation and F&W could have been committed to loan repayment for those purposes. However, in this example, it was assumed that the applicant elected to reduce the ad valorem taxes collected instead.

Note that the beginning balance in table 6, column 40 (\$12,688,900) is the total loan and RIDC amount from row 18 in table 5.

CRITERIA FOR APPROVAL AND FUNDING OF LOAN APPLICATION

Each application for a SRPA loan will be evaluated by Reclamation to determine its conformance with three criteria which have been adopted for measuring the relative financial impact of such loans upon the United States. These criteria are as follows:

- Criterion No. 1 - The "loan factor" must not exceed 50 percent for a category I project or 67 percent for a category II project. (The significance of the two categories is discussed below.)
- Criterion No. 2 - The loan repayment period shall not exceed 40 years.
- Criterion No. 3 - The loan repayment period and other significant aspects of the financial program shall be arranged in such a manner that 100 percent of the estimated irrigation payment capacity of the benefitted area is utilized for loan repayment and for payment of other appropriate irrigation water costs. (Irrigation payment capacity cannot be utilized to pay interest on that portion of the loan allocated to "excess lands.")

These are Department and OMB guidelines for approval and funding of SRPA loan applications in accordance with EO 12322. LAR's are reviewed and processed in the order received but are separated into two categories according to the loan factor criteria.

Under these guidelines, category I projects can be sent forward to the Congress by the Department without OMB review and approval. Category II projects cannot be sent to Congress without OMB review and approval. Consequently, category II projects will experience some delay and perhaps require some revision as a result of this OMB review process. To meet category I criteria, a project must (1) have a loan factor of 50 percent or less; (2) be repaid in 40 years or less; and (3) the annual irrigation water charges covering existing obligations, loan repayment, and irrigation's share of OMR&P costs must utilize total estimated irrigation payment capacity. Category II criteria are the same except the loan factor will fall between 50 and 67 percent.

An application which initially does not meet either category I or II criteria cannot be accepted by Reclamation and must be returned to the applicant together with suggested revisions which would bring it as closely as possible into conformance with category I criteria. The applicant should seek advice from the RLE in the event that conformance with category II criteria appears unattainable.

In view of the importance of these criteria in determining the acceptability of loan applications, it is essential that the applicant have a working knowledge of the procedures used by Reclamation in evaluating the criteria so that the proposed project's financial program will be in conformance with those criteria. A discussion of the evaluation procedures is presented below.

Loan Factor

The loan factor is basically a measure of the proportion of the total Federal outlay for a project which is not ultimately returned to the United States Treasury by the applicant and which is consequently a contribution toward, or a financial assistance to, the project by the United States.

In general terms, the total Federal outlay is considered to be comprised of the loan obligation plus the amount of interest paid by the United States Treasury during the construction period. Of that total, a portion will be returned to the Treasury by the applicant's annual loan amortization installments. The difference between the total outlay and total return is in effect a financial contribution by the United States toward the project. The loan factor is the amount of that difference divided by the total project cost less Federal grants.

1. **Inservice Date.** - Several different interest computations will be involved in the determination of the loan factor, and it will be necessary to select some point in time on which to base these computations. That point is designated herein as the "inservice date."

IDC charges must be computed on a compound interest basis up to the inservice date, and the series of future annual loan repayment installments must be brought back to that date by computing their total present worth as of that time.

To simplify these interest computations, it is usually assumed that the construction period ends at the end of fiscal year and that the first repayment installment falls due 12 months later. The inservice date is then the last day of the last fiscal year in the construction period.

In making these interest computations, care should be taken to ensure that there is neither a lapse nor an overlap of interest charges in going from the construction period to the repayment period.

2. **Loan Factor Formula.** - The computation of the loan factor may be stated mathematically as follows:

$$\text{Loan Factor} = \frac{\text{TLO} + \text{FIDC} - \text{PWP}}{\text{TPC} - \text{Grants}}$$

where: TLO = Total loan obligation
FIDC = Federal interest during construction
PWP = Present worth of the series of loan
and RIDC repayment installments

TPC = Total project cost

The derivation of each of the terms in the loan factor equation is discussed below.

3. **TLO.** - TLO does not include the RIDC obligation.

4. **FIDC.** -

a. FIDC is computed at the current fiscal year Federal discount interest rate for project evaluation. The RLE should be consulted for advice on the proper interest rate to be used.

b. FIDC is estimated on the full amount (not just the interest bearing portion) of the annual appropriation requirements.

5. **PWP.** - Since the loan and RIDC will be repaid over a period of time, the value to the United States of the series of annual repayment installments will be less than if the entire obligation were repaid in a lump sum at the inservice date. That discounted value of the loan and RIDC obligation as of the inservice date is considered to be the summation of the "present worth" values of the annual installments for that date computed at the Federal discount interest rate.

6. **TPC.** - TPC is the sum of the SRPA loan and RIDC obligation plus the applicant's contribution, to the extent that the items which comprise the contribution are considered allowable for purposes of computing the loan factor. For example, if the cost of deferred drainage construction is included as a component of the contribution, only the present worth equivalent of the deferred construction cost will normally be allowed in computing the TPC.

Computation of Loan Factor

Guidelines example (costs and repayment from appendixes 9 and 11)

1. Loan Amount (Principle + RIDC)	\$22,095,000
2. Amount of SRPA grant	0
3. Applicant's contribution ¹ \$14,179,000	
4. Total project cost ²	\$36,274,000
5. Appropriation requirement	\$21,546,000
6. Federal discount interest rate	= 8.375%
7. SRPA Repayment interest rate	= 10.625%
8. Compute FIDC using rate on line 6	

1/2	Sum of	Sum of	Amount
Current	Previous	Previous	for

¹ See following adjustments to contribution to allow for present worth of deferred drainage.

² This cost differs from that shown in table 7.2 because of the discounting of the deferred drainage cost.

Year (1)	Appro- ³ priation (2)	years approp. (3)	years approp. (4)	years int (5)	computing int (6)	Interest (7)
1	1,500,000	750,000	0	0	720,000	62,812
2	4,010,000	2,005,000	1,500,000	60,300	3,612,812	302,573
3	9,996,000	4,998,000	5,510,000	365,395	10,873,385	910,646
4	6,100,000	3,050,000	15,506,000	1,276,031	19,832,031	1,660,933

9.	FIDC					\$ 2,936,964
10.	RIDC					\$ 489,000
11.	Line 1 less line 10 (TLO)					\$21,606,000
12.	Line 9 plus line 11 (TLO + FIDC)					\$24,542,964
13.	Present worth of payments (PWP)					\$10,519,312
14.	Line 12 minus line 13 (TLO + FIDC - PWP)					\$14,023,652
15.	Line 4 minus line 2 (TPC - G)					\$36,274,000
16.	LOAN FACTOR					0.3866%

This table is the same as table 9.1 except interest is computed using the Federal discount rate instead of the repayment interest rate.

Present Worth of Deferred Drainage Costs

For purposes of computing the loan factor, the payments to the deferred drainage sinking fund must be discounted to their present worth equivalent, as of the inservice date, to determine the amount allowed as district contribution.

The sinking fund is set up to accumulate \$407,000⁴ over a 20-year period at an interest rate of 9 percent. The inservice date is considered to be at the beginning of the repayment period. Therefore, the present worth of these 20 payments of \$8,000 based on a Federal discount rate of 8-3/8 percent is:

$$\$8,000 \times 9.55011 = \$76,401 \quad (\text{Rounded to } \$76,000)$$

Therefore, the total district contribution for use in computing the loan factor is \$14,510,000⁵ - \$407,000 + \$76,000 = \$14,179,000.

Utilization of Payment Capacity

Criterion No. 3 requires that 100 percent of irrigation payment capacity be committed to payment of appropriate project construction and operating costs. As stated previously, none of the irrigation

³ Values in this column must total to Appropriation Requirement (line 5) plus Bureau expenditures prior to the loan reduced by the filing fee.

⁴ See footnotes to table 9.3.

⁵ From table 7.2.

payment capacity can be used for payment of interest on the portion of the loan allocated to excess lands.

The determination of conformance with this criterion can be complex, and the RLE should be consulted for detailed advice specifically applicable to the project under consideration. It is especially important that estimates of irrigation payment capacity have the concurrence of Reclamation. The following discussion is intended to apply only to single-purpose irrigation projects.

Given that payment capacity per benefitted acre has been determined (see appendix 10), the total payment capacity is normally assumed to be available for payment of project water costs. It is therefore necessary to include all water costs in determining the percentage utilization of payment capacity. Such costs might typically include the following:

1. The SRPA loan obligation.
2. The total annual project operating cost.
3. The emergency and replacement reserve funds, and deferred drainage construction sinking fund, to the extent that those funds are accumulated during the repayment period. Anticipated interest earnings on these funds should not be included.
4. Any other Federal or non-Federal indebtedness to be amortized during the repayment period, including preproject indebtedness.

Guidelines Example

For purposes of illustrating the utilization of payment capacity, the following example is included. This example is based on the project costs that were developed in appendix 9 and tentatively allocated in table 9.4.

Regular irrigation payment capacity (excludes excess lands):

Total revenue amount from column 2 of the repayment schedule (table 9.10) ⁶	\$27,373,000
Less irrigation willingness to pay	0
Equals: 100 percent of payment capacity	27,373,000

Regular irrigation costs (excludes excess lands):

⁶ Includes surplus revenues of \$435,750 after loan repayment.

Principal costs tentatively allocated to total irrigation	
(\$19,095,000) x 98.476% =	
regular irrigation portion ⁷	\$18,804,000
Plus: Operating expenditures allocated to total	
irrigation (\$9,990,543) x 98.476% =	
regular irrigation portion ⁸	\$9,838,000
Equals: Total regular irrigation costs	\$28,642,000

Since the costs exceed the payment capacity by \$1,269,000, 100 percent of the computed payment capacity would be used to repay appropriate irrigation costs.

Willingness to Pay

In the event that the application would fail to meet category II, or if it is desirable to raise the category from II to I, it is permissible to use other available funds to repay the loan. Sources of such funds may be:

1. Uncommitted surplus funds held by the irrigation district.
2. A tax authority, the assessment of which does not affect payment capacity.
3. Revenues from other functions such as M&I or power.
4. Nonfarm income, to reduce certain allowances provided for in the computation of payment capacity.

⁷ Allocated cost from table 9.4, water portion from table 9.2.

⁸ Operating expenditures from repayment schedule (table 9.10, column 13) and water portion from table 9.2.

If willingness to pay is used in addition to payment capacity to liquidate the loan, its source should be separately identified similar to payment capacity in the LAR. It may also be necessary to confirm that such willingness to pay does not create conditions of financial imprudence.