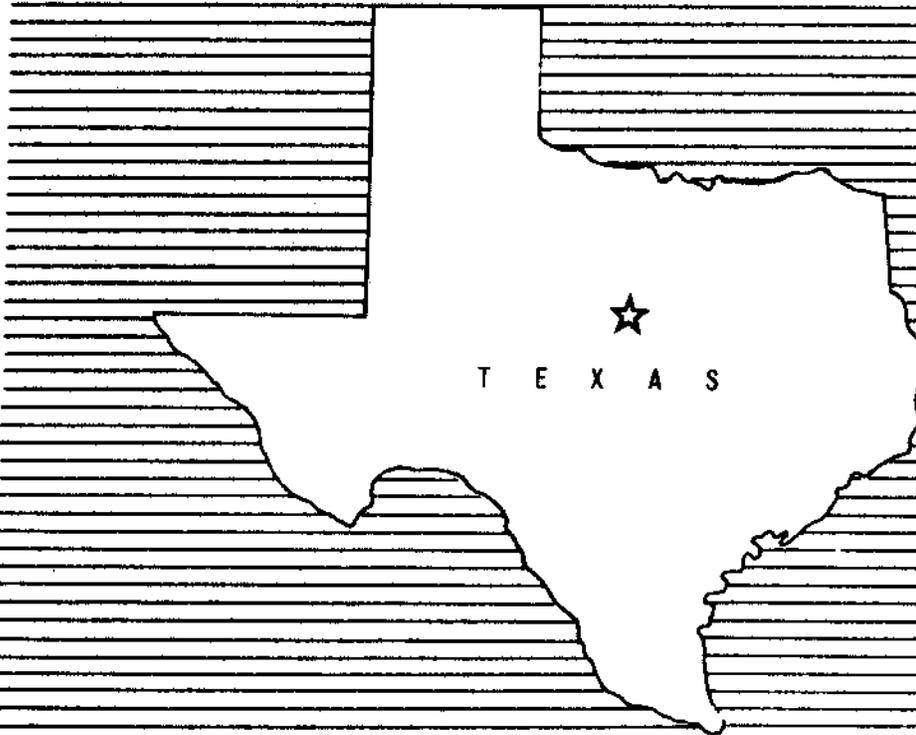


**SUPPLEMENTAL
WORK PLAN No. II**

**FOR WATERSHED PROTECTION, FLOOD PREVENTION,
AND AGRICULTURAL WATER MANAGEMENT**

RUSH CREEK WATERSHED

COMANCHE, EASTLAND, and BROWN COUNTIES, TEXAS



September 1973

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SUPPLEMENTAL WATERSHED WORK PLAN AGREEMENT NO. II

between the
Comanche County Commissioners Court
Local Organization

Upper Leon Soil and Water Conservation District
Local Organization

Brown-Mills Soil and Water Conservation District
Local Organization

State of Texas

(hereinafter referred to as the Sponsoring Local Organization)

and the

Soil Conservation Service
United States Department of Agriculture
(hereinafter referred to as the Service)

Whereas, the Watershed Work Plan Agreement for the Rush Creek Watershed, State of Texas, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 20th day of October, 1966; and

Whereas, the Supplemental Watershed Work Plan Agreement for Rush Creek Watershed, State of Texas, executed by the Sponsoring Local Organization and the Service, became effective on the 28th day of September, 1971; and

Whereas, in order to carry out the Watershed Work Plan, as supplemented for said watershed, it has become necessary to modify said Watershed Work Plan Agreement, as supplemented; and

Whereas, it has been found necessary to modify the Watershed Work Plan Agreement, as supplemented, by deleting the planned 3,570 feet of stream channel improvement; and

Whereas, a Supplemental Watershed Work Plan which modifies the Watershed Work Plan dated September, 1965 for said watershed has been developed through the cooperative efforts of the Sponsoring Local Organization and the Service, which plan is annexed to and made a part of this agreement;

Now, therefore, the Sponsoring Local Organization and the Service hereby agree upon the following modifications of the terms,

conditions, and stipulations of said Watershed Work Plan Agreement, as supplemented:

1. The 3,570 feet of planned stream channel improvement referred to in the Watershed Work Plan is hereby deleted.
2. Paragraph numbered 1 ia modified by deleting reference to stream channel (South Copperas Creek).
3. Paragraph numbered 4 is modified to read as follows:

The percentage of engineering costs to be borne by the Sponsoring Local Organization and the Service are as follows:

<u>Works of Improvement</u>	<u>Sponsoring Local Organization</u> (percent)	<u>Service</u> (percent)	<u>Estimated Engineering Cost</u> (dollars)
13 Floodwater Retarding Structures and 1 Multiple-Purpose Structure	0	100	118,800

4. Paragraph numbered 5 is modified to read as follows:

The Sponsoring Local Organization and the Service will each bear the costs of Project Administration which it incurs, estimated to be \$6,800 and \$327,500 respectively.
5. The Sponsoring Local Organization and the Service further agree to all other terms, conditions, and stipulations of said Watershed Work Plan Agreement, as supplemented, not modified herein.

Comanche County Commissioners Court
Local Organization

By Fred Hatil

Title County Judge

Address Comanche, TX 76442

Date January 28, 1974 Zip Code

The signing of this agreement was authorized by a resolution of the governing body of the Comanche County Commissioners Court adopted

at a meeting held on January 28, 1974 Local Organization

Betty Conway Co. Clerk
(Secretary, Local Organization)

Address Comanche, TX 76442

Date January 29, 1974 Zip Code

Upper Leon Soil and Water Conservation District
Local Organization

By Tommy Pittman

Title Chairman

Address Dubin, Texas 76446

Date 2/7/74 Zip Code

The signing of this agreement was authorized by a resolution of the governing body of the Upper Leon Soil and Water Conservation District

adopted at a meeting held on February 7, 1974 Local Organization

J. T. Whitson
(Secretary, Local Organization)

Address De Leon, Texas 76444

Date 2/7/74 Zip Code

Brown-Mills Soil and Water Conservation District
Local Organization

By [Signature]

Title Chairman

Address Brownwood, Tx 76801
Zip Code

Date 2/21/74

The signing of this agreement was authorized by a resolution of the governing body of the Brown-Mills Soil and Water Conservation District Local Organization

adopted at a meeting held on 2/21/74

[Signature]
(Secretary, Local Organization)

Address Coldwater, Tx 76844
Zip Code

Date 2/21/74

Soil Conservation Service
United States Department of Agriculture

By [Signature]
"Acting" State Conservationist

Date 9-18-74

SUPPLEMENTAL
WATERSHED WORK PLAN NO. II
FOR
WATERSHED PROTECTION, FLOOD PREVENTION,
AND AGRICULTURAL WATER MANAGEMENT

RUSH CREEK WATERSHED

Comanche, Eastland, and Brown Counties, Texas

Prepared Under the Authority of the Watershed
Protection and Flood Prevention Act, (Public Law
566, 83rd Congress; 68 Stat. 666), as amended.

Prepared By:

Upper Leon Soil and Water Conservation District
(Sponsor)

Brown-Mills Soil and Water Conservation District
(Sponsor)

Comanche County Commissioners Court
(Sponsor)

With Assistance By:

U.S. Department of Agriculture
Soil Conservation Service

September 1973

SUPPLEMENTAL

WATERSHED WORK PLAN NO. II

RUSH CREEK WATERSHED

Comanche, Eastland, and Brown Counties, Texas

September 1973

PURPOSE OF THE SUPPLEMENTAL WORK PLAN

It has become mutually desirable to modify the watershed work plan for Rush Creek watershed to delete the planned 3,570 feet of stream channel improvement. Since the original work plan was prepared, changes in land use from cropland to improved pasture on flood plain lands adjacent to the channel reach to be improved has eliminated the need for channel improvement below floodwater retarding structures Nos. 6 and 7. This supplement modifies the watershed work plan, as supplemented, to reflect current policy and terminology relative to engineering and project administration costs. Costs of all structural measures not constructed are updated to 1972 prices to reflect current cost estimates. All damages and benefits are updated to adjusted normalized prices, or to current prices as applicable, to reaffirm economic feasibility.

Changes and modifications which follow are made in appropriate parts of the watershed work plan, as supplemented:

WORKS OF IMPROVEMENT TO BE INSTALLED

The 3,570 feet of stream channel improvement is deleted. The Sponsoring Local Organization will obtain flowage rights for those areas that could be inundated for prolonged periods by release flows from floodwater retarding structures Nos. 6 and 7. All other conditions remain the same.

EXPLANATION OF INSTALLATION COSTS

The total installation cost of the structural measures is estimated to be \$2,728,490, of which Public Law 566 costs will be \$2,539,840, and the local share will be \$188,650.

The Public Law 566 costs consist of \$2,093,540 for construction, \$118,800 for engineering services, and \$327,500 for project administration. The local costs consist of \$8,380 for construction, \$172,870 for land rights, \$600 for water rights, and \$6,800 for project administration.

Engineering services and project administration costs were based on an analysis of previous work in similar areas. Engineering services costs consist of, but are not limited to, detailed surveys, geologic investigations and laboratory analyses, reports, designs, and cartographic services.

Public Law 566 project administration costs consist of construction inspection, contract administration, maintenance of Soil Conservation Service State Office records and accounts, and Washington Office and E&WP Unit costs.

Local costs for project administration includes sponsors' costs related to contract administration, overhead and organizational administrative costs, and whatever construction inspection they desire to make at their own expense.

EFFECTS OF WORKS OF IMPROVEMENT

With the installation of the combined programs of land treatment and structural measures, average annual flooding is reduced from 7,878 to 3,511 acres.

The effects of the deletion of the planned channel work will be limited to evaluation reach 4. The average annual floodwater damage reduction in evaluation reach 4 will change from 65 percent to 63 percent.

PROJECT BENEFITS

The estimated average monetary damage (revised table 5) within the watershed will be reduced from \$130,924 to \$39,364, or 70 percent. Crop and pasture damages will be reduced from \$57,236 to \$19,349, or 66 percent. Other agricultural damage, such as loss of fences, farming equipment, livestock, and other property, will be reduced from \$29,484 to \$9,255, or 69 percent. Road and bridge damage will be reduced from \$20,571 to \$4,802, or 77 percent. The overbank deposition of damaging sediment upon flood plain soils, now occurring at the rate of \$6,467 annually, will be reduced to \$1,050, or 84 percent. Flood plain scour damages will be reduced from \$5,263 to \$1,329, or 75 percent.

More intensive land use benefits of \$6,143 annually are expected to accrue as a result of installing the planned project.

Incidental recreation and irrigation benefits will be \$5,298 annually.

Benefits of \$3,980 annually can be expected to accrue to Proctor Reservoir as a result of reduced sediment deposition.

Benefits accruing as a result of developing irrigation water storage are expected to be \$2,390 annually.

The average annual floodwater, sediment, erosion, and indirect damage reduction in the benefited area for each evaluation reach is shown in the following tabulation:

Evaluation : Reach :	Without Project (dollars) <u>1/</u>	:	With Project (dollars) <u>1/</u>	:	Reduction (percent) <u>2/</u>
1	26,530		13,483		49
2	34,184		9,497		72
3	22,404		2,562		89
4	17,508		6,493		63
5	24,136		2,786		88
5A	1,423		217		85
6	4,739		4,326		9
Total	130,924		39,364		70

1/ Nonagricultural damages - Current prices (1972); All other damages - Adjusted normalized prices, April 1966.

2/ Where percent reductions shown differ from original work plan, except evaluation reach 4, they result from conversion of prices from long-term to adjusted normalized or current prices as appropriate.

Although not considered pertinent from a national viewpoint, secondary benefits will amount to \$9,416 annually in the immediate locale.

COMPARISON OF BENEFITS AND COSTS

The total average annual cost of structural measures (amortized total installation cost and project administration plus operation and maintenance) is \$92,180. These measures are expected to produce average annual primary benefits of \$101,795. The benefit-cost ratio without secondary benefits is 1.1 to 1.0. The ratio of total annual project benefits accruing to structural measures, \$111,211, to the average annual cost of structural measures, \$92,180, is 1.2 to 1.0 (revised table 6).

PROVISIONS FOR OPERATION AND MAINTENANCE

There will be no changes in the provisions for operation and maintenance of the floodwater retarding structures.

The estimated average annual operation and maintenance cost is \$2,800.

REVISED TABLE 1 - ESTIMATED PROJECT INSTALLATION COST
Rush Creek Watershed, Texas

Installation Cost Item	Unic	Number	Estimated Cost (Dollars)			Total
			Non-Federal Land	Public Law 566 Punds	Other	
LAND TREATMENT						
Soil Conservation Service						
Cropland	Acre	14,345	-	637,997	-	637,997
Pastureland	Acre	17,760	-	250,622	-	250,622
Rangeland	Acre	32,775	-	617,340	-	617,340
Technical Assistance			47,095	74,850	-	121,945
TOTAL LAND TREATMENT			47,095	1,580,809		1,627,904
STRUCTURAL MEASURES						
Construction						
Soil Conservation Service						
Floodwater Retarding Structures	No.	13	1,974,930	-	-	1,974,930
Multiple-Purpose Structure	No.	1	118,610	8,380	-	126,990
Subtotal - Construction			2,093,540	8,380		2,101,920
Engineering Services						
Soil Conservation Service						
Floodwater Retarding Structures			111,180	-	-	111,180
Multiple-Purpose Structure			7,620	-	-	7,620
Subtotal - Engineering Services			118,800			118,800
Project Administration						
Soil Conservation Service						
Construction Inspection			145,980	2,000	-	147,980
Other			181,520	4,800	-	186,320
Subtotal - Project Administration			327,500	6,800		334,300
Other Costs						
Land Rights						
Water Rights			-	172,870	-	172,870
Subtotal - Other Costs				172,870	600	173,470
TOTAL STRUCTURAL MEASURES			2,539,840	188,650		2,728,490
TOTAL PROJECT			2,586,935	1,769,459		4,356,394

L/ Price Base: Land Treatment - 1965; Structural Measures - 1972, except for structures Nos. 5, 7, 10, 11, 12, 13, 14 and multiple-purpose structure No. 9 which are actual costs.

REVISED TABLE 2 - ESTIMATED STRUCTURAL COST DISTRIBUTION
 Rush Creek Watershed, Texas
 (Dollars) 1/

Item	Installation Cost P. L. 566 Funds :			Installation Cost - Other Funds :			Total Installation Cost	
	Construction	Engineering	Total	Construction	Land	Water		Total
	: P. L. 566:			: Rights :			Other :	
Floodwater Retarding Structures Nos. 5, 7, 10, 11, 12, 13, 14, and Multiple-Purpose Structure No. 9	1,042,560	60,320	1,102,880	8,380	94,230	600	103,210	1,206,090
1	303,700	15,190	318,890		18,680		18,680	337,570
2	248,040	12,400	260,440		15,750		15,750	276,190
3	136,690	8,200	144,890		8,930		8,930	153,820
4	93,110	6,520	99,630		5,960		5,960	105,590
6	145,370	8,720	154,090		15,330		15,330	169,420
8	124,070	7,450	131,520		13,990		13,990	145,510
Subtotal	2,093,540	118,800	2,212,340	8,380	172,870	600	181,850	2,394,190
Project Administration			327,500				6,800	334,300
GRAND TOTAL	2,093,540	118,800	2,539,840	8,380	172,870	600	188,650	2,728,490

1/ Price Base: 1972 except for structures Nos. 5, 7, 10, 11, 12, 13, 14 and Multiple-Purpose Structure No. 9, which are actual costs.

REVISED TABLE 2A - COST ALLOCATION AND COST SHARING SUMMARY

Rush Creek Watershed, Texas

(Dollars) 1/

Item	COST ALLOCATION				COST SHARING				
	PURPOSE		PUBLIC LAW 566		OTHER		OTHER		
	Flood : Prevention :	Ag. Water : Mgt. :	Flood : Prevention :	Ag. Water : Mgt. :	Flood : Prevention :	Ag. Water : Mgt. :	Flood : Prevention :	Ag. Water : Mgt. :	
Single Purpose 13 Floodwater Retarding Structures	2,241,180	-	2,241,180	2,086,110	-	2,086,110	155,070	-	155,070
Multiple-Purpose Structure No. 9	131,630	21,380	153,010	116,850	9,380	126,230	14,780	12,000	26,780
GRAND TOTAL	2,372,810	21,380	2,394,190	2,202,960	9,380	2,212,340	169,850	12,000	181,850

1/ Price Base: 1972 except for structures Nos. 5, 7, 10, 11, 12, 13, 14 and multiple-purpose structure No. 9 which are actual costs.

REVISED TABLE 4 - ANNUAL COST

Rush Creek Watershed, Texas

(Dollars)

Evaluation Unit	: Amortization : of : Installation : Cost 1/	: Operation : and : Maintenance : Cost 2/	: Total
Floodwater Retarding Structures Nos. 1 through 8 and 10 through 14 and Multiple-Purpose Structure No. 9	78,430	2,800	81,230
Project Administration	10,950		10,950
GRAND TOTAL	89,380	2,800	92,180

1/ Price Base: 1972 except for structures Nos. 5, 7, 10, 11, 12, 13, 14, and Multiple-Purpose Structure No. 9 which are actual costs amortized for 100 years at 3.125 percent.

2/ Price Base: 1972

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REVISED
TABLE 5 - ESTIMATED AVERAGE ANNUAL FLOOD DAMAGE REDUCTION BENEFITS

Rush Creek Watershed, Texas

(Dollars) 1/

Item	: Estimated Average : : Annual Damages :		Damage
	: Without :	With :	Reduction
	: Project :	Project :	Benefits
Floodwater			
Crop and Pasture	57,236	19,349	37,887
Other Agricultural	29,484	9,255	20,229
Non-Agricultural (Road and Bridge)	20,571	4,802	15,769
Subtotal	107,291	33,406	73,885
Sediment			
Overbank Deposition	6,467	1,050	5,417
Erosion			
Flood Plain Scour	5,263	1,329	3,934
Indirect	11,903	3,579	8,324
TOTAL	130,924	39,364	91,560

1/ Price Base: Non-agricultural damages - Current prices (1972);
All other damages - Adjusted normalized prices, April 1966.

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REVISED TABLE 6 - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Rush Creek Watershed, Texas

(Dollars)

Evaluation Unit	AVERAGE ANNUAL BENEFITS 1/													
	Flood Prevention		Agricultural:		Proctor		Reservoir		Secondary		Total			
	Damage Reduction	Intensive Land Use	More Intensive	Incidental	Water Management	Proctor	Management	Reservoir	(Irrigation)	Secondary	Total	Average Annual Benefit	Annual Cost	Benefit Cost Ratio
Floodwater Retarding Structures Nos. 1 through 8 and 10 through 14, and Multiple-Purpose Structure No. 9	83,984	6,143	5,298	3,980	2,390	9,416	111,211	81,230	1.4:1.0					
Project Administration	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	10,950	xxx	xxx	
GRAND TOTAL 4/	83,984	6,143	5,298	3,980	2,390	9,416	111,211	92,180	1.2:1.0					

1/ Price Base: Non-agricultural benefits - current prices (1972); all other benefits - Adjusted normalized prices, April 1966

2/ Includes 2,234 from recreation and 3,064 from irrigation

3/ From Table 4

4/ In addition, it is estimated that land treatment measures will provide 7,576 damage reduction benefits in the flood plain and 1,094 sediment damage reduction benefits to Proctor Reservoir.

