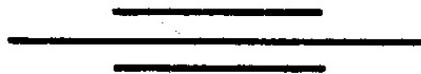


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WATERSHED WORK PLAN
for the
PAULINS KILL WATERSHED

**Warren and Sussex Counties
New Jersey**



Paulins Kill Watershed, New Jersey

Table of Contents

September, 1956

Application for Assistance

September, 1958

Amendment to Application for Assistance

October, 1958

Watershed Work Plan

November, 1958

Watershed Work Plan Agreement

May, 1959

First Supplemental Work Plan

June, 1959

First Supplemental Watershed Work Plan Agreement

July, 1964

Second Supplemental Watershed Work Plan Agreement

February, 1973

Third Supplemental Watershed Work Plan

June, 1973

Third Supplemental Watershed Work Plan Agreement

March, 1974

Final Table 1

~~WORKSHEET-001~~

APPLICATION FOR ASSISTANCE IN PLANNING AND CARRYING OUT WORKS OF IMPROVEMENT
IN NEW JERSEY
UNDER THE
WATERSHED PROTECTION AND FLOOD PREVENTION ACT

(PUBLIC LAW 566 - 83rd Congress)

1956

TO THE HONORABLE
THE SECRETARY OF AGRICULTURE
UNITED STATES DEPARTMENT OF AGRICULTURE

The undersigned local organization(s) makes application for Federal assistance under the Watershed Protection and Flood Prevention Act in preparing and carrying out plans for work of improvement for the Paulins Kill watershed.

The following information is submitted in support of the application:

1. Size of watershed: 116,000 acres.
2. Location of watershed:
 - a. State(s) New Jersey
 - b. County(ies) Sussex & Warren
 - c. Tributary of Delaware River

3. Watershed problems:

- a. The problem is one of channel siltation and flooding along the main stem and tributaries of the Paulins Kill. The Kill drains an area of approximately 116,000 acres of agricultural land in Warren and Sussex counties in northern New Jersey. Flooding is almost an annual occurrence, particularly in the vicinity of Blairstown. Series floods occurred in 1896, 1903, 1913, 1914, 1936 and August 19 and September 20 1955.

Damages from the flood of August 1955 were estimated as follows:

<u>Townships & Towns</u>	<u>Private</u>	<u>Public</u>
<u>Sussex County</u>		
Stillwater	40,000	35,000
Fredon	-	-
Hampton	-	15,000
Frankford	-	25,000
Branchville	950,000	50,000
Lafayette	-	15,000
Sparta	6,000	11,000
Newton	<u>170,000</u>	<u>25,000</u>
Sub Total	1,166,000	176,000
<u>Warren County</u>		
Knowlton	-	-
Blairstown	150,000	10,000
Hardwick	17,000	8,000
Frelinghuysen	<u>-</u>	<u>-</u>
Sub Total	167,000	18,000
Sussex County Highway		500,000
Warren County Highway	<u> </u>	<u>120,000</u>
TOTAL	1,333,000	814,000
Agricultural Damage	<u>20,000</u>	<u> </u>
GRAND TOTAL	\$1,353,000	\$814,000

If the same flood (August 1955) were to reoccur today the damage would be considerably greater due to the poor condition of the channels caused by the last flood.

b. Erosion damage both sheet and gully is severe throughout the watershed. This erosion reduces the agricultural production materially and causes serious sediment damage both to croplands and stream channels.

4. Types, extent and probable location of watershed treatment measures;

a. Flood water retarding structures on the tributaries to reduce flood flow.

b. Channel improvement through critical areas along the main stem and main tributaries to reduce flood stages.

c. Land treatment measures on the entire watershed to protect the retarding structures and reduce sedimentation of the channels.

d. To reduce run-off and erosion which will reduce sedimentation of the channels.

6. Sponsors and Co-sponsors:

Witness the signatures of the undersigned local organization(s) on the dates shown below. (Type or print all information except signature.)

Warren County Soil Conservation District
(Name of Local Organization) This action authorized at an official meeting
By:(Sig.) /s/ Alfred F. Baylor on June 13, 1956,
Title Chairman at Belvidere, New Jersey
June 13, 1956 Attest:(Sig.) /s/ C. F. Lorenzo
(Date) (Secretary)

Sussex County Soil Conservation District
(Names of Local Organization) This action authorized at an official meeting
By:(Sig.) /s/ Douglas M. Roy on June 4, 1956,
Title Chairman at Newton, New Jersey
June 4, 1956 Attest:(Sig.) /s/ Warren J. Welsh
(Date) (Secretary)

Village of Blairstown
(Name of Local Organization) This action authorized at an official meeting
By:(Sig.) /s/ Herman A. Shotwell on _____, 19____,
Title Mayor at _____
July 2, 1956 Attest:(Sig.) _____
(Date) (Secretary)

Contact: The above local organizations request that all correspondence or contacts pertaining to this application be directed to:

Herman A. Shotwell
(Name)

R. D. Blairstown, New Jersey
(Mail Address)

The foregoing application for Federal assistance under the Watershed Protection and Flood Prevention Act is hereby approved.

New Jersey Department of Conservation and Economic Development

By: s/ Alden T. Cottrell
Title: State Forester
Date: 9-17-56

File copy

ADMENDMENT TO

APPLICATION FOR ASSISTANCE IN PLANNING AND CARRYING OUT WORKS OF IMPROVEMENT UNDER THE WATERSHED PROTECTION AND FLOOD PREVENTION ACT

TO THE HONORABLE
THE SECRETARY OF AGRICULTURE
UNITED STATES DEPARTMENT OF AGRICULTURE

The application for Federal assistance under the Watershed Protection and Flood Prevention Act, in preparing and carrying out plans for works of improvement for the Paulins Kill Watershed, approved by the New Jersey Department of Conservation and Economic Development 9/17/58, is hereby amended as follows:

A fourth local organization, the Town of Newton, is added as a co-sponsor.

The Paulins Kill Watershed is located in Warren and Sussex Counties, New Jersey, and is a tributary of the Delaware River.

Witness the signatures of the undersigned local organizations on the dates shown below:

Warren County Soil Conservation District
(Local Organization)

By: Alfred F Bayler
Title: Chairman
Date: Sept 10, 1958

This action authorized
at an official meeting
on Sept 10, 1958
at Belvidere N.J.
Attest: C. Fred Lorenzo
(Secretary)

Sussex County Soil Conservation District
(Local Organisation)

By: J. A. Blakeslee
Title: Chairman
Date: September 9, 1958

This action authorized
at an official meeting
on September 8, 1958
at Newton, N.J.
Attest: Warren J. Stelsh
Secretary
MS

Township of Blairstown
(Local Organization)

BY: Herman A. Shotwell
Title: Mayor
Date: Sept 10 - 1958

This action authorized
at an official meeting
on Sept 10, 1958
at Blairstown
Attest: G. Chauluba
(Secretary)

Town of Newton
(Local Organization)

By: Milton Wolfenden Jr.
Title: Mayor
Date: August 26, 1958

This action authorized
at an official meeting
on August 25, 1958
at Newton, N.J.
Attest: Charles Mathews
(Secretary)

Contact: The above local organizations request that all correspondence or contacts pertaining to this amendment to application be directed to:

Herman A. Shotwell
(Name)

R. D Blairstown, N.J.
(Mailing Address)

The foregoing amendment to application for Federal assistance under the Watershed Protection and Flood Prevention Act is hereby approved.

New Jersey Department of Conservation and
Economic Development

By: _____
Title: _____
Date: _____

WATERSHED WORK PLAN

PAULINS KILL WATERSHED

Warren and Sussex Counties, New Jersey

Prepared Under the Authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress, 68 Stat. 666) as amended by the Act of August 7, 1956 (Public Law 1018, 84th Congress, 70 Stat. 1088).

Prepared by:

WARREN COUNTY SOIL CONSERVATION DISTRICT

SUSSEX COUNTY SOIL CONSERVATION DISTRICT

TOWN of BLAIRSTOWN, WARREN COUNTY

TOWN of NEWTON, SUSSEX COUNTY

Assisted by:

U.S. Department of Agriculture, Soil Conservation Service

U.S. Department of Agriculture, Forest Service

October, 1958

TABLE OF CONTENTS

	<u>Page</u>
SECTION 1 - THE WATERSHED PLAN	1
SUMMARY OF PLAN	2
DESCRIPTION OF THE WATERSHED	2
WATERSHED PROBLEMS	2
Floodwater Damage	2
Sediment and Erosion Damage	3
EXISTING OR PROPOSED WORKS OF IMPROVEMENT	3
WORKS OF IMPROVEMENT TO BE INSTALLED	3
Land Treatment Measures	3
Structural Measures	4
Floodwater Prevention for Blairstown	4
Floodwater Prevention for Newton	4
BENEFITS FROM WORKS OF IMPROVEMENT	4
COMPARISON OF BENEFITS AND COSTS	5
ACCOMPLISHING THE PLAN	5
Land Treatment Measures	5
Structural Measures	6
PROVISIONS FOR OPERATIONS AND MAINTENANCE	7
COST SHARING	7.1
CONFORMANCE OF PLAN TO FEDERAL LAWS AND REGULATIONS	7.1
SECTION 2 - INVESTIGATIONS, ANALYSES, SUPPORTING TABLES AND FIGURES	8
INVESTIGATIONS AND ANALYSES	8
Hydrology and Hydraulics	8
Geological	8
Economic	9
Investigation by U.S. Fish and Wildlife Service	9
TABLES	
Table 1 - Estimated Project Installation Cost	11+12
Table 2 - Estimated Structure Cost Distribution	13
Table 3 - Floodwater Retarding Structures	14
Table 3A- Stream Channel Improvements	15
Table 4 - Summary of Physical Data	16
Table 5 - Summary of Plan Data	17
Table 6 - Annual Costs	18
Table 7 - Monetary Benefit From Structural Measures	19
Table 8 - Benefit Cost Analysis	20
Table 9 - Cost Sharing Summary	21
FIGURES	
1 - Problem Location Map	
2 - Planned Structural Measures Map	
3 - Typical Stream Cross Section	
4 - Section of Typical Floodwater Retarding Structure	

SECTION 1 - THE WATERSHED WORK PLAN

PAULINS KILL WATERSHED

Warren and Sussex Counties, New Jersey

September, 1958

SUMMARY OF PLAN

The Paulins Kill Watershed is located in Warren and Sussex Counties, New Jersey. The watershed area is 171 square miles (109,440 acres). The Paulins Kill is a tributary of the Delaware River.

The Sponsoring Local Organizations of the Paulins Kill Watershed are the Warren County Soil Conservation District, Sussex County Soil Conservation District, the Township of Blairstown, and the town of Newton.

The primary watershed problems are flooding at Blairstown and Newton. To reduce damages in these areas, the plan proposes widening and realignment of approximately 2 miles of the Paulins Kill channel in the vicinity of Blairstown, and construction of four floodwater retarding structures above Newton. In addition to the structural measures, the plan also proposes an accelerated land treatment program for protection of the entire watershed.

It is planned to complete this proposed watershed program within a five year period at a total estimated installation cost of \$667,819. This estimated total cost includes \$331,359 for the installation of structural works of improvement and \$336,460 for establishing land treatment measures for watershed protection. The \$336,460 for establishing land treatment measures includes \$58,620 for technical assistance, of which \$26,805 is from P.L. 566 funds and \$31,805 from "Other", which includes P. L. 46 and ACP. Of the total estimated cost of installing structural measures, \$320,459 will be borne by the Federal Government and \$10,900 will be borne by local interests.

The Sponsoring Local Organizations have agreed to assume responsibility for operation and maintenance of the structural measures. The estimated average annual cost of operation and maintenance is \$2,755. The Sponsoring Local Organization will be responsible for preparing, letting and administering construction contracts, and providing necessary easements and rights-of-way.

The proposed program, when completed, will reduce flood damages by approximately 100% at Blairstown and 89% at Newton from a storm of the magnitude of the 1955 storm.

The average annual benefit resulting from installation of the channel improvements at Blairstown is estimated at \$12,034 as compared to the average annual cost of \$9,899. The benefit-cost ratio for the channel improvements is 1.2 : 1.

The average annual benefit resulting from installation of the four floodwater retarding structures at Newton is estimated at \$6,483 as compared to the average annual cost of \$4,539. The benefit-cost ratio for the floodwater retarding structure is 1.4 : 1.

DESCRIPTION OF THE WATERSHED

The Paulins Kill meanders 42 miles from the headwaters above Newton to the mouth at Columbia on the Delaware River.

The soils of the Paulins Kill watershed are made up of materials associated with two major divisions of surrounding bedrock, a limestone valley and a slate upland. The Kill, with the exception of a few miles northeast of Blairstown, cuts through a low-lying limestone valley with its tributaries arising in the higher slate sections.

The limestone valley consists of gravelly and stratified sandy terraces and knobs with interspersed limestone ridges and outcrops. Much of this land is in cultivation. The soils of the floodplain are developed on recent alluvial deposits of silts and fine sands and are generally in pasture or weeds.

The soils associated with the limey tills on the sloping limestone ridges are generally well suited to production of corn, grain, and alfalfa.

The upland slate is mostly rolling to steep. The soils developed in this area are used mainly for dairying, and some for commercial fruit production.

The major farm enterprise is dairy. Thirty-five percent of the farms are under co-operative agreement with the Warren and Sussex County Soil Conservation Districts.

Farmers utilize the water along the Kill for stock water and, to some extent, for irrigation. Water power is utilized at Marksboro and Paulina.

Recreation plays a very important part in the overall economy. There are approximately 1,900 acres in public and private lakes and streams. Table IV summarizes the physical data.

The map (figure 1) shows the location and boundaries of the watershed and other features such as towns, main stems and tributaries, locations of proposed structural measures, U.S.G.S. Gage at Blairstown, and major water bodies.

WATERSHED PROBLEMS

FLOODWATER DAMAGE

Blairstown - At Blairstown major floods occurred in 1903, 1920, 1938 and 1955. Basements and first floors of many houses and commercial establishments were inundated. In the 1955 flood, 48 homes, 41 commercial buildings, several churches, and the fire company were damaged by floodwater. Damages from this flood amounted to \$369,000. No accurate records of damages were available for the other major floods. It is estimated that the 1938 flood would cause \$60,000 damage if it were to occur today and if the 1920 and 1903 floods were repeated, the damages would approximate \$200,000 for each occurrence.

Newton - At Newton floods occurred in 1903, 1905, 1920, and 1955. During the 1955 flood, 10 houses and 14 commercial buildings were damaged by floodwaters to the extent of \$139,000.

The Hyper-Humus Plant below Newton reported \$60,000 damage from the 1955 flood. Channel improvement is needed to substantially reduce these damages, but only one beneficiary is involved, and induced damages would occur at Lafayette.

Branchville - Flooding at Branchville during the 1955 storm was caused by the failure of two dams above the town. These dams are non-existent today so this flooding will not reoccur.

Other Flooding - The narrow flood plain of the Paulins Kill is flooded frequently. It is used mostly for pasture. Protection measures are not economically justified at this time.

The 1955 storm caused spot damage to bridges, highways, and railroads throughout the watershed. The damages were insufficient to justify remedial measures under present procedures.

Flooding occurs at Columbia as a result of high stages on the Delaware River but that problem is beyond the scope of this plan.

SEDIMENT AND EROSION DAMAGE

Sedimentation and sediment damages are of minor importance in the watershed.

Streambank erosion is light to moderate, occurring generally throughout the main stem and its tributaries. Little flood plain scour occurs. Upland gullying is minor. Sheet erosion is generally light due to the good cover of woods, and grass.

EXISTING OR PROPOSED WORKS OF IMPROVEMENT

There are no existing or proposed works of improvement under other authorities which will affect, or be affected by, the works of improvement included in this plan.

WORKS OF IMPROVEMENT TO BE INSTALLED

This plan is designed to meet the needs of the Paulins Kill Watershed for erosion and floodwater reduction.

Works of improvement include land treatment measures, stream channel improvements, and floodwater retarding structures.

LAND TREATMENT MEASURES

Land treatment measures for watershed protection are being applied by landowners at a satisfactory rate through co-operative agreements with the Warren County and Sussex County Soil Conservation Districts.

Approximately 35% of the farms in the Paulins Kill watershed are under co-operative agreements with districts. About 95% of the land in farms above the planned floodwater retarding structures is in conservation plans.

Land treatment measures for watershed protection which are to be installed on an accelerated basis during the period of this plan are listed with units and amounts in Table 1, and consist of the following: contour farming, cover cropping, strip cropping, conservation crop rotation, pasture planting, diversion-construction, waterway development, pond construction, tree planting, timber stand improvement, harvest cutting, grazing control (fences), and skid trails and logging roads.

STRUCTURAL MEASURES

Flood Protection for Blairstown - Approximately 2 miles of the main channel will be improved by deepening, widening, and realigning between the U.S.G.S. Gaging Station near Blairstown and the Lambert bridge.

About 800 feet of dike 3-4 feet high will be constructed along the west side of the river above Blairstown.

A dike approximately 3 feet high will be constructed along each side of Blair Creek starting at the Route #94 bridge and extending upstream approximately 275 feet. This is a desirable alternative to increasing the size of the main channel.

A grade control structure will be constructed below the Route #94 bridge on Blair Creek to protect this bridge from undercutting.

A typical section of the channel improvement is shown in Figure 3.

Flood Protection for Newton - Four floodwater retarding structures will be constructed on the tributaries above Newton. These structures will be compacted earth fill dams with a pipe spillway and an emergency spillway. The outlets of these structures will be uncontrolled (no gates or valves), with sufficient capacity to pass runoff from greater than a 100 year frequency storm. The detention storage behind each of the structures will be equivalent to approximately 4" of runoff from the contributing watershed. Approximately 47% of the contributing drainage area above the damage center of Newton will be behind these reservoirs. About 184 acre feet of floodwater storage will be provided.

A cross section of a typical floodwater retarding structure is shown in Figure 4.

Planned structural measures are shown on map (figure 2).

BENEFITS FROM WORKS OF IMPROVEMENT

The proposed stream channel improvements at Blairstown will provide protection against a flood comparable to the flood of August 1955.

The floodwater retarding structures above Newton will provide approximately 89% protection from a flood comparable to that of August 1955. Some flooding will still occur at Darlington Fabrics and at the intersection of Clinton and Water streets, but the floodwater retarding structures will lower

the peaks of a storm of the 1955 magnitude by approximately two feet. In addition to the flood protection provided at Newton, additional benefits will be provided at the Hyper-Humus Plant by reducing peak flows by about 10%. These benefits were not evaluated.

COMPARISON OF BENEFITS AND COSTS

The average annual benefit from the stream channel improvements at Blairstown is \$12,034 and the average annual cost is \$9,899, giving a benefit-cost ratio of 1.2 : 1.

The average annual benefit from the four floodwater retarding structures above Newton is \$6,483 and the average annual cost is \$4,539, a benefit-cost ratio of 1.4 : 1.

ACCOMPLISHING THE PLAN

LAND TREATMENT MEASURES FOR WATERSHED PROTECTION

Land treatment measures as itemized in Table 1 will be established by the landowners in co-operation with the Warren and Sussex County Soil Conservation Districts. The cost of applying these measures will be borne by the individual farmers, assisted through ACP cost sharing and technical assistance by SCS and State Forest Service. It is expected that the owners and operators will be reimbursed for a portion of this cost through the existing Agricultural Conservation Program. The cost of the land treatment measures is shown in Table 1.

The governing bodies of the Soil Conservation Districts will, through an accelerated information program, and individual contacts, encourage the landowners and operators within the watershed to adopt and carry out soil and water conservation plans on their farms. The Soil Conservation Districts will also solicit and use the services and assistance of all available Federal, State and local agencies and organizations in accomplishing the application of land treatment measures.

The Soil Conservation Service will provide technical assistance in the preparation and application of soil and water conservation plans.

The forest land treatment measures will be installed by the landowners with technical services furnished by the New Jersey Department of Conservation and Economic Development in co-operation with the U.S. Forest Service.

The Extension Service will provide leadership in carrying out the accelerated educational program through press releases and other means of disseminating information. The education and information program will be aimed at helping to achieve an understanding and appreciation of the plan and participation in the program by the landowners and operators in the watershed and other interested people and groups in order to facilitate the full accomplishment of the project.

The Farmers Home Administration will have loan services available to those eligible for the installation of soil and water conservation measures.

The Agricultural Conservation Program Service, through the county ACP Committee will co-operate with the governing bodies of the Soil Conservation Districts in selecting for cost-sharing those conservation practices which will accomplish the conservation objectives in the shortest possible time.

STRUCTURAL MEASURES

Federal assistance for carrying out the works of improvement as described in this work plan will be provided under the authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress, 68 Stat. 66, as amended by Public Law 1018, 84th Congress, 70 Stat. 1088).

The Soil Conservation Service will provide installation services, including surveys, site investigations, layout, design, preparation of specifications, supervision of construction, and perform related forms of assistance for installation of the channel improvements and floodwater retarding structures.

The Sponsoring Local Organization will obtain easements and rights-of-way for structural measures at no cost to the Federal Government. Included in easements and rights-of-way are all necessary relocation or reconstruction of fences, public utilities, bridges and culverts.

The township of Blirstown and the Warren County Soil Conservation District will obtain easements and rights-of-way for the channel improvements.

The town of Newton and the Sussex County Soil Conservation District will obtain easements and rights-of-way for the floodwater retarding structures.

The Sponsoring Local Organization will obtain the necessary administrative and clerical services for the preparation, advertising, awarding, execution and administration of construction contracts for all structural measures.

Construction contracts will be handled by the township of Blirstown for the channel improvements and by the town of Newton for the floodwater retarding structures.

The Sponsoring Local Organization will be responsible for securing the necessary construction permits from the N.J. Division of Water Policy and Supply.

The stream channel improvements near Blirstown will be handled as one construction unit and the four floodwater retarding structures above Newton as a second construction unit.

It is anticipated that the stream channel improvements will start in September, 1959 and be completed in March, 1960.

It is anticipated that the floodwater retarding structures above Newton will be started in June, 1959 and completed in November, 1959.

All land easements and rights-of-way for each construction unit must be obtained before construction starts in that unit. The local organizations must have agreements to carry out needed soil and water conservation measures on at least 50% of the land above each reservoir before construction can be started.

PROVISIONS FOR OPERATIONS AND MAINTENANCE

Land treatment measures for watershed protection will be installed, operated and maintained by landowners and operators under agreements with the Warren and Sussex County Soil Conservation Districts.

The township of Blirstown will assume responsibility for operation and maintenance of the stream channel improvements at Blirstown, the estimated average annual cost being \$2,375. Maintenance costs will be paid for from funds budgeted and held in reserve for that purpose.

The town of Newton will assume responsibility for operations and maintenance of the four floodwater retarding sites above Newton, at an estimated average annual cost of \$380. Funds will be budgeted and held in reserve for that purpose.

Specific maintenance agreements will be executed prior to issuance of invitations to bid.

The township of Blirstown will appoint an official who will make an inspection of the stream channel improvements at least once a year and more often with unusual flood conditions.

The town of Newton will appoint an official who will make an inspection of the four floodwater retarding structures at least once a year and more often with unusual flood conditions.

Joint inspections will be made by these local officials with the Soil Conservation Service representative at least once a year.

Written inspection reports will be prepared by the local officials at least once a year and will be made available at any time to the Soil Conservation Service.

The State Conservationist will determine what maintenance measures are needed and he will so notify the Sponsoring Local Organizations responsible for the maintenance. He will provide design information and technical assistance that may be available and needed to the Sponsoring Local Organizations in performing works of maintenance. The U.S. Fish and Wildlife Service and the New Jersey Division of Fish and Game will be invited to participate in the determination of means of carrying out maintenance works in the channel so as to result in the least damage to fishing.

COST SHARING

The estimated cost of accelerating technical assistance for land treatment measures for watershed protection is \$58,610, of which \$26,805 will be from Public Law 566 funds and \$31,805 from other funds.

The construction cost, estimated at \$244,160 and the cost of installation services, estimated at \$76,299, will be paid for from Public Law 566 funds.

The cost of land, easements and rights-of-way and administration of contracts, estimated at \$10,900 will be borne by non-federal interests. They also will bear the cost of operations and maintenance, capitalized at \$78,138.

The local people will pay the cost of installing land treatment measures for watershed protection, estimated at \$277,850. It is anticipated that there will be ACP cost sharing on this amount.

The total cost of the proposed project, including capitalized operation and maintenance costs, is estimated to be \$745,957. Of this amount, \$347,264 (46.6%) will be paid for from Public Law 566 funds and \$398,693 (53.4%) from other funds.

This proposed project is justified entirely on the basis of flood prevention. There are no other cost sharing features other than is indicated above.

CONFORMANCE OF PLAN TO FEDERAL LAWS AND REGULATIONS

The planned works of improvement do not conflict with the comprehensive development of the Delaware River by the Interstate Commission on the Delaware River Basin, for which the Paulins Kill is a contributory watershed.

The proposed project does not provide for bringing new land into agricultural production.

SECTION 2 - INVESTIGATIONS, ANALYSES, SUPPORTING

TABLES AND MAPS

INVESTIGATIONS AND ANALYSIS

HYDROLOGY AND HYDRAULICS

Stream Channel Improvements - Soil cover complex curve numbers were calculated for the watershed above the stream gage at Blairstown and for each of the tributaries and contributing areas within the area of stream channel improvements. The discharge hydrograph for the Paulins Kill at the Blairstown gage was plotted and the hydrographs from the tributaries and contributing areas were added to get the discharge downstream. The peak discharges were reduced to account for the control of runoff expected from the land treatment measures by refiguring the soil cover complex curve numbers with the land treatment measures applied. Water surface profiles will be obtained prior to construction of stream channel improvements. The design provides for a channel with a top width of approximately 220 feet. Within this 220 feet is a low flow channel having a capacity of about 770 cfs, a bottom width of about 75 feet and a depth of 3 feet. Figure 3 shows a typical section of the proposed channel.

Floodwater Retarding Structures - A soil cover complex curve was calculated for the watersheds above the dam sites. The runoff was determined for antecedent moisture II, curve number 65 and antecedent moisture condition III, curve number 83, using the rainfall-runoff relationship expressed in ES-1001. The structures are classified as Class C.

The principal spillway was designed to take runoff from a 6 hour rainfall to be expected once in 100 years, with antecedent moisture condition III. The emergency spillway was designed to take runoff from 1.5 times 6 hour point rainfall, with antecedent moisture condition III. The elevation of the top of the dam was determined by using runoff from 2.5 times 6 hour point rainfall, with antecedent moisture condition II and passing it through the emergency spillway.

Inflow hydrographs were prepared using the simplified method of computing design hydrographs as given by the dimensionless composite hydrograph procedure.

Routing through the structures was done by the short cut method developed by M. L. Culp in 1953. The tubes and risers were planned to release the water above the sediment pool in from 6 to 29 hours. The total watershed area above the lower damage point is 2.25 sq. miles. The area above the structures is 1.06 sq. miles. The peak discharges for the 1955 storm through the two control points were measured by cross sections based on known high water marks and applying the weir flow formula. A typical section of a floodwater retarding structure is shown in Figure 4.

GEOLOGICAL INVESTIGATIONS

Stream Channel Improvements - Borings were made along this section of the river approximately 300 feet apart. All of the excavation will be in unconsolidated alluvial or glacial fluvial material. There are two outcrops of a massive limestone on the north west side, but they were not encountered on the opposite side of the river. There are no apparent geological reasons why the stream channel improvements would not be feasible.

Floodwater Retarding Structures - All sites are located north of the terminal moraine of the Wisconsin Glacier, on the Martinsburg slate (Ordovician). The soil mantle is thin and many outcrops were noted. There were no geological features noted that would make these sites impossible.

Musgrave's soil loss formula was used to compute the sediment pool size for a 50 year life, with 75% of the sediment source areas under control.

ECONOMIC INVESTIGATIONS

A survey for damages was made for the entire length of the Paulins Kill. Damage schedules were made out for practically all of the damage areas.

The historical method was used for evaluation, using the 1955 storm as a key flood. Stage damage relationships were arrived at with the hydrologist.

All costs except operation and maintenance were based on 1958 prices. Benefits and operation and maintenance costs were long termed, Federal costs were amortized at $2\frac{1}{2}\%$ interest for 50 years.

Indirect damages were estimated to be 20% in the Newton area and 15% in the Blairstown area. Rerouting of traffic, decreases in values of real estate, loss of telephone communications, medical expenses, business losses to industry and commercial establishments contribute to the indirect damages.

OTHER INVESTIGATIONS

A detailed study was made by the U. S. Fish and Wildlife Service in co-operation with the New Jersey Division of Fish and Game, to determine to what extent the channel improvement at Blairstown would affect fishing, and to determine what measures might be incorporated into the design to mitigate damages to fish.

Conclusions reached were:

1. The effects of land treatment measures throughout the watershed and the flood retarding structures above Newton will be neutral or broadly beneficial from the fish and wildlife standpoint.

2. The contemplated two miles or less of channelization below Blairstown will result in serious deterioration of the fishery habitat in this reach.

The following recommendations were made:

1. In developing final plans to provide flood control through increasing the channel capacity of Paulins Kill River in the two-mile reach immediately below Blairstown, maximum consideration be given to the alternate approaches suggested in the report which would preserve to the greatest possible extent the natural features of the stream.

2. Construction work be scheduled and completed between November 30 and April 15 and during no other period.

3. The possibility of utilizing silt traps to reduce sedimentation damages during the initial construction period be investigated by the Soil Conservation Service with the assistance of fish and game agencies, prior to construction.

4. In the event that a favorable alternate plan can not be developed in lieu of stream channelization as initially proposed, damages to fishery habitat between Blairstown and Three Bridges be mitigated by construction of not more than 50 stream improvement devices (deflector dams), this number to be reduced in accordance with pools retained or created naturally in this reach under "with-the-project" conditions as determined by the New Jersey Division of Fish and Game.

5. A system of continuous liaison be established between the Soil Conservation Service and the New Jersey Division of Fish and Game to work out methods of reducing the possible detrimental effects of continuing maintenance operations.

6. Present public access for fishing on the Paulins Kill system be retained and, if possible, expanded.

The reconnaissance made by the U.S. Forest Service and Department of Conservation and Economic Development showed that about 55% of the watershed is in forest cover. The forest acreage of the watershed is all privately-owned (75 percent is in private non-farm ownership) except for about 1,000 acres of State Forest and Park land. The forest land is mostly located on the ridges and steeper slopes in the upland areas,

Past use of the forest land is responsible for present stand-size conditions. Most of the stands were heavily cut about 40 years ago for lumber, mine props and railroad ties. A large percentage of the resulting stands are immature but have high potentials for the production of future timber crops.

Table 1

ESTIMATED PROJECT INSTALLATION COST

Paulins Kill Watershed, New Jersey

<u>Installation Cost Item</u>	<u>Unit</u>	<u>No. to be Applied</u>	<u>Estimated Costs</u>		<u>Total</u>
			<u>P.L. 566</u>	<u>Other</u>	
LAND TREATMENT FOR WATERSHED PROTECTION					
Soil Conservation Service					
Contour Farming	Ac.	1033		\$ 12,000	\$ 12,000
Cover Cropping	Ac.	595		8,000	8,000
Strip Cropping	Ac.	1025		24,000	24,000
Conservation Crop Rotation	Ac.	1240		40,000	40,000
Pasture Planting	Ac.	1590		110,000	110,000
Diversion Construction	Mi.	13.5		9,000	9,000
Waterway Development	Ac.	8.3		2,000	2,000
Pond Construction	No.	25		50,000	50,000
Technical Assistance	\$		\$ 20,000	25,000	45,000
SCS Sub-Total			\$ 20,000	\$280,000	\$300,000
• LAND TREATMENT -- Forest Service					
Preparation of Mgt. Plans	Plan	200		1,000	1,000
Tree Planting	Acre	200		9,600	9,600
Hydrologic Cultural Operations					
A. Timber Stand Improvement	Acre	350		8,750	8,750
B. Harvest Cutting	Acre	500			
Woodland Grazing Control	Mile	5		3,200	3,200
Skid Trail & Log Road Erosion Control	Mile	3		300	300
Technical Assistance			6,805	6,805	13,610
Forest Service Sub-Total			6,805	29,655	36,460

Table 1 - Continued

ESTIMATED PROJECT INSTALLATION COST

Paulins Kill Watershed, New Jersey

<u>Installation Cost Item</u>	<u>Unit</u>	<u>No. to be Applied</u>	<u>Estimated Costs</u>		<u>Total</u>
			<u>P.L. 566</u>	<u>Other</u>	
<u>STRUCTURAL MEASURES</u>					
Soil Conservation Service					
Floodwater Retarding Structures	No.	4	\$ 87,360		\$ 87,360
Stream Channel Improvements	Mi.	2	156,800		156,800
Sub-Total - Construction			\$244,160		\$244,160
<u>INSTALLATION SERVICES</u>					
Soil Conservation Service					
Engineering			\$ 48,832		\$ 48,832
Other			27,467		27,467
SCS Sub-Total			\$ 76,299		\$ 76,299
<u>OTHER COSTS</u>					
Land Easements and Rights-of-way				\$ 8,400	\$ 8,400
Administration of Contracts				2,500	2,500
Sub-Total - Other				\$ 10,900	\$ 10,900
TOTAL STRUCTURAL MEASURES			\$320,459	\$ 10,900	\$331,359
TOTAL PROJECT			\$347,264	\$320,555	\$667,819
<u>SUMMARY</u>					
Sub-Total SCS			\$340,459	\$290,900	\$631,359
Sub-Total FS			6,805	29,655	36,460
TOTAL PROJECT			\$347,264	\$320,555	\$667,819

Price Base 1958

Table 2

ESTIMATED STRUCTURE COST DISTRIBUTION

Paulins Kill Watershed, New Jersey

Price Base 1958

Structure	P.L. 566 Installation Cost				Installation Cost		Total Non-Federal	Estimated Total Cost	
	Construction Engineering Estimate	Contingencies	Installation Engineering	Other Services	Total Federal	Other Administration of Contracts			Basements and R/W
1	13,000	1,560	2,912	1,637	19,109	225	600	825	19,934
2	30,000	3,600	6,720	3,780	44,100	225	600	825	44,925
3	20,000	2,400	4,480	2,520	29,400	225	600	825	30,225
4	15,000	1,800	3,360	1,890	22,050	225	600	825	22,875
SUBTOTAL	78,000	9,360	17,472	9,827	114,659	900	2,400	3,300	117,959
Stream Channel Improvements	140,000	16,800	31,360	17,640	205,800	1,600	6,000	7,600	213,400
GRAND TOTAL	218,000	25,160	48,832	27,467	320,459	2,500	8,400	10,900	331,359

Table 3

STRUCTURE DATA

FLOODWATER RETARDING STRUCTURES

Paulins Kill Watershed, N.J.

Item	Unit	Floodwater Retarding Structure				Total
		1	2	3	4	
Drainage Area	sq. mi.	0.27	0.42	0.21	0.16	1.06
Storage Capacity						
Sediment	ac.ft.	8.03	13.65	6.32	5.0	33.00
Floodwater detention	ac.ft.	46.9	71.49	35.3	30.5	184.19
TOTAL	ac.ft.	54.93	85.14	41.62	35.5	217.19
Surface Area						
Sediment Pool	ac.	2.81	2.98	1.29	1.81	8.89
Floodwater detention pool	ac.	6.05	7.18	3.23	4.17	20.63
Maximum Height of Dam	ft.	18	24	28	25	
Volume of Fill	cu.yds.	9,273	34,592	17,839	10,130	
Emergency Spillway						
Type		earth	earth	earth	earth	
Frequency of use	years	100	100	100	100	
Design storm rainfall						
Duration	hours	6	6	6	6	
Total	inches	28.75	28.75	28.75	28.75	
Bottom width	ft.	200	140	120	120	
Design depth	ft.	4	4	4	4	
Design capacity	c.f.s.	4,353	2,951	2,449	2,579	
Freeboard	ft.	2	2	2	2	
Total capacity	c.f.s.	7,547	5,117	4,246	4,472	
Principal Spillway						
Capacity	c.f.s.	44	27	33	30	
Capacity Equivalents						
Sediment Volume	inches	0.56	0.61	0.57	0.59	
Detention Volume	inches	3.31	3.18	3.16	3.59	
Spillway Storage	inches	1.87	1.82	1.32	3.38	
Class of Structure		c	c	c	c	

Table 3

STRUCTURE DATA

FLOODWATER RETARDING STRUCTURES

Paulins Kill Watershed, N.J.

Item	Unit	Floodwater Retarding Structure				Total
		1	2	3	4	
Drainage Area	sq. mi.	0.27	0.42	0.21	0.16	1.06
Storage Capacity						
Sediment	ac.ft.	8.03	13.65	6.32	5.0	33.00
Floodwater detention	ac.ft.	46.9	71.49	35.3	30.5	184.19
TOTAL	ac.ft.	54.93	85.14	41.62	35.5	217.19
Surface Area						
Sediment Pool	ac.	2.81	2.98	1.29	1.81	8.89
Floodwater detention pool	ac.	6.05	7.18	3.23	4.17	20.63
Maximum Height of Dam	ft.	18	24	28	25	
Volume of Fill	cu.yds.	9,273	34,592	17,839	10,130	
Emergency Spillway						
Type		earth	earth	earth	earth	
Frequency of use	years	100	100	100	100	
Design storm rainfall						
Duration	hours	6	6	6	6	
Total	inches	28.75	28.75	28.75	28.75	
Bottom width	ft.	200	140	120	120	
Design depth	ft.	4	4	4	4	
Design capacity	c.f.s.	4,353	2,951	2,449	2,579	
Freeboard	ft.	2	2	2	2	
Total capacity	c.f.s.	7,547	5,117	4,246	4,472	
Principal Spillway						
Capacity	c.f.s.	44	27	33	30	
Capacity Equivalents						
Sediment Volume	inches	0.56	0.61	0.57	0.59	
Detention Volume	inches	3.31	3.18	3.16	3.59	
Spillway Storage	inches	1.87	1.82	1.32	3.38	
Class of Structure		c	c	c	c	

Table 3A

STRUCTURAL DATA

Stream Channel Improvements

Paulins Kill Watershed, New Jersey

Channel Designation	Water-shed area sq.m	Planned Channel Capacity cfs/sq.m	Ave. bottom width ft.	Ave. side slope	Ave. depth ft.	Ave. fall ft/m	Ave. velocity in channel ft/sec	Volume of excavation cu.yds.
Blainstown reach of the Paulins Kill								
566+88 to 440+03	149	68.5	see Fig.3	1.5:1	see Fig.3	6.6	6.0 ±	210,000

Table 4

SUMMARY OF PHYSICAL DATA
Paulins Kill Watershed, New Jersey

<u>Item</u>	<u>Unit</u>	<u>Quantity Without Project</u>	<u>Quantity With Project</u>
Watershed area	Sq.Mi.	171	171
Watershed area	Ac.	109,440	109,440
Area of cropland	Ac.	28,282	24,609
Area of grassland	Ac.	19,392	21,439
Area of woodland	Ac.	58,950	59,968
Other	Ac.	2,816	3,424
Overflow area subject to damage	Ac.	1,116	1,076

Temperature Range -30° F. to 101° F.

Growing Season -- April 15 - October 15

Average Annual Rainfall -- 44 inches

Average Annual Surface Runoff -- 21 inches

Table 5

SUMMARY OF PLAN DATA

Paulins Kill Watershed, New Jersey

Item	Unit	Quantity
Years to complete project	Year	5
Total structural measures		
Public Law 566	Dollar	320,459
Other	Dollar	10,900
Annual O & M cost		
Non-Federal	Dollar	2,755
Average annual monetary benefits	Dollar	18,517
Non-agricultural	Percent	100
Structural Measures		
Floodwater retarding structures	No.	4
Sediment pool	Ac.	8.89
Detention pool	Ac.	20.63
Watershed area above structures	Ac.	678
Reduction of floodwater damage	Dollar (ave.annual)	18,517
By Land Treatment Measures	Percent	10
By Structural Measures	Percent	90

Table 6
ANNUAL COSTS

Paulins Kill Watershed, New Jersey

Price Base 1958

Measures	Amortization of 1/ Installation Cost	Operation and Maintenance Costs 2/	Total
Floodwater Retarding Structures	4,159	380	4,539
Stream Channel Improvement	7,521	2,375	9,896
TOTAL	11,680	2,755	14,435

1/ 50 yrs. @ 2 1/2% interest

2/ Long term projected prices

Table 7

MONETARY BENEFIT FROM STRUCTURAL MEASURES

Pankins Kill Watershed, New Jersey

Price Base 1958

Item	Estimated Average Annual Damage			Average Annual Monetary Benefits
	Without Project	After Land Treatment for W/S Protection	With Project	
Non Agricultural Commercial, Residences and Municipal	18,429	16,575	708	15,867
Indirect Damage	3,086	2,792	142	2,650
Total, All Damages	21,515	19,367	850	18,517

Table 8

BENEFIT COST ANALYSIS

Paulins Kill Watershed, New Jersey

Price Base 1958

Measures	AVERAGE ANNUAL BENEFITS			Average Annual Cost	Benefit Cost Ratio
	Flood Prevention		Total		
	Floodwater	Indirect			
Floodwater Retard- ing Structures	5,403	1,080	6,483	4,539	1.4
Stream Channel Improvements	10,464	1,570	12,034	9,899	1.2
GRAND TOTAL	15,867	2,650	18,517	14,438	1.3

Table 9

COST SHARING SUMMARY

Paulins Kill Watershed, New Jersey

Price Base 1958

Type of Cost	P.L. 566 Funds		Other		Total Cost	
	Dollars	Pct	Dollars	Pct	Dollars	Pct
Land Treatment						
Non-Federal Land for Watershed Protection	26,805	8.0	309,655	92.0	336,460	45.
Structural Measures						
Installation Flood Prevention	320,459	96.7	10,900	3.3	331,359	44.
Total Installation Cost	347,264	52.0	320,555	48.0	667,819	89.
<u>1/</u> Operation and Maintenance			78,138	100.0	78,138	10.
Total Structural Cost	320,459	78.3	89,038	21.7	409,497	54.
TOTAL PROJECT COST	347,264	46.6	398,693	53.4	745,957	100.

1/ Capitalized value O & M @ $2\frac{1}{2}\%$

FIGURE 3.
TYPICAL STREAM CROSS SECTION

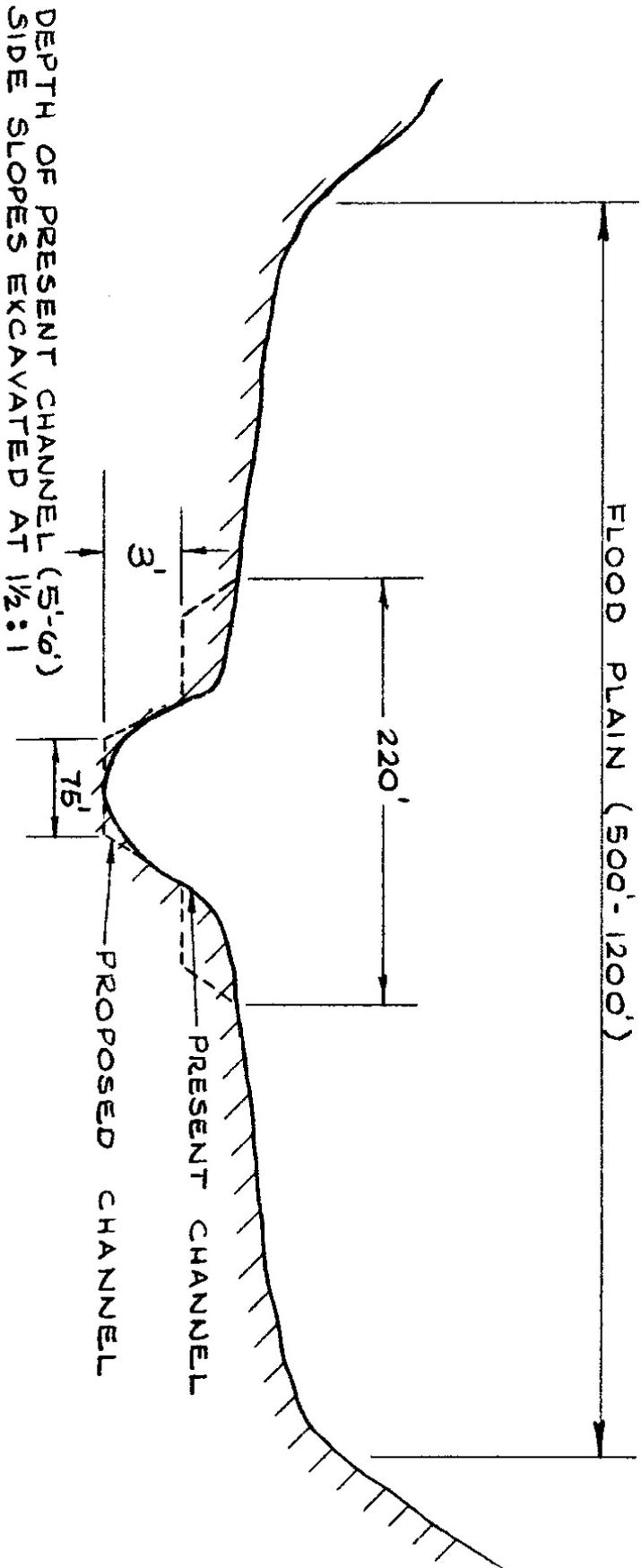
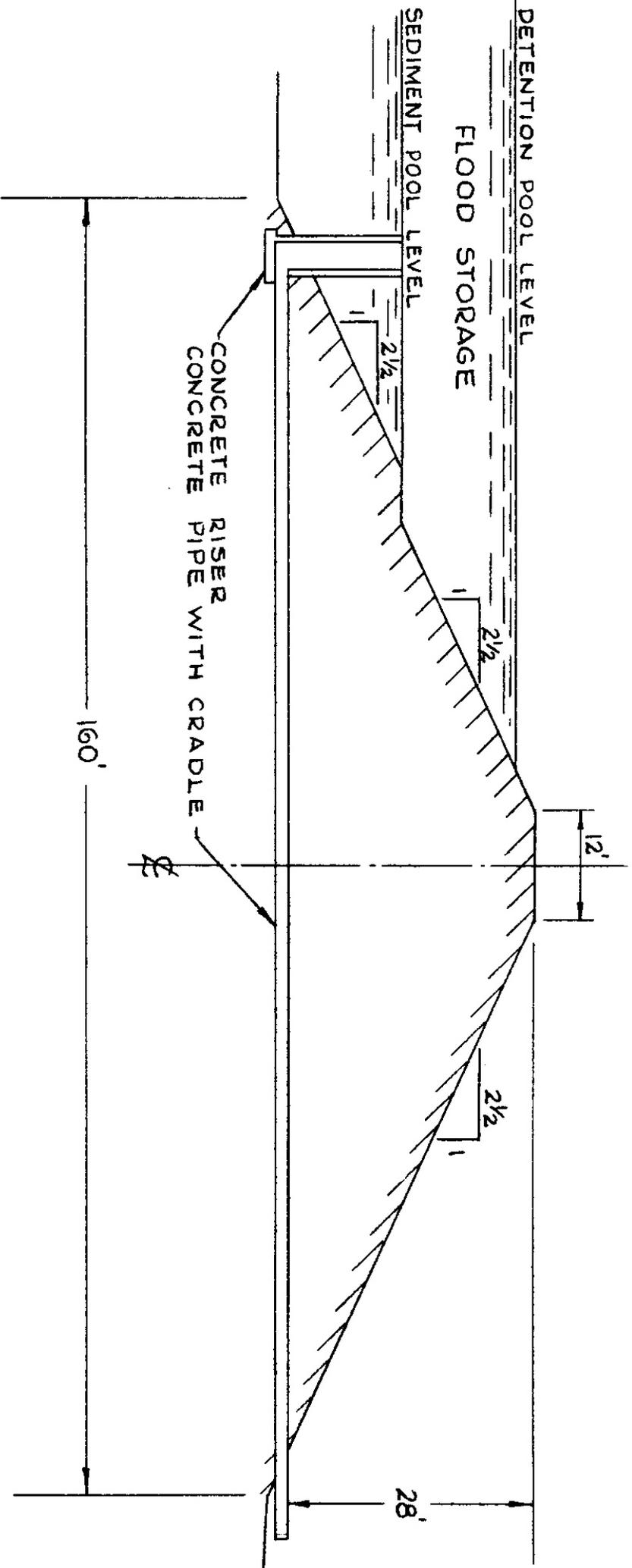


FIGURE 4.
SECTION OF TYPICAL FLOODWATER RETARDING STRUCTURE



PAULINS KILL WATERSHED

WORK PLAN AGREEMENT

between the

Warren County Soil Conservation District
Local Organization

Sussex County Soil Conservation District
Local Organization

Township of Blirstown
Local Organization

Town of Newton
Local Organization

(hereinafter referred to as the Sponsoring Local Organization)

in the

State of New Jersey

and the

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

Whereas, application has heretofore been made to the Secretary of Agriculture by the Sponsoring Local Organization for assistance in preparing a plan for works of improvement for the Paulins Kill Watershed, State of New Jersey, under the authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress; 68 Stat. 666), as amended by the Act of August 7, 1956 (Public Law 1018, 84th Congress; 70 Stat. 1088); and

Whereas, the responsibility for administration of the Watershed Protection and Flood Prevention Act, as amended, has been assigned by the Secretary of Agriculture to the Service; and

Whereas, there has been developed through the co-operative efforts of the Sponsoring Local Organization and the Service a mutually satisfactory plan for works of improvement for the Paulins Kill Watershed, State of New Jersey, hereinafter referred to as the watershed work plan, which plan is annexed to and made a part of this agreement;

Now, therefore, in view of the foregoing considerations, the Sponsoring Local Organization and the Secretary of Agriculture, through the Service, hereby agree on the watershed work plan, and further agree that the works of improvement as set forth in said plan will be installed within 5 years, and operated and maintained substantially in accordance with the terms, conditions, and stipulations provided for therein.

It is mutually agreed that in installing and operating and maintaining the works of improvement described in the watershed work plan:

1. The Sponsoring Local Organization will acquire without cost to the Federal Government such land, easements, or rights-of-way as will be needed in connection with the works of improvement. (Estimated cost \$8,400.)
2. The Sponsoring Local Organization will acquire or provide assurance that landowners or water users have acquired such water rights pursuant to State law as may be needed in the installation and operation of the works of improvement.
3. The percentages of construction costs of structural measures to be paid by the Sponsoring Local Organization and by the Service are as follows:

<u>Works of Improvement</u>	<u>Sponsoring Local Organization (Percent)</u>	<u>Service (Percent)</u>	<u>Estimated Construction Cost (Dollars)</u>
Floodwater Retarding Structures	0	100	87,360
Stream Channel Improvements	0	100	156,800
Total	0	100	244,160

4. The Service will bear the cost of all installation services applicable to works of improvement for flood prevention. (Estimated cost \$76,299.)
5. The Sponsoring Local Organization will bear the costs of administering contracts. (Estimated cost \$2,500.)
6. The Sponsoring Local Organization will obtain agreements from owners of not less than 50% of the land above each floodwater retarding structure that they will carry out conservation farm or ranch plans on their land.
7. The Sponsoring Local Organization will provide assistance to landowners and operators to assure the installation of the land treatment measures shown in the watershed work plan.
8. The Sponsoring Local Organization will encourage landowners and operators to operate and maintain the land treatment measures for the protection and improvement of the watershed.

9. The Sponsoring Local Organization will be responsible for the operation and maintenance of the structural works of improvement by actually performing the work or arranging for such work in accordance with agreements to be entered into prior to issuing invitations to bid for construction work.
10. The costs shown in this agreement represent preliminary estimates. In finally determining the costs to be borne by the parties hereto, the actual costs incurred in the installation of works of improvement will be used.
11. This agreement does not constitute a financial document to serve as a basis for the obligation of Federal funds, and financial and other assistance to be furnished by the Service in carrying out the watershed work plan is contingent on the appropriation of funds for this purpose.

Where there is a Federal contribution to the construction cost of works of improvement, a separate agreement in connection with each construction contract will be entered into between the Service and the Sponsoring Local Organization prior to the issuance of the invitation to bid. Such agreement will set forth in detail the financial and working arrangements and other conditions that are applicable to the specific works of improvement.

12. The watershed work plan may be amended or revised and this agreement may be modified or terminated, only by mutual agreement of the parties hereto.
13. No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

Mr. Theodore Sager Meth
Meth & Wood
11 Commerce Street
Newark, New Jersey 07102

Blair Academy
Attorney
1/29/69

(201) 642-5535 (office)

1st Supplemental Watershed Work Plan

(hereinafter referred to as the Sponsoring Local Organization)

State of New Jersey

and the

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

Whereas, the Watershed Work Plan Agreement for the Paulins Kill Watershed, State of New Jersey, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 10th day of November, 1958; and

Whereas, in order to carry out the Watershed Work Plan for said watershed, it has become necessary to modify said Watershed Work Plan 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:

1. Floodwater retarding structure No. 1 referred to in the Watershed Work Plan is hereby deleted from the Work Plan.

2. Floodwater retarding structure No. 2 referred to in the Watershed Work Plan is hereby moved downstream sufficient to include the drainage area formerly behind structure Site No. 1.

The need for the change is based on the availability of fill material. There was some question as to the availability of material for earth fill at structure Site #1. This presents no problem in the new site.

Warren County Soil Conservation District
Local Organization

By: Alfred F Bayles
Title: Chairman
Date: Oct 8, 1958

The signing of this agreement was authorized by a resolution of the governing body of the Warren County S. C. D.
Local Organization

adopted at a meeting held on Oct 8, 1958

C. Fred Lorenz
(Secretary, Local Organization)
Date: Oct 8, 1958

Sussex County Soil Conservation District
Local Organization

By: J. P. Blackwell
Title: Chairman
Date: Oct. 7, 1958

The signing of this agreement was authorized by a resolution of the governing body of the Sussex County S. C. D.
Local Organization

adopted at a meeting held on Sept 3, 1958

Warren J. Wilch
(Secretary, Local Organization)
Date: Oct. 7, 1958

The purpose remains the same. The drainage area controlled by relocated structure No. 2 is .86 sq.mi. as compared to .69 sq.mi. for structures No. 1 and 2 referred to in the Work Plan. The cost will be essentially the same.

3. Tables 1, 2, and 3, referred to in the Watershed Work Plan are modified to conform with Tables 1, 2, and 3, (Revised,) which are attached to and made a part of this supplemental agreement.

The Sponsoring Local Organization and the Service further agree to all other terms, conditions and stipulations of said Watershed Work Plan Agreement not modified herein.

The purpose remains the same. The drainage area controlled by relocated structure No. 2 is .86 sq.mi. as compared to .69 sq.mi. for structures No. 1 and 2 referred to in the Work Plan. The cost will be essentially the same.

3. Tables 1, 2, and 3, referred to in the Watershed Work Plan are modified to conform with Tables 1, 2, and 3, (Revised,) which are attached to and made a part of this supplemental agreement.

The Sponsoring Local Organization and the Service further agree to all other terms, conditions and stipulations of said Watershed Work Plan Agreement not modified herein.

Table 1

ESTIMATED PROJECT INSTALLATION COST

Paulins Kill Watershed, New Jersey

<u>Installation Cost Item</u>	<u>Unit</u>	<u>No. to be Applied</u>	<u>Estimated Costs</u>		<u>Total</u>
			<u>P.L. 566</u>	<u>Other</u>	
LAND TREATMENT FOR WATERSHED PROTECTION					
Soil Conservation Service					
Contour Farming	Acre	1033		12,000	12,000
Cover Cropping	Acre	595		8,000	8,000
Strip Cropping	Acre	1025		24,000	24,000
Conservation Crop Rotation	Acre	1240		40,000	40,000
Pasture Planting	Acre	1590		110,000	110,000
Diversion Construction	Mile	13.5		9,000	9,000
Waterway Development	Acre	8.3		2,000	2,000
Pond Construction	No.	25		50,000	50,000
Technical Assistance	\$		20,000	25,000	45,000
<u>SCS Sub-Total</u>			<u>\$20,000</u>	<u>\$280,000</u>	<u>\$300,000</u>
Forest Service					
Preparation of Mgt. Plans	Plan	200		1,000	1,000
Tree Planting	Acre	200		9,600	9,600
Hydrologic Cultural Operations					
A. Timber Stand Improvement	Acre	350		8,750	8,750
B. Harvest Cutting	Acre	500			
Woodland Grazing Control	Mile	5		3,200	3,200
Skid Trail & Log Road	Mile	3		300	300
Erosion Control					
Technical Assistance	\$		6,805	6,805	13,610
<u>Forest Service Sub-Total</u>			<u>\$ 6,805</u>	<u>\$ 29,655</u>	<u>\$ 36,460</u>
<u>TOTAL LAND TREATMENT</u>			<u>\$26,805</u>	<u>\$309,655</u>	<u>\$336,460</u>

Continued

272

Table 1 - Continued

ESTIMATED PROJECT INSTALLATION COST

Paulins Kill Watershed, New Jersey

<u>Installation Cost Item</u>	<u>Unit</u>	<u>No. to be Estimated Costs</u>		<u>Total</u>
		<u>Applied</u>	<u>P.L. 566</u>	
<u>STRUCTURAL MEASURES</u>				
Soil Conservation Service				
Floodwater Retarding Structures	No.	3	92,960	92,960
Stream Channel Improvements	Mile	2	156,800	156,800
Sub-Total - Construction			249,760	249,760
<u>INSTALLATION SERVICES</u>				
Soil Conservation Service				
Engineering			49,952	49,952
Other			26,968	26,968
SCS Sub-Total			76,920	76,920
<u>OTHER COSTS</u>				
Land Easements and Rights-of-way			8,400	8,400
Administration of Contracts			2,500	2,500
Sub-Total - Other			10,900	10,900
TOTAL STRUCTURAL MEASURES			326,680	10,900 337,580 ✓
TOTAL PROJECT			353,485	320,555 674,040
<u>SUMMARY</u>				
Sub-Total	SCS		346,680	290,900 637,580
Sub-Total	FS		6,805	29,655 36,460
TOTAL PROJECT			353,485	320,555 674,040
Price Base	1958			272

May, 1959

ESTIMATED STRUCTURE COST DISTRIBUTION

Paulins Kill Watershed, New Jersey

Price Base 1958
(Dollars)

Table 2

Structure	P. L. 566 Installation Cost				Total Federal	Installation Cost		Total Non-Federal	Estimated Total Cost
	Construction Estimate	Contingencies	Installation Engineering	Services Other		Other Administration of Contracts	Assessments and R/M		
Floodwater Retarding Structures	48,000	5,760	10,752	4,918	69,430	450	1,200	1,650	71,080
	20,000	2,400	4,480	2,520	29,400	225	600	825	30,255
	15,000	1,800	3,360	1,890	22,050	225	600	825	22,875
SUBTOTAL	83,000	9,960	18,592	9,328	120,880	900	2,400	3,300	124,180
Stream Channel Improvements	140,000	16,800	31,360	17,640	205,800	1,600	6,000	7,600	213,400
GRAND TOTAL	223,000	26,760	49,952	26,968	326,680	2,500	8,400	10,900	337,580

Table 3

STRUCTURE DATA

FLOODWATER RETARDING STRUCTURE

Paulins Kill Watershed, N.J.

Item	Unit	Floodwater Retarding Structure
		2
Drainage Area	sq. mi.	0.86
Storage Capacity		
Sediment	ac.ft.	27.0
Floodwater detention	ac.ft.	104.8
TOTAL	ac.ft.	131.8
Surface Area		
Sediment Pool	acre	5.7
Floodwater detention pool	acre	13.1
Maximum Height of Dam	feet	28
Volume of Fill	cu.yds.	46,000
Emergency Spillway		
Type	-	earth
Frequency of use	years	100
Design Storm Rainfall		
Duration	hours	6
Total	inches	27
Bottom width	feet	95
Design depth	feet	2.3
Design capacity	c.f.s.	1,050
Freeboard	feet	4.2
Total capacity	c.f.s.	4,820
Principal Spillway		
Capacity	c.f.s.	145
Capacity Equivalents		
Sediment Volume	inches	0.59
Detention Volume	inches	2.29
Spillway Storage	inches	1.72
Class of Structure	-	C

SUPPLEMENTAL WATERSHED WORK PLAN AGREEMENT

between the

Warren County Soil Conservation District
Local Organization

Sussex County Soil Conservation District
Local Organization

Township of Blainstown
Local Organization

Town of Newton
Local Organization

(hereinafter referred to as the Sponsoring Local Organization)

State of New Jersey

and the

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

Whereas, the Watershed Work Plan Agreement for the Paulins Kill Watershed, State of New Jersey, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 10th day of November, 1958; and

Whereas, in order to carry out the Watershed Work Plan for said watershed, it has become necessary to modify said Watershed Work Plan 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:

1. Floodwater retarding structure No. 1 referred to in the Watershed Work Plan is hereby deleted from the Work Plan.

2. Floodwater retarding structure No. 2 referred to in the Watershed Work Plan is hereby moved downstream sufficient to include the drainage area formerly behind structure Site No. 1.

The need for the change is based on the availability of fill material. There was some question as to the availability of material for earth fill at structure Site #1. This presents no problem in the new site.

The purpose remains the same. The drainage area controlled by relocated structure No. 2 is .86 sq.mi. as compared to .69 sq.mi. for structures No. 1 and 2 referred to in the Work Plan. The cost will be essentially the same.

3. Tables 1, 2, and 3, referred to in the Watershed Work Plan are modified to conform with Tables 1, 2, and 3, (Revised,) which are attached to and made a part of this supplemental agreement.

The Sponsoring Local Organization and the Service further agree to all other terms, conditions and stipulations of said Watershed Work Plan Agreement not modified herein.

Warren County Soil Conservation District
(Local Organization)

By: Albert F. Boyles

Title: C. Chairman

Date: June 10, 1959

This action authorized
at an official meeting

on June 10, 1959

at Belvidere, N.J.

Attest: C. Fred Loney
(Secretary)

Sussex County Soil Conservation District
(Local Organization)

By: J.A. Blakely

Title: Chairman

Date: June 1, 1959

This action authorized
at an official meeting

on June 1, 1959

at Newton, N.J.

Attest: Sharon J. Skelch
(Secretary)

Township of Blainstown
(Local Organization)

By: Herman Atwell

Title: Mayor

Date: June 12, 1959

This action authorized
at an official meeting

on 6/12/59

at Blainstown, N.J.

Attest: Robert Chamberlain
(Secretary)

Town of Newton
(Local Organization)

By: Walter Woodhead, Jr.

Title: Mayor

Date: June 8, 1959

This action authorized
at an official meeting

on June 8, 1959

at Newton, N.J.

Attest: Charles Matthews
(Secretary)

Soil Conservation Service
United States Department of Agriculture

By: Walter E. Fisher

Title: State Conservationist

Date: June 17, 1959

Warren County Soil Conservation District
(Local Organization)

By: Albert F. Bayles
Title: Chairman
Date: June 10, 1959

This action authorized
at an official meeting
on June 10, 1959
at Belvidere, N.J.
Attest: C. Fred Lorenzo
(Secretary)

Sussex County Soil Conservation District
(Local Organization)

By: J. A. Blakely
Title: Chairman
Date: June 1, 1959

This action authorized
at an official meeting
on June 1, 1959
at Newton, N.J.
Attest: Harvey J. Welsh
(Secretary)

Township of Blainstown
(Local Organization)

By: Harvey J. Welsh
Title: Mayor
Date: June 12, 1959

This action authorized
at an official meeting
on 6/12/59
at Blainstown - N.J.
Attest: Robert Chamberlain
(Secretary)

Town of Newton
(Local Organization)

By: William Woodland, Jr.
Title: Mayor
Date: June 8, 1959

This action authorized
at an official meeting
on June 8, 1959
at Newton, N.J.
Attest: Charles Matthews
(Secretary)

Soil Conservation Service
United States Department of Agriculture

By: Walden Lee Jolley
Title: State Conservationist
Date: June 17, 1959

SECOND SUPPLEMENTAL WATERSHED WORK PLAN AGREEMENT

between the

Essex County Soil Conservation District
Local Organization

Sussex County Soil Conservation District
Local Organization

Township of Blairstown
Local Organization

Town of Fenton
Local Organization

(hereinafter referred to as the Sponsoring Local Organization)

State of New Jersey

and the

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

Whereas, the Watershed Work Plan Agreement for the Paulins Kill Watershed, State of New Jersey, executed by the Sponsoring Local Organizations named therein and the Service, became effective on the 10th day of November, 1958; and

Whereas, a Supplemental Watershed Work Plan Agreement became effective on the 17th day of June, 1959; and

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

Now therefore, the Sponsoring Local Organizations and the Service hereby agree upon the following modification of the terms, conditions, and stipulations of said Watershed Work Plan Agreement, as supplemented:

1. The time required to install the works of improvement, as stated in the first paragraph on page II of the Work Plan, is extended by 3 years to November 10, 1966.

Years to complete project, as shown in Table 3 of the Work Plan, is changed to 8.

The need for this change is due to the delay in obtaining all easements required in connection with the channel improvement work.

The Sponsoring Local Organizations and the Service further agree to all other terms, conditions and stipulations of said Watershed Work Plan Agreement not modified previously or herein.

Warren County Soil Conservation District
(Local Organization)

By: (Sgd.) Leonard C. Queitzsch

Title: Chairman

Date: May 28, 1964

This action authorized at an official meeting of the governing body

on May 28, 1964

at Belvidere, N. J.

Attest: (Sgd.) Harry E. Serfass
(Secretary)

Surry County Soil Conservation District
(Local Organization)

By: (Sgd.) Herman Kleindienst

Title: Chairman

Date: June 9, 1964

This action authorized at an official meeting of the governing body

on June 8, 1964

at Newton, N. J.

Attest: (Sgd.) Warren J. Welsh
(Secretary)

Township of Blairstown
(Local Organization)

By: (Sgd.) Frank C. Cook

Title: Mayor

Date: May 21, 1964

This action authorized at an official meeting of the governing body

on May 21, 1964

at Blairstown, N. J.

Attest: (Sgd.) W. E. Travers
Township (Secretary) Clerk

Town of Newton
(Local Organization)

By: (Sgd.) Charles Mathews

Title: Mayor

Date: June 22, 1964

This action authorized at an official meeting of the governing body

on June 22, 1964

at Newton, N. J.

Attest: (Sgd.) Marion R. DeVore
Township (Secretary) Clerk

Soil Conservation Service
United States Department of Agriculture

By: (Sgd.) Selden Lee Tinsley

Title: State Conservationist

Date: July 1, 1964

PAULINS KILL WATERSHED

SUPPLEMENTAL WATERSHED WORK PLAN NO. 3

Warren & Sussex Counties

New Jersey

FEBRUARY 1973

SUPPLEMENTAL WATERSHED WORK PLAN #3

PAULINS KILL WATERSHED

Warren and Sussex Counties, New Jersey

January 1973

Prepared under Authority of the
Watershed Protection and Flood Prevention Act
(P.L. 566, 83rd Cong., 68 Stat. 666, as amended)

Prepared by:

Warren County Soil Conservation District
Sussex County Soil Conservation District
Township of Blairstown
Town of Newton

Assisted by:

The United States Department of Agriculture
Soil Conservation Service
Forest Service

SUPPLEMENTAL WATERSHED WORK PLAN #3

PAULINS KILL WATERSHED

WARREN AND SUSSEX COUNTIES, NEW JERSEY

JANUARY 1973

NEED FOR THE SUPPLEMENT

Since construction of three single purpose dams above Newton was completed in May 1963, no further structural measures have been built. The Township of Blirstown has experienced problems with obtaining all land rights required for the work. Even though most of the land rights were obtained, they received objections to the plan from a major land holder and fish interests. Alternative proposals were presented, but did not overcome the objections, and the Township did not see fit to use powers of eminent domain available to it and the Soil Conservation District. They were concerned about excessive court and land costs.

In early 1971 a complete reevaluation of all channels was carried out according to instructions from Washington (Watershed Memo 108). Design changes were made and a proposal was presented to the local people during the summer of 1971. Two other presentations were made at their July 12, 1972 meeting and the Blirstown Town Council decided to abandon the project because:

- "1. It would be impossible to obtain the easements required.
2. The cost to the Township is more than it could afford.
3. And that the maintaining of the system would be an economical problem over the years."

Both the Warren County and Sussex County Soil Conservation Districts agree that the project should be closed out.

EFFECTS OF THE PROPOSAL

Without these works of improvement the Township of Blirstown will receive no protection from the 100 year storm and will continue to receive minor damage from storms as frequent as once every 5 years.

Since the land treatment phase of the project and the structural measures in the Newton area have been completed, nothing will remain to be completed after this Supplement is signed.

TABLE 5 - ESTIMATED AVERAGE ANNUAL FLOOD DAMAGE REDUCTION BENEFITS

Paulins Kill Watershed, New Jersey

(Dollars)^{1/}

ITEM	Estimated Average Annual Damage		Damage Reduction Benefit
	With Project	Without Project	
Floodwater Non Agricultural	5604	555	5049
Indirect	1066	105	961
TOTAL	6670	660	6010

^{1/} Price Base October 1958

February 1973

TABLE 6 - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Paulins Kill Watershed, New Jersey

(Dollars)

Evaluation Unit	Average Annual Benefits ^{1/}			Avg Annual Cost ^{3/}	Benefit Cost Ratio
	Damage Reduction	Secondary	Total		
Floodwater Retarding Structures 2,3,4	5,893	590	6,483	5,040	1.3 to 1.0
Project Administration	--	-	--	110	--
GRAND TOTAL	5,893 ^{2/}	590	6,483	5,150	1.3 to 1.0

1/ Price Base - October 1958

2/ In addition, it is estimated that land treatment measures will provide flood damage reduction benefits of \$117 annually

3/ From Table 4

Warren County Soil Conservation District
Local Organization

Sussex County Soil Conservation District
Local Organization

Township of Blairstown
Local Organization

Town of Newton
Local Organization

(hereinafter referred to as the Sponsoring Local Organization)

State of New Jersey

and the

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

Whereas, the Watershed Work Plan Agreement for Paulins Kill Watershed, State of New Jersey, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 10th day of November 1958; and

Whereas, Supplemental Watershed Work Plan Agreements for Paulins Kill Watershed, State of New Jersey, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 17th day of June 1959 and the 1st day of July 1964; and

Whereas, in order to carry out the Watershed Work Plan 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 as supplemented by deleting the structural measures proposed for the protection of Blairstown for said watershed;

Whereas, it has been found necessary to modify the Watershed Work Plan as supplemented, to terminate funding and close out the project for said watershed;

Whereas, a Supplemental Watershed Work Plan which modifies the Watershed Work Plan dated November 1958 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:

1. Channel modification proposed for the Paulins Kill through Blirstown is hereby deleted from the plan.
2. As of the signing of this agreement by the State Conservationist, the project will be officially closed out and funding terminated.

The Sponsoring Local Organization and the Service further agree to all other terms, conditions, and stipulations of said Watershed Work Plan Agreement not modified herein.

Township of Blairstown
Local Organization
By Frank Kelly
Title Mayor
Stillwater Rd.
Address Blairstown, N.J. 07825
Zip Code
Date 5/9/73

The signing of this agreement was authorized by a resolution of the governing body of the Township of Blairstown adopted at a meeting held on April 23, 1973

Paul Strickland
(Secretary of Local Organization)
Stillwater Rd.
Address Blairstown, N.J. 07825
Zip Code

Town of Newton
Local Organization
By Charles Yarnall
Title Mayor
39 Trinity Street
Address Newton, N.J. 07860
Zip Code
Date May 29, 1973

The signing of this agreement was authorized by a resolution of the governing body of the Town of Newton adopted at a meeting held on May 29, 1973

Quinn
(Secretary of Local Organization)
39 Trinity Street
Address Newton, N.J. 07860
Zip Code
Date May 29, 1973

Warren County Soil Conservation District
Local Organization

By *Norman J. Schmelzer*

Title Chairman

Address RD #1
ASBURY, NJ 08802
Zip Code

Date 5/9/73

The signing of this agreement was authorized by a resolution of the governing body of the Warren County Soil Conservation District
Local Organization

adopted at a meeting held on Dec 13 1972

Norman C. Schmelzer
(Secretary of Local Organization)

Address Stiger Street
Hackettstown, N.J. 07840
Zip Code

Date May 7 1973

Sussex County Soil Conservation District
Local Organization

By *Charles R. ...*

Title V. Chairman

Address 46 Jones
RD #3 Sussex NJ 07461
Zip Code

Date 2/6/73

The signing of this agreement was authorized by a resolution of the governing body of the Sussex County Soil Conservation District

adopted at a meeting held on Feb 6 1973

Charles R. ...
Secretary of Local Organization)

Address RD #1 Box 13
Newton, N.J. 07860
Zip Code

Date 2/6/73

Soil Conservation Service
United States Department of Agriculture

By W. J. Tucker

Date June 29, 1973

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TABLE I - PROJECT INSTALLATION COST

Paulins Kill Watershed, New Jersey

Installation Cost Item	Unit	Number Applied	Costs - (Dollars) ^{1/}		
			P.L. 566	Other	Total
<u>LAND TREATMENT</u>					
Soil Conservation Service					
Cropland	Acres	9,680		987,200	987,200
Technical Assistance			20,000	88,800	108,800
Subtotal SCS			20,000	1,076,000	1,096,000
Forest Service					
Woodland				44,600	44,600
Technical Assistance			14,718	14,682	29,400
Subtotal FS			14,718	59,282	74,000
TOTAL LAND TREATMENT			34,718	1,135,282	1,170,000
<u>STRUCTURAL MEASURES</u>					
Soil Conservation Service					
Floodwater Retarding Structures	No.	3	99,007		99,007
Subtotal Construction			99,007		99,007
<u>INSTALLATION SERVICES</u>					
Soil Conservation Service					
Engineering			51,000		51,000
Other			121,908		121,908
Subtotal SCS			172,908		172,908
<u>OTHER COSTS</u>					
Land Easements and Rights-of-way				7,100	7,100
				1,500	1,500
Subtotal Other				8,600	8,600
<u>SUMMARY</u>					
Subtotal SCS			291,915	1,084,600	1,376,515
Subtotal FS			14,718	59,282	74,000
TOTAL PROJECT			306,633	1,143,882	1,450,515

Price Base - As Built

March 1974 - FINAL

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

Project in brief. Authorized-November 10, 1958. Estimated completion--in fiscal year 1962. Area--109,000 acres (practically all privately owned). Sponsors--Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown, and Town of Newton. Estimated total cost--\$674,000 (\$353,000 Federal and \$321,000 non federal). Principal problems--floodwater damage to urban property in Blairstown and Newton. Land ownership and use--15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in land treatment. About 6% of the planned land treatment measures have been applied. Of the 643 farmers in the project, 230 are district cooperators and 144 have basic farm conservation plans. Estimated cost of land treatment is \$336,000.

Progress in structural measures. No contracts have been let to date. Total estimated Federal cost of all structures is \$327,000.

Progress in obtaining easements and rights-of-way. Easements and rights-of-way, valued at \$1,800, have been obtained by the Town of Newton from three landowners on two of the three floodwater retarding structures, planned at an estimated Federal cost of \$91,000. This work was done by Dana Whitman, Town Manager. Easements and rights-of-way valued at \$4,000 have been obtained by the Township of Blairstown from twelve of the fourteen landowners for two miles of channel improvements. This work was done by Herman Shotwell, Mayor, Archie Roth, Lawyer, and Wayne Dumont, State Senator.

Effectiveness of project proved. No installations have been made on which to base an evaluation.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The project in brief. Authorized-November 10, 1958. Estimated completion--fiscal year 1962. Area--109,000 acres (practically all privately owned.) Sponsors--Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown and Town of Newton. Estimated total cost--\$674,000 (\$353,000 Federal and \$321,000 non-Federal.) Principal problems--floodwater damage to urban property in Blairstown and Newton. Land ownership and use--15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in land treatment. About 20% of the planned land treatment measures have been applied. Of the 643 farmers in the project, 249 are district cooperators and 162 have basic farm conservation plans. Estimated cost of land treatment is \$336,000.

Progress in structural measures. A contract has been let for 2 of the 3 floodwater retarding structures in the amount of \$68,000, about 3% less than the work plan estimates. These are about 75% complete. Total estimated Federal construction cost of all structural measures is \$249,760.

Progress in obtaining easements and rights-of-way. Easements and rights-of-way, valued at \$1,800, have been obtained from 3 landowners on 2 of the 3 floodwater retarding structures. This work was done by Dana Whitman, Newton Town Manager. Easements and rights-of-way, valued at \$5,000 have been obtained from 13 of the 14 landowners for the 2 miles of channel improvement planned. This work was done by Herman Shotwell, Mayor of Blairstown, Archie Roth, Attorney and Wayne Dumont, State Senator. Steps have been taken by the Paulins Kill Watershed Association to initiate condemnation proceedings against the 1 remaining landowner on the Paulins Kill channel.

Effectiveness of project proved. No installations have been completed on which to make evaluations.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The project in brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1963. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in land treatment. About 40% of the planned land treatment measures have been applied. Of the 643 farmers in the project, 268 are district cooperators and 178 have basic farm conservation plans. Estimated cost of land treatment is \$336,000.

Progress in structural measures. A contract has been let for two of the three floodwater retarding structures in the amount of \$75,000, about 6% more than the work plan estimates. This is about 99% completed. Total estimated Federal cost of all floodwater retarding structures and stream channel improvements is \$327,000.

Progress in obtaining easements and rights-of-way. Easements and rights-of-way valued at \$6,800 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown; Archie Roth, attorney for Blairstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover two of the three floodwater retarding structures and half of the two miles of channel improvement planned at an estimated Federal cost of \$206,000.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The project in brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1965. Area - 109,000 acres (practically all privately owned.) Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal.) Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in land treatment. About 130% of the planned land treatment measures have been applied. There are 297 district cooperators covering 38,702 acres and 202 basic plans on 25,220 acres. Estimated cost of the applied land treatment measures is \$482,000. Principal measures are contour farming, 1,473 acres, 143% of planned; strip cropping, 1,730 acres, 169% of planned; cover cropping, 943 acres, 158% of planned; field diversions, 10.8 miles, 80% of planned; waterway development, 5 acres, 60% of planned; and pond construction, 79 each, 316% of planned.

Forestry accomplishments to date consist of 78.5 M. trees planted on 68 acres, 60 acres of woodland grazing control (1 mile fencing,) 549 acres marked for improvement or harvest, 182 acres harvested, 146 acres of hydrologic stand improvement and 46 management plans involving 2,493 acres. Technical assistance was provided to 142 landowners and one operator.

Progress in structural measures. The three floodwater retarding structures are completed at a cost of \$102,226, including vegetative cover. Work on the two miles of channel through the Town of Blairstown is delayed because of one easement.

Progress in obtaining easements and rights-of-way. Easements and rights-of-way valued at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown, Archie Roth, attorney for Blairstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover three of the three floodwater retarding structures and half of the two miles of channel improvement. The channel improvement work is being delayed because of reluctance of the local organization to condemn land of one property owner.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The project in brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1963. Area - 109,000 acres (practically all privately owned.) Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal.) Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in land treatment. About 116% of the planned land treatment measures have been applied. There are 290 district cooperators covering 36,477 acres and 192 basic plans on 24,832 acres. Estimated cost of the applied land treatment measures is \$374,000. Principal measures are contour farming, 1,324 acres, 128% of planned; strip cropping, 1,560 acres, 152% of planned; cover cropping, 875 acres, 147% of planned; field diversions, 10.8 miles, 80% of planned; waterway development, 4 acres, 48% of planned; and pond construction, 52 each, 208% of planned.

Forestry accomplishments to date consist of 74 M. trees planted on 59 acres, 60 acres of woodland grazing control (1 mile fencing), 434 acres marked for improvement or harvest, 170 acres harvested, 103 acres of hydrologic stand improvement and 35 management plans involving 2,270 acres. Technical assistance was provided to 111 landowners and one operator.

Progress in structural measures. Two of the three floodwater retarding structures are completed at a cost of \$81,652, including vegetative cover. The third site will be placed in construction in September 1962. Work on the two miles of channel through the Town of Blairstown is delayed because of one easement.

Progress in obtaining easements and rights-of-way. Easements and rights-of-way valued at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown; Archie Roth, attorney for Blairstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover three of the three floodwater retarding structures and half of the two miles of channel improvement. The channel improvement work is being delayed because of reluctance of the local organization to condemn land of one property owner.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project in Brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1968. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in Land Treatment. About 130% of the planned land treatment measures have been applied. There are 315 district cooperators covering 44,285 acres and 230 basic plans on 29,846 acres. Estimated cost of the applied land treatment measures is \$482,000. Principal measures are contour farming, 1,548 acres, 150% of planned; strip cropping, 1,836 acres, 179% of planned; cover cropping, 1,032 acres, 173% of planned; field diversions, 10.8 miles, 80% of planned; waterway development, 5 acres, 60% of planned; and pond construction, 88 each, 352% of planned.

Forestry accomplishments to date consist of 106.5 M trees planted on 91.5 acres, 60 acres of woodland grazing control (1 mile fencing,) 564 acres marked for improvement or harvest, 349 acres harvested, 146 acres of hydrologic stand improvement and 51 management plans involving 2,518 acres. Technical assistance was provided to 159 landowners and two operators.

Progress in Structural Measures. The three floodwater retarding structures are completed at a cost of \$102,226, including vegetative cover. Work on the two miles of channel through the Town of Blairstown is delayed because of one easement.

Progress in Obtaining Easements and Rights-of-Way. Easements and rights-of-way valued at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown, Archie Roth, attorney for Blairstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three floodwater retarding structures and half of the two miles of channel improvement. The channel improvement work is being delayed because of reluctance of the local organization to condemn land of one property owner.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project in Brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1968. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blirstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blirstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in Land Treatment. There are 305 district cooperators covering 40,900 acres and 205 basic plans on 28,123 acres.

Practices on the land as of June 30, 1966:

Conservation Cropping System - 2,860 acres	Land Clearing - 355 acres
Contour Farming - 1,669 acres	Drainage Main - 132,372 feet
Cover Crops - 1,031 acres	Pasture & Hayland Planting - 5,036 acres
Diversions - 60,521 feet	Stream Channel Imp. - 9,950 feet
Farm Ponds - 121 each	Strip Cropping - 1,780 acres
Grassed Waterways - 12 acres	Drainage Field Ditch - 1,200 feet
Irrigation Storage Reservoirs - 2 each	
Tile Drain - 15,100 feet	

Forestry accomplishments to date consist of 132 M trees planted on 117 acres, 60 acres of woodland grazing control (1 mile fencing), 608 acres marked for improvement or harvest, 362 acres harvested, 146 acres of hydrologic stand improvement and 59 management plans involving 2,568 acres. Technical assistance was provided to 186 landowners and 3 operators.

Progress in Structural Measures. The three floodwater retarding structures are completed at a cost of \$102,226, including vegetative cover. Work on the two miles of channel through the Town of Blirstown is delayed because of one easement.

Progress in Obtaining Easements and Rights-of-Way. Easements and rights-of-way valued at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blirstown, Archie Roth, attorney for Blirstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three floodwater retarding structures and half of the two miles of channel improvement. The channel improvement work is being delayed because one property owner still refuses to grant an easement.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project in Brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1968. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - Floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in Land Treatment. There are 329 district cooperators covering 44,558 acres and 232 basic plans on 29,928 acres.

Practices on the land as of June 30, 1965:

Conservation Cropping System - 2,700 acres

Contour Farming - 1,599 acres

Cover Crops - 916 acres

Diversions - 60,521 feet

Farm Ponds - 114 each

Grassed Waterways - 12 acres

Irrigation Storage Reservoirs - 2 each

Tile Drain - 15,100 feet

Land Clearing - 355 acres

Drainage Main - 132,372 feet

Pasture & Hayland

Planting - 4,751 acres

Stream Channel Imp. - 9,950 feet

Strip Cropping - 1,732 acres

Drainage Field Ditch - 1,200 feet

Forestry accomplishments to date consist of 122 M trees planted on 107 acres, 50 acres of woodland grazing control (1 mile fencing), 589 acres marked for improvement or harvest, 362 acres harvested, 146 acres of hydrologic stand improvement and 54 management plans involving 2,540 acres. Technical assistance was provided to 173 landowners and 3 operators.

Progress in Structural Measures. The three floodwater retarding structures are completed at a cost of \$102,226, including vegetative cover. Work on the two miles of channel through the Town of Blairstown is delayed because of one easement.

Progress in Obtaining Easements and Rights-of-Way. Easements and rights-of-way valued at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown, Archie Roth, attorney for Blairstown; Jayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three floodwater retarding structures and half of the two miles of channel improvement. The channel improvement work is being delayed because one property owner still refuses to grant an easement.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project in Brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1968. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in Land Treatment. There are 332 district cooperators covering 43,220 acres and 233 basic plans on 31,188 acres.

Practices on the land as of June 30, 1967:

Conservation Cropping System - 2,860 acres	Land Clearing - 355 acres
Contour Farming - 1,669 acres	Drainage Main - 132,372 feet
Cover Crops - 1,074 acres	Pasture & Hayland Planting - 5,065 acres
Diversions - 60,521 feet	Stream Channel Imp. - 11,150 feet
Farm Ponds - 126 each	Strip Cropping - 1,823 acres
Grassed Waterways - 12 acres	Drainage Field Ditch - 4,515 feet
Irrigation Storage Reservoirs - 2 each	
Tile Drain - 15,678 feet	

These accomplishments exceed considerably the planned land treatment program.

Forestry accomplishments to date consist of 151 M trees planted on 136 acres, 60 acres of woodland grazing control (1 mile fencing), 623 acres marked for improvement or harvest, 362 acres harvested, 146 acres of hydrologic stand improvement and 73 management plans involving 2,634 acres. Technical assistance was provided to 205 landowners and 3 operators.

Progress in Structural Measures. The three planned floodwater retarding structures are completed at a cost of \$102,226, including vegetative cover. Work on the two miles of channel through the Town of Blairstown is delayed because of one easement. Construction of the channel is scheduled to start next spring.

Progress in Obtaining Easements and Rights-of-Way. Easements and rights-of-way valued at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown, Archie Roth, attorney for Blairstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three flood water retarding structures and half of the two miles of channel improvement. The remaining easements are being resolved with some realignment of the channel.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project in Brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1970. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blirstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blirstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in Land Treatment. There are 331 district cooperators covering 42,859 acres and 238 basic plans on 31,947 acres.

Practices on the land as of June 30, 1968:

Conservation Cropping System - 2,880 acres	Drainage Main - 129,512 feet
Contour Farming - 1,669 acres	Pasture & Hayland Planting - 5,065 acres
Cover Crops - 1,074 acres	Stream Channel Improvement - 11,150 feet
Diversions - 60,521 feet	Strip Cropping - 1,943 acres
Farm Ponds - 129 each	Drainage Field Ditch - 4,515 feet
Grassed Waterways - 12 acres	
Irrigation Storage Reservoirs - 2 each	
Tile Drain - 15,678 feet	
Land Clearing - 355 acres	

These accomplishments exceed considerably the planned land treatment program.

Forestry accomplishments to date consist of 168 M trees planted on 153 acres, 65 acres of woodland grazing control (1.25 mile fencing), 841 acres marked for improvement or harvest, 516 acres harvested, 160 acres of hydrologic stand improvement and 86 management plans involving 3,253 acres. Technical assistance was provided to 235 landowners.

Progress in Structural Measures. The three planned floodwater retarding structures are completed at a cost of \$102,226, including vegetative cover. Work on the two miles of channel through the Town of Blirstown is delayed because of one easement. Construction of the channel is scheduled to start next spring.

Progress in Obtaining Easements and Rights-of-Way. Easements and rights-of-way valued at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blirstown; Archie Roth, attorney for Blirstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three flood water retarding structures and half of the two miles of channel improvement. The remaining easement is being resolved with some realignment of the channel.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project in Brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1970. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blirstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blirstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in Land Treatment. There are 242 district cooperators covering 34,896 acres and 249 basic plans on 32,640 acres.

Practices on the land as of June 30, 1969:

Conservation Cropping System - 2,838 acres

Contour Farming - 1,674

Diversions - 60,521 feet

Farm Ponds - 139 each

Grassed Waterways - 9 acres

Irrigation Storage Reservoirs - 2 each

Tile Drain - 17,130 feet

Land Clearing - 355 acres

Drainage Main - 133,012 feet

Pasture & Hayland Planting - 4,902

Stream Channel Improvement - 12,055 feet

Strip Cropping - 1,951 acres

Drainage Field Ditch - 4,515 feet

These accomplishments exceed considerably the planned accelerated land treatment program.

Forestry accomplishments to date consist of 192 M trees planted on 176 acres, 65 acres of woodland grazing control (1.25 mile fencing), 1,118 acres marked for improvement or harvest, 576 acres harvested, 196 acres of hydrologic stand improvement and 100 management plans involving 3,858 acres. Technical assistance was provided to 283 landowners.

Progress in Structural Measures. The three planned floodwater retarding structures are completed at a cost of \$102,226, including vegetative cover. Work on the two miles of channel through the Town of Blirstown is delayed because of one easement. Construction of the channel is scheduled to start in fiscal 1971.

Progress in Obtaining Easements and Rights-of-Way. Easements and rights-of-way valued at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blirstown; Archie Roth, attorney for Blirstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three flood water retarding structures and half of the two miles of channel improvement. The remaining easement is being resolved with some realignment and changes in the design of the channel.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project in Brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1970. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in Land Treatment. There are 242 district cooperators covering 34,896 acres and 249 basic plans on 32,640 acres.

Practices on the land as of June 30, 1969:

Conservation Cropping System - 2,838 acres	Drainage Main - 133,012 feet
Contour Farming - 1,674	Pasture & Hayland Planting - 4,902
Diversions - 60,521 feet	Stream Channel Improvement - 12,055 feet
Farm Ponds - 139 each	Strip Cropping - 1,951 acres
Grassed Waterways - 9 acres	Drainage Field Ditch - 4,515 feet
Irrigation Storage Reservoirs - 2 each	
Tile Drain - 17,130 feet	
Land Clearing - 355 acres	

These accomplishments exceed considerably the planned accelerated land treatment program.

Forestry accomplishments to date consist of 192 M trees planted on 176 acres, 65 acres of woodland grazing control (1.25 mile fencing), 1,118 acres marked for improvement or harvest, 576 acres harvested, 196 acres of hydrologic stand improvement and 100 management plans involving 3,858 acres. Technical assistance was provided to 283 landowners.

Progress in Structural Measures. The three planned floodwater retarding structures are completed at a cost of \$102,226, including vegetative cover. Work on the two miles of channel through the Town of Blairstown is delayed because of one easement. Construction of the channel is scheduled to start in fiscal 1971.

Progress in Obtaining Easements and Rights-of-Way. Easements and rights-of-way valued at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown; Archie Roth, attorney for Blairstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three flood water retarding structures and half of the two miles of channel improvement. The remaining easement is being resolved with some realignment and changes in the design of the channel.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project in Brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1970. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15% tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in Land Treatment. There are 242 district cooperators covering 34,896 acres and 249 basic plans on 32,640 acres.

Practices on the land as of June 30, 1969:

Conservation Cropping System - 2,838 acres	Drainage Main - 133,012 feet
Contour Farming - 1,674	Pasture & Hayland Planting - 4,902
Diversions - 60,521 feet	Stream Channel Improvement - 12,055 feet
Farm Ponds - 139 each	Strip Cropping - 1,951 acres
Grassed Waterways - 9 acres	Drainage Field Ditch - 4,515 feet
Irrigation Storage Reservoirs - 2 each	
Tile Drain - 17,130 feet	
Land Clearing - 355 acres	

These accomplishments exceed considerably the planned accelerated land treatment program.

Forestry accomplishments to date consist of 192 M trees planted on 176 acres, 65 acres of woodland grazing control (1.25 mile fencing), 1,118 acres marked for improvement or harvest, 576 acres harvested, 196 acres of hydrologic stand improvement and 100 management plans involving 3,853 acres. Technical assistance was provided to 233 landowners.

Progress in Structural Measures. The three planned floodwater retarding structures are completed at a cost of \$102,226, including vegetative cover. Work on the two miles of channel through the Town of Blairstown is delayed because of one easement. Construction of the channel is scheduled to start in fiscal 1971.

Progress in Obtaining Easements and Rights-of-Way. Easements and rights-of-way valued at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown; Archie Roth, attorney for Blairstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three flood water retarding structures and half of the two miles of channel improvement. The remaining easement is being resolved with some realignment and changes in the design of the channel.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project in Brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1970. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown, and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15 percent tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in Land Treatment. There are 223 district cooperators covering 32,026 acres and 201 basic plans on 25,851 acres.

Some of the practices on the land are:

Conservation Cropping System - 2,888 acres	Drainage Main - 133,012 feet
Contour Farming - 1,674	Pasture & Hayland Planting - 4,930
Diversions - 60,796 feet	Stream Channel Improvement - 12,055 feet
Farm Ponds - 143 each	Strip Cropping - 1,951 acres
Grassed Waterways - 9 acres	Drainage Field Ditch - 4,515 feet
Irrigation Storage Reservoirs - 2 each	
Tile Drain - 17,130 feet	
Land Clearing - 355 acres	

These accomplishments exceed considerably the planned accelerated land treatment program.

Forestry accomplishments to date consist of 217 M trees planted on 202 acres, 65 acres of woodland grazing control (1.25 mile fencing), 1,289 acres marked for improvement or harvest, 576 acres harvested, 237 acres of hydrologic stand improvement and 116 management plans involving 4,089 acres. Technical assistance was provided to 323 landowners.

Progress in Structural Measures. The three planned floodwater retarding structures above Newton have been completed at a cost of \$102,226, including vegetative cover. The original plans for a two stage channel of the Paulins Kill through Blairstown have been changed. Most recent proposals call for levees and flood walls along the Paulins Kill, a concrete channel for Blair Creek and pumping plants for Blairstown. Designs and a work plan supplement will be completed this winter. Construction is scheduled for fiscal year 1972.

Progress in Obtaining Easements and Rights-of-Way. Easements and rights-of-way at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown; Archie Roth, attorney for Blairstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three flood water retarding structures and most of the channel improvement. However, easements for the channel have expired because of a 4 year construction start period. New easements will be obtained when exact locations are known. No problem is anticipated since all were previous grantors.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project in Brief. Authorized - November 10, 1958. Estimated completion - in fiscal year 1974. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15 percent tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress in Land Treatment. There are 227 district cooperators covering 32,402 acres and 203 basic plans on 25,898 acres.

Some of the practices on the land are:

Conservation Cropping System - 2,888 acres	Drainage Main - 133,112 feet
Contour Farming - 1,674	Pasture & Hayland Planting - 5,599
Diversions - 60,796 feet	Stream Channel Improvement - 12,055 feet
Farm Ponds - 143 each	Strip Cropping - 1,951 acres
Grassed Waterways - 9 acres	Drainage Field Ditch - 4,665 feet
Irrigation Storage Reservoirs - 2 each	
Tile Drain - 17,130 feet	
Land Clearing - 355 acres	

These accomplishments exceed considerably the planned accelerated land treatment program.

Forestry accomplishments to date consist of 233 M trees planted on 214 acres, 65 acres of woodland grazing control (1.25 mile fencing), 1,289 acres marked for improvement or harvest, 576 acres harvested, 347 acres of hydrologic stand improvement and 139 management plans involving 5,706 acres. Technical assistance was provided to 323 landowners.

Progress in Structural Measures. The three planned floodwater retarding structures above Newton have been completed at a cost of \$102,226, including vegetative cover. The original plans for a two stage channel of the Paulins Kill through Blairstown have been changed. Most recent proposals call for levees and flood walls along the Paulins Kill, a concrete channel for Blair Creek and pumping plants for Blairstown. Designs and a work plan supplement will be completed this winter. Construction is scheduled for fiscal year 1973.

Progress in Obtaining Easements and Rights-of-Way. Easements and rights-of-way at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown; Archie Roth, attorney for Blairstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three flood water retarding structures and most of the channel improvement. However, easements for the channel have expired because of a 4 year construction start period. New easements will be obtained when exact locations are known. No problem is anticipated since all were previous grantors.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project In Brief. Authorized - November 10, 1958. Completed and closed out June 30, 1973. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown and Town of Newton. Total cost - \$1,446,000 (\$303,700 Federal and \$1,142,300 non-Federal). Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15 percent tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress In Land Treatment. There are 230 district cooperators covering 31,962 acres and 205 basic plans on 25,271 acres.

Some of the practices on the land are:

Conservation Cropping System - 2,888 acres	Drainage Main - 133,112 feet
Contour Farming - 1,670 acres	Pasture & Hayland Planting - 7,680 acres
Diversions - 63,360 feet	Stream Channel Improvement - 12,055 feet
Farm Ponds - 143 each	Strip Cropping - 2,000 acres
Grassed Waterways - 12 acres	Drainage Field Ditch - 4,665 feet
Irrigation Storage Reservoirs - 2 each	
Tile Drain - 17,130 feet	
Land Clearing - 355 acres	

Forestry accomplishments to date consist of 254 M trees planted on 236 acres, 65 acres of woodland grazing control (1.25 mile fencing), 1,259 acres marked for improvement or harvest, 767 acres harvested, 427 acres of hydrologic stand improvement and 166 management plans involving 6,519 acres. Technical assistance was provided to 438 landowners.

These accomplishments considerably exceed the planned accelerated land treatment program.

Progress In Structural Measures. The three planned floodwater retarding structures above Newton have been completed at a cost of \$102,226 including vegetative cover. The original plans for a two stage channel of the Paulins Kill through Blairstown and the more recent proposals calling for levees and flood walls along the Paulins Kill, a concrete channel for Blair Creek and pumping plants for Blairstown have been turned down by Blairstown officials. A close out supplement was signed by all the sponsors by June 30, 1973.

Progress In Obtaining Easements And Rights-of-Way. Easements and rights-of-way at \$7,100 have been obtained from 15 landowners. This work was done by Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three flood water retarding structures.

NEW JERSEY

Paulins Kill Project (P.L. 566) Warren and Sussex Counties

The Project In Brief. Authorized - November 10, 1958. Estimated completion in fiscal year 1974. Area - 109,000 acres (practically all privately owned). Sponsors - Warren County Soil Conservation District, Sussex County Soil Conservation District, Township of Blairstown and Town of Newton. Estimated total cost - \$674,000 (\$353,000 Federal and \$321,000 non-Federal). Principal problems - floodwater damage to urban property in Blairstown and Newton. Land ownership and use - 15 percent tenant operated; 28,000 acres cropland, 19,000 acres grassland, 59,000 acres woodland.

Progress In Land Treatment. There are 230 district cooperators covering 31,962 acres and 205 basic plans on 25,271 acres.

Some of the practices on the land are:

Conservation Cropping System - 2,888 acres	1410	Drainage Main - 133,112 feet	
Contour Farming - 1,674	106	Pasture & Hayland Planting - 5,599	7680
Diversions - 60,796 feet	121100	Stream Channel Improvement - 12,055 feet	
Farm Ponds - 143 each	1500	Strip Cropping - 1,951 acres	1370
Grassed Waterways - 9 acres	12	Drainage Field Ditch - 4,665 feet	
Irrigation Storage Reservoirs - 2 each			
Tile Drain - 17,130 feet			
Land Clearing - 355 acres			

Forestry accomplishments to date consist of 254 M trees planted on 236 acres, 65 acres of woodland grazing control (1.25 mile fencing), 1259 acres marked for improvement or harvest, 715 acres harvested, 427 acres of hydrologic stand improvement and 166 management plans involving 6519 acres. Technical assistance was provided to 438 landowners.

These accomplishments considerably exceed the planned accelerated land treatment program.

Progress In Structural Measures. The three planned floodwater retarding structures above Newton have been completed at a cost of \$102,226 including vegetative cover. The original plans for a two stage channel of the Paulins Kill through Blairstown and the more recent proposals calling for levees and flood walls along the Paulins Kill, a concrete channel for Blair Creek and pumping plants for Blairstown have been turned down by Blairstown officials. A close out supplement was signed by all the sponsors by June 30, 1973.

Progress In Obtaining Easements And Rights-of-Way. Easements and rights-of-way at \$7,100 have been obtained from 15 landowners. This work was done by Herman Shotwell, former Mayor of Blairstown; Archie Roth, attorney for Blairstown; Wayne Dumont, State Senator; and Dana Whitman, Newton Town Manager. The easements and rights-of-way cover the three flood water retarding structures and most of the channel improvement. However, easements for the channel have expired because of a 4 year construction start period. New easements will be obtained when exact locations are known. No problem is anticipated since all were previous grantors.