

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE - Regional Technical Service Center

7600 West Chester Pike, Upper Darby, Pennsylvania 19082

March 15, 1972

TSC TECHNICAL NOTE - WATERSHEDS - UD-29

Re: Economics - Cost Allocation of Multiple-Purpose Channels Serving Other Purposes Than Flood Prevention and Agricultural Drainage

Ref: Watershed Protection Handbook - Paragraph 103.0222
Economic Guide, Chapter 10, page 8.

The purpose of this technical note is to supplement the Watershed Protection Handbook and the Economic Guide by providing a detailed step-by-step description of how to allocate multiple-purpose channel costs based on the "relative conveyance capacity" for each purpose. This procedure is applicable for allocating costs of a multiple-purpose channel improvement measure, by reaches, planned with capacity to serve other than flood prevention or agricultural drainage purposes, either with or without flood prevention and/or agricultural drainage.

Design and cost data will be provided by appropriate personnel.

If both flood prevention and agricultural drainage purposes are involved in determining channel capacity, they will be considered as a single-purpose in the initial allocation. After allocating costs to other purposes and to this combined "single"-purpose, sub-allocations will then be made to flood prevention and agricultural drainage using either the first or second methods as described in paragraph 103.0221 of the Watershed Protection Handbook.

Attached is a step-by-step procedure illustrating the application of the "relative conveyance capacity" cost allocation method using two case examples. Case No. 1 involves flood prevention and one other purpose other than agricultural drainage. Case No. 2 involves flood prevention, agricultural drainage, and one other purpose.

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Attachment

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COST ALLOCATION TO PURPOSES OTHER THAN FLOOD PREVENTION
AND AGRICULTURAL DRAINAGE IN MULTIPLE-PURPOSE CHANNELS

References: (1) Watershed Protection Handbook, paragraph 103.0222 and
(2) Economics Guide, Chapter 10, page 8

Joint costs may be allocated on the basis of the relative conveyance capacity designed for each purpose. If flood prevention and agricultural drainage are involved, they will be combined as a "single" - purpose in the initial allocation. Sub-allocations to flood prevention and drainage will be made in accordance with paragraph 103.0221 of the Watershed Protection Handbook.

Specific costs will be allocated to the purpose served.

The following examples ^{1/}illustrates the use of the relative conveyance capacity method of cost allocation:

Case 1: A multiple-purpose channel designed to carry 8,500 cfs to convey floodwater and water for one other purpose other than agricultural drainage.

1. Installation cost of multiple-purpose channel \$100,000
 - a. Specific cost for "other" water purpose \$ 20,000
 - b. Joint costs \$ 80,000

2. The design capacity needed if planned as a single-purpose channel for benefits claimed are:
 - a. Flood prevention only 8,000 cfs
 - b. Other water purpose only 2,000 cfs

3. Relative conveyance capacity:
 - a. Flood prevention $= \frac{8,000}{8,000 + 2,000} = 80\%$
 - b. Other water purpose $= \frac{2,000}{8,000 + 2,000} = 20\%$

4. Joint cost allocated to each purpose:
 - a. Flood prevention = 80% x \$80,000 = \$ 64,000
 - b. Other water purpose = 20% x \$80,000 = \$ 16,000

^{1/} Design and cost data provided by appropriate personnel.

5. Total cost allocated to each purpose:

a. Flood prevention (joint cost)	=	\$ 64,000
b. Other water purpose:		
Joint cost	=	\$ 16,000
Specific cost	=	\$ 20,000
TOTAL COST	=	\$ 36,000

Case 2: A multiple-purpose channel designed to carry 8,500 cfs to convey floodwater, agricultural drainage, and one other water purpose.

1. Installation cost of multiple-purpose channel is: \$100,000

a. Specific costs:

Agricultural drainage	\$ 5,000
Other water purpose	\$ 20,000

b. Joint costs \$ 75,000

2. The design capacity needed if planned as a single-purpose channel for benefits claimed are:

a. Other water purpose	2,000 cfs
b. Joint flood prevention and drainage considered initially as a single-purpose	8,000 cfs

3. Relative conveyance capacity - initial allocation:

a. Other water purpose	=	$\frac{2,000}{2,000 + 8,000}$	=	20%
b. Joint flood prevention and drainage	=	$\frac{8,000}{8,000 + 2,000}$	=	80%

4. Sub-allocation of the joint flood prevention and drainage "purpose" may be accomplished by employing the first or second methods as outlined in paragraph 103.0221 of the Watershed Protection Handbook.

5. The total cost allocated to each purpose would then be a summation of joint and specific costs.