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# 92-49 NON-POINT SOURCE POLLUTION FROM AGRICULTURAL, RURAL, AND DEVELOPING AREAS

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## HEARINGS

BEFORE THE

### SUBCOMMITTEE ON CONSERVATION AND WATERSHED DEVELOPMENT

OF THE

### COMMITTEE ON PUBLIC WORKS HOUSE OF REPRESENTATIVES

NINETY-SECOND CONGRESS

SECOND SESSION

ON

### H.R. 15596 and Related Bills

AUGUST 15, 16, AND 17, 1972

Printed for the use of the Committee on Public Works



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92<sup>D</sup> CONGRESS  
2<sup>D</sup> SESSION

# H. R. 15596

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IN THE HOUSE OF REPRESENTATIVES

JUNE 20, 1972

Mr. KEE (for himself and Mr. SCHWENGL) introduced the following bill; which  
was referred to the Committee on Public Works

---

## A BILL

Non-point source pollution from agricultural, rural, and  
developing areas.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled.*

3 NON-POINT SOURCE POLLUTION FROM AGRICULTURAL,  
4 RURAL, AND DEVELOPING AREAS

5 AGRICULTURAL AND RELATED POLLUTANTS

6 SECTION 1. (a) It is recognized that the soil and water  
7 resources of the Nation are being polluted by agricultural and  
8 related pollutants such as animal wastes, plant nutrient mate-  
9 rials, agricultural and other chemicals, mineral salts, infec-  
10 tious agents, waste products from processing plants, as well  
11 as pollutants emanating from improper solid waste disposal,

VI—O

(1)

1 and that such pollution is injurious to crops, livestock, wild-  
2 life, fish, air and water quality, and the public health, and  
3 constitutes a growing menace to the national welfare. The  
4 Congress finds that the resources of State and local public  
5 agencies are not adequate without Federal assistance to  
6 undertake an essential nationwide program for the abate-  
7 ment, control, and prevention of such pollution and declares  
8 that the purposes of this section are to provide for Federal  
9 cooperation with State and local public agencies in the  
10 development and execution of a national program for the  
11 abatement, control, and prevention of such pollution, and  
12 in conjunction therewith to initiate and accelerate nation-  
13 wide research and education directed toward expediting the  
14 abatement, control, and prevention of such pollution.

15 (b) (1) In order to provide the Federal assistance  
16 needed in connection with such national program the Secre-  
17 tary of Agriculture, hereinafter called the Secretary, may  
18 cooperate and enter into agreements with and furnish tech-  
19 nical, financial, and other assistance to State and local public  
20 agencies.

21 (2) The Secretary may, upon application by State and  
22 local public agencies, if such application has been submitted  
23 to, and not disapproved within forty-five days by, the State  
24 soil and water conservation commission or comparable State  
25 agency, in consultation with the appropriate State pollution

1 control agency, or by the Governor in the absence of any  
2 such commission or comparable State agency, assist such  
3 State and local public agencies to prepare plans for the abate-  
4 ment, control, and prevention of agricultural and related  
5 pollution. Any such plan shall identify the pollution problems  
6 and the areas involved; shall set forth the needed remedial  
7 measures and works of improvement and the arrangements  
8 to be made for the necessary operation and maintenance  
9 thereof; shall describe any proposed regulatory or control  
10 actions to be undertaken by the State or local public agency;  
11 shall set forth the conditions governing the acquisition by the  
12 State or local public agency of the needed lands, easements,  
13 or rights-of-way; and shall include a statement of the esti-  
14 mated costs of carrying out the plan and of the respective  
15 portions of such costs that are to be borne by the Secretary  
16 and the State or local public agency. The Secretary may  
17 agree to bear such portion of such costs as he determines to  
18 be equitable in consideration of national needs and assistance  
19 authorized for similar purposes under other Federal programs.

20 (3) When a plan has been agreed upon by the Secre-  
21 tary and the State or local public agency, the Secretary may  
22 enter into an agreement with the State or local public agency  
23 setting forth the terms and conditions upon which the plan is  
24 to be carried out.

1           (4) The Secretary may, in order to assist the State or  
2 local public agency in carrying out the plan, (a) enter into  
3 an agreement of not to exceed ten years with any owner, op-  
4 erator, or occupier of land providing for the installation and  
5 maintenance of the pollution prevention, abatement, control,  
6 and practices and measures described in the agreement, (b)  
7 any such agreement may include, but need not be limited to,  
8 engineering operations; methods of cultivation; the growing  
9 of vegetation; land utilization; and the development, ac-  
10 quisition, or installation of waste holding, conditioning and  
11 disposal facilities, and the installation of waste utilizing and  
12 pollutant management practices and measures, and (c) fur-  
13 nish such financial and other assistance to any such owner,  
14 operator, or occupier as he determines to be necessary and  
15 appropriate for the installation of such practices and measures.

16           (c) The Secretary may, with respect to any plan upon  
17 which he has reached agreement with a State or local public  
18 agency, make loans or advancements for the non-Federal  
19 share of costs to any cooperating State or local public agency,  
20 and to any cooperating owner, operator, or occupier of land  
21 with whom an agreement has been entered into pursuant to  
22 the plan. Loans or advancements under this section shall be  
23 made under contracts which will provide, under such terms  
24 and conditions as the Secretary deems appropriate, for the  
25 repayment thereof in not more than thirty years, with in-

1 interest at a rate prescribed by the Secretary not less than (i)  
2 a rate determined by the Secretary of the Treasury, taking  
3 into consideration the current average market yield on out-  
4 standing marketable obligations of the United States with  
5 remaining periods to maturity comparable to the average  
6 maturities of such loans, plus (ii) such additional charge,  
7 if any, toward covering other costs of the program as the  
8 Secretary of Agriculture may determine to be consistent  
9 with its purposes, such rate of interest to be adjusted to the  
10 nearest one-eighth of 1 per centum. Repayment of principal  
11 and interest on such loans or advancements shall begin  
12 within five years.

13 (d) The Secretary may initiate and conduct nationwide  
14 research and education for identifying and characterizing  
15 such agricultural and related pollutants and developing  
16 methods for the abatement, control, and prevention of pollu-  
17 tion. As a part of such program he may conduct, and pro-  
18 mote the coordination and acceleration of, research, investi-  
19 gations, experiments, training, demonstrations, surveys, and  
20 studies relating to the causes, effects, extent, abatement, con-  
21 trol, and prevention of pollution.

22 (e) (1) The Secretary of Agriculture shall consult with  
23 the Secretary of Health, Education, and Welfare and the  
24 Administrator of the Environmental Protection Agency to  
25 assure the appropriate coordination in the administration of

1 this section with the administration of any other Act adminis-  
2 tered by the Secretary of Health, Education, and Welfare  
3 and the Administrator of the Environmental Protection  
4 Agency relating to control, prevention, or abatement of air  
5 or water pollution.

6 (2) Nothing in this section shall be construed as super-  
7 seding or limiting the functions of the Secretary of Health,  
8 Education, and Welfare and the Environmental Protection  
9 Agency under any other law relating to control, prevention,  
10 or abatement of air or water pollution.

11 (f) Any Federal department or agency which has juris-  
12 diction over any land, building, installation, or other prop-  
13 erty causing or affected by such agricultural or related  
14 pollution, or which is administering a program involving any  
15 such property, shall, to the extent practicable and consistent  
16 with the interests of the United States and within available  
17 appropriations, cooperate with the Secretary of Agriculture  
18 in the abatement, control, and prevention of such pollution.

19 EROSION AND SEDIMENT CONTROL

20 SEC. 2. (a) The Congress recognizes that erosion aris-  
21 ing on farm and forest land and rapidly developing rural  
22 and urban areas, erosion of roadsides and rights-of-way,  
23 streambank and lakeshore erosion, erosion from unrestored  
24 and unrehabilitated non-Federal surface or strip mined lands,  
25 is causing the pollution of and damage to lakes, reservoirs,

1 rivers, streams, and other waterways by sediment and mine  
2 acid drainage, deterioration of water quality, impairment of  
3 the beauty of the natural landscape, destruction of land and  
4 other property, damages to fish, wildlife, and recreation  
5 resources, and unsafe conditions on roads and highways,  
6 all of which constitute a serious loss to the Nation's natural  
7 resources and an injury to the public health, safety, and  
8 general welfare. The Congress further finds that State, local,  
9 and private resources are not adequate without Federal aid  
10 to undertake an essential program to overcome and remedy  
11 these damages to the Nation's resources. It is therefore the  
12 purpose of this section to provide for Federal participation  
13 and assistance in a program for the abatement, prevention,  
14 and control of such erosion, sedimentation, and related  
15 damages.

16 (b) (1) The Secretary of Agriculture is authorized to  
17 cooperate with and to furnish technical, financial, and other  
18 assistance to States, their political subdivisions, and local  
19 public agencies, including soil and water conservation dis-  
20 tricts, in developing and carrying out on a natural drainage  
21 area or community basis, plans which have been developed in  
22 cooperation with the appropriate soil conservation district for  
23 the prevention and control of excessive erosion and sedimenta-  
24 tion arising on farms and ranches.

1 (2) Any such plan shall be agreed upon by the Secre-  
2 tary and the cooperating State, political subdivison, or local  
3 public agency, and may include works or measures such as  
4 revegetation, land smoothing, diversions, grade stabilization  
5 and gully control structures, debris basins, bank sloping,  
6 drainage, access roads for maintenance, and any other works  
7 or measures deemed appropriate by the Secretary: *Provided,*  
8 That the Federal share of the cost of carrying out any such  
9 works or measures shall not exceed that deemed by the  
10 Secretary to be necessary and appropriate in the public  
11 interest to carry out the purposes of this section.

12 (3) In carrying out any such plan the Secretary is  
13 authorized to enter into an agreement, which agreement  
14 has been reviewed by the appropriate soil and water con-  
15 servation district, with any landowner or occupier, and is au-  
16 thorized to require as a condition to the furnishing of  
17 assistance hereunder that the landowner or occupier shall—

18 (A) enter into an agreement of not to exceed ten  
19 years providing for the installation and maintenance  
20 of the needed works or measures; and

21 (B) install the needed works or measures in ac-  
22 cordance with technical specifications as approved by  
23 the Secretary.

24 (c) (1) The Secretary of Agriculture is authorized to  
25 cooperate with and furnish financial and technical assistance

1 to States, counties, municipalities, and other local public  
2 agencies in formulating development land use plans, includ-  
3 ing plans for the control of erosion and sediment in rapidly  
4 developing rural and urban areas. Such plans will be devel-  
5 oped in cooperation with appropriate soil and water conser-  
6 vation districts.

7 (2) The Secretary shall require as a condition to pro-  
8 viding Federal assistance for formulating development plans,  
9 works, and measures that the cooperating State, county, or  
10 local public agency provide assurance that such agency will—

11 (A) enact and enforce adequate development reg-  
12 ulations;

13 (B) bear proportionate costs for preparing the de-  
14 velopment plan as agreed upon by such agency and the  
15 Secretary.

16 (d) (1) The Secretary of Agriculture is authorized to  
17 cooperate with and to furnish technical, financial, and other  
18 assistance to States, counties, and local public agencies in  
19 formulating plans, which shall be developed in cooperation  
20 with the appropriate soil conservation district, and in carry-  
21 ing out any such plans that have been agreed upon by the  
22 Secretary and the cooperating State, county, or local public  
23 agency, for the prevention and control of erosion sedimenta-  
24 tion and related damages on roadsides and rights-of-way of  
25 existing State, county, and other rural roads, and of areas

1 within or related to their rights-of-way, including borrow  
2 areas and adjacent areas contributing directly to such  
3 damages.

4 (2) The Secretary shall require as a condition to  
5 providing Federal assistance for the installation of works  
6 or measures included in such plans that the cooperating  
7 State, county, or local public agency shall—

8 (A) bear not less than 25 per centum of the con-  
9 struction costs of works or measures involving Federal  
10 assistance;

11 (B) acquire or provide assurances satisfactory to  
12 the Secretary that it will acquire, without cost to the  
13 Federal Government from funds appropriated for the  
14 purposes of this subsection, such land, easements, or  
15 rights-of-way as will be needed in connection with any  
16 such works or measures;

17 (C) make arrangements satisfactory to the Secre-  
18 tary for defraying the costs of operating and maintaining  
19 any such works or measures; and

20 (D) bear such proportionate part of the costs of  
21 engineering services and administration of contracts as  
22 the Secretary determines to be equitable and appro-  
23 priate to carry out the purposes of this subsection.

24 (e) (1) The Secretary of Agriculture is authorized to  
25 cooperate with and to furnish financial and other assistance

1 to States, counties, local public agencies, including soil and  
2 water conservation districts, and private nonprofit agencies  
3 in formulating plans, which shall be developed in coopera-  
4 tion with the appropriate soil conservation district, and in  
5 carrying out any such plans that have been agreed upon by  
6 the Secretary and the cooperating State, county, or public  
7 or private agency, and which have been developed in co-  
8 operation with the appropriate soil conservation district, for  
9 the prevention and control of erosion of the banks of upstream  
10 tributaries of major rivers, and of sediment damages resulting  
11 therefrom.

12 (2) The Secretary shall require as a condition to pro-  
13 viding Federal assistance for the installation of works or  
14 measures included in such plans that the cooperating State,  
15 county, or public or private agency shall—

16 (A) bear not less than 25 per centum of the con-  
17 struction costs of any works or measures involving Fed-  
18 eral assistance;

19 (B) acquire or provide assurances satisfactory to  
20 the Secretary that it will acquire, without cost to the  
21 Federal Government from funds appropriated for the  
22 purposes of this section, such land, easements, or rights-  
23 of-way as will be needed in connection with any such  
24 works or measures;

1 (C) make arrangements satisfactory to the Secre-  
2 tary for defraying the costs of operating and maintain-  
3 ing any such works or measures; and

4 (D) bear such proportionate part of the costs of  
5 engineering services and administration of contracts as  
6 the Secretary determines to be equitable and appropriate  
7 to carry out the purposes of this section.

8 (f) (1) The Secretary of Agriculture is authorized to  
9 cooperate with and to furnish financial and other assistance  
10 to States and their political subdivisions, including soil and  
11 water conservation districts, in developing and carrying out  
12 on a watershed or community basis, plans which have been  
13 developed in cooperation with the appropriate soil con-  
14 servation district for the prevention and control of erosion  
15 on, and for the restoration, rehabilitation, and use of, non-  
16 Federal lands which have been damaged by surface or strip  
17 mining and which are presently in a scarred or unrestored  
18 condition, and with respect to which lands the Secretary  
19 determines that—

20 (A) such lands were damaged by surface or strip  
21 mining prior to the date of enactment of this section;  
22 and

23 (B) there is no existing contractual or other legal  
24 requirement for the adequate restoration and rehabilita-  
25 tion of such lands.

1 (2) Any such plan shall be agreed upon by the Sec-  
2 retary and the cooperating State or political subdivision, and  
3 may include works or measures such as revegetation, land  
4 smoothing, diversions, grade stabilization and gully-control  
5 structures, debris basins, bank sloping, drainage, access roads  
6 for maintenance, and any other works or measures deemed  
7 appropriate by the Secretary: *Provided*, That the Federal  
8 share of the cost of carrying out any such works or measures  
9 shall not exceed that deemed by the Secretary to be necessary  
10 and appropriate in the public interest to carry out the pur-  
11 poses of this section.

12 (3) In carrying out any such plan the Secretary is  
13 authorized to enter into agreements with any landowner  
14 or occupier, and is authorized to require as a condition to the  
15 furnishing of assistance hereunder that the landowner or oc-  
16 cupier shall—

17 (A) enter into an agreement of not to exceed ten  
18 years providing for the installation and maintenance of  
19 the needed works or measures;

20 (B) install the needed works or measures in ac-  
21 cordance with technical specifications as approved by the  
22 Secretary; and

23 (C) provide assurances satisfactory to the Secretary  
24 that such restored and rehabilitated lands will be ade-

1           quately protected against damages resulting from future  
2           surface or strip mining operations.

3           (g) The Secretary shall initiate and conduct nationwide  
4           research and education for determining rates of soil erosion  
5           and associated sedimentation, pollution effects of sediment,  
6           and for developing methods for the abatement, control, or  
7           prevention of pollution by sediment arising from erosion on  
8           farm and forest lands, rapidly developing rural and urban  
9           areas, roadsides and rights-of-way, streambanks and shore-  
10          lines, and erosion on unrestored and unrehabilitated non-  
11          Federal surface or strip mined lands. As a part of such  
12          program he may conduct, and promote the coordination and  
13          acceleration of, research, investigations, experiments, train-  
14          ing, demonstrations, surveys, and studies relating to the  
15          causes, effects, extent, abatement, control of soil erosion, and  
16          associated pollution by sediment.

17          SEC. 3. Section 10 of the Water Pollution Control Act,  
18          as amended (33 U.S.C. 466g), is hereby further amended  
19          by adding after subsection (k) thereof a new subsection  
20          (l) to read as follows.

21          “Notwithstanding any other provisions of this section,  
22          with respect to livestock and poultry enterprises (including  
23          feeder lots), for a period of three years following the adop-  
24          tion of water quality standards pursuant to this Act appli-  
25          cable thereto, no notices respecting abatement of pollution

1 shall be made hereunder, and no action shall be brought  
2 pursuant to subsection (g) hereof, if the Secretary deter-  
3 mines from time to time during such three-year period that  
4 such enterprises are complying with interim standards  
5 adopted pursuant to guidelines prescribed as provided herein.  
6 The Administrator of the Environmental Protection Agency  
7 shall, in consultation with the Secretary of Agriculture and  
8 interested State agencies, develop and publish in the Federal  
9 Register interim guidelines to be implemented by the oper-  
10 ator of livestock and poultry enterprises (including feeder  
11 lots) during such three-year period, which guidelines for  
12 interim standards shall include water quality criteria reason-  
13 ably attainable by the operator during such period, shall be  
14 the minimum reasonably acceptable to adequately consider  
15 public health, and shall include criteria for treatment of the  
16 site of the enterprise with respect to (1) type of soil, (2)  
17 topography, (3) distance from towns or cities, (4) drain-  
18 age, (5) presence of holding ponds, oxidation ditches, la-  
19 goons, and other animal waste management facilities and  
20 procedures, (6) amount and location of land for distribution  
21 of waste residues, and (7) presence of any buffer zone to  
22 screen and diminish sound, odor, and unsightliness. So long  
23 as any such livestock or poultry enterprise (including feeder  
24 lot) is in compliance with interim standards prescribed by  
25 the Administrator during such three-year period, such com-

1 pliance shall be deemed compliance with the water quality  
2 standards established pursuant to this Act for purposes of  
3 notification pursuant to subsection (c) (5) hereof and of  
4 any legal action brought in any court respecting compliance  
5 with such standards."

6       SEC. 4. Notwithstanding anything in this Act or in  
7 any other law whenever after the Secretary of Agriculture  
8 and a State agency have agreed upon a plan for the abate-  
9 ment, control, and prevention of agricultural related pollu-  
10 tion or prevention of erosion and sediment damages which  
11 plan includes promulgation of regulations, standards, and  
12 criteria with respect thereto the State agency determines  
13 that any landowner, operator, or occupier, including any  
14 livestock or agricultural enterprise, violates or is in violation  
15 of State water quality standards for the area, or is doing any  
16 act, or permits to exist any condition causing pollution from  
17 agricultural and related pollutants or which causes exces-  
18 sive soil erosion and sediment damages in violation of said  
19 regulations, standards, or criteria, if the State agency or  
20 the Secretary of Agriculture under the provisions of this  
21 title has offered assistance to such landowner, operator, or  
22 occupier, or livestock or agricultural enterprise to come into  
23 compliance with said water quality standards, or to other-  
24 wise take the minimum reasonable steps to avoid such pollu-  
25 tion, or erosion and sediment damages, such landowner,  
26 operator, or occupier shall not be eligible for further Federal

1 assistance or benefits under any other Federal program or  
2 activity with respect to such land or enterprise until such  
3 water quality standards or such plans have been substantially  
4 complied with: *Provided*, That the State agency shall have  
5 given such landowner, operator, or occupier thirty days writ-  
6 ten notice of such violation and an opportunity to be heard,  
7 not exceeding a period of sixty additional days; and notice  
8 of said violation and failure to act shall have been given by  
9 the Secretary of Agriculture by publication in the Federal  
10 Register.

11 SEC. 5. (a) The Secretary is authorized to develop a  
12 program of summer jobs, to be designated the agriculture  
13 youth program, for students of agriculture, conservation, and  
14 related fields.

15 (b) The agriculture youth program shall, as the Sec-  
16 retary may determine, participate in any phase of the soil  
17 conservation and watershed programs provided for in this  
18 title.

19 SEC. 6. (a) The Secretary is authorized to prescribe  
20 such rules and regulations as he deems necessary or desirable  
21 to carry out the principles of this title or to facilitate the  
22 practical administration of the programs provided for herein.

23 (b) There is hereby authorized to be appropriated  
24 \$5,000,000,000 for the fiscal year 1973 and such sums there-  
25 after as may be necessary to carry out the purposes of this  
26 title, such sums to remain available until expended.

The first part of the book is devoted to a general introduction to the subject of the history of the English language. It discusses the various influences that have shaped the language over time, from Old English to Modern English. The author also touches upon the geographical spread of the language and the role of literature in its development.

The second part of the book is a detailed study of the phonology of the English language. It examines the changes in the sound system of the language from Old English to the present day. The author discusses the process of vowel raising, the Great Vowel Shift, and the influence of French and Latin on the English lexicon.

The third part of the book is a study of the morphology and syntax of the English language. It discusses the changes in the inflectional system of the language and the development of the modern English sentence structure. The author also discusses the influence of other languages on the English grammar and the role of syntax in the development of the language.

# NON-POINT SOURCE POLLUTION FROM AGRICULTURAL, RURAL, AND DEVELOPING AREAS

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TUESDAY, AUGUST 15, 1972

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON CONSERVATION AND  
WATERSHED DEVELOPMENT  
OF THE COMMITTEE ON PUBLIC WORKS,  
*Washington, D.C.*

The subcommittee met at 10 a.m., in room 2167, Rayburn House Office Building, Hon. James Kee, subcommittee chairman, presiding.

Mr. KEE. The Subcommittee on Conservation and Watershed Development will now come to order.

It gives me a great feeling of encouragement and pleasure to look around this room and see so many wonderful friends in attendance. I sincerely and enthusiastically welcome each and everyone here—whether you are here as an active participant to offer testimony or whether you are here as an interested spectator.

We are holding these hearings on H.R. 15596, 15731, and 15693 in order to give everyone an opportunity to be heard. Whether you sing out for or against this proposed legislation, we welcome your views. They are—your views are indeed vital to the cause we seek to serve—the noblest of all causes—the future of America.

At the outset, I would emphasize that this proposed legislation is strictly a nonpartisan effort. My distinguished colleague—a man for whom I have the utmost respect, affection and friendship, and great personal friend, Representative Fred Schwengel, has been by my side every step of the way. I might add this that Fred knows more about this program than I do and perhaps it should be better said that I have been by your side, Fred, rather than you by mine. I must make this observation, Fred Schwengel stands as a giant among men in his search for a better and safer America. He has given unstintingly of his time and he has contributed the fullest benefit of his rich storehouse of knowledge which, in my opinion, is unsurpassed. I am certain that his voice will continue to be heard long after I leave the Congress this coming January.

The legislation that is being proposed in H.R. 15596, 15731, and 15693 is strong—it is bold—and it is new. At first blush, it may appear prohibitively expensive, even for this—the richest nation in the world. But those of us who have labored to learn the facts and to bring this legislation into being are firmly convinced that it is the most vital and potentially rewarding investment in future America that this or any other Congress could possibly make. It is an investment that we cannot possibly afford to pass up—we cannot possibly afford to miss.

This beautiful land of ours is, indeed, a sacred trust, and we who are fortunate enough to inhabit this great land and reap its rich harvests are the trustees and the stewards—for good or for ill. It is a mighty challenge.

Our Subcommittee on Conservation and Watershed Development has traveled throughout the United States making inspections firsthand and holding public hearings, just as we are doing here today, in an endeavor to bring together the true story of what is happening to our national land and water resources.

Our findings have been grim, but our hopes have been brightened and our hearts have been gladdened as we have heard the story unfold in some areas where the watershed and soil conservation program has been put to the practical test. The story they tell is indeed a call to all America to get into the act.

We have traveled north, south, east, and west to develop this story. We have heard the compelling testimony of the experts and the no less compelling testimony of "little ladies in sneakers" who have pounded the pavements and rapped at the doors to get something done. We have heard legislators; we have heard doctors, we have heard lawyers; we have heard students; and, most important of all, we have heard farmers; we have heard sportsmen; and we have heard industrialists.

We have gone into rural America—to the people of the soil. If you are of the soil, you love the soil—and that is what America is all about. That is what this proposed legislation is all about.

We are seeking to find the ways and means of harnessing and putting to constructive use the awesome hydraulic forces that are relentlessly forging on, robbing us of our topsoil, eroding our natural scenic beauty, and turning our rivers, lakes and streams into cesspools of pollution. Non-point source pollution from agricultural, rural and developing areas.

A rough estimate of the suspended solids loadings reaching our Nation's streams from surface runoff shows these to be at least—and I repeat at least—700 times the loadings caused by sewage discharges. It is estimated that up to 500 million tons of soil dust floats over the United States annually.

When heavy rains occur and water flows over the land, the running water is completely indiscriminate. It will pick up and move anything that is movable, causing tragic and needless loss of lives from drownings and property damage in untold billions of dollars. But that is not all. It takes with it organic residue, manure, plant nutrients, pesticides, and infectious organisms attached to soil particles and dumps them right into the waterways and reservoirs of our beloved Nation.

A chain is only as strong as its weakest link—so be it with a nation—it is only as strong as its weakest vital resource. I would like to think of this proposed legislation as the link that binds us together as the good stewards of our land and water.

Now the problems we are dealing with in this legislation are not parochial problems. They are national in scope and there is no segment of our country not directly and immediately affected by them.

My distinguished colleague, Representative Fred Schwengel, commented on a recent trip flying over Mississippi that he could see and

recognize some of his Iowa topsoil "right down there." That is more truth than poetry. That is where it is going—down the river and lost forever.

What this proposed legislation envisions is a truly enlightened, well-coordinated national plan, with broad enough authorizations and adequate financing to do the job for America—literally to save America—that we may continue to have life and that more abundantly.

You know, until meats, vegetables, and poultry are grown, on the supermarket shelves, we are going to have to learn to live with pesticides, plant nutrients, animal waste, and food and fiber processing wastes. With appropriate land management and responsible waste disposal techniques, we can accomplish this and so much more.

We can preserve our countryside from wind and water erosion and runoff. We can conquer the raindrop and use it for public benefit and enjoyment. We can clean our rivers. We can clean our lakes. We can clean our streams. And we can even go back and reclaim and rehabilitate the millions of acres of land that have over the last 100 years been denuded and laid waste by strip mining, floods, winds, and improper use.

Individual or local efforts are ineffective unless they are part of an adequately financed and coordinated plan. National action with Federal funding, therefore, is undoubtedly the logical, practical, and the economical approach to the problem.

There is limited Federal assistance in many areas under existing laws, but to meet the need, this must be expanded.

We have many U.S. Department of Agriculture administered programs underway now that are making significant contributions, but they must be improved upon and expanded. They must have the human and technological resources available to them. Development of new technology must continue to keep pace with new developments in machines that move the earth or work the land.

Not to go forward is to go backward, and with the passage of these three bills, and others I understand will be introduced, America will be making another "giant step" forward into a more glorious future for America and those generations yet to come.

As a matter of fact, unless we move forward promptly it is a question of only a very few years when there will not be enough clean water, clear water for the future generations to keep body and soul together.

In conclusion, a word on the language of the proposed legislation. I would point out that we are keenly aware of the existing imperfections. There are many wrinkles, so to speak, yet to be ironed out. As we progress in these hearings, it is our hope and expectation to gain new insights that will enable us to make appropriate changes and add the refinements of language necessary to report a bill that is crystal clear and one that will address head on the problem of pollution control.

At this point, before recognizing our most illustrious and distinguished first witness, I think it is only proper at this time if I yield to Mr. Fred Schwengel, who has in fact devoted his life to this problem we are now facing.

Mr. Schwengel.

Mr. SCHWENDEL. Thank you, Mr. Chairman.

I would like to say at the outset that there is little I can add to the eloquence and accuracy of your statement just now given. I believe it will prove to be one of the outstanding contributions made to the political literature in this arena.

I commend the chairman for his excellent statement, and hastily associate myself with everything you have said.

I thank the chairman for his kind words regarding myself. I have been interested in conservation ever since I learned from my father the importance of soil and farming.

Mr. Chairman, this bill nor the final solution would not have been possible without your leadership and your response to the challenge of going out in the field and to make it possible for us on the committee to see with our own eyes, and to listen to people who have been directly involved—who have deep feelings about the importance of the soil.

I was impressed, as all must have been, with the evidence that Public Law 566, and our first witness can tell you—what it has done to the small watershed program throughout America. It has been eminently successful where we have completed it. It has proved to be real landmark legislation. We have built on that base. The most important art it has given us is talent to do the job, to accept the challenge, to complete the job that must be done, if we are really going to serve the public interest and protect the fertility and productivity of Mother Earth.

I was glad that the chairman pointed to the fact that this is an investment and not an expenditure. And this ought to be realized more than it has been.

Now, Mr. Chairman, in the 18 years since Public Law 566 established the watershed program, only 366 projects have been completed, representing a dismal 3 percent of the 8,925 projects found needed in the national inventories on soil and water conservation needs.

It is tragic to note that the discrepancy widens every year between applications received and projects under construction. A recent study of the last 50 projects approved showed an average of 3.7 years of preconstruction period of the projects.

Sponsors often are becoming disheartened. In many cases they are paying interest on loans; their taxes have been raised in anticipation of benefits. Land agreements or rights must be negotiated. Little wonder that the rates of application have seriously declined in recent years.

Even after approved, a proposed project has many obstacles to overcome if they are ever to become a reality. At this time 871 programs are waiting in the backlog of unserved applications.

Local sponsors are not the only ones being disappointed by increases in delay. It is reported to Congress that the Soil Conservation Service said the major cause of construction being delayed and terminated was the failure of local sponsors to obtain the needed land grants. These delays have caused compounded problems. Forty-six projects terminated because of land rights failures; \$4,300,000 had been spent on planning and engineering before termination. And each year \$4,100,000 in projected benefits have been completely lost.

The figures are impressive, but they are merely illustrations of inefficiency that has developed around the watershed program, the

kind of inefficiency that this kind of legislation before us proposes to do something about.

Government administrators are hindered by local land rights failures. Local sponsors are frustrated by Government delays to face the growing needs that the watershed program has, which has, frankly, been unsatisfactory.

The problem is serious because no other legislation is designed to control erosion and non-point source pollution, which is by far the greatest single water pollutant. Erosion from non-point sources not only pollutes waterways, but compounds problems of flood control. Controversial bills in House and Senate will cause major changes in the water pollution laws. Those bills, however, will not touch upon the massive problems that have stymied the watershed program for so long.

H.R. 15596 and the companion bills are designed to turn the floundering watershed program around and inject it with new life. The proposal would give the Secretary of Agriculture power to make agreements for up to 10 years with people at all levels. The watershed program includes specific requirements for each type of agreement, land rights agreements, arrangements, planning and engineering procedures, and all other necessary negotiations would be finalized under this bill, and make each watershed project a positive, responsive program from beginning to end. I sincerely hope that we will all act with all possible speed to give this bill the consideration it deserves.

Mr. Chairman, we have in this committee, as you know, wrestled with pollution problems, and the bill to resolve the problems caused by municipalities and by business. But an honest study will show that a dollar spent for this type of program will do 10 times as much good, at least, as a dollar spent in all other areas.

It is interesting to note, and, based upon my experience, that the farmers are basically conservationists. A farmer by himself cannot have a final answer. But a total program as envisioned by this legislation can have an impact the likes of which the world has never seen and this country has never seen, and it is something we need. It ought to have a much higher priority in a lot of areas in Government than it has had. And I hope what we do here will convince those people who are in decisionmaking places, and that as a result it will make it easier to cooperate with all of us.

One word about the first witness. He has had a most important committee in Agriculture. He is a conservationist. I am glad to have him here as our first witness and I am looking anxiously to hearing from you and having the benefit of your thinking on these important matters that have concerned you and with which you have worked for so long.

Impressed that I may have permission to revise and extend, Mr. Chairman, I yield back the balance of my time. I am prepared now to listen.

Mr. KEE. Without objection, so ordered.

I might make this point. Our very able and distinguished colleague who is cosponsoring the bill and put in a bill, Representative Charles Thone of Nebraska, has very graciously agreed to hold his testimony so that we can hear the next witness.

The next witness is the very distinguished chairman of the Committee on Agriculture, Chairman Bob Poage from Texas.

Now, at this time we have on our committee a very, very distinguished Member, Mr. Ray Roberts, and I turn the microphone over to Mr. Roberts to properly present our very dear friend and colleague, Chairman Poage.

Mr. ROBERTS. Thank you, Mr. Chairman.

I am always proud to point out to people within the Congress itself that we have some outstanding authorities in many fields among the Members.

This morning I have the privilege of having the greatest authority in Congress or anywhere else in the country on agriculture and land and water conservation, on the present soil conservation program and most of the other land and water conservation programs, and the agricultural programs as well.

I am pleased to present to this committee my close friend and colleague from Texas, the chairman of the Agricultural Committee, the Honorable Bob Poage.

Bob, it's a pleasure to have you with us.

**STATEMENT OF HON. W. R. POAGE, A REPRESENTATIVE IN  
CONGRESS FROM THE STATE OF TEXAS**

Mr. POAGE. Thank you.

Mr. KEE. Mr. Chairman, the committee joins Representative Roberts in extending to you a warm welcome, sir.

Mr. POAGE. Thank you.

Mr. Chairman and Members of this most dedicated and distinguished subcommittee, I am delighted to be here today to discuss H.R. 15596 and the related bills which were introduced by you, Mr. Chairman, and by the distinguished ranking minority member of this subcommittee, Mr. Schwengel.

I thought I was doing real well when I was listening to all the plaudits that you were extending to me, until you began to talk about somebody being here as an authority on the subject. I have never claimed to be an authority on any of these subjects. I am just one of those who, like you, know that there are problems and that we must deal with them. I certainly don't come before you at all with the idea that I'm an authority to tell you all the answers.

You will recall, Mr. Chairman, on June 22 you wrote to me advising me that this legislation had been introduced. You pointed out that this bill was in part a product of this subcommittee's field trip to several watersheds throughout the Nation. In your letter you indicated that since this bill dealt essentially with the Secretary of Agriculture, you thought it might have been referred to the House Committee on Agriculture. However, the bill has been referred to the Public Works Committee, and while this action did surprise me a bit, I am confident the legislation is in excellent hands.

As the chairman so well pointed out, we have had the finest of relationships between the committees, and where you have that kind of relationship, it makes little difference where the measure is sent. As you know, it will be given equal consideration in either group. I am happy that we have such a relationship with this committee.

Now, Mr. Chairman, I would like to commend you for the leadership you have provided in conservation throughout the years. You have al-

ways expressed a deep interest in the small watershed program, and certainly you have done an outstanding job during the time you have chaired this subcommittee which, of course, handles the watershed projects which have been referred to the Public Works Committee.

I vividly recall your most effective assistance on the floor of the House, especially during consideration of the Rural Development Act in February of this year, when there were those Members who offered amendments to the Small Watershed Protection and Flood Prevention Act, generally known as Public Law 566, which would have destroyed a great program had they been adopted.

I think it is most fitting, Mr. Chairman, that you should assume the leadership role in the type of legislation that we have before us today.

Upon receiving your letter, I took time to read your comments and those of Congressman Schwengel in the Congressional Record of June 20, 1972. I would recommend that all of those who are interested in pollution abatement and control read your statements. You and Mr. Schwengel have described in a most concise and comprehensive manner the tremendous problem we face so far as non-point or source pollution is concerned.

As an example of a fact which was brought out in your statement, Mr. Chairman, I would repeat from your remarks that "the Mississippi River delivers approximately 250 million tons of sediment to the Gulf of Mexico during the average year." This is an astounding example of pollution at its worst. Of course, that covers two-thirds of the continent.

Unfortunately, Mr. Chairman, when we think of the problem of pollution, we tend to immediately relate the problem with automobile emissions, raw sewage, black smoke pouring out of great smoke stacks in industrial areas, or chemical wastes being dumped into our rivers and lakes.

True, these are serious forms of pollution, and the most obvious. While great problems exist with this type of pollution, we do have an advantage in that case which we lack in other cases, and that is, we can pinpoint the source of that type of pollution.

We know where the automobile exhaust emissions come from. We can see the smoke billowing out of the smoke stacks. We know where the raw sewage is dropped—or at least we can find out—where it goes into our rivers and our lakes. Therefore, part of the problem has been solved at the very start.

However, the truth of the matter is that this type of pollution is but a part of our entire program, as you so well pointed out. The legislation you are considering today is designed to do something about the oldest form of pollution—the non-point source pollution.

Primarily, non-point source pollution, involves soil erosion of one type or another. When the rain comes, causing waters to flow across large areas of the land, the soil is often carried with the water. Not only does the water carry soil, but it might well pick up residues of chemical fertilizers or manure along the way. In a very dry area, when the wind blows at a good rate, we can literally see thousands of tons of soil being blown across the land. When great rains come and fill the banks of our streams, the rushing water often cuts into the bank, oftentimes changing the course of our rivers and clogging them with silt that literally strangles animal and plant life.

We know of many techniques to prevent this type of erosion, but in many cases landowners need assistance to apply these techniques. This, of course, is one of the purposes of the legislation.

In my opinion, the Secretary of Agriculture, in cooperation with the Soil Conservation Service, is the logical authority to coordinate the program outlined in your proposed legislation. Certainly the Soil Conservation Service throughout the years has done an outstanding job in pollution abatement and control, a fact that is often not acknowledged, or is overlooked by those who are in the forefront of the movement to protect our environment.

I find it surprising that some of our environmental protection groups are unaware of the great pollution abatement and control benefits brought about by the small watershed program, for example. I am certainly disappointed when some environmental groups only choose to criticize the watershed program and launch bitter attacks against any project which includes channelization, for instance. I not only talk of pollution, but those who are seeking to develop and protect our wildlife, or our ecology, attack the work under Public Law 566, when that very program has brought probably more wildlife to more areas than any other program that we've ever had.

I know, as an example in my own area, of a stream adjoining my own farm—and I have farmed along the banks of Tehuacana Creek—and I can't spell it for the reporter. I have farmed there since 1928. I never saw a beaver in the wild in the whole State of Texas. I have gone out there to fish, but the creek goes dry every year and the fish die, or did before we had a watershed program there. Now we have 23 dams out there, the stream never goes dry, and there is some movement of water the year around. Those fish are living along the creek, and in 23 reservoirs that were not there. People have the opportunity to enjoy that wildlife. And yet some of the environmental groups have been very bitter against the project because one of the things that is needed is to develop a rapid runoff of that water in times of flood, and they say you're going to kill the fish and the beavers, which haven't been there since the days of the Indians, and that was long before my time.

So I repeat, that I believe this program has accomplished a tremendous amount of good in protecting our environment, and I am honored to have been one of the original sponsors of Public Law 566.

Mr. Chairman, I didn't mean to stray from the subject at hand, because this is an important bill. It will become even more important as even stronger regulations for pollution abatement and control are issued for the operation of such farm activities as dairy farming and animal feedlot operations. Those regulations are moving along with greater rapidity than most of our people realize.

Mr. Chairman, at this point I want to bring up what I think is a fundamental issue of the entire problem. I am cognizant that when people look at the potential cost of this legislation, certainly there will be a great deal of criticism, and I will agree that your initial authorization of \$5 billion for the first year is substantial, indeed.

I would agree also that there is a need to curb spending in an effort to slow down inflation. But the issues I speak of involve much more than the cost. Obviously, our country has embarked upon an accelerated program of environmental protection. I cannot quarrel

with the objectives of this movement, but I think that we must use some kind of practical judgment along the way.

I believe that this movement, with its many programs designed to protect our environment, is clearly for the benefit of the American people as a whole. All of the well-meaning regulations in the world are not worth their salt unless they can be placed into effect.

Pollution abatement and control equipment and general soil and water conservation practices are expensive, indeed. I, for one, do not feel that we can expect a farmer or small businessman to go bankrupt in an effort to comply with all these new requirements. I do not say that these measures should not be put into effect, but I do say that where the people as a whole are the beneficiaries, then the public should help pay the cost.

As I see it, this is the spirit of this legislation. This bill allows the Federal Government to assist landowners install conservation measures designed to reduce non-point source pollution.

While I do not attempt to pass on all of the points of this comprehensive legislation, I do want to say that I commend you, Mr. Chairman, for attempting to attack this problem and for bringing it to the attention of the public in these hearings.

As chairman of the House Committee on Agriculture, I shall be pleased to cooperate with you in any manner that you see fit. This is a serious problem that has long been neglected, and I am honored to have been selected as the first witness in these important hearings. I don't know if I have any knowledge or information that would be of benefit to the committee, but any questions I could answer, I would be happy to do so.

Mr. KEE. Mr. Chairman, the fact remains that on this legislation it is absolutely vital. In fact, both of our committees have the background, you have the background and you have the experience.

You will remember that when I talked with you, I thought the bill was coming over to your committee and I asked for an opportunity to come and testify. And to my surprise—

Mr. POAGE. I am happy to come over here.

Mr. KEE. It was a surprise to me as it was to you.

I thought, in order to eliminate any possible question of jurisdiction, of authority, that it was indeed incumbent upon us to invite you to be our first witness. Actually, we're in the same boat, in the same battle, at the same time, and I certainly highly commend you for your testimony. Any suggestions you have, Mr. Chairman, we more than welcome.

Furthermore, as I mentioned to you, we would be delighted, as we proceed along with these hearings, for you to have any of your staff people sit in with us and we certainly will listen to them, because we have an obligation to report the best bill possible and we are, indeed, grateful to you.

Mr. Schwengel?

Mr. SCHWENDEL. Thank you, Mr. Chairman. I, too, want to express my appreciation for your excellent testimony, and also for your avid interest in the watershed program. You have never failed to cooperate with this committee or with anyone in Washington to advance the cause of watersheds and conservation. For this, I am grateful. Indeed, all of America should be grateful to you and the principal authors

of 566. This was really landmark legislation. It's a great thing, and the only trouble is we haven't supported it enough and encouraged it enough. What we are doing here is trying to encourage that.

I have some questions because these things have plagued me and bothered me for a long time. I think, in a sense, they have become a handicap and they ought to be more an asset.

The question of cost-benefits on the projects, I know the principal things we considered as benefits, but in my view, there are many, many more benefits than we give credit to projects for. You referred to the 250 million tons going down the Mississippi River. That's a tremendous waste. We don't consider what we would save in maintaining channels alone, do we, because of specific cost-benefit ratios, nor do we consider sufficiently the importance of productivity that comes with preserving the soil and the other cost-benefits that come to the area itself.

I am thinking now particularly of the project we saw at Winfield, Kans., the Timberlake area, something like 100,000 acres in that watershed. I think it's a fantastic development. There is probably more people, more employment, and all these things aren't considered benefits to this program and they ought to be.

So I would like to have your response to this question: Do we consider sufficiently and adequately all the benefits that come from these watershed projects?

Mr. POAGE. I certainly agree with you. Mr. Schwengel, that we don't, by statute, take into consideration anything like all of the benefits to the Nation.

On the other hand, it has been my judgment that the present practice is a sound one and one I wouldn't want to change at the moment—for this reason: As long as we have so many more projects to work on than we have money to finance, it seems to me that the present type of cost-benefit ratio is a reasonably sound method of bringing to the top the better projects, as you might say.

Certainly, I wouldn't suggest that we have a formula that accounts for nearly all of the actual benefits to the Nation, but I don't see that with our present budgetary situation that there is any need of making a change, because it would simply open the door to the approval of a great many projects which are clearly of lesser economic advantage than those that have the higher ratio.

Our committee has followed a practice—not an ironbound practice, not an absolute rule—but over the country as a whole, you have noticed that these projects do not involve a cost of more than \$200 per acre. Now, we have made some exceptions to that in the aid to cities and highly developed areas, but basically, we have done that not because we don't know that there are a great many areas where you could spend more than that amount of money, but we have felt that since we couldn't take care of all of it, since it is impossible to finance all of these projects, that it is better to start financing those that have the best ratio and that can meet the real strict requirements that we have.

Certainly, if we had unlimited amounts of money—and we hope the time will come when we can move down the scale—but when you have to make selections, it seems to me it is right helpful to be able to have some kind of formula that helps you make a selection of the better projects.

Mr. SCHWENGEL. I'm glad to have your comment on that. However, I don't completely agree with you, because I think we could prove—that we could sell this program to America and could show the many more benefits that come, that at least they ought to be mentioned in connection with the projects when we do have them, because I am sure there are many more benefits.

For instance, the testimony in Winfield, Kans., that I referred to, the many benefits coming to that area aren't even listed or testified to. We were there and it seemed to me it would make this program work a lot better to the American people and make it seem more like a good investment.

I'm glad to have your comment, and I agree that the present formula gives us more projects to finance on the present basis, at least.

I have another question, and this relates to interest. You talk about raising the interest charges on this thing. What jurisdiction is there for considering interest at all, if this is an investment? We don't talk about interest when we appropriate funds for a lot of other things that are a lot less important than this.

Mr. POAGE. I think this goes to much the same sort of situation discussed a moment ago, or must the same logic, if it be logical, applies to it. It's a question of which projects should be taken on first.

Now, we have had some problems about interest rates in our subcommittee, and, in fact, some of our members felt very strongly that we should eliminate some projects because of the increased interest rates. One of them was a project in your chairman's district. There were members of our subcommittee who very sincerely felt, since the cost of money has gone up, that the project didn't meet the 1-to-1 ratio—that we should eliminate it. Actually, the majority of our subcommittee came to a different conclusion and we approved that project and three or four others since that. Those are all projects that at one time did meet the interest rate, and that do meet it now, by using the formula of the average cost of Government securities, long- and short-term securities. You understand, the law doesn't have any specific provision in there just what interest you're figuring. I mean, it doesn't tell you whether it's the interest today or whether it's the interest 10 years ago or 10 years in the future.

Our subcommittee has been, in recent months, following the formula of average interest rates over all of the outstanding Government obligations, which includes the longtime obligations which makes these projects eligible.

Now, very frankly, that's a question of judgment I think on which the committee makes its decision as to how far we want to go in picking up these projects. Frankly, our committee is picking up projects that 10 years ago we wouldn't have picked up, let's put it that way. I think it all goes to the same question that we were discussing awhile ago, that we can't get money enough to finance all of the projects all over the United States, and then shouldn't you finance those that would be the less costly and the most economical to the Nation for which you will get the largest return?

Mr. SCHWENGEL. Mr. Chairman, I appreciate these comments and I follow your argument very closely. I am also glad we had this colloquy because I think these are matters we need to think about.

One other thing that bothers me in Government—and I think it has bothered you in the past—we have an organization called OMB, Office of Management and Budget. They try to tell us what we can do and what we can't do.

Now, we passed a bill here to envision authorizing \$24 billion to take care of industrial pollution and municipal pollution, and I want to do that, as you do. But here we have a watershed program, a program that will do much more good toward the solution of water pollution problems—some rate it 10 times as much good for the same amount of money, and more.

How can we get OMB to take this into consideration so we could share some of the 12—I understand they're going to approve \$12 billion of the water pollution program for municipalities.

Mr. POAGE. I might have a slightly different view, again, although I fully agree with you personally, that the projects under our 566 law do a great deal more good for the money involved than these projects under the large-area industrial legislation to which you referred.

But I think we must recognize as a matter of government that once the Congress of the United States puts its stamp of approval on a program, that as far as the executive branch is concerned, they must be looked upon as of equal importance. And the Congress did approve these other projects that you are referring to. You and I don't think they were as important dollar for dollar as the 566 projects.

But I can't quarrel with the executive who says that the Congress has put its stamp on all of those projects and therefore, from the standpoint of the executive, he must, as I see it, look upon them all as of equal importance, since the Congress has approved it.

Now, I go further—and I think you will join me in this—I don't believe that the executive—and I'm not speaking in any partisan vein, because this thing started in big proportions under Mr. Johnson. And I went to several meetings to protest what President Johnson was doing. President Nixon has been doing the same thing, with some apologies for what he had done. But I mean the Office of Budget and Management has taken the same view, regardless of the political party that was in power, they have taken the view that the executive had the right to determine what money was to be spent after the Congress appropriated it.

I felt that the legislative branch was the only one that had the right to make the determination as to the expenditure of funds, and that when we make it, even though I think we didn't put the right priorities on some of this, once having made it, I think that it becomes the function of the executive to carry out and provide just as far as the resources are available, to provide for financing what the Congress said it wanted financed.

Now, I don't know any way of forcing the executive to do those things except through public pressure, because I don't think that you can mandamus the President to making expenditures even though the Congress authorized them every day for a year. But I do think public understanding will ultimately force an expenditure or release by the executive of the funds.

Now, I know it has been a practice for a long time, and I think it goes back long before even President Johnson's time. My recollection

is not so much on 566, but on the withholding of the ASCS funds, they were withheld by Kennedy and I think by Eisenhower, too. They have been withheld for a long period of time, because the executive simply took the view that they had the right to do it and have done it. We have had no recourse in court.

I think the only thing is public opinion.

Mr. SCHWENGEL. I'm glad you made that point.

One of the purposes of this hearing is to get the information out to the public and then have them help shape the thinking in the Congress itself, and certainly in the executive. So you have put your finger on the real problem and I'm glad we had this little colloquy about that question.

That's all I have. I think we've had an excellent witness and I appreciate your attitude. Thank you again for your fine cooperation we have had through the years.

Mr. POAGE. I am happy to visit with your committee.

Mr. KEE. Mr. Zion?

Mr. ZION. It's a real pleasure to see you here today, Mr. Chairman. There is no question but what you chair one of the most difficult committee's in the Congress. Not only do the American people not share a given concept of what should be done for agriculture, but four or five well-organized different agricultural groups always disagree; do they not—

Mr. POAGE. Yes.

Mr. ZION (continuing). Making it very difficult to come up with responsible legislation. The chairman does an excellent job on this subject. We had the Corps of Engineers a couple of years ago, and the Department of Agriculture, conduct a survey of the stream erosion problems. Now, this is just one aspect of this.

As I recall, we had something like 142,000 miles of streambed that was being eroded, in my own district, the Ohio River, the Wabash, Pigeon Creek, White River, and so forth. So there are quite a few miles of streambed representing many thousands of acres of good agricultural land that is washing down to New Orleans, and it isn't doing us a bit of good there.

I understand it costs about a million dollars a mile here to correct this, so we have 142,000 miles, and this is a little more money than we are going to be able to authorize, of course.

Now, you and the gentleman from Iowa were talking about cut-backs from OMB. Obviously, we're talking about a serious problem. I believe the gentleman from Iowa suggested 700 times as much "pound" pollution or solid pollution, 700 times as much solid pollution on a pounds basis coming from rural runoff as we get from point sources such as industrial and municipal waste.

Now, we have introduced a bill here that could cost \$2.5 trillion. This is the bill that passed the Senate and, as you know, it's in conference right now. If we take 700 times that cost, and \$2.5 trillion, we're talking about a problem that's just astronomical. There is just no way we're going to be able to solve it.

Now, my question is, since we have a problem, the cost of which is way up in the trillions and trillions of dollars, where do we start, in your opinion?

Mr. POAGE. I think we start, just as I was trying to suggest to the gentleman from Iowa a moment ago, we start with those projects that are most helpful for the least money. We start with the best of our projects rather than with the marginal projects. I think the fantastic total cost emphasizes the fact that's where we must start.

Mr. ZION. I know we're talking about cost-benefit ratios, but there are a lot of ways to measure it. For example, our subcommittee went out to San Diego, that the big Highway 1 going through San Diego is being undercut by the Pacific Ocean. Where we can correct the Ohio River erosion for a million dollars a mile, out there it might be \$15 or \$20 million a mile. But as you were so accurately pointing out, it was saving the city of San Diego and Highway 1, and to reroute that through San Diego might cost \$15, \$18, \$20 million a mile.

Now, really we are talking about a very high priority item on the basis of cost-benefit ratio, but we are not doing anything about pollution in this instance. Do you see my point?

If we're going to use cost-benefit ratio, we might be better off to spend money in San Diego to save a highway and a lot of high-priced houses, and actually State property and Federal park property, but we're not solving this big problem of pollution.

Should we change our priorities and talk in terms of pounds pollution per dollar of investment, or are we talking about a saving, as we do now, that the criteria now is that it has to be a municipal property.

Mr. POAGE. I think we have to take into consideration all of the direct benefits. I think we have to recognize those things you don't get out of the field of sound business when you recognize all of the directly and immediately visible and accountable benefits such as the destruction of that highway. Of course, under 566 we recognized that highway costs is one of the things that is taken into consideration, under the present law and under the present interpretations of it.

Mr. ZION. You would suggest we change our priorities a little, though, to take into consideration pollution, to take into more consideration pollution, and a little less consideration of economic factors such as—

Mr. POAGE. Oh, I don't want to give the impression that I think we ought to give less consideration. There are other economic factors. I merely think we must recognize that pollution is an economic factor as well as an authentic factor and, as such, we have got to give it the recognition that we probably haven't given it in the past.

Mr. ZION. Thank you.

I yield the floor, Mr. Chairman.

Mr. KEE. Thank you.

Are there any further questions? Mr. Miller of Ohio.

Mr. MILLER. Thank you very much, Mr. Chairman.

Bob Poage also happens to be my chairman on the Agriculture Committee who I also served, and I know he's very knowledgeable of the problem we have before us. We're very fortunate to have him to testify on this subject.

Bob, I have read in several cases here, getting to one part of this particular problem, one part that would be considered in the legislation is levees and dam projects which come under possibly 566. Maybe these would be expanded or we would have more of them.

Let's assume we do, and we now have the insecticide and pesticide runoff, and we have so many of the salts, nitrogen, and phosphorus that runs off. And I also read not long ago where we have doubled the volume of fertilizer that is used in this country in the last 5 years.

I am wondering whether you would have some information that would convey to us whether we will be creating additional problems by the agricultural runoff, coming to one impoundment, and there some of these chemicals have a long life span, and whether this may leach through to the ground water and create problems? Because we have concentrated behind the dam the water impoundment, and I didn't know whether you had any information on this or what your thinking may be. I'm concerned about it, because we not only want to clean the streams, but we also want to make sure we do not somehow create problems for our underground water.

Mr. POAGE. I don't think there is any doubt but what every time we establish any kind of program that interferes in the slightest with conditions as the Lord made them before we came on to the scene, that we do create additional problems. I don't think that is a sound basis, however, for failing to take action. I think we must recognize that all civilization creates problems and we've got to deal with it.

I think certainly that our agricultural development creates problems, vast problems, but the problem of feeding our people would be far greater than any of those problems if we hadn't created it. If we hadn't put this land in cultivation, you wouldn't have as much soil going down the Mississippi—you would have some, but not nearly as much. But if we hadn't put land in cultivation in Ohio, in Iowa, and down in Texas, we just wouldn't have as many people. That's really what would happen. Of course, they would have died of starvation as children, and we just wouldn't have 200 million people here. We would probably have on the order of 3 or 4 million in our great land.

So I think that we must recognize that we are creating problems. Putting land in cultivation was one of the early ones. The use of chemical fertilizers is one of the later ones, but it has exactly the same basis as placing the land in cultivation has; it increases the productivity of our land and feeds more of our people and increases the welfare of all the people of the United States—and it creates problems along with it.

I think we are going to solve those problems. We have got to work on those as well as other problems, and I think we're going to have to face up to the fact that we're creating problems every day and we've got to solve the new ones.

Mr. MILLER. I'm aware of this, and my intent was not to say whether we should or should not be using at the present time—we do need at least that food and fiber you speak of to feed the American people and other peoples of the world.

My idea was that whether in the legislation we might propose or might come up with not necessarily solving the problem, but at least moving the problem to someone else's back yard.

I know some of the watershed programs are also flood control to a certain degree, and they will have orifice openings through the dams where a limited amount of water can flow through the concrete structure and will only temporarily hold the water back, and then it would feed out whatever maybe behind that dam in the pool of water down-

stream. So it would not necessarily help the agricultural runoff, as I see it.

I guess perhaps the thing that I wondered about, if we should be considering something which would tend to neutralize some of the chemicals that we use. I'm not sure. Have you given that any thought?

Mr. POAGE. Some, although I'm no chemist and in no position to tell you what to do. I have recognized, as you suggest, the need to find methods of neutralizing or destroying the effectiveness of chemicals that might go into our streams and lakes.

Of course, they certainly are going in not only from agricultural activities, but from all kinds of industrial activities. You are transplanting chemicals. We're not producing any new ones. They were all here when the world was formed, but we are transplanting them from place to place, changing the chemical composition of some of our animals. We have got to recognize that we can't create a situation where too much of a certain element gets tied up in a certain way that it becomes dangerous.

Mr. MILLER. Bob, with your great knowledge of what is going on in the Agriculture Department, do you think we have the proper research going on in order to attempt to neutralize the chemicals that we are concentrating in one area?

Mr. POAGE. Let's put it this way: I think we have the proper research. Research is like a great many other things. You can use unlimited amounts of it, dependent upon what you can afford. We are getting all that those of us in Congress have thought that we could afford, that is, we're getting all we're paying for, and I think the Department is doing a very good job for what we are giving them, and it's up to the Congress to decide at what rate we shall carry that kind of work on.

I don't criticize what the Department is doing with the resources that are made available to them. And being one of those who had a part in determining the availability, I'm not going to criticize that, either, because I had a part in that.

Mr. MILLER. Thank you, Mr. Chairman.

Mr. KEE. Thank you, Mr. Miller.

Any other questions?

Mr. Poage, we certainly thank you for your enlightening testimony.

We are certainly in your debt. Any suggestions on this legislation as we progress along that you may have, we welcome them with open arms. We certainly thank you, sir. You have done a wonderful, wonderful job, and we're all deeply in your debt.

Mr. POAGE. Thank you so much, Mr. Chairman. We are not unmindful of what you're doing and we are interested in what you are doing. We will try to have somebody come over.

Mr. KEE. Thank you, sir.

At this time the committee is happy to recognize one of our most valuable members, Representative Charles Thone of Nebraska, who has also joined in on this bill.

Mr. Thone.

Mr. THONE. Thank you, Chairman Kee. I am pleased to be a sponsor of a companion bill to H.R. 15596. The hour gets a little late here, and I know we all want to hear from the Department of Agriculture witnesses who are here, so I will be very brief.

I would like to make a brief statement.

STATEMENT OF HON. CHARLES THONE, A REPRESENTATIVE IN  
CONGRESS FROM THE STATE OF NEBRASKA

Mr. THONE. AS I see it, we cannot have clean water until we control what flows off the land and into our streams and lakes. This runoff is the source of the majority of pollutants found in our waters.

In my area, the animal wastes in the Missouri River Basin are equal to 370 million people. If only 5 percent of this waste reaches our streams, it will equal the waste of 18 million people. The magnitude of the problem is indicated by the fact that the basin's human population is only 7.9 million people.

Of course, as has been indicated in this hearing today, the largest component of the runoff problem is soil erosion. Chairman Poage mentioned that yearly about 250 million tons of topsoil flows off the land in the great Mississippi-Missouri River Basin and out into the Gulf Stream. This amounts to more than one-third of a ton of soil off of every acre in the basin.

Mr. Chairman, I was born and raised on a farm on the banks of the Missouri River, near Yankton, S. Dak., and how well I know why they call it the Muddy Mo. Now, I am encouraged by the third annual report of the President's Council on Environmental Quality. This report, which just came out this month, for the first time gives serious recognition to the runoff problem. In fact, I would like to quote just two short paragraphs from that report.

In other words, point sources of organic and nutrient pollution, such as industrial and municipal discharges, appear to be overshadowed, in the most of the stations that were analyzed, by runoff sources, such as farms, feedlots, and possibly urban runoff. However, the runoff trends which the data show also may be caused by other factors, such as scouring of pollutants from riverbeds by high flow.

The Enviro data reinforce some recent steps to place more emphasis on runoff sources. What they say, in essence, is that even if all discharges of municipal and industrial pollution were stopped, many streams would still be polluted as a result of discharges from runoff sources.

Again, as Chairman Poage mentioned in his testimony, pollution is a problem that will be with us as long as there is an earth. We would have water pollution even if there were no men or animals on the planet, that water would still run by sources of metallic poisons and leach them into the streams. Water would still cause river banks to fall in and billions of particles of soil to be eroded off the soils with rains and snows.

While recognizing that water pollution will always be with us, we must resolve to fight pollution as best we can. We can make a major step forward by passing this bill to provide solutions to non-point source pollution from agricultural, rural, and developing areas.

The bill, together with the bill passed earlier this year by the House, to increase funding for sewage treatment plants, will together form the basis for a successful fight to improve the waters of America.

Mr. Chairman, I have a fuller, more complete statement here that I would like to have unanimous consent to place in the record at this point.

Mr. KEE. Without objection, so ordered.

(Mr. Thone's prepared statement follows:)

## STATEMENT OF HON. CHARLES THONE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEBRASKA

Mr. Chairman, it is an honor to be a sponsor with the Subcommittee Chairman, Representative James Kee, and with its ranking Republican, Representative Fred Schwengel, of a bill to deal with the problems of non-point source pollution of agricultural, rural and developing areas.

The nation as a whole and even many members of the Congress have not realized the extent of the water pollution problems caused by runoff from the land. Earlier this year, the House and Senate passed a bill that provided about 20 billion dollars primarily for aid in constructing sewage treatment plants. In the Senate, this proposed legislation was hailed as the "clean waters bill." This was a rather ironical title since that bill largely ignored the major source, by volume, of water pollution. That source, of course, is runoff.

We cannot have clean water until we control what flows off the land and into our streams and lakes. This runoff is the source of the majority of pollutants found in our waters.

There are many components to the runoff problem. One component is the problem of animal wastes. The beef feedlot is a major source of waste. Consider the fact that one 1,000 pound steer in a feedlot will produce 35-to-50 pounds of waste per day. Then consider the fact that feedlots containing 10,000 steers are becoming common, and there are even feedlots containing 100,000 steers.

Animal wastes in the Missouri River Basin are equal to 370 million people. If only 5 percent of this waste reaches our streams, it will equal the waste of 18 million people. The magnitude of the problem is indicated by the fact that the basin's human population is only 7.9 million people.

Another component of the runoff problem is the danger of pesticides becoming concentrated in fish or birds. Our farmers must have a means of protecting their crops from being eaten by pests. At the same time, we must be careful that the use of pesticides doesn't threaten the survival of any species.

A third component in the runoff problem is the growing use of fertilizer. Use of fertilizer has increased 50 percent in just the past five years. Between 1920 and 1970, the use of fertilizer doubled every 10 years. When this fertilizer runs off the land and gets into our waters, it is a source of nitrogen, phosphorus, and potassium.

The largest component of the runoff problem is soil erosion. Every year, more than 250 million tons of topsoil flows off the land in the great Mississippi-Missouri River Basin and out into the Gulf Stream. This amounts to more than one-third of a ton of soil off of every acre in the basin.

If we stop soil erosion, we will largely solve the problems of pesticides and fertilizers. Tests have shown conclusively that particles of soil being eroded are the carriers of fertilizers and pesticides into streams. For example, as much as 96 percent of the phosphorus from off the land that gets into the water is carried by particles of soil.

I am encouraged by the third annual report of the President's Council on Environmental Quality. This third annual report, just out this month, for the first time gives serious recognition to the runoff problem.

The Council contracted with a consulting firm, Enviro Control, Inc., to make a study of trends based on pollution monitoring data collected by Environmental Protection Agency, the U.S. Geological Survey and other Federal and State agencies. A sample of 140 Federal and State water quality stations was chosen for the study, regarded as being representative of all types of conditions in the nation.

The study indicates that problems that can be corrected by sewage treatment plants improved between 1965 and 1970, while problems caused by runoff grew worse.

Specifically, the study showed that the oxygen-demanding load situation improved at 48 percent of the stations, grew worse at 23 percent, and remained the same at 29 percent of the stations.

In contrast, the study reported that the nutrient situation improved at only 18 percent of the stations, grew worse at 64 percent, and remained the same at 18 percent.

Listen to the conclusions that the Council on Environmental Quality draws from the study:

"In other words, point sources of organic and nutrient pollution, such as industrial and municipal discharges, appear to be overshadowed, in the most

of the stations that were analyzed, by runoff sources, such as farms, feedlots, and possibly urban runoff. However, the runoff trends which the data show also may be caused by other factors, such as scouring of pollutants from riverbeds by high flow.

"The Enviro data reinforce some recent steps to place more emphasis on runoff sources. What they say, in essence, is that even if all discharges of municipal and industrial pollution were stopped, many streams would still be polluted as a result of discharges from runoff sources."

The bill we are considering today would permit the U.S. Department of Agriculture to give loans to build dams, terraces and structures to keep our precious topsoil where it belongs, on our land. The bill would allow the government to enter into 10-year agreements with owners or tenants of land to cover maintenance of structures, cultivation methods and waste treatment procedures.

This bill is not a farm bill, nor a bill related only to the problems involved in agriculture. The bill tackles the problems of erosion alongside our roads. It provides for handling the special erosion problems of developing areas—in transition from rural land to residential land. The bill offers a solution to the problems of abandoned strip mines. The bill seeks to come to grips with the problem of salinity of water, which the President of Mexico so dramatically brought to our attention in his recent speech to a joint session of Congress.

Pollution is a problem that will be with us as long as there is an earth. We would have water pollution even if there were no men or other animals on the planet. Water would still cause river banks to fall in and billions of particles of soil to be eroded off the soils with rains and snows.

While recognizing that water pollution will always be with us, we must resolve to fight pollution as best we can. We can make a major step forward by passing this bill to provide solutions to non-point source pollution from agricultural, rural and developing areas. This bill, together with the bill passed earlier this year by the House of Representatives to increase funding for sewage treatment plants, will together form the basis for a successful fight to improve the waters of America. We must make certain that we leave our children and grandchildren with a legacy of decent lakes and streams. We can't be satisfied when we reach the point where our waters are not getting worse. We must not be satisfied until we have instituted the means whereby our lakes and streams are improving in quality.

MR. KEE. Mr. Thone, I certainly thank you for your most pertinent testimony.

Now, before proceeding with the next witness, the Chair has two announcements to make. Representative Jamie L. Whitten, Democrat of Mississippi—Jamie is enthusiastically in support of this matter. He called me late last night and said that he would get here this morning if at all possible, but that he had something come up.

So, without objection, I would like for Mr. Whitten's statement to appear in the record at this point. Without objection, so ordered.

(The statement follows:)

STATEMENT OF HON. JAMIE L. WHITTEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSISSIPPI

Mr. Chairman, members of the committee, I appreciate this opportunity to testify in support of the principles of H.R. 15596 which concern non-point source pollution from agricultural, rural and developing areas.

First I would like to compliment the Chairman, Jim Kee, and other members of the sub-committee, not only for this bill you are considering, but for the fine job you have done over the years, for the good of all, future generations as well as the present one.

The bill you have before you today I know stems from the realization of some years that our Nation's water and soil resources are invaluable assets which must be conserved for future generations.

And that much of our land suffers from unacceptable erosion and runoff and that most of our streams are below reasonable standards of quality.

## A NEXT STEP

The bill represents a logical step as we move to attack the problems of our land and water.

We have since 1936 been working with the problems of erosion and runoff and flooding through the programs of the Soil Conservation Service. Indeed the Great Plains Program spawned by the drought-ridden thirties provides the prototype for much that is envisioned in the bill now before you. The other prototype is the Agricultural Conservation Program also dating from the mid-thirties. Last year, the ACP program was renamed the Rural Environmental Assistance Program and was expanded to include many of the pollution-abating practices which have been envisioned here, such as waste lagooning and new methods for disposal of on-farm wastes. The Appropriations Committee, on my recommendation, added \$30 million above the regular level of appropriations for 1973 to be set aside for these new pollution control practices. It also provided \$195.5 million for the regular practices which have made such a contribution over the years. The following is a list of those contributions:

## PERFORMANCE OF SELECTED PRACTICES IN 1971 AND 1936-71 RURAL ENVIRONMENTAL ASSISTANCE PROGRAM

Practice	Extent under 1971 program	Total accomplishments, 1936-71
Water storage reservoirs constructed to distribute grazing, control erosion, and conserve irrigation water and wildlife (structures).....	42,000	2,201,000
Terraces constructed to control erosion or conserve water (acres).....	458,000	32,301,000
Stripcropping systems established to control wind or water erosion and conserve water (acres).....	149,000	114,051,000
Permanent sod waterways established to control erosion and safely dispose of excess runoff (acres).....	30,000	1,152,000
Enduring vegetative cover established or improved to control erosion, conserve water, and for land-use adjustment (acres).....	6,495,000	( <sup>1</sup> )
Competitive shrubs controlled on range or pasture to permit growth of adequate cover for erosion control and to conserve water (acres).....	1,334,000	62,697,000
Trees and shrubs planted for forestry purposes, erosion control, and land-use adjustments (acres).....	167,000	5,258,000
Forest tree stands improved for forestry purposes and erosion control (acres).....	141,000	4,358,000
Wildlife conservation (acres served).....	846,000	12,685,000
Animal waste and solid waste disposal structures (lagoons, storage, diversions and other) (structures).....	4,000	<sup>2</sup> 6,000
Sediment-related structures (acres served).....	376,000	<sup>2</sup> 388,000
Other pollution abatement practices (acres served).....	123,000	<sup>2</sup> 137,000

<sup>1</sup> Similar data lacking.

<sup>2</sup> 1970 and 1971 only.

My reason for being such a strong advocate for this program is that by providing 50 percent of the out-of-pocket cost of this while the farmer provides the rest plus his labor, we have bought a tremendous amount of conservation that would not have been done. But much yet needs to be done.

It was testified that the most recent conservation needs inventory shows 64 percent of our cropland, over two-thirds of our grasslands, and nearly 60 percent of our forest lands still require some type of conservation treatment. Keeping up with changes of nature and the changing needs of our expanding population—while maintaining and restoring the quality of our air and water is a continuing task.

## THE ONLY WAY

I mentioned earlier that the bill before you represented a logical step in an honorable tradition of Federal conservation efforts. It is also a step which is absolutely necessary.

As I review the various activities of the Environmental Protection Agency, it seems that we are moving hell-bent to establishing rules and then looking around to see how we can meet them or what the effect will be. This is backward in my view, but seems what the present climate requires. If we are going to continue down this path, it seems that we must also look to ease the burdens this approach creates on important sectors of our economic life. We cannot sit idly by while factories are closed and people are put out of work, nor can we see feed-lots, for example, put out of business which will endanger our meat supply. As we pointed out in our report on Agriculture, Environmental and Consumer Protection Appropriations, we must look for such means as tax credits to soften the

effect of these rules. Likewise, as recommended in this bill, we must look for long-term cost sharing arrangements to accomplish our objectives.

Mr. KEE. Mr. Tom Abernethy telephoned me last night. He, too, is an enthusiastic supporter of this measure. And due to conditions beyond his control, he, too, said he would be late in getting in.

Since the hour is late and we must hear from the Department, I ask unanimous consent, and without objection, that Mr. Abernethy's statement appear at this point in the record.

Without objection, so ordered.

(The statement follows:)

STATEMENT OF HON. THOMAS G. ABERNETHY, A REPRESENTATIVE IN CONGRESS  
FROM THE STATE OF MISSISSIPPI

Mr. Chairman, and Members of this distinguished Subcommittee, I appreciate this opportunity to present this statement. I commend you on recognizing the tremendous problems which plague our environment as a result of what we have come to know as "non-point source pollution."

It is impossible to calculate the vast amount of soil that is eroded away by water and wind. Frankly, there is no greater or more dangerous pollution than this type. When rains come and wash away our valuable soil, not only is the involved land damaged, but the soil itself often serves to clog and choke our streams and rivers, killing fish, animal and plant life indiscriminately. In addition, the same water which rakes away so much of our land, carries with it the chemicals and other potential pollutants that might be in its path. This, of course, multiplies the problem.

Many of our colleagues who come from our great plains of the West know of the tremendous erosion that can take place as a result of strong and prevailing winds. Just consider the damage which occurred in the great dust bowl back in the 1930's. Those disasters were pollution at its worst. Unfortunately great dust storms are still not uncommon and are a real hazard to man and his environment.

I commend the Chairman, Mr. Kee, the Ranking Minority Member, Mr. Schwengel, and others who have introduced legislation to try to do something about non-point source pollution. I commend you for placing the primary responsibility for this monumental task in the hands of the Department of Agriculture which has been in the forefront of Soil and Water Conservation for many years. I know of no other department that is nearly as well qualified for this sort of work than is the Department of Agriculture.

It is unfortunate that the various environmental protection groups seemed to completely ignore the leadership role the Department of Agriculture has played in environmental protection, even long before "environmental protection" became a popular household term.

Mr. Chairman, I again want to point out that I believe the hearings you have begun on this subject are most important. I am delighted to have been asked to present a statement to this distinguished Subcommittee.

I fully support your efforts to combat this problem. This Subcommittee has a record of diligent service to the Nation, and I am convinced that the hearings on this subject will constitute continuation of the type of work you have performed in the past.

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Mr. KEE. At this time the committee is delighted to welcome Mr. William B. Davey, Deputy Administrator for Field Services, Soil Conservation Service, U.S. Department of Agriculture, and he will also be accompanied by Mr. William Weld, Assistant to the Deputy Administrator for Watersheds, Soil Conservation Service, U.S. Department of Agriculture.

I might at this point add that anyone who reads the record of our hearings will see that Mr. Weld traveled with us throughout the United States.

Mr. Davey, proceed at your own convenience.

STATEMENT OF WILLIAM B. DAVEY, DEPUTY ADMINISTRATOR FOR  
FIELD SERVICES, SOIL CONSERVATION SERVICE, U.S. DEPARTMENT  
OF AGRICULTURE; ACCOMPANIED BY WILLIAM WELD,  
ASSISTANT TO THE DEPUTY ADMINISTRATOR FOR WATERSHEDS,  
SOIL CONSERVATION SERVICE, U.S. DEPARTMENT OF AGRICULTURE

Mr. DAVEY. Thank you, Mr. Chairman, and members of the subcommittee. My colleague, Mr. Weld, and I appreciate the opportunity to appear before this subcommittee to present the views of the Department of Agriculture on H. R. 15596 and related bills, 15596 being a bill cited as "Non-point source pollution from agricultural, rural, and developing areas."

The bill would authorize the Secretary of Agriculture to enter into agreements with and furnish technical, financial, and other assistance to State and local public agencies for the abatement and control of pollution originating in the agricultural and rural sectors.

Only last week Hon. Russell E. Train, Chairman of the Council on Environmental Quality, presented the Council's annual report to the President. The following direct quotes are taken from the discussion on water pollution contained in that report:

The Enviro data reenforce some recent steps to place some emphasis on runoff sources. What they say in essence is that even if all discharges of municipal and industrial pollution were stopped, many streams would still be polluted as a result of discharges from runoff sources.

If our enforcement programs and our financial investments in control are to have the maximum effect, we must greatly expand our knowledge of the causes, sources, and trends in water pollution. For example, if the Enviro analysis is confirmed by further work, it points up the need to place much greater emphasis on non-point sources of pollution.

Two major areas of non-point source pollution are identified in the bill; namely (1) agricultural and related pollutants which cover such items as animal wastes, mineral salts, plant nutrient materials, infectious agents, and pesticides, and (2) erosion and sediment control. The latter addresses itself to four critical sediment sources which are strip-mined land, roadside erosion, developing rural areas, and streambank erosion.

The bill also provides for development of a summer jobs program to be designated the agriculture youth program for students of agriculture, conservation, and related fields. Finally, the bill authorizes an appropriation of \$5 billion for the fiscal year 1973, to be available until expended.

In consideration of the substantive issues raised in our report on H.R. 15596, and the current constraints on the Federal budget, the Department recommends against enactment of H.R. 15596.

Some of the issues the Department has raised relate in part to authorities and part to costs. This Department agrees with the objectives of the bill. However, with respect to authorities, the pending Rural Development Act of 1972, if enacted, would authorize a program for the abatement and control of agricultural related pollution and it would accomplish certain of the general purposes of the bill.

Existing authorities of the Department of Agriculture permit the Secretary to provide technical, financial, and other assistance to State

and local public agencies, private landowners and operators, for most if not all of the purposes contained in H.R. 15596.

Further, legislation currently under consideration by the Congress is directed at the purposes of H.R. 15596. Amendments of the Federal Water Pollution Control Act would cover non-point sources of pollution.

The Sediment Control Act proposed by the administration would make a significant contribution to control over nonagricultural land disturbing activities, such as urban and road construction. And with regard to the agricultural youth program, authorized by section 5, we believe that further analysis is needed of similar programs such as the Youth Conservation Corps, which is administered in part by the Department of Agriculture.

Finally, while agreeing with the objectives of the bill, the budgetary impact of this legislation is beyond the Federal budget capabilities for such purposes.

Thank you, Mr. Chairman.

Mr. KEE. Thank you, Mr. Davey.

I might say that in my judgment, in our markup session, we will eliminate—of course, this is only my opinion—but we will eliminate the \$5 billion for fiscal year 1973, and I think that the Bureau of the Budget will be able to live with that figure. The important thing, as we look about us during these so-called modern times, we will have to get started to do something right now without waiting in order to do what I have previously said, to retain an adequate and good clean water for the generations yet to come. That's something we'll get into in the markup session, too.

Mr. Schwengel?

Mr. SCHWENGEL. Thank you.

I am glad to have the Department appear and to hear your testimony this morning. I am glad you endorse the objectives of the bill—this is what I understand you have done. So you have given us your encouragement and I appreciate having your statement. I know this comes after thorough consultation with your Department, beginning with the Secretary of Agriculture himself. I visited with him and he told us, in essence, the same thing. You are bound by the budget.

Mr. DAVEY. Yes, sir.

Mr. SCHWENGEL. And I respect you for respecting the administration's wishes here.

However, there is a bigger problem we must confront. If we pass the bill without money, would it strengthen and help you to attain the objectives you're trying to attain to complete the watershed conservation program?

Mr. DAVEY. It would broaden, in essence, our approach on a project-type activity without which it would be difficult for us to implement; yes.

Mr. SCHWENGEL. You would have authority then to enter into certain agreements that you do not now have, or contract authority with people to borrow money to carry out the objectives here?

Mr. DAVEY. Well, we might possibly have authority. I think it would reinforce and clearly mandate the mission of the Department for broadened efforts in this particular arena.

Mr. SCHWENDEL. So it seems we could pass this without money, then, and that's the thing I wanted to get established.

Now, you have been associated with this, and I'm sure you have given thought to it, this next question I raise: If we were to adopt a program within 10 or 15 years to complete the watershed conservation program, do you have any estimate of what it would cost under the terms of this bill?

Mr. DAVEY. I think this would be a most difficult estimate. As far as I know, we haven't addressed ourselves to that specific question; have we, Mr. Weld?

Mr. WELD. No, sir.

Mr. DAVEY. We know there are some 8,000-9,000 watershed projects which our conservation needs inventory has indicated has serious problems. They would appear to be feasible so far as treatment is concerned, but we would only be dealing with averages if we were to estimate such a cost, particularly if we brought in new types of endeavors such as we have had under consideration.

Mr. SCHWENDEL. You have on these 8,000 some estimates of the cost. What is that figure?

Mr. DAVEY. That was only calculated in terms of numbers of projects having a need. As I recall, we have not tried to place a dollar figure against these and estimate the total cost. You see, they would also be restricted to the purposes which are now involved in Public Law 566.

If new purposes were added, or new dimensions added to the program, this would result in a different figure.

Mr. SCHWENDEL. I think it might be well, Mr. Chairman, if we suggested to these people at least to put some of their talent to work to get some estimate of the cost of completion. I have a feeling if we would invest the \$24 billion we propose in the pollution solution bill for cities and towns, that we might have a figure that would pretty much complete the watershed program.

Mr. DAVEY. We could supply for the record, Mr. Schwengel, an estimate based on current policies and procedures in terms of the numbers of watersheds.

Mr. SCHWENDEL. All right. And we could show here that the expenditure would be a much wiser investment than we are investing in the other programs.

(The requested information follows:)

ESTIMATED COST TO COMPLETE THE WATERSHED CONSERVATION PROGRAM WITHIN  
10 TO 15 YEARS

Based upon the number of potential watershed projects, current policies and authorities, and giving consideration to average federal cost of recent approved projects, we estimate the federal cost to complete the watershed program in the next 10 to 15 years at approximately \$16 billion at present price levels.

Mr. SCHWENDEL. Now, so far as I know, we are not applying the question of interest in the water pollution solution program for municipalities and industry, and I raise the question of interest.

What was the basis of assessing interest costs to the watershed programs? Why do that in this program and not do it in some of the other water pollution solution programs?

Mr. DAVEY. Certain of this, I suspect, is historical. It has been customary in water resource development projects generally to have a so-

called cost-benefit analysis. The guidelines promulgated here are generally now under the broad umbrella of the Water Resources Council. We have certain kinds of interest rates that we are required to apply in water resource development projects.

It is true that there are other endeavors that involve moving earth or in doing construction development work for which no interest rates are applied, or for that matter, no cost-benefit ratios are applied. But basically in all water resource projects, of which the small watershed projects are a part, the requirements are to develop a cost-benefit ratio.

Mr. SCHWENGEL. I don't disagree with that, but I only raise the point of why charge interest here for water pollution solution problems and not on another program? You see, we have an unfair yardstick in comparison here and I raise that question because I think it's a very real one that we ought to consider sometime in the future.

Also, I know you have been working on the benefits, in addition to those you are now allowed to consider. I think for the record we should have a list of those additional benefits that come from the watershed programs and conservation programs that we are not considering now, and that ought to be in the record, Mr. Chairman.

If these people would furnish that, I think it would be very valuable testimony.

Mr. KEE. Would you furnish that?

Mr. DAVEY. Yes, sir.

Mr. KEE. Without objection, so ordered.

(The requested information follows:)

ADDITIONAL BENEFITS THAT COME FROM THE WATERSHED AND CONSERVATION PROGRAMS THAT ARE NOT BEING FULLY CONSIDERED IN THE EVALUATION OF PROJECTS

Present PL-566 project work plans show benefits for flood damage reductions, enhanced use of flood plain area for both agricultural and nonagricultural uses, irrigation, drainage, fish and wildlife, recreation, and from the use of municipal and industrial water. Flood damage reduction benefits include not only the damages caused by rampant water but also the damages caused by sediment deposition in urban and rural residential areas, but on productive agricultural lands, and in downstream reservoirs, to name a few. The detrimental effects of suspended sediments on municipal water facilities, on stream, and reservoir recreation, and in Hawaii on ocean recreation are included. The effect of land treatment and structural measure to reduce erosion on uplands, with its resulting gully formation or top soil removal, and scour on the flood plain are evaluated and included as part of the flood damage reduction. Also, an approximation of economic activity generated in the other sectors of the economy, are shown as secondary benefits.

The effect of PL-566 projects on the environment and on the social well-being of the residents of the area are only now being included in the "effects" section of these work plans. This recent change as of May 24, 1972, has been brought about to facilitate the development of environmental statements now required with PL-566 work plans.

Revision of existing procedures for the evaluation of sediment as an environmental pollutant are now undergoing review. A quote from this revision indicates our concern and feeling on this problem:

"The volume of sediment is often referred to as the world's greatest pollutant. Literature on sediment damage to the environment frequently refers to the ability of sediment to transport nutrients which accelerate eutrophication of water bodies, cover fish spawning beds and food supplies, destroy aesthetic qualities of streams and adversely effect wildlife habitat and nesting grounds. Sediment also can degrade the quality of recreation experience, cause vector problems and carry toxic chemicals, radioactive substances and pathogenic bacteria which may be detrimental to human health.

"Since a reduction in sediment yield is brought about by most land and water resource development plans prepared by Soil Conservation Service, these plans should claim credit for any reduction in damages similar to those described above."

While enumeration of the effects other than monetary is now being undertaken in connection with PL-566 work plan development, the requirement that plans show economic feasibility, often prevents the inclusion of practices which have known beneficial environmental or social well-being effects.

The concept of cost allocation and cost-sharing for practices included to serve environmental and social objectives is contained in the proposed Principles and Standards for Planning Water and Related Land Resources as issued by the U.S. Water Resources Council. If implemented, these Principles and Standards would allow inclusion of practices to improve or prevent deterioration of environmental and social conditions without requiring economic development and the benefit-cost ratio to bear the complete burden.

To summarize and provide a specific answer to your question, environmental and social effects enumerated but not taken as benefits are:

1. Environmental.

- (a) Area, location, and quality of open and green space.
- (b) Extent, quality, and location of streams and rivers.
- (c) Lakes and reservoirs—the esthetic aspects of open water development in area frequently devoid of open water.
- (d) Beaches, shores, and streambanks—the enhancement and protection of these beaches which render them a more pleasing part of the human environment.
- (e) Mountain and foothill remote area—improved accessibility, fire protection, increased biological diversity.
- (f) Estuaries—size, biological significance, quality preservation, and accessibility.
- (g) Wetland areas—as visually attractive settings that support nongame shore birds and aquatic plant communities.

2. Archeological and Historical.

3. Biological.

4. Geological.

5. Ecological Systems.

6. Social Well-being.

- (a) Employment—as number of jobs.
- (b) Per capita income—as a measure of improved living standard.
- (c) Population distribution—as reflected by improved employment opportunities in rural areas.
- (d) Enhanced security of life and health.
- (e) Enhanced educational and cultural opportunities.
- (f) Rural fire protection resulting from availability of stored water.

Mr. SCHWENDEL. Your testimony didn't tell us about the principal sources of sediment, and I know you have some studies on that. It might be well to have those in the record, if you can furnish those for us.

Mr. DAVEY. All right, sir.

Mr. KEE. Without objection, so ordered.

(The requested information follows:)

#### CRITICAL SEDIMENT SOURCES

These can be identified as falling into four main categories:

1. *Strip and surface mining*

It is estimated there were some 3.2 million acres disturbed by 1965, of which approximately 2 million acres were nonfederally owned and needing conservation treatment. These are nonproductive, eroding lands.

2. *Roadside erosion*

Of some 3.5 million miles of U.S. roads, 2.5 million miles contribute sediment. We estimate that at least 425,000 miles of secondary roads need stabilization. Unfortunately, much of the sediment from eroding roadsides is carried in the road ditches into the streams.

### 3. Streambank erosion

The Corps of Engineers undertook a study a few years ago, in which the Soil Conservation Service participated, to appraise the problem arising from streambank erosion. Of approximately 3.5 million miles of streams in the United States, about 8 percent, or 549,000 miles, was causing sedimentation with 148,000 miles considered serious sources of sediment. The report estimated \$90 million annual damages from sediment and land losses.

### 4. Developing areas (rural and urban)

An estimated 1.5 million acres are being converted to urban use annually. These areas may contribute sediment loadings 10 to 50 times greater than rural areas.

Mr. SCHWENGEL. In view of the past progress of the program under Public Law 566, do you believe the water resources control problems are being effectively controlled under the several and various programs mentioned in the Department's report, or do you believe noneffective programs would be produced under continued authority?

Mr. DAVEY. I'm not sure I follow your question, Mr. Congressman.

Mr. SCHWENGEL. The counsel suggested this to me, and maybe I can yield to him the question.

He wants to yield for further clarification on that question.

That's all I have.

Mr. KEE. Mr. Davey, according to the views of the Office of Management and Budget, apparently they will take a look at this as an expenditure of Federal funds. As has been mentioned before—and I mentioned it myself—this is truly an investment in the future of America.

Now, for example, when we conducted these hearings—and I assume you have seen a copy of them—on these projects before I became a member of this subcommittee, they came up with a cost-benefit ratio of 1.2 to 1, 1.3 to 1, and at every single place we visited we found that when these watershed projects were established, that the benefit-cost ratio was up to 5, 6, and 7 to 1—in other words, for every dollar invested, we got \$5, \$6, or \$7 in return. That's something that I would hope we would work out in our markup session, and to make that absolutely crystal clear.

It is really amazing—at least it was to me—when you go out as we have been and look at these upstream watersheds, it was absolutely amazing to me to see how clear the water is. You could just take a cup, you know, and drink the water from there. The sediment goes down into the ground. It doesn't get into the downstream.

We saw fish that had never been there before; we saw the absolute elimination of floods, which they had before these projects were completed and constructed. In my judgment, I'm so enthusiastic about this proposal, even though it obviously can be improved, that this will not only be landmark legislation, as my distinguished colleague, Mr. Schwengel stated on the floor of the House, but it will be the finest thing this Congress or any other Congress could do as we look forward to this life that will be lived by our grandchildren and the future generations yet to come. I simply want to make that as an observation.

Are there any other questions?

Mr. Miller?

Mr. MILLER. Yes, Mr. Kee.

Thank you, Mr. Davey, for your enlightening comments.

I would like to ask you a question that I asked the chairman of the Agricultural Committee, Mr. Poage, about the possibility of

chemicals that we are now using, the fertilizer, insecticides, and pesticides, the possibility of the concentration behind the dams that we are constructing throughout the Nation, and the possibility of that high concentration of chemicals going into our ground water in an area where we would be helping some people in one region but harming people in another region.

Do you have any comment on this? Are there any studies that have been made that you can convey to us?

Mr. DAVEY. I believe I will ask Mr. Weld, if I may, to address himself to this question. Certain of the techniques that would be involved in the project-type action as envisioned by the bill would be specifically designed to prohibit this sort of thing, but from a technical standpoint, I wonder if you would comment, Mr. Weld.

Mr. WELD. Yes, I would be happy to.

I believe the thinking and whole philosophy behind this bill is that we don't want to lose sight of the fact that we are attacking this problem from the broad, upstream standpoint. We are not considering just one practice alone.

In our watershed program, the first and foremost increment that we always consider is an adequate land treatment program, and that is supplemented by structural measures.

Now, if we're going to do an adequate job on sediment control and erosion control and the other pollutants related to agriculture, we must take care of these things at their source. Part of that comes from erosion control on crop and pasture land, of an adequate program to keep the soil from moving, since sediment is the main carrier of a lot of these pollutants.

Another example would be in connection with feedlots. We don't want that pollution water moving into a reservoir, where it is either going to move on downstream or get into the ground water. We must devise ways and means of controlling and diverting the runoff from these areas plus proper treatment at the waste, then getting it back on the land where it can't be too damaging.

So I think the whole principle of this has got to be taken in context as an overall program and not think of what one practice alone might do either detrimentally or beneficially.

Mr. MILLER. Do you feel the Department has ample research funds in order to attempt to find whether it's advisable to neutralize the chemicals? Are you working on that, or is someone in the Department working at the present time to come up with an answer on this?

Mr. DAVEY. There is a considerable amount of research. I would suppose, in the normal bureaucratic sense, we never have enough money to do all the research we would like to do. There is a need for, I believe, intensified research on this aspect.

There is some controversy with respect to nutrient removal in rural lands, agricultural lands. There are some who believe that most fertilizer finds its way into the water sources. Our research indicates this is not entirely so, that even under very high fertilization, if associated management practices go along with it, that the nutrient runoff is relatively small. But there are other indications that even on lands that have little or no cropland history, and little or no fertilization, there is considerable nutrient output from it.

It will vary by the kinds of soil, the kinds of rainfall, the topography and runoff conditions. Our research is going in this direction, to try to discover more of the reasons why.

Mr. MILLER. Thank you. I wanted to mention I have not only the interest in agricultural runoff and the problems created there, but the bill also would help us—I do represent 13 counties in southeastern Ohio. We have some 200 miles of the Ohio River bank, and we have a great erosion problem at the present time. It is something we did not have a few years back. The new dams are built higher and that means there is more of a pool of water behind each dam up the river, and for each new dam that was installed, some two or three smaller and lower dams were removed.

This has created problems where we may have a normal water pollutant 3 to 4 to 8 feet higher, and this has created problems on the bank, because it really gives us a new shoreline up above the old stabilized shoreline, and it takes about 20 years to stabilize it.

We find that as the tugboats push the barges, the great wash behind would come in and wash the soil out from under the trees, since the water is up higher, and the trees fall in, and that has created a lot of problems for people in our area who have built along the bank of the Ohio River.

Also we have a lot of strip mines in our area, and we have not been able to truly solve the problem. Many of the people who did strip mine years ago have left the residue; they have gone out of business. We now find some of our smaller streams turn out to disappear overnight because of the amount of water falling, washing in the sand off the sides of the spoil banks, and it will literally fill the stream. Then we have no streambed at all. We find the soil is washed out, and in many instances the chemicals and minerals, acids, are washed out to the farmland. So it does seem this bill encompasses many things that would be helpful to us in our area.

The fact that you do research regarding agricultural runoff, who might I ask would actually supervise and have authority for, Mr. Chairman, the strip mine conditions and the erosion conditions in your bill, if I may ask that question?

Mr. KEE. The problems that you mentioned with your strip mines is something that occurred years ago, when we were preparing for World War II. Very fortunately, most of these so-called fly-by-night people who used to ruin our streams are gone. We do have responsible so-called strip mine operators that are very, very particular in the work they are doing, and they do not in any way interfere with the water streams at all.

As a matter of fact, when they have finished putting their top soil back, they have made small airports, they have made nice places for people to buy lots and build homes and new communities. So what we would like to do, through this, and another piece of legislation that is pending before another committee, is to put the regulations down so that these irresponsible strip miners, once they are out of business, will no longer be a problem.

Mr. MILLER. Yes, Mr. Chairman. To get back to that point of who would actually be responsible for the control of strip mine erosion aid in your bill presented here, is that the Secretary of Agriculture?

Mr. KEE. That's correct, yes.

Mr. MILLER. While I was mentioning the strip mines, we happen to have many, many strip mines and the overburden is still in the same place. Maybe at the present time it may be one-half the size it was. It was a small mountain. Those operators, in many instances, are out of business, and some people do not even know who they are.

Mr. KEE. That's correct.

Mr. MILLER. That was my concern, and that is the type of thing that we need to solve. I believe today we do have people who are attempting to solve those problems, of not creating problems in the streams as they do strip mining. But we have so many that go back so many years, that we need a solution to that problem. Would your bill help solve that problem?

Mr. KEE. Absolutely. That is the intention.

Mr. MILLER. That's all I have for Mr. Davey. I thank you. Thank you, Mr. Chairman.

Mr. KEE. Mr. Schwengel?

Mr. SCHWENDEL. I think this colloquy we have had has been very helpful, but I do want to extend it a little bit. First of all I want to make a comment regarding our impression of the people who work for you and in your Department.

Throughout the areas we visited, I was impressed with the kind of talent and capability that you have developed all over the United States to tackle this problem, and who are ready and willing to go.

With that preliminary, I want to ask this: Do you feel, if we pass this legislation, and if we could probably fund it, do you have the talent and capability and capacity to carry through this program, so that we could hopefully complete a major portion at least of the watershed program, say 10, 15 or 20 years from now?

Mr. DAVEY. First, thank you very much for your kind comments, sir, on behalf of our employees.

With respect to capability of vastly speeding up the watershed program, assuming funds were available, it would be my judgment that we would need additional personnel to keep up with the demand for an accelerated rate of progress on the small watershed program.

Mr. SCHWENDEL. How much additional, percentagewise?

Mr. DAVEY. Well, we have not, I believe, analyzed a speedup of this magnitude. It would be a question of assessing the problems and opportunities. We would also need an assessment of the capabilities of the sponsoring agencies, the States and the local communities, and their ability to accelerate at this same rate.

Mr. SCHWENDEL. Let me ask you this: There are 69 land-grant colleges in America and other colleges interested in this, other institutions. Would they respond to the challenge here to furnish the kind of talent and help that we need?

Mr. DAVEY. I'm certain they would. There are some excellent research projects being done by many of the land-grant colleges. Through them, the extension services would be helpful in this kind of context envisioned under the bill.

Mr. SCHWENDEL. You then have a real good base to operate from, and you would not have an insurmountable challenge if we could sell—if the American Congress could sell them—

Mr. DAVEY. The Department has very considerable expertise developed over a good many years in this area; it has a sound delivery

system in terms of having offices in virtually every county of the United States. It has a good deal of knowledge and experience on working with State and local communities and public agencies.

From this standpoint, I would agree the Department has some substantial capabilities. But any vast speed-up I think would require a substantial augmentation of our personnel resources to pull it off.

Mr. SCHWENGEL. But it could be made available? It's a challenge that could be met, you confidently believe?

Mr. DAVEY. If all these other pieces fell into place, in our judgment, yes.

Mr. SCHWENGEL. Isn't it true, also, that you presently have probably the greatest collection of talent in the world to deal with this problem?

Mr. DAVEY. We would like to think we have a very substantial expertise in this whole arena of erosion and sediment control, not to say we have a monopoly on the market. But, yes, we have some very talented individuals and capabilities.

Mr. SCHWENGEL. Mr. Chairman, I want to say that I'm indeed grateful we have Public Law 566. It has embarked on a very worthwhile program, and the investment has been one of the best investments we have made. The chairman earlier referred to that in his statement.

I hope personally that we could pass this bill, and I hope we could develop a case before America, to develop a program that will deal with the problems on earth, and at the same time produce a real solution to the water pollution problem.

I also would like to make this observation, that when we do this, we will make the job easier for municipalities and we will make the job easier for industry. So I hope we can somehow develop a case so that more of America will feel as we do about the importance of the passage of this bill and the implementation of this kind of program.

I would also like to reiterate what the chairman has said earlier, and that is, this is probably not a perfect bill and it may need some amendments, maybe some deletions, and maybe some additions. I hope you will feel free to give us the benefit of your talent and thinking as we progress with this.

There is one other question I would like to have confirmed. I saw some studies eminently made, and because I have been worried about this trend of moving away from the country, that if we would fully implement this kind of program, that couldn't we conceivably not only keep the population on the farm but many more would move back to the farm areas?

Has anybody done any studies in your department on that?

Mr. DAVEY. Mr. Weld, do you recall—

Mr. WELD. I don't know of any broadbased study on that particular point. However, we are confident, from experience in the projects that have been carried out so far, that there is no question if you have an adequate supply of quality water in a rural community, that community is going to prosper. If it can prosper, you can then bring in additional industry and provide jobs to the people there, rather than having them move to the urban areas.

Now, that is one definite benefit I am sure has been reflected many times over in our projects.

Mr. SCHWENDEL. Any figures you have on that would be very, very helpful to the testimony we are developing here. So I hope you will send that to us.

(The requested information follows:)

SUMMARY OF WATER SUPPLY STORAGE FOR MUNICIPAL AND INDUSTRIAL USE IN PL 566 AND FP AUTHORIZED WATERSHED PROJECTS, JULY 1, 1971

An adequate supply of good quality water is essential to any community large or small, not only for future economic growth but to satisfy present demands. Need for water is constantly rising due to population growth, migration to urban centers, greater per capita consumption for domestic use, and expanding industrial needs.

Many communities have come to realize that their water supplies are inadequate as a result of seasonal droughts, depletion of ground-water supply, increasing demands, and other factors. Too often little attention is given to this important problem until the shortage is imminent. Water resource development programs, such as are authorized under P.L. 83-566 and the Water Supply Act of 1958, are most effective throughout the nation in helping to provide the needed water supply facilities.

In keeping with the multiple-purpose concept of the small watershed program, local sponsoring organizations are encouraged to include water supply storage in available reservoir sites for both present and anticipated future demands. Since 1958, a total of 198 multiple-purpose reservoirs incorporating storage for municipal or industrial use have been planned in 150 projects (135 PL 566 and 15 FP) in 29 states. These structures will provide over 559,000 acre-feet of municipal and industrial water supply serving 206 communities with an aggregate population of more than 1,221,000 people. The local communities will invest more than \$48.5 million in installing these storage facilities.

An analysis of the figures shows that the average amount of M&I water supply storage added per reservoir is approximately 2,800 acre-feet, at an average cost of \$87 per acre-foot.

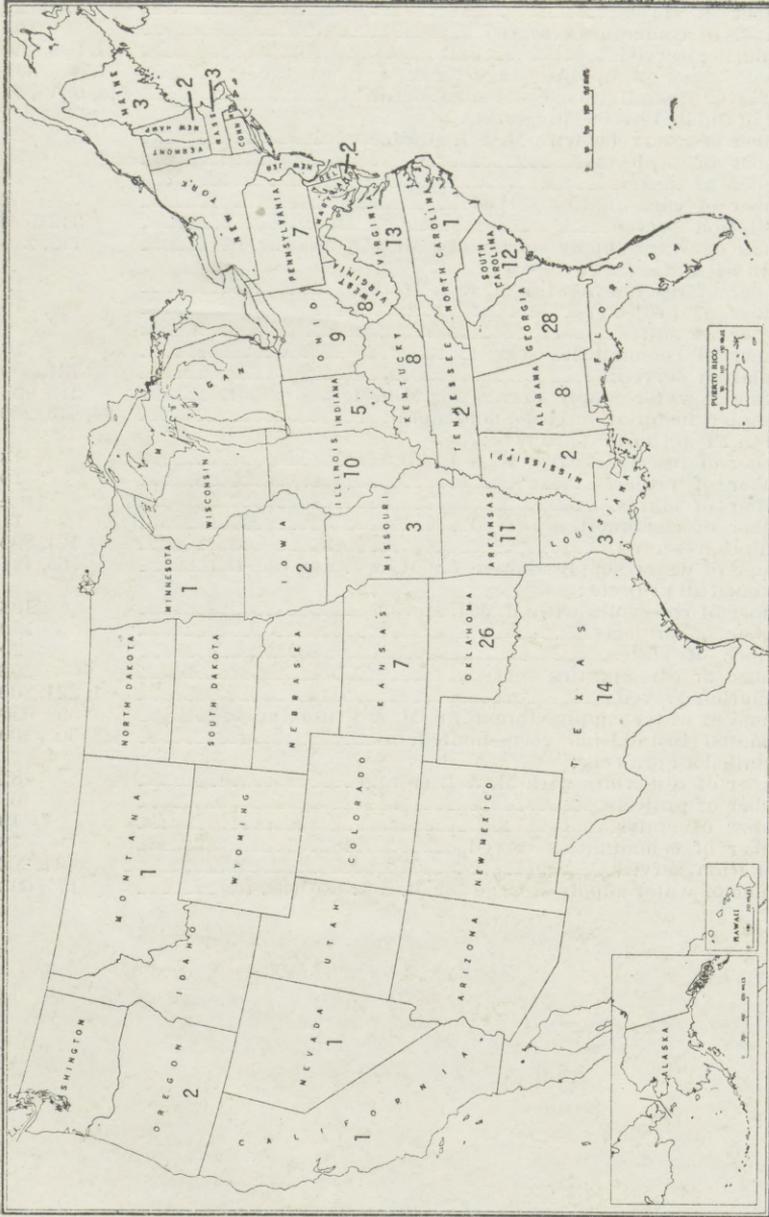
The program has been particularly popular with small rural communities. Of the 206 communities to be served, 51, or 25 percent, have less than 1,000 population; 152, or 74 percent, have less than 5,000; 174, or 84 percent, fall below 10,000; and 98 percent, comprising all but four communities, have less than 35,000.

Many of these small communities are the trade centers for the surrounding rural areas. Their economic growth and welfare is contingent on a dependable water supply. With water available new industry will be encouraged to settle in these locations. The trend toward population concentration in the larger urban centers can be slowed if conditions are favorable for persons to remain in the smaller communities. Expanding business created by new industry will provide employment opportunity for local residents and will induce others to move into these communities.

The following tabulation provides a more detailed summary of water supply storage for municipal and industrial use included in approved PL 566 and FP projects:

*Summary of water supply storage for municipal and industrial use in Public Law 566 and FP authorized watershed projects, July 1, 1971*

Planned in Public Law 566 projects :	
Number of reservoirs with M. & I. storage-----	179
Number of projects-----	135
Number of states-----	29
Number of communities served-----	190
Population served-----	1,089,400
Volume of water supply storage for M. & I. use (ac.-ft.)-----	346,065
Estimated installation cost—nonfederal-----	\$44,035,700
Installed in Public Law 566 projects :	
Number of reservoirs with M. & I. storage-----	68
Number of projects-----	55
Number of states-----	19
Number of communities served-----	67
Population served-----	342,500
Volume of water supply storage for M. & I. use (ac.-ft.)-----	112,256
Planned in FP authorized projects :	
Number of reservoirs with M. & I. storage-----	19
Number of projects-----	15
Number of states-----	4
Number of communities served-----	16
Population served-----	131,800
Volume of water supply storage for M. & I. use (ac.-ft.)-----	213,003
Estimated installation cost—nonfederal-----	\$4,470,200
Installed in FP authorized projects :	
Number of reservoirs with M. & I. storage-----	13
Number of projects-----	10
Number of states-----	4
Number of communities served-----	11
Population served-----	121,800
Volume of water supply storage for M. & I. use (ac.-ft.)-----	65,437
Total planned all projects :	
Number of reservoirs with M. & I. storage-----	198
Number of projects-----	150
Number of states-----	29
Number of communities served-----	206
Population served-----	1,221,200
Volume of water supply storage for M. & I. use (ac.-ft.)-----	559,050
Estimated installation cost—nonfederal-----	\$48,505,900
Total installed all projects :	
Number of reservoirs with M. & I. storage-----	81
Number of projects-----	65
Number of states-----	19
Number of communities served-----	78
Population served-----	464,300
Volume of water supply storage for M. & I. use (ac.-ft.)-----	177,693



USDA-ARS-RESEARCH STATION, ARS 1544

PLANNED RESERVOIRS WITH MG&I WATER SUPPLY STORAGE  
IN APPROVED WATERSHED PROJECTS  
July 1, 1971

Mr. SCHWENGEL. Isn't it true, also, that we would develop some broader based agricultural—in the southern part of my district, ideally suited for the growing of trees, that wouldn't this be a good development and enhance the economy of the area and actually move people back to the farm; wouldn't it?

Mr. DAVEY. It could well work in this direction; yes.

Mr. SCHWENGEL. Besides that, you would have to have more people to help with the maintenance of all these programs?

Mr. DAVEY. Yes.

Mr. SCHWENGEL. So this would help that trend and help keep the people in Iowa and the rural areas, where they could be much happier and enjoy life more.

We have had valuable testimony here, Mr. Chairman, and I'm glad to see these people again. I look forward to working with you until we get this job done.

Mr. DAVEY. Thank you, sir.

Mr. MILLER. I'm not yet clear, Mr. Davey, about the bank erosion problem. We would have authority given to the Secretary of Agriculture, as I understand, by the legislation now. Is there a size of a stream, a maximum size that he would have control of?

As an example, the Ohio and Mississippi Rivers—

Mr. SCHWENGEL. This would remain the challenge of the Army Engineers. We're not taking anything away from them. This committee, Mr. Miller, has already acted on a bill that gives that authority to the Engineers to work on this river bank problem beyond the main streams where the traffic is, like the Ohio, the Mississippi, and the Missouri.

Here we may need some clarification. We may need your thinking on the bill to see whether we have the designations correct so we don't overlap authority and so that we will be sure we have authority in the areas where the problems are throughout the country. I know what you're talking about and what the problem is.

As I interpret this bill—and we were aware of this problem—when we wrote this bill, it does not interfere in any way with the Army Engineers on soil bank erosion.

Mr. MILLER. This was the purpose of my question, because I'm aware the Corps of Engineers does have responsibility for soil bank erosion. They only have authority to help on public lands.

Now, is it your intent with this bill that the Secretary of Agriculture would be able to help on the larger rivers and private land; is that the intent?

Mr. SCHWENGEL. I'm not sure here how—you have raised a very valid question. I don't think we can answer that at the present time. I do know the Engineers have authority on the rivers. We visited down through the Mississippi and they have a tremendous soil bank erosion program down there. They ought to be able to have it in the upper Mississippi and Ohio. It depends largely on what we will do with the Engineers' program.

I want to say this, because the Engineers have been criticized in years past, because they have been involved in what Peterson of Nebraska referred to as a program of "big dam foolishness." The Engineers are beginning to see that this accent of building big dams with-

out protecting the headwaters and developing other programs is not good public policy and they're changing their attitude on that.

I think you raise a very valid question and I think we need to explore it further.

Mr. MILLER. Thank you, Mr. Chairman.

Mr. KEE. Mr. Thone?

Mr. THONE. Mr. Chairman, I want to underscore that point, too. Mr. Miller and I visited here about this. We have a critical problem on the Missouri. The Gavins Point Dam at Yankton, S. Dak., has increased this downstream flow, as Mr. Miller pointed out is happening on the Ohio. We are actually losing farms, not just farmland, but farms with this terrible erosion of the banks of the Missouri, on both the South Dakota and Nebraska side. Congressman Denholm and myself have been working on this now for quite some time. We are working, Mr. Miller, with the Corps of Engineers. Of course, we need the authorization from this committee before they can be funded for this project.

Second, Mr. Chairman, I would like to go back with Mr. Davey, if I may, to the report from the Russell Train—the recent report from the Council on Environmental Quality, which acknowledges, as I understand it, for the first time the serious problem we do have with the non-point sources of pollution.

As I understand it, they had some consultants come on in and it was their conclusion that we have got a real problem here. Now, I'm just a freshman Congressman here Mr. Davey, and probably have a lot to learn yet—I'm sure I do. But as I understood our testimony on this so-called Clean Water Act of 1972, the \$20 billion price tag or so, some of the witnesses were telling us we were going to have drinkable water in the streams in 1980 or thereabouts.

I remember so well one day, that Mr. Schwengel here very vocally excepted and said "I don't think you're getting to all of the problems."

Now, with that preliminary, I assume this report now is confirming Mr. Schwengel's concern, that they weren't telling us the whole story. Is this correct, in your opinion?

Mr. DAVEY. I think there has been growing recognition of agricultural and, for that matter, urban land runoff problems and how they contribute to water pollution. This is a little less dramatic, of course, than seeing a point source where it is easy to see and visualize. This is a broader thing, but in total it adds considerably to it.

I think what the Council on Environmental Quality is now saying is that there is growing recognition that this, too, is a serious problem.

Mr. THONE. I don't want to get argumentative at all, but I notice you brought up the budget—and properly so. There is a real financial problem, no doubt about that at all. But we're talking about some \$20 billion for these sewage treatment plans, as I understand it, from the Clean Waters Act of 1972. This is fine and dandy. I'm sure you won't get any argument here from Chairman Kee, or Mr. Schwengel, or Mr. Miller or myself, or any members of this committee.

But why now is there such a sound of alert on this \$5 billion authorization? I understand there is going to be work done on this and everything, Mr. Schwengel, but if we're willing to spend \$20 billion over here and try to tell the public we're going to have drinking water in all of our streams and so forth, and we now get expert information here that this isn't the case at all, why is there this great concern of

the \$5 billion, if we need this to really come to grips with this problem?

Mr. DAVEY. Of course, in the large context, this is a matter of priorities, as to what is done first and in what arena. I think the administration's position is that this would add very substantially to the cost of the budget at this time.

Mr. THONE. Granted. I can understand that.

Well, I guess I'm just being repetitious. This ground has been plowed, to use a bad expression, considerably here. But I just add my 2 cent's worth, that I intend, if I stay in Congress, to get vigorous in this area here and see the rural area gets as much attention as obviously the urban areas are getting in the clean waters fight, because we're only solving a portion of the problem, misleading the public, as I see it, with the statements that have been issued regarding that so-called Clean Waters Act of 1972.

This is no criticism whatsoever of the Soil Conservation Service. I want to second what Mr. Kee has said and what Mr. Schwengel has said, and Mr. Miller. With my experience in Nebraska with your people, I think you're devoted people and I think you are probably the original ecologists in this country. I think we should speed "right on," which seems to be the vernacular of the day.

I think we need more funding in this area, and more attention. I think perhaps this bill has accomplished that, Mr. Kee and Mr. Schwengel, if nothing else.

Mr. DAVEY. Thank you, sir.

Mr. KEE. Mr. Miller?

Mr. MILLER. Mr. Chairman, if I may ask just one question.

On the basis of agricultural runoff, and the basis of pollution from municipal and industrial areas, do you have any figures that would tell us what percentage of the pollution comes from the industrial and municipal runoff, and what percentage comes from the agricultural runoff?

Mr. DAVEY. It's a little unfair comparison, because you have different kinds of pollutants, if I may use the expression, going in. It isn't all the same kind of pollution; therefore, it's a little like the "apples and oranges" bit, except for the matter of load, the amount being 700 times greater, I don't know of any definitive work as to which adds the most actual pollution per se.

Mr. MILLER. We have heard some very high figures in both ways, and I thought maybe you may have something that would help clear the record.

Mr. SCHWENGLER. If the gentleman will yield—

Mr. MILLER. Yes, sir.

Mr. SCHWENGLER. The 700 times of solid waste in from the countryside, as compared to other sources, comes from agricultural studies and reports in your own department. But as you say, it's a different kind of pollutant. But it may be also a more important one, because, you see, the Mississippi and the Ohio and the Missouri, we have this flood control problem. We saw at Winfield, Kans. that watersheds can control floods, so it's a flood control program as well as a program to protect nature and to keep the soil where it belongs and takes full advantage of water by proper land management.

Mr. DAVEY. In the watershed program, we have always regarded it as a multipurpose program, accomplishing many different things.

Mr. SCHWENGEL. That's right. The more we can do to dramatize this to the American public, the better we serve the public interest and the earlier we will resolve the problem of water pollution. So let's keep our fighting togs on and apply the very best of our ability in presenting this case to the public, because they're the ones that have to understand better than they do now the importance of the watershed conservation program that is headed by Mr. Kee, when he gave it so much impetus when he took the leadership to bring about a tour, an inspection, and gave us this magnificent collection of testimony that is the basis of these hearings.

Thank you, Mr. Chairman.

Mr. KEE. Thank you.

Any further questions?

Well, Mr. Davey and Mr. Weld, we are certainly grateful to you for taking your time to come over. Of course, we will be looking forward to the additional information which has been requested—

Mr. SCHWENGEL. One further question, if I may, Mr. Chairman. There may be some other questions that occur to us that we could address to these people in the Department, and I would like to address those questions to them in writing and have them appear in the record.

Mr. KEE. Without objection, so ordered.

(The questions follow:)

#### QUESTIONS POSED BY REPRESENTATIVE FRED SCHWENGEL

*Question. First, have you undertaken any recent studies concerning soil losses and sediment yields?*

Response. Yes. An analysis of the 1967 Conservation Needs Inventory of the Department of Agriculture shows that the annual soil losses from 437 million acres of cropland amount to 2.6 billion tons. Sixty-five percent of this loss, or 1.8 billion tons, comes from 30 percent of the total cropland, representing 137 million acres. It is estimated that annual sediment yields from soil losses on cropland exceed 1 billion tons of soil. The predominant sediment source is from sheet-erill erosion of cultivated land.

*Question. Second, how serious is sedimentation in our streams and lakes?*

Response. Each year, some 4 billion tons of sediment are washed into tributary streams. Over 1.3 billion tons of this sediment are deposited in major lakes. Of equal, or greater concern, is the fact that sediment is a major carrier of other pollutants such as nutrients, pesticides, and infectious agents.

*Question. Third, how are the going programs of the Soil Conservation Service structured to attack these erosion and sediment problems? What are some of the accomplishments?*

Response. The Department of Agriculture has memorandums of understanding with over 3,000 locally controlled soil conservation districts. These districts encompass more than 98 percent of the nation's land. Departmental technical and cost-sharing programs are available to private landowners for installing pollution abatement practices.

The great Plains Conservation Program covers 10 states and is designed to protect the land from wind erosion. Over 72 million acres have been put under contract involving 40,000 individual farmers and ranchers.

The Watershed Protection Program, as you know, has been a very successful program. The nucleus of the more than 1,000 projects now in operation is a sound land treatment program involving more than 67 million acres supplemented by multiple-purpose structural measures.

The RC&D Program covers 296 million acres. This program is concerned with environmental improvement and economic development on a multicounty basis. These programs are helpful and have produced good results but they have not been adequate to treat the many critical pollution problems in the nation.

There are attached summary reports which reflect accomplishments under these programs.

[From Soil Conservation, U.S. Department of Agriculture]

CONSERVATION HIGHLIGHTS, 1971—SUMMARY OF ACTIVITIES OF THE SOIL  
CONSERVATION SERVICE FOR FISCAL YEAR 1971

During 1971, the Soil Conservation Service placed increased emphasis on efforts to improve the quality of living in rural communities and to increase job opportunities through resource development and management, to plan conservation on an areawide basis, and to implement the growing desire of Americans to keep their country beautiful and healthful.

A significant development in this respect was the completion of a framework plan, *Soil and Water Conservation for a Better America*. This plan will guide the Soil Conservation Service in the decade ahead in its mission of assisting in the conservation, development, and productive use of the nation's soil, water, and related resources and thus helping to improve the quality of human environment.

The plan can be useful not only to people with responsibilities in the environmental field within the federal government but also to soil conservation districts, state resource agencies, and private conservation organizations. Its framework is applicable to any part of the country. What will vary from area to area and community to community is the mix and importance of future needs and goals.

The plan comprehensively lists SCS activities under seven categories: resource technology and development, surveying and monitoring, resource conservation planning assistance, installation and maintenance assistance, information support, management support, and international assistance. In 1971 significant progress was made in each of these activities.

RESOURCE TECHNOLOGY AND DEVELOPMENT

Changes in land use and management, in equipment, in plants and fertilizers, and in life styles make it necessary to update and improve conservation technology.

AGRICULTURAL WASTE MANAGEMENT

Public demand for a quality environment plus enforcement of more rigid air- and water-quality regulations brought rapid advances in agricultural waste management in 1971. The basic concepts—divert clean water, grade feedlots and barnyards, intercept polluted runoff, and treat or utilize the runoff and solid wastes—remain the same, but techniques are constantly being improved.

Drying and refeeding manure mixed with other rations is being tried on cattle, poultry, and hogs. Equipment to compost manure for subsequent sale as an organic fertilizer and soil builder has been developed and is being used successfully by some large beef-cattle enterprises. Experiments are being conducted using the common housefly to process or biodegrade manure. Mechanical aeration techniques are being refined to assist nature in degrading wastes in lagoons. Waste-handling equipment is being developed or modified to improve management of both liquid and solid wastes.

Recycling agricultural wastes to the land and its plant cover remains the most successful method for ultimate disposal.

*Soil data*

SCS continued to use automatic data processing technology to improve the processing of data about soils. Already operational is a system dealing with soil taxonomy. Under development are systems for rapid preparation of data for soil survey manuscripts and for making substantially more use of interpretative soil data that relate directly to use and management of our soils as a national resource.

Also operational is the Gerber automatic drafting machine. This machine, designed to draft press-ready negatives of soil maps, is presently being used for precision drafting of control and acreage grids and photographic line screens. Under development is a system for drafting digitized maps at any selected size up to 5 feet by 8 feet.

*Plant materials*

A creditable number of new plants were released by SCS plant materials centers and their cooperators during 1971. They were distributed through state crop-improvement associations and soil conservation districts and are now in commercial production. Some of the new plants are:

*Barton western wheatgrass*.—from Kansas, for improved forage and soil stabilization.

*Bend sand lovegrass*.—from Kansas, an outstanding variety adapted to sandy soils in south central Kansas and north central Oklahoma; for grazing and soil stabilization.

*Mason sand lovegrass*.—from Texas, vigorous and leafy, well adapted to sandhill areas; for forage and stabilization.

*Cape American beachgrass*.—from New Jersey, outstanding vigorous clone; for tying down eastern coastal sand dunes.

*Critana thickspike wheatgrass*.—from Montana, a stabilizing plant for such critical areas as airports, industrial parks, and highway banks.

*Marshfield big trefoil*.—from Oregon, a new vigorous strain adapted to wet lands; for pasture or use as a legume in seepy critical areas.

*Arnot bristly locust*.—from New York, adapted to much of the eastern half of the United States; for stabilizing, screening, and beautifying acid mine spoils, highway banks, and sterile borrow areas.

*Rem-Red Amur honeysuckle*.—from New Jersey, provides late winter "raisined" food for songbirds; its bright red berries are highly ornamental through fall and early in winter.

#### SURVEYING AND MONITORING

Surveying and monitoring provide resource information needed in research, in establishing resource use policies, and in planning resource management systems.

##### *Soil surveys*

SCS continued to accelerated the publication of soil surveys. In fiscal year 1971, 60 were sent to the printer—the most ever in any one year (40 soil surveys were sent in FY 1970). Also, 1,074 special soil-interpretation reports were prepared and made available for local use. In FY 1970, 529 similar reports were prepared.

The demand for soil surveys and the ways in which they are used continued to increase. More and more urban planners, developers, and engineers used soil surveys and soil maps to avoid the costly mistakes that can result from building houses, schools, factories, and roads on soils having severe limitations for these purposes. Soil interpretations were broadened to better serve the multifarious users.

##### *Conservation Needs Inventory (CNI)*

The *Basic Statistics* of the 1967 Conservation Needs Inventory was published in January 1971. In November a color brochure on the CNI, *Two Thirds of Our Land*, was sent to the Government Printing Office. In addition, publication of a comprehensive interpretative report is being considered.

Forty-two individual state CNI reports have been received plus a number of brochures on state and county findings. County data are also being published, and some states report that all counties have issued reports.

The 1967 CNI data already in the data bank are being reviewed, certain entries are being corrected, and soil names are being introduced to increase the effective use of the data. It is proposed that soil interpretations for each kind of soil listed in the CNI data bank be added to the CNI data file. Four pilot states—Ohio, Indiana, Kansas, and Nebraska—are testing procedures.

##### *Monitoring—natural resources*

The Soil Conservation Service continued in the development of a natural resource monitoring capability. This was made necessary by the accelerated planning at local and state levels of government, especially in areas of critical environmental concern and those areas of high-intensity land use or rapid change in land use.

As set forth in the SCS framework plan, remote sensing developments will become increasingly important in resource monitoring. USDA is watching and evaluating developments in remote sensing and is planning to participate modestly in testing selected outputs from the first Earth Resources Technology Satellite (ERTS) scheduled for launching by NASA next spring.

In 1971, the Soil Conservation Service voluntarily developed and put into action a nationwide program to support efforts to preserve and protect rare and endangered species of plants and animals. This program places the SCS field force—cooperating with concerned agencies and groups—on the lookout for habitat changes, land use changes, or other changes in the landscape that may affect the rare species adversely. SCS people notify proper state and federal authorities when this takes place.

### *Monitoring—snow and water supplies*

The Soil Conservation Service Snow Survey and Water Supply Forecasting Program continues to grow in popularity in the Western States. It is a good example of cooperative effort—37 percent of last year's program was paid for by cooperating agencies.

New uses for snow survey data were found, including evaluating potential for winter sports areas and predicting snow loads for design of structures. Snow survey data have long been used in predicting irrigation supplies and power generation. Snow precipitation was monitored for some of the Bureau of Reclamation studies made of weather modification through cloud seeding.

Snow survey data are finding a use in water management for pollution control. With knowledge of predicted rates of streamflow available, assimilative capacity of streams can also be predicted and allowable rates of waste discharges determined in advance.

### RESOURCE CONSERVATION PLANNING ASSISTANCE

Revitalizing rural America continued to be one of the most important facets of Soil Conservation Service work during 1971. The goal of this effort is to build, through the development and use of soil, water, and related resources, a more prosperous and more attractive rural America with full opportunity for the social and cultural development of people, for higher per capita and family income, for more adequate community facilities, and for stopping the rural-to-urban migration of population.

Rural development involves change, and SCS programs are designed to bring about change. Change may come in terms of increased employment opportunities and higher incomes. It may mean a new water-supply system or other community facilities. Change may include development of a lake or stream for recreational use. And it may come in the form of institutional developments for training or retraining people in the skills and the arts demanded by society.

#### *National and regional*

SSC assisted in developing policies and plans for achieving national soil and water conservation objectives. It continued to give priority to regional planning that considers the conservation and safe use of land and water resources and that facilitates state and local resource planning.

#### *State and area*

*Watershed projects.*—The watershed program, one of the early efforts of Congress toward environmental improvement, was designed originally to help local sponsoring groups control erosion, reduce sediment, and prevent floods. Water supply, recreation, fish and wildlife, and other multiple-purpose features are added benefits that provide a means for people to meet broad and positive community aims. Watershed projects also bring many new jobs to rural towns.

During the fiscal year, federal assistance was furnished to sponsors of 1,045 projects. Initial agreements for construction were signed for 36 projects located in 22 states, bringing the total to 760 projects that have entered the construction stage. Sponsors of 323 projects had completed the construction of all measures by the end of 1971. A total of 306 projects have now completed all planned construction and related land-treatment work.

Local sponsors submitted 85 new applications for assistance during the fiscal year. Planning assistance had been authorized for a total of 1,622 projects by the end of the year, leaving a backlog of 1,309 unserved applications.

A total of 1,045 projects were approved for Department help. And 42 plans were awaiting approval by Congressional committees at year's end.

The multiple-purpose concept is strongly reflected in projects planned during fiscal year 1971. Of the 1,045 plans approved for operations, 58.6 percent included more than one purpose.

*Resource conservation and development projects.*—In September 1971, 20 new RC&D projects, covering nearly 72 million acres in 133 counties in 21 states, were authorized for planning assistance by the Department of Agriculture. This addition brought the number of projects underway across the country to 98, covering 372.5 million acres. The Department recognizes resource conservation and development projects as a real force in meaningful rural and community development.

The objective of RC&D projects is to improve the use of the project area's natural resources and the economic and social conditions of its people. Each

RC&D project covers an area where the potential is high for boosting income and increasing community facilities.

The Little Colorado River Plateau Project, for example, covers the Hopi Indian Reservation, the Navajo Indian Reservation (Arizona), and two northeastern Arizona counties—16.2 million acres. Its headquarters are in Holbrook, Ariz. Project goals include stabilizing the livestock industry through improved range vegetative cover, development of water and timber resources, improvement of sewage treatment and disposal, introduction of specialty crops, improvement of transportation facilities, establishment of markets for the area's farm products, and development of new recreational areas. Sponsors include the Hopi and Navajo Tribal Councils.

SCS provided leadership in fiscal year 1971 in moving forward more than 7,000 project measures. More than 1,100 of these were completed during the year. Project measures are aimed at solving a wide variety of problems in agriculture, forestry, industry, employment, and community facilities.

#### *Units of government*

More than 22,800 units of state and local government received help from SCS in 1971. SCS provided 10,931 resource inventories and evaluations to planning commissions or other agencies of local or state government. It made field investigations and recommendations on land use and treatment of proposed sites for 2,042 public facilities such as schools, hospitals, sanitary landfills, transportation facilities, recreation areas, and water and sewer facilities.

In 1971, SCS responded to increasing requests from local and state governments for resource data essential to developing land use and treatment ordinances. Four hundred and sixty-eight land use regulations, zoning ordinances, sanitary codes, and building codes or standards were issued or enacted by government bodies, using soil surveys and other technical information provided by SCS.

An increased number of community and regional planning workshops were conducted for SCS personnel to help increase their contribution to local comprehensive planning programs. A specialist in community and regional planning was added to the national staff to intensify the Service's efforts in this important field.

SCS participated in a series of joint meetings with several chapters of the American Institute of Planners. These meetings helped give professional planners a better understanding of the planning capabilities available from SCS on land use and conservation treatment. Such contacts have led to SCS personnel being assigned to full- or part-time service on the staff of regional planning commissions.

#### *Group and individual*

During 1971, the Soil Conservation Service continued its planning assistance to individual land owners and users cooperating with the more than 3,000 soil and water conservation districts throughout the country. SCS also sharply increased help to groups and organizations ranging from two or three land owners to many land owners forming large single interest and multi-interest associations. SCS people helped prepare nearly 70,000 conservation plans covering more than 28.7 million acres and helped revise 32,393 plans covering more than 20.3 million acres. More than 586 million acres of private land in the United States now are covered by conservation plans that insure resource protection and proper land use.

*Great Plains Conservation Program.*—Severe drought struck the Southwest in 1971, and the excessive damage to farms and ranches in the Great Plains Region points to the necessity for the high priority that SCS gives to the Great Plains Program. Through long-term contracts under the Great Plains Program, farmers and ranchers apply needed conservation treatment on their land in the 453 designated Great Plains counties. Priority is given to cropland that is unsuited for sustained cultivation but is still used for that purpose. About 20 percent of all cropland in Great Plains Conservation Program contracts is planned for conversion to rangeland.

In 1971, 2,368 farmers and ranchers placed more than 4 million acres under Great Plains Program contracts. More than 40,000 farmers and ranchers now either have completed or have underway contracts for conservation treatment of more than 72 million acres.

Wind erosion in the Great Plains reached a 14-year high last season—the 4.7 million acres damaged indicating the worst years since 1956–57 when 10.3 million acres underwent extensive soil movement. The erosion marks a serious increase

from the all-time low of 995,150 acres damaged in 1968-69. An SCS survey showed 2.7 million acres of land damage in west Texas alone. Most of this season's damage was on lands insufficiently protected by the residues of the previous year's crops. Emergency tillage was effectively used to protect 3.9 million acres.

#### INSTALLATION AND MAINTENANCE ASSISTANCE

Conservation districts, by the end of fiscal year 1971, had more than 2.2 million cooperators who were applying and maintaining soil and water conservation practices on 766.5 million acres.

SCS recognizes that conservation measures must be carefully planned, installed, and maintained. SCS provides onsite technical assistance for applying measures if needed to insure new techniques. In FY 1971, SCS provided 2.9 million technical services to 1.1 million individual land owners and users in conservation districts.

SCS will continue to assist units of state and local government, private organizations, and land users in inspecting completed work and in maintaining resource management systems according to quality standards.

#### MANAGEMENT SUPPORT

In 1971, the Soil Conservation Service reviewed all of its program policies and procedures to insure appropriate steps to bring about maximum environmental quality enhancement in its work. For example, revegetation and other sediment-reducing measures are applied concurrently with or immediately following all soil-disturbing conservation operations under direct control of SCS.

#### INTERNATIONAL ASSISTANCE

The Service's international reputation for soil and water conservation expertise continued to generate requests for assistance from developing countries. In 1971, SCS had 20 top field specialists in India helping with water-management demonstration projects. Three men were assigned to Nigeria, two to Tunisia, and one to Thailand to assist with soil and water conservation programs. Short-term consultants were assigned to Brazil and Argentina under an agreement with the Organization of American States. And a number of other nations requested and received help in solving their soil and water conservation problems.

During the year the Service assisted 407 individuals coming from 40 countries to observe and gain experience in various aspects of soil and water conservation.

#### SUMMARY OF PROGRESS, FISCAL YEAR 1971—TOTAL REPORTABLE PROGRESS IN SOIL AND WATER CONSERVATION PROGRAMS ASSISTED BY THE SOIL CONSERVATION SERVICE

Progress items	Total reportable progress	Cumulative to June 30, 1971
<b>Conservation plans and related services:</b>		
District cooperators (number) .....	86,792	2,237,093
District cooperators (acres) .....	33,190,135	766,515,440
Cooperators canceled (number) .....	56,724	
Cooperators canceled (acres) .....	20,326,594	
Recipients of technical assistance (number) .....	1,130,377	
Technical services (number) .....	2,942,006	
Recipients applying practices (number) .....	673,972	
Special mapping for planning and CNI (acres) .....	8,890,428	291,079,767
Conservation plans prepared (number) .....	69,863	1,763,067
Conservation plans proposed (acres) .....	28,794,134	586,357,175
Conservation plans canceled (number) .....	42,879	
Conservation plans canceled (acres) .....	15,709,193	
Conservation plans revised (number) .....	32,393	
Conservation plans revised (acres) .....	20,393,049	
Inventories and evaluations prepared (number) .....	49,766	
Federal lands in coordinated:		
Conservation plans (number) .....	145	1,109
Conservation plans (acres) .....	2,132,928	13,304,984
State and county CNI reports (number) .....	230	
<b>Resource planning and implementation:</b>		
Services on resource plans (number) .....	76,753	
Units of government assisted (number) .....	22,838	
Resource plans prepared (number) .....	1,204	
Inventories and evaluations for resource plans (number) .....	10,931	
Land use regulations established (number) .....	468	
Site selection for public facility (number) .....	2,042	

See footnotes at end of table.

SUMMARY OF PROGRESS, FISCAL YEAR 1971—TOTAL REPORTABLE PROGRESS IN SOIL AND WATER CONSERVATION PROGRAMS ASSISTED BY THE SOIL CONSERVATION SERVICE—Continued

Progress items	Total reportable progress	Cumulative to June 30, 1971
<b>Operating units:</b>		
Total operating units (number).....		4,478,433
Total operating units (acres).....		1,386,509,910
Other land units (number).....		4,187,682
Resource planning units (number).....		82,874
<b>Group plans, services, and installation plans:</b>		
Group plans prepared (number).....	2,967	11,897
Group plans prepared (acres).....	2,327,782	12,889,658
Group inventories and evaluations (number).....	4,293	57,150
Group inventories and evaluations (acres).....	4,740,812	49,774,425
Groups assisted (number).....	12,559	
Services to groups (number).....	77,098	
Groups applying practices (number).....	4,246	
<b>Great Plains conservation program:</b>		
GP applications received (number).....	3,689	45,956
GP applications received (acres).....	7,147,310	88,447,657
GP applications canceled (number).....	1,406	
GP applications canceled (acres).....	1,694,344	
GP contracts signed (number).....	2,368	40,147
GP contracts signed (acres).....	4,098,454	72,092,334
<b>GP contracts terminated:</b>		
By mutual consent (number).....	105	1,208
By mutual consent (acres).....	157,337	1,705,995
For cause (number).....	37	862
For cause (acres).....	40,725	794,185
By expiration (number).....	3,361	20,793
By expiration (acres).....	6,193,892	34,990,421
Total terminations (number).....	(3,503)	(22,863)
Total terminations (acres).....	(6,391,954)	(37,490,601)
Cropland before GP contract.....	708,495	11,178,776
Planned cropland conversions (acres).....	144,491	2,250,930
<b>Servicing other USDA programs:</b>		
<b>Referrals services:</b>		
REAP—Fiscal year 1971 (number).....	256,992	
REAP—Prior year 1970 (number).....		285,909
Cropland adjustment program (number).....	28	
Appalachian program (number).....	1,263	
Conservation plans approved (number).....	2,173	
<b>Soil surveys:</b>		
Detailed soil surveys (acres).....	36,905,054	748,226,618
Reconnaissance (acres).....	1,067,947	30,104,829
Total surveys (acres).....	(37,973,001)	(778,331,447)
Soil conservation surveys (acres).....		23,606,919
Soil conservation surveys canceled or converted (acres).....	1,278,922	
<b>Snow surveys and water supply forecasting:</b>		
Snow course measurements (number).....	6,659	
Aerial snow marker readings (number).....	960	
Mountain precipitation gage readings (number).....	1,790	
Soil moisture station readings (number).....	1,417	
River stations for which numerical forecasts issued (number).....	465	
Numerical forecasts issued (number).....	2,055	
<b>Recreation developments:</b>		
<b>Land owners and operators who have:</b>		
Established their first commercial recreation enterprise (number).....	1,556	60,055
Expanded or added to commercial recreation enterprises (number).....	955	
Changed to recreation enterprises as their primary source of income (number).....	195	10,778
Changed to recreation enterprises as their primary source of income (acres).....	51,743	2,241,752
Private noncommercial recreation facilities established or expanded (number).....	32,296	549,150
Public recreation facilities established or expanded (number).....	524	37,493
<b>Watershed and R.C. &amp; D. project measures:</b>		
Reservoir-type structure sites investigated (number).....	434	
Flow control structure sites investigated (miles).....	600	
Reservoir-type structure sites surveyed (number).....	483	
Flow control structure sites surveyed (miles).....	903	
<b>Public fish, wildlife, and recreational developments:</b>		
Surveyed (number).....	25	
Designed (number).....	23	
Under construction (number).....	20	
Reservoir-type structures designed (number).....	745	
Flow control structures designed (miles).....	608	
Services provided on land rights agreements and contract awards (number).....	23,023	
Reservoir-type structures under construction (number).....	1,298	
Flow control structures under construction (miles).....	1,033	

Practices	Total reportable progress	On the land June 30, 1971
Bedding (acres)	48,029	687,888
Brush control (acres)	4,049,869	48,250,604
Chiseling and subsoiling (acres)	732,207	7,522,499
Clearing and snagging (miles)	954	6,549
Commercial fish ponds (acres)	10,309	59,198
Conservation cropping system (acres)	21,991,680	198,453,695
Contour farming (acres)	3,368,473	48,713,298
Critical area planting (acres)	148,207	4,757,980
Crop residue management (acres)	20,528,863	165,561,626
Dam, diversion (number)	396	27,055
Dam, multiple-purpose (number)	275	6,001
Dam, multiple-purpose (acre-feet)	140,760	12,983,450
Debris basin (number)	1,711	86,181
Deferred grazing (acres)	12,723,086	71,500,937
Dike (miles)	326	10,973
Disposal lagoon (number)	987	1,632
Diversion (miles)	2,070	98,639
Drain (miles)	25,455	804,895
Drainage field ditch (miles)	5,971	181,201
Irrigation canal or lateral (miles)	228	45,936
Irrigation ditch and canal lining (miles)	976	26,866
Farmstead and feedlot windbreak (acres)	38,335	723,468
Fencing (miles)	4,198	452,930
Field border (miles)	1,302	48,733
Irrigation field ditch (miles)	1,534	125,504
Field windbreak (miles)	4,061	90,789
Firebreak (miles)	2,428	19,655
Fishpond management (number)	60,922	597,694
Fish raceway (feet)	65,383	151,913
Fish stream improvement (feet)	173,744	1,065,748
Floodwater diversion (feet)	29,135	1,472,830
Floodwater-retarding structure (number)	360	10,859
Floodwater-retarding structure (acre-feet)	222,942	5,492,569
Floodway (feet)	105,891	3,891,107
Grade stabilization structure (number)	10,287	123,066
Grassed waterway or outlet (acres)	57,473	1,846,138
Grazing land mechanical treatment (acres)	55,863	1,453,381
Hedgerow planting (miles)	324	24,612
Hillside ditch (miles)	50	3,334
Irrigation pipeline (miles)	3,284	80,113
Irrigation pit or regulating reservoir (number)	1,121	48,795
Irrigation storage reservoir (number)	409	40,671
Irrigation storage reservoir (acre-feet)	19,269	9,515,639
Irrigation system, sprinkler (number)	4,281	126,616
Irrigation system, surface and subsurface (number)	4,822	150,448
Irrigation system, tailwater recovery (number)	1,015	14,485
Irrigation water management (acres)	4,128,770	19,960,112
Land grading for drainage (acres)	32,939	455,389
Land leveling for irrigation (acres)	322,375	11,250,282
Land smoothing (acres)	264,462	6,923,490
Livestock exclusion (acres)	410,215	7,501,118
Main or lateral drainage (miles)	5,715	352,393
Minimum tillage (acres)	2,160,865	21,804,073
Mulching (acres)	129,023	757,150
Pasture and hayland management (acres)	10,984,159	59,396,600
Pasture and hayland planting (acres)	2,964,395	66,643,838
Pipeline (miles)	2,595	29,588
Planned grazing systems (acres)	6,237,268	29,845,332
Pond (number)	49,305	1,813,320
Prescribed burning (acres)	479,053	4,688,358
Proper grazing use (acres)	66,625,877	239,320,806
Pumping plant for water control (number)	2,136	68,692
Range seeding (acres)	478,369	15,170,743
Recreation area stabilization (acres)	3,893	114,296
Recreation area improvement (acres)	91,755	828,522
Recreation land grading and shaping (acres)	55,311	330,251
Recreation trail and walkway (miles)	490	7,654
Road, access (miles)	2,382	18,056
Spring development (number)	4,209	122,710
Stock trails and walkways (miles)	77	4,164
Streambank protection (miles)	401	7,588
Stream channel stabilization (miles)	22	719
Stream, open channel (miles)	869	15,976
Stripcropping (acres)	487,462	20,920,638
Structure for water control (number)	64,255	2,103,448
Terrace, basin (miles)	163	1,993
Terrace, gradient (miles)	9,962	15,976
Terrace, level (miles)	7,805	385,258
Terrace, parallel (miles)	7,113	76,277
(Total terraces) (miles)	(25,043)	(1,213,579)
Toxic salt reduction (acres)	45,258	1,561,331
Tree planting (acres)	360,105	19,424,875
Trough or tank (number)	12,229	476,916

See footnotes at end of table.

SUMMARY OF PROGRESS, FISCAL YEAR 1971—TOTAL REPORTABLE PROGRESS IN SOIL AND WATER CONSERVATION PROGRAMS ASSISTED BY THE SOIL CONSERVATION SERVICE—Continued

Practices	Total reportable progress	On the land June 30, 1971
Waterspreading (acres).....	28, 131	933, 320
Well (number).....	7, 308	495, 901
Wildlife upland habitat management (acres).....	5, 451, 597	29, 305, 663
Wildlife wetland habitat management (acres).....	466, 069	3, 936, 767
Wildlife watering facility (number).....	1, 323	17, 748
Woodland direct seeding (acres).....	18, 438	571, 422
Woodland improved harvesting (acres).....	1, 405, 043	30, 373, 605
Woodland improvement (acres).....	468, 859	14, 872, 701
Woodland pruning (acres).....	35, 150	122, 690
Woodland site preparation (acres).....	212, 530	4, 186, 246
Land treated:		
Land adequately treated (acres).....	41, 834, 187	699, 627, 817
Land protected during development (number).....	356	1, 026
Land protected during development (acres).....	10, 722	32, 197
Land use conversions: <sup>1</sup>		
Cropland to grassland (acres).....	991, 943	24, 739, 822
Cropland to woodland (acres).....	62, 891	2, 793, 891
Cropland to wildlife-recreation (acres).....	47, 927	1, 360, 917
Cropland to "other" (acres).....	68, 440	5, 277, 061
All other uses to cropland (acres).....	154, 581	7, 072, 235
All other uses (except cropland) to wildlife-recreation (acres).....	418, 614	7, 802, 916

<sup>1</sup> Conversions on the land June 30, 1971, are estimates of conversions since July 1, 1962.

Some preliminary estimates, cumulative through fiscal year 1972, of benefits accruing from completed work on watershed projects are listed below:

Flood prevention:

Agricultural damage prevented..... \$228, 707, 000  
 Nonagricultural damage prevented..... \$40, 140, 000

Sediment pollution control:

Sediment reduction<sup>1</sup>..... tons... 16, 572, 000  
 Benefits (storage cost)..... \$1, 660, 000

Land conservation and development:

Erosion reduction..... tons... 249, 676, 000  
 Erosion control installed..... acres... 1, 922, 000  
 Grassland improvement..... do... 9, 103, 000  
 Benefits..... \$347, 336, 000

Increased income:

Employment from construction..... man-years... 24, 616  
 New jobs created..... 69, 600  
 New and expanded business..... 3, 363  
 Annual payroll added..... \$208, 800, 000

<sup>1</sup> Sediment prevented from reaching reservoirs, lakes, and stream channels.

*Question. Finally, could you explain what happens to water when it enters and passes through a watershed controlled by watershed structures and conservation measures?*

*Response.* We believe that the two attached bulletins entitled "Conservation and the Water Cycle" and "What is a Watershed?" explain the functions in question quite well.

## What is a WATERSHED?

"Watershed" is a new term to many people. The increasing use of soil and water conservation measures for watershed protection and flood prevention is bringing the term into more common use. Its definition is almost as simple as the well-known phrase "water runs downhill."

The drainboard that carries rinse water into your kitchen sink can be compared to a watershed.

On the land, water that does not evaporate or soak into the soil usually drains into ditches, streams, marshes, or lakes. The land area from which the water drains to a given point is a watershed.

When you were a small child, you probably had a favorite mud puddle in which you liked to play. The part of the yard from which the water drained into the puddle was its watershed.

Possibly a small stream ran by your house. It may have been dry most of the year or it may have flowed continuously. Water from a few acres drained into that little stream. Those few acres were its watershed. This small stream and others like it ran into a larger one. The land areas drained by the small streams made up the watershed of the larger stream into which they flowed.

Small watersheds make up the larger ones. The Mississippi River, for example, drains a watershed of about 1,243,000 square miles.



## WHAT IS A WATERSHED ?

UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
PA-420

This large watershed is made up of thousands of smaller ones.

So, wherever you live you are in a watershed. It can be just your own backyard or the area drained by a small creek or a large river.

Your watershed may include farm or ranch land. It may include hills or mountains or foothills. Or it may be nearly flat. Some of it may be rough, rocky, or marshy land suitable only for trees and wildlife. Some of it may be covered with towns, suburban developments, or industrial plants.

You and the other people who live in this watershed are part of the watershed community. So are the animals, the birds, and the fish. All depend on the watershed, and they in turn influence what happens there.

whether it's good or bad. What happens in your small watershed also affects the larger watershed downstream.

*Why your watershed is important:* Water may be a friend or it may be an enemy. If it runs off the land too fast, it cuts gullies and carries off topsoil which should be kept on the farm to produce food and clothing. This soil along with other debris the water carries into streams and lakes may spoil fishing. It may also reduce the amount of water the stream or lake can hold and thus decrease the water supply for your town and your bathroom. Such sediment carried downstream by runaway water may greatly increase the cost of filtering the water you get from the kitchen faucet. It can interfere with the hydroelectric plant that produces your electricity. This may make your electric bills higher.

A small watershed consisting of all or parts of several farms. The rain drains into the ditch in the center.





Diagram of a watershed.

If too much water runs away too rapidly, it causes a flood that damages farms, ranches, crops, property, homes, highways, and utilities. It may take lives. Stream channels may be choked with sediment. Then the flood is more serious because the choked-up channels carry less water. Sediment deposited in reservoirs after heavy rains reduces the amount of water that can be stored for use in water-short areas. When water does these things it is an enemy. But water can be slowed down and used to

advantage when soil and water conservation practices and other flood-prevention measures are put in over all the watershed. Terraces, stripcropping, more grass and legumes in crop rotations, and improved pastures are practices that make more water soak into the soil for use of crops, pasture, and range. Small dams can hold back runoff water that would otherwise cause flood damage. These dams may also store water for irrigation, recreation, and municipal or industrial water supply. Conservation irrigation systems waste less water and thus leave more for other irrigators to use. Later some water will go into streams, lakes, or underground storage to be used in other ways. It doesn't carry sediment to clog streams and water supplies. Thus, more water is available for the many uses people make of it. Then water is a friend.

More detailed information on soil and water conservation and watershed protection and flood prevention can be obtained from your local Soil Conservation Service office.

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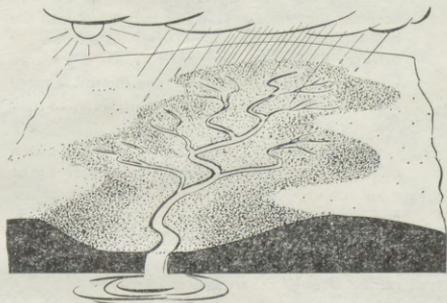


Diagram of the same watershed with the farm fields, trees, buildings, and roads removed to show the drainage pattern.

## Conservation and the Water Cycle

By the Soil Conservation Service

Water is probably the natural resource we all know best. All of us have had firsthand experience with it in its many forms—rain, hail, snow, ice, steam, fog, dew.

Yet, in spite of our daily use of it, water is probably the natural resource we least understand. How does water get into the clouds, and what happens to it when it reaches the earth? Why is there sometimes too much and other times too little? And, most important, is there enough for all the plants, and all the animals, and all the people?

Water covers nearly three-fourths of the earth, most is sea water. But sea water contains minerals and other substances, including those that make it salty, that are harmful to most land plants and animals. Still it is from the vast salty reservoirs, the seas and oceans, that most of our precipitation comes—no longer salty or mineral laden. Water moves from clouds to land and back to the ocean in a never-ending cycle. This is the water cycle or the hydrologic cycle.

Ocean water evaporates into the atmosphere leaving impurities behind, and moves across the earth as water vapor. Water in lakes, ponds, rivers and streams also evaporates and joins the moisture in the atmosphere. Soil, plants, people, and animals, and even factories, automobiles, tractors, and planes, contribute moisture. A small part of this moisture, or water vapor, is visible to us as fog, mist, or clouds. Water vapor condenses and falls to earth as rain, snow, sleet, or hail, depending on region, climate, season, and topography.

Every year about 80,000 cubic miles of water evaporates from oceans and about 15,000 cubic miles from land sources. Since the amounts of water evaporated and precipitated are almost the same, about 95,000 cubic miles of water are moving between earth and sky at all times.

Storms at sea return to the oceans much of the water evaporated from the oceans so land areas

THE WATER CYCLE is an endless process of water circulation going on throughout the world.

To trace the movement of water through the cycle, begin at the far right of the diagram. There the sun's energy is transferring water from the sea and earth to the atmosphere in the form of water vapor. The soil and inland water bodies through *evaporation* and plants through *transpiration* add large amounts of water vapor to the atmosphere, but most of it comes from the oceans. Man, animals, and machines add small amounts by means of *respiration* and *combustion*.

Air masses (top of diagram) carry the water vapor across the earth, and the water vapor condenses into *precipitation*.

At the left, precipitation falls as rain, snow, sleet or hail. Some evaporates while falling and returns to the atmosphere. A small amount is intercepted and held by plants or by buildings, automobiles, and other structures and machines until it evaporates back into the atmosphere.

Most of the precipitation soaks into the soil the part that doesn't run to the sea by way of streams and rivers. Ground water gets there more slowly.

Misuse and poor management of the soil will decrease the amount of water that soaks into the soil and increase the amount that runs off over the surface. Runoff on bare land leads to erosion. Grass, trees, and other plants hold the soil in place and slow the runoff, allowing more water to soak into the soil.

Some of the water that soaks into the soil is used by plants. Part of it percolates beyond the reach of plant roots to the water table, to underground reservoirs, and to springs and artesian wells.

Runoff on its way to the sea can be intercepted and stored for industrial or household use, and it can be diverted for irrigation.

Little water has been added or lost through the ages. The water cycle prevails in all places and at all times with neither beginning nor end.

A 40- x 28-inch color reproduction of illustration at left is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price 35 cents.

get only about 24,000 cubic miles of water as precipitation. Precipitation on the land averages 26 inches a year, but it is not evenly distributed. Some places get less than 1 inch and others more than 400 inches.

The United States gets about 30 inches a year, or about 4,300 billion gallons a day. Total streamflow from surface and underground sources is about 8.5 inches a year, or about 1,200 billion gallons a day. This is the amount available for human uses—homes, industry, irrigation, recreation.

The difference between precipitation and stream flow—21.5 inches a year, or 3,100 billion gallons a day—is the amount returned to the atmosphere as vapor. It is roughly 70 percent of the total water supply. It includes the water used by plants.

Man can exist on a gallon or so of water a day for drinking, cooking, and washing though he seldom does or has to. In medieval times he probably used no more than 3 to 5 gallons a day. In the 19th century, especially in Western nations, he was using about 95 gallons a day. At present in the United States, man uses about 1,500 gallons a day for his needs and comforts including recreation, cooling, food production, and industrial supply.

When water hits the ground some soaks into the soil, and the rest runs off over the surface. The water that soaks into the soil sustains plant and animal life in the soil. Some seeps to underground reservoirs. Almost all of this water eventually enters the cycle once more.

Man can alter the water cycle but little, so his primary supply of water is firmly fixed. But he can manage and conserve water as it becomes available—when it falls on the land. If he fails to do so he loses the values that water has when used wisely.

Water management begins with soil management. Because our water supply comes to us as precipitation falling on the land, the fate of each drop of rain, each snowflake, each hailstone depends largely on where it falls—on the kind of soil and its cover.

A rainstorm or a heavy shower on bare soil loosens soil particles, and runoff—the water that

does not soak into the soil—carries these particles away. This action, soil erosion by water, repeated many times ruins land for most uses. Erosion, furthermore, is the source of sediment that fills streams, pollutes water, kills aquatic life, and shortens the useful life of dams and reservoirs.

Falling rain erodes any raw-earth surface. Bare plowed farmland, cleared areas going into housing developments, and highway fills and banks are especially vulnerable.

In cities and suburbs, where much of the land is paved or covered—streets, buildings, shopping centers, airport runways—rainwater runs off as much as 10 times faster than on unpaved land. Since this water cannot soak into the soil, it flows rapidly down storm drains or through sewer systems, contributing to floods and often carrying debris and other pollutants to streams.

Grass, trees, bushes, shrubs, and even weeds help break the force of raindrops and hold the soil in place. Where cultivated crops are grown, plowing and planting on the contour, terraces, and grassed waterways to carry surplus water from the fields are some of the conservation measures that slow running water. Stubble mulching protects the soil when it has no growing cover. Small dams on upper tributaries in a watershed help control runoff and help solve problems of too much water one time and not enough another time.

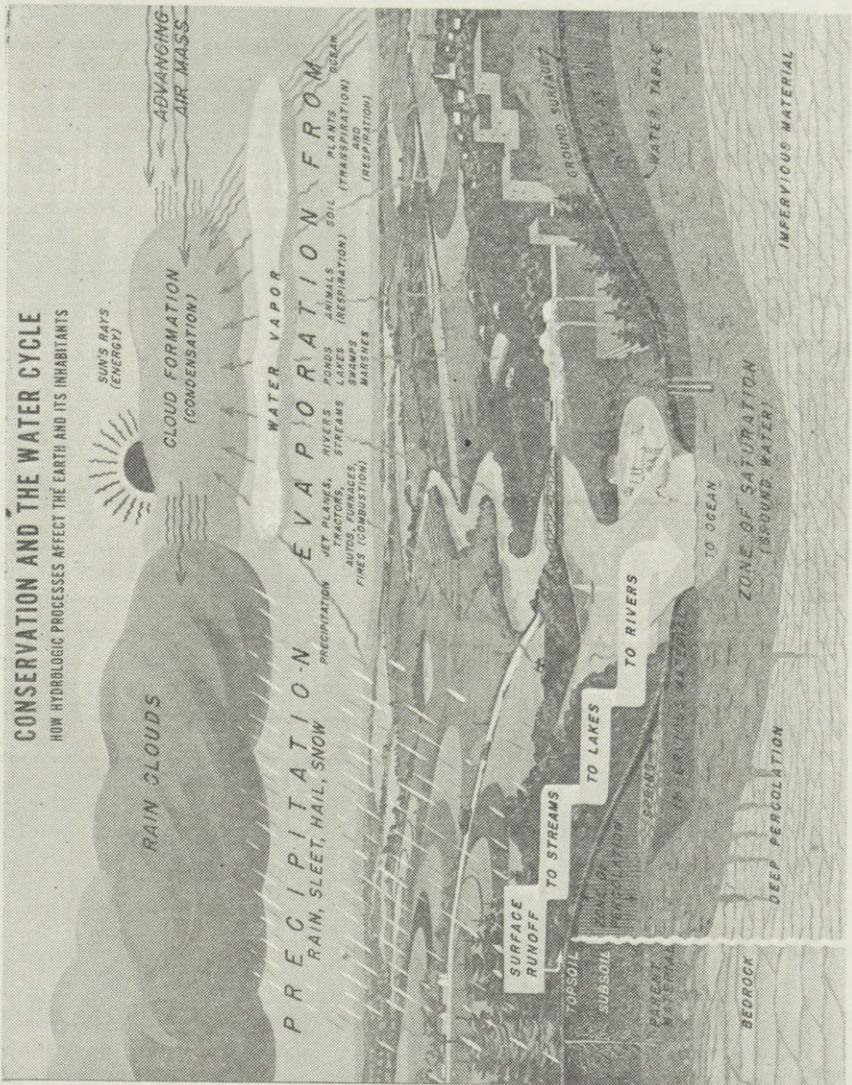
Throughout the world the need for water continues to increase. Population growth brings demands for more water. Per capita use of water, especially in industrialized countries, is increasing rapidly.

It is man's management of the precipitation available to him that determines whether or not he has both the quantity and the quality of water to meet his needs.

It is man's obligation to return water to streams, lakes, and oceans as clean as possible and with the least waste.

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Mr. KEE. In conclusion, the door of every Member of this subcommittee and Members of the full committee is open, that we would be happy to receive any improvements that in your judgment may be helpful, in order that we may fulfill our obligations to temporary stewards of the land today. So I hope you will feel perfectly free to call on us, to write to us, to notify the committee so we can have the benefit of any additional information that you may have.

The committee thanks you so very, very much, both of you, for coming and taking the time to come over and testify with us today. We thank you very much.

Mr. DAVEY. Thank you, Mr. Chairman, and members of the committee.

Mr. KEE. The subcommittee stands adjourned until 10 in this room tomorrow morning.

(Whereupon, at 12:15 p.m. the subcommittee was adjourned, to reconvene at 10 a.m., Wednesday, August 16, 1972.)

The first in consideration, the door of every Member of this House  
and leaders of the full committee is open that we would be  
happy to receive any suggestions that in your judgment may be  
helpful in order that we may fulfill our obligations to Congress  
to the best of our ability. So I hope you will feel free to  
call on us to advise us to notify the committee so we can have the  
benefit of your valuable information that you may have.

The committee thanks you so very much and we hope  
to hear from you again in the future.

Very truly yours,  
Mr. Tamm, Chairman, and members of the com-

mittee.

Mr. Tamm, The subcommittee stands respectfully in the name  
of the committee.

(Washington, at 12:15 pm, the subcommittee was adjourned, to re-  
convene at 10 am, Wednesday, August 10, 1943.)

## NON-POINT SOURCE POLLUTION FROM AGRICULTURAL, RURAL, AND DEVELOPING AREAS

WEDNESDAY, AUGUST 16, 1972

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON CONSERVATION AND  
WATERSHED DEVELOPMENT  
OF THE COMMITTEE ON PUBLIC WORKS,  
*Washington, D.C.*

The subcommittee met at 10:05 a.m., in room 2167, Rayburn House Building, Hon. James Kee, subcommittee chairman, presiding.

Mr. KEE. The Subcommittee on Conservation and Watershed Development is now in session.

As you all know, we are considering H.R. 15596, H.R. 15731, and H.R. 15693, non-point source pollution from agricultural, rural, and developing areas.

At this time the Chair is delighted to recognize our first witness, Mr. Gary H. Baise, Director, Office of Legislation, Environmental Protection Agency. Mr. Baise, we would be delighted to have you present those you have with you at the table, and then you may proceed in your own manner.

**STATEMENT OF GARY H. BAISE, DIRECTOR, OFFICE OF LEGISLATION, ENVIRONMENTAL PROTECTION AGENCY; ACCOMPANIED BY HAL BERNARD, CHIEF OF THE AGRICULTURAL AND MARINE POLLUTION CONTROL SECTION, OFFICE OF RESEARCH AND MONITORING, AND DAVID SCHUENKE, ASSISTANT DIRECTOR FOR LEGISLATIVE AFFAIRS**

Mr. BAISE. Thank you very much, Mr. Chairman.

On my immediate right I have with me Mr. Hal Bernard, who is the Chief of the Agricultural and Marine Pollution Control Section, Office of Research and Monitoring, U.S. EPA, and on my left I have with me my Assistant Director for Legislative Affairs in the Office of Legislation, Mr. David Schuenke.

Mr. KEE. Welcome, gentlemen, on behalf of the committee.

Mr. BAISE. Mr. Chairman, it is a pleasure for us to be here this morning to present, on behalf of the agency, our views on these three very important bills.

These are identical bills which would provide for the establishment in the Department of Agriculture of programs to study and control pollution associated with non-point sources and erosion from agricultural, rural, and developing areas.

Although the problems we face in these areas are serious, work is already underway to seek and provide solutions.

We, therefore, believe that this legislation is unnecessary. It also amends the Federal Water Pollution Control Act detrimentally.

Briefly, I would like to summarize the bills' primary features:

1. They would provide for a national program, administered by the Secretary of Agriculture, of financial and other assistance to States and localities for the preparation of plans for the abatement, control, and prevention of agricultural and related pollution.

The Secretary would be empowered to enter agreements with those controlling land to provide for installation and maintenance of equipment to accomplish this purpose, and for other necessary measures, and to provide financial assistance.

The Federal Government would pay such share of the cost of carrying out the programs as the Secretary determined to be equitable in consideration of national needs and assistance authorized for similar purposes under other Federal programs.

The Secretary could also advance the non-Federal share of the cost to a cooperating State or locality, and to any landowner or occupier with whom there was an agreement pursuant to the plan.

The Secretary of Agriculture would be authorized to undertake a research program to identify and characterize agricultural and related pollutants and develop control and prevention methods. He would cooperate with the Administrator of the EPA and the Secretary of HEW in carrying out this section.

2. The second portion of the bills contains a declaration of the importance of controlling pollution caused by erosion from farm and forest land, rapidly developing urban and rural areas, unrestored and unrehabilitated non-Federal mined lands, roadbeds and rights-of-way, and streambanks and lakeshores.

In the case of each of these sources of erosion, the Secretary of Agriculture would be authorized to give technical support and/or financial assistance to States and other non-Federal jurisdictions to carry out programs to prevent and control erosion and sedimentation.

In all cases, there would be technical aid.

In the case of erosion from farms and ranches and from mined lands, the Federal financial contribution would be what the Secretary deemed necessary and appropriate.

For control of erosion from roadbeds and from streambanks, the localities would be required to provide at least 25 percent of the cost of construction of works. In the formulation of development use plans for erosion control in developing areas, the localities would pay proportionate costs.

Agreements with landowners, occupiers, or operators would be provided for in the farms and ranches section and in the mined-areas section.

Assistance for erosion control and restoration in mined areas would be available only for lands damaged before the enactment of the legislation, which are not covered by other legal requirements for restoration or rehabilitation.

Agreements with landowners would be contingent on assurances to the Secretary that the land would not be subject to further damage from mining activity.

3. The bills would authorize the Secretary to conduct nationwide research and education on rates of erosion and sedimentation, pollu-

tion effects, and development of abatement methods. He may conduct research, training, demonstrations, and other activities in this area.

4. The bills would amend the enforcement provisions in section 10 of the Federal Water Pollution Control Act to require the Administrator of the EPA to develop interim guidelines for discharges of wastes from livestock and poultry operations, including feedlots. The guidelines must include water quality criteria and criteria for treatment of the site, including drainage, waste treatment facilities, and buffer zones.

During the 3-year period in which the interim guidelines would be in effect, compliance with the guidelines, as verified by the Secretary of Agriculture, would be deemed to be in compliance with water quality standards under the act and no notices could be served or enforcement action taken.

5. The bills provide that if a State agency determines that a landowner, operator, or occupier who has been offered assistance violates State water quality standards or an agreed plan, he would be ineligible for any Federal assistance with respect to such land or enterprise until he substantially complied with standards or plans.

Five billion dollars would be authorized to carry out the purposes of the bill in fiscal year 1973, and "such sums as may be necessary" thereafter.

In our opinion, much of this expenditure would go for work that would duplicate existing programs or new efforts contained in legislation which is currently before the Congress.

Under its rural environmental assistance program and other authorities, the Department of Agriculture already is able to undertake many activities of the sort for which these bills would provide.

The Department carries out cost-sharing programs under which it may make grants of up to \$2,500 per year per farm for pollution control measures.

The farmer must use technical assistance from the Soil Conservation Service.

Sediment control programs are also provided under authorities of the Soil Conservation Service and the Agricultural Stabilization and Conservation Service.

The Department also has authority to deal with erosion control per se, and with the pollutant effects of erosion as they affect agriculture.

Consideration work of the sort that section 1(d) would authorize is being conducted in the Department of Agriculture. This is a function which we encourage the Department to pursue diligently.

The EPA enters the picture in one way, where the entire soil system is viewed as a carrier of pollutants.

Under sections 5 and 6 of the Federal Water Pollution Control Act, we have the authority to undertake or assist research, technology development, and demonstration projects in agricultural pollution and sediment and erosion control.

In the farm area, our programs are geared to the development and demonstration of technology and equipment for adoption by both large and small feedlot and farm management operations, and to businesses which are producing process or control equipment.

Many companies and institutions have grants to develop control technology and equipment. We expect that additional demonstration projects will be undertaken and that the adoption of the control technology and equipment by the agri-business industry will be accelerated.

The results of technology development and the guidelines which we prepare are widely disseminated and are available to the States, which have the principal responsibility for regulating farming operations.

Our joint programs in agricultural areas also help to ameliorate pollution from crop-raising operations.

The work, for example, of the Desert Research Institute in Las Vegas, the Colorado State University in the Grand Valley, and the State of California in the San Joaquin Valley, has been especially important to the understanding of water management effects on salinity and water pollution.

We are working to develop methods of minimizing water usage in such processes as irrigation, as well as to control the pollutant effects of the water that is used.

The amendments to the Water Pollution Control Act, which are now pending in the Congress, would expand the scope of our responsibilities to study and control non-point sources.

For example, under section 104, "Research, Investigations, Training and Information," the Administrator would be authorized to do the following:

Use contracts or grants for developing and demonstrating new or improved methods for prevention, removal, and elimination of natural or manmade pollution in lakes, including the undesirable effects of nutrients.

Make grants for river basin studies, which may include the effects of agricultural and sediment runoff.

Carry out a comprehensive program, in cooperation with Agriculture and other agencies, to learn how to better apply existing methods, and develop new methods, of preventing and abating water pollution from agriculture.

Ten million dollars per year would be authorized for the last of these three programs, for fiscal years 1973 and 1974 in the House bill, and for fiscal year 1972 and succeeding years in the Senate version.

Section 105, which is "Grants for Research and Development," would authorize the following:

Grants to States or interstate agencies to demonstrate pollution treatment and environmental enhancement techniques for the control of pollution from all sources, including non-point sources.

An accelerated effort to develop and apply waste management efforts applicable to point and non-point sources to eliminate discharges of pollutants, including runoff of pollutants.

Development and application of advanced waste treatment methods for point and non-point sources.

Grants to be made in consultation with the Secretary of Agriculture for research and demonstration projects on methods to prevent and abate pollution from agriculture.

Section 304(a) would authorize the Administrator to issue within a year after enactment, guidelines for identifying and evaluating information on and means to control pollution resulting from agricul-

ture, mining, construction activities, and other sources. This information would be periodically reissued as warranted.

We are participating in this kind of program already, in cooperation with the Departments of Agriculture and of the Interior, under the authority of section 5 of the Federal Water Pollution Control Act.

Finally, under section 304(j), the Administrator would be empowered to enter into agreements with the Secretary of Agriculture, and others, to provide for the maximum utilization of programs under the Secretary's jurisdiction in order to achieve and maintain water quality under areawide waste treatment management plans. Here, again, cooperative work of this nature is already underway.

This brings me to the second point:

The programs in section 2 in your bill for control of pollution resulting from erosion from five different sorts of activities or areas. Here, again, we believe that sufficient authority exists or has been proposed to deal with these particular problems.

Sediment is a significant pollutant even when it is not carrying toxic substances or other materials which can impair water quality. It destroys water storage capacity, for example.

Annual sediment deposition in the United States is approximately 850,000 acre-feet, or nearly five times the volume of earth and rock that was excavated for the Panama Canal. It preempts space in reservoirs which could otherwise be storing drinking water for 5.5 million people. In other words, Mr. Chairman, drawing about \$50 million worth of storage space a year for potable water.

The most significant contributor to sediment loading is construction which, in newly developing areas, can yield 20,000 to 40,000 times the sediment that comes from natural runoff.

Streams draining the Washington, D.C., metropolitan area alone will transport 20 million tons of sediment in the next 20 years, or 10 tons for each person added to the area.

Improper logging procedures have been shown to account for 7,000 times more sediment runoff than would occur naturally in forested areas.

Nationwide, the Corps of Engineers spends about 40 cents per cubic yard to dredge navigable waterways, or \$150 million.

The Environmental Protection Agency, together with the Department of Agriculture, has done extensive work in control of sedimentation and erosion generally, under section 6 of the FWPCA.

For example, we have a project with the State of Maryland, at Columbia, to collect and compile information on erosion and sediment control practices used in urban development, and to develop a programmed demonstration for erosion and sediment control inspectors and others.

In addition, we have joint programs with the Department of Agriculture in agricultural management technology, which indicates the role of sediment control in pollution abatement.

Under this grant, a manual entitled "Guidelines for Erosion and Sediment Control Planning and Implementation" has been developed. It is being printed now and will be widely distributed. The manual and the results of studies of this nature can be used not only by the building construction industry but also by road builders and mine operators.

EPA has previously issued a report entitled "Control of Erosion and Sediment Deposition from Highway Construction and Land Development," and its "Policy on Control of Nutrient Runoff from Agricultural Lands."

These resulted from initial efforts in EPA's continuing development of programs for the control of pollution from non-point sources.

The Water Pollution Control Act currently provides for comprehensive programs for water pollution control and for grants to States to establish and maintain measures to prevent and control water pollution.

Section 208 of the pending amendments, concerning areawide waste treatment management plans, directs that they apply to "all wastes generated within the area involved." They must contain processes to identify sources of pollution from agriculture, mining, and construction, and set forth procedures and methods, including land use requirements, to control such sources to the extent feasible.

The present Water Pollution Control Act does not deal with sedimentation by itself as a water quality problem.

Earlier this year, the administration sent to the Congress a proposed Sediment Control Act, which is specifically designed to meet this. The proposed act, which was introduced in the Senate last week as S. 3910, would apply to all nonagricultural activities which disturb the land.

Mined areas which would be covered under the proposed Mined Areas Protection Act, which I will discuss later, also would not be subject to the provisions of the Sediment Control Act, but all others would be covered.

The act provides for State-administered programs, including the issuance of permits where appropriate, to regulate land disturbing activities which cause sedimentation which significantly affects water quality.

Within a year of enactment, the Administrator of EPA is to promulgate guidelines for the:

. . . effective control of sedimentation from land-disturbing activities, including, but not limited to, cleanup, grading, transporting, and filling of land in connection with (1) construction of both public and private buildings, roads, and highways, and (2) other activities . . .

The guidelines are to include generally applicable information concerning "demonstrably feasible" sediment control techniques and their costs, effects of failure to control sedimentation, the extent of control to be achieved by the technique discussed, and procedures to evaluate costs.

The guidelines would also designate areas where permits would be required for land-disturbing activities, those where general regulation would suffice and those where no regulation would be necessary for sediment control purposes.

The Administrator would be required to consult with the Secretary of Agriculture and other department and agency heads, in preparing the guidelines.

Each State would be required to survey the waters in its jurisdiction and determine those "areas of critical sedimentation" which result from activities subject to regulation under the bill, and are amenable to "substantial attainment" of water quality standards.

The States would also be required, within 1 year of the promulgation of Federal guidelines, to submit plans for sedimentation control programs to the administration. If, within 30 months of the enactment of the law, a State had no program or only a partially approved program, the Administrator may adopt the necessary regulations.

Land-disturbing activities, other than those specifically exempted, must be administered in accordance with regulations adopted in accordance with or as part of a State plan, or under the terms of a permit received from a State agency.

A "qualified public agency" must review each sedimentation control plan before the issuance of a permit. The permit would be issued by a State agency which has a permit issuing program which, in turn, has been approved by the State agency which establishes and enforces water pollution control standards.

A State program must also contain provision for monitoring activities conducted under a permit or a regulation, and authority for the State water pollution control agency and such other agencies as it may designate to enjoin activities which violate the act or a permit, and to assess penalties.

The Federal Government would have enforcement authorities similar to those in the existing law. The certification provisions of section 21(b) of the Federal Water Pollution Control Act would be construed as calling for reasonable assurance of compliance with the provisions of the Sediment Control Act.

Finally, Federal aid to activities which required a permit under the sediment act would be contingent on the possession of such permit.

With respect to mined areas, many mines are already subject to compliance schedules established by the States under the Federal Water Pollution Control Act and ultimately established under the Refuse Act permit program. Many States' water quality standards include criteria governing toxicity and siltation from mining activities.

The EPA and its predecessors have undertaken many studies and conducted a great deal of research and several demonstration activities to assess the effectiveness of innovative mine water pollution abatement techniques.

Section 14 of the Federal Water Pollution Control Act, "Area Acid and Other Mine Water Pollution Control Demonstrations," authorizes the Environmental Protection Agency to undertake projects dealing with pollution from mine drainage.

We have, for example, current projects which deal with use of sediment basins, use of "daylighting" to abate acid mine drainage pollution and reclaim the land, and development of new vegetative cover, to eliminate or minimize erosion and mine drainage.

Section 107 of the pending amendments would expand this authority to include pollution by sedimentation from mining.

Control of mine pollution by this Agency is limited at present to cases in which water quality standards are being violated.

The Refuse Act permit program also provides a partial answer to the problem of pollution by mine wastes.

Early in 1971, the administration sent the Mined Area Protection Act, H.R. 4697, to the Congress. Like the Federal Water Pollution Control Act, it would establish a framework of Federal guidance and financial assistance, and regulatory programs administered by the

States. We believe that it will both prevent undue damage from mining activities and assure the restoration of areas that are damaged.

Under the act's provisions, each State would develop environmental regulations for mining operations within its borders, except those on Federal or Indian lands.

The regulations must be approved by the Federal Government and, among other stipulations, require mine operators to obtain State permits and submit mine reclamation plans; contain requirements designed to insure that the mining operation will not violate applicable air or water quality standards, and erosion, sedimentation, and release of toxic substances will be controlled or prevented; and require reclamation of mined lands.

The Federal Government would be empowered to make grants to States to aid them in developing, administering, and enforcing their regulations, and also to conduct or promote research or training programs.

This provision allows for much needed research into less well understood aspects of environmental damage caused by mining, such as land subsidence.

Although the administration's proposed Mined Area Protection Act did not provide for restoration of past mined areas, both the Senate and House Interior Committees plan to report bills which, in addition to the major provisions of the administration's bill, provide for the restoration of past mined areas.

Our third major concern which the Environmental Protection Agency has about the bills before you has to do with the amendment to section 10 of the existing Federal Water Pollution Control Act. This would permit feedlots and other livestock and poultry operations to adhere to interim guidelines for their discharges for 3 years before they would be subject to final guidelines and to enforcement.

We believe that, as it is currently written, this section would seriously impede our authority to control pollution from point sources of animal wastes.

Under the Refuse Act permit program, a confined animal feedlot which contains 1,000 or more animal units and discharges through a manmade contrivance, such as a pipe or ditch, is considered to be a point source. The definition of point source is broadened in S. 2770 to include a concentrated feeding operation.

Although only 1 percent of livestock and poultry operations falls into the 1,000 animal unit category, they produce 55 percent of the meat and poultry consumed in this country. The amount of sewage that enters navigable waters from these sources is significantly greater than that which enters them from municipalities.

The Refuse Act permit program, the current water pollution legislation, and proposed amendments to the Federal Water Pollution Control Act have been the subjects of extensive legislative and/or oversight hearings in both Houses, including extensive inquiries by this committee.

The bill, which a conference committee will probably report soon, will contain a strengthening of Federal authority for control of feedlot discharges and a permit program to be administered by the States. We are already working with the Department of Agriculture to develop guidelines for feedlot discharges, and we see no reason to alter the

guidelines and the timetables which these kinds of operations must follow.

Finally, we oppose this bill because it represents a departure from the desire to consolidate the Nation's water pollution control efforts which was the basis for the establishment of the Environmental Protection Agency. We believe that enactment of this legislation, which would create a substantial pollution control program in another department, would be detrimental to our efforts to effectively and efficiently unify research, implementation, and enforcement responsibilities of the Federal Government in water pollution control.

I would like to emphasize that in all of the ongoing and prospective programs which I have described, we work and will continue to work closely with other agencies.

In the mining area, we cooperate closely with the Bureau of Mines.

We make extensive use of the excellent capabilities and resources in the Department of Agriculture for research, development, and field work on soil and pollutants in it. We also take advantage of their extension services to notify farmers of the management practices that they should follow and of the assistance they can receive.

The Department of Health, Education, and Welfare is an important ally in our considerations of pollutant effects on health.

In conclusion, EPA believes that the authorities that we and other agencies have now and would be given in legislation which has been transmitted to the Congress will be sufficient to enable our cooperative efforts to continue and to bring results.

Mr. Chairman, I will be happy to try to attempt to answer any questions you have at this time.

Mr. KEE. Mr. Baise, as you know, the purposes of our hearing are to develop all aspects so that we can come up with the most effective, reasonable, and practical bill possible.

I would like to ask you two questions. No. 1, have you read the hearings which we conducted in 1971 in Ardmore, Okla., Princeton, W. Va., Macon, Ga., Greenville, Miss., Davenport, Iowa, and Wichita, Kans.?

Mr. BAISE. No, I have not.

Mr. SCHWENGEL. Mr. Chairman—

Mr. KEE. I yield.

Mr. SCHWENGEL. Did I understand you to say you have not read it?

Mr. BAISE. That's correct.

Mr. SCHWENGEL. You didn't know that this committee went on a trip for the first time in history—

Mr. BAISE. I was informed this committee had made a trip and that there was this publication, because it was brought up yesterday at the hearings. But we were unable to obtain a copy in time for me to read it last night.

Mr. SCHWENGEL. Mr. Chairman, what was the date of that first hearing?

Mr. KEE. July 17, 1971.

Mr. SCHWENGEL. That's a long time.

Mr. BAISE. The hearings I have read, which are close to this area, are those hearings held by the Senate Public Works Committee in April on agricultural pollution and runoff held in Kansas City, Mo., where I am told—and since I have not read your particular volume,

I cannot substantiate it, but a good deal of the material is the same concerning sediment runoff and——

Mr. SCHWENDEL. How could you say that when you never read it?

Mr. BAISE. That's what I say, I cannot substantiate that. I have just been told that.

Mr. KEE. At this point, sir, I would like to present to you a copy of our watershed field inspection. I would advise you to read these quite carefully. I don't know why you haven't seen them. They have been published and have been available here in the committee for anyone to read and learn the facts.

I must point out to you, sir, that I have been here 40 years at the end of this term, and during those 40 years I have learned that all the brains are not in Washington.

Mr. BAISE. Right.

Mr. KEE. That's exactly why this committee went out to talk to the people.

Now, on the watershed projects that we saw, where in many cases there were no fish to begin with, we have seen some very fine fish, the clearest water you could find in the world. So I would like the counsel on my right to give you a copy of that and I hope very much that you will look at it.

Mr. BAISE. Thank you very much.

Mr. KEE. The second thing, on this Federal Water Pollution Control Act that you referred to, as you know, the Senate passed one version and the House passed another version, and I guess in 3 months or more the conferees have been trying to reach an agreement. Yes; I think they will reach an agreement.

But what we are trying to do is eliminate the major pollution in your downstream areas. You know, this bill wasn't drawn hastily. It was drawn through our hearings in the field.

The second thing that you referred to was this \$5 billion, which you seemed to be concerned about. That's not the problem at all. In our markup session we intend to make some changes and improvements in this bill. That's one reason, you know, that we wanted to hear from you. But we want to spread it out over a number of years, so that you will have so much.

I can assure you, sir, from our experience, that when we left the House we missed a powerful lot of votes and we were out asking people and conducting hearings and having people come in and testify. We know that by far your major sediment, et cetera, in your downstream water, you only have to go out here to the Potomac to see what we're talking about, that this will do more to provide clean water, adequate water, for the future generations to come.

At this time I yield to my illustrious and distinguished colleague, a man with extreme knowledge, Mr. Schwengel. He has certainly devoted every ounce of energy that a man could; he has gone further than that. He has gone that extra step.

Mr. Schwengel.

Mr. SCHWENDEL. Thank you, Mr. Chairman.

You can imagine that I read your statement with a great deal of apprehension. I have some real concerns. You see, I have been in conservation since my father first introduced me to it on a farm in Iowa——

Mr. BAISE. I have, too, in Illinois. We're not all that far apart.

Mr. SCHWENGEL. I wonder, how much time have you spent investigating this total problem in your department?

Mr. BAISE. Mr. Schwengel, I can't give that to you in terms of man-years, if that's what you want. We can provide that to you for the record.

As far as the emphasis on this program, it has gone up markedly in just the last year in our Agency. For example, in the research and development area, it has gone up a great amount. One of the reasons for this is because the President's Water Pollution Control Advisory Board has held some meetings on this particular subject, although they have concentrated their efforts in the feedlot operations for the most part. But those hearings have served to spur the efforts in our own Agency, and I would like to give you some figures as an example, as to how Mr. Ruckelshaus considers this to be a priority problem in our Agency.

As you know, we have brought together a number of bureaus and departments from around the Government—and our figures go back to 1968—

Mr. SCHWENGEL. Would you name those bureaus?

Mr. BAISE. They are the Federal Water Pollution Control Administration, from the Department of Interior, the National Air Pollution Control Administration from HEW, the Bureau of Solid Wastes from HEW, pesticides from both HEW and Interior, and Agriculture, the Bureau of Water Supply from HEW, the radiation standards setting function of the Atomic Energy Commission—I think that basically covers the waterfront.

Mr. SCHWENGEL. Who did you talk to in Agriculture? Who was the responsible person in Agriculture that you talked to?

Mr. BAISE. I'm talking about the bureaus we brought in—

Mr. SCHWENGEL. Yes, I know, but you must have talked to somebody in that bureau.

Mr. BAISE. I did not specifically. I just have the figures which are the result of the bureaus that we brought under our jurisdiction from Agriculture.

Mr. SCHWENGEL. Have you talked to anybody who has anything to do with Public Law 566?

Mr. BAISE. I have not personally; no. I think Mr. Bernard and some of the others on our staff have talked with these individuals.

The point is, what I want to get across here, is how we are increasing our expenditures in dealing with this particular problem.

Starting in 1968—I will take the sections you are most concerned with, like forestry, logging, agricultural runoff, irrigation return flows, animal feedlots, nonsewer mineral wastes, and actual runoff. Just in the research area alone, we started out in 1968, through 1973, that we had spent in forestry and logging \$38,000. This year's budget alone, in research, we have increased to \$66,900—

Mr. SCHWENGEL. This is research just on logging?

Mr. BAISE. Yes; this is forestry and logging. We're looking at the sediment runoff problems we have in this area.

Mr. SCHWENGEL. Are you doing this research yourself?

Mr. BAISE. We're doing part of it ourselves, and some of it will be farmed out on contract.

Mr. SCHWENGEL. Have you checked with the departments that already know the answers here?

Mr. BAISE. Yes; we are working cooperatively with the Department of Agriculture, through their Forest Service operation, and the Department of the Interior. But we are very cognizant of the fact we don't want to reinvent the wheel, as it were, from our Agency's standpoint.

In agricultural runoff, up until this last fiscal year, our component parts of our agency, and now EPA, have spent \$2.5 million in research on how to control it. This year alone we have increased our expenditures to \$642,000.

Mr. SCHWENGEL. You are doing actual research in this area?

Mr. BAISE. Yes, we are.

And irrigation return flows, up until 1972, we had spent \$4 million. Those were not only research projects but these were actual demonstration projects, like I outlined in the testimony for you.

Mr. SCHWENGEL. I have been very close to this, and I am pursuing this because this is the first I have been aware of this, and I am also aware of what the Conservation Service has done in research.

With our own eyes we saw some tremendous success stories of watersheds and conservation programs. It seems to me here we have a new department that is setting up some new research on all the things in areas where the work may already be done.

Now, I am pursuing this because, you see, Mr. Ruckelshaus and your people were before this committee when we had the pollution bill, and every person that came before the committee I asked about this agricultural runoff and they knew nothing about it. Now you come here and tell us all what you know about it and what you want to do, and you want to take this away from Agriculture, is that right? Do I interpret this right?

Mr. BAISE. No, we don't want to take anything away from Agriculture. Let me make that point very clear. We work very closely with the Department of Agriculture. As you know, Mr. Butz and Mr. Ruckelshaus have a very close working relationship. And one point Mr. Ruckelshaus has made from the top is "Don't be reinventing the wheel continually around here. Let's save the taxpayers' money," to find out exactly what Agriculture and Interior have been doing, set their priorities after he determined what they had done, and then, hopefully, that is what our research and monitoring section of our agency has done.

In the animal feedlot area, up until 1972 we have spent some \$3 million within the component parts of our agency and ourselves. This year alone we are going to spend some \$867,000 in research.

Mr. SCHWENGEL. Here again, Agriculture knows an awful lot about this and they are concerned about it—I am and a lot of people are. You say you're spending this money, and it seems to me Agriculture has much more competency and experience here. I just wondered why you are spending this when—

Mr. BAISE. On that one I can testify to personally. I have met and talked to and have testified before Mr. Byerly, over at the Department of Agriculture, on their efforts in this area. Agriculture did testify before the President's Water Control Board hearings, in both Denver, Colo., and in Warsaw, Ind.

So again, we have worked very closely and cooperatively with them in determining what they have done.

One of the most definitive studies on cattle feedlot and waste management alternatives have been turned out by ourselves, again in conjunction with and not off to the side with Agriculture. This, in my mind, is the most definitive thing I have seen, and it gives the farmer the costs, depending upon the number of head of cattle he has in his operation, what type of feeding operation he has, be it on concrete, concrete with a covered shed, or just a plain dirt operation.

You and I are basically familiar with Iowa, that Iowa has basically a small to medium-sized feedlot operation, whereas in the Western States they have a drier climate and a larger feedlot operation. But this gives you a detailed analysis on exactly what the costs are. We're going to go that next step, as to how we can control a little bit better the runoff from these feeding operations.

But getting back to these figures here, showing our agency's commitment to cutting down non-point source pollution, in the natural runoff area—and this would be like roadsides—we find that DOD is already doing some work there, Transportation is already doing some work there, so we have not spent very much money in this area at all. In fact, up to and including this year, we have only spent \$25,000 in that particular area.

We found in our research, again, that a good many agencies are expending sums of money, manpower and time on the natural runoff problems. So again, to stress the point, we think what we are doing in conjunction with Agriculture, in conjunction with Interior, is sufficient to address this problem at the present time.

If I may quote Mr. Ruckelshaus here, he believes the erosion problem is quickly becoming our number one pollution problem—

Mr. SCHWENGEL. That's very interesting, because he didn't know that when he came before this committee.

Mr. BAISE. That's right. I talked to him just this morning. We had a long chat about it—

Mr. SCHWENGEL. So you're "Johnny come lately" here. I have been concerned about that problem since I was on the farm and my father taught me how to farm around the hills and how to never plow in a gully, to let the grass grow there. We had our own version of a water diversion channel that worked pretty good. It was kind of crude. We built ponds and all these things.

Now, the EPA is coming in here, and knowing only since we had the hearings on the bill, when Mr. Kee and I were pursuing this question before the water pollution bill, and now since that time you have done all these studies and you're ready to come here and say this bill, as a result of many, many hours of work on our part, and the committee's part, of hearings and testimony, consulting with some of the finest people I know—

Mr. BAISE. I'm not sure—

Mr. SCHWENGEL (continuing). Who are more interested in conservation than the farmer himself.

One reason we haven't made more progress is because Congress hasn't sufficiently funded this, and your people came here and they didn't realize this fact, and because they didn't—if you deal with all the problems of pollution caused by municipalities and all the prob-

lems of pollution caused by industry, you would only deal with 7 percent of the total problem. It was this testimony here that got you people on the ball, and what kind of bothers me, now that you're on the ball, and we got you on the ball, is that you want to take over the whole operation.

Mr. BAISE. We don't want to take over the whole operation.

Mr. SCHWENGEL. That's what your testimony is.

Mr. BAISE. No. 1, we don't have the manpower, and No. 2, we don't have the funding. All we are saying is, we think there are sufficient authorities available to us right now to address the problem, and that there is no further need for additional legislation in this area because it would be duplicative. I don't think any of us want to get into that particular area.

If we are a "Johnny come lately", as I say, we started in 1968, when we had component parts from Interior, component parts from Agriculture, and from HEW, these people have been involved in this since that time. I have reports here that are dated 1968, 1969 and 1970.

Mr. SCHWENGEL. There wasn't anything from your people before this committee when we raised this question. There wasn't even a suggestion you were studying this before the Public Works Committee.

One further thing I think we ought to know, and one reason for this bill that you're saying you're against, which I think is landmark legislation to be enacted, we are aware of all these matters you call to our attention, and we don't see this as duplicatory at all. We see it as a supplement and a much needed program.

My conviction is that a dollar spent on the kinds of programs we propose in this legislation will do 10 times as much good toward water pollution solutions, than the dollars we spend in all other areas—and I don't oppose them; I supported them. I want them enacted. I think we ought to clean up the sewers and municipalities, and I think industry has to be called up—in fact, we need to demand of them in some instances that they do the kind of job they can do and should do, or this idealism we want of pure water and fish everywhere will just not happen.

I'm glad, Mr. Chairman, we're getting an indication from you now that we've got to get to this non-point source pollution problem, but this is the first testimony we've had from your department on this. I am glad to have your endorsement of the idea, but I am disappointed in your saying that all of the hours of work we have put into it, the result of hearings and testimony, by competent people working with Agriculture is for naught so far as you are concerned. I don't think there is an organization anywhere in the world that matches our Conservation Service in the Agriculture Department. They've just been almost crying because they have not had enough money to fund what they have to do. We've got 8,000 projects that we just don't have money for. That would go a long way toward solving the problem that we want to solve.

Mr. BAISE. But you and I both know—and you have a farming operation in Iowa, as I understand it—and I don't own one yet, but my father and two uncles have a considerable amount of land in Illinois—I have dealt with the conservation people as you have and I think we have to say that money is not the only answer. You have to have

the farmers working in cooperation with you to solve this erosion problem.

I see it all around us in the west-central part of Illinois, where the farmers are not implementing the information which is provided to them by the Department of Agriculture in the Conservation Service. There is a real weakness as far as I see it, from just my personal standpoint. I'm not talking as an EPA person right now. We need better management capabilities out there where the action is, informing the farmer what is available to him and having that county agent out there encouraging him to implement Agriculture's programs. If we did that, I don't know what—

MR. SCHWENGEL. Just tell me of a county agent that isn't doing that. Just give me one name.

MR. BAISE. I can't name specific—

MR. SCHWENGEL. You're condemning the county agent system that—

MR. BAISE. No; I'm not. I'm just saying that the farmers don't utilize the information that the county agents can bring to them.

MR. SCHWENGEL. This is what you're saying. But, you see, we've been out in the field.

First of all, I want to correct the record, that I'm not the owner of a farm. I own only  $3\frac{1}{2}$  acres, but I help manage some 900 acres.

MR. BAISE. That's a farm in this part of the country.

MR. SCHWENGEL. I'm not a stranger to a farm and was born and reared on a farm, but I'm amazed at some of your statements here. All the farmers I know in Iowa want something like this—

MR. BAISE. I'm not condemning the bill. I am just saying, as a fact of life, around our area in west-central Illinois, I can take you out there personally and show you some of the farms where I don't think they are implementing some of the programs and some of the advantages—let's put it that way, the advantages.

MR. SCHWENGEL. It's kind of difficult—you know, the farm that I looked at, that belongs to my grandson, because we don't have a watershed in that area, and one reason we don't have it is because we haven't implemented the program. With this kind of bill, it would be implemented and funded.

They built ponds on that farm, and we're doing our part. But the silt is coming down from the other areas. Those farmers by themselves just can't do it.

MR. BAISE. That's right. We find the same—

MR. SCHWENGEL. We have got to have some program that will see this thing through, like we envision we're going to do in the municipalities. If the bill that is now in conference is passed, we're going to make real progress here. That will spell more progress toward the solution of water pollution. All we want in this legislation—and I admit it isn't perfect—but if you sit here from EPA and say this is not needed, my friend, you just don't know what you're talking about. I want to underscore that.

MR. Chairman, I'm going to have some testimony for the record to show that—

MR. BAISE. I don't want to say the concept is not needed. The testimony from EPA says simply that we can attack, address, and hopefully solve the problem with the jurisdiction we presently have, the

jurisdiction we think we are going to receive under the new legislation, and with the jurisdiction that Agriculture and Interior already have.

Let's not let the record show that EPA and myself feel that something on this order is not needed. All we are saying is this is duplicative of what we already have. We are addressing the problem—

Mr. SCHWENGEL. This is an idea you have developed since you were represented before this committee before?

Mr. BAISE. I can't testify on behalf of Mr. Ruckelshaus, as to what he said.

Mr. SCHWENGEL. Well, you can look at the testimony and you will note my wife's husband led the questioning period there, and I don't mind saying I was amazed that he didn't know some of the basic facts that should have been known to tackle this total problem.

So I reiterate—

Mr. BAISE. In the past.

Mr. SCHWENGEL. So maybe it could be true that you don't have the competency here to testify on this question that you ought to have, that you're not backed up with sufficient research and study.

Also, I don't think you can reach this conclusion from counseling with those in Agriculture who have done more and who want to do more than any comparable group anywhere in the world. I don't think they gave you this kind of testimony; did they? Did you counsel with them?

Mr. BAISE. We counseled with Agriculture and—

Mr. SCHWENGEL. Did they tell you they didn't need this?

Mr. BAISE. They did; yes, sir.

Mr. SCHWENGEL. Did they tell you they didn't need this bill?

Mr. BAISE. Yes, sir.

Mr. SCHWENGEL. Did you read Mr. Davey's statement yesterday?

Mr. BAISE. I skimmed it.

Mr. SCHWENGEL. The only reason they're against it is because the administration has got the money sealed.

Mr. BAISE. I cannot testify to that.

Mr. SCHWENGEL. Well, he certainly endorsed the concept of this legislation.

Mr. KEE. Will the gentleman yield?

Mr. SCHWENGEL. Yes.

Mr. KEE. Mr. Baise, I was somewhat interested in your statement that in Illinois, as I understood you to say, the farmers were not cooperating with the Soil Conservation Service. I can take you out to southern West Virginia, which is a rural area, and we have absolutely no problems. The fact of the matter is, when the local people understand what can be done, they do their homework without question, and then they go to the Soil Conservation people, who I think are absolutely outstanding, and there is such a close relationship between the two. They do know they are preventing floods. I can cite you case after case on these projects that we have been able to put together.

During our hearings we have found—and this is the reason for the bill we have—that we need to give the Department of Agriculture more authority. There is not a man, including you or anybody else, that can question the efficiency of those tremendously knowledgeable and qualified men in the Soil Conservation Service.

Mr. BAISE. I am just saying, at least in our area, I don't think advantage is being taken of these tremendously competent individuals you're talking about. I just see it. I go back home—I was back there as recently as 3 weeks ago.

For example, as you know, we are bringing into operation now six- and eight-row equipment. Now, sometimes it is pretty difficult to get that kind of equipment in between contours. I see contours on some of the farms in our area just being plowed under, cultivated, flattened out, and obviously that is going to cause more sediment runoff.

I think just the production itself at times has caused at least the farmers who are adjacent to our area to forget a little bit about the conservation practices they have utilized in the past. I just didn't see nearly the good contouring I have seen elsewhere.

Mr. SCHWENGEL. Where is your area?

Mr. BAISE. Jacksonville, Ill., 70 miles from the Mississippi.

Mr. SCHWENGEL. I've been in Jacksonville.

Mr. BAISE. It's Congressman Paul Findley's district.

Mr. SCHWENGEL. Whereabouts in Jacksonville is this?

Mr. BAISE. The entire area, I would say. We own land on the northwest side; we rent a lot of land both south and east of Jacksonville.

Mr. SCHWENGEL. Generally speaking, those are pretty good conservationists over there in Illinois. I'm amazed to have you say that. There must be some—

Mr. BAISE. They started a rather sizable dam-building program over in Pike County that you're probably familiar with. It is much closer to you. But as you also realize, that is an area which has an enormous erosion problem and has had for the last 20 years.

Mr. SCHWENGEL. We believe this program we have here would solve that. I have a dam in my district and I'm concerned about the Coralville Dam as a recreation area. I don't believe we should build those big dams until and unless we have assurance that we're going to have good land management above the dams.

So in the future I hope the engineers will be forced to work with some kind of a system that protect these installations better. That's what we envision here with this bill.

Mr. BAISE. Do you envision in this bill a system where there are a lot of small farm ponds also built, because that's what is going on right now. I see that happening.

Mr. SCHWENGEL. Isn't that good?

Mr. BAISE. Yes; it's good.

Mr. SCHWENGEL. You bet your life it's good. This promotes and encourages that, terracing, water grassy waterways, and good conservation practices are fully used.

Mr. BAISE. We need to encourage more of that.

Mr. SCHWENGEL. You were accusing the farmers; you know, the farmers used to plow their lands in the fall. They don't do that any more. Do you know why?

Mr. BAISE. Yes; because the runoff—although there is still a lot of fall plowing around our area, because—especially in the black gumbo area, where you want it to lay all winter—

Mr. SCHWENGEL. I'll do some checking on your area there that you have condemned so, that the people are so careless. I have been around there and I haven't been so aware of a shortcoming of the farmers there

in that area. We have them in our area, too, but many times there are special reasons for that.

Mr. BAISE. It may very well be in particular cases. I certainly don't want my remarks to be construed to condemn all the farmers, especially—

Mr. SCHWENGEL. The farmers in Illinois must be fairly good in taking care of their land, because they run a close second in corn production, and once in a great while they beat us in corn production, but not very often.

Mr. BAISE. I thought it was more than "once in awhile."

Mr. KEE. Mr. Thone?

Mr. THONE. Thank you, Mr. Kee.

Is there any question here that you feel the Department of Agriculture might be getting too much authority in this field, to the detriment of EPA?

Mr. BAISE. No; not at all.

I would guess at this time there is probably as close a working relationship between Agriculture and our agency as there ever has been, just because of the two personalities involved—Mr. Ruckelshaus and Mr. Butz—both being old and close friends, and also our special agricultural consultant, Mr. Will Irwin, who recently shifted over from us to go over to help out Mr. Butz as the Deputy Under Secretary.

So as far as the relationships with Agriculture, I would have to say they are extremely close. As far as jealousy—well, I could never rule that kind of thing out down in the bureaucracy.

Mr. THONE. I'm sure I wouldn't, from past experience.

Mr. BAISE. I would have to say that our main point is that Agriculture has sufficient authority, and we have some authority now—

Mr. THONE. Do they have sufficient funding in this area?

Mr. BAISE. I don't think I could answer that question.

Mr. THONE. My thought would be that they do not. That would be one of the good aspects of this legislation or something like it. Here we are just passing that so-called Clean Waters Act of 1972 to the tune of around \$24 billion or so, coming to grips with industrial and municipal sewage treatment plants and all that. But I don't think we have yet become realistic in this area of runoff financially.

What's your observation?

Mr. BAISE. I was pointing out just earlier that we are beginning to put in our agency increased emphasis on this. I talked to Mr. Ruckelshaus just before I came up here and I stated something for the record, that this is quickly moving up in terms of very high priority in our agency, and I cited some figures just to show our commitment in the research area alone for our agency. I don't think it is necessary for me to repeat them here, but we are just increasing our resources in this area tremendously in forestry and logging, agricultural runoff, confined feeding operations, irrigation return flows. All these areas are getting increased funding from our agency.

The point being with the authority we have, the authority we hope to achieve or obtain through the new amendments, and with the authority the Department of Agriculture has, we think we can address this problem in an intelligent, capable, manner.

Mr. THONE. I think you people have been doing an excellent job overall; and I think your top man is an extraordinary, fine administrator.

Mr. BAISE. Thank you.

Mr. THONE. But we're talking now about research.

What have you really done to help in this runoff problem—practically nothing?

Mr. BAISE. No, I can't say that. We have taken one step beyond research. For example, we have specific demonstration projects as outlined in my testimony where we have gotten into the irrigation return flow business in California and Colorado, to see just what the effects are in an actual operation.

Also, in the use of urban lands, that we have worked with—out here in Montgomery County we have put together a publication now, which is a plan or guideline as to how a county can go about addressing itself to this problem of erosion and sediment control. Every day in this country 4,000 acres of farmland go under the developer's bulldozer. We know the sediment runoff from that is increasing tremendously.

One specific example is out here at Lake Barcroft. We determined here I guess in the last 3 years, by our agency, and Agriculture and Interior all working together, that for each square mile of land being developed in upper Fairfax County, that was putting in about 25,000 tons per year of sediment into Barcroft. That is the kind of thing our research and our demonstration projects want to stop. We think this study in conjunction with Montgomery County will show other counties across this Nation, or other jurisdictional units, how to abate that erosion.

Mr. THONE. I don't want to prolong this too much, but out my way—as I think the testimony showed yesterday—that 450,000 tons annually go down the Mississippi. We live up on the Missouri, where of course, we have bank erosion, which is just fantastic, caused by the Gavins Point Dam up at Yankton, S. Dak.

These aren't directly your problems, I understand, and I don't want to prolong this.

Mr. BAISE. The regional administrator has brought out, where we have cut down upon the sediment loads going into the Missouri, and clean up those loads considerably, that in turn increases, as I understand it, the viscosity of the water so that as it goes down the channel it is taking more off of the river banks, because it is not loaded up with sediment. So you stop one problem and you in turn create another.

Mr. KEE. Well, Mr. Baise, to you and your associates, we appreciate your views. Obviously, this is an unbiased hearing, and your testimony will be very carefully considered, both by our subcommittee and the full committee. We thank you and your associates for coming here and giving us the benefit of your observations.

Thank you very much.

Mr. BAISE. Thank you, Mr. Chairman.

Mr. KEE. Before proceeding with our next witness, I would like to insert into this record a statement received from the Environmental Protection Agency on the bill, H.R. 15596.

(Statement referred to follows:)

COUNCIL ON ENVIRONMENTAL QUALITY—STATEMENT ON H.R. 15596 "NON-POINT SOURCE POLLUTION FOR AGRICULTURAL, RURAL AND DEVELOPING AREAS"

The Council on Environmental Quality welcomes this opportunity to discuss with your committee the very timely and important issue of non-point source pollution of our waters from land run-off and to provide you with our comments on H.R. 15596.

As you know, our Third Annual Report to the Congress on August 7 discussed the issue of non-point sources on the basis of a study recently conducted for the Council. This study, by Enviro Control Inc., showed the trends in water quality between 1965 and 1970 as measured at 142 Federal and State water quality stations across the country. The study covered several basic water quality parameters, including dissolved oxygen and oxygen-demanding loads, nutrients, salinity, and suspended solids and turbidity.

Although the Enviro Control study showed a mixed picture of trends in water quality, it showed that "the problem of nutrients, phosphorous and nitrogen is worsening dramatically in all types of basins, probably because of increased use of fertilizer." [CEQ, Third Annual Report, page 13.] We further stated that "the Enviro Control data confirmed that in undeveloped or agricultural areas, where most of the pollution comes from run-off" (the washing of soil, fertilizer, pesticides, etc., into the water from fields and open land), rain or melting snow increases the amount of run-off and thus pollution increases with flow. But they also show, contrary to the common notion, that in areas of low agriculture and high population and/or industry, 20% of the sampled basins show a run-off effect for total nutrients, and no stations showed a dilution effect, or improvement in water quality with increased flow. In other words, point sources of organic and nutrient pollution such as industrial and municipal discharges, appear to be overshadowed, in most of the stations that were analyzed, by run-off sources, such as farms, feedlots and possible urban run-off. However, the run-off trends which the data show also may be caused by other factors, such as scouring of pollutants from riverbeds by high flow. [CEQ, Third Annual Report, page 16.]

We believe that further analysis of available monitoring data is needed in order to fully verify and refine the results of the Enviro Control Study. However, the report suggests that land run-off in its various forms is a more important water pollution control problem than many had previously thought.

Clearly non-point source pollution is a problem to which the Council and the Administration have devoted substantial attention over the past several years. We would like to briefly describe some of our efforts.

In December 1970, the President changed the old Agricultural Conservation Program to the current Rural Environmental Assistance Program (REAP), but more importantly he redirected the program to emphasize preservation and protection of the environment through practices that will provide environmental benefits to the general public at less Federal cost. A major thrust of this program has been to reduce water pollution, particularly through control of sedimentation. The REAP program of cost sharing with farmers to protect the environment is a major component in our efforts to enhance the rural environment.

In 1971, the President submitted to Congress a proposed mined area protection act to establish Federal requirements and guidelines for State programs to regulate the environmental consequences of surface and underground mining (H.R. 4704). The proposed Act specifically requires erosion control measures as part of the State regulatory programs, which the Federal government would enforce if the States failed to do so. Action is long overdue on this proposal, and we are hopeful that the Congress will not miss its opportunity to deal with this major problem in this session.

In this year's Environmental Message, the President submitted proposed legislation for controlling sediment from other non-agricultural sources, particularly building and highway construction. The proposed sediment control act called upon States to establish, through appropriate local regional agency, regulatory programs to control sediment affecting water quality from earth moving activities. EPA together with other Federal agencies, would develop Federal guidelines for appropriate control measure.

In a speech to the Farm Forum in Minneapolis last March, Council Chairman Russell E. Train called upon the nation's more than 3,000 soil conservation districts to increase the effectiveness of their sediment control programs by using the authority contained in the State legislation of more than 30 States that authorizes soil conservation districts to adopt appropriate land use regulations to complement voluntary soil conservation efforts. The National Association of Conservation Districts currently is giving serious consideration to this suggestion.

The Environmental Protection Agency and the Department of Agriculture have a number of additional efforts now underway to deal with non-point pollution sources. These efforts are dealt with in the statements by the two agencies.

The Administration has undertaken and proposed a comprehensive set of

measures to deal more effectively with agricultural run-off. We are strengthening our efforts to identify even more effective measures for the control of nutrient run-off. However, it is clear that we are dealing in a very complex and inadequately understood area.

With regard to the specific provisions of H.R. 15596, we subscribe to the criticisms made of the bill by EPA and some of the other witnesses which you have heard. The bill is too broad and many of its provisions could be more specifically worded; it vests authorities with other departments, some of which more properly belongs in the Environmental Protection Agency; and it would duplicate and confuse a number of existing and proposed authorities.

We believe that the problems of non-point sources can more successfully be dealt with through current authorities and the provisions contained in the Water Pollution Control Act Amendments and other pending legislation; and that certain provisions of H.R. 15596, such as the one calling for direct payments to individuals, are contrary to the general philosophy of water pollution control which Congress and the Executive Branch have pursued for a number of years.

In conclusion, we wish to reiterate that our Council shares with your Committee keen interest and concern with agricultural and non-point sources of pollution and that we will continue in the coming year to devote substantial attention to these problems. However, we believe that the proposals and actions already made or initiated by this Administration provide the basis for a major step forward in this area and will serve as a sound base for further progress. Therefore we recommend against passage of the bill now before you.

Mr. KEE. Our next witness is a very, very distinguished man, Dr. Dan Hale, supervisor of the Southern Soil Conservation District, Princeton, W. Va.

Princeton happens to be the county seat of my home county. I would like to point out he flew in this morning, because of his dedication to this, and he has just arrived.

Dr. Hale is a man I have worked with so closely to bring about a watershed project which literally saved his own city. Before the Brush Creek watershed came into being, his own city was dying because of lack of water. Dr. Hale, who is a medical doctor, took a tremendous interest and literally went around and knocked on doors and talked to the people. At this point Princeton is one of the most prosperous areas in our section, simply because they have an adequate water supply.

Furthermore, Dr. Hale is a man who is so knowledgeable, so dedicated. About 3 years ago I journeyed down to St. Louis to attend a ceremony where Dr. Hale was selected as the "Watershed Man of the Year."

At this time, Doctor, if you will come forward, sir. We are so delighted that you took the time to be away from your medical practice and at your own expense, to fly up here and give us the benefit of your knowledge on the three bills that we now have under consideration. Welcome.

**STATEMENT OF DR. DANIEL HALE, M.D., SUPERVISOR OF THE  
SOUTHERN SOIL CONSERVATION DISTRICT, PRINCETON, W. VA.,  
MEMBER OF THE WEST VIRGINIA STATE SOIL CONSERVATION  
COMMITTEE**

Dr. HALE. Thank you, Mr. Chairman, and distinguished members of the committee. I appreciate the honor and privilege of testifying before this distinguished subcommittee on conservation and watershed development.

I appear here as a country doctor and as a man who has long been interested in conservation of this Nation's natural, renewable, and human resources.

I congratulate the authors of these bills, which deal with non-point source pollution from agricultural, rural, and developing areas. Also, I congratulate the members of this subcommittee and the leadership of the House of Representatives for recognizing and attempting to solve the monumental environmental problems which this subject involves.

The bill which this subcommittee is now considering has been described as "landmark legislation." I heartily concur with that opinion, based upon a lifetime of experience in health and conservation problems in southern West Virginia, in the heart of Appalachia, where the rapid runoff of rainfall with its consequent sediment and erosion damage has contributed to the deterioration of agricultural, forestry, recreational, and esthetic values, as well as to the deterioration of the health and safety of the people.

Only recently has this country come to realize just how great are the areas of overlapping interest in the fields of conservation and health. And, only recently have the people come to realize the importance and gravity of non-point source pollution from agricultural, rural, and developing areas, both to the public health and to the conservation of West Virginia's soil and water resources.

Therefore, it is with pride that I point out that in West Virginia for several years the mutual interests of health and conservation endeavors have been recognized by individuals and agency personnel alike. And although progress in coordinating health and conservation activities has not always occurred at breakneck speed, it now is obvious to all concerned that substantial dividends are being realized as a result of coordinating efforts which began several years ago.

In fact, on June 8, 1966, the 14 soil conservation districts of West Virginia, and the State department of health, signed a memorandum of understanding by which both health and agriculturally oriented agencies and personnel agreed to focus upon the health aspects of conservation problems and the conservation aspects of health problems.

Although this agreement was the first of its kind in the Nation, the idea soon spread to other States, until now such memorandums of understanding are commonplace in the working relationship between soil conservation districts and local and State health departments.

Thus, with this history, it is not surprising that the philosophy and concepts embodied in the legislation pending before this committee, at this time, should receive almost unanimous approval of soil conservation districts, county health departments, and other public agencies in West Virginia.

Also, it is gratifying to know that not only the magnitude of the nonsource pollution problems from agricultural, rural, and developing areas, but also the enormity of the measures necessary to solve these problems have been recognized by Members of the Congress and that constructive action for their correction is under careful consideration.

I support this legislation, as a practicing physician and a conservationist. I want to emphasize the damaging effects which sediment and erosion have upon the environment and the many ways by which

sedimentation is detrimental both to individual and community health, regardless of its origin. I select erosion and sediment for emphasis in my discussion today, because sedimentation is the greatest factor in damages to the environment from non-point source agricultural pollution.

But before discussing the health aspects of erosion and sediment, the following points need to be stressed:

One, it is generally recognized that while there has been a decrease in the acreage of land used for agricultural purposes in West Virginia, such lands are still responsible for significant offsite erosion and sediment damages.

It is generally recognized that disturbance of the earth's surface in surface mining, roadbuilding, suburban development, et cetera, has increased greatly during the last decade. And such operations are major sources of sediment and erosion and now overshadow sediment damages from farming operations. And this is true in West Virginia. For example, it is known that the sediment yield from spoil banks due to surface mining is often more than 1,000 times that which occurred before the area was disturbed.

It is generally recognized that effective measures must be found and greater efforts made to halt erosion and sediment which occur as a result of surface mining and other disturbances of the earth's surface, for the damages thus caused are rapidly escalating to the point that damage to the total environment is incalculable.

It also is generally recognized that in West Virginia two-thirds of the land area has steep slopes, 25 percent or more, and that such terrain is especially conducive to soil erosion and sediment deposition whenever the earth's surface is disturbed, for whatever purpose.

Hence, for these reasons surface mining, agricultural pursuits, lumbering, road construction, suburban development and so on produce serious environmental problems and are vital concerns to the people of West Virginia as well as to the Nation as a whole.

Among the most compelling reasons for this concern about erosion and sediment are the health hazards which are produced as a result of sedimentation.

The idea that erosion and sediment are public health hazards is relatively new. A little more than a generation ago both erosion and sediment were regarded as a danger almost entirely because they resulted in the loss of fertility and productivity of the soil, with a consequent reduction in the country's ability to meet its food requirements. However, it has been recognized during the last few years that erosion and sediment pose even greater dangers. They are, indeed, pollutants which are detrimental to water quality and which menace the health of individuals and communities alike.

Actually, sediment is a dangerous multiple pollutant, not only because it transports other pollutants, but also because it provides the biological and physical mechanisms by which a variety of pollution processes take place.

Sediment is the most extensive water pollutant known, both in volume and in distribution. Some well-informed people believe that of all water pollutants, sediment also causes the greatest damage. Nearly all the phosphates, nearly all the potassium, nearly all the ammonium form of nitrogen present in our streams are carried on sediment. Also,

most of the pesticides and herbicides present in water are carried on sediment.

Particles of sediment carry absorbed bacteria, both pathogenic and harmless, nematodes and minute crustaceae to which pathogenic viruses and bacteria are attached are carried on or with sediment. These microscopic animals protect attached disease-causing organisms from destruction by chlorination and by other forms of water treatment.

Sediment impairs water quality and is detrimental to the health of man in other ways. Sediment in water gives the water an opaque nature which prevents the penetration of sunlight. It has been estimated "that penetration of sunlight in sediment laden water is halved or more."

Hence, sediment reduces the lethal action of the sun's direct rays on disease-causing organisms in water and blocks out the energy which sustains the natural purifying cycle present in water. Organic sediment, because of its high nutrient content, may readily abet a proliferation of algal growth which overwhelms the carbon cycle by increased BOD requirements—a process known as eutrofication. And sediment breaches the water consumer's last line of defense because any particulate matter in water interferes with chlorination as a method of water treatment.

By preventing the penetration of sunlight into water, sediment particles also cause changes in the temperature of creeks and rivers, and have a significant effect on aquatic fauna and flora.

In blanketing stream bottoms, from the smallest brook to the largest river, sediment creates unfavorable conditions for fish and other forms of wildlife. And of timely interest today is the knowledge that radioactive material and heavy metals, such as arsenic, lead, cadmium, and mercury are transported on or with sediment. Thus, these toxic substances, having entered the chain of life through sediment, are responsible for the fact that fish and other seafood are now found to have dangerous levels of mercury and other substances, often rendering them unsafe for human consumption.

Erosion and sediment, indeed, are monstrous water pollution problems. Besides causing the destruction of invaluable water and soil resources, and besides menacing the public health, erosion and sediment cause ditches, culverts, and streambeds to be clogged, water treatment costs to be increased, recreational and esthetic values to be destroyed, and reservoirs and lakes to be filled, thus reducing the water storage capacity in this country's reservoirs by 325 billion gallons each year. And, by its abrasive action, sediment damages downstream channels and the trees and plant life which grow along the banks of both creeks and rivers.

Sediment also robs the earth of plant nutrients. Based upon research by the Agricultural Research Service, "It has been estimated that each year, in the Mississippi River, 149 million tons of dissolved solids, including 5.5 million tons of phosphorus, nitrogen, potash, calcium, and magnesium are carried away with 435 million tons of sediment. This can give us reason for concern, when we consider that for the United States as a whole, 4 billion tons of sediment move from the land to tributary streams each year." This depletion of soils of their fertilizer content can only lead to a reduction of both the quantity and quality of foods produced.

Other damaging effects of sediment are those imposed upon fish and wildlife. These effects are often catastrophic. And, finally, sediment produces swamps and stagnant water, breeding places for mosquitoes, which in turn may carry deadly diseases affecting both man and animals.

Massive earth disturbances in Appalachia, whether from surface mining, from road construction, or from other causes have other adverse ecological effects which also are detrimental to human health. These effects result from the destruction of or reduction in the quantity and quality of the natural cover which in most instances is composed of trees and forests and, less frequently, of brush, grass, or other herbaceous materials.

Now, while these detrimental effects are indirect, they are the result of erosion and sediment just the same. Some of these detrimental effects have been well known for a long time, while others have come to light only recently.

One important way by which trees and forests and other vegetation influence the health of man has been dramatically shown by research pioneered by Penn State University, research which pinpoints the interdependence of health and soil and water resources. This research has opened up a realm of ecological relationships affecting sewage disposal and food and timber production.

In this study it was demonstrated that the effluent from secondary sewage treatment plants, when sprayed on forage crops and forested land, can be renovated almost completely.

Along with the renovation of this polluted effluent, there are other benefits: Increased production of forage crops, increased growth of certain kinds of trees, an elevated water table, and a breakdown of all toxic materials before the water reaches the water table. Even detergents carried in the effluent were broken down and dispersed with no toxic accumulation of phosphates in the soil.

All of this activity is accomplished by an ancient built-in arrangement of complex rhythmic cycles in which biological, chemical, and physical reactions and interreactions fit naturally together to form a complete system. It is the same story of the carbon cycle at work again, cleansing and purifying the environment in a never ending process, unless the system is artificially interrupted or overloaded.

As a result, the forest floor has been identified as a cleansing antipollutant reservoir of colossal magnitude, which is capable of disposing of astonishing amounts of polluted material, in a way that is harmless both to man and animals. This pollution abatement capacity of the forest floor is again demonstrated by the Hubbard Brook studies conducted by the U.S. Forest Service in New Hampshire. This watershed research shows, "that trees and other biota removed ammonia, nitrate, potassium, and sulfur from precipitation. Lesser amounts of these nutrients run off than fall in rain and snow."

Also pointed out is that "on the woodland, only 12 percent of the nitrogen in rain reached the weir." This concept that trees and forest play a role in cleansing rainfall of absorbed air pollutants, indeed, is an intriguing one, especially in Appalachia, which is prone to atmospheric inversions and resulting widespread air pollution.

Forests and forest practices affect not only the public health but also the health of individual people in many different ways. The use

of the forest floor for waste disposal and the role of the forests in air pollution abatement, as just described, are but some of these ways.

For example, it long has been known that trees and other vegetation help to purify the air by photosynthesis—a process by which leaves take in carbon dioxide and emit oxygen. Trees and other types of ground cover consequently help provide the oxygen which people need to breathe. One acre of young trees provides sufficient oxygen to keep 18 people alive. But a still more startling fact is that nearly all of the oxygen in the earth's atmosphere today is the result of photosynthesis which occurred eons ago.

Photosynthesis indeed is a remarkable process, which not only is responsible for the oxygen-carbon dioxide cycle, but also exerts other effects important to the health of man. For instance, there is evidence that some toxic gases other than carbon dioxide are detoxified during photosynthesis. By photosynthesis, trees also have an ameliorating effect on the extremes of climate by modifying excessive heat and excessive cold. They transpire great quantities of water in the air as moisture, thus influencing temperature and humidity and possibly rainfall. So effective is this air conditioning effect that "a moderate sized tree cools the summer air of a city as much as 20 average roof air conditioners running 10 hours a day."

These important effects of forests and other ground cover on our environment are well-established, but trees have other functions about which less is known. They act as windbreaks; they act as sound barriers, with each 100 feet in width absorbing 6 to 8 decibels of sound intensity; they use their hairy leaf surfaces to trap and filter out ash, dust, offensive odors, and pollen particles carried in the air; and they can hide much of the visual pollution with which man has surrounded himself and which inflicts its own peculiar type of trauma on those exposed to it.

By their beauty and esthetic effect, trees undoubtedly influence the mental health of man to an extent not yet measured.

Thus, massive destruction of the forests and forest floors, as well as the destruction of grass and other ground covers, especially in Appalachia, from any cause, should be a matter of great concern to the people of this country, for with the destruction of our forests and ground cover, there is a corresponding loss of the beneficial effects which this vegetation has on the total environment.

The importance of forests, trees, grasslands, and other types of ground cover are pointed up by other statistics. When one considers that in the 50 States in the Union, there are more than 773 million acres of forested land, it becomes apparent how vital trees and forests may be in preventing sediment and erosion and how vital they may be in keeping this country's air pure and clean.

However, when one realizes that of these 733 million acres of forested land more than 241 million acres are in need of conservation treatment, and that 12.5 million acres of non-Federal forested land needs treatment to prevent further erosion and sediment, the magnitude of the job which all of us face becomes apparent.

Also, when one views the disturbance of the earth's surface which has occurred as a result of strip mining operations, suburban development, highway construction, lumbering, et cetera, the dimension of the job increases many times.

In addition, when one realizes that more than 60 percent of America's farmland needs better care and treatment, and that of the 60 percent, more than 161 million acres need treatment to prevent erosion and sediment, this Nation's conservation task then takes on astronomical proportions.

Now, it is highly important to stress that the legislation which you have before you not only recognizes the relationship of sediment and erosion and their detrimental effects on human health, just as it recognizes the effects of the destruction of the forest floor and other protective ground cover and their consequent environmental damage, but it also recognizes the need for solving these colossal problems by providing for massive attacks upon the erosion and sediment caused by disturbance of the earth's surface from any cause.

Therefore, it is the considered opinion of all conservationists that I know of that staggering sediment problems can be solved only by massive attacks upon sediment and erosion, attacks directed toward problems ranging through the whole spectrum of erosion and sediment, from sedimentation which occurs around a man's home and in his garden, to the mammoth problems which exist in road construction, lumbering, and surface mining operations.

Moreover, I would like to point out that the planning and implementation of planning for sediment control, visualized in the legislation, which is the subject of these hearings, can be expected to have other beneficial spinoffs which will be of great value to this country. A sediment abatement campaign of the proportions required will involve nearly all aspects of community life. Sediment control programs will be constructed in every county in the Nation. The advantages and opportunities in launching widespread sediment control programs are many: Sediment is a problem with which people are familiar, in every town, hamlet, and rural area of the country; sediment is universal in its effects, inflicting damages upon everyone; sediment means the loss of soil productivity and decrease in food production; and sediment destroys creeks, rivers, and their tributaries, thus increasing flood damages which have been experienced by millions of Americans.

Because of the prevalence of sediment, because of the extensive damage it causes, and because its ravages are familiar to all people, sediment and erosion are problems which people can "get their teeth into." Furthermore, the road already has been paved for initiating community action programs for sediment control.

For years Soil Conservation districts and other groups and individuals, interested in conservation, have been engaged in sediment control programs in cooperation with the Soil Conservation Service, the ASCS, the Forest Service, and other USDA and State agencies. Such programs offer unusual opportunities for large-scale cooperative efforts involving the local people and local organizations with Federal, State, and local agencies, particularly those local individuals and groups who now clamor for a piece of the action. Such programs also offer a rare opportunity to mobilize the energy of an incensed citizenry to constructive action, by actual participation in pollution abatement activities.

Once mobilization of these people and their organizations in support of local sediment control programs becomes a reality, and once this massive local support becomes apparent to the country, and once real

progress is made in achieving substantial reduction in the overall sediment load carried in this Nation's waterways—progress which can be pointed to and demonstrated—once all these things are accomplished, the Nation will be in a much better position to combat its other pollution problems than it is today, when men everywhere feel frustrated and helpless in the face of the complexities, the technical difficulties, and the overwhelming costs involved in other types of pollution abatement activities.

Thus, the large-scale, regional, and statewide sediment control endeavors provided for in this legislation, if successful, will, indeed, be a major contribution to improvement of the quality of the environment for the whole Nation. And this legislation can become a model for launching similar attacks on other aspects of environmental pollution.

In conclusion, I repeat that the legislation considered here today, which deals with non-point source pollution from agricultural, rural, and developing areas, is indeed landmark legislation, for it embodies concepts and ideas whose time have surely come.

I have reached this conclusion because of the following reasons:

For the first time, to my knowledge, congressional legislation has recognized the scope of agricultural and related pollution problems, especially those caused by sediment and erosion.

For the first time an adequate approach and realistic funding have been proposed to solve these problems. Heretofore, landowners and conservationists have merely scratched the surface of sediment and erosion problems.

For the first time sediment and erosion and agriculturally related pollution problems have been looked at on a regional, statewide, and national basis, without ignoring the multitude of small sedimentation problems which exist throughout the country.

For the first time a planning mechanism has been proposed for erosion and sediment and agriculturally related pollution problems—planning which can be meaningful and is based upon a commonsense approach.

This legislation also is highly significant for other reasons:

The involvement of the local people in planning and the implementation of planning in seeking solutions to the erosion and sediment problems, as well as solutions to other types of agricultural pollution.

For the leadership offered to soil conservation districts and State soil conservation committees and/or commissions, which already have developed not only experience, expertise, and working relationships with local people necessary for the success of such a program, but also have developed the experience and relationships necessary to focus the technical and financial assistance available through the Soil Conservation Service, the ASCS, the Forest Service, and other USDA and State agencies.

For the inclusion in this legislation of provisions for research, education, and a creation of a youth corps, all of which are necessary ingredients in the antipollution activities which this legislation promotes.

Mr. Chairman, this legislation carries with it the hopes and prayers of conservationists and environmentalists everywhere.

Mr. KEE. Dr. Hale, as far as this member is concerned, you have made the most comprehensive statement that we have heard during our hearings. I know that came because of your vast experience.

I would like to ask you just one question. You were not here when the previous witness testified, but is it not a fact that you have had, through hard work with the local people and farmers, and the Soil Conservation Service, that you have had absolutely perfect cooperation and help; is that not correct?

Dr. HALE. That is absolutely true.

Mr. KEE. The reason I ask you that is because I want that to be made a part of the record.

Now, I have told you how grateful we were for you coming up here, at your own expense. And at this time I will turn the microphone over to Mr. Fred Schwengel, who, I will say again, has much more knowledge on this problem than I have.

Mr. Schwengel.

Mr. SCHWENDEL. Mr. Chairman, first I don't necessarily agree with that statement, because you are knowledgeable on this subject and have a great deal of experience. I particularly appreciate the leadership you have given in getting the basic information that is necessary to bring out this kind of legislation, landmark legislation that you referred to. So in a very real sense, the chairman is the granddaddy of this, and I have had the pleasure of working with him.

It is gratifying, too, to know about people like you and to have the benefit of your insights, your experience, your observations and studies. I wish there were some way to get the essence of what you said to this committee to America, to have them understand how important this is, not only for protecting our soil and aiding and abetting nature and cleaning up our streams and so on, but the testimony on the importance of trees and how they produce oxygen, the oxygen that we need. It would soon be depleted if we didn't show a continuing concern and interest in this.

And then the air-conditioning effect, we can realize how god awful it would be if we didn't have trees this time of year. You know, in areas where they don't have trees, how awful it is.

This has been very valuable testimony and I am glad you have come here to give us the benefit of this study and experience, insight, and evaluations that you have. This will be valuable testimony as we pursue this problem.

I have a question relevant to the cost benefit; the benefit of furnishing oxygen when you plant trees, that isn't considered when you consider cost-benefit ratios; the flood-abating effect and the cost of terrible floods as a result often isn't adequately considered; nor is the cost of silting that you dealt with so elaborately and clearly and dramatically. All these benefits that come from this kind of program aren't considered cost-benefit ratios.

In the matter of costs there is an interest factor. Now, they want to raise the interest rates for the money that goes into this sort of thing. Do you see any reason that we ought to consider interest in this investment? We don't consider the interest costs when we build a school or road, do we?

Dr. HALE. No. In meeting with Water Resources, we had to comply with the cost ratio. For instance, to come up with a cost-benefit

ratio in pure economic terms for hospitals or for a new school, many aspects that are taken for granted, why are we then forced to go into the cost-benefit ratio when we are dealing with water resources?

Mr. SCHWENGEL. Fine. And it's true also when we develop these areas, we enhance the economic productivity of not only those that live on the farms, and therefore they pay more taxes, but—

Dr. HALE. The cost-benefit ratio is there all right, and it's favorable. It's only our conventional means or ways by which we arrive at that cost-benefit ratio that is troubling.

Mr. SCHWENGEL. The reason I mention this is because, when these projects come before us—watersheds in particular—we have the benefit-cost ratio estimate given to us, and if it has greater benefit than cost, then we can consider it more favorably. And usually, if it doesn't have, we don't consider it. I think it's important for us to give attention to this, because for America to understand the total benefits, all the benefits that are measurable economically, the attitude of these projects, that we begin to see this more as an investment.

I think the term ought not to be "cost." It should be investment benefits, and I think that's the term we ought to start using.

Sir, you have been a very valuable witness and I appreciate your coming here. You have stated your case very well. The committee and the staff will be looking at this very closely.

Dr. HALE. Thank you.

Mr. KEE. Thank you very much.

Mr. THONE?

Mr. THONE. Mr. Chairman, the hour grows late here, and I will be very brief.

I, too, would like to join with Chairman Kee and Mr. Schwengel in complementing you, Dr. Hale. We need more citizens like you around the country.

The previous witness, Mr. Baise, said this—and I'll quote verbatim:

Although the problems we face in these areas are serious, work is already underway to seek and provide solutions. We therefore believe this legislation is unnecessary.

What's your observation on that?

Dr. HALE. My observation is that we have only scratched the surface, that the pollution problems involved here from sediment and erosion and other agriculturally related pollution problems are so enormous, that unless we're willing to wait for what I call these massive attacks, this requires, of course, massive funding.

Now, we'll never get caught up. I can cite you an example in West Virginia. We feel we've got a pretty good regulation and law in the soil conservation districts, and other agencies and groups have been interested in the revegetation of surface mined areas for almost a generation; and yet we're getting a backlog of undercleaned areas. Now we have more than 100,000 acres of surface mined areas alone. That says nothing about the roads or roadbanks; it says nothing about the suburban type of redevelopment that is taking place; it says nothing about erosion occurring as a result of lumbering operations; it says nothing about the erosion that is occurring as a result of farming operations. We're getting behind all the time more and more.

Unless we have a massive attack on this thing, we will never get caught up.

Mr. THONE. Thank you, Dr. Hale.

Mr. KEE. Again, I certainly am deeply in your debt. Your testimony will do more to help us to write the most effective bill possible. Your testimony certainly stands as a star in guiding us in our final legislative actions.

Thank you very much.

At this time I am obligated to be present on the House floor to be one of the floor managers on a bill that is coming up.

If it's agreeable with the committee, and with Dr. Richard Dague and Mr. Gary DeLoss, I would like to recess the committee until 2:30 this afternoon.

Is there any objection? Without objection, so ordered. We will be back in this room at 2:30 this afternoon.

(Whereupon, at 11:50 a.m. the subcommittee adjourned, to reconvene at 2:30 p.m. the same day.)

#### AFTERNOON SESSION

(Whereupon, at 2:40 p.m., the subcommittee reconvened, Hon. W. J. Bryan Dorn presiding.)

Mr. DORN. The subcommittee will come to order. Our first witness this afternoon is Dr. Richard R. Dague, senior environmental consultant, Henningson, Durham & Richardson, Omaha, Nebr.

Dr. Dague, would you step forward, please, sir? Proceed in any way you care to.

Dr. DAGUE. I have a written statement, Mr. Chairman.

Mr. DORN. I regret that a lot of our members can't be here, because the Economic Development Act is now on the floor of Congress for debate. And I will have to go over there in a moment myself.

But, Dr. Dague, you go ahead. You understand about these things. I never know myself from one day to the other what is coming up next, but I am glad you are here.

Mr. SCHWENGEL. Mr. Chairman.

Mr. DORN. Yes, sir, Mr. Schwengel.

Mr. SCHWENGEL. I want to welcome Dr. Dague to this committee. I am looking forward to hearing you again.

You gave a very impressive statement to the subcommittee when we were in Davenport. And it was very valuable as we put this proposition together that we are considering now in this legislation.

So I am glad to join the chairman of the committee in welcoming you and I yield to you.

Mr. DORN. Before you start, doctor, I would like to state here that there is not a more diligent member of this committee, particularly the Watershed Subcommittee, than my distinguished colleague from Iowa, Mr. Schwengel.

He has just absolutely lived with this for years day and night. And I know of no one in the Congress who has done more for conservation, water and soil conservation, to help the environment in this country.

And I might say that I heard some of the testimony this morning from Mr. Schwengel, and I was tremendously interested in it and sorry I couldn't stay throughout—because of the farm aspects of it, cattle and all of that, hogs, and I know that is of some concern to all of us who are interested in the environment.

But I will state for the record at this point that as a bona fide farmer, that I know of nothing that has helped me personally more to help the environment than good waste from feedlots and from the barn.

This was the main thing when my entire farm was eroding away, sheet erosion—this organic fertilizer, which is the best, and put it out in grass and trees. I would love for you to see it.

It is really fantastic what we have been able to accomplish there where they have high rainfall. So all that we hear about waste from the farm is not bad, properly controlled and utilized.

I know nothing that can help the environment more. And certainly the conservation of water, right where it falls. This watershed program has been a fantastic program—and I learned a lot from the distinguished gentleman from Iowa.

I might say that, you know, some people get a little bit off track sometimes and like to believe that nothing has been done and that the country is gone from the standpoint of water pollution and water quality and environment.

But in my own congressional district, in the last 30 years, Mr. Schwengel, we have built 7,000 farm ponds, a fantastic contribution to the environment and to collecting water where it falls—7,000 in one congressional district, plus innumerable watershed projects and Government reservoirs on the Savannah River, several of the largest in the world.

So we have been working night and day, as my friend from Iowa said this morning, on this.

When the country was washing away and blowing away in the thirties, there was great concern, and some of us went to work then.

And I think the environmental accomplishments in this field have been the greatest in the history of the world. A lot of other countries are still blowing away and washing away.

In my area we solved it. Where you used to see sheet erosion as red as these curtains here from the air, it is all green now. And it has been a great job done and we want to continue it.

And I do want to take this opportunity to thank my colleague here.

And many of us have actually set out trees with our own hands—I have done this, put them in gulleys, put rocks below the trees—then it is all grown up in pine trees. It is a beautiful thing.

You still see the gulleys as deep as this room. But they are covered with pines and the water coming out is clear, no soil escaping at all.

I just had to say this, because I know that sometimes we overlook—I know you don't, because you are very familiar with this program, and the university you represent is one of the greatest in the world in this field.

And Iowa is really something to see this time of year. I had the privilege of going through there once in the Des Moines River Valley and corn was averaging 100 bushels an acre and over—this was some years ago—and it was a beautiful sight.

So something has been done and you gentlemen are trying to continue it in an orderly fashion and not get off into the ditch on the left-hand side of the road or right-hand side of the road, but move ahead.

And I commend you for it. And I particularly want to commend my distinguished colleague here from Iowa.

Mr. SCHWENDEL. Mr. Kee has come in.

Mr. DORN. Excuse me, Mr. Chairman. I have got to say something nice about you.

That Appalachian program in your State has been fantastic.

Mr. KEE. It certainly has.

Mr. DORN. All in the interest of environment, and we are going to try to continue the EDA program. That is why I have to leave you.

Thank you, Mr. Chairman.

Mr. KEE. Thank you, sir. Doctor, I humbly apologize for being late. I will remember your superb testimony that you gave while we were in Iowa.

The reason I was late is that we have a very important bill that affects my district and we had a lot of unnecessary things that came up first.

The reason we recessed this meeting is because we thought we were first. I waited until the chairman of the full committee started his argument. Instead of giving my speech I was supposed to give over there—I made arrangement for it to be inserted into the record. Come back, and I have a pretty good idea that my beloved colleague, who is, as I have said so many times, a giant among men, Mr. Schwengel has said about you.

And we are indebted to Mr. Schwengel for inviting you to be with us. You may proceed in your own way.

**STATEMENT OF DR. RICHARD R. DAGUE, SENIOR ENVIRONMENTAL CONSULTANT, HENNINGSON, DURHAM & RICHARDSON, OMAHA, NEBR.**

Dr. DAGUE. Mr. Chairman and members of the House Committee on Public Works, I am pleased to have been invited before you to present my views, and those of the company I represent, on H.R. 15596, a bill on non-point source pollution, introduced by Messrs. Kee and Schwengel.

My name is Richard R. Dague. I am senior consultant in environmental research and systems planning with Henningson, Durham & Richardson. We are a consulting engineering, architecture and planning firm with home offices in Omaha, Nebr., and with branch offices in 10 other cities around the United States, including Washington, D.C.

Our firm has been engaged in the planning for and the design of environmental quality control systems, and other public and private works, for over 55 years.

My personal experiences include some 8 years as a teacher and researcher in environmental engineering, most recently at the University of Iowa, and another 8 years in engineering practice.

One of my research interests has been the control of water pollution from non-point sources, especially livestock feedlots and agricultural land runoff.

Some time ago we technicians in the field of water resource management began to realize that the problem of soil erosion and the problem of water pollution from non-point sources—agricultural land runoff, livestock feedlots, and so forth—are largely one and the same problem, subject to the same technical solutions.

Thus, if soil erosion is controlled, we not only limit the transport of soil particles into the water but we also limit the transport to water of nitrates, phosphates, pesticides, organic pollutants, and other deleterious matter.

Soil erosion control leads to a large measure of water pollution control in many regions of the United States. This fact cannot be overstated.

Few would deny that the United States, largely because of its wealth of human and natural resources and its free enterprise economic system, is the greatest producing and consuming nation ever witnessed to the world.

But there are very real dangers inherent in our power to produce and consume. Environmental degradation, including resource depletion, can result from the production-consumption cycle. The greater the production and consumption, the greater the potential for resource depletion and environmental degradation. As we have great power to produce, so we have great power not only to destroy our environment but to waste natural resources as well.

The two resources most essential to man's survival are soil and water, both their quality and quantity. Air is essential, but is present in the world in abundant amounts.

Air pollution is a serious environmental problem, but the technology is rapidly developing and programs are available aimed at solving the problem.

Depleting energy supplies are of concern, but there is a reasonable expectation that new energy sources will be tapped. But the soil, once washed to the sea, is gone forever.

Thus it is imperative that greater efforts be devoted to conservation of the soil resource and to the abatement of the attendant problem of water pollution arising from soil erosion.

And that is why we are here: To urge your favorable consideration of H.R. 15596, to provide for increased Federal action to control soil erosion and non-point sources of pollution, as introduced by Congressmen Kee and Schwengel.

Our firm has been engaged in the design of pollution control facilities for many years. Recently, there has been increasing emphasis on the basin approach to water quality management. We have been involved in the development of several comprehensive basin plans for water resource management and pollution abatement.

In many cases, non-point sources of pollution are dominant in their detrimental impact on water quality.

In too many cases, the desirable results of controlling pollutants from urban areas, homes and factories, are muted by the effects of feedlot and cropland runoff or by some other non-point source of pollutants.

Thus, if efforts to improve water quality are to come to full fruition, it is essential that all sources of water pollutants, point and non-point, be controlled.

Our work with basin planning has led to one important conclusion: An overall basin plan is essential to effective water quality management.

The essence of planning as well stated by Abraham Lincoln, in 1858, when he said:

If we could first know where we are, and whither we are tending, we could better judge what to do, and how to do it.

The severity of soil erosion and runoff pollution problems are widely variable from one region to another. Similarly the best solutions to individual regional problems are quite variable.

Thus, to "better judge what to do, and how to do it," as Lincoln put it, basin planning is essential. We urge that new legislation to control soil erosion and non-point sources of pollution require, as a prerequisite to Federal funding, that all works be completed in accordance with a comprehensive basin water resource and quality control plan. We are pleased that H.R. 15596 places considerable emphasis on planning.

In planning for new programs, the question always arises—and rightly so: Will it work and, if so, can we afford it?

There is no question but what the technology and manpower exists to dramatically reduce the harmful effects of agricultural activities on soil erosion and water quality.

As Dr. T. L. Willrich, of Oregon State University, has stated:

The universal application of existing soil management and waterflow technology would essentially eliminate agricultural cropland as a major source of sediment.

And it should be emphasized that such an effort would also greatly reduce the impact of agriculture as a contributor of water pollutants other than sediment.

Can we afford it? In my opinion we can ill-afford not to take decisive action to control soil erosion and the attendant problem of water pollution resulting from land runoff. Soil erosion represents damages to both the land and to receiving streams, lakes, and reservoirs.

It has been estimated that the dollar damages from siltation in reservoirs and waterways totals \$225 million annually in the United States. And that amount includes only the cost of dredging waterways plus the estimated cost of damages to reservoirs.

It does not include damages to the land, per se, and the increased costs of water treatment which results from water pollution.

No one knows the real costs of inaction in the area of soil and water conservation and pollution control. But it is a very large dollar figure.

Another question is: Who is to pay the costs of the program? There is considerable societal responsibility in the area of soil erosion and water pollution control arising from land runoff.

The producers of food and fiber are only temporary stewards of the land. It hardly seems logical, or equitable, to fund treatment systems for controlling wastes from cities at a level of 80 percent while, at the same time, expecting present agricultural landowners to totally assume the obligation of conserving the soil and water resource for all future generations.

A level of Federal funding of 75 percent seems appropriate.

I have one observation that might be considered a criticism of H.R. 15596. The bill does not appear to limit the pollution control efforts of the Department of Agriculture to the area of agricultural activities.

Pollution control efforts should not be needlessly duplicated.

The bill makes reference to wastes from processing plants, solid waste disposal activities and acid mine drainage.

In my opinion the control of pollution from these sources is the direct concern of the Environmental Protection Agency, and should remain so.

The Department of Agriculture should be charged with solving the problem of soil erosion and water pollution arising from agricultural activities, that is, land runoff, livestock feedlots, and so forth.

There is much to be done in this area alone. There is no need, nor would be it wise, to allow the Department of Agriculture to dilute its efforts by concerning itself with water pollution arising from sources outside of agriculture.

Mr. Chairman, I am pleased to have had the opportunity to appear before you and your committee.

I would conclude by saying that we must press harder to develop and execute plans that will improve conditions today and not create the problems of tomorrow.

We must seek to preserve and strengthen our freedoms, but we must take care to insure that the freedom to produce and consume today does not result in environmental bondage tomorrow, for generations yet unborn.

The profits of today must not lead to the losses of tomorrow.

The country needs and can afford a program of the nature proposed by Messrs. Kee and Schwengel and we urge your favorable consideration.

And that is the end of my written statement, and I would like to add at this point that the one criticism that I mentioned a little bit ago, I have a concern about this because there are many areas of pollution, of course, where overlapping could occur.

And it is a question of where the line is to be drawn. If it is a question of inaction, I basically would rather not see a line drawn, but it seems to me that we could draw the line at the production of food and fiber end, as far as the Department of Agriculture is concerned, than being concerned with the erosion, the land runoff, the feedlots, where you are in the area of production of food and fiber.

And the greater emphasis of EPA to be in the area of processing plants and domestic waste and things of this nature.

But I certainly wouldn't want my own criticism to be too harsh of a criticism, because we need that program too badly.

And I thank you.

Mr. KEE. Doctor, we thank you very much. Mr. Schwengel?

Mr. SCHWENDEL. I appreciate this man coming here and giving us the benefit of his thinking and his conclusions.

Let me ask you this. Can you fortify your suggestion with some additional material for us, that we fund at the Federal level at 75 percent? This is the result of a lot of serious thought on your part, I know. It would strengthen your hand here, if we could supplement this statement with why you say that. The economics of that especially.

But if we could have an elaboration on your part. You have probably given more thought to this than most people have. That would be very helpful to us.

You might not want to do this now, but we could leave the record open and you could expand on that suggestion.

Dr. DAGUE. That number has been established almost through practice, I think. At the present time it is possible for cities to get 80-percent funding for domestic waste treatment plants by a combination of State and Federal aid.

And when I go and use my bathroom facilities each morning, someone is paying 80 percent of it, other than me, directly.

So I personally feel that perhaps I should be paying that whole bill the case of soil erosion, as well as the water itself.

But we are talking about a resource, a basic natural resource, in the case of soil erosion, as well as the water itself.

And so, as I said, I think there is considerable societal responsibility and you have to get into what can be afforded, in terms of individual owners.

In an eternity an individual farmer only owns the property for a twinkling. And it is very difficult for me to see how we as a society can expect an individual to do the things that should be done for the future and bear the whole expense.

It needs to be a high percent of societal obligation.

Mr. SCHWENGEL. What you are saying is that 6 percent of the population shouldn't pay for what 94 percent benefits from.

Dr. DAGUE. Yes, sir. Not only these 94 percent now, but from now on out. I assume this country is going to be here for a very, very long time.

Mr. SCHWENGEL. That is right. And often it is true, isn't it, that when we enter into these programs, these conservation programs and watersheds, we are doing a better job finally than Nature herself has done? We are actually improving on Nature?

Dr. DAGUE. Yes.

Mr. SCHWENGEL. Well, if you could give some more thought to the economics of this, I think you would have a good point that ought to be thought of.

Now, while I am on that, I have made the statement often that a dollar spent on the conservation watershed program, in the general area conceived by this legislation, will probably do 10 times as much good toward the solution of water pollution than the money spent anywhere else.

Now, this envisions the farmer doing what he can and should do in the total program.

So the point I am trying to make is maybe we have more priorities wrong here again. We are all excited about cleaning up the waters around the cities, around business, which I want to do, and are forgetting about the biggest job that has to be done.

Dr. DAGUE. I think your factor of 10 is well taken. It may be low. But this problem varies from one place to another. If we are around New York City it is one thing. If we are around Des Moines it is another.

So the problem is tremendous in terms of pollution arising from agricultural areas. And it is also quite tremendous in some areas from the other sources.

Mr. SCHWENGEL. Now, in the rural areas that you know of, there are many, many small streams where you have soil bank erosion.

Whose responsibility should this be? And that soil bank erosion sometimes gets more silt in the rivers than the watershed does in certain areas.

Dr. DAGUE. That is a difficult question for me to answer. The Corps of Engineers, the Soil Conservation Service, the Department of Agriculture, in these areas—one of those three at least—of course, the Corps of Engineers isn't—much of the watershed they wouldn't be.

Of course, much of the time, when we do put in soil-conserving practices—ponds and so on—we sometimes reduce the flow considerably, the peak flow, that is. There is considerable advantage to that in terms of flood protection as well as bank erosion.

Mr. SCHWENGEL. Do you know about Lake Darling down in Washington County?

Dr. DAGUE. No. I haven't visited it, sir.

Mr. SCHWENGEL. It was named for a great conservationist. There is a great installation there, a recreation area, but because we haven't been good managers of the soil it is silting in pretty fast.

The same is true of the Coralville Dam area. Would it be good national policy to say that these projects would not go forward until and unless assurances are given that watershed areas will be controlled and the silting especially is taken care of?

Dr. DAGUE. Yes, sir; I would agree with that 100 percent. This is what I was referring to in the area of planning.

We have got some rather poor planning—good works headed in the right direction. But it could have been better by some better planning and allocation of resources a little more properly.

Mr. SCHWENGEL. We had a representative of EPA here this morning who said that we didn't need this legislation. Therefore, they were opposed to it, overlapping, maybe confusing—I don't know exactly what his criticisms were really.

Do you feel like any part of the present program that we have in being would be handicapped in any way by this legislation?

Dr. DAGUE. I see, as I mentioned here—what I called here some criticism—that there is a potential here for some overlap.

Mr. SCHWENGEL. With that exception—I concede the point, you probably have a good point there—but there are reasons which we have included which we will expand on.

But forgetting that, that one part.

Dr. DAGUE. My feeling is that there hasn't really enough been done in this area. A lot of research has been done by EPA and some of the universities, but it is my feeling that what we need now is some action, some things actually being built in the field, in these areas, which requires financial resources.

And I would certainly be in favor of the Department of Agriculture doing this. This is really where the experts are in the area of soil erosion.

As I said, when you do a good job of controlling soil erosion, you have gone a long ways down the road in controlling the water pollution problem from the point of view of runoff. Cattle feedlots is in between—they are sort of a point source, as Mr. Baise pointed out this morning, and in a way they are non-point, depending on the way things are looked at and viewed.

But, again, the people in agriculture have considerable expertise on both sides of the fence here, relative not only to pollution, but the animal sciences and others of that nature.

And this, in my opinion, could very well be the best place for those kinds of activities, in the Department of Agriculture, with full co-operation, of course, with the other agencies, and their knowledge and expertise.

Mr. SCHWENGEL. And the potential for additional study is so great in agriculture that there is no comparison in the world—69 land-grant colleges with all kinds of talent in this general area and these specific areas that we could call on—the animal waste proposition, and I know how serious that is in some spots. We don't have much of this in my district, but in areas that I do know of there are other answers to the problem.

Rather than just draining it off, we could put it into a huge pool and pipe it out and use it for fertilizer.

We would probably have to do some research to find out how much we can put on land before it becomes a pollutant, before it pollutes the land.

Dr. DAGUE. Well, that example that you have just given is an excellent one in terms of research needed. I don't want to put down research.

But in the area of cattle and feedlots and other types of livestock feedlots, the ultimate answer is to not allow as much runoff to leave the area, to retain it in ponds and to pump it back on the land, using it as a source of irrigation water as well as the nutrients and the materials that are there.

We don't really know for sure how many pounds of livestock waste, manure, can be applied to different kinds of soil that are growing different kinds of crops.

So some considerable more research is needed in that area.

Mr. SCHWENGEL. We had this in mind. One of the things we had in mind—the reason the bill was written the way that it is. It calls for some additional research.

So I am pleased with your testimony here and I am glad you came here to strengthen our hand and help us move forward.

Mr. KEE. Doctor, your testimony certainly has been most informative and helpful, and you can rest assured that we will take your observations under very, very careful consideration.

Our whole purpose is to come out with the best possible bill and with adequate funding so we can get the job done.

And it certainly is good to see you again, Doctor, and thank you very much for coming. We are in your debt.

Without objection, before we hear the final witness—and I have a schedule here—I think it is appropriate that we keep the record open for 30 days.

Mr. SCHWENGEL. Yes.

Mr. KEE. So ordered.

Mr. SCHWENGEL. Mr. Chairman, there is a man here from Iowa, Mr. William K. Day, one of my personal friends, who has spent a lifetime studying this area.

He certainly understands from both study and experience. He comes from Washington, Iowa, and is a farmer, a conservationist, a gentleman, and a scholar.

I am glad to welcome you, Bill, to this committee, and look forward to hearing your testimony.

Mr. KEE. I join Mr. Schwengel in extending to you, Bill, a very, very warm welcome and we are very anxious to hear what you have to say, sir.

The floor is yours, sir.

**STATEMENT OF WILLIAM K. DAY, PRIVATE CITIZEN, FARMOWNER  
AND OPERATOR, BRIGHTON, IOWA**

Mr. DAY. Thank you very much, Congressman Kee, and thank you for those very kind remarks, Congressman Schwengel.

Mr. Chairman and Members of the committee, I appear before you and wish to offer testimony as a private citizen. So the record will clearly show the circumstances of my appearance here today, I wish to state that I am the county executive director of the Washington County, Iowa, Agricultural Stabilization and Conservation Service office.

I have been invited to testify by Congressman Fred Schwengel. I have received permission from the Washington County ASC Committee chairman, Robert Pearson, to be on annual leave. I have paid my own expenses for this trip and I will not receive any compensation from any source other than my own resources.

Mr. Chairman and Members of the Congress of the United States, the bill H.R. 15596 comes to grips with one of our Nation's most urgent problems, non-point source pollution from agricultural, rural, and developing areas.

A heavy responsibility rests on the shoulders of every Member of Congress as you weigh the worth and priority for this kind of legislation.

I recently read an article written by Dr. Don Paarlberg, Director of Agricultural Economics, USDA. He asked the question on pollution, environment, ecology: What kind of standards should we have? How much of the responsibility for wise resource use is the responsibility of the farm operator and how much of it is a public responsibility? And of the public responsibility, how much should be borne respectively by the local, the State, and the Federal Government?

He said:

These questions relate to a major public policy issue of the years ahead. Farm people must be ready to make helpful contributions to the resolution of these questions.

I wish to speak to you as a farmer. I testified before the special Subcommittee on Conservation and Watershed Development, Congressman Kee, chairman, at Davenport, Iowa, on November 10, 1971.

That testimony is a matter of record and I have fully reviewed it. I would not change one word of that statement if I were to again be asked to address myself to the same subject.

I was particularly impressed by the testimony and statement offered by Dr. Richard E. Dague, who at that time was associate professor of civil engineering, University of Iowa, at that same hearing. I wish to repeat his conclusions. I quote:

Man has begun to view his trek through space as eternal, not temporary. This new awareness must now be directed toward constructive action to conserve man's most valuable resource, the soil, and to prevent environmental degradation as a result of water pollution.

We must develop and execute plans that will improve conditions today and not create the problems of tomorrow. We must seek to preserve and strengthen our freedoms, but must take care to insure that the freedoms of today do not result in environmental bondage tomorrow. The profits of today must not lead to the losses of tomorrow.

No single environmental problem is more critical than the loss of top soil by erosion and the water pollution resulting from such losses. We must proceed to solve the problem.

The work of Dr. Min Amemiya, extension agronomist, Iowa State University of Science and Technology, Cooperative Extension Service, Ames, Iowa, is to be commended in my opinion. I would particularly like to call your attention to a bulletin entitled "Crop Production Considerations for 1972." I think Dr. Amemiya really addressed himself expertly in this publication to the subject, "Conservation and Soil Erosion Control."

I believe the bill H.R. 15596 will give the State of Iowa an opportunity to receive great benefits from the Iowa conservancy district legislation enacted by the 64th General Assembly of Iowa in 1971.

This bill gives the Secretary of Agriculture an opportunity to develop young persons with an interest in conservation in a proper manner. Skill and knowledge can be acquired through education and training. Judgment to apply learned technology is also necessary.

This vital element for a successful conservation effort must be attained at least partially through experience. There is no substitute for work experience that can give an individual inspiration to overcome seemingly insurmountable obstacles to accomplish desirable goals. Many farmers are concerned about the environment in which they live and the effect their operations have on the lives of others.

Technology has made it possible for us to raise large numbers of livestock in confined quarters. At the present time I have no livestock. I practiced the McLain County system of hog raising when I was an active producer. This still is a good system. One nearby neighbor still uses this system.

The confinement system has a terrific problem of waste management. Two of my neighbors have this type of swine system. Another neighbor has modest-sized cattlefeeding lots where approximately 200 or 300 head of cattle are fed out yearly. Each operation is within three-fourths of a mile of our home. My family regularly smells their money. We recognize this is their way of making a living. We in no way complain to anybody about the odor and flies that are generated by these operations.

Runoff from all four operations does move through the same watershed. The Brighton, Iowa, city dump drains into the same small creek. This creek keeps getting larger. More agricultural land and livestock feeding operations add a share of pollution. The released effluent from the Brighton City sewer system soon becomes added to the stream.

You people know the story so well. Each stream adds a little to bigger streams that eventually are a river. It finally winds up in the Gulf of Mexico.

My neighbors want to be good citizens. They want to properly conserve the soil, have proper livestock waste management, and, most of

all, they don't want to make the life of any other citizen unhappy or unhealthy. The problem is beyond their individual control. They will respond to enthusiastic, able leadership.

The current prices these producers are receiving for their livestock help to make up for some of the close or losing margins of the past. The vast majority of the land in the small watershed where my home, 80 acres, is situated is owner operated. Very little of the land is free of debt. Most of the fellows will be lucky to have the real estate debt retired when they retire or die. The capital improvement, equipment, general operating, and living costs are very great.

I see no way the township or county government can furnish any money for a soil conservation effort except in the area of roadsides and related areas. The State governments should be able to contribute where river projects are feasible.

I believe the farm conservation programs must be carried out with a mix of Federal money and private funds.

My neighbors and I are willing to make some regular investments from the farm profits for long-term conservation practices. The practices under the rural environmental assistance program are only scratching the surface in correcting the problems of erosion and water pollution that exist.

From my work experience I know many livestock producers are seriously seeking answers as to the kind of efficient permanent type of livestock raising or feeding facilities which will have the least adverse effect on the environment. There are numerous complete feeding systems on the market. I am not aware that adequate research has been conducted so an individual farmer can make a sound choice in this type of a purchase.

I have carefully read the introductory remarks for this bill made by Congressman Fred Schwengel on June 20, 1972. He has ably stated the case for the bill. He has provided the Congress with much data necessary for the Members to make a fair analysis of the problems that exist.

I urge the Members of the Congress to carefully consider all such information provided which will help in their rendering a favorable decision concerning this most important piece of legislation.

I would be hopeful that the various research work already completed that would be pertinent to this type of effort be collected and expanded as deemed necessary. I have reason to believe water purification studies already made by some of the companies who were contractors under the space programs could be of value.

This legislation, in my opinion, should not be interpreted and applied so the thrust of the effort and finance is expended in unrewarding accomplishments. The terms of the bill are broad and this is good. The Secretary of Agriculture would need to make wise selections in seeking out persons to execute this act so the thrust of the effort would be a real physical shaping of the landscape of this Nation for the control of erosion and the purification of water that would be of a direct benefit to all our people.

Pollution, environment, ecology: what kinds of standards should we have?

I fear for the future of our Nation and the well-being of our people if we do not view this problem seriously and do it now. We even have

people in the rural areas who have read one highly publicized book. They are determined to do away with all the progress in scientific knowledge and the application of such knowledge that has been attained in the last 50 years.

I believe the standards must be economically sound, practical in their application, administered in fairness to the producers, and extend an abundance of clean air, clean water, uncontaminated food, and enjoyment to the consumer.

How much of the responsibility for wise resource use is the responsibility of the farm operator and how much of it is a public responsibility?

I firmly believe the land-grant colleges and all other agricultural educational institutions have a responsibility to change the emphasis from all-out production research and technique.

I believe equal emphasis must be placed by these institutions on proven wise resource use. Farm operators will respond to the things they are taught that have proven benefits.

It is my opinion the subject of conservation of soil and water has been a poor stepchild too long. Let us get on with the business of giving education in this field adequate funds and a front chair in academic affairs with the same revered importance as the production people.

When ways are found for farm operators to have commensurate income return for their production on a sustained basis as many of the highly organized segments of our economy, they can bear a greater share of the cost for wise resource use. Until that time I believe the public has a high level of financial responsibility to accomplish the permanent control measures needed.

The public responsibility, how much should be borne respectively by the local, the State and the Federal Governments?

The level of property taxes in our area is a matter of great concern. We tax ourselves heavily to provide good roads, good schools, and good local government. The present income tax system gives increasing amounts of revenue to the State and Federal Governments. Revenue sharing by the Federal Government seems to have some favorable degree of acceptance at this time in our Nation's existence.

The Federal Government through this legislation sets up the machinery whereby a partnership between other governmental units and private citizens can be created. Such a partnership can be molded so the people where the conservation problem exists can have a desirable influence on the projects selected for completion and the execution of the tasks. The funding provisions of the bill appear reasonable in my judgment.

I support the philosophy that all assistance from any Federal program should be withdrawn from any landowner who fails to proceed with feasible plans and is found to be causing pollution, until the pollution is controlled.

Mr. Chairman, it is a pleasure for me to be here. If there are any questions, I would like to attempt to answer them for you.

Mr. KEE. Mr. Day, it certainly has been a pleasure to hear you again. I have been following rather intently your presentation.

It reminds me somewhat of your previous presentation on a little different theme.

Is it not your judgment that any Federal funds or public funds that are put into this program that we are trying to establish on a nationwide basis is not actually an expenditure? More accurately, it is an investment in the future of America.

Do you not agree with that?

Mr. DAY. I would agree that it is an investment in the future of America. And the future is so important for us.

Mr. KEE. For our children, grandchildren, and generations yet to arrive upon this earth.

Mr. DAY. We can look upon some instances in the past where humans have not felt this responsibility for future generations.

We can see some land laid waste that was really unnecessary. Yet we have to recognize that the Holy Lands and some of these areas, they didn't have the technology, the knowledge, that we have now.

And here we are with the knowledge of how we can, in many instances, control erosion, make the water more pure. It is a matter of getting it implemented in an orderly sort of way, as Dr. Dague pointed out, a planned way.

And I think that the visible evidence will be a great pleasure to us and the knowledge of what it can mean for the future would be very gratifying.

Mr. KEE. We certainly thank you very much. Mr. Schwengel?

Mr. SCHWENGEL. I anticipated a fine statement and we sure did get it.

I can tell you I am very pleased with your presentation and with the way you presented it.

Mr. Chairman, I have been out in the country with this man and inspected some of the projects that are the result of his guiding hand in cooperation with the farmers.

And I wanted to ask you a general question about the attitude of the farmer.

We had a suggestion here from somebody here this morning who claimed he was from Illinois, that farmers weren't too interested in this program. And they are pretty careless soil managers.

You have been with these farmers for a long time. What is your response to that observation?

Mr. DAY. Well, Congressman, I think that you have to divide farmers into different categories in their attitudes. And there are some men who are not interested in conservation.

But I feel that the thrust of a lot of our educational efforts some times has been toward produce, produce, produce, and we didn't put equal emphasis on production and conservation together.

And so we have some very able people out there as farmers who are excellent in production who haven't given adequate attention to conservation.

Now, we have some other farmers who haven't kept up with the times. They have followed some practices that were quite adequate in horse-drawn times and they got better equipment and so forth, and they use this equipment and are not paying attention to the conservation that is being practiced by their neighbor across the road or in the area.

Yet, at the same time, every farmer I know, some time along the line, comes face to face with conservation.

And in my work I have seen many a man come to the office after he has farmed a farm for 40 years—he has went around the ditch, he has put some money in the bank, and he has rented his farm to his son or rented it to a neighbor—and he comes in and, Bill, I have got to fix that ditch. And it has got to be done right now.

Well, one of our problems is to get the funds from the rural environmental assistance program. You can't always just have enough money right now.

Also, you have a problem of the engineering of the project. The men who do this, under the Soil Conservation Service, have to plan their work a little ahead to have any efficiency.

So it is one of my jobs to set this man down and say, well, now, look, George, you have done a fine job of farming along here—that ditch wasn't created yesterday, we can't solve the problem tomorrow, but let's work together and let's get the problem solved.

And generally we get the thing worked out. So, to be specific, I think that it depends on the life of the individual when they really get conservation minded, Fred.

It strikes some of us earlier in life than it does some of the rest of us.

But many of the fellows—the enormity of the task to provide the facility that is needed is so great that they just don't see how it can be done right now or in the foreseeable future, so they go right on with practices that they know aren't the best.

Mr. SCHWENGEL. Generally, the attitude of the farmer is buying the program more. I am thinking of Rocky Branch in Jefferson County, which you know about.

That was quite some problem. That was a poverty area before they went in there with the watershed. Now they have got people educated, and when you organize you have got some powers that you didn't have before when you develop a watershed; isn't that right?

Mr. DAY. Yes, sir. Just recently, the Extension Service, the Soil Conservation Service, and our office cooperated in holding a couple of evening tours to demonstrate and show to farmers the real installation and benefits of tile outlet terraces.

And I was very pleased at the type of farmer who appeared to view this tour.

And I know that many of them are looking forward to installing this type of facility, but the cost is real high.

You know, when it comes to the point where you are going to make an investment for the future generations or where you are going to apply some money to the farm debt—this has a bearing on these family decisions.

And so I think this legislation would give us the tools to move forward, and we could accomplish bigger things than we have dreamed about in the past.

Mr. SCHWENGEL. In our research we discovered that flood damages above the upstream represent 59 percent, yet only 11 percent of the money goes to that area with the present concept.

So this program will tend to reverse that. This will solve a lot of problems and continuing problems downstream.

Since you have commented on this, do you think there is a need for more education in the farm areas?

Mr. DAY. Well, yes, definitely. And I think the thrust of the education has got to be on wise resource use along with productive knowledge and the application of techniques for production.

You see, in our county, if you want to hold a big meeting of farmers, you can use two subjects. One is something about zoning, that will bring them out. The other is how to raise 200 bushels of corn per acre.

I think you have to bring in conservation with equal emphasis, from the agencies of government that work with farmers—and it is a slow, laborious teaching process.

But I am confident that farmers will buy things that are sound. And if they have the inspired leadership to bring this about—and the other thing is, they have got to have some money to bring it about.

Mr. SCHWENGEL. Well, one way, I think, to bring that about is to have more testimony and hearings that can bring out the facts, like you and Dr. Dague brought before us, and then some way of reaching the public, who in turn can finally reach Congressmen.

So I hope you stay in there and keep pitching. And together we will get this job done, I hope.

Mr. DAY. Well, it is a great challenge to all of our people, And I feel that we are at a point in time in history where we are slowing down in our military effort and we need to keep the people employed, and with this great need on the agricultural lands to apply conservation with the many companies that have worked in water purification, and so forth—I think that we are at the time in history where we can have some meaningful conservation by a partnership between the various governmental units and individual farmers.

Mr. SCHWENGEL. One further thing, Mr. Chairman. I think you noticed it. I want to comment on it and commend the witness. He paid his own expenses to come here.

This is the kind of dedication he has to this cause. I guess there are others that probably did the same thing.

They are to be commended for this. And I personally—and I am sure the chairman joins me—thank you for this very valuable testimony that you presented.

Mr. KEE. I certainly agree with Mr. Schwengel. Just one little item. We are talking about conservation. We are talking about conservation for the future, for all times to come, like the old CCC program, if you remember, that we had many years ago down in my section of the country.

Our people are still benefiting today from the old CCC program.

I think with this program Americans, in a minimum of 100 years, we can get this show on the road, so to speak, and we will be the ones that can truly benefit from this effort.

So I join Mr. Schwengel in commending you and thanking you for taking your time to come up and to testify. And also for paying your own expense. We are in your debt.

And I hope that we can continue to work together as a team in order to get the job done in a reasonable, practical, and effective fashion.

And we certainly thank you so very, very much. I hope you have a pleasant trip back.

Any time you want to come before this committee, the door is open to you, sir.

Mr. DAY. Thank you.

Mr. KEE. At this time, the Subcommittee on Conservation and Watershed Development will stand adjourned until 10 a.m. in this room tomorrow morning.

I thank each and every one of you.

(Whereupon, at 3:43 p.m., the subcommittee adjourned.)

The time for writing the contract is over  
 to you all.  
 The Government on Government and  
 the Government will stand adjourned until in the  
 next morning meeting.  
 I have not had any news of you.  
 My affectionate regards to all.  
 Yours truly,  
 Wm. Lloyd Garrison

# NON-POINT SOURCE POLLUTION FROM AGRICULTURAL, RURAL, AND DEVELOPING AREAS

THURSDAY, AUGUST 17, 1972

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON CONSERVATION AND  
WATERSHED DEVELOPMENT OF THE  
COMMITTEE ON PUBLIC WORKS,  
*Washington, D.C.*

The subcommittee met, pursuant to recess, at 10:07 a.m., in room 2167, Rayburn House Office Building, Hon. James Kee, subcommittee chairman, presiding.

Mr. KEE. The Subcommittee on Conservation and Watershed Development, our third meeting, is now open.

As you know, we are considering H.R. 15596, H.R. 15731, and H.R. 15693.

Our first witness is Mr. Richard C. Longmire, chairman, legislative committee and director, National Association of Conservation Districts, Pauls Valley, Okla.

I might say two things about our witness.

No. 1, when we were in Oklahoma, this distinguished witness and his very charming lady invited us to a very beautiful home and a magnificent reception for which we are in your debt, Mr. Longmire.

The second thing, knowing you to be as modest as you are, I am delighted that you are the watershed man of the year this year, and you certainly deserve it.

Mr. Schwengel.

Mr. SCHWENDEL. I, of course, want to join the chairman in saying welcome, glad to see you again and have you here.

I am looking forward to your testimony as we build a case for some real solution to the water pollution problem, and while we are doing that, to do something for mother earth.

Thank you, Mr. Chairman.

## STATEMENT OF RICHARD C. LONGMIRE, DIRECTOR, NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS, PAULS VALLEY, OKLA.

Mr. LONGMIRE. Thank you, Mr. Schwengel, and Congressman Kee. I appreciate your kind words. You are very kind.

It was our pleasure to have your committee in Oklahoma last year, and we want to thank you again for the time that you gave us at the hearing, and we all appreciate it very much.

Our association, of course, our group, we are real happy to support this bill, this type of legislation. This is what we have been working for, for many, many years, as you well know.

We are real happy that in the past few years people in all walks of life, in the private sector and in government, have finally come to realize that the greatest pollutant we have is our soil; that is, sediment, and this soil, when it moves, carries with it many other particles that are attached to it, such as herbicides, pesticides, fertilizers, and insecticides.

I am not going to read my statement. I am going to just, if it is all right, kind of speak off the cuff, and kind of summarize.

Mr. KEE. Without objection, your testimony will appear in the record as read, and we are happy to hear you speak off the cuff.

I have heard you before.

(The statement referred to follows:)

STATEMENT OF RICHARD C. LONGMIRE, PAULS VALLEY, OKLA., DIRECTOR, NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS

My name is Richard C. Longmire. I am a supervisor of the Gavin Conservation District of Oklahoma and a director of the National Association of Conservation Districts (NACD). I am appearing today to present the views of my association on H.R. 15596, pertaining to non-point source pollution from agricultural, rural, and developing areas.

The members of this committee are familiar with NACD and with conservation districts. For the record, let me say that NACD represents more than 3,000 individual conservation districts, created under state laws, and their associations in the 50 states, Puerto Rico, and the Virgin Islands. These districts are managed by more than 18,000 men and women who contribute their time and services, and are intensely interested in the wise use and management of the nation's renewable natural resources.

Over two million private landowners and operators are cooperating in the resource and environmental programs of the districts. Also, nearly 23,000 units of state and local government receive conservation services through these districts.

The non-point sources of pollution identified in H.R. 15596, and the remedial measures set forth, are matters of great concern to conservation districts. Indeed, they should command the earnest attention and support of all who are working to upgrade resource management and protect the environment.

The abatement of pollution from municipal and industrial sources is clearly important, but even complete success in these two areas would not solve the nation's pollution problem. If we are to have clean air and clean water, it will also be necessary to control the overland flow of water and sharply reduce erosion by wind and water—especially in situations that habitually produce large loads of sediment.

We need to know more about the full dimensions of the sediment pollution problem, but even with existing data it is evident that this is one of the major and most difficult pollutants to deal with. It is major because the total annual sediment movement is estimated to exceed four billion tons in an average year. It is difficult to deal with because it originates from thousands and thousands of places across the entire country.

Rough estimates currently available are impressive. They indicate the suspended solids loadings reaching the streams and rivers of the country from surface runoff are at least 700 times the loadings caused by sewage discharges. About 500 million tons a year are moved by our rivers into the oceans and Gulf of Mexico. More than a billion tons of sediment are deposited each year in our major reservoirs.

More than soil is involved. When water flows over the land it picks up and moves anything that is movable, including not only soil particles but organic residues, plant nutrients, pesticides, manure, and infectious organisms.

This transportation process is important because the evidence shows that the principal means whereby pesticides, infectious agents, plant nutrients, and nu-

clear fallout leave the land and enter bodies of water is by attachment to particles of sediment.

In 1971, the Council of NACD, composed of representatives of districts in all 50 states, adopted the following policy statement:

"Sediment is the major stream pollutant of America. Sediment originates on farmland, roadbanks, strip mine areas, airports, urban developments (residential and industrial), and all other areas where soil is disturbed or its vegetative cover is destroyed.

"Sediment exacts a continuous and cumulative toll of damages from its point of origin to its final resting place in lakes, drainageways, stream channels, harbors, and coastal estuaries.

"Sediment leaves the fields rilled, gullied and impoverished. Along the way to its destination it clogs stream channels; settles on farmland; accentuates flooding; kills fish, farm crops, and timber; and destroys wildlife habitat. It adds millions to the cost of purifying water for domestic and other uses, and still more millions to the cost of maintaining harbors and navigation channels. It destroys the natural beauty and diminishes the recreation value of streams and lakes.

"The National Association of Conservation Districts strongly urges that the Congress adopt legislation which would:

"1. Provide for federal participation and assistance in a project type program of pollution abatement from sediment damages resulting from roadside erosion on existing state, county and public rural roads; from streambank erosion; and from unrestored surface mined non-federal lands.

"2. Authorize the Secretary of Agriculture to provide, upon the request of states, counties, local public agencies, including soil and water conservation districts, and private non-profit agencies, technical assistance for developing a plan on a watershed or community basis for controlling erosion from roadsides, streambanks, and surface mines.

"3. Authorize the Secretary of Agriculture to provide long-term cost-sharing agreements for installing planned works of improvement."

The bill now being considered by the committee expands and improves upon all the points urged by the NACD. With two exceptions, which I shall come to, the NACD earnestly recommends favorable action on this legislation.

H.R. 15596 would not only provide for the control of erosion and sediment from roadsides and streambanks, but would undertake the restoration, rehabilitation and use of non-federal lands damaged by surface or strip mining. It would provide a program for dealing with the very large amounts of erosion and sediment originating in rapidly developing rural and urban areas. Additionally, it would provide for a stepped-up program of erosion control on farm and forest lands, including measures for reducing pollution which arises from livestock, poultry and other agricultural enterprises.

We note with favor the provision in the bill authorizing the Secretary of Agriculture to initiate and conduct nationwide research and education pertaining to agricultural and related pollutants. There is a clear need to expand and refine the knowledge now available bearing on all aspects of the process and control of sediment-related pollution.

We also note with favor the provisions of the bill directing the Secretary of Agriculture to consult with the Secretary of Health, Education, and Welfare, and with the Administrator of the Environmental Protection Agency to assure the appropriate coordination of programs and efforts pertaining to the control, prevention, or abatement of air and water pollution.

Section 5 of the bill would authorize the Secretary of Agriculture to develop a program of summer jobs, to be designated as the agriculture youth program, for students of agriculture, conservation, and related fields.

We have no quarrel with what we presume to be the twin objectives of this section: namely, to provide a supplementary work force in summer months in support of the sediment control operations proposed in the bill, and also to provide healthy, constructive employment for interested young people. We believe good arguments can be assembled in support of these objectives.

Nevertheless, it is our judgment that the organization and operation of an agriculture youth program is sufficiently complex and conducive to such a wide range of variations, that the authorizing language should be more explicit—either by expansion of Section 5 or by the introduction of separate legislation dealing specifically with this subject. We believe the authorization should be more particular and detailed, for example, about such important elements as

annual cost, duration of the program, types of eligible activities, supervision, and administration.

Section 6 of the bill would authorize the appropriation of \$5,000,000,000 for fiscal year 1973 and such sums thereafter as may be necessary to carry out the purposes of the legislation, such sums to remain available until expended.

We presume the \$5,000,000,000 authorization is intended to serve as an initial estimate of the overall costs of the programs set forth in the bill, *over a period of time*, and not as an assessment of probable expenditures during fiscal year 1973. As stated in Section 6, however, the language is confusing and subject to misinterpretation. We believe it should be clarified by authorizing specific yearly appropriations within a long-term authorization.

We are not prepared to venture an estimate of the amount that might be required to launch the programs in the first year, but it would certainly be in the range of millions rather than billions. We would anticipate, also, that costs would increase each year during the beginning years as the programs were geared upward to practical levels for attaining their purposes.

Considering the enormous environmental values at stake, and their nationwide dimensions, we believe legislation to deal with non-point source pollution from agricultural, rural, and developing areas is both timely and urgent. We compliment the Chairman and Congressman Schwengel for introducing this bill and we thank them also for holding these hearings. They help to focus attention on a vital environmental issue that has been bypassed for too long.

Mr. LONGMIRE. Thank you.

No one knows, or can really pinpoint, where this problem first occurs. You just cannot say it is out here in section so and so, or it is in a field somewhere out there, or it is on a roadside.

It has been estimated that we have over 3 million miles of rural roads in America, and many, many of those miles contribute a large amount of sediment.

Our stream banks—I have seen this happen on my own farm. Many, many times in the last 25 years we have lost at least 50 acres, which sloughed off into the Washita River, and these things are something that the private citizen cannot control.

We do not know too much about stream bank erosion. We do not know what the cost is.

We know it is very expensive, but we need some kind of legislation such as this to control, especially these two areas, stream banks and roadside erosion.

We need the assistance of the Federal Government. We need some research in some of these areas.

However, the Soil Conservation Service has been in business for over 35 years. It has the know-how. It has the technicians. They know how to control most of these problems.

I noticed with interest in this bill that you are going to authorize perhaps, or suggest to authorize, a Youth Corps to work in the summertime, students. I think this is an excellent idea.

We found out in the past that bringing some city children out to the rural areas gives them a greater concept of the problems that the rural people face, and at the same time, it gives them an opportunity to realize what a great life it is in the country, and what they have been missing.

I understand that this has been discussed before, before this committee, but your authorization for \$5 million, I presume this would be over a period of years rather than—

Mr. KEE. It is \$5 billion, and at our markup session what we intend to do is to spread it out, like \$500 million per year, in order to get the job done.

Mr. LONGMIRE. I did not think we could spend \$5 billion in 1 year. These are the main areas I wanted to visit with you about. If you have any questions, I will be happy to answer them.

Mr. KEE. Well, we thank you, Mr. Longmire.

Mr. Longmire, I would like to ask you one question.

We had a prior witness, who claimed that in Illinois that they were having trouble, that the farmers were resisting this program.

Now, that is absolutely contrary to everything our field hearings have shown.

However, I think it would be very helpful in our legislative history to find out from you whether or not, No. 1, the officials of the Soil Conservation Service are the best qualified in this matter; and, the second thing, due to your leadership and that of others, in taking the time to explain to farmers the benefits, do you have any problems with the farmers wanting to, after it is explained to them, the farmers wanting to participate in this program?

Mr. LONGMIRE. Our farmers in my State and, of course, I think clear across the Nation—this is their No. 1 objective, to improve their land and to improve its productivity and fertility, and to keep it from washing away.

In Oklahoma, in my State, which I am most familiar with, over 80 percent of our total agricultural area is under a farm plan with a conservation district, a basic farm plan; and, of course, recently we have had discussion of sediment control legislation, and there is going to be a lot of opposition to that, not only by the farmers, but also by the urban developers.

Right now in Oklahoma urban development per acre is producing 500 times as much sediment as rural lands are, agricultural lands.

Mr. SCHWENGEL. Would the gentleman yield?

Mr. KEE. Yes.

Mr. SCHWENGEL. To deal effectively with this on a project by project basis, the cost would be infinitesimal compared to what the damage is by neglecting this area, is that right?

Mr. LONGMIRE. It certainly is.

Mr. SCHWENGEL. Just a little area—

Mr. LONGMIRE. We are going to have to do something about, whether we are going to have to do it by legislation or not. Every time a piece of land is disturbed, there is going to have to be some kind of a plan to keep it from washing away, to keep the sediment out of our streams.

Mr. SCHWENGEL. I am glad you mentioned that, because I think the builders are assessing an immense cost on the public to make these wonderful homes in their areas available to people, and as I analyze or see these projects in different parts of the country, and especially in my own section of the country, I think how little effort it would take to preserve it all.

Mr. LONGMIRE. That is right.

Mr. SCHWENGEL. We could develop structures, as you put them in the areas, that will just make it impossible for the silt to get out of that area, and it would be a good thing for them to do, where they are building, and it would certainly serve the public interest.

It is a good point to make.

Mr. LONGMIRE. Thank you.

Mr. SCHWENGEL. Do you have now, or could you get for us, some estimate of the amount of investment it would take to implement your present programs, and programs envisioned in the bill we have here before us?

Mr. LONGMIRE. It would just be a wild guess. You mean the annual cost?

Mr. SCHWENGEL. I mean the total cost.

Mr. LONGMIRE. Total cost of this?

I have no conception.

Mr. SCHWENGEL. You have a very fine agricultural college there, and it might be a challenging question to present to your agricultural college. They are interested.

Mr. LONGMIRE. We will attempt—

Mr. SCHWENGEL. They have talent.

So with your interest, and with your sense of dedication and understanding and appreciation of this problem, it seems that possibly you could get the ear of your leaders in the agricultural schools who deal with conservation and who deal with water problems and siltation, and all these things.

Mr. LONGMIRE. Well, Mr. Schwengel, we will try to come up with a figure in the near future for you, and get it to the committee.

Mr. SCHWENGEL. I want information on that, good, solid information, because I think we are going to find out that the amount of money that we are spending on the present pollution solution programs for municipalities and for business, at least the amount of money authorized—we may not appropriate it right away—but what we envision spending there, if they were diverted to this area, or a percentage of it, we would find that the amount of good we would do with the billions spent in municipalities—and I am not against that.

I am for that, and I am for business doing what they can to solve the problem—but the good that would come in that area is infinitesimal, and compared to the good that would come from completing the watershed conservation programs we envision in this bill.

Mr. LONGMIRE. I do not think there is any doubt—I believe it has been estimated that there are 700 times as much sediment, pollution from sediment, as there is from municipal waste, and we know where the balance of the money is spent.

Mr. SCHWENGEL. I would like to enlist your help in this goal I have, and that is to change the term cost-benefit to investment-benefit, because to me this program is an investment in the preservation of our capacity to produce on the land, and in the last analysis we will finally have to depend on that for almost everything.

Mr. LONGMIRE. It is really not a cost, it is an investment.

Mr. SCHWENGEL. Right. One other thing.

In considering the projects that we have before this committee, we had a certain list of benefits we consider, and I would like your comment on whether we should not consider a lot of the other benefits that come from completion of these programs, besides those we are now considering.

You know what they are.

What is your reaction to that?

Mr. LONGMIRE. There is no doubt that we have secondary benefits that have never been taken into consideration, not only in our watershed program, but in some of the other programs we have.

I do not think anyone can envision what the benefits are going to be 100 years from now from what we are doing now, or 200 years from now, and I think that some of our planners and our economists, or whoever figured out the cost-benefit ratio, were very, very conservative and were not looking down the road far enough.

I do not think anyone can do it. Maybe a computer could do it. Maybe you could put all the information into it and come out with what the secondary and the final benefits will be in the centuries to come.

Mr. SCHWENDEL. Mr. Longmire, I am looking forward to reading your statement, which I will do, I promise you, before the day is up.

I want to thank you for coming here, because I think you are now involved in developing some really landmarked legislation. It can be far more valuable and important to America than anything we have considered to date.

We have had testimony here yesterday by Dr. Hale—maybe you know him—telling us about the values of growing trees, the cooling capacity of trees, and how the trees produce oxygen, and convert other chemicals into the oxygen we have to have to help us clear the air.

So as we understand the total benefit program, and as we can dramatize this to America, I think you will agree we have a job to do here.

Mr. LONGMIRE. Immense job.

Mr. SCHWENDEL. It is not an impossible one, but it is a challenging one, and we ought to accept that challenge.

Mr. LONGMIRE. That is right.

Mr. SCHWENDEL. It is good to have people like you around. I join the chairman in congratulating you on the deserved honor that just came to you as man of the year in this area. A fine tribute.

Mr. LONGMIRE. Thank you.

Mr. KEE. Mr. Longmire, we are certainly delighted that you took your time to make the long trip from Oklahoma to be with us today.

For that we are in your debt.

We are trying, as you know, to develop the overall picture.

I might mention under unanimous consent, which was approved by this subcommittee, so that everyone can have an opportunity to express any further views, that the record will be open for 30 days.

Now, in connection with Mr. Schwengel's first question, if you can develop during that period any information on the cost-benefit as he referred to it, we would welcome that in the record, and obviously we cannot go into executive session, you know, until all the testimony is in, and we certainly thank you very, very much, and I am looking forward to having you come back and see us.

Mr. LONGMIRE. Thank you. It has been a pleasure to be with you again, and I thank you again for hearing our views, and we will get this information to you for the record.

Thank you, sir.

Mr. KEE. Thank you so very much.

Our next witness is Mr. Lewis F. Clapper, National Wildlife Federation, Washington, D.C.

Mr. Clapper, welcome board.

STATEMENT OF LEWIS F. CLAPPER, DIRECTOR OF CONSERVATION,  
NATIONAL WILDLIFE FEDERATION, WASHINGTON, D.C.

Mr. CLAPPER. Good morning, Mr. Kee and Mr. Schwengel. It is a privilege to be here before you today.

As to my identification, I am Lewis F. Clapper, director of conservation for the National Wildlife Federation, which has its headquarters at 1412 16th Street NW., here in Washington, D.C.

The federation is composed of independent affiliates in all 50 States, Guam, Puerto Rico, and the Virgin Islands. These affiliates, in turn, are made up of local conservation groups and individuals who, when combined with associate members and other supporters of the National Wildlife Federation number an estimated 3 million persons.

The primary objective of the National Wildlife Federation is to achieve conservation goals and objectives through educational means.

We welcome the invitation and opportunity to comment upon H.R. 15596 and identical bills designed to control non-point source pollution from agricultural, rural, and developing areas.

We are pleased, Mr. Chairman, that the Council on Environmental Quality, in its recently released third annual report, laid heavy stress on the runoff problems, as previous witnesses have pointed out.

Our organization, from its very inception in 1936, has been concerned with controlling water pollution by all types of contaminants, including the runoff from agricultural areas.

In fact, through the years, we have supported the fine water pollution control programs originating from this committee over a number of years. Equally, from another point of view, we have long recognized the significant problems relating to soil erosion and sedimentation and, as a consequence, the National Wildlife Federation was a vigorous supporter of the original small watershed protection program—believing in the concept that water should be retained as long as possible where it falls. We continue to serve as one of the sponsors of the National Watershed Congress.

In view of the foregoing, we would be in accord with the Congress if it recognizes the extent of the water pollution problem resulting from agricultural and related pollutants, as outlined in section 1 of H.R. 15596. We agree with the bill's declaration that such pollution is injurious and a growing menace to the national welfare.

And, we join with the sponsors in believing that the resources of State and local public agencies are not adequate without Federal assistance to undertake "an essential nationwide program for the abatement, control, and prevention of such pollution."

We also agree with the desirability of Federal, State, and local public agencies cooperating in the development and execution of a national program for these purposes, one including expanded research and education.

Congressmen Kee and Schwengel inserted in the Congressional Record of June 20, 1972, much good factual material relating to the movement by hydraulic forces of soil particles, organic residues, manure, plant nutrients, pesticides, and infectious organisms.

Indeed, these materials not only pollute water resources, but usually constitute real and significant losses of valuable resources. And so, we are firm in our conviction that the Nation should embark upon a

sound, nationwide plan to curb these sources of pollution, including the reclamation of stripmined areas.

However, we are not convinced that H.R. 15596, as presently written, is the proper vehicle to effect such a program. Some of the problems we have with the bill follow.

First, the bill not only provides Federal financial help for State and public agencies, but for "any owner, operator, or occupier of land," providing for the installation and maintenance of pollution prevention, abatement, control, and practices and measures described in an agreement of up to 10 years in duration.

To the best of our knowledge, this process would give individual farmers and ranchers financial assistance beyond that of any other segment of society.

The question remains: Is the Congress ready to finance, in a similar manner, the installation of waste treatment facilities by private industry?

While we would agree to giving industry and farmers generous tax writeoff incentives, outright grants of this type would seem to saddle taxpayers with another heavy burden. We hope the committee will consider instead the principle that pollution control measures be built into the cost of doing business, passing them along more equitably to the consumer of agricultural products.

It might be pointed out here that, last year, I completed a 3-year term on the President's Federal Water Pollution Control Advisory Board. I continued to serve as a consultant to the Board for two additional meetings in which it considered the animal waste problem. In these meetings, we held open public hearings in Denver and at Purdue University.

In addition, field tours were made of cattle feedlots in Colorado, Nebraska and Kansas, and swine and poultry operations in Illinois and Indiana. Consequently, I have had some exposure to many of the problems involved. Depending upon definitions, many of these feedlots might be considered "point" sources of pollution rather than "non-point."

Second, we question the advisability of having the Federal assistance program administered by the Department of Agriculture. The Environmental Protection Agency was created, in part, when it was deemed wise to separate control functions of the Federal Government from those of a promotional nature.

Consequently, the pesticides regulation function was taken from Agriculture. Radiation regulation was split off from the Atomic Energy Commission. EPA has the function of controlling water pollution for the Federal Government. Let it also supervise a national program for controlling agricultural pollution, cooperating fully as necessary and desirable with the Secretaries of Agriculture and Health, Education, and Welfare.

In all honesty and candor, Mr. Chairman, I must confess that the experience we have had with SCS-sponsored and promoted stream channelization and drainage program does not give us the confidence that this agency should administer a program of the magnitude envisioned by H.R. 15596, particularly one so open ended that the Secretary could decide the degree of Federal participation in grants.

We would rather see such guidelines set out by EPA, an agency not involved in the promotion of agriculture.

We should point out that the USDA is already involved in many worthwhile soil conservation practices. USDA already has the authority to provide technical, financial and other assistance to State and local agencies and private landowners for many of the purposes outlined in H.R. 15596.

Third, we fail to appreciate why livestock and poultry enterprises should be exempted from application of the water standards for 3 years. We fear there would be a tendency to lock any "interim standards" into permanent standards, particularly if the interim standards are less stringent, as might be supposed.

To conclude, Mr. Chairman, we would be pleased to see the approval of a summer job program in agriculture for young people on the assumption that its basic objectives would be similar to those involved in the Youth Conservation Corps as presently related to forest areas, parks and wildlife refuges.

And we have no sound basis for knowing whether or not the proposed appropriation of \$5 billion for fiscal 1973 is adequate or inadequate. It would be our observation that authorization for a program of this magnitude will be difficult to achieve.

I have been interested in the chairman's remarks about your plan to stage this out over a period of years.

I thank you again for the opportunity of making these remarks.

Mr. KEE. Mr. Clapper, we certainly thank you very much.

In listening to you, and in reading your statement, I know from our hearings that we have held, I know from conditions down in my own congressional district, I further know from questions that I have asked various witnesses, that we have been unable to find anyone anywhere that has the knowledge, the know-how, the technical know-how that is possessed by the Soil Conservation Service.

Down in my section of the country, if you talk about taking this away from them, you had better get the first train out, so to speak.

Mr. CLAPPER. I do not think we want to take the program away from the Soil Conservation Service entirely. We just want the principles and guidelines to be set down by EPA, Mr. Chairman, which is the one agency in the Federal Government which is charged with water pollution abatement and control.

We would like for EPA to cooperate extensively with all of the agencies within the Department of Agriculture.

I do not mean to infer that we wanted to phase agriculture completely out of the picture, but we just do not think the basic decisions should be made in agriculture.

I think they should be combined with EPA in the one agency that is related to pollution, and I think your own committee so recognized when you signed the Environmental Protection Agency as the agency to conduct basic research on non-point pollution in your bill that was passed earlier this year, and I think Mr. Baise, when he testified yesterday emphasized this to some degree.

I did not get to attend the hearings yesterday. I did on the first day, and I have read his statement very briefly, but I believe this is the same opinion he expressed in his statement.

Mr. KEE. Thank you, sir.

Mr. Schwengel.

Mr. SCHWENGEL. Thank you, Mr. Chairman.

Have you read the report of this committee as a result of our hearings throughout the United States—

Mr. CLAPPER. No, sir; I have not.

Mr. SCHWENGEL. To which everybody had a chance to come and participate?

Mr. CLAPPER. No, sir; I have not. I have been away for 5 weeks.

Mr. SCHWENGEL. You knew about this tour?

Mr. CLAPPER. I knew about the hearings; yes, sir.

Mr. SCHWENGEL. And you had no reason to believe that this was for any ulterior or selfish motive?

Mr. CLAPPER. Well, I will be frank with you, Congressman. We thought the hearings in Georgia had been heavily weighed by the proponents of the channelization and drainage program. At least the observers who reported to us from Georgia indicated that was a heavily stacked hearing, if you want to term it that way.

Mr. SCHWENGEL. Who would you say stacked it?

Mr. CLAPPER. I do not know. I have no knowledge.

Mr. SCHWENGEL. I think before you make that statement, and—

Mr. CLAPPER. I said I was reporting from an observer there.

Mr. SCHWENGEL. No one, sir, there or anywhere else was denied an opportunity to be heard, or to put their statement in the record, and the record was left open for anybody to report in.

So whatever went out, whoever reported to you, must have been a false report or mistaken.

You are looking now at one person, and two, who were completely and utterly dedicated to the solution of the problem, and I read with some apprehension your statement that you wanted to turn this over to EPA.

I am not against what EPA is doing. I think they have one of the finest leadership arrangements we have ever had for this period, for this area; but when Mr. Ruckelshaus was before this committee, he had no concept apparently, or his aides, about the worst pollution of all, that which comes from the land areas.

Mr. CLAPPER. I am surprised.

Mr. SCHWENGEL. Only after Mr. Baise comes here, and after we have repeatedly raised the question, and had the hearings on the pollution solution bill that deals with municipalities and with business—and I supported that legislation.

I think it is landmark legislation itself. I am glad we are launching it, and we authorized, the House did, over \$24 billion for this program.

But the figure I gave them was a surprise to them. Since that time they have gotten busy, and now they want to take over, and you want them to take over an area where agriculture and others have much more experience.

On this matter of channelization, we invited people to come and talk to us and tell us about examples we could see. We have testimony from the Conservation Service, the Soil Conservation Service, that they had made mistakes in the past, but they have learned from those mistakes.

The testimony of Mr. Poage on some of the channelization that was criticized in Texas was eloquent, and we saw some things in Kansas,

and we had people from the Sierra Club come and say, well, "I do not know how they are otherwise, but we have no complaint with the Soil Conservation Service in Kansas."

Representatives of that organization said that, and they were in the forefront.

So I would like to now invite you, as I have repeatedly, with those people who talk about this terrible channelization program, to cite examples for our record that we can consider and look at.

We looked for those channelization projects when we went around the country.

MR. CLAPPER. I will do better than that, Congressman Schwengel. I will invite you and all of the subcommittee to go down to Gilbert Run, 30 miles south of the Capital, in Maryland, where I will arrange a tour for you of an area, if you will go, and I will have representatives of the State game and fish department to appear and explain to you the problems that they have with one of the 40 streams in this one State of Maryland, and I will arrange this at our expense, sir, if you will go.

MR. SCHWENGEL. Mr. Chairman, I want to go on that tour.

MR. KEE. I must say we appreciate your invitation. I am happy to come.

However, as a matter of ethics, we should come at the expense of the committee. We have to be fair with this.

MR. CLAPPER. Any way. I will just arrange a bus—whatever you see fit to do.

MR. SCHWENGEL. I sure want to see it, because I have yet to see a good, clear example of this great criticism that is made of the Conservation Service.

MR. CLAPPER. We think this is one, although it has a peripheral interest with respect to this bill, but we will be happy to give the subcommittee the benefit of the problems we think are involved.

MR. SCHWENGEL. I would like to ask this. We have 69 land-grant colleges in America, and I will grant through the years they have spent too much time on helping us increase productivity and not enough on conservation.

MR. CLAPPER. I will go along with that.

MR. SCHWENGEL. Have you explored their facilities and their studies on this very question of whether or not EPA might have more competency than the Department of Agriculture or Interior, or other parts of the Government?

MR. CLAPPER. Your bill was introduced on June 20, and we have not had a chance even to explore that with any of the educational institutions.

MR. SCHWENGEL. I raise the question because maybe you have not considered—

MR. CLAPPER. It is a good thought.

MR. SCHWENGEL (continuing). All the factors in this.

We think we set out with some of the best talent in America when we wrote this bill. And we said, when we introduced it, that we did not think it was a perfect bill, and you pointed out some things we probably ought to consider, and I am willing to consider them—

MR. CLAPPER. That is all we ask.

Mr. SCHWENGEL (continuing). Like whether or not the man in the feedlot ought to be treated the same as industry.

I think you have a point, frankly, but in some situations we allow those things to develop, not only allowed them but we encouraged them.

We do not envision in this bill that we will not wrestle with this problem, but I know what you do to an economy when you, all of a sudden, come in and say, "Boy, you are out of business."

Mr. CLAPPER. We appreciate their difficulties.

Mr. SCHWENGEL. This envisions a gradual transition, and I think the transition has to come to the smaller feedlots in that way. I cannot see anything else at this time.

Mr. CLAPPER. Our committee visited near Greeley, Colo., where we had a feedlot of 100,000 head of cattle, and I have never seen anything of this magnitude with the animal waste problem that was created.

But, out there, they are recycling the waste onto the land which, we think, is a very fine process. We did not find that in some areas of Nebraska and Kansas.

Mr. SCHWENGEL. There are some studies going on throughout the United States by the cattle feeders themselves and in cooperation with others to find ways to take advantage and use that fertilizer to produce. And there are a number of ways it can be done. But, 100,000 cattle in one spot makes a lot of manure and a lot of fertilizer for probably a limited area.

Mr. CLAPPER. Our committee was shown building blocks, gasoline, many other products that are being made from those waste products. So there is an opportunity.

Mr. SCHWENGEL. There are some good, sound, solid answers that we have to have before we move this over into EPA.

I have a great respect for those people and what they are doing, but they are Johnny-come-latelies in a sense because, when they were before this committee, they had never testified about this great problem. They testified about the problem of municipal wastes and industrial wastes, and this is a problem they wanted to solve. And that was their whole interest, their entire interest, and their entire focus was on that problem.

Only as some of us from the country, who are conservationists, called their attention to it did they quicken their interest. Even when I quoted 700 times as much solid waste going into the streams from the countryside areas as from all other sources, they did not even know about that. They could not cite the authority; yet it was in Government, in Agriculture.

Further than that, I am a farmer. I am from the farm country. Generally speaking, farmers want to do the right thing. They love the land and they want some program to take care of it, but sometimes, individually, it is awfully hard to do it.

You have got to have a cooperative effort. You have got to have a program that has a concept of a total solution. And this does that, we think.

Again, I think it is not a perfect bill, and the point you raised there certainly quickens my interest.

Mr. CLAPPER. Congressman, I grew up in a county in north Missouri near where you were educated, and the football team on which you were so prominently a player was one of the pride and joys of our time, in my era.

Mr. SCHWENGEL. What county?

Mr. CLAPPER. Putnam, Unionville. And I know you have been there many times.

Mr. SCHWENGEL. Right.

Mr. CLAPPER. And Kirksville State Teachers College was one of our pride and joys.

Mr. SCHWENGEL. Forty years ago yesterday I was married in Unionville. It is a great part of the country, and that is a part of the country that needs this kind of program.

You have good testimony, but I invite you to pursue further the study and reappraise this whole question of who should do it again.

It is my feeling that the Agriculture people originally generated the program for conservation, and it was leaders in the Congress like Poage, and—what is this great man from Kansas that died recently?—Cliff Hope—that initiated Public Law 566. And this is just a small watershed program.

We have experiences all over the United States where they have made magnificent contributions, and we really have never properly funded it, never really given them a chance.

Mr. CLAPPER. We have been a vigorous supporter of Public Law 566 programs generally.

There is one aspect, the channelization, that we do not agree with, but overall we think it is a good program.

Mr. SCHWENGEL. I am looking forward to this experience to investigate this channelization problem you pointed out, and I am going to avail myself of the opportunity to see it.

But I also want it evaluated fairly. I want to consult with conservation people and maybe there is something wrong with the conservation program out there or the people who are directing that, or maybe in the State of Maryland itself. I do not know.

What you are saying certainly is not true in Iowa. The Iowa Legislature is composed of so many farmers that we are watching that, believe me.

How do you feel about the soil bank problem?

Mr. CLAPPER. We would like to have—

Mr. SCHWENGEL. The river banks.

Mr. CLAPPER. You mean the erosion control?

We would most certainly like to see that accomplished. We certainly would. We think this is a tremendous problem.

I am not sure how best it can be approached. There have been many, many agencies proposed to do this, too. Just like the runoff from urban areas, we see this as a great problem.

This is why we are hoping the Environmental Protection Agency research will come up with some real fine proposals. And we note with great interest the sediment control bill that the administration has just introduced.

Mr. SCHWENGEL. You considered this legislation, and you know what has been before this committee and what has come out of it.

In your opinion, would there be any real help at all for the program we envision here in the bill that is before the conference committee?

Mr. CLAPPER. Is not there a section in there, Congressman Schwengel, that gives the Environmental Protection Agency authority to conduct basic research in this area on non-point sources of pollution?

Mr. SCHWENDEL. Yes.

Mr. CLAPPER. We think that would be very helpful.

Mr. SCHWENDEL. I am not against that, but is there anything in that which would envision the completion of these programs?

Mr. CLAPPER. No. Not to my knowledge. Not to my knowledge.

I think there are some areas—

Mr. SCHWENDEL. Would it not be a good idea?

I think you would agree in this total program, whoever administers it, that we do more good by 10 times with the dollars spent in this area, whether it is EPA or Agriculture, than we do with all other moneys spent for the pollution-solution challenge?

Mr. CLAPPER. It certainly is of great magnitude. There is no question about that.

I do not think any of us are able to say whether the soil erosion problem is a greater pollutant than those originating from cities and all, but certainly it is at least as great, and it certainly needs very, very much attention, and we are most certainly in favor of that.

It is just we do not entirely agree with the way the administration of it should go; but mined land reclamation, the control of sedimentation from urban areas, all of these are important facets of the same big problem to which you are addressing this legislation, and we think it has a lot of merit. We really do.

We certainly hope the Congress will attack this problem as soon as possible.

Mr. SCHWENDEL. What leads you to believe, sir, that EPA would do a better job in this total program than the Conservation Service and Agriculture that have had years of experience?

Mr. CLAPPER. We just think that EPA has the broad overall viewpoint which will be more advantageous to the program in the form of guidelines and direction than the Soil Conservation Service.

Now, we have no purpose to phase out the SCS from this program, but you get into the mined land reclamation, you get into urban areas, many, many aspects of the overall program, and we think EPA is the most dispassionate, unbiased, objective agency in this field. It has the basic responsibility for pollution control and abatement, and that is the way we view it.

Mr. SCHWENDEL. What explains the fact they never mentioned this total program when they came before this committee?

Mr. CLAPPER. I cannot answer that. I do not know.

I feel the matter is before them.

Certainly, when I was serving on the Water Pollution Control Advisory Board, it was discussed many times, and I am sure that the personnel of EPA are concerned about it.

I cannot say why they did not testify with respect to it.

Did Mr. Baise address himself to this problem yesterday in his testimony?

Mr. SCHWENDEL. He could not have. He did not have an explanation either why Mr. Ruckelshaus did not mention it.

Mr. CLAPPER. Then I cannot, sir.

Mr. SCHWENGEL. I am very proud of Ruckelshaus. I think he is a very fortunate appointment to that responsibility.

The facts are that he is just lately in the total job. Our Government has only in this administration really come to grips with this total problem, and it is understandable why he has not had a chance to thoroughly understand it.

But, there are people all over the United States that really do understand, and we have got 8,000 watershed programs and conservation projects in the United States just standing idle because we are not doing anything, and we are losing about \$4 million a year of money we have spent on planning because they are not going ahead, because we do not fund it. And here are programs that could be very effective.

You have invited me to go somewhere, and I am going. I now invite you to go to two places that I know of that are very dramatic examples of great results.

One is Rocky Branch in Jefferson County, Iowa. I know about that place because that was a poverty area when I came to Congress, and we got up the watershed program started there, and it is completed now. It is like a Garden of Eden compared to what it was before.

The average production of corn was 30 bushels an acre before. Now it is 120. They do not have nearly as much land in cultivation because the program calls for diversification, grassy waterways, farming around the hills, ponds. They did not have any ponds in that area. They have got a number of fishing places now.

Mr. CLAPPER. Congressman, we are in favor of all of those things in the small watershed program, the upstream dam projects.

Mr. SCHWENGEL. I would like to have you go to Winfield, Kans. That was a program initiated on 100,000 acres up there.

If you are interested in wildlife, they never had any wildlife in Kansas before. They have the Timber Lake watershed development project there, and there are many others.

If you go to the Agriculture Service, they will give you hundreds of them, places to go to show you proof beyond question that they have done more toward attaining the objective you want than any other bureau or department of Government.

So, I think a further study on your part might quicken your interest in what they are doing. It might cause you to reappraise your decision on who should do it.

I am not going to deny EPA's right to come in on this, to know about it, and to work with these people. I think this is fine.

But they have got to come to the conclusion that these people have done a magnificent job in attaining the objectives they say they want.

Mr. CLAPPER. Thank you, sir. I will try to make those trips. I would certainly enjoy them.

Mr. KEE. Mr. Clapper, not only are we happy to have you, but since you had not read our field trip inspections—

Mr. CLAPPER. He just provided me with a copy.

Mr. KEE (continuing). I hope you will read them.

Second, I want to make perfectly clear when we announced our hearings on these field trips—and believe you me, we missed rollcall votes, you know, and our constituents were not very happy. I happened to get caught. I lost my primary because we had votes coming up dur-

ing these days. The fellow that defeated me in my primary said I was not doing my job.

Ninety percent of the work of Congress is done here.

But, the point I want to make is when the notices went out, they were well publicized. We wanted any and everyone to come in and testify.

There is an old saying we use down in my home: "You can lead a horse to water, but you cannot make him drink."

We make the statement on each one of these hearings that when you talk about it being stacked, it was not stacked at all. The invitation was out. And I continued to make the observation, as far as I was personally concerned, that we could go all day and all night and all the next day, you know, to hear it.

So, I do not think it is fair for you or anybody else to say we stacked the meetings, and I think that when you read the book that you have in your hands, you will find that those people that came and testified came, you know, at their own expense, every farmer that came in.

Furthermore, I want to point out that during each of the areas we went to in Oklahoma, West Virginia, Georgia, Mississippi, Iowa, and Kansas, on these watershed projects, that we spent a day going all through them.

You have fish there today that you did not have before these projects were completed. You have wildlife there, you know, after completion, which you did not have before.

So I agree with Mr. Schwengel in the request that you look this over and make a little reevaluation within your own judgment, and I will certainly make myself available to take this little trip which, I said before, to do properly, that it should be at the expense of the committee. And I further want to assure you, sir, that in our markup session, not only in the subcommittee, but when we report it to the full committee, the testimony of every person that has taken the time to appear will be given complete and thorough consideration.

What we want is that we want the best possible bill, and I certainly thank you so very much.

Mr. CLAPPER. That is what we want, Congressman, the best possible bill.

Mr. KEE. We certainly thank you so very, very much for coming here.

Mr. CLAPPER. Thank you.

Mr. KEE. But we are going to hold you to that other.

Mr. CLAPPER. All right. I will be there.

Mr. KEE. Our next witness is Mr. Wayne Shriwise, president, Pawnee Watershed District, Tetmore, Kans.

Mr. Shriwise, we are indeed delighted to have you again, sir, and for the benefit of the record, it would be helpful if you would introduce your associates that you have with you.

Mr. SHRIWISE. Thank you.

We have the vice president of our watershed, Mr. Warner, and Mrs. Warner back there.

We have Charles Holmes, and we have our secretary of the watershed district, Mr. Humburg. And this is our district engineer, Dale Steward.

Mr. KEE. Thank you, sir.

You may proceed in your own way.  
Do we have a copy of your testimony?

Mr. SHRIWISE. Right here, sir.

Before I start my testimony, I would like the permission of the subcommittee to submit some statements from people in Kansas who have sent them along with me.

I have a statement from Mr. E. E. Jabes, president of the State Association of Kansas Watersheds.

Mr. KEE. Without objection, so ordered.

(The statement referred to follows:)

STATEMENT OF E. E. JABES, PRESIDENT, STATE ASSOCIATION OF KANSAS  
WATERSHEDS

Because of the critical need for land and water conservation and pollution abatement, and because I feel that the Watershed Program is the most efficient solution to these problems, I wish, as President of the State Association of Kansas Watersheds and representing that group, to express my support for the non-point source pollution bill, H.R. 15596.

Mr. SHRIWISE. I have a statement from Mr. Nathan Hayse, president of the Kansas Association of Soil Conservation Districts.

Mr. KEE. Without objection, so ordered.

(The statement referred to follows:)

STATEMENT OF NATHAN HAYSE, PRESIDENT, KANSAS ASSOCIATION OF SOIL  
CONSERVATION DISTRICTS

Mr. Chairman and Members of this most dedicated and distinguished Subcommittee, the Kansas Association of Soil Conservation Districts supports in full the principles embodied in H.R. 15596 and wishes to be associated with the testimony presented by Mr. Wayne Shriwise, President, Pawnee Watershed Joint District No. 81.

Mr. SHRIWISE. Also, a statement from Mr. Paul J. Koegeboehn, president of the Middle Creek Watershed.

Mr. KEE. Without objection, so ordered.

(The statement referred to follows:)

ELMDALE, KANS., August 15, 1972.

Representative FRED SCHWENDEL,  
U.S. Congress  
Washington, D.C.

DEAR MR. SCHWENDEL: As President of the Middle Creek Watershed No. 62 Jt., which is located in the heart of the Flint Hills of Kansas and contains more than 75,000 acres, I fully support bill H.R. 15596. We have been actively organized since 1959, and up to this date we have just begun preparing our general plans due to lack of personnel and funds.

Watersheds in this area are very essential. The agriculture of the watershed is predominantly livestock. The 6 percent flood-plain acreage has to support the livestock program of the upland for winter feed and a balanced livestock program. The watershed program is the most efficient program we can have in this area. We need to control soil erosion and sediment control.

Our watershed lies within the Flint R.C. & D. which recognizes the need for watersheds.

I fully support bill H.R. 15596 because we need more funds to get this important work finished.

Sincerely,

PAUL J. KOEGEBOEHN,  
President of Middle Creek Watershed,  
Chairman, Chase County Commissioners,  
Supervisor of Conservation District,  
Member of Flint Hills R.C. & D.

**STATEMENT OF WAYNE SHRIWISE, PRESIDENT, PAWNEE WATERSHED DISTRICT, TETMORE, KANS.; ACCOMPANIED BY MR. WARNER, MR. HOLMES, MR. HUMBURG, AND DALE STEWARD**

Mr. SHRIWISE. I am pleased to have this opportunity to report on the status of the small watershed program in Kansas and, as president of Pawnee Watershed Joint District No. 81, to present my views on House bill 15596.

The Pawnee Watershed District is located in southwest Kansas and encompasses 1.5 million acres of crop and rangeland.

The district was incorporated in June 1968, following a favorable vote of three to one for organization, and application for Public Law 566 assistance was filed in March 1969. Because a delay in Public Law 566 authorization was apparent, the district board of directors voted to initiate a locally directed program of non-Public Law 566 flood detention dams.

A general plan has been developed that will reduce flooding damages by 81 percent. The economic feasibility of this project is 2.24:1, based upon a 50-year amortization rate at  $5\frac{3}{8}$  percent interest.

In computing the benefit-cost ratio, we were unable to evaluate the environmental enhancement and groundwater recharge values provided by this project. Even with the fine local initiative and support, this non-Public Law 566 program has definite limitations; namely, lack of implementation authority and limited local landowner financing.

The Pawnee Watershed District is still awaiting Public Law 566 authorization.

The popularity of this program, combined with a shortage of planning and construction funds, has backlogged projects in Kansas to the extent that the Pawnee Basin cannot expect to receive Federal assistance for Public Law 566 planning until 1978. If future funding continues at the present rate, the Pawnee could expect a delay of up to 35 years before construction is completed. Such a time delay is completely incompatible with local enthusiasm and support.

Artificial groundwater recharge studies conducted in the Wet Walnut Creek Watershed District in Kansas have indicated that flood detention structures can appreciably increase the natural recharge rate.

Thought confined to relatively small-scale research, these limited studies have been highly encouraging. In an area where average annual evaporation is three times the annual precipitation, the use of underground aquifers is a very effective means of storing water.

The major industry in southwest Kansas is agriculture. Rapidly expanding cattle feedlots have created a demand for feed products. To be competitive in the feedlot business, there must be, first of all, availability of cattle. These, we have.

Second, a plentiful supply of nearby grain and roughage must be available. In this semiarid region, adequate roughage, or corn silage, can be produced only with irrigation.

The economic future of this area, therefore, is based upon irrigation and adequate water supply.

A 1967 report by the Kansas Water Resources Board projects increased water usage in Kansas, because of the obvious economic ad-

vantages; and, much more importantly, predicts areas in southwest Kansas subject to groundwater depletion because of excessive pumpage beyond the natural recharge, as early as the year 2000.

This overdraft on groundwater supplies is already being felt in local areas, where water levels have dropped as much as 100 feet in the past 20 years. Indeed, as this excessive withdrawal of water becomes more widespread, water rights have the potential of becoming more valuable than oil rights.

The district is convinced that it is essential to plan for future water needs, and that interagency cooperation is necessary for efficient planning.

The benefits derived from established watershed districts cannot and should not be underestimated.

The economic value of the watershed program was recently demonstrated in Kansas when heavy rains lashed operating watershed dams on the Upper Verdigris and the Big Caney Watershed Districts. Dams on the Upper Verdigris reduced flooding damages in excess of one-half million dollars, and Big Caney structures harnessed a potential flood that would have exceeded the historic flood of 1961.

In addition to providing the benefits of reduced flooding, watershed districts play a major role in reducing water pollution. Left unchecked, sediment is as costly and destructive as any other water pollutant.

Not only are communities faced with the expense of dredging sediment plagued navigable rivers and canals, but turbid floodwaters produce food for bacteria and the problem, all too often, terminates in septic conditions, toxic to fish and wildlife.

Water supply and water quality are both immensely important to ours and future generations.

We entirely agree with the 1971 Kansas Park and Resources Authority report that states, "The most satisfactory answer to the reduction of stream pollution from stream runoff in southwest Kansas is the establishment of watershed districts."

As the late Congressman Clifford R. Hope, a native of southwest Kansas and coauthor of Public Law 566, attempted to demonstrate, the watershed program is vital, not only to the rural community, but to urban centers as well. No one benefits from polluted streams and rampaging floodwater.

So, it is our immediate obligation to educate American society of the vast social and economic benefits of the small watershed program.

We wish to commend this committee for acknowledging sediment as a major source of pollution in America and for introducing this bill as a positive step toward solving this problem.

The Pawnee Watershed Joint District No. 81 Board of Directors supports the non-point source pollution bill—H.R. 15596—as an instrument for injecting new vitality into the Public Law 566 program and as a method of effectively reducing pollution.

Thank you.

Mr. KEE. Well, I certainly commend you for the excellent statement you have made.

You have given us a very well-thought-out justification for trying to report out and pass through the House the very best bill possible, and we certainly do have the greatest respect for you and for your

testimony, and also the fact that you have made a long trip from Kansas to visit with us.

Do any of your associates desire to make any statements?

Do they wish to add anything to what you have said?

Mr. SHRIWISE. They have no statements.

I would like to say this, though, that I think you two, or this subcommittee—especially you two, have been out in the field so much, and you might be the champions in carrying the ball Clifford R. Hope left for conservation.

Mr. KEE. That is what we are trying to do.

We have a quorum call. Mr. Schwengel had to go over to cast his vote. He was coming back, and I have to run over on the second one.

So, if you can wait, I would like to declare a 15-minute recess. And if you will be here so Mr. Schwengel can take over and ask the pertinent questions that he has in mind, we would appreciate it.

Mr. SHRIWISE. We would be happy to.

Mr. KEE. Thank you very much.

The subcommittee stands in recess for 15 minutes.

(Short recess.)

(Mr. Schwengel assumed the chair.)

Mr. SCHWENGEL. The Subcommittee on Conservation and Watershed Development will reconvene.

I am not sure. Did you finish your statement?

Mr. SHRIWISE. Yes, sir.

Mr. SCHWENGEL. Well, speaking for the chairman, he asked me to go ahead, and I want to say you are really welcome here.

I appreciate seeing you again.

We had a great time out there in Kansas with your people. And while we were there, we heard about this project.

One of the things uppermost in their mind was the project just like you testified for here.

Mr. SHRIWISE. We would love to have a project like the Winfield project in our area. We are in dire need of recreation.

Mr. SCHWENGEL. You are in need of recreation, and I am aware of the damaging effects of floods.

I live on the Mississippi River, and four of my counties border on the Mississippi River. So, I have seen flood periods when we have had some real problems, and we are wrestling with levees, but there is another way and that is to nail that raindrop.

Mr. SHRIWISE. Where it starts, where it falls.

Mr. SCHWENGEL. We were impressed with the need, and while you were reading this, I made some notes on your statement, and I would like to ask some questions.

First, a comment on benefits that come from these programs. It seems to me that we ought to give serious thought to this question of benefits and consider more than we do or consider the secondary benefits and, indeed, if we study and reevaluate them that it might indicate, instead of secondary benefits, they ought to be considered primary benefits.

Mr. SHRIWISE. We have heard statements that it could be that ground water recharge could be our No. 1 benefit. This has never been studied, and we have offered to help with our local moneys to start such studies so that we could put a value on these.

Mr. SCHWENGEL. I would like to suggest, because I know of the great college you have there, that you use the prestige of the organization you belong to and go to Kansas State—do you still call it college, by the way?

In Iowa, we called it the Iowa State College, but we have changed it to the Iowa State University.

Do you still call it the Kansas State College?

Mr. SHRIWISE. We call it Kansas State University.

Mr. SCHWENGEL. And then like in Iowa you have a Kansas State College?

Mr. SHRIWISE. Yes.

Mr. SCHWENGEL. I would like to have you challenge them to do some studies in this area of benefits, especially as they apply to Kansas.

Mr. WARNER. We have already challenged them. Wayne referred to offering to fund some of this cost with the watershed money, and they have not come up with any matching funds to go with it.

Mr. SCHWENGEL. You mean to study this area?

Mr. WARNER. Yes.

They have no matching funds. We wanted them to make a study on the groundwater resources.

Mr. SCHWENGEL. I think if there is no other source that your Legislature ought to see this as a challenge. There is not anything in my view that we envision where money will probably pay more dividends than with this kind of study.

The reason I mention it is because if we could get some more true analysis and better comprehension of the total benefits for all of the people, it would be easier to sell this program to Congress.

Mr. SHRIWISE. Yes, sir.

We have one that I did not mention. We have silted streams out there that stop flowing. We will have heavy rains and they will flood one day, and the next day they are dry.

We have been on the watershed program, visiting neighboring watersheds. In fact, that is what started nearly all of us, visiting the Washita in Oklahoma, where their streams have never ceased running since they have initiated the watershed program.

The economy is tremendously larger. The pride of the people is something you cannot measure, too. They are proud.

These are the things that started us on this, and we hope to do it in our area. And we cannot put a value on what a running stream is worth.

Another benefit they had down there, which we put in our general plan, was the help to the roads and bridges by the watershed program that greatly reduces erosion. And these are the things that, as a whole, the public gets benefit from.

We have failed, I think, to really get to the American people, the whole American people.

Mr. SCHWENGEL. It would be an interesting figure if we can get it, and maybe you can in your area with the watershed.

You say in your statement that there probably will not be any money for Public Law 566 planning until 1978.

Mr. SHRIWISE. Yes, sir.

Mr. SCHWENGEL. The completion would come at least 3 years after that if you got money and were lucky?

Mr. SHRIWISE. We could not do it that fast, I do not believe.

Mr. SCHWENGEL. How fast could you do it?

Mr. SHRIWISE. I had a report that it would take 2 years to plan this at present rates, at the present force they have there from the State planning agency. And we hope to—

Mr. SCHWENGEL. That would make it 1980?

Mr. SHRIWISE. Yes, sir.

Then we would try to complete this in 10 to 12 years.

Mr. SCHWENGEL. Now, having this in mind, would there be somebody that you could get, some group within your organization, to give us some estimate of the damages that we could expect from floods and the cost of silting, and all of that, because we postpone it, because we do not get at it?

I think it would be a very interesting figure to have, and it would be very valuable testimony.

If you can get just a ball park figure, we could have it in this testimony, and it would be a wonderful thing for us to point to as we promote this legislation.

Now, the suggestion has been made here that this is a good program, that the overall program ought to come under EPA.

Do you know what EPA is?

Mr. SHRIWISE. Yes, sir.

We have not had an awful lot of experience out there with EPA, with the agency.

Mr. SCHWENGEL. What is your reaction to the suggestion that we have this program, but let EPA be the boss?

Mr. SHRIWISE. I am convinced that the Soil Conservation Service has done a tremendous job. They have worked with us 100 percent.

I think the small watershed program—the only thing it lacks is money. I think anybody else that takes it over could not begin to do the job.

Mr. SCHWENGEL. One thing I imagine caught your eye here was the fact we had \$5 billion in this thing.

Mr. SHRIWISE. Yes, sir.

Mr. SCHWENGEL. I was the one who insisted on that figure, and I am not ready to agree with the chairman that we ought to compromise on it yet.

If you had the money now for planning, you have the capability in Kansas to get going now in planning; have you not? Is that right?

Mr. SHRIWISE. Yes, sir.

We would start tomorrow.

Mr. SCHWENGEL. You would start tomorrow if you had the money for planning?

Mr. SHRIWISE. In fact, we already have levied local taxes in anticipation that something might break like this so that the local money would not hold us up.

We have engaged our engineer, our licensed engineer, to start to do things on our own so that if these moneys become available, we could move.

The enthusiasm of our people there is tremendous.

We have levied these taxes, local taxes, in the midst of a tax reevaluation, and there has been a lot of tax protest, but we have never had a tax protest at any of our budgeting since we have been organized.

MR. SCHWENGEL. That is very interesting testimony, and this is good for us to know at this point, because this confirms what I felt all the time, that the farmers, especially good farmers, are all out and gung-ho for this type of program.

MR. SHRIWISE. In presenting our program for our district, I found the women and the children and the ministers are great assets. They are great believers in the watershed program.

MR. SCHWENGEL. There is another point I want to raise, and that is on the matter of cost versus investment.

I think we have sat by too long and let the title of cost be used rather than investment

What is your reaction on that?

MR. SHRIWISE. I visited with some of the Board about this just a minute ago, and I asked them what they thought a treated piece of land was worth, how much more in value was it worth, and we all agreed at least 20 percent.

We had one instance of the land being sold there where a watershed structure is being planned that would take out probably 10 percent of the land.

There was less land, but this land sold for more money.

So, to me, I think land treatment is an investment, and why should not the watershed program be an investment, too, because it is the extension of land treatment.

MR. SCHWENGEL. It certainly is. That is a very good point.

I have never thought of it quite that way.

So you probably—if somebody wanted to lead a fight to eliminate the interest costs we levy on the projects, you would probably support it?

MR. SHRIWISE. We certainly would, 100 percent.

MR. SCHWENGEL. MR. Chairman, you are here, so I will turn the chair over to you again and see if you have any questions.

I may want to pursue some questions momentarily.

(Mr. Kee resumed the chair.)

MR. KEE. As a convenience to you all, I am certainly indebted to my beloved friend for coming back so that we could proceed.

I am afraid I have no other questions at this time, and I am delighted with the testimony.

I turn the microphone back to you.

MR. SCHWENGEL. One further statement I want to make, and I suggest you carry the message back home.

There has been some criticism that we did not give more notice for these hearings. Many more people wanted to come.

There is a reason. We were trying to find a time, and the only time we could find finally is the time we are having. So we were handicapped here. It was not because we did not desire to have hearings, or let the people know more in advance which normally we do, but we either had to do it now or not do it at all this year, it looked like to us, and that is the reason for the short notice.

I hope you will go back and explain this to your colleagues.

Also, the record will be left open for 30 days to anybody who wants to send in a statement, add to the testimony we are collecting here in anticipation of presenting it to the subcommittee for action, and finally for action by the whole committee.

The reason we wanted to get action on it is because we wanted to get started now and get this before the Congress, and it is probably too much to expect both Houses to pass it; but if we can go into the next session of the Congress after having passed the House, if we can do that, or even past the committee, it will go in with more prestige as we look down the road.

There is one reason especially I wanted to have some hearing, and that is to in this way indirectly, if not directly, pay tribute to the chairman.

I say to you that we would not have this bill, which I think is landmark legislation, if we had not had the chairman who fronted for the proposition of going out to the countryside to hear testimony from about 20 some States, I guess.

We have our great program on conservation, and it was that experience, that testimony, that going to the grassroots, or in Kansas, I guess we would say the wheat roots—

Mr. SHRIWISE. Both.

Mr. SCHWENGEL (continuing). To get the testimony that has been of such value.

So we are moving as fast as we can, and I hope you will carry the message back. We will explain this in a letter to the many people, and will probably get out a press release inviting other people to give us testimony.

One other thing.

There is the matter of channelization that you have heard criticism of.

In Kansas this thing came up, but nobody could point to an example in Kansas where channelization was any problem at all.

Mr. SHRIWISE. We have no channelization anticipated in our watershed district at all. In fact, I know of none in the western two-thirds of Kansas.

If we have channelization, I cannot find any in Kansas, or any problems with it.

Mr. SCHWENGEL. There is really no problem as far as you know, and nobody has complained?

Mr. SHRIWISE. First of all, I am certain that there is none planned in our area, in our watershed district, and there is none I know of in Kansas.

Mr. SCHWENGEL. Mr. Chairman, we have had some excellent testimony here, and we certainly are grateful to you and the Kansans who are working on it.

If you will pursue it, and continue to pursue it with the great institutions of your college and university and present them with the challenging questions I raised, and others that may occur to them, as they go over this, and consider the legislation, we would appreciate having it.

Mr. SHRIWISE. I am sure if there is anything we can do to help this committee, that we will be ready to come again, short or long notice.

Mr. SCHWENGEL. All right.

That is all, Mr. Chairman.

Mr. KEE. Mr. Schwengel, I am indeed grateful to you for going over to cast your vote and coming back so that there would be an absolute minimum of inconvenience to our witnesses.

Mr. Shriwise, you and your associates well remember the most interesting, and perhaps one of the most fascinating experiences that I have had when I was privileged to hold hearings in your great State of Kansas.

You have wonderful people up there. They are solid people. Just one way I can express them—they are just like the Rock of Gibraltar, and I admire your sincerity, and we certainly want to again thank you, each of you, for making your long trip.

As I mentioned, and as Mr. Schwengel has mentioned, the record is open for 30 days now for anything else you know that you and your folks might feel will be helpful to us in our battle that we have during this Congress.

My intention is that we will report a bill to the full committee from the subcommittee, and have action on that during this Congress, and I hope that you will be pleased with our results.

We will do the best we can, and the committee certainly wants to thank each of you so very, very much for taking the time.

Gentlemen, we certainly are grateful to you. You have been most objective, and you have been most helpful. We thank you so very much.

Now our final witness is Mr. Gary DeLoss of Washington, D.C.

Mr. DeLoss?

(No response.)

MR. KEE. I would like to make a point that Mr. DeLoss has been scheduled to testify for the last 2 days and he is not here today.

Now, in our unanimous agreement that everyone will have 30 days, I want to make it perfectly clear that Mr. DeLoss has that 30 days to submit whatever statement that he may desire to submit during this time, also additional statements will be received for the record.

Are there any other witnesses, anyone else that desires to testify?

(No response.)

MR. KEE. The Subcommittee on Conservation and Watershed Development stands adjourned subject to the call of the Chair.

(Whereupon, at 11:43 a.m., the subcommittee adjourned, subject to the call of the Chair.)

(The following were received for the record:)

PAWNEE WATERSHED JOINT DISTRICT No. 81,  
*Jctmore, Kans., September 12, 1972.*

Hon. FRED SCHWENDEL,  
*House of Representatives*  
*Washington, D.C.*

DEAR MR. SCHWENDEL: I am enclosing information to be added to the statement of Wayne Shriwise which was presented August 17, 1972 at the hearings on HR 15596. At that time you stated that additional information could be added to the record for a period of one month and you also requested an estimate of the annual flooding damages which could be expected as a result of construction delay.

Pawnee Watershed Joint District Number 81 does not expect federal assistance under PL 566 planning until 1978. According to our present information, construction will not start prior to 1985. Average annual floodwater damage due to overflow of the Pawnee River and its major tributaries is estimated at \$523,000. Annual benefits expected from installed detention dams are approximately \$481,000. This represents an 81 per cent reduction in annual flood damages. If construction is delayed until 1985, the district will lose \$481,000 annually which will accumulate to 6.25 million dollars by 1985. It is interesting to note that total installation costs to reduce flooding damages by 81% would cost 3.7 million dollars, or about 3/5 of what it is costing to wait for PL 566 funds.

The Pawnee Watershed Joint District No. 81 Board of Directors recognizes that the PL 566 program is inadequate to handle all small watershed flooding problems and supports HR 15596 as a means toward alleviating the pressure on PL 560 funds.

Very truly yours,

WAYNE SHRIWISE,  
*President.*

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DEPARTMENT OF SOIL CONSERVATION,  
*Des Moines, Iowa, September 15, 1972.*

HON. FRED SCHWENGEL,  
*House of Representatives,*  
*Washington, D.C.*

DEAR CONGRESSMAN SCHWENGEL: I am enclosing a statement on H.R. 15596. You informed me sometime ago that the record would be held open on this bill until September 18. I hope my statement arrives in time so that it can be included in the official record.

We in Iowa are very much in favor of this bill and feel it will go a long way in helping to control agricultural pollution. I am sorry to be so tardy in getting this statement to you, but we have been tremendously involved with a statewide meeting and other activities and it has simply not been possible to prepare it any sooner.

It was nice seeing you at the Living History Farm the other day.

Sincerely yours,

WILLIAM H. GREINER,  
*Director.*

STATEMENT ON H.R. 15596

I am happy to have the opportunity on behalf of the Iowa Department of Soil Conservation to present the views of the Department and its governing body, the State Soil Conservation Committee, on H.R. 15596. This bill would provide for the establishment of programs within the Department of Agriculture to study and control pollution associated with non-point sources and erosion from agricultural land and developing rural and urban areas.

The problems facing the United States today with regard to agricultural pollution, and especially pollution resulting from sediment, which is the product of the misuse of land, are very serious. It has been estimated the total annual sediment movement exceeds four billion tons in an average year in the United States. Sediment is very difficult to deal with because it originates from literally thousands of points across the United States. These points include agricultural areas, urban and rural development areas, airports, highways, shopping centers, to name only a few. Suspended solids loadings reaching streams and rivers from surface runoff in the United States are at least 700 times the loadings of sewage discharges, and it has also been estimated that approximately 500 million tons of sediment are moved by our rivers and streams each year and deposited into the oceans and Gulf of Mexico, and more than a billion tons of sediment are deposited each year in our major lakes and rivers. While the sediment in itself is very damaging to our environment, the multitude of pollutants that are carried with it compound the problem. These pollutants include infectious agents, agricultural and industrial chemicals, organic residues, inorganic salts and minerals, plant nutrients and a magnitude of other contaminants.

The authors of H.R. 15596 are to be commended for taking the initiative to write a legislative bill which will help alleviate many of the problems created by agricultural pollution. The United States can no longer permit the low federal priority that has been allocated to agricultural pollution which results in untold economic losses to this country.

This legislative bill is of great interest to the Iowa Department of Soil Conservation because, if enacted, it will alleviate many of the problems being experienced with sediment control today in the State of Iowa. The 64th Iowa General Assembly enacted a legislative bill known as the Conservancy District Law. The bill assigns authority and responsibility to soil conservation districts and the Iowa Department of Soil Conservation to establish procedures and guidelines to abate sediment damage. The law declares sediment damage resulting from soil erosion on the property of another to be a nuisance, H.R. 15596 would aid districts and the Department immeasurably in implementing this law. The Depart-

ment heartily endorses the authority and responsibility given by the bill to soil conservation districts and state departments of soil conservation or state soil conservation commissions in the respective states.

Districts and these departments or commissions have had the experience for a number of years in dealing with local problems associated with erosion control. They have been involved in watershed programs since 1954 and much progress has been made through these programs to alleviate flooding, soil erosion and sedimentation. However, the funding has not been adequate and as a result the program has not accelerated as rapidly as it should. Much of the administration of the bill is placed with the soil conservation districts and the state agencies which are already established for the implementation of this bill. This is much preferred to establishing a new agency of the state or federal government to accomplish these same goals. Districts and the state departments work very closely with the Soil Conservation Service in providing assistance to landowners and operators with their erosion control programs, and this should be continued.

The Iowa Department of Soil Conservation also endorses the section of the bill which provides that the Secretary of Agriculture may enter into an agreement not to exceed ten years with any owner, operator or occupier of land providing for the installation and maintenance of the pollution prevention and abatement control, which will reduce and minimize pollution from agricultural operations. Many of the problems in the past with regard to soil conservation programs have related to the lack of adequate cost-sharing for landowners and occupiers. There are many farmers and ranchers throughout the United States who would be willing to enter into agreements which would provide for adequate funding over a period of years to initiate and complete soil conservation programs on lands under their control.

The Great Plains concept should definitely be extended to the midwest and other areas of the United States. This has been a successful approach to implementing soil and water conservation programs, because it provides assurance that funds will be available for landowners to complete their conservation practices over a contractual period. The Rural Environmental Assistance Program has been a good program, but it has been impaired by lack of funds and has been dependent upon congressional appropriations each year. There is no assurance from one year to the other that the cost-sharing program will be continued. H.R. 15596 would help remedy this problem if it were enacted.

The legislative bill also provides that the Secretary may initiate and conduct nationwide research and education for identifying and characterizing agricultural and related pollutants and developing methods for the abatement, control and prevention of pollution. This is tremendously important because if any program is initiated to alleviate the problem of agricultural pollution, adequate research and education must be provided. It is granted that much education and research has taken place, but the complexity of the materials being used in today's agricultural production dictates that research in these areas must be intensified.

The bill also provides state and local agencies the financial and technical assistance needed in the important fields of land use planning, roadside erosion, stream bank erosion and erosion in strip-mining areas. Erosion from these sources is excessive and much assistance is needed to correct the problem.

Section 4 of the bill provides that when it has been determined that any landowner, operator or occupier of land is in violation of a state water quality standard for the area, or is doing any act or permits to exist any condition causing pollution from agricultural or related pollutants, or which causes excessive soil erosion and sediment damages in violation of said regulations, standards and criteria of the state agency, that he shall not be eligible for further assistance or benefits under any other federal program or activity, with respect to such land or enterprise, until such water quality standards or such plans have been substantially complied with. This section adds strength to the bill and is certainly needed if compliance is to be achieved.

Finally, the Department of Soil Conservation favors this bill because it meets a need not provided for in other federal legislation enacted to date. We strongly feel that local soil conservation districts in Iowa and the Iowa Department of Soil Conservation, as local and state agencies, and the United States Department of Agriculture, including the Soil Conservation Service, as the federal agency, are the logical agencies for carrying out the important national program

proposed in this bill. The United States Department of Agriculture is in a unique and favorable position to provide the leadership in carrying out national programs for water quality management and pollution in relation to agricultural, rural and developing areas, as proposed by H.R. 15596. The USDA is the logical federal department to undertake this program because it has established field offices in or available to every county in the nation and these offices are staffed with competent personnel. In view of this organization, it would seem unnecessary and wasteful to establish a parallel organization with similar responsibilities or capabilities.

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STATEMENT OF HON. CHARLES M. TEAGUE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. Chairman and distinguished Members of this Subcommittee, I appreciate the opportunity to present this statement at these hearings on "non-point source pollution".

The distinguished Ranking Minority Member of this Subcommittee, Mr. Schwengel, advised me of your intention to give careful consideration to this great problem, and I commend you for recognizing that non-point source pollution constitutes a major threat to our Nation's environment.

It seems most unfortunate to me that we often tend to overlook non-point source pollution as a major part of the threat to clean air and water. So often the more obvious forms of pollution, such as automobile emissions and industrial wastes, get most of the publicity. Naturally these are gigantic problems, but the fact that so much attention is focused on this aspect of the problem makes the non-point source pollution even more dangerous.

While I have not had an opportunity to thoroughly consider the legislation that the Chairman and the Ranking Minority Member have introduced to try to combat this problem, I do agree that a way must be found to halt the various forms of non-point source pollution just as soon as we practically can.

As many of you know, I have for many years served as Ranking Minority Member on the Subcommittee on Conservation and Credit of the House Committee on Agriculture. Our Subcommittee has worked closely with the Soil Conservation Service in such programs as the Small Watershed Program with which this distinguished Subcommittee is most familiar. I feel that the Soil Conservation Service has done a good job in combating soil erosion in our rural and developing areas. Therefore, I believe that the Department of Agriculture is the logical department to carry out this responsibility. I am pleased to see that the pending legislation does utilize the resources of the Department of Agriculture to carry out a program of combating non-point source pollution.

As I pointed out, I am not familiar with the details of this bill, and I cannot at this point address myself to its merits directly. Obviously, a broad program of this nature would be vastly expensive and there is a very serious question as to just how much money we can obligate, in view of our economic situation. However, I do commend you for beginning these hearings on this serious problem. I am confident that these hearings will yield badly needed data which in turn may greatly assist us in taking appropriate action in the future.

Again, I wish to say that I am most grateful to have been invited to participate in these hearings.

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STATEMENT OF R. V. SMRHA, CIVIL ENGINEER, FORMER CHIEF ENGINEER, DIVISION OF WATER RESOURCES, KANSAS STATE BOARD OF AGRICULTURE

Mr. Chairman and members of the committee, my name is R. V. Smrha. I am pleased to be afforded this opportunity to be heard in support of H.R. 15596. On May 1, 1972, I retired as Chief Engineer of the Division of Water Resources of the Kansas State Board of Agriculture. In that capacity I had responsibility during the past 20 years for administration of various state laws pertaining to the conservation, development, utilization and disposal of water. It included the watershed district act which was passed by the Kansas legislature in 1953. I am licensed as a professional civil engineer and reside at 1017 High Avenue in Topeka, Kansas.

On November 12, 1971, it was my privilege to appear before the Subcommittee on Conservation and Watershed Development of the House of Representatives

Committee on Public Works, at a hearing in Wichita, Kansas. I stated then and reiterate at this time that the watershed program has a great potential and offers a tremendous opportunity for the further and more complete development of the water resources of the state. While its basic function is for flood control purposes, the program serves either indirectly or can be adapted to provide specifically for water supplies that are needed for domestic, rural, municipal, industrial, irrigation, recreation, fish and wildlife and perhaps other purposes. To the extent that it has been applied, the program has demonstrated that its objectives are successfully achieved. It has application to a broad area of local water problems and brings about a wide distribution of benefits to many communities.

The continuing activity in organization of additional watershed districts in the state is a measure of the increasing demand for the program. There is at the present time a considerable backlog of work to be done in connection with pending applications for assistance in planning and construction. While progress is being made, it is not keeping pace with either the demand or the need. For example, out of the 78 organized watershed districts in the state, projects have been completed in 12 of them. There are 8 districts in which projects are under construction, 15 districts which are in various stages of planning, 3 districts in which planning has been completed and 5 districts which have been assigned a priority for planning. That leaves 35 districts or nearly one-half of the total number that have not yet been touched. While they are ready to proceed, it is not likely that any assistance will be available to them for some time at the current rate of progress.

The watershed program is relatively new and at this time can be considered as being well started. At this stage it can be viewed as a continuing operation in which progress will be made over a period of perhaps several decades. Because of the extensive, widespread benefits which result from the program, it is urged that funding for planning and construction be established at a level more nearly commensurate with local needs as reflected by the number of districts which are prepared to proceed. The watershed program is and should continue to be a major factor in water resources development to the extent that it contributes to the economy of any area and to the end that people may thrive in an attractive environment.

It is my opinion that H.R. 15596 as introduced at the second session of the 92nd Congress has a great deal of merit. Many of its objectives can be achieved through activities of watershed districts. Their programs whether carried on in connection with R.E.A.P. or under Public Law 566 bring about a substantial reduction in soil erosion, resulting in the abatement of pollution by sediment from agricultural areas.

The bill provides an opportunity also for dealing with the disturbing problem of mined land reclamation. This has been successfully accomplished in limited areas where recent mining operations have been regulated by state laws. There are, however, thousands of acres of land that have been mined in the past which remain as deep and ugly scars on the surface of the earth. The bare and rugged terrain created by the excavated overburden is readily eroded and contributes materially to the sediments polluting the streams into which run-off is discharged. Any agreements which can be made pursuant to H.R. 15596 to reclaim these lands will restore them as an asset to the natural resources of the area.

In my judgement the provisions of H.R. 15596 would stimulate the soil conservation and watershed programs which in themselves are extremely effective in reducing pollution by sediments eroded from agricultural lands. I take this means to add my endorsement of the measure and to urge its prompt and favorable consideration.

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WILDLIFE MANAGEMENT INSTITUTE,  
Washington, D.C., August 25, 1972.

HON. JAMES KEE,  
*Chairman, Subcommittee on Soil Conservation and Watershed Development,  
Rayburn House Office Building, Washington, D.C.*

DEAR CONGRESSMAN KEE: We are concerned over certain phases of the non-point pollution bill, H.R. 15596. As presently worded, it is not acceptable.

The National Wildlife Federation, in their statement of August 17 before your Subcommittee, outlined a number of features of H.R. 15596 which should

be modified in order to strengthen it. We endorse and support those proposed changes. They would help insure that authorized efforts are organized to focus on erosion and pollution control problems in an effective manner.

Kindly include this statement in the hearing record.

Sincerely,

LAURENCE R. JAHN,  
*Vice President.*

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LANSING, MICH., *August 15, 1972.*

HON. JOHN A. BLATNIK,  
*Chairman, Committee on Public Works,  
U.S. House of Representatives,  
Rayburn House Office Building, Washington, D.C.:*

Michigan Department of Agriculture supports Federal assistance through U.S. Department of Agriculture to State and local governments for the control of animal waste and sediment pollution as proposed in H.R. 15596 and strongly urges the House Committee on Public Works to give favorable consideration to this bill.

B. DALE BALL,  
*Director, Michigan Department of Agriculture.*

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the world's history is written in the blood of the people. The people are the ones who have made the world what it is today. They are the ones who have created the great civilizations of the past and the great nations of the present. They are the ones who have fought for freedom and justice, and they are the ones who will continue to do so in the future.

It is the duty of every citizen to stand up for the rights of the people. It is the duty of every citizen to work for the betterment of the world. It is the duty of every citizen to be a part of the solution. It is the duty of every citizen to be a part of the future. It is the duty of every citizen to be a part of the world.

Let us stand up for the rights of the people. Let us work for the betterment of the world. Let us be a part of the solution. Let us be a part of the future. Let us be a part of the world.