

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

September 8, 1978

THE ADMINISTRATOR

SUBJECT: EPA Policy  
To Protect Environmentally Significant Agricultural Lands

TO : Assistant Administrators  
Regional Administrators  
Office Directors

PURPOSE

The purpose of this statement is to establish EPA policy that will recognize the food production and environmental value of agricultural lands and the necessity to protect them wherever impacted by Agency programs. This policy is intended to guide Agency actions, regulations, program guidance and technical assistance to reduce or mitigate adverse impacts, and to encourage farmland protection efforts which are consistent with environmental quality goals.

RATIONALE

Conversion and loss of agricultural land, particularly prime farmlands to expanding urban uses, has significantly diminished the Nation's cropland base, and affects environmental quality. With less "prime" quality agricultural land available, greater reliance on marginally productive farmland will occur, resulting in greater soil erosion, increased fertilizer requirements, and increased environmental damage. Conversion of agricultural land also reduces our future food production capability, the viability of farming units, and causes adverse secondary economic impacts on farming enterprise in many metropolitan areas.

Loss of agricultural land diminishes environmental quality by reducing the beneficial role which the land itself can play. Agricultural land reduces runoff by absorbing precipitation, aids in replenishing groundwater supplies, buffers environmentally sensitive areas from encroaching development, and serves in wastewater treatment through land treatment processes. These environmental benefits are predicated on best management practices. Other benefits of retaining agricultural land in or near urbanizing areas are the value of convenient sources of food production in proximity to consumer markets enabling reduced consumption of scarce fossil fuels for transportation, which in turn will assist in protecting ambient air quality, and the open space, recreational, and aesthetic setting these lands may provide for fuller enjoyment of cleaned waters.

Protecting agricultural land to maintain environmental quality also is based on sound planning practice which reduces sprawl development and its associated social, economic, and environmental costs. Retaining agricultural land can be a significant element of an environmental management strategy, and is consistent with the President's Initiatives to limit urban sprawl.

In a recent report, the U.S. Soil Conservation Service pointed out that 79.2 million acres have been converted from cropland since 1967. While additional acreage has been converted to cropland during the same period, the net loss to cropland has been 30.5 million acres, leaving about 400 million acres in the nation's cropland base. Of the nearly 17 million acres converted to urban development, reservoirs, and other built-up uses (often with federal assistance), more than 8 million acres was of prime quality. These losses to the cropland base are absolute, yet they also have a qualitative aspect. To maintain crop production, land of lower quality is brought into cultivation requiring greater input of crop production technology, with its potential negative impact on environmental quality. In 1976, the Council on Environmental Quality recognized these conditions and directed that federal agencies evaluate the impacts of their actions on prime and unique farmlands in NEPA reviews and environmental impact assessments.

Urban encroachment, unique economic problems faced by farmers, and the impact of federal programs all influence the conversion of agricultural land. The impacts which result from federal grants-in-aid for community infrastructure and new development are significant in the conversion process. Decisions on federal grants for sewers, highways, and other capital improvements do not adequately recognize that agricultural lands are a finite productive and environmental resource which is cumulatively and irretrievably diminished as a result of federal actions.

Some EPA programs impact on farm management practices, economically affect farming operations, and can inadvertently cause conversion of agricultural land to other uses. Cumulatively, there likely are significant EPA program impacts which induce land use changes, unplanned urban development, remove land from agricultural production and reduce our ability to maintain environmental quality.

A recently issued policy on land treatment of municipal wastewater underscores our Agency's reliance on a variety of agricultural lands in proximity to urbanized areas to enable the option of wastewater management and beneficial utilization of municipal wastes in agriculture to continue in the future. The land treatment systems fostered by this policy involve the use of plants and the soil to remove unutilized wastes from wastewaters. The recovery and beneficial reuse of wastewater and its nutrient resources through land treatment can contribute to the productivity of farmlands. Thus, land treatment can enhance production, and the availability of agricultural land in urbanizing areas can enable land treatment to continue as a viable waste management approach.

The Agency currently has no overall policy which assures that its actions, regulations, and programs reinforce the retention and protection of environmentally significant agricultural land. Since agricultural land itself can play an important role in maintaining environmental quality, it is in EPA's interest to treat it as an environmental resource, and to discourage its conversion to other non-agricultural uses.

EPA is in a strategic position to assist in the protection of the Nation's vital agricultural land resources. It must, therefore, seek to minimize the impact of its programs which may induce conversion of agricultural land unless the proposed activity serves an essential public need.

#### DEFINING ENVIRONMENTALLY SIGNIFICANT AGRICULTURAL LAND

Soil capability for food and fiber production, together with management and technology are among the major factors governing the potential of land productivity. The importance of agricultural land from an environmental perspective, in addition to these factors, is determined by its capability to contribute to maintaining or improving environmental quality. Thus, the ability of agricultural land to directly or strategically aid in maintaining environmental quality determines its significance.

For purposes of this policy, agricultural land types defined in 1, 2, 3, and 4 are those set forth by the U.S. Department of Agriculture in 7 CFR Part 657. Their environmental significance is based on their own merits for productive capability and general environmental resource value. Agricultural land types defined in 5, 6, and 7 are those identified for their specific environmental value. Their environmental significance is based on their role in an EPA-required environmental plan or management strategy. Under these definitions, prime farmlands are to be considered as having the greatest environmental significance.

Environmentally Significant Agricultural Lands include:

1. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not developed land or under water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed.
2. Unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods.
3. Additional farmland of statewide importance is, in addition to prime and unique farmlands, significant for the production of food, feed, fiber, forage, ornamental, and oilseed crops. Criteria for defining and delineating this land is to be determined by the appropriate State agency or agencies.
4. Additional farmland of local importance is not identified as having national or statewide importance. In some local areas, however, it is economically important and environmentally sound for certain additional farmlands for the production of food, feed, fiber, forage, ornamental, and oilseed crops. Where appropriate, these lands may be identified by the local agencies concerned.

5. Farmlands in or contiguous to Environmentally Sensitive Areas (ESA's), such as floodplains, wetlands, aquifer recharge zones, or natural scientific study areas; these farmlands play a crucial environmental buffer role to prevent development from encroaching on ESA's, thereby protecting their capability to remain environmentally productive and stable.

6. Farmlands of waste utilization importance which may serve in the land treatment process, be used for composting activities, or for controlled beneficial application of sewage sludges or other wastes.

7. Farmlands with significant capital investments in Best Management Practices (BMP's), which serve as elements of an area's (or state's) soil erosion and non-point source pollution control plans.

#### BASIS FOR ACTION

The basis for Agency action to protect environmentally significant agricultural land is found in several policy directives and statutes:

EPA final regulations implementing the requirements of the National Environmental Policy Act in 40 CFR Part 6 direct the Agency to specifically identify impacts affecting prime agricultural land or agricultural operations on such land. A Council on Environmental Quality Memorandum for Agency Heads (dated August 30, 1976) seeks to assure that prime farmlands are not irreversibly converted to other uses as a result of federal program impacts.

Impacts resulting from programs administered under the following statutes can directly or indirectly influence agricultural lands or farming operations:

The Clean Water Act provides for waste treatment works and water quality planning which impact on agricultural lands. It also requires that comprehensive pollution control programs give due regard to agriculture activities.

The Clean Air Act Amendments focus on air resources and consider public welfare impacts such as effects on soils, water, crops, and vegetation.

The Resource Conservation and Recovery Act calls for criteria and guidelines to ensure that solid and hazardous waste disposal activities do not create adverse health or environmental effects, including those which may affect agricultural activities.

The Safe Drinking Water Act enables the designation of areas containing sole source aquifers which are likely to contain agricultural lands performing groundwater recharge and natural cleansing functions for those aquifers.

The Federal Insecticide, Fungicide, and Rodenticide Act enables the Administrator to reclassify or suspend the registration of a pesticide. This may lead to changes in crop patterns and ultimately to conversion of prime farmland to other uses.

#### POLICY

It is EPA's policy to protect, through the administration and implementation of its programs and regulations, the Nation's environmentally significant agricultural land from irreversible conversion to uses which result in its loss as an environmental or essential food production resource.

#### IMPLEMENTATION

EPA will apply this policy to the full extent of its authorities in implementing Agency actions. Each major Agency Office and Region will review its programs and modify its policies and operations as necessary to carry out the actions required in this policy. Headquarters Offices and Regions shall designate staff responsible for seeing that required actions are carried out.

Responsibility for implementing this policy rests with each Agency program and Regional Office. Responsibility for monitoring the implementation of this policy rests with the Office of Federal Activities, which will report its progress and recommend adjustments prior to the next issuance of the annual EPA Policy Guidance.

#### ACTION REQUIRED

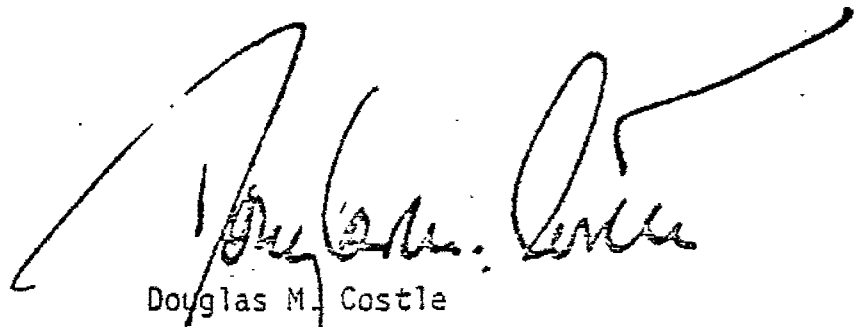
Assistant Administrators and Regional Administrators shall ensure that their actions and those of their staffs clearly advocate protection

of agricultural lands. Protection of environmentally significant agricultural lands shall be carried out in the following Agency actions:

- a. A consideration of impacts on agricultural land shall be incorporated within the process of developing new or revised Agency regulations, standards, or guidance.
- b. Specific project decisions involved in the planning, design, and construction of sewer interceptors and treatment facilities shall consider farmland protection. Consistent with Agency cost-effectiveness guidelines, interceptors and collection systems should be located on agricultural land only if necessary to eliminate existing discharges and serve existing habitation.
- c. Agency permit actions which are subject to NEPA review shall ensure that the proposed activity will not cause conversion of environmentally significant agricultural land. The permit process shall consider farmland protection alternatives, and ensure that the least damaging environmental alternative is implemented.
- d. Primary and secondary impacts on agricultural land shall be determined, and mitigation measures recommended in environmental assessments and reviews of environmental impact statements of EPA decisions, and reviews of actions proposed by other federal agencies.
- e. The regional or local significance and economic value of farmlands to communities shall be considered in Agency enforcement actions.
- f. Future environmental consequences, trends, and applications of the environmental roles of agricultural land shall be studied and research needs identified.
- g. A public awareness program which recognizes the environmental value of agricultural land and its role as an environmental resource shall be pursued.
- h. Agency technical assistance activities in the development of air quality, water quality, and solid waste plans shall support and encourage State and local government agricultural land protection programs. Significant farmlands recognized in these programs shall be incorporated into Agency-required environmental plans and implementation approaches, whenever appropriate.

i. Agricultural land protection efforts of states, local governments, or other federal programs shall be supported through intergovernmental coordination and EPA project reviews. Opportunities for review and comment on proposed EPA actions which impact on agricultural land shall be afforded.

j. Future EPA Policy Guidance shall reflect this policy of protecting environmentally significant agricultural land.

A large, stylized handwritten signature in black ink, appearing to read "Douglas M. Costle". The signature is written over the printed name below it.

Douglas M. Costle



## QUESTIONS AND ANSWERS - AGRICULTURAL PROTECTION POLICY

1. What will this policy do?

A. It will require EPA Regional Administrators and program officials to consider the impacts of their activities and rulemaking (for example, in deciding the location of an interceptor sewer) and ensure that the effects of those actions minimize the loss of productive farmlands.

2. Why is it needed?

A. Unfortunately, for some time Federal programs have unintentionally caused a loss of valuable farmland. Recently Secretary of Agriculture Bergland put it this way: "We have been losing a million acres of cropland a year for the last 30 years. During the 50's we lost land to the interstate highway system. In the 60's we lost land to suburban sprawl. In the 70's we're losing land to sewage treatment facilities. All of which require flat farmland." EPA wants to make sure that its programs have a minimal impact on agricultural land loss. That is what the Council of Environmental Quality wants us to do, that is what American farmers, and the State Agricultural Departments want us to do, and that is what we want to do.

3. What does the policy mean for the farmer?

A. It should provide some assistance to the farmer in hanging on to his property. It does not dictate how a farmer can or can't use his land. It means there will be less pressure coming from the EPA -- in terms of grants for treatment plant construction -- that could provide the spark for other residential or commercial development.

4. Is the loss of agricultural land really a problem?

A. Yes. Roughly 31 million acres of farmland have been lost to development and other uses during the past decade. Of this, 17 million acres have been eaten up by urban growth; 8 million has been converted to reservoirs, ponds and other water bodies and the remaining is no longer being farmed for various reasons.

5. Will the policy result in new regulations?

A. Not likely. But it is likely that rules now in effect or under development increasingly will be administered in ways that don't contribute to the problem of farmland loss.

6. What is the status of this policy as opposed to a regulation or law?  
Will it be changed from time to time?
- A. This policy itself does not have the force of law. However, EPA will make every effort to uphold the policy in carrying out activities, such as regulation development and grant approvals. The policy is backed up the National Environmental Policy Act. While the basic framework of the policy is not expected to change, it will be further developed and refined as we gain experience through its implementation.
7. Is it a "no growth" policy?
- A. Definitely not. EPA air and water pollution control programs are designed to accommodate projected growth. This policy is no exception.
8. Can the policy stop EPA from doing certain things?
- A. It will affect how we do certain things. For example if we're facing a decision on approving an interceptor sewer to be built in a rural area or one already inhabited, this farmlands policy favors consideration of alternatives which would limit the "spread" of urbanization unless there's some overriding consideration that makes this impossible or environmentally unsound.
9. Are State and local governments acting to preserve farmland?
- A. New Jersey and Suffolk County, New York are experimenting with public purchases of development rights from farmers that allow them to continue using the land for agricultural or other purposes but not to sell or lease it for development. Massachusetts has passed a law adopting this approach, and California is considering it. Oregon has a comprehensive program based on statewide planning goals and local zoning. Many other States attempt to preserve farmland by using "differential tax assessments" that price farmland for its food production value as opposed to its value for urban development.
10. What causes the loss of agricultural land?
- A. Urban encroachment, unique economic problems faced by farmers, and the impact of federal programs all influence the conversion of agricultural land. The impacts which result from federal grants-in-aid for community infrastructure and new development are significant in the conversion process.

Decisions on federal grants for sewers, highways, and other capital improvements do not adequately recognize that agricultural lands are a finite productive and environmental resource which is cumulatively and irretrievably diminished as a result of federal actions. Some EPA programs impact on farm management practices, economically affect farming operations, and can inadvertently cause conversion of agricultural land to other uses.

11. Why is farmland environmentally important?

A. Farmlands play an environmentally active role as open space to:

- absorb and filter snow and rainfall to maintain clean underground water supplies;
- serve as wildlife habitat and, in some cases, preserve wetlands essential to the reproduction of certain fish and other aquatic life;
- can provide a way of disposing sewage sludge to condition soil and fertilize crops;
- provide a country experience for harried city dwellers.

12. Do you have examples on how EPA programs impact on agricultural lands?

- through decisions on the location of sewage treatment plants and interceptor sewers that may make uninhabited areas attractive for development.
- through decisions as to where new sources of industrial air pollution may build (significant deterioration policy).
- through decisions on the siting of solid waste landfills.
- through reviews of environmental impact statements of other federal agencies activities that affect farmland (highways, dams, etc.)

13. What is the relationship between the agricultural lands policy and the 208 program?

- A. The relationship is indirect. By protecting prime farmland, there will be less need to rely on marginally productive farmland which often results in greater soil erosion, increased environmental damage and increased energy intensive fertilizers.

14. What is the relationship between the agricultural lands policy and the 201 program?

A: EPA will review municipal waste treatment grants carefully to mitigate, as far as possible, construction activities on significant agricultural lands. The Regional Administrators and their staffs will be required to carry out their 201 actions in accord with the EPA agricultural lands policy.

15. How is agricultural land conversion caused by EPA programs?

A: Our investigations of case examples have confirmed the logic and causal relationship of EPA program impacts on farmland loss. However, currently available EPA data does not illustrate the full degree of program impacts on farmlands. The Soil Conservation Service points out that some 79.9 million acres have been converted from cropland since 1967 -- a relatively short period of time. Of the nearly 17 million acres converted to urban development, reservoirs, and other built-up uses, more than 8 million acres was of prime quality. Where EPA programs help support development infrastructure, such as sewer construction grants, they serve to stimulate farmland conversion. As such, farmland loss attributed to urbanization or the "threat" of impending urbanization can be seen as the result of our impact on this problem.

EPA is one of several federal agencies (including EDA, FmHA, DOT, and HUD) that provide financial assistance which induces urban development. In addition to reducing the adverse impacts of our programs, careful comprehensive planning at local levels can reduce farmland conversions.

BACKGROUND PAPER IN SUPPORT OF AN EPA POLICY TO PROTECT  
ENVIRONMENTALLY SIGNIFICANT AGRICULTURAL LANDS

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Footnotes

Tabs 1 - 12

Prepared by the Office of Land Use Coordination  
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\*Note: This background paper is an in-house EPA document subject to  
revision before being published and made generally available.

LIST OF TABS FOR BACKGROUND DOCUMENT

1. Abstracted texts of Administrator Costle's speeches referring to farmland retention.
2. Letter of Massachusetts State Officials on interaction of sewage treatment and agricultural land use.
3. Portion of Denver Regional Overview EIS Statement
4. USDA policy memorandum on Prime Farmland, Range, and Forest Land
5. Farmland Benefits outlined in State of Maryland Report.
6. CEQ Memorandum on Analysis of Impacts on Prime and Unique Farmland
7. Reprint of 7 CFR, Part 657 - Prime and Unique Farmlands Definitions
8. Article by Robert A. Norton on Value of Unique Farmlands
9. Newsclip of case example of Farmland Retention Efforts
10. Text of Massachusetts Law on Agricultural Land Development Rights Purchase and California proposal for Farmland Retention
11. Considerations for Farmland Retention Strategies at State and Local Government levels.
12. Newsclip describing the Jeffords Bill, H.R. 11122

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## 1. INTRODUCTION AND STATEMENT OF THE ISSUE

Administrator Costle's remarks before the Massachusetts Farm Tour on August 25, 1977, and before the Annual Convention of the National Association of Conservation Districts on February 6, 1978, stressed the need to examine relationships between EPA Programs and the Protection of Farmlands. (See Tab 1). In his words, "Because of our sensitivity to the need for preserving our (prime) farmlands and keeping them in production, I have directed that EPA examine the effects of each and every one of its own programs and regulations on the retention of agricultural lands.... And, I've directed that we develop an overall policy statement on the preservation of these (environmentally significant) agricultural lands to give general guidance for the implementation of EPA programs."

A recent exchange of letters among state officials in EPA's Regions (See Tab 2 and Tab 3) similarly characterizes these issues. The U.S. Department of Agriculture has also articulated a policy expression on this issue (See Tab 4).

From this charge, an Agency-wide working group engaged to contribute information on impacts and review the problems and opportunities facing EPA on this issue. This background paper serves several purposes: as an educational device for understanding relationships between farmlands and environmental quality; as a basis for identifying the impacts of EPA programs on farmlands; and as a vehicle for supporting an Agency policy proposal.

### ISSUE

Well-managed agricultural lands often play environmentally beneficial roles by providing assimilative capacity, serving as buffer zones, and offering relative environmental stability when compared to urban or developed land uses. EPA programs are designed to improve environmental quality but may induce land use change and development, and remove agricultural land from production. These losses of agricultural land use reduce our ability to maintain environmental quality, yet the Agency currently has no overall policy which assures that its actions, regulations, and programs reinforce the retention and protection of environmentally significant agricultural lands.

## 2. ENVIRONMENTAL CONSEQUENCES OF AGRICULTURAL LAND CONVERSION

Conversion of prime farmlands to urban uses induces a shift to farming on less desirable land or more intensive use of existing farmland.<sup>1</sup> This shift would lead to a greater reliance on environmental manipulation, which, given current levels of technology, would tend to require additional land management and conservation practices.

In addition to the outright loss of high quality land as an agricultural and environmental resource, other consequences of prime farmland conversion which raise environmental concerns are the shift to less productive (non-prime) lands, and the implicit requirement for greater application of technology and environmental manipulation to achieve high levels of productivity on less-productive lands.

Conversion of prime agricultural LAND to other (urban) uses often leads to these consequences:<sup>2</sup>

A. Since over 90% of the highest quality land is currently in production, land shifted out of agriculture is irretrievably lost from the agricultural land resource base. This loss of "open space" land also depletes a region's assimilative capacity. Such losses are significant as more and more urbanized areas are covered with impermeable surfaces, and more public investments are made to accommodate the adverse environmental effects of urbanization.

B. Urban sprawl, skip development, and fragmenting farms into 5 to 50-acre parcels has both direct and indirect effects on agricultural production. There may be speculative idling of cropland, isolation of farming enterprises, increasing land values and production constraints arising from regulations on odors, waste disposal and other land-use incompatibilities.

C. Often, agricultural land in floodplain areas is shifted to industrial or commercial development. Pressure is then created for public investment to provide flood protection, where such investments was not previously required.

D. Shifting agricultural activities to less productive (non-prime) lands leads indirectly to these results:

1) "under-utilized land" being held in a natural or undisturbed state is reduced. Such land provides one of the very limited opportunities for natural ecosystems to develop, and for natural diversity to be maintained.



2) Use of non-prime land and marginal land implies the use of land which has steeper slopes and poor soil quality. Such lands are more vulnerable to soil erosion from either wind or runoff.

Sediments carried by water runoff clearly represent the "dominant form of soil loss in the United States, delivering approximately 4 billion tons/year of sediment to waterways in the 48 contiguous states".<sup>3</sup> Three-quarters of these sediments come from agricultural lands. Soil erosion also has a detrimental effect on reservoirs, rivers, and lakes. About 1 billion of the 4 billion tons of water borne sediments end up in the ocean, and the remaining 3 billion tons settle in reservoirs, river and lakes.<sup>4</sup> One-quarter of the total sediments come from sources other than agriculture, such as construction and logging. About 450 million cubic yards (344 million cubic meters) of sediment are dredged from U.S. rivers and harbors annually at a cost of about \$250 million.<sup>5</sup> Sedimentation materially reduces the useful life of reservoirs, and costs the nation about \$50 million annually.<sup>6</sup> These and other sediment damages are estimated to cost the United States about \$500 million annually.<sup>7</sup>

Soil sediments, the associated nutrients (for example, nitrogen, phosphorus, and potassium), and pesticides have an ecological impact upon stream fauna and flora. The added nutrients may increase aquatic productivity resulting in eutrophication; in contrast, when suspended sediments are present they reduce light penetration, which reduces the productivity of aquatic ecosystems. Fish food may then be less abundant.

Wind erosion of soil is generally considered to be less severe than water erosion, but may be significant in specific regions of the United States. It is estimated that 850 million tons of soil per year were moved by the wind in the western region of the United States alone. For the United States as a whole, it has been estimated that about one-quarter of the total erosion that occurs is due to the wind.<sup>8</sup>

E. Use of marginal farmlands and attempts to maintain high crop yields which causes greater reliance on artificial and technological manipulation also results in environmental consequences:

1) There is a greater dependency on soil conservation measures to maintain agricultural productivity and environmental stability. At the same time, increased burdens and costs are placed on the farmers who undertake soil conservation measures, reducing the likelihood that they will be done effectively and completely.

Various methods are used for soil conservation. Contour planting is probably the most common and can be extremely effective. However, it results in a 5 to 7 percent increase in both farming time and fuel use.<sup>9</sup>

2) With low soil capability, increased applications of fertilizer would be needed to maintain yields. Inevitably, increased amounts of nutrients are fixed to soil particles carried into streams in the more erodible soils of marginal farmlands.

Additionally, farmland conservation results in secondary environmental effects. The conversion of prime farmlands to urban uses implies the provision of urban services (e.g., sewer lines). Unless these increments of change are carefully managed, poorly planned and staged development could lead to adverse environmental effects as well as an inefficient infrastructure and tax base from which to provide needed public services.<sup>10</sup>

These consequences, the secondary environmental effects they imply, along with the specific environmental effects of increased runoff and erosion and transport of particulates, the likely increase in applications of pesticides and fertilizers in some areas, reduction of aquifer recharge capability, and the subsequent energy/pollution effects, all suggest that shifts in agricultural land uses are environmentally significant.

Historically, most land-use decisions have been made by open pricing in the market place. On this basis, land for agriculture can seldom compete when the land is in demand for non-agricultural use. The market place has not put a value on farmland's contribution to maintaining environmental quality. Future actions will need to ensure that the long-term environmental interest of the public is given due consideration in agricultural land use decisions.

More than even before, the conversion of high quality farmlands to urbanized uses escalates the relative cost of new agricultural development by placing greater reliance on fertilizers and technology. The continuing cycle of agricultural land conversion and development of alternative (often less productive and environmentally fragile) lands will be costly for the farmer, for the consumer, and for the environment.

### 3. THE ENVIRONMENTAL CASE FOR PROTECTING AGRICULTURAL LAND

In addition to food and fiber production, agricultural lands of all types<sup>11</sup> (prime, unique, etc.) play an important environmental role. The open space afforded by farms acts to ameliorate local microclimate conditions. Farmlands absorb precipitation, thereby replenishing the groundwater supply and reducing the amount of runoff during periods of high water. Insulation of environmentally sensitive areas such as wetlands and floodplains from incompatible uses is another function served by farmlands. Agricultural land may also serve as a repository for sludge and other wastes or be an appropriate application for spray irrigation. While there are costs to farmers in terms of productivity and crop quality, farmland open space acts beneficially as a sink for such air pollutants as ozone, sulfur dioxide and fugitive dust.

It should be emphasized that these environmental benefits of farmlands are predicated on good farm management and soil conservation practices. In light of this, a strong rationale for maintenance of farmland is found in the open space and environmental benefit inherent in cropland, woodland, and pasture. Some of these more readily identifiable benefits include:<sup>12</sup>

A. Watershed protection can be an essential attribute of well-managed farms. Water availability will become an increasingly important issue in most regions as the population expands and per capita use increases. Open lands, such as farms, help maintain local water supplies by absorbing precipitation and transferring it to the groundwater system, protect the hydrologic integrity of watersheds through the control of storm water run-off and sediment damage, protect aquifer recharge areas, and provide buffers for water supply and other natural areas.

B. Insulation of environmentally sensitive areas such as wetlands and floodplains are an important open space function of farms. Many states and counties are now adopting regulations to protect these valuable resources and nearly all of the protective measures list agriculture as a compatible use.<sup>13</sup> As long as the farms remain, these areas are protected and provide environmental benefits at no direct cost to the public.

C. Wildlife habitat is commonly associated with farmland and particularly deer, grouse, quail, pheasant, rabbit and a variety of non-game species equally important to the web of nature.

D. The value of agricultural land for waste treatment is increasing, and will likely become more important as the population increases, as treatment plants become more expensive and difficult to locate, and as the public more readily accepts the idea of land treatment of municipal sewage. While there are several health-related questions, concerning the heavy metal content of sludge that must be answered before broad-scale application will be permitted on cropland, the future potential seems high and could evolve into a major benefit--assuming there are farmlands remaining near cities to receive the treatment.

E. Aesthetic relief from the pressures and living conditions of urban areas; pleasure driving still remains a popular form of outdoor relaxation.

F. Many areas of scenic or cultural value, such as unique landscape or geologic forms, vistas or historic sites, can be preserved with agricultural land.

G. Farmland serves as a geographic buffer between expanding jurisdictions, punctuating urbanized areas and affording an opportunity to structure urban development, thereby reducing and controlling urban sprawl.

H. The pollution absorption capacity of farmland open space traps air pollutants such as ozone and sulfur dioxide. For example, typical polluted air containing 150 parts per billion (ppb) ozone would be filtered by a forest of trees 15 feet tall so that air reaching the forest floor would contain only 30 ppb. Expressed differently, one acre of woodlot vegetation will trap the ozone from eight automobiles, or the carbon dioxide from fifty. Studies of the ability of vegetation to trap spores of various fungi show that vegetation is also a very effective filter for particulate matter.<sup>14</sup>

I. The value of farmland as a form of "landbank" for future operations is yet another rationale for retention. Not only as an approach for waste disposal, but possibly as the site for a new college or health center. Although this view is not consistent with other rationale that call for the permanent retention of farmland, it does, at a minimum, keep a number of development options open that might otherwise be foreclosed through premature conversion of agricultural lands.

Some significant secondary benefits (having environmental implications) resulting from prime farmland preservation include:

- A. Provision of fresh, high quality food at reasonable cost located close to the consumer, reducing transportation and energy costs;
- B. Providing productive, tax-paying, privately maintained agricultural open space with its environmental benefits, including rural aesthetics and enhanced air and water quality;
- C. Contributing to a stable economy by providing job opportunities, income, a market for farm production, and general regional self-sufficiency;
- D. Safeguarding reserve food production capacity to meet the future needs of our population;
- E. Preservation of the farming "way of life" with its unique cherished values as part of diversified metropolitan areas;
- F. Contributing to the Nation's balance of payments by providing food and fiber for export;
- G. Protecting potential mineral resources from being prematurely exempted;

Several states have recognized these environmental values in reports or Legislative Actions (See Tab 5). While each State or region has unique political and economic circumstances, each shares the common concern for the loss of productive agricultural land, and with it, the benefits described above.

#### 4. BASIS FOR EPA CONCERN

Agency concern for protection of farmlands is based in the following policy directives and statutes:

- a. EPA's final regulations implementing the requirements of NEPA in 40 CFR Part 6 published on April 14, 1975, direct the Regional Administrator to "assure that an EIS will be prepared on a treatment works facilities plan, 208 plan or other appropriate water quality management plan when.... implementation of the treatment works or plan may directly cause or induce changes that....adversely affect significant amounts of prime agricultural land or agricultural operations on this land."
- b. A CEQ memorandum for Agency heads, dated August 30, 1976, on "Analysis of Impacts on Prime and Unique Farmland in Environmental Impact Statements" (See Tab 6 for text); this memo seeks to...." assure that such farmlands are not irreversibly converted to other uses unless other national interests override the importance of preservation or otherwise outweigh the environmental benefits derived from their protection." "...Federal agencies should attempt to determine the existence of prime and unique farmlands in the areas of impact analyzed in environmental impact statements prepared in compliance with Section 102(2)(c) of NEPA."
- c. The following sections of the Clean Water Act apply:
  - i Section 102(a) requires the Administrator to develop comprehensive pollution control programs which give due regard to activities such as agriculture.
  - ii Section 201(d) states that the "Administrator shall encourage waste treatment management which results in the construction of revenue producing facilities providing for--(1) the recycling of potential sewage pollutants through the production of agriculture, silvaculture or aquaculture products or any combination thereof;
  - iii Section 201(f) states that the Administrator shall encourage waste treatment management which combines "open space"....with such management.

- iv Section 208(b) says that areawide treatment management plans shall include "a process to (i) identify, if appropriate, agriculturally and silviculturally related non-point sources of pollution, including return flows from irrigated agriculture, and their cumulative effects, runoff from manure disposal areas, and from land used for livestock and crop production, and (ii) set forth procedures and methods (including land use requirements) to control the extent feasible such sources;"
- v Section 212(2)(A) defines treatment works to include "...site acquisition of the land that will be used as an integral part of the treatment process (including land use for the storage of treated wastewater in land treatment systems prior to land application)...."
- vi Section 304(f) states that the Administrator shall issue "(1) guidelines for identifying and evaluating the nature and extent of non-point sources of pollutants, and (2) processes, procedures, and methods to control pollution resulting from (a) agricultural activities, including runoff from fields and crop and forest lands;"
- d The following sections of the Clean Air Act Amendments apply:
  - i Section 101(b) states that the purposes of this title are to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and productive capacity of its population. Welfare as defined in Section 302(h) includes "effects on soils, water, crops, vegetation...."
  - ii Section 160 identifies purposes of the Act..."to preserve, protect, and enhance air quality in.... areas of special natural or regional natural.... value".
  - iii Section 316(b) enables the Administrator to "withhold, condition, or restrict"...construction of treatment works which may cause or contribute to an increase in emissions of any air pollutant.



- e. The following sections of the Resource Conservation and Recovery Act apply:
  - i Section 1002(b)(2) states that disposal of solid waste and hazardous waste in or on the land without careful planning and management can present a danger to human health and the environment;"
  - ii Section 1008(a)(3) calls for solid waste management guidelines which "provide criteria...and define practices" for disposing of solid waste in landfills.
  - iii Section 4004(2) requires criteria for sanitary landfills which insure there is..."no reasonable probability of adverse effects on health or the environment (through the food chain) from disposal of solid waste at such facilities".
  - iv Section 8002(g) calls for a comprehensive study on sludge, including the analysis of...(1) alternative methods for the use of sludge, including agricultural applications...."
- f. The following section of the Safe Drinking Water Act apply:
  - i. Section 1424(b) states that: "the Administrator may so designate an area within a State if he finds that the area has one aquifer which is the sole or principle drinking water source for the area and which, if contaminated, would create a significant hazard to public health."
- g. The following sections of Federal Insecticide, Fungicide, and Rodenticide Act apply:
  - i Section 3(b)(2) states that "if the Administrator determines that a change in the classification of any use of a pesticide from general use to restricted use is necessary to prevent unreasonable adverse effects on the environment, he shall notify the registrant...."
  - ii Section 5(e) states that "the Administrator may revoke any experimental use permit, at any time...."
  - iii Section 6(c)(1) states that "if the Administrator determines that action is necessary to prevent an imminent hazard...he may suspend the registration of the pesticide immediately."

## 5. TRENDS IN AGRICULTURAL LAND CONVERSION

Changes from agricultural lands to other uses, particularly prime farmlands to expanding urban uses, have received considerable attention in recent years. Several recent CEQ Annual Reports have expressed concern about the environmental consequences of these trends.<sup>15</sup>

The Soil Conservation Service (SCS) has recently completed a study<sup>16</sup> of non-federal land that provides up-to-date statistical data at national and regional levels on (1) land use changes and trends, (2) the potential for converting land in other use to cropland, (3) the extent of land that can be readily converted, and (4) the problems related to developing this land for crop production. Some of its major findings are described below.

- A. Significant changes in land use have taken place on American's non-federal lands between 1967 and 1975. About 17 million acres have been converted to urban and built-up areas, and about 7 million acres have been inundated by water. During that 8-year period, nearly 2.1 million acres were converted to urban and built-up areas each year. About 30 percent of the land converted to urban and built-up areas each year comes from cropland.
- B. Cropland actually farmed declined from 431 million to 400 million acres. This decline occurred in 8 of the 10 farm production regions. The exceptions were the Delta states region, where there was a slight increase in cropland acreage, and the Mountain region, where the acreage remained about the same. Forest land declined from 445 million to 375 million acres. The major decline occurred in the Mountain region. Pastureland and rangeland increased significantly, from 507 million to 571 million acres. Gains occurred in every region. Land in other uses also increased from 57 to 70 million acres.
- C. A "reserve" of about 111 million acres now in pasture and range, forest, or other land uses have high or medium potential for conversion to cropland. Of this land, 35 million acres can be converted to cropland simply by beginning tillage. The remaining 76 million acres have impediments that will require additional expense and effort to convert them to cropland. Examples of these impediments are high density forest, seasonal high water table, or high erosion hazard.

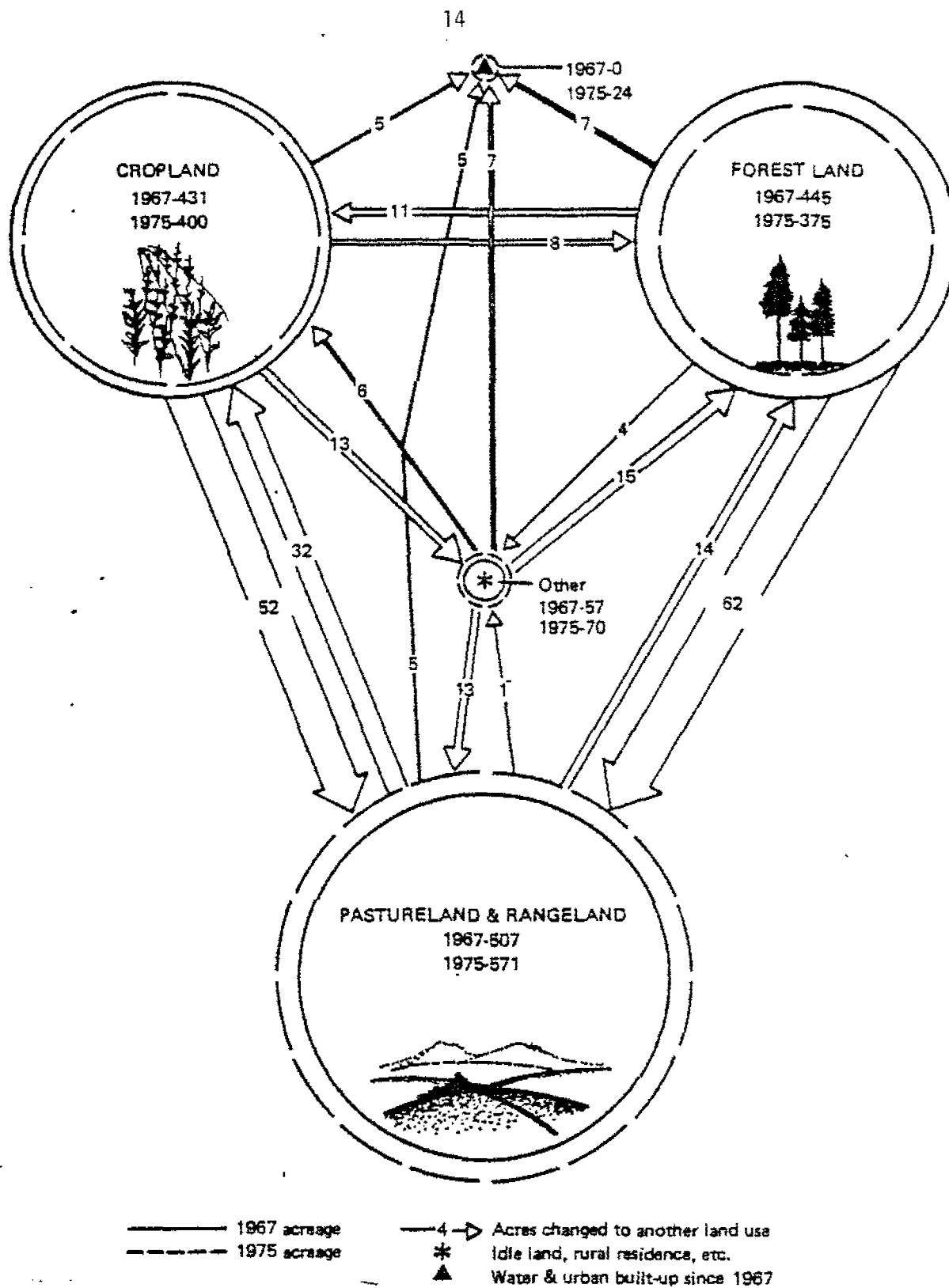
Changes in land use at the national level indicate that about 79.2 million acres have gone out of cropland since 1967, and 48.7 million acres have been converted to cropland during the same period. The net loss to cropland has been 30.5 million acres, leaving a total of 400.4 million acres in cropland.

- D. Of the nearly 17 million acres converted to urban and built-up areas during the 8-year period, about 60 percent was land in capability Classes I - III<sup>17</sup>. Of the nearly 7 million acres converted to water during the same period, about 40 percent was land in capability Classes I-III. The flow of these land use conversions is illustrated in Figure 1 on the following page.

Nearly 30 percent of the land converted to urban and built-up areas each year comes from cropland, indicating a cropland loss of about 0.6 million acres each year. About 10 percent of the land converted to water areas each year comes from cropland. Most comes from land in other uses. The conversion to urban and built-up areas and water is occurring at a greater rate than previously estimated.

An important question to be addressed in determining the significance of prime farmland conversion is: How much (uncultivated) land has the potential for conversion to cropland and with what degree of effort and investment? The SCS study points out some of the problems associated with converting pastureland and range-land, forest land, and land in other use to cropland.

- A. Of a total of nearly 1 billion acres of non-cropland in the United States, only about 111 million acres have high and medium potential for conversion to cropland. The production by farm production region is shown in Figure 2. In 1967 there were 266 million acres of non-cropland in Classes I - III which have been called potential cropland. Much of this land may have the physical capability, but location, ownership, or other factors make it unavailable for crop production.
- 8. One hundred eleven million acres of land with high and medium potential for conversion to cropland as of 1975 is shown in Figure 3. If new cropland is needed, most would be drawn from land in pasture and range. For all practical purposes, the present forest land and land in other use would yield insignificant amounts of new land for cropping.



**FIGURE 1:** Land use conversions between 1967 and 1975 (million acres).

(SOURCE: POTENTIAL CROPLAND STUDY, SCS, USDA)

TABLE 1.—Land use by farm production region—1958, 1967, and 1975  
[thousand acres]

Region	Cropland			Pasture and range			Forest			Other land		
	1958	1967	1975	1958	1967	1975	1958	1967	1975	1958	1967	1975
Northeast	20,907	21,169	17,344	7,991	6,334	7,345	65,913	76,170	62,965	7,832	5,318	9,065
Lake states	44,887	46,568	44,194	8,811	7,914	7,989	46,474	46,024	42,519	9,101	7,443	11,876
Corn Belt	94,720	92,427	86,729	21,935	23,492	29,262	28,078	29,602	25,516	8,533	6,212	7,502
Northern Plains	93,896	94,188	90,764	83,902	81,653	85,043	3,672	2,836	1,511	2,467	3,929	4,132
Appalachian	27,362	23,406	20,308	15,657	18,412	21,874	64,014	65,230	63,066	6,148	4,080	3,410
Southeast	20,385	19,286	16,519	13,930	13,558	18,810	70,392	73,293	85,236	8,313	5,325	5,006
Delta states	20,719	19,146	20,239	9,331	12,166	12,475	48,559	47,199	44,401	4,724	4,115	4,565
Southern Plains	56,251	48,023	41,062	109,447	119,497	139,227	33,737	31,056	16,665	2,945	2,651	1,782
Mountain	42,489	40,629	40,633	182,583	188,539	208,658	42,185	35,813	14,569	8,680	9,548	9,346
Pacific	25,776	25,337	21,926	31,130	33,306	37,998	46,647	43,029	36,408	7,528	7,002	10,915
AK, HI, PR, VI	338	1,063	669	648	1,983	2,220	3,079	3,300	2,593	772	1,667	2,232

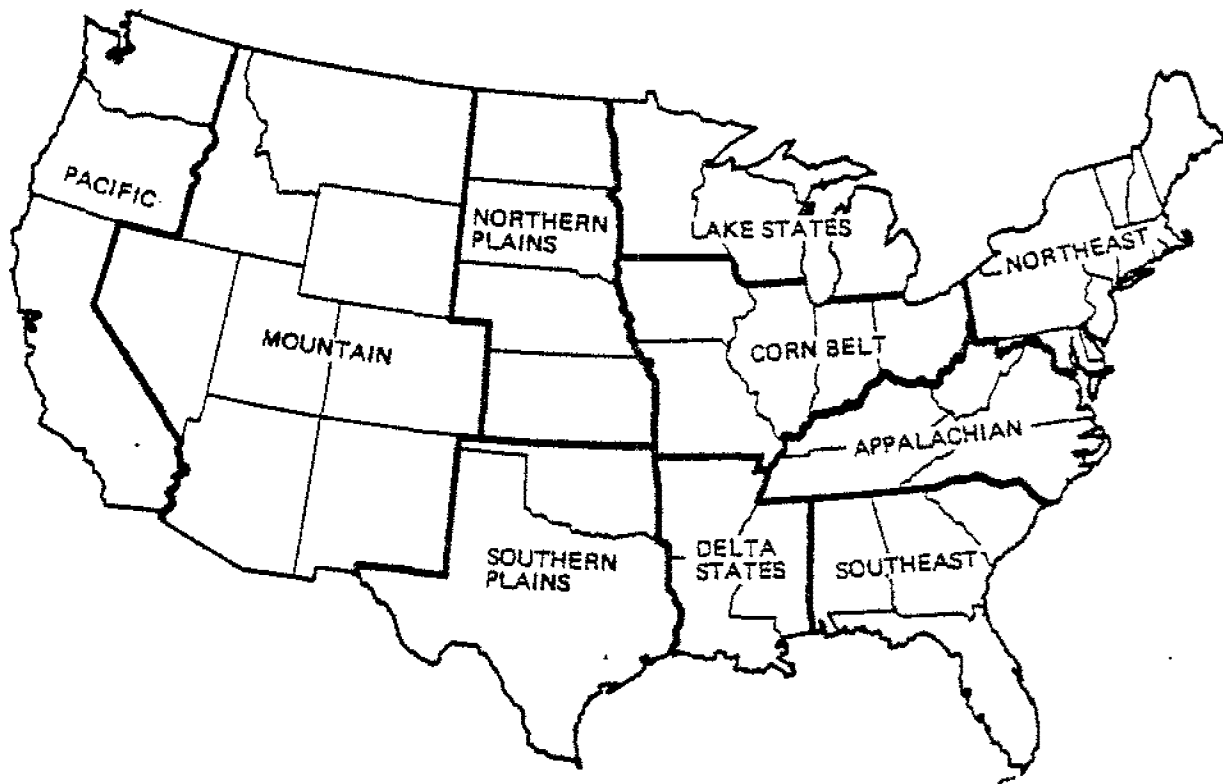


FIGURE 2: Farm production regions in the United States.

(SOURCE: POTENTIAL CROPLAND STUDY, SCS/USDA)

TABLE 2.—Land capability class of the 1975 cropland acreage by farm production region (million acres)

Farm production region	Classes I-III	Class IV	Classes V-VIII
Northeast.....	14	2.0	1.3
Lake states.....	39	3.7	1.5
Corn Belt.....	80	4.7	1.6
Northern Plains.....	78	9.0	4.2
Appalachian.....	18	1.4	1.3
Southeast.....	13	2.7	.6
Delta states.....	19	.6	.9
Southern Plains.....	36	3.4	1.5
Mountain.....	30	7.8	2.3
Pacific.....	17	4.3	1.0
AK, HI, PR, VI.....	0.4	.1	.2

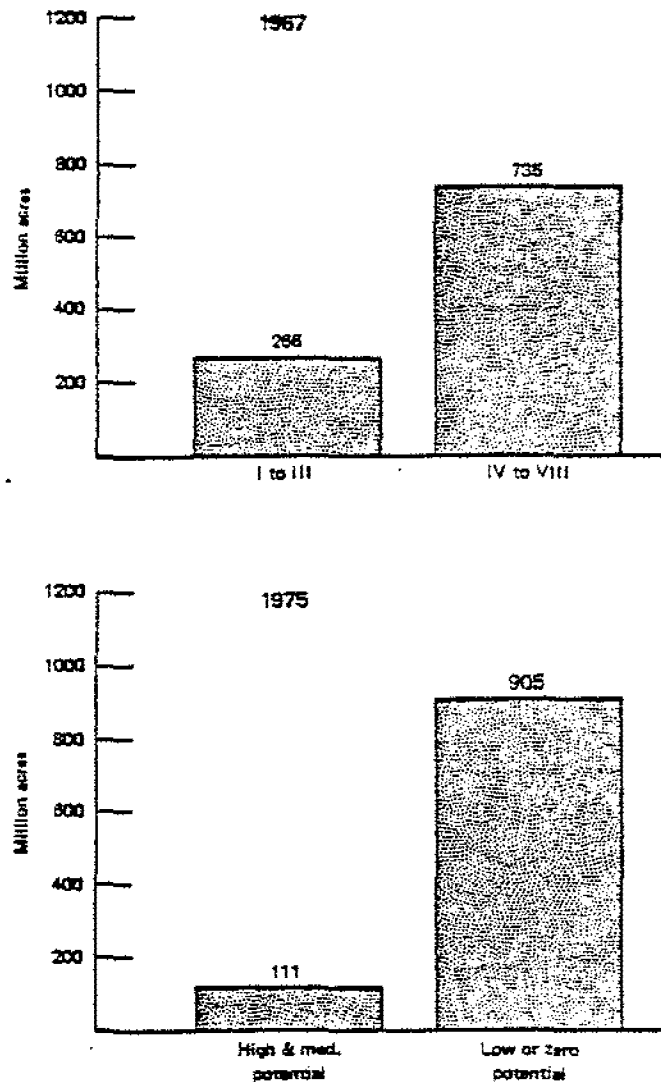


FIGURE 3:

Total nonfederal land in uses other than cropland in 1967 by capacity class and by potential for conversion in 1975.

SOURCE: POTENTIAL CROPLAND STUDY

- C. Of the 78.3 million acres of land with high potential for conversion to cropland, 34.9 million acres have no problems and conversion can be accomplished by simply beginning tillage. The remaining 43.4 million acres have one or more problems that must be considered before conversion to cropland. For example, 14.1 million acres have a wind and water erosion hazard that will require installation of conservation practices. Such practices are, however, relatively inexpensive and can be installed by individual landowners.
- D. Although nearly 33 million acres have medium potential for conversion to cropland. Most of it will require significant investments if converted to cropland.
- E. About 905 million acres have low or zero potential for conversion to cropland. Some of this land is committed to non-cropland use (220 million acres), has a high erosion hazard (224 million acres), or supports a high density forest (179 million acres). About 20 percent of the low and zero potential land is in capability Classes I - III, but problems with conversion are such that it is unlikely that this high-quality land will be used for cropland.

Overall, farmland conversion trends have resulted in a cropland base of 400 million acres in 1975. There were 111 million acres with high and medium potential for conversion to cropland, of which only 34.9 million acres can be converted without the application of significant conservation practices.

Although the total cropland in the United States remains about the same as it was in 1967, there is a continuing shift<sup>18</sup> of land going in and out of production. When new land with a potential for conversion to cropland is brought into production, nearly two-thirds of it will have conservation problems that must be addressed. Shifts of 1967 cropland to urban and built-up by 1975 suggest that the investment in conservation has been lost on much of the 17 million acres converted to that use. This may also be true for another 24 million acres being held for future urban use.

The availability of land that can be converted to cropland and the rate of land lost to irreversible uses suggest that the scarcity of land and the pressures on existing cropland will be greatest in the Northeast, Appalachian, Pacific, and Lake state regions.

The reasons that suitable land hasn't been converted to cropland in the 150 to 200 years of cropland development include: Fragmented ownership, size and location of an area, and commitment to other uses set the pace of conversion. For instance, more than 24 million acres of land are now held for urban and built-up use. At least one-half of this acreage is of good quality, but because it is isolated by urban development, zoned for development, or not economically feasible to crop, it remains underused.

In conclusion, increasing national and world needs for agricultural products indicate that cropland will be used more intensively and that other land, some of it marginal, will be converted to cropland. Urban development is taking place on some of the Nation's best cropland but energy and environmental requirements may limit the use of the marginal land for cropping. Together, these factors will affect our future cropland base, our potential for growing food and fiber, and the overall significance of agricultural lands as an environmental resource.



## 6. ENVIRONMENTAL VARIABLES IN AGRICULTURAL PRODUCTION

Many variables enter into and affect agricultural activities in our country. Some can be thought of as "internal" variables which directly affect the biological process of the food or fiber production. Examples of these "internal" variables might include the quality of soil, tilling methods and fertilizer used, amounts of available water, etc. Other variable, can be considered exogenous and outside the bounds of the biological production process, but cause direct and secondary effects which result in changes in agricultural activities. Examples of such "external" variables include foreign food demands, expanding U.S. population, urban development pressures, price supports, transportation and marketing effects, etc.

In an effort to illustrate agricultural activity as a set of inter-related components, a simplified operating formula<sup>19</sup> is presented. Reducing the basic relationships to their simplest terms, it can be said that agricultural production (P) is a function of climate (C) (in all its aspects), plus various forms of environmental manipulation through technology (T), consumption of energy (E), and investment (I) of capital and labor by the former, together multiplied by the amount and quality of the land (L), under cultivation. Hence, P is a function of L (C + T + E + I).

For production to remain constant in this formula, a decline in the amount and quality of land, (within limits), can easily be balanced by improvements in climate and technology. This has been the case up to now. If, however, climate is unfavorable there is no improvement in technology, or energy efficiency, (or if there is even a degree of unpredictability), then land of high capability must be cropped, or land of lower capability must be improved with conservation measures if a given level of production is to be maintained.

Uncertain weather patterns, competition for water and air, effects of pollution (e.g., acid rain and salinity), increasing costs and scarcities of fertilizers, fuels and other supplies, and environmental management constraints on farming practices have all affected production. It is becoming apparent that if high levels of productivity are to be maintained, and if yields per acre are not increasing, then land supply itself becomes the critical variable.

A shift in the supply of prime farmlands to marginally productive lands could lead to a greater reliance on environmental manipulation through technology, which in turn will place greater demands on energy supply and environmental modification of land. Increasing the use of and dependency on lower-capability croplands, despite careful management practices, has nearly always led to environmental degradation.

Thus, an adjustment in the variables of this formula will pose trade-offs between agricultural productivity, our national economy, the economy of agricultural support industries, and environmental quality. At a time when world food supplies appear to be more important than ever before, the United States could actually be diminishing its productive farmland reserves.<sup>20</sup> Environmental significance stands as one of several important roles along with food production and the economy, played by farmlands in the production cycle.

## 7. DEFINING ENVIRONMENTALLY SIGNIFICANT AGRICULTURAL LAND

From an agricultural perspective, soil capability emerges as the most important characterization of farmland types. Categories of "prime" and "unique"<sup>21</sup> connote productive capacity, while categories of "state-wide" and "local importance" connote an economic and land value role which supports agricultural activities in a community.

From an environmental perspective, all farmland is important in serving as a natural filter and buffer role, and farming on prime lands enables high production to be achieved with relatively low environmental damage.<sup>22</sup> Likewise, certain farmlands, by virtue of their location in urbanizing areas, their particular soil structure, and their strategic proximity to environmentally sensitive areas, facilitate non-structural solutions for environmental management.

In order to provide a basis for understanding the environmental significance and importance of farmlands, several categorical definitions are set forth below. (See Tab 7 for detailed definitions of types A - D).

A. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

B. Unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location,

growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. Examples of such crops are citrus, tree nuts, olives, cranberries, fruits, and vegetables.

C. Additional Farmland of Statewide Importance is, in addition to prime and unique farmlands, of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are to be determined by the appropriate State agency or agencies. Generally, Additional Farmlands of Statewide Importance include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable. In some States, additional farmlands of statewide importance may include tracts of land that have been designated for agriculture by State law. (See Tab 8 for an illustration of unique farmlands).

D. Additional Farmland of Local Importance are not identified as having national or statewide importance. In some local areas, however, it is economically important and environmentally sound for certain additional farmlands for the production of food, feed, fiber, forage, and oilseed crops. Where appropriate, these lands are to be identified by the local agencies concerned. Additional Farmlands of Local Importance may include tracts of land that have been designated for agriculture by local ordinance.

E. Farmlands in or Contiguous to Environmentally Sensitive Areas (ESA's), such as floodplains, wetlands, aquifer recharge zones, or natural scientific study areas; these farmlands play a crucial environmental buffer role to prevent development encroachment on ESA's thereby aiding in maintaining their capability to remain environmentally productive and stable.

F. Farmlands of Waste Utilization Importance which may serve in the land treatment process, be used for composting activities or for controlled beneficial application of sewage sludges or other wastes.

G. Farmlands with Significant Capital Investments in Best Management Practices (BMP's), which serve as elements of an area's (or state's) soil erosion and non-point source pollution control plans.

While the categorical term "prime land" means the best productive land, it is not the only category of environmental significance. Categories of prime and unique farmlands connote productive capacity, and farmlands of state-wide and local importance connote economic and land value. The relative environmental value of farmland in an urbanizing metropolitan area is also significant, especially as it becomes a smaller fraction of the total land use. All farmland is important, however, in serving assimilative functions which aid in maintaining environmental quality.

## 8. WHY FARMLANDS ARE LOST

Confining urbanization to limited areas might appear to preserve agricultural land by avoiding dispersion and sprawl, but history shows us that cropland is twice as likely as non-cropland to be urbanized. For several reasons, cities have tended to grow in precisely those areas where some of the best farmlands occur. Throughout the world, civilizations have tended to develop in river basins, where rich, deep soils, level topography, and ample water were available.<sup>23</sup> Urban centers developed close to farm populations, and, as they expanded, tended to cover level, well-drained land. Most major cities are located on major waterways that provided water for municipal use and transportation, as well as a disposal system for sewage and industrial wastes. Highways and railroads within and between urban areas also generally followed the flat river basins which contain some of the best agricultural land. Thus, our evolutionary patterns of urban growth tended to have built-in land use conflicts which fostered conversion of our best farmlands.

Many factors can lead to premature conversion of farmland. One set of factors surrounds the use of federal grants-in-aid which provide financial assistance for community infrastructure and new development. All too often these capital improvements (which guide future growth) are planned and built on the assumption that farmlands are not the highest and best use. In other words, federal infrastructure grants for sewers, highways, and other capital improvements do not recognize that farmlands are a finite agricultural and environmental resource which is absolutely, cumulatively, and irretrievably diminished as a result of federal actions.

Another set of factors has to do with the unique economic problems faced by farmers on the urban-rural fringe. As urbanization pressures emerge, the cost of land begins to rise, often pushed upward by speculation. The dilemma is that good farmland is also good for urban development. As the cost of adjacent land increases, so do property taxes and estate and inheritance taxes. Soon the urban development value outweighs the productive resource value of the land. Thus, the farmer-owner is burdened with taxes which often bear no relationship to the profitability of this agricultural enterprise, and is induced to profit from changes in land value.

A third set of factors<sup>24</sup> has to do with encroachment of urban-oriented uses and their impacts on agricultural activities: pilfering and needless destruction of crops and farm equipment

by people, increased traffic making it difficult and dangerous to drive farm machinery on the roads, and complaints from neighbors concerning the application of manure, fertilizer, and pesticides. In some cases, as suburbanites gain political power, their complaints have been enacted into ordinances which restrict normal farming practices. Further, farmers are often assessed for new water and sewer lines which run through their property, even though they don't use them.

All these factors change the individual farmer's view of the future, and once he is convinced that his area will eventually be urbanized, he stops investing in improvements to his farm. An "impermanence syndrome"<sup>25</sup> sets in and a transition from farming activities is almost assured. This phenomenon may precede a change in land use by as much as 20 years. Figure 4 illustrates the range of farmers' responses to urbanization.

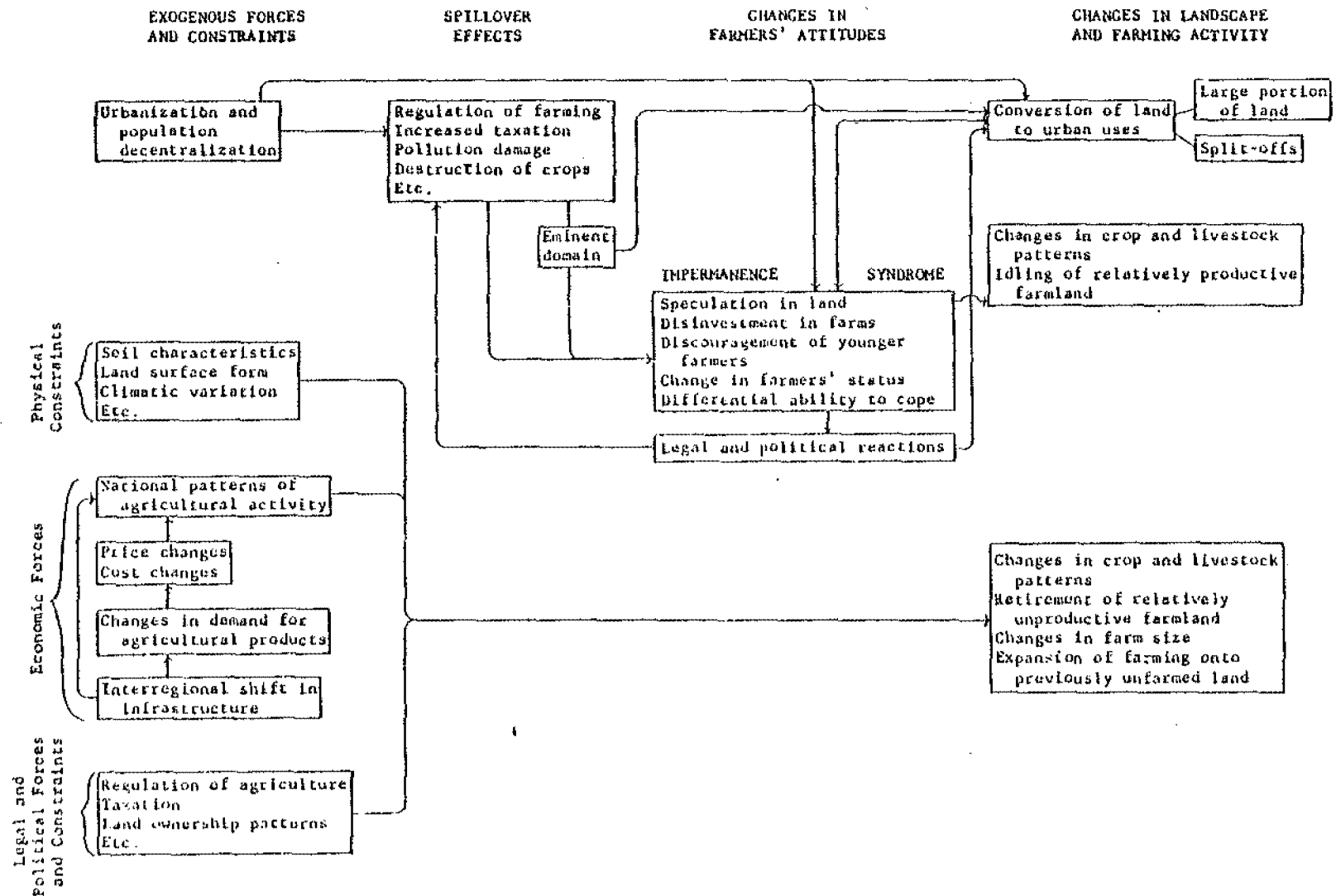
As urban pressures begin to weigh on agricultural operations, a chain of events is set in motion. Rising taxes and development pressure begin to take their toll on neighboring farms; as the number of farms begins to decline, the important support industries, such as feed and grain dealers, farm equipment outlets, etc., begin to leave the area because there simply isn't enough business; in dairy areas the milk processors often begin to leave for more productive "milk sheds" that can continue to provide adequate sources of raw milk. In time, farm labor becomes more expensive and scarce as higher paying jobs "in the city" come within reasonable commuting distance for the rural labor force; the farmer slowly feels his political strength drain away as country and local governments become dominated by suburban, non-farm residents who often begin passing "nuisance" ordinances which keep slow moving vehicles (such as tractors) off local roads during certain hours of the day, or "health ordinances" which prevent the spread of manure during certain weather conditions.

Eventually, farmers often begin to make management decisions based on the opinion that they will not realize a return on further investment in farming. Conservation improvements such as terracing and soil conditioning which are environmentally beneficial tend to be neglected. Consequently, no new investments in improved and more efficient farm equipment are made, nor is available land purchased for expanded operations. Typically, the farmer's profit margin begins to shrink. For example, feed and grain often becomes more expensive because remaining suppliers have to travel further for delivery and no longer deal in cost-saving volumes, and farm commodities must be shipped to more distant processors--a direct cost to

Figure 4:

FARMERS' RESPONSES TO URBANIZATION IN THE CONTEXT OF  
OTHER EXOGENOUS FORCES AND CONSTRAINTS

SOURCE: SAVING THE GARDEN, COUGHLIN, ET. AL., PAGE 75





the farmer. This is ironic, since many farmers in these situations have marketing advantages of being in close proximity to consumers, and have an option to grow crops such as vegetables for local high-value markets.

For those who wish to remain in farming, the choices come down to hanging on for as long as possible and then selling to the highest bidder, usually a developer, or selling out and moving the operation to an area that has a stronger agricultural community.

The underlying point to these illustrations is that once the impermanence syndrome takes effect within an agricultural community, it becomes a self-fulfilling prophecy. A county which has a number of farms may point with pride to the active, producing areas but those who farm the land may be preparing for what they view as inevitable abandonment of farming. Those that do remain most often farm as a hobby. Young people interested in farming simply can't buy in unless they are prepared to make a several hundred thousand dollar investment.

Under these constraints, farming as an industry can't survive in the area, leaving scattered remnants of hobby farming or estates which may or may not remain open land over time. A "critical mass" of farming activities must be maintained in order to keep an agriculture functioning viable in a community.

9. STATE-OF-THE-ART APPROACHES FOR FARMLAND RETENTION

A wide variety of approaches for farmland retention<sup>26</sup> have been tried and discussed extensively. This is a reflection of the many-faceted nature of the problem, the differing characteristics of agriculture, urban development, and political attitudes in various regions, and of the relatively short time during which the loss of agricultural land in the urban-rural fringe has been recognized as an important public issue. This diversity is further compounded by the variable involvement of different levels of government (e.g., federal, state, and local) and the agricultural, environmental, and infrastructure-development programs directed to the individual farmer. The loss of agricultural land is influenced by the marketplace as well as by the complex pattern of programs which sometimes induce farmland conversion (e.g., federal grants for sewer interceptors or highways) or sometimes foster farmland retention (e.g., state development rights purchase legislation).

The intention here is to identify current approaches for farmland retention, their role in mitigating the environmental effects of farmland conversion, their general effectiveness, and the apparent void created by a lack of applicable tools at the federal level to address the problem.

The major approaches to farmland retention may be classified as either "Direct" or "Indirect" methods.<sup>27</sup> Direct methods are those which directly control what the land can be used for, either by the purchases of rights in land or through the regulatory power of government. Indirect methods are focused primarily on alleviating the problem of the farmer caused by nearly urbanization.

One example of a "Direct Method" uses market interventions such as the purchase of development rights in land by a public body, leaving the private owner the right to use his land for agriculture and other uses but not to develop it, the right to keep others off it, the right to sell or lease it, and the responsibility to pay real estate taxes on it. Important demonstration projects using this method are now being conducted by Suffolk County, New York (see Tab 9 for newsclips of these case examples). Massachusetts has just passed a law implementing this approach and the California legislature has recently considered a similar proposal (see Tab 10 for description of these law). Because of the public cost involved, however, it may be possible to apply such methods to only a limited portion of endangered farmland.

"Indirect Methods" of farmland retention include taxes and other measures which help the farmer to continue to farm or which reduce the profit incentive of the speculator or developer. Tax concessions are the most widely adopted of these measures. Differential assessment of real estate for property tax purposes has been instituted by some 42 states.<sup>28</sup> Under it, farmland is assessed at its value as a factor in agricultural production rather than at its market value for urban development, which in urban-rural fringe areas tends to be much higher.

Tax concessions and agricultural districting can protect the farmer from many but not all of the problems caused by nearby urbanization. They make it easier for him to continue farming, but do not prevent him from developing his land. It seems safe to say that to retain farmland both direct and indirect measures will be necessary: Indirect measures to insure that farming is economically viable, and direct measures to prevent farm owners from selling to developers to reap financial gain much faster than they could by continued farming.

A third ingredient must also be considered as a "measure" of influence on farmland retention: The impact of federal program policies and decisions, which affect farmland conversion and are not easily controllable by Direct or Indirect Measures. Neither direct measures alone nor indirect measures alone are likely to be effective in retaining farmland for a significant period of time.

Historically, efforts have been devoted to persuade farmer through indirect measures, but to shy away from restricting the possibility of development (direct measures). As a result, states often favor some form of differential assessment. An advantageous Federal estate tax is enjoyed by all farmers in the United States, and participation in New York's Agricultural Districting Program has been high, but only a handful of states have instituted any kind of direct measure to retain farmland under pressure of urbanization.<sup>29</sup>

Several emerging trends<sup>30</sup> in agricultural open space-land use policy in this country will affect the future ability to employ various "measures":

- o There is increasing recognition of the need to control the forces stimulating urban/suburban expansion. Effective growth management programs may help reduce urban/suburban pressures on the rural landscape and thereby increase the effectiveness of well designed farmland retention programs.

o As is true in the case of general land-use management programs, the role of the state in agricultural and open-space land-use planning and policy has increased. An increased state role will stimulate local governments to increase their land-use management capabilities.

o Public policy makers are more aware of the need to exploit the interdependence among different land-use control techniques.

o The issue of what is "fair" compensation for regulation-induced reductions in property value will become more important. As the need for accommodation of the legitimate interests of both government and private landowners becomes increasingly evident, the search for programs based on compromise will intensify.

o The virtues of incrementalism in land resource protection programs are becoming more widely appreciated.

The conclusion drawn from the effectiveness of current efforts is that marketplace intervention techniques alone will not halt the conversion of prime and environmentally significant farmlands. An outline of important considerations for farmland retention strategies at the State and local government level is listed in Tab 11. While hope is held out for approaches like the one in Suffolk County, New York, or though enactment<sup>31</sup> of the Jeffords Bill (see Tab 12) at a national level, other avenues must be sought at each government level concerned with maintaining the environmental value of farmlands.

## 10. EPA PROGRAM IMPACTS ON AGRICULTURAL LAND

In an attempt to assess the potential positive or adverse impacts of EPA programs on agricultural lands, several factors which ultimately affect environmental quality are drawn from the previous discussion; first, those factors which directly (or indirectly) induce conversion of agricultural land to another use; second, those factors which might cause increased costs of farming activities leading to premature conversion, third, those factors which might affect farmland productivity leading to premature conversion, fourth, those factors which might affect and/or complicate agricultural practices, and fifth, those factors which affect the farming way of life or the scale of farming activity leading to premature conversion.

EPA program impacts<sup>32</sup> affecting each of these factors are outlined below:

### A. Program Impacts Which May Induce Change in Farmland Use

- Air Programs: Air Quality Standards in Non-attainment Areas may limit location of new industries, reduce urban development density, lead to a lower density distribution of growth, and conversion of farmlands on metropolitan fringes. Agency decisions affecting air quality plans may encourage the dispersal of air pollution sources, or may unwittingly encourage secondary urban development in agricultural areas. Agricultural lands classified under PSD could be protected with a higher degree of air quality.
- Water Quality Planning: Land Use Elements of 208 plans could affect land uses on farms as well as land adjacent to farmlands, inducing conversion;
- Facilities Planning: Induces land use change directly by providing reserve sewage capacity, and may increase land values for agricultural lands as a secondary effect; land treatment systems for municipal wastewater could aid in retaining farmlands where in proximity to urban areas.
- Water Supply: Sole source aquifer identification and designation could give greater consideration to retention of farmlands within the aquifer recharge zone. Competition between urbanizing areas and agricultural uses for limited water supplies can induce farmland conversion.

- Solid Waste: Site selection factors for landfills could induce farmland conversion; Application of high cadmium municipal sludges, or other heavy metal-laden sludges, could "permanently" remove farmlands from food production.
- Toxic Substances: Program decisions may cause changes in pesticides which could change crops grown in certain areas, or the "feasibility" of growing certain crops in certain areas, leading to a conversion of farmland.
- NEPA Review: NEPA reviews and environmental assessments could lead to grant conditioning which could affect agricultural land use changes. NEPA review activities may substantially modify the outcome of other program and project decisions, particularly facilities planning and water quality planning.

#### 8. Increased Farming Costs

- Air Programs: Fuel changes for improving air quality made in response to an SIP would be passed on to farmers and could increase operating costs;
- Water Quality Planning: Best Management Practices (BMP's) required to implement a 208 plan may increase capital or operating costs in the short run, but serve to protect the land base which permits profitable agricultural use in the long run. BMP's prevent or abate pollution, having a positive economic benefit for surrounding communities. Also, BMP's such as no-till or minimum tillage serve to reduce farming costs.
- Facilities Planning: Installation of a facilities treatment plant or interceptors in or near farmlands usually imposes assessment increases for farmers.
- Water Supply: In scarce water regions where potable water is used for agricultural irrigation, expansion of community water supply facilities and service imposes greater competition for water and can lead to increased farming costs.
- Solid Waste: Land application of sludge (if readily available and if risks are removed) could be economically beneficial;

- Toxic Substances: While yields are increased, use of pesticides generally increases costs; additional controls add to these costs;
- Integrated Pest Management (IPM) could lead to reduced costs for crop production, and therefore, net farming income;
- NEPA Review: Mitigation measures may affect costs.

C. Effects on Farmland Productivity

- Air Programs: Aimed at reduction of acid rain and oxidants, generally limiting the adverse effects of pollutants on crops, and improving productivity;
- Water Quality Planning: Aimed at reducing soil erosion and salinity thus improving productivity;
- Facilities Planning: Sludge application and spray irrigation could increase productivity, but potential danger of heavy metals build up and up-take exists;
- Water Supply: Agency policies on the supply of irrigation water would affect productivity;
- Solid Waste: Control of landfill sites should prevent soil contamination, and protect productivity;
- Toxic Substances: Controls should prolong soil productivity;
- NEPA Review: Mitigation measures may affect productivity.

D. Effects on Agricultural Practices

- Air Programs: Possible effects from fugitive dust controls;
- Water Quality Planning: BMP's can call for a change in agricultural practices, structural controls, relocation of production units, or even land use change; NPDES permit program may have similar impacts. Non-point source controls will result in reduction of agricultural-related pollutants, (sediment, nutrients, pesticides, salts, etc.);

- Facilities Planning: May induce greater landspreading, wastewater reclamation and reduced demand for irrigation water;
- Water Supply: No apparent impact;
- Solid Waste: Greater emphasis on recovery and recycling of agricultural (and other) wastes may change practices;
- Toxic Substances: Tends to induce more sophisticated farming practices; could foster integrated pest management;
- NEPA Review: Mitigation measures may affect practices;

E. Effects on the Scale of Farming Activity

- Air Programs: No apparent impact;
- Water Quality Management: Application of BMP's for small farms could be burdensome and cause pressure for change, especially those that are marginally profitable;
- Facilities Planning: Potential assessment charges could adversely affect small farms;
- Water Supply: No apparent impact;
- Toxic Substances: Could favor larger farms over smaller ones if pesticides and application techniques become highly sophisticated;
- NEPA Review: No apparent impact.



## FOOTNOTES

1. For a more elaborate narrative description of these operational interrelationships, see Section 6, Environmental Variables in Agricultural Production.
2. No specific piece of literature has outlined all the consequences listed here. However, many are found in "Conservation of the Land, and the Use of Waste Materials for Man's Benefits", a Committee Print prepared for the Senate Committee on Agriculture and Forestry, March 25, 1975. Also, the works of Charles Little and Dallas Miner (cited later) were used to identify these consequences.
3. National Research Council Committee on Agriculture and the Environment, Productive Agriculture and a Quality Environment, National Academy of Sciences, Washington, D.C. 1974.
4. From a National Program of Research for Environmental Quality - Pollution in Relation to Agriculture, prepared by USDA, Washington, D.C., 1968
5. G. Nelson, in "Food for Billions", special publication No. 11, pp. 27-30, American Society of Agronomy, Madison, Wisconsin, 1968
6. J. B. Stall, in "Public Works", Vol. 93, No. 3, page 125, 1962
7. G. H. Wadleigh and R. S. Dyo1, in Agronomy and Health, pp. 9-19, American Society of Agronomy, Madison, Wisconsin, 1970
8. U.S. National Resources Board, "Soil Erosion, A Critical Problem in American Agriculture", page 5, Washington, D.C., 1935
9. David Pimentel, et. al., "Land Degradation: Effects on Food and Energy Resources", in Science, Volume 192, 8, October 1976
10. See The Growth Shapers, prepared for CEQ by Urban Systems Research and Engineering, U.S.G.P.O., Washington, D.C. May, 1976
11. See Section 7 for a description of various types of farmland and their environmental significance.
12. The most useful single source which discusses benefits of farmland is Farmland Retention in the Metropolitan Washington Area by Dallas Miner, prepared for the Metropolitan Washington Council of Governments, June, 1976, pp. 32-33

13. See the 1977 edition of Summary of State Land Use Controls published by Land Use Planning Reports, Silver Spring, Maryland for a survey of agricultural lands retention regulations currently enacted.
14. See Open Space As An Air Resource Management Measure, by the EPA Office of Air and Waste Management, October 1976 (EPA-450/3-76-028), for sink and emission factors for soil and vegetative open space.
15. See CEQ's Eighth Annual Report (1977), pp. 90-91, CEQ's Seventh Annual Report (1976), pp. 73-74, and CEQ's Fifth Annual Report (1974), pp. 68-72.
16. Potential Cropland Study, by Raymond I. Dideriksen, et. al., Soil Conservation Service, USDA, Statistical Bulletin No. 578, October, 1978
17. See Potential Cropland Study (Ibid), Appendix III, for definition of Soil Capability Classes.
18. Agricultural land use shifts occur through principles of substitution and competition. For example, high wheat prices, particularly when accompanied by low feeder cattle prices, induce increased wheat production on marginal land fragile lands. The same reasoning applies to corn, soybeans, cotton and feed-grain lands. Most land uses are interlinked and shift back and forth in response to changes in product prices and factor costs emanating from foreign and domestic demands and supplies.
19. This formula was originally articulated in simpler terms by Charles E. Little of the Congressional Research Service for a Library of Congress Workshop held on February 8, 1977. Publication available from the author.
20. Potential Cropland Study, op cit
21. Farmland categories were defined by the Soil Conservation Service, USDA, in 7 CFR Part 657 Prime and Unique Farmlands
22. See reasoning in Section 2, Environmental Conferences of Farmland Conversion, and the efforts of shifts from prime to marginal croplands.
23. See Origins of the State and Civilization, by E.R. Service, Norton Publishing Co, New York, 1975

24. These factors are described in more detail by Robert E. Coughlin, et. al., in Saving the Garden: The Preservation of Farmland and Other Environmentally Valuable Land, a preliminary Report to the National Science Foundation, (RANN), August, 1977, pp. 53-55
25. Some of the spinoffs of the "impermanence syndrome" cited by Coughlin, ibid, include: land speculation, disinvestment in farms, discouragement of younger farmers starting out, a differential in the farmer's ability to cope, and legal and political reacting.
26. The often-used phrase "farmland preservation" is avoided in this paper, in favor of "farmland retention". The term "preservation" suggests an absolute inflexibility in saving farmland regardless of cost. Farmland retention implies that options are kept open and that future community goals might be best served by development on croplands under one set of circumstances, and permanent dedication to agricultural use under another.
27. This taxonomy of methods is described in some detail in Coughlin Saving the Garden, op cit, and in "Land Use Policy and Farmland Retention: The United States Experience", NRE Working Paper No. 28, by Greg G. Gustafson, ERS, USDA, Corvallis, Oregon.
28. See the 1977 edition of Land Use Planning Reports Summary of State Land Use Controls, available from BPI, P.O. Box 1967, Silver Spring, Maryland
29. See Tab 4 for examples in New York, New Jersey, Massachusetts, and Maryland
30. See NRE Working Paper No. 28, by Greg G. Gustafson, (cited in Footnote 27), page 28
31. The so-called Jeffords Bill is currently being considered in Committee by both the House and Senate. Likelihood of its passage is unclear, and the Administration has developed alternative legislative proposals which eliminate the roll of federal funding to support State or local government purchases of development rights on agricultural lands.
32. These program impacts were identified through a survey instrument, draft discussion paper, review comments, and follow-up interviews held with the Agency's Program Office and Regional Staff. The format for arranging program impacts was developed by the Office of Land Use Coordination. For a detail discussion of secondary impacts on Agriculture, see Evaluating Secondary Impacts of Waste-Water Treatment Facilities, by ABT Associates, January 27, 1977, Contract No. 68-01-3268, for EPA.



# The Role of Agriculture in the Environment

TAB 1

By Administrator Douglas M. Costle

**W**e live in an age of industrial and chemical pollution on farms as well as in cities.

In the early 1970's, national environmental efforts concentrated on controlling the highly visible water and air pollution coming from our cities and their great industrial complexes. These battles against municipal and industrial point sources of pollution are by no means won. As a Nation, however, we have made very considerable progress in cleaning up both our air and water.

This progress brings into focus a less visible, but more widespread problem, that of non-point sources of pollution, primarily runoff.

As farming has become more technological—and as our understanding of natural systems grows more complete—the relationship of non-point source pollution to water quality is becoming clearer. On the smaller scale, we must learn to control sediment runoff—from urban areas as well as agricultural ones. On the larger scale, we must protect entire watersheds and our underground water supplies.

Generally in the treatment of non-point source pollution in agricultural areas, voluntary cooperation will get the job done. Clearly there is a great deal yet to be accomplished. Thirty-seven States have already indicated to us that non-point source pollution could prevent attainment of the statutory goals of fishable, swimmable waters.

As an example of how a non-point source problem can be handled, I can report that as early as 1972, EPA funded what became known as the Black Creek project, through the Allen County soil and water conservation district in Indiana. The project was designed to assess and help solve the problems of sediment runoff in the Maumee River Basin. Careful assessment—supported by scientific help from a local university—proved that the major source of the water quality problem in Black Creek was restricted to a small portion of the land. The local

farm community then cooperated by applying several traditional—as well as some innovative—approaches to solve the problem. One lesson everyone learned was that a solid assessment of the problem is a critical first step to solving it.

I might add, parenthetically, that runoff is not exclusively agriculturally caused. Poorly planned urban development, poorly managed construction, the paving over of our lands—are each, in their way, a real problem needing focus and attention.

A challenge we all face today is the control of toxic substances in our land, air, and water. Modern agriculture, like the rest of our civilization, has benefited greatly from chemicals that increase production. But we're going to have to face up to the fact that we are living in an age of industrial and chemical pollution—on the farm as well as in the cities—that is far more serious than anyone had imagined. As President Carter has said, "The presence of toxic chemicals in our environment is one of the grimmest discoveries of the industrial era." In the last few years science has been telling us in no uncertain terms that some chemicals, including some pesticides, have totally unexpected side effects which increasingly threaten human health.

The production of synthetic organic pesticides has risen 800 percent in the last 30 years. We, as a Nation, now use 1.6 billion pounds of these chemicals a year. Of course, there are also toxic chemicals that occur in nature. But whether created synthetically or naturally, it is essential that we do whatever we can to control them.

The alarming and steadily increasing rate of cancer in our society and the growing evidence that much of it may be induced by cancer-causing agents in our air, soil, and water, as well as in our workplaces, is alarming.

Congress responded to this threat by passing the 1976 Toxic Substances Control Act. EPA is now moving to implement that Act. In doing so, we are just beginning to define the dimensions of the problem—and those



dimensions are enormous. For example, we are now compiling an inventory of all chemicals presently in commercial production or use in this country. We started with an estimate that there would be 30,000 such chemicals. Today we are up to 70,000 and the list keeps growing.

Not all these chemicals are cancer-causing, of course. The list includes common, necessary items like table salt, but the point is that many of these chemicals are widespread in our environment, and some of them are dangerous.

Another major challenge facing the U.S. is the preservation of agricultural land.

All across the United States today, people—city people—are beginning to realize what farmers have known for too long a time. One of America's great resources is in danger: agricultural land is rapidly going out of production. More than one-and-a-half million acres are being lost each year. We simply cannot afford that. As Will Rogers once said, "The one thing they aren't making any more of is land."

The pace of suburbanization increasingly threatens farmland. With the growth of suburbia, too many farmers find land values, taxes, and the price of labor skyrocketing, making it almost inevitable that the only solution left is to sell their farms, causing the fabric of one farming community after another to be torn apart.

EPA has its own vested interest in this problem. The U.S. needs those farmlands, not only in terms of food production, but also for their value as natural filters and buffers. While EPA programs in the past have not always been sensitive enough to any potential adverse effects on farmlands, today we realize how valuable preserving farmland is to carrying out our own responsibilities.

Among other steps, we are:

Revising the construction grant program for building sewage treatment facilities so as to minimize the pressure to take farmland out of production.

Seeing to it that there is a thorough review of environ-

mental impact statements on any actions that will affect agricultural lands.

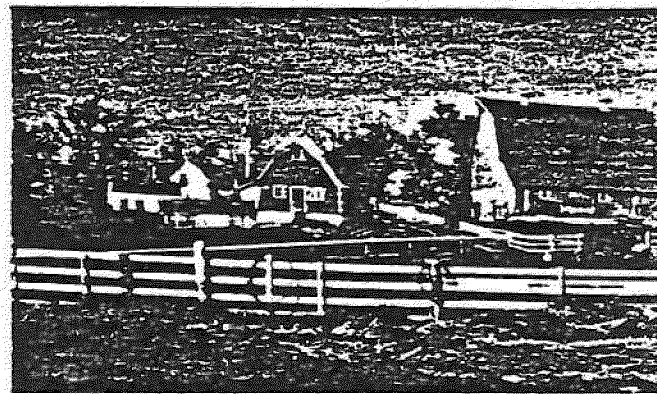
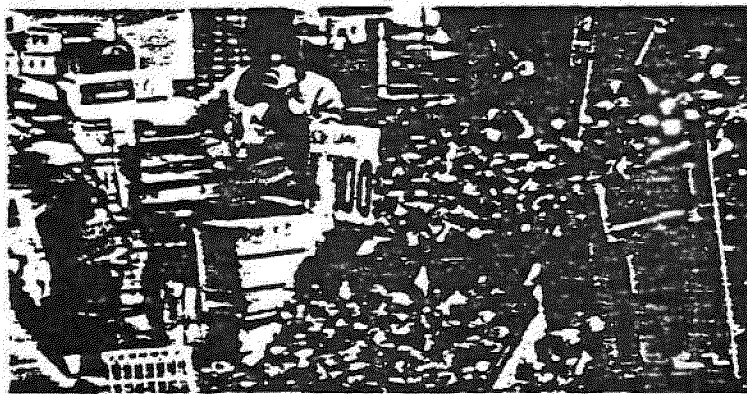
Clearly, as the 208 planning program moves forward, some tough choices lie ahead—at the local, State and Federal levels. Even with the new monies that Congress has authorized, there will not be sufficient Federal funds to pay for the control of practices needed in every soil and water conservation district. We will need to encourage achieving the goals of the Water Act by voluntary means. If and when those means do not succeed, we need to ensure that there is an effective, reasonable regulatory back-up to get the job done in a timely fashion.

On the local level conservation districts in six States to date have played a crucial political role in shaping such fall-back regulatory systems. In another dozen States, conservation districts are now playing a major role in working out sensible regulatory procedures.

I believe that conservation districts are moving rapidly and effectively to enlarge their role. A quotation from Vance Ehmke, Newsletter Editor, Kansas Association of Conservation Districts, lays it pretty much on the line. What he says of Kansas conservation districts is likely to be true for many other States.

"Like it or not," says Ehmke, "Kansas Conservation Districts will have to face some tough problems in the next few years. The day of voluntary compliance by farmers in stopping erosion from their land may be drawing to a close.

"But let's face facts: No farmer is going to appreciate being told to control his non-point sources of pollution such as field runoff. Farmers are one of the most fiercely independent races of people on the face of the Earth. But there's not much of a correlation between independence and our pollution problem. And again, let's face facts: Silt and sedimentation are the biggest sources of pollution in this country."



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# PRESERVING FARMLAND

The Environmental Protection Agency has begun an intensive review of its programs and regulations to assure that they will encourage the preservation of America's prime farmlands.

The actions come at a time when the American farmer is beset by pressures on every side to sell out and let his land be converted to other uses.

Every year the Nation experiences a net loss of more than a million acres in valuable croplands. Some of this acreage is eaten up by urbanization—the spread of streets and houses and shopping centers across once productive fields. Other farmland reverts to grazing and forest. And still other acreage is prone to erosion and dust storms and other natural forces that cause rapid soil depletion.

The trend would be serious enough by itself, but it comes at a period when the Nation and indeed a hungry world needs the American farmer's products. EPA intends to shape its policies with the farmer's interests in mind.

As Administrator Douglas M. Costle recently told the Essex Agricultural and Technical Institute in Danvers, Mass.:

"EPA has what might be called a vested interest in preserving farmland. It also carries out a series of mandates that—if not carefully thought out and managed—could conflict with that vested interest."

Why is farmland lost? What are the factors that conspire to change a farmer's view of the future and convince him, despite his own love of the land, to sell out and either retire or find work in some other walk of life?

"Almost every aspect of modern life conspires to destroy the farmer's incentive to keep on farming," Mr. Costle said.

"Costs have risen. Labor is tough to come by. Prices for farm products have not kept pace. Taxes have skyrocketed. And many a farmer is caught between the difficulty of making a living, the temptation to sell out to developers who have been offering top price for his acreage, and lack of support from his neighbors and local representatives who too often would dearly love to see his farm become a source of greatly increased tax revenues through development. Yet the added costs of meeting the resource needs—roads, sewers, schools—of such development almost inevitably offset the gain in taxes, not to mention the losses in quality of life."

There are obvious reasons why many

observers are concerned over the shrinking supply of prime agricultural land. Although the loss of a million acres annually seems small compared with the 470 million acres in cropland, the land going out of food production often is the best in terms of quality and accessibility. Also, the change in land use can have a major local impact—economically, environmentally, and socially.

Once the farmland is lost to urbanization, particularly in industrialized areas such as the northeastern United States, it cannot be retrieved. And when enough land is taken out of farm production, related industries such as local feed mills, farm machinery outlets, and farm supply stores also must close.

There are other undesirable side-effects. A recent Congressional report noted that agricultural land in floodplain areas often is shifted to industrial or commercial development, with pressure then created for public investment to provide flood protection.

One of the social effects, of course, is the loss of the farmer himself and the enduring, sturdy values that he historically has contributed to the national character. Such things cannot be weighed in dollars and cents, but they have been known and honored for many centuries. As Oliver Goldsmith wrote in "The Deserted Village" two centuries ago:

"Ill fares the land, to hastening ills  
a prey,

Where wealth accumulates,  
and men decay."

The Environmental Protection Agency has an interest in preserving prime farmland and keeping it in food production for other and more specific reasons.

"The drought and water shortages of this past summer," Mr. Costle pointed out, "have underscored one of the essential attributes of farmland: the protection of watersheds. Open lands such as farms maintain local water supplies by absorbing precipitation and transferring it to the ground water system. They also protect aquifer recharge areas and provide buffers for water supply and other natural areas."

In addition to protecting such environmental entities as wetlands and flood plains, farms furnish a habitat for wildlife, including game such as deer, grouse and quail, as well as songbirds and other nongame species, he noted. Equally valuable are the emotional, aesthetic and social benefits of our verdant fields and

valleys.

Because of the Agency's specific concern for preserving and protecting such valuable land, Costle has directed EPA to take a fresh look at the way its programs may affect the future of farmland. He listed these steps the Agency now is taking:

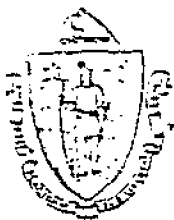
- An examination of land use changes which may be induced by EPA programs. "We have already begun revising the construction grant program for building sewage treatment facilities, for example, in order to make sure that we are minimizing pressure to take land out of food production," he declared.
- EPA is becoming increasingly sensitive to regional variations in water and land availability in implementing Agency programs that affect farmlands.
- The Agency is working to bring about closer cooperation with the Soil Conservation Service through joint technical assistance projects.
- EPA is seeking to assure that there is a thorough review of environmental impact statements on any actions that will affect agricultural lands.
- The Administrator has directed that EPA develop an overall policy statement on the preservation of prime agricultural lands to give general guidance for the implementation of EPA programs.

The English poet Goldsmith was not the first to warn of the serious social side effects that can result when farmland is squeezed out and the "bold peasantry" disappears.

As Costle noted, "Two thousand years ago the Roman poet, Virgil, warned his countrymen that the loss of agriculture would be the destruction of the nation. He was right. Just as an army becomes vulnerable when its supply lines grow too long, a city, a state, or a nation is weakened when it is no longer capable of producing most of its basic food supply."

In announcing the new policy, the Administrator concluded:

"I would like to assure you that EPA, both nationally and regionally, will do everything in its power and within its mandate to preserve and protect our farmlands. We will devote our best efforts to developing a common-sense awareness of the very real problems and opportunities that our policies and progress can create for farmers. We will work to minimize the problems and expand the opportunities."



DAVID STANDLEY  
COMMISSIONER

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*Department of Environmental Quality Engineering*  
*100 Cambridge Street, Boston 02202*

TAB 2

MEMORANDUM

RECEIVED  
EPA-208  
FEB 21 1978

TO: Mr. William Adams, Regional Administrator  
EPA, Region I

FROM: Commissioner Standley

DATE: January 5, 1978

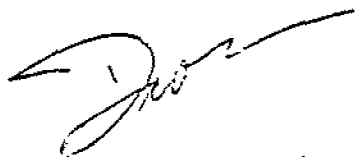
SUBJECT: The inter-action of sewerage, sewage treatment and  
agricultural land use.

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I take the liberty of enclosing a memorandum from Frederick Winthrop, Jr., Commissioner of the Massachusetts Department of Food and Agriculture, dated November 22 which I find provocative and worthy of serious concern. It is my hope that after staff review at both the Massachusetts and EPA Region I levels, we could meet with Commissioner Winthrop and explore further his concerns and suggested remedies. If you would advise me of a suitable time and place, I will make arrangements for attendance by appropriate State parties.

DS:eb  
Enclosure

CC: Commissioner Winthrop  
Mr. McMahon





MEMORANDUM

TO: Secretary Evelyn F. Murphy  
Commissioners Standley, Kendall, Snedaker & Gullion  
William Hicks

FROM: Commissioner Frederic Winthrop, Jr.

DATE: November 22, 1977

SUBJ: Agricultural Land, Agricultural Preservation Restriction  
(H-6491), Flood Plain Management, Sewage Systems, and  
their interrelationship.

- Enclosures:
1. President Carter's Executive Order 11988,  
May 24, 1977.
  2. Excerpts from speech of E.P.A. Administrator  
Douglas M. Costle, Mass. Farm Tour,  
Danvers, August 25, 1977.
  3. Excerpts from "The River's Reach-Flood Plain  
Management in the Ct. River Basin, N.E.R.B.C.  
*Chap. 98*

The three enclosures plus the passage of H6491 (the Agricultural Preservation Restriction Bill) by the Legislature have reinforced my previously expressed concern over the placement and scope of sewage systems through or near agricultural lands, especially those prone to flooding.

The secondary effects of excess sewage capacity accessible to currently undeveloped farmland is well known. Where the land is flood prone and septic tanks are marginal, the increase in land values can be dramatic. This not only tends to accelerate the demise of agriculture, but by raising the development increment, would raise the subsequent cost of purchasing the development rights.

Were this to happen the net effect would be to subsidize with public funds a windfall to the landowners which, were it still possible, would be bought back by further public funds for the restriction - hardly a parsimonious use of taxpayers' money.

Referring particularly to the projects in Hatfield, Northampton, Hadley, and South Hadley areas, there is also the problem of increasing the potential for flood damage through encouragement of development in flood prone areas. N.E.R.B.C., in "The River's Reach", makes a strong case for non-structural flood control methods, proposes that the compatible uses of agriculture and recreation be actively promoted as the most cost-effective method of maintaining these areas for flood storage, and makes specific recommendations for the towns in question (see encl. 3).

In my opinion the most cost-effective method of achieving these several environmental goals would be to:

1. Restrict in perpetuity all sewer connections in prime farmland and flood prone areas. I believe this should be possible without delaying current projects. E.P.A. has some precedents such as "Block Island", as described in their publication on "Mitigating Secondary Effects", and Costle's statements in enclosure 2 indicate an understanding of the situation and a willingness to act.
2. Encourage the implementation of the N.E.R.B.C. recommendations as delineated in "The River's Reach".
3. Investigate the availability of Federal flood control funding to supplement state funds for the purchase of Agricultural Preservation Restrictions on farmland within the flood plain. (This D.F.A. is doing).
4. Investigate the possibility of and encourage where appropriate the utilization of agricultural lands near sewage plants for the disposition of effluent and/or sludge (compost) to the benefit of both agriculture and the environment. (The Organic Waste Recycling Commission headed by Dr. Cleve Willis, U. Mass. has started to pull together some useful information on this score).

To save the states agricultural land resource will require a multi-faceted approach and action on many fronts. The A.P.R. program will not in itself be sufficient, especially if it has to compete for the same land with other publicly financed goals and projects. (Water lines, utility corridors and highways, as well as Waste Water Treatment plants, fall in this category.)

The preservation of our local agriculture currently enjoys wide popular support and I believe a complementary approach to the sewage treatment issue would engender wide support for EOEA and the administration.

## Agricultural Land

In the period between 1960 and 1970, land devoted to urban uses in the Denver region increased by 12.3 percent while land devoted to agriculture declined by 6.8 percent. In all, about 33,600 acres were lost to agricultural production. Most new urban land came out of the agricultural category, and the decline in agricultural use affected every county. How much of this loss was prime agricultural land is not known.



About 134,000 acres of agricultural land in the five county Denver Region will be converted to other uses. Of that, about 38,000 acres is classed as prime agricultural land. The 134,000 acres represents 29 percent of the agricultural land in the region, whereas the 38,000 acres of prime agricultural land represents about 23 percent of the prime agricultural soils of the region. The bulk of loss of prime agricultural land would be in Adams County.

The U.S. Council on Environmental Quality has stated that "efforts should be made to assure that such farmlands are not irreversibly converted to other uses unless other national interests override the importance of preservation or otherwise outweigh the environmental benefits derived from their protection." The benefits cited include provision of open space, scenery and wildlife habitat; it is also pointed out that prime lands by their nature produce more food with less erosion and lower fertilizer and energy requirements.

The forecasted sharp declines in agricultural land use in the five county area represent only part of the likely future state of agricultural activity in the region. As the agricultural lands on the fringe of the Denver urbanized area are gradually converted to urban use, there will be increased pressure to expand and intensify agricultural activity in areas just beyond the metropolitan region. These pressures would be felt most strongly in eastern Adams and Arapahoe counties, southern Weld County and northern Douglas County. If supplies of water for agricultural use permitted, increased agricultural production in those areas would take place, with little loss in overall production despite urbanization of some cropland. However, water is a far more important constraint on agricultural activity than is land in this region, and local agricultural experts report that urbanization threatens continued agricultural activity, less because it absorbs agricultural land than because of competition with domestic water users in the allocation of water. The condemnation of water rights may make farming economically infeasible long before pressures for conversion of agricultural land are experienced.

Markets for agricultural products have not been good the last few years and farmers have had great difficulty in just breaking even. This, coupled with a drought caused intensification of competition for available water, and urbanization pressures, has sapped the basic strength of the agricultural sector of the region's economy.

UNITED STATES DEPARTMENT OF AGRICULTURE

OFFICE OF THE SECRETARY

WASHINGTON, D. C. 20250

June 21, 1976

SECRETARY'S MEMORANDUM

No. 1827, Supplement 1

Statement of Prime Farmland, Range, and Forest Land

The continued loss of lands well suited to the production of food, forage, fiber, and timber, and the degradation of the environment resulting from those losses is a matter of growing concern to the Nation. Major consideration must be given to prime lands and the long-range need to retain the productive capability and environmental values of American agriculture and forestry. Developments that result in irreversible land use changes represent a loss of valuable natural resources. The process is dramatic in some local areas. At the national level, individual losses appear small, but the cumulative effect can adversely impact domestic and international production.

The concerns about wise use of prime lands are local, Statewide, and national in scope. The loss of land suitable for sustained crop and wood production in a region or locality can influence the viability of supporting supply, processing and marketing facilities. Continued loss of farmland, range, and forest land production affects the economy locally, influencing employment and income levels. In addition, it limits other qualities essential to the well-being of our people.

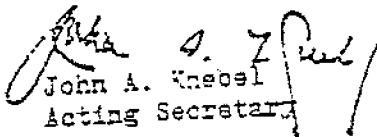
Land use alternatives are generally available that can minimize impacts on prime lands. Such alternatives should be explored carefully, particularly where Federal funds are involved. When possible, land use decisions should be avoided which irrevocably commit prime lands to nonfarmland, nonrange, and nonforestland uses, thereby foreclosing the options of future generations. USDA will urge all agencies to adopt the policy that Federal activities that take prime agricultural land should be initiated only when there are no suitable alternative sites and when the action is in response to overriding public need. The long-term implications of these land use conversions on the productive capacity of our farmland, range, and forest land, as well as on environmental impacts, should be evaluated and made known to the public.

The Department, through the Land Use Committee, counterpart State and local committees, and the activities of all concerned agencies, groups, and organizations will advocate the protection of prime and unique farmlands, range, and forest lands from premature or unnecessary conversion to nonagricultural land uses. Urban or built-up uses and water impoundments that preclude utilization or recovery to high quality agriculture or forestry purposes are of particular concern.

State and local interests in retaining prime farmland, range, and forest land for production are often based on concerns other than the demands for food, forage, fiber, or timber. Open space, environmental quality, visual quality, and local economic impacts are often cited as reasons for protecting these lands. Many of these lands have modest production capability, but are valued because of location and other unique factors that make them of State or local importance. Retaining farmland, range, and forest land enhances local values and protects resource options for the future. The Department will make specific efforts to assist States and localities to identify lands of State and local concern and support efforts to protect these lands from premature or unnecessary conversion to other uses.

The Statement on Land Use Policy (Secretary's Memorandum No. 1827) and the following specific policies are set forth for the guidance of the agencies in this Department in regard to prime lands:

1. Advocate the protection of prime lands from premature or unnecessary conversion to other land uses. Priority will be given to prime lands threatened by conversion to irreversible land uses.
2. Assure that environmental impact statement procedures and review processes thoroughly consider and evaluate the impact of major Federal actions on prime farmland, range, and forest lands.
3. Emphasis will be placed on programs to inventory, assess and evaluate the Nation's farmland, range, and forest lands to assist decision makers and the general public's understanding of the kind, extent, location, and current status of prime lands.
4. Cooperative efforts with States, local governments and universities will be initiated to assure concerns for food, fiber, and wood production are recognized and emphasized in the identification of prime lands.
5. USDA agency actions and programs will give thorough consideration to the local, State, and national concerns for the retention of prime lands. The necessity of conversion of these lands to other uses will be considered only after a determination that feasible alternatives do not exist or that overriding public needs warrant the action.
6. The agencies in the Department will review their programs to insure consistency with the intent of this supplement.

  
John A. Knebel  
Acting Secretary

The quality of life for citizens of the State is enhanced in the following ways:

1. Preserves a way of life with its unique cherished values;
2. Provides fresh, high quality food at reasonable cost at locations close to the consumer;
3. Contributes to a stable economy in Maryland by providing job opportunities, income, and a market for the resources of production;
4. Contributes to the Nation's balance of payments by providing food and fiber for export;
5. Provides reserve food production capacity to meet the future needs of our population;
6. Provides wood products from farm wood lots;
7. Maintains the quality and beauty of the environment through the cleansing effect of growing plants on the supply of oxygen and the filtering effects of plants and soil on water supply;
8. Maintains farm associated wildlife habitats and provides for private outdoor recreational areas, camping, fishing, hunting, etc.;
9. Provides areas for recycling of solid and liquid waste;
10. Protects mineral resources from being pre-empted;
11. Provides productive, taxpaying, privately maintained agricultural open space with its environmental benefits, including rural aesthetics and enhanced air and water quality;
12. Provides for orderly development and growth; and
13. Protects the hydrologic integrity of watersheds through the control of storm water run-off and sediment damage, protects aquifer recharge areas, and provides buffers for water supply and other natural areas.

It is for these reasons that the committee studying the need for preservation of agricultural land believes it is imperative for the citizens of Maryland to preserve and protect its agriculture resources for the benefit of present and future generations of the State.<sup>5/</sup>

<sup>5/</sup> "Final Report", Committee on the Preservation of Agricultural Land, Maryland Department of Agriculture: 1974.

EXECUTIVE OFFICE OF THE PRESIDENT  
COUNCIL ON ENVIRONMENTAL QUALITY  
722 JACKSON PLACE, N. W.  
WASHINGTON, D. C. 20006

TAB 6

August 30, 1976

MEMORANDUM FOR HEADS OF AGENCIES

SUBJECT: Analysis of Impacts on Prime and Unique Farmland  
in Environmental Impact Statements

This memorandum provides guidance to Federal agencies on how to carry out evaluation of the impact of major agency actions on prime and unique farmland in the course of preparing environmental impact statements (EIS). \*

Paragraph 101(b)(4) of National Environmental Policy Act (NEPA) establishes a Federal policy to preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment which supports diversity and variety of individual choice. This policy should be understood to include highly productive farmlands.

Efforts should be made to assure that such farmlands are not irreversibly converted to other uses unless other national interests override the importance of preservation or otherwise outweigh the environmental benefits derived from their protection. These benefits

\* Prime farmlands are those whose value derives from their general advantage as cropland due to soil and water conditions. Unique farmlands are those whose value derives from their particular advantages for growing specialty crops.

stem from the capacity of such farmland to produce relatively more food with less erosion and with lower demands for fertilizer, energy, and other resources. In addition, the preservation of farmland in general provides the benefits of open space, protection of scenery, wildlife habitat and, in some cases, recreation opportunities and controls on urban sprawl.

As part of its policy to preserve the Nation's prime farm, range, and forest lands, the Department of Agriculture (USDA) has recently announced a general policy to establish and keep current an inventory of prime and unique farmland. Recent estimates conclude that of 1.4 billion acres of privately owned lands in the United States, approximately 275 million are classed as prime farmlands.


Federal agencies should attempt to determine the existence of prime and unique farmlands in the areas of impact analyzed in environmental impact statements prepared in compliance with Section 102(2)(C) of the NEPA. This should include threats to the continued use and viability of these farmlands not only from direct construction activities, but also from urbanization or other changes in land use that might be induced by the Federal action.



The Department of Agriculture, at its field locations throughout the country, is committed to assisting Federal agencies in the identification of prime or unique farmlands, and in nearly all cases has complete information on land areas which may be impacted. This should simplify and reduce the burden on other agencies in carrying out their impact analysis. Initial contact should be made with the USDA Land Use Committee in the state where the lands under consideration are situated. This Committee can be located by contacting either the Chairman of the USDA Rural Development Committee in the state, or any nearby USDA office. The State Land Use Committee will then help facilitate contacts with the appropriate USDA office and personnel so that all available information on prime and unique farmlands within the project area is accessible to the agency preparing an EIS.

Finally, the Department of Agriculture has agreed to place a major new emphasis on the review and evaluation of draft environmental impact statements with respect to impacts on prime and unique farmland. In undertaking these reviews, USDA will use soil, range, forest, water resource, and other surveys and information which may be applicable. This service of the Department should help improve the quality of all EISs.

Further information on where agencies may obtain assistance in identifying prime and unique farmland and analyzing significant impacts on it from agency activities can be obtained from State Soil Conservation Service (SCS) offices shown on the attachment. Information on new USDA procedures to review impact on prime and unique farmlands in draft EISs can also be obtained from these sources.

  
Russell W. Peterson  
Chairman

Attachment

# PART 657 - PRIME AND UNIQUE FARMLANDS

## Subpart A - Important Farmlands Inventory

Sec. 657.1 Purpose.

657.2 Policy.

657.3 Applicability

657.4 SCS Responsibilities.

657.5 Identification of important farmlands.

Authority: 16 U.S.C. 590a-f, q; 7 CFR 2.62; Pub. L. 95-87; 42 U.S.C. 4321 et seq.

## Subpart A - Important Farmlands Inventory

§ 657.1 Purpose.

SCS is concerned about any action that tends to impair the productive capacity of American agriculture. The Nation needs to know the extent and location of the best land for producing food, feed, fiber, forage, and oilseed crops. In addition to prime and unique farmlands, farmlands that are of statewide and local importance for producing these crops also need to be identified.

§ 657.2 Policy.

It is SCS policy to make and keep current an inventory of the prime farmland and unique farmland of the Nation. This inventory is to be carried out in cooperation with other interested agencies at the national, State, and local levels of Government. The objective of the inventory is to identify the extent and location of important rural lands needed to produce food, feed, fiber, forage, and oilseed crops.

§ 657.3 Applicability.

Inventories made under this memorandum do not constitute a designation of any land area to a specific land use. Such designations are the responsibility of appropriate local and State officials.

§ 657.4 SCS Responsibilities.

(a) State Conservationist. Each SCS State Conservationist is to:

(1) Provide leadership for inventories of important farmlands for the State, county, or other subdivision of the State. Each is to work with appropriate agencies of State government and others to establish priorities for making these inventories.

(2) Identify the soil mapping units within the State that qualify as prime. In doing this, State Conservationists, in consultation with the cooperators of the National Cooperative Soil Survey, have the flexibility to make local deviation from the permeability criterion or to be more restrictive for other specific criteria in order to assure the most accurate identification of prime farmlands for a State. Each is to invite representatives of the Governor's office, agencies of the State government, and others to identify farmlands of statewide importance and unique farmlands that are to be inventoried within the framework of this memorandum.

(3) Prepare a statewide list of:

(i) Soil mapping units that meet the criteria for prime farmland;

(ii) Soil mapping units that are farmlands of statewide importance if the criteria used were based on soil information; and

(iii) Specific high-value food and fiber crops that are grown and, when combined with other favorable factors, qualify lands to meet the criteria for unique farmlands. Copies are to be furnished to SCS Field Offices and to SCS Technical Service Centers (TSC's). (See 7 CFR 600.3, 600.6.)

(4) Coordinate soil mapping units that qualify as prime farmlands with adjacent States, including the States responsible for the soil series. Since farmlands of statewide importance and unique farmlands are designated by others at the State level, the soil mapping units and areas identified need not be coordinated among States.

(5) Instruct SCS District Conservationists to arrange local review of lands identified as prime, unique, and additional farmlands of statewide importance by Conservation Districts and representatives of local agencies. This review is to determine if additional farmland should be identified to meet local decisionmaking needs.

(6) Make and publish each important farmland inventory on a base map of national map accuracy at an intermediate scale of 1:50,000 or 1:100,000. State Conservationists who need base maps of other scales are to submit their requests with justification to the Administrator for consideration.

(b) Technical Service Centers. Field Representatives are to provide requested technical assistance to State Conservationists in inventorying prime and unique farmlands (see 7 CFR 600.2). This includes reviewing statewide lists of soil mapping units that meet the criteria for prime farmlands and resolving coordination problems that may occur among States for specific soil series or soil mapping units.

(c) National Office. The Assistant Administrator for Field Services (see 7 CFR 600.2) is to provide national leadership in preparing guidelines for inventorying prime farmlands and for national statistics and reports of prime farmlands.

### § 657.5 Identification of important farmlands.

#### (a) Prime farmlands.

(1) General. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding. Examples of soils that qualify as prime farmland are Palouse silt loam, 0 to 7 percent slopes; Brookston silty clay loam, drained; and Tama silty clay loam, 0 to 5 percent slopes.

(2) Specific criteria. Prime farmlands meet all the following criteria: Terms used in this section are defined in USDA publications: "Soil Taxonomy, Agriculture Handbook 436"; "Soil Survey Manual, Agriculture Handbook 18"; "Rainfall-Erosion Losses from Cropland, Agriculture Handbook 282"; "Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss, Agriculture Handbook 346"; and "Saline and Alkali Soils, Agriculture Handbook 60."

(i) The soils have:

(A) Aquic, udic, ustic, or xeric moisture regimes and sufficient available water capacity within a depth of 40 inches (1 meter), or in the root zone (root zone is the part of the soil that is penetrated or can be penetrated by plant roots) if the root zone is less than 40 inches deep, to produce the commonly grown cultivated crops (cultivated crops include, but are not limited to, grain, forage, fiber, oilseed, sugar beets, sugarcane, vegetables, tobacco, orchard, vineyard, and bush fruit crops) adapted to the region in 7 or more years out of 10; or

(B) Xeric or ustic moisture regimes in which the available water capacity is limited, but the area has a developed irrigation water supply that is dependable (a dependable water supply is one in which enough water is available for irrigation in 8 out of 10 years for the crops commonly grown) and of adequate quality; or,

(C) Aridic or torric moisture regimes and the area has a developed irrigation water supply that is dependable and of adequate quality; and,

(ii) The soils have a temperature regime that is frigid, mesic, thermic, or hyperthermic (pergelic and cryic regimes are excluded). These are soils that, at a depth of 20 inches (50 cm), have a mean annual temperature higher than 32° F (0° C). In addition, the mean summer temperature at this depth in soils with an O horizon is higher than 47° F (8° C); in soils that have no O horizon, the mean summer temperature is higher than 59° F (15° C); and,

(iii) The soils have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches (1 meter) or in the root zone if the root zone is less than 40 inches deep; and,

(iv) The soils either have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to the area to be grown; and,

(v) The soils can be managed so that, in all horizons within a depth of 40 inches (1 meter) or in the root zone if the root zone is less than 40 inches deep, during part of each year the conductivity of the saturation extract is less than 4 mmhos/cm and the exchangeable sodium percentage (ESP) is less than 15; and,

(vi) The soils are not flooded frequently during the growing season (less often than once in 2 years); and,

(vii) The product of K (erodibility factor) x percent slope is less than 2.0, and the product of I (soils erodibility) x C (climatic factor) does not exceed 60; and

(viii) The soils have a permeability rate of at least 0.06 inch (0.15 cm) per hour in the upper 20 inches (50 cm) and the mean annual soil temperature at a depth of 20 inches (50 cm) is less than 59° F (15° C); the permeability rate is not a limiting factor if the mean annual soil temperature is 59° F (15° C) or higher; and,

(ix) Less than 10 percent of the surface layer (upper 6 inches) in these soils consists of rock fragments coarser than 3 inches (7.6 cm).

(b) Unique farmland.

(1) General. Unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. Examples of such crops are citrus, tree nuts, olives, cranberries, fruit, and vegetables.

(2) Specific characteristics of unique farmland.

(i) Is used for a specific high-value food or fiber crop.

(ii) Has a moisture supply that is adequate for the specific crop.

The supply is from stored moisture, precipitation, or a developed irrigation system.

(iii) Combines favorable factors of soil quality, growing season, temperature, humidity, air drainage, elevation, aspect, or other conditions, such as nearness to market, that favor the growth of a specific food or fiber crop.

(c) Additional farmland of statewide importance. This is land, in addition to prime and unique farmlands, that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are to be determined by the appropriate State agency or agencies. Generally, additional farmlands of statewide importance include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable. In some States, additional farmlands of statewide importance may include tracts of land that have been designated for agriculture by State law.

(d) Additional farmland of local importance. In some local areas there is concern for certain additional farmlands for the production of food, feed, fiber, forage, and oilseed crops, even though these lands are not identified as having national or statewide importance. Where appropriate, these lands are to be identified by the local agency or agencies concerned. In places, additional farmlands of local importance may include tracts of land that have been designated for agriculture by local ordinance.

YOU CAN'T MOVE SKAGIT VALLEY'S AGRICULTURE TO THE COLUMBIA BASIN.

Robert A. Norton  
Superintendent and Horticulturist  
Northwestern Washington Research and Extension Unit

TAB 8

Driving through the Columbia Basin from Othello down to Pasco, one can't help but be tremendously impressed with the growth of agricultural enterprises in that area. Gigantic circle irrigation systems, as well as the more traditional systems are bringing thousands of acres of desert into production. With all of this development it's easy to see why some people wonder why we even bother with farming in the Skagit Valley, or anywhere else in western Washington, for that matter.

Like most of us, farmers keep on farming because they are attached to their land, have a big investment in buildings and equipment and, not to be underestimated, they just like it here, rain and all! Some are making a good return on their investment but a lot more have quit for a variety of reasons, eg. age, unprofitability, urban pressures and taxes.

What about the majority of us that don't farm for a living? What would happen if all of Skagit Valley's farmers sold out and moved to the Basin? Let's look at it both from the farmer's and then the non-farmer's standpoint.

First, although the farmer might be able to sell his land, he'd have to leave much of his equipment behind. Our smaller tractors are like toys to Basin farmers who generally farm much larger acreages.

But more important, our farmers generally would have to grow entirely different crops. Peas, our mainstay in the Skagit, require irrigation in the Basin and can't be grown all summer long because of the heat. Our yields on the Coast average over two tons per acre with no irrigation, just twice the yield obtained in eastern Washington or anywhere else in the U. S., Western

Washington farmers can boast that they have never lost a pea crop from the weather, nor have yields ever fallen below 75% of what they expected. No other area can make this claim. An equal quantity are grown in eastern Washington, usually in rotation with wheat or other cash crops. Strawberries can be grown fairly well in parts of the Basin but only one or two growers have made a go of it. No processing industry exists, nor is contemplated. Except in California where strawberries are picked primarily by migrants, most strawberries are grown in moderately populated areas where help is available for picking. Many people feel that it's a real asset to have an opportunity for our young people to earn their own money and develop good work habits.

Raspberries thrive in the moist coastal areas of the Northwest. Like peas, yields are double those possible anywhere else in the world. In the Basin, however, they ripen too fast and are subject to winter injury and diseases that don't exist on the Coast.

Flower bulbs, like the berries, can't be grown successfully in the Basin. Bulbs were first grown in Whatcom County but the Dutch growers experienced severe winter damage and had to move south to the Skagit. Can you imagine how well they would survive in Yakima's 20° below zero? In addition, bulb growing requires many workers, not readily available in the sparsely settled Columbia Basin. The bulb crops provide the single largest source of youth employment of any agricultural enterprise in this area. The largest bulb grower in the world, William Roozen, is a Skagit farmer.

Vegetable seed crops are produced on both sides of the mountains but they are not interchangeable. Skagit Valley produces up to 85% of the nation's red beet, spinach and cabbage seed. These crops require either a mild winter (cabbage and beet) or cool temperatures during the growing season (spinach) to get top yields. On the other hand, the Skagit Valley is



not adapted to heat-loving crops like corn, beans and onions. Several seed companies based in Mount Vernon have seed crops in both areas.

A similar story can be told about many of the other crops grown on the fertile Skagit flats, or elsewhere in western Washington - blueberries, broccoli, cauliflower, cucumbers, rhubarb or blackberries. These crops seem to thrive in the unique combination of climate and soil we have here.

And this climate is truly unique! What other area do you know that has a summer temperature seldom exceeding 80°F and a winter which rarely goes below 20°? I know of only a few relatively small areas like our own - the Salinas Valley of California and other smaller valleys along the West Coast. Even the great Willamette Valley in Oregon does not have the climate or soils for large scale pea production. Our almost nightly dew makes it tough for rolling out the sleeping bag on the lawn like I used to do back East, but the peas really like it, in fact they depend on it.

What is all that newly irrigated land in the Basin being used for? Mostly for potatoes, alfalfa (hay), sugar beets and wheat. Though we have quite a bit of wheat in western Washington this year, it is not likely to remain important if wheat supplies continue to increase.

Let's get back again to the effect of Skagit Valley agriculture on those of us not directly involved in farming or ranching. Is there anyone among us who does not somehow benefit - either from a job for someone in our family on the farm or in some related industry - processing, feed, fertilizer, farm equipment, fuel or marketing farm products? Who does not benefit from being able to enjoy the greenness of the fields, the pollution-free air, the beauty of the tulips and daffodils in May, the ability to watch the sun setting over a relatively unobstructed landscape?

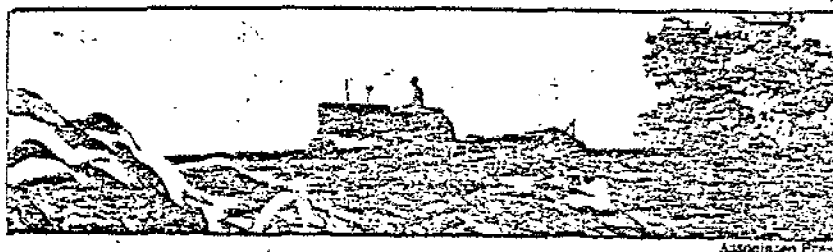
We all know that overnight our farmers aren't going to leave the

the Skagit even though they might make more money farming in the Basin.

But, don't you think we all have a stake in keeping agriculture strong and profitable so that all the benefits we now enjoy will continue? What can we do? Here are a few possibilities:

1. Support good land use decisions at the local level. Attend Planning Commission Meetings and voice your opinions, especially when you can speak impartially on an issue.
2. Help educate others as to the uniqueness of our agricultural resource and how residential development is detrimental to continued agricultural development. We can use the example of aerial spraying which is much cheaper and more efficient than ground application. Houses, power lines, children, pets are causing increased interference with profitable farming operations.
3. Promote the idea that agriculture and industrial growth are not seriously competitive. Industry requires relatively little land and can afford land closer to the urban areas or land not suitable for farming. It is residential development that seriously jeopardizes agricultural land. There is plenty of land for homes away from the "flats", land free from the threat of flooding, spray planes or dust.
4. Finally, support our farmers. They are the key to Skagit Valley's and Washington's most important industry. This dairy-berry valley is a great place to live. Let's not be too much in a hurry to change it.

5/17/76



Associated Press

# Preserving Farms

## Long Island County Buying Land to Save It

By William Gillen  
Associated Press Writer

RIVERHEAD, N.Y.—Suffolk County, a once-rural county inundated since the 1950s by waves of urban emigrants, is spending millions of dollars to keep thousands of acres farmland forever.

Under the most far-reaching program of its kind in the country, county residents have approved a \$55 million bond issue to purchase the development rights to as many as 15,000 of the 55,000 acres now used as farmland.

Federal, state and local officials around the country are watching the Suffolk program as an example of how a suburban area, in the path of urban spillover, can retain its traditionally rural character.

James Johnson, a soil conservationist with the U.S. Soil Conservation Service, quoted one study as showing that the United States "lost" during the period 1967-1975, a total of 5 million acres of farmland a year.

This figure, according to Johnson, consisted of 2 million acres converted to suburban development and 1 million converted to lakes, ponds and reservoirs. Another 2 million acres, he said, were rendered inefficient by the strip-type nature of most suburban development.

In the first phase of the program, the Suffolk County Legislature appropriated \$21 million last September to buy the development rights to about 4,000 acres some 75 miles east of New York City.

Landowners who participate in the

program are paid the difference between what their land is worth for farming and what it is worth, for example, for housing. The first two farmers to sell their development rights were paid \$618,875 for 215 acres, or an average of \$2,860 an acre.

Once the farmers have sold these rights to the county, they retain ownership of the land but may use it only for agricultural purposes.

Many Suffolk residents emigrated from neighboring Nassau County, which was largely rural itself before the influx of 1 million residents after World War II. Today Nassau, once New York City's backyard vegetable garden, has about 1,600 acres of working farmland.

Suffolk County Executive John N. Klein, who backed farmland preservation soon after his election in 1972, said in a recent interview: "If I had endorsed this concept 10 years ago, I would have struck out. But today the voters realize that the county's farms are important economically, environmentally and recreationally."

Suffolk's mirror-flat fields have more than just scenic appeal. The county produces more than 370 million a year in agricultural crops.

The Maryland Legislature enacted an agricultural preservation law in the 1977 session that would allow the state to purchase development rights to farmland located in designated agricultural districts. However, no funds have been voted for the program.

# Work in Progress

## Notes on the Law: A New Way to Save Our Farmland

By MARC General Counsel Alexander D. Sawyer

Chapter 780 of the Acts of 1977 represents the latest effort to halt the abandonment and conversion of Massachusetts farmlands to other uses. This new law creates "agricultural preservation restrictions" (APRs) and provides \$5 million to the Massachusetts Department of Food and Agriculture for purchasing such APRs.

An APR is a new kind of conservation restriction especially tailored for farm and forest land. Essentially, the landowner signs a covenant promising the state that the land will not be developed for nonagricultural purposes. When recorded, this covenant will bind all future owners of the land in perpetuity. The land may then be sold or otherwise transferred and it may be used only for farming or forestry, including dwellings for the owner or his employees. The APR gives the owner more latitude in using his land than does the typical conservation restriction which may permit nothing more than passive recreation. The statute specifically preserves the other customary rights and privileges of the landowner including the right to privacy and to carry out all regular farming practices. Future access is limited to inspection to make sure the terms of the APR are not violated.

In return for this covenant the state will pay the landowner a sum not exceeding the difference between the value of the land before it was restricted and its value for farming purposes after restriction. In areas where development pressures have driven up land costs, this price may be too much for the state but program to pay. In those areas, cities and towns may vote to contribute some of the cost of the APR.



The region's farmland is slowly vanishing. But can we afford to lose it?

Chapter 780 will be administered by an agricultural lands preservation committee chaired by the Commissioner of Food and Agriculture which will be publishing regulations early in 1978. The details of the program will be spelled out in the regulations. The law states that when evaluating proposed purchases, the committee must consider, among other things, the suitability of the land as to soil, classification, development value and its value for farm life, and the degree to which acquiring an APR on that land would preserve the agricultural potential of the Commonwealth. Land owners will apply through the local conservation commission not directly to the committee.

An APR purchased with state funds cannot be released unless the holder, Commissioner of Food and Agriculture and the local, selectmen or city council consent after a public hearing or a two-thirds of the legislature so votes. Furthermore, the owner must pay a sum equal to the market value of the APR at the time of release. This could mean paying back much more than the original price of the APR. Inflation and development pressure have increased the value of the right to build.

So long as the land under the APR is actively farmed, it will be assessed for real estate tax purposes at rates not to exceed the annual guidelines of the Department of Taxation and Corporations for land in the "farm assessment" program, General Laws Chapter 61A. The owner of APR land, however, has additional tax advantages which do not apply to Chapter 61A. For example, state and federal estate taxes will be based on the lower value of land resulting from the relinquishment of development rights.

Additional protection is also afforded by a requirement in the act that if a third party takes an easement across APR land, the owner may sue the owner of the property a million for the easement if the land were sold and not used for farming. In addition, the easement must preserve the right of direct interference with normal operations with respect to water of easement, pole location and other customary matters. The act clearly would not allow the easement holder to

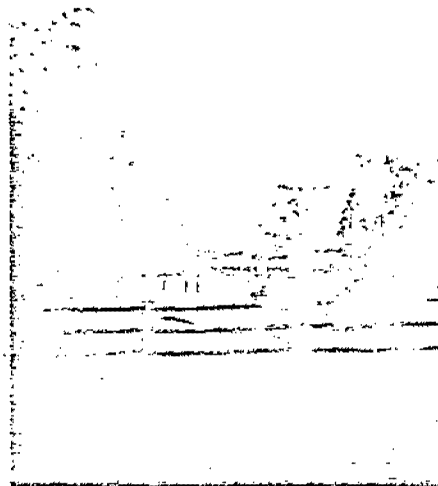
In order to be considered for the program, the land must be eligible for farmland assessment under General Laws Chapter 61A, although it need not be subject to that program. This means that the property must conform to the requirements of the first five sections of Chapter 61A, that is, it must consist of at least five acres actively devoted to farming or to forestry under an approved forestry plan and it must have grossed at least \$500 a year for the past two years. Agricultural uses are defined very broadly in that statute to include growing all kinds of crops, including forest products and raising animals for sale.

Chapter 780 requires the Registrar of Deeds to establish by Jan. 1, 1980 special "tract indices" using all APRs. These indices are needed so that the permanent APR can easily be found by a prospective purchaser searching the chain of title at the registry. Without the index, the APR will not be enforceable unless periodically re-recorded by the holder.

Although this program is sometimes described as involving the sale of the farmer's development rights, it is not to be confused with the concept of transferring development rights from one site to another. The right to develop the land for other than agricultural purposes is simply purchased and held by the state, not transferred to another place.

Since the land will remain in private ownership, the state cannot force the owner to continue to farm. However, state may enter into a development plan not be permitted, the land will remain available for farming in future years. If transportation costs should become prohibitive, such a land bank would be crucial to the Commonwealth. Of course, a great deal more than \$5 million would be required to secure a substantial base of farmland. The present appropriation represents a pilot program. It is hoped that this may be the beginning of an important state program to preserve our agricultural state.

Further information is available from the Division of Conservation Services, 100 Waterhouse Street, Boston, MA 02109.



An agricultural preservation restriction could help landowners resist nondevelopment.

BILL ~~TO~~ SAVE 12.5 MILLION ACRES  
OF FARMLAND PASSES CALIFORNIA ASSEMBLY

A bill aimed at preserving California's 12.5 million acres of prime agricultural land and indirectly halting urban sprawl has passed the California General Assembly and been sent to the Senate.

The bill (AB 15), sponsored by Assemblyman Charles Warren, D-Los Angeles, calls for the creation of an Agricultural Resources Council that would be charged with protection of such prime farmland. It would require all cities and counties, with the exception of those consisting of less than 1,600 acres, to map prime agricultural land within their boundaries, or have the state do it for them. These maps will then be sent to the Agricultural Resources Council for certification and recommendations for types of permissible use.

California, which provides 40 percent of the fresh vegetables and fruit consumed in the nation and 25 percent of all the nation's table food, has been losing an estimated 20,000 acres of prime agricultural land to urbanization each year.

The Warren bill would permit this condition to continue for only ten more years. He estimates that land presently exempted under his bill would amount to between 200,000 and 250,000 acres, including: land already committed to urban development (e.g. that with existing sewer lines); land that cities can show to be required for a public welfare use more urgent than preserving it for agricultural use; and that land available to cities to grow to 1,600 acres. With 20,000 acres being urbanized each year, Warren estimates cities have little more than ten years to plan for the growth moratorium.

A staff member of Warren's Committee on Resources, Land Use, and Energy, told LUP Reports the measure was an extension of the principle of agricultural land preservation begun under the Williamson Act of 1965. That act sought to preserve farmland on the fringes of communities by means of voluntary agreements between the state, county, and local governments and the property owner. Such agreements would call for land to be taxed on its agricultural income rather than its development potential with the difference between the new tax rate and the old being paid to the city by the state.

Under the Warren bill, the state would not compensate communities for losses in property taxes because Warren expects land within the city to gain value as fringe lands are placed in the prime agricultural lands category.

Warren is said to be optimistic about the bill's chances. He has accepted amendments that have mollified opponents who charged the bill with being too rigid in its classification categories and lacking in local government input.

One amendment removed from the bill a moratorium on any new development until land-classification maps were produced. Another amendment granted special consideration to land-owners who might not receive the irrigation water for their land they had otherwise planned on. And, the composition of the Agricultural Resources Council has been changed to reflect the state, county, and local government involvement in the program.

## CONSIDERATIONS FOR FARMLAND RETENTION STRATEGIES AT STATE AND LOCAL GOVERNMENT LEVELS

SOURCE: NRE/ERS WORKING PAPER NO. 28

The U. S. experience with land-use controls to retain land in agricultural and other open-space uses suggests some common elements essential to effective agricultural land-use policy:

*Planning-based land-use management*--It perhaps goes without saying that sound land-use planning is an important prerequisite for effectiveness. Public policy efforts to guide private land-use decisions towards public goals cannot be effective unless public land-use goals are well articulated and translated into definitive and specific designations of where farmland retention is in the public interest.

*Efficacy*--Implicit to the notion of effectiveness is the requirement that a land-use policy instrument have the capacity to achieve the desired end. The importance of this requirement is most evident in the context of incentive programs. If the incentive offered is insufficient to alter private land-use decisions (as is apparently the case with use-value assessment), the allocation of land between uses will not be affected. Beyond this, however, it is not enough to merely prevent development on farmland. The economic vitality of agriculture in the rural-urban fringe also requires programs sensitive to the need for agricultural infrastructure, tax policy consistent with sustained agricultural use of land, and reduced economic uncertainty.

*Supra-local control*--Most land-use analysts probably would agree with Libby (1974) that local governments "have important strengths but retaining agriculture and open space is not one of them". Factors of more than local concern need to be brought into the land-use decision-making process. Hence, there is a need for land-use policy instruments which place some (but clearly not all) administrative authority at the state level.

*Flexibility*--The management of economic growth and land-use change is, by its very nature, a dynamic process. Since there will always be uncertainties preventing accurate predictions of future conditions, policy instruments must be flexible enough so that land-use decisions can be reviewed and revised when changing conditions warrant.

*Constitutionality*--Constitutionality is a most important element in the context of noncompensatory regulation. While some analysts argue that the scope of public regulatory powers is broader than is typically assumed, there is no consensus on how far regulation without compensation can go and not be interpreted as a "taking" under the U. S. Constitution. Policy makers and the public will remain sensitive to this issue.

*Economic feasibility*--The fiscal burden of alternative land-use control approaches is clearly an important criterion. For example, it seems apparent that the massive public expenditures required for public purchase of development rights programs has been a major impediment to their implementation.

*Political acceptability*--The political acceptability of any land-use policy instrument is dependent largely upon its anticipated impacts, the certainty and clarity with which these impacts are perceived, and the political influence of those affected. This factor is particularly important in the context of regulatory approaches. Because of the political backlash generated among property owners by noncompensatory regulation, it is argued that at least partial compensation may be necessary to make broad based regulatory programs politically acceptable. This factor may limit (for the time being, at least) the scope of noncompensatory open-space regulation in the United States to very sharply focused, limited-purpose programs in which the public purpose is obvious, tangible, and widely supported. Public decision makers, nevertheless, must also recognize that what is politically acceptable may change over time due to changes in social values, citizen awareness, and the intensity of political participation among different interest groups.

FARM AND URBAN DEVELOPMENT NEED  
FOR FEDERAL PROTECTION, JEFFORDS SAYS

Pending legislation providing grants to states and localities for farmland preservation will help prevent Federal intervention because farmland losses become critical, according to Rep. James Jeffords (R., Vt.) in remarks last week before the National Association of Counties.

Jeffords said his H.R. 11122 is an "anti Federal land use bill," predicting that the grant provisions will encourage local governments to halt the urbanization of prime farmland without Federal interference. While farmland development is not yet a serious problem, strong measures are needed to prevent a crisis, Jeffords contended. Localities need aid to "put the fire out."

Jeffords noted that Federal actions frequently encourage farmland development. Even the Agriculture Department, which has taken a strong position favoring farmland protection in recent years, has encouraged development through various housing and sewerage construction programs. Jeffords pointed out. Despite increased concern at the Federal level, Federal agencies "are often the prime cause" of farmland urbanization, he said.

While the Northeast has suffered the most serious farmland losses, the problem confronts virtually every region, Jeffords continued. Legislation should be designed to provide aid for a variety of farm, timber and range areas to increase Congressional support and ensure enactment, he added, urging NACo, which supports the legislation, to help convince native farm groups and encourage their support.

Jeffords was confident that the legislation would be adopted this year, despite some fears that the bill could lead to a stronger role for the Federal government in controlling agricultural land use.

Jeffords was joined by Senate Agriculture Committee aide Stuart Hardy, who agreed that the legislation stands a good chance of passage. However, additional funding should be added to the grant program, Hardy said, noting that Sen. Warren Magnuson (D.-Wash.) plans to introduce legislation providing \$500-million for grants, twice the amount envisioned in Jeffords' bill. The Magnuson bill will have a more narrow focus, emphasizing protection of farmland on the urban fringe "where the real problem is," Hardy noted.

In response to questions, Jeffords opposed requirements that Federal agencies prepare "agricultural impact statements" before approving projects. Such a procedure, patterned after the environmental impact statement process, would be cumbersome and politically unpopular, Jeffords suggested.

In other sessions, the Department of Housing and Urban Development drew qualified praise from NACo staffers in response to recently developed Community Development Block Grant regulations. NACo's William Dodge praised HUD for developing "reasonable" guidelines, but he warned that local governments should closely monitor the program to ensure equitable implementation.

HUD spokesman Don Patch reiterated the department's position that CDBG aid should be used to benefit low- and moderate-income persons. Although the initial 75% rule has been relaxed, HUD will still subject applications to close scrutiny if a substantial majority of funds will not benefit low-income persons. "Negotiations" will be required for such applications, Patch noted. Dodge was critical of HUD's decision to make the new rules applicable as of May 1. Such a deadline discriminates against counties, most of which have not submitted their requests. NACo also sought assurances that counties will be able to gain Urban Development Action Grants, since city applications already exceed available funds.