HOW DID WE GET WHERE WE ARE -- THE PHYSICAL RESOURCE SETTING

It is said in various ways that each day we look out on a new and different America.

America is changed.

America has changed.

And much has contributed to that change. Technological advances--chemical, mechanical, and electronic. New inventions and inexpensive energy sources. The growing demand of Americans for goods and services and the often desperate needs of people abroad. 'Cause CHANGE

Also contributing to change have been wars and droughts, recessions and depressions, commodity surpluses and shortages.

To fully comprehend the physical resource setting of today, we must look back on those events--some exciting, some traumatic--that have shaped our resource setting today. In other words--How Did We Get Where We Are.

(lights down--slide presentation starts)

1. In the early days of this Nation, settlers hacked down the forests to get timber to build their homes and open space for farms and gardens.

2. Families worked together for long exhausting days to claim each acre of cropland from the trees.

Slide presentation by Norman A. Berg, Administrator, USDA Soil Conservation Service, at the National Conference on Soil Conservation Policy, Washington, D.C., November 15, 1979.

3. The forests gave way to fields. Crops were planted and harvested.

4. Most Americans saw their new country as did French historian Alexis de Tocqueville, who visited the United States in the 1830's. "The country," he wrote, is limitless and full of inexhaustible resources."

5. And so it seemed to (nearly) everybody, as new waves of settlers planted their corn in the tall grass prairies of Indiana and Illinois...

6. ...and grew the biggest crops they had ever seen. Another generation pushed the frontier farther west...

7. ...into the treeless plains, the country of the short grass. And--although they didn't know it at the time--it was also the country of high risks and periodic droughts.

8. The railroad helped bring an end to the last frontiers, speeded settlement, and opened up new markets for agriculture.

9. The invention of modern farm machinery meant that a ~~man and his~~ family could farm more acres...

10. ...and harvest them more quickly and efficiently ~~than ever before~~. The land was considered expendable. When it became infertile or eroded, a family could pack up and move farther west.

128.3

11. A few prophets foretold that our land was not inexhaustible, but their warnings fell on deaf ears. 1894 - USDA Bulletin 20
1910 - " " Soil Cons

12. World War I increased demand for farm products. Prices were high, and more and more marginal land--especially on the fragile soils of the Great Plains--was plowed up in hopes of obtaining a crop of wheat.

13. With the end of the war came agricultural depression. Farmers weren't as worried about their resources ~~as~~ they were about surpluses and falling prices.

14. In the South, things weren't any better. Cotton continued to dominate southern agriculture.

15. It was a way of life. When the price dropped to 5 cents a pound and when the boll weevil threatened destruction...

16. ...southern farmers responded by plowing more land and cultivating even steeper slopes.

17. And soil erosion took its toll.

18. Then in October 1929, came the stock market crash, and the industrial economy joined the farm economy in deep depression. This was a bleak period for the American Dream...

19. formerly fertile land, overworked in the boom years, was now eroded, sunbaked and dust covered, farms were left desolate...

1284

20. And homeless families were on the road looking for any kind of work, millions in the cities were unemployed.

21. The mood in the countryside was ugly and dangerous. Dairymen dumped milk in Wisconsin, and some farmers tried to enforce their demands with rifles.

trouble

22. As if there weren't misery enough, a severe drought began and a grasshopper plague overran the Great Plains.

open

23. Giant clouds of dust rose from the dryland, from abused rangeland and from fields where all residues had been devoured by insects.

24. The soil blew from farms in Texas and Colorado and Oklahoma and Kansas and The Dakotas as far east as Washington, D.C., and into the sea beyond. Atmospheric FALLOUT!

25. So was born the infamous Dust Bowl. The land was stripped of productive soil and men and women were stripped of hope and ambition, which was the backdrop for Pare Lorentz' famous film, "The Plow That Broke The Plains."

26. Farm after farm went on the block at public auction.

27. And countless families packed up and moved West, in the greatest out-migration this country ever saw. Which was documented in John Steinbeck's Grapes of Wrath.

a region

This

28. It was this setting--depleted land in the South, eroded land in the Corn Belt, and devastated land in the Plains--that finally awoke Americans to the fact that land was perishable.

29. Land could be destroyed and it could impoverish its people.

30. It was this setting that moved Congress in 1929 to attach the Buchanan amendment to the agricultural appropriation act and set up a sum of $160,000 to study soil erosion.

30a. The money was used to set up the first erosion station in the world at Guthrie, Oklahoma, and in nine other locations. More than 300,000 measurements of soil and water losses were made at these early sites.

31. These findings were dramatized to alert the public to the seriousness of soil erosion. In charge of the new research was Dr. Hugh Hammond Bennett, of the USDA Bureau of Chemistry and Soils.

31a. Just one year earlier, Bennett had published the now famous circular, "Soil Erosion, A National Menace."

32. Bennett wanted to prove his theories; a new President was looking for ways to put people to work.

33. In 1933 FDR named Bennett Director of the Soil Erosion Service in the Department of the Interior. In April 1935 the unit was transferred to the Department of Agriculture. The agency created by Congress was named the Soil Conservation Service, with Bennett its first chief.

34. He was an evangelist for soil conservation, speaking to individual farmers and groups wherever he could.

35. "Soil conservation is essential," he said, "whether we are ready to admit it or not. The ravages of unrestrained farming have left us in a situation where we have no more land to waste."

36. And the Modern soil conservation movement began, couched first in demonstrations around the country.

37. The first was the Coon Creek, Wisconsin, Project started August of 1933.

38. Bennett enlisted the help of the Civilian Conservation Corps, made up of young men from the cities and farms who needed work. Bennett had plenty of work for them, which suited President Roosevelt very well.

39. The CCC healed gullies,

40. planted trees, established contour cropping patterns,

41. built drop inlets and grass waterways to slow down the excess water from rainstorms.

42. Soil conservation demonstrations were set up in practically every State and thousands of farmers came out to see what conservation practices were all about.

43. But M. L. Wilson, an assistant secretary of agriculture, ~~told~~ others told Bennett he would never be able to lead a nation of millions of farmers into adopting the many changes in private land use and methods of cultivation necessary for soil and water conservation through demonstrations alone. "We must somehow devise a method by which we can say to the farmers and ranchers of America, "You take the initiative. We will help you."

44. And the first seeds of the soil conservation district idea were planted.

45. Shortly, thereafter, in early 1937, President Roosevelt sent to the Governors of all the States a letter:

46. "My Dear Governor: (he wrote) The dust storms and floods of the past few years have underscored the importance of programs to control soil erosion. I need not emphasize to you the seriousness of the problem and the desirability of our taking effective action as a Nation and in the several States, to conserve the soil as our basic asset. The Nation that destroys its soil destroys itself..."

47. He ended the letter this way:

"I'm sending you several copies of the Standard State Soil Conservation Districts Law, with a memorandum summarizing its basic provisions. I hope that you will see fit to make the adoption of legislation along the lines of the Standard Act part of the agricultural program of your State."

48. Arkansas and Oklahoma were the first to act. In 1937 a total of 23 States had district laws. Two years later the number was up to 36. By 1947 all the States and Alaska, Hawaii, and Puerto Rico had soil conservation district laws. A decade!

49. The first district -- The Brown Creek Soil Conservation District -- was organized in Anson County, North Carolina, the home of Dr. Bennett August 1937.

50. By 1945 there were 1,328 districts primarily in areas where erosion by water was most severe.

51. Five years later the Midwest and a large portion of the Great Plains began to fill in with districts. (1950)

52. Then, the remaining States followed suit with their own districts. (1960)

53. (slide 1970)

54. (slide 1976) Today there are some 2,950 districts covering 2.2 billion acres of land.

55. From the beginning, the conservation district approach to soil and water conservation was a (marked) success.

56. Farmers and ranchers did take the initiative and sought the help of SCS field employees on planning and applying stripcropping, contour plowing, tree planting and pasture management.

57. Encouraged by friends and neighbors, more and more farmers and ranchers signed up with local soil conservation districts as their cooperators.

58. With research, technical, education and financial assistance from USDA, they ~~began to~~ changed their way of farming, often using homemade transits to lay out contours...

59. homemade irrigation equipment to help crops live through dry spells...

60. and crude but effective devices to build terraces.

61. Even earthen dams were built with homemade equipment...and plenty of horse and man power.

62. Even the old Dust Bowl began to be healed.

63. Schoolchildren, too, learned about soil conservation, for many saw the damaged caused by erosion on their parents' farms and even schoolgrounds, ~~like this one in Tennessee~~.

64. Under the guidance of SCS technicians, children in the school helped develop their own conservation plan and learned how grass and trees keep soil in place.

65. Children enlisted the help of parents, who learned first-hand that gullies can be repaired and soil fertility restored.

66. Those who doubted the claims of conservationists could see for themselves what conservation practices could do.

67. In the West, ranchers began to restore unproductive rangelands, many with a return to tough, long-rooted native grasses.

68. Thousands of ponds were built; furnishing water for livestock, fire protection, and wildlife. More than 2 million now dot the countryside.

69. The face of rural America began to change from one of careless exploitation to planned husbandry of soil and water.

70. The change to conservation farming was so rapid that by World War II, America was able to meet record farm production goals without seriously damaging basic resources, a point Chief Bennett underscored in a popular article, "Acres are Aces."

71. After the war, attention shifted to upstream watershed protection and flood prevention in which farmers and other landowners in an entire watershed of up to 250,000 acres would band together to reduce the threat of flooding.

72. This ecosystem watershed approach combined proven conservation practices with small floodwater detention dams that would trap the peak storm runoff, and reduce the serious damage caused by upstream flooding.

73. The program, approved by Congress in 1944, got started on a pilot basis in 1947 on 11 small watersheds. It proved so successful that Congress in 1954 passed the first permanent upstream watershed legislation, Public Law 566, known as the small watershed program.

74. Local involvement is what made this legislation unique.

75. The responsibility for starting watershed projects is borne by local people, acting through their own organizations.

76. The local sponsors are required to share in the cost of each project. They must obtain all land, easements, and rights-of-way, help develop the project plan, and award construction contracts.

77. Average total cost per project is 3 million dollars, of which local sponsors provide about 1.2 million.

78. Public Law 566 has been broadened by amendment several times since its passage.

79. With the threat of floods eliminated or drastically reduced, local sponsors were quick to see beneficial uses of a controlled water resource...

80. like municipal and industrial water supply, involved in 165 projects to date

81. fish and wildlife habitat, in 93 projects,

82. public recreation, in 264 projects,

83. irrigation and other kinds of water management, in 371 projects to date

84. Certainly one of the most rewarding features of the program has been its favorable impact on the economy of areas around watershed projects.

85. It has helped increase local opportunities and income, build a livelier economy, and helped reverse the out-migration from rural communities.

86. It is ironic that while the small watershed program was getting started in the mid-1950's to reduce flood hazards, the Great Plains States were once again drying up.

87. Drought and high winds struck the High Plains, causing damage in excess of that of the Dust Bowl days of the Dirty Thirties, although the drought wasn't as widespread.

88. There was still too much fragile land in cultivation. It became apparent that this high-risk farming area needed a conservation plan of its own.

89. USDA and conservation districts helped design the program.

90. Thousands of farmers and ranchers would be asked to undertake drastic, time-consuming changes in their operation, and possibly suffer financial hardship for a few years.

91. The program became a reality in 1956 when the President signed Public Law 1021, The Great Plains Conservation Program.

92. This act enabled for the first time the Department of Agriculture's Soil Conservation Service to enter into long-term conservation contracts with farmers and ranchers in parts of the 10 Great Plains States.

93. In return the landowners received Federal cost-sharing payments of up to 80 percent for each conservation practice completed.

94. Practices such as converting cropland to grass...of which 9 million acres have been converted

95. developing field stripcropping...more then 22 million acres completed,

96. planting windbreaks, 110,000 miles completed...

97. and reseeding range, 17 million acres.

98. More than 30 conservation practices are included in the program, all designed to protect soil and water and lessen the impact of drought.

99. This high risk agricultural area--stretching from the Dakotas to Texas--is invaluable to America's stability and prosperity. From the Great Plains comes 60 percent of our wheat and 30 percent of our beef cattle.

100. Today farmers and ranchers in 469 counties are eligible under the program and more than 50,000 are taking advantage of it.

101. But millions of acres still lie vulnerable to the droughts and winds of future years...prey to what some believe is a sunspot cycle.

102. A few years after the Great Plains program began, the Department of Agriculture tried a new approach to the conservation of natural resources--one calculated to improve the fortunes of whole rural communities.

103. These were the Resource Conservation and Development projects--today called RC&D areas.

104. Today there are 184 multicounty RC&D areas in the Nation, covering millions of acres and involving thousands of rural leaders.

105. RC&D is but one of 34 conservation programs in USDA authorized since 1935

106. No single program, no single agency or organization, can rightfully claim to have rescued America's soil and water resources from disaster.

107. No single approach-Federal, State, or Local-has proved to be a panacea--nor were any expected to be.

108. What has been accomplished so far has been the result of millions of farmers, ranchers, and organization and government people working hard at all levels to manage and conserve our resources to meet present and future needs.

109. Had we not had Research'd begun experimenting in the 'thirties with various approaches to soil and water conservation...

110. Had the conservation district movement not begun and spread...

111. Had we not had research, education, technical help, and financial assistance programs...

112. Had we not had the small watershed program...

113. And the Water Bank, Forestry Incentives Program, and RC&D...

114. We would not be able to say today that 42 percent of our cropland is adequately treated against erosion... 25 percent of our pastureland and rangeland... 33 percent of our forestland.

115. We might not even be here today to talk about our physical resource setting in the 1980's.

116. That setting has just been described in a review draft of Part I of an Appraisal of the current condition of soil, water, and related resources. The appraisal was carried out under the Soil and Water Resources Conservation Act of 1977, and it is one of the most important documents ever published in the 47-year history of the soil conservation program.

117. The findings are particularly significant in this high export year of 1979, when heavy demands are being placed on the capacity of our agricultural production plant.

118. These statistics I am citing are taken from Phase 1 of the SCS National Resource Inventories, the most comprehensive on-site study yet of the Nation's soil and water resources. Those findings, together with earlier findings of two Conservation Needs Inventories, are the basis for our look at the Nation's physical resource setting, yesterday and today. Taken together, our statistics are the best figures available anywhere on soil resource conditions and trends.

119. The land we are talking about in our Inventories and in the RCA Appraisal is our nonfederal rural land--about 1.4 billion acres. Of that base, about 413 million acres is cropland; 414 million acres is rangeland; 377 million acres is forestland; and 9 percent is pastureland and native pasture. About 12 percent is in other uses--cities, shopping centers, airports, highways, and reservoirs.

120. The Appraisal also shows how much of our nonfederal rural land is in each capability class and how we use the land in those classes. For most of our easy-to-protect Class I land, as might be expected, is in cropland. But there isn't very much Class I land, compared to the acreage in Classes II through IV, and it is in those Classes that you find most of our cropland. The lesson: Most of our crops are grown on land that requires moderate to intensive soil conservation systems to reduce soil erosion.

121. This chart looks at the picture another way. The clear areas represent the amount of land suitable for continuous cultivation--about 614 million acres. Another 189 million acres is suitable for occasional cultivation, but only with the application of intensive conservation practices. Those are pretty much the limits of our available cropland, and for many reasons, not all that land is available to us and important wetlands should never be converted. We will soon be approaching the practical limits of our cropland base; that is one of the lessons of the RCA Appraisal.

122. Another lesson is that if our cropland is limited, we had better take steps to preserve what we've got.

123. Hugh Sidey, in a recent editorial in Time magazine, said the Nation has hardly given notice to the record-breaking harvest rolling in this year. He pointed out that, "American strength rests on this miracle of food."

124. He might have added what Hugh Bennett told the American people so often: that the miracle of food depends on the continued productivity and availability of our soil.

125. Today, despite 47 years of USDA, state, and local soil conservation programs, soil erosion is still the greatest single threat to our continued productivity.

126. Today sheet and rill erosion varies from region to region, but the national average is about 5 tons per acre per year. This erosion from the action of water is most serious in the most important cropland areas-- in the Midwest and South.

127. In the Corn Belt States, where much of America's row crops are grown, there is an annual soil loss of 8.1 tons per acre per year.

128. That means that soil is being lost at about twice the so-called "T-value," or soil loss tolerance. T-value is defined as the maximum rate of annual soil erosion that will permit a high level of crop productivity to be obtained economically and indefinitely.

129. When you lose soil at twice T-value, as we are in so much of the Corn Belt, you are squandering your soil "capital." ~~You are~~ We are allowing a resource to wash away that cannot be replaced--at least not for hundreds of years.

130. This soil loss, of course, is also detrimental to water quality, fish habitat, and often wetland management.

131. Assuming average T-value for all soils at about 5 tons of soil loss per acre per year, the box score for our nonfederal rural land is not ~~very~~ reassuring. Although there are 1.2 billion acres with an annual soil loss of 5 tons per acre or less; there are 124 million acres with a loss of between 5 and 14 tons per acre per year; there are 61 million acres suffering an annual loss of more than 14 tons per acre.

132. There is, in addition, a cyclical loss of soil from the action of wind in the 10 Great Plains States. This map shows those States which were hardest hit in 1977--Texas and New Mexico with wind erosion losses of 10 tons or more per acre that year and Colorado, with between 5 and 10 tons of soil per acre blown away. This is a particularly insidious kind of erosion, because it damages the land where it blows away and it frequently damages the land and property that receives the blown soil. It gets you coming and going. It's a double whammy

133. There is also additional cropland lost each year to salinity and the depletion of irrigation water. One particularly serious area of groundwater "mining" is in Texas, Oklahoma, and New Mexico. We are taking out more water than is being replaced.

134. In other areas, water for agriculture from all sources is severely depleted in an average year.

135. Some ~~farmers~~ also are worried about soil compaction from repeated passes by heavy tillage machinery, particularly when the soil is wet.

136. Another serious threat to cropland productivity is suburban sprawl and other non-agricultural taking of farmland.

137. Each year some three million acres of rural land are irreversibly shifted from agriculture to other uses, and are either built on, paved over, or flooded.

138. One third of the land shifted --one million acres-- is prime farmland, the most productive land we have.

139. This map from the RCA Appraisal, Part 1, shows the location of our prime farmland, in millions of acres. The greatest proportion of it is in the Corn Belt, Northern Plains, and Southern Plains. With growing pressures on our land base--including demand for exports-- we need to keep our best farmland in farming.

140. Rangeland also can stand improvement. This map shows total wind, sheet, and rill erosion on nonfederal rangelands. The darkest areas suffer combined erosion of 5 tons per acre per year or more.

141. Other types of problems, including heavy growth of brush, droughtiness, and overgrazing, also plague rangeland, which after all is the source of much of our meat and wool.

142. We also need to give more attention to improving water quality and reducing sedimentation from farm and ranch operations.

143. At the same time, we need to preserve wetlands and improve and develop wildlife habitat.

Wood Lands - RPA

144. In addition to all the other problems that beset our soil and water resource base, a continuing threat to our productivity is unfavorable weather.

145. Taking the Nation as a whole, we have had (remarkably) good weather for several years now.

146. But even in the best year, some locations have too much water resulting in damaging floods...

147. and some have too little resulting in droughts.

148. These threats--erosion, urban sprawl, and unfavorable weather--form a part of our physical resource setting. Another part is the demand we make on our farmlands.

149. Our primary demand is to feed, and also furnish part of the clothing and timber for our Nation. When that demand is met, surpluses can be exported to other countries.

150. A decade ago, U.S. farmers exported the product of about one out of every five acres harvested. Today, one out of every three acres harvested is exported and the foreign demand is growing.

151. And new demands are emerging, demands brought about by the energy crisis. One is the manufacture of grain alcohol from corn to blend with gasoline to make gasohol.

152. Another demand is the use of biomass as an energy source. This looks promising to some, but should not be undertaken at the expense of good soil conservation.

153. This is where we stand. Are we approaching the limits to crop production both technologically and geographically? -- a question studied in depth by RCA.

154. Through technology -- hybrids, fertilizer, pesticides -- we greatly increased per acre yields in the 1950's and 60's. Has this leveled off to about one percent per year -- to about half of what it was in those earlier decades?

155. As for land, in addition to the 413 million acres now in cropland, we have 135 million acres or less of potential cropland.

413
135
548

156. Much of that is now in valuable use such as grass and trees and wetlands.

157. This leaves us with one intelligent course. We must protect the soil and water we have. We must keep the best land in cropland.

158. How we get that done is the subject of the rest of this conference.

EPILOGUE. I have given you a brief look at where we have been in the soil conservation movement and tried to bring you up to the jumping-off place for our consideration of future courses of action. We have more facts and figures to determine our present resource conditions than we had in 1933; we now have computer runs on the state of America's soil and water that include more than 47 million different characters.

We may also have more sense of direction than had the early planners of soil and water conservation. The early days of the program were characterized by guesswork and trial and error. It took several years for the district movement to be born and several more to organize enough conservation districts to make an impact. Resource problems were defined slowly and painfully and new programs, like Public Law 566, evolved slowly to deal with those problems.

Today we are wrestling with the RCA process in the hope that it will enable the Federal Government to plan the future of soil and water conservation more surely and successfully than it did in the 1930's. I have high hopes that this goal will be attained.

But beyond statistics and planning, we must also rededicate ourselves to the size and complexity and importance of the task ahead. Hugh Hammond Bennett and his cohorts may occasionally have used faulty statistics and tried schemes that fell short of their mark, but they brought an evangelical zeal to their mission that won the minds and hearts and sense of commitment of rural people everywhere. We must recapture some of that zeal for this great work in which we are engaged as we plan for the future.

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