MANAGEMENT EFFORTS TO CONTROL NONPOINT SOURCE WATER POLLUTION:

OREGON'S APPROACH

by

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MANAGEMENT EFFORTS TO CONTROL NONPOINT SOURCE WATER POLLUTION: OREGON'S APPROACH

ABSTRACT: Water quality problems in the U.S. are a result of pollution form both point and nonpoint sources. While point source pollution can largely be controlled through waste water treatment, the pollution from nonpoint sources is more difficult to manage. The Federal Water Pollution Control Act Amendments of 1972 established legislation, under Section 208, to develop and implement areawide water quality management plans. These plans are to establish procedures and methods to control nonpoint source pollution. The management of nonpoint source pollution is confronted with numerous problems ranging from institutional to financial. These problems reflect the diffuse nature of nonpoint source pollution. Oregon has used a dual approach to management of nonpoint source pollution on nonurban lands. The Forest Practices Act has been relied upon to control nonpoint source pollution on forest lands, while management of nonpoint source pollution on agricultural lands has been piecemeal.

INTRODUCTION

Water quality in the United States has long been an issue of national concern. Heightened awareness of the impacts man has made on the environment has resulted in efforts to clean up the nation's waters. Since passage of the Federal Water Pollution Control Act Amendments of 1972 great progress has been made in the development of technology to control point source pollution, along with the administrative,

regulatory, and enforcement institutions necessary to implement the law as it concerns point sources. But, it has become increasingly apparent that controlling point source pollution alleviates only a portion of the problem. Nonpoint source pollution or diffuse pollution, as it is sometimes called, accounts for over half of this nation's total water quality problem. The pollution parameters involved in determining the total water quality problem are suspended sediment, dissolved oxygen (DO), biochemical oxygen demand (BOD), and nutrients.

The 1972 Act was the first piece of legislation to recognize the importance of controlling nonpoint sources of pollution. The method through which control of nonpoint source pollution is to be achieved is the implementation of areawide water quality management plans. The attempt to develop and implement areawide water quality management plans under Section 208 of the 1972 Act has resulted in numerous studies and government documents dealing with the identification, evaluation, and control of nonpoint source pollution. Research in this area is continuing.

In this paper the history and intent of the 1972 Act will be examined, with particular emphasis on Section 208. Then, a description of some of the problems faced in management of nonpoint sources of pollution will be given. Finally, the approach Oregon has taken to areawide water quality management will be discussed.

HISTORY AND INTENT OF PL 92-500

The concern for clean water in the U.S. started decades ago when the nation's drinking water supplies were threatened by uncontrolled

use of the nation's waters for waste disposal. The first legislation to address this problem was passed by Congress in 1912. This legislation required that the U.S. Public Health Service research the health threats water pollution posed to humans. The studies done by the health service greatly increased knowledge of the links between water pollution and human health. This precipitated a rapid increase in technological and scientific findings on how to control pollution. The administrative role was ignored in the 1912 legislation and was therefore developmentally deficient (U.S. Code 1972, 3668-3670).

It was not until the passage of the Federal Water Pollution Control Act of 1948 that the administrative roles of the various levels of government became clear cut. There were four major provisions of the 1948 Act which spelled out the roles of the states and the federal government and made this act a historic piece of legislation:

*policy recognizing the state's primacy in
 resolving water pollution
*federal grants to state programs
*authority for interstate compacts
*construction loans to municipalities (Linton 1982, 414).

Though the 1948 Act was never fully implemented due to lack of funding, the role of the states as the leaders in water pollution abatement efforts and the federal government as supporter and assistant were clearly stated. The administrative roles of the states and the federal government have changed since the 1948 Act. The federal government has attained greater authority as it has assumed greater financial responsibility for carrying out national pollution abatement programs.

Reauthorization of the Act occurred in 1956 with a number of

provisions being added. These provisions called for greater cooperation between the states and the federal government in an effort to develop a more expansive national water pollution control policy. The effort included funding for research, funding for municipal wastewater treatment plants, and assistance to the states in preparing water pollution control plans (U.S. Code 1972, 3668).

In 1965 new legislation was passed which delegated to each state the responsibility to "develop standards for water quality within its boundaries" (U.S. Code 1972, 3669). The 1965 Act also set up a new administrative agency, the Federal Water Pollution Control Administration (FWPCA), which was responsible for the federal portion of the program. It was to this agency that the states were to submit their water quality standards for approval. The agency's authority was transferred twice in five years and finally came to rest with the Administrator of the Environmental Protection Agency (EPA).

The 1965 Act continued the use of an enforcement procedure previously established in the 1948 Act. The procedure arranged for negotiations between polluters and government officials. Judicial review of the negotiated procedures was permitted. A court, after finding the abatement procedures feasible, could order compliance. The changes that were made in the Federal Water Pollution Control Act in 1956 and 1965 were not enough to produce the desired effects. The struggle to produce an adequate national pollution policy continued.

Nationally, awareness about environmental quality and public concern over water pollution increased during the 1960's. The 1960's found local governments struggling for increased federal aid. Local governments wanted a seperate program in which aid would be given

directly to metropolitan areas to construct waste treatment plants. This began a rivalry between states and local governments for federal funds. Out of this struggle emerged a greatly strengthened municipal role in the federal program (Linton 1982, 413-417; U.S. Code 1972, 3668-3670).

During the same period, the Kennedy Administration's push for activism in government opened the way for tougher laws and additional federal aid in the fight against water pollution. But it was not just the administration's activism which initiated a broader federal commitment, a change had taken place in the Senate. A group of liberal senators had been voted into office and were assigned to the committee on public works. "This class included senators Muskie, Young, Moss, Randolph and McCarthy, to mention a few" (Linton 1982, 414).

In 1962, due to the deaths of two of the senior members of the committee on public works, Sen. Pat McNamara, a liberal Democrat from Michigan, became chairman. A subcommittee on air and water pollution was also established with Sen. Edmund Muskie (D-Me.) as chairman. This ushered in a new era in efforts to alleviate water pollution problems, with some of the most liberal senators leading the way.

As early as 1963, hearings were held in the Senate on a bill to amend the Federal Water Pollution Control Act. This led to passage of the 1965 Act which created the FWPCA and required the states to set water quality standards. In 1966, more funds were authorized to help the water pollution control efforts of the states. This authorization was to provide "\$3.4 billion for grants to assist the construction of waste treatment plants" (U.S. Code 1972, 3670). The Senate became the leader of efforts to produce better water policies. These efforts eventually led to the amendment of the Federal Water Pollution Control

Act in 1972 and again in 1977.

Members of the Senate were not the only ones concerned with water pollution, the House also had its supporters of changes in national water policy. The leader of the House' effort was John Blatnik. He was chairman of the House Public Works and Transportation Committee and had been the leader of "the national water pollution control program since the 1950's" (Feliciano and Ellicott 1981, 1265).

In 1972, both the Senate and House were working to come up with a bill acceptable to both for changes in national water quality policy. There were a number of factors which eventually led to the passage of the 1972 amendments of the Federal Water Pollution Control Act. First, the Senate and the House had a number of common interests and they acted professionally towards one another even though there was always some jealousy. Second, Sen. Muskie was a candidate for President and the Nixon Administration was trying to play down environmental issues. Third, was that during the time the House was trying to put together its version of the bill, Rep. John Blatnik suffered a heart attack. Because of this unfortunate turn of events, Rep. Bob Jones became acting chairman of the House Public Works and Transportation Committee. Rep. Jones went to the staff and told them to produce a bill which would reflect what Rep. Blatnik would want as a bill, by the next day. A large portion of the House bill was, therefore, based on the Senate bill because of the short period in which to finish drafting it. This bill was sponsored and signed by all 37 of the committee members. Lastly, the Congress took exception to the stance of the Nixon Administration in relation to water quality questions. According to Senate staffer Leon Billings, "we were furious with the Nixon Administration's resurrection of the Refuse

Act as the basic water pollution regulatory mechanism without authorization, legal basis, legislative history, and damn little Congressional consultation. Perhaps this latter community of antagonism was the binding which kept us together through 45 conferences which culminated in the enactment of the 1972 water act over the Presidents veto" (Feliciano and Ellicott 1981, 1264).

The 1972 Act dealt mainly with the environmental aspects of water pollution which contrasts with the emphasis placed on public health in the 1912 Act. The 1972 Act was innovative in that cleaning up the nation's waters was based on a "two-tiered approach: (1) construction of wastewater treatment facilities, and (2) an increased emphasis on better water quality management and planning" (Linton 1982, 416). The main focus of this paper is on the second strategy of better water quality management and planning, more specifically Section 208 of the 1972 Act concerning nonpoint sources of water pollution.

Section 208

Section 208 was included in the 1972 Act because of a general lack of planning at the local, regional, state and national levels. It was the key to the planning effort. Sec. 208 was meant to be the starting point of planning but it was not meant to be done alone. There were four sections in the act which Congress intended to be tied together to produce a complete system of planning. These were "the areawide planning process under Section 208, the river basin plans under Section 209, the state plans under Section 303, and the consideration of alternatives under Section 201" (Feliciano and Ellicott 1981, 1374). These sections were meant to complement one another, but the EPA failed

to fund Section 208 and instead focused on Sections 303 and 201, which in Congressional staffer Lester Edelman's words was "a gross misunderstanding of Congressional intent" (Feliciano and Ellicott 1981, 1374).

One of the responsibilities of areawide planning agencies under Sec. 208 was the identification and control of nonpoint source pollution. The act specifically states in Sec. 208(b)(2)(F) that any plan prepared under the areawide management planning process shall include:

a process to (i) identify, if appropriate, agriculturally and silviculturally related nonpoint sources of pollution, including 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 to the extent feasible such sources; (PL 92-500)

Previously, nonpoint sources of pollution had not been directly addressed in legislation. Pollution from agricultural runoff, forest practices, mining activities and construction were all identified as contributors to the water quality problem in Sec. 208 of the 1972 Act. The management of this type of water pollution presented innumerable problems because little had been done previously to control nonpoint source pollution.

MANAGEMENT OF NONPOINT SOURCE POLLUTION

To understand the problems that are faced when dealing with nonpoint sources of pollution, one must first understand what is meant by the term. The characteristics which have been developed by the EPA to describe nonpoint source pollution are (Pisano 1976, 95-96):

*Nonpoint source discharges enter the water in a diffuse manner and at intermittent intervals that are related

mostly to the occurrence of meteorological events. *Pollution arises over an extensive area of land and

- is in transit overland before it reaches surface waters. *Nonpoint sources generally cannot be monitored at their point of origin, and their exact source is difficult or impossible to trace.
- *Elimination or control of pollutants must be directed at specific sites.
- *In general, the most effective and economical controls are land management techniques and conservation practices in rural zones and architectural control in urban zones.
- *Compliance monitoring for nonpoint sources is carried out on land rather than in water.
- *Nonpoint source pollutants cannot be measured in terms of effluent limitations.
- *The extent of nonpoint pollution is related, at least in part, to certain uncontrollable climatic events, as well as geographic and geologic conditions, and may differ greatly from place to place and year to year.
- *Nonpoint sources are derived from consecutive operations on extensive units of land, as opposed to industrial activities that typically use repetitive operations on intensive units of land.

Control of nonpoint sources of pollution is important because approximately 97 percent of land in the U.S. is nonurban and therefore is potentially a source of diffuse pollution. Sediment from erosion makes up the majority of the nonpoint source pollution. "Almost 2 billion tons of sediment enter our waters annually from 400 million acres of land in crop production" (Pisano 1976, 96-97). Another 2 billion tons come from other sources such as forestry, construction and mining. This 4 billion ton total, along with nutrients and pesticides, represents more than half of the nation's total water quality problem, measured in terms of suspended sediment, BOD, DO, and nutrients.

Sediment causes turbidity which impairs water for many of its uses and also may be harmful to fish and benthic organisms. Sediments as they settle blanket the stream bottom ruining fish spawning grounds and altering the aquatic environment. Sediments also reduce the lifetime

of reservoirs and necessitate the periodic dredging of navigation channels. Other undesirable additions to receiving waters are toxic chemicals, toxic metals, and organic debris. Toxic metals do not oxidize and therefore accumulate in bottom sediments. When these sediments are disturbed a surge of toxic material to downstream areas may result. The addition of organic matter to water increases the BOD, thus, decreasing the dissolved oxygen in the stream. This may have deleterious consequences for fish and other aquatic organisms. Nonpoint sources of pollution are responsible for contributing about 80% of the total nitrogen load and greater than 50% of the phosphorus load into the nation's waters. These nutrients, while not harmful in themselves, can lead to eutrophication, especially in standing bodies of water (Novotny and Chesters 1981, 2-9).

Nonpoint source pollution is a major contributor of pollutants to the nation's waters in the form of sediment, organic matter, pesticides and nutrients. This type of pollution arises over extensive land areas, is diffuse in nature and is difficult to monitor and control. These characteristics of nonpoint source pollution make it difficult to manage, and result in numerous problems which must be resolved before any management plan can be effective. These problems make the implementation of water quality management plans difficult.

Implementation Problems

The implementation of water quality management plans for the control of nonpoint source pollution requires that minimum standards for instream water quality be established. The determination of minimum standards is difficult since the definition of clean water varies with uses and

users. For example, for some uses such as industrial, the dissolved oxygen (DO) level in a stream is relatively unimportant, but for fish life minimum levels of DO are necessary for survival. When there are a number of uses or users on a stream it becomes necessary to prioritize the uses in order to set minimum standards that meet the requirements of the perceived "best" use. This requires that a value judgement be made which may lead to conflicts between users. It is difficult to set standards which will satisfy all uses and users. As G.F. White states in <u>Strategies of American Water Management</u>, "The question of what is clean water can be resolved for any one water body only in terms of preferences among uses and by users as interpreted by agencies responsible for stream flow and quality" (1971, 60).

Another area in which conflict may occur is in the realm of water law. Most of the conflict in this area arises from the juxtaposition of water quality laws and water allocation laws. There have been two seperate sets of laws developed in the U.S. which govern the quality and allocation of water. Allocative laws were the first to be established, with the riparian doctrine developing in the eastern U.S. and the appropriation doctrine developing in the West. Allocative laws originated as a means to protect farmers' and other users' rights to water. More recently water quality laws were established, first to protect public health and later to protect the environment.

Water quality laws are often in direct conflict with water allocation laws because water quality laws may regulate the amount of water which can be withdrawn from a stream, and the type and timing of the addition of return flows to the stream. These regulations often

infringe on water users' rights, real property rights. "Water quality law threatens to not only abridge some of these property rights, but to undermine the whole system of water allocation" (Lamb 1980, 5). In order for our nation's water laws to work in a comprehensive manner, an integration of the water quality and water allocation laws is needed. This is basically a political problem which demands new legislation to form a policy framework in which solutions may be developed.

One of the major difficulties in the administration of water law is that jurisdictional areas don't coincide with ecological units or watersheds. In a hydrologic system the actions of any upstream party that uses water and related lands may affect all other downstream users by changing a combination of either the quality or quantity, or timing and location of water available to them. This makes it very important for one management agency to be established to coordinate and regulate water use in a system (Craine 1969, 9). In the case of nonpoint source pollution it is especially important that a regional agency have jurisdiction over both water and land use within the hydrologic unit. Such regional agencies were established under Sec. 208 of the 1972 Act to develop areawide water quality management plans.

The control of land use activities on lands surrounding streams is essential for the control of most nonpoint sources of pollution. This is a sensitive area because many individuals feel that any restriction or regulation of their activities on their land is unconstitutional through violation of the Fifth Amendment. This is the issue of "taking" without just compensation. When areawide plans are being formulated it is important that the public realize that for water quality to be

improved some form of land use regulation is involved (Kite 1980, 24; Abel 1976, 86).

While areawide planning agencies were set up under Sec. 208 of the 1972 Act to create plans which would control nonpoint source pollution, the institutional framework to implement these plans has not been fully developed. There are still basic questions to be answered, such as: Who has the legal authority to implement regulations?; How will these regulations be enforced?; Who will finance the program?; and, How will monitoring be carried out? George Abel, Chief of Water Quality Management Section, EPA Region X, lists ten "essential elements" which must comprise any program to regulate nonpoint source pollution (1976, 85):

- 1. A clear statement of the conditions to which the regulation applies;
- A clear indication of the parties affected by the regulations;
- The timing of the regulations, notice of hearings prior to their adoption;
- 4. The form of the regulation, i.e., a)activity permit,
 b) land use control, c) zoning, d) building code,
 e) ordinance, f) new law, g) licenses, h) standards;
- 5. The legal authority for the regulation;
- 6. The agency responsible for implementing the regulation;
- The enforcement devices to be used, such as fines, assessments, criminal and civil penalties;
- 8. A monitoring or inspection program to assess compliance;
- 9. A financial program to support the agency's activities in carrying out the regulatory program; and,
- 10. Administrative arrangements, such as relationships with other agencies for monitoring and inspection, leveling of penalties, or provision of financial assistance.

The implementation of plans is more difficult and more important than the planning itself for "no plan or planning process has ever produced a drop of clean water" (Nowak and Korsching 1983, 350).

Unlike point source pollution, nonpoint pollution cannot be controlled through the use of wastewater treatment plants. The nonpoint problem is so widespread and diffuse that treatment is not feasible. Instead, the mangement practices of farmers, foresters and other land owners must be relied upon to control nonpoint pollution. This requires that these individuals implement the newest and best techniques and methods available to control erosion and entry into the waters of nutrients and pesticides. Reliance upon so many individuals for support of a program makes it very difficult to ensure that the goal of clean water in the U.S. will be met.

Some of the most pressing problems of establishing new techniques and practices to control nonpoint source pollution on agricultural and forest lands are: (1) education; (2) economic incentives; (3) support for the program; and, (4) legal issues. Since there are a number of techniques and methods by which nonpoint pollution can be controlled, it takes major education programs to disseminate this information to landowners. Even though information is provided it does not quarantee the use of new techniques. Some landowners may not support the program because they don't perceive a problem in the first place or the cost of implementation is too great. Economic incentives for incorporating new management practices may be needed. The types of control measures vary "from management of surface vegetative cover to structural practices or systems of practices" (Krivak 1978, 164). The cost of each also varies. Some agencies such as the Soil Conservation Service are supplying

farmers with economic incentives to implement new management strategies.

But new techniques do not always give the desired results. Most conservation techniques only protect against average storm intensities. They do not provide adequate defense

against storms of a 5-year recurrence or greater. If on-site erosion is reduced significantly by effective conservation practices, less sediment will enter the channel. Without a comparable reduction in runoff entering these systems, the carrying capacity of streamflow will be greater than the sediment input and an unstable channel will degrade rapidly to adjust gradient and load (Knisel 1982, 194).

A greater contribution of sediments to streams may result from a number of structural practices and techniques if proper design and maintenance are not carefully considered. Each project should be considered individually before being implemented. This requires an input of large quantities of both time and money.

All stages of 208 program development take a great deal of financial backing. The planning, implementation and enforcement of areawide pollution controls cannot be accomplished unless monies to support them can be acquired. There are innumerable costs associated with regulatory programs. There are planning costs, administrative costs, monitoring costs and education costs to name a few. Much of the funding for regulatory programs comes from government at the national, state and local levels. This means that the public must bear the financial burden if programs are to be carried out.

In the case of control of nonpoint pollution on agricultural lands, the agricultural sector would bear the major cost of implementing plans. These costs range from the purchase of new equipment to the cost of

structures such as tile outlet channels. The benefits from implementing pollution controls do not accrue to the farmer which gives him/her little incentive to use new techniques and practices. Some of the measures used by Congress to provide financial incentives to farmers are cost-sharing programs, tax incentives and low-interest loans. Each of these types of incentives, though, have inherent problems. For instance, in cost-sharing programs the costs of administration and technical assistance often equal the amount actually being distributed to farmers (Knisel 1982, 195).

The acceptance of financial incentives by farmers is the key to the success of water pollution abatement programs. Four factors which are important to farmers when considering financial incentives are:

*The time and effort required to establish eligibility.

*The compatibility of the promoted practice with present farm operations.

*The availability of technical assistance, along with financial assistance.

*The profitability of the pollution control investment relative to other investment opportunities (Moore, et.al. 1979, 61).

These factors will determine whether financial incentives will be acceptible to the agricultural community which is necessary to produce the desired pollution control. ۰.

The silvicultural sector also faces problems of increased costs when implementing techniques and practices to control the amount of pollutants entering streams from nonpoint sources. These costs are borne by the logging operator and can be substantial. For example, it was estimated by the National Commission on Water Quality (1975, II-184)

that a change from skidding logs by tractor to non-tractor yarding such as skyline, balloon or high lead could increase costs by \$39 to \$130 per acre, while decreasing sediment yield by as much as one-half ton per acre. The cost of implementing new techniques and practices on both agricultural and forest lands is a major hindrance to achieving water quality goals.

OREGON'S APPROACH TO AREAWIDE WATER QUALITY MANAGEMENT

Oregon was the first state to have its water quality standards approved pursuant to the passage of the 1965 Federal Water Pollution Control Act. Standards for each river basin in the state were then developed by the Oregon Department of Environmental Quality (DEQ). With passage of the 1972 Federal Water Pollution Control Act Amendments, regional planning agencies were to be set up within the states. The Governors of each state were to designate areas in which water quality problems had been identified. They were also to designate agencies to prepare areawide water quality management plans.

In Oregon, four areas were designated (Figure 1). The Portland metropolitan designated area is comprised of Washington, Multnomah and Clackamas Counties. The entity which does continual planning for control of water quality in this area is the Columbia Region Association of Governments (CRAG). The Mid-Willamette Valley Council of Governments (MWVCG) is the regional entity responsible for the Salem area which consists of Yamhill, Polk and Marion Counties. The Eugene-Springfield area in Lane County is represented by the Lane Council of Governments (LCOG). The Rogue Valley Council of Governments (RVCOG) is the designated 208 entity for Jackson County (Glanzman 1976, 54; OR DEQ 1978, 10).



The other 208 planning areas in the state, which are termed nondesignated areas, are under the control of the Oregon DEQ. As part of the nonpoint source pollution abatement program there have been project areas selected throughout the state. Four of the project areas were selected because they were fairly representative of the nonpoint source pollution problems faced around the state. These areas have nonpoint pollution problems resulting mainly from activities on agricultural and forest lands. The other project areas have been selected for study as problems have been recognized (Wassenberg 1980, 245-247; Lucas 1984).

Oregon has received approximately \$7 million in funds to support 208 programs since 1972. Roughly one-half of this amount has gone to areawide agencies. The other one-half has gone to the state with about half of this money being passed to agricultural and forestry personnel.

The last funding Oregon received was four years ago. Even though funds are no longer being received the 208 plans are reviewed each year. This is a cursory review with just a letter report being sent to the Environmental Protection Agency (EPA), but it ensures that a 208 program framework remains intact (Lucas 1985).

Agricultural Lands

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The approach to nonpoint source pollution control on agricultural lands in Oregon has been piecemeal. The major projects have been: (1) a sediment reduction program in Wasco, Sherman, Gilliam, Morrow and Umatilla Counties; (2) a project dealing with irrigation return flows in the Bear Creek drainage; (3) irrigation management in Malheur County; and, (4) an agricultural nonpoint source pollution abatement plan in the Tillamook Bay drainage basin (OR DEQ 1978, 5; Lucas 1985). Each area's problems have been studied and solutions in the form of "best management practices" (BMPs) have been proposed. Some of the BMPs have been implemented but lack of funds has hindered implementation in most areas. A "best management practice" is defined in the Federal Register Vol. 40 Part 130.2(9) as

a practice, or combination of practices, that are determined by a State (or designated areawide planning agency) after problem assessment, examination of alternative practices, and appropriate public participation, to be the most effective, practicable (including technological, economic and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

Often ordinary soil conservation measures are all that are needed to meet BMPs (Wassenberg 1980, 247).

There have been a number of smaller projects carried out throughout the state. Several of these have been projects to manage streambank erosion. The Oregon DEQ and the State Soil and Water Conservation Commission (SSWCC) have worked on these projects since 1976. A combination of BMPs and structural work has been used to control streambank erosion at fifteen sites around the state (OR DEQ 1978, 6). Several projects to control the entry of sediments and nutrients into lakes have also been completed. A program has been implemented at Blue Lake and a program for Sturgeon Lake is in the process of being implemented. Other projects have been undertaken at Klamath Lake, Fern Ridge Reservoir, Devil's Lake and Mirror Pond. The Oregon DEQ has also been involved in water quality analysis after field burning in the Salem and Eugene areas. At this time, no BMPs have been implemented (Lucas 1985).

The Oregon 208 nonpoint source pollution control program on agricultural lands has suffered from lack of funding. The state didn't receive enough money to fulfill the intent of the 208 program and little, if anything, is being done at this time.

Forest Lands

The Oregon Forest Practices Act (ORS 527.610-527.730 and 527.990) was passed in 1972 prior to the enactment of the Federal Water Pollution Control Act Amendments of 1972. The Oregon Forest Practices Act was meant to protect not only water quality but to also provide for reforestation, fire prevention, and protection against insects and disease. The Act divided the state into three regions in which rules were to be developed to control nonpoint source pollution. These rules were Oregon's answer to

the BMPs required on forest lands under the Federal 1972 Act. The Oregon Forest Practices Act applies only to state and private lands. The administration of the Act is carried out by the Oregon State Department of Forestry (OSDF). The rules are enforced by the Department of Forestry but must comply with water quality standards set by the DEQ (Brown et.al. 1978, 4).

The identification and implementation of BMPs on federal forest lands has been designated to the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM). The federal forest practices have been compared with the Oregon Forest Practices Rules and have been found to meet or exceed these rules. The USFS and BLM have agreed to carry out nonpoint source pollution control programs on forest lands under their jurisdiction (OR DEQ 1978, 16-17). Table 1 shows the amounts of forest land in private, state and federal ownership in Oregon.

Oregon 1980 Timber Inventory								
	Acres (1000)	% of Total						
Forest Industry (Private)	4,013.3	30						
Other Private	2,199.0	17						
State and Other Public	865.3	6						
National Forests	4,408.9	33						
Bureau of Land Management	1,820.6	14						
Total	13,307.1	100						
	ward could be a							

Table 1									
Oregon	1980	Timber	Inventory						

(Source: Stere et.al. 1980, 34)

The forest practices which effect water quality and are therefore regulated under the Forest Practices Act and are also under regulation on USFS and BLM land are (Brown et.al. 1978, 4):

- 1. Timber harvesting
- 2. Road construction and maintenance
- 3. Site preparation
- 4. Application of chemicals
- 5. Rockpits and surface mining
- 6. Petroleum leakage
- 7. Stream channel changes

The effects of these activities on water quality in Oregon are not well documented. There is little long term monitoring of headwater streams thus data is lacking. It is therefore difficult to conclude how effective the Forest Practices Act has been in controlling nonpoint source pollution in Oregon. The Forest Practices Act Technical Work Group felt that the level of attainment of water quality goals was "moderately effective". They arrived at this conclusion after soliciting the opinions of Forest Practice Officers, District Fishery Biologists, Timber Operators and BLM Foresters and Engineers. The problems which were identified as limiting effectiveness were: "training, supervision, and enforcement" (Brown et.al. 1978, 56). The problems were all administrative in nature.

The Oregon DEQ states in its <u>Nonpoint Source Narrative Summary</u> (1978, 4-5) that the Forest Practices Rules are "generally adequate to protect water quality". The DEQ agrees with the technical work group on its findings and states that the minimum implementation requirements are being met by the OSFD. The report also states that as new information is acquired the rules may have to be changed to meet BMPs.

The Forest Practices Act has been implemented to meet minimum requirements around the state. The Act requires that timber operators notify the State Forester that an operation is to begin. Operations notifications are then prioritized as high, moderate or low priority.

The priority given is determined by the steepness of slope in the operation's area and the proximity to Class I streams. The higher priority operations often warrant an inspection before work is begun. Inspections are also made during the operation. Enforcement is provided through issuance of citations stating exactly the violations the operator has committed. If the operator corrects the conditions to comply with the rules the violations are dropped. If not, the district courts must decide guilt and the amount of the fines which will be levied against the operator. "The largest fine was \$1,505 plus \$2,000 restitution to the Department of Fish and Wildlife" (Brown et.al. 1978, 27). A violation of the Forest Practices Rules is considered a Class A misdemeanor.

The key to nonpoint source pollution control on forest lands in Oregon is the implementation of the Forest Practices Rules. These rules may change as new information becomes available. Research in the area of BMPs on forest lands is important if nonpoint source pollution is to be controlled. The technical work group developed a list of research questions and needs that could provide new information on BMPs. The categories of research needs are: (1) resource information needs on forest soils, forest streams and aquatic organisms; (2) research needs for timber harvesting technology; (3) research needs for road construction; and, (4) other research needs. With the addition of new research, better methods and practices may be developed which will better control nonpoint source pollution (Brown et.al. 1978, 75-78).

SUMMARY AND CONCLUSIONS

Beginning with legislation in the 1940's and continuing through present day, efforts to fine tune our water quality laws have been

unceasing. With the realization that nonpoint source pollution must be controlled to meet water quality goals came legislation to regulate this source of pollution. Section 208 of the Federal Water Pollution Control Act Amendments of 1972, was the first legislation to directly address nonpoint pollution. The creation of areawide water quality management entities under this section was the first attempt to form regional authorities to plan for the abatement of water pollution. originating from nonpoint sources.

Though planning to control nonpoint pollution has been carried out, the attempts to implement these plans are confronted with a number of problems. Regional entities have difficulties in coordinating the activities of the plethora of local, state and federal agencies. The ability of regional entities to implement plans is further hindered by a lack of funds and the lack of authority to regulate. Other problems are associated with the administrative and technical difficulties of implementation.

In Oregon, the approach to areawide water quality management on agricultural lands has been piecemeal. There have been a number of projects completed throughout the state and a few have been implemented. The Oregon DEQ has directed the efforts of regional planning agencies and has been responsible for designating agencies to implement these plans. In the area of nonpoint pollution control from silvicultural activities, Oregon has relied upon its Forest Practices Act to meet BMPs. Forest Practices Rules have been set up to govern the operations of silvicultural activities. They have been found to be "moderately effective" by the Forest Practices Act Technical Work Group.

Viewing the characteristics and problems associated with nonpoint

source pollution, it will take a great deal of time, research and money to achieve the desired results. The main hurdle to get over is the establishment of an institutional framework with the needed authority within which to work. This would be a framework in which the financial, legal and administrative mechanisms to implement plans had been designed.

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