REGULATORY POLICY - INSTITUTIONAL CHALLENGES TO IMPLEMENTING THE CLEAN WATER ACT IN ARIZONA

by

Susan Elizabeth Ritter

A Thesis Submitted to the Faculty of the
SCHOOL OF RENEWABLE NATURAL RESOURCES
In Partial Fulfillment of the Requirements
For the Degree of
MASTER OF SCIENCE
WITH A MAJOR IN RENEWABLE NATURAL RESOURCES STUDIES

In the Graduate College
THE UNIVERSITY OF ARIZONA

1993
STATEMENT BY AUTHOR

This thesis has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his or her judgement the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: Susan E. Ritter

APPROVAL BY THESIS COMMITTEE

This thesis has been approved on the date shown below:

David A. King, Thesis Director
Professor of Renewable Natural Resources

David Phillip Guertin
Assistant Professor of Renewable Natural Resources

Hanna J. Cortner
Professor of Renewable Natural Resources

Date

4/27/93
ACKNOWLEDGEMENTS

My appreciation is extended to Dr. David A. King, who served as my advisor and thesis director, for his support and guidance during preparation and completion of this thesis. Thanks are also extended to Dr. King for helping me get started in the graduate program with funding and office space.

I also wish to thank my other committee members, Drs., Phil Guertin and Hanna Cortner, for their thoughtful comments and suggestions. Additional thanks are extended to Dr. Guertin for his many encouraging words and his generous advice.

To the folks in the ART Lab, I am grateful for the camaraderie and laughs over the last two years. A special thanks is extended to Craig Wissler for educating me in the world of GIS, and for keeping me employed while I worked on my thesis.

And finally, I want to extend a heartfelt thanks to those friends and family that provided support and encouragement when it was most needed.
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>6</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>7</td>
</tr>
<tr>
<td>Problem Statement and Purpose</td>
<td>7</td>
</tr>
<tr>
<td>Organization</td>
<td>11</td>
</tr>
<tr>
<td>REGULATORY POLICY - A Theoretical Discussion</td>
<td>14</td>
</tr>
<tr>
<td>Introduction</td>
<td>14</td>
</tr>
<tr>
<td>Policy Definitions</td>
<td>15</td>
</tr>
<tr>
<td>Regulatory Policy Development</td>
<td>17</td>
</tr>
<tr>
<td>Progressive Era</td>
<td>18</td>
</tr>
<tr>
<td>The New Deal Era</td>
<td>21</td>
</tr>
<tr>
<td>New Social Regulatory Policy</td>
<td>23</td>
</tr>
<tr>
<td>Theories of, and Insight into, Bureaucratic Discretion</td>
<td>29</td>
</tr>
<tr>
<td>Statutory Design</td>
<td>32</td>
</tr>
<tr>
<td>Rulemaking Proceduralism</td>
<td>36</td>
</tr>
<tr>
<td>Policy Analysis</td>
<td>39</td>
</tr>
<tr>
<td>Political Oversight</td>
<td>40</td>
</tr>
<tr>
<td>Suggestions for Improvements</td>
<td>43</td>
</tr>
<tr>
<td>WATER POLLUTION REGULATORY POLICY</td>
<td>46</td>
</tr>
<tr>
<td>Introduction</td>
<td>46</td>
</tr>
<tr>
<td>Evolution of Water Pollution Policy in the United States</td>
<td>47</td>
</tr>
<tr>
<td>Water Pollution Control Act of 1948</td>
<td>50</td>
</tr>
<tr>
<td>The Water Pollution Control Act Amendments of 1956</td>
<td>51</td>
</tr>
<tr>
<td>The Water Quality Act of 1965</td>
<td>52</td>
</tr>
<tr>
<td>Federalism vs Pre-emption</td>
<td>53</td>
</tr>
<tr>
<td>State Program Evaluations</td>
<td>55</td>
</tr>
<tr>
<td>Conclusion - Implications of Federal Pre-emption</td>
<td>58</td>
</tr>
<tr>
<td>The 1972 Federal Water Pollution Control Act Amendment</td>
<td>60</td>
</tr>
<tr>
<td>Goals and Objectives</td>
<td>61</td>
</tr>
<tr>
<td>Means of Controlling Pollution</td>
<td>62</td>
</tr>
<tr>
<td>Implementation Issues</td>
<td>66</td>
</tr>
<tr>
<td>Conclusion</td>
<td>68</td>
</tr>
<tr>
<td>ARIZONA and U.S. WATER QUALITY REGULATIONS</td>
<td>69</td>
</tr>
<tr>
<td>Introduction</td>
<td>69</td>
</tr>
<tr>
<td>Arizona's Riparian Environment</td>
<td>70</td>
</tr>
<tr>
<td>The Problem - Arizona Implementation Difficulties</td>
<td>72</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS - Continued

Additional Considerations .......................... 78

THE CASE FOR REFORM .................................. 81
  Introduction .......................................... 81
  Linking the Arizona Case ............................ 82
  Reform Potential and Reauthorization of the CWA . 85
    Assessing Modifications in State-Federal
    Relationship ........................................ 86
    Modifications to the CWA Goals and Objectives 89
    The Case for Increased Bureaucratic Discretion 92
  Options for Arizona .................................. 96
    Discharge Measurements ............................ 96
    Use Attainability Analysis ........................ 98
  CONCLUSION ......................................... 100

REFERENCES .......................................... 102
This study of regulatory policy concerns issues and problems related to "new" social regulatory policies. These policies, initiated in the late 1960's, introduced fundamentally different approaches to regulatory policy, including comprehensive constraints on bureaucratic discretion, markedly increased federal oversight, and strong and absolutely worded statutes. While effective in many ways, these new approaches are blamed for seriously inhibiting the flexibility and creative problem-solving powers of implementing agencies. To illustrate these problems, this study focuses on the implementation of the Clean Water Act in Arizona, where regulation of effluent dominated waters in an arid state poses a unique situation. The thesis shows how characteristics associated with new social regulations have facilitated the resultant unfortunate regulatory outcome. By using the Arizona case, reforms that increase agency responsiveness yet maintain the strength and integrity of the innovative policies are recommended.
CHAPTER 1
INTRODUCTION
Problem Statement and Purpose

The social movements of the 1960’s and 1970’s brought about profound changes in U.S. regulatory policy. Whereas earlier regulatory politics of the Progressive and New Deal eras had centered on economic issues, major initiatives during the 1970’s involved the federal government directly in so-called "quality of life" concerns, such as safety in the workplace, affirmative action, pollution control, and consumer protection. Not only did the government enact ambitious programs, but it also undertook a complex and sweeping effort to reform the institutional arrangements responsible for implementing those programs.

A generation of experience had eroded the Progressive and New Deal eras’ image of the independent and expert administrative agency creatively regulating important problems in the public interest. A pervasive dissatisfaction in which bureaucracies were perceived as inefficient, ineffective, unaccountable, and unresponsive, led the way for a new strategy of "checks and balances" which directly involved Congress, the courts, the President, and public interest groups in regulatory policy.
This eagerness for substantive changes extended into federal-state relationships. Before 1970, health and environmental protection were principally matters for state and local governments, rather than federal. But the typical state or local agency was understaffed and generally unprepared for the aggressive undertaking these new social regulatory programs demanded (Ackerman and Hassler 1981). In some ways the state agencies were a parody of the New Deal and Progressive administrations. State agencies often took the form of "independent" commissions whose members were often dominated by the very interests they were suppose to regulate (Ackerman and Hassler 1981). In response, social regulations took on a massively increased federal presence, pre-empting responsibilities and authority long held by states.

Unfortunately, in their haste to secure regulatory programs that would eliminate the pathologies of the earlier regulatory regimes, architects created a whole new set of pathologies equally as vexing as the first. The combined effects of demanding rule-making procedures, political oversight, and strong statutory directives, may have curtailed bureaucratic misuse of powers, but at the expense of creative problem-solving and flexibility. Proceduralism, "bean counting", and statutory adherence tended to become
the dominate agency agenda. Coupled with adherence to federal uniform standards, the agency's ability to accommodate unique regulatory situations became seriously impaired, and contributed to unreasonable regulatory outcomes.

As an archetype of "new" social regulatory policies, the Clean Water Act (CWA) reflects these pathologies, and the current issue over appropriate standards for effluent-dominated streams in Arizona provides a good illustration. In this arid state, communities discharging effluent into ephemeral streambeds from publicly-owned treatment works are being asked to comply with tough new standards. Some of these standards, based on the CWA's goal of protecting aquatic and wildlife species, are more stringent than drinking water standards due to the high toxicity of some aquatic species. Because streambeds provide little or no dilution of treated wastewater discharges, many dischargers are required to meet stringent water quality standards at the end of the discharge pipe. Consequently, the prohibitively high costs of complying are forcing many communities to seek off-stream, less stringently regulated locations for discharge.

Ironically this has created a situation in which water
quality standards have become a greater threat to the habitat than the effluent itself, for without effluent there would be no fish and wildlife species to protect. Furthermore, effluent-dominated riparian ecosystems have become important replacements for the natural riparian systems that have been largely eliminated throughout the state, due largely to human exploitation (Sonorensis 1988).

While well aware of this unreasonable outcome, EPA has remained firm in requiring Arizona dischargers to comply with the standards. This unwillingness to deviate from prescribed uniform requirements and provide more environmentally sensitive options illustrates the downside of the "new" social regulatory policies.

While blame for this seemingly senseless outcome has easily fallen on EPA, it is the thesis of this paper that it is the combination of mechanisms and structure designed into "new" social regulatory policies that has significantly affected agency performance. Controls on bureaucratic discretion, coupled with absolute statutory goals and federal authority, are all influencing factors that burden and constrain agency decision making. As such, it is these factors that should be evaluated when analyzing how best to remedy situations of regulatory discord, such as that occurring in Arizona.
The purpose of this paper is to generate insight into the causes and consequences of such regulatory discord, and by using the Arizona case, aim toward recommending reforms. While applicable to "new" social regulatory policies in general, the focus of the discussion will be on environmental policies, and specifically, the Clean Water Act (CWA).

The analysis will specifically involve examination of the following three important components of social regulatory policy: 1) federal control of regulatory policy; 2) statutory goals and objectives of the CWA and; 3) the degree of discretion afforded regulatory agencies.

Based on the theoretical and historical discussions, the conclusion drawn is that a revision in controls on bureaucratic discretion offers the best opportunity for reform. To provide much needed responsiveness, these modifications could be accomplished while still maintaining the strength and integrity of the Act.

**Organization**

To lay a foundation for discussion, this paper presents both the historical and the theoretical backgrounds of social regulatory policy and the Clean Water Act. The paper is
organized into five chapters. Chapter 2 introduces the concept of regulatory policy and presents an historical overview of its development in the United States. The intent is to draw a distinction between previous regulatory policy eras with that of the current era, and to illustrate what a substantially significant turning point new social regulatory policies represent in U.S history. In terms of a theoretical understanding, this chapter also provides an examination of the mechanisms incorporated into new social regulatory policies to control bureaucratic discretion, including considerations of specific techniques.

Chapter 3 presents a discussion of water pollution policy specifically. This discussion includes a historical perspective and draws a distinction between past and present responses to water pollution. The main intent of this presentation is to illustrate the significance and consequences, of an emerging and dominant federal role in state water quality management, an aspect continually under debate, and a subsequent topic for analysis of potential areas of reform.

Chapter 4 presents the Arizona case study. It delves into regulatory problems experienced by Arizona communities that
discharge effluent into ephemeral streambeds. The value of riparian areas to Arizona is also discussed.

Chapter Five concludes with a discussion of potential reforms. The preferred option is then applied to the Arizona case as an illustration of how it might benefit the current regulatory dilemma.
CHAPTER 2
REGULATORY POLICY - A Theoretical Discussion

Introduction
This chapter provides the foundation for understanding regulatory policy and its development in the evolving capitalistic and democratic society of the United States. The intent is to establish a distinction between previous regulatory eras and that of the current period, characterized by the enactment of so called, "new" social regulatory policies. These "new" policies marked a significant turning point in U.S. history in terms of the federal government’s relationship to its citizens, the states, and administrators entrusted with carrying out policies. Here the federal government assumed a more aggressive and active protectionist role toward its citizens, usurping a role once claimed, but only sporadically maintained, by the states. These policies also brought about profound changes in bureaucratic relations. Once the darling of government regulations, the administrative branch now was viewed as a necessary evil, and in need of binding and forcible constraints (Yeager 1991, Bardach and Kagan 1982).

To establish a groundwork for understanding regulatory policy, the first section introduces definitions and
classifications related to policy in general, and regulatory policy specifically. These concepts are necessary for establishing a foundation for effective dialogue with the reader.

Policy Definitions
According to Webster’s Dictionary, policy is a "course of action adopted and pursued by a government," while implementation is the act of "putting into effect, according to or by means of a definite plan." A plethora of variations on these definitions can be found in the political science literature, many suggesting this similarly idealized interpretation of implementation and its relationship to policy. In reality, however, the relationship between policy and implementation is often less congruent. Marcus (1980) provided the straightforward distinction, that public policy is "what governments choose to do" while implementation is "what they actually do". This is a useful concept and one to be kept in mind in discussions of Congressional intent, bureaucratic discretion, and the CWA.

Regulatory policy is one of several types of public policies. Other types include distributive and redistributive policies (Lowi 1964). Distributive policies
are those aimed at promoting private activities which are thought to be desirable to society, and often involve the use of subsidization. Examples include, low-cost grazing permits and grants for public works. Redistributive policies involve the reallocation of wealth which tends to favor some citizens or groups at the expense of others. This would include such policies as income and social security taxes. Regulatory policies are easily differentiated from these other policy types in that they employ the most forceful techniques of coercion "aimed at prescribing specific conditions under which private activity can and cannot take place" (Ripley 1980).

U.S. regulatory policies are largely enacted in response to inefficiencies inherent in the capitalist market system. These inefficiencies include: barriers to entry into the marketplace, as with monopolies; externalities, such as air or water pollution, in which not all costs of production are taken into account; and imperfect knowledge and uncertainty, which may result in deceptive practices potentially harmful to consumers (Portnoy 1990, Gerston 1988).

Policies intended to correct these flaws are commonly characterized as either being social or economic. Economic regulatory policies are those that seek to stabilize

While these distinctions are useful in understanding the different objectives of regulation, they are not perfect. For instance, economic regulations obviously affect social well-being, and the impacts of social regulation are felt in the market (Yeager 1991).

Regulatory Policy Development

Regulatory policy in the U.S., while continuously increasing over the century, has developed in distinct spurts or "waves". The literature generally identifies three periods of regulatory activity in the U.S. (Harris and Milkis 1989, Vogel 1981). The first two are familiarly referred to as the Progressive Era and the New Deal Era. The third, which has eluded a popular label, is associated with the consumer, civil rights, and environmental movements that emerged during the 1960's. The common theme which unites these three eras is the effort to politically and legally
transform the structure and dynamics of U.S. business-government relations (Harris and Milkis 1989). Not only did they establish new guiding principles in U.S. government policy, but also firmly rooted the bureaucracy as the fourth branch of U.S. government.

As will be illustrated, the emergence of each new regulatory wave brought about a distinctly new set of regulatory ideas, ideas that brought about profound political changes, especially in business-government relations. It should be noted, however, that these changes did not mean an end to the regulations of the preceding wave, but rather their continuation, augmented by new regulations.

Progressive Era

The Progressive Era, 1902 to 1914, defines the first flurry of regulatory activity in the U.S. which occurred in response to outrage over the domination in the market by huge corporate entities, in a society that valued independent businesses closely tied to a local economy (McCraw 1984). Though the Sherman Anti-Trust Act and the Interstate Commerce Commission were established in the late 1800's, most political scientists associate the Progressive Era with the early 1900's. This recognition is attributed to the degree and effectiveness of subsequent regulatory

Regulatory policy of the Progressive Era dealt primarily with capital goods and industries, such as railroads, steel, oil, and coal, which were becoming increasingly concentrated and centralized. The power and abuses of these "robber barons" resulted in the famous "trustbusting" campaigns of Theodore Roosevelt. This led to, among several other important enactments, the 1914 Clayton Act and establishment of the Federal Trade Commission, whose job was to keep business competition free and fair (Keller 1981, Vogel 1981).

Social regulatory policies played a far less prominent role during this period. Of the few policies produced during this era the most notable were the Meat Inspection Act of 1906, which regulated the meat-packing industry, and the 1910 enactment which protected coal miners health and safety. Both of these enactments were largely supported by the targeted industries, who found it politically and economically advantageous to support them (Harris and Milkis 1989). Coal operators, for instance, found that championing such regulations provided a leverage for stabilizing relations with organized labor, as well as a means of circumventing the patchwork of individual state laws. Large
meat packing companies found passage of 1906 Act also beneficial, as the regulations were likely to prove too costly for smaller competing companies (Vogel 1981).

Bureaucratic autonomy was aggressively promoted during the Progressive Era, being largely perceived as a remedy to partisan politics and to menacing concentrations of corporate power. Thus the notion of "bureaucratic expertise" was founded, which established a distinction between politics and administration and served as the philosophical basis for agency discretion. Bureaucratic experts it was argued, should be free to perform technical tasks undistracted and unencumbered by political burdens (Gormley 1989).

Progressives promoted this autonomy through the establishment of independent regulatory commissions, deliberately structured to minimize political control. Institutionalized during this period was the notion of a strong civil service, which protected bureaucrats from both chief executives and party bosses, and the idea of a local city manager who would remove technical, managerial questions from the political arena (Gormley 1989).
The New Deal Era

The New Deal era of the 1930's is the second period of notable regulatory activity in the U.S.. Spurred on by the depression and the new issues raised by the mass marketing of goods and services, this era marked a major transformation of the government into the modern administrative state, as regulatory activity accelerated to unprecedented levels (McCraw 1984, Vogel 1981).

The events that culminated in the Great Depression focused attention, once again, on the destructive capability of uninhibited competition, resulting in more anti-trust regulations and additional regulation of securities and banking activities. In the post-Depression era a consumer explosion necessitated regulations to prevent misleading and dangerous commercial practices. And the rising demands for gas, electric, and telephone service, resulted in the emerging concept of "natural" monopolies and the development of public regulation of private utilities. These conditions resulted in government broadening the scope of its relationship with the corporate sector, and in providing legal protection for labor (Harris and Milkis 1989).

This growth in federal regulations necessitated the establishment of more implementing agencies. In fact, after
only two years in office, Franklin Roosevelt had established sixty new agencies with one hundred thousand jobs (Gormley 1989). While the Roosevelt Administration attempted to maintain strong central control of the growing bureaucratic establishment, the federal bureaucracy became much more independent. Agencies came to conduct their business with a tremendously large degree of discretion, relying heavily on experts. The increasing technical detail in decision-making meant less accessibility to the general public and narrowing of power in the hands of a few (Gormley 1989, Bryner 1987).

Regulatory agencies also had small spheres of influence, usually regulating one or a handful of related industries. The Interstate Commerce Commission, for instance, was established to oversee surface transportation, the Federal Communications Commission, communications, and so on. The combined conditions of autonomy, and close working relations with the regulated industries created a persistent dilemma. The term "capture" was used to characterize many of these relationships, as special interests groups began dictating to the regulating agencies. Despite occasional criticism from academics, this pattern aroused little controversy, since those most affected were reasonably content (Gormley 1989).
New Social Regulatory Policy

The "new" social regulatory policies introduced in the late 1960's and early 1970's established an even broader concept of the government's role in the economy. Differing from the previous wave of regulatory policy which largely centered on economic issues, these initiatives involved the federal government directly in so called "quality of life" concerns, such as safety in the workplace, affirmative action, pollution control, and consumer protection. Unlike the previous regimes which appeared to largely embrace capitalism, these regulatory policies reflected a deep suspicion of the capitalist system as well as the ability of government to adequately control it. Thus these regulations extended a more heavy handedness into the affairs of business, as well as the decision-making apparatus of regulating agencies (Harris and Milkis 1989, Bryner 1987, Vogel 1981).

Not only were qualitative changes associated with this period, but also massive quantitative changes. Prior to the 1960's, existing social regulatory programs were administered almost exclusively by state and local governments (Lake 1982). The Food and Drug Administration, established in 1933, was the only federal agency whose primary responsibility was the protection of consumers,
employees or the public from harm due to corporate activities. But between 1964 and 1977 ten new federal agencies were created to supervise social regulatory programs, including the Environmental Protection Agency and the Occupational Safety and Health Administration both established in 1970. In terms of legislation enacted, laws covering the area of consumer safety and health amounted to 5 during the Progressive Era, 11 during the New Deal, as compared with 62 between 1964 to 1979. In the area of energy and the environment, 2 enactments were passed during the Progressive Era, 5 during the New Deal, while 32 were enacted in the most recent period (Bryner 1987).

Impetus for this impressive array of new policies and agencies concerned with the health and safety of society and the environment can be traced to major changes in the value system underlying American society in the post-industrial post-WWII era (Lemak 1985). Specifically, Bardach and Kagan (1982), propose five underlying reasons for this wave of social regulation around 1970:
- Increasing knowledge about risks by individuals,
- Consumer attitude shifts toward an increasing intolerance of risk as quality of life issues come to the forefront,
- Reformist activism of the 60's transformed social problems into moral issues,
- Responsibility for preventing harm was being shifted from
the individual to society, and

- Pragmatically, it was politically advantageous to sponsor social regulation in Congress.

Particularly instrumental was the emergence of a collective and powerful consumer voice (Harris and Milkis 1989). While in earlier years the consumer occupied a passive role in the policy process, activists such as Ralph Nader ushered in the new and powerful public interest movement. These advocates of new social regulation consciously sought to design regulatory institutions that would minimize the prospects of business exercising undue influence in the administration of regulatory affairs. Backed by public support, this new powerful lobby single-handedly reshaped the arena in which regulatory policy was decided, a process largely removed from the public prior to the 1960’s (Vogel 1981).

Vogel (1981) illustrates the significance of the social momentum of the 1960’s, by stating that "the Prohibition movement represents the only comparable effort in this Century to organize successfully large numbers of individuals around the pursuit of what are essentially ‘public goods’."
charges of agency capture, Congress specifically designed the new agencies and regulations to cut across industry lines. This policy approach, in addition to the expanded scope of much of the new legislation, intruded far more into the daily activities of industry, and created an adversarial relationship between the regulated and regulators (Portnoy 1990, Harris and Milkis 1989).

Unlike previous regulatory endeavors, these programs were founded on statutory goals stated in absolute, unqualified terms. The goal of the 1972 Federal Water Pollution Control Act Amendments, for instance, was to eliminate all effluent by 1985; the 1970 Clean Air Act stated that carbon monoxide and hydrocarbon emissions from new cars were to be reduced 90 percent from 1970 levels by 1975; and under the Occupational Safety and Health Act workers had a right to have a job "free of known hazards". Such language, common to the statutes of the 1960's and 70's, was a rarity in earlier legislation (Bryner 1987).

These ambitious programs, not surprisingly, came under a myriad of intense criticism and debate. Though a certain amount of the criticism came from the anti-regulation contingent, considerable criticism was generated by those who generally supported the goals of the regulation, but who
were disgruntled with the means of achieving it. Economists especially, in both liberal and conservative camps, derided the high costs of compliance and thought that greater efficiencies were possible. In their opinion the problem essentially centered around the "command-control" approach of these new policies (Harris and Milkis 1989, Bardach and Kagan 1982).

The term "command-control" generally refers to the high level of statutory and regulatory specificity and detail, aimed at controlling the daily operation of business firms. These statutes mandate specific technological requirements usually within specified deadlines. The CWA, for instance, requires industries to install "the best available technology economically achievable" by 1983. Critics charge that this approach creates costly overregulation and ignores less costly incentive-based approaches to regulation (Milkis and Harris 1989).

Command-control or statutory specificity is only part of the implementation picture which has yielded undesirable regulatory outcomes. Recently attention also has focused on the constraints designed to reduce bureaucratic discretion and excessive industry influence in the administrative process. These constraints are blamed for stifling both
ideas and creative problem-solving that could lead to more effective and efficient results (Bryner 1987, Gormley 1989).

In reality most statutes grant agencies some flexibility in rulemaking. Yet with so many controls on discretion, and Congressional intent so expressly stated, regulators tend to be reluctant to exercise much flexibility in policy implementation. Bardach and Kagan (1982) describe this pattern of following the letter of the law as "risk avoidance," wherein particular regulatory measures are adhered to whether or not the regulatory approach is effective, and creative and innovative administrative discretion are stifled.

Ackerman and Hassler (1981) allude to this problem in what they describe as "agency-forcing in Clean Coal/Dirty Air. Ackerman and Hassler recount how EPA, through the Clean Air Act, required all new coal-burning power plants to use "scrubbers," despite the fact that a more cost-effective strategy would have been to permit the use of low-sulfur coal. Ackerman and Hassler concluded that EPA was encumbered by "abstract legalisms," as well as the framework within which Congress, agencies, courts, and special interest groups interacted to form and implement policy. According to Ackerman and Hassler "creating a regulatory
universe only tangentially related to environmental realities".

In order to lend insight into this poor performance and provide a foundation for a later discussion of the Arizona case study, the next section provides the theoretical perspectives relating to bureaucratic discretion. The intent is to provide an appreciation for the environment under which agencies operate, the complexity and enormity of these controls, and to provide adequate detail in order to evaluate their impact and overall contribution to the regulatory process. This discussion will focus on the major mechanisms designed to control bureaucratic discretion: statutory design, rulemaking, policy analysis, and political oversight.

Theories of, and Insight into, Bureaucratic Discretion
The dilemma over how much latitude should be granted to administrative agencies in policy making is an old and persistent one. On the one hand is the thought that discretion provides flexibility and adaptability to variable circumstances. This thought follows from the premise that no system of detailed regulations can adequately anticipate the myriad of situations and circumstances that an agency could face. Thus regulators should be allowed that range of
discretion necessary to adapt policy implementation to specific conditions, enabling more reasonable and fair results (Yeager 1991, Bryner 1987, Gormley 1989).

Administrative discretion also is said to be particularly important given the complexity of science, especially that associated with health, environmental and safety regulations. Advocates argue that adherence to rigid rules results in regulatory unreasonableness, maintaining that bureaucratic discretion is a natural response to the complex and diverse problems faced by government (Bryer 1987, West 1985, Bardach and Kagan 1982).

An opposing viewpoint holds that discretion invites chaos. By leaving important policy decisions to un-elected officials, bureaucratic discretion threatens the idea of political accountability, and that without specific rules, regularly enforced, the deterrent effect of the law will erode. The end result of unlimited discretion being unpredictability, unequal treatment, and a high risk of corruption that could ultimately harm citizens. The notion is that the rule of law, no matter its defects, is preferable to the discretionary rule of imperfect officials (Bryner 1987, West 1985, Gormley 1989).
Furthermore, traditional "rules of law" mandate that coercive powers such as regulatory requirements, and their associated penalties, be limited by laws that are uniformly and explicitly applied. Founded on ideas of fostering individual freedom, rules of law are to be based on insuring that citizens know precisely what actions are prohibited, so they can act and live their lives accordingly (Bryer 1987). They also serve to assure that administrative agencies are limited to powers that are expressly delegated to them by law, providing a check against arbitrary power and "capture" by the interests they are suppose to control (Lowi 1979).

In reality, bureaucratic discretion, in varying degrees, has become a fundamental characteristic of modern administrative government, and a common element of all bureaucracies (Bryner 1987). Congress does not have the resources, the time, nor the inclination to deal with complex, detailed regulations, and is thus obliged to depend on experts.

Various means of coping with discretionary activity have been introduced ranging from the subtle to the highly coercive, and have had a great deal of impact on policy implementation. The most coercive constraints on administrative discretion are found in strongly worded and specific enabling legislation, as well as in rulemaking
procedural requirements. Other means include policy analysis and political oversight. These procedures have important implications for the actual decisions made, influencing the interests, assumptions and values that will have an impact on administrative deliberations (Gormley 1989, Bryner 1987).

Statutory Design
Among the legislative means of controlling bureaucratic discretion, statutory design, particularly specificity, is a powerful tool in regulatory policies. According to Mazmanian and Sabatier (1981) "it is the statute that essentially has the capacity to structure the entire implementation process."

Political realities discourage legislators from enacting strong and precise legislation. It is far easier for legislators to delegate authority to administrators, under loosely worded mandates, than it is to agree on specific goals and standards. Sanctioning discretion can serve political incentives by providing a way for legislators to delegate difficult decisions to bureaucrats and avoid the wrath of politically powerful interests (Bardach and Kagan 1982). Vague statutory statements, such as "to the extent feasible" or "presenting an unreasonable risk of injury" are
inserted into statutes to provide watered down regulations while giving the public appearance of achieving more (Bardach and Kagan 1982).

The health and environmental statutes of the 1960's and 1970's significantly departed from this convenient practice. Strong language that mandates specific standards, clear priorities, and fixed deadlines characterizes such high profile legislation as the Clean Air Act and the 1972 Federal Water Pollution Control Act. In terms of clear priorities, Congress established health, safety, and environmental goals as the principal objectives, and, in many cases, expressly mandated absolute goals without regard for economic considerations.

In terms of specificity, Congress not only stated that standards would be technology-based, but also to whom the standards would apply and when they must be established. The Clean Air Act, for example, sets the acceptable levels for carbon monoxide, nitrogen oxide and hydrocarbons to be emitted by automobiles, and the Clean Water Act specifies 65 toxic pollutants to be regulated (Bryner 1987).

The ideal of a strong statute is appealing. The notion of developing regulations containing objectives and goals that
are consistent, clear, and specific, with important design elements and assumptions left chiefly in the control of the statutory designer, appears attractive, especially to those opposed to bureaucratic discretion. But in reality the construction of such statutes is difficult, and attempts to be clear and precise may in fact produce serious misunderstandings and unintended negative effects. The political nature of the legislative process itself, in terms of conflict and bargaining, can make clarity difficult (Ingram and Schneider 1990).

A key concern of "strong statutes" is the excessive rigidity they impose. Ingram and Schneider (1990) discuss how too much clarity "may assume more knowledge than exists," and that such statutes disable agencies to tailor their strategies to meet specific local conditions. "Implementors sometimes need to alter means in order to achieve statutory goals, but statutes that are too clear and specific may prevent this..." (Ingram and Schneider 1990).

Bryner (1987), referring to the absolute goals of statutes, charges that the integrity and effectiveness of laws suffer when the expectations they foster cannot be met. "The rule of law is a practical, concrete concern. If legal provisions lose their integrity they lose their ability to
command compliance" (Bryner 1987). Bryner maintains that agencies cannot possibly achieve these mandated goals because all risks cannot be eliminated and tradeoffs are inevitable. Further, Congress gives little guidance about how these inevitable tradeoffs must be made, and denies that the "marginal benefits, as controls become increasingly strict, may be extremely small, and may not justify the often exponential increase in costs" (Bryner 1987).

Yet there are those who favor strong and specific statutes. Gormley (1989), while recognizing the downside of excessive Congressional coercion, concludes that the considerable progress made in combating pollution "would not have been possible without the strong, specific statutes of the 1970's." Gormley (1989) points out that the American political system impedes rapid progress on any front, "especially domestic policy where state's rights and decentralized political parties are particularly pertinent" (Gormley 1989). He goes on to state that under these conditions it is "remarkable that the United States accomplished as much as it did in environmental protection so quickly" (Gormley 1989) giving credit to ambitious statutory mandates.

And in response to charges that strong statutes "create
unrealistic goals and expectations, thus fostering public
cynicism and distrust" (Bryner 1987), supporters of such
statutes, such as Ingram contend that the symbology of such
"bold" goals alone sends a powerful message, and is
preferable to endorsing more limited ambitions (Ingram and
Schneider 1990). Along these lines, Gormley (1989)
indicates that strong statutes require collective action on
the part of lawmakers, resulting in more enduring outcomes
as well as requiring more long-term perspective in place of
short-run political gains.

Rulemaking Proceduralism
The 1946 Administrative Procedure Act (APA) was enacted as a
procedural restraint on agencies and a means of due process
to those affected by agency actions. The APA requires
agencies to provide a notice and comment period prior to
promulgating new rules, and provides for judicial
determination of whether or not agencies have acted
"arbitrarily" and "capriciously" (West 1985).

The reforms of the 1970's expanded the scope of rulemaking
process beyond the minimum required in the APA. Congress
inserted additional rulemaking requirements through enabling
statutes, such as requirements for cross-examination and
oral hearings, formal trial type proceedings, and various
other devices. Federal courts imposed additional requirements, directing agencies to respond to all of the concerns, facts, and alternatives raised by interested parties (Gormley 1989). Encouraged by Congress and the courts, rulemaking has become the primary means for formulating basic policy throughout federal bureaucracies. The result has been an outpouring of rules from agencies accompanied by massive technical reports and analysis.

Agencies have issued up to 7000 rules and regulations annually in recent years, while Congress has enacted only about 3000 public laws (Bryer 1987). Regulations issued by agencies include a wide range of concerns. The Food and Drug Administration, for instance, establishes standards for the content of foods ranging from mayonnaise to ice cream, as well as guidelines for the use of food additives in food products. The EPA issues rules governing manufacturing activities that affect nearly every industrial sector of the economy, regulating sources of air, water, and noise pollution, radiation, hazardous wastes and toxic chemicals.

The rulemaking process varies from agency to agency. At EPA the process is particularly complicated. Under the CWA for instance, establishing effluent standards for toxic pollutants requires publication of a proposed standard; an
initial 60-day period for the receipt of written comments; a public hearing, if any person requests one, with oral and written presentations and cross-examinations for "disputed issues of material fact;" and the publication of the final standard within 270 days following publication of the initial standard. In reviewing standards established through this process, the courts are to reject standards that are not based on "'substantial evidence' in the rulemaking record" (Bryner 1987).

As with statute design, important problems can arise from attempts to structure agency discretion by promoting rationality of decisionmaking and responsiveness through rulemaking. A real dichotomy exists between expectations for developing objective and efficient solutions and pluralistic notions of bargaining and compromise to produce appropriate resolutions (Gormley 1989). These ingredients can create tremendously adversarial situations, especially where there is little consensus over scientific or technical facts (Bryer 1987).

The adversarial nature of the process tends to direct attention away from legislative intent. Agencies become forced to provide rulemaking records that satisfy a reviewing court rather than substantive concerns. Demands
from courts for more detailed rulemaking records and extensive supporting analysis for regulations also consume a significant share of agency resources. These conditions make administrative actions slow and imprecise, judicially forcing agencies to adopt specific proposals which may inhibit other more useful alternatives (Gormley 1989). Overall, critics charge that rulemaking procedures make it very difficult for agencies to accomplish the tasks delegated to them, and address the significant environmental and health problems that need attention (Gormley 1989, Bryner 1987, West 1985).

Policy Analysis
Corresponding to an increased interest in evaluating and enhancing program effectiveness, scientific and economic analysis has assumed an especially important role in environmental and health-related regulation decision-making.

Policy analysis guidelines have been developed as a means of limiting administrative discretion. Such guidelines can involve a number of criteria, including the balancing of risks and benefits, the determination of cost-effectiveness, as well as requirements for cost-benefit analysis (Bryner 1987).
Conclusions regarding the role of policy analysis in rulemaking are decidedly mixed. Economic impact statements have been praised for promoting balance and forcing agencies to take costs into account, while scientific analysis promotes rationality in decisionmaking (Gormley 1989). Yet the fact that the terms of most policy analysis are actually dictated to the agency by Congress and the President, and usually applied coercively, makes it politically suspect and less objective (Gormley 1989, Bryner 1987). Besides skepticism over the procedures, the proliferation of analysis is believed to spread analytical resources too thin, diverting attention away from important problems and burying rulemakers underneath mounds of paper (Bryner 1987, West 1985).

**Political Oversight**

A formidable assortment of players are associated with oversight activities including Presidents, staff members of the White House, and others in the Executive Office of the President; members of Congress, their staffs, Congressional support agencies; and the federal courts (Bryner 1987). Within the Executive, Presidents have taken on increasing responsibility for the operation of individual agencies, largely to insure that particular programs and priorities are followed, but also on behalf of constituent demands
(Bryer 1987). Executive oversight can include any number of mechanisms, including the appointment of agency heads, reorganizing and restructuring agencies and administrative jurisdictions, as well as reviewing and altering agency budgets (Bryner 1987, Gormley 1989).

Congress employs a variety of mechanisms to control and influence the administrative branch. One of the most direct means is through legislation enactments intended to override or alter agency rules, regulations, jurisdiction or authority (Bryner 1987). Congress also may block funding for certain regulatory efforts.

Congress has nonstatutory mechanisms at its disposal as well. Hearings and investigations by various Congressional committees and subcommittees provide a means of oversight. The number of subcommittees has proliferated in recent years, thus dispersing the power previously enjoyed by a few influential Congressional committees. The average number of subcommittees overseeing each agency is approximately 3.0 in the House and 4.7 in the Senate (Bryner 1987). While this permits an expanded number of agency overseers, it is also fragmented and decentralized which may reduce its effectiveness.
As an arm of Congress, the General Accounting Office (GAO) has gained a reputation as a nonpartisan, professional watchdog agency. Created in 1921 to conduct financial audits of federal agencies, the GAO has expanded into program evaluation and policy analysis. With its sound reputation, the GAO wields a great deal of influence with members of Congress, and critical reviews of an agency’s performance can bring a rash of publicity and investigations. Such reviews have helped to improve agency performance, but there is concern that agencies will respond with rigid enforcement, playing a "numbers game" in order to elude adverse publicity (Gormley 1989).

Individual members of Congress also involve themselves in agency oversight, in response to constituent complaints or their own personal agendas (Calvert and Weingast 1982). Gormley (1989) alleges that such uncoordinated efforts result in very narrow accountability that may actually run contrary to attempts at creating fairness and consistency the rules and regulations.

While oversight helps legitimize the authority of the administrative branch, the consequence is a slow moving, overly encumbered bureaucracy. Agencies are caught between numerous overseers whose conflicting and contradictory
demands and expectations can create a "chaotic, imprecise, and competitive" decisionmaking environment (Bryner 1987). With the host of players involved, it is not clear who is responsible for agency decisions.

**Suggestions for Improvements**

Clearly agency discretion has been limited. But the coercive controls that have been instituted have created new pathologies. Those who have analyzed these conditions have advocated more thoughtful and creative limits and checks on administrative discretion. They wish to create an environment which enhances flexibility, innovation, and experimentation within the bureaucracy.

Bardach and Kagan (1982), while not advocating abandonment of discretion-control mechanisms, propose revitalizing the notion of "professionalism" within regulatory agencies. They differentiate between "responsibility", which they define as doing what an administrator judges to be the right action in a problematic situation, and "accountability", which implies judgement by an outside reviewing party not present in the immediate situation. The authors see an erosion of responsibility by government-imposed accountability. They propose returning to a sense of ethics in professionalism, in which regulators are granted a fair
amount of discretion, and hence trust, in order to effectively and efficiently carry out their work. They acknowledge the dangers of incompetence, but describe this as a necessary risk. In the spirit of the Progressive Era, the authors seem to be suggesting a revival of the notion of trust in bureaucratic-expertise.

Ingram and Schneider (1990) advise that mechanisms for allocating discretion should vary depending on the implementation context. They suggest designing statutes in such a way as to bias the implementation process toward supplying "the values crucial to successful implementation."

For instance, in the case where there is a national majority in favor of a goal and conflict over values is localized, the authors recommend what they call the Wilsonian statute model. This model includes clear and unambiguous goals, with allowances for discretion over objectives, and abilities for federal agencies to tailor strategies to meet specific local conditions.

This idea is similar to that advocated by Gormley (1989) who advocates scrutinizing the characteristics of implementing agencies in relation to their associated policies and deciding what constraints should apply, and to what degree
coercion is necessary. Gormley advocates less coercive constraints, favoring policy analysis and public participation requirements when practical, and moving to more coercive measures only when necessary.
CHAPTER 3
WATER POLLUTION REGULATORY POLICY

Introduction

This chapter focuses on the issue of water pollution policy in the U.S. As in the preceding chapter, this section begins with a short historical description, a social perspective that is imperative for making sound decisions in this policy area.

As might be expected, water pollution policy mirrors many of the characteristics outlined in the earlier discussion of the regulatory policy development. Early attempts at water pollution control were largely dictated by economics and were not of widespread public concern until the 1960’s, when important social concerns came into the forefront. While this depiction of water regulatory policy supports those aspects of regulatory policy put forth earlier, the intent here is to indicate the significance of an emerging federal role, an area only briefly alluded to earlier.

Additionally, this section serves to introduce, in some detail, relevant aspects and sections of the 1972 Federal Water Pollution Control Act Amendments, an Act which continues to serve as the foundation for today’s policy implementation.
Evolution of Water Pollution Policy in the United States

The federal government's involvement in controlling water pollution essentially begins with the 1899 Rivers and Harbor Act, which barred the discharge of refuse into navigable waters without a permit (Wenner 1976). Its passage came at the height of America's pursuit of wealth, fueled by industrialization, rapid urbanization, and aggressive exploitation of natural resources by "robber barons." At this time, the waterways were considered ideal dumping grounds, and were used to dispose of all types of wastes, ranging from animal carcasses to pulp. It was assumed that their assimilative capacities were virtually inexhaustible. In time, these wastes began to choke the waterways essential to commercial trade. Given the seriousness of the problem and the apparent inability of industries to contain their self destructive behavior, government was called on to intervene and enact the first national legislation dealing with water pollution control (Yeager 1991).

Ironically, government was much slower to respond to the clear health threat of this waste than to the navigational needs of industry. Although the means for protecting human health, by excluding human sewage from drinking water and using sand filtration, had long been known (the link between water and disease transmission was understood by the early
1800's), it was decades before they were widely applied in the United States (Yeager 1991). In fact, until the turn of the century, public officials who identified sources of drinking water as unsafe were as likely to be driven from office as to find a receptive audience (Murphy 1971). In some cases it was not until death and disease rates rose to politically unacceptable levels that municipalities acted (Yeager 1991).

By the early 20th Century, most cities had public health ordinances designed to control domestic sewage. For the most part, pollution policy remained a local or state responsibility and was directed strictly at water-borne diseases, not industrial pollution. The federal government's role, especially during the New Deal Era, remained mostly non-regulating, offering instead financial assistance for the construction of municipal waste treatment plants. Industrial pollutants were largely ignored, although their volume and toxicity had markedly increased (Yeager 1991).

Despite increased levels of pollution, the federal government remained reluctant to risk economic growth by legislating expensive water pollution controls, and instead deferred to states to manage their own water pollution
problems. But politics at the state level favored protecting industrial growth, perhaps even more so than at the federal level. Though many states began implementing laws designed to address industrial water pollution, most of these laws were ineffective (Yeager 1991).

The protection of the country's leading private economic institutions was particularly mirrored in many company towns, where industry had a great deal to say about the political and economic life of the community. One particularly graphic example, involving air quality, occurred in Donora, Pennsylvania in 1948. During a four day period a deadly inversion of trapped sulfur dioxide and other pollutants blanketed the town. Following the episode 20 people were dead and 5,910 of the 12,000 residents had become ill, largely with respiratory tract infections. Despite the seriousness of the occurrence, the town's residents resisted aggressive air pollution control because of its economic dependence on the major source of pollution, a large steel mill (Yeager 1991).

The only other avenue at this time for challenging water polluters resided in the courts, through common law doctrine (Wenner 1976). But even the courts did not provide adequate control of pollution, as industrial aggregates were so
situated in the political economy that they could either pay for a disproportional use of natural resources or justify a primary claim on them (Yeager 1991).

**Water Pollution Control Act of 1948**

Initial attempts by the federal government to become legislatively involved in water pollution policy were far from impressive. The Water Pollution Control Act of 1948 premiered the government’s involvement with conventional forms of water pollution (Freeman 1990). Though stating that it was in the "national interest" to control water pollution, Congress limited federal authority to supplying technical assistance, and research aid, and providing low interest loans to states. Congress continued to defer to states rights, stating explicitly: "It is hereby declared to be policy of Congress to recognize, preserve, and protect the primary responsibilities and rights of the State in preventing and controlling water pollution" (Lieber 1975). Despite its enormous ineffectiveness, the 1948 legislation was an accomplishment with respect to its formal recognition of water pollution as a problem of legitimate concern to the federal government, laying the foundation for future improvements (Yeager 1991).
The Water Pollution Control Act Amendments of 1956

The Water Pollution Control Act Amendments of 1956 were a slight improvement over the 1948 Act. Key features included the establishment of a federal grants program for municipal sewage treatment facilities, and the authorization of states to establish water quality criteria for determining desirable levels of water quality. The Act also established "enforcement conferences" which were intended to publicized the polluting activity and move the regulatory forum away from the industry's local and state sphere of influence (Yeager 1991, Freeman 1990). The emphasis, however, was on negotiation rather than coercion and stiff enforcement.

In addition, Congress continued to assign responsibility for policy implementation to the Public Health Service (PHS), reflecting the traditional view that the pollution problem remained principally one of preventing infectious diseases carried by human sewage. Ironically, once water-borne diseases substantially diminished, the PHS doctors began to side with state and local public health doctors who felt that there no longer was a need for substantial pollution control (Yeager 1991).

In sum, the federal government remained averse to challenging the industrial sector. Without a strong
political constituency demanding governmental action, federal water pollution control continued to be largely symbolic.

The Water Quality Act of 1965

The Water Quality Act of 1965 was a final attempt by legislators to shape meaningful policy within the confines of the traditional approaches. The most notable aspect of the Act was that it mandated states to adopt water quality standards, and made the federal government responsible for the review and approval of these standards, obviously enhancing the federal role. These standards, applicable to the somewhat narrowly defined "interstate waters," were to be based on a state's "designated use" determination for each of its bodies of water, taking into consideration "their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, agricultural and industrial, etc., a requirement continued today through the 1972 FWPCA (Freeman 1990, Yeager 1991, Gaba 1983).

But once again the Act was plagued with inadequacies which rendered it mostly ineffective. Inability to adequately enforce the standards was a major defect. The difficulty rested with determining the allowable amounts of discharge over a whole river basin to achieve a pre-determined water
quality standard. In the case where several industrial sites shared a waterway, detection of a violation often defied available scientific and legal enforcement technologies.

The federal government, while taking on more authority, still deferred to strong industrial and state opposition to intrusive regulatory approaches. For instance, though the federal government could have required states to establish specific effluent controls for municipalities and industries, it only required that all wastewater require secondary treatment, a method inadequate for removing inorganics and toxics (Yeager 1991).

This deference to states led to variability in standards from state to state. Standards were not only not uniform, but they were also subject to unpredictable shifts. Nature and geography could heavily shape the relative advantages of firms and therefore their market advantages. Water flow in a river and the concentration of industry on it could influence the regulatory stringency companies faced.

**Federalism vs Pre-emption**

Several decades of legislation failed to generate notable results. In the wake of the country’s new environmental
morality, pressures mounted for establishing a new policy that would extend federal authority to intrastate waters, increase effluent discharge limits placed on industrial polluters, and increase civil and criminal penalties for violators (Lake 1982). Compelled to come up with a strong law that would eliminate the rising tide of water pollution and squarely address the limitations of state and local governments, the federal government passed the 1972 Federal Water Pollution Control Act Amendments (FWPCAA).

Those in support of maintaining state hegemony pointed to the increased resources and legal tools that states now devoted to water pollution control. Supporters of the states accused the federal government of providing insufficient funds for effective state enforcement of water quality standards (Lieber 1975). They also pointed out various examples of successful local initiatives that preceded federal action, such as New York’s Clean Water Program.

Others, however, especially many senators, EPA officials and the environmental community, were less charitable to the states. Senate hearings in 1971 reported that states were "understaffed and operating on curtailed budget" thus inadequate to effectively control pollution. At a House
hearing one state official estimated that only 15-20 states had good permit systems, 15 were mediocre, and 15-20 were poor (Lieber 1975). Not only was it claimed that the states had failed to enforce their pollution control laws, especially water quality standards, but also little faith was expressed in their ability to do so in the future. State and local officials, they felt, were too close to the polluters and unwilling to support higher taxes for pollution control (Lieber 1975, Yeager 1991).

Testifying at the 1971 Congressional House hearing, David Zwick, Ralph Nader’s water pollution representative, and author of Water Wasteland (1971), described the "tremendous economic and political pressures which large local polluters, particularly industries with jobs and tax money to bargain with, can exert at the State level to weaken the control requirements the States will give them." Testimony from an Oregon legislator claimed that state plans varied substantially "where residents of states with vigorous enforcement programs are inundated with the refuse that flows downstream from less attentive jurisdictions" (Yeager 1991).

State Program Evaluations
Several studies conducted in the late 1960’s and early
1970's tended to be critical of state programs. A 1969 General Accounting Office (GAO) study of several rivers concluded that although 5.4 billion dollars had been spent at all levels of government for waste treatment plant construction during the previous 12 years, "the nation's rivers were in worse shape than ever before". Often cited at the Congressional hearings was the third annual report by the Council on Environmental Quality (CEQ), which stated that while 27% of the nation's waters were polluted in 1970, the figure had risen to 29% by 1971 (Yeager 1991, Lieber 1975).

While often referred to during deliberations on the FWPCA, these reports were viewed by some with skepticism. According to Lieber (1975), "the Council itself admitted", regarding the CEQ study, "that results were a rough estimate containing a sizable judgmental factor." Others charged that it lacked any scientific basis. Regarding the GAO study, Lieber felt that the study overemphasized the shortcomings of present efforts.

To be certain, not all states were susceptible to industry pressure. Lieber analyzed five states to determine whether the assumption of incorporating greater federal control was justified based on the performance of state pollution
programs prior to enactment of the 1972 FWPCA. Of the five states surveyed, Wyoming and Mississippi were at the extremes, with Wyoming representing a best case scenario and Mississippi the worst. Lieber's conclusion as to the necessity of increased federal authority was somewhat mixed, stating that the Act would help "spur the more retarded states" like Mississippi, have a mixed affect on those with developed programs like New York, and have a negative effect on a few like Wyoming.

Wyoming, however, had no permit program, monitoring was not sophisticated, and formal enforcement nonexistent. But because the state had no large urban areas, and few industrial dischargers, Lieber felt that stringent federal treatment requirements, such as monitoring, planning, and permitting would force Wyoming into costly and unnecessary upgrading of its program. This conclusion appears to ignore future needs of the state and can only be applied to an exceptionally small number of other states.

In the case of New York, which had one of the most sophisticated programs in the country, but also some of the most far-reaching pollution problems, Lieber felt that federal intervention, while not necessary to substantially improve planning or monitoring, would not seriously
interfere with those efforts "and is justified in bringing about an overall change in regulatory philosophy."

Conclusion - Implications of Federal Pre-emption

Lieber's assessment focuses only on the effects of specific programs, and tends to ignore some of the more broadly based merits of federal water pollution control. During Congressional debate, Congressman Hanley of New York expressed a different perspective: "I am very much disturbed by the uneven progress in the 50 states toward controlling and abating pollution" (House Debate on HR 11896, 1973). Hanley's concern stemmed from the massive financial commitment by N.Y. residents and the heavy burdens on industry to comply with state standards. To insure that states were moving ahead at the same pace as New York, Hanley demanded "I want them to guarantee that the Federal Government will insist that all the states measure up to the same mark. I feel that the power to set national standards for effluent control must be monitored by the Federal Government and the power to enforce those standards must be kept at a national level" (Lieber 1975). Implicitly uniform standards also meant increased equity among states competing for new industry.

While ignoring the more favorable aspects of uniform
standards, Lieber's critical analysis does indicate the serious implications of federally-mandated requirements. In his analysis Lieber goes on to discuss: "the inappropriateness of applying one single national Act, no matter how detailed to fifty different states" stating that while "uniform legislative requirements may seem to be easy to administer and equitable to enforce... they may be inefficient, costly, and perhaps unfair." In Congressional House hearings the National Governor's Conference pointed out that "The diversity of water quality control problems existing in the United States today pose problems that are not amenable to the simple, generalized solutions that generally flow from a centralized agency," or from inflexible national requirements (Lieber 1975).

In conclusion, it would seem fair to assert that history has demonstrated a need for a strong federal presence to control pollution nationally. While some would argue this point, the evidence seems to weigh heavily on the side of the federal government. The problem in finding a balance between state and federal control is that federal rules that are too lenient can lead to evasion or neglect, while too stringent rules can lead to implementation problems. The challenge for Congress in writing the FWPCA was to reconcile the national purpose with state and local
diversities, an endeavor Lieber (1975) and others consider failed, saying that Congress enacted and EPA implemented uniform national legislation rather than a flexible federal law. This is a problem which continues to plague many states today and is central to the Arizona case.

The 1972 Federal Water Pollution Control Act Amendment

The 1972 FWPCA was a monumental piece of legislation, revolutionizing the means of controlling water pollution in the United States. The word "Amendments" in the title is a misnomer since the statute is a major departure from previous legislation. The Act completely restructured water pollution control strategy in terms of enforcement, standards, and planning, focusing on many of the inefficiencies of the previous legislation. (The Federal Water Pollution Control Act is commonly known as the Clean Water Act (CWA), and unless addressing the specific statute, this paper will adopt the common name usage).

Development of the legislation was an immense task. The roster of players involved is as imposing as the issues themselves: the White House, both houses of Congress, industry, the states, the newly potent public interest advocacy groups, the news media, and the public. Responding to the critiques of the "capture" theory of regulation, and
to the often scathing indictments of federal pollution control efforts (Zwick and Benstock 1971, Fallows 1971), the House and Senate both pledged to develop a strong law that could not be subverted by the regulated.

**Goals and Objectives**

One area of particular concern in Congressional debates was the defining of goals. In its final form, Section 101 declares:

"(1) it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985; (2) it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by 1981" (Section 101, FWPCA 1972).

This section of the Act shows how Congress radically departed from previous federal water pollution control policies and abandoned the notion, at least in principle, of "acceptable" pollution levels for bodies of water. Inspired by the Muskegon Project, which demonstrated the possibility of a closed-cycle, no-discharge system for municipal wastewater treatment, the Senate committee originally adopted a no discharge requirement (Lieber 1975). But this proved too
controversial and it was instead transferred to the preamble (Barfield 1972). In explaining these changes, Senator Muskie stated during the floor debate that "the 1985 deadline for achieving no-discharge of pollutants is a policy objective. It is not locked in concrete. It is not enforceable. It simply established what the committee thinks ought to be done on the basis of present knowledge." (Barfield 1972).

Though not legally enforceable, these goals have become much more than rhetoric, and in fact have become profoundly interwoven into many of the Act’s operative provisions that do have legal enforceability. This is especially true of the CWA’s interim goal of attaining fishable and swimmable waters. EPA has mandated this as a minimum state requirement for water quality standards. While there exists some compelling reasons to question the agency’s literal interpretation, EPA has remained steadfast to what was perceived as a Congressional directive (Gaba 1983).

Means of Controlling Pollution
To achieve these goals, the CWA combines two approaches to water pollution control, a water quality-based approach and a technology-based approach. Both strategies entail administrative permitting of allowable discharges and
enforcement against permit violators.

Water quality standards form the basis of the water quality-based approach and are made up of two components. The "water quality standard" is the legal designation of the desired use for a given body of water. These uses include industry, agriculture, propagation and protection of fish and wildlife, and public water supply. The second component is the "water quality criteria," which is the level of water quality necessary to protect that use (Goldfarb 1984). A state, for example, might set the water quality standard for a river by designating it as a fishing area, and require that the chloride concentration be no greater than 250 milligrams per liter of water.

Designated uses may be either existing uses or attainable uses. Existing uses are those which are being attained, or have been attained since 1975. Attainable uses are potential uses which could be attained if certain point source and nonpoint source technologies are implemented (Woodwick 1991).

While states may recognize a variety of designated uses, EPA has required states to designate all waters as fishable/swimmable unless the state can demonstrate that
such use is environmentally or economically unattainable. EPA has based this requirement on the national water quality goals stated in Section 101(a)(2) of the CWA: "wherever attainable an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife...".

To prove that a given water body is incapable of attaining this fishable/swimmable minimum designated use, states or individuals, must prepare a use attainability analysis (UAA). The UAA is an assessment of the physical, chemical, biological, and economic factors which affect attainment of a use (Gaba 1983). However, at present, criteria for UAA’s are not well defined and there has been little precedence for successfully changing designated uses through completion of a UAA (Chavez 1990).

This water quality strategy differs from the technology-based approach which derives its standards based on what is technologically and economically achievable for a given pollution source, rather than what should be done to achieve a particular use (Freeman 1990, Gaba 1983). These also may be divided into two categories: those that restrict the strength and/or amount of substance that can be discharged, and those that specify the degree of treatment or percentage
removal of a specific pollutant that must be attained by
treatment or by changes in the industrial process
(Schoenbaum 1985) These standards are referred to as
"effluent limitations" and are measured at, or near, a
discharger’s outfall pipe. Effluent standards usually limit
the discharge of particular pollutants to a certain number
of pounds per day, per week, or per month (Schoenbaum 1985).

Until recently, technologically-based standards, introduced
in 1972, were the primary tool for abating water pollution.
Water quality standards developed in the 1965 legislation
were retained, but only as a secondary line of defense.
Senator Muskie and other authors of the Act, believed that
enforcement could be accelerated if Congress adopted a
clear, uniform national standard of performance, as designed
by technologically-based standards. According to this view,
effluent limits based on a single, simple standard would be
easier to administer than those based on fifty different
sets of state water quality standards (Goldfarb 1984).

Renewed interest in an expanded role for water quality
standards in the regulatory scheme has recently gained
momentum. As industrial dischargers achieve compliance with
technology-based requirements, attention has focused on the
CWA provisions that call on EPA to impose more stringent
water quality standards when technology-based limitations are inadequate for protecting designated uses (Heineck 1989).

The most recent amendment to the CWA, the 1987 Water Quality Act, mandated more stringent and specific water quality standards for toxic pollutants. While states once relied on ambiguous narrative standards such as "there shall be no discharge of toxic pollutants in toxic amounts," they are now required to adopt numeric criteria for toxic pollutants. This marked for the first time a Congressional mandate dictated to the states what was to be included in their triennial water quality standards review, and was intended to increase the stringency of permit limitations for point source dischargers (Heineck 1989, Federal Register 1990).

Implementation Issues

The 1972 FWPCA is an archetype of the "new" social regulatory policies, and as such embodies many of the characteristics and problems outlined earlier. In its enthusiasm for a dramatic response to water pollution, Congress bestowed on EPA a massive and draconian regulating burden that was without precedent. The Act's eighty-nine, single-spaced pages presents a bewildering array of requirements, giving EPA the impressive and complicated
responsibility of creating the scientific and technical foundations for implementing detailed regulations and procedures. As an extremely visible element of the federal government, EPA is closely monitored by Congress, the White House, the courts, and a vast array of interest groups. This situation, along with the high demands placed on EPA, creates a tension among procedural constraints, scientific analysis, and political oversight, elements which have undoubtedly shaped much of EPA's implementation effort (Bryner 1987).

In assessing the CWA, much commentary has been focused on the complexity of the link between the Act's environmental symbolism and the administrative process. Many have proposed that the ambitious intent of the Act undercuts itself to a certain extent, stifling EPA's ability to craft creative or realistic policies responsive to the complexities of environmental relationships.

Yeager (1991) for instance, states that "the radical shift in pollution control combined with the law's due process protection, produced countless legal challenges, amplifying both delay and compromise. "Despite the zeal... in practice [EPA] was permitted to operate only within the fundamental limits embedded in the substance and processes
of the law" (Yeager 1991). Described as "anticipatory politics", agencies tend to write regulations in such a way as to stave off criticisms or challenges (Yeager 1991). Thus it has not been just national uniform standards which has diminished flexibility, but the administrative process itself.

In *Bureaucratic Discretion* Gary Bryner (1987) discusses several problems correlated with EPA's enabling statutes and administrative process. Bryner describes "the failure to integrate EPA rulemaking efforts with the state units expected to implement them," faulting external pressures for this fragmentation, as well as the inhibition of the agency from experimenting with alternative regulatory strategies.

**Conclusion**

Despite problems with the CWA, it is unlikely we would choose to return to the dismally weak controls of the past. In enacting the 1972 FWPCA the Congress abandoned restraint in protecting the nation's waters, taking an unusually aggressive stance, and providing much less deference to states and economic interests.
CHAPTER 4
ARIZONA and U.S. WATER QUALITY REGULATIONS

Introduction

This case involves Arizona, an arid state, where compliance with U.S. water quality regulations poses a unique and costly regulatory dilemma for many communities. These are communities that discharge effluent into ephemeral streambeds that provide little or no dilution capabilities. In accordance with a 1987 amendment to the Clean Water Act and EPA authority, these communities must meet water quality standards which fully protect "fish and wildlife" use goals. Because of the difficulties in meeting these new standards, communities are considering the less costly option of eliminating discharge into the watercourse all together. Ironically, without the effluent discharge there would be no fish or wildlife populations to protect. Furthermore, effluent-dominated riparian ecosystems have become important replacements for the natural riparian ecosystems which have been extensively decimated throughout the state. This impasse over water quality standards led to the withdrawal of effluent from a lake near Prescott, Arizona, thus drying up a longtime recreational and aesthetic water body for the town (Laurenzi 1990).

EPA concedes that this is an unfortunate circumstance, and
while endeavoring to develop options, has thus far remained steadfast to federally imposed requirements. In the meantime, various Southwestern communities are appealing to Congress for more state autonomy, or some other form of relief (Brinsko 1991, Miele 1991). As the CWA comes up for re-authorization in 1992-1993 Congressional session, it is important that careful consideration be given to any proposed exemptions or amendments on behalf of Southwestern communities.

Arizona’s Riparian Environment
In the last 100 years, Arizona’s arid landscape has undergone profound changes. Especially impacted have been Arizona’s watercourses and their associated bankside communities. Often cited is the gloomy statistic that Arizona possesses only 5% to 10% of its original riparian habitats. This loss is largely attributed to human activities such as extensive wood harvesting, agricultural practices, excessive groundwater pumpage, livestock grazing, water development and flood control, as well as urbanization (Arizona State Parks Board 1989).

This is a tremendous loss for Arizona. In terms of biodiversity, it is estimated that at least 75% of all Southwestern vertebrate species depend in some capacity on
streams and wetlands. The fact that these areas constitute less than 0.5% of the land mass in Arizona illustrates how disproportionate their biological value is to their area (Sonorensis 1988).

While perennial sources of freshwater for riparian areas have become severely depleted, perennial supplies of effluent, discharged from municipal wastewater treatment plants, now support a large number of remaining and recreated riparian ecosystems. This effluent has acted to recharge watercourses, resulting in the revitalization of originally existing ecosystems. A preliminary survey has documented approximately 40 of these effluent-dominated riparian areas in the state of Arizona (Tellman 1990). Many of these are high quality riparian systems, which, in the absence of discharged effluent, likely would be lost.

The Arizona Department of Environmental Quality (1990) compiled information in a memorandum entitled "Species List for Statewide Effluent Dominated Waters". This list presents an impressive array of fish, amphibians, reptiles and aquatic plants found along effluent-dominated portions of the Salt and Gila Rivers, Santa Cruz River, and the Rio del Flag in Flagstaff. Along the Santa Cruz River, for instance, observations of various aquatic plant species,
Sonoran mud turtles, bullfrogs, sunfish, bullheads, and a variety of macro-invertebrates were documented. This information provides proof of the biologically diverse and rich capabilities of effluent-dominated riparian areas.

The Problem - Arizona Implementation Difficulties

Pursuant to the CWA, the state of Arizona is concluding its triennial review of water quality standards. Drafted by the Arizona Department of Environmental Quality (ADEQ), the updated water quality standards reflect current requirements mandated by the 1987 Water Quality Act aimed at toxic pollution control (ADEQ 1991). These enhanced requirements include the adoption of specific criteria for toxic pollutants that will protect "designated uses" for all of Arizona’s "navigable waters." These requirements reflect a significant departure in regulatory approach, shifting from the primarily technology-based control, to greater emphasis on water quality based control.

Arizona’s effluent-dominated watercourses are subject to regulation under the CWA since they are considered "navigable waters" (Pima County Wastewater Management, et al. 1989). Since most of these effluent-dominated streams also are capable of supporting aquatic and wildlife uses (A&W), water quality necessary to protect these uses must be
maintained. According to the regulations this protection extends beyond the protection of fish species to include invertebrates and plants (Pima County Wastewater Management, et al. 1989).

Problems with meeting these standards have arisen largely because of the ephemeral nature of many of the "effluent-dominated" streams. Except during seasonal runoff there is little or no dilution of the nutrients and toxins going into these stream channels. In most parts of the country given the perennial nature of the watercourses, dischargers are allowed a "mixing zone" where the streamflow acts to dilute the wastewater. Dilution results in technical compliance with water quality standards since states generally express criteria values in the form of concentrations, rather than total mass of pollutants in the stream.

In the southwest, however, where ephemeral streams provide no dilution capabilities, dischargers must meet standards at the end of the discharge pipe, thus effluent limitations and water quality standards are the same. To comply with new standards, effluent must be treated to a level that will protect A&W_{cdw} (aquatic and wildlife for effluent dominated waters) species prior to discharge (ADEQ 1990). For some
A&W standards, most notably those for ammonia and chlorine, sensitivity of some aquatic species will mean standards much more stringent than primary or secondary drinking water standards.

Ammonia and chlorine are toxic to many aquatic organisms. Ammonia is a nitrogenous end product of human digestion of protein, and chlorine is commonly used by treatment plants as a disinfectant to kill potentially infectious bacteria and microbes. As such, they are a common component in most domestic effluent discharges. Given time, both of these pollutants are reduced to non-toxic levels by sunlight and plants, which is why greater abundance of aquatic species are found several miles from the pipe outlet. New biological requirements, however, will now require discharged effluent to be capable of supporting aquatic species at the discharge point and throughout the stream reach (Malusa 1990).

Other pollutants, considered even more dangerous and toxic to both aquatics and humans, also occasionally appear in the effluent. Various heavy metals such as mercury, which has a tendency to bioaccumulate and move throughout the food chain, and various synthetic organics appear in the effluent
from the Nogales, Phoenix and Tucson areas, where they are contributed by various commercial activities. Phenols, organic acids common in cleaning products like Pine-Sol, also have been a problem. They impart a bad taste to fish and in some cases are toxic. Households contribute phenols to the wastewater, but the major source of phenol in effluent is from local hospitals (Malusa 1990).

Unlike ammonia and chlorine, these non-domestic toxic pollutants can usually be controlled at their source, through more stringent pretreatment standards. Pretreatment programs are implemented by POTW's to limit the types and amount of industrial wastes discharged into a community treatment plant. While POTW's will need to spend additional sums to insure that these pollutants are kept out of the sewers, direct costs for control will be born by the local companies (Chavez 1990). Thus, the chief concern for POTW's is with domestic toxic pollutants, that are not controlled by pretreatment standards. Situations vary, but the major impediments to meeting A&W_{cw} standards are ammonia and chlorine toxicity, as well as dissolved oxygen levels, and in some communities, levels of phosphates. In Pima County, for example, EPA regulations will require chlorine to be reduced to 0.05 mg/l. Historically, the Ina Road plant
discharged effluent with up to 5 mg/l, 100 times the proposed limit (Malusa 1990).

To meet these water quality standards, plants will need to make modifications in their treatment process. Currently, most treatment facilities in the state employ primary and secondary treatment. Primary treatment generally involves mechanical and physical removal of solids, and secondary treatment involves additional clarification, a series of biological treatments, and disinfection (Lieuwen 1990). In the case of ammonia, new facilities will be required to convert ammonia to a nitrogen form, and then remove the nitrate from the wastewater. This is true also for disinfection alternatives to chlorination, such as ozone or ultraviolet disinfection. In Pima County the combined capital and 20-year operation and maintenance costs for these additional treatments are estimated at $135 million to $200 million (Malcolm Pirnie 1991). Costs to other facilities tend to vary according to needs and size.

Ironically, the use of effluent offstream is subject to much less stringent requirements than if left instream. Primary treated effluent, for example, is allowed to be used for surface irrigation of fodder, fiber and seed crops, as well as orchards and vineyards. Secondary effluent is acceptable
for all livestock watering, irrigation of most food crops, and for irrigation of landscaped areas where public access is restricted. (Lieuwen 1990). Consequently, these considerably less regulated, and therefore, considerably less costly uses, are more attractive alternatives than further effluent treatment by communities subject to meeting designated use standards.

As previously mentioned, the City of Prescott discontinued flows into Watson Lake, a popular recreational area, rather than incur a $17 million investment for complying with nitrogen and phosphorus standards. Instead the City spent $8 million for upgrading facilities and building a pipeline to deliver effluent to a local golf course and recharge basin (Smith 1990). Pima County also is considering solving its compliance woes by piping the effluent to farmers in Marana and Avra Valley. It has hired a consulting firm to undertake an effluent use feasibility study. And the City of Payson, which discharges into American Gulch, is constructing a major park and golf course complex, where it plans to utilize all of its effluent. While water conservation measures have motivated a certain amount of effluent use (Tellman 1991), the costs of compliance have been a hastening factor. Similar plans exist for other communities.
EPA is well aware of this situation. EPA Region IX has proposed a policy which could potentially provide protection for effluent-dependent ecosystems through an enhanced use attainability analysis (EPA 1990). This proposal, however, has been in draft forms for two years and has yet to be adopted. Even if adopted it is uncertain what a final policy would offer to these Arizona communities. In the meantime, the EPA Region IX has begun the process of issuing NPDES Permits throughout the state and enforcing the standards as they stand.

Additional Considerations

This situation has tended to place environmentalists, and other concerned citizens in an uncomfortable position. On the one hand are those that want to eliminate all toxins, thus fulfilling the "no-discharge" goal of the CWA (Baron 1991). On the other hand are those who may tacitly endorse less stringent effluent standards than those proposed by ADEQ if that is necessary to save the effluent-dominated habitats (Malusa 1990).

Both Michael Gregory of the Sierra Club, and David Baron of the Center for Law in the Public Interest, are advocating tougher standards to protect aquifers associated with stream systems that are not in compliance with water quality
standards (Laurenzi 1990). While much of their aim is to "get tough with local industries" (AZ Daily Star 1991), there is some compelling concern over the effect of ammonia and chlorine on aquifer quality. Ammonia forms nitrates, which are linked with the "blue-baby" syndrome, a heart-lung circulation defect in newborns. Chlorine gas can bind with organic constituents to form hazardous compounds such as trihalomethanes (THM's) (Lieuwen 1990). Despite a great deal of research on the subject, much debate remains about the formation of toxic compounds when the effluent comes in contact with soil and ambient groundwater (Lieuwen 1990).

Legislatively, however, aquifer protection and surface water quality standards are unrelated. And furthermore, these standards, which are driving the effluent out of the streambeds, are relocating it to less stringently regulated or protected uses. The very same toxic effluent that is not adequate for Arizona stream channels can be used for agricultural irrigation. These less regulated uses will not only avoid stricter nitrogen and chlorine standards, but also alleviate stricter pretreatment standards for more toxic compounds. A new law passed in Arizona allows effluent, when used to displace groundwater pumping, to be exempt from aquifer protection permits (Laurenzi 1990). Thus the fragmented nature of the laws themselves have
helped to facilitate this situation.
CHAPTER 5

THE CASE FOR REFORM

Introduction

Ironically, Arizona's compliance with stringent national water quality regulations is posing a much greater threat to effluent-dependent aquatic and wildlife populations than the effluent quality itself. Most despairing is that EPA's rigid adherence to the language of the CWA has obscured the regulations' real intent of protecting effluent-dependent habitats. Such misguided regulation invites cynicism, providing yet another opportunity for detractors to proclaim the incapacity of bureaucracies to intelligently implement laws.

Yet holding the EPA solely accountable for Arizona's predicament ignores the effect the CWA has had on EPA's implementation behavior. Had the New Deal era's notions about bureaucratic expertise prevailed, and had Congress entrusted the agency to independently develop its own workable water quality program, then blame for an inept outcome could be placed on the shoulders of EPA. But this arrangement was not the case, and instead Congress enacted a strong statute, embracing bold goals and objectives, specific requirements, and mechanisms designed to appraise and supervise agency performance. These regulatory policy
strategies have affected EPA's implementation behavior. As such, their impacts should be considered when determining how to remedy the regulatory discord as exemplified in Arizona.

Linking the Arizona Case

Particularly vexing in the Arizona case has been the synergistic effects of federal usurpation of state authority for water pollution control and EPA's rigid and dogmatic regulatory perspective and literal interpretation of the Act. The Arizona case particularly illustrates the problems posed by regulatory policy that is procedurally driven. Here we have shifted our expectation of the bureaucracy from one of authoritative problem-solving role, to that of acquiescent compliance. As predicted by scholars of "new" social regulatory policy this has increased the possibility of inefficient and or inappropriate regulatory outcomes.

Arizona's arid environment poses just the kind of diversity that states' rights advocates had warned Congress about when it set out to construct an aggressive nationally-oriented water pollution policy. Though the CWA explicitly proclaims the rights of the states, and throughout the 1972 FWPCA, Congressional hearings members emphasized their support for maintaining a strong state role, statutory requirements and
EPA policies have largely constrained this. EPA’s water quality requirements do not differentiate between the arid environments of the west and the wetter climates of the east. The consequence of this nationally imposed program is an inability to tailor or alter requirements for particular regulatory anomalies, such as the case with Arizona’s ephemeral rivers and streams.

Token measures of flexibility are granted, such as allowing states to establish their own classification system for surface waters. This has allowed Arizona to establish a unique "effluent-dominated use designation," but because the state must still provide extra protection for resident aquatic and wildlife species habitat, it does little to actively address the problem at hand. And, though the Arizona Department of Environmental Quality is responsible for establishing the state’s rules and standards for surface water quality protection, its decisions and rulings are entirely subject to federal requirements and approval.

Strict adherence to uniform rules has proved to be the nemesis in the Arizona case, particularly the fishable/swimmable water quality goal EPA has adopted as a minimum state requirement with little to no elaboration or qualifying language. In many respects, the notion of
demanding that polluters reduce effluent toxicity sufficiently to protect aquatic species sounds like a sensible and just approach. Yet when examined from Arizona's point of view, EPA's ardent support of this goal, turned requirement, has created a regulatory dilemma. Failure to fully account for economic and environmental complexities has boxed Arizona in.

EPA's conditional provision, the Use Attainability Analysis, was to provide the necessary modifier to this minimum requirement, but as mentioned, a great deal of uncertainty and vagueness accompany it. And, as in the case of Arizona, its strict application will not always address the problem at hand.

EPA's persistence to have Arizona comply with regulations in the name of aquatic and wildlife protection, while knowingly aware of the pending outcome, continues to make for a frustrating situation. While EPA makes much of its protection of wetlands, often bringing lawsuits against those who attempt to drain them, they remain seemingly ambivalent about Arizona's riparian losses. If this protection were say, in the name of human health, such as for groundwater protection, then perhaps the regulations would not appear as hypocritical.
Thus the Arizona case provides a small glimpse of the irrationalities bred into "new" social regulations and the limits of these regulatory approaches.

Reform Potential and Reauthorization of the CWA

Different approaches might be preferable if we could start over, but given the complex structure of vested interests and invested capital in current environmental regulations, as well as the current political climate, a radical regulatory overhaul is improbable, and possibly undesirable. Nevertheless important changes in the present structure are feasible while maintaining the integrity and strength of current legislation.

Keeping this in mind, Congressional re-authorization of the CWA, initiated in mid-1991, offers a pertinent time for those seeking modifications to the Act. Among the many interests in this reauthorization are Arizona municipalities, and other affected southwestern communities. While they have mostly been pressing legislators to re-impose states rights and primacy in managing state water quality problems (Miele 1991), there is no ruling out other possible Congressional provisions.

These next sections assess the idea of modifying the CWA’s
regulatory means and provisions. While areas of analysis were selected based on applicability to the Arizona case, the discussion is intended to apply to "new" social regulatory policies in general. Three options to reform the CWA are discussed including: 1) assessing modifications in state-federal relationship, 2) modifications to the CWA goals and objectives, 3) the case for increased bureaucratic discretion.

Assessing Modifications in State-Federal Relationship
This analysis looks specifically at providing greater state autonomy in surface water quality management, modifications of the statute's goals and objectives, and changes in the degree of discretion afforded to EPA. Conclusions are drawn based on the theoretical and historical sections presented earlier.

Within the CWA, the conflict between the competing goals of state autonomy and federal authority is probably nowhere more pronounced than in the water quality standards program. Water quality standards, impinging as they do on land use and economic policy ask particularly sensitive questions of the federal-state relationship.

Given the recently expanded role of water quality standards
in the regulatory scheme it is understandable why states would perceive it necessary to have an expanded role. Many of the stubborn water quality problems that remain are uniquely region-specific, and increased state jurisdiction would provide states with greater flexibility.

The Arizona case illustrates this point. Had Arizona been given greater autonomy to manage its water quality problems it is likely that there would be greater sensitivity to the regulatory outcome. Given that one of Arizona’s environmental priorities is protecting riparian habitats (Governor’s Riparian Habitat Task Force, 1990), it is unlikely that the state would ignore the current situation if given the authority.

Providing this kind of flexibility to states raises important questions. For the states to have the kind of regulatory flexibility necessary to accommodate and develop programs for unique regional differences, the type of federal-state relationship existing prior to the 1972 FWPCA would appear necessary. Returning to this arrangement raises serious concerns. Specifically what is there to insure that states will continue to enforce and implement a strong water quality program, that economic interests and prospects will not lure them into the patterns exhibited in
the past. While the environment is currently an important public concern, the country's growing economic and employment instability may overshadow it. As in 1940 with Donora, Pennsylvania case, when it came to jobs versus the environment that company town opted for jobs. Certainly this would not be the case everywhere, but state authority over regulations would certainly increase the possibility of lowered standards to promote state economic development. Past failures of many states to establish and enforce effective water quality programs limit their credibility in asking for such authority now.

Federal regulations, and their implementation, currently provide the only means of ensuring that states maintain a measure of commitment to minimum water quality protection. Furthermore, given the transitory nature of water, issues concerning its quality are better served by a national rather than local perspective. Federally imposed regulations accomplish a legitimate national purpose in a clearly defined and consistent manner.

Thus, the lack of assurance that past failures in state water quality protection would not be repeated warrants a continued strong federal presence. In the search for a means to create a more responsive regulatory program,
returning power to the states would not be the recommended one.

Modifications to the CWA Goals and Objectives
As costs of controlling pollution escalate, the underlying principles of the CWA - the absolute goal of no-discharge, and the interim goal of "fishable and swimmable" - become increasingly subject to debate (Van Putten and Jackson 1986). Economists, especially, point out the disproportion between the higher marginal costs and the marginal benefits of increasingly stringent requirements. This is clearly an issue raised in the Arizona case. Discussions of costs and benefits often lead to debates over how clean is clean enough, with many deeming current pollution control measures more restrictive than necessary to achieve minimum water quality standards. This contemporary debate gets at the heart of the CWA's underlying premise and illustrates the extent to which some would effectively read the current goals out of the Act.

Not only were these goals a political statement to demonstrate Congress's commitment to pollution control, but they were important directives to the implementing agencies in the aim to control discretion. Yet critics today deride these goals as being too burdensome to administer and
entirely too impractical to accomplish, thus, creating unrealistic promises that impact the integrity of the Act. Congress, they charge, propose these overwhelming tasks but failed to provide the guidance for how tradeoffs should be managed or how scarce resources should be allocated (Bryner 1987).

The view that the goals of the CWA act as impediments or sources of inefficiency fails to appreciate their larger significance. When Congress enacted the CWA in 1972 they were precisely seeking to rescue federal water pollution control efforts from the arcane and unending debate over how much pollution is too much. The adoption of the zero-discharge goal was an intentional means of creating an entirely new regulatory philosophy, radically departing from past federal approaches in which pollution control was based on calculating "acceptable" pollution levels. The premise of the CWA is that any discharge of pollutants is unacceptable and should cease as soon as control is technologically and economically feasible. These goals have become an interwoven part of the Act, a guiding principle for both point source and surface water quality programs. To weaken them weakens the whole foundation on which the Act is based.
In terms of their binding effect, the Congressional record specifically maintains that these goals are to be guiding principles, not absolute mandates. In terms of "no-discharge," the fact that new technology is capable of detecting increasingly minute substances, for all practical purposes, renders this goal, in an absolute sense, unfeasible. Furthermore, if all discharge were prohibited there would be the paradoxical problem of having to dispose of wastes on land or in the air. Thus absolute attainment of the zero-discharge goal is to a large extent impractical; to aim towards its accomplishment is its strength and intent.

Moreover, Congress’s interim goal of controlling discharges so waters are "fishable/swimmable," does represent a feasible approach, and EPA has appropriately implemented it as such. Incidents where its implementation has become excessive or inappropriate may exist, but are the exceptions rather than the rule. Congress included in the CWA provisions for exceptional considerations, and it is EPA’s responsibility to provide them. As in the Arizona case, and perhaps elsewhere, it is EPA’s reluctance to fully accept this responsibility in the face of so many discretionary controls and not the goal itself that is the limiting factor.
Thus the goals of the CWA represent a historical milestone in U.S. regulatory policy. As a major departure from preceding laws, they represent hard won protection against a legacy of unrestrained capitalist behavior. To tackle the nation’s remaining stubborn and complex water quality problems, such as toxics and non-point pollution, requires an aggressive stance. This paper maintains that Congress must reaffirm its commitment to the CWA goals and not pander to interests which would undermine these hard won statutory commitments. While exceptions may be warranted, they should not be undertaken statutorily, but instead achieved through administrative procedures.

The Case for Increased Bureaucratic Discretion

Probably the area to receive the least amount of attention from those seeking regulatory reform, is bureaucratic discretion. As a means by which government officials control other government officials, these control mechanisms tend to be less visible and less controversial than those aimed directly at citizens or private firms (Gormley 1989). Yet discretionary controls can be a potent force in policy implementation, and their redesign could provide opportunity for much needed responsiveness now lacking in the regulatory arena.
Reforms to guard against the abuses of administrative discretion were made hastily, and instituted across the board without consideration of the characteristics of the bureaucracy nor the complexity of the policy they were applied to. At a time when the need for creative problem-solving has increased, this plethora of controls has led to a confused and inefficient administrative process, and in the long-run, promoting more agency excuse making than policy-making.

When Progressive and New Deal notions of agency expertise were dispelled, they were done in by a storm of anti-bureaucratic rhetoric that lingers to this day. Hence, the key to activating reforms is to link regulatory pathologies to these agency controlling mechanisms rather than an inherent failure of the agency itself. As this is better understood, more appropriate responses for limiting and directing discretion can be fashioned. Ideally, this would result in an increased capacity of administrative agencies to intelligently accomplish their objectives while assuring that the exercise of power is accountable to law and the people.

The enormous power and responsibility still wielded by the bureaucracy continues to warrant maintaining some balance of
control. Theorists still concern themselves with issues of bureaucratic inertia, arbitrariness, and parochialism (West 1985). Therefore, rather than wholeheartedly promoting the notion of "agency expertise," it is preferable that we instead limit the extent to which we borrow from the Progressive and New Deal traditions, as we struggle to define more sound policy-making.

It is beyond the scope of this paper to advance a definitive set of proposals. All that is intended here is to lay a foundation on which some answers can be constructed. Cutting back on unnecessary discretionary constraints could involve examining innumerable separate powers, discovering what cutting is feasible, and evaluating in each instance the intended and unintended results. The idea is to alleviate mismatches that under-estimate bureaucratic skill and support, and in many cases allow the agency more responsibility for handling complex issues.

A statute like the CWA, where agency support runs relatively high (Ingram and Schneider, 1990) could benefit from less coercive controls, trusting the agency to develop reasonable recommendations to complex water quality problems. It may be sufficient to insure that due process has been attained, while leaving the specific rulemaking-process in the hands
of the agencies.

The symbolism of granting more discretion alone may provide some benefits. As mentioned, agency-forcing mechanisms within the CWA, especially important to the point source program, were not as much a factor in the surface water program. While allowing flexibility, EPA's implementation of the CWA has nonetheless been highly constrained and limited. Visibly promoting more agency responsibility may provide the necessary incentive for EPA to take advantage of existing discretionary abilities.

Ideally, increased bureaucratic discretion would enhance the ability of agency experts to execute more resourceful, less rigid resolutions within the confines of the statutes. It would also allow a closer, more familiar working relationship with the regulated in order to alleviate regulatory dilemmas like that in Arizona. The idea here is not to create an opportunity for EPA to accommodate every costly regulatory situation, but to continue to pursue environmental protection in a more sound and reasonable manner, while continuing to aggressively pursue its statutory goals and objectives.
Options for Arizona

Two possibilities for resolving the issues in the Arizona situation could be implemented if EPA were to be given increased administrative discretion: 1) allowing effluent discharge measurements to be taken at an extended distance from discharge outlets and 2) enabling the Use Attainability Analysis to become a more realistic option for communities.

Specifically, both of these options would allow continued discharge of effluent into the river. Discharging high quantities of ammonia and chlorine may not be welcomed in a "perfect world." At present, however, these proposals offer a more sound solution than the current pending proposal of discharging less regulated, more toxic effluent, on crop fields and storage reservoirs, especially at the expense of losing the established riparian ecosystems.

Discharge Measurements

The idea of taking water quality measurements downstream, away from the point of discharge, is a concept borrowed from the traditional waste load allocation concept used in wetter parts of the country. As described earlier, dischargers in these areas are allowed to capitalize on the dilution capabilities of perennial streams and lakes. While not
specifically authorized in the CWA, EPA has allowed "mixing zones" to facilitate compliance with standards.

Given more flexibility, EPA might be inclined to apply this approach to Arizona. Based on the fact that ammonia and chlorine are largely dissipated by exposure to sunlight and air, this concept could likewise be extended to the arid southwest. As described, this accounts for the existence of fish populations downstream, rather than at the point of discharge. Measuring water quality for compliance purposes downstream, where toxic levels have been substantially reduced by exposure, would work on the same principal governing "mixing zones". While the mixing zone concept allows all type of toxins to be diluted, in Arizona its application could be limited to ammonia and chlorine, and possibly several other non-biomagnifying elements.

Technical details would need to be worked out on various issues, including exactly where measurements should be taken, and what concentrations would be tolerated. The concept also should be contingent on maintaining groundwater quality protection. A certain amount of additional effluent treatment may still be necessary, but this approach is intended to alleviate the costs and implications of complete ammonia and chlorine removal.
Use Attainability Analysis

Increased bureaucratic discretion also could provide for a more workable approach to Use Attainability Analysis (UAA). At present, there is little precedent for obtaining site-specific standards through a UAA, and EPA has been reluctant to issue detailed procedures or offer individual recommendations. The UAA can be a very costly undertaking involving a great deal of investigation and documentation to scientifically justify site-specific consideration, and communities are hesitant to make such a risky investment. Communities are fearful that because their effluent-dominated waters are capable of supporting some aquatic species, that fishable-swimmable is attainable, and thus they would not qualify for the site consideration.

But the aim of the UAA provision was to grant considerations for unique situations. Arizona communities would seem to meet this need. Given more bureaucratic discretion, EPA might be willing to work more closely with communities to assess the potential for receiving site-specific consideration before a costly study was undertaken. Most of the facts related to these cases are understood, even without a complex UAA, and it would seem warranted for EPA to provide greater assistance with an aim toward providing site-specific consideration.
Recently EPA has moved in a more positive direction by drafting new policy, with more explicit UAA guidelines for effluent dischargers. Written in response to problems of the effluent-dominated waters and water reclamation projects of Southern California, EPA has recently made some efforts to apply this concept to Arizona communities. The draft guidelines entitled "Guidance for Modifying Water Quality Standards and Protecting Effluent-Dependent Ecosystem," allow a "net ecological benefit" concept to be factored into the UAA (EPA 1990). This would provide an opportunity for evaluating the benefits of using effluent in the enhancement and restoration of riparian systems. This policy is still in draft form, however, and it is yet unclear, how, or if adopted, if it would specifically provide relief for Arizona communities.
CONCLUSION

The purpose of this paper has been to offer insight into the distinct character of "new" social regulatory policies to illuminate how these qualities have contributed to regulatory inefficiency and unreasonableness. As a new social regulatory policy, the CWA mirrors these attributes, and its implementation in Arizona, which threatens the viability of effluent-dominated riparian ecosystems, provides a clear example of these problems.

The intent has not been to put forth a despairing view of these policies, or environmental regulations specifically. In fact, in many respects this paper has been a tribute to these new innovative policies which brought about profound changes in U.S. society. While problems exist, it is unlikely that we would want to return to the regimes of the past which catered to business, and only minimally addressed the nations' social regulatory needs. Yet important problems relating to the institutional design of these new policies need to be addressed. Failure to fully appreciate how these factors contribute to regulatory inefficiencies and unreasonableness could lead to misguided reforms, thus threatening the integrity and strength of these regulatory enactments.
The proposal put forth in this paper for improving the efficiency and effectiveness of the regulatory policy contained in the CWA works on the concept of granting more discretion to the implementing agency. Rather than adherence to rigid rules, as is presently the case more discretion would afford EPA implementors more flexibility for "real world" decision making. In maintaining this position, options for tampering with other components of social regulatory policies, such as federal control or statutory goals and objectives that state their intent in absolute terms have been rejected. These features continue to fulfill an important role, especially in terms of strengthening the policies.

As we move into the 21st Century, environmental problems will be less amendable to uniformly-based approaches and rigidly defined rules. Implementing agencies will increasingly need more control to solve diverse problems, and flexibility for creative problem solving. It is hoped that the constraints on bureaucratic discretion will become more fully understood as a factor in regulatory inefficiency and unreasonableness, and that more attention will be given to loosening their effects on policy implementation.
REFERENCES


Federal Water Pollution Control Act, As Amended 1972. 33 USC 466.


Goldfarb, W., 1984. Water Law, Butterworth, Boston, MA.


Research Center, University of Arizona, Tucson, Arizona.


