Political culture and water politics in Nevada: Las Vegas attempts to quench its thirsts

Andrea Kristen Gerlak

University of Nevada, Las Vegas

Follow this and additional works at: https://digitalscholarship.unlv.edu/rtds

Repository Citation
https://digitalscholarship.unlv.edu/rtds/168

This Thesis is brought to you for free and open access by Digital Scholarship@UNLV. It has been accepted for inclusion in UNLV Retrospective Theses & Dissertations by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact digitalscholarship@unlv.edu.
INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.
Political culture and water politics in Nevada: Las Vegas attempts to quench its thirsts

Gerlak, Andrea Kristen, M.A.

University of Nevada, Las Vegas, 1992

Copyright ©1992 by Gerlak, Andrea Kristen. All rights reserved.
Political Culture and Water Politics in Nevada:
Las Vegas Attempts to Quench its Thirsts

by
Andrea K. Gerlak

A Thesis submitted in partial fulfillment
of the requirements for the degree of

Master of Arts
in
Political Science

Department of Political Science
University of Nevada, Las Vegas
April 1992
The thesis of Andrea K. Gerlak for the degree of Master's in Political Science is approved.

Chairperson, Dr. Dennis L. Soden

Examining Committee Member, Dr. Michael Bowers

Examining Committee Member, Dr. Andrew Tuttle

Graduate Faculty Representative, Dr. James E. Deacon

Graduate Dean, Ronald W. Smith

University of Nevada, Las Vegas

April 1992
ABSTRACT

Today it is clear that the issue of water and its unavoidable scarcity in many areas has secured a permanent place on the public policy agenda. Certainly in Las Vegas, Nevada the rapid population growth, great economic development and extreme arid climate make the region vulnerable to the dangers of a water shortage. While some estimates suggest that Las Vegas will use all of its water by 1997, Las Vegas appears to be unprepared to deal with the challenge of water scarcity. This lack of real planning and conservation has led to the Las Vegas Valley Water District's "water grab", which is essentially an attempt by Las Vegas to secure water from Central and Eastern Nevada.

This study is twofold in nature, relying on both a case study and survey research. The political culture of Nevada as it applies to the politics of water is explored. Additionally, the impact of factors such as socioeconomic/background characteristics, value orientations, and residency factors, which may affect support for particular water policies, is examined.
TABLE OF CONTENTS

Chapter One
Introduction ........................................ page 1

Chapter Two
Western Water: An Overview ....................... page 9

Chapter Three
Forces and Factors Determining Environmental Policy Preferences: An Overview page 64

Chapter Four
Water and Public Opinion in Nevada: Consensus or Cleavage page 92

Chapter Five
Conclusion ........................................... page 123

Bibliography .......................................... page 131
LIST OF TABLES

Chart 1.1
Distribution of the World's Water  page 3

Map 2.1
Colorado River Basin  page 11

Table 2.1
Water Supply Available  page 16

Map 2.2
Locations for Proposed Las Vegas Water Wells  page 55

Table 3.1
Contrast Between New Environmental Paradigm and Dominant Social Paradigm  page 66

Chart 3.1
Maslow's Hierarchy of Needs  page 78

Table 4.1
Water Use, Employment and Revenue Generations for Agriculture and All Other Sectors in Nevada  page 98

(continued on next page)
LIST OF TABLES (continued)

Table 4.2
Level of Support for Limitations on Water Use in Nevada: Statewide page 100-101

Table 4.3
Level of Support for Exporting Water from Rural to Urban Areas Among the General Public in Nevada page 104

Table 4.4
Level of Support for Exporting Water from Rural to Urban Areas Based on Region page 106-107

Table 4.5
Frequency Distribution of Sources of Variation in Support of Water Transfers from Rural to Urban Areas in Nevada: Statewide page 109-112

Table 4.6
Association of Sources of Variation in Support of Water Transfers From Rural to Urban Areas in Nevada, Statewide and by Region: Gamma page 116-117
ACKNOWLEDGEMENTS

I wish to thank my chairman, Dennis L. Soden for all of his time and energy. I could not have possibly achieved this goal without his encouragement and understanding. I am also grateful to Dr. Michael W. Bowers and Dr. Andrew Tuttle, my committee members for all that they have taught me, both as an undergraduate and graduate student. I look forward to share my knowledge and impact students' lives as my committee has impacted mine. Finally, I wish to express my gratitude to my mother, Elenore, who has been my constant source of inspiration. I am deeply indebted to her.
To my parents who have consistently encouraged me to pursue my dreams and to Dennis L. Soden who has set me on my course.
CHAPTER ONE

Introduction

Today it may be argued that citizens are more aware of environmentalism than during any other period of history. The notion of conservation has moved beyond a small segment of activists and become embraced by many people, thereby allowing for the acceptance of previously unconsidered environmental limitations. The notion of conservation has been extended to include the actual preservation of our natural resources, thereby allowing for an even more committed movement that goes beyond multiple-use conservationism. The concept of the world as a fragile and vulnerable spacecraft upon which humankind is utterly dependent has gained broad acceptance. As a consequence, the physical environment has secured a permanent place on the public policy agenda.

It is clear that water is an integral part of the natural environment and, as such, is given a high priority rating. Moreover, water is a unique commodity in that it is essential for human existence. Yet, one could easily argue that the entire world is facing a water crisis. While water may cover three-fourth's of the earth's
surface, more than 97 percent of the earth's water is saltwater in the oceans. Less than 3 percent is fresh water and of this fresh water, 77 percent is frozen in polar glaciers and ice caps. The remaining fraction is in rivers, lakes, plants, and animals. Chart 1.1 displays the distribution of the earth's water. Thus, a global water crisis is not inconceivable. Yet, the impact of such a crisis remains unknown, even among the most knowledgable observers. Furthermore, when physical scarcity becomes intertwined with the political system the reaction is even more unpredictable.

Clearly water is a resource which humans have for the most part taken for granted. In many respects its use has been part of the wilderness and untamed forces of nature which man has, especially in western democracies, historically sought to control. A utilitarian concept of water has existed for so long that in most instances man has merely sought to acquire some utility from water. As a result, water has become a very natural convenience in our lives, one which we essentially take for granted. Water is something we have grown so accustomed to that we simply surround ourselves with it, in fact wasting it more often than may be logical. This is certainly evidenced by such artifacts as man-made lakes, fountains, swimming pools, golf courses, and even volcanoes. In our
Chart 1.1

Distribution of the World's Water

(Source: David H. Speidel and Allen F. Agnew, "The World Water Budget", in Speidel et al., (eds), Perspectives on Water Uses and Abuses (New York: Oxford University Press, 1988), Table 3.1, page 28.)
attempts to control, we are allowing our water to evaporate right out of canals or flow down our roads and sidewalks from excessive irrigation and sprinkler practices. While the idea of conservation has indeed surfaced in many segments of today's society, it has not yet expanded to include water in the manner which many feel it should. Thus, the reality may well be that most have not yet realized the great potential for a water shortage. It is this very lack of understanding that has prevented a thorough water conservation plan in many localities, including Las Vegas, Nevada, the focus of this study. Yet, awareness is growing within many segments of society, allowing water to become a vital public policy issue incorporating a broader set of political, social, and economic actors than previously considered.

This study will investigate the issue of water in the state of Nevada. While this public policy issue has always held significance, it has recently gained renewed attention. That is, as Southern Nevada approaches a potential water shortage the issue suddenly appears vital. In response to this potential shortage, the Las Vegas Valley Water District has applied for water rights in Central and Eastern Nevada counties. This Cooperative Water Plan, which has also become known as the "water grab", is Southern Nevada's attempt to replenish its dwindling
Chapter Two will begin with a look at the brief history of water in Las Vegas. The distribution of Colorado River water and possible additional allocations will be discussed. Indeed there is reason to be concerned and the potential danger will be demonstrated. An overview of water law will be provided, outlining Nevada’s water doctrine. Certainly there exists possible state and federal conflict; yet, potential trade-offs also appear likely. New initiatives in water policy dictate water markets and transfers. Many find water marketing to offer solutions to both water shortages and environmental concerns. In fact, water markets are often preferred over the great development initiatives of the Bureau of Reclamation. From another perspective, the National Environmental Policy Act of 1969 changed the mindset of many Americans, thus opening the doors for the environmental movement. Yet, competing goals still exist with water issues. This is certainly evident in Nevada as battles exist over the demand for clean water, the preservation of the Colorado River, and the compromise of values and need for environmental ethics. Agricultural water efficiency is also relevant in Nevada, as irrigation accounts for 90 percent of the state’s water use. Clearly conservation appears desirable, if not imperative.
With this background information in mind, it becomes necessary to move forward to the heart of this study, that is, the issue of water transfers from Central and Eastern to Southern Nevada and the forces and factors which determine environmental policy preferences. Chapter Three provides an overview of these preferences, beginning with a look at two contrasting belief systems known as the New Environmental Paradigm and the Post-Industrialist Paradigm. Beyond this, a Maslowian framework then provides a way to assess individual and collective responses to public policy concerns.

Political culture is considered as a mechanism to understand differences within a particular homogeneous domain. In this instance, political culture helps to explain differences in the opinions of Nevadans concerning possible water transfers to Southern Nevada. Since public opinion data provides a starting point, a poll conducted by the University of Nevada, Reno and the University of Nevada, Las Vegas in the fall of 1990 is relied upon. In Chapter Four this data will be used to indicate Nevadans' level of support for limitations on water use, as well as the level of support for exporting water from rural to urban areas. The frequency distributions of sources of variation in support of water transfers from rural to urban areas in the state of Nevada will also be discussed and the associate of various
correlates of support. Lastly, Chapter Five will offer some basic conclusions suggesting the importance of the various results.
CHAPTER ONE ENDNOTES


CHAPTER TWO

Western Water: An Overview

Brief History of Water in Las Vegas

According to the Bureau of Reclamation, the Las Vegas Valley is one of the driest and warmest areas in the country. In fact, the normal recorded annual rainfall is between only two to four inches a year. The floor of the Las Vegas Valley is composed of alluvial gravel, sand, silt, and clay, which cover an area approximately forty miles long and fifteen miles wide. The artesian aquifers (an underground reservoir of rock formations that yield water) of the valley are of three types according to water experts: shallow zone, middle zone and deep zone. There also exists an even shallower zone of groundwater found within forty or fifty feet of the surface. The shallow zone lies between a depth of about 200 feet and the top of the "blue clay layer", which occurs between 380 and 450 feet below land surface. It is in this zone that approximately three-fourth's of the valley's wells have been drilled. In fact, there exist a minimum of 7,000 wells that have been drilled.
in the valley, including domestic, community and municipal wells. The replenishment of our underground water supplies comes from precipitation falling primarily in the Spring Mountains, west of the city. Generally, the flow of water in the aquifers is from west to east. Yet, groundwater is incidental since Southern Nevadans receive 80 percent of their water from the Colorado River and only 20 percent from groundwater.

Groundwater is, however, of interest since it is a common-pool resource which often creates a disincentive to conserve and as a result, there is often a "race to the bottom of the aquifer" which prevents optimal economic utilization of the resource. Nevada's allocation of rights for groundwater is based on "prior appropriation" which recognizes the best legal rights in the person who first began using the water. A fundamental principle of prior appropriation is that senior appropriators, those who filed their claims first, are entitled to receive their full share of water before junior appropriators, those who filed their claims later, receive any in times of shortage.

Our primary source of water is, however, from the lower basin of the Colorado River. In 1921 Congress authorized the states of the Colorado River Basin to enter into an interstate compact for the division of water. Map 2.2
Map 2.2

The Colorado River Basin

displays the Colorado River Basin area. It was believed that an interstate compact would pave the way for federal funding, a point which bears fruit in Hoover Dam and its successors both upstream and downstream5. In the 1920's, Southern Nevada's water needs were quite minimal and it can be safely stated that no one envisioned a city the size that Las Vegas is today; nor could conventional logic lead to the conclusion we would have the Clark County metropolis as we know it in the 1990's. Yet, Las Vegas feared the aggressive and water greedy city of Los Angeles. The Owens Valley case and the impacts on Mono Lake, although not discussed here, suggest good reasons why.

In 1952 Arizona brought suit over the distribution of water from the Colorado River in Arizona v. California, 373 U.S.546 (1963). Nevada intervened to protect its Colorado River interests and in 1954 the United States Supreme Court granted Nevada's petition to intervene in the case. Thus, even by the 1950's it was becoming apparent, at least in the court system, that groundwater supplies were being rapidly depleted and surface water rights from the Colorado River needed to be perfected. In June 1963, the United States Supreme Court ruled that the Colorado River Compact of 1922 did not determine the distribution of water at the present time but only for the initial period of the compact. The Supreme Court,
therefore, ruled for new distribution so that California would receive 4,400,000 acre feet/year, Arizona - 2,800,000 acre feet/year and Nevada - 300,000 acre feet/year, with no reallocation among the upper basin states. Nevada's leaders originally requested a 900,000 acre feet/year allotment but then suggested that 539,100 acre feet/year would be adequate. Nevertheless, Nevada was more than happy with the 300,000 acre feet/year allotment, the amount originally received from the Colorado River Compact in 1921. At the time it was viewed as a victory for Nevada, suggesting foresight and determination of Nevada's representatives in the negotiations. This 300,000 acre feet/year allotment is a permanent water resource for Southern Nevada, as it is meant to supplement the groundwater supply. Unfortunately, an acre foot of water, the amount equivalent to twelve inches of water standing on one square acre of land, supplies only two typical families for one year. When one considers this in light of the fact that the state's population has grown greatly between 1980 and 1990, from 801,000 to 1,280,020, it is apparent that a problem is in the making. Moreover, in Southern Nevada the population climbed from 463,087 in 1980 to 741,459 residents in 1990, a 62 percent increase for that decade alone. Considering Las Vegas' anticipated growth, scarcity and severe limits seem not only apparent, but
unavoidable in the not-so-distant future.

The most likely solution appears to be additional allocations from the Colorado River. Yet, it is important to note that several factors prohibit such an approach. For instance, the Colorado River is already over-allocated; enough water simply does not exist. Also, to increase the allocation would require approval from all seven states already receiving water from the Colorado River. Thus, to increase Nevada's allocation another state would have to give up a part of its share. Political realists would agree that this seems extremely unlikely. In addition, compacts, court rulings, and various agreements are so complex and intertwined they essentially preclude Nevada from acquiring additional water from the Colorado River. Therefore, while this approach appears quick and simple, it is the most unlikely alternative of all. As a consequence, Southern Nevada needs to look elsewhere to procure new water supplies.

**Reason for Concern**

There is a little saying in the water business that goes something like this:
"There's plenty of water on this planet - God just didn't always put it where people want to live." Indeed this appears to be the case in Southern Nevada. In Las Vegas, rapid population growth, great economic development and the obvious arid climate make this region vulnerable to the dangers of a water shortage. Certainly the available evidence indicates that a potential water shortage currently exists in Southern Nevada. The current water usage patterns project complete utilization of current water resources by 1997. However, according to the Las Vegas Valley Water District, conservation and effective water management could possibly stretch the current water supply until the end of the century.

As previously noted, Southern Nevada receives 80 percent of its annual water usage from the Colorado River and 20 percent from local groundwater. Because the Colorado River is already over-allocated, Las Vegas cannot expect to increase its allocation. In an effort to obtain water from other sources, additional groundwater is currently being sought from Northern Nevada via an effort referred to by opponents as the "water grab". To date, the State Engineer has not yet ruled on this proposal and is unlikely to do so in the immediate future. Las Vegas cannot safely assume that its water supply will be increased and may have to look at other means for reallocating water.
Reviewing the water supply and consumption of the Las Vegas Valley, it is evident that a potential water shortage exists. In this regard, the following breakup of the available water supply in Table 2.1 is valuable for determining the severity of the problem.

**TABLE 2.1**

**Water Supply Available**

43 = annual natural recharge of groundwater

370 = annual Colorado River allocation

107 = annual "return flow credit" to Colorado River

**TOTAL 520 = TOTAL ANNUAL AVAILABLE WATER**

(Figures are in millions of cubic meters.)

In 1986 there were 207 million cubic meters of water pumped from the Colorado River out of the available 370 million cubic meters annual allocation and 83 million cubic meters pumped from groundwater, yielding a total of 290 million cubic
meters. The population at that time was approximately 600,000 in the Las Vegas Valley. Based upon this population figure and the use at that time, a rough estimate suggests that per capita use equals approximately 483.33 cubic meters per resident. With this rough estimate and in light of a total annual available supply of 520 million cubic meters, we can determine that growth is essentially limited to 1,075,869 residents. The population of the Las Vegas Valley was 750,000 in 1990. Thus, the allowable growth of the valley is more or less 325,800 (1,075,800 - 750,000). The estimated current population increase is 4,500 people per month. This leaves only 72.4 months or six years of remaining growth (325,000 divided by 4,500 = 72.4 months or six years). Therefore, assuming the current population growth, it is predicted that the Las Vegas Valley will be at its maximum sustainable population by late 1996 or early 1997, given no new sources of water or changes in water consumption habits10.

Quite recently, in early March 1992, federal, state and local officials signed a contract providing Southern Nevada with the remainder of the state's allocation of Colorado River water. This provides Southern Nevada with the entire 300,000 acre/feet, the surplus river water that exists when reservoirs are full. This contract also allows the Las Vegas Valley Water District to lift its suspension on making
new water commitments if it deems desirable. According to Thalia Dondero, Clark County Commissioner and Chairperson of the Southern Nevada Water Authority, the only way that this contract was possible was because of the cooperation which existed leading to combined water and waste water supplies.

This evidence illustrates that in the early nineties concern for sustaining present growth depends in large part on obtaining new water sources. If not, a growth moratorium may be required. Thus, if new sources are to be obtained to support the present growth then they must be obtained under the system of water law which directs allocations, reallocations and control of water.

Water Law: An Overview

States reserve the power and prerogative to establish the institutions for allocating all of the waters within their boundaries which are not encumbered by federal law or interstate compact. States then grant water rights based on one of three methods. The first is common law doctrine which calls for all users to cut back in time of shortage. This doctrine, more typically known as riparian rights,
grants the owner of the land adjacent to a water body the right to use the water. This riparian doctrine is practiced in some 29 states, predominantly in the East.

A second method involves a system in which the earliest users have the most senior rights. In the western region of the United States streams are less numerous and their flows less reliable. As a result of considerable development, water has been extensively diverted beyond riparian lands, providing a larger set of lands with water and in turn the opportunity for subsequent development. This doctrine known as "prior appropriation" is based on the principle of "first in time, first in right". Here rights depend on usage not land ownership and has its roots primarily in mining in California and the West more generally. A third less common method is a hybrid system, also known as the "California doctrine". These states originally recognized riparian rights but then converted in part to a system of prior appropriation while still maintaining existing riparian rights. Regardless of the system, water has generally been treated as a free commodity. The water itself, however, remains the property of the public with the state as guardian or trustee. What each diverter "owns" is merely the right to use the water, but not the water itself.

Nevada relies on the doctrine of prior appropriation. The appropriation
system was viewed as a way to encourage development in the West where water was limited. It rewarded those who first risked their money and time by providing them with the region’s most precious commodity. Under this system, full burden of any water shortage is borne by the holders of the most junior rights, inasmuch as senior appropriators can use all available supplies before junior rights can be exercised; a problem being experienced in some areas as a result of the six year drought affecting the region. In Nevada, water rights are made inseverable as a rule, but may be severed if their use on the original benefitted land becomes economically infeasible. Nevada statutes restrict transfers of water away from the land as well as the transfer of irrigation rights. The present system of prior appropriation reflects the need for certainty in establishing water rights. It does not reflect the concern that water be allocated equitably, as new situations arise.

Under this doctrine, a water right is a legal title to the use of a portion of water from a given source of supply. The goal is to protect the rights of existing waters so that there is stability and certainty of supply.

In the West, the traditional view has been that water does not flow down rivers but it "wastes" if not diverted. The "conservation" of water for diversion is peopled by appropriators and diverters who have been granted senior and junior
rights and by state engineers and water masters who yield "powers of star
tribunals". Western water law is therefore, very often obscure and extremely
complex. For instance, if you steal your neighbor's water and get away with it then
it is yours. The celebrated book and movie Melagro Beanfield War provides a
somewhat interesting, if not comical, example of how this occurs. Non-diversion
or use also has its costs since if you leave your water in a stream you lose it if
someone decides to take it. Or, if you take it out, it must be for "beneficial use",
(the measure, the basis, and the limit of the appropriator's right to use water)
which means just about everything or anything depending on one's perspective.
Beneficial use in Nevada, for example, includes domestic, agricultural, industrial,
and recreational uses among others. But certainly the ultimate law of western
water is that it always flows uphill - toward money.

Indeed there is strong evidence which suggests a need for reform of
Nevada's water laws. It has been argued, for example, that the free market may
be the most efficient means of reallocating the scarce western resource, a point
to which we shall return. It is quite obvious Nevada is no longer solely the
agrarian and mining society on which much of the state's history and water law
rests. It may be necessary to change with the times as the majority of Nevada's
water is now required for its burgeoning population and growing service industries. Nevada's current water law, which is based on prior appropriation, leads to a great deal of unchecked control over water and use patterns which may no longer be efficient or effective. Legislative reform is necessary in many instances, especially concerning the permitting process. The unpredictability and timeliness of this process make it an appropriate target. To ensure that the public interest is truly served, it is now necessary to establish some means for determining the nature, extent, and relative priority of each water right on a given source, as opposed to past reliance on prior appropriation and historical preferences\textsuperscript{15}.

From another perspective, Garret Hardin stresses the importance of the interplay between law and the development of social awareness. Hardin maintains that if our definitions, both societal and legal, become unjust or even counterproductive, it is necessary to redefine them. This appears to be the case with Nevada water law. As Hardin openly states in his seminal 1968 article "Tragedy of the Commons", it is a "tragedy" (an inherent logic) that it is to an individual's advantage to exploit our "commons" (real resources). Indeed our resources, such as water, are being exhausted to the detriment of all. Ruin is the
destination toward which all men rush, if each pursues his own best interest in a society that believes in the free-run-of-the-commons. Freedom in a commons brings ruin to all\textsuperscript{16}. Unfortunately, each will attempt to increase his allocation in a world that is limited. These limitations include water resources, of course, and the overexploitation of these requires a serious reevaluation of the regulatory legal system to insure that the multiple "public interests" are served.

State Versus Federal Involvement

Before considering what alternatives exist for water resource use and management it is necessary to consider the important state-federal relationship that overwhelms policy issues in the Silver State. Put simply, Nevada is a prime example of a state completely unprepared to deal with the challenge of water scarcity. The state legislature has not produced any effective laws concerning the development or management of the state's water resources. Thus, the desperation of farmers, suffering from economic and environmental catastrophes, and the Nevada State Legislature's failure to initiate effective administrative control
over water rights and distribution made national reclamation inevitable¹⁷.

It was the Arizona v. California Supreme Court decision that truly altered the state-federal relationship concerning water in the West. With this decision, the federal government took on a new role as it acquired greater powers over the distribution of the water of the Colorado River. This decision demonstrates that water from the Colorado River now de facto rests in the federal government's hands and that federal entitlement may change allocations at some point in the future. Acting in the role of policy maker, the Supreme Court has gone on to say that water is fundamentally an article of commerce and that barriers to its interstate movement cannot be legislated by a state except where public health and safety strongly demand it. As a result, especially in the case of Sporhase v. Nebraska, the private marketing of water across state lines has subsequently occurred.

Additionally, due to the growth of federal and state involvement in water development, the federal and state administrative agencies, quite apart from the water rights regulatory agencies such as the State Engineer, have become increasingly influential in allocation decisions¹⁸. The United States Supreme Court ruling in Arizona v. California is again evidence of this, inasmuch as this decision also gave the Secretary of the Interior the prerogative of interstate
allocations of water generated by federal projects such as Hoover Dam, Glen Canyon and others on the Colorado River.

It is important to bear in mind that federal power over water may very well be paramount to anyone else's power if the federal establishment wishes to exercise it. Water policy is set at the state level, yet it must coincide with federal law. Clearly courts have recognized federal authority to deal with water resources including commerce power, property power, war power, and treaty power. Moreover, in a state like Nevada where the federal presence is dramatic, this clearly creates great potential for state-federal tradeoffs.

**Pandora's Box and Water Resources: New Initiatives in Water Policy**

-Water Markets and Transfers

Prior to this new age of water politics, which emphasizes conservation, reallocation and transfers, water development flourished through the provision of water via dams and aqueducts. These large-scale federal water projects, which will be discussed in greater detail later, indeed encouraged high water use and may be viewed as the "golden age of concrete". While locally based policy actors
and construction bureaucracies received great benefits from this development, many disadvantaged peoples (i.e. Blacks, Hispanics, Women, Native Americans) and environmental groups suffered. This idea of big development essentially came to a halt because of congressional change and the opening of access to environmental groups.

Contemporary politics of water now emphasizes a new era of water marketing. Success in water politics is now measured in paper rather than concrete. Water rights and sales and lease agreements have replaced bulldozers\textsuperscript{19}. Just as the development-oriented elites were the main beneficiaries of the federal water development era, they continue to win in today's marketing era. The previous losers, such as the poor, Indians and environmentalists, meanwhile, still continue to lose. Furthermore, one may argue that the overexploitation of water resources continues to take place whether it is facilitated through construction projects or the marketing of water rights to users far-removed from the areas in which water naturally exists\textsuperscript{20}. Even with water marketing, it appears that often resource decisions continue to avoid or dismiss impacts on the environment.

Historically, the prevailing ideology of western society has been the concept
of human progress. There has existed a great emphasis on economic growth, expansion of markets and exploitation of new resources. This growth ethic emphasizes man as a creature apart; divorced from his ecological moorings and dependencies. This ethic has often placed decision makers in situations with higher levels of uncertainty and risk about the consequences of their actions. Indeed there exists the weighing of costs and benefits and the assessment of market versus government involvement. Conflicts over public management of natural resources have many dimensions: local versus national perspectives, development versus preservation, vested interest versus "the greatest social good", and financial returns versus distributive justice. While the Alaskan land issue poses a perfect example of this conflict, water as a policy issue in the West substantiates this proposition as well. There clearly exists various justifications for market intervention by public agencies. For instance, mere market failure, externalities, distributive justice, and stabilization all offer substantial justifications for market intervention. Under market intervention, management objectives can continue to include efficiency responsibilities, distributional responsibilities, custodial responsibilities, and of course, public participation.

Reclamation law does not necessarily authorize or prohibit the voluntary
transfers of water via water markets. In practice, there are isolated transfers occurring with the Bureau of Reclamation's approval. The Interior Department has publicly announced that they support the concept of market-based transfers. Economists and some environmentalists alike find water transfers via water marketing to be the most efficient and least disruptive means of solving future water shortages. These transfers may consist of permanent sales, temporary sales, or drought-year options. Thus far water transfers have involved mainly the sale of agricultural water rights to cities or industries. Farmers can sell all of their water rights they manage to conserve, thus reducing irrigation return flows and problems with pesticides.

Obviously, rapid population growth has much to do with helping water transfers occur. Rapid growth fosters urgent demand and demand creates high prices; and water, as the old cliche goes, always flows uphill to power and money. Thus, market allocation of water is seen as a better way to allocate water. It involves the free and voluntary exchange of rights and resource entitlements. It advocates implementation of market processes as it believes that the water market will provide incentives that will greatly improve conservation. Market allocation results in the flow of resources to those who value them the highest. Yet,
advocating the free market system as a cure for environmental ills is always a risky proposition; it is easy to find a thousand instances where unfettered capitalism has created environmental harm. But in the case of western water (at least for now) the transfer of water rights shows great promise as a means of achieving several important goals at once. These goals include supplying water to water short urban areas, alleviating the drainage and salinity crisis, reducing surplus crop payments, and promoting ecological health - all at a reasonable cost and without new dams. Clearly this has some attraction. Water markets can release the creative power of individuals in the marketplace enabling water users to bring to bear specific knowledge to respond to growing scarcities.

Environmentalists have been grappling with the problems of developing strategies in the Reagan/Bush era. Many have been extremely disappointed with the conservative retrenchment. In the area of water policy, environmentalists feared that the tentative reforms of the Carter Administration would be swept aside in an avalanche of new water projects and hostility to environmental values. In an attempt to meet this challenge, many groups and individuals have turned to the notion of water markets, hoping that this would appeal to conservatives while at the same time protect the environment. This strategy has appeared to work and
has become a very hot topic in the West. Conservatives tend to view water markets simply as pure economic transactions. Environmentalists however, look to water markets for greater efficiency in water use which thereby, reduces the environmental damage resulting from large-scale projects. In pure form, water marketing is the treating of water as a commodity to be bought and sold on the basis of supply and demand. In most areas of life, a marketplace for commodities is a rule, yet in western water it is revolutionary.

So if this is indeed the case, one wonders why more water marketing does not occur? Perhaps because engineers, especially retained engineers and the companies at their literal “bidding”, have always concentrated on development of water, that is dams. Certainly rural areas fear water transfers as they view it as a prescription for economic demise. There are definitely many obstacles to water transfers, most of which are made of paper. From the fundamental doctrine of appropriative rights to the bylaws of obscure irrigation districts, the corpus of western water, procedure, policy, and custom at least inhibits water transfers; in many instances they are prohibited outright. Even where transfers have occurred, almost none have been made for the sake of the environment. This is mainly
because of historically hostile attitudes and a legal system that thwarts change. No state has yet managed to reconcile its laws and procedures governing water management with the enormously heightened public interest in the environment; for the most part, they reflect decade-old attitudes.

Yet, as a society we have clearly not chosen the use of markets to balance water supply and demand. Perhaps this is because water is perceived as too vital a commodity to be left to economic forces involving self-interest and profit-maximization. Many blame markets for resource misallocation and environmental degradation. Additionally, markets do not always work as efficient allocators. Thus, most tend to view water as a resource which should be administratively managed via government mechanisms. The private ownership of water is not all that desirable, inasmuch as water belongs to everyone. Yet, water transfers do provide an option, that may provide an alternative after conservation; retrofitting for efficiency and optimization of wastewater reuse have all been implemented. Certainly it has become necessary to rethink the way we view water supply. The need to create greater incentives concerning natural resource conservation is evident. Thus, it is necessary to obtain more information about possible alternatives such as water markets and incorporate them into our long term comprehensive statewide and community planning.
Bureau of Reclamation Impact

In the process of assessing the role of the federal government, one also needs to consider the primary federal institution in the western water resource arena - the Bureau of Reclamation. The modern American West could be likened to a great, rich, serious-minded Disneyland - most of its wealth, most of its population, its very existence dependent on the artificial manipulation of water in thousands of dams and tens of thousands of miles of aqueducts and canals almost entirely under the jurisdiction of the Bureau of Reclamation. Historically, western water management has focused on water development. Dams, reservoirs, and diversion canals have been built as a means to supply water and encourage agricultural and economic expansion. This approach took momentum with the Reclamation Act of 1920 which aimed to settle the western frontier by offering farmers cheap water and power as part of rural electrification. It also established a separate agency, the Bureau of Reclamation, to develop the West's rivers for both irrigation and hydropower. Since 1902 the Bureau has built or authorized more than 160 irrigation projects. Collectively they supply water to about 25 percent of the West's irrigated land. The Bureau of Reclamation controls far more
water than anyone else in the West, it also sells the cheapest and some of the most inefficiently used water around\textsuperscript{27}.

The Bureau of Reclamation is an independent agency within the Department of the Interior. By law the Secretary of the Interior is the watermaster of the Colorado River; thus, the Bureau serves as the Secretary’s agent. The commissioner of the Bureau is in theory directly responsible to the Interior Secretary and the President, thereby carrying out the wishes of the administration. But this is not always the case. The Bureau is really a creature of Congress. In Congress, water projects are a kind of currency, like wampum, and water development itself is a kind of religion\textsuperscript{28}. In fact, water projects came to epitomize pork-barrel; they were the oil that lubricated the nation’s legislative machinery\textsuperscript{29}. President Jimmy Carter’s efforts in the 1970’s are certainly evidence of an administration’s failure to control the Bureau by cutting funding on many water projects. President Carter revealed his skepticism of dams by attempting to cut funding on many water projects. This was obviously not well received in Congress where he faced a resounding defeat of his proposals.

Earlier, Franklin D. Roosevelt was extremely successful in harnessing control of the Bureau. Roosevelt sought the title of "Great Developer". He saw
dams as a means to lift American spirits and put hope back into the capitalism which was greatly battered by the Great Depression. In the 1920's it was the Empire State Building and the Chrysler Building that were landmarks of American achievement. In the 1930's it was federal dams going up on western rivers. A dam, whether or not it made particularly good sense, whether or not it decimated a salmon fishery or drowned a gorgeous stretch of wild river, was a bonanza to the constituents of the congressman in whose district it was located - especially the engineering and construction firms that became largely dependent on the government for work.

The reclamation program received tremendous public support because millions of people owed their livelihood to it. Furthermore, it incorporated the family farmer into its scheme following long-held standards of Jeffersonian ideals. A "public works oligarchy" came to exist in Congress as construction companies rewarded congressmen for supporting bills which authorized more dams. By the 1940's, the federal reclamation program had outreached its early origins. Stretched-out repayment periods, multiple-purpose legislation, and subsidies provided by hydroelectric power revenues all served, or conspired, to justify projects which would not have passed muster under the original terms of the
Reclamation Act\textsuperscript{31}.

Soon all the best dam sites were used and the Bureau turned to more marginal projects. It began spending more and more on less and less thereby, becoming an easy target. The progressive extinction of free-flowing rivers soon infuriated many powerful and wealthy sportsmen. Several powerful Eastern members of Congress (i.e. Senator Douglas of Illinois and Congressman John Saylor of Pennsylvania) soon took notice and began criticizing water projects. President Eisenhower attempted a policy of "No New Project Starts", yet he was unsuccessful in limiting the programs of the Bureau. Presidents Nixon, Ford, and Johnson were in turn somewhat more successful in delaying and undermining new water projects. The death or retirement of several powerful Congressman in Arizona (Hayden), California (Sisk) and Colorado (Aspinall) also contributed to the reclamation programs' downfall. But it was really the growing power of the environmental movement and the election of President Jimmy Carter which brought about new changes. Environmental organizations lobbied for legislation, most notably the National Environmental Policy Act of 1969, which will be discussed shortly, to restrain water agencies. Under this particular act, water agencies were now compelled to publicize the environmental consequences of
their actions, not just the hypothetical costs and benefits.

In 1987, the Bureau of Reclamation announced that the great dam-building era had in fact come to an end. It was time for the Bureau to overhaul its policies and redefine its mission. The Bureau now hopes to be a management-oriented agency concentrating on the preservation of our existing water. Many westerners now believe that greater water development solves nothing in the long run. With little government money being offered for more dams, westerners now wonder if the investment is really worthwhile. The environmental costs of water development - such as the extinct salmon runs and the poisoned rivers - are also becoming more evident. What exactly the Bureau intends to do now is difficult to say, as they are often short on specifics. For now we just have vague pronouncements about repairing environmental damage and facilitating water transfers.

The Bureau of Reclamation's achievements as of 1987 included -

- 355 storage reservoirs
- 254 diversion dams
- 15,853 miles of canals
1,376 miles of pipeline
276 miles of tunnel
37,263 miles of laterals
17,002 miles of drainpipes and canals
51 hyoelectric plants\textsuperscript{32}

Certainly an engineer would find this extremely impressive. The federal investment involved totals more that $9.4 billion. This figure however, represents uninflated dollars and excludes interest so that the actual cost is in fact many times more. Clearly, if archaeologists from some other planet were to sift through the bleached bones of our civilization, they may well conclude that our dams were our temples\textsuperscript{33}.

Could one even imagine what the West would be like today if there were never a Bureau of Reclamation? Nevada is a state without any notable rivers and only slightly borders the Colorado River. We are, perhaps, the closest approximation of how things could have remained; a state with its settlements a hundred miles apart, its economy rooted, for lack of a better alternative, in what used to be called sin, its ghost towns as numerous as those that managed to
survive it is indeed interesting to imagine what would have occurred without
the Bureau of Reclamation.

The National Environmental Policy Act of 1969 and the Environmental Movement

The 1960's brought a great deal of attitudinal change concerning the
environment. During this time, a gradual awareness began to build in the public
consciousness. Rachel Carson's *The Silent Spring*, for example, called attention
to man's assault on nature. According to Carson, this assault has "silenced the
spring in countless towns in America". She points out that while the history of life
on Earth has been a history of interaction between living things and their
surroundings, man has now subjected himself to contact with dangerous
chemicals or "elixirs of death", and thus shifted the balance of nature against him.
Carson pointed to the destruction of rivers, neglect of soil, and decimation of
salmon as examples of the "needless havoc" created by man. Even thirty years
ago Carson took notice that most of the world's population was either experiencing
or threatened with critical water shortages.
Indeed man has left a depressing record of destruction against both the Earth and other men. Newly discovered horrors were mentioned almost daily in the newspapers of the time: In 1969, the Food and Drug Administration was forced to prevent over 28,000 pounds of salmon from Lake Michigan from going to market because of excessively high levels of DDT and dieldrin; the Great Lakes were widely reported to be dying, choked to death in large part by phosphates that encouraged the growth of plant life; and the Apollo astronauts had no trouble picking out the cloud smog over Los Angeles. Certainly the public was beginning to understand the natural order of the Earth and the impact of their actions in the sixties. Environmentalism was beginning to take shape as people's perception of their world was beginning to change. Earth Day, April 22, 1970, was evidence of this focused attention on environmental problems and for many is a benchmark for the present environmental era. Lectures and demonstrations across the country furthered the environmental movement and heightened public awareness.

This growing awareness led, in part, to the passage of the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. 4331-4335) which pledged the federal government to foster "harmony between man and his environment". While
NEPA represents mere policy and not law, it indeed expanded specific acts, including land and water. NEPA outlined procedural guidelines for the federal government just as it provided alternatives for the decision-maker. NEPA also outlined the Environmental Impact Statement (EIS) process, perhaps the most significant impact of this legislation. The quasi-cabinet level Council on Environmental Quality (CEQ) was also established to complement the Environmental Quality Council which had been established by Executive Order in May 1969.

Beginning with NEPA, it became obvious that cleaning up the environment was increasingly a bipartisan issue. Both Congress and the Administration moved toward the enactment of environmental protection laws. The Environmental Protection Agency (EPA) opened its doors in December 1970 in an effort to coordinate all existing pollution control programs within one agency. Environmentalism became a national movement incorporated into government. Yet, by the 1980's environmental issues faced great conflict. Partisanship had developed on several proposals, lobby groups were exerting cross pressures, and the legislative and executive branches found themselves at odds, particularly on spending levels for existing programs38.
President Reagan’s drastic EPA budget cuts reduced the size and scope of the agency. Cuts in the 1980’s left EPA 29 percent below 1981 in total budget, 30 percent in staff and 42 percent in research\(^9\). Often times it became impossible for the EPA to carry out its congressional mandate and many decisions on environmental legislation were deferred. Congress quickly moved from its proactive stance to one of defending environmental protection laws against the policy changes pursued by Reagan in the 1980’s. The pattern became clear, but in a democracy hard to explain: A handful of unelected White House officials, who have little respect for public opinion, and are distrustful of government’s own environmental agencies, work behind the scenes to throw wrenches into environmental negotiations\(^{40}\). Indeed the Reagan Administration’s environmental policy was often no policy at all; a policy of benign neglect. In fact, Reagan really worked more vigorously to cut program funding than any other aspect. For instance, renewable energy research and development was cut by 89 percent in the 1980’s\(^{41}\). Hazardous waste and dumps, lead poisoning, groundwater pollution, wilderness protection and pesticides were issues which were quickly neglected by the Reagan Administration and continue to be under President Bush. The only environmental problem the White House cared about was overregulation,
and the only people whose counsel they had sought were those who felt they were
"overregulated".

Today the United States is indeed lagging behind. President Bush obstructs
progress on everything from protecting the oceans to encouraging the spread of
family planning in developing countries. President Bush's lack of interest in the
environment is evidenced by his hesitation to speak at the June 1992 "Earth
Summit": in essence it may be argued because he has nothing to say or propose.
The issues concerning the environment are becoming even more complex, as they
begin to involve class competition over scarce resources. This conflict is certainly
evident in Nevada over water. Indeed there often exist various goals which often
conflict.

Water and Competing Goals in Nevada

Southern Nevada quite obviously needs and desires water. In addition,
Southern Nevada seeks clean water, the preservation of nature, in particular the
Colorado River, and a compromise of values, be they political, economic, or social.
Often it is difficult for these three objectives to coexist. As conflicts arise, we find that rarely are all of the intended goals met, if any at all. Certainly the potential for conflict is enormous.

Clean Water

It has been pointed out that as much as a fourth of the world’s reliable water supply could be rendered unsafe for use by the year 2000. Pollutants caused by industrial and mining operations, hazardous waste disposal and pesticides are all contaminating the water supply. Growing populations, increasing use of water in agriculture and industry, and environmental degradation all contribute to shortages of fresh water. Today we find ourselves searching not merely for water but for clean water.

Groundwater, our only source of drinking water for half of the United State population, is virtually unprotected by law. Groundwater, which collects in strata known as aquifers, accounts for 20 percent of Southern Nevada’s water supply. Chemicals can easily percolate into the ground and enter the aquifer thus, harming the water. Aquifers contain nearly 50 times the volume of the nation’s surface
waters and constitute 96 percent of all fresh water in the United States. Clearly the protection of groundwater from contamination is of paramount concern.

The federal government has acted to control groundwater pollution. It has done so through the Clean Water Act of 1970 and the Safe Drinking Water Act of 1974. There also exist some 16-plus federal departments and agencies involved in administering groundwater programs. Yet, the result of government intervention has been merely fragmentation and poor coordination in nearly every case. For groundwater has remained virtually unprotected in the federal domain of environmental concerns. Yet, it would appear that we could begin to protect the quality of water by improving the regulation by both federal and state governments. It would also be in our best interest to greatly reduce the amount of pollutants used in our agricultural practices. Regardless, it is obvious that Southern Nevada is concerned with running out of clean water. Clearly clean, not dirty water is a desired resource.

The Preservation of Nature - the Colorado River

Water is the most limiting of all factors that influences growth and development in the West. The key to the economic development of this region has
been the harnessing of water. The Colorado River is perhaps the most sobering reminder of our fragile dependence on water supplies\textsuperscript{46}. The Colorado River embodies the West's history of struggles with nature and among rivals vying for scarce resources. It demonstrates the paradoxical western attitude that allows a distrust and distaste for intrusions of the federal government to coexist with constant demands for federal assistance\textsuperscript{47}. While it may not be the biggest or the longest river in the American West, it has more people and industry dependent directly on it and its flow than any comparable river in the world. If the Colorado River suddenly stopped flowing, we would have two years of carryover capacity in the reservoirs at best, but then we would have to evacuate.

Today, the Colorado River has been assessed as the "river no more"\textsuperscript{48}. It may be viewed as the preeminent symbol of everything that mankind has done wrong. We set out to tame the rivers and we ended up killing them. We set out to make the future of the American West secure; what we really did was make ourselves rich and our descendants insecure\textsuperscript{49}. Thus far it would appear that nature has paid the highest price. The Colorado River Delta is essentially dead and many of our nation's great salmon runs have diminished, while the prairies and desert have been civilized. Our environment has indeed suffered great
damage as capitalism and environmental pursuits clash. The issue of water represents this clash. The Colorado River, a "river no more", is clearly an example of a severely abused natural wonder/resource and of a goal hardly reached. Thus, the Colorado River is not a realistic opportunity for new water supplies for southern Nevada and its environment.

Compromise of Values and the Need for Ethics

The issue of water - water development, water quality, the pattern of urban, industrial and agricultural development, are at their core preeminently social issues. They address value systems. They influence the quality of life. The debates over the future direction of water policy are really debates about the direction of social change. Certainly the clash of values lies at the center of most battles over water. There are four distinct values that we recognize in the United States as legitimate purposes of water-resource development. They include economic efficiency, equity, environmental quality, and regional economic development; all values formally recognized in the federal water-planning document entitled - "Principles and Standards for Planning Water and Related Land Resources".
Efficiency refers to those projects whose net benefits exceed costs. Today we see many substantial economic inefficiencies which exist causing shortages and conflicts. We see pervasive water conflict as we value water so highly yet, waste it so freely. This creates an obvious inconsistency. People may choose to rely on the equity argument to oppose any change in plan. People without water may rely on it in an effort to receive water. Yet, equitable apportionment certainly does not exist. Everyone is out to get their own, there really exists no concern for fairness. Environmental quality can be used to both defend and oppose a project. For a project can simultaneously create and destroy wetlands. Environmental quality is easy to recognize; clearly clean water is better than dirty water. The difficulty appears when one must determine priorities, for instance, are trout more valuable than squawfish? Regional economic development has been a discredited approach since the mid-1970’s. Regional development is no longer considered a consensus goal of water investment. Almost all water-resource decisions however, involve the consideration of the three values - efficiency, equity, and environmental quality. There are often substantial trade-offs and conflicts which occur. Harmonization of these values is necessary, yet seldom occurs, thereby making water a political industry.
Christopher D. Stone suggests that in order for law to be stable, it must be based on ethics. Ethics are needed to protect land and other natural amenities. Even though some may deem it "unthinkable", Stone insists that we give legal rights to forests, oceans, rivers, and other so-called "natural objects" in the environment, indeed to the natural environment as a whole. Certainly compromise is necessary for the co-existence of man and his environment. It is necessary that man's values maintain the importance of the environment. In a city such as Las Vegas, where economic development and growth are so eagerly sought, this does and will often prove difficult.

Agricultural Water Efficiency

In the West, of course, where water is concerned, logic and reason have never figured prominently in the scheme of things. As long as we maintain a civilization in a semi-desert with a desert heart, the yearning to civilize more of it will always be there. The waste and inefficiency that exist in today's use of water is a result of policies which have promoted an antiquated illusion of
abundance. Las Vegans in particular have always been careless with water. They rarely pay for water what it is really worth. For about four decades Las Vegans paid only $2 per month to the Land and Water Company, no matter how much water was used or wasted. Not unexpectaedly, Las Vegans have had one of the highest rates of water use in the nation, averaging about 600 gallons per capita per day. In fact, in 1990 Southern Nevada used 225,236 acre feet of water alone. The average daily usage in 1990 was 201 million gallons of water. The Las Vegas Valley Water District approximated that Southern Nevada used 245,000 acre feet in 1991.

Nevada’s beneficial uses of water specified by state law include irrigation/agricultural, stockwatering, recreation, and fish/wildlife. Irrigation for agricultural purposes accounts for 90 percent of Nevada’s out-of-stream or diversion water use. Public water supply and industry account for only five percent of this water. It is extremely significant that irrigation uses an overwhelming share of water consumed in Nevada. While irrigation withdraws 90 percent of the state’s water, the crops, which include hay, barley, and wheat, were worth only $168 million last year, a small portion of the state’s annual revenue. For every 1,000 gallons of water used by agriculture $14 is generated for the state’s economy.
Yet, for every 1,000 gallons used by other economies, such as gaming and tourism, $146 million in revenues is generated. Additionally, agriculture creates only approximately 6,000 jobs for the state, a point to which we shall later return.

There is more and more evidence that water left in the stream, or used to sustain wetlands acreage, is of greater economic value than when it irrigates certain crops. Today, Nevada possesses only 36,650 acres of wetlands. In 1850 there existed 205,000 acres of wetlands in Nevada. Perhaps if the water were better allocated, more in wetlands, for instance, than for irrigation, a more equitable share/balance would exist.

Free-flowing waters have been appreciated in the West since it has been inhabited. Throughout the West, water was taken from once-thriving streams to satisfy the needs of crops, people and the new economies. The first person to actually take water from the stream and apply it to use was granted a vested right to continued use of the water. Indeed there exist multiple benefits of instream flows. In fact, instream flow enactments in the West have sprung from a recognition of the broad economic, as well as intangible, benefits that free-flowing water brings to a region. Its intangible benefits may include recreation and
tourism. Free-flowing water also benefits the environment as it has become necessary for endangered fish species and aquatic environments. Most western state legislatures have enacted statutes to protect instream flows, yet as of 1992 Nevada had not moved in that direction. However, this realm of concern provides an opportunity for productive coordination. That is, instream flow protection may provide a forum for the convergence of national and individual state interests.

Conservation

We have never really adapted to the notion of a limited supply of water. The idea that we would perhaps run out of water never entered into our planning scenarios. We have continually relied on supply-side management philosophy. But as the uses for water expanded, so have the costs of these supply-side options. It has become prohibitively expensive to resort to large-scale infrastructural solutions to solve our water problems. When water is locked into uses that are no longer high-valued, inefficiency abounds. When the distribution
of resource use cannot adapt to changing economic conditions, conflict escalates\textsuperscript{59}.

Only by managing our water demand, rather than ceaselessly striving to meet it, is there hope for a truly secure and sustainable water future\textsuperscript{60}. Thus, conservation appears to be a possible alternative. Rarely has conservation been considered as a long-term approach. It has generally been used to pull communities through short-term crises, such as drought-induced shortages. Yet, conservation requires creativity. Successful efforts to permanently curb per capita demand invariably include some combination of water-saving technologies, economic incentives, regulations, and consumer education\textsuperscript{61}. One technique may involve raising the water rates, thus encouraging consumers to install water-saving devices and opt for native landscaping.

The Las Vegas Valley Water District has developed a public awareness campaign involving education and landscaping techniques. The District is also involved in a joint project with the Cooperative Extension Service and the University of Nevada College of Agriculture to study water use and evapotranspiration rates of various trees and grasses. Yet, while conservation appears to be an effective alternative, it is clear that Southern Nevada has not
adopted any significant policies dealing with conservation. So while it represents a possible alternative, it is not one which we have seriously considered. If conservation is going to come about, state and local governments certainly need to take aggressive action. For example, James E. Deacon and David K. Kraemer of the University of Nevada, Las Vegas, propose landscaping and indoor retrofit strategies in an effort to reduce residential use of water. This strategy would work to keep the costs of water down as it serves more people by treating and pumping the same amount of water. Yet, they argue that outdoor conservation strategies represent a more effective way of reducing per capita water consumption. Conversion to water efficient landscaping for instance, would allow the existing water supplies to serve more people. Outdoor strategies are likely to be the most successful ways to reduce per capita consumption, while indoor strategies hold down costs of water and sewer services.

The Latest Issue in Nevada

Water has certainly played a crucial role in the settlement of the American
West. Without water, reclamation of the American desert would never have occurred. And without water, the first western industry, mining, would not have developed so quickly, thus encouraging the huge western migration of the mid-1800's. The control of water in the West has always been a means to power, it has served as an important political lever. The institutions and laws which were established in the West were meant to protect mining and agricultural interests. But as Las Vegas grew, creating an urban center demanding a great deal of water, inevitable conflicts arose over water-use priorities.

Under Nevada law, all unused water belongs to the state. The state may give it to anyone who can put it to "beneficial use". Relying on this, the Las Vegas Valley Water District filed for water rights in 26 valleys in Clark, Lincoln, Nye, and White Pine counties. Map 2.3 indicates the locations for the proposed Las Vegas water wells. The District did so in October 1989 in an effort to import central and eastern groundwater. Clark County claims that it will give some of the water mined to those rural counties which cannot afford to obtain it. The rural counties fear that this withdrawal of groundwater will harm the environment as well as local economic development. Those that lead the rural coalition against this proposal, refer to it as the "water grab". Various federal agencies such as the National Park Service,
Map 2.3

Locations for Proposed Las Vegas Water Wells

page 55
the United States Fish and Wildlife Service and the Bureau of Land Management have also filed protests to this application. These organizations fear that pumping this water may harm wetlands and river habitats. They do not want to dry up the federal reserves, including Death Valley National Monument.64

Basically, it comes down to a fight - Clark County leaders and the Las Vegas Valley Water District (UNLV also stands behind this proposal) versus environmentalists, ranchers, rural politicians, Indian tribes, and the federal government. This certainly makes this issue all the more interesting.

Since water is a state resource, it is the state engineer who will hear the case. R. Michael Turnipseed, the state engineer, has already received over 3,000 protests to the proposal. Because of such negative publicity, in April 1991 the Las Vegas Valley Water District abandoned applications for about one-sixth of the water it originally requested.

Southern Nevada maintains that Las Vegas generates over 70 percent of the state’s economy. This argument justifies, they believe, their request for the water. The District estimates this to be a $2 billion project involving five phases. The first phase, even if quickly approved, will not be completed until 2007. Approximately 50 percent of the project will be paid out of service connection
charges from developers, 35 percent from water rates, and 15 percent from assessments on vacant land or property taxes\(^6\). The rural counties are unwilling to give up their water. They hope to bring this issue into federal court where the South will not have the clear advantage that it has in the state legislature.

In September 1991 the state engineer agreed to delay the hearings until fall 1992 in order to give the federal government enough time to investigate the effects of the water withdrawal on Death Valley National Monument, among other concerns. In his order delaying the hearings until this fall, Turnipseed said motions for continuances will only be granted for good cause and in unusual circumstances\(^6\).

The Las Vegas Valley Water District’s plan would if approved, bring to Southern Nevada about 180,000 acre feet of groundwater and approximately 70,000 acre feet from the Virgin River. Indeed the Clark County “Cooperative Water Plan” is the Las Vegas Valley Water District’s solution to Southern Nevada’s potential water shortage. Yet, this is a very expensive, politically divisive, and environmentally disruptive plan\(^6\). It appears that a rough battle lies ahead as water will continue to test this community’s capacity to institutionalize compromise and negotiation. It is this very issue which is, to a large degree to be the focus of the remainder of this study.
CHAPTER TWO ENDNOTES


3Dennis L. Soden, Nicholas P. Lovrich, Jr., and John C. Pierce, "City/Suburb Views on Groundwater Issues" in *Symposium on Groundwater Contamination and Reclamation* (Bethesda, Maryland: Water Resources Association, 1985).


7"Water Wise" - informational update from the Las Vegas Valley Water District, Volume 1, Number 1, October 1990.

8Las Vegas Valley Water District Cooperative Water Project Fact Sheet, 1991.


10David Weide, "Water Supply Consumption - Las Vegas Valley" (UNLV, Department of Geology, November 1990).


19Helen M. Ingram, Water Politics - Continuity and Change (New Mexico: University of New Mexico Press, 1990), page 23.


22Ibid, page 125.


34 Ibid, page 497.


40 Christopher Flavin, "Uncle Sam’s Sad Record" in World Watch Institute, Volume 4, No. 5, September/October 1991, page 2.

41 Rocky Mountain Institute Newsletter - Volume VII, Number 1, "Photovoltaics - Clean Energy Now and For the Future", page 5.


43 Christopher Flavin, "Uncle Sam’s Sad Record" in World Watch Institute, Volume 4, No. 5, September/October 1991, page 2.


54 Ibid, page 1.


57 Lawrence J. MacDonnel, Teresa A. Rice and Steven J. Shupe, Instream Flow Protection in the West (University of Colorado School of Law: Natural Resources Law Center, 1989), page 1.


61 Ibid, page 42.


64 "State Fight Looms Over 'WaterGrab'," Las Vegas Review Journal, 21 April 1991, Section B, p1B.

65 "Water District to Cut Request", Las Vegas Review Journal, 23 April 1991, Section 1B, p.1B.


CHAPTER THREE

Forces and Factors Determining Environmental Policy Preferences: An Overview

The New Environmental Paradigm and Post-Industrialism

Riley Dunlap and Kent Van Liere have identified two contrasting belief systems, known as paradigms, to explain environmental value orientations. A paradigm as defined by Thomas S. Kuhn is an "accepted model or pattern that gains its status because it is more successful than its competitor in solving a few problems that the group of practitioners has come to recognize as acute." Paradigms are not only beliefs about what the world is like and guides to action; they also serve the function of legitimating or justifying courses of action. The dominant social paradigm (DSP) in modern societies, often associated with the early twentieth century, emphasizes the accumulation of wealth and power. Meanwhile, the New Environmental Paradigm (NEP) emphasizes humans living in
harmony with nature and not attempting to dominate nature. Table 3.1 suggests the contrast between these competing paradigms. Indeed the 20th century industrial dominant social paradigm emphasizes man’s superiority over nature. This paradigm finds that the history of humanity is one of progress in that the world provides unlimited opportunities for humans. Although it is often difficult to slow down the momentum of the technological structure which exists today, a New Environmental Paradigm has developed. According to Dunlap and Van Liere the supporters of the NEP have become something of a "vanguard", pointing the way to a better society and also pointing out the dire consequences of continuing on the old path. The great environmental problems and concerns noticed since the middle of the 20th century including dangerous pollution, extensive depletion of natural resources, global warming, scarcity and the like, all act as evidence in support of this shift. This new vanguard possesses a higher level of concern and awareness that has come to recognize limits to growth and seeks to remedy past abuses of the natural system through public policy mechanisms.

Certainly this environmental vanguard wishes to develop a civilization that can survive in a long-run sustainable relationship with the physical environment in which it is symbiotically and symbolically embedded, as well as to maximize quality
Table 3.1
Contrast Between New Environmental Paradigm and Dominant Social Paradigm

<table>
<thead>
<tr>
<th>New Environmental Paradigm</th>
<th>Dominant Social Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I</strong> High valuation of nature</td>
<td><strong>I</strong> Lower valuation of nature</td>
</tr>
<tr>
<td>A) Nature for its own sake</td>
<td>A) Nature to produce goods</td>
</tr>
<tr>
<td>B) Humans harmonious with nature</td>
<td>B) Human domination of nature</td>
</tr>
<tr>
<td>C) Environmental protection over economic growth</td>
<td>C) Economic growth over environmental protection</td>
</tr>
<tr>
<td><strong>II</strong> Generalized compassion toward:</td>
<td><strong>II</strong> Compassion for only those near and dear</td>
</tr>
<tr>
<td>A) Other species</td>
<td>A) Exploitation of other species for human needs</td>
</tr>
<tr>
<td>B) Other peoples</td>
<td>B) Unconcern for other people</td>
</tr>
<tr>
<td>C) Other generations</td>
<td>C) Concern for this generation only</td>
</tr>
<tr>
<td><strong>III</strong> Careful planning and acting to avoid risk</td>
<td><strong>III</strong> Acceptance of risk to maximize wealth</td>
</tr>
<tr>
<td>A) Science and technology not always good</td>
<td>A) Science and technology great boon to humans</td>
</tr>
<tr>
<td>B) No further development of nuclear power</td>
<td>B) Swift development of nuclear power</td>
</tr>
<tr>
<td>C) Development and use of soft technology</td>
<td>C) Emphasis on hard technology</td>
</tr>
<tr>
<td>D) Regulation to protect nature and humans-gov't responsibility</td>
<td>D) Deemphasis on regulation-individual responsibility</td>
</tr>
<tr>
<td><strong>IV</strong> Limits to growth</td>
<td><strong>IV</strong> No limits to growth</td>
</tr>
<tr>
<td>A) Resource shortages</td>
<td>A) No resource shortages</td>
</tr>
<tr>
<td>B) Population explosion-limits needed</td>
<td>B) No problem with population</td>
</tr>
<tr>
<td>C) Conservation</td>
<td>C) Production and consumption</td>
</tr>
<tr>
<td><strong>V</strong> Completely new society (new paradigm)</td>
<td><strong>V</strong> Present society okay (keep DSP)</td>
</tr>
<tr>
<td>A) Humans seriously damaging nature and themselves</td>
<td>A) Humans not seriously damaging nature</td>
</tr>
<tr>
<td>B) Openness and participation</td>
<td>B) Hierarchy and efficiency</td>
</tr>
<tr>
<td>C) Emphasis on public goods</td>
<td>C) Emphasis on market</td>
</tr>
<tr>
<td>D) Cooperation</td>
<td>D) Competition</td>
</tr>
<tr>
<td>E) Post-materialism</td>
<td>E) Materialism</td>
</tr>
<tr>
<td>F) Simple lifestyles</td>
<td>F) Complex and fast lifestyles</td>
</tr>
<tr>
<td>G) Emphasis on worker satisfaction in jobs</td>
<td>G) Emphasis on jobs for economic need</td>
</tr>
<tr>
<td><strong>VI</strong> New politics</td>
<td><strong>VI</strong> Old politics</td>
</tr>
<tr>
<td>A) Consultative and participatory</td>
<td>A) Determination by experts</td>
</tr>
<tr>
<td>B) Partisan dispute over human relationship to nature</td>
<td>B) Partisan dispute over management of the economy</td>
</tr>
<tr>
<td>C) Willingness to use direct action</td>
<td>C) Opposition to direct action</td>
</tr>
<tr>
<td>D) Emphasis on foresight and planning</td>
<td>D) Emphasis on market control</td>
</tr>
</tbody>
</table>

of life for the people living with their environment. Yet, history suggests that environmentalists have tended not to be very well organized. Overall, they lack a chosen articulate leader and possess no real doctrine and in fact, are scattered in their interests and efforts. Additionally, they have yet to establish a clear consensus about who the opposition is. Environmentalists tend to operate in three separate time frames, often simultaneously. First, there are those who are urgently concerned about immediate problems, such as toxics leaking from a dump. These are often local efforts and more often than not have short life cycles. Second, many are merely concerned about medium range public policy issues such as water or air protection legislation, and include many well-known special interest groups such as the Sierra Club. And finally, there are those who have a far greater vision and wish to educate people in hopes of stimulating a revolution as proposed by Earth First and other radical ecologists such as Greenpeace in an earlier period. Thus, despite a measurable shift towards the NEP, overall there exists a need for environmentalists to unite more effectively within the political arena.

Many people in the United State (20%-30%) believe that we have made good progress in dealing with our environmental problems but even more (40%−
50%) believe that we are losing ground. In fact, an overall consensus finds that most people believe that societal response to environmental problems is often inadequate. Depletion of natural resources has been listed high on the list of the urgent environmental problems and public policy issues more generally. Certainly environmentalists advocate thoughtful consideration of where we are going: careful and subdued production and consumption, conservation of resources, protection of the environment, and the basic values of love, compassion, justice, and quality of life; in turn creating empathy with nature. Even with this interest and effort there exists an obvious need for greater unity and further commitment, particularly among policymakers and elected officials who decry "environmentalism" but fail to act once in office.

From a somewhat similar perspective, it has been argued that a "silent revolution" has occurred in that the values of Western publics have been shifting from an overwhelming emphasis on material well-being and physical security toward greater emphasis on the quality of life. Values are changing because of a variety of socio-economic changes which include rising levels of education, shifts in occupational structure, and especially the development of effective mass communication. The unprecedented prosperity that has resulted from our post-
industrial phase of development in western democracies has also contributed to these changing values.

Many people have satisfied their basic needs and as a consequence there now exists a greater emphasis on higher-order needs, including environmental awareness. As long as an individual is preoccupied with needs for sustenance and safety, he or she is likely to have little energy or interest in dealing with more distant concerns."\textsuperscript{10} Knutson confirms this in \textit{Human Basis of the Polity} as she suggests that these basic needs could be viewed as points along a continuum. These points run from "concern with one's self" to "concern with the environment".

Some propose that these value changes and/or societal shifts are the hallmark of a post-materialist society. Post-materialists are indeed less concerned with immediate personal needs and more sensitive to societal problems, including the environment. They are believed to be attempting to maximize different values than those of previous generations. Post-materialists emphasize individual self-expression and a more participant, less hierarchical society. Additionally, they tend to be more educated and wealthier with more information, yet a less parochial outlook.

The most striking characteristic of Post-Materialist individuals is that they are
mainly recruited from the more affluent strata of society. Yet, they tend to vote for the parties of the Left. Meanwhile, the Materialist, who comes from lower income backgrounds, is more likely to vote for the conservative parties.\textsuperscript{11} This revolution of sorts indicates a shift from emphasis on material consumption toward greater concern with the quality of life. It also concentrates on the ever-increasing political skills of Western publics which allows them to play a much more active and perhaps attentive role. While this revolution appears silent, it speaks of much loud progress and change. This progress is not the same progress that marked the Industrial Era which stressed development as the means to an affluent end. This new emphasis will, one hopes, provide a time for the application of these means to even greater ends.\textsuperscript{12}

Another problem facing post-industrial or post-materialist society is a "quintessential quandary" which questions how the democratic ideal of public control can be made consistent with the realities of a society dominated by technically complex policy questions.\textsuperscript{13} Certainly environmental policies are characterized by conflict over fundamental values and technical content in public debate and involvement. Hydroelectric development, acid rain, population control, and nuclear waste disposal, among others, are all arenas which lend themselves
to a technical information quandary.

Indeed the degree of complexity of information has increased concerning environmental and natural resource politics. Pierce and Lovrich's four state study of the role of technical information in water resource policy making in Colorado, Idaho, Montana, and Washington found that the public is less familiar with technical aspects of water policy than experts or policymakers, thereby putting them at a distinct disadvantage. Similar studies in the United States and Japan\textsuperscript{14}, the Southern United States\textsuperscript{15}, and the United States and Canada\textsuperscript{16} confirm their findings.

When looking at patterns of information, it is clear that general information about the major problems facing a policy may be essential and sufficient for the public's role in establishing the policy agenda.\textsuperscript{17} It is essential in a democratic society that questions and problems be confronted by governmental authorities. Yet, the public finds technical information "difficult", "complex", and "unfamiliar". Thus, there exists a "quintessential quandary" about how to incorporate the public in a policymaking process which surrounds complex issues like environmental and natural resource policy. Additionally, elites, both elected and non-elected, tend to withhold information from the public which then threatens not only informational
quality but hinders communication. Yet, if a proper goal of social policy in a democracy is to maintain and enhance the role of citizens in decisions about technical policy questions, a central concern must be shown for the channels through which policy-relevant information can best be communicated. Certainly communication is essential if this technical information quandary is at all to be countered.

There was a time when the physical environment appeared to take care of itself, without much human responsibility or power to intervene. Yet, this has changed in that the limitations of our environment are now being realized. With this the issue of water has become one of the highest priorities on the environmental agenda. We have come to realize that even the abundance of the nation's magnificent waterways and aquifers cannot withstand forever the onslaught of modern technology and pollution growth. The impact of limited water resources has indeed gained the attention of environmentalists. While in the past water was considered to be a free good, it has now become a scarce resource, a commodity valued in many regions like precious minerals. The issue of water, in particular its scarcity, is a natural extension of more general environmental concerns and issues. Thus, we turn from the more general to the
more specific. In doing so we begin to focus on the specific problems of water resource scarcities in the western United States. Furthermore, we begin to ask what factors may account for how the general public establishes a framework about water issues in an era of growing environmental awareness.

**Factors Affecting Policy Preferences**

To better understand the issue of water politics in the west and the state of Nevada, the focus of this study, we are directed to the work on political belief systems and political culture. According to Phillip Converse, in general a political belief system is a "configuration of ideas and attitudes in which the elements are bound together by some form of constraint or functional interdependence". In this regard, a belief system is a "set of related orientations to political objects", or it might be added, public policies and programs. John C. Pierce and Nicholas P. Lovrich, among others have examined the structure and content of beliefs specifically orienting their research about environmental questions and constraints on beliefs. Constraint explains the extent to which beliefs are interrelated.
Belief system constraint has been identified as being in either of two directions, horizontal or vertical. Horizontal constraint occurs when beliefs at approximately the same level of generality exhibit coherence and consistency. Here there exist two levels of generality, a general level and then a much more policy-issue level. At the broad level, general questions of environmental policy are not likely to be linked to partisan and ideological divisions; everyone, for example, tends to support environmental protection when issues reach the policymaking stage and the arena of political elites (i.e., legislators). Conflicts arise in broader ideological and partisan contexts generally about the best way of achieving the goals of policies. Yet, at the more narrow or specific policy-issue, and implementation level, legislators only slightly surpass other groups in the area of horizontal constraint. At this level, preservationist identification, for example, has been proven to be a much stronger bridge between environmental beliefs and other political divisions, such as party and ideology. Vertical constraint exists when beliefs at different levels of generality go together. Here the preservationist identification plays a central role in the overall environmental policy issue arena. The independent impact of preservationists' identification with issue positions across environmental issues more generally is greater for nonelites (i.e., the
Belief system constraint can also contribute to how new policy-relevant information is obtained. Numerous studies show that people will, in fact, be more likely to accept and trust information from those sources whose beliefs are consistent with their own\textsuperscript{24}. For example, in the environmental policy domain, one would expect people with a preservationist orientation to exhibit greater trust in information from environmental groups and, in turn, less trust in the information provided by those with development orientations. Similarly, people with developmentalist orientations who consistently are less sympathetic to environmental policy should exhibit less trust in the information provided by environmentalists than they do in similar information provided by supporters of resource development, such as public utilities, land developers, and the like.\textsuperscript{25}

In addition, political belief systems also vary with an individual's position in social, economic, and political structures. The more one is involved in the politics of a particular issue, the more likely their beliefs will be highly constrained, more coherent, and consistent. Thus, we might expect a greater constraint and consistency among political activists and policymakers than among the general public.
public. From their research, Pierce and Lovrich conclude that horizontal constraint is greater among legislators and activists than the general public. They have found that the general orientation to the environmental issue domain - which they call the preservationist identification - exhibits a stronger connection to partisan and ideological orientations first among legislators followed by activists, than among other groups including the general public or attentive publics. Vertical constraint patterns, however, indicate that only among the legislators does ideology and party constrain or direct environmental beliefs. Clearly the legislators exhibit a much larger and stronger environmental belief system, inasmuch as they are constrained by general environmental orientations as well as partisan and ideological beliefs. Indeed research has essentially shown that preservationist identification plays a significant role in environmental belief systems, acting as a general orientation around which other beliefs can be organized and interpreted. Thus, order and consistency in environmental belief systems suggest that indeed order and consistency in environmental politics in general may exist.

When investigating the degree of belief system consistency and constraint we may find that elected officials and policy activists, several differences appear. That is, elected decision makers are often inconsistent in expressing beliefs
because of their obvious accountability. Activists, however, tend to be much more consistent because of the narrower focus of their positions. Furthermore, elected officials such as legislators are much less constrained when their actions involve their jurisdictions.

With this as a starting point it is suggested that political conceptualization is the "underlying principle for political thinking". Indeed it is important to look at conceptualization’s power to order the ability of individuals to hold consistent opinions on political issues either horizontally or vertically. Hagner and Pierce have thus, searched for how conceptual abstractness orders the level of individuals’ belief consistency on political issues.27

One abstract framework for assessing individual and collective responses to public policy concerns is that provided by the work of Abraham Maslow. Maslow has studied man’s motivations and personality by emphasizing ultimate human goals or desires. Indeed man is a wanting animal who rarely reaches a state of complete satisfaction except for a short time.28 Certainly one can go his entire life always desiring something. Maslow’s hierarchy of needs suggests that man begins by seeking physiological needs (such as food and water) and then progresses towards self-actualization. (See Chart 3.1) Beyond the physiological
Chart 3.1

Maslow's Hierarchy of Needs

- Physiological needs
- Need for safety & security
- Need for affection & belongingness
- Need for esteem
- Self-actualization
needs, man seeks safety needs and then belongingness and love needs. From here, man seeks esteem needs, which include the desire for strength, achievement, adequacy, mastery, and competence. Man then finally reaches self-actualization and it is here where "what a man can be, he must be". This model states that those who have attained satisfaction of a given set of objective needs will, after time, shift their priorities, giving greater attention to the pursuit of other needs. While this hierarchy appears rigid and fixed, this is not necessarily so. That is, most members of society are only partially satisfied in all of their basic needs.

Those which are self-actualized however, maintain a more efficient perception of reality and thus, possess more comfortable relations with it. They are also more accepting of themselves, others, and even nature. Indeed self-actualized individuals tend to be more problem centered or it might be suggested policy oriented than those who are ego centered. That is, they are more strongly focused on problems outside of themselves, problems more collective in nature. Certainly those on the higher steps of the self-actualized hierarchy have a wonderful capacity to appreciate again, freshly and naively, the basic goods of life, with awe, pleasure, wonder, and even ecstasy, however stale these experiences
may have become to others.\textsuperscript{31} Indeed it has been argued that many individuals who are not quite self-actualized are becoming more aware of environmental issues\textsuperscript{32}. As environmental issues such as resource scarcity are seen as threatening lower-order values such as family security, the more likely they will be seen as issues which are relevant to all citizens - not just those who have solved the problems of feeding and housing a family\textsuperscript{33}. In this regard, water may be viewed as necessary for the very livelihood of individuals and their communities. Entire regions, such as the Southwest, are economically dependent on this valuable resource, and its role in fulfilling basic needs suggests that at an abstract level it constrains social and political and economic behavior.

Social learning is essential for understanding environmental issues, such as water. In fact, most of those with environmental learnings have gone through an experience known as "consciousness raising". It follows that the beliefs and values they have developed explain much of their environmental orientation more effectively than do demographic measures. Public opinion, concerning support and awareness of environmental issue is, however, likely to be influenced by several factors beyond this broad conceptualization of belief systems or higher order needs. The myriad analysis of how the public determines its opinions, their actual
belief systems, and higher order needs suggest we need to "unwrap" general orientations and see what makes up the positions taken about specific policies. In this regard factors including socioeconomic and background characteristics, political values, residency factors, and environmental values have all been pointed to as forces determining policy positions about the environment.34

Concerning socioeconomic and background characteristics, age, income level and education have been identified as important correlates of support for environmental programs.35 It might be suggested that these characteristics affect an individual's perception of a water shortage. For instance, younger individual's have been found to be more sympathetic to environmental issues and more likely to advocate protection of resources or quality concerns than older counterparts raised prior to the environmental era.36 Other studies show that those with higher income levels have already succeeded in fulfilling their basic security and subsistence needs and are now more capable of concentrating on the environment.37 From another perspective, those with higher income levels may be closely linked commercially and economically with new policy proposals such as water development schemes or water transfers, and thus see their lifestyle and economic well-being closely linked to the success of a project under
consideration. 

Education has also been identified as an important factor. That is, higher levels of education are assumed to lead to an increase in the knowledge of environmental problems as well as the desire to do something about these problems. Education is certainly associated with lifelong learning and it is expected that higher education levels will associate with a greater understanding of the issue at hand and the ability to rationally contend with them.

Value orientations in the public opinion domain refer in the degree to which components of political belief systems characterize the formation of public opinion. An individual's political party allegiance has been shown to correlate with orientations toward environmental policies and awareness with Republicans until recently consistently being the opposition party seeing environmental programs as a form of regulation which hampers a free market. Those of Democratic affiliation, in contrast, see environmental protection as benefitting a broader public interest than that served by a free market which sells nature to the highest bidder or has created externalities requiring government intervention. Recent studies suggest that the role of party is diminishing and that environmental concerns are becoming bipartisan; this may especially be the
case in Nevada. Furthermore, citizens tend to rely greatly on their political ideology which follows closely that of party allegiance. Individuals on the left-liberal end of the political spectrum tend to support environmental awareness and subsequent policies while those on the right-conservative side are often considered less supportive of environmental concerns.

Another component of how public opinion regarding the environment is developed concerns residency factors. Research has indicated that residential characteristics are quite significant in determining support for or opposition to environmental protection and public works projects. An individual's length of residency may indicate his association with a community and thus, suggest their opinion on environmental programs. Individuals who do not expect to remain in a community for any length of time may, for example, care little or not at all about environmental programs. Geographical location has been shown to be an important factor in explaining citizen support for environmental programs. Close proximity to an affected area could theoretically increase an individual's support for or opposition to a proposed program, such as a waste site, invoking the well-known "NIMBY" - not-in-my-backyard syndrome.

In addition, the size and diversity of a political domain, such as a state,
suggests distinct political communities and perhaps political cultures which lead to unsolvable preferences. Nevada, the focus of this study, is characterized by three distinct political communities - north (Carson City-Washoe counties), south (Clark County), and fourteen rural counties. Within these three separate areas of the state it has been suggested that there exist opposing attitudes toward both general and specific public policies, a point to which we shall return. Lastly, in states experiencing dramatic growth, attitudes toward growth and its management may have great importance on the support for development of natural resources and the exploitation of nature. Those favoring continued growth policies may be expected to support resource use and development while those seeking to curb growth or wishing a decline may be more likely to oppose use and development in favor of protection and preservation seeing their preferences linked to not securing resources needed to sustain growth preferring instead the status-quo or an earlier period.
Summary and Conclusions

In this chapter we investigated the shift from the dominant social paradigm which emphasizes the accumulation of wealth and power to the New Environmental Paradigm which emphasizes the harmonization between humans and nature. Indeed this environmental "vanguard" has come to possess a high level of concern and awareness for the natural environment. This "silent revolution" has shifted the values of Western publics toward greater emphasis on the quality of life as it pertains to environmental protection. Yet, today's environmental policies are often characterized by the complexity of information. This often hinders communication, thus creating obvious barriers to policymaking. Certainly this is the case with regard to the issue of water resources. The impact of limited water resources has gained the attention of environmentalists, thus making it a relevant public policy issue. This is indeed the case in Southern Nevada.

To better understand the issue of water politics in Nevada, political belief systems and political culture have helped us to determine the factors which often affect policy preferences. Belief system constraint explains the extent to which
beliefs are interrelated. The more an individual is involved in the politics of a particular issue, the more likely his beliefs will be highly constrained and consistent. In environmental belief systems the preservationist identification plays a significant role as it acts as a general orientation of sorts around which other beliefs organize. Maslow's hierarchy then offers an abstract framework for the conceptualization of individuals' belief consistency on political issues. Certainly those who have reached Maslow's highest level of self-actualization are much more inclined to recognize environmental problems and resource limitations. It has been previously pointed out that socioeconomic and background characteristics, political values, residency factors, and environmental values act as forces which determine policy positions about the environment. These factors will act as independent variables in association with support for water transfers from rural to urban areas in Nevada, the focus of this study. From the basic framework provided in this chapter is possible to move to the more specific issue of water in Nevada and the political institutions and dynamics which exist.
CHAPTER THREE ENDNOTES


3This "vanguard" consists of those individuals who perceive large environmental problems and great limits to growth, thus seek social change to solve their problems.


5Ibid, page 95.

6Ibid, page 97.

7Ibid, page 100-101.


9Ibid, page 57.

10Ibid, page 183.

11Ibid, page 392.


13Ibid.
14 John C. Pierce, Nicholas P. Lovrich, Jr., Taketsugu Tsururani, and Takematsu Abe, Public Knowledge and the Environmental Politics in Japan and the United States (Boulder: Westview Press, 1989)


18 Ibid, page 147.


23 Ibid, page 270.


27 Paul R. Hagner and John C. Pierce, "Levels of Conceptualization and Political Belief Consistency" in Micropolitics, Volume 2, Number 4, 1983.


29 Ibid, page 91.


38Dennis L. Soden and Donald Carns, "Rural-Urban Attitudes Regarding Water Transfers in the State of Nevada" (UNLV Environmental Studies Program, 1992).


46Dennis L. Soden, Nicholas P. Lovrich, Jr., and John C. Pierce, "City/Suburb Views on Groundwater Issues" (Bethesda, Maryland: American Water Resources Association, 1985).

Dennis L. Soden and Donald Carns, "Rural-Urban Attitudes Regarding Water Transfers in the State of Nevada". (UNLV Environmental Studies Program, 1992).
CHAPTER FOUR

Water and Public Opinion in Nevada:
Consensus or Cleavage?

Political Culture in Nevada

One perspective for incorporating the previous discussion about what determines positions taken regarding water issues is that provided by political culture. Political culture indeed helps to create a better understanding of water politics in Nevada. Social scientists have used political culture to describe segments of society which share values and beliefs that provide the foundation of how groups view individual policies and often politics in general, in effect an extension of the discussion of political systems at the macro level. Political culture certainly provides a way to understand differences within a particular homogeneous domain, in this instance, a state like Nevada. Daniel Elazar offers the most recognizable formulation of political sub-culture at the mass level. In
his state-level studies, Elazar contends that there is a political culture within a given political boundary, which can be used to determine general policy preferences. Elazar characterizes political sub-cultures as individualistic, moralistic, and traditionalistic. An individualistic political culture emphasizes a commercial enterprise where the political system protects the marketplace. Meanwhile the moralistic political culture emphasizes the commonwealth as it pursues the "public interest". Finally, the traditionalistic political culture is a hybrid of the moralistic and individualistic subcultures. That is, while there exists an obligation to self-interest, tradition dictates how elites should act. These three typologies indeed provide a framework for political culture. Yet, further consideration is necessary at a particular policy level, in this instance the issue of water transfers at the statewide level in Nevada.

Of these various political sub-cultures, Nevada has historically been considered an individualistic state. That is, the political culture of Nevada prefers a marketplace where government acts as a business enterprise. Here the political system works to protect the marketplace where individual needs are achieved. Overall involvement in politics beyond one's self-interest is unwarranted and
politics is viewed as corrupt and highly "pork barrel" in nature, and as such is best left to the professional politician.

Nevada's individualistic flavor has afforded opportunities to various distinct groups including farmers, miners, ranchers and even those involved with gaming and recreation. In fact, newcomers to Nevada welcomed its rugged geography and frontier character. Yet, while Nevadans claim government nonintervention, they ironically have been a major recipient of federal benevolence. In fact, Nevada can be characterized as a pork-barrel state as it has greatly benefitted from federal dollars. These obvious benefits include Hoover Dam, Nellis Air Force Base, and the Nevada Weapons Test Site at Mercury. In fact, approximately 85 percent of the state's land consists of federal land managed by such agencies as the Bureau of Reclamation, the Bureau of Land Management, the United States Forest Service, and the National Parks Service. Thus, many understand Nevadans as people who repeatedly sought and often received federal aid, but who resent most forms of supervision or control from Washington.

Elazar's framework suggests that the political culture of a state may in fact vary over particular issues in light of mixed intrastate cultures, a concern which may be further addressed by consideration of water issues in Nevada. In this
instance, the particular issue involves not only general water use preferences but the transfer of water from rural areas to urban locations. Looking at the political culture of Nevada, it becomes evident that the state is characterized by a split of North versus South, or rural versus urban. For instance, Northern Nevadans may view issues such as growth management or water transfers differently than those who reside in southern Nevada. Indeed a regional perspective offers a prediction of support for particular political attitudes and individual citizen behaviors. Sharkansky, for instance, argues that state policies and political characteristics differentiate significantly by region⁵. Further, Erikson and his associates have found regionalism to be a great predictor of partisanship and ideology when proceeding from a macro or national level to a micro or state level of analysis⁶.

Nevada is a state with vast sagebrush-covered open spaces and majestic mountains, and yet it is one of the most urban states in the nation with over 85 percent of its population concentrated in the Reno-Carson City and Las Vegas metropolitan areas⁷. Nevada can in fact be characterized by three potential communities: North (Carson City-Washoe Counties), South (Clark County) and fourteen rural counties. Certainly each area possesses its own character and
appeal which retains residents. Distinct political communities and political cultures within a state, however, can lead to quite disparate and often seemingly unresolvable preferences about appropriate courses of action. Nevada indeed possesses disputes along regional lines as a result of economic and natural resource preferences. In this regard, the state is currently battling over water rights. In fact, the remaining undeveloped surface and groundwater resources in the state exist in the rural areas, areas traditionally at odds politically and economically with the state's thirsty urban cores.

This study uses public opinion survey data to address the issue of water use attitudes in general and more specifically the transfer of water from rural sources to urban areas in the state of Nevada. It examines the relationship between citizen attitudes toward these potential water transfers. Four basic areas are covered in this study. First, attitudes about general water usage are analyzed. Second, support for water transfers from rural to urban areas are compared on a statewide basis. Third, residents are contrasted based on several hypothesized sources of variation, as discussed in the previous chapter, which may alter their support for or opposition to water transfers. Finally, these variations are analyzed across rural and urban samples to determine which characteristics
among Nevadans lend support to or opposition to water transfers in this state.

The issues addressed by this study are based on responses to a state poll conducted by the University of Nevada, Las Vegas and the University of Nevada, Reno in the fall of 1990. This telephone survey obtained 1182 responses from the state divided quite fairly across the three major areas of Clark County (n=380), Carson City-Washoe counties (n=397) and the fourteen rural counties (n=399) (four responses were unrecorded by region). Because 90-98% of United States residences now have telephones, this method is indeed representative.

This look at public opinion and attitudes provides a starting point for the assessment of how various political actors within Nevada are affected. Indeed this study occurs at an extremely appropriate time. The urgency for a remedy to southern Nevada’s potential water shortage is certainly evident.

Findings

Water use patterns within the state of Nevada become significant when analyzing water transfers. Table 4.1 indicates water use, employment, and revenue generation for agriculture and all other economic sectors in Nevada.
Table 4.1

Water Use, Employment and Revenue Generations for Agriculture and All Other Sectors in Nevada

<table>
<thead>
<tr>
<th></th>
<th>AGRICULTURE</th>
<th>ALL OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of total water use</td>
<td>90.3%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Employment</td>
<td>6,010 Jobs</td>
<td>547,000 Jobs</td>
</tr>
<tr>
<td>Revenue Generated</td>
<td>$168 Million</td>
<td>$19.4 Billion</td>
</tr>
<tr>
<td>Water Used Daily</td>
<td>3.3 Billion Gall.</td>
<td>363 Million Gall.</td>
</tr>
</tbody>
</table>

Source: Cooperative Water Project Fact Sheet, Las Vegas Valley Water District, 1991.
From this, it becomes clear that agriculture uses 90.3 percent of the state's water yet only produces 6,010 jobs and $168 million in revenue per year. The remainder of the economy however, uses only 9.7 percent of the state's water yet produces approximately 547,100 jobs and $19.4 billion in revenue\textsuperscript{11}. Since Las Vegas accounts for 70 percent of the Nevada economy\textsuperscript{12}, it becomes clear that additional adequate water is necessary to ensure continued growth and prosperity.

While water use patterns within the state of Nevada provide one dimension of analysis, public opinion on water use also provides an important dimension which theoretically should provide limits within which non-elected and elected officials should operate. How the public views water issues then should be reflected in policy statements and actions.

Water and Public Opinion in Nevada

Table 4.2 records statewide responses to a series of questions regarding water use limits and restrictions. Public opinion concerning limitations on lawn watering, restrictions on lakes in new developments, and required low-water-use
## Table 4.2

Level of Support for Limitations on Water Use in Nevada: Statewide

**Question:** How do you feel about limits on lawn watering, restrictions on lakes in new developments, and required low-water-use landscaping for new developments?

### LIMITS ON LAWN

<table>
<thead>
<tr>
<th>Level of Support</th>
<th>Frequency</th>
<th>Valid%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Support</td>
<td>188</td>
<td>21.4</td>
</tr>
<tr>
<td>Support</td>
<td>521</td>
<td>59.3</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>41</td>
<td>4.7</td>
</tr>
<tr>
<td>Oppose</td>
<td>119</td>
<td>13.5</td>
</tr>
<tr>
<td>Strongly Oppose</td>
<td>10</td>
<td>1.1</td>
</tr>
<tr>
<td>Missing Cases or No Answer</td>
<td>303</td>
<td>***</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1182</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Note:** The high number of missing cases is the result of asking a filter question whether there should be "unlimited use of water" or "restrictions and controls". Only those in support of restrictions and controls were asked about water exports from rural to urban areas.
Table 4.2 (continued)

NEW LAKES

<table>
<thead>
<tr>
<th>Level of Support</th>
<th>Frequency</th>
<th>Valid%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Support</td>
<td>206</td>
<td>23.5</td>
</tr>
<tr>
<td>Support</td>
<td>397</td>
<td>45.3</td>
</tr>
<tr>
<td>Don't Know</td>
<td>74</td>
<td>8.4</td>
</tr>
<tr>
<td>Oppose</td>
<td>157</td>
<td>17.9</td>
</tr>
<tr>
<td>Strongly Oppose</td>
<td>43</td>
<td>4.9</td>
</tr>
<tr>
<td>Missing Cases or No Answer</td>
<td>305</td>
<td>***</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1182</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

LOW-WATER-USE LANDSCAPING

<table>
<thead>
<tr>
<th>Level of Support</th>
<th>Frequency</th>
<th>Valid%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Support</td>
<td>206</td>
<td>23.4</td>
</tr>
<tr>
<td>Support</td>
<td>513</td>
<td>58.4</td>
</tr>
<tr>
<td>Don't Know</td>
<td>52</td>
<td>5.9</td>
</tr>
<tr>
<td>Oppose</td>
<td>95</td>
<td>10.8</td>
</tr>
<tr>
<td>Strongly Oppose</td>
<td>13</td>
<td>1.5</td>
</tr>
<tr>
<td>Missing Cases or No Answer</td>
<td>303</td>
<td>***</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1182</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
landscaping for new developments offers significant insight into both acceptable and unacceptable water use patterns and how willing the public is to have restrictions placed on their use and the use of others. The findings in Table 4.2 suggest that a majority of Nevadans "support" or "strongly support" limits on lawns, new lakes, and requirements for low-water-use landscaping. In all three instances, more Nevadans "strongly support" limitations than those who "strongly oppose" them. Over 80 percent (80.7%) of Nevadans either "support" or "strongly support" restrictions on lawn watering while less than fifteen percent (14.6%) fall into "oppose" or "strongly oppose" categories. Restrictions on new lakes in subdivisions and developments register "support" and "strongly support" responses among over two-thirds of Nevadans (80.7%) with less than one-quarter in the combined opposed categories. Over eighty percent (81.8%) fall into "support" categories requesting low-water landscaping with only approximately twelve percent (12.3%) in opposition to mandated landscaping. From this initial data, it appears that Nevadans are in favor of limiting their use of water and that no significant opposition exists within the state to these proposals.

Beyond these basic use patterns however, the politics of the Southwest suggest that the key to political and economic power is based on who controls
water. From this, it is often assumed that in the West that water runs uphill -
towards money! While water can often explain the history of a region, it indeed
dictates the future for Las Vegas. In fact, Las Vegas is now looking to the rural
parts of the state to secure its future water needs. Las Vegas is attempting to
appropriate its needed water for "beneficial use" by obtaining the rights to
groundwater in rural counties. The original application filed by the Las Vegas
Valley Water District in 1989 requested 840,000 acre feet of water. Yet, as
previously mentioned in Chapter Two, this request has been reduced to 250,000
acre feet because of the great negative response encountered. The State
Engineer has not yet made his decision on the request, as he agreed to delay the
hearings until fall of 1992 in order to give the federal government enough time to
investigate the effects of the water withdrawal.

Table 4.3 indicates the level of support for water transfers from rural to
urban areas among the general public in Nevada. This statewide data indicates
that over one-third of the respondents (37.4%) either "support" or "strongly
support" water transfers. Meanwhile, nearly one-half (48.5%) "oppose" or "strongly
oppose" water transfers from rural to urban areas. Indeed this split suggests the
potential for considerable political controversy concerning water transfers in
Table 4.3

Level of Support for Exporting Water From Rural to Urban Areas Among the General Public in Nevada

Question: How do you feel about exporting water from rural to urban areas?

<table>
<thead>
<tr>
<th>Level of Support</th>
<th>Frequency</th>
<th>Valid%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Support</td>
<td>49</td>
<td>(5.6)</td>
</tr>
<tr>
<td>Support</td>
<td>278</td>
<td>(31.8)</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>122</td>
<td>(14.0)</td>
</tr>
<tr>
<td>Oppose</td>
<td>318</td>
<td>(36.4)</td>
</tr>
<tr>
<td>Strongly Oppose</td>
<td>106</td>
<td>(12.1)</td>
</tr>
<tr>
<td>Missing Cases or No Answer</td>
<td>309</td>
<td>***</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1182</strong></td>
<td><strong>(100%)</strong></td>
</tr>
</tbody>
</table>
Nevada unlike proposals about relatively simple water restrictions. The undecided population, in this study over ten percent of Nevadans, suggests that potential for a shift in either direction is possible.

If the thesis of political culture as a statewide phenomenon holds true, there should be little difference within regions regarding this issue. If regional preferences do obtain through analysis by region this may tell us a great deal about the water issue in Nevada. A breakdown of the data by the three major areas of the state, namely Clark County, Carson City-Washoe counties, and the fourteen rural counties, is provided in Table 4.4. Here it appears that those in Clark County tend to "support" or "strongly support" this notion of water transfers stronger than any other region, as evidenced by 46.7 percent in these categories combined. In fact, more Clark County residents "strongly support" (7.8%) water transfers than those who "strongly oppose" (6.1%) them. While there exists less "support" in Carson-Washoe counties for water transfers, significant "support" does indeed exist suggested by the 41.8% in the "support" or "strongly support" categories. Meanwhile, most rural county residents tend to "oppose" or "strongly oppose" water transfers from rural to urban areas. Approximately two-thirds of these residents (67.3%) do, in fact, either "oppose" or "strongly oppose" water
Table 4.4

Level of Support for Exporting Water from Rural to Urban Areas Based on Region

Question: How do you feel about exporting water from rural to urban areas?

CLARK COUNTY

<table>
<thead>
<tr>
<th>Level of Support</th>
<th>Frequency</th>
<th>Valid%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Support</td>
<td>23</td>
<td>7.8</td>
</tr>
<tr>
<td>Support</td>
<td>115</td>
<td>38.9</td>
</tr>
<tr>
<td>Don't Know</td>
<td>36</td>
<td>12.2</td>
</tr>
<tr>
<td>Oppose</td>
<td>104</td>
<td>35.1</td>
</tr>
<tr>
<td>Strongly Oppose</td>
<td>18</td>
<td>6.1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>296</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

(continued on next page)

page 106
Table 4.4 (continued)

CARSON-WASHOE COUNTIES

<table>
<thead>
<tr>
<th>Level of Support</th>
<th>Frequency</th>
<th>Valid%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Support</td>
<td>15</td>
<td>5.0</td>
</tr>
<tr>
<td>Support</td>
<td>111</td>
<td>36.8</td>
</tr>
<tr>
<td>Don't Know</td>
<td>59</td>
<td>19.5</td>
</tr>
<tr>
<td>Oppose</td>
<td>90</td>
<td>29.8</td>
</tr>
<tr>
<td>Strongly Oppose</td>
<td>27</td>
<td>8.9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>302</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

RURAL COUNTIES

<table>
<thead>
<tr>
<th>Level of Support</th>
<th>Frequency</th>
<th>Valid%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Support</td>
<td>11</td>
<td>4.0</td>
</tr>
<tr>
<td>Support</td>
<td>51</td>
<td>18.8</td>
</tr>
<tr>
<td>Don't Know</td>
<td>27</td>
<td>9.9</td>
</tr>
<tr>
<td>Oppose</td>
<td>122</td>
<td>44.9</td>
</tr>
<tr>
<td>Strongly Oppose</td>
<td>61</td>
<td>22.4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>272</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
transfers.

Based on these findings, it is now important to determine what may account for these differences among regions. It is suggested that public opinion concerning the transfer of water from rural Nevada to the Las Vegas area may be influenced by several factors. Primary influences among a host of potential factors may be grouped into three general categories, namely socioeconomic/background characteristics, value orientations, and residency factors. As previously discussed, these three categories offer general correlates of support for water transfers from rural to urban areas. In this study, socioeconomic and background factors include age, income, and education. Meanwhile value orientations refer to political party affiliation and attitudes toward economic and social policies based on a liberal/conservatism scale. The residency factors which are employed emphasize the individual's length of residency in Nevada, the particular region of residence, and attitude towards growth. Table 4.5 provides the frequency distributions of these potential sources of variation on a statewide basis. This table suggests a state with a quite diverse population and it may, therefore, be assumed that Nevadans might vary in their levels of support for water issues as an example of a salient environmental issue.
Table 4.5

Frequency Distributions of Sources of Variation in Support of Water Transfers from Rural to Urban Areas in Nevada: Statewide

<table>
<thead>
<tr>
<th>Variation</th>
<th>Frequency</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Socioeconomic Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondent Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 years or less</td>
<td>549</td>
<td>(46.4)</td>
</tr>
<tr>
<td>Over 40 years</td>
<td>626</td>
<td>(53.0)</td>
</tr>
<tr>
<td>Missing Cases</td>
<td>36</td>
<td>(3.0)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1182</td>
<td>(100%)</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $10,000</td>
<td>56</td>
<td>(6.4)</td>
</tr>
<tr>
<td>$10,000 to $15,000</td>
<td>86</td>
<td>(9.9)</td>
</tr>
<tr>
<td>$15,000 to $25,000</td>
<td>168</td>
<td>(19.2)</td>
</tr>
<tr>
<td>$25,000 to $35,000</td>
<td>177</td>
<td>(20.3)</td>
</tr>
<tr>
<td>$35,000 to $50,000</td>
<td>166</td>
<td>(19.0)</td>
</tr>
<tr>
<td>$50,000 to $75,000</td>
<td>103</td>
<td>(11.8)</td>
</tr>
<tr>
<td>More than $75,000</td>
<td>61</td>
<td>(7.0)</td>
</tr>
<tr>
<td>Other or Missing Cases</td>
<td>56</td>
<td>(6.3)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1182</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

(continued on next page)
Table 4.5 (continued)

<table>
<thead>
<tr>
<th>Education</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than High School</td>
<td>63</td>
<td>(7.2)</td>
</tr>
<tr>
<td>High School Graduate</td>
<td>265</td>
<td>(30.4)</td>
</tr>
<tr>
<td>Some College</td>
<td>288</td>
<td>(33.0)</td>
</tr>
<tr>
<td>College Graduate</td>
<td>136</td>
<td>(15.6)</td>
</tr>
<tr>
<td>Post Graduate or Professional</td>
<td>115</td>
<td>(13.2)</td>
</tr>
<tr>
<td>Other or Missing</td>
<td>315</td>
<td>(27.0)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1182</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

Value Orientations

<table>
<thead>
<tr>
<th>Political Party</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Democrat</td>
<td>439</td>
<td>(37.1)</td>
</tr>
<tr>
<td>Independent or Other</td>
<td>287</td>
<td>(24.3)</td>
</tr>
<tr>
<td>Republican</td>
<td>456</td>
<td>(38.6)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1182</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Economic Liberalism-Conservatism</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal</td>
<td>161</td>
<td>(18.4)</td>
</tr>
<tr>
<td>Moderate</td>
<td>346</td>
<td>(39.6)</td>
</tr>
<tr>
<td>Conservative</td>
<td>327</td>
<td>(37.5)</td>
</tr>
<tr>
<td>Other or Missing</td>
<td>348</td>
<td>(29.5)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1182</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

(continued on next page)
Table 4.5 (continued)

Social Liberalism-Conservatism

<table>
<thead>
<tr>
<th>Political Affiliation</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal</td>
<td>206</td>
<td>(23.6)</td>
</tr>
<tr>
<td>Moderate</td>
<td>364</td>
<td>(41.7)</td>
</tr>
<tr>
<td>Conservative</td>
<td>266</td>
<td>(30.5)</td>
</tr>
<tr>
<td>Other or Missing</td>
<td>346</td>
<td>(29.3)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1182</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

Residency Factors

Length of Residency in State of Nevada

<table>
<thead>
<tr>
<th>Length of Residence</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ten years or less</td>
<td>520</td>
<td>(44.0)</td>
</tr>
<tr>
<td>More than Ten years</td>
<td>626</td>
<td>(53.0)</td>
</tr>
<tr>
<td>Missing cases</td>
<td>36</td>
<td>(3.0)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1182</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

Region of Residence

<table>
<thead>
<tr>
<th>Region</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clark County</td>
<td>380</td>
<td>(32.1)</td>
</tr>
<tr>
<td>Carson-Washoe Counties</td>
<td>397</td>
<td>(33.8)</td>
</tr>
<tr>
<td>Rural Counties</td>
<td>399</td>
<td>(33.8)</td>
</tr>
<tr>
<td>Unrecorded</td>
<td>4</td>
<td>(0.3%)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1182</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

(continued on next page)
Table 4.5 (continued)

Attitude Toward Growth

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase</td>
<td>309</td>
<td>(27.1)</td>
</tr>
<tr>
<td>Same</td>
<td>597</td>
<td>(52.3)</td>
</tr>
<tr>
<td>Decrease</td>
<td>199</td>
<td>(17.4)</td>
</tr>
<tr>
<td>Missing Cases</td>
<td>77</td>
<td>(6.5)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1182</td>
<td>(100%)</td>
</tr>
</tbody>
</table>
An individual look at each particular independent variable provided in Table 4.5 in association with support for water transfers offers great insight into the differences with regions and is recorded in Table 4.6. In this study the variables being assessed are ordinally measured. Thus, gamma, a measure of ordinal association, is considered an appropriate measure for the purposes of this study. Gamma is based on one’s ability to predict variation in one variable by knowing the values of another. Since gamma is based on the ordinal arrangement of values, one guesses that the ordinal ranking on one variable will correspond, either positively or negatively, to the ordinal ranking of another.

In this study, gamma is reported in order to also reduce the amount of data presented by reporting a summary measure of relationships from contingency tables. Gamma measures fall within a known range, from -1.0 to +1.0. Here 1.0 indicates a perfect association, and zero simply indicates no association. A positive gamma suggests that as one variable increases so does another. In contrast, a negative relationship notes that as one variable increases another variable decreases. While there exists no typical rule for measuring gammas, a gamma measure over .20 is reason to take notice and .30 or greater is considered a very good indicator.
The statewide findings for association suggest that age (gamma=.203) and education (gamma=.564) show association. This substantiates the suggestion that younger respondents are more likely to support water transfers than are older individuals. Education also is associated and provides support to the notion that those with higher levels of education are less likely to support water transfers than those with less formal education. Among residency factors, length of residence (gamma=.265) suggests that those who are relatively new to the area indicate more support for water transfers than those which have lived here for a substantial amount of time. When looking at the residency factors in the state, it appears that residence of region (gamma=.362) may have considerable influence. Further, those who do not support continued growth tend to be less supportive of water transfers. Among value orientations no individual measure draws attention, suggesting that at least on a statewide basis the water transfer is not affected by partisan politics or general policy preferences.

Looking at socioeconomic factors in Clark County, income (gamma=.250) and age (gamma=.289) suggest differences may obtain among older and younger citizens and those of varying income levels. Younger respondents are indeed more apt to support water transfers than those who are older. This may be explained
when considering that most younger respondents tend to be less economically secure and, thus, view water as a key component in the economic future of Las Vegas. It appears that education and income are not significant indicators of views taken about water issues.

With value orientations concerning social issues, however, the findings suggest more opposition from conservatives than liberals (gamma=.286). Nevada conservatives have long attempted to reclaim control of the state's lands from the federal government and thus, tend to support a traditional, self-governed Nevada. They maintain support of the status quo and in many ways may wish to deny growth to the urban areas. Liberals on the other hand, tend to view water as a social good. Political party preference, in this study, appears insignificant in the context of the urban-rural water transfer issue in Nevada. This may be explained in that as environmental issues become more salient to both parties, the role of political parties in environmental politics will decline. Suprisingly, economic orientations are not associated. This is a difficult finding to explain if one accepts that water is the economic key to the region.

When looking at residence factors in Clark County, it appears that length of residence and growth does affect an individual's position on water transfers.
Table 4.6

Association of Sources of Variation in Support of Water Transfers From Rural to Urban Areas in Nevada, Statewide and by Region: Gamma

**STATEWIDE**

**Socioeconomic Factors**
- Education: .564
- Income: .115
- Age: .203

**Value Orientations**
- Economics: .199
- Social: .160
- Party: .032

**Residency Factors**
- Length of Residence: .265
- Region: .362
- Population: .375

**CLARK COUNTY**

**Socioeconomic Factors**
- Education: .110
- Income: .250
- Age: .289

**Value Orientations**
- Economics: .167
- Social: .286
- Party: .143

**Residency Factors**
- Length of Residence: .226
- Population: .140

(continued on next page)

page 116
### CARSON-WASHOE COUNTIES

**Socioeconomic Factors**
- Education: -.557
- Income: .032
- Age: -.022

**Value Orientations**
- Economics: .031
- Social: .052
- Party: .032

**Residency Factors**
- Length of Residence: -.012
- Population: .177

### RURAL COUNTIES

**Socioeconomic Factors**
- Education: .178
- Income: .238
- Age: .156

**Value Orientations**
- Economics: .373
- Social: .054
- Party: -.068

**Residency Factors**
- Length of Residence: .329
- Population: .136
Those who are relatively new to the area indicate more support for water transfers than those who have lived here for ten years or more. However, attitudes toward growth and population appear of little value in determining preferences in Clark County.

Moving away from the state's major metropolitan area to Carson-Washoe counties, we find only one measure of association which shows an important association; that of education (gamma=.557). However, unlike Clark County, the association is negative in value such that as education increases support for transfers increases. This would seem unusual in light of the prevailing literature which suggests that those who have higher levels of education are likely to be environmentally "sympathetic". In Carson-Washoe, population does show some potential as a predictor (gamma=.177) and it appears weak given the vocalized opposition to growth in the area.

In the rural counties the gamma measure points to high associations with income (gamma=.238), among socioeconomic factors (gamma=.373), and length of residence (gamma=.329). From this it appears that those who are at higher income and economic levels in the rural counties tend to be more in favor of water transfers. Certainly those who already appreciate the economic value of water
desire to continue this reliance and use. Considering length of residence, it is clear that those who are newer to the rural counties lean more in favor of water transfers than their more established cohorts. This can be explained in that those who have resided in a region for a substantial amount of time may tend to be more familiar and supportive of that region. That is, those who have resided there for approximately ten years or more feel that they have more at stake in the region and, thus, want to protect their water resources.

Summary and Conclusions

Political culture has certainly provided a perspective for understanding water politics in Nevada. The political culture of Nevada is individualistic in that it prefers a marketplace where government acts as a business enterprise. Yet, the political culture of a state may vary over particular issues in light of mixed intrastate cultures. This has proven to be the case in Nevada where an obvious split exists between North and South, or rural and urban. As previously discussed, Nevada
can be characterized by three potential communities: North (Carson-Washoe counties), South (Clark County) and fourteen rural counties. These distinct political communities and political cultures have indeed led to quite disparate policy preferences. This has proven to be the case with regards to water transfers from rural northern Nevada to urban southern Nevada.

The findings suggest that most Nevadans either "support" or "strongly support" limits on lawns, new lakes, and low-water-use landscaping. In fact, more Nevadans "strongly support" limitations than those who "strongly oppose" them. In addition, the public opinion data indicate that Clark County residents tend to support (46.7%) rural to urban water transfers just as Carson-Washoe county residents also tend to support (41%) these transfers. However, rural county residents significantly oppose (67.3%) these water transfers. Certainly it is the rural county residents who feel they have the most to lose from potential rural to urban water transfers. The data tend to, for the most part, substantiate previous studies concerning the various independent variables examined in this study. Age, education, length of residence, and value orientations have all proven significant when examining environmental policy preferences in Nevada.
CHAPTER FOUR ENDNOTES


4James W. Hulse, The Silver State: Nevada's Heritage Reinterpreted (Reno/Las Vegas: University of Nevada Press, 1991)


9Dennis L. Soden and Donald Carns, "Rural-Urban Attitudes Regarding Water Transfers in the State of Nevada". (UNLV Environmental Studies Program, 1992).


Water is life in the desert\textsuperscript{1}. Indeed water as an example of an environmental issue has secured a permanent place on the public policy agenda, particularly in the western United States. Americans are, in fact, becoming more aware of environmentalism today than in any other period of history. Along with this, the notion of potential water scarcities has achieved growing attention. Awareness has grown in many segments of society, thereby allowing water to become a vital public policy issue which more often than not incorporates a broad set of political, social, and economic actors.

When considering Las Vegas' anticipated growth, scarcity and severe limits seem quite unavoidable. Indeed there is reason for concern as current water usage patterns project complete utilization of current water resources by 1997. Southern Nevada, as discussed earlier, receives 80 percent of its annual water supply from the Colorado River and 20 percent from local groundwater. Because
the Colorado River is already overallocated, Las Vegas cannot expect to increase its allocation. Thus, in an effort to obtain water from another source, additional groundwater is currently being sought from central and eastern Nevada via the Las Vegas Valley Water District's Cooperative Water Plan.

The politics of water in Nevada is often complicated by western water law which is indeed, quite obscure and extremely complex. Nevada's current water law, which is based on prior appropriation, is characterized by a great deal of unchecked control over water and use patterns which may no longer be effective or efficient. As Garret Hardin maintains, if definitions, either societal or legal, become unjust or counterproductive, then it is necessary to redefine. Certainly the state-federal relationship overwhelms the issue of water in Nevada. It seems inevitable that in Nevada, where the federal presence is dramatic, there exists great potential for federal-state tradeoffs. These tradeoffs may involve new initiatives in water policy which emphasize water markets and transfers. Today many look to water marketing in an effort to alleviate water shortage problems while at the same time promoting ecological health. Both conservatives and environmentalists alike view water marketing as an alternative. In any case, it is a new approach in that it avoids the dam building trend that the Bureau of
Reclamation once promoted.

Water in Nevada is certainly characterized by competing goals and conflict. That is, southern Nevada seeks clean water, the preservation of nature, in particular the Colorado River, and a compromise of values. Southern Nevada is also faced with the problem of water use efficiency or actual agricultural water inefficiency. While irrigation for agricultural purposes uses 90 percent of the state's water, it produces only a small portion of the state's annual revenue. In addition to these questions of efficiency, Nevada has never really adapted to the notion of a limited supply of water and thus, conservation has never really been considered. Because of this lack of planning, the Las Vegas Valley Water District has proposed the Cooperative Water Plan in an effort to secure water from central and eastern Nevada. While its opponents refer to this as the "water grab", and it has been the focus of great controversy and concern in Nevada.

Before analyzing public opinion data on support for water transfers from rural Nevada to urban Nevada, it was significant that we reviewed forces and factors determining environmental policy preferences. Here the shift from the dominant social paradigm which emphasized the accumulation of wealth and power to the New Environmental Paradigm which emphasizes harmonization
between humans and nature was explored. It has been suggested today that a "silent revolution" has occurred in that the values of Western publics have been shifting from an overwhelming emphasis on material well-being and physical security toward greater emphasis on the quality of life. Many in fact suggest that these value changes and societal shifts hallmark a post-materialist society. The post-materialists are often found on the higher levels of Maslow's hierarchy. That is, those who are self-actualized tend to be more environmentally aware of water issues and scarcity problems than those on the lower levels of the hierarchy. Yet, even those who are self-actualized encounter informational complexity problems. This "quintessential quandary" poses many problems of how to incorporate the public in the policy making process.

With this framework developed, it then became necessary to question what factors actually accounted for how the general public develops its policy preferences. Pierce and Lovrich's work with belief systems is quite significant in that it examines the structure and content of beliefs specifically oriented about environmental questions and constraints on beliefs. Political culture then provided a mechanism to understand the various differences within a particular homogeneous domain. In this instance, political culture helped us explain
differences in the opinions of Nevadans concerning water transfers from central and eastern to southern Nevada. The political culture of Nevada, which has historically been considered an individualistic state, prefers a marketplace where government acts as a business enterprise. Looking at the political culture of Nevada, it becomes evident that the state is characterized by a split of north versus south. Nevada possesses disputes along regional lines as a result of economic and natural resource preferences. In this regard, the state is currently battling over water rights as southern Nevada pursues groundwater resources in rural Nevada.

Lastly, this study analyzed public opinion polls conducted from the University of Nevada, Las Vegas and University of Nevada, Reno in the fall of 1990. First, we analyzed the level of support for limitations on water use in Nevada on a statewide basis. From this, it was discovered that a majority of Nevadans "support" or "strongly support" limits on lawns, new lakes, and low-water-use landscaping. Meanwhile the level of support from rural to urban areas among the general public in Nevada indicates that over one-third of the respondents either "support" or "strongly support" water transfers. Yet, almost one-half of the respondents "oppose" or "strongly oppose" water transfers from
rural to urban areas. This split indeed suggests the potential for considerable political controversy and, thus indicate a cleavage and not a consensus.

The frequency distributions of sources of variation in support of water transfers from rural to urban areas offered some insight into the differences of respondents within regions, yet overall may be less informative than expected. Concerning socioeconomic/background characteristics, younger individuals appeared to be more apt to support water transfers than those who are older. Meanwhile economic conservatives tend to be more opposed to water projects than economic liberals. Looking at residency factors, we learned that those who are newer to the state are more inclined to support water transfers than longtime Nevadans. The gamma measures confirm these generalizations.

Indeed the issue of water in southern Nevada is an "overtly political" policy issue. While each player is seeking an optimal posita, it seems unlikely that all players will be satisfied. It appears from our analysis of the public opinion data that cleavage exists. Certainly there exists a strong demand for creativity and innovation. Southern Nevada's situation appears unique which requires that the state search beyond the usual techniques as there exists no model to follow. While southern Nevada looks to the Owens Valley incident in California as an
unlikely approach, it can possibly look to Arizona for solutions. That is, one could argue that southern Nevada should follow Tucson’s lead and implement a rate hike on water. Certainly the 1980 Arizona Groundwater Management Act offers an example of a state attempting to manage its scarce resource. Given the mixed support for water transfers, it appears that Nevada would be better off adopting more stringent conservation measures rather than transfers. Indeed conservation provides an acceptable and extremely desirable alternative. Yet, overall innovation and cooperation are certainly necessary if Southern Nevada is to survive the life-threatening and economically devastating consequences of a water shortage.
CHAPTER FIVE ENDNOTES

1Russell Martin, A Story that Stands Like a Dam - Glen Canyon and the Struggle for the Soul of the West (New York: Henry Holt and Company, 1989), page 324.

BIBLIOGRAPHY


Flavin, Christopher. "Uncle Sam's Sad Record" in Worldwatch Volume 4, Number 5, September/October 1991.


Las Vegas Valley Water District Cooperative Water Project Fact Sheet, 1991.


Rocky Mountain Institute Newsletter, Volume VII, Number 1, Spring 1991.


NEWSPAPERS


