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PLANNING FOR RESERVOIR SHORELINE
DEVELOPMENT IN NEBRASKA

by

Thomas Victor Cech

A THESIS

Presented to the Faculty of
The Graduate College in the University of Nebraska
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Professor Charles Y. Deknatel

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CHAPTER I

INTRODUCTION

Dimensions of the Problem

Recreational land development can be a controversial topic. It has often caused disagreement between individuals who wish to preserve the natural beauty of an area and those wanting to increase local economic activity. According to a study by the American Society of Planning Officials (ASPO) in 1976, recreational development has resulted in

. . . both positive and negative consequences in different settings and under different conditions. On the positive side, it has provided recreational opportunities for an increasingly broad segment of the American public--a place in the country to spend vacations and leisure time, a place to retire, and for some an attractive financial investment. Recreational land has also created markets for marginally productive land, increased local tax revenues, stimulated local businesses, and provided some jobs.

Despite these important benefits, recreational land development has caused some very serious problems: consumer victimization resulting from misleading and fraudulent sales tactics; environmental degradation from the development of ecologically fragile lands; and high public service costs for some rural communities.(1)

Recreational land ownership and use in the U.S. was primarily a luxury of the wealthy until the late 1950s. However, over the past two decades many factors brought ownership of recreational property within reach of the

massive middle income market. Increased disposable income, increasing vacation and leisure time, increased mobility through better highways and the Interstate System, and widespread ownership of automobiles and recreational vehicles were all major factors in the recreational land development boom which continued with momentum into the 1970s.(2) In the past decade, however, inflation, high interest rates, and escalating gasoline prices have reduced second home sales considerably.

Although reliable figures for the number of recreation lots or properties in the country are not available, the present scope of development can be estimated from the following information. It was estimated in 1979 that 7.5 million lots and six million acres were devoted to such use.(3) The basis for this information was the records of projects registered with the Office of Interstate Land Sales Registration (OILSR) in the U.S. Department of Housing and Urban Development. Since the formation of OILSR in 1969, developers have been required to register all projects with fifty or more second home lots less than five acres in size.(4) In Nebraska as of January 1974, nine recreational land subdivisions had been filed with OILSR, which contained 3,990 recreational lots and covered 4,863 acres.(5)

The most reliable figures on existing vacation home stock are available from the U.S. Census. Two sets of data

are contained within the Census records which relate directly to vacation housing. The first data group contains figures on the number of units used as vacation homes under the headings of "Rural Seasonal Vacant" and "Other Rural Vacant". In 1970 the total figure for the U.S. was approximately 2.1 million units. Of this number, Nebraska contained 18,521 second homes or 0.9 percent of the U.S. total, Kansas had 20,724, Iowa with 29,192, Colorado had 35,467, South Dakota had 15,000, and Oklahoma with 27,758. Nebraska's share of all second homes in the U.S. increased from 0.3 percent in 1950, to 0.5 percent in 1960, and up to the previously mentioned 0.9 percent figure in 1970.(6)

The second data group within the Census relates to the number of households which own second homes. This figure was approximately 2.9 million or 4.6 percent of all households in the U.S. in 1970. The number and percent of all households within a state that owned second homes, respectively, in Nebraska was 15,207 (3.2%), Kansas was 22,925 (3.2%), Iowa had 30,104 (3.4%), Colorado had 34,775 (5.0%), South Dakota had 9,410 (4.7%), and Oklahoma with 31,151 (3.7%).(7)

The above information shows that, in 1970, over 100,000 vacation homes were located in five midwest states. In Nebraska, second homes accounted for 3.6 percent of all housing units in the state.(8) Since this area of the

country is not noted as a prime location for second homes in terms of scenery, climate, etc., it is significant that nearly 20,000 such homes exist in Nebraska.

Quite often, second homes are located near water, and Nebraska is no different in this respect. However, development near shoreline areas has led to conflict between development and preservation philosophies.

Problem Statement

Within Nebraska, the second home development phenomenon has been directly and primarily related to water. Shoreline residential development has occurred along the banks of streams and rivers (such as the Platte), around gravel pits (as at the Fremont Lakes), and along the shorelines of man-made impoundments across the state. Since Nebraska does not have an abundance of natural lakes suitable for shoreline development, flood control and irrigation reservoirs have provided the primary opportunities for second home locations.

Residential shoreline development in Nebraska has created positive and negative consequences similar to those experienced by other developments around the country. On the positive side, residential development near Nebraska's reservoirs has provided ". . . a place in the country to spend vacations and leisure time, a place to retire, and for some an attractive financial investment."(9) However, several negative factors are evident due to shoreline

development in the state. While the ASPO study mentioned problems common at the national level, such as fraudulent sales practices, development of ecologically fragile lands, and high public service costs, it appears that the primary problems in Nebraska are related to environmental and land use conflicts associated with lakeside development.

Specific examples include:

1. Lack of Public Access - Lakefront lots are usually very marketable to individuals for cabin sites. As a result, many reservoir shoreline areas are highly developed, and often do not provide adequate public access. For example, second home development around Johnson Reservoir in southwest Nebraska has severely limited public access to the lake. Lots are situated in long, contiguous stretches along the shoreline so that no public access is provided to the lake in most locations. Therefore, cabin owners at Johnson are obtaining most of the shoreline recreational advantages provided by the construction of the reservoir.

2. Pollution - Construction of homes or placement of trailers along the shoreline, such as at Johnson or Sherman reservoirs, can lead to pollution of the lake from septic tank seepage or surface water runoff. Inadequate absorption fields for septic tanks can contribute to system failures and possible pollution of nearby surface waters.

3. Erosion - Development of second homes near

reservoirs may contribute to increased storm water runoff since the surface area available for infiltration is reduced. Construction of homes and roads on steep slopes and on certain soil types, without adequate precautions, could compound erosion problems, especially during the construction phase of a project. Excessive erosion can lead to increased siltation of a reservoir, thus reducing the storage capacity of the impoundment.

4. Inadequate Design Standards - Inadequate restrictions on height, bulk, density, setbacks, building materials, landscaping, lot and street layout, and maintenance of second homes could lead to problems such as crowding and visual blight as has occurred at Sherman Reservoir. Inadequate setback standards can allow development to occur up to the water's edge of a lake. This can contribute to pollution from runoff, lack of public access, and loss of scenic views along the shoreline area.

5. Lack of Enforcement of Regulations - The Bureau of Reclamation and the U.S. Army Corps of Engineers have prohibited construction of any structures (or additions to existing structures) at any federally-operated impoundments in Nebraska. However, this policy has been ignored at several reservoirs, specifically at Sherman. The result has been that many mobile homes at these lakes now have patios, room additions, semi-enclosed porches, and

observation decks on rooftops. The resulting visual appearance is very unattractive due to poor workmanship or use of unsuitable construction materials. In addition, improper construction techniques can contribute to unsafe conditions within the residential area if structural failures occur.

These types of land use and environmental problems may increase if more reservoirs are constructed or if the demand for second homes remains constant or increases. In addition, environmental problems may become more severe if, as these homes age, many of these "second" homes become "primary" or "year-round" residences as is currently occurring at many shoreline areas of the state, e.g., Johnson Reservoir, Lake McConaughy, and Lewis and Clark Lake.

Objectives

Comprehensive second home development controls for reservoir shoreline areas in Nebraska do not exist at the state level, and regulations at the local level have often been created after problems have become critical. In addition, many existing local controls on shoreline residential development are not strictly enforced. Therefore, the purpose of this thesis was to:

1. Identify the extent and potential demand of second home development near Nebraska's reservoirs;

2. Identify existing environmental and land use problems associated with such development;

3. Identify shoreline development regulations which exist at the federal, state, and local level which affect residential development in Nebraska;

4. Identify existing problems in the scope and enforcement of residential shoreline regulations in Nebraska;

5. Present recommendations to improve the orderly development of second homes in shoreline areas of reservoirs in the state.

Scope of the Study

This thesis only examined residential development near reservoirs which have a surface area greater than 150 acres. Residential shoreline development along rivers, streams, natural lakes, and gravel pits was not considered although it is expected that the results of this study would be applicable to other types of shoreline areas in the state.

All categories of residential shoreline development were considered. These include seasonal and year-round cabins and trailers located on either public or private land. As a note of clarification, for this study "shoreline" dwellings are defined as being those residential units that either have direct beach front access, or are located on public property which is part of

the reservoir project area (often referred to as the area within the "take line"), or are within a residential subdivision immediately adjacent to the take line of a reservoir, or are located along bluffs, banks, hills, or other steep grades which are situated immediately adjacent to a reservoir area.

Only residential development was examined in this study. Consideration was not given to shoreline parks, camping areas, wildlife refuges, etc.

The inventory of existing residential development was accomplished by obtaining information from county assessors and public power and utility districts. In addition, data were obtained from county comprehensive plans and regional water and sewer plans. Information regarding environmental and land use problems is presented and was compiled from the above sources, along with interviews with officials of the Nebraska Department of Health and USDA Soil Conservation Service District Conservationists. Identification of existing shoreline regulations in Nebraska and other midwest states was accomplished through telephone interviews and literature research. The time span of this work was from July 1981 through April 1982.

FOOTNOTES

- (1) American Society of Planning Officials, Subdividing Rural America: Impact of Recreational Lot and Second Home Development, (Washington, D.C.: U.S. Government Printing Office), 1976, p. 1.
- (2) Ibid., p. 17.
- (3) U.S. Department of the Interior, Heritage Conservation and Recreation Service, The Third National Outdoor Recreation Plan - Executive Report, (Washington, D.C.: U.S. Government Printing Office), December 1979, Appendix IV, p. 66.
- (4) Leslie Allan, et. al., Promised Lands--1: Subdivisions in Deserts and Mountains, (New York: INFORM), 1976, p. 6.
- (5) Subdividing Rural America, p. 135.
- (6) Ibid., p. 136.
- (7) Ibid., p. 137.
- (8) U.S. Bureau of the Census, Census of Housing: 1970, Vol.I, Housing Characteristics for States, Cities, and Counties, Part 29, Nebraska, (Washington, D.C.: U.S. Government Printing Office), 1972.
- (9) Subdividing Rural America, p. 1.

CHAPTER II

CURRENT STATUS OF SECOND HOME DEVELOPMENT NEAR RESERVOIRS IN NEBRASKA

Introduction

Residential shoreline development is somewhat of an unresearched topic in Nebraska. Although various public agencies regulate development near reservoirs in the state, it appears that no comprehensive, statewide inventory and analysis have ever been conducted at either the public or private level. Past studies have been conducted at the project level, that is, only concerned with one or a small group of reservoirs.

Therefore, the purpose of this chapter is to conduct an inventory of all reservoirs in Nebraska with a surface area of over 150 acres to determine the amount, type, use, and ownership of shoreline residential dwellings.

Reservoir Classifications

Nebraska has experienced extensive reservoir development, especially in the southwest region of the state. The Bureau of Reclamation, U.S. Army Corps of Engineers, and The Central Nebraska Public Power and Irrigation District (Tri-County) have been responsible for construction of most of these reservoirs. In all, there

are approximately 630 reservoirs in Nebraska, not including farm ponds, permanent pools from floodwater retention structures or grade stabilization structures.(1) However, of these 630 reservoirs, only thirty-eight have a surface area greater than 150 acres. Table 1 presents information regarding these principal reservoirs which are considered more closely in this chapter.

TABLE 1
PRINCIPAL RESERVOIRS IN NEBRASKA, 1982
(surface areas greater than 150 acres)

Unit	County	Surface Area (acres)	Date Completed	Operator
McConaughy	Keith	35,000	1941	CNPP&ID
Lewis and Clark	Knox	32,000	1956	Corps
Harlan County	Harlan	13,240	1952	Corps
Swanson	Hitchcock	4,794	1953	Bureau
Sutherland	Lincoln	3,190	1935	NPPD
Oliver	Kimball	3,000	1981	SPNRD
Merritt	Cherry	2,906	1965	Bureau
Sherman	Sherman	2,850	1960	Bureau
Johnson	Dawson & Gosper	2,800	1941	CNPP&ID
Minatare	Scotts Bluff	2,158	1915	Bureau
Harry Strunk	Frontier	1,850	1949	Bureau
Branched Oak	Lancaster	1,780	1967	Corps
Enders	Chase	1,707	1950	Bureau
Maloney	Lincoln	1,670	1935	NPPD
Hugh Butler	Frontier	1,629	1962	Bureau
North and Babcock	Platte	1,070	NA	LPPD
Box Butte	Dawes	1,060	1945	Bureau
Elwood	Gosper	1,040	1978	CNPP&ID
Whitney	Dawes	984	1923	WID
Alice	Scotts Bluff	776	1913	Bureau
Pawnee	Lancaster	730	1965	Corps
Jeffrey	Lincoln	600	1941	CNPP&ID
Midway	Dawson	560	NA	CNPP&ID

TABLE 1--Continued

Unit	County	Surface Area (acres)	Date Completed	Operator
Ogallala	Keith	530	1941	NPPD
Blue Stem	Lancaster	320	1963	Corps
Wagon Train	Lancaster	300	1963	Corps
Beaver	Cass	300	1974	BLC
Capitol Beach	Lancaster	290	1962	CBI
Twin Lakes	Seward	260	1966	Corps
Conestoga	Lancaster	230	1965	Corps
Plum Creek	Dawson	220	NA	CNPP&ID
Yankee Hill	Lancaster	210	1965	Corps
Stage Coach	Lancaster	200	1964	Corps
Antelope Creek Watershed	Sheridan	193	1964	Gordon
Gallager Canyon	Dawson	180	NA	CNPP&ID
School House	Cherry	177	NA	Adamson
Olive Creek	Lancaster	170	NA	Corps
Ericson	Wheeler	160	NA	NPPD

Source: Nebraska Department of Water Resources, and Ray Bentall and F. Butler Shaffer, Availability and Use of Water in Nebraska, 1975, Nebraska Water Survey Paper Number 48, Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska, June 1979, pp. 20-22.

CNPP&ID - The Central Nebraska Public Power & Irrigation District

Corps - U.S. Army Corps of Engineers

Bureau - Bureau of Reclamation

NPPD - Nebraska Public Power District

SPNRD - South Platte Natural Resources District

LPPD - Loup Public Power District

WID - Whitney Irrigation District

BLC - Beaver Lake Corporation

CBI - Capitol Beach, Incorporated

Gordon - City of Gordon

Adamson - Elvin Adamson

Eleven of the reservoirs mentioned in Table 1 are operated by the Corps of Engineers while nine are operated

by the Bureau of Reclamation. However, fifteen, or over one-third of the reservoirs in the state with a surface area greater than 150 acres, are controlled by private development companies, irrigation or public power districts.

Residential Development

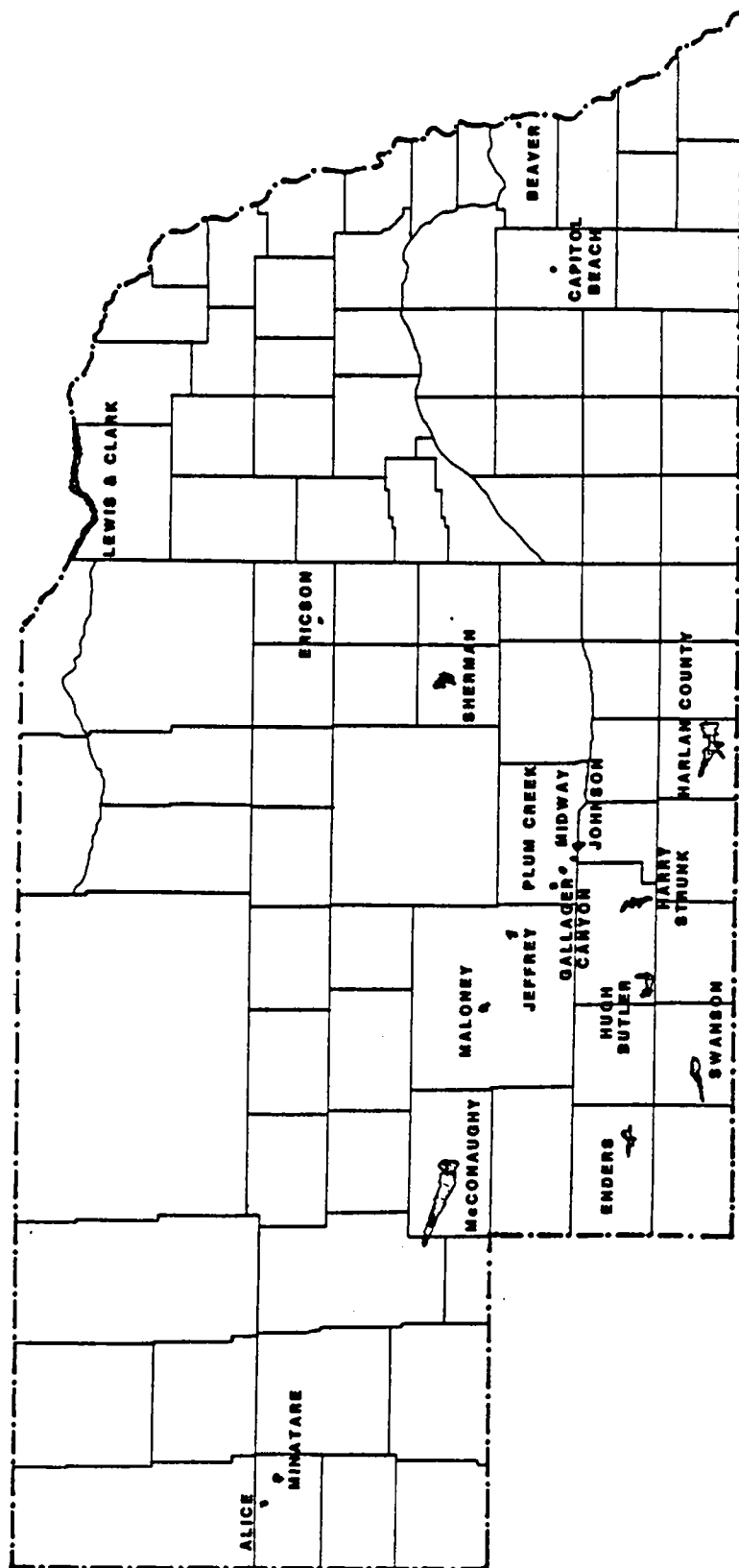
Residential development in shoreline areas of Nebraska's principal reservoirs has been extensive. Nineteen reservoirs, with surface areas over 150 acres, contain shoreline residential development. This development ranges from approximately five mobile homes at Gallagher Canyon in Dawson County to 850 residential units at Lake McConaughy. Illustration 1 shows the locations of these reservoirs and Table 1 presents a complete list of adjacent residential development.

In all, there are approximately 4,253 residential units located in shoreline areas of Nebraska's principal reservoirs. Seven of the above contain less than one hundred homes, while seven others each contain over two hundred residential units. Johnson Reservoir, with 842 homes, could conceivably support a population of 1,684 people at a modest density of two people per dwelling.

The greatest amount of residential growth in the past ten years has occurred at Johnson Reservoir and Lake McConaughy. At Johnson, the number of dwelling units has increased by 247 units, or 42 percent, between the years

ILLUSTRATION 1

RESERVOIRS IN NEBRASKA WITH SHORELINE RESIDENTIAL DEVELOPMENT (reservoir surface areas greater than 150 acres)



1969 and 1979.(2) Lake McConaughy experienced a growth of 140 homes, or 20 percent, between 1974 and 1982.(3) Enders, on the other hand, had an increase of only one mobile home since 1970.(4) No reservoir listed in Table 2 showed a decrease in number of homes.

TABLE 2
RESIDENTIAL SHORELINE DEVELOPMENT
AT RESERVOIRS IN NEBRASKA
(surface areas greater than 150 acres)

Unit	Year(a)	Number of Dwellings
McConaughy(b)	1982	850
Lewis and Clark(c)	1982	257
Harlan County(d)	1982	419
Swanson(e)	1982	113
Sherman(f)	1982	194
Johnson(g)	1979	842
Minatare(h)	1982	112
Harry Strunk(i)	1982	96
Enders(j)	1982	29
Maloney(k)	1982	325
Hugh Butler(l)	1982	90
Alice(m)	1982	40
Jeffrey(n)	1979	129
Midway(o)	1979	68
Beaver(p)	1982	233
Gallager Canyon(q)	1982	5
Capitol Beach(r)	1982	301
Plum Creek(s)	1979	33
Ericson(t)	1981	117
TOTAL	--	4,253

(a) Data is presented for the most recent year available.

(b) Correspondence with Arthur Bradley, Keith County Zoning Administrator, Ogallala, Nebraska, February 4, 1982.

(c) Correspondence with Wesley G. Mach, Knox County Assessor, Center, Nebraska, February 16, 1982.

- (d) Correspondence with Floyd M. Schippert, Harlan County Assessor, Alma, Nebraska, February 19, 1982.
- (e) Telephone conversations with Barbara Dye, Hitchcock County Assessor, Trenton, Nebraska, January 22, 1982 and Jim Fuller, Administrative Assistant to the Chief of Recreation and Wayside Areas, Nebraska Game and Parks Commission, Lincoln, Nebraska, January 28, 1982.
- (f) Telephone conversation with Jan Robertson, Sherman County Assessor, Loup City, Nebraska, January 22, 1982.
- (g) Correspondence with Wendell D. Hudson, Chief Draftsman, The Central Nebraska Public Power and Irrigation District, Holdrege, Nebraska, September 15, 1981.
- (h) Correspondence with Marjorie Kleist, Scotts Bluff County Assessor, Scottsbluff, Nebraska, January 22, 1982.
- (i) Correspondence with Z. Arlene Sass, Frontier County Assessor, Stockville, Nebraska, January 25, 1982.
- (j) Correspondence with Amelia A. Headrick, Chase County Assessor, Imperial, Nebraska, January 25, 1982.
- (k) Telephone conversation with Debra Brown, Clerk, Lincoln County Assessor's Office, North Platte, Nebraska, February 8, 1982.
- (l) Z. Arlene Sass, January 25, 1982, and Jim Fuller, January 28, 1982.
- (m) Marjorie Kleist, January 22, 1982.
- (n) Wendell D. Hudson, September 15, 1981.
- (o) Ibid.
- (p) Telephone conversation with Sherrill Konfrst, Office Manager, Beaver Lake Association, Murray, Nebraska, February 3, 1982.
- (q) Telephone conversation with Wendell D. Hudson, February 3, 1982.
- (r) Telephone conversation with Phyllis Thornton, Assistant Secretary, Capitol Beach, Inc., Lincoln, Nebraska, February 1, 1982.
- (s) Wendell D. Hudson, September 15, 1981.

(t) Kenneth W. Clement, October 27, 1981.

Residential development at reservoirs operated by the Bureau of Reclamation and the U.S. Army Corps of Engineers amounted to 1,350 units on public and private property, or 32 percent of all homes listed in Table 2. Development at irrigation and public power district lakes amounted to 2,369 units or 56 percent.

Residential Development on Public and
Private Property Near Reservoirs

Shoreline residential development on public land has been significant when compared to development on private property. As shown in Table 3, at least 2,162 units currently exist on public land at reservoir shorelands. The most extensive development on public land has occurred at Johnson and McConaughy with 678 and 511 units, respectively. Other significant development on public land has occurred at Harlan County Lake with 238 units and at Sherman Reservoir which has 192 cabins and mobile homes.

Residential development on private property has occurred most at Lake McConaughy, partly due to its long shoreline of 105 miles, but also due to its proximity to the populous Front Range of Colorado. It was estimated by Lula Zierlein, a real estate broker near McConaughy, that 50 percent of the homes at the lake are owned by people from the

Denver area.(5) Currently, 339 units are located on private property at McConaughy, most of which are just beyond the public lands owned by The Central Nebraska Public Power and Irrigation District. Capitol Beach in Lincoln and Lewis and Clark Lake in Knox County also have a great deal of private development with 301 and 257 units, respectively.

TABLE 3
RESIDENTIAL SHORELINE DEVELOPMENT ON PUBLIC
AND PRIVATE PROPERTY AT RESERVOIRS
IN NEBRASKA
(surface areas greater than 150 acres)

Unit	Year	Number of Dwellings				Total
		Public Land	%	Private Land	%	
McConaughy(a)	1982	511	60%	339	40%	850
Lewis and Clark(b)	1982	0	0%	257	100%	257
Harlan County(c)	1982	238	57%	181	43%	419
Swanson(d)	1982	113	100%	0	0%	113
Sherman(e)	1982	192	99%	2	1%	194
Johnson(f)	1979	678	81%	164	19%	842
Minatare(g)	1982	35	31%	77	69%	112
Harry Strunk(h)	1982	72	93%	24	7%	96
Enders(i)	1982	28	97%	1	3%	29
Maloney(j)	1982	325	100%	0	0%	325
Hugh Butler(k)	1982	90	100%	0	0%	90
Alice	--	NA	--	NA	--	40
Jeffrey(l)	1979	121	94%	8	6%	129
Midway(m)	1979	68	100%	0	0%	68
Beaver(n)	1982	0	0%	233	100%	233
Gallager Canyon	--	NA	--	NA	--	5
Capitol(o)	1982	0	0%	301	100%	301
Plum Creek(p)	1979	16	48%	17	52%	33
Ericson	--	NA	--	NA	--	117
TOTAL	--	2,162	--	1,596	--	4,253

- (a) Telephone conversation with Jim Fuller, January 28, 1982, and correspondence with Arthur Bradley, February 4, 1982.
 - (b) Correspondence with Wesley G. Mach, February 16, 1982.
 - (c) Correspondence with Floyd M. Shippert, February 19, 1982.
 - (d) Telephone conversations with Barbara Dye, January 22, 1982 and Jim Fuller, January 28, 1982.
 - (e) Telephone conversation with Jan Robertson, January 22, 1982.
 - (f) Correspondence with Wendell D. Hudson, September 15, 1981.
 - (g) Correspondence with Marjorie Kleist, January 22, 1982.
 - (h) Correspondence with Z. Arlene Sass, January 25, 1982, and telephone conversation with Jim Fuller, January 28, 1982.
 - (i) Correspondence with Amelia A. Headrick, January 25, 1982.
 - (j) Z. Arlene Sass, January 22, 1982, and telephone conversation with Jim Fuller, January 28, 1982.
 - (k) Wendell D. Hudson, September 15, 1981.
 - (l) Ibid.
 - (m) Ibid.
 - (n) Telephone conversation with Sherrill Konfrst, February 3, 1982.
 - (o) Interview with Phyllis Thornton, February 1, 1982.
 - (p) Wendell D. Hudson, September 15, 1981.
-

Development of private shoreline property at reservoirs operated by the Bureau of Reclamation or Corps of Engineers amounts to only 285 units or 18 percent of all

development on private lands in Table 3. However, development on private property at Beaver Lake and Capitol Beach, combined, equals 534 units or 33 percent of all private development listed in Table 3.

Mobile Home and Cabin Development

Information regarding types of homes at Nebraska's principal reservoirs is not complete, but is still quite revealing. Of the 1,245 mobile homes listed in Table 4, 649 or over 50 percent, are located in Nebraska Game and Parks Commission concessionaire areas at McConaughy, Swanson, Hugh Butler, Harry Strunk, and Sherman while another 238, or almost 20 percent, are at the concessionaire area at Harlan County Lake.

TABLE 4
RESIDENTIAL DEVELOPMENT BY TYPE
AT RESERVOIRS IN NEBRASKA
(surface areas greater than 150 acres)

Unit	Year	Number of Dwellings				Total
		Mobile Homes	%	Cabins	%	
McConaughy(a)	1982	482	57%	368	43%	850
Lewis and Clark(b)	1982	26	10%	231	90%	257
Harlan County(c)	1982	320	76%	99	24%	419
Swanson(d)	1982	100	88%	13	12%	113
Sherman(e)	1982	103	53%	91	47%	194
Johnson(f)	1979	0	0%	842	100%	842
Minatare	--	NA	--	NA	--	112
Harry Strunk(g)	1982	44	46%	52	54%	96
Enders(h)	1982	1	3%	28	97%	29
Maloney	--	NA	--	NA	--	325
Hugh Butler(i)	1982	82	91%	8	9%	90

TABLE 4--Continued

Unit	Year	Number of Dwellings				Total
		Mobile Homes	%	Cabins	%	
Alice	--	NA	--	NA	--	40
Jeffrey(j)	1979	0	0%	129	100%	129
Midway(k)	1979	0	0%	68	100%	68
Beaver(l)	1982	87	37%	146	63%	233
Gallager Canyon(m)	1982	5	100%	0	0%	5
Capitol Beach	--	NA	--	NA	--	301
Plum Creek	--	NA	--	NA	--	33
Ericson	--	NA	--	NA	--	117
TOTAL	--	1,245	--	2,075	--	4,253

- (a) Telephone conversation with Jim Fuller, January 28, 1982, and correspondence with Arthur Bradley, February 4, 1982.
- (b) Correspondence with Wesley G. Mach, February 16, 1982.
- (c) Correspondence with Floyd M. Schippert, February 19, 1982.
- (d) Jim Fuller, January 28, 1982.
- (e) Telephone conversation with Jan Robertson, January 22, 1982.
- (f) Correspondence with Wendell D. Hudson, September 15, 1981.
- (g) Correspondence with Z. Arlene Sass, January 25, 1982.
- (h) Correspondence with Amelia A. Headrick, January 25, 1982, and telephone conversation with Jim Fuller, January 28, 1982.
- (i) Telephone conversation with Jim Fuller, January 28, 1982.
- (j) Wendell D. Hudson, September 15, 1981.
- (k) Ibid.

- (l) Telephone conversation with Sherrill Konfrst,
February 3, 1982.
- (m) Telephone conversation with Wendell D. Hudson,
February 3, 1982.

Of the 2,075 cabins listed in Table 4, which include cabins used as both seasonal and year-round residences, 384 are leased to private individuals by the Nebraska Game and Parks Commission(6) while 883 are leased by the Central Nebraska Public Power and Irrigation District (Tri-County).(7)

Seasonal and Year-Round Residences

As would be expected, the majority of homes along shorelines of inventoried reservoirs are seasonal dwellings. However, Table 5 shows that from the information available approximately 600 homes are used as year-round dwellings.

TABLE 5
SEASONAL AND YEAR-ROUND RESIDENTIAL DWELLINGS
NEAR RESERVOIRS IN NEBRASKA
(surface area greater than 150 acres)

Unit	Year	Number of Dwellings				Total
		Seasonal	%	Year-Round	%	
McConaughy(a)	1973	568	80%	142	20%	710
Lewis and Clark	--	NA	--	NA	--	--
Harlan	--	NA	--	NA	--	--
County	--	NA	--	NA	--	--
Swanson	--	NA	--	NA	--	--
Sherman(b)	1982	189	97%	5	3%	194

TABLE 5--Continued

Unit	Year	Number of Dwellings				Total
		Seasonal	%	Year-Round	%	
Minatare(d)	1981	75	67%	37	33%	112
Harry Strunk(e)	1982	95	99%	1	1%	96
Enders(f)	1982	28	97%	1	3%	29
Maloney	--	NA	--	NA	--	--
Hugh Butler(g)	1982	90	100%	0	0%	90
Alice	--	NA	--	NA	--	--
Jeffrey(h)	1982	123	95%	6	5%	129
Midway(i)	1982	61	90%	7	10%	68
Beaver(j)	1982	10	4%	223	96%	233
Gallager Canyon	--	NA	--	NA	--	--
Capitol Beach	--	NA	--	NA	--	--
Plum Creek	--	NA	--	NA	--	--
Ericson(k)	1981	112	96%	5	4%	117
TOTAL	--	2,043	--	577	--	--

- (a) Keith County Comprehensive Plan, p. 34.
- (b) Correspondence with Kenneth W. Clement, October 27, 1981.
- (c) Correspondence with Wendell D. Hudson, September 15, 1981. He noted that the figure of 150 year-round units should be considered as a minimum number as there are probably many more at the lake.
- (d) Correspondence with Marjorie Kleist, January 22, 1982, and Chimney Rock Public Power District, Bayard, Nebraska, November 6, 1982.
- (e) Correspondence with Z. Arlene Sass, January 25, 1982.
- (f) Correspondence with Amelia A. Headrick, January 25, 1982.
- (g) Z. Arlene Sass, January 25, 1982, and telephone conversation with Jim Fuller, January 28, 1982.
- (h) Correspondence with Darryn Gulden, January 28, 1982, and Wendell D. Hudson, September 15, 1981.
- (i) Ibid.

- (j) Telephone conversation with Sherrill Konfrst, February 3, 1982.
 - (k) Kenneth W. Clement, October 27, 1981.
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Future Demand and Supply of Shoreline
Residential Property

Of the thirty-nine reservoirs in Nebraska with surface areas greater than 150 acres, nineteen have some type of shoreline residential development. Table 2 shows that there are over 4,000 residential units at these lakes of which at least five hundred are used year-round. In addition, Table 3 shows that approximately 1,600 units are located on private property. This implies that private developers are providing opportunities for individuals to purchase shoreline property. In addition, year-round use is a significant aspect of this type of development.

Although high interest rates and gasoline prices have reduced the ability of many to purchase shoreline property, as mentioned in Chapter I, the demand for such property (especially lakefront property) apparently is still high. The following interviews present the extent of sales of homes at selected reservoirs.

All available lakefront property at Lake McConaughy has been sold, according to Lula Zierlein of the Goldenrod (Real Estate) Agency in Lewellen. Zierlein mentioned that there are probably 150 to 200 vacant lots currently available around the lake in new subdivisions, but none has

lakefront locations. She estimated that if interest rates were at 10 percent it would take roughly ten years to sell all those lots, based on her past experience with sales at McConaughy. "Lake McConaughy has developed slowly but steadily since its construction in 1941," Zierlein stated. She estimated that vacant lots range in price from \$15,000 to \$35,000.(8)

Janelle Blue, with Gateway Realty in Lexington, said that the demand for lakefront property at Johnson Reservoir would be high if more lots were available. She mentioned the demand for non-lakefront property was quite low. The current market at Johnson ranges from \$25,000 to \$150,000 for a home on a leased lot. High interest rates are the major deterrent to cabin sales, but Blue noted that local loan companies and banks have stopped making loans for cabins at area reservoirs since the cabin owner's lease agreements with the Tri-County expire in the early 1990s.(9)

Carl How, a broker with How Real Estate in Murray, stated that sales at Beaver Lake would definitely increase if interest rates went down. The original developer of the lake sold 1,700 lots in six years after the lake's construction in 1971. How mentioned that the price range at Beaver Lake is from \$50,000 to \$290,000, but all homes in the \$50,000 to \$70,000 range are already sold.(10)

The developers of Capitol Beach, in Lincoln, are planning to add 499 lots near the lake in the near future.

S.E. Copple, president of Commonwealth Savings Company in Lincoln, stated that even with current high interest rates, seven vacant lots were sold at Capitol Beach between October 1981 and January 1982.(11)

Since it is evident that there is an apparent demand for residential shoreline property at several reservoirs in Nebraska, the construction of new surface reservoirs would provide new opportunities for shoreline residential development. Table 6 presents examples of potential reservoir projects in the state as identified by the Nebraska Natural Resources Commission.

TABLE 6
POTENTIAL SURFACE RESERVOIR PROJECTS
IN NEBRASKA

Unit	Counties
Boyd County Pumped Storage Power Project	Boyd
Oliver Dam Recreation Project	Kimball
Cedar Rapids Diversion	Wheeler and Greeley
Willow Creek Dam and Recreation Area	Pierce
Rock Creek Watershed	Lancaster and Saunders
Little Blue Unit	Clay, Nuckolls, and Thayer
Big Sandy Creek Watershed	Adams, Clay, and Nuckolls
Sunbeam Unit	York, Seward, and Saline
Swan Creek Watershed	Saline and Jefferson
Middle Big Nemaha Watershed	Johnson
Plum Creek Reservoir	Dawson
O'Neill Project	Keya Paha
Calamus Dam and Reservoir	Garfield

Source: Status Summary--Potential Projects, Volume 1, State Water Plan Publication No. 301-4, Nebraska Natural Resources Commission, Lincoln, Nebraska, March 1979.

A somewhat dated but interesting study of the potential for development of vacation cabins, cottages, and homesites was done by local soil conservation districts across the state in the late 1960s. Over forty counties were inventoried and rated in terms of development potential based on factors such as climate, scenery, and income level of area residents.

Seventeen counties, primarily in the eastern third of Nebraska, received high ratings for potential summer home development. These included Knox, Cedar, Otoe, Butler, Dixon, Richardson, Cass, Keya Paha, Seward, and Saunders counties.(12)

Summary

Residential shoreline development has been extensive in Nebraska. As shown in Table 2, 4,253 residential units were located at nineteen of the principal reservoirs in the state. Densities vary from five trailers at Gallagher Canyon up to 842 homes at Johnson Reservoir and 850 units at Lake McConaughy. Many of these cabins and trailers were intended for only seasonal use, but, as shown in Table 5, over five hundred are used as year-round dwellings.

Some of the shoreline residential development in Nebraska could lead to environmental and land use conflicts if adequate precautions are not taken. Improper siting of

homes, roads, septic tank systems, etc., can all lead to pollution, erosion, and lack of public access. Therefore, the following chapter identifies the extent of shoreline regulations in the state which affect residential development near reservoirs.

FOOTNOTES

- (1) Ray Bentall and F. Butler Shaffer, Availability and Use of Water in Nebraska, 1975, Nebraska Water Survey Paper Number 48, Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska, June 1979, pp. 20-23.
- (2) Correspondence with Wendell D. Hudson, Chief Draftsman, The Central Nebraska Public Power and Irrigation District, Holdrege, Nebraska, September 15, 1981.
- (3) Keith County Commission, Keith County Comprehensive Plan, Ogallala, Nebraska, September 11, 1974, and correspondence with Arthur Bradley, Keith County Zoning Administrator, Ogallala, Nebraska, February 4, 1982.
- (4) Correspondence with Doris Phillips, Billing Supervisor, Southwest Public Power District, Palisade, Nebraska, January 20, 1982, and with Amelia A. Headrick, Chase County Assessor, Imperial, Nebraska, January 25, 1982.
- (5) Telephone conversation with Lula Zierlein, Real Estate Broker, Goldenrod Agency, Lewellen, Nebraska, February 3, 1982.
- (6) Telephone conversation with Jim Fuller, Administrative Assistant, Recreation and Wayside Areas, Nebraska Game and Parks Commission, Lincoln, Nebraska, January 28, 1982.
- (7) Correspondence with Wendell D. Hudson, September 15, 1981.
- (8) Telephone conversation with Lula Zierlein, February 3, 1982.
- (9) Telephone conversation with Janelle Blue, Broker, Gateway Realty, Lexington, Nebraska, February 3, 1982.

- (10) Telephone conversation with Carl How, Broker, How Real Estate Agency, Murray, Nebraska, February 3, 1982.
- (11) Interview with S.E. Copple, President, Commonwealth Savings Company, Lincoln, Nebraska, February 5, 1982.
- (12) Nebraska Soil and Water Conservation Districts, et. al., Appraisal of Potential for Outdoor Recreational Development, Selected Counties in Nebraska, 1966-1969.

CHAPTER III

REGULATIONS AFFECTING RESIDENTIAL DEVELOPMENT NEAR RESERVOIRS IN NEBRASKA

Introduction

Residential development in shoreline areas of reservoirs in Nebraska is regulated by a variety of federal, state, and local entities. Development regulations originate at the federal level with the U.S. Army Corps of Engineers and the Bureau of Reclamation; at the state level with the Department of Health, Department of Water Resources, Department of Environmental Control, and the Game and Parks Commission; and with irrigation districts, public power districts, and zoning ordinances at the local level. When the wide range of policies represented by these groups is considered, it is easy to understand the uncoordinated and at times haphazard approach to residential regulations near reservoirs in the state.

To follow is a listing of the existing controls at the federal, state, and local level which are related to health, safety, design, and environmental considerations for residential development near reservoir shorelines.

Federal Regulations

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (Corps) manages several reservoirs in Nebraska, primarily in the eastern third of the state. The Corps operates Harlan County Lake in south central Nebraska, Lewis and Clark Lake in the north eastern part of the state, and the Salt Valley lakes near Lincoln. The size of these reservoirs ranges from 32,000 surface-acres at Lewis and Clark Lake to only sixty surface-acres at Yankee Hill Lake near Lincoln.(1)

As noted in Table 3 of Chapter II, Harlan County Lake is the only Corps of Engineers reservoir in the state which has shoreline residential development on public property. Of the 419 homes located at Harlan, 238, or 57 percent, are on Corps property. All are mobile homes and are situated in two concessionaire trailer areas. The project area also included thirty-eight cabins once owned by the Corps, but these have been sold, along with the lots, to private individuals.

Since the early 1960s, the Corps has enforced a policy prohibiting residential development on land which it manages. This policy is based on the intent of the Federal Flood Control Act of 1944 which states

The purpose of all flood control projects is for the public welfare. The private, exclusive use of land by individuals is not to be allowed . . . Human habitable structures may be endangered during the release of floodwaters. Therefore, such structures should be prohibited.(2)

The 238 trailers located at Harlan County Lake were constructed before this policy took effect and, therefore, are allowed to remain or "grandfathered". However, existing policy of the Corps states that all private cabins and trailers will eventually be removed from Corps projects areas.

Water and land areas at Corps projects are maintained for the benefit of the general public. Since the early 1960s, the permanent siting of floating cabins, cottages, and non-transient mobile homes and trailers for private exclusive use at project areas has been discouraged. Recent policy recognizes such uses as a low priority interim use. Present policy stresses procedures for eventual elimination based on regional, project, or site specific considerations. These established procedures are applicable to all new, expanding, or existing developments except floating cabins which are forbidden.(3)

The existing plan of action for the cottage site areas at Harlan County Lake is as follows:

1. No new cottage site areas will be planned or platted.
2. The District shall develop a plan to reconfigure the project boundary to eliminate all project lands within the community area by:
 - a. Replatting and sale of additional lots.
 - b. Transfer road maintenance and underlying fee interest in such rights-of-way to county or township entities for public roads.
 - c. Transfer of interspersed internal green space and/or lands adaptable to community or park use to local entities.(4)

The existing plan of action for the two non-transient trailer parks at Harlan provides for:

. . . continuation of existing private exclusive use of concession trailer parks with compliance of the following conditions:

1. No increase in number of trailer sites will be permitted in respective concession areas.

2. Concessionaires will be required to remove trailer additions and other illegal structures from trailer lots.

3. Compliance with all applicable laws, ordinances, and regulations will be intensified.(5)

Although the Corps of Engineers prohibits construction of or additions to structures on project property, the Kansas City District Engineer was not enforcing this policy at Harlan County Lake in the early 1970s. Residential owners were constructing patios, permanent foundations for trailers, permanent entryways, and permanent outbuildings.(6) Residents in the area argued that no harm was being done by such minor improvements. However, the policy has been enforced in the past few years and most illegal structures have been removed.(7)

Bureau of Reclamation

The Bureau of Reclamation manages several reservoirs in central and western Nebraska. These include Sherman Reservoir in Sherman County, Enders Reservoir in Chase County, Merritt Reservoir near Valentine, Lake Minatare and Lake Alice near Scottsbluff, Swanson Reservoir in Hitchcock County, Box Butte Reservoir near Chadron, and Harry Strunk and Hugh Butler lakes in Frontier County.

Although the Bureau has allowed residential development on project land in the past, a proclamation was issued in 1965 by the Secretary of the Interior announcing a policy of "no new residential development".(8) The policy

also prohibits additions to existing dwellings.

Since that time, all Bureau reservoir shoreline property, including all residential areas, has been regulated by the Nebraska Game and Parks Commission.(9) All regulations regarding residential development have been developed and enforced by the Commission. These will be discussed later in this chapter.

State Regulations

Nebraska Natural Resources Commission

Since 1976, the Natural Resources Commission has been involved in regulating construction in flood plains across the state.(10) As part of the Nebraska Flood Plain Regulation Act, the Commission prohibits construction of any residential dwellings within flood plains of the state.

Home construction will not be permitted within the floodway but may be permitted outside the floodway (within the flood fringe) contingent upon the first floor elevation of the 100-year frequency flood. Basements are prohibited unless certified by a Registered Professional Engineer or other qualified person as being flood proofed.(11)

Local political subdivisions are required to adopt land use regulations which meet at least the minimum standards of the Act. If adequate controls are not adopted, the Commission is to enforce necessary regulations.

Nebraska Department of Health

The Nebraska Department of Health has established minimum standards for private water wells and septic tanks.

Listed below are the rules and regulations which might affect the siting of domestic water wells.

. . . The well shall be located at least 50 feet from any pit, privy, septic tank, or accumulated manure; and at least 100 feet from any cesspool, seepage pit, or any other subsurface disposal system or other known or suspected source of contamination or pollution. A well should be located at least 10 feet from any depression that would retain stagnant water. There shall be no sewer within 10 feet of the well, and any sewer located from 10 to 50 feet of the well shall be constructed so that it is water-tight. . . .(12)

The applicable rules and regulations regarding septic tanks require that:

. . . For three or less bedrooms, an adequate septic tank capacity shall be one thousand gallons. For each additional bedroom two hundred fifty gallons shall be added(13)

The regulations also state that the minimum horizontal distance between a septic tank and any surface waters (under optimum soil conditions) shall be fifty feet; the minimum distance from a dwelling shall be fifteen feet, and only five feet from any property line, easement, or right-of-way. The minimum horizontal distance between the disposal field of a septic tank and the above is the same except a minimum of thirty feet is required near a dwelling. In addition, soil percolation tests are required prior to installation of any septic tank system.

The department does not have a regular inspection program for septic tanks systems, but recommends that owners inspect systems yearly. Septic tank malfunctions are inspected only on a complaint basis. Also, since the above

regulations were not adopted until 1977, many septic tank systems in reservoir areas were already in place and not subject to these new standards.

Nebraska Department of Environmental Control

The Nebraska Department of Environmental Control (DEC) has two requirements which might affect residential development in shoreline areas:

. . . The DEC allows no discharge of sewage from central collection systems into reservoirs. Individual home owners on septic tanks need an individual treatment program approved by the State Health Department.(14)

Harlan County Lake, Beaver Lake near Omaha, and Capitol Beach in Lincoln are the only impoundments of those inventoried in Chapter II that are served by central sewage collection systems. Therefore, the DEC is not greatly involved in the regulation of shoreline development in Nebraska.

Nebraska Game and Parks Commission

The Nebraska Game and Parks Commission is assigned the task of achieving a balanced and well-regulated park and recreation program throughout the state. As part of this responsibility, the Commission has assumed control of residential development on public property at six Bureau of Reclamation projects in the state. These include Enders, Harry Strunk, Minatare, Hugh Butler, Sherman, and Swanson reservoirs. In addition, the Commission regulates all

residential development on public property at Lake McConaughy, as was discussed earlier.

The Commission currently leases 383 cabins at these six lakes in Nebraska. The following regulations are enforced in all of these cabin areas:

No buildings or structures or part thereof shall be erected, constructed, reconstructed, altered, moved or used for any purpose, except in conformance with the standards established herein.

No excavation or topographic change shall be permitted except that required for foundations, utilities, or roads, that would modify or change the scenic beauty of natural hillsides.

All new buildings shall be set in a minimum of ten (10) feet from each side of property line.

All new buildings shall be set back a minimum of forty (40) feet from center of roadway or twenty (20) feet from front of property line, whichever is greater.

All new buildings shall be in a minimum of twenty (20) feet from the rear property boundary line.

Only one single-family dwelling is permitted for each cabin lot.

No new building shall exceed a single story in height as determined from ground level.

Construction of basements in new or existing buildings shall not be permitted.

No new building shall have a floor space less than 300 square feet nor greater than 700 square feet. Additions to existing buildings presently having a floor space of 700 square feet or greater shall not be permitted.

No new building shall be erected with foundation pillars or stilts that exceed 36 inches above ground level. If used, pillars or stilts must be enclosed.

All new buildings shall be constructed of such material as to blend with the natural landscape

(logs, shakes, rough lumber, finish siding, native stone).

Mobile or semi-mobile homes are permitted only in approved mobile home parks.

All new buildings shall employ non-reflective roofing materials.

Paints or stains shall be of earth tones common to the area. Bright, disharmonious colors are prohibited.

All buildings and structures, including fences, shall be maintained in a useable and serviceable condition, or removed. Cabin lots are to be maintained in a clean and orderly condition.

Owner identification and sale signs shall not exceed 2 square feet in size.(15)

According to Commission staff, enforcement of these regulations has been adequate, and no major problems exist at any of these cabin areas.(16)

The Commission presently operates eight concessionaire mobile home areas at Sherman, McConaughy, Swanson, Hugh Butler, Minatare, and Harry Strunk lakes which contain a total of 652 trailers. These areas are leased to private concessionaires who, in turn, lease space to individuals. The lease agreements do not contain any regulations or guidelines regarding lot layout, setbacks, or densities except that trailers must meet minimum state health and safety regulations. Although the Nebraska Department of Health enforces controls in mobile home parks, the standards do not apply to seasonal trailer areas, thus exempting concessionaire trailer areas. Since concessionaires currently receive 98 percent of the revenues from trailer

lease agreements, many trailer areas are very crowded due to concessionaires trying to maximize revenues.

Regional Regulations

Natural Resources Districts

Natural resources districts (NRDs) have no regulations regarding residential development in shoreline areas of the state. Each NRD has the authority to utilize land use controls in a district, upon approval of 75 percent of all voters in the district.(17) To date, this has not been attempted anywhere in Nebraska.

The Central Nebraska Public Power and Irrigation District

The Central Nebraska Public Power and Irrigation District (CNPP&ID), commonly referred to as Tri-County, has twenty-three lakes under its control in southwest Nebraska. Reservoirs with a surface area greater than 150 acres include Lake McConaughy, and Elwood, Midway, Plum Creek, Gallagher Canyon, Johnson, and Jeffrey reservoirs.

Land which is designated for residential development is leased by Tri-County to a Lake Development, Inc. (LDI), which in turn, leases cabins or cabin sites to individuals. Currently, LDIs exist at Johnson, Jeffrey, Midway, McConaughy, and Plum Creek Reservoir and lease land for 883 cabins.(18) Development standards and regulations are included in the lease agreements between the individuals and the LDIs. Below are excerpts from the Johnson Lake

Development, Inc. (JLDI) lease agreement with Tri-County.

. . . No structures shall be placed upon any lots or premises until . . . said structures shall have submitted the plans . . . to JLDI, and said plans have been approved by JLDI in writing. The JLDI shall approve no plans unless the proposed structures or construction shall be sightly, have a concrete slab, foundation or base, as well as have adequate sanitary facilities for the disposal of garbage and other refuse including the disposal of sewage in accordance with all present and future local, state and federal statutes and regulations in existence. All structures or properties now located on said premises . . . shall be kept in a sightly condition and shall not be permitted to become rundown and shall not be abandoned, but shall be removed by JLDI or the sublessee when the structures are no longer used. All noxious weeds shall be destroyed and never allowed to go to seed. All weeds shall be moved and destroyed around cabin areas and within all areas leased to JLDI. No refuse shall be permitted to accumulate hereon, and these lots and all leased premises shall be kept in good husband-like conditions at all times . . . There are designated areas for the purpose of dumping or burying of refuse(19)

Excerpts from the lease agreement between the JLDI and private tenants contain similar regulations:

. . . TENANT agrees to keep as a condition of this lease, the premises in a good and sightly condition, to keep it reasonably mowed at all times, and no refuse shall be permitted to accumulate on said premises, and the premises shall have adequate sanitary facilities as are necessary to protect the health and welfare of the area, and in accord with all rules and regulations of the Sanitation Department of the Department of Health of the State of Nebraska, and the premises shall be at all times in a good husband-like condition . . . TENANT shall have constructed a dwelling . . . within one year after the date of this lease . . . no structure shall be placed upon said premises until the party desiring to build such structure or structures shall have submitted plans thereof to JLDI(20)

The regulations do not place restrictions on densities of dwellings or septic tanks in shoreline areas.

This has contributed to inadequate public access at reservoirs, and potential surface water pollution from septic tank effluent. This will be discussed in more detail in Chapter IV.

Nebraska Public Power District

The Nebraska Public Power District (NPPD) operates Lake Maloney and Sutherland Reservoir in Lincoln County. Since the water level at Sutherland Reservoir fluctuates ten to fifteen feet per year, no residential development has been permitted around it.(21) Development at Lake Maloney, as shown in Table 2 in Chapter II, however, has been quite extensive. Tenants are required to sign a lease agreement with NPPD which includes some of the following provisions:

. . . The leaseholder herein dismissed shall not be deemed to include the exclusive use of such area of said leasehold as may directly front upon the water of said lake. DISTRICT reserves the right to allow the public to make reasonable use of the shoreline of said premises for fishing from said lake . . . Within two years of the date of this lease, there shall be constructed on said premises a dwelling, adequate landscaping, water supply and sanitary facilities, all of such design extent and quality as shall obtain the written approval of DISTRICT . . . Said premises . . . shall at all times have water supply and sanitary facilities to the extent necessary to fully protect the health and welfare of the other residents of the lake area, and of the kind, location and quality complying with all rules and regulations of the Department of Health of the State of Nebraska.(22)

The NPPD also enforces regulations regarding exterior lighting of cabins, noise, use of firearms, storage, signage, and parking. The regulations also require that all construction plans for structures, fences, wells, and

septic tanks must receive the prior written approval of the NPPD.(23)

Although the regulations appear to be quite adequate, lack of cabin maintenance has occurred extensively at Lake Maloney. In addition, surface water pollution from septic tank effluent has also been evident.(24) Apparently, these controls have not been adequately enforced or are not adequate to control pollution and maintenance problems.

Loup Public Power District

Lake North and Lake Babcock, located north of Columbus, are the only impoundments operated by the Loup Public Power District (LPPD). The LPPD prohibits residential development at both lakes in order to maintain public access. No change in policy is expected in the future.(25)

Local Government Regulations

Keith County Zoning and Subdivision Resolution

Keith County, in southwest Nebraska, is one of approximately thirty counties in the state which currently administer land use controls. Development pressures around Lake McConaughy encouraged adoption of a zoning ordinance in 1975 to prevent uncontrolled residential development on the lake shoreline. The Keith County Resolution contains two articles which directly

affect residential development around McConaughy. The Lake Planned Unit Development (LPUD) was formed to ". . .

satisfy the basic needs of . . . (preserving) open spaces, along with lake development, and to prevent the overcrowding of development of land along the lake."(26)

Four "standards" are identified for the LPUD District:

1. Open space shall be developed as Controlled Open Space. The Controlled Open Space must be 35% of the LPUD's total size and must have the same lake frontage (length) as the balance of the LPUD.
2. All roads to the LPUD must lead from a County road and must have not less than 100 ft. of right-of-way . . .
3. The Zoning District will (have) . . . a permitted density of one family unit per acre . . .(and)
4. The applicant shall provide for and establish an organization for the ownership and maintenance of the Controlled Open Space. . . .(27)

The second article of the Keith County Zoning and Subdivision Resolution which pertains to lakeshore development is the Residential-Seasonal District (R-S). The intent of this District is to discourage ". . . any attempt to use or convert seasonal housing to permanent, year-round housing."(28) The restrictions include the use of cabins and mobile homes for seasonal occupancy only (not to exceed six months).

Knox County Development Regulations

Considerable residential development around Lewis and Clark Lake contributed to the development of a zoning ordinance for Knox County in 1976. The Ordinance includes

an Environmental Limitations Overlay (ELO) District which is intended to be applied in areas ". . . because of limiting environmental characteristics . . . or because of the need to protect unique natural areas and resources, such as wetlands and shorelands, from encroachment by unsuitable development. . . ."(29)

The ELO District is also created to

- . . . minimize the destruction or despoilation of unique or important natural features of the environment . . . minimize the expenditure of public monies for services, facilities and improvements
- . . . preserve the natural resources, vegetation and animal life in the area . . . (prevent) soil erosion, slope instability, (and) rapid runoff of water . . . (and) serve to promote and protect the general health, safety, and welfare.(30)

Summary

Residential shoreline development is regulated by a wide variety of units of government in Nebraska. Twelve state and local agencies have controls that may affect residential land use practices near reservoirs. However, some residential development, e.g., the Nebraska Game and Parks Commission concessionaire trailer areas, is regulated very little. In addition, governmental controls apply only to residences on public property. Only the Keith and Knox county zoning ordinances, Nebraska Department of Health, Department of Environmental Control, and the Natural Resources Commission have specific controls which affect private development. However, it is possible that shoreline regulations in Nebraska are inadequate to protect

the reservoir shorelines from land use and environmental conflicts. The following chapter will identify selected examples of such conflicts at five reservoirs across the state.

FOOTNOTES

- (1) Nebraska Department of Water Resources, Lincoln, Nebraska, July 1981.
- (2) Telephone conversation with Rick Noel, Attorney, U.S. Army Corps of Engineers, Civil Section, Management Disposal Branch, Real Estate Division, Missouri River Division Office, Omaha, Nebraska, July 14, 1981.
- (3) U.S. Army Corps of Engineers, Office of the Chief of Engineers, Digest of Water Resources Policies and Authorities, EP 1165-2-1, Washington, D.C., March 27, 1981, p. 16-8.
- (4) U.S. Army Corps of Engineers, Regional Plan for Private Exclusive Use--Harlan County Lake, Civil Works Lake Projects, Missouri River Division Office, Omaha, Nebraska, September 16, 1980, Appendix I, p. D-1.
- (5) Ibid.
- (6) Telephone conversation with Dick McWilliams, Chief of the Recreation Resource Management Branch, U.S. Army Corps of Engineers, Operations Division, Omaha District Office, Omaha, Nebraska, October 6, 1981.
- (7) Telephone conversation with Paul Sweeney, District Conservationist, USDA Soil Conservation Service, Alma, Nebraska, February 2, 1982.
- (8) U.S. Department of the Interior, CFR 43, Part 21, 21.6, 1965.
- (9) Telephone conversation with Bob Kutz, Project Manager, Bureau of Reclamation, Grand Island, Nebraska, July 14, 1981.
- (10) Nebraska Revised Statutes, Sections 2-1506.01 through 2-1506.10, as amended, 1976.
- (11) Ibid.
- (12) Nebraska Department of Health, et. al., Minimum Standards for a Private Water Well in Nebraska, Lincoln, Nebraska, 1972, pp. 3-4.

- (13) Nebraska Department of Environmental Control, Rules and Regulations for the Design, Operation and Maintenance of Septic Tank Systems in Nebraska, Lincoln, Nebraska, December 27, 1977, p. 5-1.
- (14) Telephone conversation with Ken Hassler, Permits and Compliance Supervisor, Nebraska Department of Environmental Control, Lincoln, Nebraska, July 30, 1981.
- (15) Nebraska Game and Parks Commission, Regulations for Private Cabin Areas, Lincoln, Nebraska, no date.
- (16) Telephone conversation with James J. Carney, Chief of Recreation and Wayside Areas, Nebraska Game and Parks Commission, Lincoln, Nebraska, July 30, 1981.
- (17) Nebraska Reissue Revised Statutes of 1943, Sections 2-3244 and 2-3246.
- (18) Correspondence with Wendell D. Hudson, Chief Draftsman, The Central Nebraska Public Power and Irrigation District, Holdrege, Nebraska, September 15, 1981.
- (19) Lease agreement between The Central Nebraska Public Power and Irrigation District of Holdrege, Nebraska and the Johnson Lakes Development, Inc., of Lexington, Nebraska, May 1, 1978.
- (20) Lease agreement between Johnson Lakes Development, Inc., and Tenant, sample copy, no date.
- (21) Telephone conversation with Gary Westphal, Regional Operations Superintendent, Nebraska Public Power District, North Platte, Nebraska, September 3, 1981.
- (22) Lease agreement between Nebraska Public Power District and Tenant, sample copy, no date.
- (23) Nebraska Public Power District, Rules and Regulations for Lake Maloney Residential Lots, North Platte, Nebraska, May 1, 1975.
- (24) Lincoln County Joint Planning Commission, Lincoln County, Nebraska, Comprehensive Plan, North Platte, Nebraska, September 1974, p. 129.
- (25) Telephone conversation with Dwayne Smith, Development Manager, Loup Public Power District, Columbus, Nebraska, July 31, 1981.

- (26) Keith County Joint Planning Commission, Keith County Zoning, Keith County, Nebraska, January 15, 1975, p. 8.
- (27) Ibid., p. 9.
- (28) Ibid., pp. 8-9.
- (29) Knox County Board of Supervisors, et. al., County Development Regulations for Knox County, Nebraska, Knox County, Nebraska, June 1976, p. 23.
- (30) Ibid., p. 13.

CHAPTER IV

SELECTED EXAMPLES OF DEVELOPMENT CONDITIONS AT FIVE NEBRASKA RESERVOIRS

Introduction

Shoreline residential development, while not extensive across the state, exists in varying degrees at the eighteen principal reservoirs identified in Chapter II. This development ranges in size from twenty-nine residences at Enders Reservoir to 850 shoreline dwellings at McConaughy.

Regulation of residential development also differs significantly at these reservoirs, as shown in Chapter III. Tenants at Tri-County lakes are required to follow many rules and regulations regarding construction and use of cabins. In comparison, the Nebraska Game and Parks Commission does not require leaseholders at concessionaire trailer areas to follow many guidelines. Thus, several important land use decisions are delegated to the individual concessionaire.

Due to the diversity of shoreline development and regulations in the state, five reservoirs were examined to identify the types of land use and environmental conflicts that were occurring. The reservoirs were Lewis and Clark Lake, Sherman Reservoir, Harlan County Lake, Lake

McConaughy, and Johnson Reservoir. These were selected on the basis of size, location, residential densities, and reservoir ownership in order to present a wide range of examples of shoreline residential development. Land use and environmental conflicts such as erosion, lack of public access, pollution, and visual blight were the main focus of the following studies.

Selected Reservoirs

Lewis and Clark Lake

Gavins Point Dam, which created Lewis and Clark Lake, was completed in 1957 on the Missouri River in northeast Nebraska. It serves as a mainstem dam for the Pick-Sloan Project for flood control along the Missouri. Lewis and Clark Lake is a U.S. Army Corps of Engineer project and extends twenty-five miles upstream from the dam. The lake covers 32,000 surface-acres and has a shoreline of ninety miles.(1)

As stated in Chapter III, the Corps of Engineers has prohibited residential development at Corps projects since the early 1960s. Therefore, residential development has not occurred on public shoreline property at Lewis and Clark Lake. The "take line" around the lake, that is, the shoreline actually owned and managed by the Corps, extends only a few hundred feet (on the average) from the existing high water mark of the lake. This area has actually decreased to less than a few feet in some areas due to

erosion of the lakeshore. The bluffs of the Missouri River are also situated close to the lake, thus providing excellent views of the lake and surrounding areas. This combination has contributed to extensive residential development on private property around the reservoir.

Fourteen residential areas have been developed on private shoreline property along the Nebraska side of Lewis and Clark. The number of homes in each area is presented in Table 7.

TABLE 7
SHORELINE RESIDENTIAL DEVELOPMENT
AT LEWIS AND CLARK LAKE, 1982

Name	Cabins	Trailers	Total
Hideaway Acres	44	0	44
Mischke's Deep Water Area	9	0	9
Mischke's Cedar Hills Lakeview	4	0	4
Mischke's Lakeview Terrace	3	7	10
Walker's Valley View	63	11	74
Kohles Acres	47	0	47
Bon Homme Subdivision	7	0	7
Devils Nest	19	0	19
Lakeview Heights	6	0	6
Valley View Subdivision	4	0	0
Lake Hills Subdivision	13	3	16
Lakeshore	0	1	1
Autumn Oaks Country Estates	0	0	0
Grandview Estates	0	0	0
TOTAL	219	22	231

Source: Correspondence with Wesley G. Mach, Knox County Assessor, Center, Nebraska, February 16, 1982.

Some of these developments, such as Kohles Acres, are

located on relatively level terrain adjacent to the take line of the lake. Others, such as Walker's Valley View and Lakeview Terrace, are located on the steep terrain of the bluffs. Gravel roads within these developments were constructed on steep slopes and contain gullies from storm water runoff. Some homes in the bluff area are constructed on elevated supports on the downhill side to accommodate the terrain. Erosion is a major problem due to the construction of homes and roads on such steep slopes.

The Devils Nest Development is the largest proposed residential area at Lewis and Clark Lake in Nebraska. The development is a major year-round second home resort complex which began in the late 1960s. The original master plan called for subdivision of 3,000 acres into residential lots to accommodate 15,000 residential units,(2) some of which are shown in Illustration 2, but the original developer encountered financial difficulty and was unable to complete the project. However, in 1981 another investor announced plans to continue the development of the area.(3)

Devils Nest is located along the bluffs of the Missouri River and contains rugged terrain similar to the Lakeview Terrace development mentioned above. Roads at Devils Nest were constructed on very steep inclines and, quite often, did not traverse steep hills but rather ran perpendicular to the grade. Proposed residential lots were likewise located on extremely steep terrain.(4)

Although the development has a central water and sewer system which was owned by the Devils Nest Sanitary Improvement District(5), it was never used due to the small number of residents actually living at the site.(6) Other residential areas along the lake are served by individual septic tank systems.

Phillip Quady, an Environmental Health Scientist for the Nebraska Department of Health's Norfolk office, is aware of only three or four complaints since 1973 concerning water or sewerage facilities in residential areas along Lewis and Clark Lake. Most residents along the lake use cisterns or haul in water for domestic use. However, when lakeshore residents utilize the new rural water system in the area, septic tank malfunctions may occur. Quady foresees problems for sewage absorption systems with inadequate capacities at the lake due to expanded use and overloading of the absorption fields.(7)

Residential construction on steep slopes or impermeable soils is also potential problems in the area. Quady indicated surprise that no additional sewerage problems have occurred along Lewis and Clark Lake due to the shale and chalk formations in the bluff areas. These types of soils can reduce the efficiency of soil absorption systems.(8) It is possible that more sewerage problems exist at the lake but remain unreported. As mentioned in Chapter III, Department of Health officials only inspect

septic tank systems on a complaint basis.

Merle Illian, the USDA Soil Conservation Service District Conservationist for Knox County stated that erosion is a problem in some of the residential areas.(9) Gullies along roads and increased siltation of the lake are the results of environmentally insensitive development at the reservoir. The soils in the shoreline area are very susceptible to erosion, but the SCS cannot require private landowners to use conservation techniques to reduce or prevent erosion.(10)

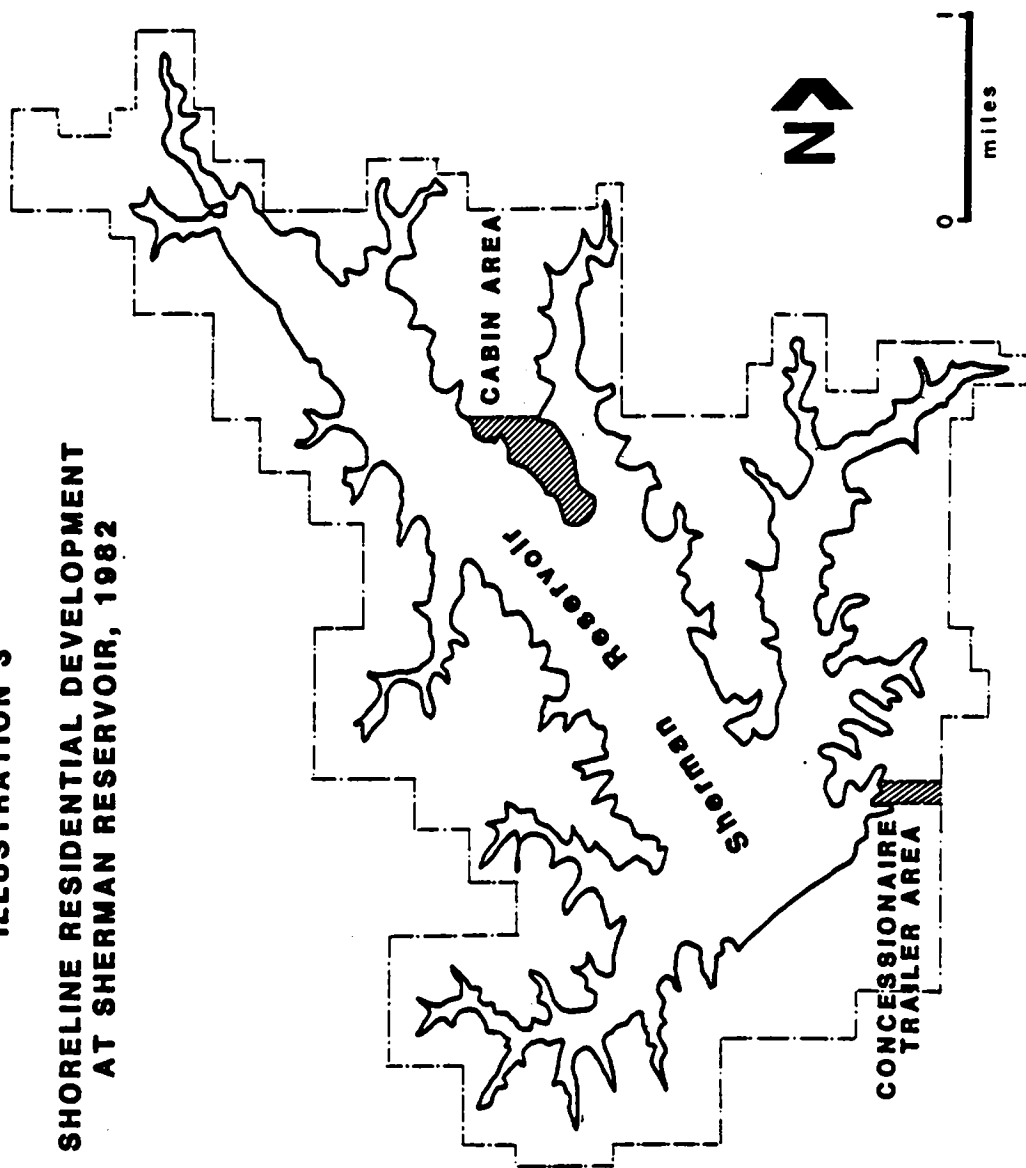
Sherman Reservoir

Sherman Dam, which impounds Sherman Reservoir, was completed by the Bureau of Reclamation in 1962. The reservoir is located approximately five miles northeast of Loup City in central Nebraska and is used primarily for irrigation purposes. When filled to capacity, Sherman Reservoir has an approximate shoreline of sixty-five miles and a surface area of 2,845 acres.(11)

The Bureau designated two areas of the lake project shoreland for development of seasonal cabins and trailers, as shown in Illustration 3. The cabin area is located on three hundred acres on the east side of the reservoir and is operated by the Nebraska Game and Parks Commission. Eighty-nine cabins are leased by the Commission at this site. (See Illustration 4.) As noted in Chapter III, the Commission requires leaseholders to follow several

ILLUSTRATION 3

**SHORELINE RESIDENTIAL DEVELOPMENT
AT SHERMAN RESERVOIR, 1982**



Source: U.S. Department of the Interior, Bureau of Reclamation, Reservoir Area Development Plan, Sherman Reservoir, Niobrara-Lower Platte Projects, Grand Island, Nebraska, March 1964.

regulations regarding construction and occupancy of these homes. Currently, the cabin area appears well maintained and has minimal sanitation problems.(12)

The trailer area at Sherman is also operated by the Commission but is leased to the concessionaire at the Tradewinds Marina located just northeast of the dam.(13) The concessionaire subleases trailer "pads" or lots to individuals who relocate trailers to the site for private use. The concessionaire receives 98 percent of all income produced from these trailer sublease agreements while the Commission receives the remaining 2 percent.(14) Since the Game and Parks Commission and the Department of Health do not regulate seasonal or concessionaire trailer areas, the concessionaire at Sherman has not been prevented from crowding over one hundred mobile homes into the area provided by the Commission.

As stated in Chapter III, very few land use or sanitation regulations exist at the local or state level to regulate trailers in concession areas. The Game and Parks Commission has not required the concessionaire at Sherman Reservoir to follow density guidelines, site layout requirements, off street parking provisions, or septic tank absorption field requirements.

A major sanitation concern of the Commission in the trailer area is the inadequacy of existing septic tank systems. Crowded conditions and inadequate capacities have

contributed to the failure of many systems. Some trailers are only using buried fifty-five gallon metal drums to meet sewage disposal needs. In some cases two trailers are using the same drum. Department of Health officials have received complaints regarding septic tank malfunctions in the trailer area at Sherman, and have required replacement of some systems.(15) However, the department cannot require upgrading of other inadequate systems until complaints are made on an individual basis. The concessionaire has attempted to reduce the potential for septic tank failure by prohibiting the use of all washing machines in the trailer areas so that the amount of waste water that enters the sewage system absorption fields is minimized.(16)

The Bureau of Reclamation prohibits construction of new dwellings or additions to existing structures on all project property, as mentioned in Chapter III. Although this regulation still exists, it has not been enforced in the trailer area at Sherman Reservoir. Many mobile homes have patios, roof overhangs which serve as carports or storage areas, room additions, and observation decks on roof tops. Some of the work appears haphazard, unmaintained, and potentially hazardous due to poor construction techniques and materials.(17) An official of the Nebraska Game and Parks Commission stated that the Commission would like to improve the appearance of the concession area by removing all illegal structures, additions, etc., but the Bureau of

Reclamation has not supported similar efforts in Nebraska courts in the past.(18) Without legal support from the Bureau, the Commission can do very little under current regulations.

Harlan County Lake

Harlan County Lake is located on the Republican River in south central Nebraska. Completed by the Corps of Engineers in 1952, the lake extends about twelve miles upstream with a shoreline of seventy-five miles.(19) Since construction of the lake occurred prior to the change in Corps policy regarding residential development mentioned previously, cabin and mobile home areas were developed on Corps property. Thirty-eight cabin sites exist at two platted cottage areas. These two sites, North Cove and Bone Cove, were owned by the Corps of Engineers but all lots were sold to private individuals in 1965 in accordance with the policy discussed in Chapter III.(20)

The two mobile home areas located on project property are operated by private concessionaires through a lease agreement with the Corps. Patterson Harbor, on the south shore, contains 108 mobile homes while North Shore Marina has 130. The greatest problems at Harlan, regarding residential development on Corps property, exist in these two trailer areas.(21)

Corps of Engineers regulations require that mobile homes located in concessionaire trailer areas must not be

permanently affixed. However, several leaseholders constructed sun decks, patios, and utility sheds which were illegal structures. However, the Corps has actively enforced its policy in the past few years and has required removal of many illegal structures.(22) According to the current Plan of Action mentioned in Chapter III, the Corps is planning to continue enforcement of the removal of illegal structures. Therefore, this problem will probably be alleviated in the near future at Harlan.

A study by the Nebraska Department of Environmental Control, regarding water quality in recreational waters, found that Cook Cove at Harlan County Lake experienced serious water quality degradation in the early 1970s.(23) However, domestic sewage effluent from the village of Alma was found to create the problem and has since been corrected by construction of a sewage treatment plant.

Sewerage problems have also occurred at the concessionaire trailer areas due to undersized or improperly located septic tanks. However, this problem should be alleviated after sewage lagoons are constructed in 1983.(24)

Currently, four private residential developments are located on the reservoir shoreline at Harlan, and range in size from fourteen to fifty-six residential units.(25) Paul Sweeney, the SCS District Conservationist for the area, stated that he was not aware of any erosion problems caused by residential development at Harlan County Lake.(26) Phil

Bailey, the project manager for the lake, was not aware of any pollution problems due to excessive runoff or septic tank effluent from private residential development around Harlan.(27)

Lake McConaughy

Lake McConaughy is located in Keith County about five miles north of Ogallala. With a shoreline of 105 miles, the lake has a surface area of 34,700 acres and stretches over twenty-two miles at capacity. Kingsley Dam, which created the lake, was constructed in 1941 by The Central Nebraska Public Power and Irrigation District (Tri-County).(28)

Development on public and private property has been extensive. Although Tri-County owns and operates Lake McConaughy, it has given regulatory responsibility for residential development to the Nebraska Game and Parks Commission.(29)

The Commission has allowed development on public property in seven leased areas at McConaughy. Cabin leaseholders are required to follow the Game and Parks Commission regulations for cabin areas listed in Chapter III. The trailer areas are operated by private concessionaires--similar to the arrangement at Sherman Reservoir. Since the concessionaires receive 98 percent of the income from these trailer leases, crowding of mobile homes has been evident in many areas. In addition, many trailers are served by undersized septic tanks. The

Commission recently relocated the concessionaire trailer area of Otter Creek and has required installation of systems of adequate size at the new location. Table 8 presents a complete list of residential development on public property at Lake McConaughy.

TABLE 8
RESIDENTIAL SHORELINE DEVELOPMENT ON PUBLIC PROPERTY
AT LAKE MCCONAUGHY, 1982

Area	Cabins	Trailers
Martin Bay/K-4	12	0
North Shore/K-3	18	150
Otter Creek	8	23
Omaha Beach/K-2	12	0
Lakeview	6	130
K-1	126	0
Kingsley Lodge Area	10	15
TOTAL	192	318

Source: Telephone conversation with Jim Fuller, Administrative Assistant, Recreation and Wayside Areas, Nebraska Game and Parks Commission, Lincoln, Nebraska, February 9, 1982.

It has been the policy of the Commission to not enlarge or establish any new residential sites at Lake McConaughy so that open and unobstructed areas around the lake are preserved.(30) This has contributed to extensive development on private property near the lake. The shoreline area currently has fifty-seven private subdivisions platted. These areas contain a total of 1,526 lots, 339 of which have existing housing units.(31) As

shown in Table 5 in Chapter II, 20 percent of these homes are year-round residences.

Not all of this development at Lake McConaughy has been sensitive to the surrounding environment. The Keith County Comprehensive Plan states

. . . Lots (at Lake McConaughy) are basically unimproved except for rough street grading. Sewer, water and paved streets are non-existent. Many areas have a mixture of mobile and permanent structures. The appearance of the mobile units suggests that most units were "used units" brought to the lake as a low cost cabin. The appearance then, of most developed areas, approaches that of a rural slum. With a lack of landscaping, the projects with mobile units in them, especially detract from the aesthetic qualities of the lake. . . .(32)

The Plan identified other existing problems with residential development such as crowding of units-- especially trailers, poor access due to dead end roads, lack of adequate water supply, lack of a street address system, substantial fire potential, construction on steep grades, and long response time for fire and police protection.

The Region 19 Comprehensive Water and Sewer Plan, developed by the Nebraska Department of Economic Development in 1972, stated that

. . . the developed areas along the lake rely on individual wells for water supply and individual septic tanks or cesspools for sewage disposal. The extensive use of these types of facilities by vacationers and local residents has developed into a significant pollution threat to the lake area(s).(33)

Lester Peterson, an Environmental Health Scientist at the North Platte office of the Nebraska Department of Health, stated that the biggest problem with septic tanks in

shoreline areas (such as around McConaughy) is ". . . (the septic tanks) are often undersized since they were designed for vacation use only, and now are utilized as year-round facilities."(34)

Johnson Reservoir

Johnson Reservoir, located ten miles southwest of Lexington in Dawson and Gosper Counties, was completed in 1941 as part of the Tri-County Project. The reservoir has a surface area of 2,600 acres, a shoreline of eighteen miles, and is owned and operated by The Central Nebraska Public Power and Irrigation District (Tri-County) in Holdrege.(35)

The shoreline of the reservoir has experienced extensive residential development, especially in light of its relatively small size. As of 1979, 678 residences were located on Tri-County lakeshore property and leased to private individuals by the Johnson Lake Development, Inc. (JLDI), mentioned in Chapter III. An additional 164 cabins and mobile homes were located on private shoreline property.

Residential development at Johnson is located primarily in a single ring of small, contiguous lots surrounding the lake. Since all available lakefront property has been sold or leased, private developers have constructed some lots (approximately ten thus far) in a second or outer ring of development.(36) A method of increasing shoreline development potential at Johnson has

been to dredge artificial coves which create new lakefront areas. Over one hundred shoreline lots have been developed by this technique.

Since most of the shoreline has been platted for residential use, public access to the reservoir is very limited. The Game and Parks Commission has developed two public use areas at Johnson, but no other public access points exist along the eighteen miles of shoreline. (See Illustration 5.)

Although the Commission's public use areas are served by public water and sewer systems, the residential areas rely on individual wells for water supply, and individual septic tanks and cesspools for sewage disposal. Leaseholders with JLDI are required to

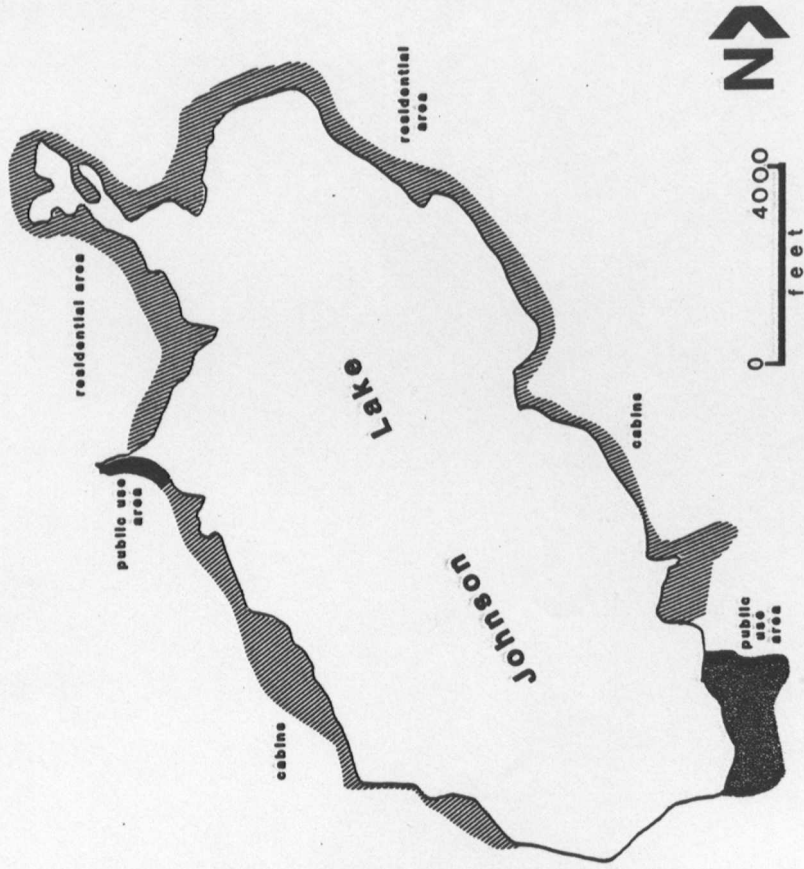
. . . have adequate sanitary facilities as are necessary to protect the health and welfare of the area, and in accord with all rules and regulations of the Sanitation Department of the Department of Health of the State of Nebraska(37)

Because of the large number of homes located along the Johnson Reservoir shoreline, pollution from septic tank effluent is a potentially significant problem. The Water and Sewer Plan for Region 16 states

The extensive use of these types of individual facilities (septic tanks) by seasonal dwelling units (at Johnson) will result in a severe pollution threat to the lake areas.(38)

As mentioned in Chapter III, the Nebraska Department of Health requires a fifty foot setback of septic tanks from surface waters. However, no standards are given regarding

ILLUSTRATION 5
SHORELINE RESIDENTIAL DEVELOPMENT AT JOHNSON LAKE



Source: The Central Nebraska Public Power and Irrigation District, Holdrege, Nebraska, 1982.

minimum absorption field areas, minimum setbacks between individual septic tanks, or guidelines for reducing the potential for ground water pollution from septic tank effluent.

Lester Peterson, with the Nebraska Department of Health's North Platte office, stated that many septic tank absorption fields at Johnson are much too small to handle current demands, but no complaints of septic tank pollution have been filed in the past few years. Peterson attributes the lack of complaints to the "... increased awareness of potential pollution problems from overuse of undersized septic tanks and absorption fields." He mentioned that shoreline residents have been taking additional precautions--such as pumping septic tanks more frequently.(39)

Summary

Residential development at the five lakes examined has, in certain instances, created some of the following impacts:

1. Erosion - The shorelines of Lewis and Clark Lake and Lake McConaughy are both experiencing erosion problems due to residential development. The construction of homes and roads on steep slopes is contributing to serious runoff and soil loss problems. Hillsides and road shoulders are eroding due to inappropriate site selection and/or maintenance procedures.

2. Lack of Public Access - This is apparent at Johnson Reservoir and Lake McConaughy. Not only does this create exclusion of public use, but it also detracts from the visual appearance of the lake by eliminating potentially scenic views for public enjoyment.

3. Pollution - Surface water pollution from septic tank effluent is a potential problem at all five lakes, but especially at Sherman, Johnson, and McConaughy. Extensive development in the shoreline areas of these lakes, combined with a lack of public sewage disposal, may create health hazards in the future.

4. Visual Blight - Blight is a problem at Sherman and McConaughy. The concession trailer areas at both lakes have been described as "rural slums" due to appearance, lack of maintenance, and crowding of trailers.

Many of the negative impacts listed above may have been prevented through proper planning and implementation procedures. For example, the poor condition of many Game and Parks Commission concessionaire trailer areas may have been prevented if adequate controls had been included in lease agreements between the concessionaire and the Commission. As it stands now, the concessionaires are inadvertently "encouraged" to crowd mobile homes together since they receive 98 percent of all revenues generated by these leases. In addition, the ring development of Johnson Reservoir may have been averted if Tri-County had been more

sensitive to public access concerns and potential pollution problems from crowding of septic tanks.

Since it is evident that present residential shoreline regulations are at times inadequate, Chapter V presents an inventory of approaches used in other states near Nebraska which might be appropriate for consideration in establishing policy in this state.

FOOTNOTES

- (1) U.S. Army Corps of Engineers, "Lewis and Clark Lake," Brochure, (Washington, D.C.: U.S. Government Printing Office), May 1977.
- (2) Knox County Board of Supervisors, Knox County Basic Development Plan, Center, Nebraska, June 1972, p. 33.
- (3) Lincoln Journal, "California Developer Promises Revitalization of Devils Nest Development," Lincoln, Nebraska, July 6, 1981.
- (4) Site inspection, August 23, 1981.
- (5) Lincoln Journal, "Devils Nest Area Farmers Happy about Water Plans," Lincoln, Nebraska, August 1, 1981.
- (6) Interview with John Alloway, formerly sales office manager with Devils Nest Development Company, Lincoln, Nebraska, September 16, 1981.
- (7) Telephone conversation with Phillip Quady, Environmental Health Scientist, Nebraska Department of Health, Norfolk office, Norfolk, Nebraska, February 2, 1982.
- (8) Ibid.
- (9) Telephone conversation with Merle Illian, District Conservationist, USDA Soil Conservation Service, Creighton, Nebraska, February 2, 1982.
- (10) Ibid.
- (11) U.S. Department of the Interior, Bureau of Reclamation, Reservoir Area Development Plan, Sherman Reservoir, Nebraska, Region VII, Niobrara-Lower Platte Projects, Grand Island, Nebraska, March 1964, p. 1.
- (12) Site inspection, August 21, 1981, and telephone interview with James J. Carney, Chief of Recreation and Wayside Areas, Nebraska Game and Parks Commission, Lincoln, Nebraska, July 30, 1981.
- (13) Telephone interview with James J. Carney, January 21, 1982.
- (14) Ibid.

- (15) Telephone interview with James J. Carney, July 30, 1981.
- (16) Telephone interview with Roy Wooden, Owner and Operator of Tradewinds Marina, Loup City, Nebraska, March 9, 1982.
- (17) Site inspection, August 21, 1981.
- (18) James J. Carney, January 21, 1982.
- (19) U.S. Army Corps of Engineers, "Harlan County Lake, Nebraska," pamphlet, Kansas City District, Kansas City, Missouri, No Date.
- (20) U.S. Army Corps of Engineers, Regional Plan for Private Exclusive Use--Harlan County Lake, Civil Works Lake Project, Missouri River Division, Omaha, Nebraska, September 10, 1980, Appendix I, p. D-1.
- (21) Interview with Richard Badders, Realty Specialist, Management and Disposal Branch, Real Estate Division, Missouri River Division, U.S. Army Corps of Engineers, Omaha, Nebraska, October 8, 1981.
- (22) Telephone interview with Paul Sweeney, District Conservationist, USDA Soil Conservation Service, Alma, Nebraska, February 2, 1982.
- (23) Ralph Langemeier, et. al., Bacteriological Survey of Selected Recreational Waters in Nebraska from May-September, 1971, Nebraska Department of Environmental Control, Lincoln, Nebraska, November 1971, p. 4.
- (24) Telephone interview with Phil Bailey, Project Manager, Harlan County Reservoir, Republican City, Nebraska, January 25, 1982.
- (25) Correspondence with Floyd M. Schippert, Harlan County Assessor, Alma, Nebraska, February 19, 1982.
- (26) Paul Sweeney, February 2, 1982.
- (27) Phil Bailey, January 25, 1982.
- (28) Nebraska Game and Parks Commission, Lake McConaughy State Recreation Area Plan, Lincoln, Nebraska, January 1975, p. 2.
- (29) Correspondence with Wendell D. Hudson, Chief Draftsman, The Central Nebraska Public Power and Irrigation District, Holdrege, Nebraska, September 15, 1981.

- (30) Ibid.
- (31) Correspondence with Arthur Bradley, Keith County Zoning Administrator, Ogallala, Nebraska, February 4, 1982.
- (32) Keith County Commissioners, Keith County Comprehensive Plan, Ogallala, Nebraska, September 11, 1974, p. 34.
- (33) Nebraska Department of Economic Development, et. al., Region 19 Comprehensive Water and Sewer Plan, Lincoln, Nebraska, 1972, p. VII-90.
- (34) Telephone interview with Lester Peterson, Environmental Health Scientist, Nebraska Department of Health, North Platte office, North Platte, Nebraska, February 4, 1982.
- (35) Nebraska Department of Water Resources, 1981.
- (36) Site inspection, August 21, 1981.
- (37) Nebraska Department of Economic Development, et. al., Region 16 Comprehensive Water and Sewer Plan, Lincoln, Nebraska, 1972, p. VII-64.
- (38) Ibid.
- (39) Lester Peterson, February 4, 1982.

CHAPTER V

SHORELINE REGULATIONS IN OTHER MIDWEST STATES

Introduction

The purpose of this chapter is to present the results of an analysis of controls used in six midwest states to regulate residential development near natural and man-made lakes. The states were Wisconsin, Minnesota, South Dakota, Iowa, Kansas, and Oklahoma. Although many other states, such as Maine, Washington, Vermont, Michigan, and Montana, have shoreland programs(1), the inventory was limited to midwestern states in order to present the current scope of regulations in the region and to examine cases more likely to be relevant to Nebraska.

Reservoirs as well as natural lakes were considered in this analysis. No attempt was made to consider regulations in these states pertaining to the shorelines of rivers, streams, gravel pits, or areas of high water tables such as wetlands.

State Shoreline Programs

Kansas

The first comprehensive state shoreline program enacted into law was in Kansas in 1963.(2) The Kansas Legislature authorized counties to establish "park

districts" and allowed regulation of private lands near lakes within such districts. Private land regulation was to occur in the following manner:

If a lake containing more than three hundred (300) acres is established within the (park) district, the board is authorized to adopt zoning regulations to restrict and regulate lands surrounding such lake within an area of two hundred (200) yards from the nearest point of the shoreline of the lake established by the board. No improvements other than farm improvements may be made within two hundred (200) yards of the nearest point of the shoreline of the lake, in any case, without approval of the park district board. No plats of land which include property located within two hundred (200) yards of the nearest point of the established shoreline of the lake shall be approved by the board of county commissioners.(3)

Although the legislature granted broad land use control authority to the local board of county commissioners, it gave no guidance concerning standards to govern the approval of improvements along shorelines.

In 1970 Kansas began a rigorous program to regulate and control development around all federal and state operated reservoirs. The Kansas Sanitation Zone Law was created to

. . . regulate and control development of areas of the state surrounding certain impoundments of water to prevent pollution of such impoundments, to assure sound and economical development and maintenance of healthful and sanitary conditions so that the state will realize maximum benefits therefrom, and the health, safety and well-being of the people of the state will be protected.(4)

Sanitation zones are established around reservoirs under the jurisdiction of the Kansas Department of Health and Environment. The zones contain land within three

miles of the shoreline of an existing or proposed state or federal reservoir, with a surface area of one hundred acres or more. The zone cannot include any area in an incorporated city. Also, no area downstream from a dam site of a reservoir can be included in the sanitation zone. Areas exempted from regulation include public lands owned by the state or federal government, lots containing more than three acres that are used as building sites for single family dwellings, or land used solely for agricultural purposes.(5)

If property within a sanitation zone is to be subdivided into more than ten lots, copies of the proposed plat must be submitted to the sanitation officer (usually the county engineer). A copy of an engineering report, which includes the plans and cost estimates for providing water, sewerage, and refuse service, must also be provided. This information is then forwarded to the Kansas Department of Health and Environment for review and approval.

The Sanitation Zone Law states: ". . . The state board of health is hereby authorized to adopt rules and regulations fixing minimum standards for the control of sanitation in water supply, sewage disposal and refuse disposal upon property located within sanitation zones established under the provisions of this act."(6)

However, the law does not contain guidelines regarding lot

SANITATION ZONES AROUND SELECTED RESERVOIRS IN KANSAS



size, slope restrictions, setbacks, etc.

Specific standards are given for the storing and disposing of refuse, disposal of sewage, and water supply requirements. The refuse standards include such provisions as ". . . Trash shall be stored in metal or plastic containers of ample size provided with tight-fitting rings . . ."(7) The water and sewer standards consist of minimum capacities, location restrictions, material specifications, and other engineering requirements.

Twenty-seven reservoir sanitation zones currently exist in the state of Kansas. An official with the Kansas Department of Health and Environment noted that ". . . (the Kansas Sanitation Zone Law), while not perfect, is functioning satisfactorily within the framework of reasonable cost effectiveness."(8)

Wisconsin

The Wisconsin Legislature passed the Water Resources Act in 1966 authorizing a broad and detailed shoreland regulation program.(9) All counties in Wisconsin are required to adopt shoreland ordinances ". . . approved by the Department of Natural Resources (or submit to direct regulation by the department) applicable to all lands in unincorporated areas within a strip 1,000 feet wide around lakes. . . ."(10)

The law defines the purposes of regulations enacted

for shoreland protection to ". . . further the maintenance of safe and healthful conditions; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses and reserve shore cover and natural beauty. . . ." (11)

The model shoreland protection ordinance drafted by the Wisconsin Department of Natural Resources presents the following types of regulations required in a county shoreland ordinance:

1. Regulating the location, installation, and operation of septic tank use;
2. Limiting structures to those areas where soil and geologic conditions will provide a safe foundation;
3. Regulating well installation and location;
4. Requiring setbacks between septic tank and soil absorption systems from lakes and other watercourses;
5. Establishing minimum lot sizes to provide adequate area for private sewage disposal facilities;
6. Regulating the use of septic tanks and soil absorption systems to protect the public health, safety, and general welfare;
7. Requiring alternative methods of sewage disposal where conditions make soil absorption methods unsuitable;
8. Controlling filling and grading to prevent serious erosion;
9. Preserving wetlands and other fish and aquatic habitat;
10. Regulating pollution sources;

11. Controlling shoreline alterations, dredging and lagooning;
12. Separating conflicting land uses;
13. Prohibiting certain uses detrimental to the shoreland area;
14. Setting minimum lot sizes and widths;
15. Regulating side yards and building setbacks from roadways and waterways;
16. Requiring the platting of subdivisions;
17. Restricting the removal of natural shoreland cover;
18. Preventing shoreline encroachment by structures;
19. Controlling shoreland excavation and other earth moving activities;
20. Regulating the use and placement of boathouses and other structures; (and)
21. Controlling the use and placement of signs.(12)

Three zoning districts are to be established to assist in carrying out the above regulations: 1) Conservancy; 2) Recreation-Residential; and 3) General Purpose. These shoreland zoning districts are superimposed upon any existing zoning districts in the area.

The conservancy district includes ". . . all shorelands designated as swamps or marshes on the United States Geological Survey Quadrangle map sheets."(13) The activities and land uses allowed in this district include forestry, hunting and fishing, preserves, paths, and parks. The only buildings allowed are non-residential structures ". . . used solely in conjunction with the raising of

waterfowl, minnows, and other similar lowland animals, fowl or fish. . . ."(14)

The recreation-residential district allows the uses permitted in the conservancy district, single-family dwellings, and other land uses by special exception permits. These include hotels, resorts, motels, restaurants, dinner clubs, taverns, private clubs, philanthropic or educational institutions, recreational camps and campgrounds, gift and specialty shops, marinas, fish farms, boathouses, forest industries, and mobile home parks and travel trailer parks.

The restrictions applied to mobile home parks include the following:

1. The minimum lot size of a mobile home park shall be five (5) acres;
2. The maximum number of mobile homes shall be ten (10) per acre;
3. Minimum dimensions of a mobile home site shall be fifty (50) feet wide by eighty-five (85) feet long;
4. All drives, parking areas and walkways shall be hard surfaced;
5. . . . there shall be a minimum setback of forty (40) feet from all other exterior lot lines;
6. No mobile home site shall be rented for a period of less than thirty (30) days;
7. Each mobile home site shall be separated from other mobile home sites by a yard not less than fifteen (15) feet wide;
8. There shall be two (2) surfaced automobile parking spaces for each mobile home;
9. Unless adequately screened by existing vegetative cover, the mobile home park shall be screened by:

A temporary planting of fast growing material. . .; (and)

10. Any mobile home site shall not have individual on-site soil absorption sewage disposal systems unless it meets the minimum lot size (approximately 20,000 square feet).(15)

Commercial, agricultural, residential, forestry, and recreation uses are permitted within the general purpose district. However, restrictions include the requirement that ". . . barnyards, feedlots, etc., shall be at least 100 feet from any navigable water."

The shoreline of a lake need not include all three zoning districts, as it is possible that the area would be zoned completely as a general purpose district or as only a recreation-residential district.

Significant land use regulations applicable to all three zoning districts include:

1. Setbacks of buildings and other structures from the waterline (are seventy-five feet) except piers, marinas, boathouses and similar uses;
2. Restriction of tree-cutting in a strip thirty-five feet wide along the water's edge. . . The width of the strip within which tree-cutting is restricted may be increased for bodies of water having unique characteristics because of outstanding fish and aquatic life, shore cover, natural beauty or ecological attributes;
3. Allowance of filling, grading, lagooning and dredging in many areas only by special exception permit by the board of adjustment. . .; (and)
4. Specification of minimum dimensions of lots (for lots not served by public sanitary sewer, the minimum lot area is 20,000 square feet and minimum lot width is one hundred feet). . . This minimum may be increased for certain soil conditions. . . Cluster residential development

and planned unit developments are allowed, but it is required that the siting of structures and the deed restrictions on use of common areas be such as to preserve the ground cover of the shoreland and the scenic beauty of the navigable water and prevent erosion and be consistent with other policies of the act.(16)

The sanitary provisions of the model shoreland ordinance include detailed requirements concerning water supply and disposal of sewage and solid waste. Restrictions on the location of septic tanks state ". . . septic tanks will be located (no closer than) 10 feet from any building used for human occupancy; (no closer than) 10 feet of a lot line . . . or on land where slopes are 12 percent or more."(17)

The subdivision provisions of the model shoreland ordinance require that the division of land into three or more lots must comply with the provisions of the act. This includes the requirement that public access areas at least sixty feet wide must be provided at one-half mile intervals along the lakeshore.(18)

Kusler noted that several important shoreland sources of indirect pollutants are not covered by Wisconsin's Model Shoreland Ordinance, including sediment from agricultural uses, pesticides, fertilizer, and storm water runoff.(19) Kusler stated, however, that the overall success of the program has been impressive.

South Dakota

The state of South Dakota does not have a

comprehensive plan or regulation program for shoreline development near lakes or reservoirs. However, the Department of Game, Fish and Parks issues permits and leases for seasonal cabins and mobile homes--similar to the process used by the Nebraska Game and Parks Commission as stated in Chapter III.

Three types of permits or lease agreements are used: 1) Summer-Home Permits; 2) Seasonal Trailer Permits; and 3) Concessionaire Summer Trailer Home Leases. The Summer-Home Permit is issued for the purpose of maintaining a summer home residence only. The leaseholder is responsible for providing all access roads, maintaining a sewage disposal system in accordance with state regulations, and complying with ". . . the regulations of the Department and all state, county and municipal laws, ordinances or regulations which are applicable to the area covered by this permit, particularly, but not limited to, those pertaining to fire, sanitation, game and fish. . . ." The permit also states that ". . . the Department reserves for public use the right to travel across the frontage of the premises where the same borders on public waters" (20)

The Seasonal Trailer Permit is very similar to the Summer-Home Permit with the exception that ". . . The trailer shall not be on a permanent foundation nor will any closed-in additions to the trailer be permitted. . .

Temporary decks and sun roofs will be permitted with written permission. . . ."(21)

The Summer Trailer Home Lease is issued when trailers are managed by a concessionaire. The lease agreement includes the following general statements:

. . . Keep the lot and trailer in good condition
. . . (do) not make any additions or modifications to the trailer without permission, (and do) not alter the terrain, make excavations, cultivate the soil or drill any holes . . . The size of the trailer shall not exceed 70 feet in length(22)

Robert Hanten, an official with the South Dakota Game, Fish and Parks Department, stated that although the State Health Department requires septic tanks to be set back one hundred feet from the shoreline of a lake, more controls (such as a regulated buffer zone) are needed to protect lakes from pollution from septic tank effluent. The State tried to enact statutes to regulate lakeshore and streambank development, but was not successful. Hanten stated that this attempt probably failed because the people of South Dakota ". . . don't want the government on their back."(23)

Due to the lack of state controls on shoreland development, the zoning ordinance of Marshall County, in northeast South Dakota, has included some specific regulations pertaining to development near lakes. A minimum setback of fifty feet from the high water mark of a lake is required along with side yard minimum requirements of eight feet. Restrictions on shoreland development have also been

established in Day and Roberts counties.(24)

Some shoreland development in the state, specifically cabins, is scheduled to be removed in the near future due to the lack of public use areas at federal and state installations. For example, all cabins at Custer State Park are to be removed by 1983. Although this policy has met tremendous opposition among area residents and in the State Legislature, it is expected that other cabin developments controlled by the state may also be scheduled for removal, according to Hanten.(25)

Oklahoma

In 1971, the Oklahoma legislature authorized counties to establish lake area planning and zoning commissions to regulate land uses within three miles of certain reservoirs.(26) The act states:

. . . in any county containing all or any part of a reservoir or reservoirs constructed by the United States Army Corps of Engineers or by the Grand River Dam Authority, such county is hereby granted authority, at the descretion of the board of county commissioners, to establish zoning regulations, a building code and construction codes, and a housing code. . . In counties in which a Lake Area Planning and Zoning Commission is authorized as provided above, said commission may be created by the Board of County Commissioners of said counties as provided in this act and said commission may exercise all the powers and authority hereinafter provided for City-County Planning and Zoning Commissions. The jurisdiction of any such Lake Area Planning and Zoning Commission is limited to a three mile perimeter from the normal elevation lake shoreline of any such lake. . . .(27)

Prior to the enactment of this legislation, the

Oklahoma State Board of Health had adopted rules and regulations "... to protect the purity and freedom from contamination of waters in reservoirs of this State, in order to protect and conserve public health."(28) These included specific guidelines and restrictions for water supply and sewage disposal systems of cottages and concessions in shoreland areas. These regulations are still enforced by the state.

Minnesota

The Minnesota Legislature passed the Shoreland Management Act in 1969, requiring each county to adopt a shoreline management ordinance.(29) The intent of the act was "... to provide local units of government with minimal dimensional and performance standards in order to protect and enhance the quality of ... surface waters and conserve the economic and natural resource values of the shorelands of public waters."(30) The Minnesota law is very similar to the Wisconsin act, except that the Minnesota Shoreland Management Act also applies to land within municipalities as well as in unincorporated areas.

The shoreland management program is based upon a classification of all public waters, by the Commissioner of Conservation, into four groups: 1) Natural Environment Lakes; 2) Recreation Development Lakes; 3) General Development Lakes; and 4) Critical Lakes. These various classifications have unique management goals and objectives:

- (aa) Natural Environment Lakes and Streams: to preserve and enhance high quality waters by protecting them from pollution and to protect shorelands of waters which are unsuitable for development; to maintain a low density of development; and to maintain high standards of quality for permitted development.
- (bb) Recreational Development Lakes: to provide management policies reasonably consistent with existing development and use; to provide for the beneficial use of public waters by the general public, as well as the riparian owners; to provide a balance between the lake resource and lake use; to provide for a multiplicity of lake uses; and to protect areas unsuitable for residential and commercial uses from development.
- (cc) General Development Lakes and Streams: to provide minimum regulations of areas presently developed as high density, multiple use areas; and to provide guidance for future growth of commercial and industrial establishments which require locations on public waters.
- (dd) Critical Lakes: to provide a more restrictive set of standards for badly deteriorated lakes which cannot be reasonably managed in any of the public waters classes defined above. These lakes, designated by the Commissioner, shall be studied in further detail to determine appropriate standards for shoreland development for each individual lake. Until such studies are completed, these lakes shall be subject to the standards applied to Natural Environment Lakes and Streams.(31)

These various classifications of lakes utilize different development standards in order to achieve adequate levels of resource protection. Minimum lot dimensions apply to each category as shown in Table 9.

The model shoreland protection ordinance provides for four land use zoning districts: 1) Special Protection; 2.) Residential-Recreational; 3) Commercial-Recreational;

TABLE 9
DEVELOPMENT STANDARDS FOR SHORELINE AREAS
OF LAKES IN MINNESOTA

Categories	Critical Lakes	Natural Environment Lakes	Recreational Development Lakes	General Development Lakes
<u>Served by Public Sewer</u>				
Lot area (square feet)	40,000	40,000	20,000	15,000
Setback for dwelling from ordinary high water mark (feet)	150	150	75	50
Lot width at building line (feet)	125	125	75	75
<u>Not Served by Public Sewer</u>				
Lot area (square feet)	80,000	80,000	40,000	20,000
Setback for dwelling from ordinary high water mark (feet)	200	200	100	75
Lot width at building line (feet)	200	200	150	100
Setback for soil absorption systems from ordinary high water mark (feet)	150	150	75	50

Source: Minn. Reg. Cons. 70, 1970

and 4) General Use. The Special Protection district designation is given to areas unsuitable for development due to wet soils (wetlands), steep slopes, large areas of exposed bedrock, or other unique natural or biological characteristics. Parks, golf courses, hiking and riding trails, wildlife preserves, etc., are allowed in such districts.

Residential-Recreation districts are established ". . . to reserve areas suitable for residential development from encroachment by commercial and industrial establishments." Permitted uses include single and multi-family seasonal or year-round residences as well as mobile home parks. However, the size of each mobile home site must be at least four thousand square feet and must be connected to a centralized sewage disposal facility approved by the state, unless the lot dimensions meet the provisions stated in Table 9. Commercial-Recreation districts allow the uses in the Residential-Recreation district as well as motels, hotels, restaurants, etc. The General Use district allows residential, commercial, and certain industrial uses.

Iowa

The State of Iowa has no statewide controls on

lakeshore development. Therefore, regulation of such development has only occurred at the county level. This arrangement is considered far from ideal by state officials. The State Superintendent of Parks said, ". . . If there's no county zoning ordinance (to regulate shoreland development), we're in trouble."(32)

Officials in Johnson County, which includes Iowa City in east central Iowa, are considering adopting more restrictive land use controls for the shoreline of Coralville Reservoir--an area encountering pressures for both residential development and preservation of the shoreland's natural beauty. Densities of one unit per five acres in locations designated as "growth centers", and one unit per twenty acres in "future growth areas" are being considered.(33) It appears that this proposal is the most comprehensive program being attempted in the state regarding shoreland development regulation.

Analysis of Programs

Scope of Regulated Territory

It is apparent that the range of regulations in these five states varies a great deal. Although the states of Iowa and South Dakota have not established comprehensive state shoreline protection programs, the other states examined do rely upon such techniques. Wisconsin and Minnesota both specify a regulatory strip of land one thousand feet wide around regulated lakes. All

public lakes greater than twenty-five surface-acres in size are regulated in Minnesota while only lakes in unincorporated areas are controlled in Wisconsin. Kansas and Oklahoma can regulate a three mile wide band of land around certain lakes. In Kansas, all state and federal reservoirs exceeding one hundred surface-acres are subject to regulation unless they are within incorporated areas or downstream from a dam site. Oklahoma allows regulation of land only around Corps of Engineers or Grand River Dam lakes.

It is important to note the variation which exists in determining the lakeside boundary of the regulated area. Minnesota and Wisconsin designate this boundary as the "normal high water mark of a lake", defined as that mark delineating the highest water level which has been maintained for a sufficient period of time to leave evidence upon the landscape. The Kansas program draws the lakeside boundary at the "water line of the conservation pool". The Oklahoma regulation fixes the lakeside boundary at the "normal elevation lake shoreline".

The precision of stating this boundary will certainly be significant, especially for lakes which have fluctuating water levels. Uncertainty of the lakeside boundary will create ambiguity of the landward boundary. In addition, minimum setback regulations would become difficult to administer if boundaries are unclear.

Regulatory Techniques

Zoning appears to be the most widely used technique to regulate residential development in the states inventoried. Wisconsin and Minnesota allow counties to establish several zoning classifications which range from severely restricting development to allowing industrial development in certain shoreline areas. Oklahoma and Kansas allow zoning to occur, but do not present specific classifications or guidelines for local governments to follow. South Dakota and Iowa rely upon the zoning authority of individual counties to control development.

Setbacks and minimum lot sizes are also important elements in the shoreline protection efforts of these states. Wisconsin and Minnesota present the most extensive requirements for location of structures and minimum lot sizes. Kansas also identifies specific guidelines although they primarily deal with the placement of septic tanks.

Wisconsin, Minnesota, Kansas, and Oklahoma require state or local officials to at least consider the establishment of controls and shoreline development of some lakes in the respective states. South Dakota's permit system provides state officials a means of controlling residential development at predetermined densities by limiting permit issuances, however no local control or review process is involved.

Goals

The goals presented within these programs are quite broad, but it is possible to identify five general ones:

1. Prevent pollution;
2. Assure sound and economical development;
3. Maintain healthful and sanitary conditions;
4. Protect fish and aquatic wildlife; and
5. Preserve shore cover and natural beauty.

Although some of the states do not have identified goals, the reasons for controlling shoreline development certainly would fit into the above list. It appears that maintaining healthful and sanitary conditions is the primary goal of all the shoreline management approaches identified in this chapter.

Most of the shoreline programs identified were developed in the late 1960s, and two factors were probably responsible for their formulation. First, the environmental movement was quite strong in this country in that decade. The passage of the National Environmental Protection Act (NEPA) was a great boost for protecting environmentally sensitive areas, and reflected the cautious development viewpoint of many during this period. This environmental sensitivity provided a great deal of pressure on policymakers to enact shoreland and other critical area protection programs across the country.

Second, and perhaps more importantly, the second home boom was in full swing during the 1960s and early 1970s, as mentioned in Chapter I. The rapid increase in shoreline development in these states probably prompted officials to implement programs to protect sensitive shoreline areas. Future changes in the degree of these two factors could encourage state and local officials in Nebraska to consider implementation of stricter shoreline regulations.

FOOTNOTES

- (1) See Maine Rev. Stat. Ann., title 12, Sec. 4811 et seq. (1974), amended, (Supp. 1976); Washington Rev. Code, Ann., Sec. 90.010 et seq. (Supp. 1975); Washington Laws 1975-1976, 44th Leg., 2d Ex. Sess., Ch. 51, p. 167; Vermont Stat. Ann. title 10, Sec. 1421 et seq. (1976 Supp.), title 24, Sec. 4411 (1975), Sec. 4410 (1976 Supp.); Michigan Stat. Ann., Sec. 13.1831 et seq. (Supp. 1975); Montana Rev. Code Sec. 89-3701 et seq. (Supp. 1976).
- (2) Corwin W. Johnson and Thomas C. Fitzhugh, III, Legal Aspects of Land Use Regulations of Lake Shorelands by State and Local Governments for the Protection of Lakes, Center for Research in Water Resources, College of Engineering, University of Texas, Austin, Texas, December 1976, p. 12.
- (3) Kansas Gen. Stat. Ann. Sec. 19-2893 et seq. (1974).
- (4) Kansas Gen. Stat. Ann. (Supp. 1970), Sec. 65-184-189f, p. 1.
- (5) Ibid., p. 32.
- (6) Ibid., p. 1.
- (7) Ibid., pp. 38-53.
- (8) Correspondence with Melville W. Gray, Deputy Director of Environment, Kansas Department of Health and Environment, Topeka, Kansas, July 17, 1981.
- (9) Wisconsin Department of Natural Resources, Shoreland Regulation Administration Manual, Madison, Wisconsin, October 1975, p. 1.
- (10) Legal Aspects of Land Use Regulations, p. 13.
- (11) Wisconsin Department of Natural Resources, Wisconsin's Shoreland Protection Ordinance, Madison, Wisconsin, November 1973, p. 1.
- (12) Ibid., pp. 1-3.
- (13) Ibid., p. 34.
- (14) Ibid., p. 14.

- (15) Ibid., pp. 40-42.
- (16) Legal Aspects of Land Use Regulations, pp. 17-19.
- (17) Wisconsin's Shoreland Ordinance, pp. 11-15.
- (18) Ibid., p. 53.
- (19) Jon A. Kusler, Water Quality Protection for Inland Lakes in Wisconsin: A Comprehensive Approach to Water Pollution, 1970 Wisconsin Law Review, p. 76.
- (20) State of South Dakota, "Summer Home Permit," Department of Game, Fish and Parks, Pierre, South Dakota, April 1980.
- (21) State of South Dakota, "Seasonal Trailer Permit," Department of Game, Fish and Parks, Pierre, South Dakota, March 1979.
- (22) State of South Dakota, "Summer Trailer Home Lease," Department of Game, Fish and Parks, Pierre, South Dakota, March 1980.
- (23) Telephone conversation with Robert Hanten, Staff Specialist-Fisheries, Department of Game, Fish and Parks, State of South Dakota, Pierre, South Dakota, July 15, 1981.
- (24) Telephone conversation with Marion Cusick, Marshall County Assessor, Britton, South Dakota, July 17, 1981.
- (25) Robert Hanten, July 15, 1981.
- (26) Jon A. Kusler, Survey: Lake Protection and Rehabilitation Legislation in the United States, Upper Great Lakes Regional Commission, Ann Arbor, Michigan, March 1972, p. 7.
- (27) Oklahoma Gen. Stat., Ann. title 19, Sec. 866.2 (Supp. 1971):
- (28) Oklahoma Board of Health, Reservoir Sanitation Rules and Regulations, Oklahoma City, Oklahoma, December 11, 1966.
- (29) Minnesota Department of Natural Resources, Elements and Explanation of the Municipal Shoreland Rules and Regulations, Supplementary Report No. 5, St. Paul, Minnesota, May 1976, p. 1.

- (30) Minnesota Department of Natural Resources, Shoreland Management Classification System for Public Waters, Supplementary Report No. 1, (Second Edition), St. Paul, Minnesota, January 1976, p. 1.
- (31) Minnesota Reg. Cons. 70, 1970.
- (32) Telephone conversation with Joseph Brill, Superintendent of Parks, Iowa State Conservation Commission, Des Moines, Iowa, July 15, 1981.
- (33) Johnson County Regional Planning Commission, Corridor Development Plan, Iowa City, Iowa, April 1980.

CHAPTER VI

MAJOR FINDINGS OF THE STUDY

Introduction

Residential shoreline development has occurred extensively near reservoirs in Nebraska in the past fifteen years, as shown in Chapter II. While the majority of development is located either on public land or on private land under the jurisdiction of a local county ordinance, environmentally unsound residential development has occurred. Too often, the reason for this unsound development is a lack of adequate or enforced regulation, or a lack of long range planning. The following are planning issues regarding residential shoreline development which are contributing to unsound development practices around Nebraska's reservoirs, and are based on the findings of Chapters II, III, and IV. In addition, regulations of other states, mentioned in Chapter V, are presented to identify techniques used in other areas which could be appropriate to utilize in this state.

Planning Issues

Excessive Mobile Home Densities in Game and Parks Commission Concessionaire Trailer Areas.

The Nebraska Game and Parks Commission currently operates concession trailer areas at McConaughy, Sherman,

Minatare, Swanson, Harry Strunk, and Hugh Butler lakes.

Under the current lease agreement, as stated in Chapter III, the concessionaire receives 98 percent of the revenues from trailer leases with private individuals at a park.

Inadvertently, concessionaires are "encouraged" to crowd trailers together to increase revenues from trailer leases. This has resulted in overcrowding at several trailer areas.

The Wisconsin Shorelands Protection Ordinance, as stated in Chapter V, allows a maximum of ten mobile homes per acre, a minimum mobile home site of fifty by eighty-five feet, minimum setbacks of forty feet from all exterior lot lines, and side yards of fifteen feet. The suggested standards for mobile home parks presented by the Mobile Home Manufacturers Association, National Fire Protection Association, and the Trailer Coach Association includes a minimum of ten feet between trailers and a maximum coverage not to exceed 75 percent of the total mobile home lot area.

Lack of Regulations for Mobile Homes Located in Nebraska Game and Parks Commission Concessionaire Trailer Areas.

In contrast to the wide range of controls listed in the Commission lease agreements for cabin areas, as stated in Chapter III, the Commission requires that leaseholders at concessionaire trailer areas only meet minimum state health and safety standards. Since very few standards exist that are applicable to these mobile home areas, several basic planning concepts have been ignored. For example, the

layout of trailers at Sherman Reservoir, as stated in Chapter IV, is linear with trailers abutting each other. In addition to restricting visual access to the lake, this design of trailer sites does not allow adequate availability for off street parking, and increases the potential for fire hazards due to crowding of mobile home units. Many trailers at Sherman are in need of repair, very little landscaping exists, and skirting is often absent. The result is poor site appearance and visual clutter.

The Nebraska Department of Health, in 1976, adopted rules, regulations, and standards for mobile home parks in Nebraska. These included minimum requirements for water supply, sanitary sewer, electrical, and waste disposal systems.(1) Department of Health officials attempted to enforce these regulations in concessionaire trailer areas, but the Nebraska Attorney General ruled that these concessionaire areas were exempt from the regulations since they were intended only for seasonal use.(2) The standards originally contained provisions for minimum setback and maximum density standards, but were removed by the Nebraska Legislature before adoption.(3)

In addition to the regulations listed previously, Wisconsin requires two surfaced auto parking spaces per trailer and landscaping to shield mobile homes from detracting visually from a shoreline area. The study of the state recreation areas at Lake McConaughy in 1975

recommended that, to alleviate the blighted appearance of the trailer areas there, the Nebraska Game and Parks Commission should

. . . Place age restrictions on mobile homes or place architectural constraints which would require maintenance up to an acceptable safety and visual level. Improvements should include color (repainting to approved natural tones), landscaping, and safety improvements.(4)

Lack of Enforcement of Construction Restrictions in
Commission Concessionaire Trailer Areas.

As noted in Chapter III, the Bureau of Reclamation maintains a policy of prohibiting construction of any permanent structures on reservoir project property. However, as noted in Chapter IV, this policy has not been followed at many concessionaire trailer sites which are located on Bureau property managed by the Game and Parks Commission. Due to the Commission's lack of enforcement of this policy, many trailers at Sherman have patios, room additions, observation decks atop trailer roof tops, etc., which give the area a very unattractive and cluttered appearance. In addition, since no construction codes exist in Sherman County, some of the work appears haphazard, unmaintained, and potentially hazardous due to poor construction techniques and material.

In contrast, violators of any part of the Wisconsin Ordinance may be prosecuted by the District Attorney and may be fined from ten to two hundred dollars for each day of violation.(5)

Potentially Inadequate Septic Tank Standards for Reservoir Shoreline Areas of the State.

Currently, only two regulations regarding septic tanks affect shoreline residential development in Nebraska. Chapter III identified the restrictions as: 1) minimum horizontal distance of fifty feet between a septic tank or disposal field and any surface water; and 2) minimum of one thousand gallon septic tank capacity for residential units of three bedrooms or less. The case studies in Chapter IV identified that, due to the "grandfather clause" of the above regulations, some trailers (especially in Commission concessionaire trailer areas) are using buried fifty-five gallon metal drums as septic tank systems. In some cases, two or more trailers are connected to the same fifty-five gallon "system".

Although the Nebraska Department of Health requires a minimum septic tank setback of fifty feet from surface waters, no guidelines or controls exist regarding minimum areas for leach or absorption fields. Considering that there are at least 3,300 residential units on private sewerage systems near Nebraska's sixteen largest reservoirs, it appears that surface water pollution is a definite possibility. Existing or imminent pollution of surface waters due to septic tanks in adjacent shoreline areas has been identified at Johnson, McConaughy, Harlan, and Sherman reservoirs (see Chapter IV), and also at Jeffrey

Lake(6) and Lake Maloney(7).

Sargent states in Rural Water Planning that onsite sewage disposal systems may cause considerable lake water pollution.

. . . the closer the septic tank leach fields are to a lake, the higher the probability that some, if not most, of the nutrients, bacteria, and other pollutants will enter the lake. This problem is critical within 200 feet of a lakeshore. The soil type may regulate the rate and quantity of this flow, but it will not prevent it.(8)

The 1976 ASP0 study recommended that septic tanks should not be considered as an acceptable permanent means of sewage disposal in high density recreational subdivisions. However, in areas where a central sewage system is not feasible, the study recommends that residential density limits be set low enough to guarantee that septic tanks pose no threat to ground or surface water quality.(9)

As identified in Chapter V, regulations regarding septic tanks in other Midwest states include: 1) South Dakota--one hundred foot minimum setback from lakes; 2) Wisconsin--minimum lot size of 20,000 square feet when septic tanks are used, fifty foot minimum setback from normal high water elevation, setback requirement may be increased by local officials, inspection by local officials; and 3) Minnesota--minimum lot size of 20,000 square feet and seventy-five foot setback from General Development Lakes, up to 80,000 square foot minimum lot size and two hundred foot setback on Natural Environment Lakes.

Construction of Second Homes in Areas of Excessive Slopes
Near Shoreline Areas.

Since many reservoirs studied in this thesis are "on stream" structures, bluffs and other steep topography are often adjacent to the impoundment. Lewis and Clark, McConaughy, and Harlan County lakes, as mentioned in Chapter IV, are surrounded by such terrain. Much of this property is privately owned and provides excellent views and, thus, is marketable for second home sites. Table 3 in Chapter II showed that 339 residential units are located on similar property at McConaughy, 257 at Lewis and Clark, and 181 at Harlan County Lake.

As mentioned in Chapter IV, erosion problems exist at all three reservoirs due to the type of residential development on private property of surrounding bluffs. Keith and Knox counties have implemented zoning controls, but, as shown in Chapter III, no specific criteria are given regarding development on land with excessive slope.

The Wisconsin Ordinance allows county officials to prohibit subdivision of any land held unsuitable for residential use due to ". . . soil and rock formations with severe limitations for development, severe erosion potential, (and) unfavorable topography, . . ."(10) The Ordinance also prohibits construction of soil absorption systems (septic tanks) on land where slopes are 12 percent or more. The Ordinance states

Where slopes exceed 12 percent, it becomes increasingly difficult to install private waste disposal systems in conformity with the applicable regulations, and the unequal distribution of effluent often causes early failure of the soil absorption field, resulting in the seepage of liquid wastes onto the land surface.(11)

The malfunction of septic tank systems in the bluff areas around Lewis and Clark Lake is a specific concern of the Nebraska Department of Health's Environmental Health Scientist for the area, as mentioned in Chapter IV.

Lack of Shoreline Buffers (Open Space) Between Surface Waters and Adjacent Residential Development.

As stated in Chapters III and IV, most development at lakes operated by the federal government, e.g., Bureau of Reclamation or the Corps of Engineers, is located away from the immediate shoreline area. This has been accomplished either through the original layout of lots on public property, through the purchase of extensive amounts of property to be used for public use, or by the prohibition of further residential development.

However, residential development at other lakes in Nebraska, such as those operated by Tri-County, Nebraska Public Power District, and private groups (Capitol Beach and Beaver Lake), is normally located immediately adjacent to the lake. In fact, the lot line on the reservoir side of a residential lot is often located at the water's edge. This lot design contributes to many of the problems listed in Chapter IV which include: 1) lack of public access; 2) lack

of visual access; and 3) increased risk of surface water pollution.

Yanggen suggests the use of lakeshore protective buffers through development restrictions in shoreline areas. Individual lots would be grouped in attractively located offshore clusters. Many advantages would result from this development scheme, according to Yanggen:

. . . Open space can be used to protect the scenic values of woods, hillsides, waters and wetlands. Greenways (lakeshore buffers) permit freedom of movement throughout the entire area. Reservation of an undeveloped strip . . . preserves the appearance of a natural shoreline and helps maintain water quality by reducing sedimentation and pollution from septic tanks and surface runoff
(12)

Wisconsin requires a minimum setback of seventy-five feet between all buildings and the waterline of a lake.(13) As stated in Chapter IV, Marshall County, South Dakota requires a minimum setback of fifty feet while Minnesota requires setbacks ranging from fifty to two hundred feet.

Inappropriate Residential Lot Layout Around Reservoirs.

Due to the large demand for lakefront property in Nebraska, as shown in Chapter II, many reservoirs contain long, contiguous, unbroken chains of residential lots which literally surround lakes. Johnson Reservoir is typical of this type of ring development. Besides posing potential pollution problems from septic tanks due to excessive crowding, public access is severely restricted. As shown in Chapter IV, public access along the eighteen miles of

shoreline at Johnson is limited to two Game and Parks Commission public use areas.

The Report on the Framework Study for Nebraska, completed in 1971, stated

Public access to lands will become a critical problem in the future. Some of the loss of public access will be due to the skyrocketing demand for water associated land, principally river and lake frontage. Individuals and groups of individuals will likely continue buying and leasing these lands as rapidly as they become available and generally totally restricting public access as they have done in the past.(14)

While the demand for lakeshore property in Nebraska may not be "skyrocketing", public access to reservoirs will be restricted by continued residential development in such areas.

Wisconsin alleviates the lack of public access by requiring public access points sixty feet wide at one-half mile intervals around all lakes. In the shoreline surrounding Johnson Reservoir, for example, approximately thirty-six access points would be required under this regulation.

Excessive crowding, according to Sargent, provides the increased potential for pollution from septic tanks, and swimming, and runoff from nearshore areas since such development reduces shoreline plant cover and increases impermeable surface areas.(15)

The ASPO study recommends that cluster techniques should be encouraged or required in sensitive environmental

areas "(to permit) substantial portions of development sites to be left in undisturbed, natural open space."(16)

Lack of a Long Range Plan for Shoreline Residential Development.

The two largest regulators of shoreline residential development in Nebraska, in terms of number of residential units controlled, are the Game and Parks Commission and Tri-County. Together, these two control nearly 2,000 (or 45 percent) of all homes located near Nebraska's larger reservoirs listed in Table 2 in Chapter II. Although these two groups regulate a large share of shoreline residences in the state, neither has prepared what could be considered a comprehensive plan for orderly residential development. The Commission did hire a consultant to prepare a plan for the shoreline of Lake McConaughy which dealt in part with residential development, but little else has been completed. Tri-County prohibits residential development at new reservoirs, but does not have any other written plan of future policy.

The results of this lack of planning is clearly evident at lakes under control of these two agencies, as shown in Chapter IV. Lack of public access, ring development, inadequate septic tank disposal fields, and visual blight are all results of inappropriate planning. This, in turn, has contributed to inadequate regulations or the existence of controls which cannot financially or

legally be enforced.

Regulating Shoreline Residential Development

An important aspect of this thesis was the identification of the wide variety of entities in the state which regulate second home development near reservoirs. Regulations at the federal level are primarily limited to the restriction on residential development at all Corps of Engineers and Bureau of Reclamation lakes. Controls at the state level are very limited and pertain primarily to the regulation of septic tanks. Local controls range from fairly strict controls, such as Keith County mentioned in Chapter III, to no controls at all.

Most residential regulation in reservoir areas has been the result of controls imposed by the owner or operator of the lake, except in the case of federal ownership where the responsibility has been given to the Game and Parks Commission. The exceptions to this would be the zoning ordinances of Keith and Knox counties.

A major attempt to regulate shoreline areas at the state level occurred in the 1970s when the Nebraska Rural Development Council attempted to have legislation adopted for a statewide "critical areas program".(17) However, this attempt for a comprehensive regulatory program failed.

Popper states that land use reformers of the early 1970s argued for the need of controlling land use at higher levels of government, such as at the state level, since

local government "(does) not have the needed environmental and social sensitivity (to implement necessary regulations)."(18) As a result of this philosophy, twenty-seven states have passed programs involving statewide planning or review of local land use decisions, such as the Wisconsin and Michigan shorelands programs.

The opposition to the reform movement of centralized land use control have protested that such controls are

. . . an assault on an enormous range of cherished American values and institutions--competitive individualism, private property, commercial freedom, the corporation, the entrepreneur, home rule, and the desire for limited and unbureaucratic government.(19)

Second home development in Nebraska has primarily occurred under this second philosophy of "local control" which often implies "no control". Healy and Rosenberg identify several reasons why no control occurs:

. . . In many cases local opinion holds that the rate of development is low enough relative to the quantity of land available to make controls unnecessary. In the absence of demonstrable spillovers from one piece of property to another, the tradition that the landowner should have free and unrestricted use of his property remains strong. If outsiders perceive land use problems that local people choose to ignore, the case becomes yet another instance of the divergence of interests.

In other cases, however, the lack of land controls is caused by the general small size and the lack of resources and expertise on the part of local governments.(20)

Another possible reason why local control of residential shoreline development is not greater in Nebraska is that, since most development has occurred on public

property, it is considered to already be "regulated" by a public agency, i.e., Tri-County, Game and Parks Commission, etc. However, as proposed in this thesis, such control has often been inadequate, ineffective, and unenforced.

Creation of regulations in shoreline residential areas can provide measures to control new development, but would have little effect on existing residences. Development which was established before new laws or ordinances were enacted is exempted or "grandfathered" from complying with the new regulation. Trailers at many reservoirs, e.g., Sherman County Reservoir, are not required to upgrade undersized septic tank systems since construction and placement of these systems occurred before the new regulations, mentioned in Chapter III, were approved. Unless specific environmental violations are identified, it is difficult to require compliance with new regulations.

Planning Opportunities

Many examples of environmental degradation, due to shoreline residential development in Nebraska, have been presented. These include erosion, pollution, and physical and visual blight. However, it is apparent that governmental mechanisms exist in the state which could be used to mitigate many of these problems. For example, the Nebraska Game and Parks Commission concessionaire trailer areas have repeatedly been cited as poor examples of shoreline development. It appears, however, that the nature

of the lease agreement between the Commission and the concessionaires is a primary reason for the decrepit conditions in such areas. First, the Commission states no specific rules or regulations which the concessionaire or mobile home owners must follow. Second, the concessionaire receives 98 percent of the revenues from mobile home leases which inadvertently encourages crowding of trailers. Third, the Commission does not enforce the Bureau of Reclamation policy which prohibits construction of appurtenances to residences situated on Bureau property. The lease instrument could be utilized to improve conditions considerably at these trailer areas.

Septic tank regulations are currently enforced by the Nebraska Department of Health. If stricter regulations could be implemented, Department officials would be in a position to carry them out. This viewpoint is substantiated by the efforts of the Department in the late 1970s when, after new mobile home regulations were enacted by the legislature, officials immediately seized the opportunity to implement controls on trailer parks at Harlan County, McConaughy, and several other lakes around the state.(21)

Regulating mechanisms for other types of shoreline regulations also exist at Tri-County, Nebraska Public Power District, the Game and Parks Commission, and Corps of Engineers lakes. According to Table 3 in Chapter II, over 2,150 homes, or roughly one-half of all shoreline homes near

reservoirs inventoried in this thesis, are under the jurisdiction of these five units of government. Also, an additional 1,200 homes in this inventory are adjacent to reservoirs in counties which currently have zoning ordinances in force. This leaves approximately 900 homes inventoried in this thesis without direct control or regulation. This implies that existing governmental mechanisms are in place to carry out proposed changes for much of the residential shoreline development in Nebraska.

FOOTNOTES

- (1) Nebraska Department of Health, Uniform Standard Code for Mobile Home Parks, Lincoln, Nebraska, October 2, 1976.
- (2) Interview with Douglas A. Clark, Environmental Health Scientist, Nebraska Department of Health, Lincoln, Nebraska, February 24, 1982.
- (3) Ibid.
- (4) Nebraska Game and Parks Commission, Lake McConaughy State Recreation Area Plan, Lincoln, Nebraska, January 1975, p. 13.
- (5) Wisconsin Department of Natural Resources, Wisconsin's Shorelands Protection Ordinance, Madison, Wisconsin, November 1973, p. 75.
- (6) Lincoln County Joint Planning Commission, Lincoln County, Nebraska, Comprehensive Plan, North Platte, Nebraska, September 1974, p. 129.
- (7) Ibid.
- (8) Frederic O. Sargent and Blaine P. Sargent, Rural Water Planning, (South Burlington: F.O. Sargent), 1979, p. 75.
- (9) American Society of Planning Officials, et. al., Subdividing Rural America, (Washington D.C.: U.S. Government Printing Office), 1976, p. 13.
- (10) Wisconsin's Shorelands Protection Ordinance, p. 52.
- (11) Ibid., pp. 14-15.
- (12) Douglas A. Yanggen, Alternatives to Protect and Enhance Lakes, Conference on the Management of Recreational Lakes, Water Resources Center, University of Wisconsin, Madison, Wisconsin, May 17-18, 1972, p. 79.
- (13) Wisconsin's Shorelands Protection Ordinance, p. 25.
- (14) Nebraska Soil and Conservation Commission, Report on the Framework Study, Nebraska State Water Plan, May 1971, p. 90.

- (15) Rural Water Planning, p. 75.
- (16) Subdividing Rural America, p. 13.
- (17) Robert H. Stoddard, Defining Critical Environmental Areas, Occasional Papers No. 3, Department of Geography, University of Nebraska-Lincoln, Lincoln, Nebraska, July 1977.
- (18) Frank J. Popper, The Politics of Land-Use Reform, (Madison: The University of Wisconsin Press), 1981, p. 13.
- (19) Ibid., pp. 63-64.
- (20) Robert G. Healy and John S. Rosenburg, Land Use and the States, Second Edition, (Baltimore: The Johns Hopkins Press), 1979, p. 11.
- (21) Interview with Douglas A. Clark, Environmental Health Scientist, Division of Housing and Environmental Health, Nebraska Department of Health, Lincoln, Nebraska, February 24, 1982.

CHAPTER VII

ALTERNATIVES AND RECOMMENDATIONS

Introduction

The existing framework for planning and regulation of residential shoreline development in Nebraska does not appear to be adequate to prevent land use and environmental conflicts. Pollution, erosion, lack of public access, and visual blight are existing and potential problems at reservoirs due to inadequate, unenforced, or non-existent regulations. As shown in Chapter VI, several specific gaps exist in regulations at both the local and state level. Therefore, the following alternatives are presented to encourage more desirable residential development near shorelines of reservoirs in the state. The alternatives are grouped into six general categories, but are not mutually exclusive, i.e., they could be implemented individually or in combinations. In addition, some alternatives are directed specifically at the Nebraska Game and Parks Commission concessionaire trailer areas, while others could be implemented statewide.

Alternatives

Concessionaire Trailer Areas

Since several Nebraska Game and Parks Commission

concessionaire trailer areas have experienced problems with crowding of trailers and septic tank system failures, three alternatives are presented which could reduce the potential for similar impacts in the future.

Reduce mobile home densities at Nebraska Game and Parks Commission concessionaire trailer areas.

As stated in Chapters IV and VI, many concessionaire trailer areas are overcrowded. The resulting problems have included excessive septic tank densities, visual blight, and lack of parking and open space. The number of mobile homes could be reduced by either removing some trailers or by expanding existing sites. If the number within an existing area were reduced, the Game and Parks Commission could require a concessionaire to reduce the number of leases by a given percentage each year until a predetermined density level was reached. However, if this placed undue financial hardship on a concessionaire or leaseholders, the Commission could either expand existing trailer areas or could relocate homes to other appropriate public areas of a reservoir. Mobile homes which are currently using fifty-five gallon metal drums as septic tank systems could be the first to be relocated. Redistribution of homes would allow for the creation of a buffer area between trailers and the lakeshore, establishment of off street parking areas, and redesign of trailer lots. In addition, illegal structures could be

removed during this process. Noncompliance should result in a financial penalty or loss of lease.

Amend the "Uniform Standard Code for Mobile Home Parks" to include seasonal mobile home parks.

Due to the Nebraska Attorney General's ruling on the Uniform Standard Code, seasonal mobile home parks, such as the Game and Parks Commission concessionaire parks, are exempt from the rules and regulations enforced by the Nebraska Department of Health. As stated in Chapter VI, if these regulations were applied to concessionaire trailer areas, they would increase controls over water supply, sewerage, and sanitation conditions. The legislature could amend the existing law to include "seasonal mobile home parks" under the definition of "mobile home parks".

Amend the "Uniform Standard Code for Mobile Home Parks" to include density and setback requirements.

Under the Uniform Standard Code for Mobile Home Parks, mobile home areas in Nebraska do not have to follow density or setback regulations. Officials at the Department of Health tried to include these items in the Uniform Standard Code, but were unsuccessful. As stated in Chapter VI, the suggested standards for mobile home parks by the Mobile Homes Manufacturers, National Fire Protection, and Trailer Coach associations include setback guidelines of twenty-five feet from any mobile home park property line, maximum coverage area of a lot not to exceed

seventy-five percent of the total lot area, and at least a ten foot separation between trailers. Wisconsin allows densities of not more than ten trailers per acre. Nebraska could adopt similar density and setback standards through a change in existing legislation.

Septic Tank Systems

Inadequate septic tank system capacities and absorption field areas has lead to pollution problems at several reservoirs in Nebraska. The following alternatives could reduce the potential for surface water pollution from septic tank effluent.

Require stricter standards for septic tank placement and minimum absorption field areas near reservoirs.

Inadequate or nonexistent guidelines for septic tanks contribute to existing and potential pollution problems. Although the State requires soil percolation tests before installation, no guidelines or regulations exist regarding minimum absorption field areas. Seasonal homes present unique problems for the required percolation test. If a test is conducted when nearby septic tanks have been unused for some time, the results may be misleading and inaccurate. Absorption rates may actually be much lower for an area than test results indicate, when several septic tank systems are in use, e.g., on weekends, during the summer, etc. Improved regulations, however, would require new legislation.

Implement annual inspections of septic tanks near reservoirs to determine pollution potentials.

Currently, the Nebraska Department of Environmental Control (DEC) suggests that septic tank systems should be inspected a minimum of once a year, but inspections are the responsibility of the owner. Under current policy, state inspections occur only on a complaint basis. Too often, neighbors and others do not want to cause any problems by reporting malfunctioning systems to the State. Regular inspections would help alleviate this problem. These inspections could be conducted by the DEC, the Department of Health, or local health agencies. Funding could be generated from inspection fees or tax assessments on appropriate reservoir shoreline properties.

Require upgrading of all existing septic tank systems near reservoirs in order to meet existing minimum standards.

Septic tank systems that were constructed prior to 1977 are exempt from the Nebraska Department of Health regulations presented in Chapter III. As a result, some systems are undersized or improperly located. The State should require that, over a period of years, all reservoir shoreline residences must have state-approved sewerage disposal systems. This would eliminate the use of buried fifty-five gallon drums as "septic tank systems". This could be administered by the DEC, state health department, local health agencies, or through the lease agreements of the

Game and Parks Commission, Tri-County, and Nebraska Public Power District.

Setbacks

Prohibit construction of residential structures within a specified distance of reservoirs.

The purpose of this restriction would be to prevent homes from being located immediately adjacent to a lakeshore, as has occurred at Johnson Reservoir, Beaver Lake, Capitol Beach, and many others across the state. This would provide increased protection to the lake from pollution from surface water runoff, would provide increased opportunities for public access, and could enhance the appearance of reservoir areas. This would require new legislation and could be administered by the Natural Resources Commission, natural resources districts, Nebraska Department of Environmental Control, or through the use of local zoning authority.

Change in Regulating Agencies

As shown in Chapter III, Nebraska currently has a wide variety of units of government which regulate reservoir shoreline development. Three alternatives are presented that would consolidate this function.

Create or expand capabilities at the state level to coordinate and regulate residential development on public property near reservoirs.

Increased control and supervision at the state level

could provide greater surveillance and enforcement of regulation of residential development on public property near reservoirs in the state. This responsibility could be delegated to the Game and Parks Commission, Natural Resources Commission, or the DEC. The U.S. Army Corps of Engineers, Tri-County, and the Nebraska Public Power District could be encouraged to turn over regulation and enforcement of some or all residential areas; however, legislation could be used to require this shift in authority to occur. This agency could also serve as an information and technical assistance center for local officials dealing with shoreline development problems on private property.

Allow counties to use land use controls, construction codes and building codes in designated areas around reservoirs (as is done in Oklahoma).

A primary reason for the lack of land use controls in Nebraska is due to the desire of individuals to minimize governmental regulation. However, local people may be more responsive and acceptable to land use controls if they could be implemented only in problem or sensitive areas, such as reservoir shorelines. This would require new legislation and the creation of reservoir shoreline zoning agencies at the local level if no zoning administration capabilities currently exist. Although this would be a technique of regulating new residential development, it would not undo existing land use problems.

Create a comprehensive reservoir shoreline management program for Nebraska.

The Legislature could enact a law which would parallel the shoreland programs of Wisconsin and Minnesota. In effect, the state would set forth standards for development which the local governmental units would be required to adopt and enforce. If local governments did not adopt appropriate standards, the State would take over regulatory responsibilities. Considering the past efforts for state-wide land use controls, e.g., LB 465 in 1973, and the current sentiment against increased governmental regulation, it is doubtful that such legislation would be enacted.

Enforcement

Increase enforcement of rules and regulations at all shoreline residential areas on public property.

Non-enforcement of existing regulations is a major cause of detrimental environmental conditions and lack of maintenance. Implementation of a penalty system, whereby offending cabin or trailer owners would be required to pay a financial penalty for non-compliance with existing rules, may be a necessary method of achieving desired and necessary results. Rules and regulations are useless if unenforced. Regulations could be enforced by the Game and Parks Commission, natural resources districts, or the DEC.

Improved Data Base

Conduct a state-wide inventory of all shoreline residential development to assess the amount, type, distribution, and status of such areas.

The purpose of this would be to provide a comprehensive inventory of shoreline development in Nebraska so that state and local officials would be better informed of this potentially serious land use issue in Nebraska. This could be conducted by the Game and Parks Commission, natural resources districts, counties, or a combination of the above, with the assistance of Tri-County, Nebraska Public Power District, Loup Public Power District, etc.

Recommendations

Increased government regulation, especially in an area like Nebraska, is not a popular subject. However, significant pollution problems exist at several reservoirs in the state, and will grow worse if steps are not taken to reduce them. Therefore, it appears that four steps should be taken which would reduce these environmental concerns, but would not create excessive governmental interference in local affairs.

First, the Nebraska Department of Environmental Control or the Department of Health should begin annual inspections of all septic tank systems located near reservoirs in the state. This would be a method of checking a system, regardless of age, to determine if it is

functioning satisfactorily. Owners of malfunctioning systems would be required to upgrade or replace faulty systems.

Second, the Nebraska Department of Health should adopt stricter standards for septic tank placement and minimum absorption field areas near reservoirs. This would aid in preventing future pollution of surface waters by reducing the amount of sewage effluent that entered a reservoir.

Third, the Nebraska Game and Parks Commission should reduce mobile home densities in all crowded concessionaire trailer areas. The Commission could either enlarge existing areas, or could create new trailer areas (such as at Otter Creek at Lake McConaughy). There is no excuse for a state agency to allow some of the worst shoreline residential development near reservoirs in Nebraska to exist on leased public property.

Finally, the State should require that, after an amortization period, all septic tank systems in reservoir shoreline areas must be upgraded to meet minimum standards. While this would be unpopular and expensive to carry out, it would eliminate the use of undersized or malfunctioning systems.

Summary

The issue of residential development in shoreline areas of reservoirs in Nebraska is only one part of the shoreline development problem across the state. Similar

problems of erosion, pollution, and uncontrolled development are apparent along rivers and streams and near gravel pits. Until now, very little has been done to assess the extent and impact of these rural second home retreats.

Shoreline development is not a widely discussed land use topic in the state for several reasons. First, most reservoirs which have surrounding residential development are located in relatively unpopulated areas. In addition, the reservoir shorelands do not have the unique and pristine environment that is often found around natural lakes in Wisconsin and Minnesota. Finally, environmental and land use conflicts of shoreline development in Nebraska are not widely known or documented and have occurred over a considerable length of time.

Several questions remain unanswered concerning residential shoreline development in the state. The examples of residential development at five reservoirs, shown in Chapter IV, was only a brief identification of existing and potential problems. More research is necessary to determine the extent of environmental and land use conflicts at other reservoirs, streams, and gravel pits.

In addition, a statewide survey of existing residential shoreline development is needed to provide a better understanding of the magnitude of this issue. The inventory in this thesis only considered cabin and trailer development near thirty-nine of over six hundred reservoirs

in Nebraska, and did not even consider development along streams or gravel pits.

Finally, the future demand and supply of shoreline property for residential development is a question which will have a tremendous impact on the degree of environmental and land use problems due to residential construction in the future.

The effect of over four thousand homes around the nineteen lakes listed in Table 2 of Chapter II could be significant over a period of years. Already, pollution from septic tanks is becoming a growing concern of many. Shoreline residential development in Nebraska will continue to occur around the reservoirs inventoried in this thesis as well as near gravel pits, rivers, and streams. The future effect could be severe. Policymakers and government officials must begin efforts now to assure future development of this type is properly planned and constructed. Likewise, it is imperative that the current statutes be properly enforced in order to protect all surface water areas of Nebraska.

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