Socio-Environmental Problems
Related to Nevada's Rural County Subdivisions

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Geology

by

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August 1975
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ACKNOWLEDGEMENT

The area covered in gathering material for the thesis was nearly 5,000 miles. Many hours were spent in the dusty corners of Nevada's rural county courthouses counting parcels and acreages, recording dates of approval, locations and designs of subdivisions. The number of interviews with county assessors, recorders, building inspectors, county managers, planning officials and "Nevadans" was impressive. During the course of two and one half years, tens of dozens of people gave me their time and knowledge and I wish to express my thanks.

And to Mike Cassidy I would like to make known my appreciation for time spent on taking photographs and processing them.

Above all, I wish to express my sincere gratitude for the assistance and direction provided by Mr. John Sparbel, Administrative Officer and Program Coordinator and Mr. Robert Rigsby, Program Coordinator - Physical Resources both representing the Office of the State Planning Coordinator in Carson City. The thesis could not have been completed without a Public Service Internship offered by the State Planning Coordinator's Office.
This report deals with subdivision activity in rural Nevada counties from 1950-1975. Included is data on the number of recorded parcels, acreage, subdivision design and amenities, location and date of approval, water and wastewater facilities provided, and data on current occupancy of developed parcels.

A map showing the distribution of Nevada's rural county subdivisions is provided along with "special lands" in Pershing, Lander and Elko Counties. Each dot on the map represents 640 acres (1 section), in which one or more subdivisions have been recorded and includes special lands in Elko, Lander and Pershing Counties during this 25 year period.

The inventory of subdivisions provided a basis for analyzing socio-environmental problems associated with the more remote subdivisions as well as problems facing Nevada's rural communities. The problems are approached on a county by county basis and are supported by case studies.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>i</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF ILLUSTRATIONS</td>
<td>vi</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td></td>
</tr>
<tr>
<td>Methods of Data Gathering</td>
<td>1</td>
</tr>
<tr>
<td>Background Information</td>
<td>2</td>
</tr>
<tr>
<td>II. REGION I: CARSON CITY, CHURCHILL, DOUGLAS, LYON AND STOREY COUNTIES</td>
<td>8</td>
</tr>
<tr>
<td>Carson City County</td>
<td>8</td>
</tr>
<tr>
<td>Carson City Water Shortage</td>
<td>10</td>
</tr>
<tr>
<td>Future Development</td>
<td>13</td>
</tr>
<tr>
<td>Churchill County</td>
<td>14</td>
</tr>
<tr>
<td>Douglas County</td>
<td>16</td>
</tr>
<tr>
<td>Lake Tahoe - Douglas County Subdivisions</td>
<td>16</td>
</tr>
<tr>
<td>Carson Valley Subdivisions</td>
<td>18</td>
</tr>
<tr>
<td>Storey County</td>
<td>18</td>
</tr>
<tr>
<td>Lyon County</td>
<td>20</td>
</tr>
<tr>
<td>III. REGION II: ELKO, HUMBOLDT, LANDER AND PERSHING COUNTIES</td>
<td>22</td>
</tr>
<tr>
<td>Elko County</td>
<td>24</td>
</tr>
<tr>
<td>Humboldt County</td>
<td>27</td>
</tr>
<tr>
<td>Lander County</td>
<td>28</td>
</tr>
<tr>
<td>Pershing County</td>
<td>29</td>
</tr>
<tr>
<td>IV. REGION III: EUREKA, LINCOLN AND WHITE PINE COUNTIES</td>
<td>31</td>
</tr>
<tr>
<td>Eureka County</td>
<td>31</td>
</tr>
<tr>
<td>Lincoln County</td>
<td>31</td>
</tr>
<tr>
<td>White Pine County</td>
<td>33</td>
</tr>
<tr>
<td>V. REGION IV: ESMERALDA, MINERAL AND NYE COUNTIES</td>
<td>35</td>
</tr>
<tr>
<td>Mineral County</td>
<td>35</td>
</tr>
<tr>
<td>Nye County</td>
<td>36</td>
</tr>
<tr>
<td>VI. REVIEW OF CASE STUDIES</td>
<td>38</td>
</tr>
<tr>
<td>Subdivision #1: Region I</td>
<td>39</td>
</tr>
<tr>
<td>Subdivision #2: Region I</td>
<td>41</td>
</tr>
<tr>
<td>Subdivision #3: Region I</td>
<td>42</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Subdivision</th>
<th>Region</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subdivision #4:</td>
<td>Region I</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Subdivision #5:</td>
<td>Region III</td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>Subdivision #6:</td>
<td>Region IV</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Subdivision #7:</td>
<td>Region II</td>
<td></td>
<td>53</td>
</tr>
<tr>
<td>VII. SUMMARY AND FINDINGS</td>
<td>Findings</td>
<td></td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Recommendations</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>69</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td></td>
<td></td>
<td>71</td>
</tr>
<tr>
<td>APPENDIXES</td>
<td>A. STATUTORY DEFINITION OF TERM SUBDIVISION</td>
<td></td>
<td>73</td>
</tr>
<tr>
<td></td>
<td>B. MODEL APPLICATION FOR APPROVAL OF FINAL OR MINOR SUBDIVISION PLAT</td>
<td></td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>C. IMPROVEMENT AGREEMENT</td>
<td></td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>D. TOTAL NUMBER OF PARCELS CREATED BY YEAR AND BY COUNTY</td>
<td></td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>E. DEFINITIONS</td>
<td></td>
<td>80</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table

1. Recorded Parcels Ranked by Year of Greatest Activity ..... 62
2. Comparative Figures on County Acreages, Tax Roll Lands and Subdivision Acreages ..... 64
3. Occupancy of Subdivided Parcels by County ..... 65
4. Occupancy of Subdivided Parcels by Permanent Structures and Mobile Homes ..... 66
5. Sewer and Water Facilities by County ..... 68

Chart

1. Recorded Subdivision Parcels ..... 62
## LIST OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Plate</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nevada's Rural County Subdivisions (map).</td>
<td>In Pocket</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Regional Boundaries (index map).</td>
<td>7</td>
</tr>
<tr>
<td>2. Erosion Surface on Northern Slopes of Subdivision #4.</td>
<td>46</td>
</tr>
<tr>
<td>3. Drainage Effects on Bladed Roads.</td>
<td>46</td>
</tr>
<tr>
<td>4. Pahrump Valley Subdivision</td>
<td>52</td>
</tr>
<tr>
<td>5. Kingston Canyon Alluvial Fans and Development</td>
<td>55</td>
</tr>
<tr>
<td>6. Cul-de-sacs on Alluvial Fans and Dissected Surfaces</td>
<td>55</td>
</tr>
<tr>
<td>7. Exposed Telephone Wires and Wash Where Wires Are Located.</td>
<td>57</td>
</tr>
<tr>
<td>8. Barricaded Mobile Home</td>
<td>57</td>
</tr>
</tbody>
</table>
Recent recognition that poor subdivision practices reflect or cause many of the nation's social and environmental problems has focused increased attention upon the quantity and quality of such developments. This is true in Nevada where the subdivision of land has been rapidly accelerating in recent years because of economic growth pressures as well as speculative developmental activities.

Many people have for some time recognized that no accounting of the rate at which the State of Nevada was being subdivided was maintained on any basis, either systematically or informally. Further, no information, to my knowledge, has ever been compiled on the rate of occupancy of subdivided parcels other than unquantified parcel-by-parcel records of various assessors. The major purpose of this thesis is to provide an analysis of the major characteristics of such activity in the non-metropolitan portions of Nevada (that portion of the state outside Clark and Washoe Counties). The latter two counties were not included because of time limitations on data gathering activities. In addition, it is my understanding that those two counties are independently undertaking similar studies which when completed will complement this study and provide a total picture of subdivision activity on a statewide basis.

METHODS OF DATA GATHERING

The information used in this study was collected from recorded sub-
division maps, tax rolls, personal interviews, aerial photographs, a limited number of field investigations and numerous published and unpublished reports and documents. The recorded maps provided data on the number of subdivisions, location and date of approval. If no recorded map was available, the records of the Nevada State Health Department was also reviewed. The major data field was the reassessment of the subdivided parcels. These were commonly the first parcel to be reassessed during the tax reassessment cycle. This cycle was performed during the past twenty-five years. The tax reassessment cycle is the beginning point for three reasons: First, it is generally agreed that this was the beginning of the era in which most of the major subdivision activity within the state occurred, although there were a few large subdivisions
division maps, tax rolls, personal interviews, aerial photographs, a limited number of field investigations and numerous published and unpublished reports and documents. The recorded maps provided data on the number of parcels, acreage, subdivision design, location and date of approval; if noted, information concerning water and wastewater requirements as set forth by the Nevada State Health Department was also reviewed. The tax rolls provided the primary source of information concerning improvements upon the individual parcels. Not all subdivisions were listed separately in the tax rolls by subdivision name, thus making extensive cross-checking necessary. In the case of large subdivisions and planned-unit-developments separate recognition by unit of subdivision was applied. Improvements on the land were broken into two categories - permanent structures and mobile homes. Data on the provision of water and waste-water was determined from individual assessment records, from personal interviews with county assessors, engineers and other persons familiar with each subdivision and from various studies dealing with such matters.

BACKGROUND INFORMATION

This study provides valuable information about subdivision activity since the year 1950. The report reveals which of the non-metropolitan counties are experiencing the greatest subdivision pressures and also shows the fluctuations of activity that have occurred during the past twenty-five years. The year 1950 was selected as the beginning point for three reasons: first, it is generally agreed that this was the beginning of the era in which most of the major subdivision activity within the state occurred, although there were a few large subdivisions
and agricultural communities created prior to that date, second, because most development prior to 1950 occurred in the two metropolitan counties in the state which are not a part of this study; and third, because many of the very early records are unreadable or unavailable for research purposes. Today, however, premature subdivisions (approved in areas where growth is not anticipated) are being created on an unprecedented scale and the problem is taking on important dimensions. Not only because many people are investing in property which will probably never produce the "speculative" return they were led to believe, or hoped would happen; but, more importantly because so much land is being needlessly developed, often with serious and irreversible damage to the environment. Scattered development patterns raise the cost of government services and produce parcels of land with little or no income producing potential far removed from essential community services and employment opportunities. These factors compounded by high marketing costs are reasons why the cost of such developments are generally high.

When local governments are required to serve these developments, either through legal or moral commitments, it is often found that the costs for maintenance and construction of schools, police and fire protection, refuse collection, etc. are far higher than the revenue derived from property taxes. The further the subdivision is from the services and the slower the build-out (the actual use of the land) the greater is the service-cost/tax return differential. To overcome this problem special governmental or quasi-governmental districts are often set up to provide services which are demanded but which can not be provided by an existing unit of government. This adversely affects
the established tax structure of the surrounding portions of the city or county and further complicates government because of the additional entities that have been created.

When land is subdivided, either as a well planned extension to a community or as a "fast-buck" promotion in a very remote area, numerous commitments may be, and generally are, made by the local general purpose unit of government (board of commissioners, supervisors, etc.) in which the subdivision or development is situated. Such problems include: demand or increased services, perpetual or, at the very least, implied assignment of some water rights to the parcel, assignment of land to a long term use, and numerous others. These problems are mitigated in developments where the build-out rate is high and occurs in a relatively short period of time, thus providing an expanded tax base that may offset some of the related increases in service costs. Likewise, in developments where zero build-out occurs the demand for services does not result to any great degree. The major problems occur largely in subdivisions where the build-out is in the very low percentages over a long period of time. This type of development creates costs which are disproportionately high when compared to the taxes generated. It should be pointed out that even when build-out is rapid it is usually a minimum of 2-3 years after services are demanded before taxes begin to reach the governmental entity providing the services.

The scale of development is another important consideration, as it relates to revenue (tax) production lag and the ability of the existing tax base to support the increase in services until tax revenues are realized from the new development. For instance, a new subdivision of 500 parcels which is half built-out would probably create few problems
in a community of one million since the community tax base would be sufficiently large to handle the extra costs. On the other hand, this same subdivision if located in a community with a total population of 500 and a very low tax base would produce unbearable problems and could conceivably bankrupt the entity. This is why localities are giving serious consideration to "shortfall" ordinances which would require that the developer install the major facilities so that they will not become a burden upon what is generally a threadbare local budget. The "shortfall" is the difference between expected costs of services provided by a community minus the taxes the new home and family will pay to the community. Services and facilities that are being required by an increasing number of communities included installation of water and sewer facilities, construction of schools, parks, fire stations, etc. Many communities are also considering requiring developers to bear the cost of off-site improvements that will become necessary as a result of their development, including streets, expanded water treatment and sewage disposal capacities, libraries, etc.

Nobody knows how many unneeded, remote, barely accessible or uninhabitable subdivisions have been platted and sold in the United States. This study, however, attempts to assess the situation in Nevada. The reader should be cautioned that the figures presented in this thesis are based only on approved and recorded subdivisions. Not included are the uncounted hundreds or thousands of parcels that did not fall within the statutory definition of the term "subdivision" (see Appendix A). Subdivisions which have received all required state and local approvals but which have not been recorded, have not been reported and consequently represent an inventory of additional uncounted parcels which could be
marketed with no additional state or local review. The size of this inventory is unknown, although recent figures lead me to believe it is very large. For example, it was learned that in 1973 the Nevada Bureau of Environmental Health approved 7,809 parcels plus 17,000 undivided interests (joint ownership of a large tract of land), yet only 5,604 parcels were recorded during that year.

Despite limitations placed upon the study as outlined above it is believed that this information accurately portrays trends in subdivision activity for the past twenty-five years.

Chapters II through V are devoted to an analysis of the problems associated with individual counties. While some of Nevada's rural counties are experiencing greater difficulties with subdivided land sales, development and approvals, other counties remain apart from the mainstream of subdivision activity. Esmeralda County, for instance, has had no subdivision approvals in the last twenty-five years. The state is divided into four regions each composed of several counties. In Chapter VI, case studies are presented to represent subdivision problems in the four regions. It would be impossible, if not impractical, to treat each subdivision separately. Chapter VII "Summary and Findings" summarizes the State's rural county subdivision activity and suggests some improvements that can be made in methods of subdivision approval. The appendices include supplementary information about the legal aspects of subdivisions, summaries of the number of parcels created by year and by county, and a list of defined terms.
REGION 1: CARSON CITY, CHURCHILL, DOUGLAS, LYON AND STOREY COUNTIES

REGION II

Humboldt

REGION III

Elko

REGION IV

Pershing

REGION I

Lander

Churchill

Eureka

Washoe

ST.

Mineral

CC.

Douglas

Esmeralda

Lincoln

White Pine

Nye

REGION III

Figure 1

RURAL COUNTY REGIONAL BOUNDARIES

Source: Nevada State Planning Board
June, 1972
CHAPTER II

REGION I: CARSON CITY, CHURCHILL, DOUGLAS, LYON AND STOREY COUNTIES

The index map on the preceding page (Figure 1) shows the boundaries recommended by the State Planning Board for regional planning and development districts for the State of Nevada. These regions serve as a guide for regional subdivision analysis and are useful for rural county delineations.

Region I includes major concentrations of population among Nevada's rural counties. Because of a greater need for housing in these counties, much of the subdivided land is located close to cities and towns. The increased demand for housing has forced land values to rise, and this factor largely discourages speculative buying since most speculative buyers prefer to purchase land cheaply and seek higher resale opportunities. Most of the land purchases near and within the established communities are non-speculative in nature and development of these properties (build-out) progresses according to the needs of the community. In these cases construction of homes, schools, etc. is contemplated at the time of the initial land purchase. The purpose is not resale of the land or possible non-payment of fees, in which case the land reverts back to the developer for resale.

CARSON CITY COUNTY

Carson City County ranks 10th in the total number of lots approved in the rural county survey. Since 1950, 4,987 parcels have been approved. The average size lot is .28 acres, a seemingly low figure resulting in a higher density residential land use. Several reasons
for this may be taken into account: 1) the amount of developable land is limited (high percentage of slope in peripheral land surrounding Eagle Valley), 2) recent growth has increased the demand for real estate and land values have risen, and 3) mobile home subdivisions do not require large lot sizes. Nearly two percent of the county's 97,920 acres have been subdivided for single-family dwellings.

The population of Carson City County has increased by 501 percent in the last 25 years. Based on a 1974 population estimate by Dr. Shifan Chu of the Bureau of Business and Economic Research, University of Nevada, Reno, Carson City's population has increased by 21,000 since 1950, creating a housing need for 7,000 units using the 1970 U.S. Census median number of 3 persons per dwelling unit. Since 1950 over 4,900 parcels were created, but this figure does not take into account apartments or parcels created prior to 1950 which contribute to the housing supply.

Over 70 percent of the lots available in Carson City County are presently occupied. This is a high percentage compared to most of the remaining rural counties in Nevada, a direct result of a stable state and government employment base in the Capitol Complex (central offices in state government). Another reason for high occupancy is the extension of utilities and services as new areas are developed. Of the occupied units, five percent have retained septic tanks while tying into the community water system. The only subdivision that is not on this water system and is not on wells is Lakeview Subdivision which connects into the Marlette Water Company line enroute to Virginia City residents.

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1Nevada State Planning Board-Planning Division, "The Housing Situation in Nevada", Nevada Planner, Vol. 4, No. 1, October, 1972, p. 4.
In Carson City County there have been high and low periods of subdivision activity over the last eighteen years. These fluctuations are related to interest rates and growth patterns in the area. As subdivisions were created, development followed closely. Therefore, lot speculation has been far less significant in Carson City County than in the remaining fourteen rural counties.

The case studies discussed in Chapter VI describe problems associated with remote subdivisions and those located near rural, sparsely populated communities. Carson City, on the other hand, comprises over 20,000 residents and faces a water shortage issue.

**Carson City Water Shortage**

A controversy has been confronting Carson City officials and residents. The issue is based on declining water resources in Eagle Valley (Carson City), and this concern has led some residents to adopt a motion to cease issuing all commercial and residential building permits until the water problem is solved. The people living in the Overland area, south of Carson City's urban area, have been complaining that their private wells are drying up. The city's Public Works Director, Paul Lumos, agreed that city well number eight (a deep water well serving as a source of community water) was having a direct effect on two nearby wells by lowering the water table. However, he said the problems of other area residents were quite likely due to such things as the end of spring runoffs and increasing water demand brought about by increasing development in the area.

Additional water could be imported from the state-owned Marlette-Hobart system (now supplying Virginia City, Lakeview Subdivision and state buildings). The improvement calls for a $3.5 million revenue
bond to be paid off by Carson City from fees it receives from its customers. New pipelines proposed in the plan would be extended from Hobart Lake down to the City's holding tanks. Water depletion from Marlette Lake would adversely effect the fish habitat in the Lake which now serves as a source of trout for transplant by the Nevada Department of Fish and Game.

The problem of water shortage is valley-wide and cannot be the product of a specific area or individual well site. Citizens feel that city officials have failed to anticipate the increasing need for water, and two senators from Reno commented that Carson City does not need water, and that growth is not advisable. It is well known that wells will not be able to supply demands of the city and officials are looking for a new water supply outside the basin. The outcome of the water problem has not been solved. The proposal to purchase the Bose Ranch in Douglas County for use in Carson City was questioned by a reader in response to a recent newspaper article posted in Carson City's Nevada Appeal on March 9, 1975.

The writer questioned the proposal in the following words:

1. Why buy private land in Douglas County when land from the BLM is available in the Carson City limits, in the Carson River Basin near the State Prison Farm or on the farm? (The ground water reservoir is in the same hydrologic continuity with the Carson River Basin.)

2. North of the Bose Ranch is BLM land with good access road to route 395. (Ground water reservoir in the same hydrologic continuity with the Carson River Basin.)

3. The proposed purchase of the Bose Ranch, and the planned well-field, seems to display shallow engineering planning because the ranch area is subject to frequent flooding. And water tanks, if located there, will need to be elevated above ground with a high probability that foundation pilings will need to be set fifty feet below ground.
4. Piping seven miles distance to Carson City, as well as pumping necessary pressure to transport over the hill (approximately 250-foot difference in elevation) to Eagle Valley, is economically extravagant.

5. It is unlikely that Carson City will obtain water rights without protest from Douglas County which has already indicated they will fight the proposal by Carson City. This means additional legal costs and wasted time.

6. There is the question, too, if bond money could be used outside Eagle Valley.

7. The escrow terms in granting $5,000 per month of taxpayers' money for the option to purchase the Bosc Ranch is out of line. The price is too high, and very possibly these public monies will be lost.

8. The price of the Bosc Ranch, $350,000, is also excessive because the ranch is not prime ranch land. It is located on a flood plain and with very high underground water. The land could not be developed for subdivision.

9. Some alternatives worth considering would be to purchase water rights from Kings Canyon Creek (approximately several hundred acre-feet): Exploration to purchase water rights from Clear Creek Canyon: Investigation of availability of the land in Carson River Basin from BLM in Carson City limits: Recharging underground water table in Eagle Valley by return flow from irrigation: Exploration, by application of geophysics, on the west side of Eagle Valley canyons where high probability of underground pools and streams interconnected with Lake Tahoe exist: Inter-counties comprehensive studies for recharging underground water from Carson Sink.

Paul Lumos, Carson City Engineer, feels that nearby BLM land is a poor risk since this land exists mostly on hillsides, rarely producing much water. The alluvial fan which is most likely to produce water is mostly within the Carson City limits, and much of that land is private.²

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The hills to the north of Jacks Valley Road have been ruled out as a possible source of water because the land is upslope from a fault zone, and it is composed of granitic rocks.

Douglas County officially protested the four proposed well sites as well as any drilling which would yield water for use outside Douglas County. State Engineer's report number three, dated October, 1971, states there is a total of 25,000 acre feet of ground water recharge within Carson Valley, with 3,000 acre feet of ground water inflow and 4,000 acre feet of evaporation, for a total available ground water recharge of 24,000 acre feet. At this time, Carson Valley uses approximately 5,000 acre feet for domestic and agricultural use. The four applications of Carson City total 17,375 acre feet, which could seriously impair the rights of Douglas County residents by leaving only 1,625 acre feet for future development. This is insufficient to permit future growth under the County's Master Plan.\(^3\)

**Future Development**

Carson City County, although far smaller in population than Clark and Washoe counties, is nevertheless experiencing much the same urban problems as those faced by the more populous counties. There has been an increase in all types of single-family dwellings (including permanent structures and mobile homes) and multiple residential units (condominiums and townhouses). The New Empire area east of Carson City is the fastest-growing part of the county, but it has the highest density of water users.\(^3\)

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\(^3\)Raymond M Smith, A.I.P.(consulting firm) "Philosophy of Growth", Douglas County General Plan, 1974, p. 43.
City's urban district has the greatest number of mobile home subdivisions in the fifteen county survey. Most of these are situated on the north side of U.S. Highway 50 East where lot sizes average 150 feet by 50 feet, assuring long term mobile home occupancy in that area.

Most of the recent developments (those of the past five years) in Carson City are on the urban fringe. There has developed a need for residential development for retired state and government employees who desire an uncrowded and pollution-free, healthy environment. But it seems likely that as the population grows, Carson City will lose its "small town" appeal and Dayton (to the east of Carson City) may serve to accommodate the overflow of non-urban oriented population.

Predictions, based on past subdivision records, indicate continued activity until most of the privately held lands are developed. Then a leveling-off period will evolve after population increases are discouraged, probably as a result of mounting water shortages. Projections indicate the basin will run out of water by 1978.

CHURCHILL COUNTY

One and two tenths percent of the area of Churchill County is privately owned, and most of this is agricultural land. Much of the remaining non-irrigated land is composed of mountains and arid basins covered with sparse shrubs.

Churchill County ranks low in the number of approved subdivided lots (812) in the last twenty-five years, but it has the highest occu-
pance rate in the fifteen-county survey (see Table III). Based on this, we can assume that Churchill County supplies its needs for housing without creating excessive lots with speculative characteristics. A major portion of occupied lots have permanent structures with the exception of one mobile home subdivision (approved in 1974) and the remaining number of mobile homes restricted to parks. Churchill County's policy for mobile home subdivisions provides for the design of lots which could be used for permanent structures in the future. The lot widths must be a minimum of 100 feet instead of 50 feet approved for mobile home lots in other counties.

Most of the subdivision activity has occurred in large, vacant tracts of land within the city limits of Fallon, and utilities have been extended to the new additions. Subdivisions which are located just beyond the city's legal boundaries will in the future be connected with the existing community water and sewage system (after annexation). Over one third of the subdivisions in the county are located within the city limits of Fallon, and the remaining two thirds are less than five miles from Fallon.

Water is a limiting factor in Churchill County's development when considering the number of people the land can support without interrupting agricultural activities. Large tracts of desert land have been sold and divided into large parcels over forty acres (see Appendix A, Definition from July 1, 1973 to 1975, section 1, subparagraph a) which are not considered subdivisions according to Nevada Revised Statutes. In many cases where these large land divisions are occurring, water and power do not exist and accessibility to the sites is minimal. The land di-
visions cannot provide future residents with adequate living conditions (water - quality and quantity, electrical power and roads) and if developed may become a burden to the county.

DOUGLAS COUNTY

Douglas County, an area of recent population increase is, for the purpose of this study, divided into two regions: the Carson Valley-Topaz Lake area and the portion of the Lake Tahoe Basin which lies in Douglas County.

Most of the subdivision activity in Douglas County has been non-speculative for reasons based on location (not far from Carson City), recreational opportunities and availability of water. In the Topaz Lake area there has been a higher degree of speculative lot purchases, and many of the improvements in that area consist of mobile homes with a few conventional homes.

Subdivisions at South Lake Tahoe must comply with sewer and water regulations set forth by the Bureau of Environmental Health. The older subdivisions, approved for septic tanks, have been required (by Nevada State Law) to purchase and install holding tanks in hope of decreasing pollution at Lake Tahoe. Water plans must be approved by the Bureau of Environmental Health before a subdivision preliminary plat is approved.

Lake Tahoe - Douglas County Subdivisions

The year around casino activity at Lake Tahoe has been responsible for growth in nearby Carson Valley where housing costs are lower. Many of the homes in the Tahoe Basin are seasonally occupied or serve as
second-home recreation sites, although, with increased visitation from California this is changing. Weekend recreationists occupy dwellings on a more permanent basis. Improved accessibility to the Lake in the winter months has contributed to the area's all-year economic activity.

The quality of housing in the Douglas County portion of the Tahoe Basin was surveyed by a local planning consultant, and his unpublished report noted that the area had the highest percentage of unsound single-family structures in comparison to other counties at Lake Tahoe.\textsuperscript{4} He recommended that these dwelling units be removed on the basis that they are "potentially dangerous and unsightly in appearance". A paradox exists because land in this area is relatively high in value, and the blighted structures do not reflect the land value. A reason for this may be that commercial or industrial use is generally profitable, and residential structures, unless they are for multiple use apartments or condominiums, are not considered profitable. Hall has stated that the property tax was instrumental in creating slums and has been one of the chief reasons why the neglect of residential structures has been perpetuated.\textsuperscript{5} The tax makes dilapidation and neglect profitable. It has been suggested that a solution exists in a reform of the tax system providing that land be taxed at a high rate because location (lake property) may increase its value. On the other hand, property should be


taxed at a lower rate which would place no penalty on erecting and maintaining quality structures. There may be a drawback in applying this concept to the Tahoe Basin. The landowner may be obliged to develop a more productive use (townhouses or condominiums) which could result in higher density land use not in good standing with today's policy of limited growth in the Tahoe Basin.

Carson Valley Subdivisions

All but one of the Carson Valley subdivisions are in agricultural areas. The exception is Lampe Subdivision. The major subdivided areas in the Valley are Jacks Valley, Johnson Lane, Genoa, the Gardnerville Ranchos (south of Gardnerville), and Rhuenstroth Ranchos. Most of these locations display a mixture of mobile home and permanent structures. Two exceptions are Genoa and the Gardnerville Ranchos, both of which are exclusively conventional homesites. One of the Carson Valley subdivisions will be discussed later as a case study.

STOREY COUNTY

Storey County is physically limited in subdivision development by its steep, mountainous topography. The county has the highest percentage of relief in the state in relation to the total area of the county. Only land of less than ten percent slope should be considered for development. Soils become unstable at higher slopes, giving way to the south.


to a more fragile environment. Some of the developable lands (based on slope conditions alone) are found at higher elevations and encompass the major watershed areas. The northern boundary of the county, along the Truckee River floodplain is one of the few low-lying, non-sloping land surfaces. The level strip of land is narrow and long in shape with little transition to the mountains (Virginia Range) which rise steeply to the south.

Precipitation is heavier on the higher peaks (15 inches per year) with considerably lesser amounts at the lower elevations. While there may be possibilities of development at higher elevations where water quality and availability are acceptable, there is the problem of access. Surface drainage during winter months, combined with clay overburden, discourages access even with the most competent of off-the-road vehicles. Further, over 60 percent of the county is classified as having very high shrink-swell characteristics, and over 90 percent of the county has been classified as having moderate frost action or frost-heave potential. The poor capability of Storey County soils combined with steep slopes and inadequate access restrict subdivision development in most parts of the county.

Storey County has two approved subdivisions and one recreational park (17,000 undivided interests located in Long Valley). The subdivided parcels are located in Long Valley and the Carson Plains. Long Valley, an area with one-acre units, has been tested for water availability, and results show it has the ability to support densities of one unit

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for every 40 acres according to the previously cited Storey County Land Use Plan. But such a high density could severely affect the drainage in that area. The Carson Plains subdivision has been approved for 355 lots, but according to water availability, the area can support only 390 units. Proposed densities are a part of a new zoning ordinance in Storey County and serve as a guide to all future subdivision activity.

LYON COUNTY

Lyon County, situated in the west central part of the state, covers an area of 1,012 square miles. The county's topography is mountainous with three fertile valleys: Carson River Valley, Smith Valley and Mason Valley. The county receives precipitation ranging from 15-20 inches at the higher elevations to 5 inches in the lower areas. Temperatures range from the 30's in the winter to the 70's in summer.

Lyon County's subdivision activity can be divided into several areas. Mark Twain development extends into Storey County. Mason Valley, Smith Valley, Fernley and Dayton constitute the other areas of subdivision development. The more popular lots are located near communities where jobs are available as well as municipal services. Lyon County has 10 percent of the state's rural county subdivided lots and has an occupancy rate of 2.8 percent.

Three major basins divide the county: the Walker, Truckee and Carson River Basins. The Fernley area is within the Truckee River Basin, and Dayton lies within the Carson River Basin. There are approximately 800 lots in the Walker River Basin (Mason and Smith Valley areas). The largest percentage of lots is found in the Dayton-Silver Springs area.
where mobile home improvements outrank permanent structures by 95 percent.

According to the State Water Engineer, the Silver Springs area, east of Dayton, is a closed basin and is limited in water resources. The lack of water for some 7,000 lots in that area will insure far less development than was previously considered. Continued and increased use of wells may eliminate ground water consumption since ground water storage is a small percentage of the total precipitation and a long recuperation period for recharge is necessary. According to studies of physical resources in the Lyon County General Plan, ground water storage is limited and withdrawal of water for years at an excess rate of natural annual recharge will result in the depletion of stored water. Increased usage of the land will continue to lower the water table, and there may be a time in the future when water may no longer be obtained.

One may describe Lyon County's remote subdivisions as speculative with the exception of the Fernley area which has the potential of becoming a "suburb" of Reno.

Lyon County is not experiencing rapid increases in occupancy, although, the Silver Springs area with its limited water resources was steadily growing until Lyon County officials imposed a subdivision moratorium in 1973.
Chapter III

REGION II: ELKO, HUMBOLDT, LANDER AND PERSHING COUNTIES

Region II counties represent the greatest amount of remote subdivision activity in Nevada. Remote subdivisions are defined as those located outside of a section of land any portion of which is incorporated. These subdivision lots may be reasonably priced and appeal to low income families as well as to retired people with fixed incomes. What these buyers may not consider prior to buying land in remote areas (for the purpose of residing there) are the costs of drilling individual wells, providing sewage disposal, power lines and road maintenance. Other services such as school facilities, fire protection (stations and equipment), emergency medical services and shopping facilities are important to the welfare of the public, and generally these too are not available near a remote subdivision. If the developer will provide these utilities and services in the future, when will he do so? What many buyers do not realize is that, in most cases, the cost of providing the necessary services is passed on to others (see Appendix C). Buyers, unable to pay for services themselves, often demand that these be provided by the County. This means increased taxes or bonds along with a special and separate tax for remote subdivision residents.

The land sales industry owes much of its spectacular growth to the ability of salespeople to convince people that buying lots is a great way to invest money.\(^2\) A land company will buy several thousand lots along with the purchase of several hundred additional acres of raw land, normally in a sparsely settled area and will sign options that give the company the right to buy additional acreage. Next the company builds a small core community with a few mobile homes, a golf course, or a clubhouse and recreation center. At the same time large numbers of lots are put on the national market. If sales go well, money starts coming in from down payments and monthly payments on lot purchase contracts, generating a cash flow. Part of this money is used to enlarge the developed area. Then options are exercised, more lots are staked out and put on the market, and the cash flow increases. Thus, lot buyers provide the "life blood" of the development, actually helping to finance it. The lot buyers supply most of the front money, and they also assume most of the risks, which are substantial. These risks are so high that banks, insurance companies and other major lenders refuse to finance them. If competently administered, the land company can be capable of producing good communities. But there are fundamental weaknesses in the system, which often works to the detriment of both lot buyers and the general public. Because a project's success is based on the number of lots sold rather than housing demands, the pressure to sell is enormous, giving rise to questionable sales practices.

\(^2\)The Nevada Real Estate Division stresses the elimination of the term "investment" in sales brochures and verbal approaches to prospective buyers.
Prior to the 1950's, indiscriminate subdividing was the work of relatively small local promoters. Now multi-million dollar corporations with international sales networks have begun moving land in developments involving much greater amounts of land. Many of the offerings of large scale land companies are remote subdivision.

ELKO COUNTY

Elko County is Nevada's second largest county with a total of 10,995,840 acres of which 48,836 acres are subdivided (1950 - 1975), and another 141,479.37 acres are classified as special lands. These special lands consist of "subdivisions" of federal land - generally previously administered by the Bureau of Land Management - that because of their federal status at the time of division did not fall within the subdivision review jurisdiction of local political entities.

Elko County's major topographical feature is that of a high plateau region with northwest-southeast trending mountain ranges. The county lies mainly in the Basin and Range Province with a small portion in the north which drains into the Columbia Basin.

The county's annual rainfall is nine inches, but higher elevations may receive as much as fifty inches of precipitation annually. Some of the lower elevations lie in rain shadow areas and receive as little as four inches of precipitation yearly, most of which occurs in winter.

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Evaporation exceeds precipitation during summer months, and water recharge is negligible in a number of basins.

The temperature extremes and limited precipitation may have adverse affects on poorly constructed dwelling units. Mobile home owners have complained about insufficient insulation which has resulted in costly heating during winter months. The hot, dry summer months promote fire danger, and electrical costs soar from air-conditioning units. Brush fires may be hazardous to those who live in outlying areas with poor accessibility and little or no fire protection.

Elko County's subdivision design parameters were set up in 1974 to regulate development of private lands by establishing standards to insure that developments lend themselves to the overall benefit of the area and to the general public. Many of the problems facing the county today originated with the approval earlier of poorly planned subdivisions. Many lots have been surveyed according to section lines in a general grid pattern, and little or no consideration was given to the steepness in grade or slope. Elko County's Meadow Valley Ranchos is an example of how a large company (described in the beginning of Chapter III) has bulldozed steep hillsides for the blading of roads in order to meet road requirements. There are no regulations as to how these roads are to be supplied or maintained; thus, watersheds are damaged or destroyed, and the landscape is marred. The purpose of providing a road for access is lost since the roads are too steep for most vehicles to use.

Another problem associated with developing land within the county's remote subdivisions is the increase in crime. Vandalism is common in outlying areas where police protection cannot be provided. The in-
migration has upset the economy and has cost the county $500,000 (in a seven-year period) to police more areas.

A number of occupied lots are situated along U.S. Highway 80, east of Elko. The majority of these are not aesthetically pleasing as landowners in the area are not able to afford the maintenance of a single car. In these cases, old abandoned cars are collected to salvage enough parts in order to maintain at least one car. Related to this is the fact that people who have purchased land and become residents cannot find jobs. The county must then provide welfare for these people. The residents in the more remote subdivisions also demand that roads which connect their property with major routes be bladed and cleared during winter months when snow cuts them off from service centers. The county is not able to provide these services to just a few individuals who may live miles from the nearest highway.

Another problem associated with poor subdivision location is education. Children who live in inaccessible areas have a high percentage of absenteeism and do not receive the education needed to better their living standards.

Often utilities are promised for some time in the future, and in the remote areas, there is a strong possibility that the lot buyer will eventually have to provide his own utilities. Electric companies may extend service free of charge as far as 500 or 1,000 feet from existing powerlines. Beyond that, a person would have to pay perhaps $.75 to $1.00 per foot. Underground lines may be paid all or in part by the lot buyer in which case the cost of trenching may be anywhere from $.35 to $4.50 per foot depending on the soil type and terrain.
Subdivisions located in and around the city of Winnemucca have a higher degree of occupancy compared to those which lie farther from the city. Most of the remaining subdivisions are located within a reasonable distance from the community with the exception of a few speculative developments. The latter account for the relatively great acreage subdivided in comparison to the number of available lots. The design of these parcels, which were broken up from sections (640 acres), is a gridiron type and does not allow for topographic irregularities and drainage.

The completed subdivisions within Winnemucca have undergone special attention in planning and organization. Holladay Subdivision, a recently approved development (1971), was carefully designed and provisions were made for water, sewer and street improvements. The subdivision occupancy is near completion which reflects the quality of planning as well as the need for housing. Bellvue Addition, approved prior to 1950, was developed by a group of business people who wanted to live in a quality area with paved streets, curbs and gutters, and community water and sewerage. There was no question as to occupancy since all lots were quickly purchased by the business people themselves and construction followed soon afterward.

There is one particular subdivision that represents two different periods of development. The owners in the older unit are in a special assessment district and have acquired paved streets, curbs and gutters, and city water and sewer lines. The newer and poorer quality unit of this subdivision has dirt roads, wells and septic tanks with little or no chance in the near future for improvement because of the homeowners'
level of income and increased construction costs.

Since 1950 Humboldt County has had a population increase of 1,537. Five hundred and twelve dwelling units were needed to accommodate this number; instead, 2,487 lots have been created. On a rural county survey, Humboldt County ranks sixth in the number of lots created and has the seventh highest occupancy rated.

LANDER COUNTY

Lander County, the ninth largest in the state with 5,621 square miles, has only 487,464 acres in private holdings. Since 1950 the county has increased its population by 816. There has been a need for perhaps 236 additional homesites in the last twenty-five years; instead, 1,361 lots have been approved.

The adopted Lander County General Plan provided a subdivision ordinance designed to regulate the private lands. Cluster subdivisions have been recommended; they have the following characteristics: ³

1. They reserve open land.
2. They permit different sizes of lots, let residential types vary, and allow a mixture of commercial and residential uses.
3. They create a more interesting housing appearance, eliminating a monotonous condition often found in many of today's subdivisions.
4. They reduce lot size which in turn minimizes maintenance.
5. They discourage through traffic (curvilinear design).

This subdivision type is favored in areas where there is little or no plant cover as is the case in many of Nevada's rural, non-irrigated

regions. Remote subdivisions have a tendency to display a "junk" landscape, where, as is usual, subdivision covenants are not issued, and it is not mandatory that refuse be covered or removed for occupied parcels. Battle Mountain is experiencing a housing shortage and rental costs are high. Mobile home parks, which accommodate approximately 233 residents, account for the greatest amount of single-family dwellings. Contractors do not consider Battle Mountain a safe area of investment because building materials brought into the area are expensive, and an unstable economy requires residents to remain mobile.

Four of the county's ten subdivisions have been annexed to Battle Mountain. Only two large subdivisions lie outside the community. Kingston Town (see Chapter VI - case studies) and Gillman Springs, both remote subdivisions, are located five miles apart in southern Lander County. There has been development at both of these locations, and Kingston Town has had enough build-out to classify it as a townsite. The remaining subdivisions in Battle Mountain may be considered speculative resulting from a high degree of occupancy. At this time there is a need for quality housing in the community.

PERSHING COUNTY

The majority of occupied lots in Pershing county are in Lovelock, the county seat, and these are few. Pershing County is the only county in Nevada to have a decrease in population. A lack of quality water and limited economic base account for its lack of growth.

Lovelock provides services to travelers who pass through the town enroute to larger centers. The highway which presently cuts through
Lovelock's central business district will be rerouted to bypass it. Lovelock's economy depends on business from the highway traffic and may well experience a setback from the bypass, perhaps further decreasing the community's population. Any new subdivision in the area is to be regarded as speculative unless new economic opportunities develop.

Special lands, composed of acreage that has been sold by the federal government to private interests, amount to 86,057.419 acres. This land has been sold speculatively to many individuals and firms from out of the state as well as from out of the country. In most cases, the landowners have not seen their property and, in all probability, would have difficulty in locating it (survey markers and bladed roads disappear with time). Still they continue to purchase land and pay taxes. There are a number of lot purchasers who have allowed their taxes to become delinquent and will probably benefit in the long run by abandoning the property. If a substantial number of special landowners decide to build upon their land with the intentions of permanently occupying it, Pershing County will be facing problems similar to those experienced in Elko County. As it stands, the county officials are content in collecting taxes from these lots without supplying services to the unimproved remote areas.
Chapter IV

REGION III: EUREKA, LINCOLN, AND WHITE PINE COUNTIES

Geographically, Region III is located farther from any major service center than the remaining three regions. The communities of Ely, Austin, Pioche, Caliente and Panaca supply the bulk of goods and services for area residents. Recent population increases are based on employment opportunities, with the mining industry and town businesses being the major contributors of employment. By some standards in more populated states, the communities themselves (in Region III) may be considered remote. Still, even more remote are the subdivisions located miles from these.

EUREKA COUNTY

Eureka County has had only two subdivisions approved in the last twenty-five years. This low number of approved subdivisions may seem insignificant but the size and location of them incorporates nearly all the problems troubling Elko County. More than 1,450 parcels have been approved, and very little development has occurred (the units were approved in 1959, 1960 and 1961). More information on Eureka County subdivisions is supplied in Chapter VI dealing with case studies.

LINCOLN COUNTY

Lincoln County subdivisions may be classified in two ways: one is
that of the subdivision addition to an established community, and the
other is speculative, located on a major transportation route, but remote
in the fact that no service centers are available in close proximity.

Evergreen Flats, now known as Mount View Estates, has not had a
single lot sold in its four years of existence (approved in 1971). The
Nevada State Health Department officiated in the approval of this subdi-
vision when the availability of water was questioned. Water was discov-
ered at depths below 200 feet, although there remains some doubt as to
the area's total amount of recharge, precipitation and runoff minus evap-
oration and transpiration.

The choicer subdivisions are near communities where some services are
available, and the larger percentage of occupied lots in these develop-
ments is representative of this.

A major problem with Lincoln County's remote subdivisions is their
poor accessibility. Some roads have not been bladed, and original fences
still exist on the former ranch land. Lot buyers who wish to develop
their property may find it difficult to determine which lot is theirs
even if they could reach the approximate vicinity of the subdivision.

Lincoln County has witnessed a population increase of approximately
2,498 since 1950. To provide sufficient housing needs for this increase,
700 dwelling units would be necessary. This figure is based on the 1970
U.S. Census of Housing which shows that there are approximately 3.2
people per dwelling unit in Lincoln County. Instead, a total of 2,056
parcels have been provided.
Many of White Pine County's divided parcels are not approved subdivisions but instead are records of survey which are not for the purpose of land sales. Still there have been cases where land of this nature has been sold and then used for subdivisions. Under N.R.S (Nevada Revised Statutes) 278.590, it is unlawful for any person to offer to sell or transfer any subdivision or any lot within the subdivision that is not in full compliance with the provisions of N.R.S. 278.010 to 278.630.

Most of the larger "land abstract" parcel maps contain a clause which reads as follows: Not a subdivision as defined in N.R.S. 278.010 to 278.630 inclusive. N.R.S. 278.540 describes a record of survey, not a subdivision. If records of survey contain more than four lots or parcels, the surveyor or person(s), for whom the record of survey is made, shall place upon the map a statement of the facts which will clearly show that such a record of survey is not a subdivision. The use of the name, "Land Abstract" in place of the term "subdivision" does not exclude the land abstract from subdivision regulations if the land is divided and sold.¹

Only 3.43 percent of White Pine County is privately held land. The Bureau of Land Management administers the bulk of County's land area (76.6 percent of the 5,699,200 acres).

¹Land Abstracts are used when referring to the history of a survey parcel and should not be confused with subdivided parcel maps.
Ely, the county seat of White Pine County, where much of the recent activity is taking place, is located near the southern perimeter of the Great Basin with sagebrush and mountain ranges representative of the county's landscape. The temperatures recorded at Ely have been the coldest in the state, and the annual precipitation has been measured at 9.42 inches.

The county has a combination of basic and non-basic industries which employ a total of 4,510 persons. There has been a 2,226 increase in population in the last 25 years, and half of these people reside in McGill (a mining company-owned town). By subtracting the number living outside of McGill four hundred and fourteen (414) units were needed to accommodate the population increase; thus, there is an excess of 1,426. This number may be low since many of the new residents have established homesites on lots platted prior to 1950.

Interviews have indicated that many of Ely's residents do not wish to speculate on lots outside the communities where the cost of construction is high and where municipal facilities and services are not available. With this in mind, build-out may be slow in the outlying areas.
Chapter V

REGION IV: ESMERALDA, MINERAL AND NYE COUNTIES

Region IV is well balanced in that it contains the leading producing county with approved subdivisions as well as the only rural county in the state that has had no subdivision approvals in the last twenty-five years. Esmeralda County is not confronted with problems associated with remote subdivisions. The only activity dealing with subdivisions there is the trading or selling of land which is part of the old town plat of Goldfield.

MINERAL COUNTY

Mineral County has one of the better looking subdivisions among Nevada's non-metropolitan counties in Hawthorne, the county seat. The homes in this subdivision (Mount Grant Addition on the west side) are well maintained, and street improvements include paving, curbs and gutters and sidewalks. Wide, straight streets provide access to the homes which may encourage excessive speeds through the residential area. In contrast, homes outside the subdivision on the east side of Hawthorne are older, substandard and generally unsafe structures.

One unique subdivision in Hawthorne is Robertson's Subdivision. The subdivision (totalling ten acres) is designed especially for livestock, not for the purpose of homesites. Although this concept in subdivision usage may seem a good idea, problems exist in practice. Many of the corrals and sheds are in poor condition, there is no conformity
as to the use of building materials or structural design, and there is a possibility of fire danger as fence lines, barns and hay storage facilities are too close together.

The southwest shoreline of Walker Lake is being developed. At least four subdivisions are located along the shore, and some of the land has been terraced to provide level surfaces for lot improvements. The majority of improvements along the shores of the lake are mobile homes, and permanent structures are intermingled with them.

NYE COUNTY

Nye County, the largest county in Nevada and the third largest in the forty-eight contiguous states of the United States, has widely distributed over its area steeply faulted mountain ranges and low gradient valleys. Playas are scattered throughout the county, and valley fill, composed predominantly of Quaternary clastic material, indicates the strong erosion forces of water coming off well developed alluvial fans.

Precipitation and temperature vary with latitude and elevation. The southern part of the county has an average annual temperature of 59.5 degrees, and the northern region has an average annual temperature of 51.3 degrees. The differences in average annual temperature are a product of latitudinal range. Precipitation also varies in distribution with respect to latitude. The northern area receives 3.58 inches, and the southern area receives 4.6 inches annually. Nye County's north-south distance encompasses one classification of climate but with two variations: the north depicts a Middle-Latitude Steppe Climate, and...
the south is a Middle-Latitude Desert Climate.

Just as there are two divisions of climatic regimes, there are also two major divisions of subdivision activity. The northern subdivisions are located in and around Tonopah, the county seat of Nye County. The southern subdivision activity is located in Pahrump and Amargosa Valleys northwest of Las Vegas. To date, there have been more improvements in the north when compared to the number of lots available. The subdivisions in the south comprise one of the most intensely subdivided areas in the state, both in number of lots and acreage.

Nye County has had an increase in population of 2,498 since 1950. Approximately 892 units would be required to house this increase. Instead, 22,158 lots have been created in the 25 year period.

Chapter VI

REVIEW OF CASE STUDIES

Land subdividing in Nevada's rural counties appears to be far more excessive than is necessary when reviewed in the light of anticipated settlement. In most cases the people who benefit most in the land sales industry are the developers (subdividers), and the purchasers of lots may not receive good financial returns on their investments. It cannot be concluded, however, that every lot or subdivision is a poor investment. As was pointed out, some areas have locational or site problems (lack of adequate roads, water, etc.), and lot purchasers should be aware of what the problems are. Not every lot owner may wish to occupy the purchased land, but for those who do, the problems of settling in a poorly planned subdivision or remote area should be considered prior to the signing of a purchase agreement.\(^1\) In spite of this, it is recognized that there are people who will deliberately choose to live in those areas because they want to live there.

Seven subdivisions have been chosen for a detailed analysis of the problems associated with them. The names of the subdivisions are withheld, but locations are given on the "Rural County Subdivision Map" included in the report for those who are interested in further investigation. The subdivisions will be referred to as subdivision #1, #2, #3

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\(^1\) The Nevada Division of Real Estate requires that the prospective buyer should see the exact property before signing any document for a purchase.
and so forth. The four regions presented in previous chapters are represented by one or more subdivisions for case study review. These subdivisions do not necessarily indicate fully what the region is experiencing, but rather, they reveal many of the problems which the rural portions of the state face as a result of premature subdivision approvals.

Subdivision #1: Region I

Located in Douglas County, Subdivision #1 has both water and sewerage problems. Subdivision residents feel dissatisfied with the developer's intentions of providing an adequate water supply. At this time there is a ban on issuing building permits and water hookups pending the Nevada State Health Department's position on this matter. County manager, Roland Adams, perceives that "they (the subdivider and stockholders) simply do not have enough water to do what they have to do and still keep expanding". The fire chief feels there should be a cushion to fall back on and that the one water tank does not provide enough water storage for fire flows.² The capacity of the system and adequacy of the source of supply are the two factors being reviewed. If the tank is kept full, the distribution system will be adequate (with the now existing 24 foot high, 60 gallon tank). The acting County Engineer found that there has been no greater than eight feet of water in the tank at any one time. Residents have voiced their concern over this matter at public meetings and support a "no growth" policy. At

²Fire flows refer to the amount of surplus water needed for fire suppression.
this time there are 400 residents in Subdivision #1 (with seven units and 1,100 lots approved).

The subdivider has an interest in the county's golf course which is located within the developed part of the subdivision. A petition has been circulated by the developer to remove the golf course from the water district following numerous complaints about decreasing water pressure. The golf course is laid out in such a way that many of the fairways run through developed portions of the subdivision and neglect in the maintenance of the course could reduce the value of the property around it. The open space stripped of vegetative cover could produce a dust-bowl effect resulting in loss of top soil and further disrupt conditions for nearby residents. The Nevada Division of Health has required that the improvement district conduct a study of its water system before it will lift the moratorium on new hookups in the subdivision.

As a result of the expansion at Subdivision #1, Douglas County is considering applying for an Environmental Protection Agency grant of more than $1 million for expansion of the presently overloaded sewage treatment plant. The Gardnerville-Minden Sanitation District desires protection against any more large developments until there is a definite agreement between the county and the district on plans and specifications for sewer lines and locations. (The sanitation district serves the communities of Minden and Gardnerville as well as Subdivision #1).

The problems of build-out in Douglas County reflect this situation described in the introduction. Build-out is slow, therefore, the existing tax base is not sufficient to support the increase in services. Also, the number of parcels created in Subdivision #1, which is
one quarter built-out, amounts to as many dwelling units as are now occupied in the communities of Minden and Gardnerville combined. Thus, the low tax base generated in the two existing communities has required that the developer (at a cost passed on to the consumer, in this case the landowner) install the major facilities. It is becoming more apparent that the cost of supplying services may have to be shared by both the developers and the communities.

Subdivision #2: Region I

Another Douglas County development, Subdivision #2, has a water shortage. One particular site was well landscaped, and sales representatives used this as an example on brochures, sales films and other forms of advertising. The sales approach assured the public of an adequate water supply, and according to one area resident, the developers encouraged tree planting. But the water system in Subdivision #2, owned by a private water company, is not adequate to supply water to the people already living there. Now, instead of encouraging water use, the company requires that water be used for domestic use, not for wasteful purposes. Wasteful purposes, as defined by the water company, are the uses of water for irrigation and violation of this may result in the discontinuation of water supplied to the individual in question. Residents feel they have been sold land under false pretense. No solution this problem has been presented at the time of this writing.
Subdivision #3: Region I

Subdivision #3, Unit 1, which is located in Storey County, has been widely publicized. No attention was given to water quality and quantity, geologic hazards (associated with faulting), flooding or historic preservation prior to subdivision approval.

At least 1,169 acre feet of water a year are needed to support all domestic functions in a single dwelling. State Water Law provides that 2,338 acre feet may be used without obtaining a permit to appropriate water.

Natural recharge is the only source available and importation is not considered (no water from the Hobart-Marlette System is to be used in Subdivision #3) as an alternative source of water. Climatological records indicate a precipitation value of 12 inches annually which may be a high approximation since much of this is lost through evaporation and runoff. Most of the precipitation falls during a four month period generally beginning in December and ending in March. Occasional summer storms temporarily rejuvenate stream runoff and spring activity and may contribute to ground water recharge.

Alta and Kate Peak Formations are the most widespread and constitute the bedrock areas. Bedrock units comprise 88 percent of the total area of Unit 1 of the subdivision. The Comstock Fault cuts through this unit and trends in a north-south direction. The latest movement may have occurred since Lousetown Basalts were deposited (approximately 6

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3 Water requirements set forth by the Nevada Bureau of Environmental Health.
million years ago). Faults in areas adjacent to Unit 1 (in the proposed, and subsequently denied, Unit 2) trend east-west displacing rocks of Quaternary age (younger than 2 million years). No evidence of recent faulting has been found in the general area of the subdivision, but the area may be subject to movement in the future. Historical records show that Virginia City experienced an earthquake in 1894 with an intensity of 7.0 on the Richter Scale. Earthquakes of the magnitude 7.0 or greater could occur within a 50 mile radius of Unit 1.

Two areas within Subdivision #3 may be subject to flash floods. These areas lie below well developed canyons carved by powerful spring runoff.

A good portion of Subdivision #3 is in a zone of bleaching, and the corrosive or reactive soils may present an additional problem. These soils are found where unweathered portions of the bleached areas contain sulfide minerals. Soils with corrosive characteristics could contribute to the deterioration of concrete in addition to affecting buried pipes and cables.

Septic systems located on bedrock may cause problems especially where a thin soil cover overlies parent rock material. Very slow percolation rates are encountered in the unfractured bedrock (Alta and Kate

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5Bleaching is a near surface phenomenon, originating from the oxidation of disseminated pyrite (FeS2) by downward and laterally moving ground waters.

Peak Formations in Unit 1). Long term water quality trends have been presented in a water appraisal report. The report points out that full development of individual ground water supplies centered on Subdivision #3 (Unit 1) will result in gradual adjustments of ground water levels in the vicinity to a new lower equilibrium level. This would be reached when well withdrawals for consumption are equalled by combined inputs of: 1) ground water moving in from surrounding areas and from depth, 2) recharge from precipitation and 3) recycling of part of the withdrawn water. It should be noted that the effects of these factors may make the water unsuitable for domestic consumption, and further study is necessary to determine this.

The quality of water varies within the subdivided area. Deep ground water discharge has been found to contain maximum concentrations of inorganic chemicals (fluoride and high iron content), while spring waters (at shallow depths) and recently recharged water are low in chemical content. Adapters for the elimination of undesirable particles in suspension may be purchased for a cost of $400 to $2,000 per individual resident.

The historic significance of the area also brings up the problem of preservation in an area of frequent visitation. Indian cultures dating as far back as 7,000 years may have inhabited the area. Metates have

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8 Sharp, Ibid.
been discovered to authenticate the site (in Unit 2) as historically valuable.\textsuperscript{9}

Subdivision #4: Region I

Field observation reveals Subdivision #4 as a possible flash flood area. The subdivision is situated on an alluvial fan with sediment thickening down slope. Well holes indicate that bedrock is only 20 feet below the surface near the upper reaches of the fan. Large, rounded boulders are found on the surface as well as buried in the 20 feet of sediment, making excavation for wells and septic tanks difficult.

Wells at the northern edge of the subdivision have been drilled at depths of 200 to 250 feet. Impervious layers of subsurface material have caused problems with the installation of septic tanks. Residents on the lower reaches of the alluvial fan have not experienced any problem with septic tanks (with the leaching process), but there is a slight drainage problem resulting in poorly maintained bladed and oiled roads. In winter months culverts are partially filled with water from surface runoff, and sediment builds up near the mouths of culverts restricting the flow of water. Ninety percent of the roads are in need of repair, and the county has been providing equipment and manpower to improve conditions there.

The lack of communication facilities has plagued area residents for some time. The developer did not include a $300.00 per lot fee in the initial sale of lots that would have been sufficient for the installa-

\textsuperscript{9}Mary Rusco, "Report prepared for Unit 2 of Subdivision #3," 1975. Desert Research Institute, University of Nevada.
Figure 2
Erosion Surface on Northern Slopes
Subdivision #4

Figure 3
Drainage Effects on Bladed Roads
tion of telephone lines. The telephone company requires a minimum of 100 phones at $2,000 for each phone to be paid before normal rates can be charged. With this goes a three year contract to be honored by each resident in order to guarantee payment of the $2,000. An alternative to this is a toll system in which every call is charged. The subdivision has a total of eighty-nine mobile homes and nineteen conventional homes, but the cost of telephone installation is far above the amount the residents are able to pay.

Fire and theft insurance is for the most part non-existent in Subdivision #4. On an insurance company scale of ten (one is the most favorable rating) the area in which the subdivision is located is rated at nine, a better rating than the previous year's ten plus. Local residents have grouped to provide the area with volunteer firemen, but the lack of communication makes the response to emergency situations difficult. A resuscitator is available for emergency use by subdivision residents, but again, the lack of communication facilities decreases the effective use of emergency equipment.

The threat of fires in Subdivision #4 accounts for the high percentage of volunteer firemen living there. At least seven of twenty-three have Emergency Medical Technician training (EMT), and they meet regularly to discuss emergency preparedness.

The predominant usage of mobile homes increases the fire risk potential. A recent survey has stated that most fires associated with mobile homes can be traced to poor wiring that occurred during construction, and the materials used in their construction is highly flammable. According to the National Fire Protection Association, the mobile home
fatality rate due to fires is 2.74 times greater than in conventional units. Mobile homes in Subdivision #4 are also subjected to high winds, and the degree of damage may vary with the quality of construction. Exposed seams in the construction of a mobile home (where the roof intersects with the siding) provide an opportunity for winds to pry away the aluminum. Ground cables used in anchoring mobile homes may prevent more severe wind damage, but there remains a better solution to the problem: better mobile home design and placement in relation to prevailing winds.

Subdivision #5: Region III

Subdivision #5 is located in Eureka County in Crescent Valley south of Beowawe. A small service center consisting of two gas stations, a grocery store and a rock shop serve the sparsely populated subdivision. The majority of people living there are employed in the mining and ranching industries and the community is not geared toward retirement living. The limited economic activity in the area accounts for the small population (no more than twenty homes exist in the 1,035 lot subdivision), and its remoteness, lack of medical services, public transportation, and other amenities are unfavorable for retirement (for the elderly).

In January of 1969, a report by Harding, Miller and Lawson, consulting engineers, investigated soil and ground water for the develop-

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ment in Subdivision #5. According to the report, the most favorable areas for wells (determined from a well yield and quality standpoint) are in the lower reaches of the largest alluvial fans. The following table indicates which units and areas within the units have good water potential:

<table>
<thead>
<tr>
<th>Water Potential</th>
<th>Subdivision Units</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>Unit No. 1 (639 lots)</td>
<td>E½ of Section 5 T.29N., R.48E.</td>
</tr>
<tr>
<td>Not Good</td>
<td>Unit No. 2 (129 lots)</td>
<td>Section 7, T.29N., R.48E.</td>
</tr>
<tr>
<td>Above the lower reaches of the alluvial fan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited Possibility of impervious volcanic layers at shallow depths</td>
<td>Unit No. 3 (128 lots)</td>
<td>Section 17, T.29N., R.48E.</td>
</tr>
<tr>
<td>Good</td>
<td>Unit No. 4 (123 lots)</td>
<td>Section 29, T.29N., R.48E.</td>
</tr>
</tbody>
</table>

At the time of subdivision approval, the developer expected much more build-out than has taken place. Power lines have been installed above the ground in a gridiron pattern crossing undeveloped, poorly accessible alluvial fans. The speed at which development is occurring gives strong indication the area will remain speculative for many years to come.

Another subdivision is located in Crescent Valley near Subdivision #5. There are 543 lots in this subdivision, and at the time of this writing (spring, 1975), no homes are situated on it. The total amount of ground water recharge in the valley, according to Harding, Miller and Lawson & Associates, is negligible. The annual precipitation (200,000 acre feet) occurs at various elevations and takes in the total size of the drainage basin. Runoff is estimated to be 35,000 acre feet after
evaporation and transpiration in streams and valley bottoms. Recharge is reduced to 14,000 acre feet of which 12,000 acre feet is estimated to be used by phreatophytes. Clearing the phreatophytes would make available an additional 12,000 acre feet, but this could create an unbalanced cycle reducing the amount of evaporation necessary for condensation.

In 1956, the total amount of recharge available was used through excessive pumping.

Subdivision #6: Region IV

The largest rural county remote subdivision in the state is Subdivision #6. Over twenty thousand lots have been created northwest of Las Vegas in Nye County. Developers have marked off no less than 36,000 lots in Pahrump Valley (these are in their tentative stages awaiting final approval) and bill the area as the "Oasis in Southern Nevada". They predict the population will reach 50,000 before the end of the century, and state officials feel this will deplete Pahrump Valley's supply of ground water. According to State Engineer Roland Westergard, the ground water is already being taken from the valley three times as fast as it can replenish itself. As much as 35,000 acre feet of water is pumped from the valley each year, mostly for agricultural purposes (the only place in Nevada where cotton is grown), but only 12,000 acre feet collects from the surrounding mountains. Laverne Rosse, public health engineer of the State Bureau of Environmental Health, suggests that

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allowing too much development in the valley is shortsighted because figures show pumping is already dipping into the underground reservoir, and eventually there will be no more ground water.

Another problem is that developers are leading people to believe the Nevada State Highway Department is planning a modern highway from Las Vegas through Wheeler Pass into Pahrump, and this is not true. Las Vegas is 50 miles by air, and Pahrump may be too far to serve as a "bedroom" for Las Vegas even if sufficient water was available. One Pahrump land company has sold half of their 15,000 lots, and it is expected that by the time the development is completed in 1980, the investment will reach more than $20,000,000 with the expected population of 50,000 residents.

Nye County officials are not deeply concerned with problems associated with Pahrump Valley land developments because of the distance between the county seat at Tonopah and Pahrump. The concern if any is the disbelief that anyone would want to live in a desert environment (similar to Death Valley's climate) such as found in Pahrump Valley. The general feeling expressed in northern Nye County is that the promotion of the Pahrump Valley land developments taking place in Las Vegas, (Clark County) is partly the responsibility of Clark County officials. Enough information concerning ground water availability has been gathered to warrant a firm decision by Nye County officials against further subdivision approvals in Pahrump Valley. A moratorium is in order. Land developments should not be allowed to "mine" water in desert regions that are not adjacent to surface water systems. Subdivision
density should not exceed limitations imposed by the maximum amount of recoverable ground water recharge. New subdivision lots, depending on ground water recharged for domestic use, must be of sufficient size to provide recharge equal to their immediate needs as well as for secondary community needs. These secondary needs are generated by residential development and include water use for parks, schools, fire suppression, commercial establishments and public buildings.

Figure 4
Pahrump Valley Subdivision

Subdivision #7: Region II

Subdivision #7 is located in Lander County, just off State Highway 8A. A large tract of approximately 1,000 acres is subdivided on dissected alluvial fans and on a floodplain bordered by steep canyon walls. The development lies just to the east of Toiyabe National Forest land (see Plate 1 for location), the vegetation zones vary within the subdivision. Pinon and juniper trees are on the higher slopes, giving way to sagebrush (Artemesia Tridentata), creosote bush (Larrea Tridentata) and other classes of xerophytic plants at lower elevations. The plants are widely dispersed providing almost negligible ground cover.

The subdivision has all the aesthetic qualities which appeal to many people. It has trees, a rare occurrence for remote subdivisions in Nevada, high mountains (snow-covered in winter) bordering the west side of the development, a creek (intermittent) which flows conveniently in front of the company-owned grocery store which is provided by the developers during summer months. What it also has is a very high potential for flash floods, forest fires, high winds, slope failure and mosquitos!

The area would have been ideal for temporary, seasonal use. Instead, expensive homes have been constructed in areas which should have remained undeveloped. Rounded rock fragments, deep gully washes, coalescing alluvial fans surrounding a canyon of 100 foot depth combined with sparse vegetation all lead to one conclusion - the area is highly prone to recurring flash floods. If the forested area to the west, where the major runoff originates, is ever cleared of vegetation (by forest fire or disease) there could conceivably be a major flood. A year of excessive
precipitation followed by a wet spring could speed up the melting process in the watershed above the development as it did in 1972. The chances of fire in the area are excellent since visitation in the nearby forest increases the possibility of fire due to human carelessness.

Bladed roads parallel the alluvial fans and cul-de-sacs are situated on the lobes of the fans which have been truncated by the drainage from the canyon below.
Pictured above are the two major alluvial fans separated by a canyon formed by fluvial processes. Note the development in the center of the canyon where natural drainage is predominant.

Figure 5

The alluvial fan pictured here has been truncated by the drainage below. Cul-de-sacs are bladed on the surface of the alluvial fan where the lobes extend into the canyon. The fans appear to be deeply dissected depicting surface runoff.

Figure 6
Lots that are located on the lobe portions of the alluvial fans are subject to slope failure in the event the lots are built upon and landscaping (lawn watering) ensues. Residents in these areas should be advised against saturating lawns and eroding the unconsolidated foundation (alluvial deposits) on which their homes rest.

Utilities vary within the townsite. Some lots have community water and sewerage while others are on septic tanks and wells. Underground telephone cables provide communication for the thirty-six residents (last surveyed March 2, 1975) in which 60 percent of the homes are for second-home use.

Further investigation revealed an interesting feature: a major gully formed by surface runoff has provided the developers with a reasonable, ready-made trench for burying telephone wires. The wires should have been encased in some protective tubing and not buried in an area of frequent drainage under 2-3 inches of unconsolidated material and debris. In the case of an emergency, a flash flood for instance, these wires would be washed away, and the residents would be cut off from outside at a time when telephone communication would be most needed.

The lack of ground cover and proximity to the mountains enables wind to be of sufficient strength to suspend dust particles in the air over the development. Pictured on the next page is a trailer barricaded for protection from prevailing southwest winds (Figure 8).
Figure 7
Exposed Telephone Wires and Wash Where Wires Are Located
(30 feet to the left of the exposed wires is a major control unit serving the entire subdivision with telephone communication).

Figure 8
Barricaded Mobile Home
(Protection from wind damage)
The thirty-six residents in Subdivision #7 have met with the approval of Lander County officials who designated the subdivision as a "Townsite". The townsite is located 18 miles from the nearest gasoline station and is 30 miles from the closest service center at Austin. All problems associated with remote subdivisions in Nevada, miles away from community and government services, apply to this area.

Data was collected on a county by county basis from recorded subdivision plats and assessors' tax rolls. State, county and city officials were contacted for additional information, and whenever possible, subdivision residents were interviewed. An inventory of Nevada's rural county subdivision activity is presented in tables, an initial step in evaluating the impact of Nevada's rural, residential land use and pattern of development.
Chapter VII

SUMMARY AND FINDINGS

In attempting to escape the crowded conditions of high density urban residence, people have expressed a desire for rural land. Much of Nevada's rural subdivided land has been purchased by people who live outside the state borders and are not familiar with the problems associated with remote parcels. The demand for rural land has resulted in land speculation and uneven development. Investors hold their land until the price has reached a desired level for resale. The land immediately outside Nevada's populated areas is often high priced and unavailable, forcing developers to "leapfrog" to cheaper areas where isolated subdivisions are established on land that should not be developed. This report is not a prediction for future population trends but does indicate what problems are associated with development in remote areas limited in resources and community services.

Data was collected on a county by county basis from recorded subdivision plats and assessors' tax rolls. State, county and city officials were contacted for additional information, and whenever possible, subdivision residents were interviewed. An inventory of Nevada's rural county subdivision activity is presented in tables, an initial step in evaluating the impact of Nevada's rural, residential land use and pattern of development.
FINDINGS

On the basis of data, certain findings listed on the following pages serve as a summary and background support for recommendations contained in this chapter.

1. From the beginning of 1950 to the end of the time period covered by this study (January, 1975) there were 79,789 parcels subdivided and recorded under provisions of Nevada Revised Statutes, state regulations and local ordinances.

2. Although subdivision activity varies dramatically from year to year, the general trend over the long term is upward. (See Table I and Chart I for specific figures and trends)

3. In excess of 2.3 percent of all privately held land in the 15 rural counties in Nevada was subdivided and recorded between 1950 and up to January, 1975.

A figure of 2.3% of private land subdivided is not particularly frightening - only 170,676 acres were subdivided. At such a rate, it would appear that the same level of activity could continue unabated for the next 1,100 years before all privately held land in the state is developed. But a simple straight line projection does not consider numerous factors which will greatly reduce the period before all private land is subdivided. These include that: (1) many acres of land were subdivided prior to the base year of this study - 1950; (2) not all holders of private land will be desirous of subdividing but will pursue agriculture or some other activity which does not subdivide land; (3) not all privately held lands are developable and therefore presumably not legally subdividable under current Nevada Statutes - these include such obvious examples as land in floodplains and on extremely steep terrain; (4) it is probable that a great deal of land has been subdivided illegally - such developments would not be recorded and thus, would not have
been available for further subdivision; (5) as seen from Chart 1 the rate of subdividing land is increasing; and (6) the figure of subdivided acreage becomes much more dramatic when it is learned that this figure only includes divisions of land that fell within the requirements of the Statutes at the time the subdivision occurred. Not included were exempted divisions of land; such as divisions which included fewer than five parcels; divisions into parcels which contained less than five acres and abutted upon dedicated streets with no street opening required. These exemptions were generally covered by a "record of survey" but not treated as a subdivision, and thus not covered in this study.

Another type of division of land not reflected in this study is what the counties commonly refer to as "special lands" or "subdivisions" of federal land - generally previously administered by the Bureau of Land Management - that because of their federal status at the time of local political entities. These technically are not subdivisions and thus not covered by this study; however, they are now privately held and on tax rolls. Exact figures of the acreage divided in this manner, number of parcels created and types of improvements made were difficult to come by, however the acreages are immense. The total acreage divided via "special lands" route was checked for three counties: Pershing, Lander and Elko (see Plate 1 for distribution of special lands in these counties). In the case of Pershing County over 86,000 acres were divided through the special lands method; in Lander County the figure was in excess of 17,350 acres, and in Elko County such divisions encompassed over 141,400 acres. As can be seen in Table II, the number of acres
Table I

Subdivided Parcels Ranked by Year of Greatest Activity

<table>
<thead>
<tr>
<th>Year</th>
<th>Recorded Parcels</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972</td>
<td>9,559</td>
</tr>
<tr>
<td>1971</td>
<td>9,213</td>
</tr>
<tr>
<td>1970</td>
<td>6,916</td>
</tr>
<tr>
<td>1973</td>
<td>5,604</td>
</tr>
<tr>
<td>1960</td>
<td>5,490</td>
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<tr>
<td>1961</td>
<td>4,888</td>
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<tr>
<td>1962</td>
<td>4,547</td>
</tr>
<tr>
<td>1959</td>
<td>4,048</td>
</tr>
<tr>
<td>1954</td>
<td>3,867</td>
</tr>
<tr>
<td>1963</td>
<td>3,317</td>
</tr>
<tr>
<td>1974</td>
<td>3,293</td>
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<td>1966</td>
<td>3,286</td>
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<tr>
<td>1964</td>
<td>3,004</td>
</tr>
<tr>
<td>1965</td>
<td>2,061</td>
</tr>
<tr>
<td>1958</td>
<td>1,921</td>
</tr>
<tr>
<td>1969</td>
<td>1,637</td>
</tr>
<tr>
<td>1957</td>
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<td>1956</td>
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<td>1967</td>
<td>1,321</td>
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<td>1958</td>
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<td>1953</td>
<td>418</td>
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<td>1955</td>
<td>395</td>
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<tr>
<td>1950</td>
<td>176</td>
</tr>
<tr>
<td>1951</td>
<td>34</td>
</tr>
</tbody>
</table>

Study Total: 79,789

Not included are 17,000 undivided interests in a recreation development in Storey County.

Source: Surveyed by Author, January, 1975
classified as special lands in these three counties is double the amount subdivided in Elko, Lander and Pershing Counties. If the ratios in these counties holds true throughout the remainder of the state then it is probable that nearly 10 percent of all the land currently on the tax rolls has been subdivided in the past twenty-five years.

4. The percentage of tax roll land that has been subdivided varies greatly from county to county, the statewide rural average of land that was subdivided between 1950 and 1975 is 2.3 percent of total land on the tax rolls. This figure varies dramatically when viewed on a county by county basis, with a high of 30.4% in Nye County to a low of zero in Esmeralda County. Table II gives more specific figures for each county.

5. Total occupancy of parcels or "build-out" throughout the study area is generally very low, averaging only 12.6 percent.

As would be expected the rate of occupancy varies quite radically from county to county (see Table III). Lowest occupancy rates consistently occur in areas where the development is remote or where very large scale development (sales) occur while the high occupancy generally occurs near the urban areas or where limited subdivision activity has taken place near existing communities.

6. Parcels that are occupied are primarily occupied by permanent structures rather than mobile homes.

It is often stated that mobile homes are the only structures that will ever be placed in remote subdivisions and that large numbers of mobile homes will occupy subdivided parcels even in urban areas. This study found that of the total number of occupied parcels in the study area 80.9 percent were occupied by permanent structures, either single-family or multi-family. The remainder, 19.1 percent, were occupied by mobile homes. Table IV illustrates this finding and further demonstrates that the rate of occupancy by permanent structures is significantly
### TABLE II
Comparative Figures on County Acreages, Tax Roll Lands and Subdivision Acreages

<table>
<thead>
<tr>
<th>County</th>
<th>Total Acreage</th>
<th>% of Land on Tax Roll</th>
<th>Acres of Land on Tax Roll</th>
<th># of Acres Subdivided 1950-1974</th>
<th>% of land on Tax Roll Subdivided (50-74)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carson City</td>
<td>97,920</td>
<td>28.33</td>
<td>27,740</td>
<td>1,797</td>
<td>6.5</td>
</tr>
<tr>
<td>Churchill</td>
<td>3,144,320</td>
<td>15.45</td>
<td>485,746</td>
<td>769</td>
<td>0.2</td>
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<tr>
<td>Douglas</td>
<td>480,640</td>
<td>32.98</td>
<td>158,420</td>
<td>8,016</td>
<td>5.1</td>
</tr>
<tr>
<td>Elko</td>
<td>10,995,840</td>
<td>24.56</td>
<td>2,700,619</td>
<td>48,836</td>
<td>1.8</td>
</tr>
<tr>
<td>Esmeralda</td>
<td>2,284,800</td>
<td>1.24</td>
<td>28,338</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Eureka</td>
<td>2,676,480</td>
<td>19.46</td>
<td>520,798</td>
<td>3,831</td>
<td>0.7</td>
</tr>
<tr>
<td>Humboldt</td>
<td>6,210,560</td>
<td>17.25</td>
<td>1,071,248</td>
<td>13,733</td>
<td>1.3</td>
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<tr>
<td>Lander</td>
<td>3,597,440</td>
<td>13.55</td>
<td>487,464</td>
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<td>0.2</td>
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<tr>
<td>Lincoln</td>
<td>6,816,000</td>
<td>1.00</td>
<td>67,903</td>
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</tr>
<tr>
<td>Lyon</td>
<td>1,295,360</td>
<td>22.77</td>
<td>294,928</td>
<td>21,845</td>
<td>7.4</td>
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<tr>
<td>Mineral</td>
<td>2,445,680</td>
<td>1.33</td>
<td>32,626</td>
<td>310</td>
<td>0.9</td>
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<tr>
<td>Nye</td>
<td>11,560,960</td>
<td>1.61</td>
<td>185,852</td>
<td>56,517</td>
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<td>Pershing</td>
<td>3,859,840</td>
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<td>Storey</td>
<td>167,680</td>
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<td>195,792</td>
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<td>0.9</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>7,301,216</strong></td>
<td></td>
<td><strong>170,676</strong></td>
<td><strong>2.3</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Comparative Statements of Segregation of Tax Rolls by Counties, FY 1965, Nevada Tax Commission

Surveyed by Author, 1974
### TABLE III

#### OCCUPANCY OF SUBDIVIDED PARCELS

BY COUNTY

<table>
<thead>
<tr>
<th>COUNTY</th>
<th>TOTAL PARCELS</th>
<th>TOTAL OCCUPANCY</th>
<th>PERCENTAGE OF OCCUPANCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carson City</td>
<td>4,987</td>
<td>3,551</td>
<td>71.2</td>
</tr>
<tr>
<td>Churchill</td>
<td>812</td>
<td>580</td>
<td>71.4</td>
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<td>Douglas</td>
<td>9,924</td>
<td>2,694</td>
<td>27.1</td>
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<td>Elko</td>
<td>20,513</td>
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<td>Esmeralda</td>
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<td>0</td>
<td>0</td>
</tr>
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<td>Eureka</td>
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<td>169</td>
<td>12.4</td>
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<tr>
<td>Lincoln</td>
<td>2,056</td>
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<td>3.8</td>
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<td>Lyon</td>
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<td>Mineral</td>
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<tr>
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<td>635</td>
<td>76</td>
<td>12.0</td>
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<tr>
<td>Storey</td>
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<td>30</td>
<td>1.7</td>
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<tr>
<td>White Pine</td>
<td>1,830</td>
<td>1,108</td>
<td>60.5</td>
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**Source:** Surveyed by Author, January, 1975
<table>
<thead>
<tr>
<th>COUNTY</th>
<th>TOTAL PARCELS OCCUPIED</th>
<th>PERMANENT STRUCTURES</th>
<th>MOBILE HOMES</th>
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<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
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<td>548</td>
<td>94.5</td>
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<td>2,404</td>
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<td>534</td>
<td>66.0</td>
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<td>291</td>
<td>87.9</td>
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<td>50.8</td>
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<td>76</td>
<td>76</td>
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<tr>
<td>White Pine</td>
<td>1,108</td>
<td>1,071</td>
<td>96.7</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>10,124</strong></td>
<td><strong>8,193</strong></td>
<td><strong>(80.9)</strong></td>
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Source: Surveyed by Author, 1974
higher in more urban settings while occupancy by mobile homes is higher in remote areas. The higher occupancy rate by mobile homes in remote areas might be attributed to several factors including higher construction costs in remote areas, the more speculative nature of remote subdivisions, small or non-existent construction labor force in rural areas and the second-home recreational nature of remote subdivisions.

7. Only a small fraction of all parcels created during the study period were to be served by community or private water and sewer facilities.

The number of units to be served by "group" water and sewer facilities are opposed to individual wells and septic tanks varies dramatically from county to county. Table V illustrates the percentages by county. Statewide, 64.1 of all parcels must rely on individual septic tanks for sewage treatment and disposal. The reasons for this are that 1) many of the subdivisions are too remote to join an existing community or private system, 2) it is often cheaper for the developer to sell larger parcels than it is to install utilities, and 3) government entities permit such development because they meet minimum state and local standards. The apparent reason for the higher number of parcels to be served by water systems than sewage systems is that this allows the developer to create smaller parcels. State Health Standards require a minimum of one acre if wells and septic tanks are used while septic tanks are permitted on 1/4 acre parcels if a community water system is provided. A check of the survey records indicates that such parcels are usually close to a developed community or in the core of a very large new development.
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<tr>
<th>Community Parcels Served By Water</th>
<th>Private Company Parcels Served By Water</th>
<th>Wells Parcels Served</th>
<th>Community Sewerage Parcels Served</th>
<th>Private Company Sewerage Parcels Served</th>
<th>Septic Parcels Served</th>
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<td>Carson City 4,636 (73.0)</td>
<td>0 ( 0 )</td>
<td>351 ( 7.0 )</td>
<td>4,385 (87.9)</td>
<td>0 ( 0 )</td>
<td>602 (12.1)</td>
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<tr>
<td>Churchill 593 (93.0)</td>
<td>0 ( 0 )</td>
<td>219 (27.0)</td>
<td>552 (68.0)</td>
<td>0 ( 0 )</td>
<td>260 (32.0)</td>
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<tr>
<td>Douglas 2,828 (28.5)</td>
<td>6,173 (62.2)</td>
<td>923 ( 9.3)</td>
<td>731 ( 7.4)</td>
<td>2,716 (27.4)</td>
<td>6,477 (65.2)</td>
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<td>Elko 1,281 (6.2)</td>
<td>5,374 (26.2)</td>
<td>13,858 (67.6)</td>
<td>1,204 ( 5.9)</td>
<td>540 ( 2.6)</td>
<td>18,769 (91.5)</td>
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<td>Esmeralda 0 ( 0 )</td>
<td>0 ( 0 )</td>
<td>828 (56.4)</td>
<td>0 ( 0 )</td>
<td>0 ( 0 )</td>
<td>1,467 (100)</td>
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<td>Eureka 639 (43.6)</td>
<td>0 ( 0 )</td>
<td>2,109 (84.8)</td>
<td>360 (14.5)</td>
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<td>2,127 (85.5)</td>
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<td>Humboldt 340 (13.7)</td>
<td>38 ( 1.5 )</td>
<td>1,071 (87.7)</td>
<td>326 (24.0)</td>
<td>0 ( 0 )</td>
<td>1,035 (76.0)</td>
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<td>Lander 290 (21.3)</td>
<td>64 ( 3.1 )</td>
<td>1,787 (86.9)</td>
<td>205 (10.0)</td>
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<td>739 ( 8.6)</td>
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<td>643 (58.3)</td>
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<td>65 (0.3)</td>
<td>151 (0.7)</td>
<td>21,942 (99.0)</td>
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<td>61 (9.6)</td>
<td>438 (76.9)</td>
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<td>Pershing 86 (13.5)</td>
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<td>1,765 (100)</td>
<td>0 ( 0 )</td>
<td>0 ( 0 )</td>
<td>1,765 (100)</td>
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<tr>
<td>Storey 420 (23.0)</td>
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<tr>
<td>White Pine 1,080 (59.0)</td>
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<td>10,223 (12.8)</td>
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<td>15,667 (19.6)</td>
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<td>79,789 (100)</td>
<td>79,659 (99.8)*</td>
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</table>

*One subdivision of 130 parcels was strictly for livestock (in Mineral County); thus no provision was included for any kind of sewerage facilities, consequently total does not equal 100%.
RECOMMENDATIONS

Although the main purpose of this study has been to make a survey of the rural subdivisions of Nevada, it seems very appropriate to suggest legislative or administrative improvements which would correct some of the problems discovered during the course of the study. The following recommendations are offered for consideration by local and state officials concerned with subdivision approvals. It should be noted that this is not a comprehensive critique of Nevada's subdivision difficulties.

1. County assessors and recorders should be provided with opportunities to take part in training sessions to make them aware of the current state laws concerning subdivision requirements, definitions and criteria to be met before parcel maps are approved and recorded.

2. A revision of current subdivision laws should be made in regard to the exemption provided for 40 acre or larger parcels. Various parcels which are not "subdivisions" were eliminated by the 1973 legislature when the term subdivision was redefined, however, the 40 acre exemption still remains with several other exemptions of a more minor nature.

3. Subdividers should be required to list gross acreage on tentative and final plats as well as the size of the largest and smallest parcel being created for ease of reference.

4. Different counties have different means of storing the subdivision maps. Methods of storing subdivision maps should be standardized and the best protective devices in storing should be considered. Consideration should be given to making copies of original parcel maps available to the public while the originals are safely stored, a practice in some counties of the state.

5. A central state depository should be designated with responsibility for receiving and storing certified copies of new subdivision plats approved in the state. Legislation would probably be necessary to require that a copy of all recorded plats are filed with the State Engineer and Division of Health for approval. The Nevada Tax Commission is currently compiling statewide uniform parcel maps as part of their ongoing function, and the additional storing and cataloging of subdivision information would become a valuable part of a statewide management information system and would be a valuable asset in
population estimating, as well as being useful to numerous state and local agencies.

6. This study should be expanded to add all available data not included in this study, e.g. special lands, all subdivisions prior to 1950, all records of survey, and any other divisions of land that are traceable. After the report is expanded a method of continuous update of the information should be implemented. A mechanism similar to that recommended in #5 (page 69) would probably be most workable and accomplished at the least expense to the taxpayer.

7. Subdivision regulations should be drafted to assist city and county governments in carrying out their tasks. The regulations should serve as a guide for use in developing or evaluating subdivisions (see Appendix B for model subdivision application).


SELECTED BIBLIOGRAPHY


________. Guide to Subdivision Control in Nevada, Nevada State Planning Board (Distributed by the Office of the State Planning Coordinator), June 15, 1972, p. 55.
Sparbel, John Wm. "Recommendations for Regional Planning and Development District Boundaries", Nevada State Planning Board, June, 1972.


(H) Subdivision does not include either of the following:

(1) Any parcel or parcels of land in which all of the following conditions are present: (i) which contains less than five acres; (ii) which shall be upon dedicated streets or highways; (iii) in which street opening or widening is not required; and (iv) the lot design meets the approval of the governing body.

(2) Any parcel or parcels of land divided into lots or parcels, each of a net area of ten acres or more, a tentative map of which has been submitted to the governing body and has been approved by its use to street alignment and widths, drainage and lot design.

(C) In either case provided in subsection (B) of this section, there shall be filed a record of survey upon premises only on the provision of this act.

(G) Nothing contained in this act shall apply to land zoned for cemetery purposes, nor shall it apply to any street, road or highway opening or widening or extensions of any kind.

(E) Nothing contained in this act shall apply to the subdivision of land for agricultural purposes, in parcels of more than ten (10) acres, not involving any street, road or highway opening or widening or extensions of any kind.

*Numbers of the sections of the above definition revised in 1957 when Statutes of Nevada were reenacted and Nevada Revised Statutes were adopted.

DEFINITION FROM APRIL 23, 1957 TO JUNE 30, 1973

1. "Subdivision" refers to any land or portion thereof, shown on the last preceding tax roll as a unit or in contiguous units, which is
APPENDIX A

STATUTORY DEFINITION OF TERM SUBDIVISION

DEFINITION FROM APRIL 1, 1947 TO APRIL 22, 1971*

"Subdivision" refers to any land or portion thereof subject to the provisions of this act.

Section 18.1(A) "Subdivision" refers to any land or portion thereof shown on the last preceding tax roll as a unit or as contiguous units, which is divided for the purpose of sale or lease, whether immediate or future, by any subdivider into five or more parcels within any one calendar year.

(B) "Subdivision does not include either of the following:

(1) Any parcel or parcels of land in which all of the following conditions are present: (I) which contain less than five acres (II) which abut upon dedicated streets or highways (III) in which street opening or widening is not required by the governing body in dividing the land into lots or parcels, and (IV) the lot design meets the approval of the governing body.

(2) Any parcel or parcels of land divided into lots or parcels, each of a net area of ten acres or more, a tentative map of which has been submitted to the governing body and has been approved by it as to street alignment and widths, drainage and lot design.

(C) In either case provided in subsection (B) of this section, there shall be filed a record of survey map pursuant only to the provision of this act.

(D) Nothing contained in this act shall apply to land platted for cemetery purposes not involving any street, road or highway opening or widening or easements of any kind.

(E) Nothing contained in this act shall apply to the division of land for agricultural purposes, in parcels of more than ten (10) acres, not involving any street, road or highway opening or widening or easements of any kind.

*Numbering of the sections of the above definition revised in 1957 when Statutes of Nevada were repealed and Nevada Revised Statutes were enacted.

DEFINITION FROM APRIL 23, 1971 TO JUNE 30, 1973

1. "Subdivision" refers to any land or portion thereof, shown on the last preceding tax roll as a unit or as contiguous units, which is
divided for the purpose of sale or lease, whether immediate or future, by any subdivider into 5 or more parcels within any 1 calendar year.

2. "Subdivision" does not include either of the following:

(A) Any parcel or parcels of land in which all of the following conditions are present:
   (1) Which contain less than 5 acres.
   (2) Which abut upon dedicated streets or highways.
   (3) In which street opening or widening is not required by the governing body in dividing the land into lots or parcels.
   (4) The lot design meets the approval of the governing body.

(B) Any parcel or parcels of land divided into lots or parcels, each of a net area of 10 acres or more, a tentative map of which has been submitted to the governing body and has been approved by it as to street alignment and widths, drainage provisions and lot design.

3. In either case provided in subsection 2, there shall be filed a record of survey map pursuant only to the provisions of N.R.S. 278.010 to 278.630, inclusive.

4. In any county having a population of 100,000 or more but less than 200,000, as determined by the last preceding national census of the United States Department of Commerce, the board of county commissioners may exempt any parcel or parcels of land from the provisions of N.R.S. 278.010 to 278.630, inclusive if:

(A) Such land is owned by a railroad company and was in the past used in connection with any railroad operation; and

(B) other persons now permanently reside on such land.

5. Nothing contained in N.R.S. 278.010 to 278.630, inclusive shall apply to land platted for cemetery purposes, in parcels of more than 10 acres, not involving any street, road or highway opening or widening or easements of any kind.

6. Nothing contained herein shall apply to the division of land for agricultural purposes, in parcels of more than 10 acres, not involving any street, road, or highway opening or widening or easements of any kind.

DEFINITION FROM JULY 1, 1973 TO 1975

278.320 "Subdivision" further defined.

1. "Subdivision" means any land, vacant or improved, which is divided or proposed to be divided into two or more lots, parcels, sites, units, plots, separate interests or interests in common, for the purpose of any transfer, development or any proposed transfer or development; unless exempted under subparagraphs (a) or (b).
(a) The term "subdivision" does not apply to any divisions of land which creates lots, parcels, sites, units or plots of land, each of which comprise 40 or more acres of land, including roads and roadway easements.

(b) Unless a method of disposition is adopted for the purpose of evading this chapter, the term "subdivision" does not apply to any division of land.

(1) Which creates lots, parcels, sites, units, or plots of land such that the land area of each of the lots, parcels, sites, units, or plots, when divided by the number of interests in every such lot, parcel, site, unit or plot results in 36 or more acres, exclusive of roads and roadway easements, per interest;
(2) Which is created by order of any court in this State or by operation of law;
(3) Which is created by a lien, mortgage, deed of trust or any other security instrument.
(4) Which is created by a security or unit of interest in any investment trust regulated under the laws of this state or any other interest in an investment entity;
(5) Which creates cemetery lots:
(6) Which creates an interest or interests in oil, gas, minerals or building materials, which are now or hereafter served from the surface ownership of real property;
(7) Which is created by the acquisition of an interest in the land in the name of a husband and wife, or other persons who are related to each other within the first or second degree of consanguinity, or pursuant to adoption in accordance with law, which interest is established or created by a joint tenancy, community property, or as tenants in common. Any such interest shall be deemed for purposes of this subsection, as only one interest.

2. For subdivisions containing not more than four (4) lots, parcels, sites, plots or interests, there shall be filed a parcel map pursuant to the provisions of N.R.S. 278.500 to 278.560, inclusive.

3. In any county having a population of 100,000 or more but less than 200,000, as determined by the last preceding national census of the Bureau of the Census of the United States Department of Commerce, the board of county commissioners may exempt any parcel or parcels of land from the provisions of N.R.S. 278.010 to 278.630, inclusive, if:

(a) Such land is owned by a railroad company and was in the past used in connection with any railroad operation; and
(b) Other persons now permanently reside on such land.

4. Nothing contained herein shall apply to the division of land for agricultural purposes, in parcels of more than 10 acres, not in-
volving any street, road or highway opening or widening or easements of any kind.

MODEL APPLICATION FOR APPROVAL OF FINAL OR INITIAL SUBDIVISION PLAN

1. Name of Subdivision

2. Location
   a. Nearest town
   b. Number of nearest State or Federal highways
   c. Legal Description (to 1/4 Section) Section Township Range

3. Name, Address and Telephone Number of Subdivider

4. Name, address and telephone of each person or firm providing professional services and information to the subdivider (e.g., attorneys, engineers, and land surveyors)

5. a. Gross Area of Subdivision in Acres
   b. Number of Lots
   c. Date Preliminary Plat Approved
      Any Conditions: (If yes, attach list of conditions)
   d. Any deed restrictions? (Attach copy if yes)
   e. Any Covenants? (Attach copy if yes)
   f. All improvements installed? (If no, attach a subdivision improvements agreement)

6. List of materials submitted with this application:
   a. 
   b. 
   c. 
   d. 

I do hereby declare and say that all the statements and information and the statements and information contained in all exhibits transmitted herewith are true. I hereby apply to the [governing body] of [city or county of subdivision]

[Signature of Subdivider or Agent]
APPENDIX B

MODEL APPLICATION FOR APPROVAL OF FINAL OR MINOR SUBDIVISION PLAT

1. Name of Subdivision

A. Nearest Town

2. Location
   a. Number of nearest State or Federal Highway(s)
   b. Legal Description (to 1/4 Section) Section
      Township_____________________ Range________

3. Name, Address and Telephone Number of Subdivider.

4. Name, address and telephone of each person or firm providing professional services and information to the subdivider (e.g. attorneys, engineers, and land surveyors).

5. a. Gross Area of Subdivision in Acres
   b. Number of lots
   c. Date Preliminary Plat Approved:
      Any Conditions:__________ (If yes, attach list of conditions.)
   d. Any Deed Restrictions?__________ (Attach copy if Yes)
   e. Any Covenants?_________________ (Attach copy if Yes)
   f. All improvements installed?
      (If No, attach a subdivision improvements agreement.)

6. List of materials submitted with this application:
   a. ____________________________ c. ____________________________
   b. ____________________________ d. ____________________________

I do hereby depose and say that all the statements and information and the statements and information contained in all exhibits transmitted herewith are true. I hereby apply to the (governing body) of (city or county of subdivision).

(Signature of Subdivider or Agent)
APPENDIX C

IMPROVEMENT AGREEMENT*

(Name of Subdivider), the subdivider, hereby agrees to construct the following public improvements in (Name of Subdivision) in conformance with the time schedule set forth below: To insure the installation of these improvements the subdivider agrees to enter into the following security arrangement with (Name of Governing Body): (Here set forth the terms of the security arrangement including the form of the security, conditions for release of collateral, inspection provisions, and the effect of non-performance by the subdivider).

(Date)                                                        (Signature of Subdivider)

ACCEPTANCE

The above improvement agreement is hereby approved by the (name of governing body).

(Date)                                                        (Authorized Signature)

*Source: Montana Subdivision Regulation's Model, May 1974 (for both Appendixes C and D.)
## Appendix D

### Total # of Parcels Created by Year and County

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APPENDIX E
DEFINITIONS

"Build-out" is used when referring to the total occupancy of parcels in a given subdivision.

"Developer" means the owner of subdivided land who, on his own behalf or through an agent or subsidiary, offers for sale; or who is the principal agent of an inactive owner. (also subdivider)

"Fire Flows" means water required for suppression of fire usually from a source of community water.

"Mobile Home" means a vehicle without motive power designed or equipped for living purposes and to carry property or passengers wholly on its own structure and to be drawn by a motor vehicle.

"Mobile Home Lot" means any area or tract of land designated, designed or used for the occupancy of mobile home.

"Parcel Map" is used when a subdivision contains not more than four lots, in which case the subdivider files in the office of the county recorder a parcel map before proceeding with the sale of any part of the subdivision.

"Purchaser" means any person who acquires or attempts to acquire an interest in any portion of a subdivision.

"Sale" means any sale, exchange, lease, assignment or other transaction designed to convey an interest in any portion of a subdivision when undertaken for profit.

"Special Lands" are "subdivisions" of federal land - generally previously administered by the Bureau of Land Management - that because of their federal status at the time of division did not fall within the subdivision review jurisdiction of local political entities.

"Unit", as in subdivision unit, means any group of parcels or interests within a clearly defined boundary which are being sold or offered for sale as part of a subdivision or common promotional plan, as such group of parcels or interests have been filed of record with any local governmental agency having jurisdiction.

Source: Nevada Revised Statutes, 1973 and other published material.