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Development of criteria for evaluating family campsites

Angeline Louise Erusha

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The Development of Criteria for Evaluating Family Campsites

by

Angeline Erusha

B.A. State University of Iowa, 1960

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. THE PROBLEM</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>1</td>
</tr>
<tr>
<td>Significance of the Problem</td>
<td>1</td>
</tr>
<tr>
<td>Delimitations of the Study</td>
<td>2</td>
</tr>
<tr>
<td>Basic Assumptions</td>
<td>3</td>
</tr>
<tr>
<td>Definitions of Terms</td>
<td>3</td>
</tr>
<tr>
<td>II. RELATED LITERATURE</td>
<td>4</td>
</tr>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Planning the Campsite Area</td>
<td>4</td>
</tr>
<tr>
<td>Vehicle Control</td>
<td>9</td>
</tr>
<tr>
<td>Dust Control</td>
<td>16</td>
</tr>
<tr>
<td>Campsites</td>
<td>17</td>
</tr>
<tr>
<td>Equipment Within the Site</td>
<td>21</td>
</tr>
<tr>
<td>Community Use Facilities</td>
<td>25</td>
</tr>
<tr>
<td>III. PROCEDURES OF THE STUDY</td>
<td>36</td>
</tr>
<tr>
<td>Collection of the Data</td>
<td>36</td>
</tr>
<tr>
<td>Development of the Opinionnaire</td>
<td>36</td>
</tr>
<tr>
<td>Selection of the Jurors</td>
<td>39</td>
</tr>
<tr>
<td>Steps Taken to Stimulate Response</td>
<td>41</td>
</tr>
<tr>
<td>Methods of Analyzing Results</td>
<td>41</td>
</tr>
<tr>
<td>IV. RESULTS AND INTERPRETATIONS</td>
<td>42</td>
</tr>
<tr>
<td>General Principle I</td>
<td>43</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>PAGE</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>General Principle II</td>
<td>46</td>
</tr>
<tr>
<td>General Principle III</td>
<td>49</td>
</tr>
<tr>
<td>General Principle IV</td>
<td>51</td>
</tr>
<tr>
<td>General Principle V</td>
<td>52</td>
</tr>
<tr>
<td>General Principle VI</td>
<td>55</td>
</tr>
<tr>
<td>General Principle VII</td>
<td>59</td>
</tr>
<tr>
<td>General Principle VIII</td>
<td>61</td>
</tr>
<tr>
<td>V. SUMMARY AND CONCLUSIONS</td>
<td>69</td>
</tr>
<tr>
<td>Summary</td>
<td>69</td>
</tr>
<tr>
<td>Conclusions</td>
<td>73</td>
</tr>
<tr>
<td>Recommendations</td>
<td>75</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>77</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>80</td>
</tr>
<tr>
<td>Appendix A--Letter Requesting Assistance for the Project</td>
<td>81</td>
</tr>
<tr>
<td>Appendix B--Response Form</td>
<td>82</td>
</tr>
<tr>
<td>Appendix C--Letter Covering Opinionnaire</td>
<td>83</td>
</tr>
<tr>
<td>Appendix D--Opinionnaire</td>
<td>84</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Responses and Chi-Squared Values for General Classifications Under General Principle I</td>
<td>44</td>
</tr>
<tr>
<td>II. Responses and Chi-Squared Values for Specific Items Within General Classifications Under Principle I</td>
<td>45</td>
</tr>
<tr>
<td>III. Responses and Chi-Squared Values for General Classifications Under General Principle II</td>
<td>47</td>
</tr>
<tr>
<td>IV. Responses and Chi-Squared Values for Specific Items Within General Classifications Under Principle II</td>
<td>48</td>
</tr>
<tr>
<td>V. Responses and Chi-Squared Values for General Classifications Under General Principle III</td>
<td>50</td>
</tr>
<tr>
<td>VI. Responses and Chi-Squared Values for Specific Items Within General Classifications Under Principle III</td>
<td>51</td>
</tr>
<tr>
<td>VII. Responses and Chi-Squared Values for General Classifications Under General Principle IV</td>
<td>52</td>
</tr>
<tr>
<td>VIII. Responses and Chi-Squared Values for General Classifications Under General Principle V</td>
<td>53</td>
</tr>
<tr>
<td>IX. Responses and Chi-Squared Values for Specific Items Within General Classifications Under Principle V</td>
<td>54</td>
</tr>
<tr>
<td>TABLE</td>
<td>PAGE</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>X. Responses and Chi-Squared Values for General Classifications Under General Principle VI...</td>
<td>56</td>
</tr>
<tr>
<td>XI. Responses and Chi-Squared Values for Specific Items Within General Classifications Under Principle VI.........................</td>
<td>57</td>
</tr>
<tr>
<td>XII. Responses and Chi-Squared Values for General Classifications Under General Principle VII..</td>
<td>59</td>
</tr>
<tr>
<td>XIII. Responses and Chi-Squared Values for Specific Items Within General Classifications Under Principle VII.............................</td>
<td>60</td>
</tr>
<tr>
<td>XIV. Responses and Chi-Squared Values for General Classifications Under General Principle VIII.</td>
<td>62</td>
</tr>
<tr>
<td>XV. Responses and Chi-Squared Values for Specific Items Within General Classifications Under Principle VIII...............................</td>
<td>66</td>
</tr>
</tbody>
</table>
CHAPTER I

THE PROBLEM

Statement of the Problem

The purpose of this study was to develop a list of items to aid in the evaluation of family campsites.

Significance of the Problem

In the past, camping has usually been a means to an end such as hunting or fishing. During the past decade, however, people have begun camping for the enjoyment inherent in the activity. This enjoyment has been increased by the attractiveness of modern campgrounds and the variety of camping equipment now available.

Since World War II, visitors to state parks and other outdoor recreation areas have almost doubled. There is much land available for outdoor, non-urban recreation of one form or another. For example, there are 9.8 million acres of publicly owned lands in the Columbia Basin portion of Montana.¹

The need for concern in the area of evaluation is justifiable since old campgrounds are becoming denuded due

to overcrowded conditions and new campgrounds, in attractive locations, are filled to capacity shortly after they are open for use. These excessive concentrations of people impair both the physical and aesthetic qualities of any recreation site. Vegetation trampled by too many human feet is one of the obvious examples of reduced natural beauty and site deterioration. One of the major results of this increased interest in camping is that fewer and fewer suitable places are available for the average person to camp.

Delimitations of the Study

It is realized:

1. That the trends toward family camping are continually increasing.
2. That present concepts concerning the adequacy of areas may not be realistic in the future.

It is further necessary to acknowledge:

1. That every area presents different problems in planning.
2. That a plan for one area cannot be considered a criterion for all areas.
Basic Assumptions

It is assumed:

1. That certain types of facilities and equipment are required in every family campsite area.

2. That certain types of facilities and equipment are common and desirable to many campsite areas.

3. That there are some general principles which will apply to virtually all camping areas.

Definition of Terms

Campground. Campground refers to the entire camping development under consideration. All other units are included within this general area.

Campsite. A campsite is an area large enough to allow location of a tent or trailer and an accompanying vehicle, and to carry on the normal activities attendant to living in a tent or trailer.
CHAPTER II

RELATED LITERATURE

Introduction

Recent trends toward outdoor recreation have made it increasingly important to examine the suitability of existing and potential campsite areas. Although a survey of literature reveals differences of opinion on criteria for the facilities, it appears that most authors believe every area requires at least a safe water supply, an adequate and safe sewage system, an adequate number of campsite areas, some means of vehicular control, provision for aesthetic development and maintenance of facilities.

An attempt has been made to locate information on the items necessary for family campsites and what characteristics of them are available. These will be used in the development of evaluative criteria.

PLANNING THE CAMPSITE AREA

Planning

The American Camping Association\(^1\) recommends the employment of a professional land planner or landscape

\(^1\)American Camping Association-Family Camping Federation, Guidelines for the Development and Operation of Family Campgrounds and Sites, Martinsville, Indiana, p. 2.
architect to help select a site and develop a master plan for the ultimate campground. This plan should show all elements included beneath the ground level as well as those elements above ground. In connection with the master plan, a topographical survey should be made as a base map by a licensed engineer or surveyor. Ideally an architect should be employed to do the construction drawings for the more complicated buildings and the water and sewage systems. Kelsey agrees with these recommendations in his suggestion that the first step in sketching out preliminary plans is to obtain a fairly accurate survey of the land and water areas. He mentions an engineer's survey showing the boundary and pertinent topographic features as a desirable procedure.

Choice of Site

Meinecke made several statements concerning the choice of campsites as far back as 1932; these are even more applicable today. He felt one important factor was not to waste space. Suitable camping grounds are no longer plentiful, because the same factors that make a

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given area suitable for camping are those which have attracted men for the purpose of building homes.\textsuperscript{4}

The American Camping Association\textsuperscript{5} suggests that a well-drained, gently sloping, rock-free, or shaded area is preferred for campsite development. Campsites in woods' edges bordering grass meadows make pleasant sites with the possibility of using the open meadows as play fields. The campground located on the shore of a lake or the banks of a river or stream will be an attraction to those campers who are interested in water sports. They also recommend another type of site which is situated on or near a well-traveled state or federal highway running between areas of historical or national importance. Potable water should be available. Consideration should be given to such factors as providing access to foot and horse trails, nature study, prehistoric or historic points of interest. Low-lying areas near swamps should be avoided because of insects and the lack of breeze. Campsites should not be placed where there is poison ivy or other harmful plants since these are almost impossible to eradicate without destroying other desirable plants.

\textsuperscript{4} Ibid.

\textsuperscript{5} American Camping Association, loc. cit.
The Camping Council\(^6\) suggests two types of sites that should be considered when planning. The first of these is the transient campground which is located along a well-traveled highway or in close proximity of one, so that travelers may readily drive to it while on trips. This type can also be in or near a large city or at some other point of tourist attraction. The other type is the recreation campground, which is located in a spot away from crowded metropolitan and suburban areas. This campground may be located where recreational activities such as swimming, boating, fishing, hiking, and sightseeing trips to historic or scenic spots would be readily available.

**Aesthetic Values**

_Site fragility._ Much of the National Forest recreation opportunity is an aesthetic intangible that should be safeguarded as far as possible in the development program. Many of these same elements are emphasized in a recent report of _Recreation Opportunities and Problems in the National Forests of the Northern and Intermountain Regions_.\(^7\) Site fragility cannot be over-emphasized.

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Excessive concentrations of people can impair both the physical and aesthetic qualities of any recreation site. A more subtle form of aesthetic downgrading happens when people overcrowd an area. Some areas, such as the pinyon-juniper and the drier ponderosa pine sites which are quite popular, have a relatively low people-carrying capacity.

Maintenance and restoration. Remington and Associates\(^8\) state that trees, shrubs and other vegetation should be checked and, if damaged or killed, replaced to maintain standards of privacy and beauty. Natural settings should be disturbed the least amount necessary to contribute to the welfare and enjoyment of visitors. The American Camping Association\(^9\) recommends that existing trees, shrubs and ground covers should be conserved during the development of the sites and only native trees planted. About the only planting needed is that necessary to provide privacy to the camper, to reduce the glare of headlights, provide shade, screen unsightly objects and tie buildings to their surroundings. Decorative plantings should be avoided. Toilets are not to be screened from view, but enough plant material either left around them during selective cutting or planted around them to make them unobtrusive.


\(^9\)American Camping Association, loc. cit.
Meinecke\textsuperscript{10} suggested the planting of native trees at strategic points in close imitation of the natural types found on the site. He stated further that landscaping in the usual sense of the word has no place in the mountain camp where the visitor seeks at least the illusion of the wilderness. This is in agreement with the statements made in more recent reports on this same subject. The Intermountain Forest and Range Experiment Station Report\textsuperscript{11} recommends the use of sprinkling systems in some places. However, the maintenance of camping areas will require a broad action program beyond watering. The planting of shrubs will be necessary to provide screening between camping and picnic units, to protect the bases of trees and to provide ground cover. Fertilizing should be considered as a means of accelerating the growth of planted shrubs and trees. In order to maintain the appearance of the site, intensified campground management techniques need to be developed to keep visitor loads within the capacity of the established units.

**VEHICLE CONTROL**

Planners seem to be in universal agreement on limiting

\textsuperscript{10}Meinecke, _op. cit._, p. 17.
\textsuperscript{11}Hutchison, _op. cit._, p. 8.
entrances to one wherever possible and two when necessary. It is further agreed that vehicular travel past campsites should be kept at a minimum. The road systems within the recreation sites should be planned and adjusted to fit natural conditions. As a rule, the best road is the shortest one that will serve the purpose.

**Entrances**

The single entrance should be a two-way road on a flat grade. Many camping areas make use of one main road to feed the whole development, with a series of one-way loops branching off on either side. The use of a single entrance and a single exit road is recommended where traffic is to be concentrated in central parking areas.

**Interior Circulation Roads**

Provision should be made to make all camping areas accessible to the family campers and still control the flow of traffic throughout the camp area as well as to provide a minimum of disturbance to the surroundings.

One-way loops. One-way loops are widely used to

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12 American Camping Association, *loc. cit.*

13 Kelsey, *loc. cit.*

alleviate the problem of excessive vehicular travel past campsites. The Forest Service Handbook\(^{15}\) recommends the loop road when a site is wide and serves many activities. The loops should not be too close together or appear to parallel each other. This system is particularly adapted to campgrounds, commercial public service sites having individual cabins, or recreation-residence sites.

**One-way roads.** The roads within the campgrounds should preferably be one-way.\(^{16}\) These should be ten feet in width.\(^{17}\) The American Camping Association\(^{18}\) agrees, since the natural features can best be preserved with the one-way system. The Association recommends that the one-way road should generally be twelve feet wide.

**Two-way roads.** The two-way road is recommended in areas where the one-way road does not lend itself to the surroundings. Perry\(^{19}\) states that these roads should be eighteen to twenty feet in width. The American Camping Association\(^{20}\) advocates the use of two-way circulation

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\(^{15}\) Forest Service Handbook, loc. cit.

\(^{16}\) Remington, loc. cit.


\(^{18}\) American Camping Association, *op. cit.*, p. 4.

\(^{19}\) Camping Council, loc. cit.

\(^{20}\) American Camping Association, loc. cit.
roads in the areas that lend themselves to the two-way feature. The two-way road lends itself to areas specifically designated as trailer camping sites.

**Dead-end road.** The dead-end road is especially applicable when a site is long and narrow, as a ridge top, narrow valley, or bench along a steep slope. This single road with a turn-around is recommended in the *Forest Service Handbook* as serving satisfactorily and may be adapted to campgrounds.  

**Combination system.** The combination system is frequently used when the site is extensive and the topography irregular, and is particularly adaptable to large campgrounds and recreation residence sites.

**Elements in Design**

**Grades.** According to Perry, grades of main roads should not exceed ten per cent for short distances and access roads to parking spurs should preferably be under eight per cent.

**Curves.** The American Camping Association states that curves on interior circulation roads should have a

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21 *Forest Service Handbook*, *op. cit.*, p. 76.

22 *Camping Council*, *loc. cit.*

23 *American Camping Association*, *loc. cit.*
minimum radius of twenty-five feet while thirty-five feet is recommended for exterior circulation roads.

Parking Areas Within the Site

Parking areas should be properly designated in order to control vehicles and assure a minimum amount of disturbance to campers and to the surrounding areas.

Location. Normally the existing natural conditions will suggest desirable locations where least damage will be done to natural topography. According to the Forest Service Handbook the parking spurs should be located at an angle of forty-five degrees to one-way campground roads and at right angles to the two-way roads. These are essentially the recommendations of Remington and the American Camping Association.

Design. According to the Forest Service Handbook the angled spurs may be designed for either forward or back-in parking. It is stated further that trailer camp parking spurs should always be designed as the forty-five degree back-in type. Remington is in agreement with this.

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25 Remington, loc. cit.
26 American Camping Association, loc. cit.
28 Remington, loc. cit.
Perry\textsuperscript{29} states that the parking spur should be designed to accommodate both car and trailer, thus giving more flexibility to the campground. The American Camping Association\textsuperscript{30} recommends that parking spurs do not need to be of one particular shape, but can be adapted to available areas where space is adequate and use will not unnecessarily damage surroundings. Due to the increase in trailer camping, they further advise that an area should be designed to accommodate a trailer and a towing vehicle.

Size. The average dimensions for campsite parking spurs, as recommended in the \textit{Forest Service Handbook},\textsuperscript{31} should be twelve feet wide by thirty feet long, and for trailer camp units, twelve feet wide by fifty-five feet long. Remington\textsuperscript{32} agrees with these recommendations, but Perry\textsuperscript{33} suggests that a parking space should be 18-20 feet in width and twenty feet in depth to adequately accommodate cars with small trailers. The American Camping Association\textsuperscript{34} briefly states that the parking spurs need not be any specific size, but can be adapted to the area.

\begin{itemize}
\item \textsuperscript{29}Camping Council, \textit{op. cit.}, p. 34.
\item \textsuperscript{30}American Camping Association, \textit{loc. cit.}
\item \textsuperscript{31}Forest Service Handbook, \textit{loc. cit.}
\item \textsuperscript{32}Remington, \textit{loc. cit.}
\item \textsuperscript{33}Camping Council, \textit{loc. cit.}
\item \textsuperscript{34}American Camping Association, \textit{loc. cit.}
\end{itemize}
Barriers

Attractive firmly set barriers should be provided to prevent cars from leaving roads, parking areas, and parking spurs. They must be massive enough to exclude automobile traffic and yet be as inconspicuous as possible. These should be provided only where they are absolutely necessary to preserve the natural features of the grounds, and to mark the camping limits.

Types. Wherever practicable, plantings should be made to ultimately replace artificial barriers or at least to make them less conspicuous. The Forest Service Handbook suggests a number of different types of barriers depending on the need and the location. Those recommended are treated or naturally resistant species of logs and posts, earth embankments, ditches, boulders, colored concrete, or combination wood and concrete. It is further suggested that large in-place trees and rocks should be used as barriers when available. These recommendations are essentially in accord with the American Camping Association and with those made by Perry.37

36American Camping Association, loc. cit.
37Camping Council, loc. cit.
DUST CONTROL

The problem of controlling dust and dirt differs from place to place depending upon the soil and the amount of use.

Roads

Campsite roads should be maintained to reduce dust and this can be best accomplished by applying a bituminous double surface treatment over gravel. The report Recreation Opportunities and Problems in the National Forests and the Northern and Intermountain Regions suggests that gravel might suffice for use in dust abatement in some cases, but when this is not a sufficient means of control, hardtopping will be necessary. The Forest Service Handbook recommends stabilization of road surfaces in all heavily used campgrounds and black top where dust deters full enjoyment of the site.

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38 Remington, loc. cit.
39 Camping Council, op. cit., p. 36.
40 Ibid.
41 Hutchison, op. cit. p. 7.
42 Forest Service Handbook, op. cit., p. 131
Camping Area

In the report Recreation Opportunities and Problems in the National Forests of the Northern and Intermountain Regions, it was stated that the area around tables might present a problem which requires considerable forethought. It was suggested that in certain circumstances watering might maintain a fairly firm grass surface, while in other cases a sawdust mulch might do a sufficient job. However, neither of these will work where there is excessive traffic and it may be necessary to lay an asphalt or concrete "pallet" around the table and fireplace area. In addition to the above, the Forest Service Handbook suggested the use of crushed stone such as gravel on parts of the camp unit where the soil is unstable.

CAMPSITES

Campsite planners agree that each site should be numbered and contain a parking space, a tent site, a table or tables, a fireplace or a camp stove, and some means of sanitary garbage disposal.

43 Hutchison, loc. cit.
44 Forest Service Handbook, loc. cit.
Layout

Size. The Camping Council\textsuperscript{45} suggested that the campsite should be an area of forty feet by fifty feet and allow for free space between sites. Whenever possible, the size should allow for the accommodation of travel trailer campers as well as tent campers. Kelsey\textsuperscript{46} stated that there is a trend toward larger sites; however, he feels that the above standards should be adequate. Alternatives he suggested were seventy-five feet by seventy-five feet or one-hundred feet by one-hundred feet. The American Camping Association\textsuperscript{47} is in agreement with Kelsey on the size of the larger sites, but suggests a size of fifty feet by fifty feet as a minimum. Perry\textsuperscript{48} recommends a site fifty-five feet by fifty-five feet center to center as the average site. He suggests that fifty feet by fifty feet is sufficient space if the area is flat. He also mentions sizes of fifty feet by seventy-five, and one-hundred feet by fifty-five feet as alternatives.

Location. The Camping Council\textsuperscript{49} suggests that sites

\textsuperscript{45}Camping Council, How to Make Money with Family Campgrounds, op. cit., p. 3.
\textsuperscript{46}Kelsey, loc. cit.
\textsuperscript{47}American Camping Association, op. cit., p. 3.
\textsuperscript{48}Camping Council, op. cit., p. 34.
\textsuperscript{49}Camping Council, How to Make Money with Family Campgrounds, loc. cit.
on rougher terrain and at greater distances from public highways could be strictly reserved for tent campers. Remington\textsuperscript{50} states that sites should be located a minimum of fifty feet from the edge of camp and picnic grounds, roads or public recreation areas and at least one-hundred feet from lakes, streams and main roads. Perry\textsuperscript{51} feels that the site location of fifty feet from the edge of the access road is adequate. House trailer and tent sites should be located in separate areas. The Forest Service Handbook\textsuperscript{52} is in agreement with the above location stipulations. The American Camping Association\textsuperscript{53} gives the same standards as Remington.

Unit classifications. Remington\textsuperscript{54} recommends five different classifications of campsites. The first of these is the "Frontier" site, which contains a trash can, water to every four to five campsites, table, and a pit latrine for each six sites or fraction thereof. The second type is referred to as the "Explorer" site and contains a trash can, water to every four or five campsites, tables, a minimum of one fire hole for every two sites, and pit

\textsuperscript{50} Remington, loc. cit.
\textsuperscript{51} Camping Council, loc. cit.
\textsuperscript{52} Forest Service Handbook, op. cit., p. 76.
\textsuperscript{53} American Camping Association, loc. cit.
\textsuperscript{54} Remington, loc. cit.
latrines for every five sites or fraction thereof. The third category is the "Pioneer" site, which contains a trash can, table, one spigot to every two camp sites, a grill for every site, electricity in every site, and a shower and a flush toilet for every six sites. The fourth grouping is the "Trailer" site (travel trailer) with trash can, table, spigot to every site, electrical outlet for each site, a shower and a flush toilet for every six sites and no shelter area provided. The trailer site (house trailer) provides the same accommodations as the travel trailer site with the exception of an enlarged parking space.

The Forest Service Handbook designates a standard camp unit as one table, stove, parking spur, and space for a tent, which will accommodate one family group. The Camping Council suggests that a site should include a parking spur for both car and trailer, a fixed fireplace, a picnic-type table, and a graded tent area.

Number of sites. The Camping Council suggests that it would be possible to accommodate eight campsites per acre, if it were permitted by limitations of the land.

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56Camping Council, loc. cit.
57Camping Council, How to Make Money with Family Campgrounds, op. cit., p. 3.
such as topographic features of the terrain. Kelsey mentions in his report that future campsites in the state of New Hampshire will be developed in a ratio of two sites to an acre. This lower density creates problems in cost of washroom and toilet facilities, since it would be necessary to provide a greater number of these facilities. Linthacum also recommends two sites per acre. Perry suggests that twenty sites per acre could be planned in a compact layout, but recommends as few as four to six per acre where space and money are no problem. The American Camping Association states that a campground should be planned to obtain the maximum number of sites per acre consistent with preservation of existing natural and cultural values. Camper privacy should be considered.

EQUIPMENT WITHIN THE SITE

Tables

According to the Camping Council each site should have one table. This is in agreement with Remington.

58Kelsey, loc. cit.
60Camping Council, loc. cit.
61American Camping Association, loc. cit.
62Camping Council, loc. cit.
63Remington, loc. cit.
The table should be large enough to seat six to eight people comfortably. The Forest Service Handbook recommends that the minimum length of tables should be eight feet, and suggests twelve, fourteen, and sixteen feet where greater capacity is necessary.

The Camping Council recommends that the seats be built as a part of the table. Tables should be constructed of hard lumber, which has been pre-cut to size and pressure treated. Hardware fittings should be galvanized or otherwise treated with rust preventative. The Forest Service Handbook suggests the fixed type tables as most appropriate since this protects the ground cover by localizing the excessive wear area. Further recommendations were made as to construction materials. They suggested heavy plank, light plank (hard wood), concrete, or combinations of concrete and wood planks as construction materials. Perry also feels tables should be of at least two-inch stock and treated with wood preservative.

*Camping Council, loc. cit.*
*Camping Council, How to Make Money with Family Campgrounds, loc. cit.*
*Forest Service Handbook, loc. cit.*
*Camping Council, loc. cit.*
According to the Forest Service Handbook, tables should be located to take advantage of the maximum shade area during the heat of the day.

Fireplaces

The Camping Council reports several types of usable camp fireplaces or grills. A U-shaped, open stone fireplace is an inexpensive type unit. Cement block fireplaces are not recommended in northern latitudes. Where sufficient money is available, the poured concrete and brick types are suggested. The Forest Service Handbook recommends the concrete block type, with a one-piece cast iron grate and poured concrete with asbestos cement to seal the space between the cast iron frame and concrete firebox. Fire holes are suggested for use in some cases, especially as separate units or in conjunction with other fireplaces in family units.

The location of fireplaces should be governed by the prevailing winds. Both the Camping Council and the American Camping Association advise removing vegetation

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70Forest Service Handbook, loc. cit.
71Camping Council, loc. cit.
72Forest Service Handbook, loc. cit.
73Camping Council, How to Make Money with Family Campgrounds, loc. cit.
74American Camping Association, op. cit., p. 5
within eight or ten feet surrounding the fireplace and avoiding placement too close to over-hanging trees. They should be located a distance from the table which is convenient for serving meals. In addition to this, the Forest Service Handbook\(^7^5\) recommends that fireplaces should face across the prevailing winds. Under certain conditions the fireplace may face toward the broadside of the table so that a maximum seating arrangement would be possible for evening warming fires.

**Electrical Distribution**

All electrical wiring should comply with state and local codes, and where there is no state code the national code should be observed. Electrical outlets, as such, are not recommended by several authorities because it seems apparent that such a facility would not contribute to a true camping experience.

The American Camping Association\(^7^6\) recommends the installation of underground power lines for the sake of appearance. However, if cost is prohibitive, overhead poles should be carefully located so as to be inconspicuous as possible and do a minimum of damage to the trees.

\(^7^5\)Forest Service Handbook, loc. cit.
\(^7^6\)American Camping Association, op. cit., p. 8
Power lines should not be less than eighteen feet above the campground roads and sites. The outlet receptacles should be water-proof. Kelsey\textsuperscript{77} suggested that a fuse box could be located inconspicuously between every two sites. He advocated that a small fee could be charged for use of electricity. The charges could be made on the basis of twenty-five cents for five Amp circuits and fifty cents for the twenty Amp circuits.

It was suggested that a light should be left burning all night outside each comfort station.\textsuperscript{78, 79} If it is considered desirable to provide campground lights, they should be placed on standards three or four feet high and located near junctions of circulation roads. These lights should be directed downward to provide illumination for pedestrians and not interfere with the activities of individual campsites.

COMMUNITY USE FACILITIES

These facilities can best be described as those that are used by more than one family camping group. They include water supply, toilets, shower baths, laundries and

\textsuperscript{77}Camping Council, \textit{op. cit.}, p. 23.
\textsuperscript{78}Remington, \textit{loc. cit.}
\textsuperscript{79}American Camping Association, \textit{loc. cit.}
sewage facilities. It is important to consult local public health standards, when considering sanitation systems within the campsite.

Toilets

Types. Kelsey\textsuperscript{80} states that dry pit toilets are not recommended since there is strong camper opposition to them. Remington,\textsuperscript{81} however, feels that pit toilets can be an adequate solution to the problem of comfort stations, and that chemical toilets should absolutely not be used. The \textit{Forest Service Handbook}\textsuperscript{82} recommends the use of flush type toilets but suggests vault toilets as a satisfactory substitute in the smaller camp areas. In opposition to Remington, the Forest Service suggests the use of chemical tank toilets where pit toilets cannot be used due to high water conditions or possible ground pollution. The \textit{American Camping Association}\textsuperscript{83} deems pit toilets feasible in areas where there are relatively few people. It does not recommend chemical toilets. The most desirable type is the flush toilet and should be made available in areas where water under pressure is available. In locations

\textsuperscript{80}Kelsey, \textit{loc. cit.}  
\textsuperscript{81}Remington, \textit{loc. cit.}  
\textsuperscript{82}\textit{Forest Service Handbook}, \textit{op. cit.}, p. 129.  
\textsuperscript{83}\textit{American Camping Association}, \textit{op. cit.}, p. 6.
where water is scarce the pullman-type fixtures are considered satisfactory.

**Number.** Remington\(^{84}\) suggests a minimum of one water closet and one lavatory for each sex for every six to ten campsites or fraction thereof. Where it is necessary to use pit toilets, there should be one hole for every fifteen people with a minimum of two holes for each five campsites. Perry\(^{85}\) has formed a fixture ratio based on at least sixty sites. This includes one water closet and one urinal for every fifteen to twenty sites (men) and one water closet for every twelve sites (women). The *Forest Service Handbook*\(^{86}\) and the American Camping Association\(^{87}\) recommend that there be one toilet seat for every twenty-five persons. Also, there should be one comfort station per thirty campsites, each station containing two water closets and one urinal for men and three water closets for women. It is also suggested that there be one water closet provided for each sex in every five to ten campsites, and for every eleven to twenty campsites there should be a urinal for men and two water closets for women.

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\(^{84}\)Remington, *loc. cit.*  
\(^{86}\)*Forest Service Handbook*, *op. cit.*, p. 76.  
\(^{87}\)American Camping Association, *loc. cit.*
Location. Remington$^{88}$ advises that pit toilets should be above the five year flood level. Perry$^{89}$ suggests that comfort station facilities be a minimum of five hundred feet from campsites. The Forest Service Handbook$^{90}$ states they are best located just off the interior roads so that campers may approach them by walking along the road. A distance of three hundred feet from campsites to toilets is recommended by the Forest Service Handbook, Remington, and the American Camping Association.$^{91,92,93}$

Lavatories

Perry$^{94}$ recommends one lavatory for every two or three water closets for each sex, while the American Camping Association$^{95}$ suggests two lavatories for each sex per thirty campsites, one lavatory for each sex per five to ten campsites, and at least one lavatory for each sex per eleven to twenty campsites.

$^{88}$Remington, loc. cit.
$^{89}$Camping Council, op. cit., p. 36.
$^{90}$Forest Service Handbook, loc. cit.
$^{91}$Ibid.
$^{92}$Remington, op. cit., p. 3.
$^{93}$American Camping Association, loc. cit.
$^{94}$Camping Council, loc. cit.
$^{95}$American Camping Association, loc. cit.
Flushing Rim Sink

Perry\(^{96}\) advises that a flushing rim sink be available in each building. The American Camping Association\(^{97}\) agrees with Perry, and states further that flushing rim sinks should be provided in a separate compartment of the comfort station building. It should be made available for disposal of night pail contents, wash water, and other liquid waste.

Showers

Perry\(^{98}\) suggests a ratio of one shower for each sex per twenty-five to thirty sites. Remington\(^{99}\) recommends shower facilities at a ratio of one for each sex per every six sites. There is a possibility of providing hot and cold water for each campground on a coin operated basis or including its cost in fees. The American Camping Association\(^{100}\) suggests one shower for each sex for each building with a dressing room for each shower area.

\(^{96}\)Camping Council, \textit{loc. cit.}

\(^{97}\)American Camping Association, \textit{loc. cit.}

\(^{98}\)Camping Council, \textit{loc. cit.}

\(^{99}\)Remington, \textit{op. cit.}, p. l.

\(^{100}\)American Camping Association, \textit{op. cit.}, p. 7.
Laundry Facilities

Perry suggests laundry tubs for the convenience of campers, while the American Camping Association goes so far as to recommend automatic washer, two laundry trays, one sorting table, and one or more drying machines in each laundry building with ironing facilities as an optional feature. Perry advises that there be one stationary tub in each laundry building.

Water Supply

Perry found that fifty gallons of water per person per day, which is the usual recommended standard allotment, was too high. The meter readings obtained by his group led them to conclude that twenty-five gallons per day per person is adequate, even when laundry and shower facilities were taken into consideration.

Grady feels that the drilled or artesian well is the most desirable water source, since it is least susceptible to pollution. He recommends that dug wells and springs should be located as far as possible from sources

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101 Camping Council, loc. cit.
102 American Camping Association, loc. cit.
103 Camping Council, loc. cit.
104 Camping Council, How to Make Money with Family Campgrounds, p. 10.
of contamination and in no instance should the separation be less than one hundred feet. Also, surface water obtained from streams or lakes should be treated by chlorination processes. If a community water supply is available, the American Camping Association suggests that connection should be made with it. When no public source is available a source should be developed, preferably by either a drilled or driven well.

**Outlets for supply.** Remington suggests the use of spigots, while the Forest Service Handbook suggests water hydrants and in some areas drinking fountains. Perry suggests the use of a combination water tap and drinking fountain.

According to Remington, spigots should be spaced within fifty feet of the nearest site and not more than three hundred feet from the farthest site. The Forest Service feels that hydrants should serve four or five camp units, but care should be taken to locate them in a way that will insure that they will not be monopolized by

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105 American Camping Association, *op. cit.*, p. 5.
106 Remington, *op. cit.*, p. 3.
109 Remington, *loc. cit.*
one unit. It is further stated that hydrants are most useful when they are located along the edge of campground roads since they are convenient to both sides of the road. The American Camping Association\textsuperscript{111} feels the water supply should not be located more than one hundred fifty feet from any campsite.

**Sewage Disposal**

The sewage disposal may be by means of simple sanitary pits, water-tight sanitary pump out pits, chemical tanks, incinerator vaults or septic tanks.

Camp and picnic grounds will usually include water flush toilets and septic tank sewage disposal units when there is heavy public use, a full-time caretaker to maintain the system, an adequate water supply, and soil conditions satisfactory for efficient disposal.

Grady\textsuperscript{112} recommends that a competent engineer be hired to plan the disposal system, since the proper design of these requires expert knowledge of sub-surface soil conditions, ground water conditions, hydraulics, estimating probable waste quantities, health department requirements and the ability to interpret this information.

\textsuperscript{111}American Camping Association, loc. cit.

\textsuperscript{112}Camping Council, How to Make Money with Family Campgrounds, loc. cit.
Grady\textsuperscript{113} states that most sub-surface systems incorporate a septic tank as one of their components. Baskous\textsuperscript{114} mentions septic tanks, sub-surface sand filters and lagoons as possible answers to the campground sewage disposal problem. He describes the lagoon as an oxidation pond and feels it has a great deal of potential for use in tenting areas because of the large areas available and the short seasons. The Forest Service\textsuperscript{115} recommends the sanitary pump-out pit, or incinerator vault toilets for use in smaller campgrounds. Septic tanks are advocated for larger sites and on any site when financially feasible.

**Garbage Disposal**

Disposal of refuse is another aspect to be considered in sanitation. The Forest Service\textsuperscript{116} advises that several factors make refuse disposal necessary. These factors include the necessity of eliminating conditions favorable to disease-spreading insects and rodents, the minimization of obnoxious odors, and the prevention of the defilement of natural beauty.

\textsuperscript{113}Ibid.

\textsuperscript{114}Camping Council, *op. cit.*, p. 29.

\textsuperscript{115}Forest Service Handbook, *op. cit.*, p. 129.

\textsuperscript{116}Ibid.
Since the collection and disposal of garbage and rubbish is often the biggest single operating problem, Grady\textsuperscript{117} suggests that a ten gallon covered garbage can be provided for each campsite. Collections should be made twice weekly and the cans washed and sanitized frequently so that odor and fly problems will be kept to a minimum. Remington\textsuperscript{118} has more extensive recommendations. He feels trash cans should be mounted so that they are tip-proof. They should be water-tight, fly-proof, and emptied and cleaned every two days. These cans should be located near circulation roads but not more than 150 feet from the campsite. The American Camping Association\textsuperscript{119} is in agreement with Remington on the types of cans and their location. They suggest further that in some areas it may be necessary to have cans bear-proof in addition to being fly-and rodent-proof. There should be a sufficient capacity provided to prevent the overflowing of any container between collections.

Camp Stores

A number of sources suggest that there should be a

\begin{footnotes}
\item[117]Camping Council, How to Make Money with Family Campgrounds, op. cit., p. 11.
\item[118]Remington, op. cit., p. 3.
\item[119]American Camping Association, loc. cit.
\end{footnotes}
park store fairly close to but not in crowded proximity of the campsites. Remington\textsuperscript{120} states that vendors' supplies should be sold at a central location and vendors should not be allowed to travel from site to site. The American Camping Association\textsuperscript{121} feels that if a campground is large enough and not located close to a store, that a camp store should be provided. This store should be located outside the campsite area near the entrance. Perhaps it could be established in conjunction with an entrance station.

\begin{flushright}
\vspace{1cm}
\textsuperscript{120}Remington, loc. cit.
\vspace{0.3cm}
\textsuperscript{121}American Camping Association, op. cit., p. 10.
\end{flushright}
CHAPTER III

PROCEDURE OF THE STUDY

Collection of the Data

The normative survey method of research was used to collect the data for this problem. Experts in the field of camping who volunteered to participate as jurors were sent a copy of the opinionnaire.

Development of the Opinionnaire

An opinionnaire (refer to the appendix) was developed after the literature presented in Chapter II had been surveyed. There were certain areas which were consistently referred to as areas of major concern. These areas fell into eight major categories and for the purposes of this study were listed as general principles for campsite evaluation. These general principles are presented here.

I. The campsite should make optimum use of the existing terrain retaining whatever aesthetic values the site has in its natural state.

II. The site should be planned and developed to present a minimum disturbance to the...
surroundings by the users.

III. Provision should be made to make all areas accessible to the campers and still control the flow of traffic throughout the camp area.

IV. Whenever possible family campgrounds should be located in the proximity of recreational areas.

V. The site should be developed so that there is a minimum amount of disturbance to campers.

VI. There should be adequate equipment for normal campsite activities.

VII. The campsite should be developed for the best possible utilization of campground space while providing adequate room for camping activities on each site.

VIII. Adequate provision should be made for sanitation and protection of the health, welfare and safety of the family campers.

General classifications of concern which related to the general principle and its implementation were developed. These were set up to be rated according to the following scale:

(I) Imperative. The consideration of this topic
is not to be evaded in family campground development.

(M) Moderately important. This may be a desirable consideration but not an absolute necessity in family campground development.

(N) Not necessary. Need not be considered in family campground development.

In addition, lists of specific construction and development features which would contribute to the implementation of the general classifications were developed. These were rated according to the following:

(M) Minimum. The least possible requirements which must be present for family campground development.

(S) Satisfactory. This implies an area where a family could camp with convenience; this feature should be present, but it is not an absolute necessity.

(O) Optimum. This implies the best and most efficient use of the area. This item is present under the most ideal conditions.

(U) Undesirable or unnecessary. This implies that the items should not be or do not need to be incorporated in the development of family campgrounds.
The items were developed into a convenient check list form, and space was allowed for additional remarks for the jurors to make comments on factors about which they had strong feelings. The opinionnaire was reproduced on a multilith machine for the sake of appearance. A space was provided at the end of the opinionnaire for the jurors' names and addresses. This was done so that it would be possible to carry on further correspondence with the jurors if it were felt necessary.

Selection of the Jurors

A list of potential participants was compiled with the assistance of the National Recreation Association and the American Camping Association. The National Recreation Association is oriented to all types of recreational interests, and outdoor recreation and camping play an important role in this organization. The spring issue of Recreation is devoted in its entirety to camping each year. The American Camping Association is an organization which has been geared to organization camping in the past, but now they are also promoting the trend toward family camping and have made many initial proposals for the development of adequate family campgrounds. The Associations sent to the investigator a list of people they felt to be competent. There was a total of twenty jurors.
Three of the jurors were recommended by both organizations.

A letter was sent to each of the twenty individuals in an attempt to enlist their aid for this study. A convenient response form was enclosed with this letter. Nineteen people answered and seventeen of these agreed to serve as jurors. Of the seventeen opinionnaires which were sent twelve were returned and were used as the final analysis material. One person expressed the desire to be excused due to a difference of opinion in how the material should have been handled. Another person became ill and was unable to return the opinionnaire in time to be considered in the study. Three of the people did not respond to the opinionnaire or the ensuing reminder letter.

The twelve jurors were representatives from several areas of outdoor recreation. They included college professors, journalists in camping, U. S. Forest Service personnel, National Park Service personnel and experts in the development of commercial family campgrounds.

The jury was representative of several states and the District of Columbia. Those areas represented were Virginia, Wisconsin, Connecticut, Massachusetts, Illinois, Michigan, Iowa, California, and Washington D. C.
Steps Taken to Stimulate Response

Several steps were taken to stimulate response. A convenient check-response form was enclosed in the original enlistment letter. A self-addressed and stamped envelope was included for quick individual replies, and a promise of a copy of the finished thesis was made to respondents who desired one.

Another letter was enclosed with the opinionnaire assuring the jurors that their responses would be treated anonymously. A self-addressed and stamped envelope was included for the convenience in returning the opinionnaire.

Methods of Analyzing Results

The returned opinionnaires were tallied according to the general classifications and specific items. A study of the distribution of responses was made to determine the degree of preference for each item and tested for statistical significance by the use of the chi-square test. The .05 level of significance was accepted as the level at which an hypothesis of an equal chance distribution was rejected.¹

CHAPTER IV

RESULTS AND INTERPRETATIONS

An analysis of the responses was made by the application of the chi-square test\(^1\) to the responses of each general classification within each of the eight general principles. Twenty-two of the thirty-seven general classification items did not show a significant agreement of opinion for acceptance at the five per cent level of confidence.

An analysis of the specific items under each general classification was made using the chi-square test. In the cases where there was no significant consensus of opinion about the general classification area, the specific items within that particular classification also failed to show significance. Therefore, in keeping with the purpose of the study, only those general classifications which showed a significant consensus of opinion were discussed.

The equation for chi square \((\chi^2)\) is stated as follows:

\[
\chi^2 = \sum \left( \frac{(fo - fe)^2}{fe} \right)
\]

\(fo = \) frequency of occurrence of observed or experimentally determined facts;

fe = expected frequency of occurrence on some hypothesis.

The differences between observed and expected frequencies are squared and divided by the expected number in each case, and the sum of these quotients is $\chi^2$.

Several jurors failed to respond to some items which they did not feel qualified to answer. This accounts for the variation in the number of responses to certain statements. The variation does not alter the reliability of the level of confidence since the chi-square method allows for this.

GENERAL PRINCIPLE I

The campsite should make optimum use of existing terrain retaining whatever aesthetic values the site has in its natural state. Table I shows the chi-squared values for general classifications under this principle. The jurors unanimously expressed the opinion that this consideration was imperative. An almost equal rating of importance was accorded to a consideration of the natural surroundings, since all jurors who responded to this general classification area rated this item as being imperative.
### TABLE I
RESPONSES AND CHI-SQUARED VALUES FOR
GENERAL CLASSIFICATIONS UNDER
GENERAL PRINCIPLE I

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response I</th>
<th>M</th>
<th>N</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of campsite</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>16 *</td>
</tr>
<tr>
<td>Consideration of natural surroundings</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>13 *</td>
</tr>
<tr>
<td>Materials for screening unsightly objects</td>
<td>3</td>
<td>8</td>
<td>0</td>
<td>6.4</td>
</tr>
<tr>
<td>Maintenance to retain aesthetic values</td>
<td>8</td>
<td>3</td>
<td>0</td>
<td>5.4</td>
</tr>
</tbody>
</table>

* General classification areas significant at 5 per cent level of confidence

**Location of campsite.** Table II shows the distribution of responses to the four items presented under the general classification "location of campsite." Two items showed significant consensus of opinion. The opinion of the jurors was interpreted as showing the desirability of locating a campsite near a recreational body of water. This was one of the considerations suggested by the American Camping Association\(^2\) as an attraction for those interested in water-oriented activities.

The item concerning provision for commercial recreation activities received a significant rating of

\(^2\)American Camping Association-Family Camping Federation, Guidelines, for the Development and Operation of Family Campgrounds and Sites (Martinsville, Indiana), p. 2.
undesirable, consequently providing commercial activities within the vicinity of the campsite appears to be an undesirable feature.

Consideration of Natural Surroundings. The opinions of the jurors showed the need for consideration of the natural surroundings when selecting campsites. They rated the item dealing with campsites within or surrounded by wooded areas as being a convenience which should be present. This opinion is in accord with the American Camping Association. They stated that this type of area is preferred. One juror stated that this sort of location could imply certain dangers from falling trees and limbs if a proper maintenance program were not carried out.

TABLE II
RESPONSES AND CHI-SQUARED VALUES FOR SPECIFIC ITEMS WITHIN GENERAL CLASSIFICATIONS UNDER PRINCIPLE I

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of campsite</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Located near some point of historical or scenic interest</td>
<td>1 7 3 0</td>
<td>7.5</td>
</tr>
<tr>
<td>Located near a recreational body of water</td>
<td>1 2 8 0</td>
<td>11 *</td>
</tr>
<tr>
<td>Located near an area which has provision for commercial recreational activities</td>
<td>1 2 1 8</td>
<td>11 *</td>
</tr>
</tbody>
</table>

3American Camping Association, loc. cit.
TABLE II- continued

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Located near a well traveled highway</td>
<td>0 7 2 2</td>
<td>6.7</td>
</tr>
<tr>
<td>Consideration of natural surroundings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Located on gently sloping, rock free terrain</td>
<td>2 4 5 0</td>
<td>2.4</td>
</tr>
<tr>
<td>Good grass turf on and around campsites</td>
<td>2 4 5 0</td>
<td>2.4</td>
</tr>
<tr>
<td>Campsite within or surrounded by a heavily wooded area</td>
<td>1 7 3 1</td>
<td>7.9 *</td>
</tr>
<tr>
<td>Judiciously spaced shade trees for screening and protecting sites</td>
<td>1 7 4 0</td>
<td>6.9</td>
</tr>
<tr>
<td>Use of decorative plantings to supplement native growth</td>
<td>1 4 4 3</td>
<td>1.9</td>
</tr>
<tr>
<td>Number of campsites per acre restricted to retain the aesthetic values of the campground</td>
<td>1 1 10 0</td>
<td>18.9 *</td>
</tr>
</tbody>
</table>

* Specific items significant at 5 per cent level of confidence

GENERAL PRINCIPLE II

The site should be planned and developed to present a minimum disturbance to the surroundings by the users. A number of authorities have recently stated that the automobile is probably the most destructive force within a camping area. It has been recommended that firmly set

\[4\] V. T. Linthacum, Lecture, Forest Recreation class, Montana State University, Spring 1963
barriers should be provided to prevent cars from leaving roads, parking areas, and parking spurs.\textsuperscript{5} The jurors seem to be in agreement. Ten of the jurors indicated the consideration of this topic was not to be evaded in family campground development, and two felt that it was a desirable consideration.

TABLE III
RESPONSES AND CHI-SQUARED VALUES FOR GENERAL CLASSIFICATIONS UNDER GENERAL PRINCIPLE II

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriers to prevent cars from leaving roads and parking areas</td>
<td>10 2 0</td>
<td>10 *</td>
</tr>
<tr>
<td>Provisions made for routing of pedestrians through campsite areas</td>
<td>7 5 0</td>
<td>2.6</td>
</tr>
</tbody>
</table>

*General classification areas significant at 5 per cent level of confidence

Types of barriers. Table IV lists the different types of materials that have been recommended as possible construction materials for barriers. The jurors choice of plantings as an ideal barrier is in agreement with recommendations made by the Forest Service, Perry, and the

\textsuperscript{5}Ibid.
American Camping Association, each of whom advocated plantings should be made in order to ultimately replace artificial barriers or at least aid in making the artificial barriers less conspicuous. Other types of barriers were recommended depending on the need and the location. The jurors selected naturally resistant species of logs and posts as a satisfactory material for barriers as well as the combination of logs and concrete. Boulders were also considered satisfactory for this purpose.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriers to prevent cars from leaving roads and parking areas</td>
<td>M S O U</td>
<td></td>
</tr>
<tr>
<td>Design as inconspicuous as possible</td>
<td>0 5 6 0</td>
<td>5.2</td>
</tr>
<tr>
<td>Types of barriers</td>
<td>1 2 8 0</td>
<td>11 *</td>
</tr>
<tr>
<td>Plantings</td>
<td>1 2 8 0</td>
<td></td>
</tr>
<tr>
<td>Naturally resistant species of logs and posts</td>
<td>2 9 1 0</td>
<td>13.6 *</td>
</tr>
</tbody>
</table>


7Camping Council, Proceedings of Meeting on Developing Family Camping and Recreation Areas on Private Lands (New York, October 24, 1961), p. 34

8American Camping Association, op. cit., p. 4.
TABLE IV- continued

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth embankments</td>
<td>3 4 0 5</td>
<td>1.6</td>
</tr>
<tr>
<td>Ditches</td>
<td>3 1 0 7</td>
<td>7.5</td>
</tr>
<tr>
<td>Boulders</td>
<td>0 8 0 3</td>
<td>10 *</td>
</tr>
<tr>
<td>Colored concrete or</td>
<td>1 3 1 6</td>
<td>3.6</td>
</tr>
<tr>
<td>concrete blocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural concrete or</td>
<td>1 5 0 5</td>
<td>4.6</td>
</tr>
<tr>
<td>concrete blocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination logs and</td>
<td>2 8 1 0</td>
<td>11 *</td>
</tr>
<tr>
<td>concrete</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Specific items significant at 5 per cent level of confidence

GENERAL PRINCIPLE III

Provision should be made to make all areas accessible to the public and still control the flow of traffic throughout the camp area. Of the three general classification areas shown in Table V, only the trend of opinion in regard to the statement dealing with the types of roads was significant. The opinions of the jurors were divided on the question of standards for interior circulation roads and parking areas.
TABLE V

RESPONSES AND CHI-SQUARED VALUES FOR GENERAL CLASSIFICATIONS UNDER GENERAL PRINCIPLE III

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of roads for the area</td>
<td>I 9 M 3 N 0</td>
<td>6.6 *</td>
</tr>
<tr>
<td>Standards for roads within the campground</td>
<td>I 6 M 5 N 0</td>
<td>1.3</td>
</tr>
<tr>
<td>Standards for parking areas</td>
<td>I 4 M 4 N 1</td>
<td>2.2</td>
</tr>
</tbody>
</table>

*General classification areas significant at 5 per cent level of confidence

**Types of roads.** Although the jurors were in agreement as to the general classification types of roads for the area, they showed a difference of opinion as to exactly what types of roads should come within the scope of this general area. The jurors showed a significant agreement on the undesirability of having dead-end roads in long narrow sites, which is in opposition to the recommendations made by the United States Forest Service\(^9\), which indicated that the dead-end road is usable in this situation. The only other road deemed satisfactory by the jurors was the two-way road to provide a single entrance to and exit from the campground. (Table VI)

\(^9\)Forest Service Handbook, op. cit., p. 76.
TABLE VI
RESPONSES AND CHI-SQUARED VALUES FOR SPECIFIC ITEMS WITHIN GENERAL CLASSIFICATIONS UNDER PRINCIPLE III

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of roads for the area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two-way road to provide a single entrance and exit for the campground</td>
<td>1 7 3 1</td>
<td>7.9 *</td>
</tr>
<tr>
<td>One-way system of roads providing separate entrances and exits</td>
<td>1 0 5 6</td>
<td>5.6</td>
</tr>
<tr>
<td>One-way loops to provide access within the campground</td>
<td>1 4 7 0</td>
<td>6.9</td>
</tr>
<tr>
<td>Dead-end roads in long narrow sites</td>
<td>1 1 2 8</td>
<td>11 *</td>
</tr>
<tr>
<td>Dead-end roads to provide access within the campground</td>
<td>2 4 2 4</td>
<td>1.2</td>
</tr>
</tbody>
</table>

*Specific items significant at 5 per cent level of confidence

GENERAL PRINCIPLE IV
Whenever possible family campgrounds should be located in the proximity of recreational areas. There was no significant agreement by the jurors in this area. However, they did make additional comments which are of interest in this area. They felt that commercial areas in the proximity of family camping areas distract from the camping experience. Three of the jurors mentioned that picnic grounds have their place, but they should be away from campsite areas. One juror felt that the
commercial aspect is just what the camper is trying to avoid. Two of the jurors suggested that one should not lose sight of the fact that the campground is a recreation area within itself, and an attempt should be made to keep it separated from other extensively used "day use" facilities.

TABLE VII
RESPONSES AND CHI-SQUARED VALUES FOR GENERAL CLASSIFICATIONS UNDER GENERAL PRINCIPLE IV

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picnic grounds</td>
<td>2 3 4</td>
<td>.6</td>
</tr>
<tr>
<td>Public recreation areas (field sports area)</td>
<td>0 5 4</td>
<td>1.6</td>
</tr>
<tr>
<td>Lakes and streams</td>
<td>4 5 0</td>
<td>1.6</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>3 3 6</td>
<td>1.4</td>
</tr>
<tr>
<td>Commercial recreation</td>
<td>0 4 4</td>
<td>2.4</td>
</tr>
</tbody>
</table>

*General classification areas significant at 5 per cent level of confidence

GENERAL PRINCIPLE V

The site should be developed so that there is a minimum amount of disturbance to campers. Table VIII shows the three classifications for which the jurors showed a significant consensus of opinion. The problems of vehicular and pedestrian traffic were both selected as imperative considerations by a majority of the jurors.
One of the jurors felt that the individual's right to privacy or even isolation should be respected. Another juror suggested that the campers should not be disturbed by non-campers in the area. He also noted that operators of privately operated campgrounds often have more control over these factors than do operators of publicly operated sites.

Another classification that was selected for attention dealt with directing lighting downward if it was deemed necessary to have it in a campsite area. One juror felt that lighting is not necessary in an area of this type since individuals can obtain so much modern lighting equipment if they so desire, and not having camp lighting would be more in keeping with the camping tradition. One juror also suggested that campers should be assured privacy from pets of other campers.

**TABLE VIII**

RESPONSES AND CHI-SQUARED VALUES FOR GENERAL CLASSIFICATIONS UNDER GENERAL PRINCIPLE V

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man-made natural screening should be provided for at least minimum privacy to campers</td>
<td>8 4 0</td>
<td>4</td>
</tr>
</tbody>
</table>
TABLE VIII—continued

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicular control should be such that there is very little disturbance to campers by passing vehicles</td>
<td>10 2 0</td>
<td>10 *</td>
</tr>
<tr>
<td>Pedestrian traffic should be controlled to prevent undue passage through or immediately adjacent to neighboring campsites</td>
<td>11 1 0</td>
<td>11 *</td>
</tr>
<tr>
<td>Camp lighting should be directed downward so as not to interfere with individual campsites</td>
<td>8 3 1</td>
<td>6.5 *</td>
</tr>
</tbody>
</table>

*General classification areas significant at 5 per cent level of confidence

Vehicular control for minimum disturbance to campers.

Table IX shows the two specific items within this general classification. Although the jurors' selections showed a significant consensus of opinion about the general classification, the two items presented under it did not show any significant agreement among those responding.

TABLE IX

RESPONSES AND CHI-SQUARED VALUES FOR SPECIFIC ITEMS WITHIN GENERAL CLASSIFICATION UNDER PRINCIPLE V

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicular control should be such that there is very little</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE IX—continued

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>disturbance to campers by passing vehicles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of one-way loops where necessary to route traffic past campsites</td>
<td>1 4 7 0</td>
<td>6.9</td>
</tr>
<tr>
<td>Campsites located so that passing auto headlights do not sweep the area</td>
<td>1 4 7 0</td>
<td>6.9</td>
</tr>
</tbody>
</table>

*Specific items significant at 5 per cent level of confidence

GENERAL PRINCIPLE VI

There should be adequate equipment for normal campsite activities. Table X lists those general classifications which were presented for the judgement of the jurors. Two of the items were selected by the jury as warranting consideration. A majority felt that the provision of tables was a necessity. Eight judges felt campstores were a convenient feature. One of these eight considered this of imperative necessity. This consensus of opinion is in agreement with the American Camping Association\(^{10}\) in their suggestion that a campstore should be provided if a campground is large enough and not located close to a regular store.

\(^{10}\)American Camping Association, op. cit., p. 10.
### TABLE X
RESPONSES AND CHI-SQUARED VALUES FOR GENERAL CLASSIFICATIONS UNDER GENERAL PRINCIPLE VI

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>10</td>
<td>1 0</td>
</tr>
<tr>
<td>Cooking facilities and warming facilities</td>
<td>7 4 0</td>
<td>3.6</td>
</tr>
<tr>
<td>Electrical outlets</td>
<td>1 5 4</td>
<td>8.7 *</td>
</tr>
<tr>
<td>Campstores</td>
<td>1 7 0</td>
<td>4.4</td>
</tr>
<tr>
<td>Firewood</td>
<td>5 1 0</td>
<td></td>
</tr>
</tbody>
</table>

*General classification areas significant at 5 per cent level of confidence

Tables. Table XI shows the responses made to statements dealing with various aspects which need to be considered in construction, placement, number and size of tables. The jurors were not in agreement as to how many tables should be required, but they did indicate the undesirability of having three tables per campsite. The jurors also felt the sixteen foot group unit table was undesirable equipment. Again, they did not agree as to what size table was desirable, although the closest agreement seemed to be in favor of the eight foot dimension. When considering materials for construction, the jurors chose a combination of wood and metal as satisfactory. Two of them suggested in addition that tables should be of indigenous materials in keeping with the rustic native aspect. Stone, as well as wood, was recommended as a possible material which would serve this purpose. One
Juror suggested that the latest trend in family camping tables is the circular table. The item concerning location of the table in order to take advantage of maximum shade was selected as a factor to consider. This parallels the suggestions of the United States Forest Service.\(^\text{11}\)

**Campstores.** The responses to the majority of items within this classification were not statistically significant. The jurors agreed that campstores located in conjunction with an entrance station is a satisfactory feature. The item dealing with provision of adequate administrative policies was given an optimum rating by a majority of the jurors. One juror suggested the possibility of having a vendor sell ice and wood in the campground area. Another juror felt that the campsite should be as rustic as possible and that "frills" should be kept to a minimum in order to avoid the town or city-like atmosphere. (Table XI)

### TABLE XI

RESPONSES AND CHI-SQUARED VALUES FOR SPECIFIC ITEMS WITHIN GENERAL CLASSIFICATIONS UNDER PRINCIPLE VI

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of tables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One per unit</td>
<td>4 4 4 0</td>
<td>0.99</td>
</tr>
<tr>
<td>Two per unit</td>
<td>0 0 6 5</td>
<td>5.2</td>
</tr>
<tr>
<td>Three per unit</td>
<td>0 0 1 10</td>
<td>19 *</td>
</tr>
</tbody>
</table>

\(^{11}\)Forest Service Handbook, op. cit., Sup. 167.
### TABLE XI - continued

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M  S  O  U</td>
<td>Value</td>
</tr>
<tr>
<td><strong>Size of tables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eight feet long</td>
<td>0 3 7 1</td>
<td>7.5</td>
</tr>
<tr>
<td>Six feet long</td>
<td>5 4 0 3</td>
<td>1.6</td>
</tr>
<tr>
<td>Group unit table 12 feet long</td>
<td>1 5 4 1</td>
<td>4.3</td>
</tr>
<tr>
<td>Group unit table 14 feet long</td>
<td>0 4 1 7</td>
<td>6.9</td>
</tr>
<tr>
<td>Group unit table 16 feet long</td>
<td>0 1 1 9</td>
<td>16 *</td>
</tr>
<tr>
<td><strong>Construction materials</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard lumber pressure treated</td>
<td>2 4 5 1</td>
<td>4.2</td>
</tr>
<tr>
<td>Two inch stock lumber</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pressure treated</td>
<td>3 7 1 0</td>
<td>7.5</td>
</tr>
<tr>
<td>Concrete</td>
<td>1 5 2 4</td>
<td>3.2</td>
</tr>
<tr>
<td>Concrete and lumber</td>
<td>1 6 3 2</td>
<td>4.6</td>
</tr>
<tr>
<td>Metal</td>
<td>1 6 0 5</td>
<td>5.6</td>
</tr>
<tr>
<td>Combination wood and metal</td>
<td>1 7 3 1</td>
<td>7.9 *</td>
</tr>
<tr>
<td><strong>Types of tables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seat built as part of table</td>
<td>3 1 6 2</td>
<td>4.6</td>
</tr>
<tr>
<td>Separate seats and table</td>
<td>0 1 3 7</td>
<td>7.5</td>
</tr>
<tr>
<td>Permanently fixed table</td>
<td>0 4 3 5</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>Location of tables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take advantage of maximum shade</td>
<td>0 8 4 0</td>
<td>8.6 *</td>
</tr>
<tr>
<td>Near fireplace</td>
<td>1 7 4 0</td>
<td>6.9</td>
</tr>
<tr>
<td>In area where makes site look most attractive</td>
<td>2 2 5 3</td>
<td>1.9</td>
</tr>
<tr>
<td>Located to take up least amount of campsite space and still be serviceable</td>
<td>6 2 3 1</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Campstores</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Near entrance outside campground</td>
<td>1 7 2 2</td>
<td>7.2</td>
</tr>
<tr>
<td>In conjunction with service station near entrance</td>
<td>0 8 2 2</td>
<td>8.9 *</td>
</tr>
<tr>
<td>Vendors allowed to sell within campground area</td>
<td>1 4 0 7</td>
<td>6.9</td>
</tr>
<tr>
<td>Central service area within campground</td>
<td>1 5 5 1</td>
<td>5.2</td>
</tr>
<tr>
<td>Adequate administration policies for control of vending in or adjacent to campground</td>
<td>3 1 8 0</td>
<td>9.6 *</td>
</tr>
</tbody>
</table>

*Specific items significant at 5 per cent level of confidence
GENERAL PRINCIPLE VII

The campsite should be developed for the best possible utilization of campground space while providing adequate room for camping activities on each site. Table XII reveals that the jurors felt the arrangement of campsites was a factor of imperative consideration. It was further stated that the arrangement would depend a great deal on the space available, the terrain, and whether the area would be used by tent or trailer campers.

TABLE XII
RESPONSES AND CHI-SQUARED VALUES FOR GENERAL CLASSIFICATIONS UNDER GENERAL PRINCIPLE VII

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response I</th>
<th>M</th>
<th>N</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrangement of campsites</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Density of campsites</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>4.5</td>
</tr>
<tr>
<td>Size of campsites</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>3.8</td>
</tr>
</tbody>
</table>

*General classification areas significant at 5 per cent level of confidence

Arrangement of campsites. Table XIII shows that the jurors felt sites located in rougher terrain should be reserved for tent campers. The majority of the jurors felt that this point was an optimum factor. The jurors choice was in accord with suggestions made by the Camping
Council\textsuperscript{12} in their recommendation that sites on rougher terrain and at greater distances from public highways might be strictly reserved for tent campers. The item recommending that rougher terrain be utilized for both tent and trailer campers was selected as satisfactory. One juror suggested that there was no real answer to either of these items because there are no two areas just alike. He suggested further that these considerations relate to area needs, local conditions and other factors, and that there may not even be any "smooth" terrain upon which campsites could be developed.

\textbf{TABLE XIII}

\textbf{RESPONSES AND CHI-SQUARED VALUES FOR SPECIFIC ITEMS WITHIN GENERAL CLASSIFICATION UNDER PRINCIPLE VII}

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrangement of campsites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sites in rougher terrain reserved for tent campers</td>
<td>2 1 7 1</td>
<td>8.6 *</td>
</tr>
<tr>
<td>Sites in rougher terrain utilized for trailer camping as well as tent camping</td>
<td>2 7 1 1</td>
<td>8.6 *</td>
</tr>
<tr>
<td>Sites at greater distances from highway reserved for tent camping</td>
<td>0 4 6 2</td>
<td>3.6</td>
</tr>
<tr>
<td>Sites at greater distances from highway utilized for both trailer and tent camping</td>
<td>0 7 2 2</td>
<td>6.7</td>
</tr>
</tbody>
</table>

\textsuperscript{12}Camping Council, How to Make Money with Family Campgrounds (New York, Camping Council), p. 2.
TABLE XIII- continued

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trailer campsites located at greater distances from highway only if access can be provided with minimum of passage by other campsites</td>
<td>3 5 3 0</td>
<td>1.8</td>
</tr>
<tr>
<td>Tent and trailer sites interspersed throughout the campgrounds</td>
<td>1 5 2 4</td>
<td>3.2</td>
</tr>
<tr>
<td>Tent and trailer sites located only in separate areas</td>
<td>1 0 6 5</td>
<td>5.6</td>
</tr>
</tbody>
</table>

*Specific items significant at 5 per cent level of confidence

GENERAL PRINCIPLE VIII

Adequate provision should be made for sanitation and protection of the health, welfare and safety of the family campers. Of the eleven general classifications shown in Table XIV, jurors showed a significant consensus of opinion about those areas dealing with sewage disposal, water supply, and fire protection and indicated that these were considered as highly important. The inclusion of laundry facilities within a campground was felt to be a moderately important factor.
TABLE XIV
RESPONSES AND CHI-SQUARED VALUES FOR GENERAL CLASSIFICATIONS UNDER GENERAL PRINCIPLE VIII

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>M</td>
<td>N</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Dust control</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Sewage disposal</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Lavatories</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Flushing rim sinks</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Water supply</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Showers</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Laundry facilities</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Garbage disposal</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Location of campsites in relation to roads</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Fire protection</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Insect control</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

*Significant at 5 per cent level of confidence

**Sewage Disposal.** Table XV shows the responses made to the items dealing with the types of sewage disposal facilities. The jurors selected septic tanks as the optimum means of sewage disposal and deemed chemical tanks satisfactory. The Forest Service\(^{13}\) advocates the use of septic tanks for all larger sites when it is financially feasible and suggests chemical tanks as a satisfactory means of sewage disposal, which is in agreement with the jurors. In their consideration of the

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\(^{13}\)Forest Service, *op. cit.*, p. 129.
ratios of sewage disposal facilities, the jurors felt that one water closet per twelve campsites is an undesirable number and they also felt that one water closet for each sex per fifteen campsites was an undesirable ratio. There were not enough votes for any of the other items to suggest a satisfactory or optimum ratio. The jurors chose one urinal per five campsites as a satisfactory ratio.

Water supply. Although twenty-three factors are suggested within this section, the jurors showed significant consensus of opinion on seven. The jurors felt that a connection with the community supply was optimum and drilled wells are satisfactory, which is in accord with the recommendations of the American Camping Association. In their consideration of water outlets, the jurors chose spigots, water hydrants with suitable attachments, combination water tap and drinking fountain, and hand pumps as satisfactory methods for dispensing water. All of these types of outlets were chosen as a satisfactory means by seven of the jurors. An equal number of jurors suggested the storage reservoir as a satisfactory means of storing the emergency water supply. When considering location of the water supply, the jurors

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14 American Camping Association, op. cit., p. 5.
selected a distance of 150 feet from all campsites as the optimum distance. Nine of the ten jurors made the optimum selection, with one suggesting this distance a minimum consideration. This, too, was in accord with the recommendations of the American Camping Association. 15

**Laundry Facilities.** Several jurors felt that laundry facilities are an added "frill" and suggested that most campers are willing to go to a nearby town to launder clothing or plan ahead sufficiently to make it unnecessary to do laundering while on their camping trips. Mechanical dryers, however, are recommended as optimum when commercial laundry equipment is provided. A drying yard was deemed a satisfactory alternative.

**Garbage Disposal.** It has been suggested by various authors that the collection and the disposal of garbage is often the biggest single operating problem in campground areas. Although twenty factors were listed for consideration, only four were considered pertinent by the jurors as a group. In many cases, two or more jurors did not feel qualified to make a statement. When considering the collection of garbage, however, eight of the ten jurors who responded selected collection once daily as ideal. Location of the garbage can two hundred feet from the campsite appeared to be an undesirable distance.

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15American Camping Association, *loc. cit.*
There were not enough responses on any one factor to show any consensus of opinion on the ideal size of garbage cans. However, jurors felt that twenty-five and thirty gallon ground vault cans are an undesirable feature to have at each site. One juror commented that these have not been demonstrated to be fully effective. Another juror suggests that it is not necessary to have a ground vault at each site but there should be a large one at some central location to serve the entire campground area.

**Fire Protection.** This section was selected as an imperative point when considering family camping. The jurors recommend that areas for fires should be defined within the campground area. This is in agreement with writers on this topic.16 One juror suggests that there should be fire extinguishers which are well marked and located in the campground area. He further suggested the installation of a telephone within the area with a sign indicating fire headquarters or fire stations.

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16V. T. Linthacum, Lecture, Forest Recreation class, Montana State University, Spring 1963.
TABLE XV

RESPONSES AND CHI-SQUARED VALUES FOR SPECIFIC ITEMS
WITHIN GENERAL CLASSIFICATIONS UNDER PRINCIPLE VIII

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>M</th>
<th>S</th>
<th>O</th>
<th>U</th>
<th>Chi-Squared Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sewage Disposal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of sewage disposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sanitary dry pit</td>
<td></td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>1.5</td>
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<td>Water-tight sanitary pump</td>
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<td>2</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>6.7</td>
</tr>
<tr>
<td>out pits</td>
<td></td>
<td>0</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td>11 *</td>
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<td>Chemical tanks</td>
<td></td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>6.7</td>
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<td>Incinerator vaults</td>
<td></td>
<td>1</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>11 *</td>
</tr>
<tr>
<td>Septic tanks</td>
<td></td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<td>Sub-surface sand filter</td>
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<td>0</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>3.5</td>
</tr>
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<td><strong>Ratios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pit latrines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One seat for every three campsites</td>
<td></td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>2.8</td>
</tr>
<tr>
<td>One seat for every five campsites</td>
<td></td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>4.8</td>
</tr>
<tr>
<td>Minimum of two seats for each sex per five campsites</td>
<td></td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Water closet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One for each sex per five campsites</td>
<td></td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>4.8</td>
</tr>
<tr>
<td>One for each sex per six campsites</td>
<td></td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>One for each sex per eight campsites</td>
<td></td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>One for each sex per ten campsites</td>
<td></td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>4.8</td>
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<tr>
<td>One for each sex per twelve campsites</td>
<td></td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>8.4 *</td>
</tr>
<tr>
<td>One for each sex per fifteen campsites</td>
<td></td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>8.4 *</td>
</tr>
<tr>
<td><strong>Urinal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One per five campsites</td>
<td></td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>6.2</td>
</tr>
<tr>
<td>One per six campsites</td>
<td></td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>13 *</td>
</tr>
<tr>
<td>One per eight campsites</td>
<td></td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>2.8</td>
</tr>
<tr>
<td>One per ten campsites</td>
<td></td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>2.8</td>
</tr>
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</table>
TABLE XV- continued

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
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<tr>
<td><strong>Water Supply</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allotment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Five gallons per person</td>
<td>0 1 1</td>
<td>4 5</td>
</tr>
<tr>
<td>Ten gallons per person</td>
<td>2 3 0</td>
<td>2 .8</td>
</tr>
<tr>
<td>Fifteen gallons per person</td>
<td>2 1 2</td>
<td>3</td>
</tr>
<tr>
<td>Twenty gallons per person</td>
<td>1 3 1</td>
<td>2</td>
</tr>
<tr>
<td>Twenty-five gallons per person</td>
<td>0 4 0</td>
<td>1 5.5</td>
</tr>
<tr>
<td>Thirty gallons per person</td>
<td>0 3 2</td>
<td>1 2.7</td>
</tr>
<tr>
<td>Forty gallons per person</td>
<td>0 2 2</td>
<td>1 3.8</td>
</tr>
<tr>
<td>Fifty gallons per person</td>
<td>0 0 4</td>
<td>1 3.8</td>
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<tr>
<td><strong>Sources of water</strong></td>
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<td></td>
</tr>
<tr>
<td>Drilled well</td>
<td>1 8 1</td>
<td>0 10 *</td>
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<tr>
<td>Artesian well</td>
<td>2 5 3</td>
<td>0 2.7</td>
</tr>
<tr>
<td>Dug well</td>
<td>3 4 0</td>
<td>0 1</td>
</tr>
<tr>
<td>Springs when possible</td>
<td>0 6 2</td>
<td>2 4.6</td>
</tr>
<tr>
<td>Treated surface water</td>
<td>3 2 0</td>
<td>5 2.7</td>
</tr>
<tr>
<td>Connection with community supply</td>
<td>0 2 8</td>
<td>0 12.2 *</td>
</tr>
<tr>
<td><strong>Water outlets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spigots</td>
<td>1 7 2</td>
<td>0 9 *</td>
</tr>
<tr>
<td>Water hydrants with suitable attachments</td>
<td>1 7 1</td>
<td>1 8.2 *</td>
</tr>
<tr>
<td>Combination water tap and drinking fountain</td>
<td>0 7 3</td>
<td>0 8.2 *</td>
</tr>
<tr>
<td>Hand pumps (frost-proof where necessary)</td>
<td>2 7 1</td>
<td>0 9 *</td>
</tr>
<tr>
<td><strong>Location of outlets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not more than 150 feet</td>
<td>1 0 9</td>
<td>0 16.9 *</td>
</tr>
<tr>
<td>from all campsites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not more than 200 feet</td>
<td>2 6 1</td>
<td>1 6.3</td>
</tr>
<tr>
<td>from all campsites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not more than 300 feet</td>
<td>1 4 1</td>
<td>4 3.6</td>
</tr>
<tr>
<td>from all campsites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency water supply</td>
<td>2 7 1</td>
<td>0 9 *</td>
</tr>
<tr>
<td>Storage reservoir</td>
<td>2 5 2</td>
<td>0 3.3</td>
</tr>
<tr>
<td><strong>Laundry Facilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum facilities provided for laundering by hand, including drying yard</td>
<td>3 7 1</td>
<td>0 7.5</td>
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</tbody>
</table>
TABLE XV - continued

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Chi-Squared Value</th>
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<tbody>
<tr>
<td>Commercial laundering equipment</td>
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<tr>
<td>provided on the campgrounds</td>
<td>0 2 5 2</td>
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</tr>
<tr>
<td>Mechanical dryers</td>
<td>1 7 1 1</td>
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</tr>
<tr>
<td>Drying yard</td>
<td>7 1 0 0</td>
<td>12.5 *</td>
</tr>
<tr>
<td>Garbage Disposal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of cans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One ten gallon</td>
<td>4 2 3 1</td>
<td></td>
</tr>
<tr>
<td>Two ten gallon per site</td>
<td>1 4 2 3</td>
<td>2</td>
</tr>
<tr>
<td>One fifteen gallon per site</td>
<td>1 4 3 3</td>
<td>1.5</td>
</tr>
<tr>
<td>One twenty gallon per site</td>
<td>0 3 2 5</td>
<td>2.7</td>
</tr>
<tr>
<td>One twenty-five gallon per site</td>
<td>0 3 1 6</td>
<td>6</td>
</tr>
<tr>
<td>One thirty gallon per site</td>
<td>0 1 2 6</td>
<td>6.7</td>
</tr>
<tr>
<td>Ground vaults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One ten gallon per site</td>
<td>1 2 2 3</td>
<td>.8</td>
</tr>
<tr>
<td>Two ten gallon per site</td>
<td>1 2 1 4</td>
<td>2.8</td>
</tr>
<tr>
<td>One fifteen gallon per site</td>
<td>0 2 1 5</td>
<td>4.8</td>
</tr>
<tr>
<td>One twenty gallon per site</td>
<td>0 2 2 4</td>
<td>2</td>
</tr>
<tr>
<td>One twenty-five gallon per site</td>
<td>0 1 1 6</td>
<td>8.8 *</td>
</tr>
<tr>
<td>One thirty gallon per site</td>
<td>0 1 0 7</td>
<td>12.5 *</td>
</tr>
<tr>
<td>Collection of garbage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once daily</td>
<td>1 0 8 1</td>
<td>13.8 *</td>
</tr>
<tr>
<td>Once every two days</td>
<td>2 5 1 2</td>
<td>3.6</td>
</tr>
<tr>
<td>Twice weekly</td>
<td>3 2 1 4</td>
<td>2</td>
</tr>
<tr>
<td>Location of garbage cans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not more than seventy-five feet from campsite</td>
<td>0 2 5 2</td>
<td>3.3</td>
</tr>
<tr>
<td>Not more than 150 feet from campsite</td>
<td>5 1 0 4</td>
<td>4.3</td>
</tr>
<tr>
<td>Not more than 200 feet from campsite</td>
<td>0 2 0 8</td>
<td>12.2 *</td>
</tr>
<tr>
<td>Disinfection of garbage cans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At time of each emptying</td>
<td>1 2 5 2</td>
<td>3.6</td>
</tr>
<tr>
<td>Once weekly</td>
<td>3 1 2 3</td>
<td>1</td>
</tr>
<tr>
<td>Twice weekly</td>
<td>0 6 0 3</td>
<td>6.4</td>
</tr>
<tr>
<td>Fire Protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Areas for fires definitely located</td>
<td>3 0 7 0</td>
<td>8.2 *</td>
</tr>
<tr>
<td>Size of fire place not unnecessarily large</td>
<td>2 3 5 0</td>
<td>2.7</td>
</tr>
</tbody>
</table>

*Specific items significant at 5 per cent level of confidence.
CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

A survey of the factors involved in the development and selection of family campsites was carried out by the normative survey method of research through a panel of jurors.

The opinionnaire contained certain factors which could be included in the scope of a family campground. The opinionnaire was mailed for evaluation to twelve experts in the field of family camping. The returns were tallied and tables were formulated for each general principle. The Chi-Square Test was applied in order to find those factors which were considered to be pertinent in the development of criteria for campsite selection and development. Fifteen general classifications were considered pertinent factors.

A site located near a recreational body of water was considered an optimum factor when dealing with campsite location. It was deemed undesirable to locate a campsite near an area which has provision for commercial recreational activities.
When dealing with the natural surroundings a site within, or surrounded by, a heavily wooded area was felt to be satisfactory, and the control of the number of campsites per acre to retain aesthetic values of the campgrounds was chosen as optimum.

A number of materials were considered satisfactory for use as barriers. Those included were naturally resistant species of logs and posts, boulders, and a combination of logs and concrete. Plantings were recommended as the ideal barriers.

The two-way road providing a single entrance to and a single exit from the campground is suggested as a satisfactory feature. Dead-end roads in long narrow sites are considered an undesirable factor.

In general, there was no significant trend of opinion in the consideration of various types of recreational sites within proximity of family campsites.

Vehicular control for a minimum disturbance to campers was considered imperative, but there was no significant trend of opinion in regard to the specific items within this general classification.

The results indicate that there is a good deal of discrepancy in the opinions of the experts relative to the normal amount of equipment which should be available for development and efficient operation of the campsite. No
optimum or satisfactory number of tables to be available at campsites can be designated from the results. Three tables per campsite as well as the sixteen foot group table were designated as undesirable features. Taking advantage of maximum shade in the placement of the tables was shown as a satisfactory factor.

It was revealed by the survey that adequate administrative policies for control of vending in, or adjacent to, campgrounds was an ideal feature in considering campstores and sale of supplies. The results show further that it may be satisfactory to locate campstores in conjunction with the service station near the entrance.

It is deemed ideal to have the campsites arranged for the best possible utilization of available campground space. The jurors indicated that sites in rougher terrain should be reserved for tent campers, or, as an alternative, sites in rougher terrain were also considered satisfactory for trailer camping as well as tents.

Septic tanks were considered the optimum method of sewage disposal while chemical tanks were deemed satisfactory. No significant trend of opinion was indicated for other methods of sewage disposal. No significant trend was revealed in considering the ideal number of water closets. However, one for each sex per twelve campsites or one for each sex per fifteen campsites were indicated
as inadequate and undesirable. One urinal per six camp-
sites was considered satisfactory.

In general there was no significant trend of opinion
regarding water allotment for each camper. Twenty-five
gallons per person came the closest to showing a signifi-
cant result. Four types of water outlets were designated
as satisfactory; spigots, water hydrants with suitable
attachments, combination water tap and drinking fountain,
and hand pumps. The storage reservoir method was revealed
as a satisfactory means of storing water.

It was indicated that when laundry facilities are part
of the campsite equipment, mechanical dryers are a satis-
factory feature.

No significant trend of opinion on the ideal number
and size of garbage cans for a campsite area was revealed,
but it was indicated that twenty-five and thirty gallon
ground vault cans are an undesirable feature. Garbage col-
lection once daily was deemed ideal for family campgrounds.
The location of garbage cans at a distance of two hundred
feet or more from the campsite was indicated as an undesir-
able distance.

The results showed that fire protection was felt to be
imperative. Areas designated for fires should be defini-
tely located for optimum use of the camping area.
Conclusions

An analysis of the data indicates the following seem to be factors significant in the implementation of evaluative criteria for family campsites:

1. Ideally the campsite should be located near a recreational body of water and away from an area which has provisions for commercial activities.

2. When considering the natural surroundings, the number of campsites should be restricted to retain the aesthetic values of the campgrounds. It is recommended that the campgrounds be within or surrounded by a heavily wooded area.

3. Barriers should be provided to prevent cars from leaving roads and parking areas and ideally these should be plantings. Other satisfactory materials, however, are naturally resistant species of logs and posts, boulders, and a combination of logs and concrete.

4. A two-way road should provide a single entrance to and an exit from the campground. Dead-end roads should be avoided in long narrow sites.

5. Vehicular control should be such that there is very little disturbance to campers by passing vehicles. Pedestrian traffic should be controlled to prevent undue passage through or immediately adjacent to neighboring campsites.
6. Tables should ideally be constructed of a combination of wood and metal materials, and they should be located so as to take advantage of maximum shade. There should be fewer than three tables per site. Group unit tables of sixteen foot lengths are not recommended.

7. Ideally campstores should be located in conjunction with the service station near the campground entrance and there should be adequate administrative policies for control of vending in or adjacent to the campground.

8. The campsites should be arranged so as to reserve the areas in rougher terrain for tent campers. Sites in rougher terrain could be utilized for both tent and trailer camping as an alternative feature.

9. Septic tanks and chemical tanks should be used for sewage disposal purposes and there should be more than one water closet per twelve campsites as well as one urinal per six campsites.

10. Ideally the water supply should be obtained by a connection with the community supply. Water obtained from a drilled well would be equally acceptable. Satisfactory water outlets include spigots, water hydrants, combination water tap and drinking fountain, and hand pumps. The outlets should not be more than 150 feet from all camping sites.

11. Laundry facilities when provided should include a mechanical dryer.
12. When ground vaults are used for garbage disposal they should not be larger than twenty-five gallon size and should be within 200 feet of the campsite. Garbage collection should be once daily.

13. Fire protection should be assured by having definite areas designated for building fires.

Recommendations

In view of the preceding conclusions and problems encountered in the completion of this study, the following recommendations are made:

1. There is a need to develop a workable system for evaluation of family campsite areas. This could be based on the list of evaluative criteria developed within this report.

2. There is a need to determine desirable procedures for the development of some phases of campsite development. This is indicated by the lack of a general consensus of opinion in regard to some of the facilities included in this report.

3. There is a constant need for a continuing evaluation of new trends in the development of campground equipment and campsite improvement. Respondents to the opinionnaire pointed out many additional factors in some categories.
4. This study was concerned only with recommended equipment and procedures. Some work should be done on the opinions of campsite users about the equipment used on these sites.
BIBLIOGRAPHY
BIBLIOGRAPHY

A. BOOKS


B. UNPUBLISHED MATERIALS

Kelsey, W. E. "The Total Plan."

Remington, Edward. "Private Campgrounds."

C. INTERVIEWS

V. T. Linthacum, retired United States Forest Service Planner, Missoula, Montana.
APPENDICES
APPENDIX A

Missoula, Montana

Dear Dr. ________________:

Currently I am a graduate assistant at Montana State University, where I am working toward a Master's degree in physical education with supplementary course work in outdoor recreation. In my thesis I am attempting to formulate evaluative criteria for family campsites. It is my hope that these criteria might be used to appraise existing campsites and serve as a set of suggested standards for planning future areas.

In order to compile the criteria in a professional manner it is necessary for me to enlist the aid of experts in this field. Your name has been suggested to me by ________________ as one who might be interested in assisting with such a study. I would appreciate very much your willingness to serve in this capacity.

Your contribution would be that of checking on a list those factors you feel should be included when evaluating family campsites. The check list is not unusually long, but will require time for you to consider the various elements involved. You will be given credit for your participation, but your responses will be treated anonymously. The check list should arrive in your office approximately May 24th and could be returned to me before June 14. I will send you a copy of the finished thesis, if you care to have one, as a small token of appreciation for your cooperation in this project.

I have taken the liberty to enclose a form for your response as to whether or not you wish to receive the check list. Would you be so kind as to fill out the response blank and return it in the enclosed self-addressed envelope.

Sincerely yours,

Angeline Erusha
APPENDIX B

I will be willing to assist with the compilation of data to formulate criteria in appraising family campsites.

I am unable to assist in this project.

Name:__________________________________________
Address:________________________________________
Title:___________________________________________
APPENDIX C

Missoula, Montana

Dear Dr. ________________:

The check list you so kindly consented to complete is included. May I say again that your assistance is most appreciated and I feel will make a real contribution to the data I hope to compile. In setting up criteria of this nature the opinions of people with your experience and knowledge are imperative.

I wish to assure you again that your responses will be treated anonymously. It is hoped that from these results my thesis will make some contribution that you might be interested in seeing. The tabulation should be started by June 17, and it is my hope that your responses can be received by that date. I shall forward a copy of my work to you upon its completion.

Sincerely yours,

Angeline Erusha
APPENDIX D

Opinionnaire

Evaluative Criteria for Family Campsites

This opinionnaire has been prepared after reviewing the available literature on family camping areas. From this review, it became apparent that certain general principles could be applied for the evaluation of these areas. If one were to determine how well these principles have been applied in the development of a specific area, it would be necessary to quantitatively and qualitatively analyze the specific items which are related to them. No lists of this type could be found in the literature other than those lists which were prepared empirically by individuals. Consequently you are being asked to give your opinion as to what these specific items should be and to what extent they should be present.

Definition of Terms

Campground. Campground refers to the entire camping development under consideration. All other units are included within this general area.

Campsite. A campsite refers to the individual campsite units within the larger, all inclusive, campground.

Comfort Station. A comfort station refers to the building that houses toilet facilities, showers, and in some cases, laundry facilities. The building that generally houses the facilities that are necessary for convenient camping is a comfort station.

Instructions

The opinionnaire deals with two sets of possible replies. The first set deals with the general classifications and the second with the specific items under each general classification. Please read through all specific items under the general classifications before making your choice on any one of them. When you have made your selection, please encircle the letter you feel is most appropriate. Evaluate each item independently. Consequently, everything could be optimum or nothing may be
optimum, or all responses might be undesirable. The "remarks" sections allow for the qualification of your answers if you feel it is necessary; however, it is preferable that qualified answers be kept to a minimum. If it is felt that more items should be included, add them in the blanks, and rate them according to the same standards as the other items.

**General Classifications**

Please rate each general classification area according to the following criteria:

(I) **Imperative.** The consideration of this topic is not to be evaded in family campground development.

(M) **Moderately important.** May be a desirable consideration but not an absolute necessity in family campground development.

(N) **Not necessary.** Need not be considered in family campground development.

**Specific Items**

Please rate each specific item according to the following criteria:

(M) **Minimum.** The least possible requirements which must be present for a family campground development.

(S) **Satisfactory.** This implies an area where a family could camp with convenience; should be present, but is not an absolute necessity.

(O) **Optimum.** This implies the best and most efficient use of the area. This item is present under the most ideal conditions.

(U) **Undesirable or unnecessary.** This implies that the item should not be or does not need to be incorporated in the development of family campgrounds.

I. The campsite should make optimum use of existing terrain retaining whatever aesthetic values the site has in its natural state.

A. Location of campsite.  

1. Located near some point of historical
or scenic interest.
2. Located near a recreational body of water.
3. Located near an area which has provision for commercial recreational activities.
4. Located near a well traveled highway.
5. ________________________________
6. ________________________________

B. Consideration of natural surroundings.
1. Located on gently sloping, rock free terrain.
2. Good grass turf present on and around campsites.
3. Campsites within or surrounded by a heavily wooded area.
4. Judiciously spaced shade trees for screening and protecting sites.
5. Use of decorative plantings to supplement native growth.
6. Number of campsites per acre restricted to retain the aesthetic values of the campgrounds.
7. ________________________________
8. ________________________________

C. Materials for screening unsightly objects.
1. Use of trees and shrubs wherever possible.
2. Use of man made screening materials.
3. Use of man made screening materials only when natural materials not available.
4. Types of man made screening materials:
   b. Natural wood products.
   c. Concrete blocks (natural).
   d. Concrete blocks (colored).
5. ________________________________
6. ________________________________

D. Maintenance to retain aesthetic values.
1. Sprinkling or some other watering system for turf.
2. Fertilizing grass for growth acceleration.
3. Employment of a caretaker.
4. Some planned procedure for checking and replacing trees and shrubs.  
5. Replacements of vegetative growth only with native plants.  
6. Existing standards and enforcement of them to keep visitor loads within capacity.  
7.  
8.  
Remarks:

II. The site should be planned and developed to present a minimum disturbance to the surroundings by the users.

A. Barriers to prevent cars from leaving roads and parking areas.  

1. Design as inconspicuous as possible.  
2. Types of barriers.  
   a. Plantings.  
   b. Naturally resistant species of logs and posts.  
   c. Earth embankments.  
   d. Ditches.  
   e. Boulders.  
   f. Colored concrete or concrete blocks.  
   g. Natural concrete or concrete blocks.  
   h. Combination logs and concrete.  

3.  
4.  

B. Provisions made for routing of pedestrians through campsite areas.  

1. Establishment of trails between frequently used facilities and points of interest.  
2. Adequate signs indicating directions to specified places.  

3.  
4.  

Remarks:
III. Provision should be made to make all areas accessible to the public and still control the flow of traffic throughout the camp area.

A. Types of road for the area.

1. Two-way road to provide a single entrance and exit for the campground.
2. One-way system of roads providing separate entrances and exits.
3. One-way loops to provide access within the campground.
4. Two-way roads to provide access within the campground.
5. Dead-end roads in long narrow sites.
6. Dead-end roads to provide access within the campground.
7. ________________
8. ________________

B. Standards for roads within the campground.

1. One-way roads a minimum width of 10 feet.
2. One-way roads a minimum width of 12 feet.
3. Two-way roads a minimum width of 18 feet.
4. Two-way roads a minimum width of 20 feet.
5. Main road grade not in excess of 6% for short distances.
6. Main road grade not in excess of 8% for short distances.
7. Main road grade not in excess of 10% for short distances.
10. ________________
11. ________________

C. Standards for parking areas.

1. Design standards.
   a. No grade in excess of 8% in parking area.
   b. No grade in excess of 10% in parking area.
c. Provision should be made for trailer camp units.
   (1) Minimum dimensions of 12 feet by 30 feet.
   (2) Minimum dimensions of 12 feet by 55 feet.
   (3) Minimum dimensions of 20 feet by 20 feet.

d. ______________

e. ______________

2. Parking spurs.
   a. Parking spurs located at 45 degree angles to one-way roads.
   b. Parking spurs located at 90 degree angles to two-way roads.
   c. Angled spurs for back-in as well as forward parking.
   d. Angled spurs for forward parking only.
   e. ______________
   f. ______________

Remarks:

IV. Whenever possible family campgrounds should be located in the proximity of recreational areas.

A. Picnic grounds.

1. Within proximity of 40 feet of campsites.
2. Within proximity of 50 feet of campsites.
3. Within proximity of 75 feet of campsites.
4. ______________
5. ______________

B. Public recreations areas (field sports area).

1. Within proximity of 40 feet.
2. Within proximity of 50 feet.
3. Within proximity of 75 feet.
4. Within proximity of 150 feet.
5. Within proximity of 300 feet.
6. ______________
7. ______________
C. Lakes and streams.  
1. Within proximity of 50 feet.  
2. Within proximity of 75 feet.  
3. Within proximity of 100 feet.  
4. Within proximity of 200 feet.  
5. Within proximity of 300 feet.  
6. 
7. 

D. Miscellaneous.  
1. Hiking and/or horse trails.  
2. Grassy meadow area bordering site.  
3.  
4.  

E. Commercial recreation.  
1. Rental of aquatic equipment.  
2. Horse rental.  
3. Amusement park in proximity.  
5.  
6. 

Remarks:  

V. The site should be developed so that there is a minimum amount of disturbance to campers.  

A. Man-made natural screening should be provided for at least minimum privacy to campers.  

B. Vehicular control should be such that there is very little disturbance to campers by passing vehicles.  

1. Use of one-way loops where necessary to route traffic past campsites.  
2. Campsites located so that passing auto headlights do not sweep the area.  

C. Pedestrian traffic should be controlled to prevent undue passage through or immediately adjacent to neighboring campsites.
D. Camp lighting should be directed downward so as not to interfere with individual campsites.

E. 

F. 

Remarks:

VI. There should be adequate equipment for normal campsite activities.

A. Tables.

1. Number of tables.
   a. One per camp unit. M S O U
   b. Two per camp unit. M S O U
   c. Three per camp unit. M S O U
   d. __________________________ M S O U
   e. __________________________ M S O U

2. Size of tables.
   a. Eight feet long. M S O U
   b. Six feet long. M S O U
   c. Group unit table 12 feet long. M S O U
   d. Group unit table 14 feet long. M S O U
   e. Group unit table 16 feet long. M S O U
   f. __________________________ M S O U
   g. __________________________

   b. Two-inch stock lumber, pressure treated. M S O U
   c. Concrete. M S O U
   d. Concrete and lumber. M S O U
   e. Metal. M S O U
   f. Combination wood and metal. M S O U
   g. __________________________ M S O U
   h. __________________________ M S O U

4. Types of tables.
   a. Seat built as part of the table. M S O U
   b. Separate seats and table. M S O U
   c. Permanently fixed table. M S O U
   d. __________________________ M S O U
   e. __________________________ M S O U
5. Location of tables.
   a. Take advantage of maximum shade.  M S O U
   b. Near a fireplace.  M S O U
   c. In an area where it makes the site
      look most attractive.  M S O U
   d. Located to take up least amount of
      campsite space and still be
      serviceable.  M S O U
   e. ___________________________________________  M S O U
   f. ___________________________________________  M S O U

B. Cooking facilities and warming facilities.  I M N

1. Types of cooking facilities.
   a. U-shaped stone unit.  M S O U
   b. Cement block unit.  M S O U
   c. Poured concrete unit.  M S O U
   d. Brick unit.  M S O U
   e. Concrete blocks with one piece cast
      iron grate.  M S O U
   f. Poured concrete with asbestos cement
      for sealer between door frame and
      fire box.  M S O U
   g. Fire hole in conjunction with other
      fireplace units.  M S O U
   h. Fire hole as separate unit.  M S O U
   i. Central cooking area rather than at
      individual campsite units.  M S O U
   j. Use of gas or electric stoves.  M S O U
   k. Combination warming and cooking fire-
      place.  M S O U
   l. ______________________  M S O U
   m. ______________________  M S O U

2. Location of cooking and warming facilities.
   a. Vegetation removed within 8 feet.  M S O U
   b. Vegetation removed within 10 feet.  M S O U
   c. Not too close to overhanging trees.  M S O U
   d. Distance from the table that makes
      serving convenient.  M S O U
   e. Facing across the prevailing winds.  M S O U
   f. Located to provide for specific condi-
      tions such as evening warming fires,
      where it would be advantageous to
      face the fireplace broadside of the
      table.  M S O U
   g. Minimum of 8 feet between the fireplace
      and the table.  M S O U
   h. Maximum of 18 feet between the fireplace
      and the table.  M S O U
   i. ______________________  M S O U
   j. ______________________  M S O U
C. Electrical outlets.

1. Location of electrical outlets.
   a. Underground installation.
   b. Overhead as inconspicuous as possible with minimum damage to trees.
   c. Minimum of 18 feet above campground.
   d. Minimum of 20 feet above campground.
   e. Fuse box between two sites.
   f. ____________________________
   g. ____________________________

2. Charges for use of electricity.
   a. Small fee for use.
   b. Free.
   c. ____________________________
   d. ____________________________

3. Wiring should comply with electrical codes.

4. Lighting.
   a. Night light outside comfort station.
   b. Provision of lights within the campground.
      (1) Two and one-half feet high.
      (2) Three feet high.
      (3) Four feet high.
      (4) Located only near junctions of circulation roads.
   d. ____________________________
   e. ____________________________

D. Campstores.

1. Near entrance outside campgrounds.
2. In conjunction with service station near entrance.
3. Vendors allowed to sell within the campground area.
4. Central service area within campground.
5. Adequate administration policies for control of vending in or adjacent to campground.
6. ____________________________
7. ____________________________

E. Firewood.

1. Provided at each site.
2. Provided at a central campground location.
Remarks:

VII. The campsites should be developed for the best possible utilization of campground space while providing adequate room for camping activities on each site.

A. Arrangement of campsites.

1. Sites in rougher terrain reserved for tent campers.

2. Sites in rougher terrain utilized for trailer camping as well as tent camping.

3. Sites at greater distances from highway reserved for tent camping.

4. Sites at greater distances from highway utilized for both trailer and tent camping.

5. Trailer campsites located at greater distances from the highway only if access can be provided with minimum of passage by other campsites.

6. Tent and trailer sites interspersed throughout the campgrounds.

7. Tent and trailer sites located only in separate areas.

B. Density of campsites.

1. Two per acre.

2. Four per acre.

3. Five per acre.

4. Six per acre.

5. Eight per acre.

6. Ten per acre.

7. Twelve per acre.

8. Fifteen per acre.

9. Twenty per acre.
C. Size (number in parentheses gives approximate number of sites this size per acre with no allowance for space between sites).

<table>
<thead>
<tr>
<th>Size</th>
<th>Number per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 feet by 50 feet</td>
<td>21</td>
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<tr>
<td>50 feet by 50 feet</td>
<td>17</td>
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<tr>
<td>50 feet by 75 feet</td>
<td>12</td>
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<tr>
<td>55 feet by 55 feet</td>
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<tr>
<td>75 feet by 75 feet</td>
<td>8</td>
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<tr>
<td>100 feet by 55 feet</td>
<td>4</td>
</tr>
<tr>
<td>100 feet by 100 feet</td>
<td>4</td>
</tr>
</tbody>
</table>

VIII. Adequate provision should be made for sanitation and protection of the health, welfare and safety of the family campers.

A. Dust control.

1. Main roads only.
   a. Bituminous double surface over gravel.                 MSSOU
   b. Sprinkling with water.                                MSSOU
   c. Application of chemicals such as calcium chloride.    MSSOU
   d. Black top over existing surface.                      MSSOU

2. Interior roads only.
   a. Bituminous double surface over gravel.                MSSOU
   b. Sprinkling with water.                                MSSOU
   c. Application of chemicals such as calcium chloride.    MSSOU
   d. Black top over existing surface.                      MSSOU

3. Camping areas.
   a. Watered grass surface.                                MSSOU
   b. Sawdust mulch.                                         MSSOU
   c. Asphalt "pallet" around high use areas.                MSSOU
   d. Concrete "pallet" around high use areas.               MSSOU
   e. Crushed stone.                                         MSSOU
   f. Gravel.                                                MSSOU

4.  

5.  

6.  

7.  

8.  

9.  

   MSSOU
B. Sewage disposal.

1. Types of sewage disposal.
   a. Sanitary dry pits. [M S O U]
   b. Water-tight, sanitary pump out pits. [M S O U]
   c. Chemical tanks. [M S O U]
   d. Incinerator vaults. [M S O U]
   e. Septic tanks. [M S O U]
   f. Sub-surface sand filters. [M S O U]
   g. Lagoons. [M S O U]
   h. __________________________ [M S O U]
   i. ______________________________________ [M S O U]

2. Ratios (All ratios compounded on the basis of 5 people per campsite as set up by the United States Forest Service).
   a. Pit latrines. [M S O U]
      (1) One seat for every 3 campsites. [M S O U]
      (2) One seat for every 5 campsites. [M S O U]
      (3) Minimum of 2 seats for each sex per 5 campsites. [M S O U]
   b. Water closet. [M S O U]
      (1) One for each sex per 5 campsites. [M S O U]
      (2) One for each sex per 6 campsites. [M S O U]
      (3) One for each sex per 8 campsites. [M S O U]
      (4) One for each sex per 10 campsites. [M S O U]
      (5) One for each sex per 12 campsites. [M S O U]
      (6) One for each sex per 15 campsites. [M S O U]
   c. Urinal. [M S O U]
      (1) One per 5 campsites. [M S O U]
      (2) One per 6 campsites. [M S O U]
      (3) One per 8 campsites. [M S O U]
      (4) One per 10 campsites. [M S O U]
   d. __________________________ [M S O U]
   e. __________________________ [M S O U]

C. Lavatories.

1. Ratios. [M S O U]
   a. One for each sex per 5 campsites. [M S O U]
   b. One for each sex per 6 campsites. [M S O U]
   c. One for each sex per 8 campsites. [M S O U]
   d. One for each sex per 10 campsites. [M S O U]
   e. One for each sex per 15 campsites. [M S O U]

2. __________________________ [M S O U]

3. __________________________ [M S O U]
D. Flushing rim sinks.

1. One for each comfort station building. M S O U
2. Two for each comfort station building. M S O U
3. Separate compartment within comfort station. M S O U
4. Located within comfort station, not necessarily separate. M S O U
5. ________________________________ M S O U
6. ________________________________ M S O U

E. Water supply.

1. Allotment of water. M S O U
   a. Five gallons per person. M S O U
   b. Ten gallons per person. M S O U
   c. Fifteen gallons per person. M S O U
   d. Twenty gallons per person. M S O U
   e. Twenty-five gallons per person. M S O U
   f. Thirty gallons per person. M S O U
   g. Forty gallons per person. M S O U
   h. Fifty gallons per person. M S O U
   i. ________________________________ M S O U
   j. ________________________________ M S O U

2. Sources of water. M S O U
   a. Drilled well. M S O U
   b. Artesian well when possible. M S O U
   c. Dug well. M S O U
   d. Springs when possible. M S O U
   e. Treated surface water. M S O U
   f. Connection with community supply. M S O U
   g. ________________________________ M S O U
   h. ________________________________ M S O U

   a. Type.
      (1) Spigots. M S O U
      (2) Water hydrants with suitable attachments. M S O U
      (3) Combination water tap and drinking fountain. M S O U
      (4) Hand pumps (frost-proof where necessary). M S O U
      (5) ________________________________ M S O U
      (6) ________________________________ M S O U
   b. Location of outlets.
      (1) Not more than 150 feet from all campsites. M S O U
      (2) Not more than 200 feet from all campsites. M S O U
(3) Not more than 300 feet from all campsites.

(4)

(5)

4. Emergency water supply.
a. Storage reservoir.
   M S O U
b. Pressure tanks.
   M S O U
c.
   M S O U
d.
   M S O U

F. Showers.

1. Ratios.
a. One for each sex per 5 campsites. M S O U
b. One for each sex per 6 campsites. M S O U
c. One for each sex per 8 campsites. M S O U
d. One for each sex per 10 campsites. M S O U
e. One for each sex per 12 campsites. M S O U
f. One for each sex per 15 campsites. M S O U
g. One for each sex per 20 campsites. M S O U
h. One for each sex per 30 campsites. M S O U
i. 
   M S O U
j. 
   M S O U

2. Miscellaneous factors concerning showers.
a. Hot and cold water. M S O U
b. Hot water on coin-operated basis. M S O U
c. Dressing rooms provided adjacent to each shower. M S O U
d. General dressing room. M S O U
e. 
  M S O U
f. 
  M S O U

G. Laundry facilities. I M N

1. Minimum laundry facilities provided for laundering by hand, including drying yard. M S O U

2. Commercial laundering equipment provided on the campgrounds. M S O U
   a. Mechanical dryers included. M S O U
   b. Drying yard. M S O U

3. 
   M S O U

4. 
   M S O U

H. Garbage disposal (Tip-proof, water-tight, fly-proof and animal-proof cans assumed to be minimum requirement). I M N

1. Number of garbage cans.
a. One 10 gallon per site. M S O U
b. Two 10 gallon per site.  

2. Ground vault cans.  
   a. One 10 gallon per site.  
   b. Two 10 gallon per site.  
   c. One 15 gallon per site.  
   d. One 20 gallon per site.  
   e. One 25 gallon per site.  
   f. One 30 gallon per site.  

3. Collection of garbage.  
   a. Once daily.  
   b. Once every two days.  
   c. Twice weekly.  
   d.  
   e.  

4. Location of garbage cans.  
   a. Not more than 75 feet from the campsite.  
   b. Not more than 150 feet from the campsite.  
   c. Not more than 200 feet from the campsite.  
   d.  
   e.  

5. Disinfection of garbage cans.  
   a. At the time of each emptying.  
   b. Once weekly.  
   c. Twice weekly.  
   d.  
   e.  

1. Proximity of interior circulation roads.  
   a. Minimum distance of 50 feet.  
   b. Minimum distance of 75 feet.  
   c. Minimum distance of 100 feet.  
   d.  
   e.  

2. Proximity of main roads.  
   a. Minimum distance of 50 feet.  
   b. Minimum distance of 75 feet.
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<tbody>
<tr>
<td>c. Minimum distance of 100 feet</td>
<td>M S O U</td>
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<tr>
<td>d. Minimum distance of 150 feet</td>
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<td>e. Minimum distance of 200 feet</td>
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<td>g. ____________________________</td>
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</table>

**J. Fire protection.**

1. Areas for fires definitely located | M S O U |
2. Size of fire place not unnecessarily large | M S O U |
3. ________________________________ | M S O U |
4. ________________________________ | M S O U |

**K. Insect control.**

1. Spraying with insecticides | M S O U |
2. Sloughs properly drained | M S O U |
3. Insect-proof sanitation facilities | M S O U |
4. ________________________________ | M S O U |
5. ________________________________ | M S O U |

**Remarks:**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Please give the following information:

**Name**

________________________________________________________________________

**Address (If you anticipate a change from your current address)**

________________________________________________________________________

________________________________________________________________________