

CRAIG W. FELDMA

A GUEST RANCH

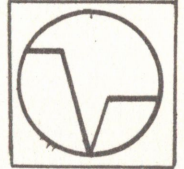
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A GUEST RANCH

Terminal Project for Architectural Design



by

Craig W. Feldman

Submitted to the School of Architecture as part of
fulfillment of the requirements for the degree of
Bachelor of Architecture

at

Montana State University

Bozeman, Montana

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Roundup, Montana

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Bozeman, Montana

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Bozeman, Montana

SUBJECT

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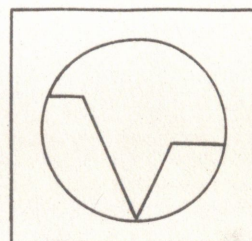
THESIS: To explore the possibilities in creating forms of indigenous architecture through implementation of natural, man-made, and historic elements.

SUBJECT: A Guest Ranch

REGION: Eastern Montana

LOCATION: 30-Mile Mesa, Montana

Introduction



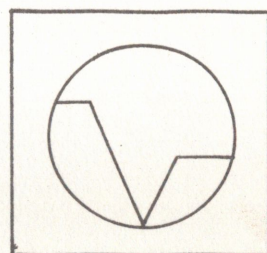
INTRODUCTION

THE SUBJECT OF THE THESIS which I am submitting is a Guest Ranch development for Eastern Montana. America is still in the process of being settled, (one need only to examine the rest of the globe to realize this). We still have areas of wilderness yet unspoiled, existing in many forms. The wilderness and its "call of the wild" is insistently audible. "Wilderness" to some in this country is tall mountains, wild rivers, huge pines, log cabins, etc. I submit that such thinking is not complete and that the Eastern prairies of Montana have a vast wealth of yet untapped opportunities for working ranch-guest ranch operation with provisions for unlimited wildlife habitats, culminating in carefully planned and initiated forms of architecture, range management, and animal science by both private enterprize and corporate interests, while still maintaining the natural beauty of the area.

"We can never have enough of nature-We must be refreshed by the sight of inexhaustable vigor, vast and titanic features, the sea-coast with its wrecks - the wilderness with its living and decaying trees, the thundercloud and the rain which lasts three weeks and produces freshets - We need to witness our own limits transgressed and some life pasturing freely where we never wander-"

Henry David Thoreau

Conditions Creating a Need



America is still in the process of being settled and we are settling in rapidly and savagely. Our technology has taken us to the moon, yet we fail miserably to utilize our technical skills in a harmonious way with nature. We simply must begin to make earnest efforts to do so. With expanding populations (human) it is critical that we utilize our remaining open spaces to their fullest potentials, and this does not necessarily imply a development, but rather a concept of preservation.

Social burdens on man in the twentieth century are of such a demanding nature that law enforcement has been at times completely futile - crime, juvenile delinquency, and mental failures continue to rise- man must "get away" from his city social life occasionally and relax. Urban architecture is ideal for the urban dweller and I submit that a rural architecture should be ideal for the country.

Therefore a new rural architectural discipline may be required and perhaps even a new rural architect.

Returning to the problem, I feel that the goals of life should not be totally that of social success and the harvest of economic fruits of toil: rather that they should be goals of the individual self with each seeking to realize his own truths and formation of values through mental awareness.

problem: REAL ESTATE VS. HUMAN VALUE

How do we save the land yet allow for its appreciation?

"Man must look into the micro-cosm and macro-cosm of nature to awaken his innate seeds of truth, knowledge, and wisdom.

We owe our very existence to nature but we debase it."

F.L. Smith

Presently, Montana has 65 million acres (70%) of its land area as rangeland. Rangeland is the basis for Montana's livestock business-the largest income-producing industry in the state, and it provides watershed protection, high-quality water production, wildlife habitat, aesthetic and economic values.

Nature attempts to maintain a soil cover of vegetation as long as soil remains. If the original kinds of taller-growing grasses are allowed to be grazed out, nature will replace them with weedy, woody, or spiny unpalatable plants or grasses so short they will escape close grazing.

The misuse of rangeland by man in his efforts to maximize profit, plus poor use of range management has caused over-grazing to occur and the declination of Montana range.

Overgrazing does not happen in a short time, but like population increases, water pollution, air pollution and erosion, the loss of useful vegetative cover is sometimes so gradual that man is not aware of the change.

Fortunately, there are many areas remaining in Montana that still have the original or near PRISTINE vegetative cover. Very little grazing by livestock or wildlife has occurred in these areas. (Livestock because land owners did

not require a beef herd and wildlife due to over-kill and dwindling game herds.)

CLIMAX OR NEAR PRISTINE vegetation provides benchmarks for determining the condition of rangeland. The Soil Conservation Service (SCS) uses such areas to determine the degree of use a range will allow and for treatment needs, by comparing a given range to its pristine condition.

Pristine rangeland is not the ultimate goal of range management, it is however an ecological benchmark on which range condition is based. The more closely the rangeland eco-systems are understood, the more accurate the management techniques will be.

Objectives in this thesis include both architectural and ecological realms for the architecture should reflect the indigenous nature of the area and the eco-system should provide harmonious plant and animal communities, insuring a productive rangeland on a sustained yield basis.

SHORTAGES

Our culture today is facing shortages of beef, energy, grain, and others, all of which come from Mother Earth. We have historically solved these problems through technology, but we never really solve the problem but merely postpone a future crisis. We must learn to live in harmony with the earth. The ranch units in Montana can and do play an important role in providing a harmonious economy by giving society a needed animal protein and also providing valuable watershed, aesthetic and economic values, which few of our other industries provide.

RECREATIONAL NEEDS:

Our culture at present has created for itself such affluence that men now seek recreational pursuits with their increase in leisure time, money, and mobility.

Though there is an increase in theatre, museums, parks, athletics, and television they are "indoor" activities. Our frontier heritage still finds its recreational needs still satisfied by the outdoor activities of travel and nature appreciation. There would today be a sufficient number of clientele not only desiring to experience nature but who could well afford the costs of a guest ranch.

MARGINAL UNITS:

Ranches in this area today are faced with rising costs and higher taxes. Larger units with fewer operators is now becoming a trend. Once sound economic units now are marginal. To overgraze the range to increase profit is in essence a path to future bankruptcy. A "guest ranch" would give these units an added source of income.

- other alternatives:
1. Buy more land
 2. Change to a different operation
 3. Except a lower standard of living
 4. Sell out mining co. = strip mining
 developers = tract housing
 logging = barren hills
 (all of the above)

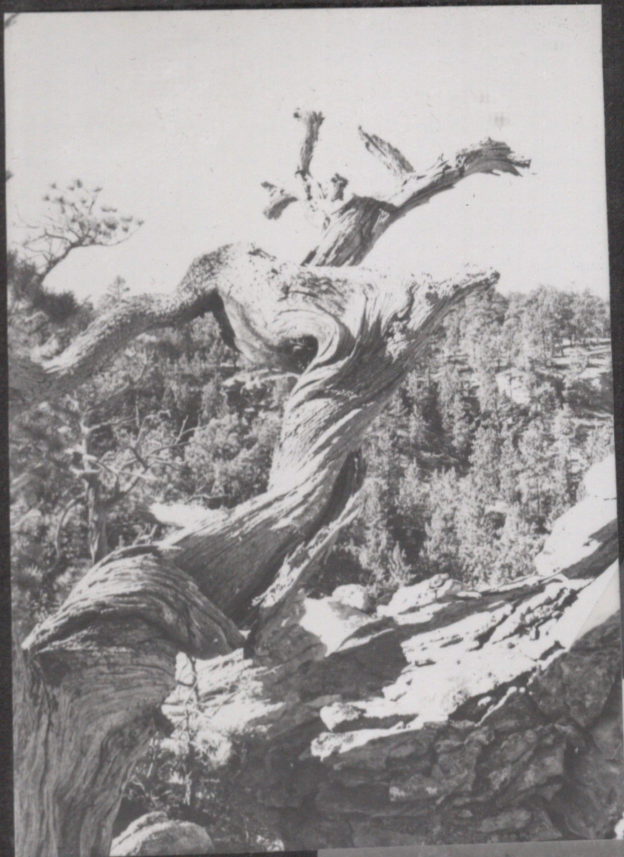
MINING:

Thirty-Mile Ranch lies in the heart of the Bull Mountain coal deposits and there will be continuing increased

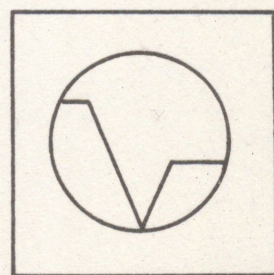
pressures, socially, economically, and politically to mine the sub-strata of coal, unless it can be shown that the ecological, agricultural, aesthetic and human values outweigh the need to strip the land, so that the mining concept is over-ridden.







History



Someone has said that the West has been the mother of many children. Prominent among her offspring were the trapper, fur trader, prospector, freighter, cowboy and homesteader. One by these sons of a great mother were born; each living out his allotted life span and passing away, and with the passing of the last one the mother herself must die. Each of these has had his biographers, but far more than his brothers has the range rider of the Cow Country caught the fancy and attracted interest of a later generation. Of him much has been written, and yet few people who know at first hand something of ranching on the western plains are willing to admit that any book on the subject is entirely correct. This is due largely to the fact that the range cattle industry came into being suddenly, rose to mammoth proportions, and, except in certain isolated areas, largely dissappeared within a single generation.

The cultural and economic pattern which, broadly speaking, is the life of the people of any region, grows from certain distinct roots. Some of these, as climate and geographic conditions, lie close beneath the surface while others are deeply rooted in the subsoil of history. (It is therefore proper and essential to examine not only ranch history but to examine the life of the aboriginal people - see section on Aboriginal Philosophy)

With the development of the United States and the Industrial Revolution, rural America was pushed westward and

more people began crowding into existing cities to answer a growing need for manpower.

Agriculture flourished and more and more land was used to raise the necessary crops. Beef production had not been seriously developed as America had a high rural population with lots of big game, wild upland birds and fish. This plus plow agriculture fed America, but the growing country now needed more meat to feed its people.

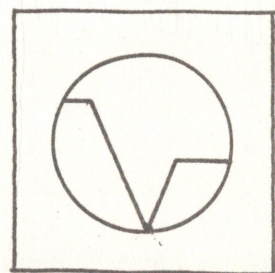
Large cattle ranches began to evolve in the West and a whole new era of the "Romantic West" and "The Great American Cowboy" came into being. Ranching became profitable and the modern beef ranch was born.

A ranch architecture did not evolve. Houses, barns, graineries, etc. took their form by accident or were "borrowed". Often a log cabin was constructed because everyone else had one.

Ranch visitations became fashionable for the social set of the East and Dude Ranches came into being. It soon became evident that men could make a substantial living with "Dudes" from the East and businessmen began to invest and build resorts for Dudes. Working cattle ranches became one ranch entity and Dude Ranches became quite another, functioning with the rest of the seasonal tourism of a region.

Relics from the past became valuable collectors items and have since had great value. Aboriginal artifacts (arrow heads, beads etc.) as well as wagon wheels, harnesses, etc. of the cowboy era therefore have historic value and it is important for the design of a ranch of this nature to have these elements considered.

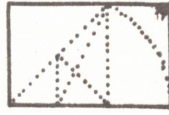
Architecture



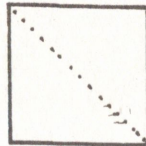
THESIS: to explore the possibilities of creating forms of architecture through the implementations of of natural, man-made, and historic elements.

MAN-MADE ELEMENTS: I am going to utilize a proper man-made form to give the buildings an appropriate porportion lending to good aethetic appearance. This form, while "man-made" will still be achieved through natural laws of math and geometry. The Greeks utilized them exclusively in creating the Parthenon. (see following page for illustration)

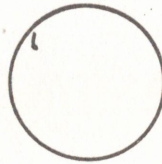
examples:



"the golden section"



a perfect square and
45 degree diagonals



the circle

From here I will then explore construction methods and material use to achieve this form with indigenous materials:

Earth (from eroded areas)

Native trees

Local shales from the rinecones

Sandstone boulders

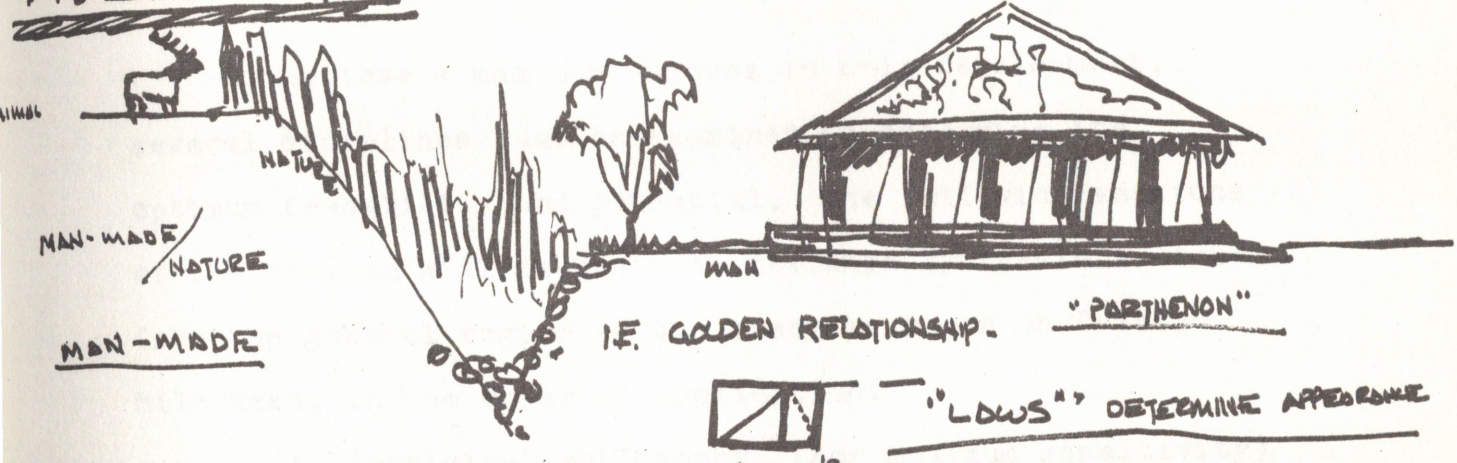
major materials

The historic elements will include actual physical forms for historic displays and symbolic uses of historic forms.

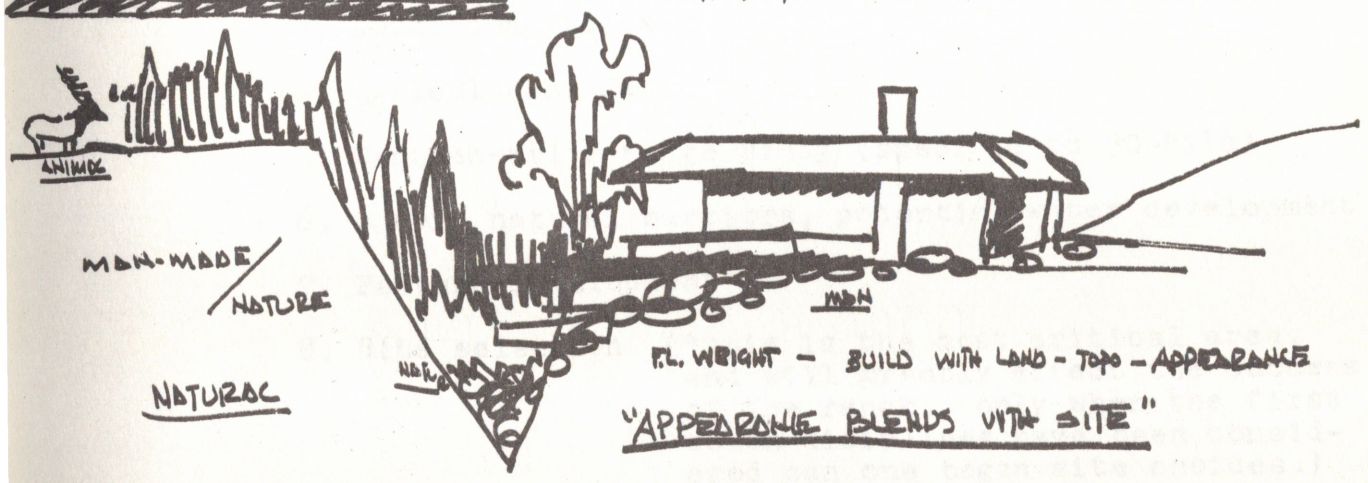
example; the actual wheel on display and a symbolic use of the wheel form as a door or window.

ARCHITECTURAL APPROACH:

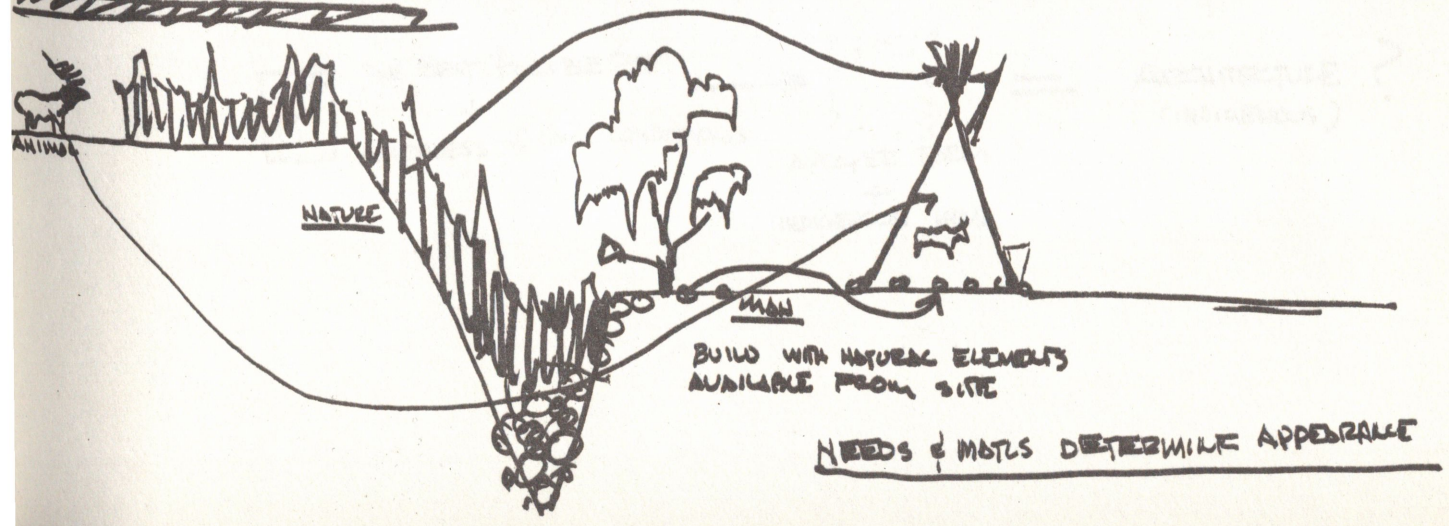
A. "LAWS" OF NATURE:



B. "LOOK" OF NATURE:



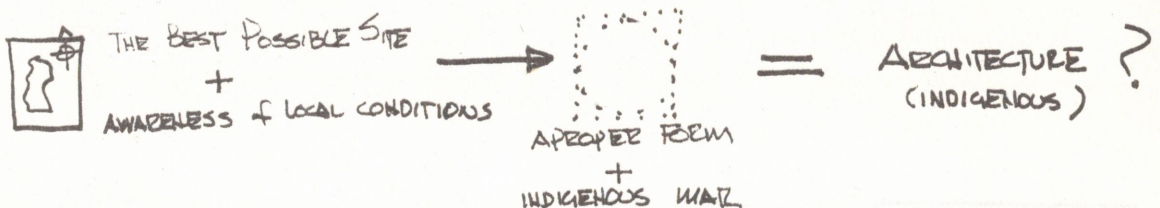
C. ABORIGINAL:



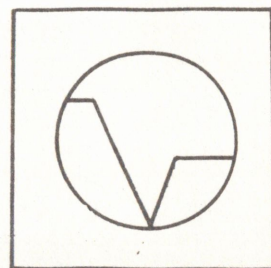
SYNTHESIS

To achieve a maximum success in this development, several diciplines must be examined to determine its optimum feasability and potential. The following sections of the program will demonstrate how this synthesis is taken from the general region to the specific ranch on Thirty Mile Mesa, in the order of application.

1. Aboriginal philosophy (for maximum sensitivity)
2. Regional problems
3. Local conditions
4. Agricultural data
5. Comprehensive range study (specific to 30-Mile)
6. Water, natural barriers, potential water development
7. Pasture development
8. Site selection (*this is the most critical area, and will greatly effect the success of the ranch. only when the first seven diciplines have been considered can one began site choices.)
9. Site development
10. Construction of proper buildings



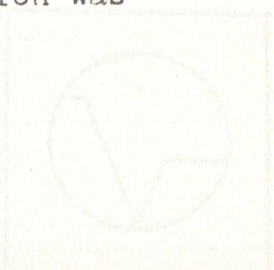
Aboriginal Philosophy



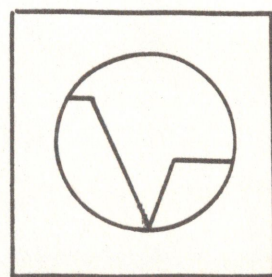
The Spirit of the Earth

The mind of the Indian has not been fully understood by the white man, and neither has civilized man understood the pain of the Indian as he experienced the death of the way of life he had on the North American continent. When Black Elk, a holy man of the Oglala Sioux, speaks of "the beauty and strangeness of the earth" he speaks of reverence for the everyday environment, an environment that was integrally interwoven with Indian life. In this design approach it is paramount for the designer to approach a keen sensitivity and understanding of the Indian and his respect for the earth.

In the following passages the Indians speak for themselves, of the quality of their way of life. These passages have been taken from the speeches and, more recently, the writings of the Indians living in all parts of the North American continent between the sixteenth and twentieth centuries. They speak with courtesy and respect for the land, of animals, of the objects which made up the territory in which they lived. They saw no virtue in imposing their will over their environment: private acquisition, almost without exception, was to them a way to poverty, not to riches. The meaning of their life was identified through their relationships with each other and their homelands - all which was given depth and resonance by memory.



Regional Problems



REGIONAL PROBLEMS:

Fire Control:

At one time there was a rather formal fire fighting operation. Now it's on an informal system with neighborhood cooperation. During fire season a local flying service flies a patrol after each electrical storm. Funds are provided through voluntary collections. Rural fire trucks exist as well as county road equipment. B.L.M. aids in big fires but mainly fires on their lands. Distance, lack of leadership, and slowness are problems.

Marketing:

Until recently marketing has been a problem but with increased communication systems of today, marketing is no longer a problem. Local ranchers can advertize their cattle well in advance of the sale.

Insect and rodent control:

With a proper attitude towards pests and rodents and a carefully initiated eco-system this should remedy itself. Grasshoppers have long been a problem to the rancher and periodic spraying in periods of drouth has occurred. The grasshopper problem is the most serious.

Wildlife-Recreation Problems:

Big problems facing the district to day in this field is the breakdown of the landowner and big game hunter. This area has a high percentage of privately owned land and more and more lands are posted each year. Similarly there has been a breakdown of relations between various agencies controlling wildlife resources.

Marginal Units:

Since World War II rising costs have brought about drastic changes in farm-ranch operations. What were sound economic units suddenly became marginal in nature. Larger units with fewer operators became the trend - this leaves only four alternatives:

1. Expand with the purchase of more lands
2. Change to a different operation
3. Remain as is but except a lower living standard
4. Sell out

One successful solution for the small stockgrower is to form cooperative grazing districts whose memberships are restricted to small owners and the purchase of large blocks of grazing land. First attempts were unsuccessful.

Watershed:

Flooding is not any problem but rather water management. Recent reservoir development has proved successful and further planning a native waterfowl habitat could be successful.

Proper Land Use:

S.C.S. offices continue to promote the use of soil surveys and land capability. Poor crop lands should be converted to grazing lands, to stabilize the livestock industry. This is not only compatible with proper land use principals, but assures valid claim of beneficial use against further downstream demands on irrigation waters.

Proper Range Use:

The S.C.S. urges and promotes proper range use through

the ranch planning concept. Native ranges cannot produce beyond certain levels on a sustained basis. If limits are exceeded the result will be deterioration.

Therefore in many cases (30-Mile is no exception)- the S.C.S. urges development of dry land pastures as a sound and logical method of not only maintaining the range but expanding the livestock economy.

1. Livestock water rotation
2. Livestock grazing rotation
3. Sound administration of public lands
4. Cooperation with public agencies to achieve coordinated efforts in land development.

Water Conservation:

Ample irrigation water is the essence of the economic stability of this area and water irrigation management is emphasized by the S.C.S. However, in some areas, (such as 30-Mile), development of water storage facilities, undertaken as small watershed projects, will serve as sponsoring agencies during formative stages of individual projects. (this includes the establishment of native waterfowl pop.)

other considerations

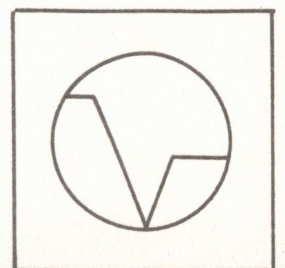
Dry Land Conservation

Woodland Development

Recreation & Wildlife

Legislation

Agricultural Data



PLANNING:

- Planning
- Lots
- Ventilation
- Confined Housing
- Waste Disposal
- Windbreaks
- Feed Centers
- Corrals

EQUIPMENT:

Feed Bunks
fenceline bunks
covered bunks
lot bunks
Hay & silage Feeders
Feeding Fences
Mineral Feeders
Self Feeders
Creep Feeders
Sun Shades
Waterers
Working Chutes
Squeeze Chutes
Loading Chutes
Doctoring Table
Breeding Rack
Windbreak Fences
Fences
Gates
Cattle Guards
Rodent Control
Materials
Weight Houses
Feed Data

PLANNING:

Procedure:

Determine A.U./ feed and storage requirements

Plan for expansion

Compute areas needed

* Select the site (water, drainage, waste)

Sketch layouts - traffic routes animals & people
as well as equipment

Select facilities

* the most important consideration of the entire concept

LOTS:

400 sq. ft./ per head lot unsurfaced

150 sq. ft./ per head lot semi-surfaced

Topography uniform 4%-6% away from prevailing winds

(unpaved lots may erode away if slope is greater than 10%)

Slight Northwest 4% East or South

Ditchches above lots to catch runoff

Slope away from buildings

Crown unsurfaced roads

Avoid lots draining into each other

N-S or NW-SE orientation is good as it allows for sun to melt ice& dry the ground

Shadows:

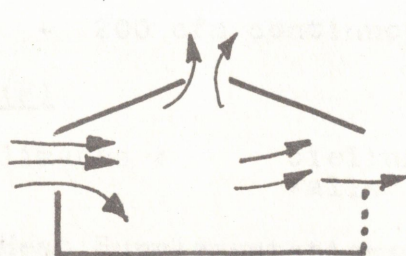
Avoid placement of buildings which cause continuous shadows on lot-to prevent snow and manure build-up

Housing:

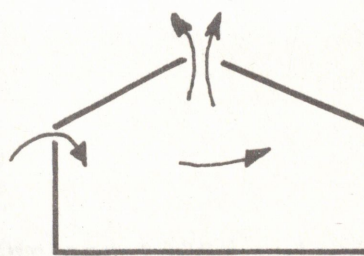
Face the long open side of sheds south and away from prevailing winds.

Advantages of Buildings for Animals

1. Feed protection from sun, rain, & snow
2. Summer shade
3. Protection from Severe Weather
4. Can Convert to Confinement

Ventilation:

SUMMER



WINTER

VENTILATION

Design buildings to use natural air movement

SEE PREVIOUS PAGE

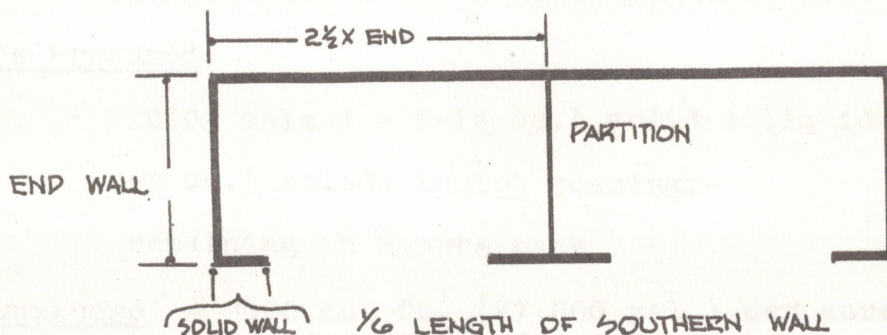
All Regions:

Leave one wall open (S*E). Provide openings in opposite wall (N*W), which can be closed in winter. About $\frac{1}{2}$ of this wall area should be left open, and breezes should circulate at animal level.

Cold Regions:

Reduce wall openings:

Increase wall on south side $\frac{1}{6}$ th of length



Vent Rates: (per 1000# animal wt.)

winter - 15 cfm continuous

solstice - 100 cfm

summer - 200 cfm continuous

Insulation (R)

Cold climates : ceiling = 23
 walls = 14

Heat Supplementation: BTU/hr per 1000# animal = 900

WASTE DISPOSAL

One may be required to control odor and pollution.

Even so, one has a moral duty to handle waste in the most esthetic and non-pollutant manner as possible. Large Units and large amounts of waste distribution contribute to high odor levels. Lagoons create strong odors.

Surface and Water Pollution: avoid at all costs

Leached Nitrates will pollute shallow wells

Runoff from waste spread on snow or frozen ground may pollute surface water.

Animal Health appears unaffected by waste except for inadequate ventilation.

Asphyxiation by methane and CO_2

Eye irritation by ammonia

A Dry Climate is more favorable than a wet one -

30-Mile is in a 9-14 inch precipitation zone

Manure Produced:

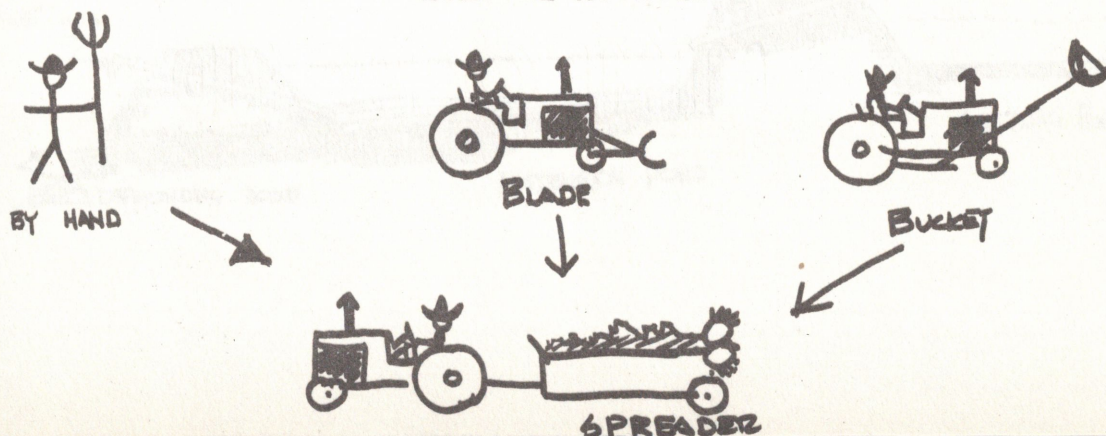
1000# animal = $1-1\frac{1}{2}$ cu.' solid & liquid waste

$-\frac{1}{2}$ cu.' solids in lot scrapings-

remaining in manure pack

Lot Drainage = 3600 cu. ft. (27,000 gal.) per acre of lot for each inch of rain.

Removal Methods



RUNOFF CONTROL

Divert all uncontaminated drainage from outside lots away from the livestock areas. Roof drainage can be collected with gutters and diverted through drain tile. (rain barrels ?)

Collection of runoff:

2-Pond system Ideal . First pond a settling basin for solid wastes. Second pond is an overflow for the first pond, acting as a lagoon and a detention basin for major cloudbursts. This detention pond may be emptied by distribution with irrigation equipment, percolation, or deponding hose.

Management:

Must be maintained - mowing grass, control of rodents and fenced.

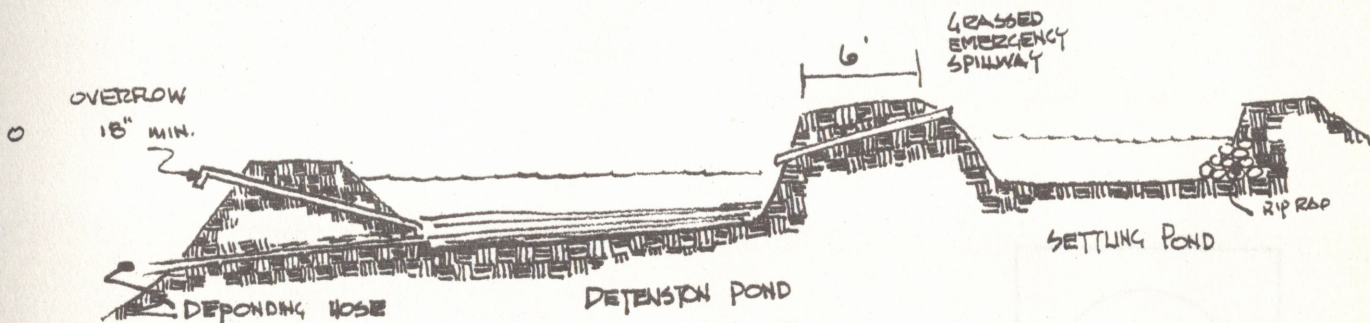
1st pond may require dredging of wastes by a manure bucket

2nd pond may be emptied with pumps, or outlets.

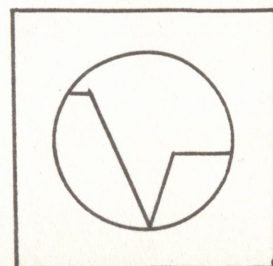
Sizing; 1 acre of drainage = 3600 sq.' H₂O/ 1" precip.

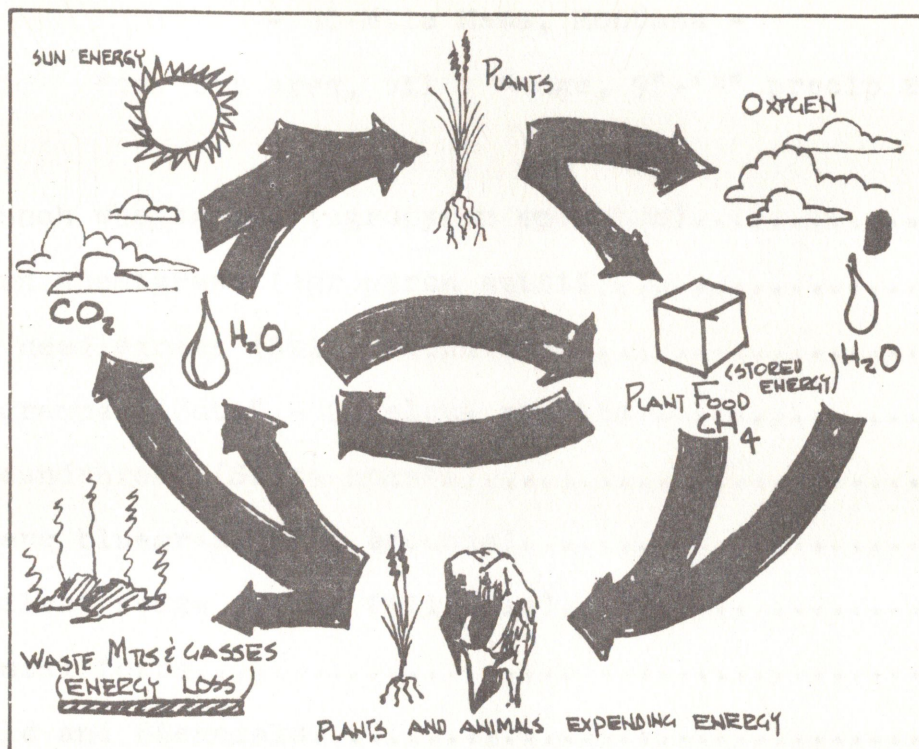
First pond should = 1" runoff from drain field

Second pond = 1" runoff and emptied once a week
or = 2" of runoff capacity.



Range Analysis





RELATIONSHIPS INVOLVED BETWEEN THE CRUCIAL LIFE PROCESSES OF PHOTOSYNTHESIS AND RESPIRATION

	TREATMENT	MAIN TREATMENT EFFECT
YEAR ↓		
	REST ROTATION TREATMENTS	
1 st	[Hatched box]	FULL GRAZING FOR MAXIMUM LIVESTOCK & ANIMAL PRODUCTION & PLANT IMPROVEMENT OF PLANT COMPOSITION BY USING ALL FORAGE
2 nd	[Hatched box] SEED RIPENING TIME (2 nd CRITICAL PERIOD)	GRAZE AFTER SEED RIPENS (SECOND PERIOD FOR CARBOHYDRATE RESERVES) FOR VIGOR, SEED PRODUCTION, & SEED TRAMPLING
3 rd	[Empty box]	FULL REST FOR INSURENCE OF SEEDLING ESTABLISHMENT, VIGOR ON MATURE PLANTS AND LITTER ACCUMULATION
4 th	[Hatched box] FLOWERING TIME (1 st CRITICAL PERIOD)	GRAZE AFTER FLOWERING TIME (FIRST CRITICAL PERIOD FOR CARBOHYDRATE RESERVES) FOR SEEDLING ESTABLISHMENT AND LIVESTOCK PRODUCTION
	GRAZING RESTING	

CLIMAX OR NEAR-PRISTINE VEGETATION

- 30-Mile Mesa, Montana -

Foothill area, silty range, 9"-14" precip zone

	%
Bluebunch wheatgrass (<i>Agropyron spicatum</i>).....	65
Western wheatgrass (<i>Agropyron smitii</i>).....	5
Green needlegrass (<i>Stipa columbiana</i>).....	8
Blue gramma ("Buta" - <i>Buteloua gracils</i>).....	5
Needleandthread (<i>Stipa comata</i>).....	5
Sandberg bluegrass (<i>Poa secunda</i>).....	T
Threadleaf sedge (<i>Carex filifolia</i>).....	T
Perennial forbs.....	4
Annuals and Biennials.....	T
Big sagebrush (<i>Artimesia tridentata</i>)	5
Fringed sagewort (<i>Artimesia frigida</i>).....	T
Cactus (<i>Opuntia polycantha</i>).....	3

ref. "soil & Vegetative
Inventory of Near Pristine
sites - Montana "

U.S. Dept. Agr.
S.C.S.

NATIVE ANIMALS

Upland Birds:

- Chinese pheasants
- Hungarian partridges
- Chukkar
- Sharptailed grouse
- Blue grouse
- Rough grouse
- Sage grouse
- Wild Merriam Turkeys
- Ducks and Geese (all types)

Big Game:

- Antelope
- Mule Deer
- White-tailed Deer
- Elk
- (remains of buffalo and
big horn sheep are found)

Predators:

- Bobcat
- Cyote
- Black bear
- W asel
- Skunk
- Raccoon
- Porcupine
- Mountain Lion

ref. Conservation Plan for the Lower
Mussellshell Soil & water Conser-
vation District "

COMMON MATERIALS INDIGENOUS TO SITE

TREES:

Ponerosa pine
 Yellow pine
 Juniper
 Cottonwoods

PLANTS:

Yucca
 Cactus
 Bitterbrush
 Sagebrush
 Greasewood
 Rabbitbrush

Grasses:

Increasesers - Decreasers

Western wheatgrass	Bluebunch
Blue grama	wheatgrass
Needle & thread	Green
Sandberg bluegrass	needlegrass
Threadleaf sedge	
Fringed sagewort	

Perennial forbs

SOILS:

Sands-sands and loamy sands more than
 20" deep

Sandy soil- coarse to fine sandy loams
 more than 20" deep

Silts- most silts in the area are 20" of
 very fine sandy loam, loam, or
 silt loam. This includes soils
 with 2" or more of silt loam over
 clayey subsoils.

Clays- a granular clay loam, silty clay
 loam, silty clay, sandy clay or
 clay over 20" in depth in most
 areas it occurs.

Thin Hilly soil- Loamy or clayey soils
 on steep or hilly landscapes with
 a thin horizon on weak or no
 structure in the subsoil, but with
 significant root penetration deeper
 than 20". It is basically calcareous
 but contains less than 15% CaCO_3 .

NOTE* these soils are excellent for earth tile
 compressed blocks.

FORAGE COMSUMED BY ANIMALS

ELK:

Elk require large blocks of undeveloped land and cause considerable conflict when competing with livestock for forage. (hay crop and fence damages- therefore the natural barriers and absence of hay ground would enhance compatability of elk on 30-Mile Mesa) They feed of grasses, sedges, forbs, and brouse.

Spring - green grass	winter food preferences
Summer - forbs(dandelion, geranium & aster)	brouse - 5%
Fall - grasses	grass - 91%
Winter - brouse	forbs - 4%

Elk will give cattle competition when competing for food on the open range, however the rimrocks and higher ground on 30-Mile has never been grazed by beef. Elk would enhance the grazing system in these areas.

MULE DEER:

Mule deer feed mainly on weedy plants from the cattleman's point of view. Utilization of such animals will control plant populations which compete with the grasses preferred by beef.

Deer prefer leaves, twig ends and brush - and it is this brouse and weeds(forbs) that make up their primary food.

Mountain mahogany	Big and Fringed sagebrush
Bitterbrush	Silversage brush
Chokecherry	Rabbitbrush
Serviceberry	Dogwood
Common and creeping juniper	
Mountain maple	
Evergreens	

White-Tailed Deer:

These deer again prefer brouse and forbs but of a more diciduous vegetative type. They will compete with cattle and elk in the winter. Therefore the use of such deer will not help either the beef or elk. It is not recommended they be used on 30-Mile.

Buffalo:

Buffalo will compete directly with cattle and will in fact present a breeding problem. Their use is not recommended.

Antelope:

They prefer sagebrush and "weeds". They will compete with the Mule Deer but prefer different habitats and will graze different areas (except in winter).

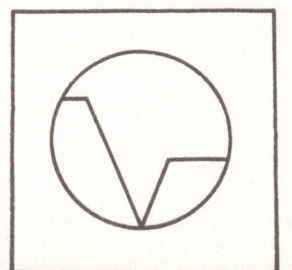
A comprehensive range study of 30-Mile was made in 1964. The range has since improved and the electrifying of wells plus developed reservoirs has increased its value for both animal and plant populations. The current range analysis is graded along with the 1964 study to give conservative estimates in reaching A.U.M.'s for the ecosystem, and in establishing pastures, habitats, and locations of operational headquarters.

ref. to ranch mosaic(s) p.55
(SEE PHOTO SECTION SLIDES)

ANIMAL UNITS PER PASTURE 1964 STUDY / 1974 STUDY

	(A) BEEF	(B) BUFFALO	(C) ELK	(D) W.T. DEER	(E) M. DEER	(F) ANTELOPE	(G) MT. SHEEP	
#1	203 360	360	360	—	72	72	72	
#2	310 320	320	320	—	64	64	64	
#2	343 649	649	649	—	130	130	130	
#4	77 77	—	—	—	—	—	—	
#5	92 92	—	—	—	—	—	—	
#6	233 540	540	540	—	108	108	108	
#7	256 488	488	488	—	97	97	97	
#8	290 586	586	586	—	117	117	117	
#9	280 421	421	421	—	84	84	84	
#10	221 290	290	290	—	58	58	58	
#11	221 360	360	360	—	72	72	72	
#12	93 116	116	116	—	23	23	23	
#13	245 408	408	408	—	82	82	82	
#14	245 345	345	345	—	69	69	69	
#15	214 214	214	214	—	43	43	43	
#16	100 192	192	192	—	38	38	38	
(174) * TOTALS				—				

Site Development



SITE DEVELOPMENT

PROBLEMS:

1. Type of Operation & Local Conditions
2. Site Selection
3. Location of Individual Buildings

Discussion: Ranch buildings should be located so as to minimize walking distances. (75% of time is spent in buildings)

A good theme for a layout is the "Central Court" or "Yard"

Justification: arrangement of buildings around a common court lends itself towards this problem as it conserves space, gives an order of service, allows for a view (s) from the ranch house or lodge.

Considerations:

(macro) Ranch range conditions and proposed range developments. Watershed, plant development, wild life habitats and improvements, beef development and human habitation (water, view and transition from city to country)

(micro) Wind, slope, drainage, roads, and pasture destruction

REQUIREMENTS:

Topography: high
level
no abrupt slopes

Drainage: High
nearly level
good outlets
dry lots

Water Supply:
good springs
easy to obtain wells
power (wind & electricity)

Power: near good electric line (3-phase)
 coal deposits
 wind (locate windmill derricks on hill tops)

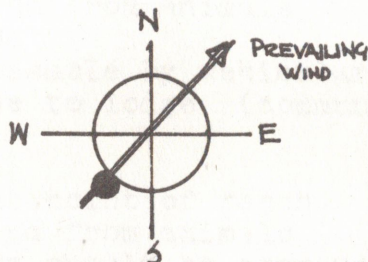
Community Service:

schools
 churches
 transportation (bus, airlines, p.o.v.)
 telephone lines

Building Locations and Requirements

House:

1. commanding view
2. easy access
3. "front door-back door" theme with inviting entrance
4. maximum use of sunlight
5. away from highway or county road min. 100'
6. a "front yard" landscape feature
7. located upwind from animal complexes



Beef Facilities:

1. main entrance to "yard"
2. downwind from house
3. access to pastures
4. holding pens and chute
5. A.I. facilities close to barn
6. water facilities
7. access to feed storage
8. cattle "sheds"

Hog Facilities:

1. minimum of 200' downwind from houses
2. one end on court
3. good water supply

Poultry:

1. downwind
2. driving access to both ends
3. water and electricity
4. face southward if open ventilation

Grain Storage:

1. central location
2. Adequate servicability
3. Pasture access

Horse Stables:

1. a "barn" structure for straw & hay
2. box stalls in barn for. . .
3. downwind from house
4. pasture access
5. trail heads
6. water & power

Machine Storage:

1. on "yard"
2. room for equip movement in and out
3. both open and closed areas
4. be in line of travel between house and yard

Bunk House:

1. close to barn
2. close to tack room
3. close to lodge
4. water and power access

Guest Houses

1. upwind from animals
2. views
3. accessable by vehicular equip
4. close to lodge (communal facilities)
- 5.

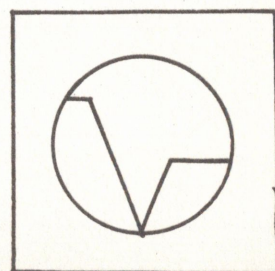
Lodge:

1. focal point of ranch
2. upwind from animals
3. views should be commanding
4. central core of all activity

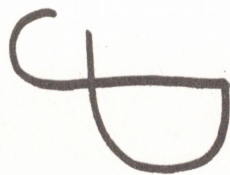
Arena:

1. downwind from lodge
2. access to corrals, pasture, & stables
3. drainage

Dude Ranch Data



Valley Ranch



Present Owner: Dr. "Oak" Thorne

B.S. Yale-biology

M.S. Yale-conservation

Ph.D. University of Colo.-zoology

Dr. Thorne is also the chairman of the board of Thorne Ecological Institute in Boulder, Colorado and heads a film making firm known as Thorne Studios.

Thorne's entire philosophy of Dude Ranching hinges around education and community: Education as the informative process by which people learn to appreciate their world and the worlds of others and community which draws the people of various disciplines together. Every effort has been made to maintain the natural beauty and aesthetic of the ranch and the surrounding country.

Goals:

the key to everything is achieving a sense of community through young and old interaction

1. Sensitivity to nature
2. Environmental taste
3. Geologic education
4. Biologic education
5. Historic education

Activities:

1. Trail rides
2. Backpacking
3. Arts & Crafts (photography, leather, pottery,
4. Workshops (oils and water colors)
5. Firesides
6. music
7. Athletics
8. Hunting and fishing
9. Ranch life
10. Game bird farm

People tire of repetition - therefore provide creative areas.

Thorne now offers summer school which has high school level courses in ecology and through the University of Colorado a series of 400 level college courses for teachers and others at a rate of one course per week.

Requirements:

(for a 50-80 guest ranch)

Food Production - 4 acre garden
 lambs
 hogs
 chickens
 milk cow(s)

Personnel - 4-6 horse wranglers
 2 full time cooks
 1 kitchen help
 in peak season (3) 2 waitresses
 (4) 3 cabin, laundry, and yard help
 1 "chuck wagon and store clerk
 1 "trading post" clerk
 2 business manager and foreman

Good water

Horses

Wild Game & Domestic Game

Greenhouse

1-2 Room Guest Cabins

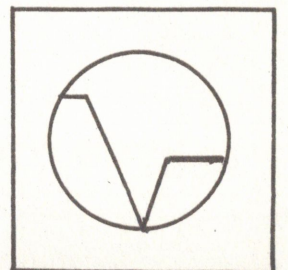
Lodge

Dining Area

Kitchen

15-30 workers for 50-80 guests (about a 1:2 ratio)

Thirty - Mile



30-MILE RANCH REQUIREMENTS

Buildings and Areas:

1. Lodge - a. kitchen for 50 meals600 sq. ft.
 b. dining for 50 guests.....700 sq. ft.
 c. game & lounge area.....1200 sq. ft.
 d. toilets.....70 sq. ft.
2. Barn -
 17 stalls (10X12).....2040 sq. ft.
 tack room250 sq. ft.
 grain.....1200 cu. ft.
 hay.....6700 cu. ft.
3. Cabins -
 (5) a. without water or sewer.....200 sq. ft.
 (6) b. with water and sewer.....240 sq. ft.
 (3) c. double cabins (2 rooms).....500 sq. ft.
4. Stock Sheds
 will vary according to animal use and
 numbers of animals using them.
5. Bunk House-250 sq. ft.
6. Machine Shed.....650 sq. ft.
7. Sauna & showers.....600 sq. ft.
8. Chicken coop.....100 sq. ft.
9. Arts & Crafts.....325 sq. ft.
 dark room = 50 sq ft
 work areas = 275 sq ft
10. Wash House.....200 sq. ft.
11. Power House.....100 sq. ft.
12. Green House.....?
13. Windmill towers
14. Headquarters Buildings= cabin

Activities for 30-Mile

Trail rides

Nature hikes

Workshops

Firesides

Barbeque area

Observation and Participation in Ranch Life :

branding

horse breaking

calving

breeding (A.I.)

veterinary work

roundups

sorting & judging

wrangling

fencing

birth and death

and many others

Photography

Arts & Crafts

Hunting: upland birds & water fowl
big game

Athletics:

tether ball

clock golf

sand box

teeter totter

swings

croquet

deck tennis

horseshoes

basketball

bucking barrel

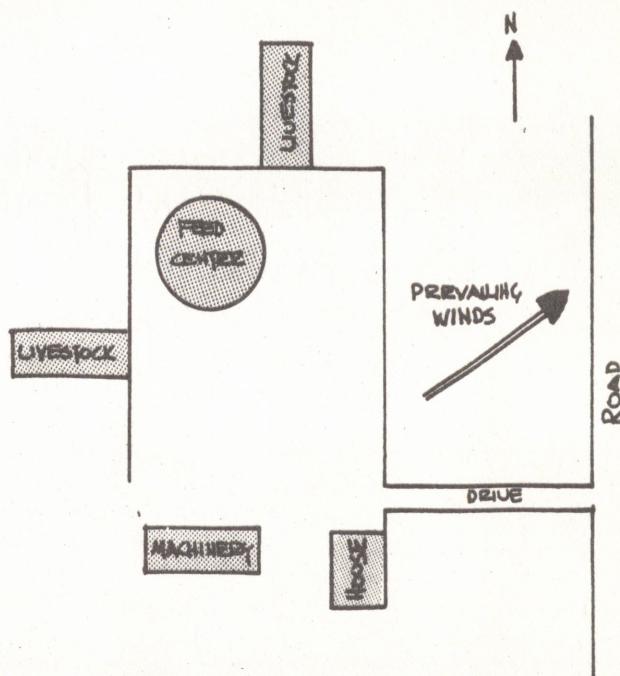
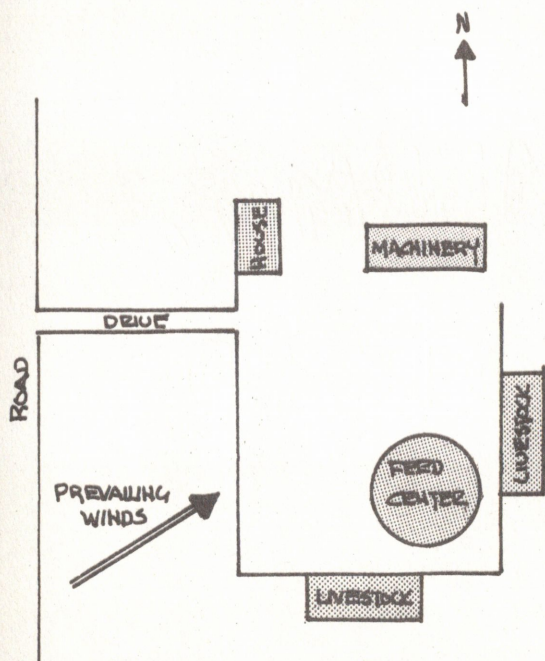
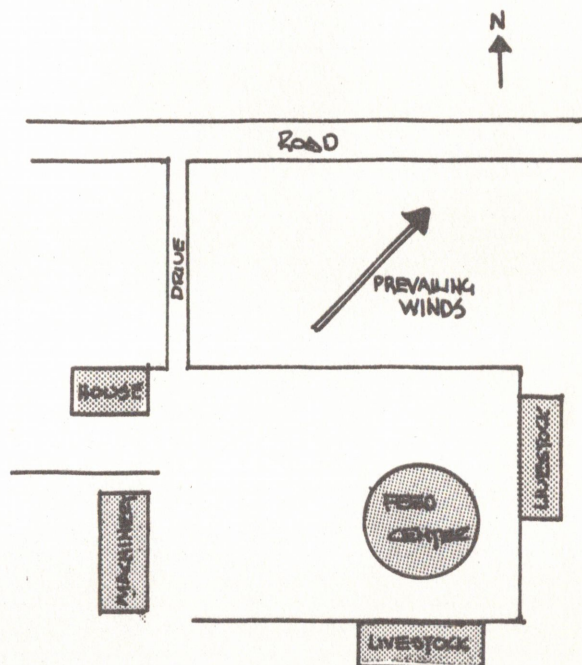
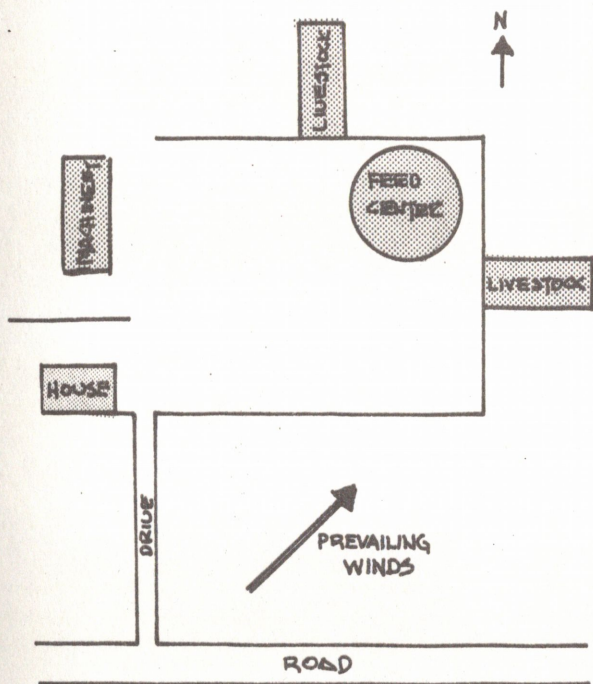
baseball

polo

football

soccer

rodeo

POSSIBLE LAYOUTS

BIBLIOGRAPHY

Commercial Beef Cattle Production, by C.C. O'Mary and Irwin A. Dyer, Lea and Febiger, 1972

Touch the Earth, by T.C. McLuhan, Outerridge and Lazard, 1971

Farmstead Planning Basic Manual, Book 1, Granite Steel Company

"The Cinva-Ram Block Press", brochure, by Metalibec LTDA. , Bogota, Columbia, South America

Beef Housing & Equipment Handbook, by The Midwest Plan Service, Iowa State University

Recreational Buildings & Facilities, Agricultural Research Service, United States Dept. of Agriculture, handbook # 438

Soil and Vegetative Inventory of Near Pristine Sites in Montana, United States Dept. of Agriculture, Soil Conservation Service, Bozeman, Montana , 1973

A Manual of Wildlife Conservation, by The Wildlife Society, 1971

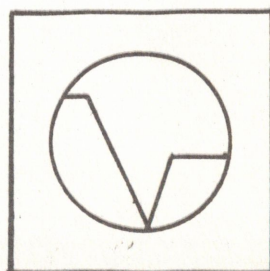
Marketing the Wildlife Crop, J.P. Wisp, Random House 1954

Soil Conservation Service Data:

1. Technician's guide for range sites, conditions, classes, and recommended stocking rates.
2. Legend Mt (Rev. 4/1/68) for conservation plan map.
3. S.C.S. Photography - An aerial Photo of 30-Mile
4. S.C.S. Conservation Plan for Lower Musselshell County, Montana.

Architectural Graphic Standards-

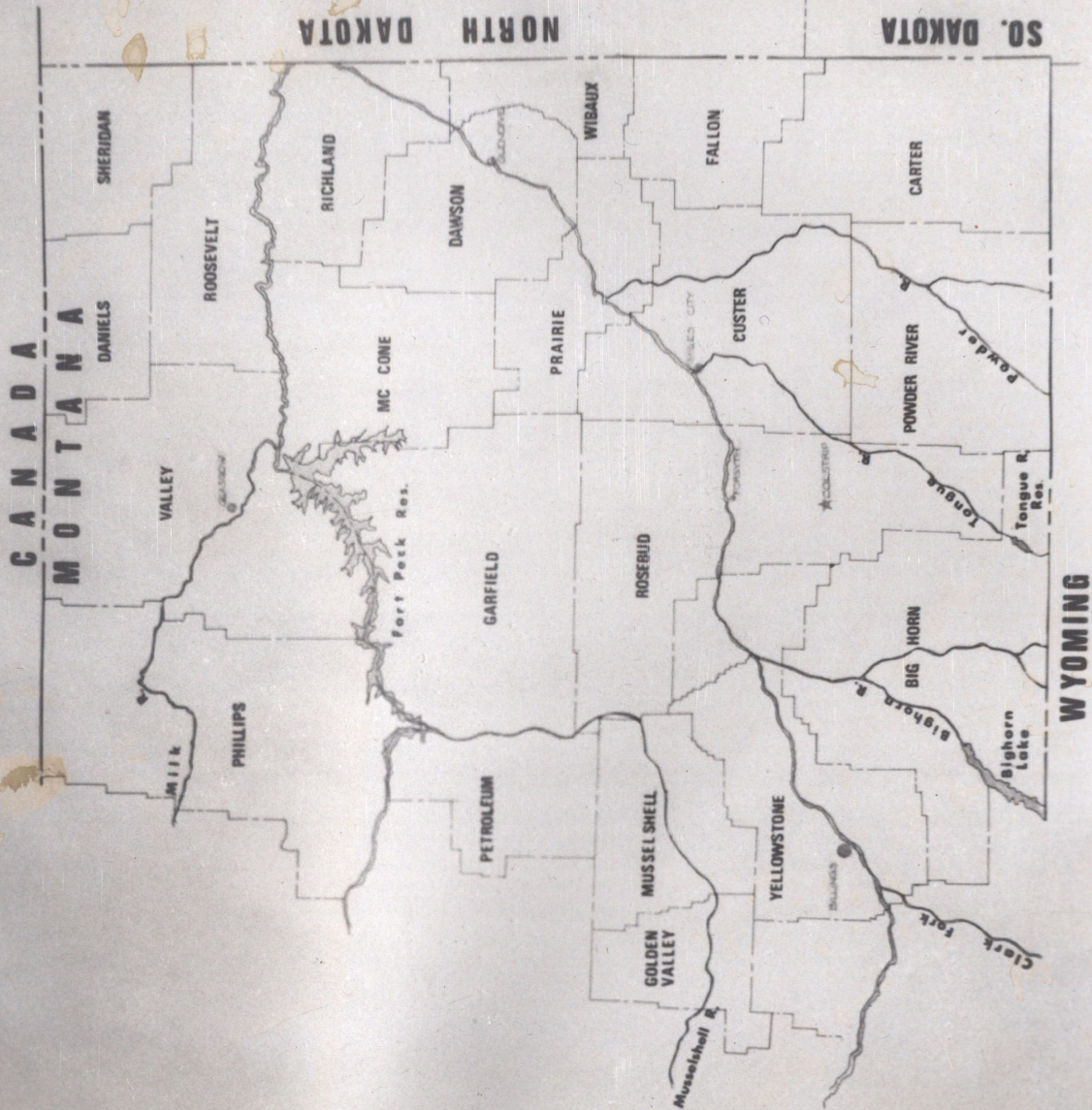
Photographs

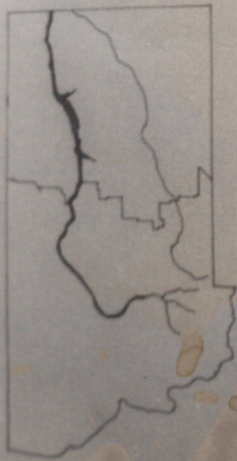




EASTERN MONTANA BASINS

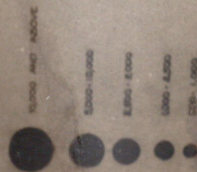
STUDY :



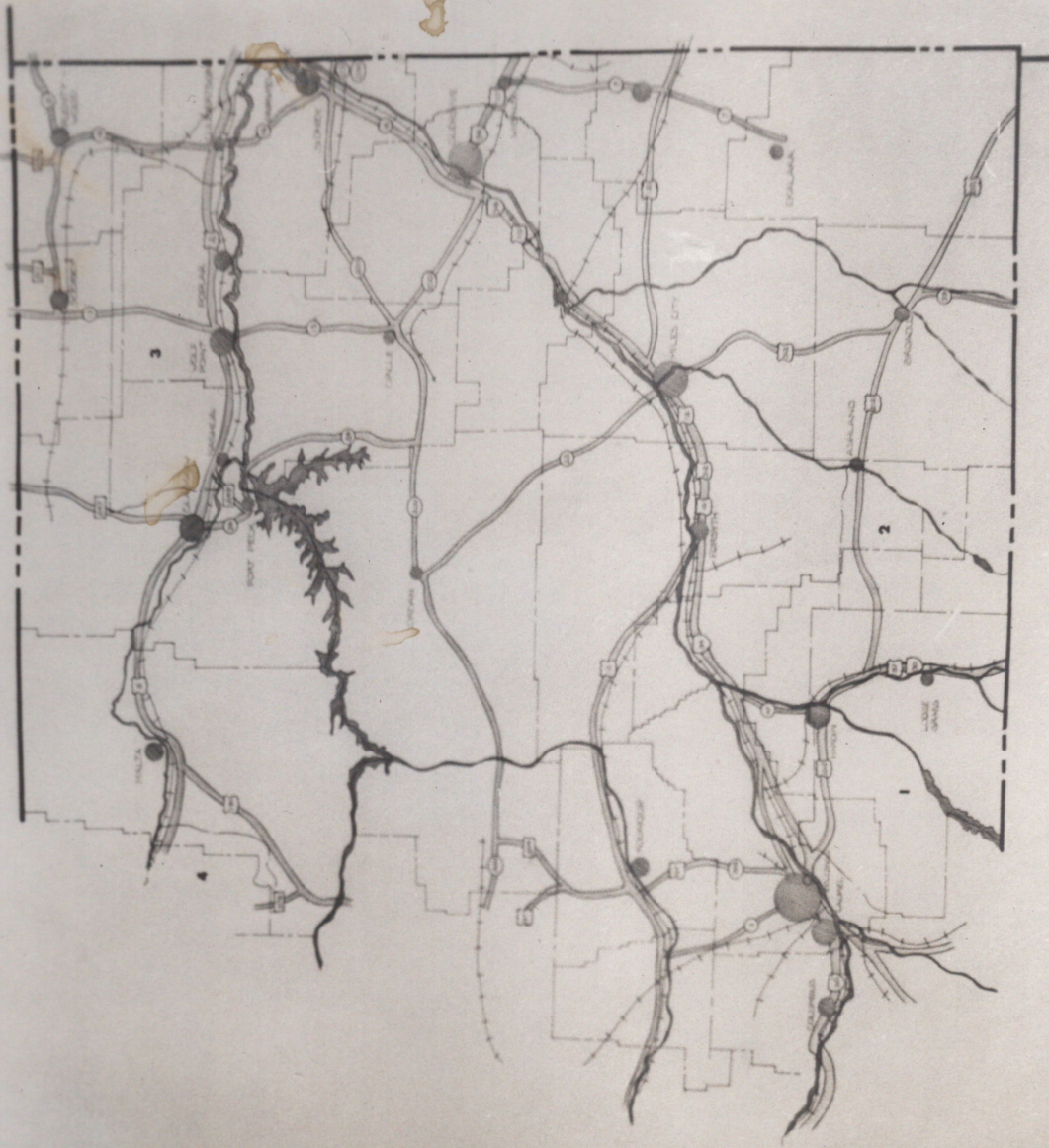


TRANSPORTATION & POPULATION CENTERS

KEY (see legend)



INDIAN RESERVATIONS
1. CHICKASAW
2. HOPKINS, OKLAHOMA
3. POKAGON
4. POKAGON-CHICKASAW



SCALE
MILES
0 10 20

HISTORY & TOURISM

KEY

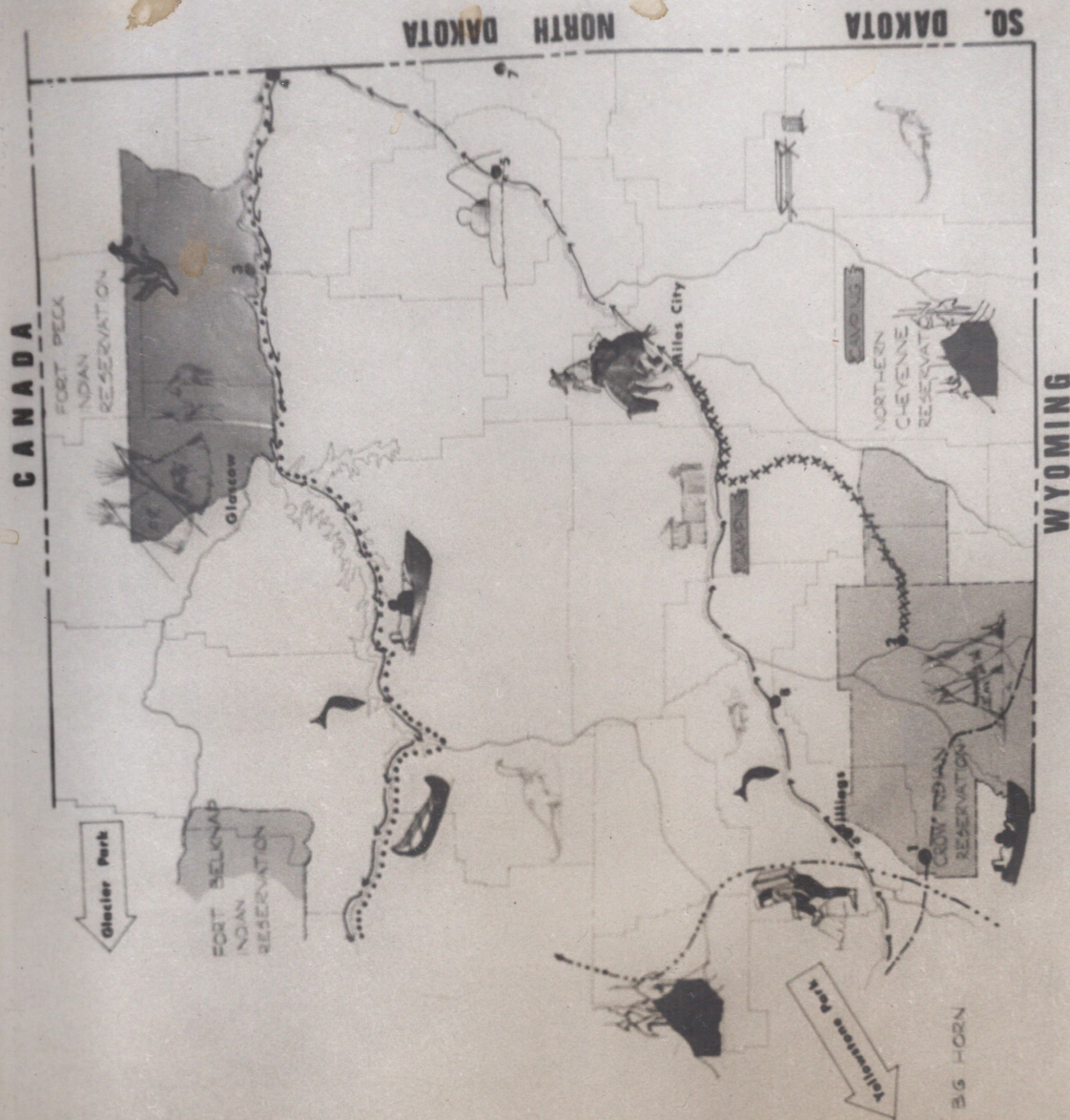
- LEWIS & CLARK ROUTES
OUTWARD JOURNEY
LEWIS' RETURN
CLARK'S RETURN

- OTHER HISTORIC TRAILS

- ## HISTORIC PLACES

[illegible]

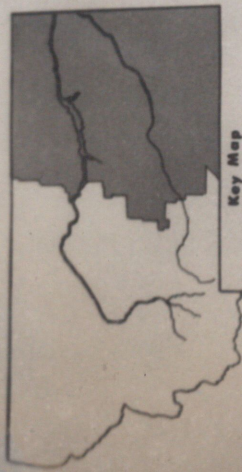
Key Map



WYOMING

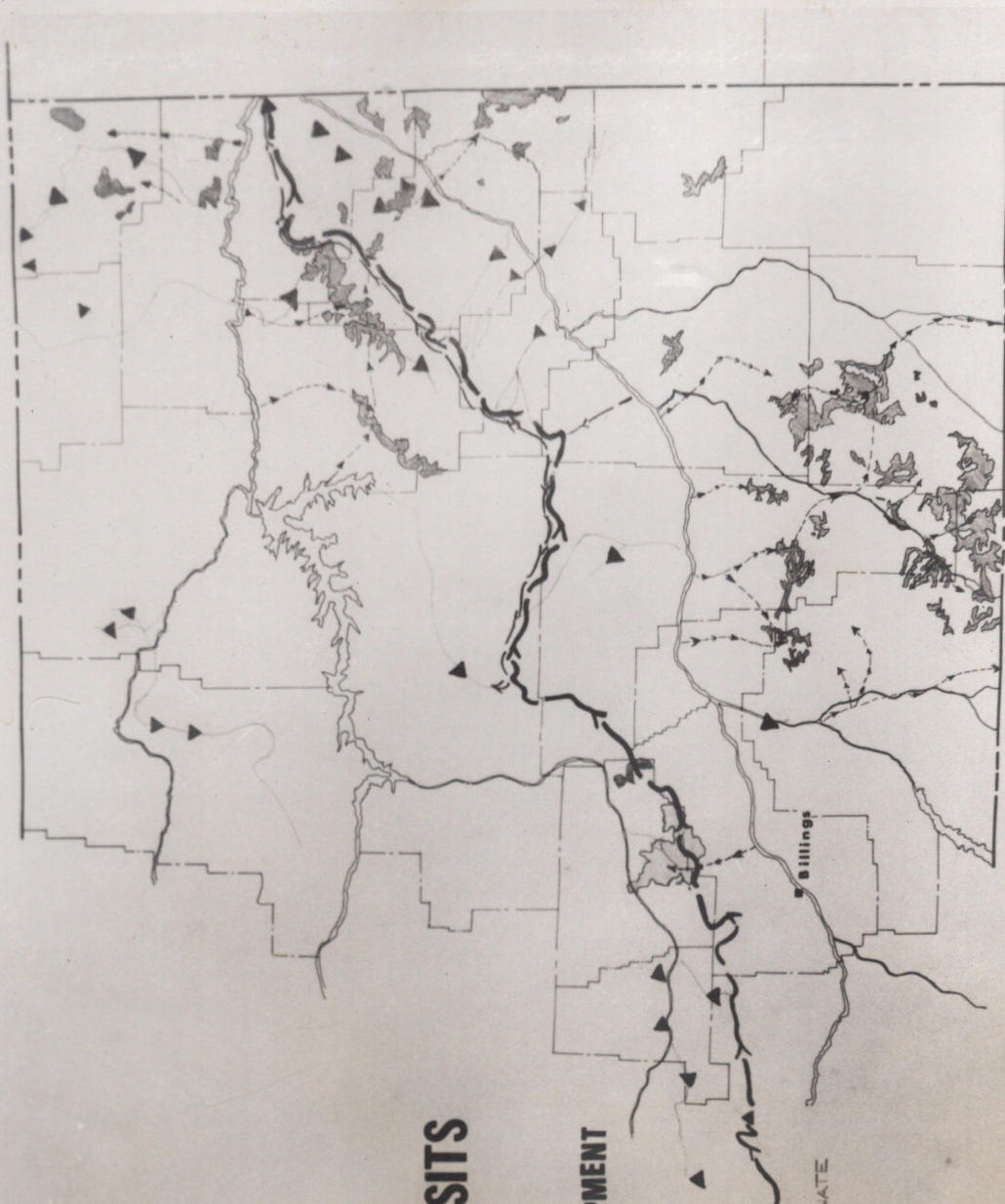
SO. DAKOTA

NORTH DAKOTA



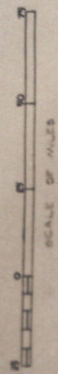
Key Map

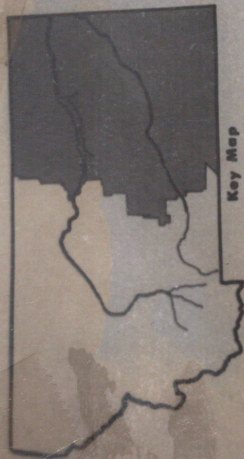
STRIPPABLE COAL DEPOSITS & POTENTIAL WATER RESOURCE DEVELOPMENT



KEY

- STRIPPABLE COAL AREA
- ▲ POTENTIAL RESERVOIRS
- OGALLALA CANAL
- - - - - OGALLALA CANAL-PUMP ALTERNATE
- - - - - POTENTIAL AQUEDUCT ROUTES

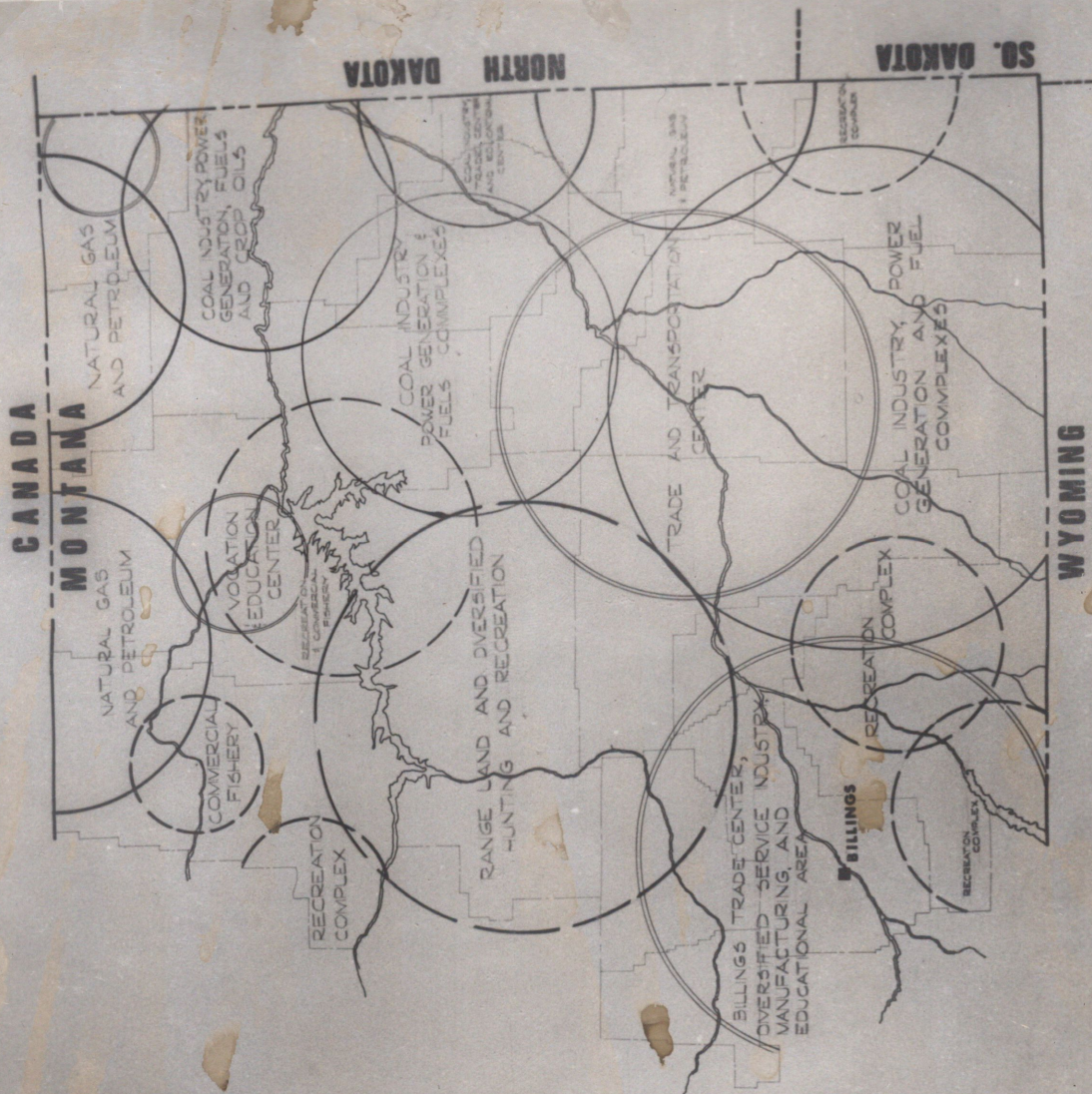


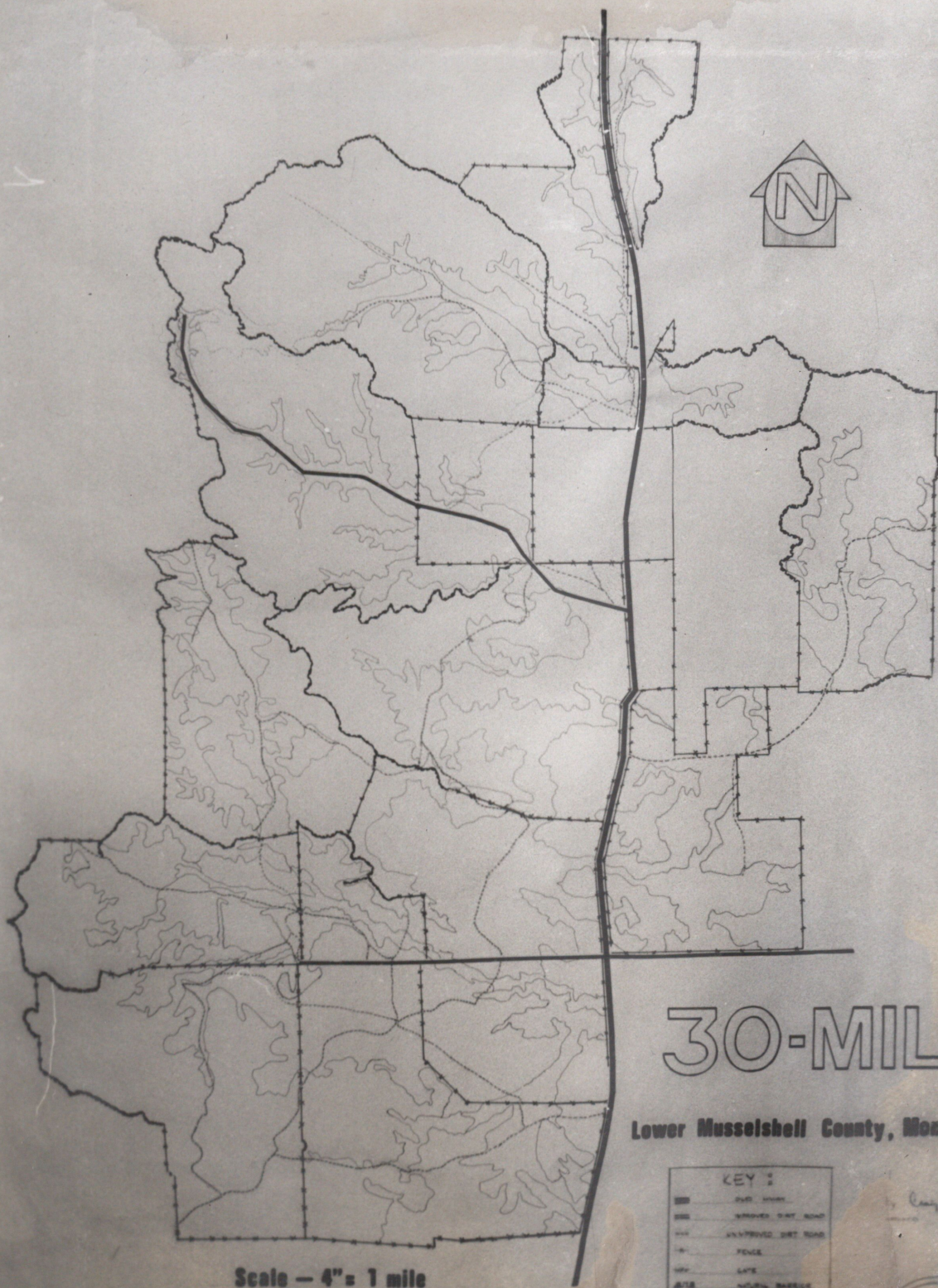


Key Map

POSSIBLE FUTURE DEVELOPMENT PATTERN

BASED ON THE INFORMATION
 COMPILED FOR 1972 BUREAU
 OF RECLAMATION'S REPORT OF
 EASTERN MONTANA RESOURCES





30-MILE

Lower Musselshell County, Montana.

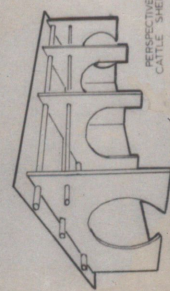
KEY :

---	RAILROAD
---	IMPROVED DIRT ROAD
---	UNIMPROVED DIRT ROAD
- - -	FENCE
---	LAKE
---	NATURAL BARRIER
---	WINDMILL
---	SUNNY SIDE
---	POWER LINE
---	SEWERAGE

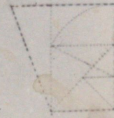


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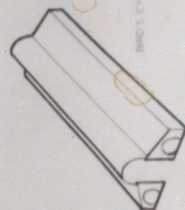
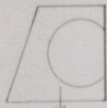
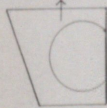
TO EXPLORE THE POSSIBILITY OF CREATING AN
INDIGENOUS ARCHITECTURE THROUGH THE IM-
PLEMENTATION OF NATURAL, MAN-MADE, AND HIS-
TORIC ELEMENTS.



SIMPLE SHED

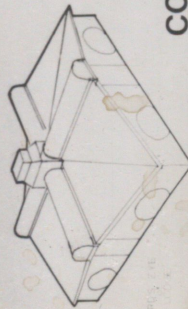
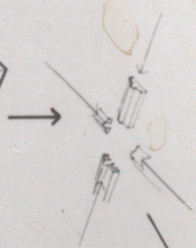


A PROPER FORM

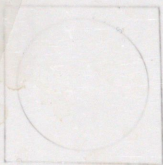


DOUBLE SHED

APPLICATION



COMPLEX





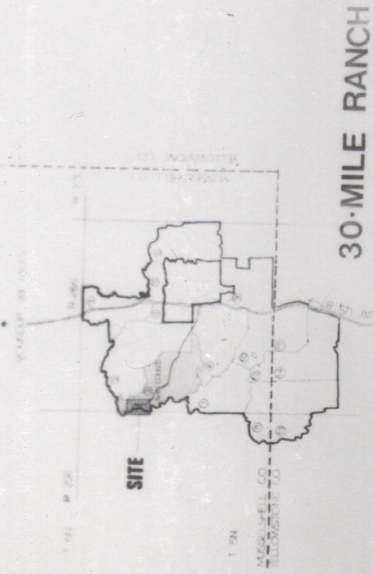
SHIN COULEE

NO. 2000 SERIES

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1

LOCATION

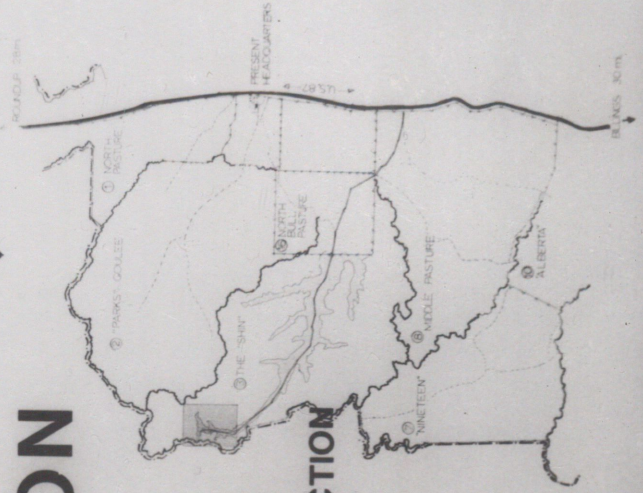


30-MILE RANCH

LOCATION



FINAL
SITE
SELECTION



2

PLAN

30-MILE



30-MILE RANCH



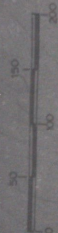
PLAN
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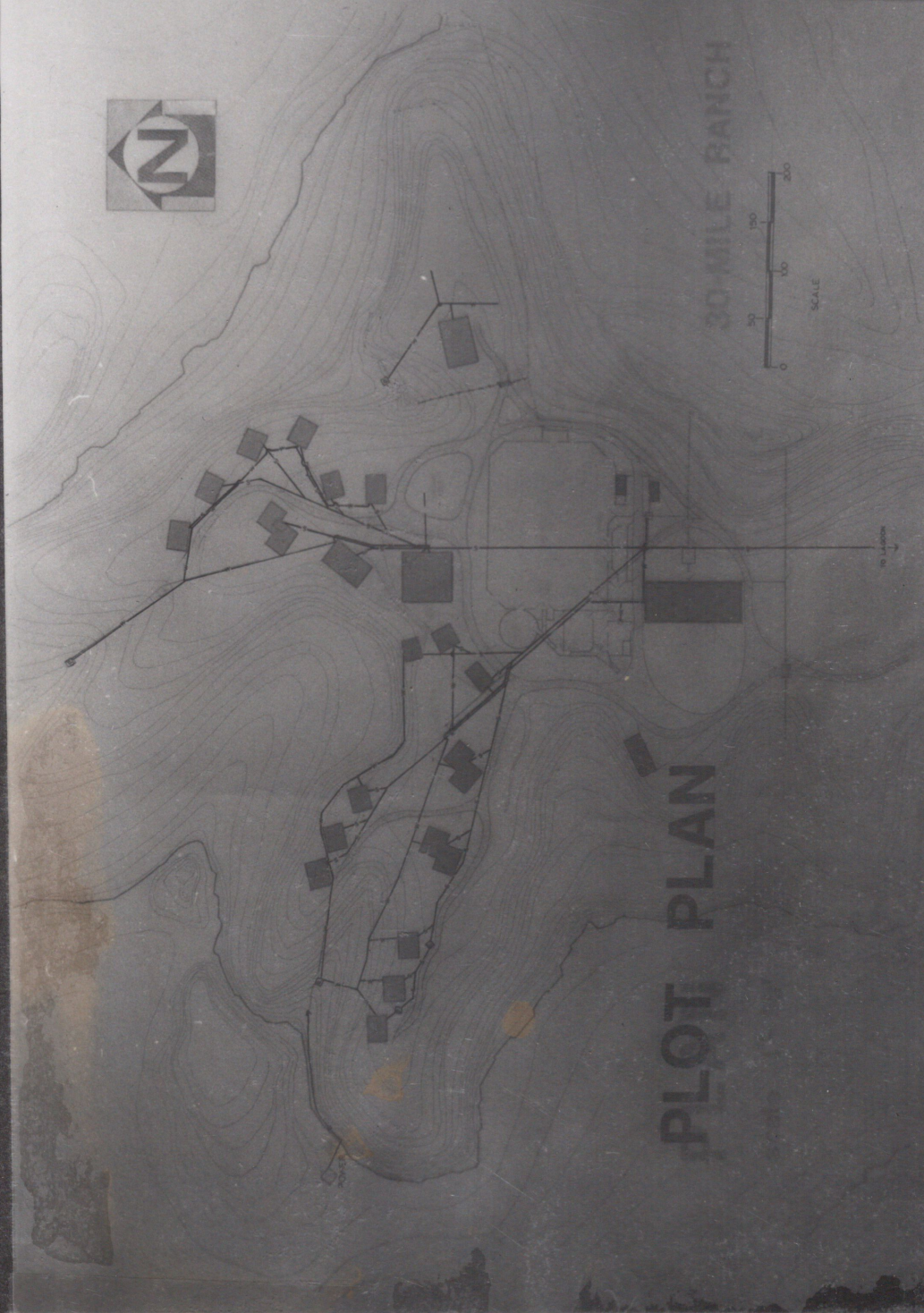
PLOT



30 MILE RANCH



SCALE



PLOT PLAN

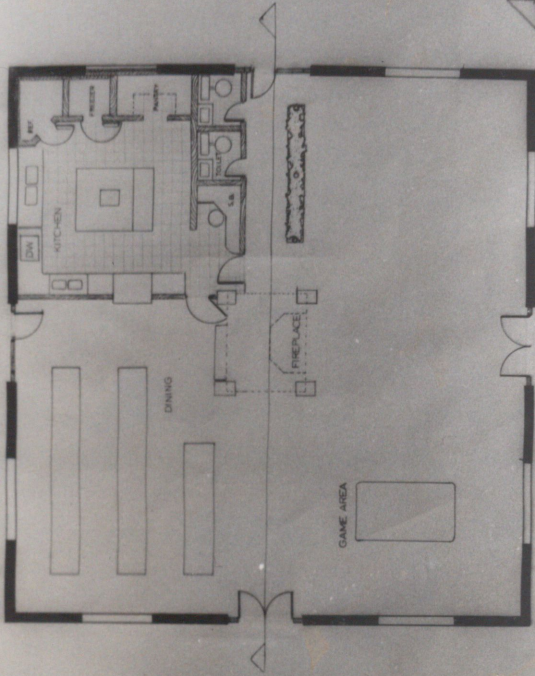
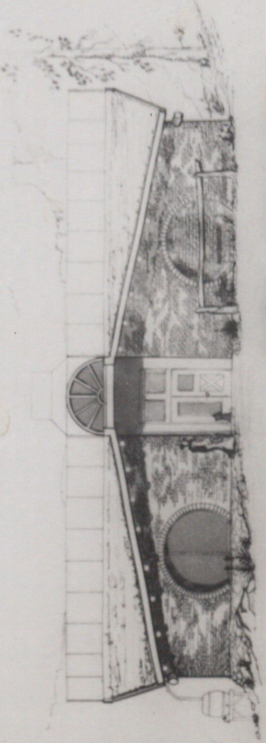
4

LODGE

30-MILE



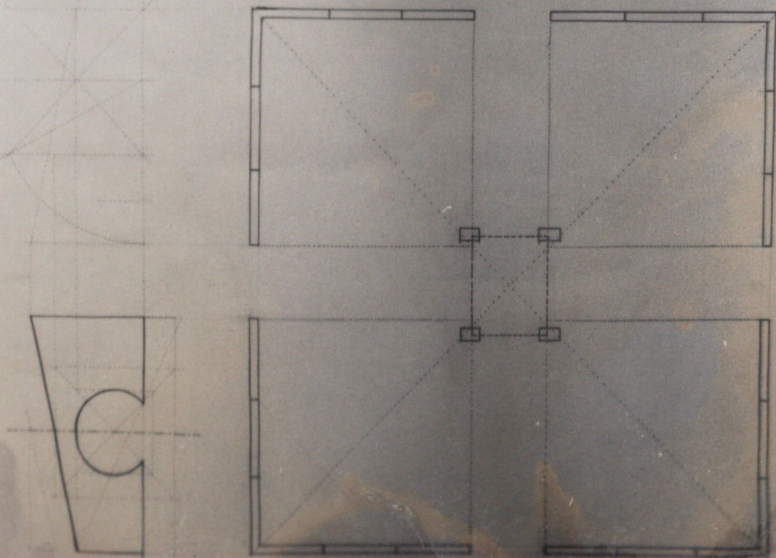
EAST ELEVATION



PLAN



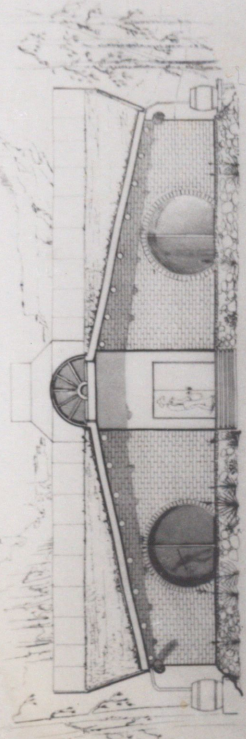
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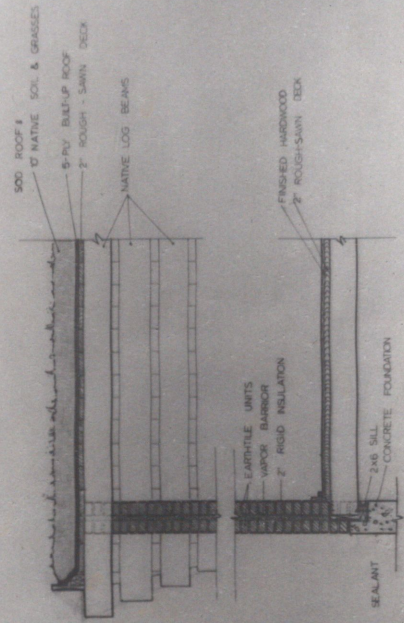
5

LODGE

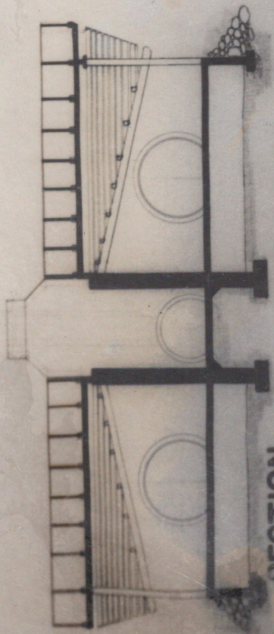
30-MILE



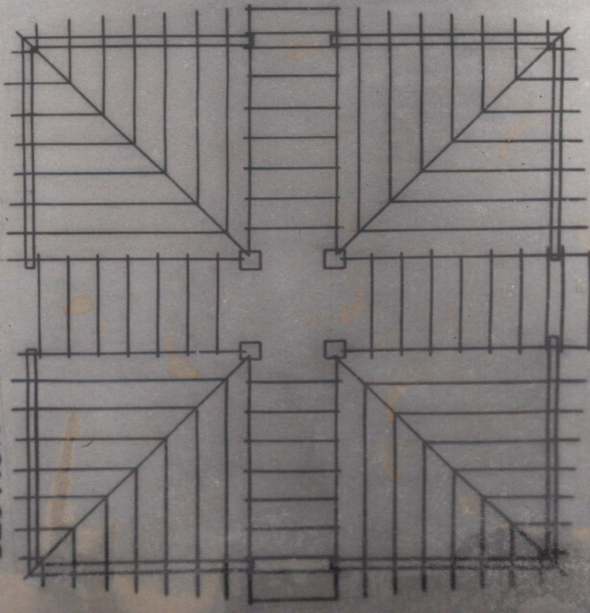
SOUTH ELEVATION



DETAIL



SECTION

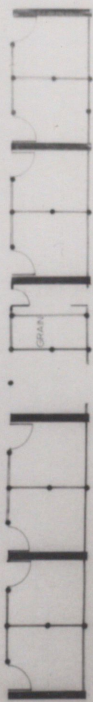
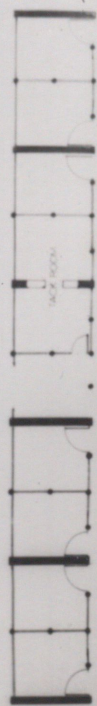


STRUCTURE

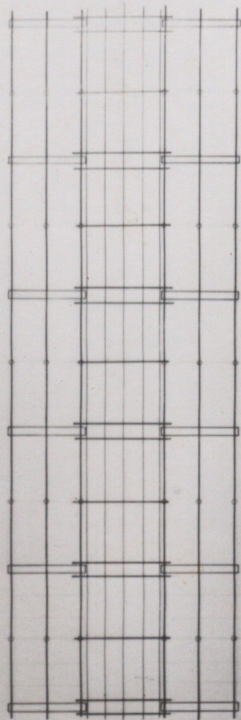
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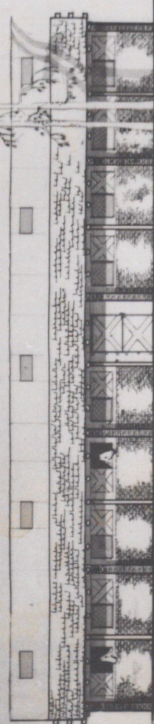
BARN



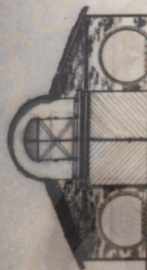
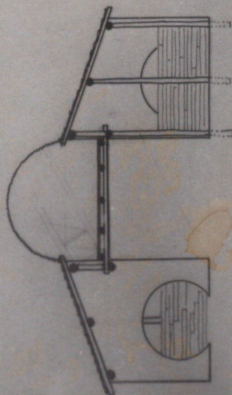
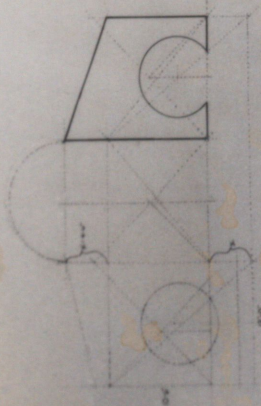
PLAN



STRUCTURE



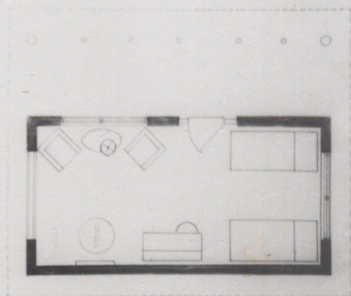
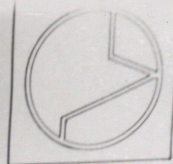
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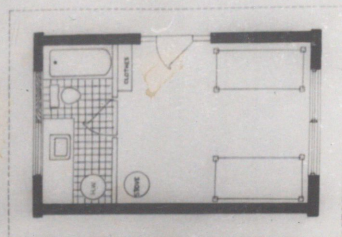
SCALE 1/4" = 1'-0"



CABIN &
BUNK HOUSE

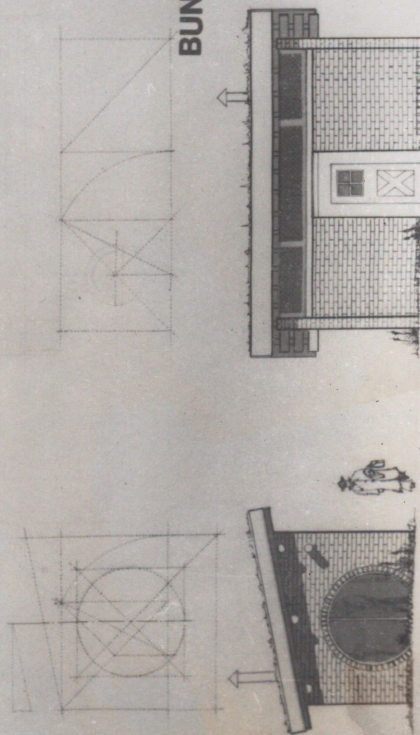
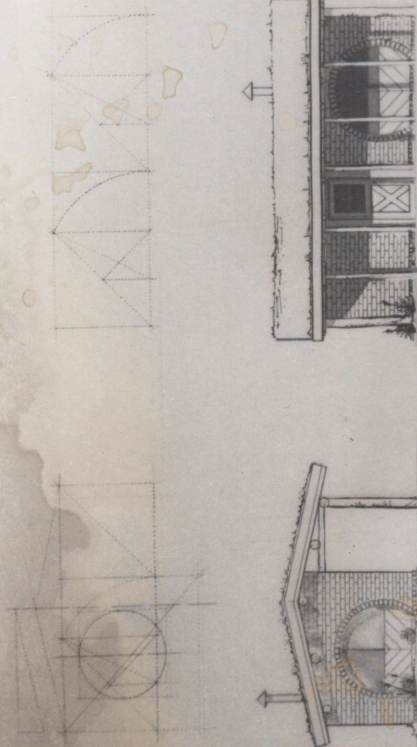


CABIN



BUNK HOUSE

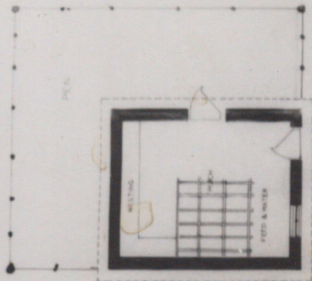
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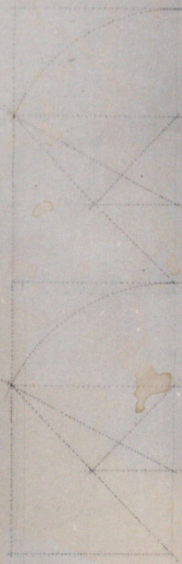
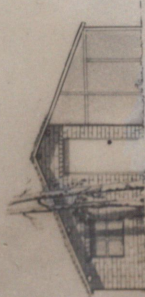
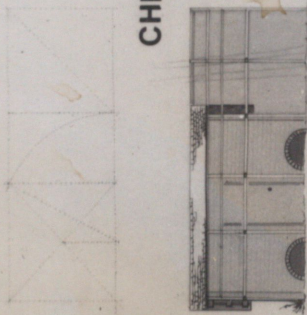


COOP
&
SHED

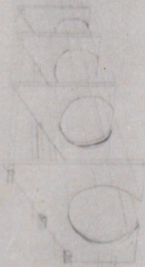
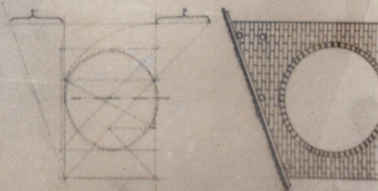
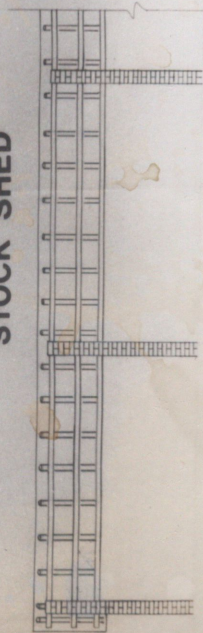
30-MILE



CHICKEN COOP



STOCK SHED









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