A Proposal for Federal Own of Lands Under the Alaska Native Claims Settlement Act

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A PROPOSAL FOR FEDERAL OWNERSHIP OF LANDS UNDER THE ALASKA NATIVE CLAIMS SETTLEMENT ACT

SUMMARY AND CONCLUSIONS

One of the current issues of land use planning in Alaska is focalized on the distribution of land ownership patterns and management philosophies, particularly on those lands to be retained in the Federal ownership. While the issue can be confused by the self-serving organizational traits of Federal agencies, the problem at hand is important enough to encourage and justify competitive and duplicate planning efforts.

This report, then, illuminates the range of choices on where the permanent reservation in Federal ownership should be located and for what purposes these Federal lands should be managed. It is based on a study conducted by the Bureau of Land Management in Alaska.

The report, consisting of map overlays of the Series "E" scale on Alaska, narrative support, and principally oral presentation of the study, covers not only the so-called "d(1)" and "d(2)" areas, but generally most of the lands in Alaska where future ownership patterns and land management philosophies need to be identified and coordinated.

Any new creation or addition to the National Parks, Forests, Wildlife Refuges, and Wild and Scenic Rivers Systems can be made to "fit" the "d(1)" and "d(1)" areas. But much will be paid for in future management problems, particularly in the environmental and economic sense, if function is permitted to dictate the "fit" or land use forms.

What is needed is a systematic test, or an inductive process which first analyzes the resource management opportunities without regard to the man-made lines on a map. Land use forms, rather than dictated by functions reflected in the proprietary interest, can then be tested or grouped according to implied use capacity and management philosophy.

The Bureau of Land Management's study, using this process, has defined or grouped the land areas, with exception of the Southeastern region, into 28 manageable units. The study's ultimate usefulness can be tested in context of the present and future land ownership distributions of the Native Villages and Regional Corporations, and Local, State, and Federal governments.

RECOMMENDATIONS

For application with the written part of this report, a photographic reduction of the overlay map showing the 28 manageable units along with the Bureau of Land Management's study recommendations for management under the multiple use philosophy are shown on the next page.

The study recommends that the public land areas encompassed by units 1a, 2, 5, 7, 8, 9, 10, 11, 12, 15, 16, 23, and modified parts of 3a, 3b, 6, and 15 be managed under the Bureau of Land Management.

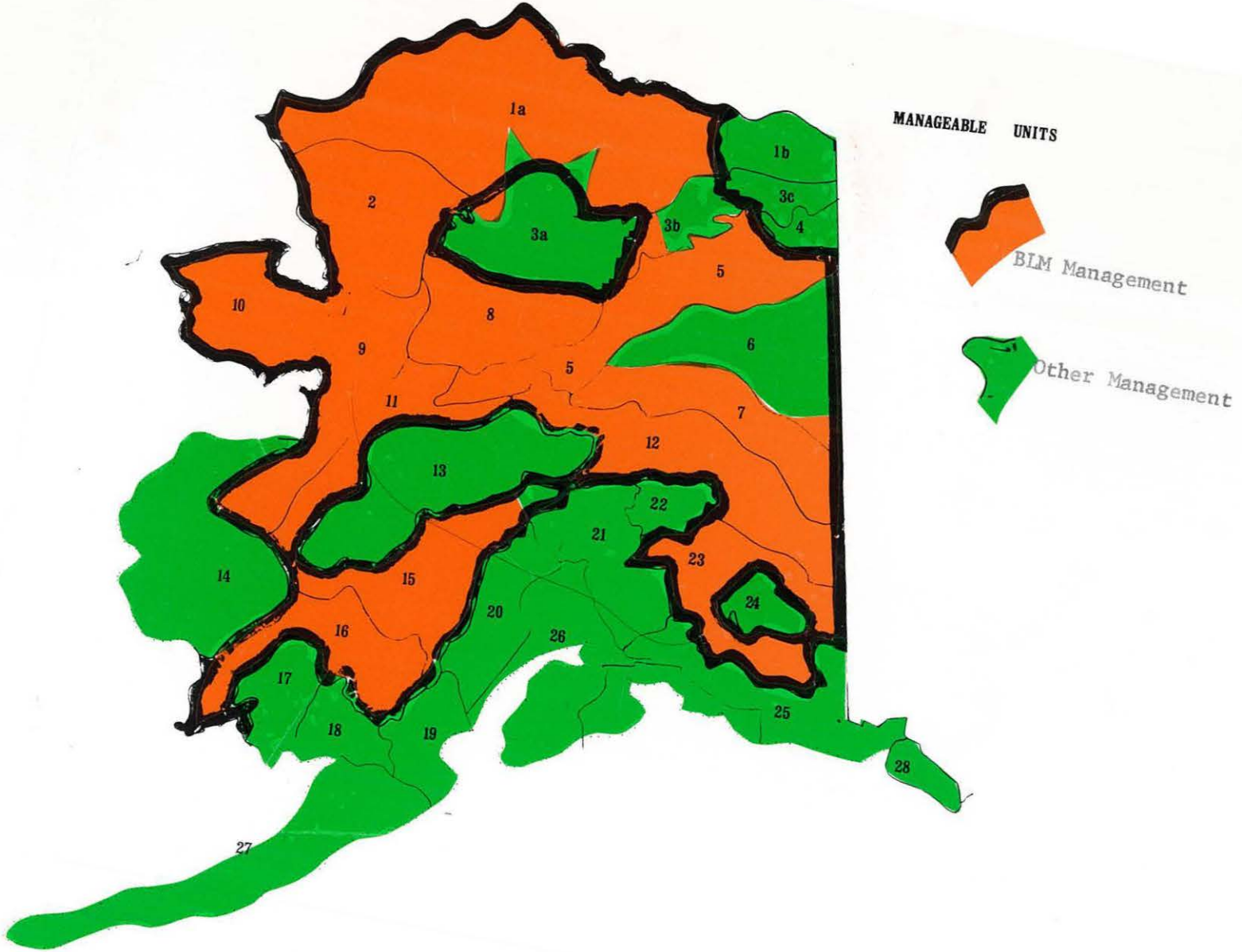
A total of approximately 127 million acres of Federal lands are identified within the above recommendation areas. Its composition is as follows:

32 million acres identified as "d(1)" lands.

27 million acres identified as "d(2)" lands.

15 million acres identified as open lands.

53 million acres identified with the Native withdrawals which will not be selected.


MANAGEABLE UNITS
BLM Management
Other Management
1a
1b
2
3a
3b
3c
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

This leaves approximately 52 million acres of lands identified as "d(2)", and approximately 10 million acres of lands identified as "d(1)" outside of the recommendation areas.

To coordinate the resource management opportunities and management philosophies identified or implied by the study, the Bureau of Land Management study recommends that the "d(2)" lands within its recommendation areas be changed to the "d(1)" classification; and the "d(1)" lands outside of its recommendation areas be changed to "d(2)" classification. The study also recommends a four mile wide withdrawal of the potentially identified Wild and Scenic Rivers within its recommendation areas. This will provide an addition of approximately 9 million acres of withdrawn lands to the Wild and Scenic Rivers System.

THE STUDY PROCEDURES

Ecological Assessment

This assessment was based on the premise that any place is the sum of historical, physical, and biological processes; and that these processes are dynamic, have values, perform work, and exhibit both opportunities and restraints to development.* In other words, an attempt was made to broadly define areas according to their intrinsic and implied suitability for human use and development.

The process involved an exploration of the subsystems of the natural environment, selecting the dimensions or parameters of the subsystems which tell about the particular character of the subsystem, establishing the relationship and attributes of the parameters, and relating the findings to the areas under assessment.

This was accomplished in the following ways:

1. Depicting the physical and biological profiles of some of the parameters from the subsystems in map overlays. Those considered but not necessarily portrayed in map overlays included the following:

Subsystems		Parameters
Geology	-	Surficial characteristics Permafrost characteristics Fault lines and seismic zones
Soils	-	Soil characteristics Suitability ratings for road and airfield construction

---

* From Ian McHarg

Topography	-	Physiographic regions
Water regimen	-	Watersheds Water sediment load Ground water potentials Water bodies and wetlands Potential flood, ice jam, Tsunami and wave hazard areas
Vegetation	-	Vegetation types

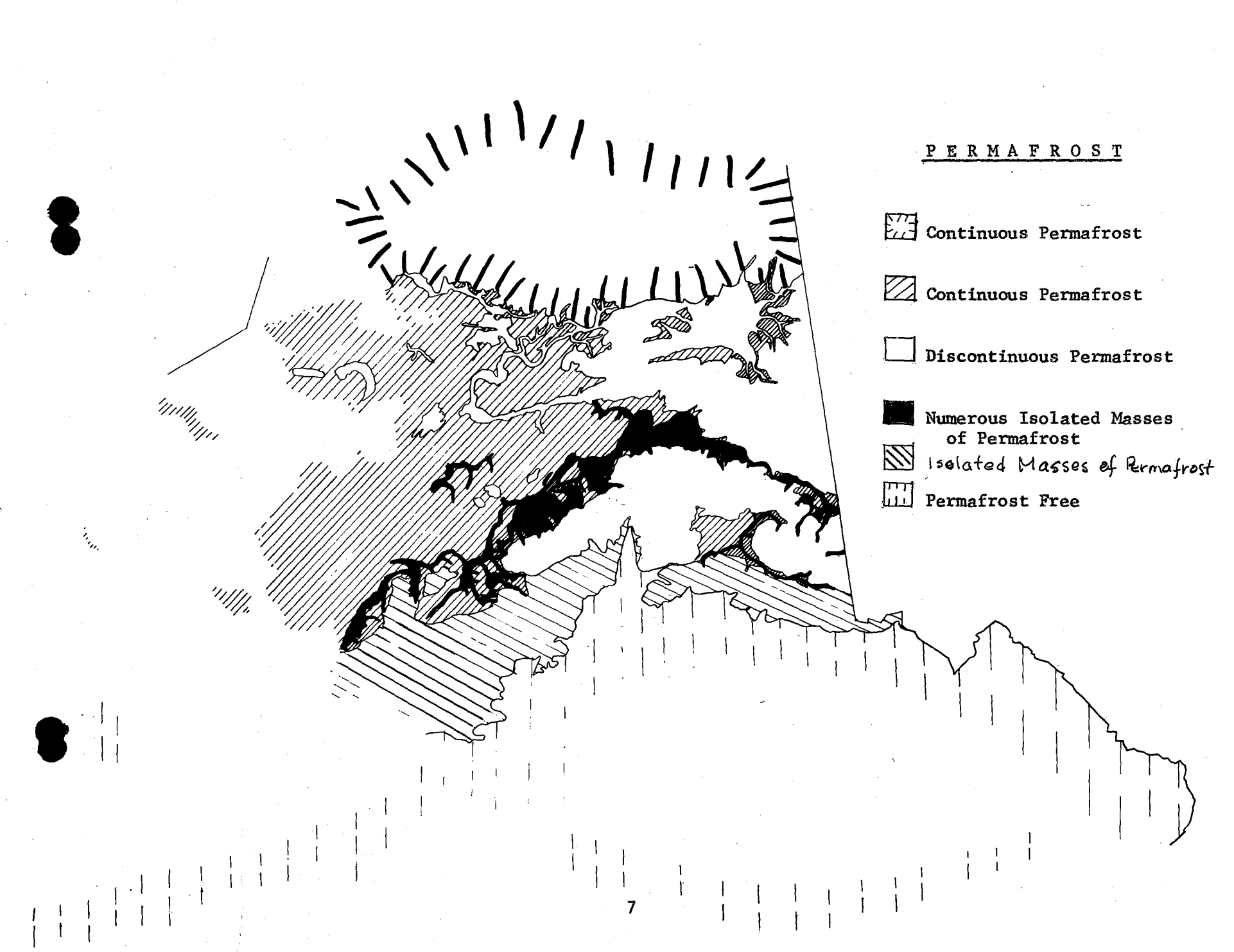
Examples of how some of these parameters were portrayed are shown on the photographic reduction of the physical profile maps for Permafrost, Faults and Seismic Hazards, and Sediment Load.

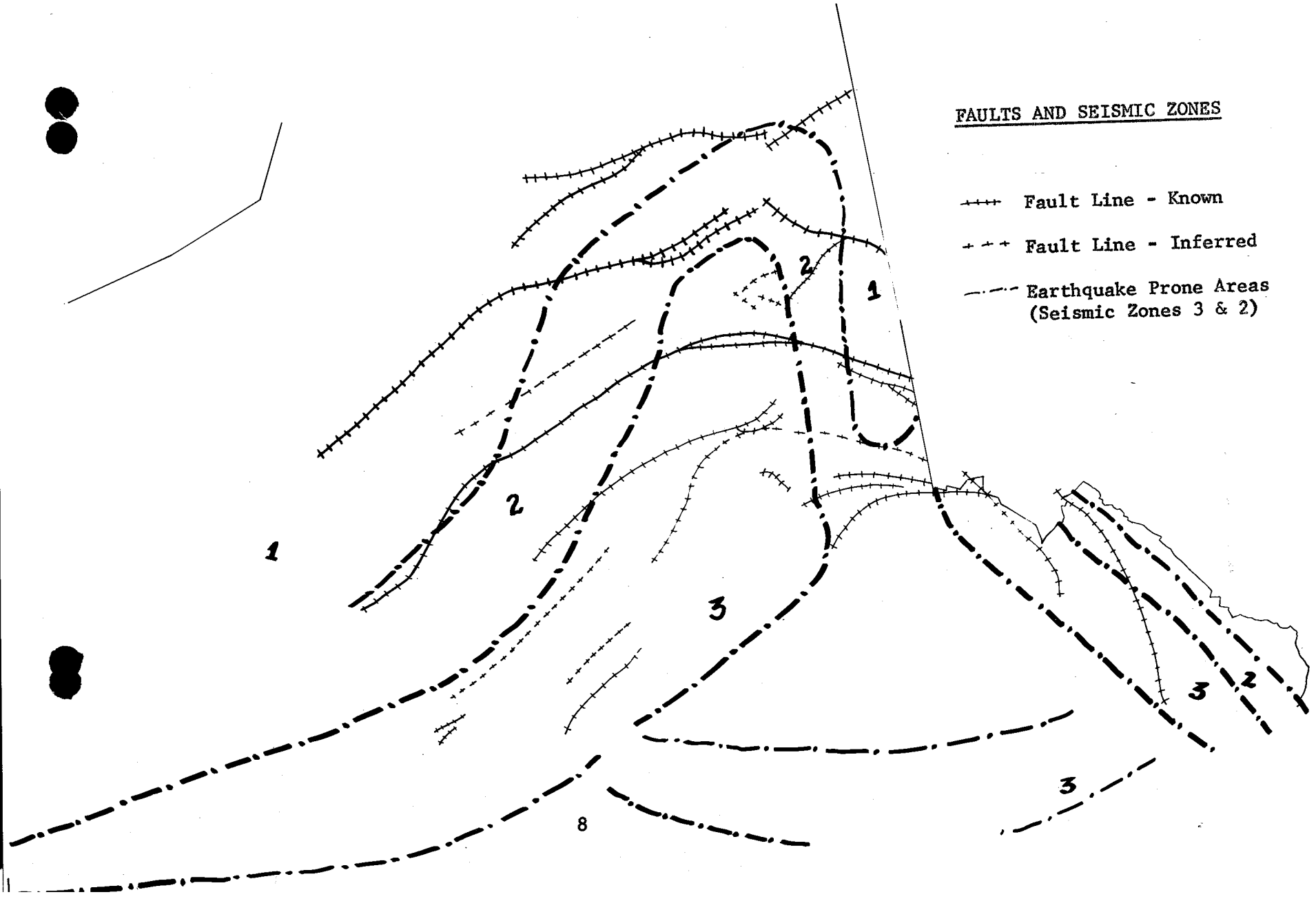
2. Identifying the resource values on inventory map format overlays. The resource profile included Livestock Forage, Timber, Lands, Minerals, Wildlife Habitat, Water, and Recreation.

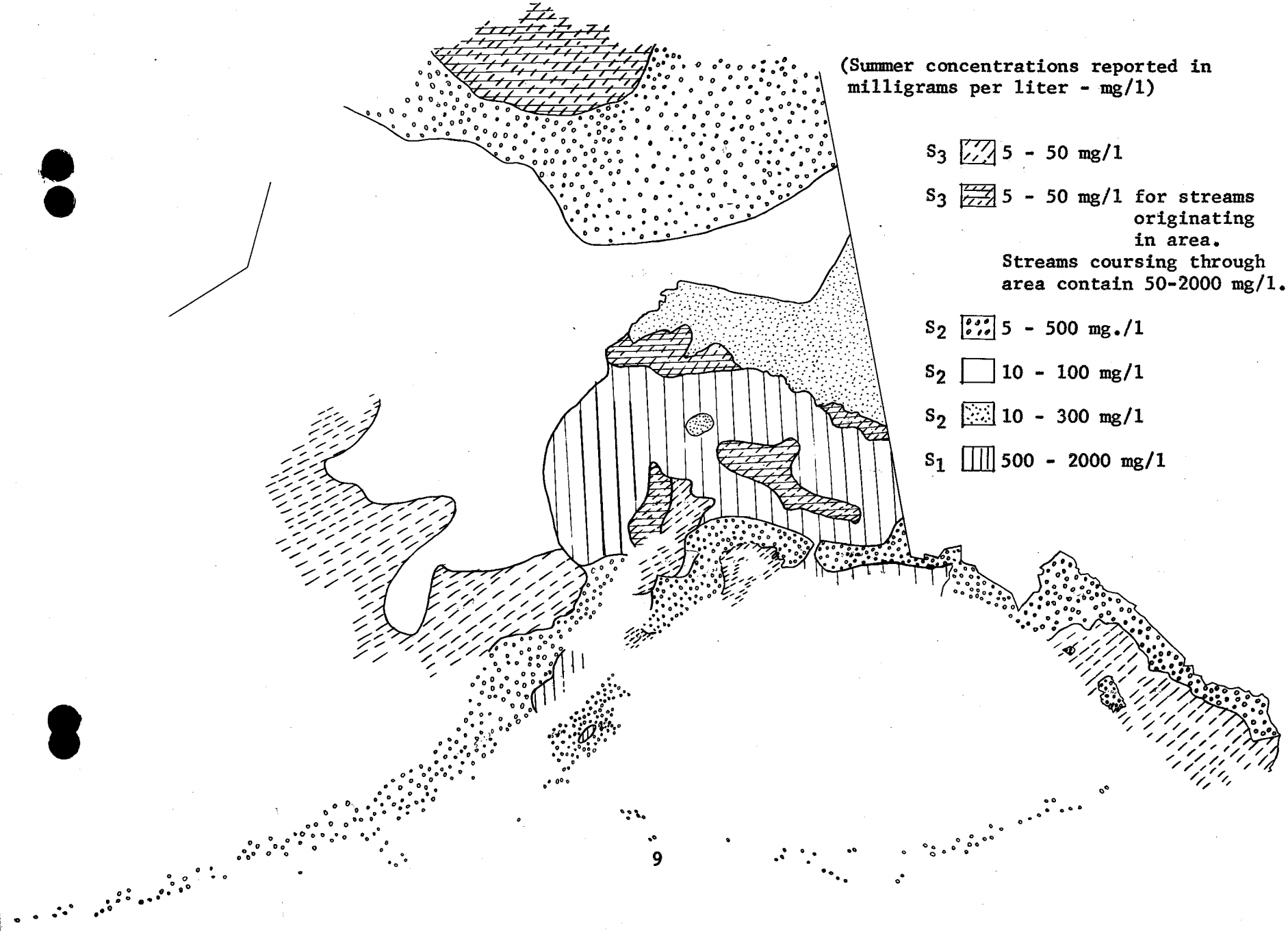
Examples of how some of this inventory information was portrayed are shown on the photographic reduction of the resources profile maps for Lands, Forestry, and Big-Game Wildlife Habitat.

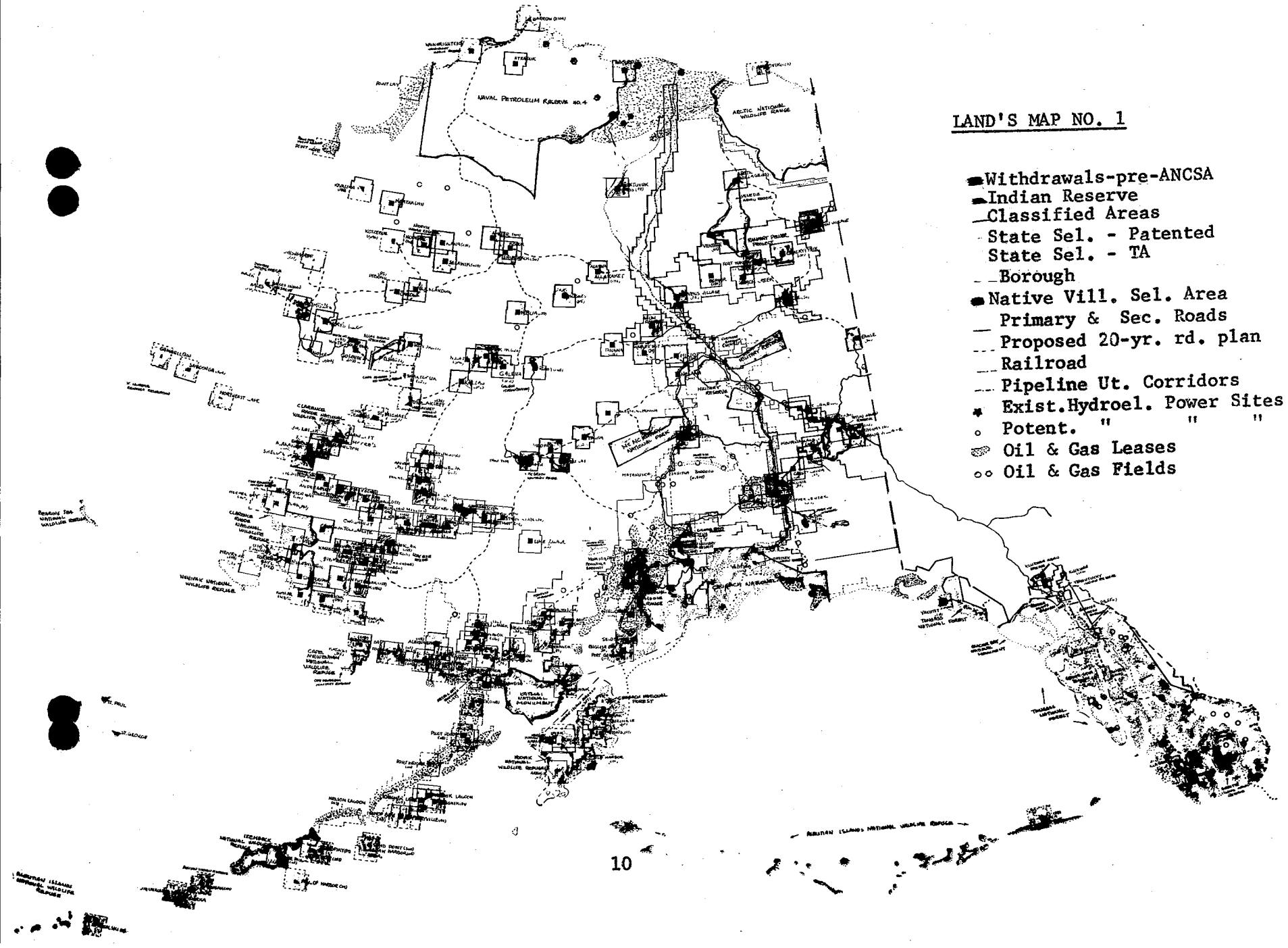
3. Relating the applicable physical and biological parameters to the inventory information (man's values) for each resource category, and establishing a numerically weighted correlation on the potential opportunities and restraints for use and development of a given area.

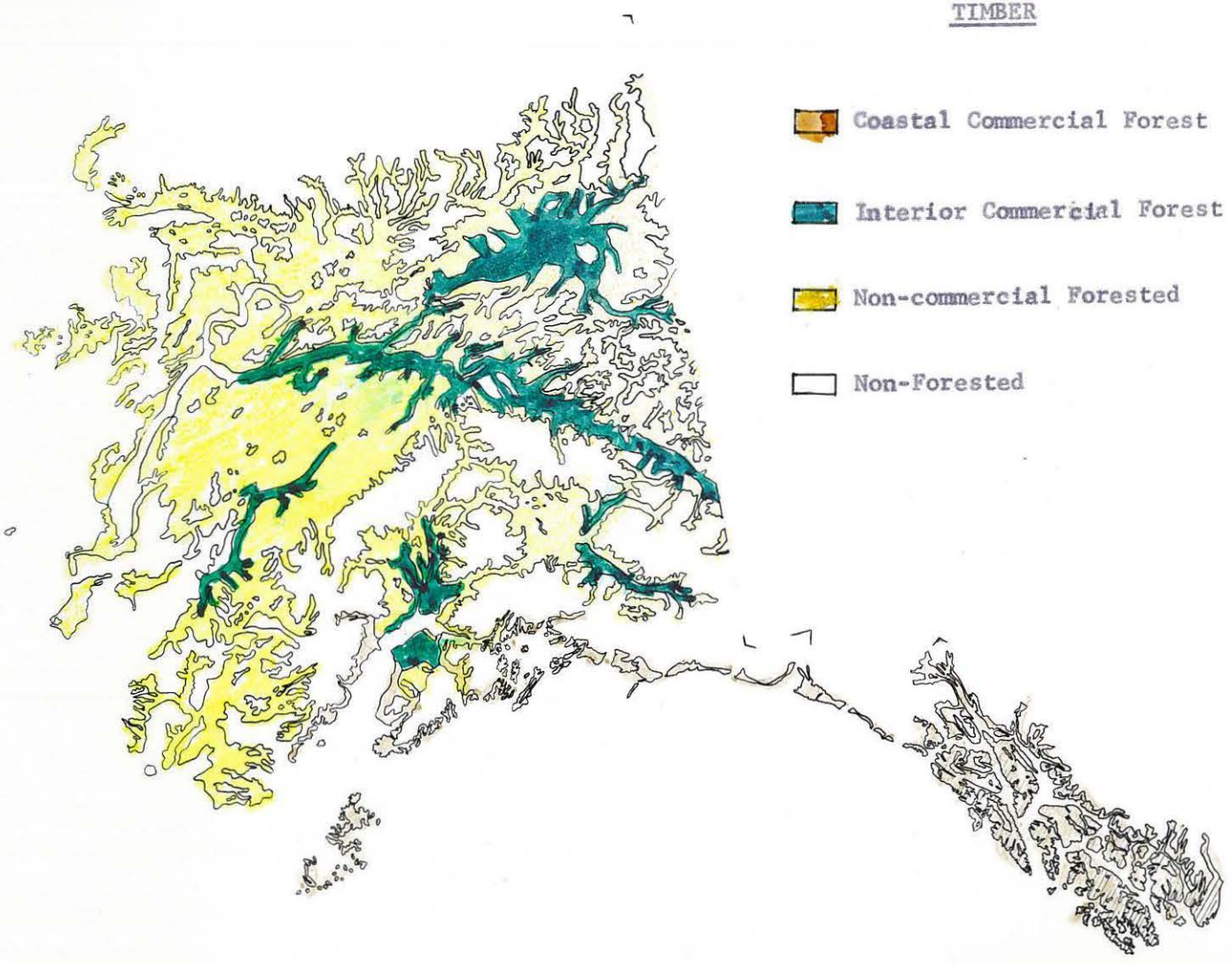
This approach, as shown on the photographic reduction of the ratings overlay examples for Timber, Lands, and Big-Game Habitat, provided an ecologically related value system

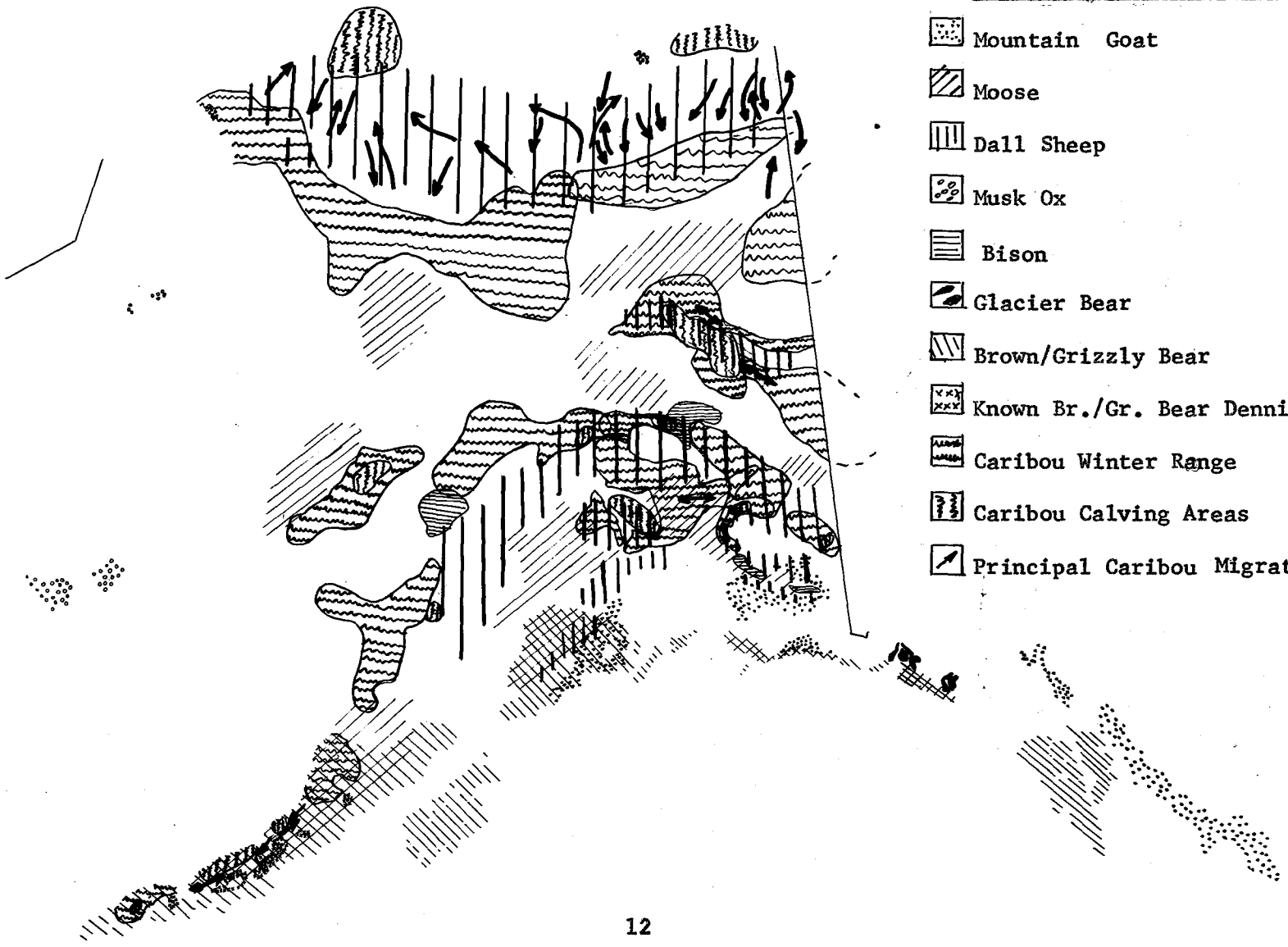

PERMAFROST
Continuous Permafrost
Continuous Permafrost
Discontinuous Permafrost
Numerous Isolated Masses of Permafrost
Isolated Masses of Permafrost
Permafrost Free


FAULTS AND SEISMIC ZONES
Fault Line - Known
Fault Line - Inferred
Earthquake Prone Areas
(Seismic Zones 3 & 2)
1
2
3


(Summer concentrations reported in milligrams per liter - mg/l)
S_3 5 - 50 mg/l
S_3 5 - 50 mg/l for streams originating in area.
Streams coursing through area contain 50-2000 mg/l.
S_2 5 - 500 mg./l
S_2 10 - 100 mg/l
S_2 10 - 300 mg/l
S_1 500 - 2000 mg/l


LAND'S MAP NO. 1
Withdrawals-pre-ANCSA
Indian Reserve
Classified Areas
State Sel. - Patented
State Sel. - TA
Borough
Native Vill. Sel. Area
Primary & Sec. Roads
Proposed 20-yr. rd. plan
Railroad
Pipeline Ut. Corridors
Exist.Hydroel. Power Sites
Potent. " " "
Oil & Gas Leases
Oil & Gas Fields
NAVAL PETROLEUM RESERVE NO. 4
ARCTIC NATIONAL WILDLIFE RANGE


TIMBER
Coastal Commercial Forest
Interior Commercial Forest
Non-commercial Forested
Non-Forested


WILDLIFE - BIG GAME SPECIES
Mountain Goat
Moose
Dall Sheep
Musk Ox
Bison
Glacier Bear
Brown/Grizzly Bear
Known Br./Gr. Bear Denning Areas
Caribou Winter Range
Caribou Calving Areas
Principal Caribou Migration Route

which illuminated the prospective land use for a given area with its identified resource value.

The ratings, in the numerical order of 1, 2, and 3, reflect a measure of amenability to environmental modification (1 - high amenability, 2 = moderate amenability, and 3 = low amenability).

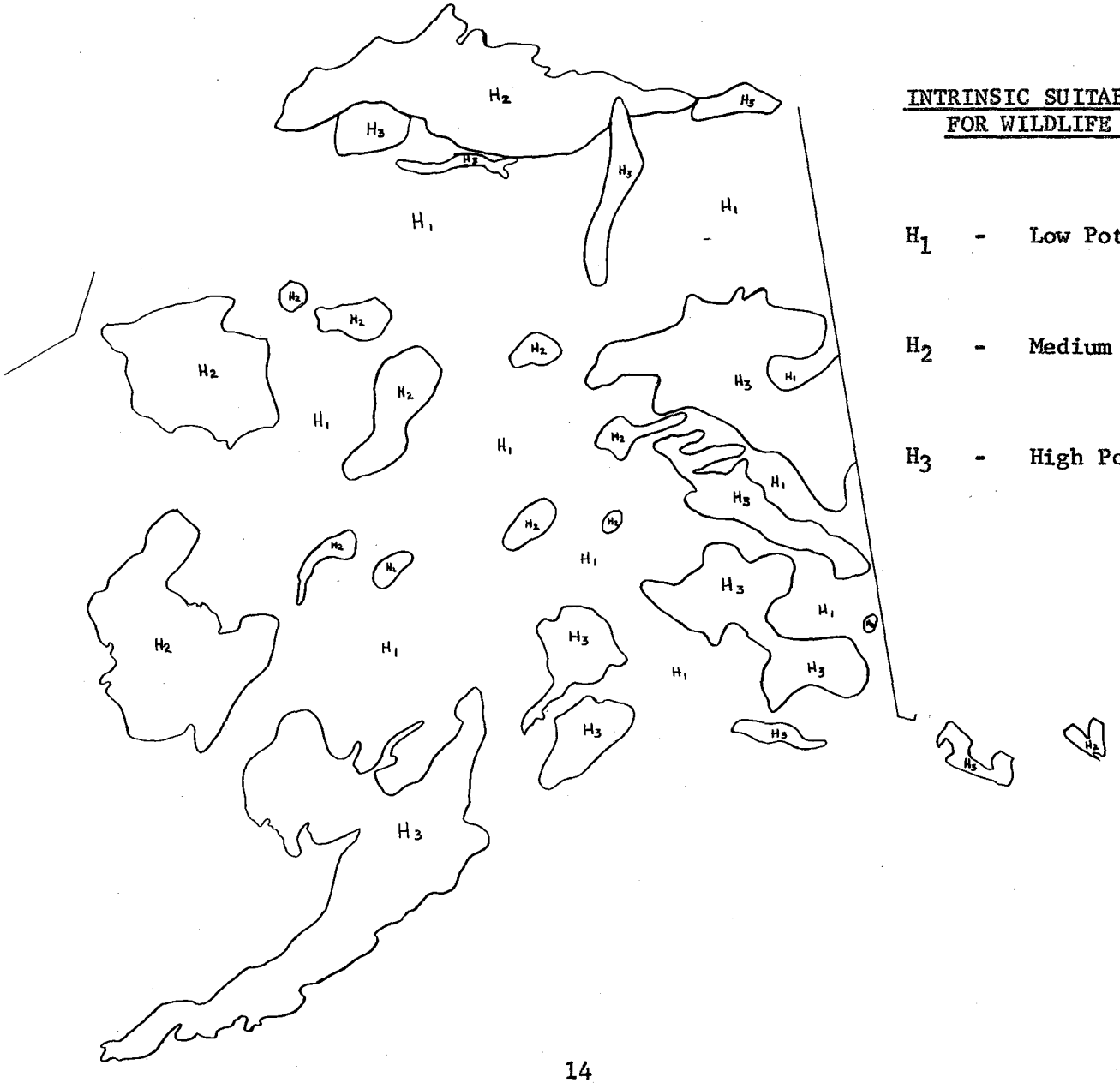
Stated in another way, the numerical weights do not mean use or development should occur or not take place; but point to the likely environmental cost which one may have to pay if use and development occurs.

4. Developing a single map showing the multi-suitability rating for each of the resources in a given area through a map transparency and sieve technique.

As shown on the examples taken from a section of the original work map, this map was developed in three steps. The first two steps involved transference of the separately assessed ecological resources profiles on a combination of two maps. The final step involved development of a single composite from these two maps which incorporates a numerical identification key of the ecologically rated combinations.

5. Developing a table with numerically identified tabulations keyed to each different variable combination.

As shown on the copy of a page from the table, the tabular information identifies the resources and the ecological assessment for any given numbered area on the multi-suitability rating base map. Moreover, the tabulated information serves as a broad determinant of the potential land use forms for a given area.

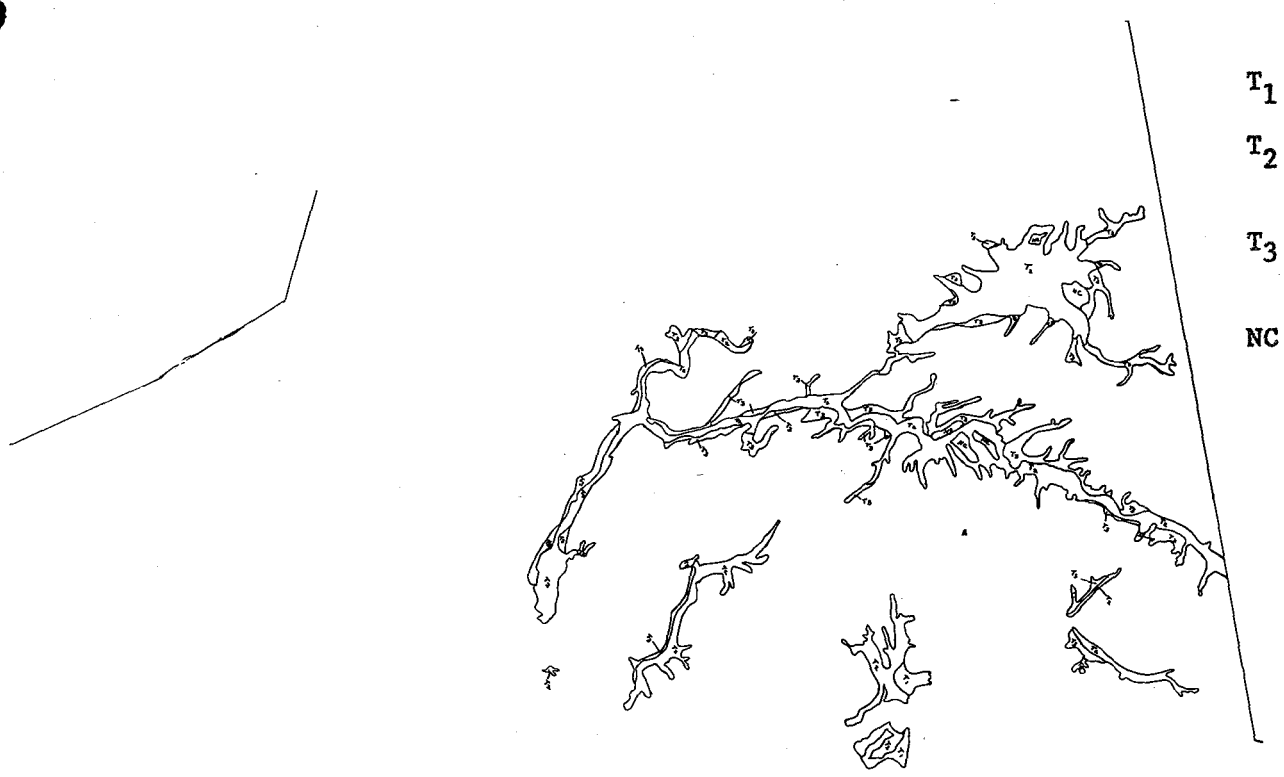


INTRINSIC SUITABILITY RATING
FOR WILDLIFE HABITAT

H_1 - Low Potential Impact

H_2 - Medium Potential Impact

H_3 - High Potential Impact



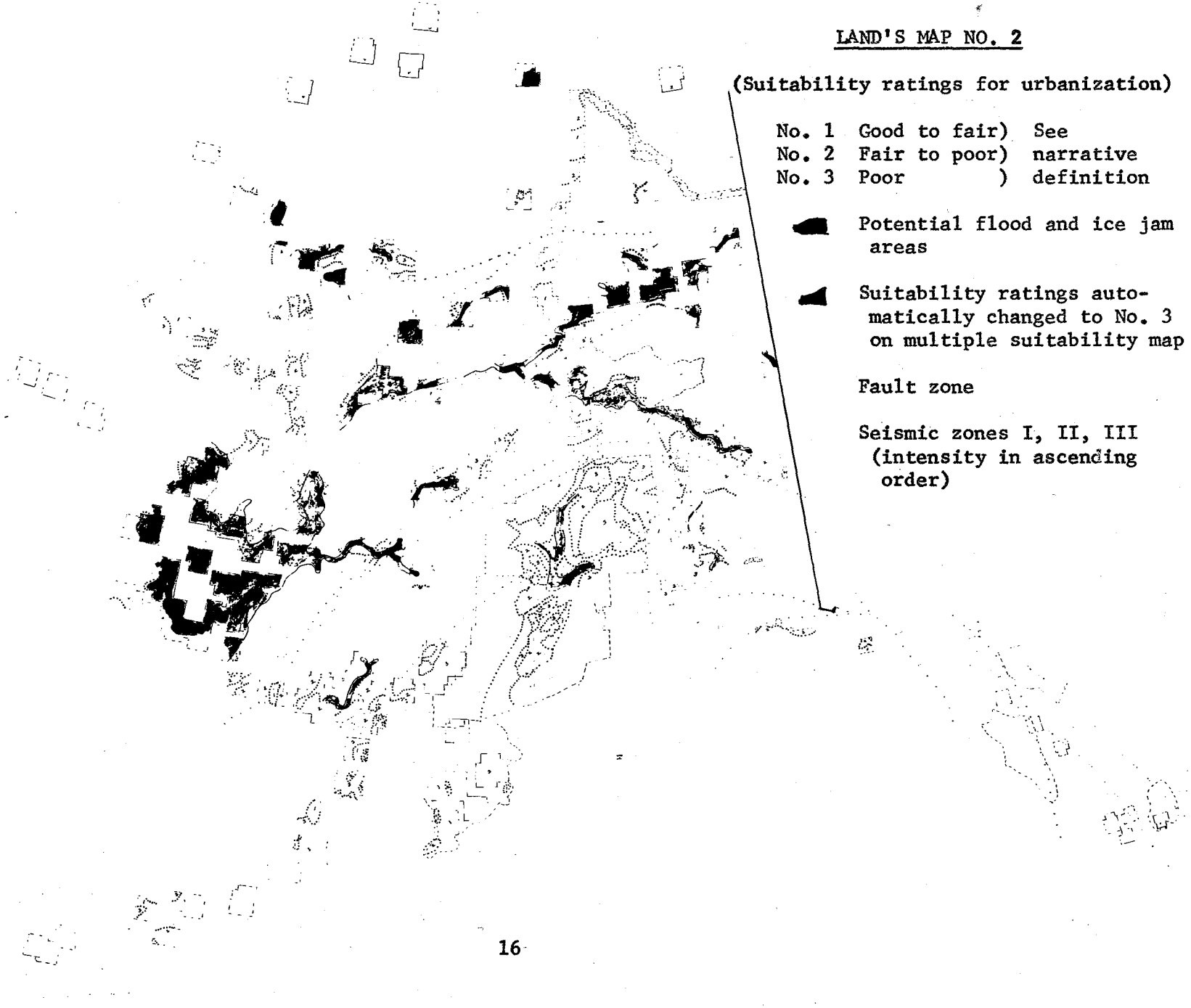
INTRINSIC SUITABILITY RATING FOR TIMBER HARVEST

T_1 - Highly suited

T_2 - Moderately suited; significant problems

T_3 - Poorly suited; numerous problems

NC - Non-commercial forest



LAND'S MAP NO. 2

(Suitability ratings for urbanization)

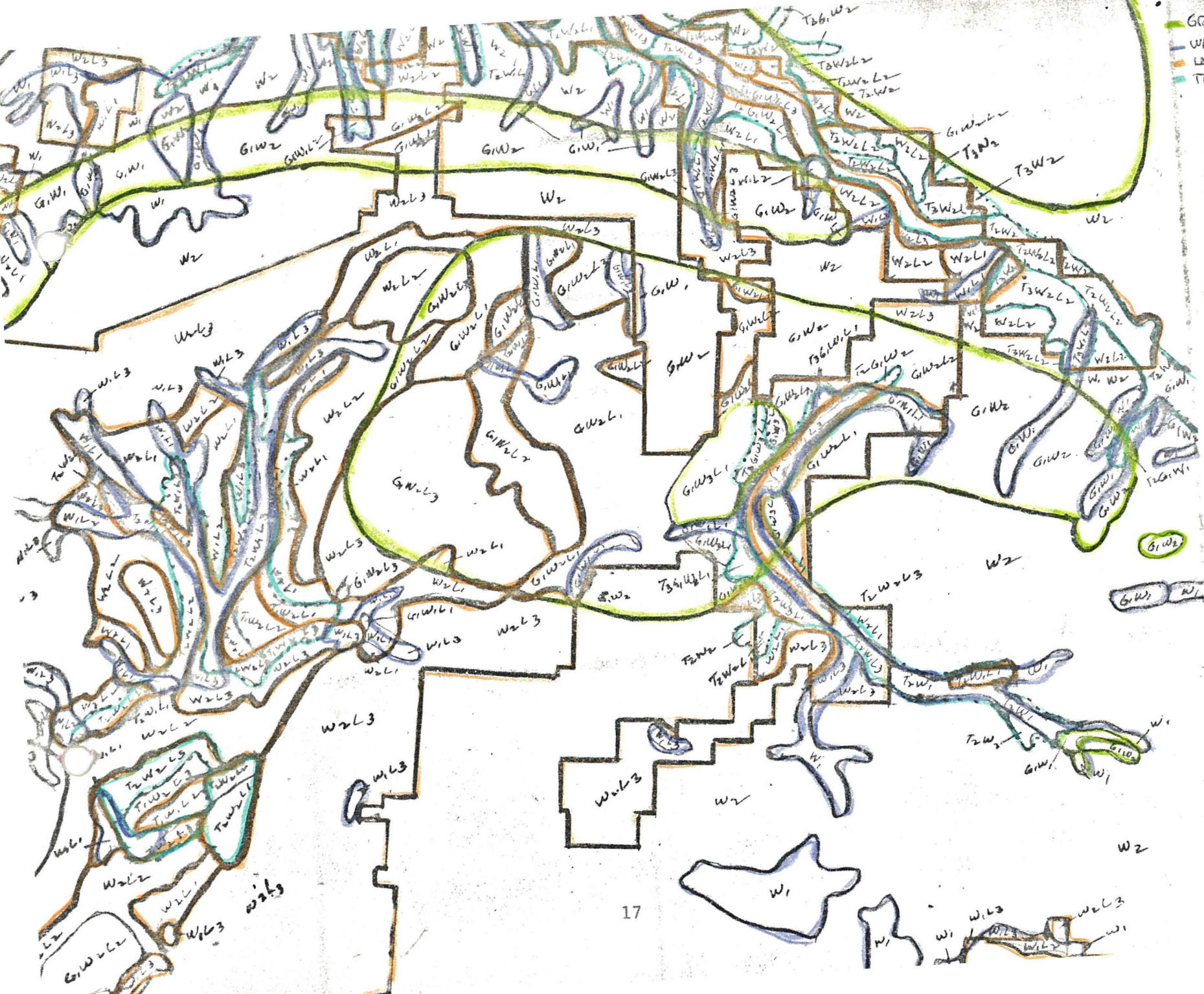
No. 1 Good to fair) See
No. 2 Fair to poor) narrative
No. 3 Poor) definition

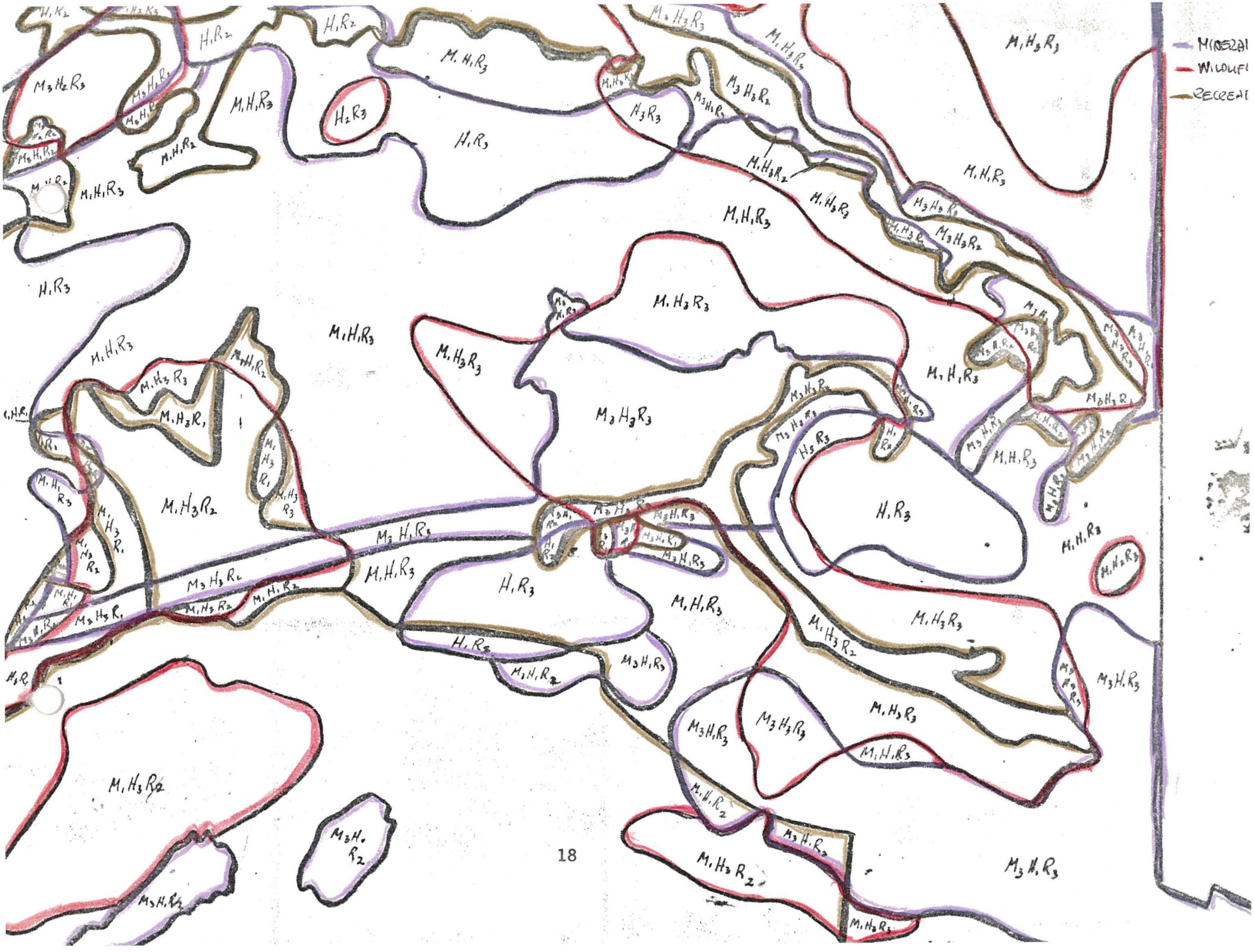
Potential flood and ice jam areas

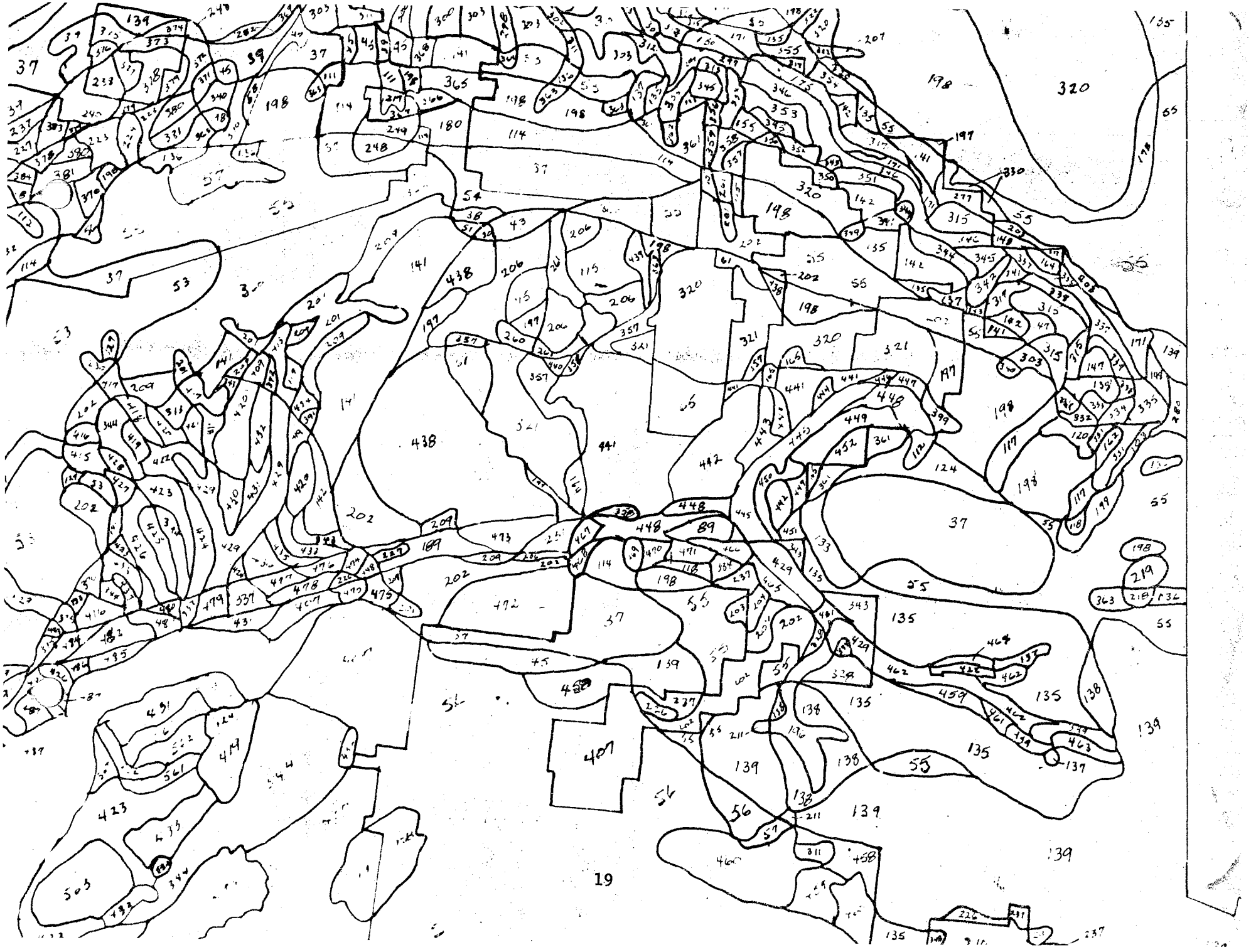
Suitability ratings automatically changed to No. 3 on multiple suitability map

Fault zone

Seismic zones I, II, III (intensity in ascending order)


GRAZING
WATER
LAND
TIMBER


MINERAL
WILDLIFE
RECREAT



MULTI-RESOURCE INTRINSIC SUITABILITY KEY TABLE

No.	G	T	L	M	W	H	R
1	1	-	2	2	3	2	3
2	1	-	2	2	3	2	2
3	1	-	-	2	3	2	2
4	1	-	-	2	3	2	3
* 5	1	-	-	2	3	1	3
6	1	-	-	2	3	3	3
7	1	-	-	1	3	3	3
* 8	1	-	-	2	3	1	3
9	1	-	3	2	3	2	3
10	1	-	3	2	3	2	2
11	1	-	-	2	3	2	3
12	1	-	-	1	3	1	3
13	1	-	2	2	3	3	3
14	1	-	-	2	3	3	2
15	1	-	2	2	3	3	2
16	1	-	1	2	3	3	3
17	1	-	1	2	3	2	3
18	1	-	2	1	3	3	3
19	1	-	1	1	3	3	3
20	1	-	1	1	3	3	2
21	1	-	-	1	3	3	2
22	1	-	-	2	3	1	2
23	1	-	-	1	3	1	2
24	1	-	-	-	3	1	3
25	1	-	1	2	3	1	2
26	1	-	1	2	3	2	2
27	1	-	1	2	3	1	3
28	1	-	1	1	3	1	2
29	1	-	2	1	3	1	3
30	1	-	2	1	3	1	2
31	1	-	3	-	3	1	2
32	1	-	3	-	3	1	3

No.	G	T	L	M	W	H	R
33	1	-	-	2	3	3	2
34	-	-	-	-	3	1	3
35	-	-	-	2	3	1	3
36	-	-	-	2	2	1	2
37	-	-	-	-	2	1	3
38	-	-	1	-	2	1	3
39	-	-	-	-	1	1	2
40	-	-	-	-	1	1	3
41	-	-	1	-	1	1	2
42	-	-	1	-	2	1	2
* 43	1	-	1	-	2	1	3
44	1	-	1	-	2	1	2
45	-	-	-	-	2	1	2
46	-	-	-	-	3	1	2
47	1	-	1	-	1	1	2
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50	1	-	-	2	2	1	3
51	-	-	2	-	2	1	3
52	-	-	2	-	2	1	2
53	-	-	3	-	3	1	3
54	-	-	3	-	2	1	3
55	-	-	-	1	2	1	3
56	-	-	-	1	2	1	2
57	-	-	-	1	1	1	2
* 58	1	-	-	1	2	1	2
59	-	-	-	1	3	1	3
60	1	-	-	1	3	3	3
61	1	-	3	1	2	3	3
62	1	-	3	1	3	3	3
63	1	-	3	1	3	1	3
64	1	-	3	-	3	3	3

No.	G	T	L	M	W	H	R
65	1	-	-	-	3	3	3
66	-	-	-	-	3	3	3
67	-	-	3	-	3	3	3
68	-	-	2	1	3	1	3
69	-	-	-	1	3	1	3
70	-	-	-	1	3	3	2
71	-	-	1	1	3	3	2
72	-	-	2	1	3	3	2
73	-	-	-	1	3	1	2
74	-	-	-	2	3	2	3
75	-	-	3	1	3	1	3
76	-	-	2	1	3	1	2
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78	-	-	-	1	3	2	3
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90	1	-	3	3	3	1	3
91	1	-	-	3	3	1	3
* 92	-	-	-	3	2	2	3
93	1	-	3	3	3	2	3
94	1	-	-	-	3	2	3
95	1	-	1	-	3	1	3
96	1	-	2	3	3	1	3

6. Analyzing the ecologically assessed resource values and relating the multi-suitability numbered areas to a more meaningful grouping of land use forms.

Using the ecologically weighted resource information on the tables, each numbered area on the multi-suitability map was cross checked with the information on the resource overlays identified for the same area through the transparency technique. The potential use and development conflicts arising from the multi-intrinsic suitability for each numbered area were resolved by synthesizing the use values under a color system correlated to a three level land use form grouping, coded A, B, and C. (See example.)

The coded use form groups were defined as follows:

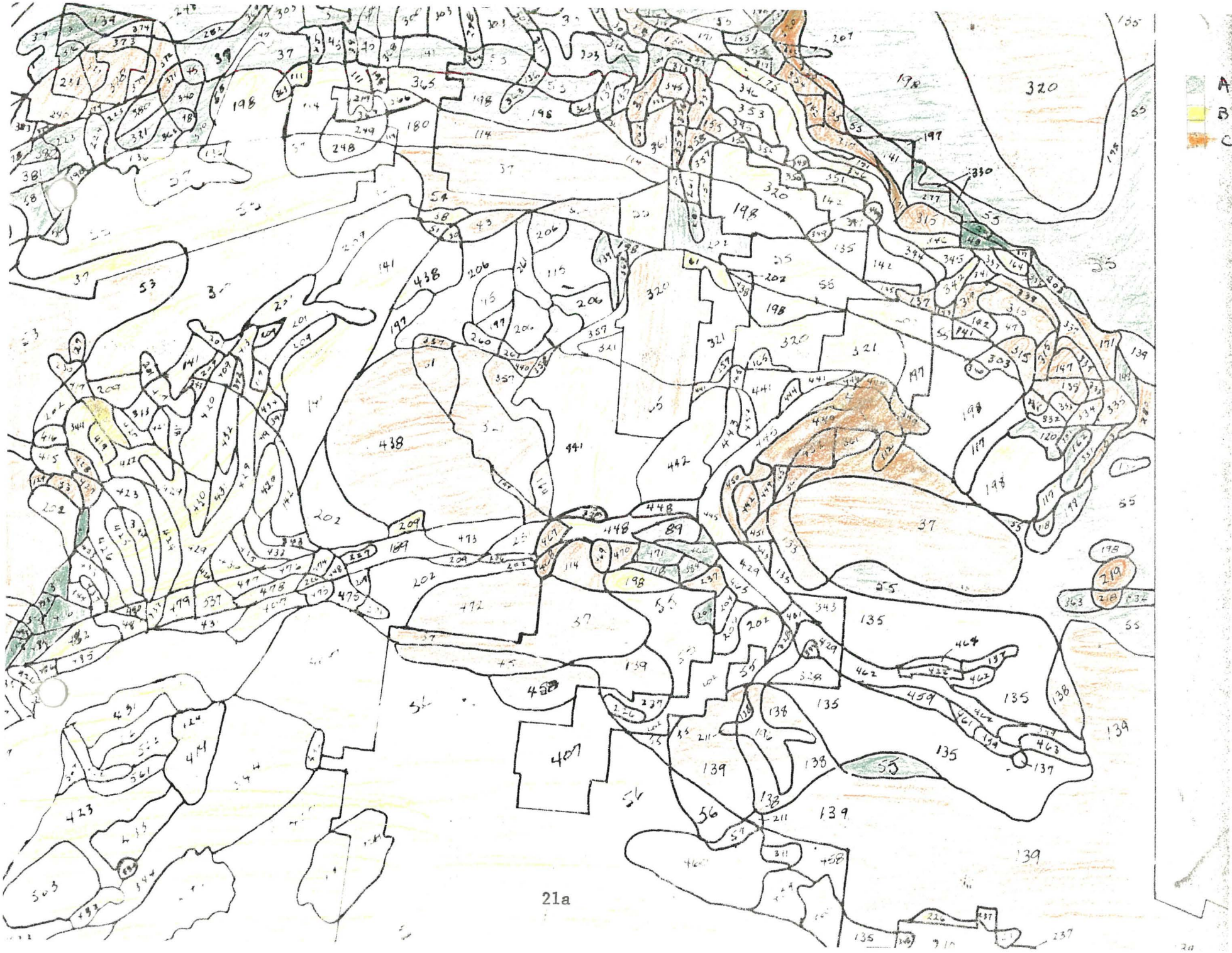
A = Areas with potentials for use and development of the resources. With certain limitations, generally amenable to man's use and development.

B = Areas with potential conflicts with Group "A" and Group "C" values.

C = Areas with unique, scarce, or vulnerable resource values. Generally reflecting low amenability to man's use and development if the identified values are to be protected.

Regional Assessment

This analysis was intended to play a significant part in delineating the manageable units. However, owing to limited time given for the study, the social and economic aspects reflected in the vertial and horizontal growth assessments were generally implied or superficially treated.


A
B
C

To a degree the transportation plan, potential hydro power source, and village or urban growth (in terms of population growth, existing and developing land use patterns, and village linkages) were assessed to help determine the manageable units.

Manageable Units and Resource Management Opportunities

The ecological associations, broadly depicted in the three level color identifications on the intrinsic land use suitability base map, correlated with the watershed drainages and limited vertical and horizontal regional assessment, provided the format for a geographic grouping of resource values with an environmental override. This was the basis for delineating the manageable units.

The ecologically assessed resources identifications, with their related land use suitability groupings, were also used to provide a broad indication of the management opportunities.

A cryptic portrayal of the salient resource features, in more or less descriptive and quantitative terms, and a summarized analysis of the predominant land use forms provided a lead or indicator to the management philosophy for each unit.

And finally, to support the conclusions and recommendations of the study, a matrix showing a correlation between the Alaska Native Claims Settlement Act's requirements and the Bureau of Land Management's resource management and support program objectives was provided.

THE STUDY

The study, at its origin, was directed to (1) define the manageable units, (2) identify the resource management opportunities, and (3) provide a basis for identifying the areas to be retained in Federal ownership under management of the Bureau of Land Management.

As indicated in the study procedures, the thrust of this study was directed at an inductive and systematic approach to gathering and analyzing the informational material leading towards a basis for decision making. To meet the given time constraint, the study adopted the map transparency and sieve technique as the key basis of its analysis.

The analysis is featured by an overlay series of physical and biological information maps, resource inventory maps, an ecologically assessed land use suitability map augmented by a numerical key table, and a summary analysis trailer of the salient resource features and predominant management opportunities for each manageable unit identified.

Physical Profile

The dimensions or parameters of the subsystems in the natural environment developed in map overlay format are listed below and the corresponding overlay maps are identified on the Map Overlay Key Table shown here and on the following page.

Subsystems		Parameters
Geology	-	Surficial characteristics
		Permafrost occurrences and characteristics
		Fault lines and seismic zones

Soils	-	Soil characteristics Suitability ratings for road and airfield construction
Topography	-	Physiographic regions Road and ridge map
Water regimen	-	Watershed Water sediment load Potential flood, ice jam, Tsunami and wave hazard areas

Resource Profile

The resource profiles were compiled from available information, both from internal and external sources. Those developed in overlay format are listed below and identified on the Map Key Table.

Timber Inventory
Lands Status - existing and potential use patterns
Locatable Minerals
Possible Metalliferous Provinces
Coal Bearing Rocks
Possible Oil and Gas Provinces
Big-Game Wildlife Habitat
Waterfowl and Fish Habitat
Recreation--Wild and Scenic Rivers
Primitive and Scenic
Cultural Features
Nodal Patterns and Influence Zones
Soil and Permafrost Limitation
Hazards

Intrinsic Suitability Evaluations

The process, as described in the Study Procedures, provides for overlay maps showing the codified ecological assessments for each of the seven resource inventory map areas. The codified letters and numbers are defined below.

G - Livestock Forage
T - Timber
L - Lands
M - Minerals
W - Water
H - Wildlife Habitat
R - Recreation

1 - High amenability to environmental modification, or in the case of water, the number reflects low limitations to use and development of water.

2.- Moderate amenability to environmentl modifications, or in the case of water, the number reflects generally some critical limitations for use and development of water.

3 - Low amenability to environmental modification, or in the case of water, the number reflects considerable limitations to use and development of water.

Each resource discipline was left on its own to select the parameters and definition of the relationship and attributes of the parameters. A list of the overlays developed for the parameters is shown in the Physical Profile part of this study.

A brief narrative support telling how each of the resource disciplines established the relationships and attributes of the parameters and related their findings to the resources and areas under assessment follows.

Livestock Forage (grazing)

The range overlay portrays those areas presently being utilized by reindeer or domestic livestock on a year long basis. Some of the ranges in the eastern portion of the state may be marginal or submarginal for year long grazing, but seasonal use may be appropriate.

Potentials are based on areas having similar terrain and vegetation as areas now being utilized. In part, the potential reindeer range is based on historical use, especially along the Bering Sea and Arctic coasts. An assumption was made that reindeer grazing could be accommodated in areas that support herds of caribou because of the close similarity in food requirements between the two animals.

Many areas exist throughout the state in mountain foothill and alpine areas which could support domestic livestock grazing at least on a seasonal basis. Some usage is expected in suitable areas adjacent to agricultural developments or in association with guided hunting services, but such usage is difficult to predict or anticipate.

Because of the difficulty of identifying and portraying potentially suitable areas in the interior and mountainous areas of the state, no attempt has been made to include these areas on the overlay.

Intrinsic Suitability Rating:

Generally, the most serious and long lasting impact of grazing use is usally evaluated by the contribution of such use to accelerated erosion, increased sedimentation and disruption of normal water runoff patterns. Grazing use by reindeer and domestic livestock can and does cause changes in plant composition. Studies concerning the effects of grazing in Alaska on erosion, sedimentation and runoff are non-existent, but gross observations to date do not indicate significant impacts. Accordingly,

grazing use must presently be considered to have little or no impact on erosion, sedimentation and runoff patterns, and all of the presently used and potential grazing areas are rated G_1.

Timber

In dealing with the interior commercial forest of Alaska, suitability for harvest is primarily related to soil and permafrost. Heavy equipment employed in associated road construction and harvest operations makes primary impact on those two entities.

Secondary impacts are found on water quality, esthetic values, and wildlife habitat. These result from the disturbance of soil and exposure of permafrost or from the basic removal of trees.

Relationship of the existing and proposed transportation system does not bear directly on possible environmental damage associated with timber harvest. Availability of transportation merely contributes to the economics of the proposed operation.

Intrinsic Suitability Rating:

Existing information on location of interior commercial forest was related to permafrost and soils maps contained in the overall project. Each of those factors had been classified into amenability classes by team members.

When both soils and permafrost exhibited a relatively high amenability to disturbance, T_1 rating was assigned ($P_1 + S_1 = T_1$). Medium class amenability (T_2) resulted when the subnotation figures of soils and permafrost totaled 3 or 4. Low amenability--high risk--resulted when subnotation equaled 5 or 6.

It cannot be concluded that presence or absence of degradation factors is an overriding determinant for timber harvest. Only detailed harvest planning can provide such information. This exercise points out general areas of the interior commercial forest where problems are anticipated.

Lands (Map No. 2 - urbanization or village expansion path)

The codified ratings are only shown in the village selection areas, boroughs, and the utility and access corridors.

Difficulty in identifying other potential areas in the urban or village expansion path curtailed meaningful coverage of the entire state. An assumption is also made that the assessed areas will for the most part fulfill the urbanization needs.

After evaluating the subsystems and parameters, it was decided that the Army's Terrain Study of Alaska, Suitability for Road and Airfield Construction provided a combination of evaluations on slope, topography, soils, drainage, vegetative cover, permafrost condition which best provided the dimensions and relationship for this assessment.

Potential flood damage and ice jam areas,delineated in orange coloring on the overlay map, were automatically rated No. 3 (low amenability to environmental modification) on the composite suitability map irregardless of the codified classification on this map. In addition, the seismic zones and fault lines shown on this map were not assessed in the suitability rating. An assumption is made that any construction activity within the seismic zone 3 (most intense) will pay an extra cost in terms of foundation and construction safeguards.

Intrinsic Suitability Rating:

RATING NO. 1

Good to fair for roads. Some to few sites for large airfields. Slopes generally less than 5% in lowlands of alluvial and glacial outwash plains and river terrace; and 5% to 45% in upland areas, sand dune and moraines, and volcanic terrains.

Soils coarse grained with surficial layer of silt; and in other lowlands, sand and gravel with local areas of silt, peat and frozen silt, and peat. Bedrock showing in places.

Drainage good and poor in lowlands. With exception of local areas, generally good in upland areas.

Vegetation sparse to forested.

Permafrost free and permafrost common at shallow depths in northern and central Alaska.

Construction and maintenance for roads and airfields easy to fairly difficult in lowland areas, and construction moderately difficult and maintenance in general fairly easy.

RATING NO. 2

Moderate for roads and no sites for large airfields.

Lowland areas of coastal plains, river flood plains and deltas mostly flat to gently sloping, but locally interrupted by hills. Upland areas of moraine, dissected terraces, dissected uplands, low mountains, and foothills adjacent to rugged mountains. Mostly 15% to 45% slopes.

Soils mainly silty and highly organic in lowlands, with some narrow, gravelly, sandy beaches, bars, and spits in coastal areas. Soils coarse grained to fine grained, thick to thin with considerable bedrock exposed in upland areas.

Drainage generally poor in lowland areas. Arctic coastal plain dotted with marshes, small lakes, and ponds. Flood plain and deltas subject to flooding during spring. Upland areas, drainage generally good but in places many lakes, ponds, and marshy depressions.

Vegetation sparse to dense forest with areas of shrub, marsh, and tundra in lowlands. Arctic coastal plain predominantly grass, tundra and marsh. Vegetation sparse to dense forest with tundra and local areas of shrub and marsh vegetation in upland areas.

Lowland areas in northern areas, including all of arctic coastal plain underlain by permafrost. Upland in northern areas with discontinuous permafrost.

Construction and maintenance for roads in lowland areas generally difficult. Construction and maintenance generally fairly difficult in upland areas.

RATING NO. 3

Poor for roads. No airfield sites.

Flat to gently sloping lowlands of tidal flats, muskegs, bogs, and marshes. Upland areas of steep and rugged hills and mountains. Glacier in many mountainous areas. Slopes more than 45%.

Soils mostly silt, organic silt, and peat in lowlands. Some narrow sandy and gravelly beaches, bars, and spits along coast. In upland areas, soils generally shallow or lacking with much exposed bedrock.

Drainage poor with water table at or near surface; many areas subject to flooding in lowlands.

Vegetation generally sparse in lowlands. Vegetation sparse to dense in uplands.

Permafrost present in lowlands within 1 to 3 feet of surface. None in upland.

Construction and maintenance for roads difficult in lowlands. In upland very difficult.

Lands (Map No. 1)

This map shows the existing land status including federal withdrawals (pre-ANCSA), native reserves, classified areas, state selection lands patented and tentatively approved, borough boundaries, and native village selection areas (ANCSA).

It also shows existing primary and secondary roads and Alaska's proposed 20 year road location plan, railroad, the pipeline utility corridors, proposed power sites, and other existing uses such as oil and gas areas, agricultural areas, and existing mining areas.

This map will be used to help define the manageable units, particularly from the regional development standpoint.

Areas of Known Mineralization

Intrinsic Suitability Rating:

M 1 No significant problem extracting the type or types of mineral for which this area has potential. Permafrost areas are generally ice-poor or ice-free. Others are generally well drained.

M 2 This category occurs mostly on the Arctic Coast, in the Kobuk River valley, and on the Bristol Bay coast. In the northern areas the land is generally characterized by continuous permafrost, but easily traversed by tracked or low-pressure tired vehicles. With proper equipment serious degradation can be avoided. Winter travel would be preferable, although care must be taken to avoid drifts. The Bristol Bay area is generally permafrost free, but the surface in many areas is fragile. Muskeg, sand beds, and othe forms of unconsolidated material require planning prior to any traverse across or operation on the surface.

M 3 There are significant problems in either extracting minerals from or transporting across these lands. In the north these lands consist primarily of deep silts, often frozen but commonly not. Because of undrained surface waters resulting in muskeg conditions, permafrost may be several feet below the surface. Any work in these areas is extremely difficult, made worse by swarms of mosquitoes and other insects. In the south, the M 3 lands are glacier covered mountains. On the Alaska Peninsula there are volcanoes, often active. Access to those mountainous and volcanic areas is extremely difficult. Aircraft landing areas are usually some distance, often several miles, from mineralized sites. Winds make helicopter and aircraft use difficult and unreliable. Major faults may present hazards to oil and gas exploration or development.

Geology

A geologic map of Alaska shows clearly the extensions of the Rocky Mountains across the State. Metamorphic rocks extend across the northern portion of the State forming the Brooks Range, dipping under the waters of Kotzebue Sound and Selawik Lake, and reappearing as the Seward Peninsula. Intrusive rocks, many partially metamorphosed, extend through the middle part of the State as the Alaska Range and the White Mountain-Fortymile area ranges. The same extension shows up also in Alaska as the Panhandle, or Southeastern Alaska. These are the areas with greatest potential for mineral deposition.

Large areas of sedimentary rocks have been deposited in several areas, notably on the north flank of the Brooks Range, on the right side of the lower Yukon River, the Kuskokwim Mountains, the Prince William Sound area, lands to the east, and in the Kandik River area. These are the areas, in general, with potential for oil and gas, coal, oil shale, and similar bedded deposits.

Unconsolidated deposits cover large lowland areas. The adjoining bedrocks can be projected under the silts and gravels, but boundaries between them can, in most cases, only be guessed. Unconsolidated materials on the Arctic Coast and at Bristol Bay, however, almost certainly cover sedimentary deposits similar to the adjacent uplands.

Throughout Alaska there are several volcanic zones, some active, some dormant, some inactive. A few are shown on the map. The others, generally smaller areas, occur throughout the State.

Information for this map was adopted from the USGS "Geologic Map of Alaska," compiled in 1957.

Geothermal

Information relative to the potential for developing power and other resources by geothermal means is taken directly from the map drawn by the Geological Survey. It, in turn, reflects the lands classified by the Survey. Those lands are described in USGS Circular 647, together with two additional more recently classified areas. Total area is about six million acres. The bulk of these lands are classified as prospectively valuable for geothermal steam, based on geologic inference. Such inference consists of one or more of the following three indicators:

1. Volcanism of the late Tertiary or Quaternary Age.
2. Geysers, fumaroles, mud volcanoes, or thermal springs at least 40° F. higher than average ambient temperature.
3. Subsurface geothermal gradients generally greater than twice the normal.

There are, however, three small known Geothermal Resource Areas (KGRA). One is at Pilgrim Springs on the Seward Peninsula; two, Geyser Spring Basin and Okmok Caldera, are on Umnak Island.

As might be suspected, since volcanism occurs throughout Alaska, the prospectively valuable areas are widely scattered. The closest to Anchorage, center of half the State's population, is 80 miles to the west near Mt. Spurr, an active volcano. To the east about 200 miles, there is a small area near Tazlina Lake and a large area encompassing the Wrangell Mountains. Since those areas are defined largely on the basis of favorable geology, it follows that considerable exploration would be necessary in order to determine whether or not geothermal development would be feasible in any of those areas.

Phosphate - Oil Shale - Bituminous Rock

The map reflects only lands classified by the Geological Survey as being potentially valuable for phosphate, oil shale, or bituminous rock. The bulk of the oil shale and phosphate deposits lies in the Brooks Range; a small portion lies in the Nation River-Kandik River area near the Canadian border.

The oil shale deposits, although locally rich, are very thin, seldom over five feet in thickness. In total, the volume may be significant, but the area is so large that it is difficult to view it as a potential resource within any reasonable time frame. An in situ method of recovery, applicable to such deposits would, of course, change the picture.

The bituminous rock, closely related to coal, occurs in the same general area as the oil shale. Known occurrences are small. Though possibly of local value, it does not appear to have significant commercial value.

Phosphate deposits occur in the eastern Brooks Range and in the Nation River areas. A road to the North Slope might make the Brooks Range deposits valuable, particularly as a backhaul. Possible markets would exist as fertilizer in the Fairbanks and Anchorage areas. Because of their dense population and consequent need for intense cultivation practices, Japan, South Korea, and Taiwan might offer overseas markets.

Because of high shipping costs and adequate supplies, the "Lower 48" does not appear to offer a market.

The Geological Survey is the source for information shown on the overlay.

Coal Bearing Rocks

Coal occurs widely throughout Alaska. On the overlay only the larger known deposits are shown. There are, in addition, a large number of small exposures, most not even of local value.

The first coal was mined under franchise from the Russian government near Port Graham. Poor quality, and inefficient mining and transportation techniques, forced a shutdown after a few years' operation. About the turn of the century a large number of coal claims were located in the Bering Sea area. This good quality coal had potential for export to the west coast. However, withdrawal of coal from location (even from leasing for a few years), discovery and development of large coal beds in the Western States, and, particularly after World War I, rising transportation costs, combined to halt development.

In recent times, since the operation of the Alaska Railroad and its narrow gauge predecessors, all production has been from the Matanuska Field, near Sutton; the Nenana Field, near Healy; and, within the past 5 years, the Beluga Field, west of Cook Inlet. The latter two support mine-mouth power plants.

Prospecting permits have been issued for lands in the Bering River Field and the Chukchi Sea Field with the view towards developing markets in the Orient. To date, however, the transportation and marketing problems have prevented development.

This overlay is based on the USGS overlay, which included other unrelated information. Reference was made also to Bureau of Mines Technical Paper 682, Analyses of Alaska Coals, for many of the small deposits.

Possible Petroleum Provinces

Large areas of Alaska have potential for petroleum development. The potential is based on geologic inference; whether or not an oil and gas deposit exists can be determined only by drilling. Various geological and geophysical techniques are used to determine prospective petroleum areas and to recognize the anomalous areas where drilling may be productive.

The sedimentary formations favorable to oil and gas accumulation cover large areas of Alaska and extend into the major portion of the continental shelf. To date, the only discoveries have been in the Cook Inlet area and in a portion of the North Slope sediments. Although natural petroleum seepages have been known for nearly a century in the Yakataga area, drilling has failed to disclose a commercial field.

Information for this overlay was taken directly from the USGS map which shows areas defined by both the Geological Survey and the Association of American Petroleum Geologists.

The small possible province along the Alaska Highway near the Canadian border is subject to some question. Although it was shown as having been defined by the Survey, there does not appear to be a favorable host rock in that area.

Locatable Minerals

Information for this map came from the Mineral Resource Inventories maintained by the two districts. They in turn are a compilation of information contained in the USGS, Bureau of Mines, and Alaska Division of Geological Survey publications, as well as some information gathered by BLM.

As might be expected, the bulk of the known deposits lie in the metamorphic and intrusive areas. Deposits occurring in areas broadly shown as sedimentary, generally are

associated with intrusives which show up on more detailed maps. As always, of course, mineralization may occur any place.

Much of the known mineralization is related to major faults. Areas a few miles either side of the many fault systems may be regarded as "possible mineral provinces," that is, they are the most favorable areas for mineralization.

Placers are formed by the natural erosion of lode deposits. Most minerals are either dissolved or broken up by the water and gravel movement over long periods of time. Gold and platinum particles, however, tend to retain their shape, thus forming the best known placer deposits. Commonly lode deposits are found in areas of placer deposition, though often they are low in grade.

Potential Mineral Areas

Significant mineralization commonly occurs along and near major faults. Knowledge of their locations can be used to great effect in finding new ore bodies. Where two or more faults cross, the potential for mineral deposition is increased in proportion. Two such areas are in the Crazy Mountains and the White Mountains where, to date, no discoveries have been recorded. They do represent, however, excellent areas for prospecting.

The overlay shows only the known major faults. Associated with each is a fault system, commonly parallel to the major fault. Such systems serve to effectively widen the potential areas of mineralization.

Information for this overlay was taken from Geologic Map of Alaska, by the Geological Survey, and from Plate 3, Tectonic Elements, Mineral Deposits, and Acidic Intrusions of Alaska, found in the final report, Mineral Resources of Northern Alaska.

Possible Metalliferous Provinces

1. Includes areas with currently producing mines, once productive deposits with remaining resources and deposits with high development potential.

2. Includes areas of known mineral occurrences and areas of high metal resource potential based on geologic settings, and geochemical and geophysical data.

3. Includes areas adjacent to and geologically similar to category II. Considered favorable for metal resources.

4. (And un-numbered areas.) Includes areas of low or unknown metal resource potential.

Water

Intrinsic Suitability Rating:

W 1 Little or no exploration necessary to find plentiful supply of good quality ground water. Surface waters of good quality and in plentiful supply. Water supply generally not considered a bar to development and use.

W 2 Exploration necessary to find good quality ground water. Surface waters generally of good quality but may be high in organic matter. Availability of water may limit location of developments and use of some areas.

W 3 Water supply, especially ground water, may exercise considerable influence on use and development. Considerable exploration necessary to find ground water. Ground water, even when available, is of generally poor quality. Surface water may be locally available, but flows may fluctuate widely seasonally.

Water Resources

Map Symbol A - Generally poor quality ground water, plentiful to restricted supplies of surface water.

Extensive prospecting required to find usable ground water supplies. In the Brooks Range and North Slope, very little possiblity of obtaining usable ground water supplies except from beneath streams and the large deeper lakes. Area generally underlain with permafrost, acquifers may be found in unfrozen areas above, within, or below the permafrost. Shallow to moderately deep wells (up to 100 feet in depth) may yield moderately hard to soft water (less than 200 ppm $CaCO_3$) of generally low to moderate mineral content (less than 1,000 ppm total dissolved solids). Deep wells may yield hard water (more than 200 ppm $CaCO_3$) of high mineral content (more than 1,000 ppm total dissolved solids).

Surface waters soft to moderately hard (less than 200 ppm $CaCO_3$), with generally low mineral content (less than 400 ppm total dissolved solids). Many lakes and smaller streams have moderate to high organic content.

Map Symbol B - Restricted supplies of good quality ground water and surface water.

Prospecting is generally required to determine ground water sources. In the higher mountain areas, considerable or extensive prospecting necessary. Permafrost may be present or absent. Where permafrost is present, acquifers may be found above, within, or below the permafrost. Water may vary in quality from soft to hard, with mineral content generally low. Locally, some areas may yield water with high iron content.

Map Symbol C - Plentiful supplies of good quality ground and surface water.

Generally little or no prospecting required to obtain plentiful supplies of ground water. Large supplies (more than 150,000 gallons per day) available in wells ranging

from 25 to 500 feet in depth. Shallow wells (less than 25 feet) may yield variable supplies from less than 15,000 to more than 1,500,000 gallons per day. Most ground water is generally soft with low mineral content. Locally may vary to moderate or high hardness. Excessive pumping near coast may cause salt water intrusion.

Surface waters are abundant, generally soft and of low mineral content. Streams may be heavily silt laden in summer.

Ground Water - May need more than one well in an area to get volumes indicated. Shallow wells may go dry in late summer or winter.

Springs are located at many scattered locations throughout the state and may be developed for small to meager supplies of water.

Surface Water - Decreased flows during winter. Small streams may become dry by late summer. Wide seasonal and yearly fluctuations in small lakes and may freeze to bottom. Suspended sediment load high to moderate during summer in rivers containing glacial meltwater, but absent in winter. Fine material in suspension may be difficult to filter out. Large rivers in interior commonly have both moderate suspended sediment load and organic content. Smaller lowland streams and lakes may have high organic content with unpleasant taste and color to water. Mineral content and organic contaminants may be concentrated in small lakes when frozen in winter.

Quantity		
	Large	More than 1,500,000 g/day
	Moderate	150,001 - 1,500,000
	Small	15,001 - 150,000
	Meager	Less than 15,000

Quality

Term	Hardness ppm $CaCO_3$	Mineral Content ppm total dissolved solids	Suspended Sediment Load ppm
Low	Less than 100	Less than 400	Less than 20
Moderate	100 - 200	400 - 1,000	20 - 100
High	200+	1,000+	100+

Depth of Wells

Shallow	Less than 25 feet
Moderate	25 - 100 feet
Deep	101 - 500 feet
Very deep	500+

Surface Water Density

Term	Miles of stream 100 sq. miles total surface area	Sq. miles lake surface 1,000 sq. miles total surface area
Abundant	More than 20	More than 15
Scattered	10 - 20	1 - 15
Rare	Less than 10	Less than 1

Watershed - Permafrost

Permafrost - Defined as base material that has been at a temperature below 32°F. continuously for two or more years.

Mountain Areas - Where summits of the mountains generally exceed 3,000 feet in altitude. Bedrock and thickness of permafrost is influenced directly by heat flow from the center of the earth. The development of permafrost tends to be restricted under these conditions, but is also influenced by altitude, character of materials, soil moisture, insolation at ground surface and vegetative cover. These influences cause extreme variation in thickness and temperature of permafrost in the mountainous areas.

Lowland and Upland Areas - Include hilly and mountainous areas where summits are generally less than 3,000 feet in altitude. Underlain predominantly by thick unconsolidated deposits, locally by bedrock at or near surface. Thickness and temperature of permafrost less variable than in the mountainous areas.

General

Water Bodies - Throughout the area where permafrost occurs, large rivers and large deep lakes influence location and thickness of permafrost. Permafrost may be either absent or located at considerable depth below such water bodies. Heat from the waters tends to decrease thickness and increase the temperature of permafrost in adjacent areas. In the more southerly areas, permafrost is commonly absent in the vicinity of large water bodies.

Glaciers - Areas beneath glaciers are considered to be generally free of permafrost.

Thermal Springs, Active Volcanoes - Permafrost is absent in close proximity to these features. The temperature influence tends to decrease thickness and increase temperature of adjacent permafrost.

Hazard Ratings:

P 1 Generally permafrost free or isolated masses of permafrost. Permafrost occurs sporadically and may be in thin lenses near the surface or at considerable depth. Permafrost generally associated with old lakebeds or other filled-in areas. Permafrost generally not a bar to use and/or development.

P 2 Discontinuous permafrost and numerous isolated masses of permafrost. Temperature of permafrost generally near melting point. Surface disturbance in areas underlain by fine materials will cause degradation and erosion on sloping ground. Permafrost in coarse deposits pose less of a problem. Some areas free of permafrost.

P 3 Continuous permafrost areas. Sensitive to disturbance and easily susceptible to erosion. The more southerly area of continuous permafrost in fine materials is extremely susceptible to permafrost degradation and massive erosion with surface disturbance.

Watershed - Suspended Sediment

The map portrays a measure of the suspended sediment load carried by flowing waters. Sediment loads are generally highest during the summer months and lowest in winter. The overlay shows the normal summer concentration of suspended sediment.

One grouping is shown where waters originating within the area carry normal sediment loads of 5 - 50 mg/L. Streams passing through the area may contain variable loads ranging from 50 - 2,000 mg/L.

Major drainages flowing through the area may not conform to the general pattern of sediment loading because of origin and transport of material from other sediment zones.

Hazard Rating

One of the rating factors for water quality is suspended sediments. Generally, the higher the load of suspended sediments, the lower the quality of the water. Streams with high sediment loads are not particularly aesthetically pleasing and are often poorly suited to recreational use. Fish production is generally poorer in such streams.

Conversely, clear streams have high potential recreational values, are aesthetically pleasing, and are generally better fish producers.

The following hazard ratings are based on the adverse impacts which could occur with accelerated erosion caused by development and use. The ratings were determined by the susceptibility of the waters to degradation of water quality, aesthetics, recreation, and fisheries production should accelerated erosion occur.

S 1 - Least susceptible to damage.

S 2 - Moderately susceptible to damage; severe in the clearer streams.

S 3 - Most susceptible to severe damage.

Wildlife

Intrinsic Suitability Rating:

H 1 - Low Potential Impact

Use and development expected to exert little or no impact on wildlife. Locally, impact may be high in minor concentration or key range areas. Most wildlife species have sufficient flexibility to tolerate some changes in habitat.

H 2 - Medium Potential Impact

Includes many of the major waterfowl production and resting areas, important for the maintenance of continental waterfowl populations. Also includes calving areas for minor caribou herds where concentration occurs during the calving season. Locally, impact could be high if human use and development is concentrated in key areas.

H 3 - High Potential Impact

Includes areas with a large mix of species, major cold water fisheries, major salmon producing streams, concentration areas for various species, key or critical habitat for either or both resident or migratory species, known habitat for rare or endangered species (glacier bear and peregrine falcon), key caribou calving areas and migration routes, remnant sheep populations and concentration areas for raptors. These areas are considered to be most susceptible to influence by man on both habitat and the wildlife species themselves.

Wildlife Habitat Evaluation

Wildlife here is used in its broadest sense, including mammals, birds, and fish species. Each species has its own requirements of food and shelter and will only be found in those areas where its needs can be met. Some species have very special requirements and are therefore found only in restricted areas; others can survive with a broad spectrum of conditions and are more widely distributed. Species with specialized needs are more vulnerable to changes in the environment and to man's presence and intrusion. Others, the more adaptable species, can tolerate some environmental changes and are therefore more tolerant to man's intrusion.

Still other species, particularly the larger predator species such as the wolf, wolverine, black bear, brown/grizzly bear, may be generally distributed depending upon availability of food, are only secondarily affected by environmental change and only

insofar as their food supply diminishes or increases. However, these species may compete directly with man and when the competition or conflict becomes severe enough, these animals are removed or destroyed. The wolf, wolverine, and brown/grizzy bear are sensitive to man's intrusion and throughout history these species have been decimated or completely extirpated when man intruded in areas they formerly occupied.

The rating system as used here is based entirely on the existing habitat and wildlife species and the potential impact of man's use and development as a force inducing the changes.

Factors which must be considered include: 1) Presently known pattern of distribution of wildlife species; 2) The mix of wildlife species occurring in any particular habitat area; 3) The sensitivity of the habitat to damage or degradation by human use and development; 4) The sensitivity of the individual species to human intrusion (also expressed as tolerance to human use and development); and 5) Habitat areas critical to the survival of a species during some stage of the life cycle.

Wildlife - Big Game Species

The wildlife overlay on big game species should be used with some caution. Many of the ranges outlined include only those areas where there are known concentrations. For example, moose are distributed widely throughout the state, but the overlay only indicates those areas of known high population concentration. The brown/grizzly bear is distributed throughout the state, especially in the coastal and mountainous areas, but the range shown on the map indicates those areas of known relatively high populations. Black bear range is found throughout much of the state, especially in the forested and brushy areas. Wolves are also found widely distributed throughout the state except for the Aleutian Islands, but no range is indicated on the overlay.

Caribou ranges and migratory routes are fairly well defined. However, caribou have been known to radically change or shift ranges to new areas within the space of a few years. Ranges portrayed include only the critically important calving areas and the important winter range areas. No areas can be really excluded from potential range except for densely forested areas, the highest mountain peaks, and ice and snow fields.

Wildlife - Waterfowl and Fisheries

The overlay portrays the major waterfowl nesting, rearing, feeding, and resting areas in the state. Waterfowl are widely distributed throughout the state during the spring and summer wherever suitable conditions of water, food, and cover are found, but the areas shown are generally considered to be the major key areas important in maintaining the continental waterfowl populations.

Cold water fisheries are found throughout the state. Those areas shown on the overlay indicate only the major lakes or groupings of lakes and streams with important cold water fisheries.

Streams and river systems supporting anadromous fish species are also shown on the overlay. In general, salmon spawning beds occupy only small portions of the streams indicated, but free passage for adults and smolts must be protected the length of the stream or stream system. Maintenance of quality and quantity of natural watersheds is essential in maintaining optimum salmon runs.

Recreation

Intrinsic Suitability Rating:

Recreation involves people on the land participating in a variety of recreation

activities. This overlay displays the amenability of the land to withstand degradation from this use.

No particular form of recreation is considered. Assume the entire gamut from ORV to hikers. Assume no management of these activities--no effort to reduce impact. No consideration is given on this overlay to the availability of the lands--access.

R_1 - High amenability. No flood or avalanche danger. Stable soils. Isolated permafrost masses or free from permafrost.

R_2 - Medium amenability. Hazards from flood, ice jam overflow, or avalanche. Permafrost continuous or numerous masses.

R_3 - Poor soils or high risk of permafrost degradation. High risk from flood or avalanche.

Recreation and the Environment

Due to the massive variety of things, activities, and uses called recreation, every acre of land has "recreation value." Generally, several values exist on each acre and these, all too often, are not compatible with each other.

As a first aspect of recreation, consider the one-of-a-kind entities found in a specific location. This includes cultural values such as historical or archeological sites. It also involves natural values such as unique land features and forms and, to a certain extent, primitive values and provision for protection of representative samples of each ecotype.

Secondly, each user knows the type of area and often the place which will give the greatest opportunity for a high quality experience in a given activity. Due to economic

considerations, including travel time, a user may often accept the trade-off of a lower quality experience for more occasions at an economically preferable (closer) location. This leads to greater impact of recreation use adjacent to population centers and the transportation network irrespective of site suitability.

Thirdly, each type of recreation activity carries its own "cost" in terms of impact on the environment. Motorized recreation vehicles (ORV) have an impact different from hunting (without vehicles) or sightseeing.

Fourthly, impact can be reduced or tempered through management by the owner. Direction and administration of use includes facilities for the owner and personnel to work with the user. The owner must decide what impact he will tolerate for each recreation activity and provide necessary inputs to manage to that level.

Suitability for People Use

This assessment combines risks associated with use of land with risk from natural hazards to arrive at amenability to people use. Durability of soils--their ability to withstand abuse--is closely correlated with type and extent of permafrost. Both were considered and then combined, together with potential for hazards such as avalanche, floods, and ice jams, to achieve classification.

Risk of environmental degradation through recreation use is assumed to be equal within a classification without regard to actual availability of the land to the recreation visitor. That is to say, it is not important to consider if the public actually recreates there; the risk associated with such use still exists.

In application, it is likely that present impact will be exhibited primarily on those areas adjacent to the transportation network or close to population centers. This aspect must be brought out during subsequent phases of the overall exercise in order to fully reflect the environmental impact of recreation.

Cultural Values

This assessment shows, to the extent possible, historically and archeologically significant areas. Within areas specific sites may be known, but this is not to say that all possible sites are located.

Sites may have scientific significance as well as potential for a properly protected and interpreted recreation entity. Areas known to contain additional unlocated or unexamined sites require protection against intentional or inadvertent damage.

Data contained on the cultural values overlay places a constraint on other land uses. Assume that any use of the land may compromise or destroy cultural values. Any decision relative to the priority role of cultural values may modify or remove the constraint. Legal constraints such as those contained in the Antiquities Act cannot be circumvented.

Natural Values

This assessment shows those areas containing natural values in three broad categories: research natural areas, primitive areas, and outstanding natural areas.

Research natural areas provide a library of ecotypes and natural features for scientific and educational purposes. Public use is controlled to the extent necessary for assuring the primary purpose of the area.

Primitive areas are representative natural environments wherein man's impact has been and will remain minimal. Since much of Alaska is basically in this category, value judgments are made in preparation of the overlay to select areas representing highest primitive values. Basically, consider as wilderness values. "Outstanding natural areas" has many features of the other categories. It is listed separately to assure consideration.

Use Impact Zones

Suitability for people use overly has related potential for environmental degradation without regard to accessibility. The actual degree of impact, however, is strongly influenced by access--transportation network and population location. These factors must be considered if a true picture is to result.

Recreation Overlays

A series of five overlays has been prepared to protray aspects of the recreation picture. Individual narratives indicate sources and relationships of each.

Overlay Workup 1 - Soils and Recreation

On this overlay soil information from the Army terrain study has been classified into two major classes:

(1) Those that are workable or manageable, and

(2) Those which are considered to be difficult to do anything with. The broad term "workability" is a reflection of the soils' intrinsic characteristics when subjected to man's manipulation (by construction or use).

The idea of this overlay is to have information on soils to have input on the environmental risk overlay.

In addition to the soils information, permafrost conditions were taken into account. For this information we use the permafrost overlay directly.

Overlay Workup 2 - Hazards and Recreation

On this overlay information presents environmental conditions which may cause harm or death to the user. Areas having potential for flood, avalanche, or ice jam are plotted.

Overlay Workup 3 - Environment Risk Areas for Recreation

This overlay combines soils, permafrost, and hazards onto one presentation. The legend identifies the breakdown into the three categories: High, Medium, and Low risk areas. This is the same information as contained on the "Suitability for People Use Overlay."

Perhaps one could stop with this overlay. This would show where the environment and recreation are or are not amenable. However, one still has to know where the user will be and relate this with the environment risk areas.

Overlay Workup 4 - Access Effect Zone from Recreation

This overlay shows the areas of Alaska considered to be an attraction from the user's point of view. Access takes into account the State Highways' future 1990 primary roads plan, ferry routes, and water routes.

Air access points in back country locations have not been plotted due to map scale and area affected.

Attractions and effects plotted with consideration of the majority of the using public in mind--this shows where the major recreation use impact will be.

Effect zones used	Zone reach one side
A. Road	
1. In or near major attraction	20 miles
2. Between major attractions and within 120 mile radius of population centers	15 miles
3. Between major attractions and outside 120 mile radius of population centers	5 miles
4. Within 40 mile radius of population centers	Total area
5. In or near minor attraction	10 miles
B. Water	
1. Inside 120 mile population radius	3 miles
2. Remainder of State (Cannot show on map E scale; have attempted along major rivers)	1 mile

Overlay Workup 5 - Recreation and/or Environment

This overlay is the final presentation. It reflects the degree of compatibility between public recreation use and environmental conditions. This overlay is based on combining: (1) Where the major use will be, and (2) Location of environmental risks.

Assumptions made to develop Recreation Overlay 5:

1. People will follow the past established trends in pursuit of a recreation experience.

2. The major portion of the recreation impact will continue to radiate out from population centers and along the primary highways.

3. Major attractions will continue to draw use. Roads leading to the major attractions will receive a higher portion of the use.

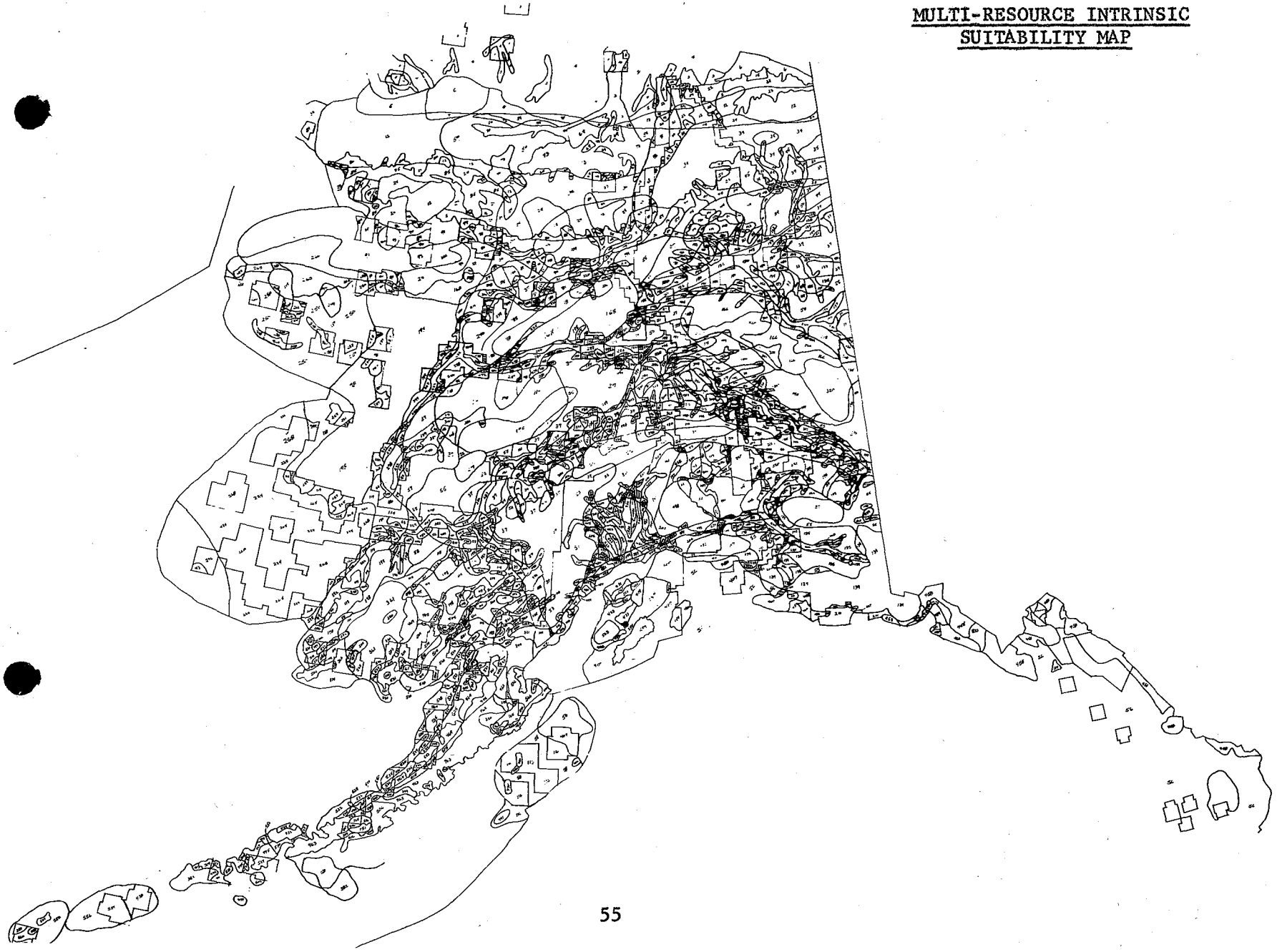
4. Management of recreation will continue at the present level (with only limited control and direction applied).

In application, an area having high suitability for people use (R_1 on the Suitability Overlay) would have high amenability to recreation use. Areas of low suitability (R_3) might also reflect high amenability if there is little likelihood that people will be using it.

Multi-Resource Intrinsic Suitability Map and Key Table

Placed one upon another, each of the seven ecologically assessed intrinsic suitability overlay maps provides a clutter of resource information and an insight to potential conflicts and capabilities for use and development of a given area. To maximize the benefit of this informational flow, a composite map with a numerical identification and a key table showing the resource combinations and ecological assessments for each numbered area were developed. The key table shows 559 variable combinations identified on the Multi-Resource Intrinsic Suitability Map. A photographically reduced copy of this map is shown on the next page. The key table is also made a part of this study as Enclosure No. 1.

MULTI-RESOURCE INTRINSIC SUITABILITY MAP



Predominant Land Use Suitability Forms

Each of the 559 variable combinations and each occurrence of the same combination interpreted on the multi-resource suitability map tells about intrinsic and implied land use forms for a given area; but to be more useful each variable or numbered area identified must be related to some grouping or classification of land use forms.

A three level land use form grouping was used for this purpose with a color identification on the multi-resource intrinsic suitability map. The three predominant land use form groupings were coded and defined as follows:

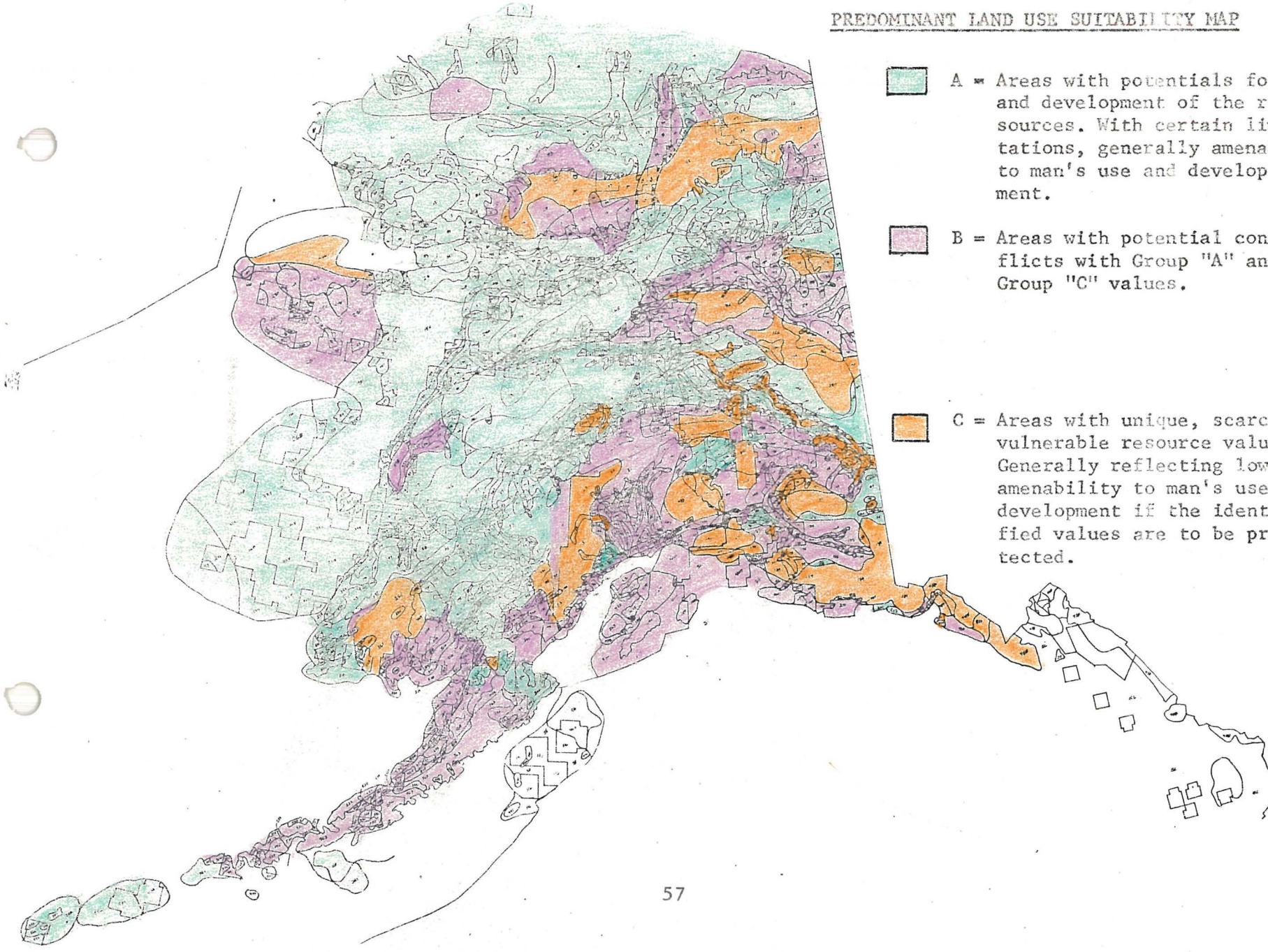
A = Areas with potentials for use and development of the resources. With certain limitations, generally amenable to man's use and development.

B = Areas with potential conflicts with Group "A" and Group "C" values.

C = Areas with unique, scarce, or vulnerable resource values. Generally reflecting low amenability to man's use and development if the identified values are to be protected.

The process of relating the numbered area on the multi-resource suitability map to the predominant land use forms involved interpretation of each numbered combination on the key table, reassessing the resource values identified by checking the resource profile overlay maps through the map transparency technique, analyzing the compatibility and potential conflicts, and forming a judgment as to which predominant land use grouping the assessed area is best fitted. The decisions were translated on to the map by coloring the assessed areas with the color code adopted for the three level predominant land use form grouping. The result of this process is shown on the Predominant Land Use Suitability map on the next page.

PREDOMINANT LAND USE SUITABILITY MAP



A = Areas with potentials for use and development of the resources. With certain limitations, generally amenable to man's use and development.

B = Areas with potential conflicts with Group "A" and Group "C" values.

C = Areas with unique, scarce, or vulnerable resource values. Generally reflecting low amenability to man's use and development if the identified values are to be protected.

Manageable Units

Visually the coloring process of the multi-resource intrinsic suitability map provided a synthesis of the analyzed similarity, compatibility, or potential conflicts of each of the assessed areas in terms of opportunities and restraints to human activities. The process also provides a broad perspective on the resource management opportunities and gives an indication of the management philosophies which may be applicable for any grouping of land areas.

What this means is that the colored areas on the map, with its keyed definitions and implied ecological associations, serve as a first level determinant for defining the manageable units within geographical regions. Tested against topographic features, primarily ridge lines of watersheds, and vertical and horizontal regional growth assessments (in this study confined to existing and proposed road net, potential hydro power source, village and urban population growth patterns and linkages, and resource identifications), the initial lines, either readjusted or retained intact, become the basis for definition of the manageable units.

No effort was made to weigh the existing and potential changes in land status or ownership, particularly whether an area was pre-ANCSA withdrawn, d(1) or d(2) lands, patented or TA, State selection applied, and village or regional corporation selection areas. For the purpose of delineating the manageable units, as objectively as possible, these factors were neutralized.

It is intended in this approach to regroup or redesignate the d(1) and d(2) lands, and incorporate those remaining lands from the native village and regional corporations' selection areas into the d(1) or d(2) category or make them available to state selection. What is portrayed is the manageable units which should be managed under the most applicable management philosophies, or as far as the Federal lands are concerned, managed by one agency.

This process resulted in definition of 28 manageable units (excluding the Southeastern region). See map attachment with Enclosure No. 2 for the salient resource features for each unit.

Regional Analysis

Owing to the time constraint, the intended analysis along vertical and horizontal growth assessment did not fully materialize. The manageable unit lines, however, were broadly tested by using the Lands' Overlay Map No. 1. Linkage patterns of the back country and existing and potential development patterns primarily from the standpoint of the road net, potential hydro power sites, and village population numbers were some of the factors considered.

Resource Management Opportunities

A summarized interpretation of the ecologically assessed land areas with its resource associations and implied management philosophy is provided in this part to relate to the 28 manageable units identified.

Some quantification and more specific identification of the salient resource features are recorded for each manageable unit. Total acreages for each unit are also shown.

Enclosure No. 2 containing the above information is made a part of this study.

To provide a decision making tool and rational support of the Bureau of Land Management's recommendations, the following matrix was designed and included as part of this study. The matrix (1) shows a correlation between the objectives of the Bureau's resources management and support programs and the applicable ANCSA requirements, and (2) tests how the other agencies may meet the same objectives in comparison to the Bureau of Land Management. See Enclosure No. 3.

ENCLOSURE NO. 1

MULTI-RESOURCE INTRINSIC SUITABILITY
KEY TABLE

MULTI-RESOURCE INTRINSIC SUITABILITY KEY TABLE

No.	G	T	L	M	W	H	R
1	1	-	2	2	3	2	3
2	1	-	2	2	3	2	2
3	1	-	-	2	3	2	2
4	1	-	-	2	3	2	3
* 5	1	-	-	2	3	1	3
6	1	-	-	2	3	3	3
7	1	-	-	1	3	3	3
* 8	1	-	-	2	3	1	3
9	1	-	3	2	3	2	3
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23	1	-	-	1	3	1	2
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26	1	-	1	2	3	2	2
27	1	-	1	2	3	1	3
28	1	-	1	1	3	1	2
29	1	-	2	1	3	1	3
30	1	-	2	1	3	1	2
31	1	-	3	-	3	1	2
32	1	-	3	-	3	1	3

No.	G	T	L	M	W	H	R
33	1	-	-	2	3	3	2
34	-	-	-	-	3	1	3
35	-	-	-	2	3	1	3
36	-	-	-	2	2	1	2
37	-	-	-	-	2	1	3
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41	-	-	1	-	1	1	2
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63	1	-	3	1	3	1	3
64	1	-	3	-	3	3	3

No.	G	T	L	M	W	H	R
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95	1	-	1	-	3	1	3
96	1	-	2	3	3	1	3

MULTI-RESOURCE INTRINSIC SUITABILITY KEY TABLE

No.	G	T	L	M	W	H	R
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MULTI-RESOURCE INTRINSIC SUITABILITY KEY TABLE

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225	-	-	2	3	1	1	3

No.	G	T	L	M	W	H	R
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No.	G	T	L	M	W	H	R
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290	-	2	1	-	1	1	3
291	-	2	3	-	1	1	2

MULTI-RESOURCE INTRINSIC SUITABILITY KEY TABLE

No.	G	T	L	M	W	H	R
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316	-	3	2	1	2	1	3
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* 319	1	-	-	1	2	1	3
320	1	-	-	1	2	3	3
* 321	1	-	2	1	2	3	3
322	1	3	-	1	2	3	3
323	1	3	2	1	2	1	3
324	1	3	2	1	2	3	3
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* 327	-	-	-	1	1	3	3
328	-	-	3	1	2	3	3
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331	1	2	-	3	1	1	2
332	1	-	-	3	2	3	2
333	-	-	-	3	2	3	2
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382	1	-	-	-	2	1	2
383	-	-	1	3	2	2	3
** 384	1	-	1	3	2	1	3
385	-	-	-	3	2	1	2
386	-	-	1	3	2	1	2
387	-	-	3	3	1	1	2

MULTI-RESOURCE INTRINSIC SUITABILITY KEY TABLE

No.	G	T	L	M	W	H	R
388	-	-	1	3	1	1	2
389	-	2	3	3	1	1	2
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414	-	2	-	1	1	1	2
415	-	-	2	-	1	1	1
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418	-	-	1	1	1	3	1
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425	-	-	3	1	2	3	1
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482	-	2	2	3	2	3	1
483	-	-	3	-	2	1	1

MULTI-RESOURCE INTRINSIC SUITABILITY KEY TABLE

No.	G	T	L	M	W	H	R
484	-	-	2	3	1	1	1
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512	1	-	1	1	1	1	2
* 513	1	-	1	1	1	1	1
514	1	-	1	1	2	1	1
* 515	1	-	-	1	2	3	1

No.	G	T	L	M	W	H	R
* 516	1	-	-	1	1	3	1
517	1	-	3	1	1	3	2
518	1	-	1	1	2	3	2
519	1	-	1	1	2	3	1
520	1	-	1	1	2	1	1
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544	1	-	3	1	1	3	3
545	1	-	3	1	2	3	2
546	1	-	3	3	2	3	3
547	1	-	3	2	2	3	2

No.	G	T	L	M	W	H	R
548	1	-	2	1	2	3	1
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550	1	-	3	-	2	3	1
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562	-	1	2	1	1	3	2
563	1	-	2	1	2	3	2
564	-	-	1	1	1	3	2

* Duplicate

ENCLOSURE NO. 2

SALIENT RESOURCE AND PREDOMINANT LAND USE SUITABILITY FEATURES
FOR 28 MANAGEABLE UNITS

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 1 (1a - 41.3) (1b - 1.4) 42.7 MILLION ACRES

Resource Values:

Grazing	Potential reindeer area.
Timber	None.
Land	7 Native village selection withdrawals, Pet. 4, arctic wildlife range, utility corridor, gas arctic corridor.
Mineral	90% of unit in possible petroleum province including known Pet. 4 and Prudhoe Bay fields; 20% of unit has high grade coal, locatable minerals in far eastern part of unit--key types copper and tin.
Water (ground)	Poor; lots of exploration, deep well and generally poor quality water.
Habitat	40% of area in waterfowl area, major peregrine and raptor nesting areas; 2 major caribou calving areas; general caribou summer range; fringe of Brooks Range Dall sheep population; portions of caribou major migration path; small introduced herd of musk ox, transplant.
Recreation	Ten segments of potential Wild and Scenic River; about 3 million acres identified exceptional scenic areas; about a million acres identified exceptional primitive values; north coast settlement cultural and archeological values.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area production oriented with high petroleum values and wildlife habitat areas. Key conflict areas include narrow band along coastline (waterfowl production), potential Wild and Scenic Rivers, caribou calving areas, major caribou migration routes. Management objectives of the Arctic Game Range are in conflict with production.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 2 — 15.2 MILLION ACRES

Resource Values:

Grazing	Potential reindeer area
Timber	None
Land	6 Native village selection withdrawals; Noorvik I.R.; 4 potential hydro powersites.
Mineral	30% of unit in possible petroleum province; 25% of unit with low grade coal; 66% of unit mineralized with locatables--copper key type.
Water (ground)	Poor; lots of exploration; deep well generally poor quality.
Habitat	Minor waterfowl nesting; major cold water fishery on Kobuk; raptor concentrations, Dall sheep range; major caribou migration route; caribou winter range; and musk ox transplant.
Recreation	Two segments of potential Wild and Scenic Rivers; one million acres identified exceptional scenic areas; one million acres identified exceptional primitive values; contains segment of Nome-Wiseman trail cultural feature; Kotzebue-Native culture;known major recreation attraction.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area production oriented, keyed to possible petroleum production, locatable minerals, and wildlife habitat. Key conflicts may arise between mineral production and potential recreation opportunities, especially Wild and Scenic Rivers and primitive values.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 3 — (3a - 10.7) (3b - 4.6) (3c - 2.6) 17.9 MILLION ACRES

Resource Values:

Grazing	Some potential reindeer areas.
Timber	None
Land	One Native village selection; utility corridor; gas arctic corridor; arctic corridor; and arctic wildlife range.
Mineral	No possible petroleum province; no coal; and 40% of area mineralized--gold key type.
Water (ground)	Poor; lots of exploration; deep well generally poor quality.
Habitat	Dall sheep; caribou migration route; and small area of winter range for caribou.
Recreation	Twenty segments of potential Wild and Scenic River; 10 million acres identified exceptional scenic areas; 6 million acres identified exceptional primitive values; cultural features contain hub of Wiseman historic district (1905); segment of Tanana-Fairbanks-Wiseman trail and Nome-Wiseman trail; no known major recreation attraction.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area conservation-protection oriented because of exceptional scenic and primitive values; potential Wild and Scenic Rivers, wildlife habitat. Potential conflict with production of minerals.

Unit includes the proposed Gates of the Arctic area.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 4 — 1.5 MILLION ACRES

Resource Values:

Grazing	None.
Timber	None.
Land	Gas arctic corridor; arctic wildlife range.
Mineral	No petroleum province; no coal; minor amount of area mineralized.
Water (ground)	25% of area poor; 60% medium; 15% good.
Habitat	Raptor concentrations; part of Porcupine caribou herd area; and caribou winter range.
Recreation	No potential Wild and Scenic Rivers; no exceptional scenic and primitive values; no cultural features identified, and no known major recreation attraction.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented to conservation-protection because of wildlife values. No obvious or major conflicts expected.

Can be logical addition to the Arctic Wildlife Range.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE AREA NO. 5 — 16.6 MILLION ACRES

Resource Values:

Grazing	Some potential reindeer.
Timber	Little on southern fringe.
Land	Three Native village selections; Venetie I.R.; gas arctic corridor; utility corridor; one potential hydro powersite.
Mineral	Minor possible petroleum province; no coal; 20% of area mineralized--key type gold.
Water (ground)	Most of area medium quality; very little good.
Habitat	High concentration of raptor species along major drainage; caribou winter range; fringe of Brooks Range Dall sheep concentration.
Recreation	Seven segments of potential Wild and Scenic Rivers; one million acres identified exceptional scenic areas; one million acres identified exceptional primitive values; cultural features contain part of Wiseman historic district and segment of Tanana-Fairbanks-Wiseman trail; small part within 120 miles radius influence zone from Fairbanks.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented to conservation-protection because of wildlife habitat, Wild and Scenic River potentials; and exceptional scenic and primitive values. Portion of area within the 120 mile influence zone of a major metropolitan area (Fairbanks). Possible conflict with potential petroleum and other mineral production.

MANAGEABLE AREA NO. 6 — 14.7 MILLION ACRES

Resource Values:

Grazing	None.
Timber	60% of unit timbered.
Land	7 Native village selection, Venetie IR, Ft. Yukon IR, utility corridor, one potential hydro powersite.
Mineral	90% of area in possible petroleum province, some coal. No identified locatable.
Water (ground)	25% good, 75% medium.
Habitat	60% in major waterfowl nesting, concentration of raptors, and know peregrin falcon nesting sites along Yukon River, cold water fishery along major drainage, concentration of moose, winter range for both Porcupine and 40 Mile caribou herds.
Recreation	9 segments of potential wild and scenic river, one million acres identified exceptional scenic areas, three million acres identified exceptional primitive values; cultural features include segment of Tanana Fairbanks-Wiseman Trail, portion of Fairbanks mining district, terminus of Circle Trail; known major recreation attractions include Yukon River crossing and quarter of unit within 120 mile radius influence zone of Fairbanks.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented toward conservation-protection because of wildlife habitat including rare and endangered species, waterfowl production, wild and scenic rivers, exceptional scenic and primitive values, potential petroleum production, potential timber production. Substantial portion of unit within 120 miles of major metropolitan center (Fairbanks). Potential conflicts between timber and petroleum production and wildlife habitat and recreational values.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 7 — 11.1 MILLION ACRES

Resource Values:

Grazing	Some potential reindeer.
Timber	Very little.
Land	1 Native village selection, Ft. Wainwright Military Reserve, utility corridor, part of North Star Borough, 2 potential hydro powersite, one existing hydro powersite.
Mineral	No petroleum province, minor coal, 10% of area mineralized-key types gold and asbestos.
Water (ground)	Very little good, mostly medium.
Habitat	Primarily raptor sites, several known peregrin nesting sites, remnant of interior dall sheep population, and 40 Mile caribou herd winter range and calving area.
Recreation	7 segments of potential wild and scenic river, three million acres identified exceptional scenic area, five million acres identified exceptional primitive values; cultural features contain Klondike Gold Rush area (1898), Eagle-Valdez Trail, Fairbanks Trail, Circle Trail, Tanana-Fairbanks Trail, Wiseman Trail, Yukon Historic River, and Fairbanks mining district (1902); known major recreation attraction include 66% of unit within 120 miles radius and small part within 40 miles radius influence zone of Fairbanks.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented to conservation-protection because of wildlife habitat, rare and endangered species, exceptional scenic and primitive values, historical values. Two thirds of unit within 120 miles of major metropolitan center (Fairbanks). Conflicts minor, mostly associated with potential mineral production of gold and asbestos.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 8 — 12.0 MILLION ACRES

Resource Values:

Grazing	Minor potential reindeer.
Timber	Timber on Koyukuk drainage.
Land	6 Native village selection, utility corridor, Arctic corridor, 2 potential hydro powersites
Mineral	70% of unit in possible petroleum province, minor coal, 10% to 15% of unit mineralized. Key types copper and asbestos.
Water(Ground)	30% poor, 50% medium, 20% good.
Habitat	20% of unit in waterfowl nesting area, cold water fishery in Kobuk, winter range for Arctic caribou herd, and moose concentration area.
Recreation	9 segments of potential wild and scenic rivers, one million acres identified with exceptional scenic area; cultural features include Nome-Wiseman Trail, Tanana-Fairbanks-Wiseman Trail, Wiseman Historic District, and Kobuk mining district.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented towards production. Possible petroleum production, timber production, some from mineralized zone. Some conflicts possible with wildlife habitat and potential recreational values.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 9 — 12.5 MILLION ACRES

Resource Values:

Grazing	30% of unit in existing and 70% in potential reindeer.
Timber	None.
Mineral	90% of area in possible petroleum province, no coal, locatable minor.
Water(Ground)	90% medium, 10% poor
Habitat	Portion of winter range for Arctic caribou herd.
Recreation	5 segments of potential wild and scenic river, half million acres identified for primitive values; cultural features include Nome-Iditarod Trail and part of North America Land Bridge, no major known recreation attraction.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented toward production. Present reindeer grazing use with potential for additional use, possible petroleum production. Potential conflicts expected to be minor with potential wild and scenic rivers.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 10 — 13.1 MILLION ACRES

Resource Values:

Grazing	95% of area in existing reindeer range.
Timber	None.
Land	11 Native village selections, Elias 1R, White Mountain 1R, Wales 1R, one potential hydro powersite
Mineral	10% of area in possible petroleum province, minor coal, 70% of area mineralized. Key types gold, fluorite, platinum and past gold production.
Water(Ground)	30% poor, 60% medium, 10% good.
Habitat	20% in waterfowl nesting area, mimportant raptor (GYR Falcon) Area, musk ox transplant site.
Recreation	8 segments of potential wild and scenic river. 2 million acres identified for exceptional scenic values and 3 million acres identified for primitive values; cultural features include Nome-Iditarod Trail, Nome Wiseman Trail, Nome mining district (1898), Known major recoreation attraction include Nome and Imuruk Lava Beds.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented towards production because of present reindeer grazing use, highly mineralized zone with past, present, and future anticipated production. Portion of area in possible petroleum province. Conflicts could occur between production possibilities and wildlife habitat especially for waterfowl and raptors (gyrfalcon), potential wild and scenic rivers, exceptional scenic and primitive values.

RESOURCE MANAGEMENT OPPORTUNITES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 11 — 8.8 MILLION ACRES

Resource Values:

Grazing	Minor potential reindeer.
Timber	40% of unit timbered (along Yukon River).
Land	9 Native village selections, Galena Defense Dept. withdrawal, three potential hydro powersites.
Mineral	10% in possible petroleum province, minor coal, locatable mineralization unknown.
Water	All medium.
Habitat	20% of area in waterfowl nesting, major cold water fishery, moose concentration area.
Recreation	Three segments of potential wild and scenic river, no scenic and wilderness value, identified; cultural features include Yukon Historic River, portions of North American Land Bridge, and segment of Nome-Iditarod Trail, no known major recreation attraction.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented towards production. Resources include timber, possible petroleum. Possible conflicts with wildlife habitat, potential wild and scenic rivers.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 12 — 17.3 MILLION ACRES

Resource Values:

Grazing	Minor reindeer potential
Timber	40% to 50% of unit timbered--Tanana River.
Land	Nine Native village selections; Tetlin I.R.; Ft. Wainwright, Eilson AFB, and FT. Greely MR; North Star Borough; Fairbanks; utility corridor; 5 potential hydro powersites.
Mineral	20% in possible petroleum province; minor coal; minor mineralization--key type gold.
Water (ground)	10% good, 90% medium.
Habitat	10% waterfowl nesting area; raptor concentration area; numerous identified peregrine nesting sites; major cold water fishery; moose concentration area; bison range; some winter range for 40 mile caribou herd; northern limits of Wrangell Dall sheep; winter range for Mentasta caribou herd.
Recreation	Ten segments of potential Wild and Scenic Rivers; 3 million acres identified for exceptional scenic values, and one million for exceptional primitive values; cultural features include: Yukon historic river, Tanana-Fairbanks-Wiseman trail, Circle trail, Fairbanks trail, Eagle-Valdez trail, Fairbanks-Valdez trail, and part of Fairbanks mining district (1902); major known recreation attraction includes small part of unit in 120 mile radius influence zone of Fairbanks.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented towards production-conservation mix. Major timber resources, possible petroleum province; some mineralization (gold). Potential conflicts with wildlife habitat, including rare and endangered species, potential Wild and Scenic Rivers, and exceptional scenic and primitive values.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 13 — 15.5 MILLION ACRES

Resource Values:

Grazing	Minor potential for reindeer.
Timber	None.
Land	One Native village selection.
Mineral	No petroleum province; no coal; 30% mineralized--key type gold.
Water (ground)	All medium.
Habitat	Winter range and calving area for McGrath caribou herd; winter range for McKinley herd; and moose concentration area.
Recreation	Three segments of potential Wild and Scenic Rivers; no scenic or primitive values identified; cultural features include Iditarod Trail, Iditarod mining district (1910); and known major recreation attraction involves small part of unit in 120 mile radius influence zone from Fairbanks.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented towards production. Mineralized area with potential for production. Conflicts expected to be minor with wildlife habitat and recreation values with possible exception of potential wild and scenic rivers.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 14 — 18.2 MILLION ACRES

Resource Values:

Grazing	Potential reindeer.
Timber	None.
Land	42 Native village selections; Clarence Rhodes NWR.
Mineral	100% of unit in possible petroleum province; no coal; mineralization unknown.
Water (ground)	All medium.
Habitat	90% of area waterfowl nesting; musk ox on Nunivak and transplant to Nelson Island.
Recreation	One segment of potential Wild and Scenic River; no areas identified for exceptional scenic and primitive values; cultural features include Yukon historic river, and North America land bridge; no major known recreation attraction.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented toward production. Primary production capability for waterfowl habitat, also possible petroleum province. Petroleum production may pose conflicts with wildlife habitat. Other conflicts anticipated to be minor.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 15 — 15.1 MILLION ACRES

Resource Values:

Grazing	Minor potential reindeer.
Timber	Kuskokwim timber stand in entirety; 15 Native village selections; McGrath NR; 1 potential hydro powersite.
Mineral	30% of unit with possible petroleum province; no coal; 30% of unit mineralized with known mercury and gold productions.
Water (ground)	20% good; 80% medium.
Habitat	10% waterfowl nesting area; bison range; portion of winter range for McKinley caribou herd; portion of Nondalton caribou winter range; westernmost fringe of Alaska Dall sheep herd.
Recreation	5 segments of potential Wild and Scenic River; half million acres identified with exceptional scenic values; half million acres with exceptional primitive values; cultural features include Iditarod Trail and Stampede Trail; major known recreation attraction--lies north of McKinley NP.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area predominantly suited to production. Contains identified but unproven petroleum province. Proven mineralization with gold and mercury production.

Areas adjacent to streams contain extensive interior commercial timber stands. There is minor potential for reindeer grazing. Wildlife habitat supports waterfowl nesting, bison, caribou winter range, and some Dall sheep. High scenic and primitive values combine with 5 potential segments of the National Wild and Scenic Rivers System. Cultural features are representative of the interior Alaska gold rush era. Land commitments include provision for 15 Native villages and one Native reserve.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 16 — 13.3 MILLION ACRES

Resource Values:

Grazing	Potential reindeer.
Timber	None.
Land	Five Native village selections. Cape Newenham NWR; Cape Newenham MR.
Mineral	Minor possible petroleum province; no coal; 25% mineralized; known gold, mercury, and platinum production.
Water (ground)	10% good, 90% medium.
Habitat	Major cold water fishery in Nulchatna drainage, caribou wintering area for Nondalton herd.
Recreation	Five segments of potential wild and scenic river; no exceptional scenic values identified; 0.5 million acres identified for exceptional primitive values; cultural features include southern part of Aleutian settlement; no known major recreation attraction.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented toward production. Major mineralized zone with known gold, mercury, and platinum. Only producing platinum mine in U.S. Possible conflicts of mineral production with cold water fisheries and potential wild and scenic rivers.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 17 — 4.4 MILLION ACRES

Resource Values:

Grazing	Potential reindeer herd.
Timber	None.
Land	Two Native village selections; one potential hydro powersite.
Mineral	Minor possible petroleum province; no coal; mineralization unknown.
Water	All medium.
Habitat	5% of area waterfowl nesting; 100% area cold water fishery.
Recreation	Two segments of potential wild and scenic river; two million acres identified with exceptional scenic values and one million acres with exceptional primitive values; Aleutian settlement cultureal feature; major known recreation attraction--Wood River--Tikchik Lakes.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area is oriented towards production and conservation. This area is extremely important for the production of fisheries. It has excellent recreational values (scenic area, primitive areas, cultural areas). No major conflicts are expected.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 18 — 4.1 MILLION ACRES

Resource Values:

Grazing	Potential reindeer.
Timber	None.
Land	Seven Native village selections; one potential hydro powersite, Bristol Bay Borough.
Mineral	90% in area of possible petroleum province; no coal; mineralization unknown.
Water	35% good; 65% medium.
Habitat	70% waterfowl area; 60% of area in cold water fishery; primary moose concentration areas; small portion of winter range for Nondalton caribou herd.
Recreation	Four segments of potential wild and scenic river; no identified exceptional scenic or primitive values; Aleutian settlement cultural features; no known major recreation attraction.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented towards production-conservation. Possible petroleum province, waterfowl production, cold water and anadromous fishery. Possible conflict of potential petroleum production on waterfowl habitat and cold water fisheries.

Key to use of area is protection of watershed.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 19 — 4.1 MILLION ACRES

Resource Values:

Grazing	Potential for reindeer.
Timber	None.
Land	Five Native village selections; Katmai NM; Iliamna classification; 3 potential hydro powersites.
Mineral	15% in possible petroleum province; no coal; 70% mineralized--key type iron and copper.
Water	10% good; 90% medium.
Habitat	17% cold water fishery; moose concentration, and grizzly/brown bear.
Recreation	Seven segments of potential wild and scenic river; two million acres identified with exceptional scenic values and 0.5 million with exceptional primitive values; part of early exploration settlement cultural features; known major attractions include Illiamna Lake, and small corner of Katmai NM.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented toward production-conservation. Area contributes average of 2/3 of Bristol Bay red salmon fishery. Possible petroleum province and large known mineralized zone. Production of minerals and/or petroleum could severely conflict with anadromous and cold water fishery and conflict with exceptional scenic, primitive, and water-based recreational values.

Key to use of area is protection of watershed.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 20 — 7.2 MILLION ACRES

Resource Values:

Grazing	None.
Timber	None.
Land	No village selections; Iliamna classification; Kenai Borough; Matanuska-Susitna Borough; one powersite withdrawal.
Mineral	No petroleum province; no coal; 10% mineralized--key type copper.
Water	10% good; 90% medium.
Habitat	5% of area cold water fishery; Dall sheep range, and caribou calving area for Nondalton herd.
Recreation	Two segments of potential wild and scenic river; five million acres identified for exceptional scenic values, and 5 million acres for exceptional primitive values; Iditarod Trail and part of early exploration settlement cultural features; known major recreation attractions include Mt. Redoubt, Anchorage, 50% of unit in 120 mile radius influence zone of Anchorage, borders SW area of McKinley NP.

PREDOMINANT LAND USE SUITABILITY:

Bulk of this unit shows suitability for both production and conservation-protection. Land segregations include Kenai Borough, Matanuska-Susitna Borough, and one powersite withdrawal. There are no village entitlements. The Iliamna C&MU classification is partially within this area.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 21 — 8.8 MILLION ACRES

Resource Values:

Grazing	None.
Timber	None.
Land	One Native village selection; Mt. McKinley National Park; 10 potential hydro powersites; powersite withdrawal; Eklutna IR; Ft. Richardson-Eilson MR; Matanuska-Susitna Borough; Anchorage Borough.
Mineral	10% in possible petroleum province; small amount or higher grade coal; 20% mineralized with gold, copper, lead, zinc produced.
Water	10% good; 90% medium.
Habitat	10% cold water fishery; some moose concentrations; Talkeetna and Chugach Dall sheep herd; calving area for Nelchina caribou herd; portion of winter range for Nelchina caribou herd, and winter range and calving area for McKinley herd.
Recreation	One segment of potential wild and scenic river; five million acres identified with exceptional scenic values, and 1.5 million acres with exceptional primitive values; Kantishna mining district, Colorado mining district; Stampede Trail; Mt. McKinley National Park, and Talkeetna Mountains are some cultural features; major known recreation attractions include Mt. McKinley NP; 50% of area within 120 mile radius, and 40 mile radius influence zone of Anchorage touches unit.

PREDOMINANT LAND USE SUITABILITY:

Bulk of this area appears to be most suited for management with protection of existing scenic, primitive, and wildlife values as dominant considerations. Potential values for mineral production appear small.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 22 — 2.2 MILLION ACRES

Resource Values:

Grazing	Some potential reindeer.
Timber	None.
Land	No village selection; one potential hydro power-site; part of military reserve.
Mineral	No petroleum province; small low grade coal-producing; mineralization unknown.
Water (ground)	10% good; 90% medium.
Habitat	Bison; Dall sheep; and calving and winter range for delta caribou herd.
Recreation	One segment of potential wild and scenic river; 2.5 million acres identified with exceptional scenic values; one million acres identified with exceptional primitive values. Cultural features include terminus of Stampede Trail and Valdez-Fairbanks Trail; known major attraction place; entire unit within 120 miles radius influence zone of Fairbanks.

PREDOMINANT LAND USE SUITABILITY:

This area is oriented to conservation-protection. Production potentials are small and would conflict with scenic-primitive values.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 23 — 14.7 MILLION ACRES

Resource Values:

Grazing	Potential reindeer, existing horse leases.
Timber	Copper River timber.
Land	Eight Native village selections; 2 potential hydro powersites; powersite withdrawal; utility corridor; Tetlin IR.
Mineral	20% in possible petroleum province; no coal; 20% mineralized; producing copper and silver.
Water (ground)	10% poor; 70% medium; 20% good.
Habitat	15% waterfowl nesting area; 25% cold water fishery; concentration area for raptors along major drainage; winter range and calving areas for Nabesna caribou herd; winter range and calving area for Mentasta caribou herd; Dall sheep; moose concentration; primary caribou migration route; goat.
Recreation	Seven segments of potential wild and scenic river; 5 million acres identified with exceptional scenic values; 2.5 million with exceptional primitive values; contains cultural features such as Valdez-Fairbanks Trail, Valdez-Eagle Trail, Tangle Lack archeological site; Lake Louise complex; Copper NW Railroad; Kennecott mining district; and early exploration/settlement; known major attractions include Chitina Valley, barely within 120 mile radius influence zones of Fairbanks and Anchorage.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented toward production/conservation. Timber and mineral resources and recreation could provide some economic viability to this unit. Production could potentially conflict with wildlife resources and scenic values.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 24 — 2.2 MILLION ACRES

Resource Values:

Grazing	Potential reindeer.
Timber	None.
Land	None.
Mineral	No petroleum province; no coal; mineralization unknown.
Water (ground)	Medium.
Habitat	Fringe of Dall sheep and caribou range; goat; bear, and moose.
Recreation	One segment of potential wild and scenic river; 1.5 million acres identified with exceptional scenic values; 1.0 million acres with exceptional primitive values; cultural features include Mts. Wrangell, Sanford, and Drum; known major recreation attractions include Mts. Wrangell, Sanford, and Drum.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented towards conservation-protection. Conflicts appear minimal because of no known resource production capabilities. Significant scenic and primitive values dominate this area.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 25 — 8.8 MILLION ACRES

Resource Values:

Grazing	None.
Timber	None.
Land	No Native village selection; 5 potential hydro powersites; utility corridor.
Mineral	30% in proven petroleum province; small amount of higher grade coal (Bering field); mineralization unknown.
Water (ground)	90% medium; 10% good.
Habitat	Goat; grizzly bear; moose; glacier bear; Dall sheep, easternmost fringe of Chugach sheep range.
Recreation	Two segments of potential wild and scenic river; five million acres identified with exceptional scenic values; two million acres with exceptional primitive values; cultural features include early exploration/settlement, Copper River NW railroad; Kennecott mining district; Eagle-Valdez Trail; Malaspina Glacier; Yakutat Bay; known major attraction places unit within 120 mile radius influence zone of Anchorage.

PREDOMINANT LAND USE SUITABILITY:

Bulk of the area predominantly suited for conservation-protection. Extremely valuable scenic and primitive area potential; 2 potential segments of the National Wild and Scenic Rivers System; cultural values representative of the highest dedication during the early development of Alaska era. Outstanding geologic features include Malaspina Glacier and Copper River Canyon. Majority of the area is within the 120 mile zone of influence from the Anchorage metropolitan area. Possible minor conflicts are between the recreation and wildlife values and mineral production.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 26 — 12.0 MILLION ACRES

Resource Values:

Grazing	Minor potential for domestic Susitna Valley and Kenai timber; 5 Native village selections; Kenai NMR; Kenai Borough; 8 potential hydro powersites.
Mineral	70% in known petroleum province; 20% of area low grade coal; mineralization unknown--some gold produced.
Water (ground)	80% medium; 15% good.
Habitat	25% waterfowl; 35% cold water fishery; moose; brown/grizzly bear; Dall sheep; goat.
Recreation	No potential wild and scenic river; one million acres identified with exceptional scenic values; one million acres identified with exceptional primitive values; cultural features include Iditarod Trail and early exploratory settlement; known major attraction includes Anchorage, Kenai Peninsula, almost entirely in 120 mile radius and a lot in 40 mile radius influence zones of Anchorage.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area suited to production providing emphasis on recreation needs of Anchorage metropolitan area. Predominant Federal holdings presently managed by USFA and BSF&W include scenic and natural values, hunting and fishing opportunities, and cultural values representative of early exploratory period.

Timber values include areas of both interior commercial and coastal commercial timber types. Provides a broad range of wildlife and fishery production. Potential exists for domestic livestock grazing.

Proven oil and gas production. Extensive low grade coal deposits with history of production. Minor gold production history. Land commitments include Chugach National Forest, Kenai NMR, 5 Native village entitlements, extensive State selections, and Kenai Borough.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 27 — 14.4 MILLION ACRES

Resource values:

Grazing	Potential reindeer and domestic.
Timber	None.
Land	Fourteen Native village selections; Katmia NM; Izemback NWR; one potential hydro powersite; part in Bristoal Bay Borough.
Mineral	75% in possible petroleum province; small area of higher grade coal; mineralization unknown--key type gold.
Water	80% medium; 20% good.
Habitat	50% waterfowl; 30% cold water fishery; winter range and calving areas for peninsula caribou herd; migration route up and down peninsula; moose concentration; brown/grizzly bear concentration and critical denning area for bear.
Recreation	One segment of potential wild and scenic river; 2 million acres identified with exceptional scenic values; cultural features include Aleutian settlement, early exploratory settlement; known major attractions include Katmai NM, Izembeck NWR.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented towards conservation-protection because of key wildlife habitat, cold water fishery values, and scenic values. Production potentials include some coal, possible petroleum, and grazing use for both reindeer and domestic livestock. Major conflicts with wildlife habitat would occur with utilization of any of the grazing potential. Production of minerals and/or petroleum could conflict with wildlife habitat.

RESOURCE MANAGEMENT OPPORTUNITIES
-SALIENT FEATURES-

MANAGEABLE UNIT NO. 28 — 1.8 MILLION ACRES

Resource Values:

Grazing	None.
Timber	Commercial coastal forest, mostly under Forest Service jurisdiction.
Land	One Native village; Tongass NF.
Mineral	30% in possible petroleum province; no coal; mineralization unknown--key copper, nickel.
Water (ground)	70% medium; 30% good.
Habitat	25% waterfowl nesting; raptor concentration areas; moose, brown bear; especially critical range for glacier bear.
Recreation:	No wild river; one million acres identified with exceptional scenic values; early exploration settlement cultural features; no known major attraction.

PREDOMINANT LAND USE SUITABILITY:

Bulk of area oriented towards production and conservation. Timber now being harvested, potential petroleum province. Possible conflicts with wildlife habitat, and with the glacier bear, a rare and endangered species.

ENCLOSURE NO. 3 - MATRIX

ANCSA REQUIREMENTS WHICH MAY HAVE BEARING

1. Identify and recommend areas planned and best suited for permanent reservation in Federal ownership as parks, game refuges, other public uses, areas of Federal and State lands to be made available to disposal and uses to be made of lands remaining in Federal and State ownership.

2. Make recommendations with respect to proposed land selections by the State under the Alaska Statehood Act and by Village and Regional Corporations under the ANCSA.

3. Review existing withdrawals of Federal public lands and recommend additions to or modifications of withdrawals.

4. Make recommendations as to changes in laws, policies, and programs.

5. Make recommendations to insure that economic growth and development is orderly, planned, and compatible with State and National environmental objectives, the public interest in the public lands, parks, forest and wildlife refuges in Alaska, and the economic and social well-being of the Native people and other residents of Alaska.

6. Make recommendations to improve coordination and consultation between the State and Federal Governments in making the resource allocation and land use decisions.

7. Make recommendations on ways to avoid conflict between the State and Native people in the selection of public lands.

8. Identify public easements across lands selected by the Village Corporations and the Regional Corporations, and at periodic points along the courses of major waterways which are necessary to guarantee international treaty obligations, a full right of public use and access for recreation, hunting, transportation, utilities, docks, and such other public uses so public easements could be reserved prior to granting any patent.

9. Make a study of all Federal programs primarily designed to benefit Native people and to recommend for future management and operations of these programs.

10. If lands within the National Wildlife Refuge System are selected by the Village Corporation, the Secretary shall add to the Refuge System other public lands to replace lands selected.

11. The Secretary of Interior, the Secretary of Defense, and the Secretary of Agriculture are authorized to exchange any lands or interest therein in Alaska under their jurisdiction for lands or interest therein of the Village Corporations, the Regional Corporations, individuals, or the State for the purpose of effecting land consolidations or to facilitate the management or development of the land.

12. The Secretary is authorized to terminate any withdrawal made by or pursuant to the Act whenever he determines that the withdrawal is no longer necessary to accomplish the purpose of the Act.

13. The Secretary is authorized to classify or reclassify lands withdrawn for the public interests and to open such lands to appropriation under the public land laws in accord with the classification.

BLM OBJECTIVES

To support public land management programs through planning, classification, and realty services:

1. Classify all public lands for multiple use management or disposition consistent with established policies, programs, and objectives for the public lands.

2. Participate in Bureau, State, and local land use planning to insure regional consideration of needs for intensive land uses such as new community development and urban expansion.

3. Acquire easements for access, scenic protection, and other purposes necessary to realize the Bureau's management objectives.

4. Support Federal resource management programs with required realty transactions (such as withdrawals, acquisitions, issuance of rights-of-way, and other permits and land exchanges.)

To meet public needs for land and information services consistent with proper land use, plans, and classification:

5. Satisfy outstanding rights for public lands in cooperation with the State's(such as State grants, indemnity selections, scrip, Native and other claims).

6. Satisfy local government needs for land as they arise. Satisfy private needs for urban, industrial, commercial, residential, and agricultural purposes in response to demonstrated need.

7. Satisfy needs for rights-of-way and permitted uses. Where appropriate, grants of rights-of-way will be conditioned upon the acquisition of reciprocal rights-of-way needed to implement the Bureau's land management objectives.

8. Support and encourage local government land use planning and zoning.

9. Participate in interagency activities designed to facilitate cooperative and complementary land use programs.

10. Retain or preserve public values in public lands, including those that would be lost if the lands passed from Federal ownership.

11. Discourage occupancy trespass through prevention programs and prompt investigation and adjudication of suspected trespasses.

Manage mineral resources on the Federal lands under a positive management program consistent with and coordinated with total natural resource objectives of the Bureau and consistent with principles of multiple use and a quality environment.

12. Consider non-mineral resource values in determining whether mineral resources should be developed, and, if developed, under what condition.

13. Assure that mineral exploration, development, and extraction are carried out in such a way as to minimize environmental and other resource damage and to provide, as necessary, for the rehabilitation of lands affected by such operations.

14. Make available for disposal and encourage development of mineral resources to meet national, regional, and local needs, consistent with national objectives for an adequate supply of minerals at reasonable market prices.

15. Manage Federal mineral resources to maximize free and open competition among resources and among producers.

16. Develop and maintain scientific, technical, economic, and environmental competence so as to provide expert management of the Federal mineral resources.

17. Minimize avoidable damage to surface resources from operation under the mining law.

The recreation program is directed to:

18. Provide for an adequate variety and supply of quality outdoor recreation uses on the public lands commensurate with public needs, resource potentials, and consistent with a quality environment.

19. Preserve and protect significant natural, historic, and cultural resources and provide for their public use and development where consistent with preservation goals.

The wildlife program is directed to:

20. Preserve and enhance the environmental quality, and variety of fish and wildlife habitat, on the public lands including the habitat of rare and endangered species.

21. Provide a variety and supply of wildlife, recreation, and commercial use of opportunities commensurate with public needs and resource potentials.

The watershed program is directed to:

22. Conserve watersheds to protect them from degradation or further deterioration.

23. Develop or improve watershed conditions to meet identified watershed needs (water quality and quantity, reduction of damage from flooding and sedimentation) either on- or off- site.

The timber program is directed:

24. To the extent that benefits exceed costs and environmental considerations permit, increase sustained yield timber production from BLM administered lands to help meet increasing national and regional timber requirements and to contribute to the economic development of communities and regions.

To manage and otherwise provide for livestock use in a manner which will:

25. Improve and maintain range land condition.

26. Provide forage to meet needs of the Nation, the livestock industry, individual users, and dependent communities.

27. Achieve multiple use objectives which have been identified through the planning process, and which require prescribed use of livestock.

The fire protection program is directed to:

28. Protect all rare or unique natural and historical resources and critical environmental values from wildfire to preserve them for the use and enjoyment of present and future generations.

29. Minimize losses of other public land resources from wildfire damages to preserve their capabilities to contribute to the resource needs of the Nation.

The road and trail construction and maintenance program is directed to:

30. Build and maintain road and trail systems which will provide access to public lands commensurate with the economic and social value of the resources served and the need for their development, use, and protection, to an extent and in a manner that will be consistent with the protection, enhancement, and development of a quality environment.

As part of the Departmental objectives of providing earth knowledge needs to sustain a growing Nation at costs consistent with economic benefits, the cadastral survey program is directed to:

31. Meet the demands for surveys required by claims under the public land laws and special acts of Congress; and meet the needs of the various Bureaus of the Department and other Federal agencies for surveys required to carry out administrative, resource management, and quality of environment programs.

BLM LONG TERM OBJECTIVES

ANCSA REQUIREMENTS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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11	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	X	X	X	X	X	X	X	-	-	-	-	-	X	X
12	X	X	X	X	X	X	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	X

BLM LONG TERM OBJECTIVES

MANAGEABLE UNITS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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BLM LONG TERM OBJECTIVES

MANAGEABLE UNITS