PART TWO: SOME WAYS TO INTERPRET SCENIC RESOURCE INFORMATION

The reader should be familiar with such terms as viewshed, intrinsic visual quality, landscape character type, assessment unit, visual absorption capability -all of which were described in part one. Part two demonstrates some of the ways scenic resource information can be displayed and interpreted to help guide land and natural resource decision-making. While the examples given here are specific to the George Parks Highway - the concepts and techniques are applicable to scenic resources along any highway as well as along rivers, trails, around recreation areas and communities.

Probably the most useful way that scenic resource information can be displayed is in map format. In map form it can most readily be used in combination with other landscape physical, biological and socio-econmic characteristics to aid in land planning and management decisions. Six different illustrative maps are shown here, each demonstrating a different aspect of the scenic resource inventory data. A portion of the George Parks Highway around the community of Nenana has been used to illustrate these mapping techniques.

Interesting and significant patterns emerge from scenic resource data in mapped form. Continuous stretches of highway with exceptional scenic resource value, areas with high visual absorption capability such that land and resource development might more easily be accommodated from a scenic resource point of view, and important views are some of the patterns which can have significance with respect to land use planning decisions.

Other graphic display techniques can be helpful in identifying additional patterns. Graphs displaying scenic resource values by assessment unit for the entire highway can be helpful to understanding overall resource distribution patterns. Following the six interpretative maps can be found five graphs comparing intrinsic visual quality, composite visual quality and visible roadside land use for the entire George Parks Highway. The field data from which these maps and graphs were developed can be found in part five of this report. This data may be used to generate similar maps and develop other graphic techniques for evaluating the scenic resources along the George Parks Highway.

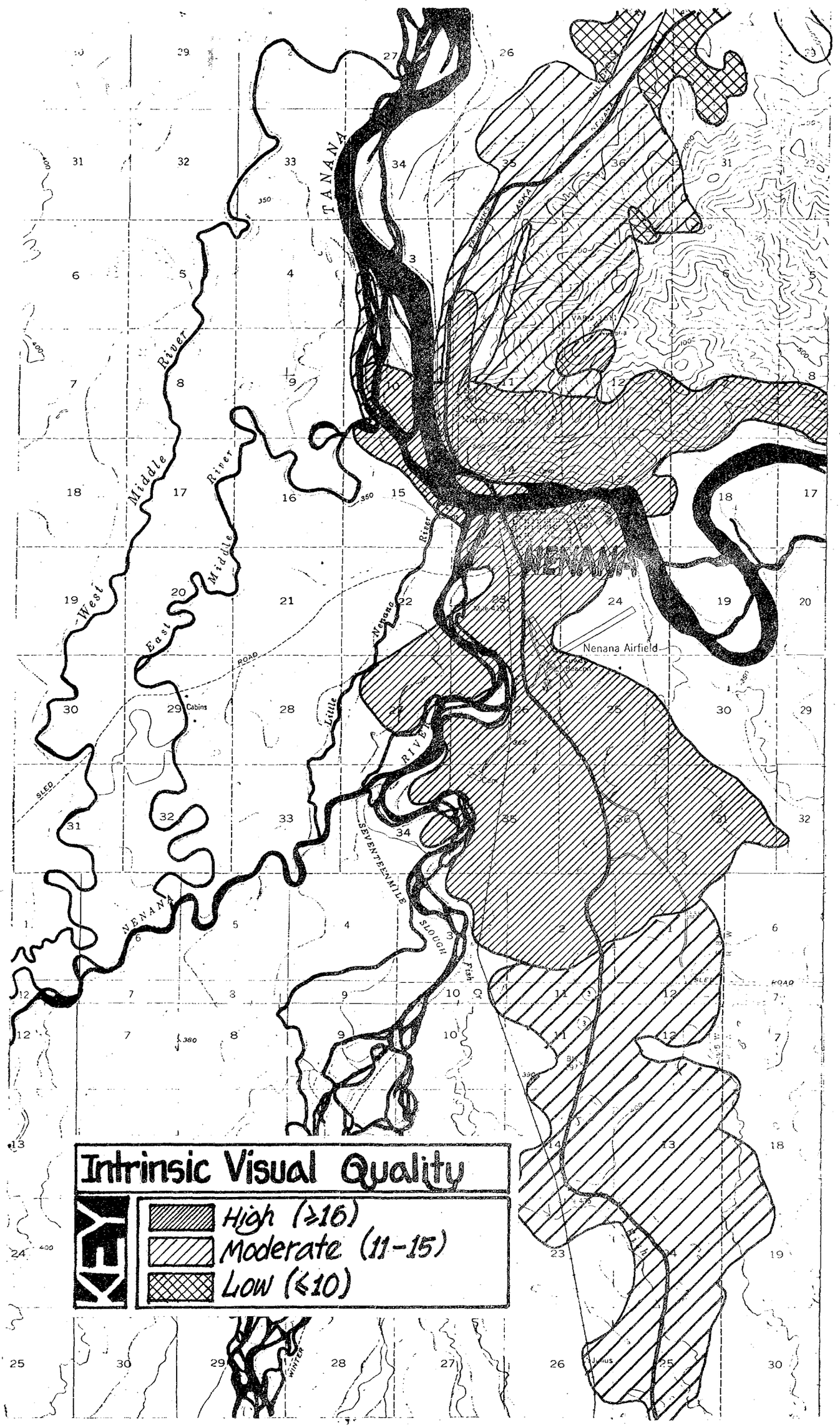
APPLICATIONS

The information contained within this scenic resource inventory was designed to be useful in conjunction with other physical, biological and socio-economic landscape characteristics in management and other land related decision making. Information set comparisons can be accomplished primarily through interpretative map overlays and graphs. The potentials also exist for computer based storage, mapping and analysis of this information alone or in combination with other data. Some interpretation techniques applications and recommendations. Interpretative maps will use that portion of the road passing through the community of Nenana for illustrative purposes.

1. Comparison of Intrinsic Visual Quality

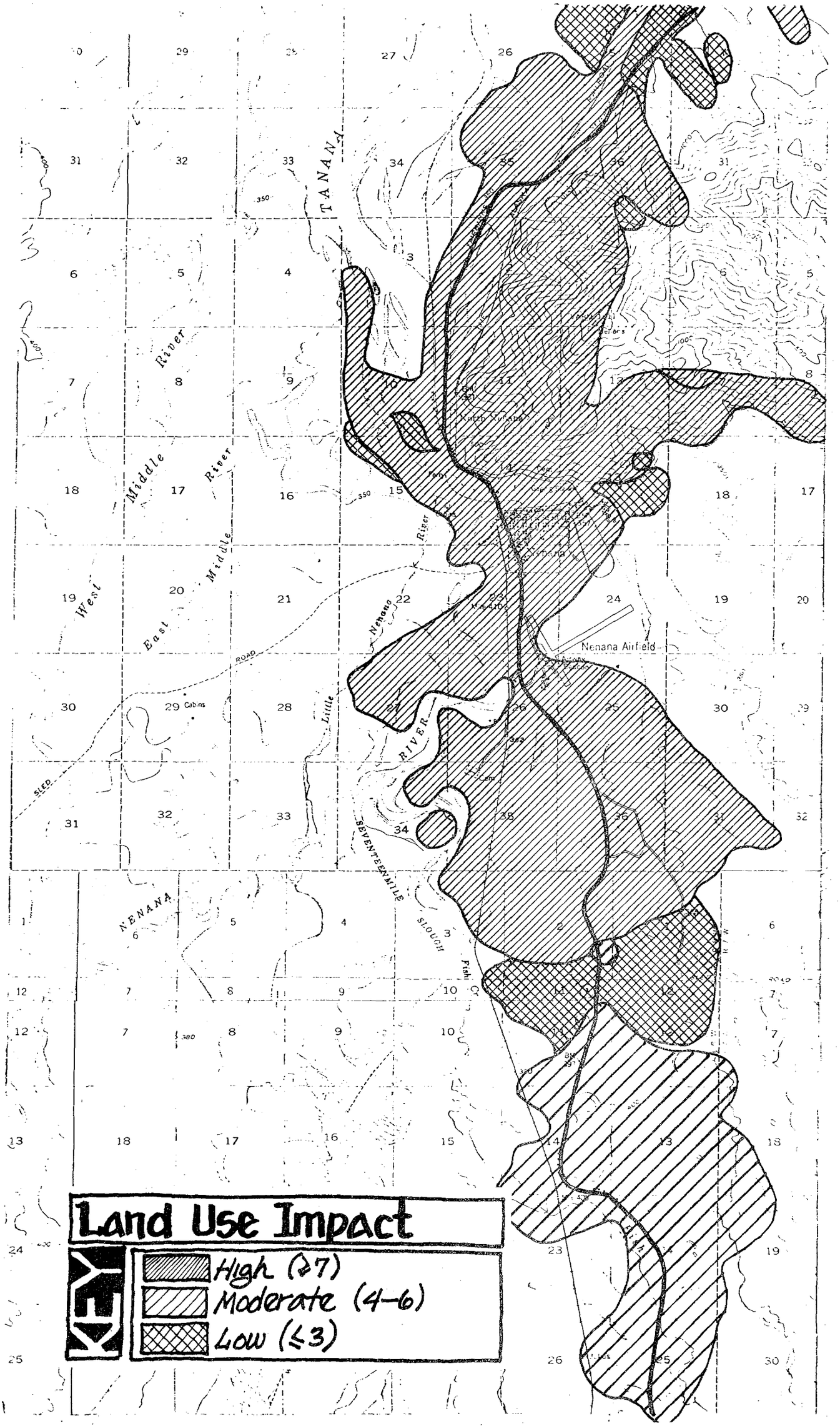
This can be accomplished in the following manner. Intrinsic visual quality values for all assessment units within a single character type (or for all character types) are grouped into three categories; high, medium, and low. The viewshed (seen area) for each unit can then be color coded or shaded according to its group rating. The resultant map gives a relative indication of areas of high scenic resource value. See facing page for an example of an intrinsic visual quality map for that portion of the road passing through the community of Nenana. Contiguous units with "high" intrinsic visual quality ratings suggest that scenic corridor or scenic highway designations, with appropriate management guidelines, might be appropriate. Similarly, those isolated units of "high" intrinsic visual quality surrounded by lands of lower values could suggest that special consideration be given to these lands to take advantage of the special landscape characteristics occurring there. It should be noted that a variety of other important factors, such as land ownership, use patterns and important resource locations need to be considered in conjunction with the scenic resource information.

On the map on the facing page, note that the lands around the community of Nenana have high intrinsic visual quality ratings. The land use impact map on the following page indicates that these lands also are subject to commercial, industrial and residential development. This suggests that careful land management and design considerations could be employed to reduce these adverse impacts and respond to the high visual quality potential of this landscape.


TANANA
Middle River
West Middle River
East Middle River
Nenana River
Little Nenana River
SEVENTEENMILE SLOUGH
NENANA
Nenana Airfield
Cabins
ROAD
SLED
Intrinsic Visual Quality
KEY
High (≥16)
Moderate (11-15)
Low (≤10)

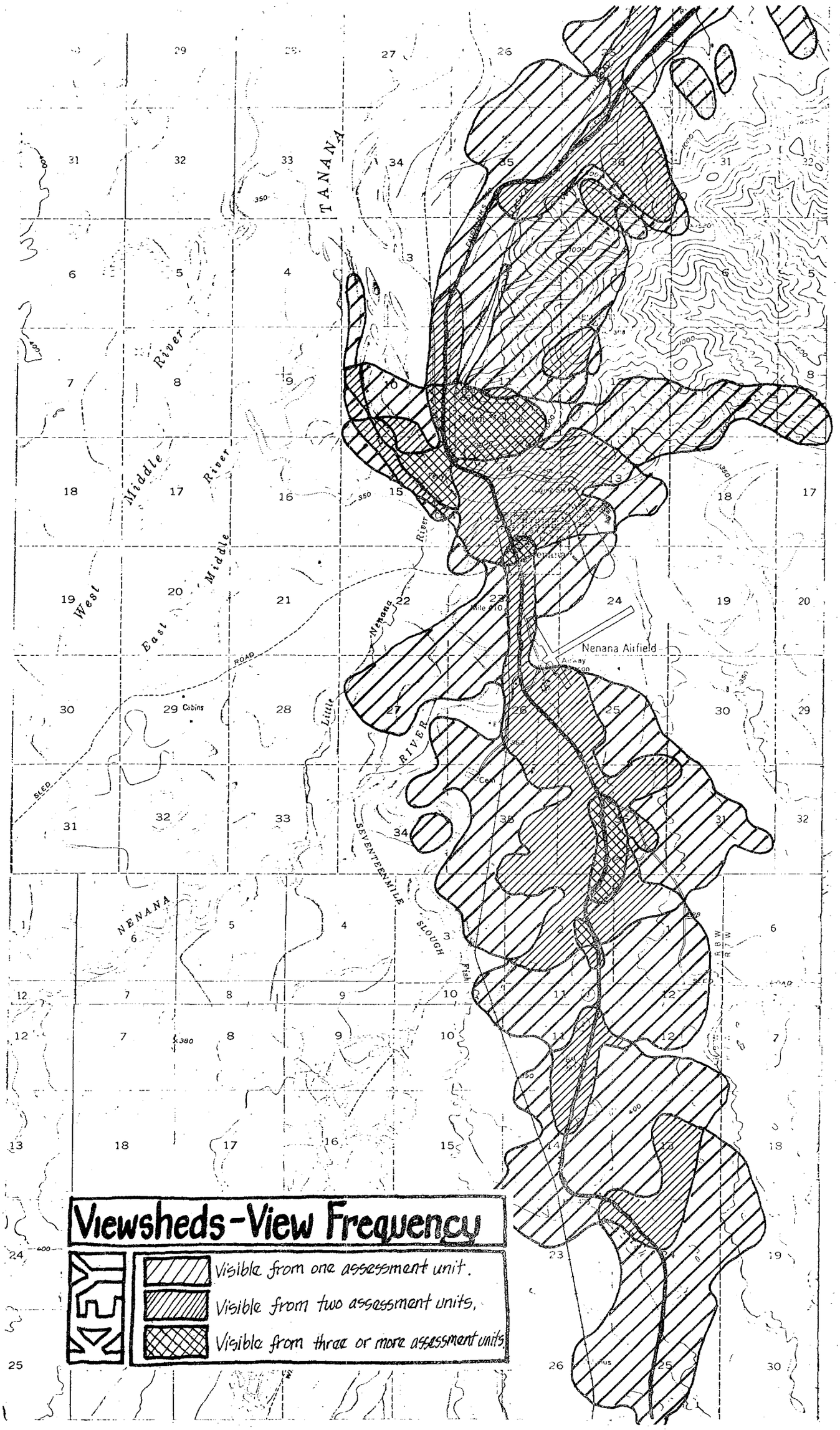
2. Land Use Impacts

The intensity of human activity and its impact on scenic resources is evaluated through the cultural impact data for each assessment unit. Values could be grouped into "high," "medium" and "low" categories. This information can be displayed graphically through a color coded or shaded viewshed map such as the one shown on the facing page. This type of map can indicate where existing land use patterns severely impact the scenic resources, as well as those areas where human activity has remained in scale and harmony with the character of the land. When this information is compared to the intrinsic visual quality map (see preceding page), those lands of high scenic resource value which have been impacted by land use activities can be identified. This would suggest that these areas may require careful onsite analysis to determine management techniques to reduce this impact.


Land Use Impact
KEY
High (≥7)
Moderate (4-6)
Low (≤3)
TANANA
River
Middle
River
West
Middle
East
Nenana
River
Little
RIVER
BEVENTEENMILE
SLOUGH
NENANA
Nenana Airfield
ROAD
SLED
Cabins
Fish Cr

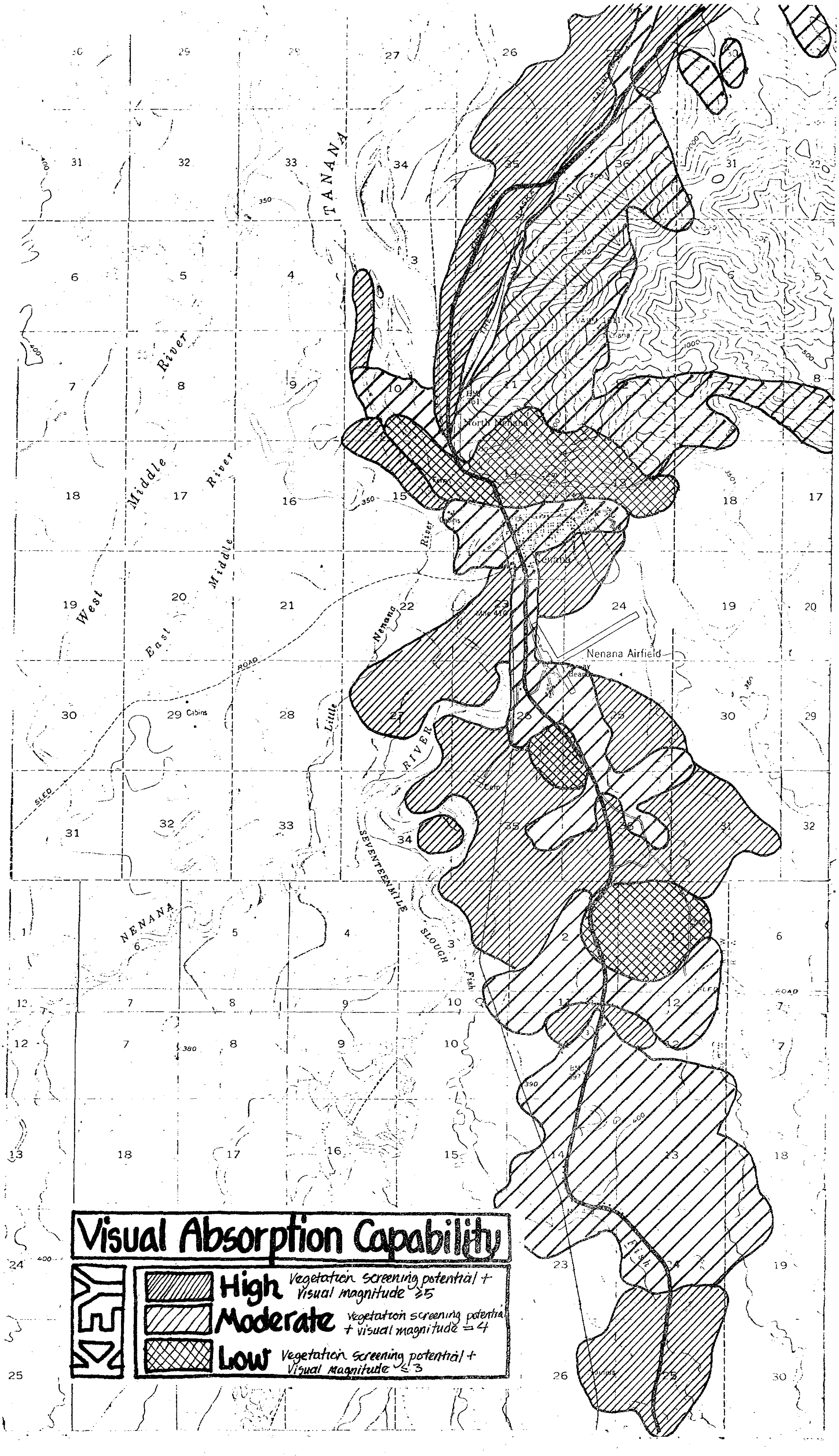
3. Viewsheds and Visibility Frequency

Often land planning and management decisions require a determination of whether a certain development or management activity will be visible or not. Composite viewshed maps give good approximations as to the extent of foreground and middleground seen areas, as well as an indication of which lands are viewed from more than one assessment unit. Thus for example, by using this map, a proposed clearcut or gravel extraction site could be evaluated as to whether or not it would be visible from the road as well as whether it might be viewed from more than one assessment unit. The map on the facing page depicts a viewshed and visibility frequency map. Note that lands across the Tanana River north of the community of Nenana are visible from three or more assessment units. These lands could be considered to be particularly sensitive since land development or modification could be highly visible from a number of vantage points along the highway.


Viewsheds-View Frequency
Visible from one assessment unit.
Visible from two assessment units.
Visible from three or more assessment units.
TANANA
Middle River
West Middle River
Nenana
Little RIVER
SEVENTEENMILE SLOUGH
NENANA
Nenana Airfield
ROAD
SLED
Cabins

4. Visual Absorption Capability

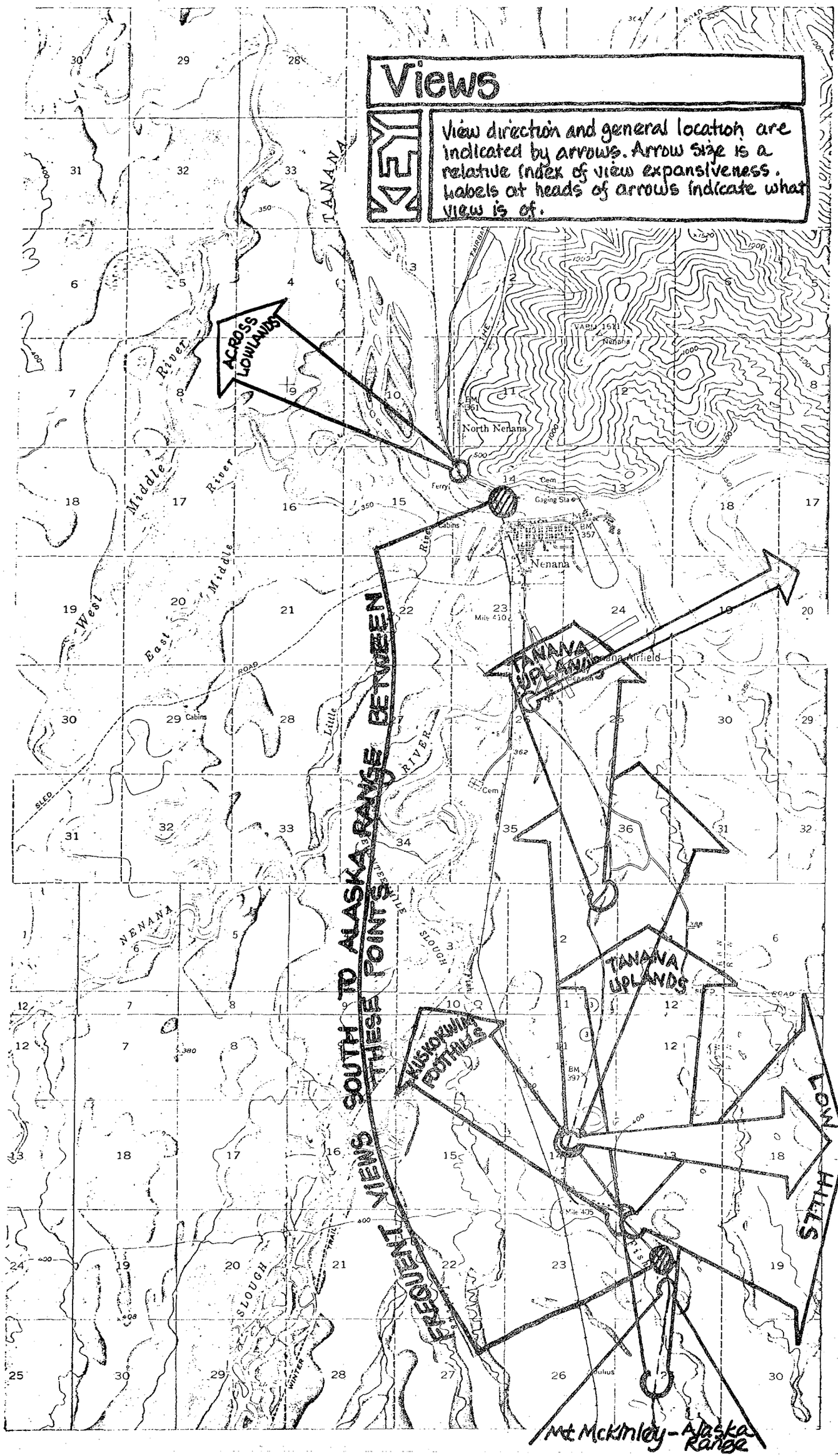
As noted in the preceding section, the visual absorption capability is an index of the ability of the topography and vegetation to screen or reduce the visibility of a landscape modification. Maps indicating "high," "medium" and "low" visual absorption capability can be generated from this inventory information (see map on facing page). Lands rated "high" suggest that development and/or landscape modification could occur without being highly visible, while those areas rated "low" indicate that any activity occurring there would be highly visible. It must be noted that onsite inspection and adequate design considerations need to be employed in all cases; however, the visual absorption capability reflects those areas where design costs and environmental impacts can be minimized.


Visual Absorption Capability
KEY
High
Vegetation screening potential + Visual magnitude ≥5
Moderate
Vegetation screening potential + visual magnitude =4
Low
Vegetation screening potential + Visual Magnitude ≤3
TANANA
West Middle River
East Middle River
North Nenana
Nenana
Nenana Airfield
Little Nenana River
SEVENTEENMILE SLOUGH
NENANA
SLED ROAD
Cabins

5. Views

Maps indicating the location of viewpoints and unique natural and manmade visual elements can be generated from the inventory data. This information can be useful for evaluating places for potential recreational wayside or scenic turnout development. These maps can also be helpful in determining where large structures (buildings, communication towers, power lines) may block or interfere with distant views. Furthermore, stretches of road with only limited views out can be evaluated to determine if vegetation modification or alternative road alignments may be employed to improve the quality of the experience by creating distant views.

Note the view patterns on the map on the facing page. Numerous views both due north to the uplands above the Tanana River and south to the Alaska Range occur from the community of Nenana south. Mt. McKinley is visible only from the southernmost assessment unit shown on the map. North of Nenana, distant views are for the most part absent. This information suggests two opportunities. First, north of Nenana there may exist places where views across the Tanana lowlands to the distant Kuskokwim foothills could be created through landscape modification. Secondly, the southern portion of the highway may be a good location for a turnout or rest area due to the expansive views in all four directions and the view of Mt. McKinley.


Views
KEY
View direction and general location are indicated by arrows. Arrow size is a relative index of view expansiveness. Labels at heads of arrows indicate what view is of.
ACROSS LOWLANDS
TO ALASKA RANGE BETWEEN THESE POINTS
FREQUENT VIEWS
TANANA UPLANDS
TANANA UPLANDS
KUSKOKWIM FOOTHILLS
LOW HILLS
Mt. McKinley - Alaska Range
North Nenana
Nenana
Nenana Airfield
Ferry
Gaging Sta
Cem
Cabins
Middle River
West Middle River
East Middle River
Little Tanana River
Nenana Slough
Winter Trail
Sled Road
Mile 410
Mile 405
BM 361
BM 357
BM 397
VABM 1511
Tanana

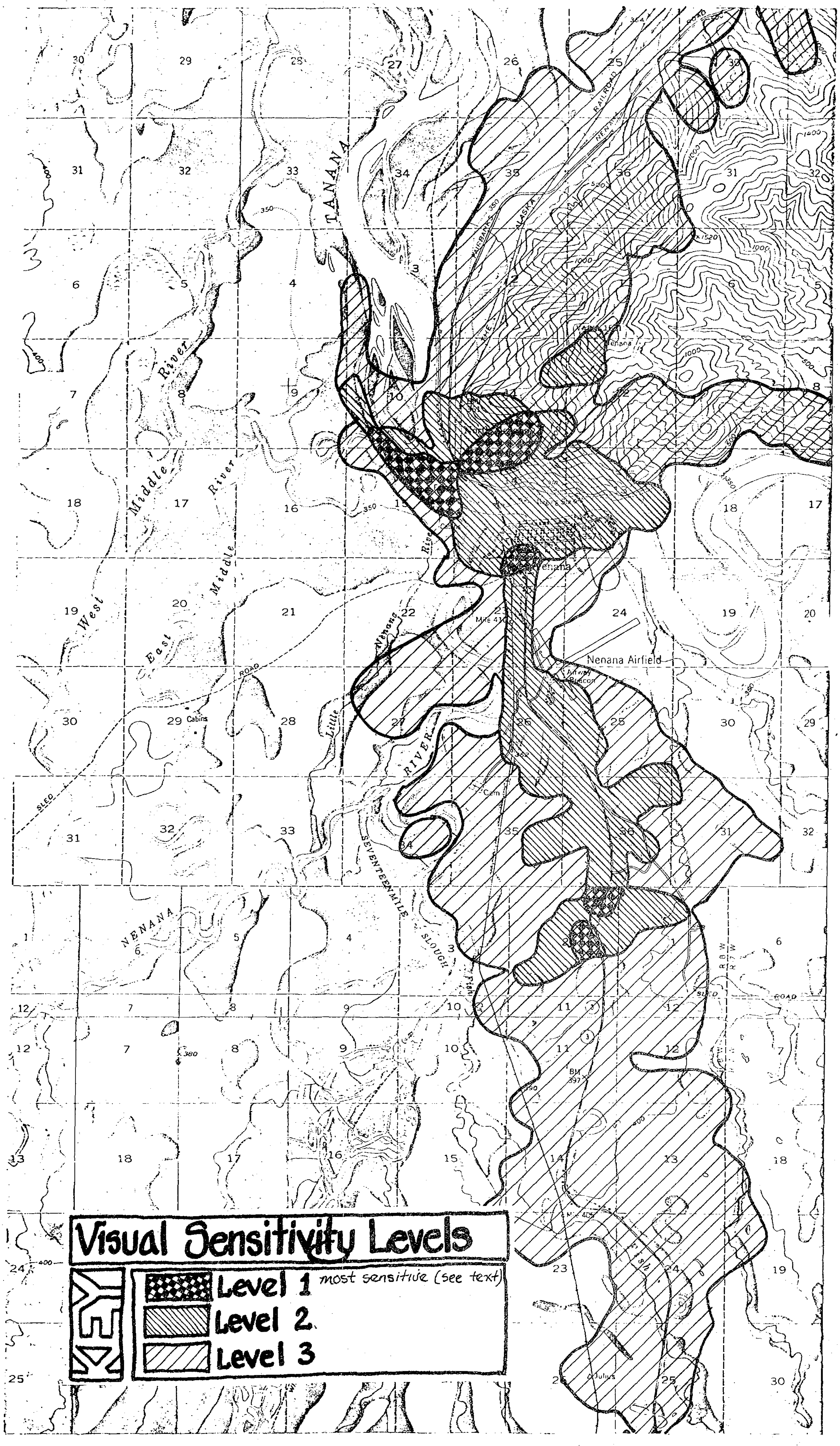
6. Landscape Sensitivity Levels

Oftentimes it is valuable to determine some index of the fragility or sensitivity of a given landscape. One index of landscape visual sensitivity can be determined through an analysis of the interactions of three important variables: view frequency, visual absorption capability and intrinsic visual quality. All of these factors have been mapped separately on the preceeding pages. Here we will look at the simultaneous combination of all three factors. The most visually-sensitive lands, here termed "Sensitivity Level One" can be considered as those with the following characteristics: Low visual absorption capability, high view frequency (visible from three or more assessment units) and high intrinsic visual quality. The map on the facing page illustrates those lands which meet all three of the above criteria. Note that a portion of the hill north of Nenana, and the south bank of the Tanana River just below its confluence with the Nenana River are classified as sensitivity Level One. Sensitivity Level Two are those lands with somewhat less restrictive criteria for view frequency, visual absorption capability and intrinsic visual quality. On the map note the pattern of level two lands around the community of Nenana and south along the highway for approximately four miles. The remaining visible lands are classed sensitivity Level Three. Landscape sensitivity levels can be helpful in determining land management guidelines to respond to scenic resource values. Generally more restrictive management guidelines are required for sensitivity level one lands, while level three lands would have the fewest restrictions.

Note: Sensitivity Level Two are those lands meeting either of the following criteria:

a) any two of the following--low visual absorption capability, high view frequency, high intrinsic visual quality

b) any one of the following--low visual absorption capability high view frequency, high intrinsic visual quality and the remaining two factors being moderate ratings, e.g. moderate intrinsic visual quality, visibility from two assessment units, moderate visual absorption capability.



Visual Sensitivity Levels
KEY
Level 1 most sensitive (see text)
Level 2
Level 3
TANANA
Nenana Airfield
Nenana
West Middle River
East Middle River
Little Nenana RIVER
SEVENTEENMILE SLOUGH
NENANA
SLED ROAD
Cabins

GRAPH 1 INTRINSIC VISUAL QUALITY

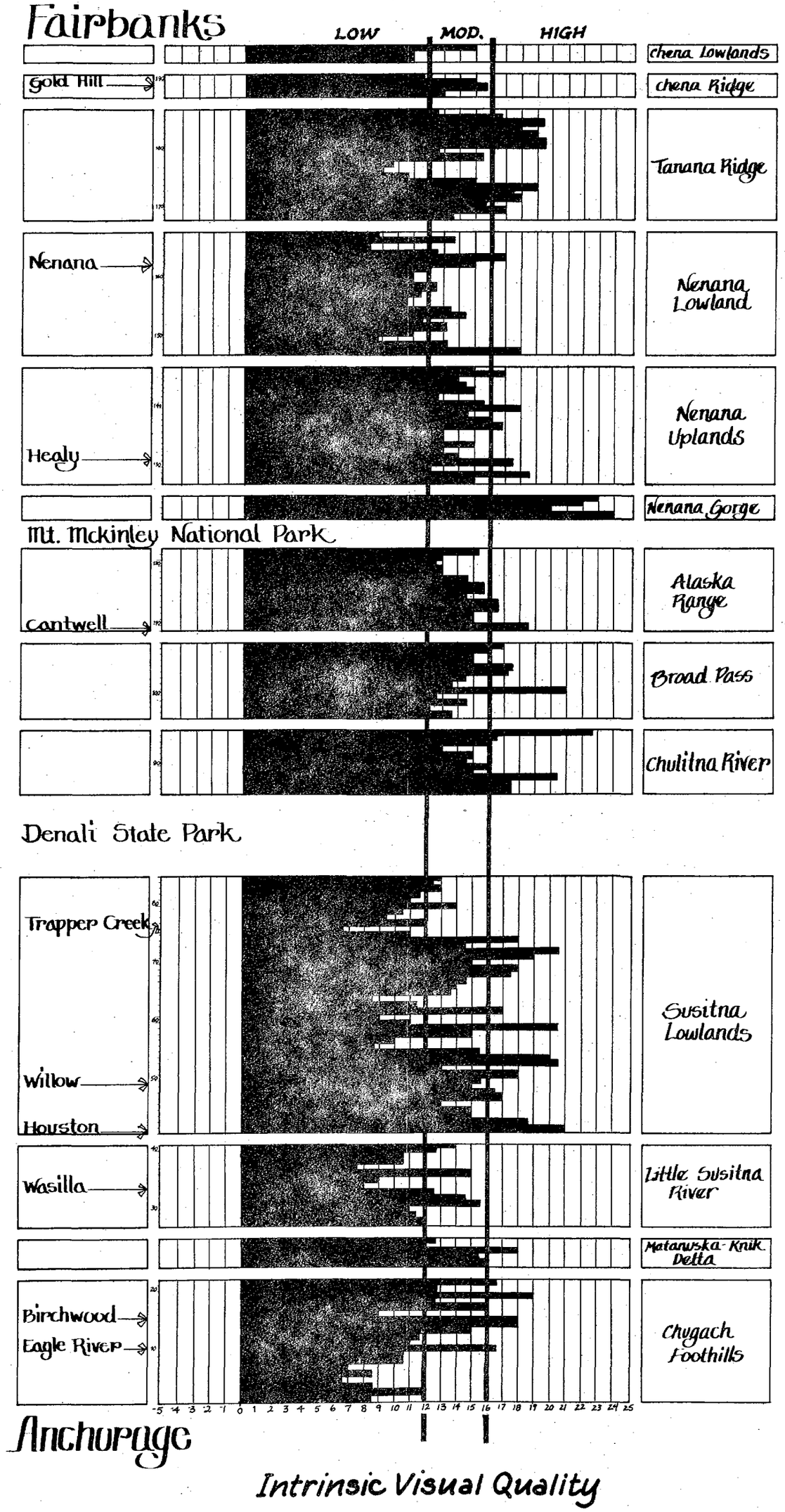
The intrinsic visual quality is defined as the degree of expression exhibited by a landscape through the interplay of its various components or elements. It is the landscapes ability to create visually distinctive and pleasing patterns of form, line, color and texture. Mathematically the intrinsic visual quality is the numerical sum of the following variables:

land-sky interface
landform
landcover
waterform
surprise
anticipation
sequential diversity
lateral views
unique visual elements

Along the George Parks Highway, intrinsic visual quality values range from a low of 6.5 to a high of 24. The mean value was 14. The intrinsic visual quality ratings were grouped into three categories:

High (16)
Moderate (13 16)
Low (13)

It is of interest to note that aside from the Nenana Gorge character type in which all assessment units scored high, all other character types generally display a wide range of intrinsic visual quality ratings. Consequently, the recommendations found in part three break the character types down into smaller units (called visual resource management units.)


Fairbanks
LOW
MOD.
HIGH
Chena Lowlands
Gold Hill
Chena Ridge
Tanana Ridge
Nenana
Nenana Lowland
Nenana Uplands
Healy
Nenana Gorge
Mt. McKinley National Park
Alaska Range
Cantwell
Broad Pass
Chulitna River
Denali State Park
Susitna Lowlands
Trapper Creek
Willow
Houston
Little Susitna River
Wasilla
Matanuska-Knik Delta
Chugach Foothills
Birchwood
Eagle River
-5 -4 -3 -2 -1 0 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
Anchorage
Intrinsic Visual Quality

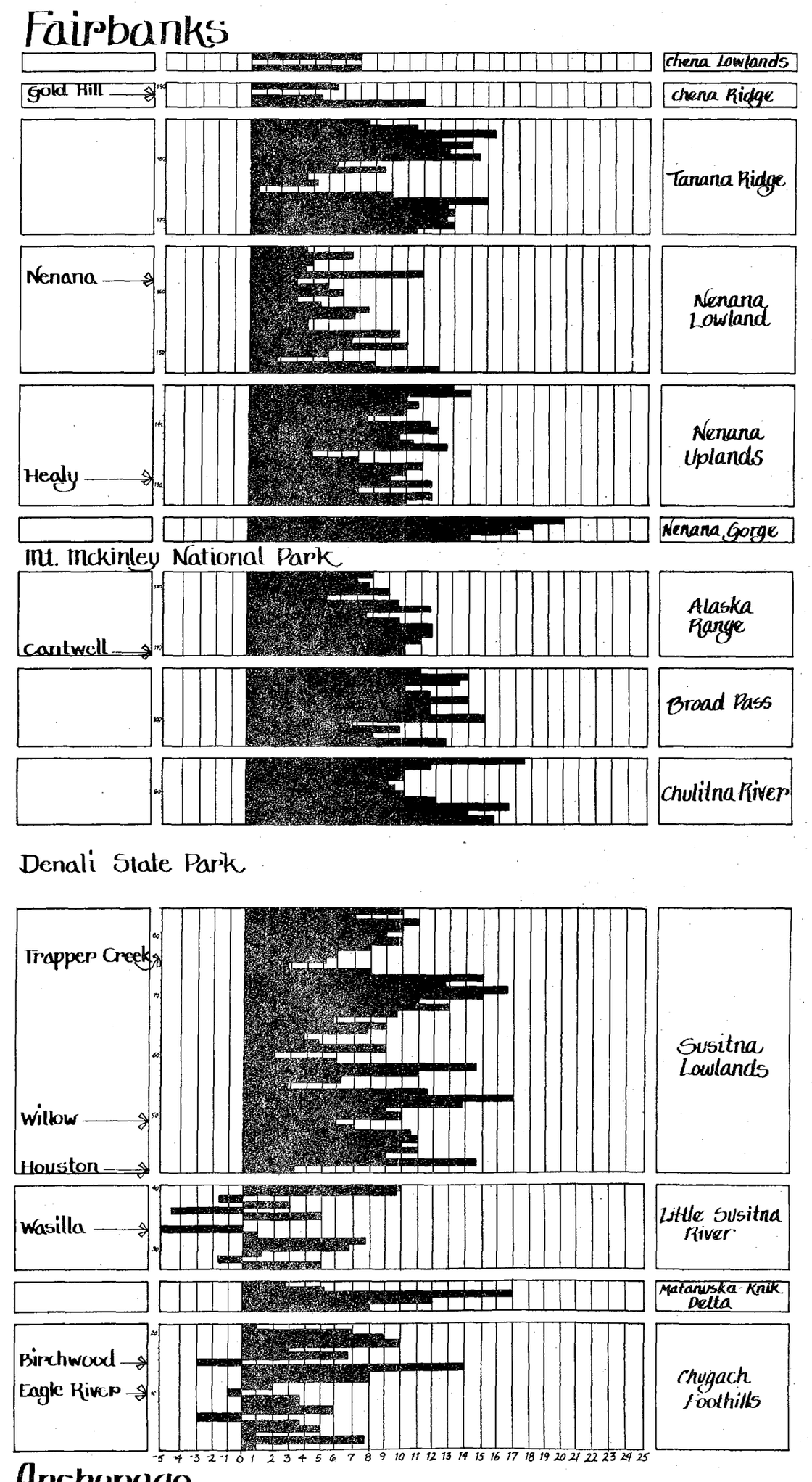
GRAPH 2 COMPOSITE VISUAL QUALITY

The composite visual quality rating is a measure of the assessment units present visual quality. It is derived from the intrinsic visual quality (see Graph 1) minus the visual impacts of land and resource development. Composite visual quality is a measure of the units relative scenic value as it presently exists. Along the George Parks Highway, the composite visual quality ranged from a low of -6 to a high of 20. The mean value was 8. The composite visual quality ratings were grouped into three categories:

High (11)
Moderate (8 11)
Low (8)

High composite visual quality ratings were part of the criteria used to determine scenic highway designation recommendations.

The reader should compare the patterns on this graph with those of the previous one. The visual impact of some land developments can be significant - as can be seen in some assessment units ending up with negative values. It is of interest to note that while the lowest composite visual quality values were clustered in the area form Wasilla south to Anchorage - there still were many assessment units which scored high enough for scenic highway designation recommendations along this portion of the highway. This graph is a good indicator of where work needs to be done to restore some of the scenic resource values intrinsic to these landscapes.

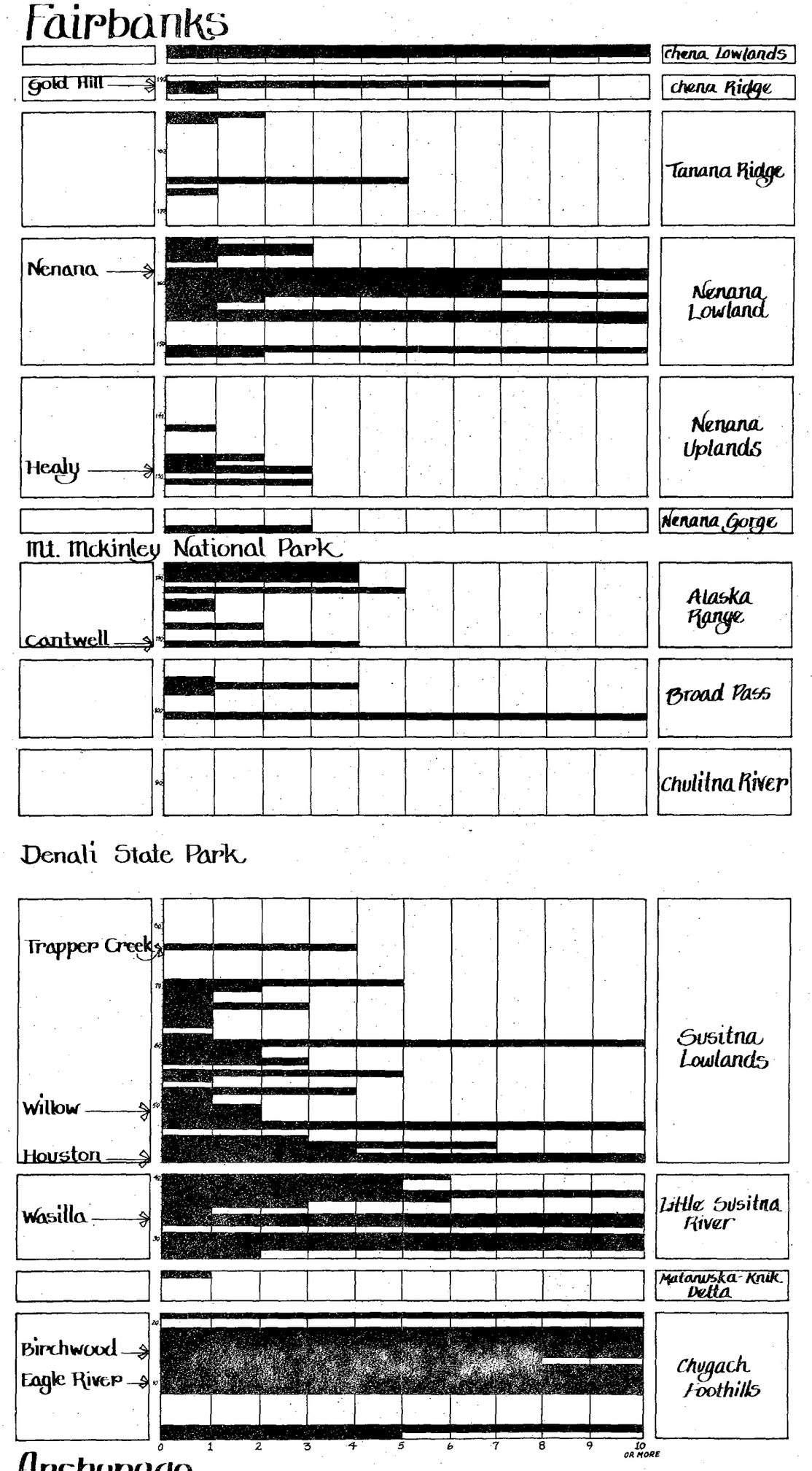


Composite Visual Quality

GRAPH 3 NUMBER OF RESIDENTIAL STRUCTURES VISIBLE FROM THE HIGHWAY

Permanent and part-year residences are visibly the most prevalent roadside land use along the George Parks Highway. From a scenic resource perspective, residential land use generally has a lower visual impact than almost any other land use. Residential use tends to disturb the land less, leave trees and shrubs, and prefer an orientation away from the road. Additionally, residences provide points of interest and variety along many portions of the George Parks Highway. Only when residential development disturbs large portions of the natural landcover, when it results in large accumulations of junked autos and other trash, and when it uses materials and is at a scale out of character with the surrounding landscape does it detract from scenic resources. At present this happens in only a few locations. Yet the potential for more adverse impacts of roadside residential development does exist as more and more land is developed.

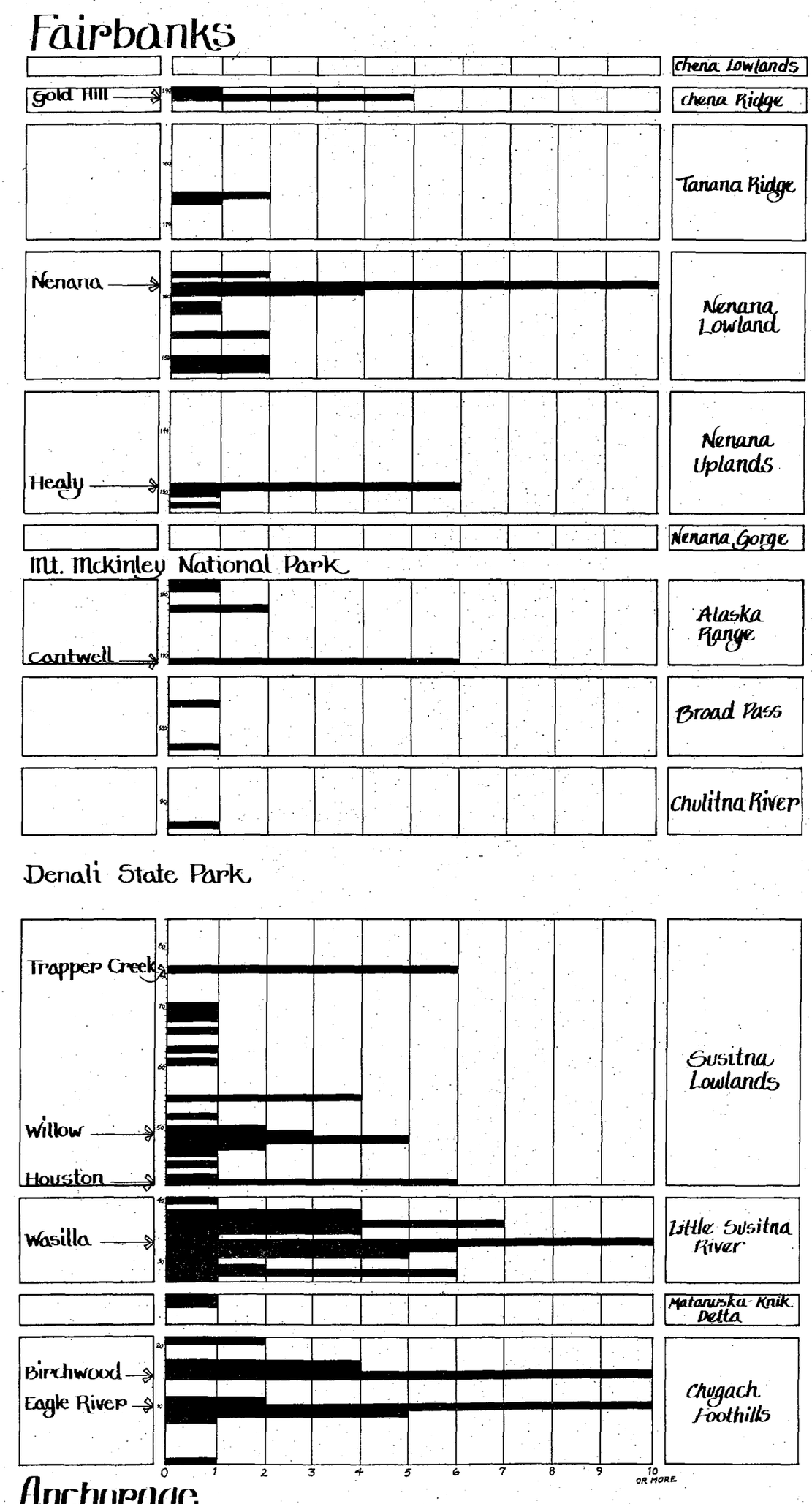
Some interesting patterns emerge from theis graph. Not suprisingly visible residential development tends to be high near Anchorage and Fairbanks, and decreases progressively as one moves farther away from these areas. Breaks in this pattern indicate large areas of public lands - such as the Tanana Ridge lands southwest of Fairbanks and Fort Richardson Military Reservation east of Anchorage, or areas which are undevelopable such as the Matanuska-Susitna Delta. The greatest visual impact of residential development is found near Anchorage (assessment units 10, 11, 12, 15, 17, 18, 21), Wasilla and the lower Susitna Valley (assessment units 28, 30, 33, 36, 41) and near Fairbanks (assessment unit 188).



Number of Residential Structures
Visible from Highway

GRAPH 4 NUMBER OF COMMERCIAL STRUCTURES VISIBLE FROM THE ROADWAY

Commercial land development (stores and other private businessess) along most of the George Parks Highway is still relatively low. As would be expected, "relatively intensive" development (5 stores visible from roadway) occurs only around existing communities (Eagle River, Birchwood, Wasilla, Willow, Trapper Creek, Cantwell, Healy and Nenana). This graph most clearly points out the intensive strip commerical development presently occurring for miles both north and south of Wasilla and the long stretches of highway with only one or two scattered commercial structues. Clearly today, aside from the Wasilla commercial strip, there exists great opportunity to play a role in the sensitive commerical development of the lands adjacent to the highway in a way which provides the necessary services and at the same time takes into consideration the scenic resource values present.



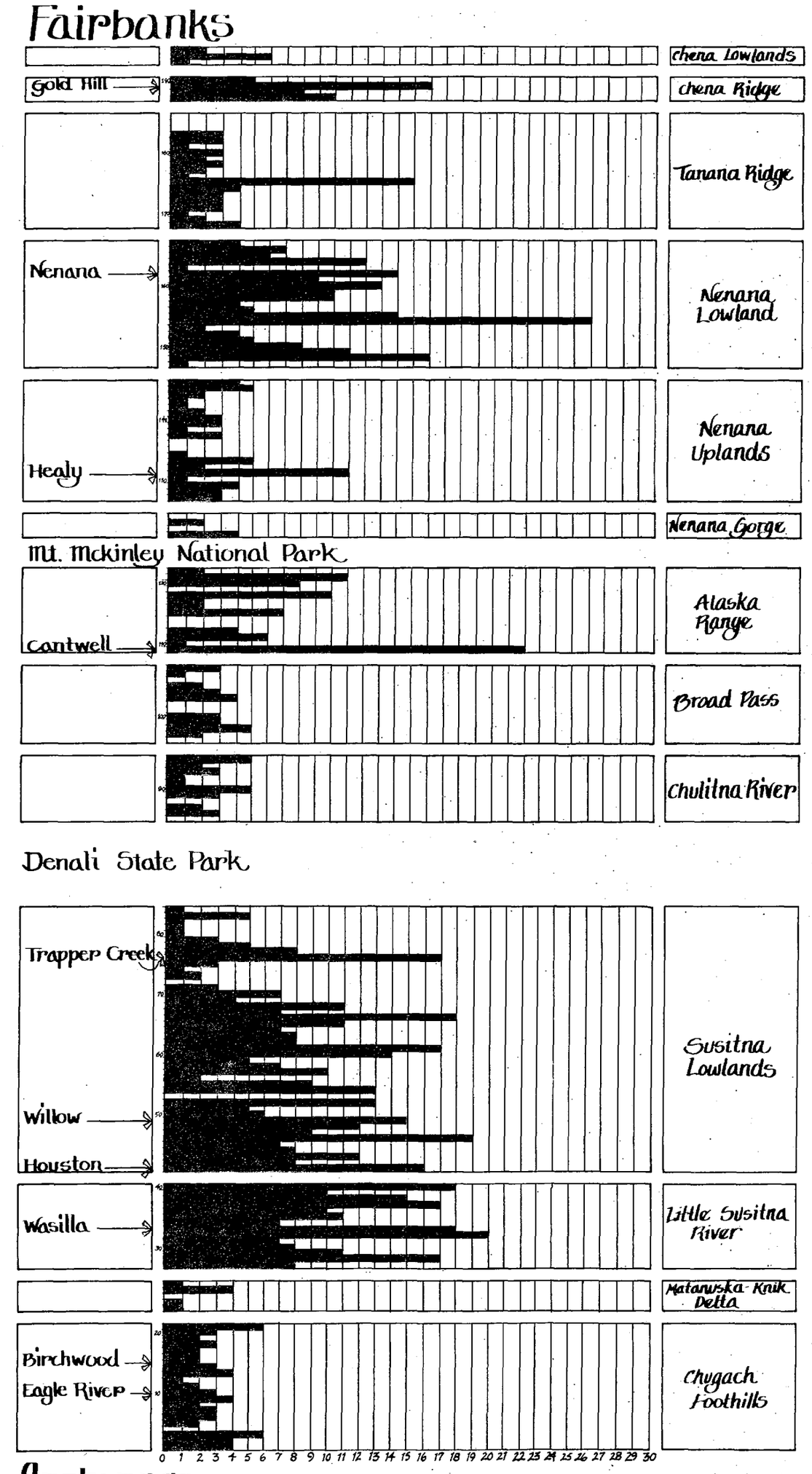
Number of Commercial Structures
Visible from Highway

GRAPH 5 NUMBER OF INTERSECTIONS WITH THE GEORGE PARKS HIGHWAY

The number of highway intersections can be an indicator of a variety of concerns related to roadside land management. Some of these concerns include the following:

- strip commercial development
- potential safety hazards. Numerous intersections in short distances create many potential traffic hazards as a result of entering and leaving vehicles.
- intensive recreational use of areas adjacent to the highway.
- visual distractions to motorists, both as a result of the need to be aware of entering and leaving vehicles as well as the required signing, turning lanes and other visual clutter needed to manage numerous intersections and turnoffs.
- potential future roadway development requirements - such as frontage roads, turning lanes, overpasses, and controlled access sections to safely deal with some of the problems intrinsic to highway intersections.

At present, there appears to be two distinct situations along the George Parks Highway. One is the controlled access situation as found on the roadway leaving Anchorage. This provides a minimum of intersections and, as a result, a minimum of safety hazards along with relatively safe system for moving vehicles through communities. The price for this is very high economically, and environmentally because it requires wide roadways and extensive landscape alteration. The other situation is at the opposite extreme - no control along a narrow two lane roadway. This is typical along most of the highway. What is needed is a method of realizing the advantages of the controlled access highway while not requiring the enormous economic and environmental costs. The most direct way to accomplish this would be to today develop control of intersections with the highway and developing frontage commerical roads along those areas where roadside commerical development requires visibility and easy access. The total lack of any control as is evident today, generally leaves as the only other option an expensive controlled access freeway bypass. This graph indicates some of the problem areas which Alaskans are going to have to pay for sometime in the near future such as around Wasilla and Nenana.



Number of Intersections with Parks Highway

(includes paved, gravel, private and recreational roads)