APPENDIX B

INTERIM NOISE STUDY REPORT

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INTERIM NOISE STUDY REPORT

METHODS

Two methods were employed to determine existing (ambient) traffic noise levels within the Sterling Highway corridor. Background ambient noise levels were measured at representative sites in the Cooper Landing area on March 25, 1980, using a General Radio 1981 Precision Noise Measuring System instrument. The method developed by the Society of Automotive Engineers Construction Site Noise Level Sub-Committee (SAE), was used to arrive at an equivalent (L_{eq}) noise level.

The second method, used throughout this report for predictions of both existing and future noise levels, is STAMINA 1.0, the FHWA Level 2 Highway Traffic Noise Prediction Model. This method involves the input of traffic and site parameters into a computer to arrive at an equivalent noise level.

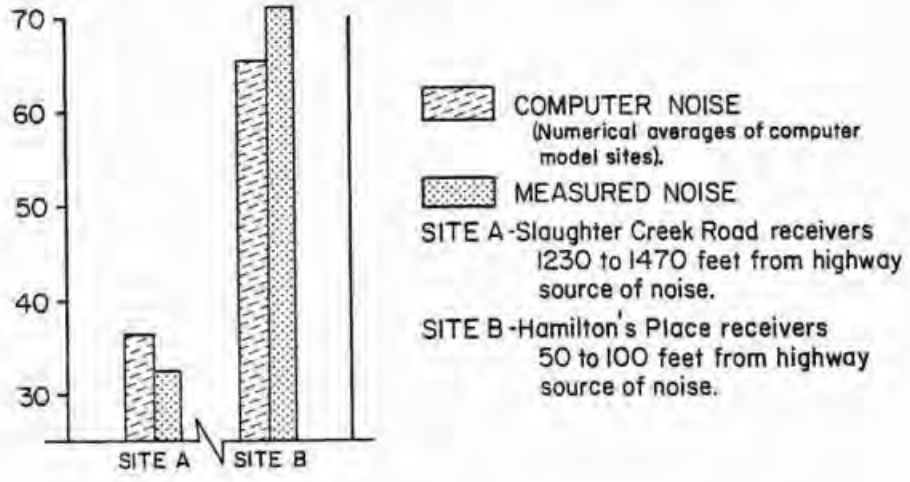
The measurement sites are representative of sensitive receivers of noise in the project corridor: residences and commercial development (Figure C). Criteria for maximum noise levels for various categories of human activity are defined (Table 1) in the Federal Highway Program Manual, Vol. 7, Ch. 7, Section 3 (FHPM 7-7-3). Site A on Slaughter Creek Road is in an exceptionally quiet residential neighborhood, where ambient levels were measured in the low 30 dBA range.

Measurements near Hamilton's Place, in the center of Cooper Landing within 50 feet of the highway, yielded an equivalent noise level of 71 dBA.

The STAMINA 1.0 computer model indicated 1979 noise levels at between 28.7 and 44.2 dBA (L_{eq}) at three Slaughter Creek Road receivers with 55 mph traffic on Sterling Highway. The computer model, with identical traffic input, showed levels at Hamilton's Place varied from 65.4 dBA at 100 feet from the highway, to 68.7 dBA at 50 feet.

The differences between sound levels measured at the sites, and levels produced by the computer with 1979 traffic input, are compared in Figure A. Correlation of computed with measured noise levels is fairly good. A better calibration is expected from improved measurement methods to be employed in preparation of the Final Noise Report.

FIGURE A
CALIBRATION OF THE COMPUTER MODEL



TRAFFIC DATA

Traffic parameters used for noise predictions include the following:

1. Traffic predictions

Average Daily Traffic	1979	Year of completion 1984	Year 2004
Sterling Highway Cooper Landing	2,500	3,350[1]	5,300[2]

2. Design Hourly Volume (DHV) of 13 percent.

3. Directional Split of 50/50.

4. Traffic Mix for DHV (peak hour):

Automobiles	92 percent
Heavy Trucks	6 percent
Medium Trucks	2 percent

5. Traffic Speed ranging from 40 to 55 miles-per-hour.

[1]-Based on 6 percent per year increase

[2]-Computer noise prediction run in 1979 for 20-year forecast with input available at the time (year 2000 traffic at 5,300 ADT); computer run with 2004 traffic (6,400 ADT) not made for interim noise study.

DEFINITIONS

1. Ambient noise refers to the existing noise level, made up of all the natural and man-made sounds within the acoustical environment of a particular area.

2. Decibel is a unit of sound pressure.

3. dBA is the abbreviation for a decibel of sound measured on an A-weighted scale.

4. A-weighted Sound infers sound having a frequency spectrum that is heard best by humans.

5. Equivalent Sound Level (L_{eq}) is a single value of sound level for any desired duration. It includes all of the time varying sound energy in a measurement period, such as 67 dBA for one-hour duration. The one-hour duration is used in highway traffic noise predictions. L_{eq} correlates well with the effects of noise on people even for wide variations in environmental sound levels and time patterns. A sound containing twice as much energy but lasting only half as long as another would be characterized by the same equivalent sound level as would be a sound with four times the energy lasting one-fourth as long.

6. Design Noise Levels Listed in Table 1 (from FHPM 7-7-3, Figure 3-1) are maximum values. Higher levels are considered to be excessive and damaging to the human environment. They are noise levels to be reduced, if possible, rather than a desirable goal. The 67 dBA and 72 dBA design noise levels are the only exterior levels that apply on this project. No activities are known to exist on the project in the category requiring the design level of 57 dBA.

7. Drop off rate Sound levels lose intensity as the source-receiver distance increases. "Drop off" refers to the rate at which the sound level is attenuated with distance; 3 dBA or more for each doubling of distance between the source and the receiver. In the generally irregular and densely vegetated terrain of the Sterling Highway corridor, "soft site" conditions (ie., grass, trees, rough ground, etc.) are prevalent. "Hard site" conditions (ie., pavement or graveled driveways and parking lots) attenuate noise less readily, exhibiting a drop off rate of only 3 dBA. Hard sites along the Sterling Highway are generally limited to developed areas close to the highway.

The 3 dBA drop off rate is automatically applied in the Stamina 1.0 noise prediction model. The traffic noise predictions in Figure B reflect this rate -- the noise level at

100 feet is approximately 3 dBA less than the level at 50 feet, other conditions being equal. To assume a "hard site", is a "worst case" or conservative way to estimate future traffic noise levels at sensitive receptors.

The 4.5 dBA drop off rate utilized in the estimate of construction noise levels is more applicable to the project as a whole -- in isolated sites as well as particularly sensitive locations. It is representative of "soft site" conditions which generally prevail at distances over 100 feet from the Sterling Highway.

RESULTS

Predictions of future noise levels were made with the computer for the year of completion (1984) and the design year of the project (see footnote 2, p. B-3). The future noise levels are compared with current (1979) levels in Figure B.

Vehicle speed and source-to-receiver distances are the primary elements of traffic noise. Other variables are not considered because they are too site-specific to be included in this preliminary analysis. They could include roadway grade and speed zones which might increase engine noise contributions, and noise attenuation from site factors like vegetation and terrain barriers. (The latter were included in computer

TABLE 1

NOISE ABATEMENT CRITERIA
HOURLY A-WEIGHTED SOUND LEVEL - DECIBELS (dBA)

Activity Category	$L_{eq}(h)$	$L_{10}(h)$	Description of Activity Category
A	57 (Exterior)	60 (Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	--	Undeveloped Lands.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

1/ Either $L_{10}(h)$ or $L_{eq}(h)$ (but not both) may be used on a project.

FIGURE B

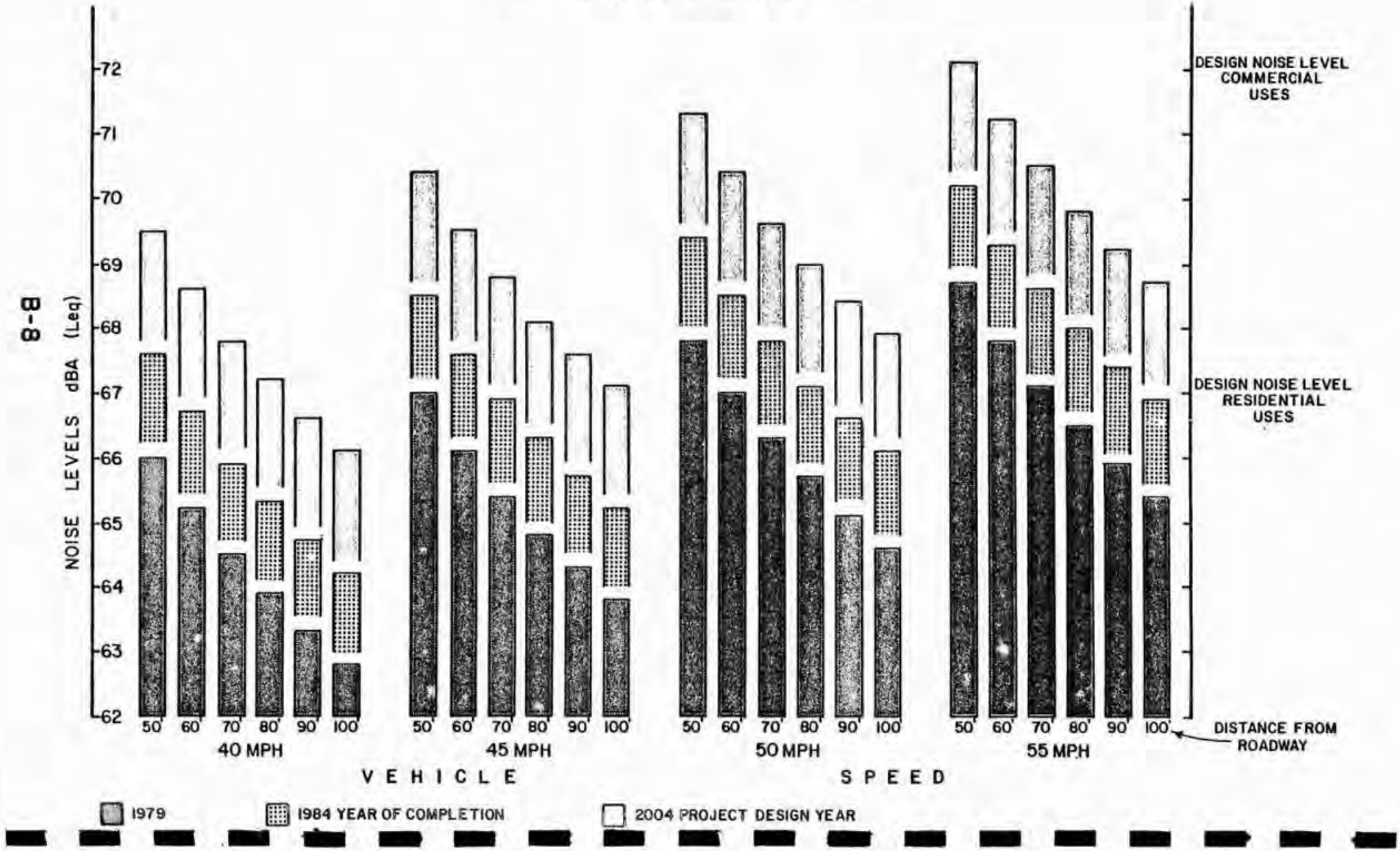
COMPUTED NOISE LEVELS

TRAFFIC NOISE

VS.

VEHICLE SPEED AND SOURCE/RECEIVER DISTANCE

AT SIX RECEIVER POSITIONS



estimates of noise from the highway at distant receivers on Slaughter Creek Road, Figure A. Note also the explanation of "drop off rate" in the definitions).

The noise levels in Figure B apply to all of the alternatives, including "No Action." Given the stage of project development (Current, Completion, or Design Year), and the traffic speed, the noise level for receivers within 100 feet of the roadway can be read directly or estimated from the graph. Using the same data, the 67 dBA contour line was projected to be approximately 160 feet from the nearest travelled lane in the year 2004. This information was used to determine which sensitive receivers would be impacted by year 2004 traffic.

Sensitive noise receptors most likely to be affected by design year traffic traveling at 55 mph (the "worse case" condition) are described below. The numerals correspond to sites labeled on the Land Use Map, Figure C. Sheet and Station numbers refer to the Project Preliminary Plan and Profile Drawings (App. C-59) where details of each noise receptor site can be studied. Other noise receptors shown on the Land Use Map, while they are "sensitive," are clearly outside of the "noise impact zone" defined by the 67 dBA contour.

Site 1. Trailhead to Fuller Lakes, Sheet No. 2, Station 1301 Left--Only the parking lot and the beginning of the trail are touched by noise exceeding the 67 dBA design level standard.

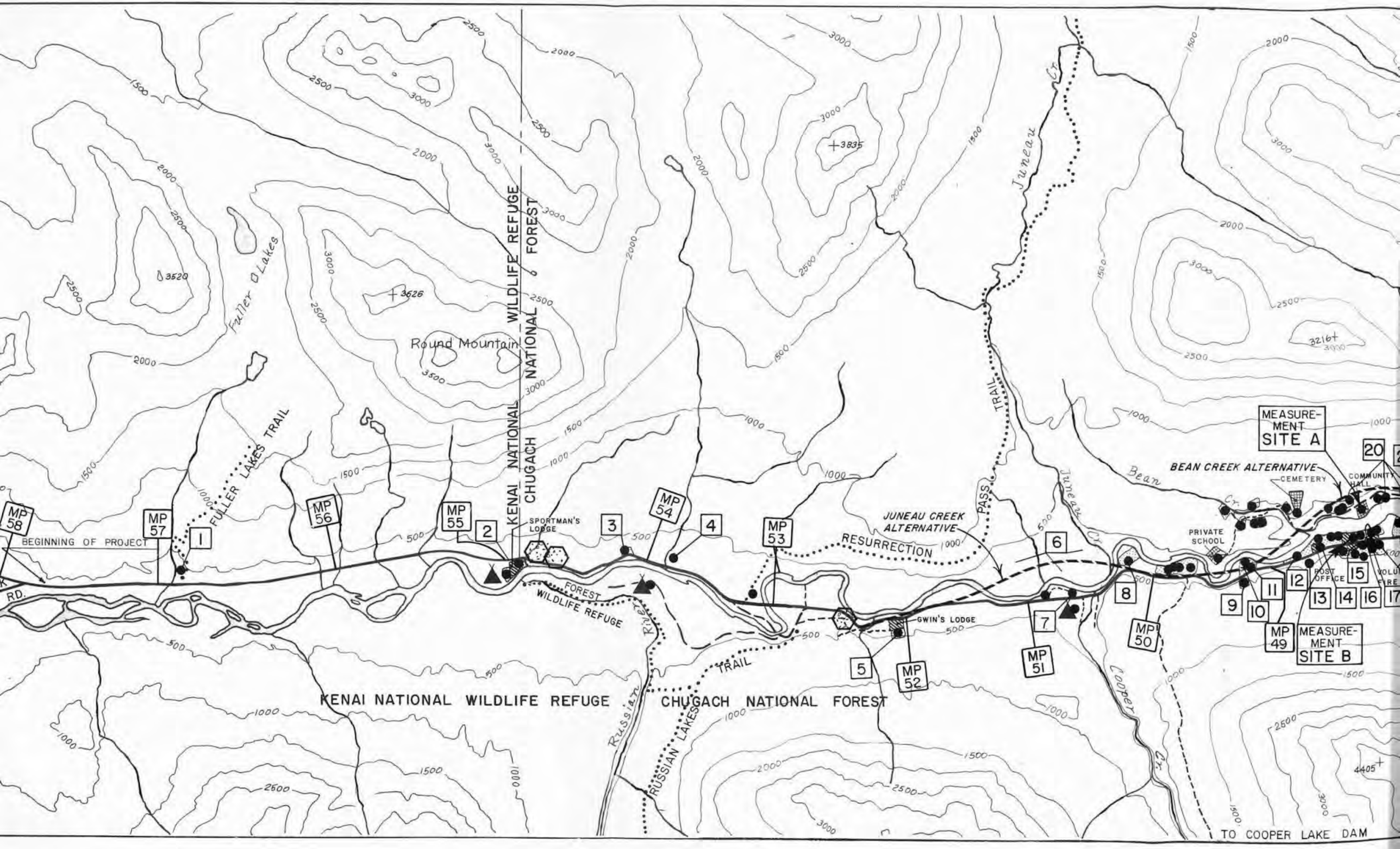
Site 2. Sportsmans Lodge and Kenai Wildlife Refuge Campground, Sheet No. 7, Station 1430 to 1440 Right--About eight cabins and trailers for overnight accommodations are located between the 67 dBA and 72 dBA noise level contours. Construction materials of these buildings may not be adequate to attenuate such noise levels enough to maintain interior levels below the 52 dBA maximum. A permanent residence, other commercial activities, and the campground are outside the design noise level contours for these activities.

Site 3. Residences, Sheet No. 8, Station 1478 to 1480 Left--Dwellings and yards are within the 67 dBA impact area.

Site 4. Residence, Sheet No. 9, Station 1497 Left--The yard of the dwelling is within the 67 dBA contour.

Site 5. Gwinn's Lodge, Sheet No. 12-A, 12-B, Station 1585 Right--The commercial buildings, and all residences are outside both design noise level contour lines.

Site 6. Undeveloped Area, Sheets 13-A, 14-A, Station 1622 to 1672 Right & Left--There are no improvements in this area, but traffic noise impact would be extreme for users accustomed to present conditions.


WILDLIFE REFUGE
NATIONAL FOREST
KENAI NATIONAL
CHUGACH
Juneau
Fuller Lakes
Round Mountain
3520
3626
3835
3216+
FULLER LAKES TRAIL
JUNEAU CREEK PASS TRAIL
MP 58
MP 57
MP 56
MP 55
MP 54
MP 53
MP 52
MP 51
MP 50
MP 49
BEGINNING OF PROJECT
SPORTMAN'S LODGE
GWIN'S LODGE
JUNEAU CREEK ALTERNATIVE
RESURRECTION
BEAN CREEK ALTERNATIVE
MEASURE-MENT SITE A
MEASURE-MENT SITE B
CEMETERY
COMMUNITY HALL
PRIVATE SCHOOL
POST OFFICE
FOREST
WILDLIFE REFUGE
Russian River
RUSSIAN LAKES TRAIL
KENAI NATIONAL WILDLIFE REFUGE
CHUGACH NATIONAL FOREST
Bean Cr.
Juneau Cr.
Cooper Cr.
4405+
TO COOPER LAKE DAM

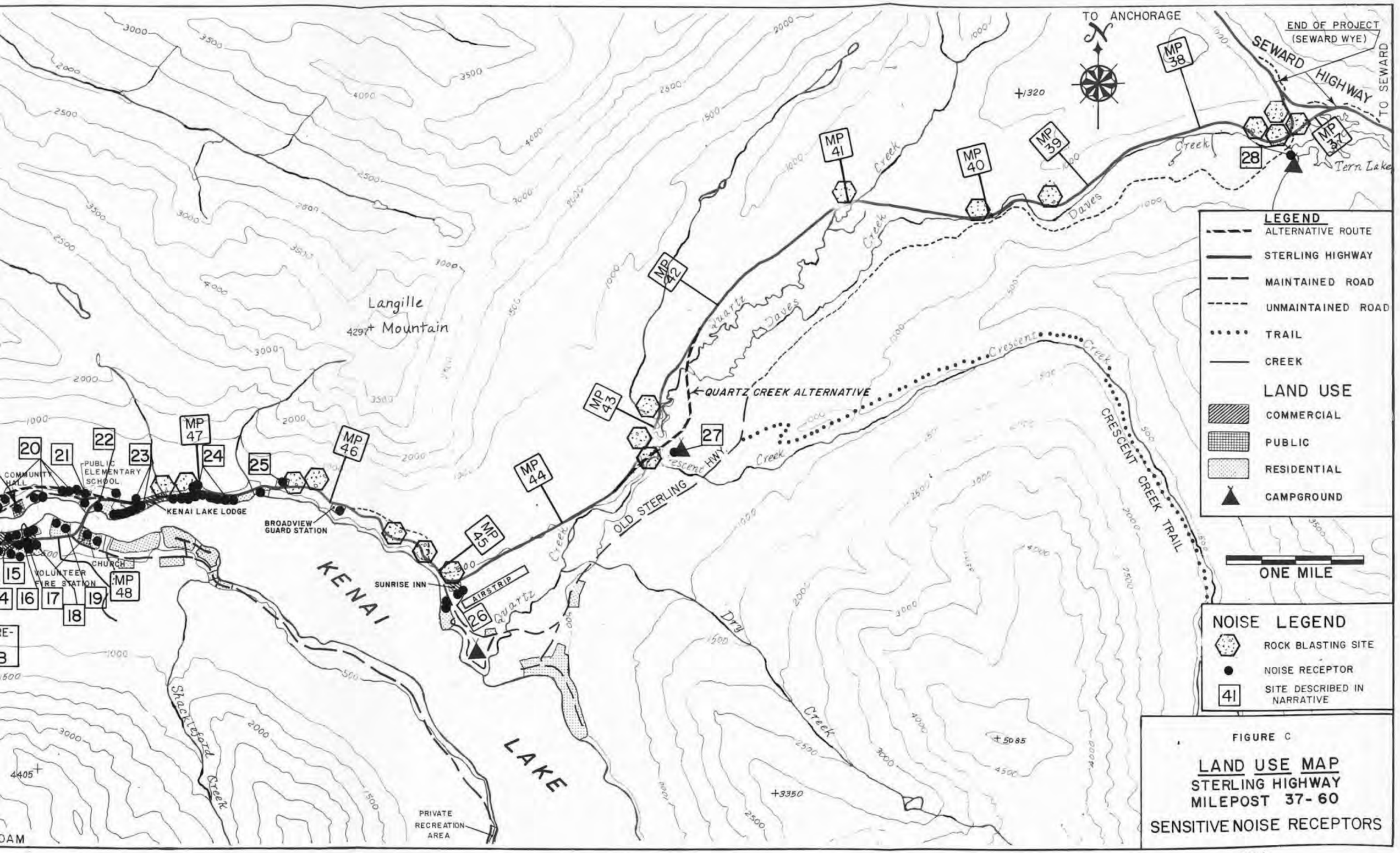


FIGURE C

LAND USE MAP
STERLING HIGHWAY
MILEPOST 37-60
SENSITIVE NOISE RECEPTORS

Site 7. Cooper Creek Campground, Sheets 13-B, 14-B, Station 1643 to 1660 Right & Left--One campsite at Station 1643 Left is within the 67 dBA zone; others, on both sides of the highway would not be impacted.

Site 8. Residence, Sheet Nos. 14-A, 14-B, 14-B^3, Station 1678 Left--The greatest impact is with "No Action;" less impact results from the Juneau Creek Alternative; the least impact will result from Alternative "B."

Site 9. Dwelling, Sheet Nos. 16-A, 16-B_A, 16-B_3, 16-C, Station 1730 (Existing Alignment)--Any highway alternative would impact this site adversely.

Site 10. Residence, Sheet Nos. 16-A, 16-C, Station 1727 (C) Left--House and yard are within the 67 dBA zone under the Bean Creek Alternative. Only a portion of the yard is within the impact zone from the existing roadway or from the Cooper Landing Alternative.

Site 11. Residence, Sheet Nos. 16-A, 16-B_A, 16-B_3, 16-C, Station 1729 (C) Right--House and yard are within the 67 dBA zone from the Cooper Landing or the Bean Creek Alternatives, or the existing road. Lines B-1, B impact zone would affect the yard only.

Site 12. Residence, Sheet 17-A_2, Station 1750 Left--Almost the entire property is within the 67 dBA zone of either the "B" proposal or the existing roadway.

Site 13. Residence, Sheet 17-A_2, Station 1755 Right--Both house and yard are within the 67 dBA zone. The centerline relocation favors this site by moving away from it.

Site 14. Residences (?), Sheet 17-A_2, Station 1756 to 1761 Left--Approximately six dwellings are located within the 67 dBA zone of the highway in this part of Cooper Landing. An equal amount are outside of the impact zone. The current use of these buildings is undetermined.

Site 15. Residence, Sheet 17-A_2, Station 1767 Right--A trailer house and front yard are in the impact zone. The commercial building next door may also be a dwelling.

Site 16. Residence, Sheet 17-A_2, Station 1771 Left & Right--The home in the rear of the grocery store (left) has no evident exterior residential use. Other buildings in this vicinity are believed to be commercial. There may be other dwellings as part of commercial buildings, some of which may be overnight accommodations.

Site 17. Residence, Sheet 18-B, 18-B_A, Station 1779 Right--The dwelling over the jewelry store and shop has an outdoor deck within the 67 dBA zone.

Site 18. Residence, Sheet 18-B, 18-B_A, Station 1782 Right--There is a dwelling over the grocery store, but no obvious exterior residential use.

Site 19. Residence, Sheet 18-B_A, Station 1795 Left--The entire dwelling is within the impact zone of Alternative "B-1." Other sensitive receptors west of the bridge (Sheets 18-B, 18-B_A, Station 1800) are outside of the 67 dBA contour. These include several residences and a church.

Site 20. Sheet 18-C, Stations 1773 and 1789 Right; and Stations 1698 and 1800 Left--Four homes exist within the 67 dBA impact zone of the Bean Creek Alternative (Line C).

Site 21. Elementary School, Sheet 19-C, Station 1807 Left--The edge of the school play yard is cut by the 67 dBA contour of the Bean Creek Alternative, covering an area amounting to about 7 percent of the paved play space.

Site 22. Residence, Sheet 19-B_A, Station 1810 Right--The front half of the house is within the 67 dBA contour of Alternative "B-1."

Site 23. Residences, Sheet 19-C, 19-B_A, Stations 1830 and 1831 Right, and 1832 Left--Three houses are within the noise impact zone of all alternatives.

Site 24. Residences, Sheet 20-B, Station 1841 to 1866--All 12 of the homes in this section could be impacted by noise, although only seven structures are touched by the 67 dBA contour. The two houses left of Station 1851 are exposed above the roadway. The others, on the lower (right) side of the highway, will be shielded from some noise by the terrain and dense spruce growth. It would be necessary to analyze each site to determine the extent of impact.

Site 25. Residences, Sheet 21-A_2, Stations 1869 to 1873 Right, and 1885 left--Two homes on the right would be affected in a way similar to those in Site 24, above. The 67 dBA contour falls roughly between the two larger structures in a cluster of buildings near Station 1885. Significant noise impact is quite certain due to the elevation of the site, although vegetation will attenuate some noise.

Site 26. Motel, Sheet 23-A_2, Station 1956 Right--The Sunrise Inn Motel will receive 67 dBA outside those units closest to the building if reflection of noise from the rock cut adds the estimated maximum 3 dBA. The interior noise level is not expected to exceed the maximum 52 dBA permitted.

Site 27. Crescent Creek Campground, Sheet 27-A, Station 2049 Right--The 67 dBA contour from the Quartz Creek Alternative will not reach the nearest camp sites, but noise will be substantially greater (61-64 dBA) than it would be from Alternative "B," the existing roadway (58-61 dBA).

Site 28. Tern Lake Campground, Sheet 36-C, Station 26--The highway noise situation in this vicinity is complicated by the presence (in the design year) of two roadways at different elevations. Noise from the highway is not expected to exceed the design level of 67 dBA within the campground, but it will increase over present levels, most likely into the low to mid-60 dBA range. Current traffic noise levels are estimated to be lower than 60 dBA at the edge of the campground nearest the highway.

A traffic situation, unique to this project, will exist with construction of the Bean Creek Alternative. Although the existing Sterling Highway will remain in service, the bulk of the traffic will

by-pass Cooper Landing on the new Bean Creek Alternative. The location of the 67 dBA contour on the new highway will not be affected by the small amount of local business and residential traffic that splits away from the mainstream to enter Cooper Landing.

The traffic split will significantly reduce the average noise level along the Cooper Landing segment of Sterling Highway. Insufficient data exists on travel origins and destinations along the route to judge which vehicles would regularly use the old Sterling Highway and those that would by-pass the community. However, it may be assumed that Cooper Landing will see a reduction in traffic volume, with those vehicles entering town only for goods and services, personal visits or to reach residences.

Another traffic condition that may influence noise levels is the stop-and-go traffic in the mid-community business section of Cooper Landing. The interrupted flow would create more of a noise impact than an equal amount of traffic flowing smoothly on a controlled access highway. Under the Bean Creek Alternative, a controlled access facility is proposed, and would generate a lower decibel level than the present facility through Cooper Landing.

EVALUATION OF ALTERNATIVE NOISE ABATEMENT MEASURES

Noise abatement measures may be recommended for sensitive sites, where design noise levels are exceeded, after the route has been selected and the project is in the final EIS/noise report phase.

It may not be practical to apply noise abatement measures in every instance. Several measures, available for consideration, are described below.

NOISE ABATEMENT MEASURES

Methods of noise abatement open to highway engineering include route design and location, traffic management, and noise barriers.

Route Design and Location

1. Route locations may be chosen which insure maximum separation between the roadway and existing noise-sensitive areas. A reduction of 3 dBA to 4.5 dBA for each doubling of distance can usually be achieved. Routes may also be located that make maximum use of shielding provided by natural barriers.

2. Roadway designs, incorporating shallow grades not requiring truck downshifting, eliminates a significant source of highway noise. In the 35 mph speed range, a 1.5 dBA noise increase can be attributed to vehicles pulling a grade while maintaining a constant speed. Accelerating at lower gear settings results in another 1.5 dBA average increase in sound level. (Close, William H., U.S. Department of Transporation, "Highway Noise Sources," Highway Research Record, No. 448, 1973).

3. Application of a coarse-graded asphaltic surfacing on the road pavement can reduce noise levels 2 to 5 dBA. However, not enough is known at this time about the durability of this surface to recommend it as a practical noise abatement measure.

4. The most effective highway noise controls are various forms of barriers. When correctly applied, barriers commonly attenuate noise by 10 to 15 dBA. Barriers must be solid and high enough to intercept the straight-line noise path. Mass and stiffness of wall structures must be sufficient to prevent bending or buckling in windstorms.

    a. The most economical, visually acceptable barrier may be an earth berm covered with grass or other vegetation.
    b. At some locations, earth berms, berms topped by fences or fences alone could be a primary noise abatement method. Barriers may not be applied at the site of every noise problem, and might only supplement other methods at some locations.
    c. Intervening vegetation will also attenuate noise, the effectiveness depending on vegetation density combined with the distance.
    d. Elevation differences will reduce noise levels for sensitive areas directly below the roadway due to the "shadow" effect.

5. While the above measures may be applied during the design and construction phases, communities can also help to avoid future noise impacts. Proper land use planning can prevent incompatible uses along a highway corridor.

Management of traffic is a noise reducing measure that is the least trouble to implement and the least expensive. The most effective of these is speed reduction. Figure B graphically illustrates the contribution of speed to traffic noise. A 5 mph change in speed translates into a 0.75 to 1.00 decibel difference in noise level. A speed reduction from 55 to 45 mph, in the year 2004, at a source/receiver distance of 100 feet, would reduce the noise level from 68.7 dBA to 67.1 dBA (Figure B) -- enough change to meet the design noise level standard at some critical locations with no additional abatement measures.

Along the Sterling Highway, the greatest number of most-sensitive receptors are clustered (Figure C) where the most congestion occurs. This suggests that limiting speed through Cooper Landing may be a reasonable way to reduce noise as well as traffic accidents in that segment of Alternative "B."

Time use restrictions and exclusive lanes for trucks are other measures which are sometimes used to reduce noise. These measures may not be feasible or reasonable on this project, due to the unique status of Sterling Highway as the only available surface route. Also, terrain limitations on right-of-way taking for additional lanes in noise sensitive areas, rules out the exclusive-lane option.

Regulations that directly or indirectly control noise, may be applied by a state or local government. An indirect regulatory noise control is the traffic speed limit discussed above. Direct noise control is most effectively achieved through regulations or ordinances with local governments possessing enforcement powers.

An ordinance has been adopted by the Kenai Peninsula Borough, entitled the "Noxious, Injurious or Hazardous Uses" ordinance. It requires an exception to borough zoning regulations to permit noxious use that produces dust, noise etc. However, the ordinance does not define noise, and the Borough Planning commission must make recommendations to the Borough Assembly on a case-by-case basis without guidelines regarding noise impact. The ordinance is not an effective tool for preventing noise impacts, nor does it possess sufficient enforcement measures (App. C-56).

APPENDIX C

SUPPORTIVE DATA

STATE OF ALASKA

NOTICE OF INFORMATIONAL PUBLIC MEETING
PROJECT RF 021-2(15)
STERLING HIGHWAY MILE 37-60

WHO- The Department of Transportation and Public Facilities

WHAT- Project RF-021-1(15) Sterling Highway Mile 37-60

WHY- To receive comments from residents concerning this project and to provide information relative to the proposed plans for the highway improvement in this area.

WHERE- Cooper Landing Community Hall

WHEN- 7:00 P.M., Wednesday, October 25, 1978

All interested persons are urged to attend. Anyone desiring information regarding this meeting please contact Walt Downs, 266-1653, Department of Transportation and Public Facilities.

AO—P-78—37

STATE OF ALASKA
PUBLIC NOTICE
OF
WETLANDS INVOLVEMENT
PROJECT RF-021-2(15),
STERLING HIGHWAY M.P. 37-60

Pursuant to Presidential Executive Order 11990, Protection of Wetlands, the Alaska Department of Transportation and Public Facilities provides notice of proposal to place excavated material for the construction of roadway embankment in the wetlands at several locations adjacent to the Sterling Highway between mile 37 and 60. More specifically, the proposed fill areas are in wetlands of the Kenai River and its tributaries, and will cover a total area of wetlands between 11 and 13 acres, depending on the final selection of route. The fill is necessary to provide new or reconstructed roadway sections to replace portions of the Sterling Highway which are currently below Federal Aid Highway Standards for a rural primary highway. No practicable alternatives are available to use of some of these wetlands because the roadway is being widened where wetlands exist on both sides. In other locations, some of the impacts will be mitigated through design efforts coordinated with the appropriate State and Federal agencies. Potential impacts to wetlands will be taken into consideration, and avoided wherever possible, in the selection of a recommended alignment. Comments and requests for specific information should be directed to the address listed below. Substantial wetland comments will be incorporated in the draft E.I.S. now in process. All comments must be received by June 6, 1980.

Mail comments to:

R. D. REDICK
Central Regional
Highways Engineering Chief
Alaska Department of Transportation and Public Facilities
Pouch 6900
Anchorage, Alaska 99502

Publ. May 23, 1980—2425/1414

Kenai Peninsula
Cheechako News

STATE OF ALASKA
DEPARTMENT OF
TRANSPORTATION AND
PUBLIC FACILITIES

PUBLIC NOTICE
OF FLOODPLAINS
INVOLVEMENT

PROJECT RF-021-2(15)
STERLING HIGHWAY
MILEPOST 37-60

Pursuant to Presidential Executive Order 11988, Floodplain Management and Protection, the Alaska Department of Transportation and Public Facilities provides notice of proposal to place excavated fill materials, bridges, retaining walls and drainage structures in the base floodplains of streams adjacent to the Sterling Highway. These include the floodplains of Kenai River and several unnamed tributaries, as well as Juneau Creek, Cooper Creek, Bean Creek, Quartz Creek, and Daves Creek.

These materials and structures are required for reconstruction of the Sterling Highway, including widening the existing roadway from 24 feet to 40 feet and to comply with Federal Aid Highway Standards. Floodplain encroachments consist of shot rock and clean, granular material, poured concrete, and metal culverts. Retaining walls will be constructed at some locations as a mitigative measure to protect the floodplain from fill encroachment. Bridges will be designed to adequately pass the 100 year flood. None of the proposed floodplain encroachments will cause flood related impacts to homes or businesses because placement of fills or structures would not alter backwater elevations during high water periods. The proposal will not directly or indirectly support incompatible floodplain development because no new access to private properties on floodplains will be created.

There are no practicable alternatives to the construction of encroachments in the base floodplains because the existing highway, following the Kenai River and its tributaries, offers the only access through the Kenai Mountains. Alignments outside the floodplain would cause increased erosion, terrain modification, resource losses, and visual impacts from excessive cuts or fills, or longer ridges across intervening gullies.

Comments and requests for specific information concerning floodplain encroachments would be directed to the address listed below. Comments must be received by February, 15, 1982.

Mail comments to:

T.R. Fleming
Central Regional
Environmental Coordinator
Technical Services Branch
Pouch 6900
Anchorage, Alaska 99502

Pub: January 23, 30, 1982

AO-E-82-71-2025

Anchorage Daily News

Environmental Impact Statement: Kenai Peninsula Borough, Alaska

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice of intent.

SUMMARY: The FHWA is issuing this notice to advise the public that an environmental impact statement will be prepared for a proposed highway project in the Kenai Peninsula Borough, Alaska.

FOR FURTHER INFORMATION CONTACT: Gene Hanna, Division Administrator, Federal Highway Administration, P.O. Box 1648, Juneau, Alaska 99802, Telephone (907) 586-7428.

SUPPLEMENTARY INFORMATION: The FHWA, in cooperation with the Alaska Department of Transportation and Public Facilities (ADOTPF), will prepare an environmental impact statement (EIS) on a proposal to improve the Sterling Highway, Project RF-021-2(15), in Kenai Peninsula Borough, Alaska. The proposed improvement would involve the reconstruction of the existing Sterling Highway between the Skilak Lake Road and the junction with the Seward Highway, a distance of about 22 miles. This is the only overland transportation corridor through the Kenai Mountains to the western and southern Kenai Peninsula. Improvements within the corridor are necessary to provide for the existing and projected traffic demand. Also included in this proposal is a partial interchange at the Seward Highway junction.

The existing facility is a narrow, winding, two-lane highway originally constructed in the early 1950's. The proposed reconstruction would provide a two-lane roadway meeting current standards for width and alignment. Existing right-of-way would be used to the maximum extent possible.

Alternatives under consideration include (1) taking no action; (2) upgrading on the existing location; and (3) construction partially on new location. Options exist for combinations of alternative alignments, including a by-pass of the town of Cooper Landing with control of access on one section, and multiple bridge crossings of the Kenai River. Because of the mountainous terrain, the low population density, and the length of the project, other modes of transportation will not be alternatives.

The western three miles of the highway project lie within the Kenai National Moose Range, a wildlife refuge. A draft Section 4(f) evaluation will also be prepared as part of this study if it becomes apparent that reconstruction will require additional lands from the refuge.

Letters describing the proposed alternatives and soliciting comments have been sent to appropriate State, Federal and local government agencies, community groups, native associations and individuals who have voiced concerns about the project in the past. In addition, public informational meetings with local residents were held February 8, 1977 and October 25, 1978 at the Cooper Landing Community Hall. Many interviews with local people have been conducted by the ADOTPF staff during the course of the environmental studies now underway. Two field reviews of the project have been conducted with representatives of several State and Federal resource agencies.

Because of the ongoing and past coordination process, a formal scoping meeting is not anticipated; but comments and suggestions are invited from all interested parties. Comments or questions concerning this proposed action and the EIS should be directed to the FHWA at the address provided above.

Issued on June 3, 1980.

Gene A. Hanna,

Division Administrator, Juneau, Alaska.

[FR Doc. 80-17685 Filed 6-11-80; 8:45 am]

BILLING CODE 4910-22-M

TRAFFIC DATA

1. Average Daily Traffic

1980	2295 ADT
1984	2897 ADT
2004	6400 ADT

2. Capacity (under ideal conditions) in Vehicles Per Hour

1500 VPH (15,385 ADT)

3. Design Hourly Volume (30th highest hour) 13% of ADT

.13 X 6400 = 832 VPH

4. Levels of Service

According to the Highway Research Board (Special Report 87), Level of Service is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs. Six Levels of Service, designated A (excellent) through F (unacceptable), are used to identify a variety of operating conditions that may occur on a given roadway. Definitions of Level of Service on 2-lane rural highways follows:

At level A, operating speeds must be 60 mph or higher. For ideal conditions a service volume of 400 pcph, total for both directions, may be achieved. Under these circumstances, approximately 75 percent of the desired passing maneuvers can be made with little or no delay.

At level B, the beginning of stable flow, operating speeds are 50 mph or above. Most drivers are affected by other vehicles in the traffic stream, although this effect is not yet unreasonable. Volumes of 900 pcph, total for both directions, are carried under ideal conditions.

In the limit of level of service C, still stable flow, operating speeds for uninterrupted flow on all 2-lane highways are 40 mph or above. Under ideal conditions of 1700 pcph are accommodated.

Unstable flow is approacted as operating speeds fall to 35 mph. This represents the limiting conditions for level of service D and a flow under ideal conditions of 1700 pcph.

At level of service E, or capacity, actual operating speeds will usually be in the neighborhood of 30 mph but may vary considerably. Volume totals for both directions, under ideal conditions, will be 2000 pcph.

Level F represents forced, congested flow with relatively unpredictable characteristics.

SUMMARY OF
1980 PAVED HIGHWAY PERFORMANCE EVALUATION

STERLING HIGHWAY MILEPOST 37-60 TERMINI	SECTION LENGTH (MILES)	ADT	PERFORMANCE VALUES* PAVEMENT CONDITION	TRAFFIC SERVICE	ACCIDENT SAFETY	COMPOSITE VALUE
E. JCN Skilak Lake Road	4	2,200	18	47	73	39
JCN Russian River Campground Road	4	2,610	16	9	70	22
Cooper Creek Bridge 674	6	2,610	8	30	65	25
W. JCN Quartz Creek Road	8	1,760	7	35	62	25
JCN FAP 31 Seward Highway						
Project Length (22 miles)						
Average values		2,295	13	30	68	28

* Highest possible value = 100

KENAI PENINSULA SPORT FISH HARVESTS
AND EFFORT IN FRESHWATER FISHERIES BY SPECIES
1979

	Days Fished	King Salmon	Silver Salmon	Red Salmon	Pink Salmon	Chum Salmon	Rainbow Trout	Dolly Varden/ Arctic Char	Lake Trout	Grayling	Whitefish	Other
Kenai River	178,485	8,843	15,276	16,887	127	Ø	14,644	34,687	409	127	754	337
Anchor River	44,220	1,913	4,006	Ø	18	Ø	1,000	21,364	Ø	Ø	Ø	144
Ninilchik River	18,282	1,493	200	Ø	Ø	Ø	382	2,390	Ø	Ø	Ø	Ø
Deep Creek	12,560	703	362	Ø	9	Ø	118	2,027	Ø	Ø	Ø	Ø
Stariski Creek	1,965	Ø	275	Ø	Ø	Ø	118	2,027	Ø	Ø	Ø	Ø
Russian River	58,133	Ø	1,098	35,999	Ø	Ø	3,109	3,718	Ø	9	Ø	Ø
Other Rivers	18,141	283	1,523	1,367	1,136	18	3,072	8,935	545	173	9	252
Hidden Lake	5,974	Ø	Ø	Ø	Ø	Ø	173	45	1,109	Ø	Ø	Ø
Canoe Lake System	5,769	Ø	Ø	Ø	Ø	Ø	4,009	445	Ø	Ø	Ø	Ø
Other Lakes	17,889	Ø	Ø	534	Ø	Ø	7,736	6,490	1,554	1,209	9	220
TOTAL	361,418	13,235	22,740	54,787	1,290	18	34,361	82,128	3,617	1,518	772	990

KENAI PENINSULA BOROUGH
BOX 850 • SOLDOTNA, ALASKA 99669
PHONE 262-4441

DON GILMAN
MAYOR

June 15, 1979

T. R. Fleming
Environmental Coordinator
Department of Transportation and
Public Facilities
4111 Aviation Avenue
Pouch 6900
Anchorage, Alaska 99502

RE: 242C-2505
Project RF-021-2(15)
Sterling Highway, Mile 37-60

Dear Mr. Fleming:

Thank you for your letter requesting information regarding the proposed Sterling Highway project. Hopefully the following information will be of assistance to you.

Presently, the Planning Department is undertaking a base map project within the Borough. Four base maps will cover the Cooper Landing area. Each map encompasses nine sections at a scale of 1 - 6,000 (1" = 500'). Major topographic features, contour intervals and land parcelization will be included on these mylar sheets of 36" by 40". The enclosed map will basically show you the areas that will be covered. This project is contracted out and hopefully shall be completed before July of this year.

The Land Management Agent has informed me, the Kenai Peninsula Borough made nominations to the State in December 1978 for land selections of approximately 7,000 acres. In June 1979, a selection of approximately 1,600 acres in the Cooper Landing area was sent to the State. It will take a period of 90 days before a decision arrives from the State whether or not the Borough will get these selected lands. The second map enclosed, shows the Borough's 1,600 acres which were selected.

An Arterial Road Plan for the Borough is also being developed at this time. This road system will include State maintained roads and highways. All land lying along the Sterling and Seward Highways, which are not part of the Chugach National

Forest or Kenai National Moose Range will be evaluated. The plan is expected to be completed sometime in August.

An inventory of all existing dedicated public right-of-ways and all built roads lying within public right-of-ways will be shown as part of the Arterial planning effort. The general road plan will be drawn upon maps at a scale of 1" = 2,000'. Additional maps at a suitable scale, will show the proposed right-of-way requirements.

The Assessing Department of the Borough has tax parcel maps available which may be helpful to you. Enclosed you will find an example of a page. If you have specific areas in mind you may contact the Assessing Department for the exact pages.

I have also sent you a copy of the Kenai Peninsula Borough Comprehensive Plan Goals and Objectives. These goals and objectives, however, were adopted in 1974 and have not been revised. The plan may not reflect the current ideas and thoughts of the communities.

In 1974, the Borough did adopt a Comprehensive Plan prepared in 1971 in which Cooper Landing was included. A copy of this plan may be obtained from the State Library. It was prepared by the Alaska State Housing Authority.

In the near future, Cooper Landing will be forming an Advisory Planning Commission. You may contact Margaret Branson, c/o Community Club, Cooper Landing, Alaska 99572, for more information.

Sincerely,

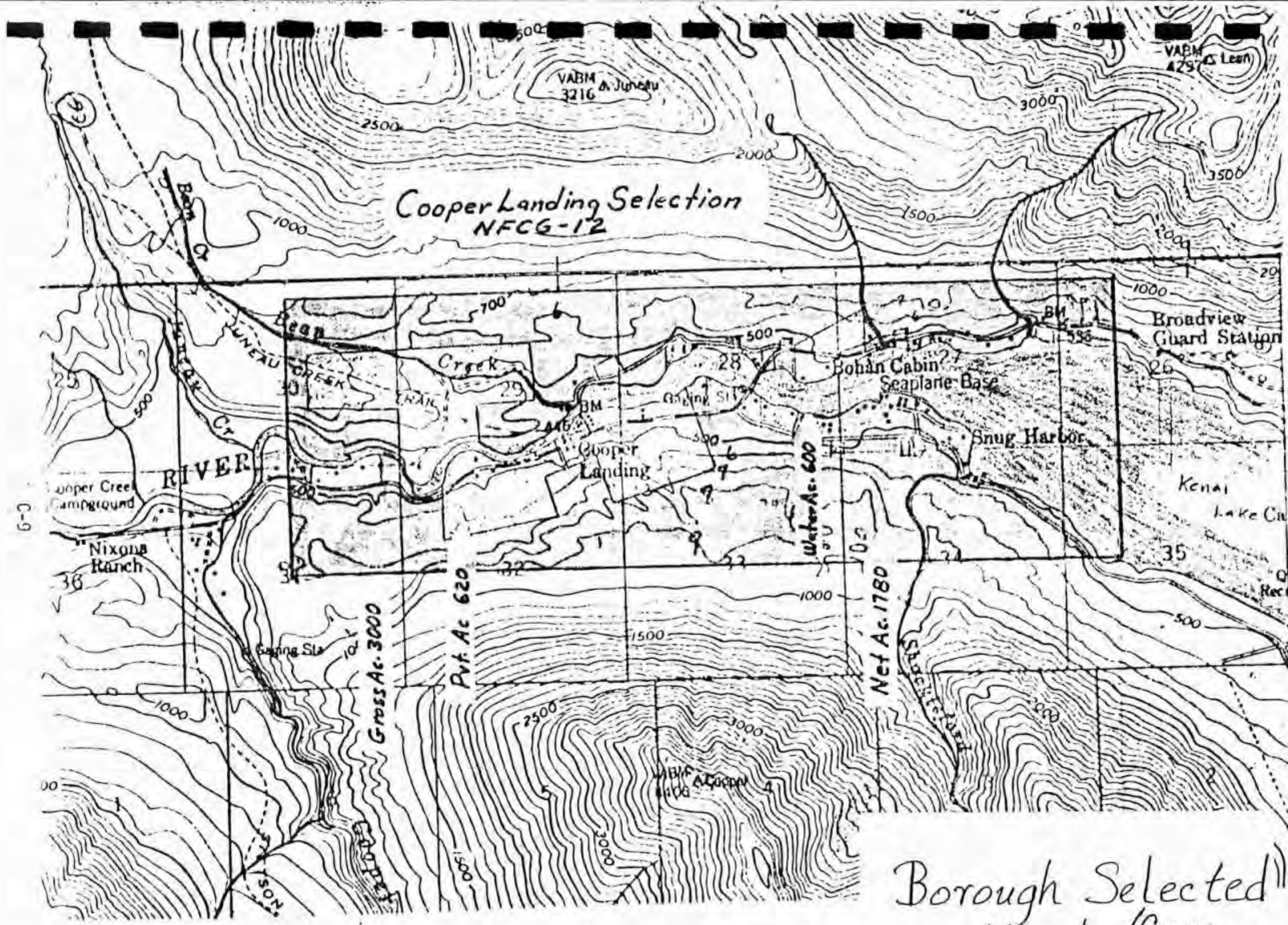
Ike D. Waits

IKE D. WAITS
Principal Planner

IDW:JG:mj

Enclosures

in project work files: Trans-Econ. or Landuse Plan.


Cooper Landing Selection
NFCG-12
VABM 3216
Bean Cr
Bean Creek
JUNEAU CREEK
Cooper Landing
RIVER
Nixons Ranch
Bohan Cabin
Seaplane Base
Snug Harbor
Broadview Guard Station
Kenai
Lake
Gross Ac. 3000
Pvt. Ac. 620
Water Ac. 600
Net Ac. 1780
Borough Selected Lands (Grey Color)

SCOPING VISUAL IMPACTS

From: Visual Impact Assessment for Highway Projects, U.S. Department of Transportation, Federal Highway Administration, Office of Environmental Policy, March 1981.

I. Project Characteristics

A. Major Project design standards: All alternatives

1. Maximum capacity 5,300 Vehicles Per Day

2. No control of access -- (except Bean Creek)

3. Design speed 60 mph optimum; 50 mph min. mountain sections

B. Typical highway cross-section and major structures:

1. Two-way, two-lane; 8-foot paved shoulders: Total 40 feet

2. Right-of-way 200 to 300 feet

3. Bridge crossings of Kenai River: one to six bridges (not yet designed -- all relatively low profile)

4. Overcrossing at Seward Wye interchange

5. Numerous major cut sections -- commonly a ¼:1 slope on rock; maximum slope of 1¼:1 on erodible soil.

6. Extensive fills with some alternatives -- 1½:1 max.

7. Lighting possible (not designed) at interchanges with Seward Highway and alternative route connections

C. Highway related facilities

1. Materials sources -- gravel pits (two locations probable)

2. Safety and drainage structures.

D. Secondary effects resulting from the project:

1. By-pass effects (from Bean Creek Alternative) may cause minor changes in appearance of establishments in mid-community area. Less traffic, possible loss of business, deterioration of buildings, or changes of use.

II. Visual Environment of Project

A. Landscape components characteristic of region and immediate project area. (See Ref. 57, Visual Character Types, Kenai).

1. Landform: Glaciated, with well drained U-shaped valley troughs, including Kenai River valley. Variety of interesting landforms ranging from rounded hills to higher ridges of Kenai Mountains with permanent snow in background.

2. Geological forms: Upper elevations offer rocky crests, peaks and boulder arrangements. River cut banks and gravel bar configurations are complex. Kenai Lake has significant gravel beaches.

3. Water: The view from the highway seldom lacks water in some form. There are several large lakes in glacier carved basins, of which Kenai Lake is the largest visible from the highway. Clear water Tern Lake is the scene of much waterfowl activity in a rugged mountain setting. Both lakes are visible and accessible from the highway. Kenai River is large, with whitewater stretches beside the highway. Quartz and Daves Creeks also parallel the roadway for several miles.

4. Vegetation: Great variety visible from the highway, and changing in color with the seasons. At roadway elevations, cover is dominated by mixed stands of black and white spruce, birch, aspen, cottonwood, willow and alder, with a great variety of lower ground cover, including grass and willow meadows in valley bottom areas.

5. Man-made development: Four roadhouses (food, drink and lodging) with attendant advertizing signs at scattered locations; off-highway campgrounds, and residential areas on rural roads, as well as adjacent to the highway on either side of Cooper Landing. Most developments are very close to the highway.

B. Project visibility (project is likely to be seen from...)

1. Existing highway location and the new roadway itself

2. Adjacent homes and businesses

3. Homes and travelers on Snug Harbor Road (across lake); Old Sterling Highway (across Quartz Creek valley); Bean Creek Road and Slaughter Creek Road (whether new highway is on north or south side of Kenai River); Russian River Campground access road

4. Resurrection Trail

5. Kenai River (boaters and fishermen)

C. Visually distinct landscape units or urban districts identifiable within the immediate project area.

1. Mid-community development of Cooper Landing

2. Other (man-made) development along the highway

a. Lodges

b. Powerlines

D. Major viewer groups likely to see the project:

1. Highway users

a. Local residents

b. Commuters, truckers

c. Tourists, recreationists

2. Residents within sight of highway

3. Recreationists in campgrounds and on trails, boaters

III. Significant Visual Resource Issues

A. Landscape components present within visual environment of the project -- and how project alternatives change these:

1. Landform:

a. No-Action -- no changes

b. Alternative B -- Heavy modification of mountainsides and river valley bluffs with cuts -- less with fills.

c. Bean Creek, Quartz Creek, Juneau Creek -- Significant, but not heavy modification of riverine lowlands and bluffs

2. Water:

a. No-Action -- no changes

b. Alternative B -- Stream margins filled, bridges crossing river and creeks.

c. Bean Creek, Quartz Creek, Juneau Creek -- Streams crossed by bridges, culverted fill.

3. Vegetation:

   a. No-Action -- no changes

   b. Alternative B -- Moderate losses of vegetation, including trees, widened roadway and realignment.

   c. Bean Creek, Quartz Creek, Juneau Creek -- Significant clearing of timber and vegetation.

4. Man-made development:

   a. No-Action -- no changes

   b. Alternative B -- a few (less than 5) buildings would have to be moved; powerline relocations.

   c. Bean Creek, Quartz Creek, Juneau Creek -- no buildings would be moved; some powerline relocation on Bean Creek Alternative.

B. Present visual character of the project environment, and compatibility with proposed project:

Prominent aspects of existing characteristics include:

1. Form: Strong forms of mountain masses all around.

2. Line: Horizontal and angled mountain ridge edges on skyline, and lower forested benches and ridges; lake and river shorelines; the highway itself; large cottonwood and other tree boles and branches.

3. Diversity: Very great with juxtaposition of patterns of shadow, texture, and color on mountainsides, valleys, and water surfaces.

4. Continuity: Expanses of forest, mountainsides and water are broken only occasionally by the lines of roads or powerline clearings.

Project alternatives parallel the natural horizontal lines of rivers, lakeshore and river terraces for a degree of compatibility with the visual character of the corridor. The more extensive cuts and fills proposed would break the vertical continuity of some hillsides, valleys and gullies, and bridges would cut across the meandering river lines. Color and shadow contrasts are inherent with bridges without special consideration for orientation and design.

C. Levels of visual quality that now exist, and how the project would affect these:

1. Vividness: High due to contrasts of snow, mountain ridge tops and shadows, lake colors and tree patterns.

2. Intactness: Low in foreground views of developed areas where maintenance is lacking or powerlines, guardrails, or signs intrude. High overall.

3. Unity: Low in foreground views of developed areas. High level of continuity in natural views.

Quality of the views from the highway would be affected mainly in the foreground and middle distance from certain vantage points. Some "key views" would be adversely affected.

IV. Significant Viewer Response Issues

A. Viewer exposure to project alternatives for different groups and how these alternatives interfere with important existing views:

None of the alternatives will block any existing views from the road. To the contrary, most of the proposals will expand views from the road due to widening and laying back of slopes. Visibility will be improved for drivers from one end of the project to the other.

The view of the road will be changed by reconstruction from some vantage points. Residences with the best views are oriented to Kenai Lake or Kenai River. Residents looking across the lake from Snug Harbor Road will be able to see the cuts and fills of the new road on either side of Broadview. Stretches of the existing highway are presently visable from the opposite side of the lake. The fill across Bean Creek on the Bean Creek Alternative will be visible from Cooper Landing near the Post Office. Residents higher on the hillside in Cooper Landing will be able to see the clearing and other portions of the road as well. The bridges and the through-cut at the west end of the Bean Creek Alternative will be prominent from residential properties near Mile 49.

The bridges will be very imposing in the eyes of recreational boaters on the river.

The view of the new road from many positions will be determined by the density and height of the forest in the foreground and at the roadway clearing edges. This will particularly apply to those residences above the highway west of Broadview and along Slaughter Creek Road where many homes are surrounded by spruce and birch woods. More distant views of the roadway will be affected by the same factors.

B. Visual resources in the project environment that are particularly important to local viewers. Also, districts, sites, or features that are regionally or nationally recognized for their cultural significance:

1. Cooper Landing Post Office is on the National Register of Historic Landmarks. The background view of the Post Office would include the fill across the mouth of Bean Creek on the Bean Creek Alternative.

2. Over-water and mountain views are highly valued here, as evidenced by the number and value of homes with these kinds of views.

3. Key (representative) views in the project corridor:

   a. Kenai Lake and River valley from the vicinity of Broadview on the highway (high point at 200 feet above the lake) and from residences in the same vicinity.

   b. Background view at the end of each long tangent on the highway.

   c. Near-river views in Cooper Landing and downstream from residences, lodges and campsites.

   d. Tern Lake, eastbound and southbound on the highway.

C. How the project is thought to threaten or support expectations for the future appearance of the areas it traverses. Also, how viewer response would be affected by superior project design:

There has been no opinion survey made of the aesthetic effects of the project. It can be surmised from the comments of local people that appropriate design could assuage some of the misgivings expressed about the number of bridges on some alternatives.

V. Visual Impacts and Impact Management

A. Summary of significant adverse and beneficial visual impacts that appear likely:

1. Beneficial Effects (potential):

   a. Improved visibility from the roadway throughout the project.
   b. Extended tangents (reduced curvature) will increase the duration of views travelers may enjoy from the highway.
   c. Ultimately improve visual quality of foreground as a result of mitigation.

d. Reinforcement of the continuity of line that exists with the highway that parallels the sinuous river valley.

2. Adverse Effects (potential):

a. Increased visability of roadway from several residences, resulting in decreased quality of views.

b. Visual incompatibility with boating activity on Kenai River.

c. Domination of views by large cuts and fills until restoration of vegetation and other mitigation reduces the contrasts.

B. Alternatives that might avoid, minimize, or reduce any adverse visual impacts:

1. No-Action Alternative would not change the existing visual environment.

2. Alternative B would impose less visual change than parallel alternatives Bean Creek and Quartz Creek. The choice with Juneau Creek is whether its bridges and fills would create more or less of a visual impact than the extensive cut slope of Alternative B.

C. Actions that might rectify or compensate for adverse visual impacts. (These could be elements of a landscape plan prepared by the Forest Service and Fish and Wildlife Service under a Reimbursable Services Agreement and then incorporated in the construction contract or a separate contract).

1. Structural and textural design of bridges and retaining walls.

2. Aesthetic earthwork

a. Lay back draws

b. Accent ridges

c. Diversity in slope grading

d. Slope rounding

3. Rock cut sculpturing to produce natural appearance.

4. Selective clearing techniques for softer edges, natural appearance.

5. Revegetation with grass, shrubs, trees, and contrast reduction with tinted emulsions sprayed on new rock cuts.

6. Rest areas to direct attention to exceptional views and points of interest.

COOPER LANDING DEMOGRAPHIC DATA

The information on page C-19 was extracted from a document entitled, Cooper Landing Needs Assessment Educational Specifications, compiled by the Cooper Landing Community Action Team and the Staff of the Cooper Landing Elementary School in March 1971.

The Employers Table on page C-19 was compiled from observations by an ADOT/PF staff member, and personal communications with Art Tarbell, Rural Services branch of the State Employment Center in Anchorage, in July 1979, and Willard Dunham, Department of Labor, Seward, July 1981. Not an exhaustive listing, it is meant to give a general indication of the local employment situation.

Tables on pages 21, 22, and 23, were extracted from an annual statistical report, SITUATION AND PROSPECTS, prepared and compiled by the KENAI PENINSULA BOROUGH, Economic Development Office, Published June 1, 1981.

The table on page C-20 was reproduced from the Kenai Peninsula Borough Growth Monitoring Program, Special Report Number 1, SPECIAL CENSUS OF THE POPULATION, March 1979, conducted by the Bureau of the Census under contract to the Kenai Peninsula Borough in July, 1978.

During the 1960's the main part of the year-around population of Cooper Landing could be divided into four categories:

1. Those connected with the tourist industry
2. Seasonal workers
3. Government workers
4. Retired persons

CENSUS DATA OF THE COMMUNITY

The 1970 census showed a population of 133

The following list shows the types of employment in the area and the numbers of persons employed in each occupation or category:

1.	Lodges (tourist, recreational	26
2.	Construction and labor.	18
3.	Retired or semi-retired persons	12
4.	U.S. Bureau of Sports Fisheries and Wildlife.	5
5.	Borough (local) school.	5
6.	State of Alaska	4
7.	Professional (doctors, etc)	4
8.	Chugach Electric Association, Inc	4
9.	U.S. Forest Service	3
10.	Air Taxi.	2
11.	Post Office	2
12.	Grocery Store	3
13.	Laundromat.	2
14.	Gunsmith.	1
15.	Photographer.	1

COOPER LANDING EMPLOYERS

Employer Type	Number
Grocery stores (1 including gasoline, auto repair, tavern/restaurant & cabins).	2
Arts, crafts, jewelry stores (1 including gasoline sales	3
Variety/hardware store.	1
Post Office (including cabins).	1
Schools (Borough elementary, private secondary)	2
Residence camps for youngsters (seasonal)	2
Logging operation (small, not current).	1
Guide services.	2
Air taxi services	3
Electric power station.	1
State highway maintenance station	1
Commercial photographer	1
Log cabin building contractor	1
Lodges (including restaurants & rooms, 2 with gasoline)	3
Other food service.	1

SPECIAL CENSUS OF THE POPULATION

Age and sex for Cooper Landing Precinct, July 13, 1978

Age	Both Sexes	Total Male	Female
All ages	238	135	103
Under 1 year	11	5	6
1 year	2	1	1
2 years	3	2	1
3 years	4	2	2
4 years	5	3	2
5 years	2	2	-
6 years	4	3	1
7 years	1	1	-
8 years	8	4	4
9 years	6	4	2
10 years	2	1	1
11 years	3	2	1
12 years	3	1	2
13 years	4	2	2
14 years	2	1	1
15 years	3	1	2
16 years	7	4	3
17 years	1	-	1
18 years	4	3	1
19 years	2	1	1
20 to 24 years	19	8	11
20 years	3	1	2
21 years	3	1	2
25 to 29 years	15	9	6
30 to 34 years	30	18	12
35 to 39 years	9	6	3
40 to 44 years	18	13	5
45 to 49 years	10	5	5
50 to 54 years	15	8	7
55 to 59 years	18	9	9
60 to 64 years	7	4	3
65 to 69 years	11	7	4
70 to 74 years	8	4	4
75 to 79 years	1	1	-
80 to 84 years	-	-	-
85 and over	-	-	-
Median age	31.3	32.2	30.4

1978 Population by Region, City and Precinct

Western Peninsula		310
Tyonek Precinct	310	
CENTRAL PENINSULA		15,672
*Kenai City	4,374 (3)	
*Soldotna City	2,368	
Nikiski 1 Precinct	1,481	
Nikiski 2 Precinct	2,004	
Ridgeway Precinct	1,473	
Sterling Precinct	1,384	
Kalifonsky Precinct	1,707	
Tustumena Precinct	881	
SOUTHERN PENINSULA		6,289
*Homer City	2,054	
*Seldovia City	485	
Kachemak City	271	
Ninilchik Precinct	470	
Anchor Point Precinct	1,447	
Diamond Ridge Precinct	433	
Fritz Creek Precinct(part)	605 (1)	
Seldovia Precinct(part)	99 (2)	
Halibut Cove Precinct	85	
Port Graham Precinct	230	
English Bay Precinct	110	
EASTERN PENINSULA		3,064
*Seward City	1,778 (4)	
Bear Creek Precinct	688	
Moose Pass Precinct	268	
Cooper Landing Precinct	238	
Hope Precinct	92	
TOTAL KENAI PENINSULA BOROUGH		25,072**

Notes: (1) Total Fritz Creek Precinct includes Kachemak City, (2) Total Seldovia Precinct includes Seldovia City, (3) Kenai is a sum of precincts:1 - 1,731, 2 - 1,779 and 3 - 864, (4) Seward is a sum of precincts: 1 - 628 and 2 - 1,150.

* denotes Home Rule or First Class Cities.

** This figure comes from the 1980 Census, however, the remaining data will not be final until sometime in 1981.

Source: 1978 and 1980 Census.

Registered Voters

	Precinct Number	No. of Registered Voters 1970	1979*	1980**	Change 1970-1980
WESTERN PENINSULA					
Tyonek	13-039	72	150	110	+ 52.7%
CENTRAL PENINSULA					
Kenai 1	13-015	520	1,035	991	+ 90.5%
Kenai 2	13-017	555	1,042	1,042	+ 87.7
Kenai 3	13-019	347	535	467	+ 34.6
Soldotna	13-033	572	1,338	1,301	+127.4
Nikiski 1	13-021	500	700	673	+ 34.6
Nikiski 2	13-023	549	1,239	1,292	+135.3
Ridgeway	13-029	339	892	910	+168.4
Sterling	13-035	293	791	814	+177.8
Kalifonsky	13-013	359	855	996	+177.4
Tustumena	13-037	265	629	616	+132.5
		4,299	9,056	9,102	+111.7%
SOUTHERN PENINSULA					
Homer	13-011	511	1,428	1,472	+188.1%
Seldovia	13-031	197	351	398	+102.0
Ninilchik	13-025	151	308	467	+209.3
Anchor Point	13-003	229	625	683	+198.3
Diamond Ridge	13-004	-	297	372	-
Fritz Creek	13-007	201	646	675	+235.8
Halibut Cove	13-009	27	62	66	+144.4
Port Graham	13-027	63	80	80	+ 27.0
English Bay	13-005	30	53	54	+ 80.0
		1,409	3,850	4,267	+202.8%
EASTERN PENINSULA					
Seward 1	5-029	367	481	444	+ 21.0%
Seward 2	5-031	421	769	722	+ 71.5
Bear Creek	5-003	169	448	422	+149.7
Moose Pass	5-025	129	184	184	+ 42.6
Cooper Landing	5-007	97	199	196	+102.1
Hope	5-021	41	117	133	+224.4
		1,224	2,198	2,101	+ 71.7%
TOTAL BOROUGH		7,004	15,254	15,580	+122.4%

* February 21, 1979
** June, 1980

School District Enrollments by School

	Oct. 1975	Oct. 1976	Oct. 1977	Oct. 1978	Oct. 1979	Oct. 1980
WESTERN PENINSULA						
Bartlett Elem./High (Tyonek)	115	103	89	97	86	107
CENTRAL PENINSULA						
Kenai Central High	633	669	733	800	862	628
Kenai Elementary	190	282	274	268	274	300
Kenai Jr. High	450	491	510	498	504	324
North Kenai Elem.	327	362	399	411	401	390
Redoubt Elem.(Soldotna)	-	-	-	-	369	440
Sears Elem. (Kenai)	441	349	414	389	404	381
Soldotna Elem.	435	576	680	684	427	423
Soldotna Jr. High	369	313	323	450	344	297
Soldotna High	-	-	-	-	-	550
Sterling Elem.	156	188	217	191	211	192
Tustumena Elem.	111	114	134	135	123	141
	3,112	3,344	3,684	3,826	3,919	4,066
SOUTHERN PENINSULA						
Anchor Point Elem.	94	78	94	99	121	140
East Homer Elem.	310	318	349	367	372	384
English Bay Elem./High	20	18	32	36	35	34
Homer Jr./Sen. High	413	409	417	414	440	478
Ninilchik Elem./High	192	173	163	169	138	123
Nikolaevsk Elem.	80	115	134	149	153	155
Port Graham Elem./High	32	34	43	41	42	29
Susan B. English Elem./High (Seldovia)	161	83	151	133	133	143
	1,302	1,228	1,383	1,408	1,434	1,486
EASTERN PENINSULA						
Cooper Landing Elem.	29	25	27	27	18	21
Hope Elementary	-	-	10	11	14	13
Moose Pass Elem.	45	39	44	41	28	34
Seward Elem.	331	307	294	287	281	282
Seward High	189	176	174	164	176	166
	594	547	549	530	517	516
TOTALS	5,123	5,222	5,705	5,861	5,956	6,175

A TABULATION OF RECREATION USE REPORTED FOR FISCAL YEAR 1979 ON DEVELOPED SITES

REGION 10 CHUGACH NATIONAL FOREST DISTRICT-02 KENAI SUB-UNIT

SITE NAME	SITE KIND[1] CODE	DEV. SCALE	CAP. PAOT	MANAGED SEASON (CAL. DAYS)	THEO.STAS*. CAPACITY (VIS. DAYS)[2]	REPORTED REC. USE (VIS. DAYS)[2]	PCT. THEO.** CAPACITY	REC. VISITS (THOUSANDS)	REL BTY
Tern Lake	41.1	3	130	104	27,040	7,000	25.88	2.0	5
Crescent Creek	41.1	3	45	104	9,360	4,900	52.35	.3	5
Quartz Creek	41.1	4	220	104	45,760	12,800	27.97	6.4	5
Quartz Creek	31.0	-	25	104	2,600	100	3.84	.1	5
Cooper Creek	41.1	3	150	104	31,200	5,100	16.34	2.7	5
Russian River	41.1	4	430	104	89,440	102,300	114.37	42.6	4
Upper Russian Lake Cabin	44.1	3	6	365	4,380	5,400	123.28	1.2	4
Crescent Lake Cabin	44.1	3	5	365	3,650	3,000	82.19	.5	4
Romig Cabin	44.1	3	5	365	3,650	4,100	112.32	.5	4
Trout Lake Cabin	44.1	3	5	365	3,650	3,200	87.67	.8	4
Juneau Lake Cabin	44.1	3	5	365	2,700	7,397	73.97	.7	4
Swan Lake Cabin	44.1	3	5	365	3,650	2,500	68.49	.6	4
Devils Pass Cabin	44.1	3	5	365	3,650	2,700	73.97	.6	4
East Creek Cabin	44.1	3	5	365	3,650	1,700	46.57	.4	4
Caribou Creek Cabin	44.1	3	5	365	3,650	2,400	65.75	.6	4
Crescent Lake Campsite	41.1	2	15	129	3,870	200	5.16	.1	4
West Swan Lake Cabin	44.1	3	12	365	8,760	2,100	23.97	.5	4
Sunrise Inn	44.2	-	80	365	29,200	900	3.08	8.5	5
Campfire Girls (Camp Kushtaka)	45.2	4	60	97	5,820	1,000	17.18	.2	5
Resurrection Lutheran Church	45.2	5	20	97	1,940	400	20.61	.1	5
West Quartz Creek Group	48.0	-	35	97	3,395	1,900	55.96	.2	5
East Quartz Creek Group	48.0	-	220	97	21,340	1,900	8.90	.2	5
Dry Creek Group	48.0	-	32	97	3,104	2,100	67.65	.2	5
Dall Sheep Sign	81.2	5	50	104	5,200	1,100	21.15	5.0	5
Moose Sign	81.2	-	25	104	2,600	400	15.38	2.5	5
Arctic Tern Sign	81.2	-	30	104	3,120	100	3.20	4.0	5
Russian River Fire Sign	81.2	-	20	137	2,740	100	3.64	5.0	5
Kenai Lake Burn Interpretive S	81.3	3	15	153	2,295	100	4.35	.4	5

All sites are owned by the Forest Service

* Theoretical seasonal capacity for occupancy sites equals PAOT X season in calendar days X 2.
Theoretical seasonal capicity for day-use sites equals PAOT X season in calendar days.

** Statistical sampling indicates the use of well managed sites fall between 20 and 40 percent of theoretical capacity.

1 KIND CODE

31.0 Boating sites
44.1 Hotel/Lodge/Resort - Forest Service Owned (sites established primarily to accomodate overnight use)
48.0 Recreation/Residential sites
41.1 Campground/Family Type
44.2 Hotel/Lodge/Resort - Privately Owned
45.2 Organization site - Privately Owned
81.2 Interpretive site - (minor)

2 Recreation Visitor Day = one person for 12 hours or 12 people for 1 hour. There are 2 visitor days in a 24 hour period.

02-5019

STATE
of ALASKA

MEMORANDUM

TO: Jim Brayton
Chief Road Design Engineer
Douglas

DATE : January 15, 1976

FROM: Ed Mulcahy *Ed Mulcahy*
Central District
Acting Reconnaissance Engineer

SUBJECT: Project F-021-2(17)
Cooper Landing Bikepath
52-2505, 3519

Here is a brief history of the Cooper Landing Bikepath project during 1975.

On April 4, 1975 Mona Painter and Jean Romig of Cooper Landing wrote to Keith Specking of the House of Representatives, asking his help in getting a bikepath built in the community of Cooper Landing. They included pictures of the community and a proposed location of the bikepath.

The bridge in Cooper Landing presently has a walkway in the north side of the bridge and the bikepath would take advantage of this separated walkway already on the bridge.

In the summer of 1975 I went down to Cooper Landing and met with Mona Painter and Jean Romig. We walked the Sterling Highway between Mile 48 and Mile 50. The right of way is very narrow in this area, and completely taken up with the roadway. The only way to build a bikepath is to go outside the right-of-way on private property.

Mrs. Painter and Mrs. Romig have been trying for approximately three months to get easements from the property owners along the north side of the highway. Up to this time they have not been having very much luck.

On June 18, 1975 a public meeting was held in the Community Hall in Cooper Landing. Don Beitinger and Jim Sandberg attended this meeting and discussed the bikepath with the people attending this meeting. They took blank easement forms with them to this meeting, but were unable to sign up any of the property owners on the north side of the road.

It was after this meeting that someone in the audience suggested that we try to get permission from Chugach Electric to put the bikepath in their power pole easement on the south side of the road.

We gathered up subdivision plats, Forest Service surveys of Cooper Landing and other records that the Kenai Borough sent us. We contacted Chugach Electric, and found them to be reluctant to let us put a bikepath underneath their power pole.

The Highway Department in Anchorage was also reluctant to put the bikepath on the south side of the road, with the walkway on the bridge being on the north side of the bridge. This would create a dangerous situation, as the bicycles would be crossing the road on both sides of the bridge in order to use the walkway on the bridge.

Later in the year as plans were made for the new Five Year Program (1976-1980) it was thought that the best way to handle the Cooper Landing Bikepath would be to include it with the repaving and widening of the Sterling Highway from Mile 37-60. This project is scheduled for the year 1976 and could very easily have a bikepath added to it. The actual cost of the bikepath would be reduced because of the large quantities of pavement involved in paving Mile 37-60 of the Sterling.

The Kenai Borough Planning and Zoning Board also feels that this bikepath would be a logical inclusion to the Sterling Highway widening and paving project.

The bikepath could definitely be built on the north side of the road, either by buying additional right of way for it, or by widening the road an including it on the road, behind guardrail, bituminous curb etc.

EM:lm

BIKEPATH DESIGN COMMENTS

On A 40-foot highway with 8-foot paved shoulders, the hazard from the roadway for bicyclists is less from speed than from turning maneuvers of vehicles from turn lanes and at intersections. (This is proven by statistics collected nationwide in recent years.) In addition to the wide, paved shoulders, clear signing to indicate bicyclists' presence on the roadway is the only improvement that can be made to the highway for bicyclists' benefit. Enforcement of the traffic laws and driver and cyclist education is the most effective mitigation of bike/car accidents.

Separate paths must be carefully designed to be safe for cyclists. They create particularly dangerous situations at intersections with roadways and driveways.

More information on bicycle safety and bike path design is available at the office of the ADOT/PF Regional Environmental Coordinator in Anchorage, Alaska.

MEMORANDUM

State of Alaska
Department of Transportation & Public Facilities

TO: Rowe D. Redick
Hwy Engr. Chief

DATE: June 30, 1981

RECEIVED

FILE NO: 246C-2917

Attn: Terry Fleming
Environmental

TELEPHONE NO:

JUN 30 '81

30-11

FROM: James E. Sandberg
Regional R/W and Land
Acquisition Agent
Central Region

SUBJECT: Project No. RF-021-2(15)
Sterling Highway M.P. 37-60
Conceptual Stage Relocation
Study-Alternates:
60 MPH "A"
60 MPH "B"
50 MPH
"C"

D.O.T.P.F.
CENTRAL REGION
HIGHWAYS
Hwy Engr Chief
Asst Hwy Engr Chief
Design Engr
Graphics
Hydr Engr
Road Plans
Traffic Engr

A field inspection of the above alternates was made in late 1980. The inspection revealed the following improvements may be affected on all alternates:

1 Old wood frame storage building-Sta. 1,100 left

Alternates 60 MPH "A", 50 MPH and "C" may also affect a like new mobile home on a concrete block foundation at Station 1832 Right. There is a question that this improvement is actually in the take area. A field location will be necessary.

No businesses, farms or non-profit organizations will be affected on any of the alternates.

The wood frame storage building is approximately 40 years old and is located in a rural area. Its removal will not have an adverse affect on the community.

The mobile home is on a permanent foundation, located in a rural area. A check with Century 21, Spils Realtors and Continental Real Estate reveals no available replacement housing in the area. There are vacant lots available in Goat Haven Estates at M.P. 36, Seward Highway and in Tok Land Estates at M.P. 34, Seward Highway. If this mobile home is affected, it would be possible to purchase a lot and either build replacement housing or place a mobile home on the one acre or two and one half acre lots which are available.

RECEIVED
JUL 01 1981
ENVIRONMENTAL
SECTION

JRW:MH:cm

cc: Jack T. Bodine, Chief
R/W and Land Acquisition
Juneau

OTHER RELOCATION FACTORS

Relocation benefits are determined partly from criteria to measure hardship. It does not appear that the couple currently occupying this home would experience hardship in relocating. They have no children living at home, neither belongs to a minority ethnic group, nor are they elderly. The Goat Haven and Toltat Estates subdivisions are comparable to the neighborhood of Cooper Landing where the mobile home is now located with respect to lot size, utilities, public facilities, access to employment, equal or better neighborhood, and not being subject to adverse environmental factors.

The foregoing is part of the Conceptual Stage Relocation Study prepared for this project in accordance with Alaska State Statutes governing relocation assistance and replacement housing (A.S. 34.60, Uniform Relocation Assistance and Real Properties Acquisition Practices Act of 1971).

WATER QUALITY DATA

TABLE 1

MINING ACTIVITY WATER USE

	Source	Anticipated Maximum Use
Cooper Landing		
Fairman-Madison	Quartz, Devils Creek	2 CFS
Milo Flothe	Quartz Creek	14 CFS
William Schofield	Quartz Creek	20 CFS

OTHER IDENTIFIED NON-DOMESTIC WATER USES

	Source	Anticipated Maximum Use	Consumptive
Cooper Landing			
Maynard Smith (commercial)	Shackleton Creek	12,000 GPD	Yes
Betty Fuller (commercial)	Wells	10,000 GPD	Yes
Chugach Electric Association (hydropower)	Cooper Lake	90,600 AFY	No

(Southcentral Alaska Water Resources Study (Level B), Phase I Technical Memorandum, WATER SUPPLY, Water Supply Work Plan Committee, Alaska Water Study Committee, 1979).

TABLE 2

STREAM MEASUREMENTS ON KENAI RIVER AT COOPER LANDING
SUMMARIZED FROM U.S. GEOLOGICAL SURVEY RECORDS

WATER YEAR 1971

DATE	OCT 1	OCT 1	DEC 20	MAR 19	MAR 19	JULY 13	AUG 26
TIME	1620	1630	1220	1830	1900	1500	1140
Surface Area (Sq. Mi.)	634	634	634	634	634	634	634
Instantaneous Discharge (cfs)	3660	3660	929	511	511	10200	7290
Specific Conductance (Micro-mohs)	78	78	76	82	82	69	--
Elev. of Land Surface Datum (Ft. above MSL)	430	430	430	430	430	430	430
Suspended Sediment (mg/l)	4	--	2	4	--	4	--
Suspended Sediment Discharge (T/day)	40	--	5.0	5.5	--	110	--
Color (Plat-colbalt Units)	--	5	--	--	--	--	--
Ph	--	7.7	7.7	--	7.6	--	--
Carbon Dioxide (CO_2)(mg/l)	--	1.0	0.9	--	1.2	--	--
Alkalinity as $CACO_3$ (mg/l)	--	25	23	--	25	--	--
Bicarbonate (CHO_3)(mg/l)	--	30	28	--	30	--	--
Carbonate (CO_3)(mg/l)	--	0	--	--	--	--	--
Dissolved Nitrate (N) (mg/l)	--	0.16	--	--	--	--	--
Hardness (CA,MG)(mg/l)	--	38	32	--	36	--	--
Non-Carbonate Hardness (mg/l)	--	13	9	--	11	--	--
Dissolved Calcium (CA) (mg/l)	--	14	--	--	--	--	--
Dissolved Magnesium (MG) (mg/l)	--	0.8	--	--	--	--	--
Dissolved Sodium (NA)	--	1.3	--	--	--	--	--
Sodium Adsorption Ratio	--	0.1	--	--	--	--	--
Percent Sodium	--	7	--	--	--	--	--
Dissolved Potassium (K) (mg/l)	--	0.7	--	--	--	--	--
Dissolved Chloride (CL) (mg/l)	--	1.5	--	--	--	--	--
Dissolved Sulfate(SO_4) (mg/l)	--	14	--	--	--	--	--
Dissolved Fluoride (F) (mg/l)	--	0.2	--	--	--	--	--
Dissolved Silica (SIO_2) (mg/l)	--	4.8	--	--	--	--	--
Total Iron (Fe)(µg/l)	--	150	--	--	--	--	--
Total Manganese (mn) (µg/l)	--	50	--	--	--	--	--
Dissolved Solids (sum constituents)(mg/l)	--	53	--	--	--	--	--
Dissolved Solids (Tons per day)	--	524	--	--	--	--	--
Dissolved Solids (tons/acre ft.)	--	0.07	--	--	--	--	--
Disolved Nitrate (NO_3) (mg/l)	--	0.70	--	--	--	--	--
Temperature (deg. C)	--	--	2.0	1.0	1.0	6.0	8.5
Turbidity (JTU)	--	--	--	--	--	--	25

WATER YEAR 1972

DATE	NOV 12	JAN 6	JAN 25	FEB 23	MAR 22	APR 24	MAY 24	JULY 10	AUG 28
TIME	1200	1000	1630	1600	1400	1500	1100	1300	1300
Surface Area	634	634	634	634	634	634	634	634	634
Instantaneous Discharge	1150	532	440	331	324	311	1170	7160	6260
Specific Conductance	71	77	77	80	77	82	74	70	70
Elevation of Land	430	430	430	430	430	430	430	430	430
Temperature	3.0	1.0	0.5	0.0	0.0	2.0	2.0	6.5	10.1
Turbidity (JTU)	2	2	3	1	1	2	1	1	1

(Nephelometric Turbidity Units (NTU) are the current standard for measurement of water clarity approved by the Environmental Protection Agency. The former standard, Jackson Turbidity Units (JTU), referenced in this summary of U.S.G.S. records, cannot be related to NTU's. According to standard methods of measurement, the lowest turbidity value that can be measured directly on the Jackson candle turbidimeter is 25 units. Therefore, the units indicated on the 1972 and 1973 records at values of 1 to 3 JTU are not valid, or they were actually measured by the nephelometric method and labeled "JTU".)

WATER YEAR 1973

DATE	OCT 9	NOV 21	JAN 09	FEB 02	MAR 06	JULY 26	SEPT 05
TIME	1730	1500	1200	1020	1525	1130	1300
Surface Area	634	634	634	634	634	634	634
Instantaneous Discharge	1820	1090	493	527	406	5620	3810
Specific Conductance	75	75	80	82	93	--	--
Elevation of Land	430	430	430	430	430	430	430
Temperature	5.0	2.0	0.5	1.0	--	12.0	10.5
Turbidity (JTU)	1	2	1	0	1	2	1

TABLE 3

SUMMARY OF ANNUAL DISCHARGE*

Stream	Drainage area, in square miles	Years of record	Average Flow Cubic Feet per second	Cubic Feet per second per square mile	Runoff, in inches per year
Crescent C nr Cooper Landing	31.7	17	75.8	2.39	32.47
Kenai R at Cooper Landing	634	24	2678	4.22	57.36
Cooper C nr Cooper Landing	31.8	9	90.1	2.83	38.48
Stetson C nr Cooper Landing	8.6	5	24.8	2.88	39.16
Russian R nr Cooper Landing	61.8	7	124	2.01	27.30
Kenai R at Soldotna	2010	11	5341	2.66	36.08

* From: U.S. Geological Survey Publication "Water Resources of the Cook Inlet/Kenai Peninsula Subregion, South-Central Alaska"

Published in: (Southcentral Alaska Water Resources Study (Level B) Phase I Technical Memorandum, WATER SUPPLY, Water supply Work Plan Committee, Alaska Water Study Committee, 1979).

WATER QUALITY PROTECTION METHODS

The following is summarized from the Alaska Department of Environmental Conservation "Best Practices" Manual, Manual of Recommended Practices for Transporation Corridor Development -- Roads, Railroads, Pipelines, Subdivisions, Non-Point Source Study Series, Section 208, PL 92-500, 95-217, Alaska Department of Environmental Conservation Water Quality Planning Program, May 1980.

Methods of protecting water quality in the design, construction and maintenance of highways:

1. Earthwork

   a. Clearing, grubbing and slash disposal to prevent erosion of areas disturbed by clearing and excavation, including: minimizing disturbed areas, stockpiling of topsoil, slash as sediment filter, prohibit stream crossings with equipment.

   b. Surface preparation to promote revegetation efforts and reduce erosion from disturbed areas as well as from driving surfaces, including: scarification before revegetation, serrated cut slopes, topsoiling, aggregate cover on roadbed, surface sloping to minimize saturation, compaction, crowning, temporary revegetation.

   c. Borrow disposal practices to prevent erosion from mining and disposal sites during and after construction, including: mining plans, mining upland sites instead of floodplains, prevent channel changes, phased development, avoiding fish entrapment, site restoration.

2. Drainage structures

   a. Culverts to provide non-erosive passage of stream flow on temporary and permanent roads that cross non-fish streams and fish streams.

   b. Grass channels to economically provide drainage of runoff from roadside ditches and other graded areas.

   c. Ditch checks, checkdams (temporary measures) to slow velocities within a ditch to reduce erosion or trap eroded sediments, including: straw bale checks, wire fence with straw bales or brushwood bundles, wooden stakes, dumped rock, sandbags.

   d. Mechanical drainage liners to carry surface runoff in stable waterways where flow velocities exceed those acceptable for vegetated channels, including: netting and seeding, fabric erosion checks, stone center drains, latticework concrete blocks, drop structures and checkdams.

e. Outlet protection (for roadside drainage) to slow flow velocity at drainage structure outlets, including: plunge pools, protective aprons, stilling basins.

f. Inlet protection to prevent accumulation of debris at culvert inlets, including: debris deflectors, racks, risers, fins, dams and basins.

3. Sediment retention

a. Sediment basins (permanent and temporary) to retain runoff waters and remove sediments generated from construction areas, preventing deposition into drainage ways and property below the site.

b. Buffer strips, barriers and fences to retard runoff, increase infiltration and contain sediments eroded from construction areas.

c. Silt curtain to prevent sedimentation of water bodies adjacent to construction activity.

4. Slope stabilization

a. General methods to prevent erosion and sloughing of cut and fill slopes by one or more vegetative or mechanical means, including: serrated cuts, pavement or rip-rap, diversion ditch, benches or fill berms, slope drains, diversion berms, sodding, seeding and mulch, woody vegetation, temporary cover.

b. Revegetation--Biotechnical methods--to prevent erosion and sloughing of cut and fill slopes through a combination of vegetative and technical means, including: sod walls, timber frame stabilization, woven willow whips, berm planting, brush layers.

c. Temporary downdrains to safely convey a concentration of runoff from one elevation to another without erosion of the slope, including: sectional downdrain, paved chute, flexible downdrain.

d. Diversions and benches to divert runoff waters and sediments away from critical areas and convey it to stable outlets, including: diversion levees, channels and benches.

e. Level spreaders to convert concentrated flow to sheet flow at non-erodible velocities over stable areas. Time of concentration of runoff is increased and storm peaks are reduced.

5. Grade stabilization structures

   a. Permanent downdrains to carry runoff water from one elevation to another without erosion of the slope or channel.

6. Revegetation and mulching

   a. Grasses, herbaceous and woody plants to provide vegetation to control runoff and prevent erosion and sedimentation.

   b. Organic mulches involve application of plant residues or other suitable organic material which can reduce erosion by reducing impacts of rainfall and checking runoff; also will stimulate plant growth by retaining moisture. Types include: straw mulch, wood fiber mulch, wood chips, wood excelsior, compost, peatmoss, topsoils.

   c. Nettings, mattings and mulch blankets to prevent soil erosion during establishment of vegetation.

   d. Chemical stabilizers and soil binders to bind soils to prevent erosion during revegetation. Some chemicals act as mulches also.

7. Revegetation after final grading

   a. Stabilizing critical areas with sod to establish a protective layer of vegetation as fast as possible to prevent soil erosion by wind or water.

8. Streambank stabilization

   a. Vegetative, for protection of small streams and their banks to prevent or control erosion and sedimentation. Fascines (bundles) of willows or alder cuttings, or mattresses woven of willow.

   b. Mechanical methods--revetment--to control streambank erosion in critical areas which cannot be protected by grass or other vegetation. Revetments consist of any number of bank lining materials including: rip-rap, concrete, grouted stone, gabion blankets, bagged concrete and sheet piling.

   c. Biotechnical methods to provide protection of critical sections of streambank through a combination of vegetative and mechanical means including: willow jetties, willow branch matt revetment, willow cuttings in rip-rap.

d. Mechanical methods--deflector jetties--to deflect streamflow away from an eroding bank, causing a buildup of sediment which can then be stabilized by planting willow cuttings.

9. Icing control

a. Specialized drainage structures to provide passage of winter or breakup flow. To avoid icing which encroaches on road surfaces or which blocks culverts and bridges and could result in damage to the structure or the embankment. Dual, stacked culverts, subsurface drains, channel realignment, or channel covers may be used.

b. Culvert thawing to maintain winter flow or provide an opening for passage of spring meltwater.

c. Channel maintenance to maintain winter flow, or induce icing at some location which will not require maintenance. Methods include: frost belts, air-ice covers and ice fences.

10. Miscellaneous erosion/pollution controls

a. Tracking control to prevent tracking sediment from construction areas onto public right-of-way by vehicles or runoff. "Wash-strips" are maintained at entrances to construction sites.

b. Wind erosion and dust control on construction sites and traffic surfaces to improve visibility, safety and health on the site and prevent sedimentation of nearby water courses. Temporary methods of control include: mulches, vegetation cover, scarification, irrigation, spray-on adhesives and vertical barriers. Permanent controls include: vegetation, topsoiling and aggregate cover.

MEMORANDUM

State of Alaska
Department of Transportation & Public Facilities

TO: Files

DATE: 19 February, 1982

FILE NO:

TELEPHONE NO: 789-0841

SUBJECT: Kenai River at Cooper Landing

COPY FOR YOUR INFORMATION

FROM: W. F. Barber, Jr.
Hydraulic Engineering Assistant
DOT/PF
Juneau, Alaska
99802

As requested by Central Region a Flood Flow Frequency Analysis was computed for the subject area.

Given Data:

The U.S.G.S., Water Resources maintains a gage on the Kenai River at Cooper Landing. This gage has a continuous record from 1947 to date. Using this data we can compute a Flood Flow Frequency using the procedures recommended in the Guidelines for Determining Flood Flow Frequency, by the United State Water Resources Council, Bulletin #17-1976.

Location of gage: Lat $60^{o}39'34"$ long $149^{o}48'28"$

Drainage Area = 634 sq. miles

Years of record = 1947 to 1980 (see attached records)

The first procedure is to determine if any of the records should be considered as "outliers". Using the Gumble Method described in Bulletin #17 we find that there are NO "outliers". We therefore will use all of the records to compute our Log Person III curve.

Using the equations in Bulletin #17 we find that the following Flood Frequency Flows were computed:

Q100 = 27,135 cfs	Q 50 = 23,943 cfs
Q 25 = 20,957 cfs	Q 10 = 17,255 cfs
Q 5 = 14,570 cfs	Q 2 = 10,900 cfs

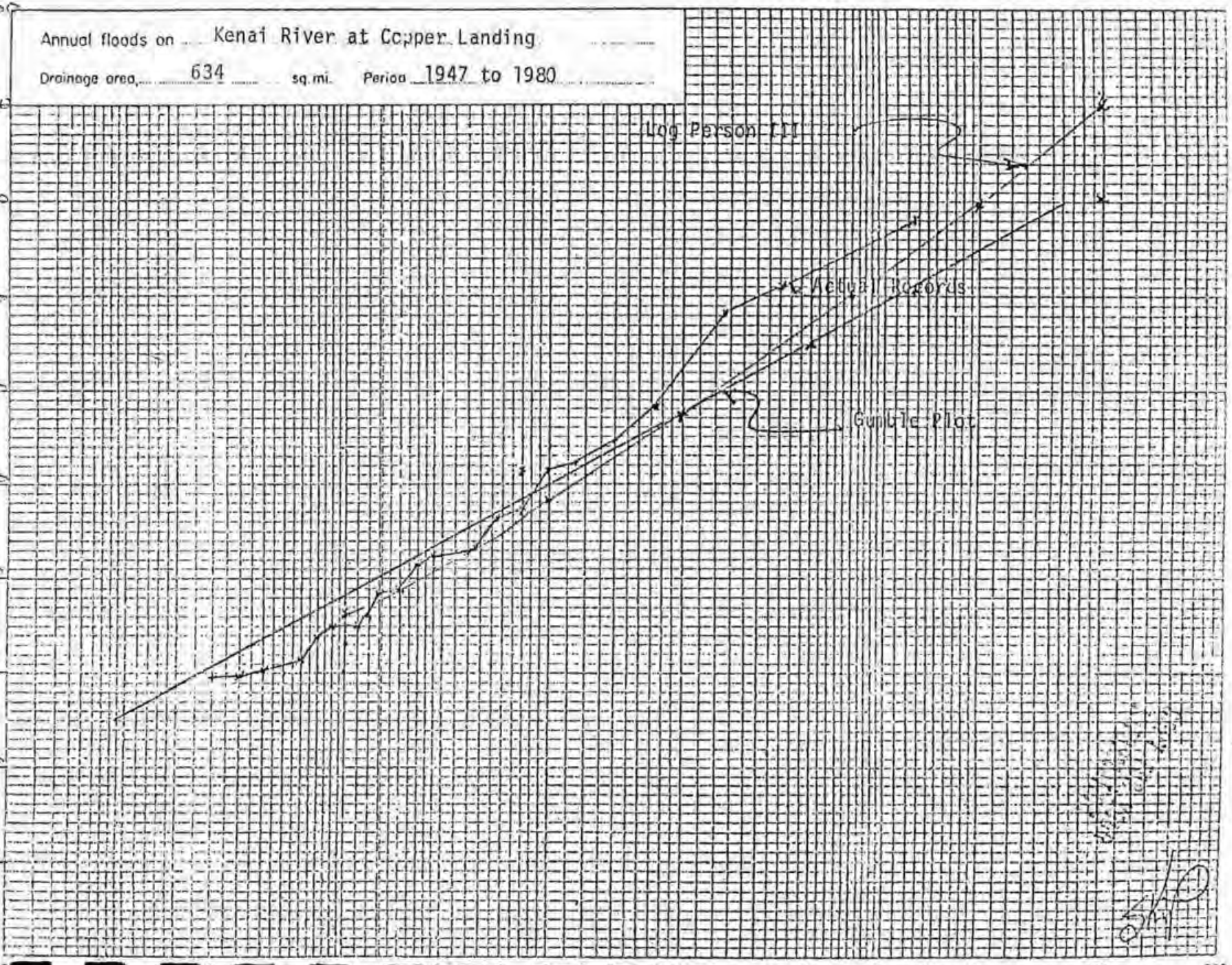
It should be noted that all methods of computing a Flood Flow Frequency show that this river appears to plot very consistently. Therefore it is felt that these design flows could be considered as very accurate or very representative of what can be expected in this area.

FORM PR-1279
(3-64)

FLOOD DATA PLOT

FILE COPY

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS



DEPARTMENT OF THE ARMY
ALASKA DISTRICT, CORPS OF ENGINEERS
P.O. BOX 7002
ANCHORAGE, ALASKA 99510

RECEIVED
DEC 11 '80
12-10-#10

D.O.T.P.F. CENTRAL REGION HIGHWAYS

	COPY	ACT
Hwy Engr Chief		
AsstHwyEngrChief		
Review Engr		
LSR&T Engr		
Graphics		
Design Engr	15	
Road Plans	12/16	
Recon		
Utilities		
Traffic		
Environmental		
Materials Engr		
Const Engr		
Central File		

REPLY TO
ATTENTION OF:
NPAEN-PL-FP

8 December 1980

Mr. Rowe D. Redick
Central Regional
Highways Engineering Chief
Department of Transportation and Public Facilities
Pouch 6900
Anchorage, Alaska 99502

Dear Mr. Redick:

This is in reply to your letter of 28 October 1980 in which you requested a flood hazard evaluation on the Sterling Highway project RF-021-2(15), from Mile 37 to 60. Although we have not completed any detailed studies in this particular area and there has not been any flood prone lands officially designated, it is obvious that portions of this highway improvement project would lie within the 100 year flood plain of the Kenai River or some of its tributaries.

Encroachment of highway fill and improvements into this flood plain does not present a significant problem in itself, as long as an adequate "floodway" remains to convey the 100 year flood without significant increases in peak water surface elevations. Review of the plan and profile sheets submitted with your letter reveals only a few areas where we feel that the encroachment could present significant problems. All of these areas involve proposed bridge crossings and their approaches.

Of particular concern are the alternative alignments "A" and "C". Each of these alignments involves a considerably higher number of bridge structures, and increases the potential for flooding problems. The flow for the 100 year flood at Cooper Landing (above Russian River) has been calculated to be 22,500 cfs. Preliminary calculations show that the proposed bridges, as shown, have enough opening to adequately convey these flows without significantly increasing flood heights. Our main concern however is the higher probability of ice flows piling up at these bridges during glacier outburst flooding, creating ice jams and more serious flooding that would otherwise have occurred. Perhaps more serious than the number, is the skew of a good percentage of these bridges. With the skews shown, there is a higher probability that ice flows will accumulate at the bridge piers during outburst flooding.

NPAEN-PL-FP
Mr. Rowe D. Redick

8 December 1980

We would recommend that serious consideration be given to the increased hazard imposed by these two alignments. Floods resulting from the release of the glacier dammed lake formed by Snow Glacier at the head of Snow River have occurred numerous times in past years, with the extreme flow of 23,100 cfs occurring in 1974. Although the damage potential would be high when a glacier outburst is superimposed on already high discharge due to high snow melt or severe rain storms during the spring, summer or fall, it can be particularly hazardous when it occurs during the winter. At this time of the year, even with the dampening effect of Kenai Lake, the rise in water surface can be sufficient to fracture the ice and transport ice flows downstream, where they may collect at any channel restriction, such as bridge piers, forming ice jams and the possibility of severe flooding.

If we can be of any further assistance or if you have any questions, please do not hesitate to contact Mr. Mason D. Wade, Jr., or Mr. Paul E. Pinard of my staff at 752-3246.

Sincerely,

M D Wade Jr

HARLAN E. MOORE
Chief, Engineering Division

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, CORPS OF ENGINEERS
P.O. BOX 7002
ANCHORAGE, ALASKA 99510

REPLY TO
ATTENTION OF:
NPAEN-PL-FP

4 March 1982

Mr. Dave DeVoe
Central Region, Highways Engineering
Department of Transportation and
Public Facilities
Pouch 6900
Anchorage, AK 99502

Dear Mr. DeVoe:

This letter is in response to your telephone conversation with Mr. Ken Hitch of my staff on 3 March 1982.

On 8 December 1980, we submitted to you a flood hazard evaluation on your Sterling Highway project RF-021-2(15), from Mile 37 to 60. In this evaluation we stated that the calculated 100-year flood flow for the Kenai River at Cooper Landing was 22,500 cfs. It has come to our attention that the most recent years of record, which were not available to us then, significantly change the 100-year flow. Inclosed is a graph indicating that the 100-year flow is now calculated to be 27,000 cfs. This makes our earlier comments more important.

If we can be of further assistance or if you have any questions, please do not hesitate to contact Mr. Ken Hitch of my staff at 552-3246.

Sincerely,

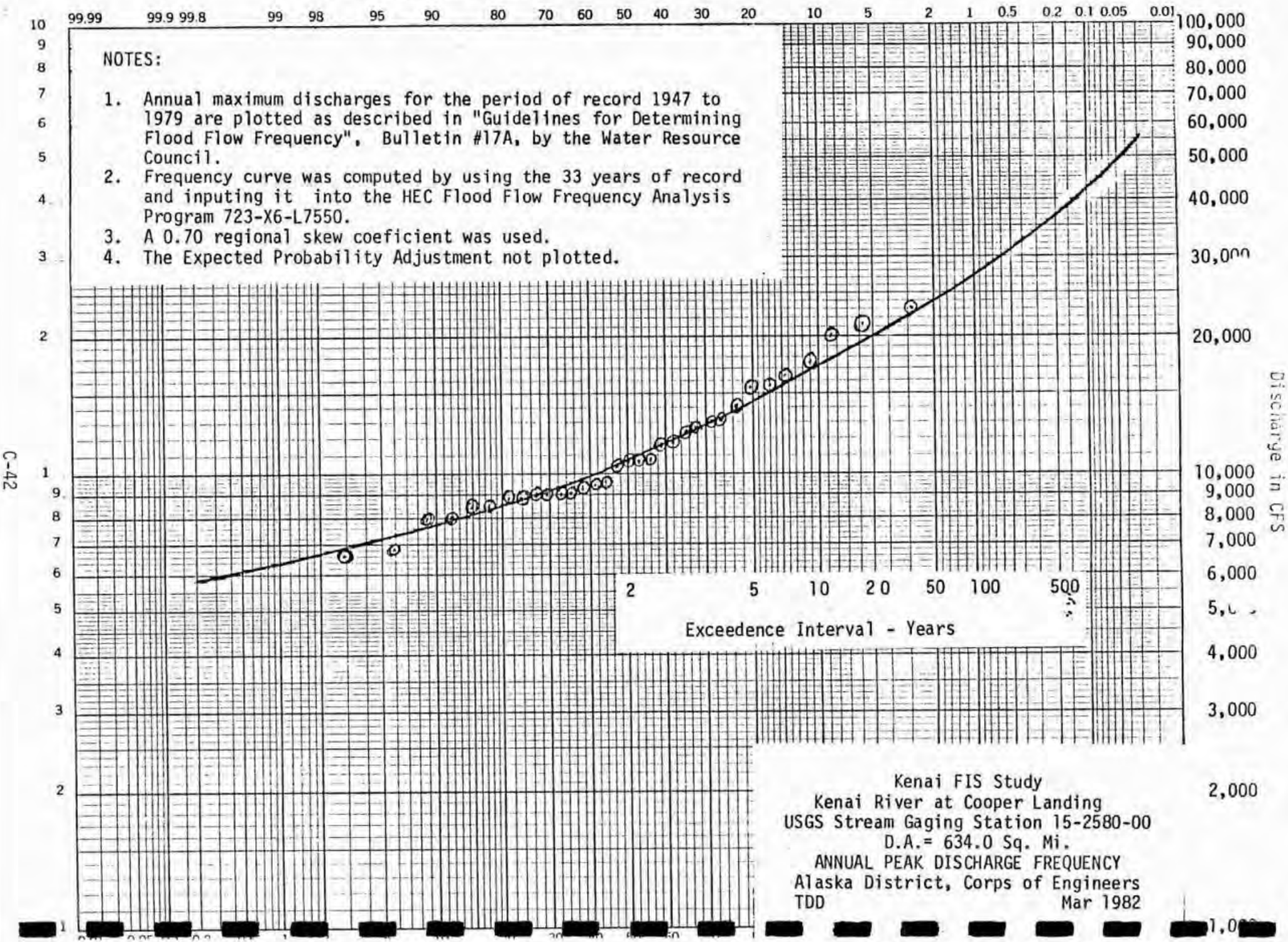
Carl E. Borash

for HARLAN E. MOORE
Chief, Engineering Division

1 Incl
As stated

K&E PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

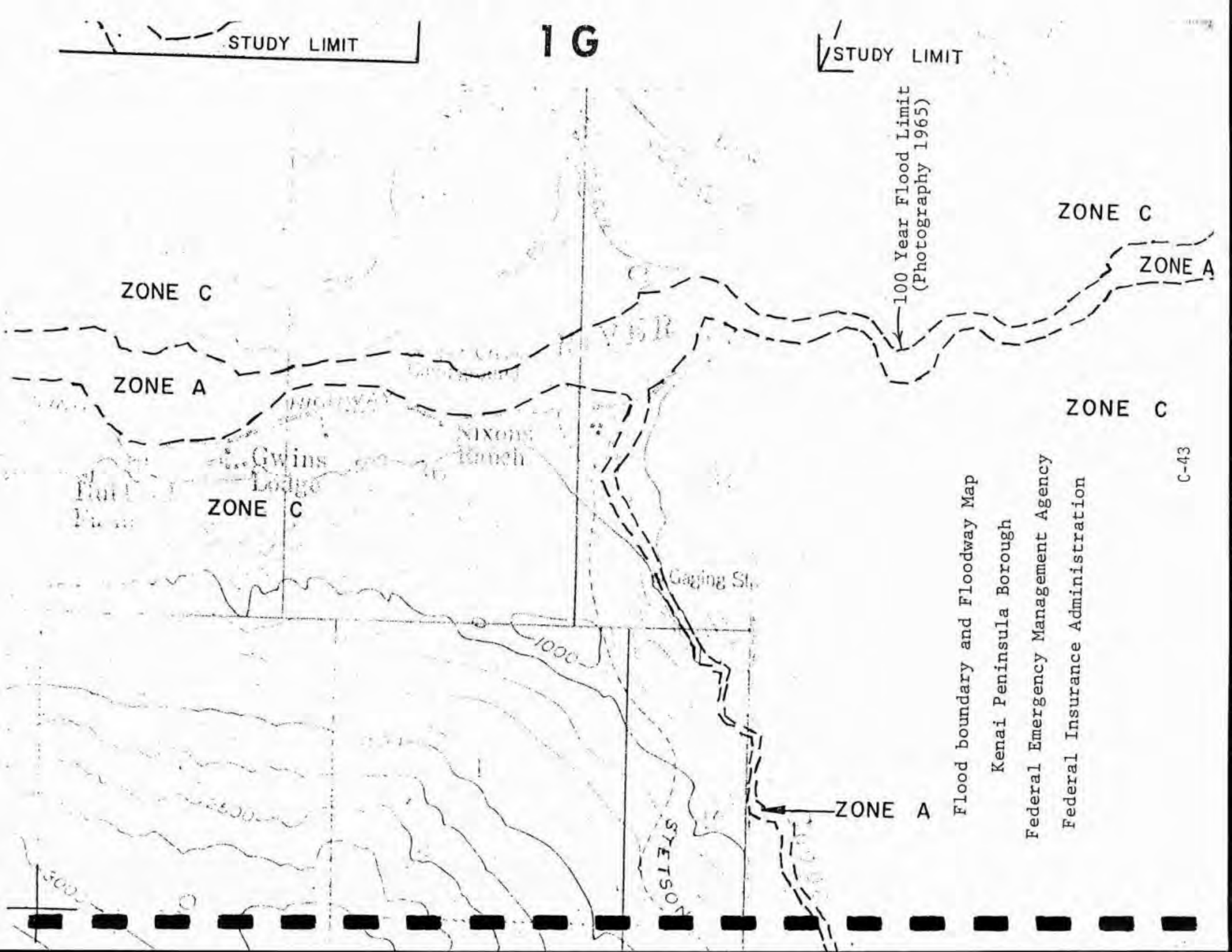
46 8043

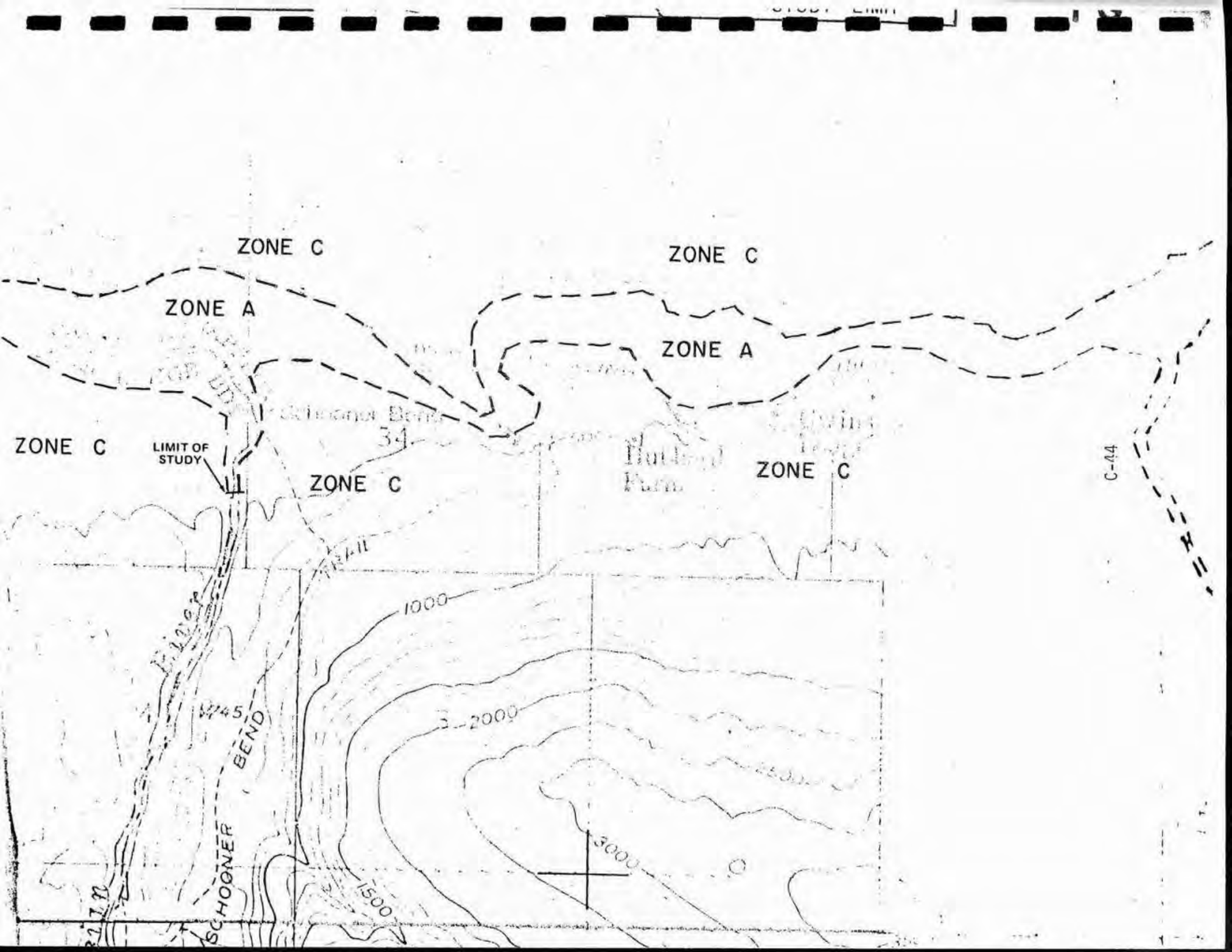


NOTES:

1. Annual maximum discharges for the period of record 1947 to 1979 are plotted as described in "Guidelines for Determining Flood Flow Frequency", Bulletin #17A, by the Water Resource Council.
2. Frequency curve was computed by using the 33 years of record and inputing it into the HEC Flood Flow Frequency Analysis Program 723-X6-L7550.
3. A 0.70 regional skew coeficient was used.
4. The Expected Probability Adjustment not plotted.

Kenai FIS Study
Kenai River at Cooper Landing
USGS Stream Gaging Station 15-2580-00
D.A.= 634.0 Sq. Mi.
ANNUAL PEAK DISCHARGE FREQUENCY
Alaska District, Corps of Engineers
TDD Mar 1982


STUDY LIMIT
1 G
STUDY LIMIT
100 Year Flood Limit
(Photography 1965)
ZONE C
ZONE A
ZONE C
ZONE A
ZONE C
ZONE C
ZONE A
Gwins
Lodge
Nixons
Beach
Gaging St.
1000
STETSON
Flood boundary and Floodway Map
Kenai Peninsula Borough
Federal Emergency Management Agency
Federal Insurance Administration
C-43


ZONE C
ZONE A
ZONE C
ZONE A
ZONE C
LIMIT OF STUDY
ZONE C
ZONE C
C-44
1000
2000
3000
1500
SCHOONER BEND

KENAI PENINSULA BOROUGH
BOX 850 • SOLDOTNA, ALASKA 99669
PHONE 262-4441

DON GILMAN
MAYOR

May 19, 1981

Mr. Dave DeVoe
Alaska Department of Transportation & Public Facilities
4111 Aviation Avenue
Pouch 6900
Anchorage, AK 99502

Re: Kenai Peninsula Borough Coastal Development Program

Dear Mr. DeVoe:

This letter is a follow-up to our May 14 telecon regarding the proposed coastal management boundary limits.

First of all, a clarification is in order. The Borough Coastal Development Program boundary excludes federal lands, unless the State exerts a form of jurisdiction over these lands; i.e., Chugach National Forest & Kenai National Wildlife Refuge. The enclosed pp. 7-1 to 7-8 define the coastal management boundaries applied under the program. As we discussed, the plan has not been finalized and it is currently being revised by the project consultant. I will advise you regarding any changes in the boundary definition. I have included a copy of the program summary for your reference.

I would like to receive a copy of the E. I. S. for the Sterling Highway relocation project in the Cooper Landing vicinity when available.

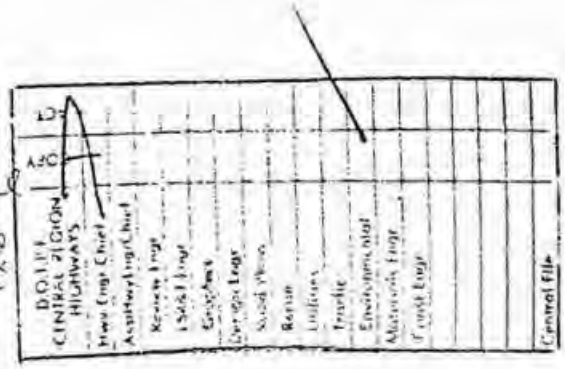
Thank you for your cooperation. Don't hesitate to call if you have any future questions.

Sincerely,

JEFF LABAHN
Senior Planner

JL:bl

Enclosures



IMPACTS OF DEVELOPMENT ON WILDLIFE

Noise is believed to be a factor in human disturbance of animals that affects their behavior. Experiments with caribou's response to machinery noise showed that caribou avoided the noise for distances of 200-800 meters from the source. The experiment did not conclusively demonstrate noise to be the sole cause for the animals' avoidance behavior. Visual and olefactory stimuli and the human activity associated with the operating complex may have presented much more distrubing stimuli than the noise.

Studies of impacts on wildlife have revealed that... "Linear barriers, such as pipelines, power lines, highways and railways, can obstruct or prevent local or seasonal (migratory) movements of wildlife. Effects of these barriers can include actual physical obstruction of movement or an avoidance of the barrier as a result of either human distrubance or behavioural responses to the altered habitats of the corridor."..."In the absence of human disturbance and frequent vehicular traffic, most ungulates do not appear to have a strong innate aversion to roads and railways. Heavily-used transportation corridors, however, may deter the animals from crossing. Collision mortality along transportation corridors does not appear to be a major factor that limits population growth; however, small isolated populations of ungulates may be seriously limited by a small amount of collision mortality.

"The disturbance of wildlife that is associated with many human activities can affect animal populations directly, by causing a deterioration in their physical condition, and indirectly, by reducing the quantity and/or quality of available habitat. If ungulates are too concentrated in limited areas of prime range or are forced to depend solely on marginal ranges as a result of disturbance, the carrying capacity of the range may be reduced and populations may decline. Distrubances associated with industrial activities (eg., logging, mining, construction activities, and aircraft disturbance) and recreational activities (e.g., hiking, snowmobiling, and use of all-terrain vehicles) are thought to be more detrimental to ungulates than are corridor-related disturbances (traffic and other road-related activities).

"The effects of human disturbance on birds are most pronounced for those species that concentrate in large numbers or that are rare or endangered." ..."Densities of both breeding and wintering populations may be adversely affected by recreational activity. Hunting activity may result in the displacement of waterfowl from prime feeding areas and may influence the activity patterns of waterfowl. Colonially-nesting waterbirds are particularly sensitive to human activity in the vicinity of nesting colonies; decreased productivity and colony abandonments have resulted from such distrubance. Many species of raptors are susceptible to human disturbance, especially during the nesting period. Human activity (recreation, climbing to nests, etc.) in the vicinity of raptor nests has resulted in nest abandonment and decreased productivity."

(Sopuck, Lennart G., C. Eric Tull, Jeffrey E. Green and Richard E. Salter, LGL Ltd., Environmental Research Assoc's. 1979. Impacts of Development on Wildlife: A Review from the Perspective of the Cold Lake Project. Esso Resources Canada Ltd.)

BIRD HABITATS IN THE HIGHWAY CORRIDOR

A measure of the significance of the bird population in the highway corridor is contained in a bird study (Ref. 35-37 and 62) made of the Kenai Lake area in 1978. Although limited in scope (one season of observations), the study confirmed the findings of studies in other areas: that mature forest are important habitat for many birds.

Mature white spruce forests support more numbers and varieties of breeding birds than other habitats in the corridor. The mature forest habitat is consequently the most susceptible to highway impacts. Portions of each highway route alternative involve some mature spruce forest. Unfortunately, no inventory has been made which identifies quantitatively the mature forest that would be affected to enable a comparison to be made between alternatives. A cursory study of forests along the corridor points to those alternatives that most deviate from the existing highway as the ones that would encroach the greatest amount on mature forest habitats -- Juneau Creek, Bean Creek, and Quartz Creek. Realignments on the existing highway, such as Alternative "B", would generally involve less forest clearing, and therefore fewer permanent impacts on bird populations.

The Quinlan study revealed that of 40 different species of breeding birds in the area, 19 were using mature forest habitat; 10 breeding species used mature forest exclusively. This compared to eight species of breeders which used areas cleared by fire and revegetated over the last 9 to 20 years. (The Chugach National Forest Wildlife Biologist has recommended maintenance of adequate mature forest habitat for non-game birds during implementation of the moose-burn (moose-browse enhancement) program, which concentrates on stands of mature spruce).

Further evidence of significance may be derived from the fact that at least 25 species of birds were acknowledged as residents of the area, including eagles, which both nest and winter in the Kenai Lake/River vicinity.

Tern Lake, which will be affected to some extent by widening of the existing roadway with Alternative "B", has been identified as breeding habitat for at least 26 bird species, ten of which are waterfowl or shorebirds. Kenai River and the mouths of Cooper Creek and Quartz Creek have also harbored some breeding pairs and young birds. Impacts to these habitats would be limited to the margins of Tern Lake and the wetlands crossed by the existing roadway.

Due to the broad distribution of the many varieties of birds, the "no build" alternative is the only one which would not result in some loss of habitat, whether it be mature forest, burn area, or wetland.

LIST OF BIRD SPECIES OBSERVED IN THE KENAI LAKE AREA

FROM: Annotated Bird List of Species Observed in the Kenai Lake Area, Summer 1978
Susan E. Quinlan, Chugach National Forest, Seward, Alaska

Bird Species Observed	Resident	Migrant	Breeder	Visitant	Abundant	Common	Fairly Common	Uncommon	Rare*
Gaviiformes (loons)									
Common loon			(?)				X		
Arctic loon				X				X	
Podicipediformes (Grebes)									
Red-necked grebe				X					X
Anseriformes (Surface-feeding & Diving ducks)									
Mallard						X			
Pintail						X			
Green-winged teal			(?)					X	
American wigeon			(?)					X	
Northern Shoveler		X					X		
Scaup		X					X		
Common goldeneye		X						X	
Barrow's goldeneye		X					X		
Harlequin duck			X			X			
Common merganser			X			X			
Red-breasted merganser		X						X	
Falconiformes (Hawks, Eagles)									
Goshawk	X								X
Sharp-shinned hawk	X							X	
Red-tailed hawk	Status Unknown							X	
Golden eagle	X						X		
Bald eagle	X							X	
American Kestrel		X						X	

* Descriptive terms of species status and abundance are defined on p. 46.

LIST OF BIRD SPECIES OBSERVED IN THE KENAI LAKE AREA

Bird Species Observed	Resident	Migrant	Breeder	Visitant	Abundant	Common	Fairly Common	Uncommon	Rare
Galliformes (Turkeys, grouse, quail)									
Spruce grouse	X						X		
Willow ptarmigan	X					Status Unknown			
Gruiformes (wading birds)									
Sandbill crane		X					X		
Charadriiformes (Shore birds)									
Semipalmated plover			X					X	
Whimbrel		X						X	
Upland sandpiper		Status Unknown							X
Greater yellowlegs			X				X		
Lesser yellowlegs		X						X	
Spotted sandpiper			X				X		
Wandering tattler				X					X
Northern phalarope			X				X		
Common snipe			X		X				
Least sandpiper			X			X			
Glaucous-winged gull	X					X			
Mew gull	X					X			
Herring gull		Status Unknown				Status Unknown			
Arctic tern			X			X			
Strigiformes (Owls)									
Great horned owl	X					X			
Great gray owl	X								X
Coraciiformes (Kingfishers)									
Belted kingfisher	X								X

LIST OF BIRD SPECIES OBSERVED IN THE KENAI LAKE AREA

Bird Species Observed	Resident	Migrant	Breeder	Visitant	Abundant	Common	Fairly common	Uncommon	Rare
Piciformes (Woodpeckers)									
Common flicker			X					X	
Hairy woodpecker	X							X	
Downy woodpecker	X								X
Northern three-toed woodpecker	X						X		
Passeriformes (Perching birds)									
Says phoebe		Status Unknown							X
Alder flycatcher			X			X			
Western wood peewee			X					X	
Olive-sided flycatcher			X				X		
Horned lark		Status Unknown							X
Tree-swallow			X			X			
Violet-green swallow			X				X		
Bank swallow			X			X			
Cliff swallow			X			X			
Gray jay	X						X		
Black-billed magpie	X					X			
Common raven	X					X			
Black-capped chickadee	X						X		
Boreal-chickadee	X					X			
Red-breasted nuthatch	X								X
Brown creeper	X						X		
Dipper	X						X		
American robin			X			X			
Varied thrush			X		X				
Hermit thrush			X				X		
Swainson's thrush			X			X			
Gray-cheeked thrush		Status Unknown							X
Golden-crowned kinglet			X					X	
Ruby-crowned kinglet			X		X				
Water pipit			X			X			

LIST OF BIRD SPECIES OBSERVED IN THE KENAI LAKE AREA

Bird Species Observed	Resident	Migrant	Breeder	Visitant	Abundant	Common	Fairly Common	Uncommon	Rare
Passeriformes									
Bohemian waxwing	X					X			
Northern shrike	X					X			
Orange-crowned warbler			X		X				
Yellow warbler			X				X		
Yellow-rumped warbler			X		X				
Townsend's warbler			X		X				
Backpoll warbler			X				X		
Northern waterthrush			X				X		
Wilson's warbler			X				X		
Rusty blackbird			X			X			
Red-winged blackbird	Status Unknown								X
Pine grosbeak	X					X			
Common redpoll			X				X		
Pine siskin			X			X			
White-winged crossbill			X			X			
Savannah sparrow			X		X				
Dark-eyed junco			X		X				
White-crowned sparrow			X			X			
Golden-crowned sparrow			X		X				
Fox sparrow	Status Unknown							X	
Lincoln's sparrow			X					X	
Total of 90 species	25	9	42	3	11	24	23	19	11

Status Unknown - 7
3 (?)

Status Unknown - 2

Terminology used to describe the status and abundance of each species:

Resident - a species represented within the region throughout the year.

Migrant - a seasonal transient through the region.

Breeder - a species with known or probable breeding populations within the region.

Visitant - (mainly summer or winter) - a species having populations within the region.

Abundant - species occurs repeatedly in proper habitats, with available habitat heavily utilized, and/or the region regularly hosts great numbers of the species.

Common - species occurs in all or nearly all proper habitats, but some areas of presumed suitable habitat are occupied sparsely or not at all, and/or the region regularly hosts large numbers of the species.

Fairly Common - Species occurs in only some of the proper habitat, and large areas of presumed suitable habitat are occupied sparsely or not at all and/or the region regularly hosts substantial numbers of the species.

Uncommon - species occurs regularly, but utilizes very little of the suitable habitat, and/or the region regularly hosts relatively small numbers of the species, not observed regularly even in proper habitats.

Rare - Species occurs, or probably occurs, regularly within the region but in very small numbers.

(The area where observations were made is primarily white spruce forest of various ages.)

TIMBER IMPACTS

The timber harvest and potential in the Sterling Highway corridor was outlined in a letter dated July 10, 1980, by George Hudak, Forester, Seward District, Chugach National Forest:

> ". . . two winters ago we harvested 100+ mbf of white spruce at Mile 39 with access via the Old Seward Highway. This past winter, another 100+ mbf of spruce were harvested along the Old Highway and hauled out through Tern Lake Campground. We expect to sell and cut another 100+ mbf a year along Snug Harbor Road, and expect to continue at this level for several years. Over the next 5 years we anticipate harvesting about 500 mbf in the vicinity of Russian River Campground. Any units proposed for moose burns are commercially logged and/or opened for free use firewood and house-log harvest.
>
> Because of low product values and the small size of local operators, major road building (cost for operators) is a serious impediment to harvest. Consequently, highway access is important, especially access to the Old Sterling Highway, both sides of the new highway in the vicinity of Mile 41 (Quartz Creek), and to the south of the highway west of Cooper Landing."

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Seward Office
P. O. Box 275
Seward, AK 99664

REPLY TO: 7750 Forest Highways

SUBJECT: Forest Resource Along Sterling Highway

TO: Ron Herbrandson
Through Fred Harnisch,
Timber Program Manager

In response to the State DOT inquiry concerning use of the timber resource on National Forest land along the Sterling Highway, I feel there is good potential for timber harvest along this route over the next 20-30 years.

Commercial timber sites along this route generally consist of old growth white spruce and young growth paper birch. As you know, commercial demand for white spruce has been increasing in the past few years, and we expect it to remain at this or a higher level in the years to come. Birch stands by the end of the design period will be approaching a size suitable for commercial harvest. The spruce bark beetle is [illegible] the greatest threat to spruce stands in this area, and salvage and sanitation harvest in this area is an increasingly strong probability. This would also apply to the timberlands going to the State in the Cooper Landing State Selection Area.

Expepting the visual resource impact, the greatest impediment to timber harvest on the Kenai has been lack of access. The moose burn program is indicating that vegetation manipulation can be done along a highway corridor, and, where access is available and timber warrants, harvest can be done. Road building under a timber sale contract is generally quite limited by the capabilities of the small operators on the peninsula, so close access to the highway is vital.

East of the Sunrise Inn, steep slopes generally preclude timber harvest north of the highway except in the Quartz Creek drainage. South of the highway is adequately accessed by the Old Sterling Highway loop. West of the Cooper Landing State Selection Area, steep slopes are not so limiting, and timber could be harvested using tractors. Although the Kenai River prevents access to much of the land north of the highway, the remaining area west of Cooper Landing State Selection Area has good harvest potential on

both sides of the highway. It is in this area that road loops and turnouts would be of most benefit and are most strongly recommended for retention along with the Mile 39-Mile 44 loop and access to the north in the vicinity of the Mile 41 substation. Although recreation and firewood harvest could utilize these loops on a year around basis, commercial harvest would only require that loops be in a condition which would permit reconnection to the highway.

Since past sales have gone to mills in Kenai, Anchorage, and Seward, I expect that hauling both ways on this stretch of highway will continue.

KERRY T. MARTIN,
Resource Management Assistant

KENAI PENINSULA BOROUGH
BOX 850 • SOLDOTNA, ALASKA 99669
PHONE 262-4441

STAN THOMPSON
MAYOR

February 9, 1981

Mr. Terry Fleming
Environmental Coordinator
State of Alaska
Department of Transportation/Public Facilities
Box 6900
Anchorage, AK 99502

Re: Sterling Highway M.P. 37-60 Project
DESIGN

Dear Mr. Fleming:

Mr. Dave De Voe spoke with me on February 6 concerning any Borough ordinances regulating noise, water or air quality which may affect the above-referenced project.

Kenai Peninsula Borough Chapter 21.12--Noxious, Injurious or Hazardous Uses--is the only ordinance which addresses these issues. This ordinance has been applied to the establishment of sawmills, solid waste operations and batch plants in the past. As no specific land use activities are cited in this ordinance, the Borough Planning Commission has made their recommendations on an individual case basis.

Please contact me if I can be of any further assistance.

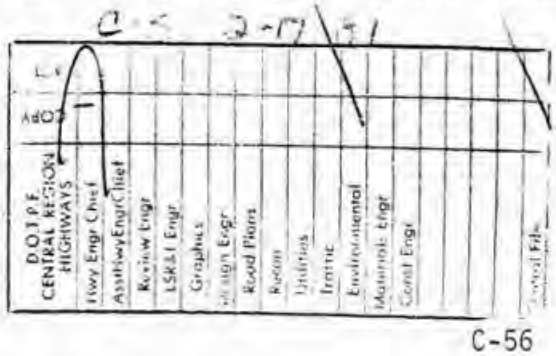
Sincerely,

JEFF LABAHN
Senior Planner

bl

Enclosures: KPB Chapter 21.12 Ordinance

RECEIVED
FEB 11 '81



Source: Kenai Peninsula Borough Code of Ordinances

Chapter 21.12

NOXIOUS, INJURIOUS OR HAZARDOUS USES

Sections:

21.12.010 Permitted when--Exception required. All uses that may be noxious, injurious or hazardous to surrounding property or persons by reason of the production or emission of dust, smoke, refuse matter, odor, gas fumes, noise, vibration or similar substances or conditions or the production or storage of explosive materials shall be permitted only by exception. (Ord. 15 §1(part), 1966: KPC §20.10.15(a)).

21.12.020 Exception--Grounds for granting. An exception for any noxious, injurious or hazardous use or uses may be granted only upon finding that the public interest is adequately protected considering the economic benefit to the community derived from the use, and that the owners or occupants of property in the vicinity who are specially affected are adequately protected or compensated. (Ord. 15 §1(part), 1966: KPC §20.10.15(b)).

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

IN REPLY REFER TO: SE

20 AUG 1980

U.S. Department of Transportation
Federal Highway Administration
Mr. Gene A. Hanna
P.O. Box 1648
Juneau, Alaska 99802

Dear Mr. Hanna:

This responds to your August 12, 1980 request for a list of threatened or endangered species which may be present in the vicinity of the proposed Alaska Highway Project RF-021-2(15)(Sterling Highway - Mile 37 to 60). Based on the best information currently available to us, no proposed or listed threatened or endangered species are present in the area described.

New information indicating the presence of currently listed species or the proposed listing of new species which may occur in the project area will require reassessment of this finding.

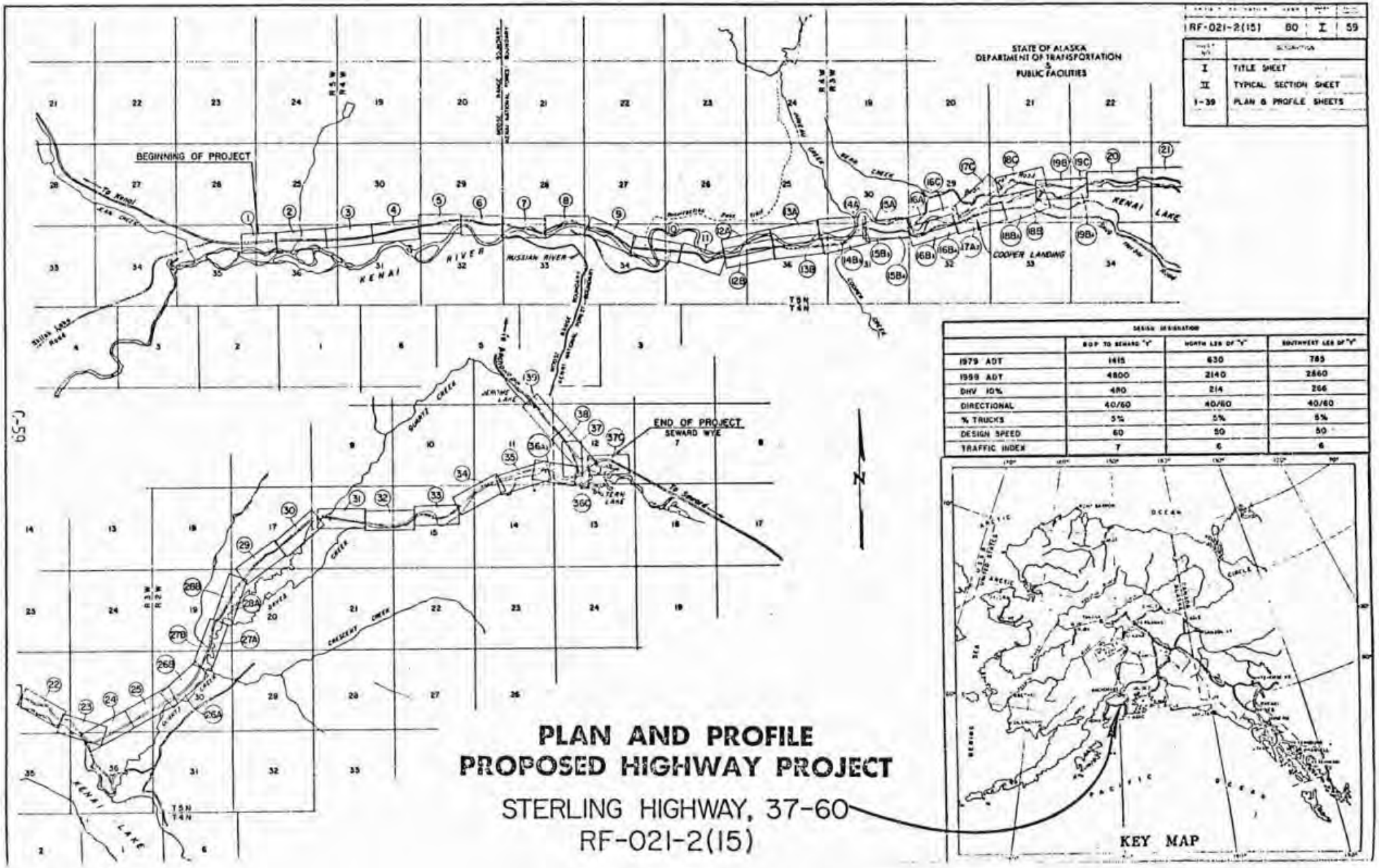
Thank your for your interest in endangered species. If you need additional information, please contact us.

Sincerely,

Jon M. Nelson
~~Assistant~~ Area Director

cc to Millar 8/26/80
C.E.S.

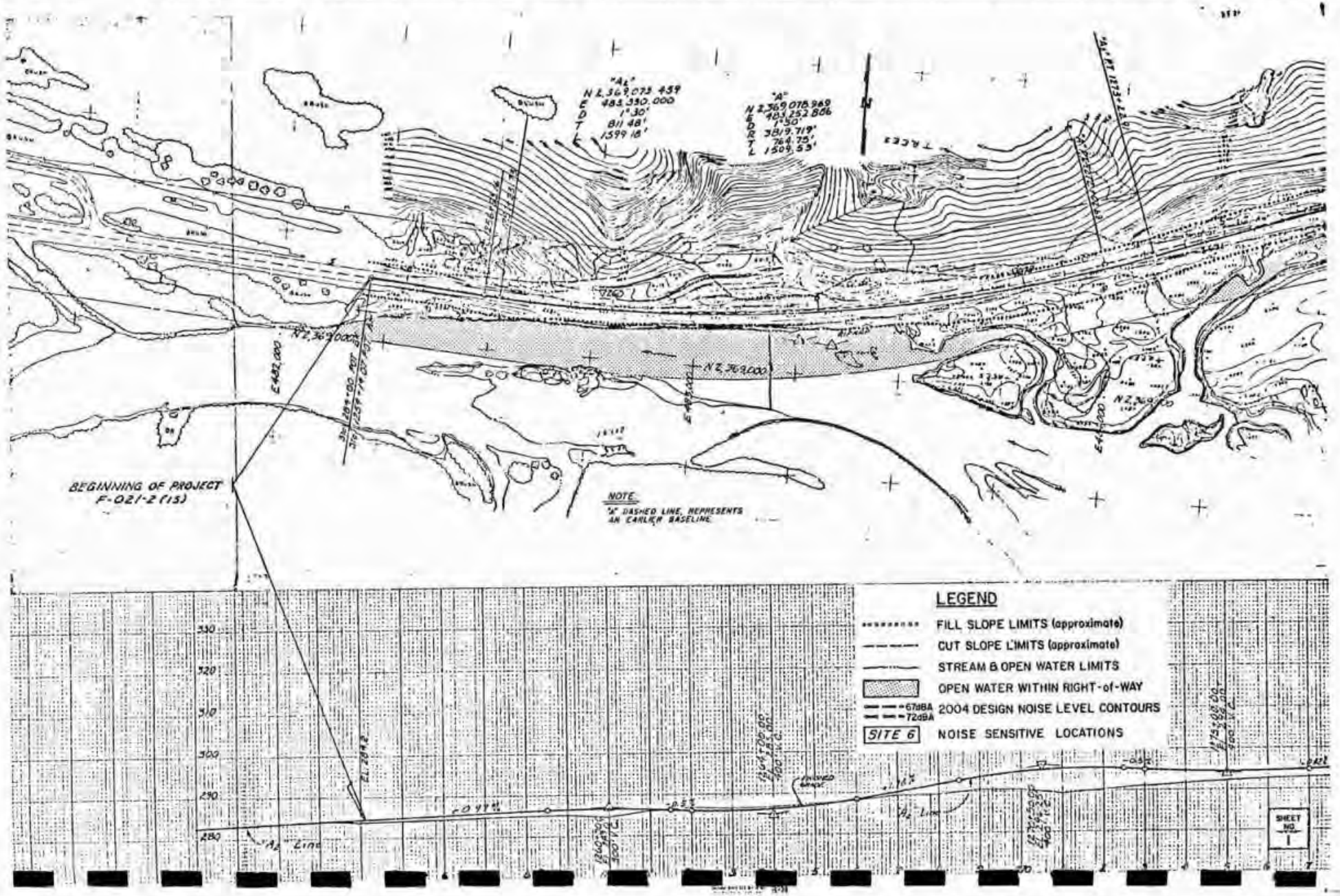
	A	Alaska Division
		Division Admin.
		Engr. Coord
		Program Asst
		Env. Coord
		Bridge Engineer
		Div. ROW Officer
		Asst. ROW Officer
		Div. P&R Engineer
		Asst. P&R Engr
		Field Opr. Engr.
		Area X-1
		Area X-2
		Area X-3
		Safety Coord.
		Asst. Area. Engr.
		Audits
		Admin. Manager
		Fiscal
		State
		Mail & [illegible]



PLAN AND PROFILE
PROPOSED HIGHWAY PROJECT

STERLING HIGHWAY, 37-60
RF-021-2(15)

F-021-2 (15)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T 811.48'
L 1599.18'
"A"
N 2,369,078.969
E 483,252.806
D 1°30'
R 3819.719'
T 764.75'
L 1509.53'
TAPER
N 2,369,000
E 482.000
E 483.000
BEGINNING OF PROJECT
F-021-2 (15)
NOTE
"A" DASHED LINE, REPRESENTS
AN EARLIER BASELINE
LEGEND
FILL SLOPE LIMITS (approximate)
CUT SLOPE LIMITS (approximate)
STREAM & OPEN WATER LIMITS
OPEN WATER WITHIN RIGHT-of-WAY
67dBA
72dBA
2004 DESIGN NOISE LEVEL CONTOURS
SITE 6
NOISE SENSITIVE LOCATIONS
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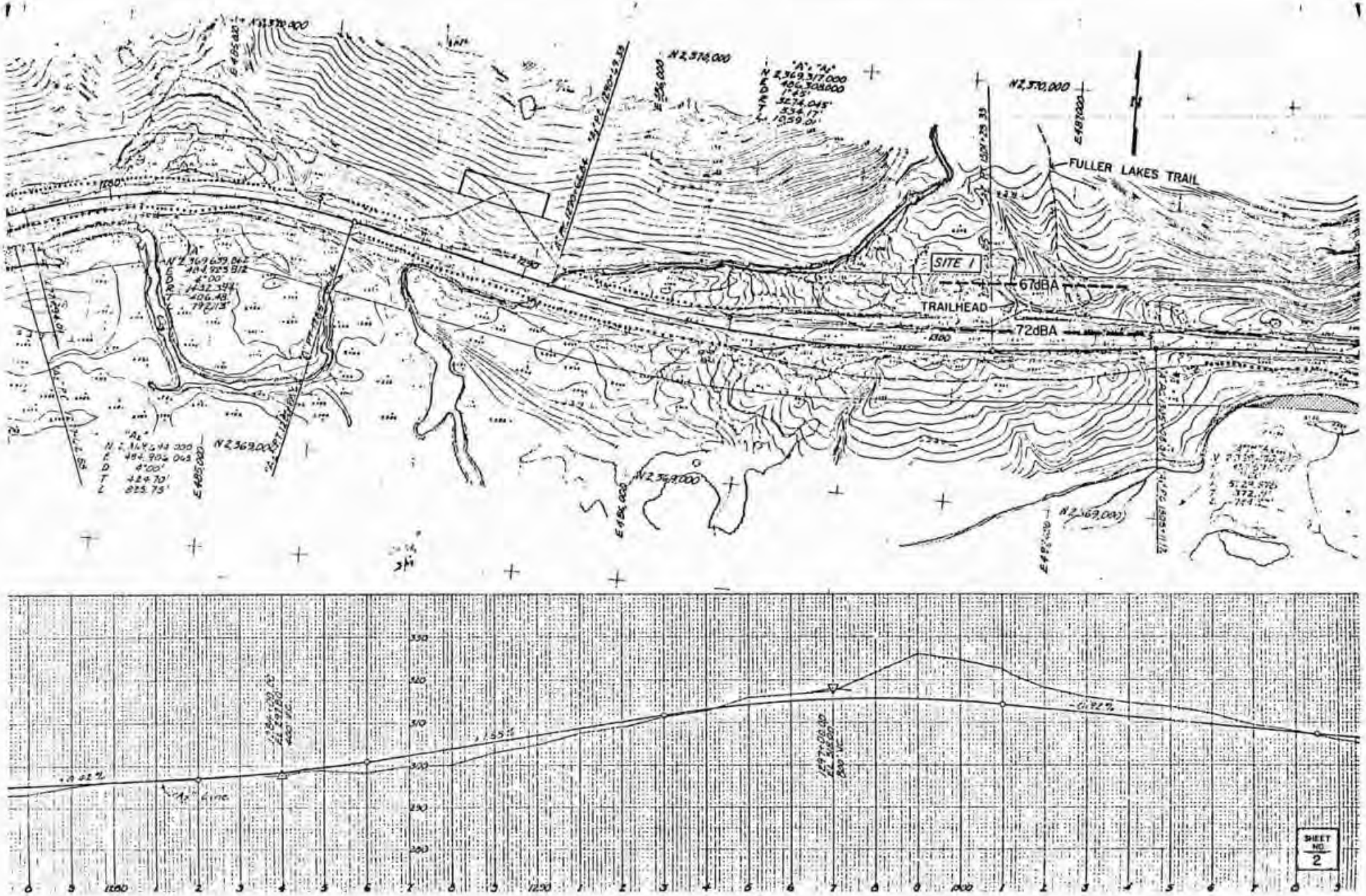
320
310
300
290
280
EL 284.2
"A1" Line
"A" Line
SHEET NO. 1

F-021-2(15)


FULLER LAKES TRAIL
SITE 1
67dBA
72dBA
TRAILHEAD
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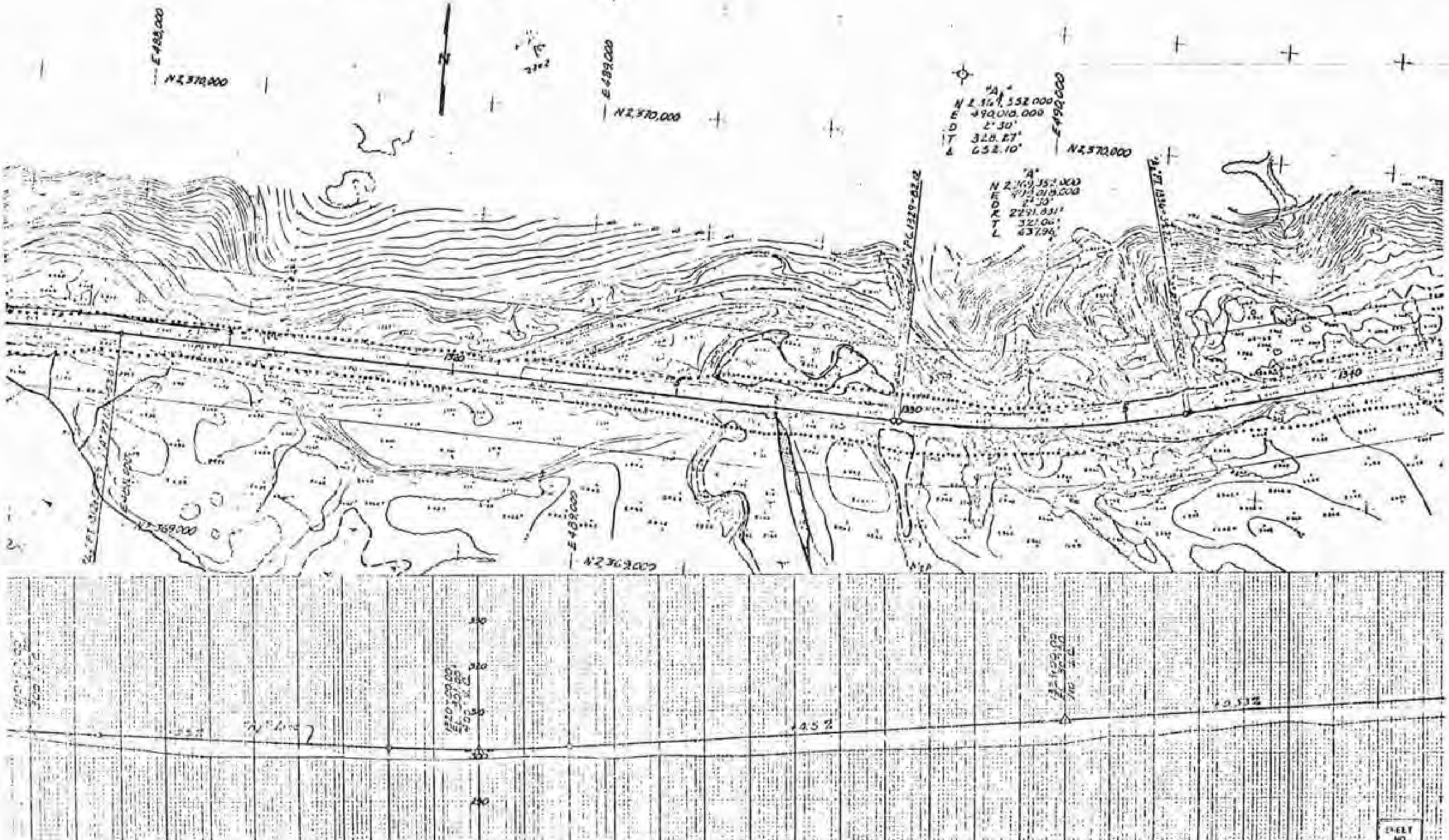
E486,000
SHEET NO. 2

F-021-2(15)



N
E 488,000
N 2,370,000
E 489,000
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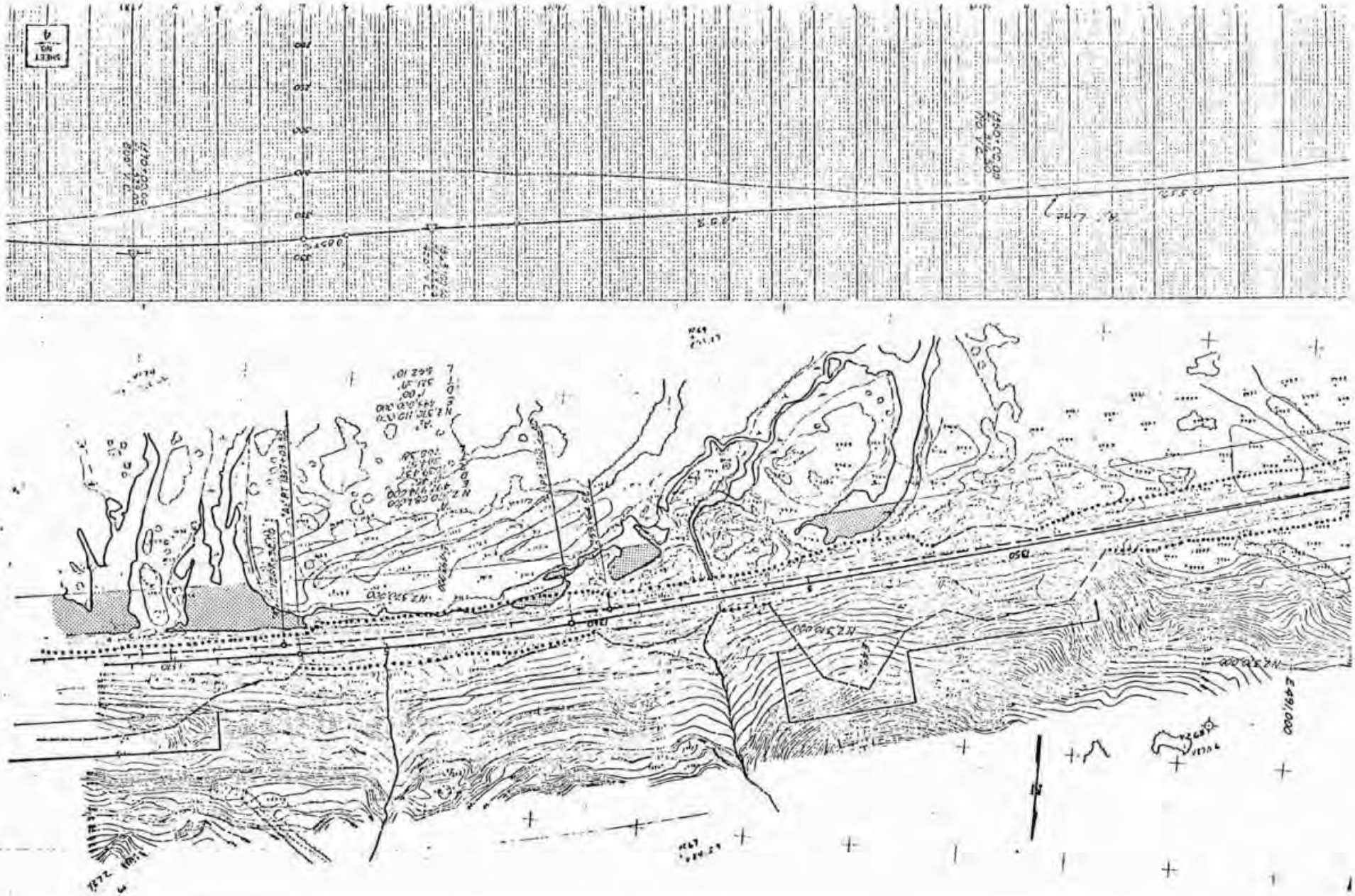
E 490,010.000
D 2°30'
T 328.27'
Δ 652.10'
E 490,000
N 2,370,000
"A"
N 2,369,352.000
E 490,018.000
D 2°30'
R 2291.831'
T 321.06'
L 637.96'
1320
1330
1340
E 489,000
N 2,369,000
N 2,369,000
+4.5%
+0.53%
SHEET NO. 3



F-021-2(15)

F-021-2(15)