

# CHIGNIK LAGOON

## 1.0 GENERAL DESCRIPTION

### 1.1 Location

Chignik Lagoon is located on the south shore of the Alaska Peninsula, one hundred and eighty air miles southwest of King Salmon. Its geographical position is approximately 56 degrees North, 158 degrees West.

### 1.2 Background

Chignik Lagoon is a village with a 1990 population of 53. The community reported that in 1993 the population was 85. The present community of Chignik Lagoon, at Packer's Point on the east side of Chignik Lagoon, was originally known as Chignik Flats. Chignik Lagoon was the name of the smaller community located at the northern end of Chignik Lagoon. The area was originally populated by Kanaigmuit Eskimos. After the Russian occupation, intermarriage of the Kaniags and Aleuts produced the Koniags who now reside in the community. Traditionally a maritime subsistence community, Chignik Lagoon still depends on the sea but the emphasis has shifted from subsistence to commercial salmon fishing. Chignik Lagoon, along with its neighbor Chignik, is now considered a regional fishing center for the Alaska Peninsula. As is typical of a fishing-based community, the population is seasonal, swelling to over 300 in the summer.

Chignik Lagoon is an unincorporated community the Lake and Peninsula Borough. Tribal government affairs are conducted by a traditional village council. The native community is served by Bristol Bay Native Corporation, Bristol Bay Native Association and Chignik Lagoon Native Corporation.

### 1.3 Infrastructure

Housing in Chignik Lagoon consists of owner built wood-frame construction. The community has 70 houses, with only 23 occupied year around. Two of the homes in the community were renovated by the BIA, two were constructed with state funds, the others were built or refurbished by the owners. Other structures in the community are a school, post office, a bible chapel, and a community center. Nearby (across the lagoon) is a cannery.

The village has a community-wide water distribution system. The only water treatment is iron removal, although the PHS has recommended that chlorine and fluoride be added.

Most of the residents have individual septic tanks and drainfields which could potentially contaminate the community water supply.

Solid waste is generally incinerated in a burn box.

#### 1.4 Soils and Topography

Chignik Lagoon lies approximately 30 miles from Mt. Veniaminof volcano. The local topography and soils reflect this proximity and are characterized by long mountain slopes and thick deposits of ash and cinders.

Soils on the slopes are well drained loamy volcanic ash overlying sandy and cindery ash. The level land only about five percent of the total, contains soil composed of poorly drained fibrous organic soils. The hazards and limitations of development in Chignik Lagoon consist of flooding, steep slopes, and localized areas of poor drainage. The community lies within the hundred year flood plain.

Vegetation surrounding Chignik Lagoon's lower, well-drained areas, consist of alpine tundra and dense thickets of willow, alder and birch. At higher elevations, the strong winds create an arid soil that only supports hardy plants such as lichens, lupines, aster and cinquefort. Poorly-drained areas are essentially muskeg and contain vegetation typical of a wet lowland.

#### 1.5 Climate

Chignik Lagoon lies within the Maritime Climactic Zone. This zone is dominated by the moderating effects of a marine environment and is characterized by high humidity, precipitation and fog cover, as well as warm winters and cool summers.

Thick cloud cover and heavy winds combine to limit travel to and from Chignik Lagoon, especially in the winter. Average summer temperatures range from 39 degrees to 60 degrees Fahrenheit, and the average winter temperatures range from 21 to 50 degrees Fahrenheit. Precipitation averages 127.15 inches annually, with an average snowfall of 58.5 inches. Winds generally blow from the northwest at an average speed of 10 miles per hour. Wind direction, however, often changes quickly and the area is subject to sudden violent gusts of cold air, called "williwaws".

The following climatic data was interpolated from The Environmental Atlas of Alaska and is applicable to the area:

Mean Annual Precipitation, inches . . . . .	80
Mean Annual Snowfall, inches . . . . .	100
Mean Annual Temperature, degrees F . . . . .	40
Thawing Index, degree days . . . . .	N/A
Freezing Index, degree days . . . . .	N/A
Design Freezing Index (1 year in 10), degree days . . . . .	N/A

## **2.0 REGULATION AND MASTER PLANNING OF TRANSPORTATION IMPROVEMENTS**

### **2.1 Regulation of Transportation Improvements**

As an unincorporated community, Chignik Lagoon has no formal authority under state law for planning, platting, and land use regulation. These powers are exercised by the borough acting through the Borough Assembly.

Land use requirements for specific road projects will vary depending on the project location. As applicable, road improvements are subject to federal, state, and borough regulations, village requirements, and private landowner approvals.

### **2.2 Comprehensive Planning**

The Lake and Peninsula Borough is preparing a comprehensive plan. The transportation segment will address road system upgraded to villages in the Borough, including Chignik Lagoon. The Borough has also recommended the construction of the Chignik Inter-Village Road System in its 1993 Six Year Capital Improvements Program submitted to ADOT/PF for inclusion in the Agency's FY94 through FY99 budgets. This road system would link the communities of Chignik, Chignik Lake and Chignik Lagoon.

### **2.3 ADOT Projects**

The Community reports that ADOT is considering an airport and road system that would connect and serve Chignik, Chignik Lake and Chignik Lagoon.

## **3.0 EXISTING TRANSPORTATION SYSTEM**

Chignik Lagoon is accessible by air and sea, but has no land connections to other communities. Scheduled air service is provided two times per week from King Salmon; charter air service is available from King Salmon and Kodiak. The 1,700-foot by 80-foot gravel runway is owned by the (ADOT/PF) and is maintained by local residents under contract. There is also a public seaplane base adjacent to the community.

Supplies and other freight arrive by barge during the summer, or by air from Anchorage. Barge cargo must be lightered to shore.

The community road system is essentially undeveloped; it is mostly trails and tracks that are located without regard for the existing road rights-of-way. The airstrip serves as the main road for the north half of the Village, creating conflicts with aircraft and a safety problem.

## **3.1 Community Roadway System**

### **3.1.1 Community Roadway Map**

A community roadway map for Chignik Lagoon is presented as Figure 3-1. The baseline map was subject to community review as part of the questionnaire packet distributed for the JATP.

### **3.1.2 Right-of-Way and Roadway Ownership**

The roads within the Chignik Lagoon townsite were reported to be owned by the Village Council. Other roads outside the townsite are owned by the Chignik Lagoon Native Corporation. Under the terms of Alaska Native Claims Settlement Act (ANCSA), the Corporation will be reconveying 1,280 acres of land to the State to be held in trust for a future municipality, or to the Village Council. The land to be reconveyed will include the street rights-of-way outside in the 123 acre Federal townsite. There are a total of 1.5 miles of roads and trails in Chignik Lagoon.

There are no State roads in the area. A review of low-altitude aerial photography of the community overlaid with property lines indicates that Chignik Lagoon's principal street, 1st Street, is allocated a 35 foot right-of-way, although most of the street exists outside the right-of-way. Other 30 to 60 foot rights-of-way are dedicated for future streets.

### **3.1.3 Geometric Elements**

All of the roads and trails in Chignik Lagoon appear to be "pioneer" construction and designed without horizontal or vertical alignment. The community reports that average roadway widths are 10 feet. The local roads can only support two-way traffic in low volumes.

## **3.2 Existing Structural Characteristics**

### **3.2.1 Surfacing and Subbase Material**

The community reported that roads in Chignik Lagoon have an average gravel fill thickness of 2 feet. The roads are reportedly too narrow and suffer from rutting, flooding and softness during the spring break-up. 1st Street is considered to have the greatest number of problems.

### **3.2.2 Drainage**

The community reported that ditches and culverts are used to aid drainage.

CHIGNIK LAGOON

AIRSTRIP

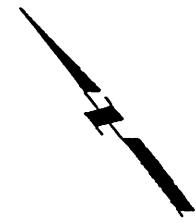
PACKERS CREEK

CLINIC

STORE

**LEGEND**

- EXISTING ROAD
- - - EXISTING TRAIL
- · - · - EXISTING BOARDWALK
- | -| - BRIDGE
- - - CREEK OR EDGE OF WATER
- ■ STRUCTURES



**CHIGNIK LAGOON, AK.**

U.S. Bureau of Indian Affairs  
Juneau Area Transportation Plan

**COMMUNITY ROADWAY MAP**

**ASCG**

INCORPORATED  
DESIGNS • PROJECTS • RECORDS • SURVEYS

**ANCHORAGE**

AGENCY REPORT

SCALE:

1"=680'

DATE:

March 1990

**Figure 3-1**

### **3.2.3 Bridges**

There is one bridge in Chignik Lagoon, located in the center of the community, that spans Packers Creek. The bridge was reported to be in good condition.

### **3.2.4 Other Amenities**

The community reported 1,000 lineal feet of 4 foot wide boardwalks in Chignik Lagoon. There are a limited number of private boardwalks connecting homes to the Chignik Lagoon beachfront.

## **3.3 User Characteristics**

### **3.3.1 Community Vehicle Inventory**

The community reports that there are 25 cars and pickup trucks, 80 all-terrain vehicles, and 7 snow-machines in Chignik Lagoon. Additionally, there are 4 dump trucks, 1 road grader, 4 bulldozers, 3 front-end loaders, 1 excavator, 1 backhoe, and 1 4 x 4 fork lift available for maintenance operations.

### **3.3.2 Trip Generators and Circulation Patterns**

The principal trip generators in Chignik Lagoon are the school, community center, post office, landfill, cemetery, medical facilities, airstrip, and water supply. Since many residents fish either commercially or for subsistence purposes, many trips are made directly between the individual residences and the beach. The poor condition of local roads and the linear nature of the Village also tends to impede travel. Trips are also occasionally made by boat to the cannery at Chignik or to Kodiak to deliver the fishing catch.

## **3.4 Maintenance**

### **3.4.1 Responsible Agencies**

The local roads are maintained by local residents under contract to the Village Council.

### **3.4.2 Maintenance Budgets and Funding Sources**

The Lake and Peninsula Borough and the individual communities share the cost of road maintenance and operations. No information is available on the level of road expenditures by Chignik Lagoon. According to data provided by the Alaska Department of Community and Regional Affairs, \$146,621 was spent on road maintenance and operations by the Borough in 1991.

As an unincorporated community, Chignik Lagoon has no authority under state law for property, sales, or other tax assessment and collection. The Borough, on the other hand, has broad authority to assess property sales or other taxes to help support government facilities and services. Lake and Peninsula currently levies a 2% raw fish tax.

Chignik Lagoon may be eligible for State Revenue Sharing to help support village facilities and services, but did not receive funding in FY93.

### **3.5 Construction Material Sources**

The community reported that Chignik Lagoon does not have an approved borrow source nearby. Little information is available concerning gravel sources, although the community expects that Packers Creek will be the best gravel source. The beach along the Lagoon would likely provide an abundant source of gravel, but the Villagers are concerned about the environmental effects of large-scale gravel extraction from the nearby beaches. It is likely that in either case crushing is required in order to create surfacing material that will bind sufficiently.

## **4.0 ROADWAY FACILITY NEEDS**

### **4.1 JATP Road Construction Projects**

The Village Council President of Chignik Lagoon returned a JATP 1993 Transportation Planning Questionnaire; however, there was no supporting tribal resolution. The questionnaire identified five projects. The first priority project is the construction of 12.1 miles of new road to connect Chignik Lagoon to Chignik Bay, shown as Route 1002 on Figure 4-1. This road will provide access to a Boat Harbor and the Marine Highway System.

The second priority project is the construction of Second Street, shown as Route CLN3 on Figure 4-2. This road is 0.4 miles in length and will provide access to residential lots.

The third priority project is the construction of Third Street, shown as Route CLN6 on Figure 4-2. This project is 0.6 miles in length and will provide access to residential lots.

The fourth priority project is the construction of First Street, shown as Route CLN4 on Figure 4-2. This project is 0.4 miles in length.

The fifth priority project is the construction of A Street, shown as Route CLN5 on Figure 4-2. This road is 0.1 miles in length and will provide access to residential lots.

## **4.2 1993 JATP Priority Project Description**

Chignik Lagoon's first priority project is the construction of a road to Chignik Bay (Route 1002), as identified in the 1993 JATP Inventory Update.

Based on unit construction costs developed for BIA-sponsored projects in construction cost zone 3 (Bristol Bay And The Aleutians), the estimated construction cost for 12.1 miles of roads is approximately \$42,471,000.

## **4.3 Project Evaluation Criterion and Scoring**

### **4.3.1 Construction Cost Criterion**

The estimated construction cost is greater than the maximum project cost of \$5,000,000 resulting in a score of zero to be assigned to the cost criterion.

### **4.3.2 Social Benefits Criterion**

The project receives a total raw incremental social benefits score of 145 points based on the following social benefits associated with the project:

- Access to health facilities: serves medical facilities; serves water supply;
- Primary community access: access to a dock with intercommunity traffic; primary access to community;
- Access to Educational / Community Facilities: access to firewood / fuel supplies; and
- Access to cultural facilities: access to a hunting/fishing area.

A population weighing factor of 0.14 has been applied to one half of the raw incremental score. The result is an adjusted incremental social benefits score of 83 points.

### **4.3.3 Economic Benefits Criterion**

The project receives a total raw incremental economic benefits score of 110 points.

The 1990 census indicates that Chignik Lagoon has an unemployment rate of 20.0%. This high unemployment rate adds 15 points to the incremental economic score.

The following benefits are associated with the project:



- Access to other communities: access to a dock with intercommunity traffic; primary access to community;
- Access to support facilities: serves water supply; and
- Access to areas of some economic potential: access to a hunting/fishing area.

A population weighing factor of 0.14 has been applied to one half of the raw incremental score. The result is an adjusted incremental score of 63 points.

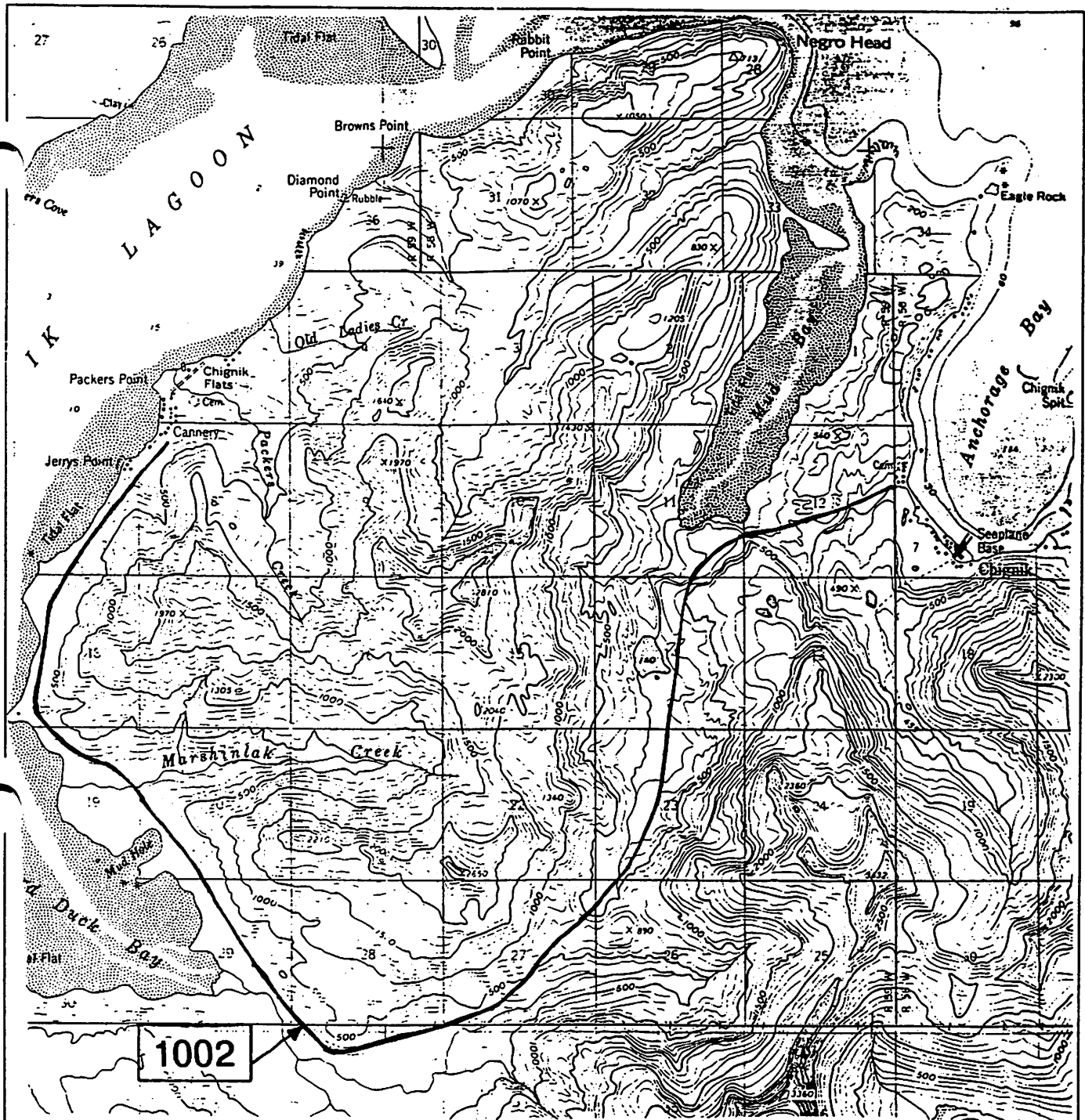
4 jobs will potentially be created by the completion of this project. Job points are summed separately as they are not adjusted to population.

#### **4.3.4 Project Recency Criterion**









No BIA funded projects are on record for Chignik Lagoon, resulting in 15 points being assigned for this criterion.

#### **4.4 1993 JATP Priority Project Ranking**

Evaluation criterion and incremental scores for this project are summarized within Appendix I. The project receives an aggregate project score of 15.1 points. It ranks as statewide priority 126 and Anchorage Agency priority 36.



**LEGEND**

-  EXISTING ROAD
-  EXISTING TRAIL
-  EXISTING BOARDWALK
-  BRIDGE
-  CREEK OR EDGE OF WATER
-  STRUCTURES
-  PROPOSED ROAD
-  PROPOSED BOARDWALK



**CHIGNIK LAGOON, AK.**

U.S. Bureau of Indian Affairs  
Juneau Area Transportation Plan

**ASCG**  
INCORPORATED  
ENGINEERS • ARCHITECTS • SURVEYORS • PLANNERS

**ANCHORAGE**  
AGENCY REPORT

**LONG RANGE  
TRANSPORTATION PLAN**

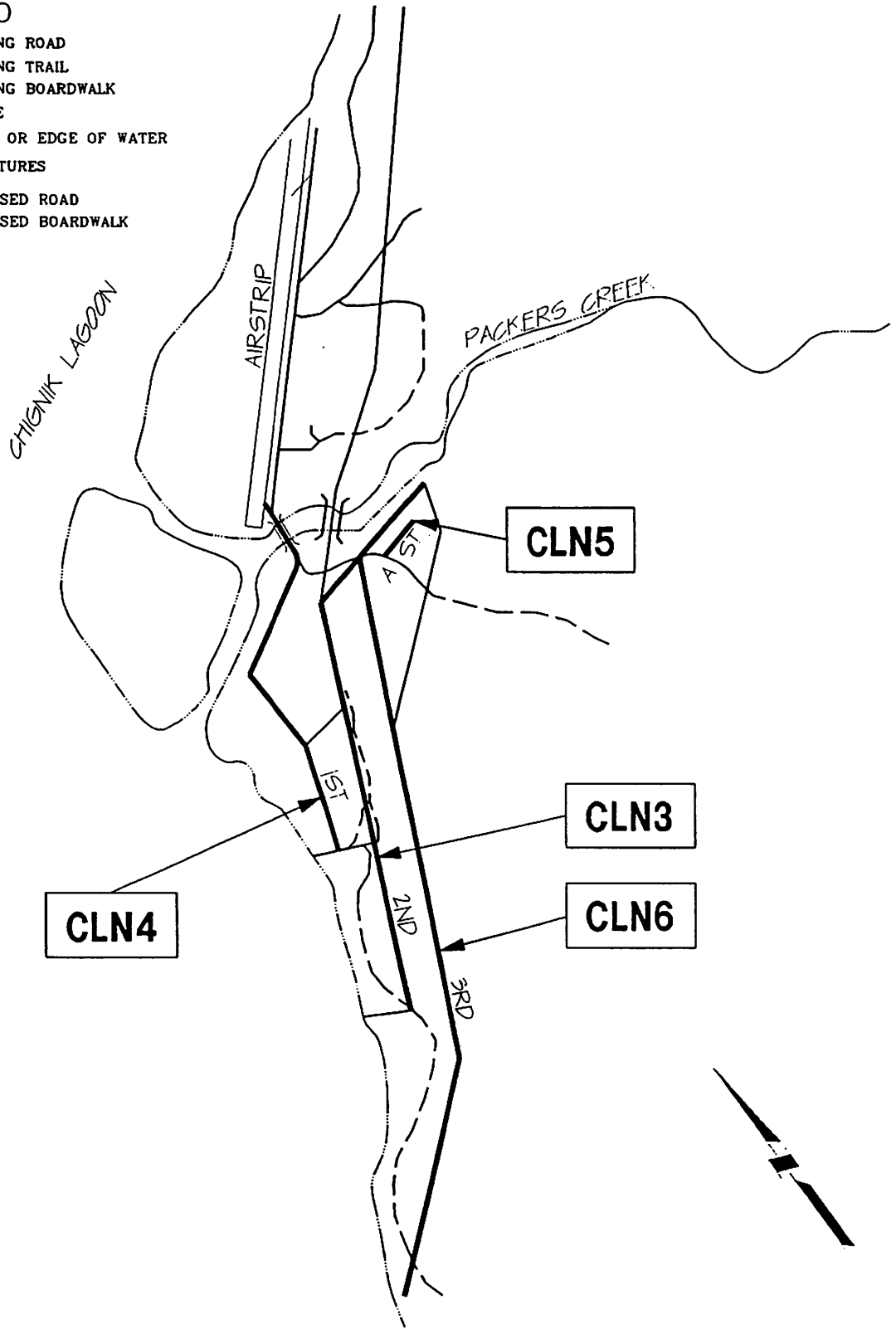
SCALE:  
1" = 1 MILE

DATE:  
AUG. 1993

**Figure 4-1**

**LEGEND**

- EXISTING ROAD
- - - EXISTING TRAIL
- - - EXISTING BOARDWALK
- | -| - BRIDGE
- - - CREEK OR EDGE OF WATER
- ■ STRUCTURES
- PROPOSED ROAD
- - - PROPOSED BOARDWALK



**CHIGNIK LAGOON, AK.**

U.S. Bureau of Indian Affairs  
Juneau Area Transportation Plan

**LONG RANGE  
TRANSPORTATION PLAN**

**ASCG**  
INCORPORATED

DESIGN • PROJECTS • SURVEY • SUPPORT

**ANCHORAGE**  
AGENCY REPORT

SCALE:  
N.T.S.

DATE:  
AUG. 1993

**Figure 4-2**

United States Bureau of Indian Affairs

JUNEAU AREA TRANSPORTATION PLAN

**APPENDIX I: Project Evaluation Scoring Spreadsheet**

**CHIGNIK LAGOON**

**U.S. BUREAU OF INDIAN AFFAIRS  
1993 JUNEAU AREA TRANSPORTATION PLAN UPDATE  
PROPOSED ROAD PROJECT EVALUATION SPREADSHEET**

**Community Name:** Chignik Lagoon  
**Agency:** Anchorage  
**Date of Evaluation:** September 1993  
**Route Name:** 1002  
**Route Description:** A Road To Chignik Bay

**Population:** 53  
**Population Weighting:** 0.14

**Construction Length:** 12.1 Miles  
**Estimated Const. Cost:** \$42,471,000

**Maximum Cost / Benefit Ratio For:**  
**Jobs:** 0.000284  
**Economic Benefits:** 0.000368  
**Social Benefits:** 0.001173

CRITERION	CRITERION VALUE	INCREMENTAL CATEGORY	RAW INCR'TL SCORE	ADJUSTED INCR'TL SCORE	CRITERION SCORE	COMMENTS
Construction Cost	15	N/A	N/A	N/A	0.0	The estimated cost of construction is greater than \$5 Million
Social Benefits	30	Access to Health Facilities	60	82.8	0.0	<b>Adjusted Incremental Score =</b> Sum of Raw Incremental Scores * Pop. Weighting ( 145 / 2 ) + 0.14 * ( 145 / 2 ) = 82.8  <b>Cost Benefit Ratio =</b> Adjusted Incremental Score / Construction Cost 82.8 / \$42,471,000 = 0.0000019  <b>Criterion Score =</b> $\frac{\text{Cost Benefit Ratio}}{\text{Max. Econ. Cost Benefit Ratio}} * \text{Criterion Value}$ ( 0.0000019 / 0.0011733 ) * 30 = 0.0
		Primary Community Access	60			
		Access to Housing	0			
		Access to Educational / Community Facilities	15			
		Access to Cultural Facilities	10			
Economic Benefits	20	Job Creation	4 Jobs	62.8	0.1	<b>Adjusted Incremental Score =</b> Sum of Raw Incremental Scores * Pop. Weighting ( 110 / 2 ) + 0.14 * ( 110 / 2 ) = 62.8  <b>Cost Benefit Ratio =</b> Adjusted Incremental Score / Construction Cost 62.8 / \$42,471,000 = 0.0000015  <b>Criterion Score =</b> $\frac{\text{Cost Benefit Ratio}}{\text{Max. Social Cost Benefit Ratio}} * \text{Criterion Value}$ ( 0.0000015 / 0.0003678 ) * 20 = 0.1
		Access to Other Communities	60			
		Access to Areas Significant Economic Potential	0			
		Access to Areas of Some Economic Potential	10			
		Commercial Access	15			
		Access to Support Facilities	10			
		Unemployment	15			
Recency of Community Road Project	15	N/A	N/A	N/A	15.0	No previous BIA funded road project on record
<b>AGGREGATE PROJECT SCORE</b>					<b>15.1</b>	<b>STATEWIDE PRIORITY = 126</b>

United States Bureau of Indian Affairs

JUNEAU AREA TRANSPORTATION PLAN

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