

**ENVIRONMENTAL SITE INVESTIGATION**

**FOR**

**TATITLEK DOCK  
AND  
EQUIPMENT FACILITIES SITE**

**LOCATED AT**

**TATITLEK, ALASKA**

**PREPARED FOR**

**ALASKA DEPARTMENT OF TRANSPORTATION  
& PUBLIC FACILITIES  
CENTRAL REGION  
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**RECEIVED**

**APR 11 1994**

**DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION  
MSDO**

**MARCH 1994**

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## EXECUTIVE SUMMARY

The proposed Tatitlek road, dock and equipment facilities are located on timber fringe and muskeg areas. Due to the proposed dock location and the existing Tatitlek village location the road will traverse the timber and muskeg fringe as much as possible but some encroachment onto muskeg can not be avoided.

There is visible evidence of petroleum contamination existing off of the proposed road location at the south end of Tatitlek village. The rest of the road location, dock and equipment facility location exhibit no signs of past development or contamination.

Soil samples were taken in the vicinity of the visible contamination and the results indicated no petroleum hydrocarbon contamination exists on the proposed right-of-way.

## 1.0 INTRODUCTION

This Environmental Site Investigation of the Tatitlek Dock and Equipment Facility Site was conducted in two phases by Peratrovich, Nottingham & Drage, Inc. (PN&D) for Alaska Department of Transportation and Public Facilities (ADOT&PF) to satisfy requirement for Services provided under Chenega and Tatitlek Dock and Equipment Facilities Project No. 50727, (Task 8A).

The first phase consisted of a site visit on November 4, 1993 which developed information of potential contamination impacting the project's location. Phase two was necessitated by the information obtained from the first visit and consisted of second site visit February 22-23, 1994, which involved intrusive sampling. The vicinity of interest is identified by maps 1 & 2 and picture #1 appendix B. The general area contains remnants of an older native village along with newer construction consisting of modern housing, schools and community buildings.

The existing community and tribal building was formerly the old school which had its own electrical generators in a separate building and diesel fuel storage in four outside tanks. There was evidence of diesel fuel spillage in and around the generator building and fuel tanks.

This report summarizes our investigation, findings, analyses and opinions regarding the environmental investigation of the Tatitlek Site.

Information is provided within the report to assist in determining the extent and adequacy of this investigation.

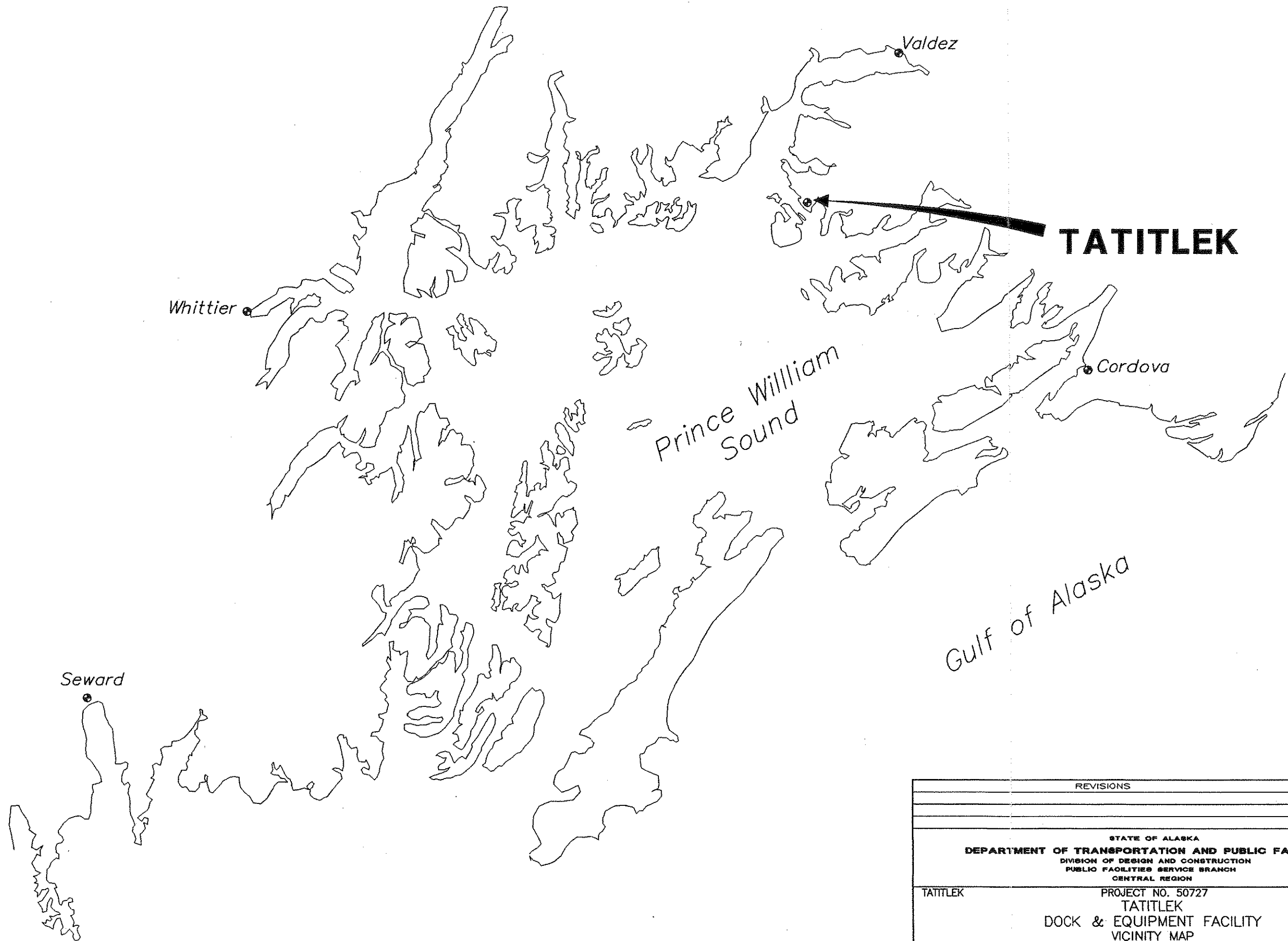
### 1.1 SCOPE OF WORK

In general, the scope of work was to perform an environmental site investigation which fulfilled the requirements of ADOT&PF's ENVIRONMENTAL CHECKLIST (Appendix A).

## 2.0 METHODOLOGY

### 2.1 ASSESSMENT

The site investigation was carried out in accordance with PN&D's scope of work. Field calls on test pit locations were made dependent upon what was found during the course of the second site investigation. The extent of the



**TATITLEK**

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STATE OF ALASKA <b>DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES</b> DIVISION OF DESIGN AND CONSTRUCTION PUBLIC FACILITIES SERVICE BRANCH CENTRAL REGION			
TATITLEK	PROJECT NO. 50727		ALASKA
<b>TATITLEK</b> <b>DOCK &amp; EQUIPMENT FACILITY</b> <b>VICINITY MAP</b>			
DESIGNED BY	DRAWN BY	CHECKED BY	SCALE
—	—	—	NOTED
			SHEET 1 OF 3



TRACT "G"  
ALASKA NATIVE CLAIMS SETTLEMENT ACT  
(ANCSA) SECTION 14 (C)  
SURVEY AT TATILEK, AK  
PLAT NO 91-2

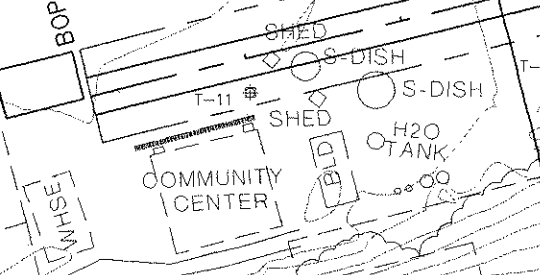
PLAT NO. 91-2

(N75°40'25"E  
488.74'R  
342.99'  
BASIS OF BEARING  
488.72'M)

BOP STA 0+00

R/W  
ROAD  
5+00

R/W  
5+00



TRACT "G"  
PLAT NO. 91-2

STAGING AREA

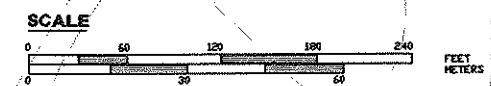
ATS PROPOSED

RAMP  
DOCK

APPROACH DOCK S16°53'41"E

TATILEK NARROWS

BOULDER BAY



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STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES DIVISION OF DESIGN AND CONSTRUCTION PUBLIC FACILITIES SERVICE BRANCH CENTRAL REGION			
TATILEK	PROJECT NO. 50727		ALASKA
TATILEK DOCK & EQUIPMENT FACILITY PROPOSED LOCATION			
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			SHEET 2 OF 3

investigation was limited to the area defined by the proposed right-of-way and prior spill evidence.

## 2.2 SAMPLING

Field sampling was conducted in accordance with PN&D's Quality Assurance Program Plan (QAPP) for non-UST site assessments. The QAPP defines sampling procedures which were applicable to this project.

Soil samples were taken for laboratory analysis by Commercial Testing & Engineering Laboratories (CT&E) in Anchorage for detailed analysis. All samples were analyzed by EPA method 418.1 to detect Total Petroleum Hydrocarbons (TPH); additional samples were analyzed for VPH & BTEX hydrocarbons by EPA method 8015M/80 and for EPH hydrocarbons by EPA method 3510/3550/81.

TPH is to some extent a misnomer; total petroleum hydrocarbons may be found in soils due to spillage of petroleum products onto soils, but they can also result from decay of certain natural substances such as peat. While EPA Method 418.1 will detect the presence of petroleum-related substances in soil, it will also detect biogenic hydrocarbons, hydrocarbons which are the by-product of biologic activity. Based on this test alone, it is not possible to differentiate the source of measured TPH between petroleum products or naturally occurring decay of organic material.

## 3.0 BACKGROUND

### 3.1 SITE LOCATION

Tatitlek Bay is located on the mainland in south-eastern Prince William Sound, specifically in section 32, Township 11 South, Range 8 West and Section 5, Township 12 South, Range 8 West of the Seward Meridian at latitude 53° 30' and longitude 146° 41'. The site is located on the southwest side of a peninsula between Tatitlek Narrows and Boulder Bay. It is accessible by boat, plane, or helicopter.

### 3.2 HISTORY

Tatitlek is a community of about 100 residents and is the oldest existing village in Prince William Sound. The people of the village are descendants of a number of native groups from widely scattered areas throughout the sound. Much of the



consolidation of these groups at the present village location was due to the copper mining and sea otter hunting activities of the Russians. Additionally, most of the residents from the former village of Chenega, which was destroyed by a tsunami during the 1964 earthquake, resided in Tatitlek until the newly constructed Chenega Bay on Evans Island was occupied in 1983 and 1984. This influx of Chenega residents in the mid-1960's generated a population increase and spurred community development resulting in the construction of housing, sewer and water utilities, a school, a church, and the existing city dock.

### 3.3 PHYSICAL CONDITIONS

Tatitlek, due to its location within the maritime climatic zone of South-central Alaska, receives 80± inches of total precipitation annually. Temperatures range from a mean maximum of 62° F during summer months to a mean minimum of 14° F during winter months. Coastal winds average between 4 and 8 knots. Extremes of 50 to 60 knots are common during the winter, and wind speeds can exceed 100 knots.

The topography is typical of coastal South-central Alaska consisting of moderate to steep slopes (30%+) covered with an organic to highly organic soil matrix to flatter slopes (30%-) covered with peat.

The predominant soil type in the site investigation area is peat or light organic soil overlying glacial till and weathered slate. The peat occurs in the flatter areas, the light organic soil occurs on the slopes. Bedrock in the area ranges from surface exposed to 6± feet deep and is composed of metamorphosed sedimentary rocks.

The vegetation is typical of the area composed of mature stands of Sitka spruce, Western hemlock and various shrubs on well drained slopes to small alders and grasses on the wetter areas.

### 4.0 FIELD WORK & SAMPLING

The phase one field work consisted of conducting a thorough reconnaissance of the proposed road and dock locations and identifying any potential sources of contamination. Phase two field work involved intrusive sampling from potentially contaminated areas which could potentially impact the proposed road location.

### Phase I Site Investigation:

The proposed road and dock locations were investigated for potential sources of contamination. The area from the Russian Orthodox church south, along the western shore margin to Boulder Bay was investigated (map 2).

No visual indicators were noted south of the village which would indicate any potential for contamination from hydrocarbons or other hazardous materials. There were no visible signs of prior habitation or industrial activity. Therefore additional investigation of this general area was not recommended.

The area immediately south (behind) of the tribal community center (old school) (picture #2); the area around the old generator building (picture #3); the area around and down slope of the generator fuel tanks (picture #4); and the area along the old generator tank refueling line (pictures #5 & 6) had visual indications of potential hydrocarbon contamination (map 3).

The ground in all of these areas was stained and contained dead vegetation to varying degrees. There appeared to be a crude attempt of containment for the four generator fuel tanks (2 - 1,100± gallons and 2 - 4,500± gallons). Down slope of the tanks was a timber cribbed containment area which had mostly caved in and/or filled in with soil, debris and vegetation (picture #7). Down slope of the containment area was a 5 foot by 5 foot timber cribbed sump (picture #8) which was partially filled in and contained standing weathered hydrocarbons in some of the remaining depressions (picture #9). There also appeared to be seepage towards Tatitlek Narrows which is 130± feet down slope (westerly).

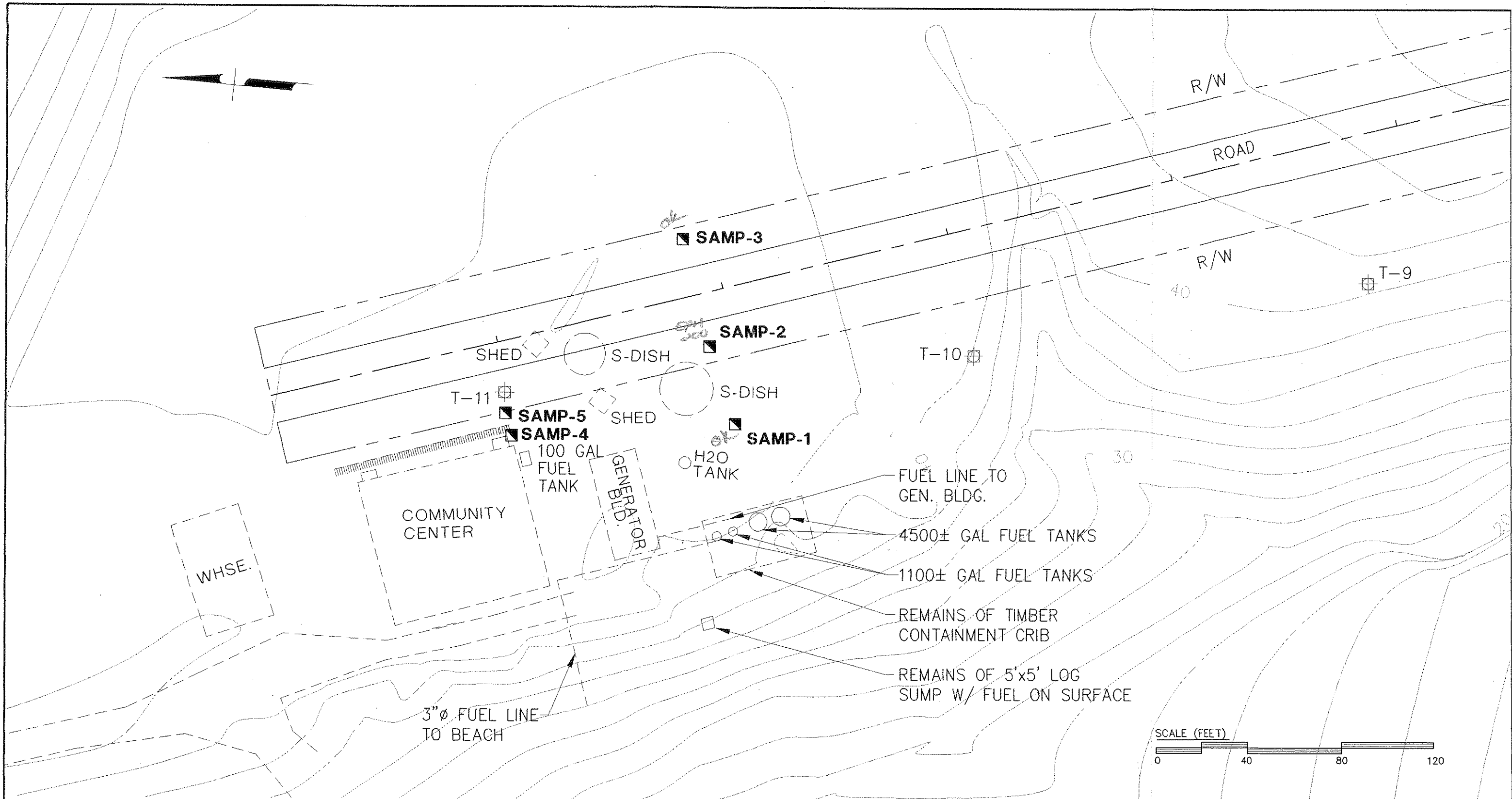
The ground upgradient from these areas appeared to be free from any visual signs of hydrocarbon contamination.

No samples were taken at this time because the original contract did not anticipate the need for intrusive sampling at the Tatitlek site, but PN&D recommended an additional site visit and soil sampling once preliminary right-of-way locations had been determined.

### Phase II Site Investigation:

Based upon the information obtained from the first site visit and the preliminary determination of the road location it was decided that intrusive sampling was required to verify absence of hydrocarbons within the proposed right-of-way.

Subsurface samples were taken upgradient from the visible stained areas; in-between the stained areas and the proposed right-of-way and within the right-of-way (map 3). The samples were taken by digging down to the sample depth with a trowel and obtaining a sample from the bottom and sides of the hole (picture



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TATITLEK	PROJECT NO. 50727		ALASKA
TATITLEK DOCK & EQUIPMENT FACILITY AREA OF INVESTIGATION			
DESIGNED BY	DRAWN BY	CHECKED BY	SCALE
			NOTED
			SHEET 3 OF 3

#10). A clean trowel was used in both steps of the sample gathering from the excavated holes. The soil was moist muskeg with no observed water table. The depth of muskeg ranged from 2 - 4± feet, with progressively deeper muskeg the further away from the visibly stained areas.

#### 4.1 TEST PIT AND DRILLING INFORMATION

A total of five holes were dug with TPH, EPH, VPH & BTEX testing done on four of the sample holes (#1, 2, 4, & 5) and TPH testing done on sample hole # 3. The general location of each of the test holes are detailed below and identified on map 3:

- Test hole #1 was located 45± feet from the old school's fuel tanks and samples 1a, 1b, & 1c were obtained at a depth of 8-12 inches. This area is upgradient and easterly from the fuel tanks and in muskeg with a soil depth of 2± feet. The soil was moist with no observed water table.
- Test hole #2 was located 80± feet upgradient from the fuel tanks and on the same easterly line as hole #1. Samples 2a, 2b, & 2c were obtained at a depth of 9-15 inches. The hole is located in muskeg with a soil depth of 4± feet and is just inside the western edge of the proposed right-of-way. The soil was moist with no observed water table.
- Test hole #3 was located 130± feet upgradient from the fuel tanks and on the same easterly line as holes #1 & 2 (picture #11). Sample 3 was obtained at a depth of 12-15 inches. The hole is located in muskeg with a soil depth of 4± feet and is just inside the eastern edge of the proposed right-of-way. The soil was moist with no observed water table.
- Test hole #4 was located 10± feet from the south east corner of the Community center building which had an 100 gallon barrel on a stand which appeared to supply fuel to the community center (picture #12). There was visual indications of diesel fuel spillage and dead vegetation. Samples 4a, 4b, & 4c were obtained at a depth of 12-18 inches. The hole is located in muskeg with a soil depth of 3½± feet and is 10± feet outside the eastern edge of the proposed right-of-way. The soil was moist with no observed water table.
- Test hole #5 was located 20± feet from the south east corner of the Community center building and on a easterly line and 10± feet away from hole #4. Samples 5a, 5b, & 5c were obtained at a depth of 12-18 inches. The hole is located in muskeg with a soil depth of 3± feet and is on the eastern edge of the proposed right-of-way. The soil was moist with no observed water table.

Given the time of year and limited depth of soil excavation no conclusions were drawn concerning the seasonal water table depth.

The village of Tatitlek gets its water from a dammed stream located 1± mile up gradient from the village. As the petroleum contaminated area is located within 200 feet of salt water, it would appear that no potable water tables are endangered by the visible petroleum contamination around the community center, generator building and fuel tanks.

### 5.0 SAMPLING RESULTS

The results of the soil sampling and laboratory testing are presented below and in Appendix C:

TABLE 1: SOIL SAMPLING LABORATORY TESTING RESULTS

Sample			Depth (inches)	Test Type	TPH (ppm)	418.1/413.2 Ratio	Comments
#	Location	Matrix					
1a	1	Soil	8-12	TPH	✓ 270	0.07	Indicates presence of biogenic hydrocarbons.
1b	1	Soil	8-12	VPH BTEX	✓ U ✓ U	N.A. N.A.	
1c	1	Soil	8-12	EPH	160	N.A.	Pattern is not consistent with middle distillate fuel. A
2a	2	Soil	9-15	TPH	✓ 433	0.06	Indicates presence of biogenic hydrocarbons.
2b	2	Soil	9-15	VPH BTEX	✓ U ✓ U	N.A.	
2c	2	Soil	9-15	EPH	200	N.A.	Pattern is not consistent with middle distillate fuel. B
3	3	Soil	12-15	TPH	✓ 1,320	0.05	Indicates presence of biogenic hydrocarbons.
4a	4	Soil	12-18	TPH	✓ 322	0.14	Indicates presence of biogenic hydrocarbons.
4b	4	Soil	12-18	VPH BTEX	U U	N.A.	
4c	4	Soil	12-18	EPH	292	N.A.	Pattern is not consistent with middle distillate fuel. B/C
5a	5	Soil	12-18	TPH	✓ 1,260	0.03	Indicates presence of biogenic hydrocarbons.
5b	5	Soil	12-18	VPH BTEX	✓ U ✓ U	N.A.	
5c	5	Soil	12-18	EPH	310	N.A.	Pattern is not consistent with middle distillate fuel. B/C

The results of the laboratory testing would indicate that due to the organic nature of peat soils the background level of TPH is high. As an example, due to their upgradient locations from existing contamination sources, the probability of Samples #1, 2, 3 & 5 being contaminated is nil. Sample #4 is within 10 feet of stained soil and dead vegetation but generally exhibits the same characteristics as the other samples. The oil/grease 418.1/413.2 ratio is marginally higher than the other samples which might indicate slight middle range contamination, but the majority (if not all) of the reading still relates to the soil's biogenic content.

## 6.0 INTERPRETATION OF DATA

Combining the information from PN&D's previous site investigation along with the additional intrusive sampling under ADOT&PF's contract points to the following conclusions.

1. Subsurface hydrocarbons of the areas investigated are composed vegetative material with some slight probability of Sample #4 containing a some amount of petroleum hydrocarbons.
2. The natural vegetative hydrocarbon background reading varies from 270 to 1,250 ± ppm depending upon location.
3. The petroleum contamination appears to be confined to the general vicinity of the stained and dead vegetation areas in and around the back of the community center, the generator building, the old fuel tanks, and probably down slope from these areas.
4. Measured depth to bedrock varies from 2 to 4± feet in the areas tested, but other probed areas are as deep as 6± feet.
5. There is no immediate danger to potable water sources.
6. Laboratory analysis of subsurface samples varied from U to 1,320 ppm.

## 7.0 RECOMMENDATIONS

The laboratory results indicate that the probably of petroleum hydrocarbon contamination existing in the proposed right-of-way is very low. Nothing was found nor do the soil sample test results indicate contamination. However the visual evidence does indicate petroleum hydrocarbon contamination exists in other locations.

These visibly contaminated areas were part of the old school complex which reverted to the community when the new school was built. If money becomes available from other sources these areas might be considered for remediation.

**APPENDIX A**

**ADOT&PF  
CENTRAL REGION  
HIGHWAYS PROJECTS  
ENVIRONMENTAL CHECKLIST**



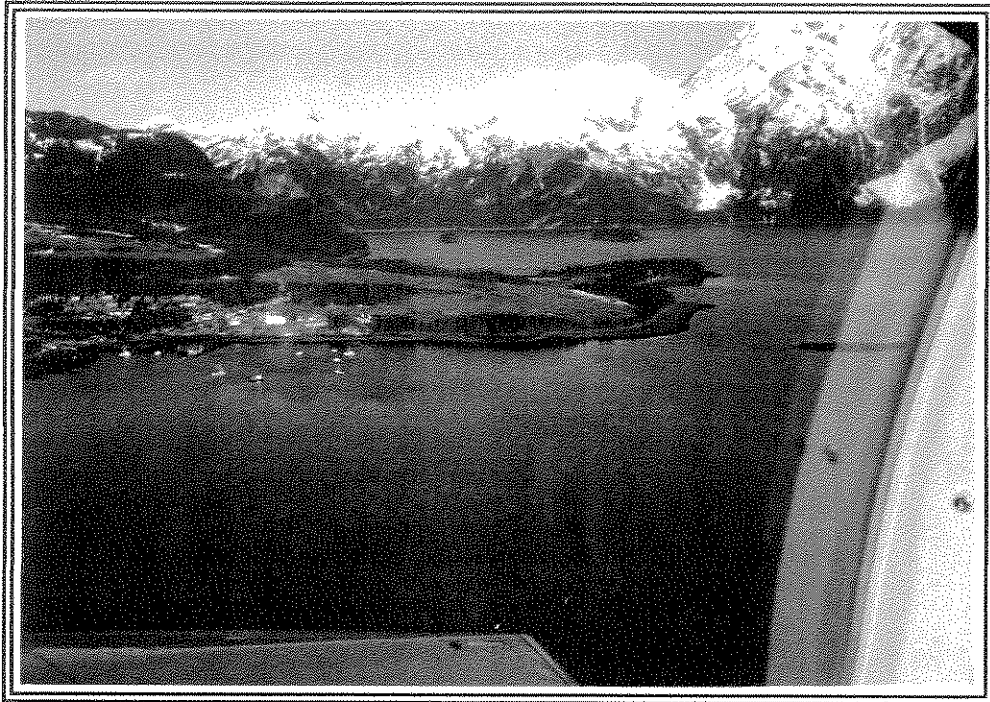
EXHIBIT B-3

ALASKA  
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES  
CENTRAL REGION  
HIGHWAY PROJECTS  
ENVIRONMENTAL CHECKLIST

- I. Project Name \_\_\_\_\_
- II. Location \_\_\_\_\_
- III. Project Identification
- A. Federal Number \_\_\_\_\_
- B. State Number \_\_\_\_\_
- C. Attachments
1. Vicinity Map \_\_\_\_\_
2. Other \_\_\_\_\_
- D. ATP/PDA Date \_\_\_\_\_
- IV. Existing Facility Description, Purpose & Need for Project
- V. Proposed Action
- VI. Alternatives to Proposed Action
- VII. Material Sites: known \_\_\_ (list) unknown \_\_\_ contractor supplied \_\_\_
- VIII. Right-of-Way
- A. Additional Required: yes \_\_\_ no \_\_\_ acreage \_\_\_\_\_
- B. Relocation Required: yes \_\_\_ no \_\_\_
1. Type of Relocation
- a) Businesses \_\_\_\_\_
- b) Family Units \_\_\_\_\_
- IX. Wetlands Involvement: yes \_\_\_ no \_\_\_ acreage \_\_\_\_\_
- A. Fill \_\_\_\_\_ c.y.
- B. Dredge Quantities \_\_\_\_\_ c.y.
- C. Wetlands Finding Attached \_\_\_\_\_

**APPENDIX B**

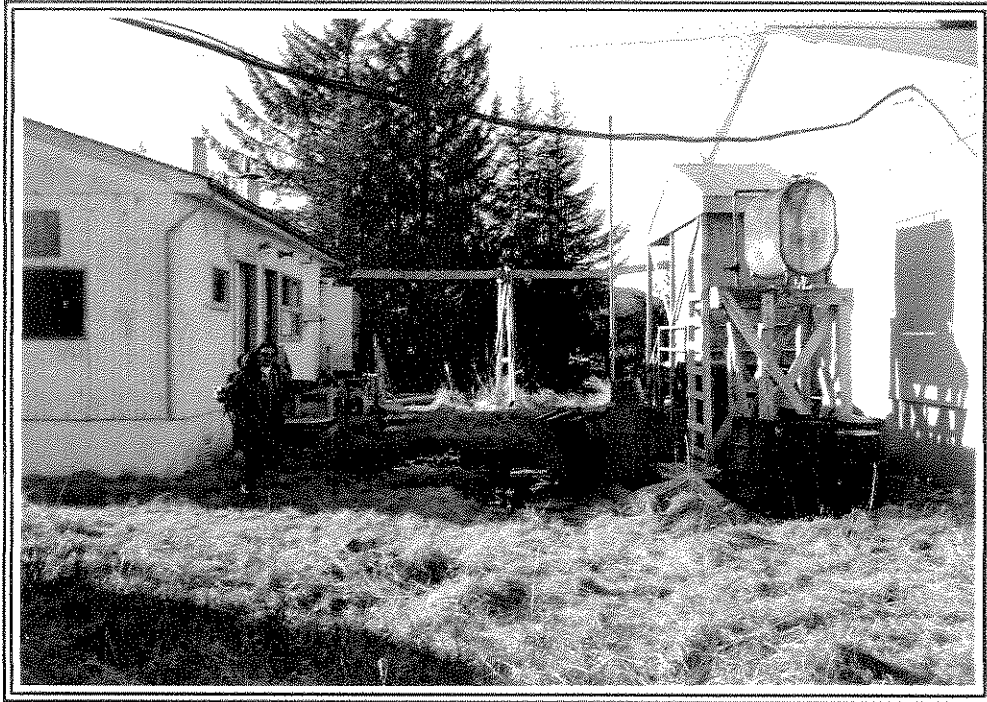
**PICTURES**



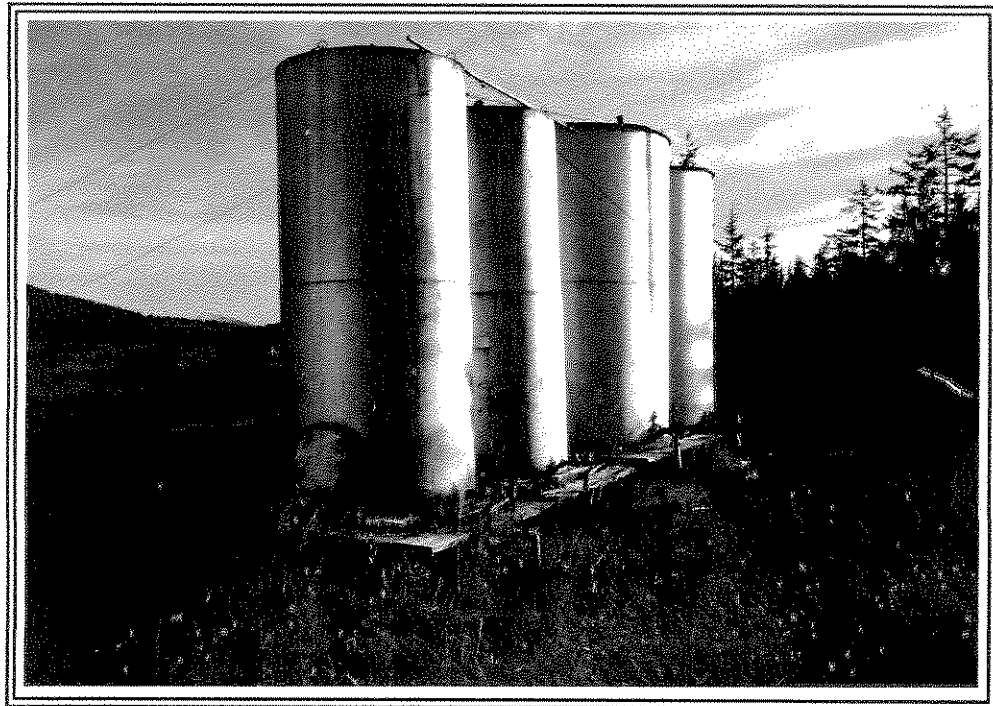
Picture 1: Tatitlek and proposed project area.



Picture 2: 100-gallon fuel barrel and dead vegetation.



Picture 3: Dead vegetation in front of generator building.



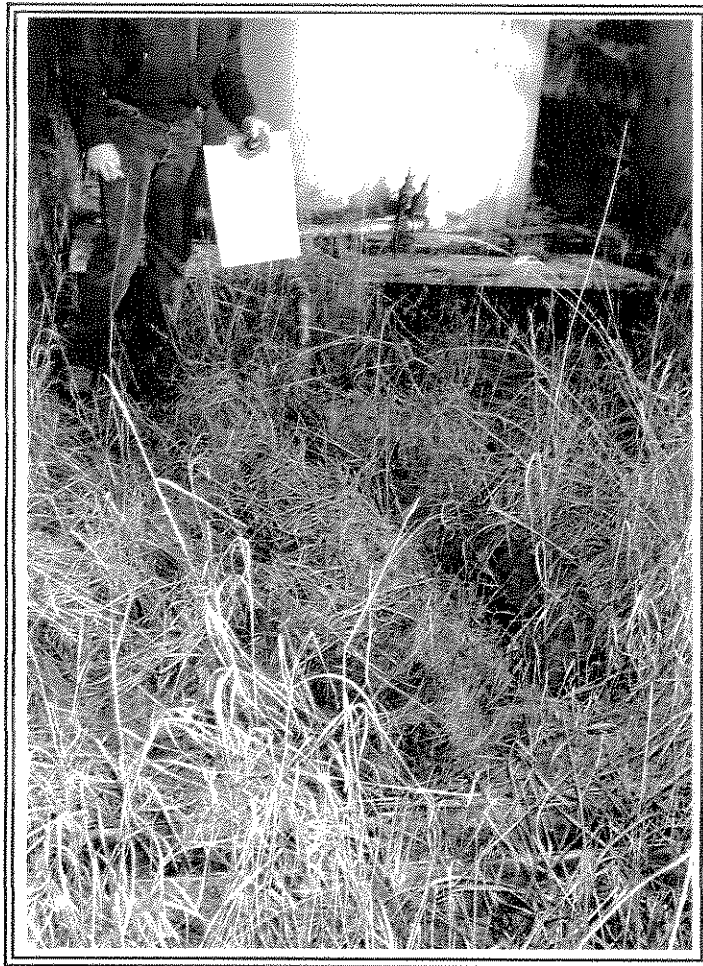
Picture 4: Old school diesel fuel tanks (4).



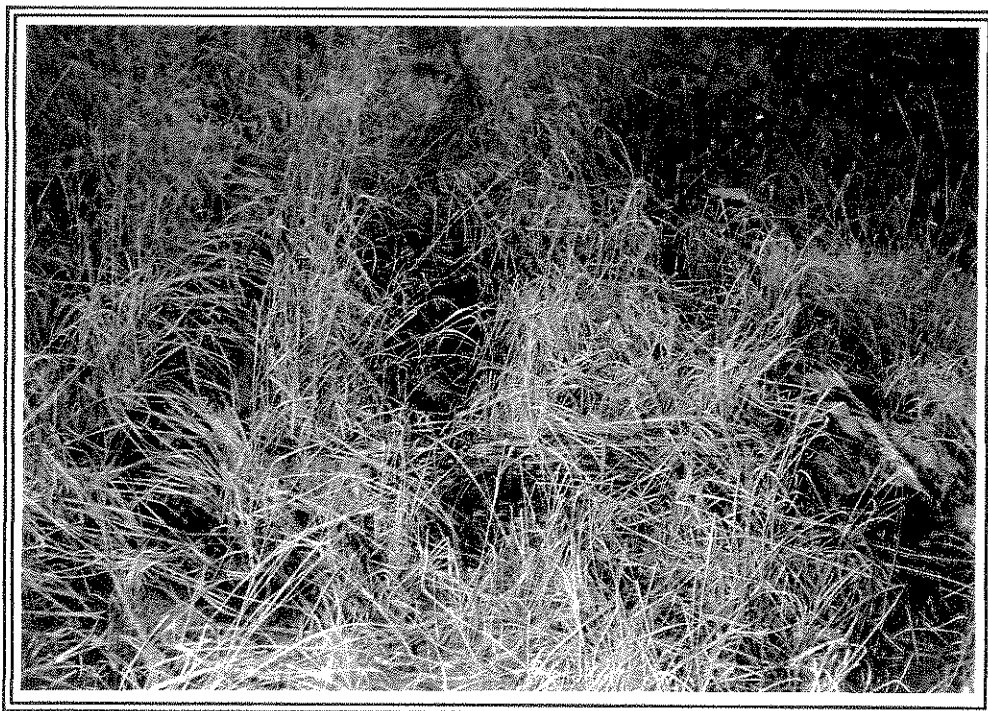
**Picture 5: 3" dia. fuel line from beach.**



**Picture 6: Stained area around 3" dia. fuel line.**



Picture 7: Timber containment structure and piping.



Picture 8: 5' x 5' log crib sump.

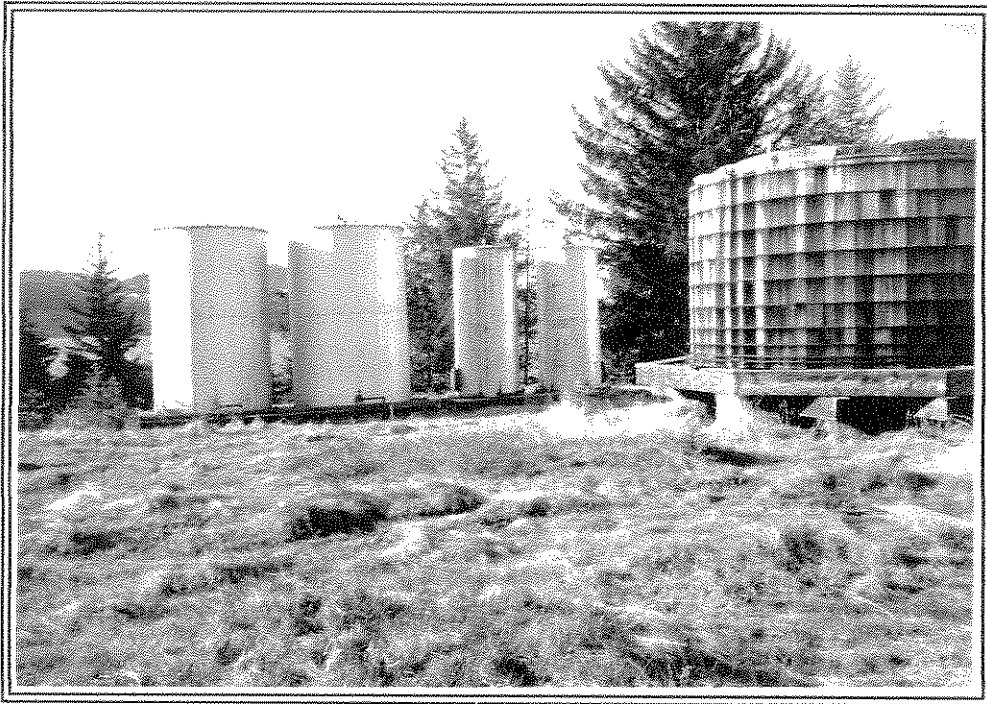




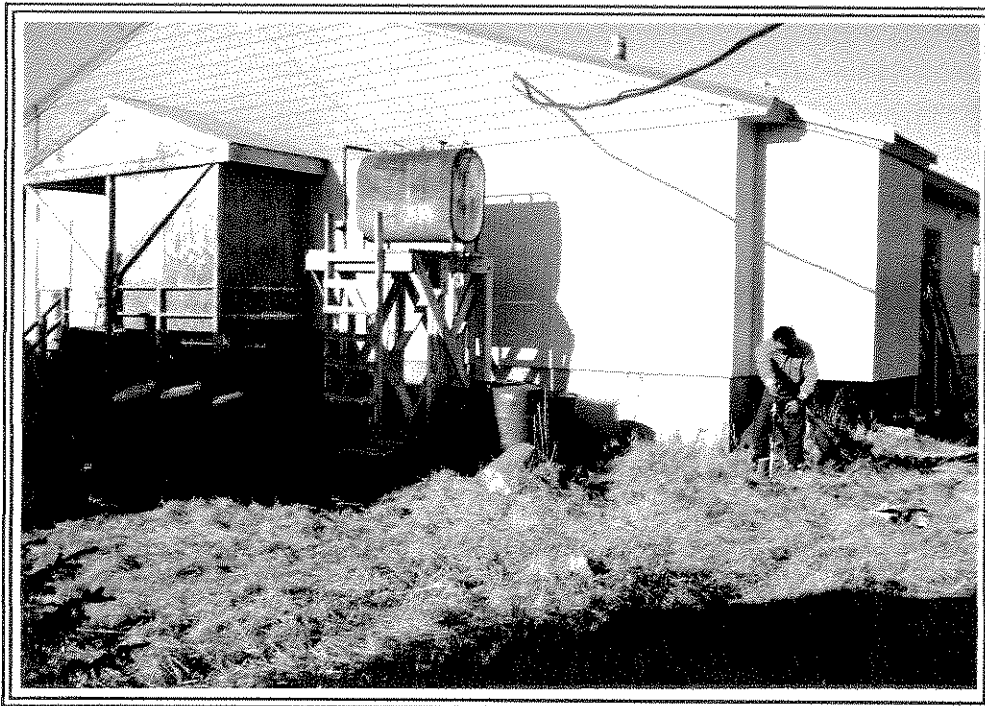
Picture 9: Fuel contained within log crib sump.



Picture 10: Typical sample hole.



Picture 11: Typical sample area.



Picture 12: Sample hole #4.