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# Alaska Pulp Corporation Long-Term Timber Sale Contract

## Southeast Chichagof Project Area
## Final Environmental Impact Statement

## Volume II: Appendices, Part 1

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Protected Resources Management Division
Juneau, Alaska

and

U.S. Department of the Interior
Fish and Wildlife Service
Southeast Alaska Ecological Services
Juneau, Alaska

# Report of Field Investigations
# Tenakee Inlet (Inbetween, Saltery Bay, Crab Bay) and Peril Strait (Oly Creek) Chichagof Island

October 28-31, 1991

In response to a request from Mr. Ted Allio, Chatham Area, USDA Forest Service (USFS), personnel from the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS) investigated, in concert, the intertidal/subtidal habitats of locations in Tenakee Inlet and Peril Strait, Figure 1, for proposed log transfer facilities (LTF). Copies of aerial photographs of the proposed LTF sites are shown in Appendix A.

Over the years the timber industry has employed the technique of placing logs in marine waters, constructing log rafts, storing the rafts, and towing rafts to processing centers. While not always obvious, a significant bark loss results from such activities. What happens to the dislodged bark is dependent on numerous variables, but most often bark is found to accumulate in areas of high log handling activity in quantities sufficient to smother bottom dwelling organisms. The effects of such losses can be reflected through the food chain.

There are two approaches to lessening the harmful effects of concentrated bark deposits: (1) to select sites where prevailing features or conditions will facilitate bark dispersal, and (2) to select sites which display relatively low biological resource value. Our site selection techniques are designed to consider each approach, and where possible, identify sites which satisfy criteria for both.

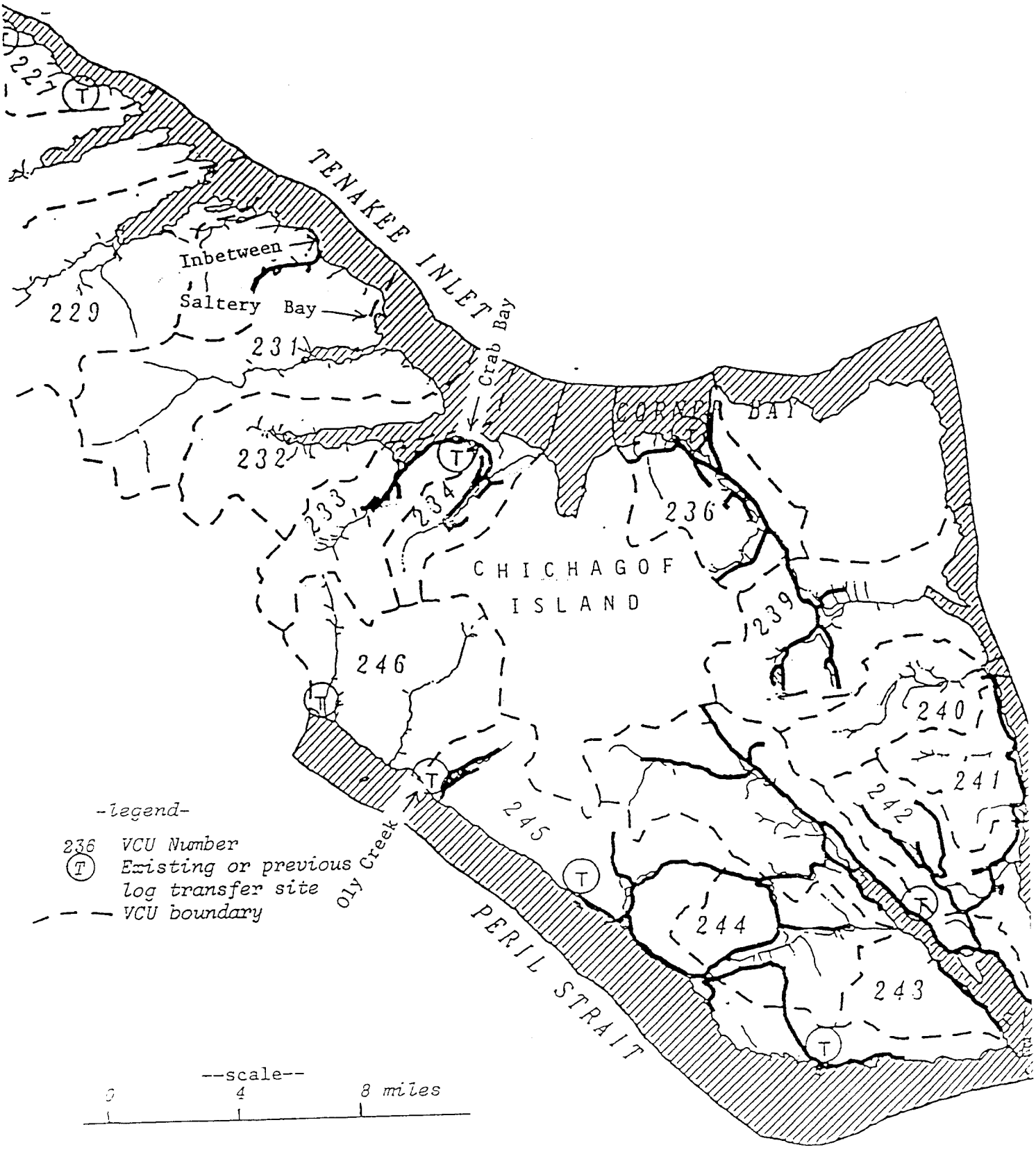


Figure 1. Proposed Log Transfer Facility Sites in Tenakee Inlet and Peril Strait. Reproduced from "Southeast Chichagof Project Area Scoping Information," USFS, 1991.

## OBJECTIVES

Investigations were directed at achieving the following study objectives:

1. Investigate subtidal habitat at potential log transfer sites to determine a) the physical characteristics including depth, slope, substrate, and current patterns; and b) the biological characteristics of productivity and diversity.

2. Analyze information collected on each site, and compare results both with the Timber Task Force log transfer facility siting guidelines[1] and with results on other nearby sites.

3. Present a recommendation relative to the use of the investigated sites for log transfer activities.

## METHODS

A transect line, 100-meters long, was extended seaward from the proposed site perpendicular to the shoreline. Self Contained Underwater Breathing Apparatus (SCUBA) was employed to gather intertidal/subtidal information along the transect line as well as in the general area of potential impact. Observations of physical and biological characteristics were made at five-meter intervals along the transect line. Observations included water depth, substratum composition, plant species, animal species, and obvious changes in zonation. In addition, the general characteristics of the area, and evidence of current flow patterns, or the lack thereof, were noted subjectively.

## RESULTS AND RECOMMENDATIONS

A discussion for each area investigated follows. Species observed in each area are listed in Table 1.

### Inbetween (Tenakee Inlet)

The underwater investigation occurred about 100 meters west of the reef and about 50 meters west of the old breakout point access road. Previous use of the area for log transfer occurred during the time period ca 1985-86. A bundling rack was used for log transfer. Log rafting occurred in deeper waters (20 feet and deeper) off the investigated site.

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[1] 1985, Log Transfer Facility Siting, Construction, Operation and Monitoring/Reporting Guidelines, Governor's Timber Task Force.

A bottom profile of the transect is shown in Figure 2. The physical attributes of the site are characterized as being very shallow (2.4 meters at the deepest) with a pebble/cobble bottom from the high tide line to 50 meters from shore giving way to a sand/silt bottom to the end of the transect. Flushing potential is moderate as evidenced by the presence of silt within the bottom composition.

Animal and plant species observed were those common to this type of habitat. Species variety was low with sea anemones (Anthopleura spp), worms (Owenia fusiformis), barnacles (Balanus spp), and mussels (Mytilus edulis) being most abundant. The two most abundant algae species noted were Fucus spp and Enteromorpha spp. Eelgrass (Zostera marina) occurred 72 meters from shore to beyond the end of the transect.

This site does not meet the Timber Task Force LTF siting guidelines, including the criteria for water depth, site productivity, and potential bark accumulation. Therefore, an underwater reconnaissance seaward of the transect and of the area toward and in front of the reef was made. An extensive band of eelgrass extended beyond the transect line an estimated 50-75 meters to a depth of 6.1 meters where a large area of woody debris extended east and west and seaward into deeper waters. The area just west of the reef was composed of a silt/sand/rock substratum with a sparse growth of algae. The most abundant animals were the sea pen (Ptilosarcus gurneyi), sea peach (Halocynthia spp), and Owenia fusiformis. Evidence of Dungeness crab was noted in the silt/sand slope. One small tanner crab was seen.

An investigation of the exposed reef indicated that it could be used as an avenue to reach deeper water which would allow woody debris to settle on less productive bottom habitat. We, therefore, recommend the reef area be used as the LTF with the structures removed after completion of logging. Any small independent log sales could use bundling racks west of the reef as was done previously with log rafts stored in waters deeper than 40 feet when measured from mean lower low water.

Saltery Bay, (Tenakee Inlet)

A bottom profile of the transect is shown in Figure 3. The physical attributes of the site are characterized as a moderate slope of bedrock to about 20 meters from the high tide line giving way to a boulder/cobble bottom to about 30 meters from shore grading into a silt/sand/cobble bottom to the end of the transect. Flushing potential is low as evidenced by the presence of a silty bottom. Depth at the end of the transect was about nine meters.

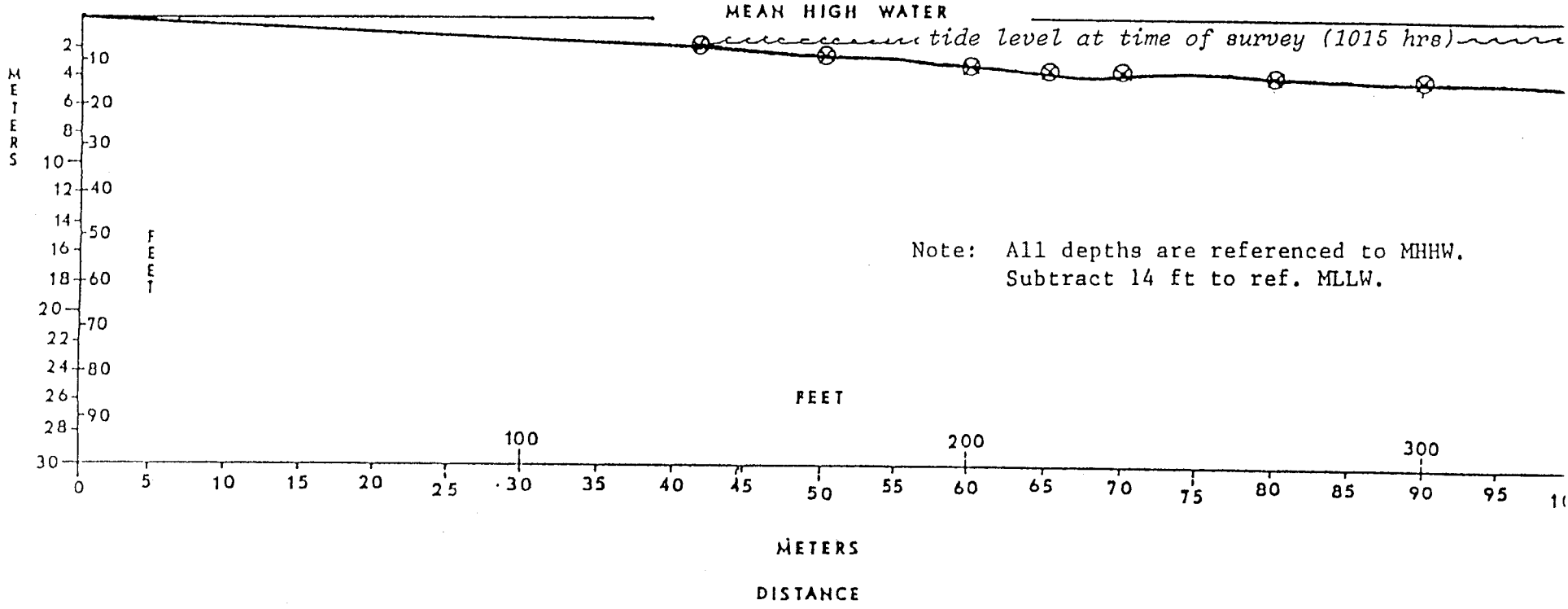


Figure 2. Dive Transect Depth-Distance Profile at Proposed Log Transfer Facility near Inbetween Creek in Tenakee Inlet, Alaska (10-29-91).

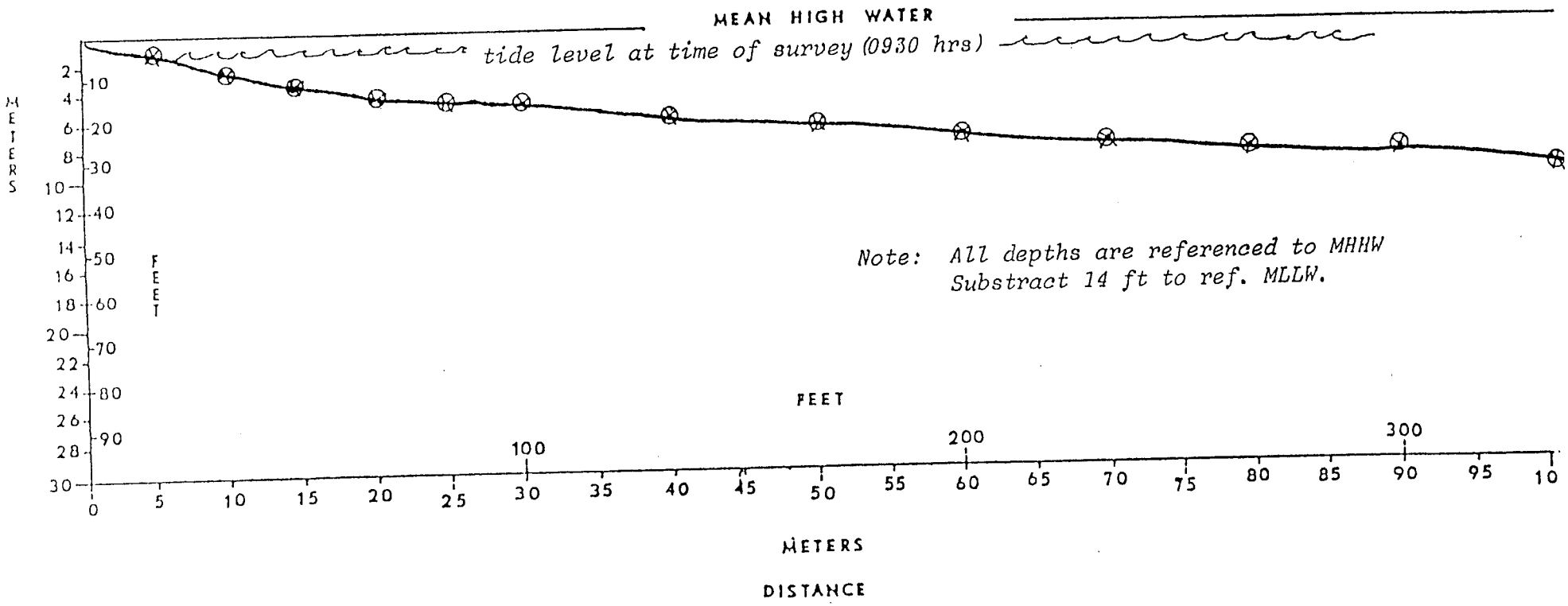


Figure 3. Dive Transect Depth-Distance Profile at Proposed Log Transfer Facility near Saltery Bay in Tenakee Inlet, Alaska (10-30-91).

Animal and plant species observed were those common to this type of habitat. Species variety was low with borrowing worms (Owenia fusiformis), sea cucumbers (Parastichopus californicus) and starfish (Dermasterias imbricata, Pycnopodia helianthoides) being most abundant. The two most abundant algae species noted were Desmarestia spp and Laminaria spp. Eelgrass (Zostera marina) occurred from 21 to 37 meters from shore and again beyond the transect. Borrowing worms Owenia fusiformis were abundant and are a significant component of the total biomass seen at the site. Commercial quantities of sea cucumbers were also noted in the area. The large macrophyte Laminaria will cover the bottom during the spring and summer periods.

This site does not meet the Timber Task Force LTF siting guidelines, including the criteria for water depth, site productivity, and potential bark accumulation. We recommend this site not be used for the transfer of logs if a deeper less productive alternative location is available.

Crab Bay (Tenakee Inlet)

The site is exposed. It is also the site of an old transfer facility used during the time period ca 1977-79. The facility is in disrepair and unusable without reconstruction. A bottom profile of the transect is shown in Figure 4. Physical attributes of the site are characterized as being very flat and shallow (4.5 meters at the end of the transect). No evidence of woody debris was noted; the only evidence of past transfer activity was the presence of a few metal bands along the transect. The substratum was composed of boulder/cobble to about 20 meters from the high tide line which graded into a sand/cobble/boulder bottom to the end of the transect. A fairly strong current was flowing west to east and will disperse most woody debris from the area. → settling out where?

15 years after use

Plant and animal species were abundant and typical for a rock/sand bottom. Laminaria spp, Desmarestia spp, and Costaria costata were abundant on rock surfaces as well as the red algae Palmeria spp and Lithothamnion spp. The site is quite productive with high diversity and biomass. Filter feeders (Metridium senile and Serpula vermicularis) were abundant as were the starfish (Pycnopodia helianthoides and Evasterias troschelii). Juvenile king crab, pandalid shrimp, and octopus were noted amongst the boulder/cobble substratum. (which was within 20 m from MHT)

This site fails to meet the Timber Task Force LTF siting guidelines, including the criteria for water depth and site productivity. However, the site has recovered well from the effects of past log transfer activities. The alternative of siting a facility within Crab Bay would have a longer lasting effect on the marine environment. Debris would settle and

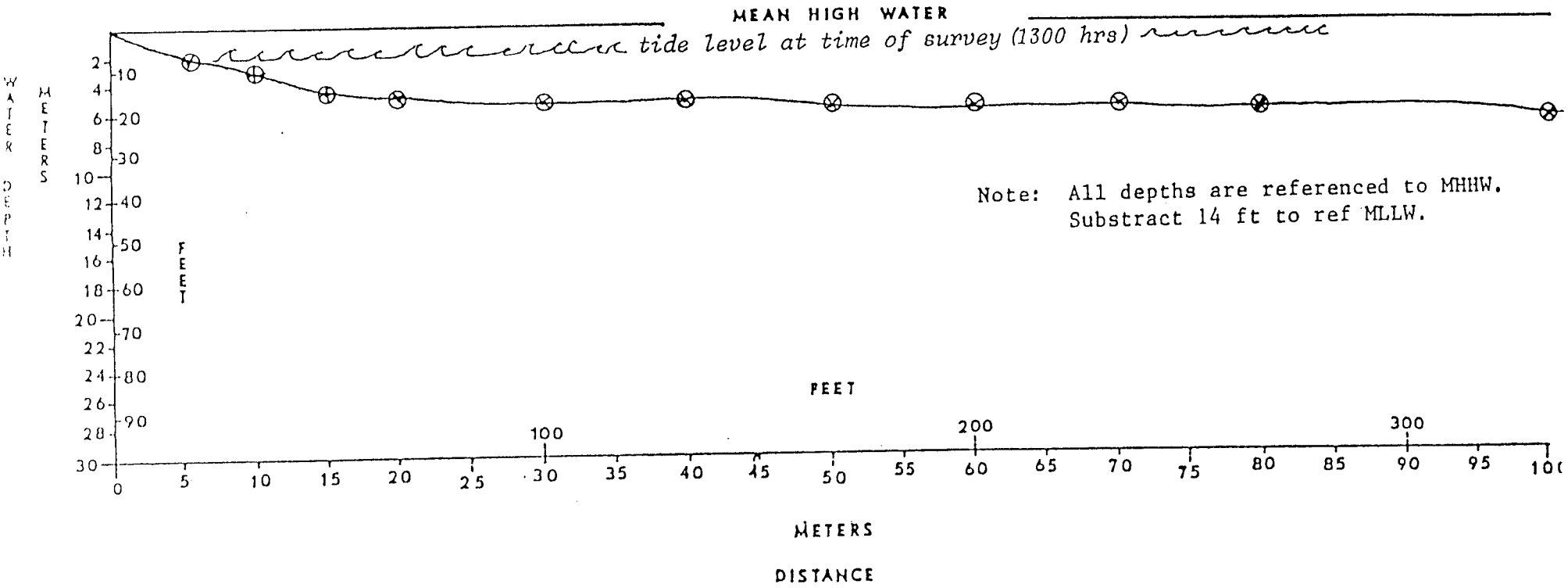


Figure 4. Dive Transect Depth-Distance Profile at Crab Bay Log Transfer Facility in Tenakee Inlet, Alaska (10-30-91).

accumulate in a defined area rendering the area less productive for a longer period of time.

We recommend the old site be selected for reuse as a log transfer facility using the same method of log transfer.

Oly Creek, (Peril Strait)

The site is exposed and adjacent to an anadromous fish stream. It is also the site of an old transfer facility used during the time period of ca 1974-76. The facility is in disrepair and unusable without reconstruction. This site was not investigated with SCUBA. A boat reconnaissance revealed the physical attributes of the site as being very flat and shallow to about two hundred meters from shore. An alternative location about 500 meters west of the old LTF was selected and investigated with the use of SCUBA. A bottom profile of the transect is shown in Figure 5.

The transect began at a bedrock outcrop about 500 meters west of the old LTF. Physical attributes of the site are characterized as bedrock dropping sharply within 10 meters to a cobble/sand bottom grading into pure sand at about 20 meters to the end of the transect and beyond. Depth at the end of the transect line was about 23 meters. Slope dropped sharply beginning at 40 meters from the high tide line. A moderate current was running west to east.

The slope was sparsely vegetated. An 8-meter wide band of eelgrass started at 40 meters from the high tide line. Laminaria spp and Desmarestia spp were the dominant algae species along the transect. Dungeness crabs (Cancer magister), a commercially important species, were found buried in the sand along the transect. Animal species diversity was limited as few other invertebrates were noted.

This site meets the Timber Task Force Guidelines for siting of a LTF except for the presence of Dungeness crabs. However, the proposed transfer method is from land to barge without water entry. Thus, operation of the facility probably would not have a significant effect on Dungeness crab habitat.

CAVEAT

The recommendations of the proposed sites indicated as suitable for LTFs are based upon observations of estuarine habitat made during a limited time period. It should be noted that observations over time were not made and as a result, seasonal changes in habitat use, including fish and shellfish spawning occurrences were not observed. Further, recommendations offered relate to aquatic observations only. Use of adjacent uplands by animals or birds, including bald eagles, was not considered.

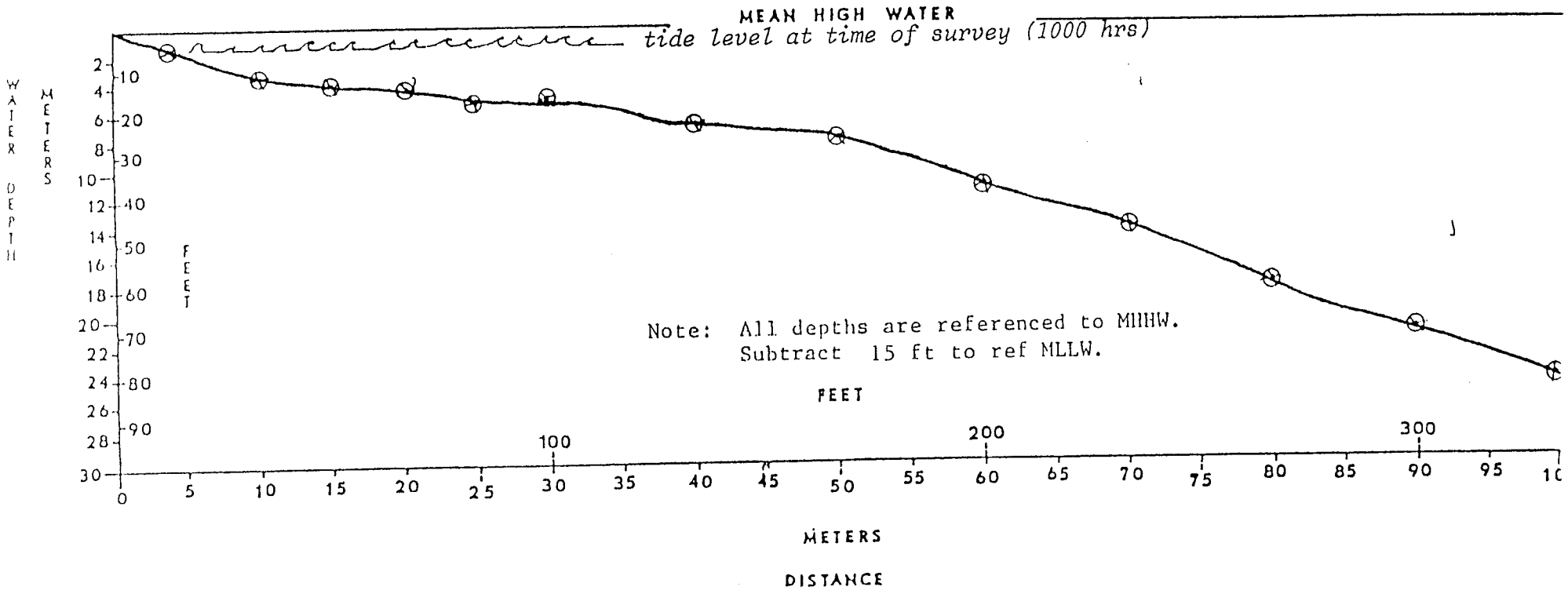


Figure 5. Dive Transect Depth-Distance Profile at Oly Creek Log Transfer Facility in Peril Strait, Alaska (10-31-91).

Table 1. List of plant and animal species observed along underwater transects at Inbetween (A), Saltery Bay (B), Crab Bay (C), and Oly Creek (D), October 29-31, 1991, a = abundant, m = typical, s = scarce, x = present.

| Aquatic Plants | Common Name | A | B | C | D |
|---|---|---|---|---|---|
| Costaria costata | Brown algae | | s | s | x |
| Desmarestia spp | Brown algae | | x | m | s |
| Enteromorpha spp | Green algae | s | x | s | s |
| Fucus spp | Brown algae | s | x | s | s |
| Laminaria spp | Brown algae | | m | m | s |
| Lithothamnium spp | Encrusting algae | | x | m | |
| Odonthalia spp | Red algae | s | | | |
| Palmeria spp | Red algae | | x | m | s |
| Ulva/Monostroma spp | Green algae | | | s | |
| Zostera marina | Eelgrass | a | x | | s |

| Aquatic Invertebrates | Common Name | A | B | C | D |
|---|---|---|---|---|---|
| Acmaea spp | White cap limpet | | s | | s |
| Anthopleura spp | Anemone | s | | | s |
| Balanus spp | Acorn barnacles | s | m | m | s |
| Boltenia villosa | Stalked hairy tunicate | | | s | |
| Cadlina luteomarginata | Nudibranch | s | | | |
| Cancer magister | Dungeness crab | | | | m |
| Chlamys spp | Pink scallop | s | | | |
| Cliona celata | Boring sponge | x | | | |
| Dermasterias imbricata | Leather star | | m | a | |
| Elassochirus tenuimanus | Big-clawed hermit crab | | s | | s |
| Evasterias troschelii | Molted star | x | s | s | s |
| Fusitriton oregonensis | Oregon triton | s | | | |
| Haliclona spp | Volcano sponge | | | x | |
| Halocynthia aurantium | Sea peach | a | | | |
| Henricia leviuscula | Blood star | s | | | |
| Hyas lyratus | Lyre crab | | s | | |
| Melibe leonina | Lion nudibranch | | s | | s |
| Metridium senile | Fine-tentacled anemone | | s | a | |
| Microporina borealis | Jointed bryozoan | | | m | |
| Mytilus edulis | Blue mussel | m | s | | s |
| Octopus dofleini | Pacific octopus | | | x | |
| Oregonia gracilis | Decorator crab | | s | | |
| Owenia fusiformis | Polychaete (worm) | a | a | | |
| Pandalid shrimp | | | | m | x |
| Pagurus spp | Hermit crab | | s | s | |
| Paralithodes camtschatica | King crab | | | x | |
| Parastichopus californicus | Mop sea cucumber | s | a | | |
| Pododesmus macroschisma | False pacific jingle | | s | s | |
| Ptilosarcus gurneyi | Sea pen | s | | | |

Table 1. (Continued) List of plant and animal species observed along underwater transects at Inbetween (A), Saltery Bay (B), Crab Bay (C), and Oly Creek (D), October 29 -31, 1991, a = abundant, m = typical, s = scarce, x = present.

| Aquatic Invertebrates | Common Name | A | B | C | D |
|---|---|---|---|---|---|
| Pycnopodia helianthoides | Sunflower star | | m | m | s |
| Serpula vermicularis | Common serpulid | | m | m | |
| Snail | | x | | s | s |
| Spirorbis spp | Coiled serpulid | | m | | |
| Strongylocentrotus droebachiensis | Green sea urchin | | s | s | |
| Tonicella spp | Chiton | | s | s | |

| Marine fish | Common Name | A | B | C | D |
|---|---|---|---|---|---|
| Myoxocephalus polyacanthocephalus | Sculpin | x | x | x | |

ACKNOWLEDGEMENTS

Duane Petersen, NMFS Juneau, Alaska, and Bill Hughes, FWS Sitka, Alaska, were the principle investigators for these field investigations and were responsible for preparation of this report.

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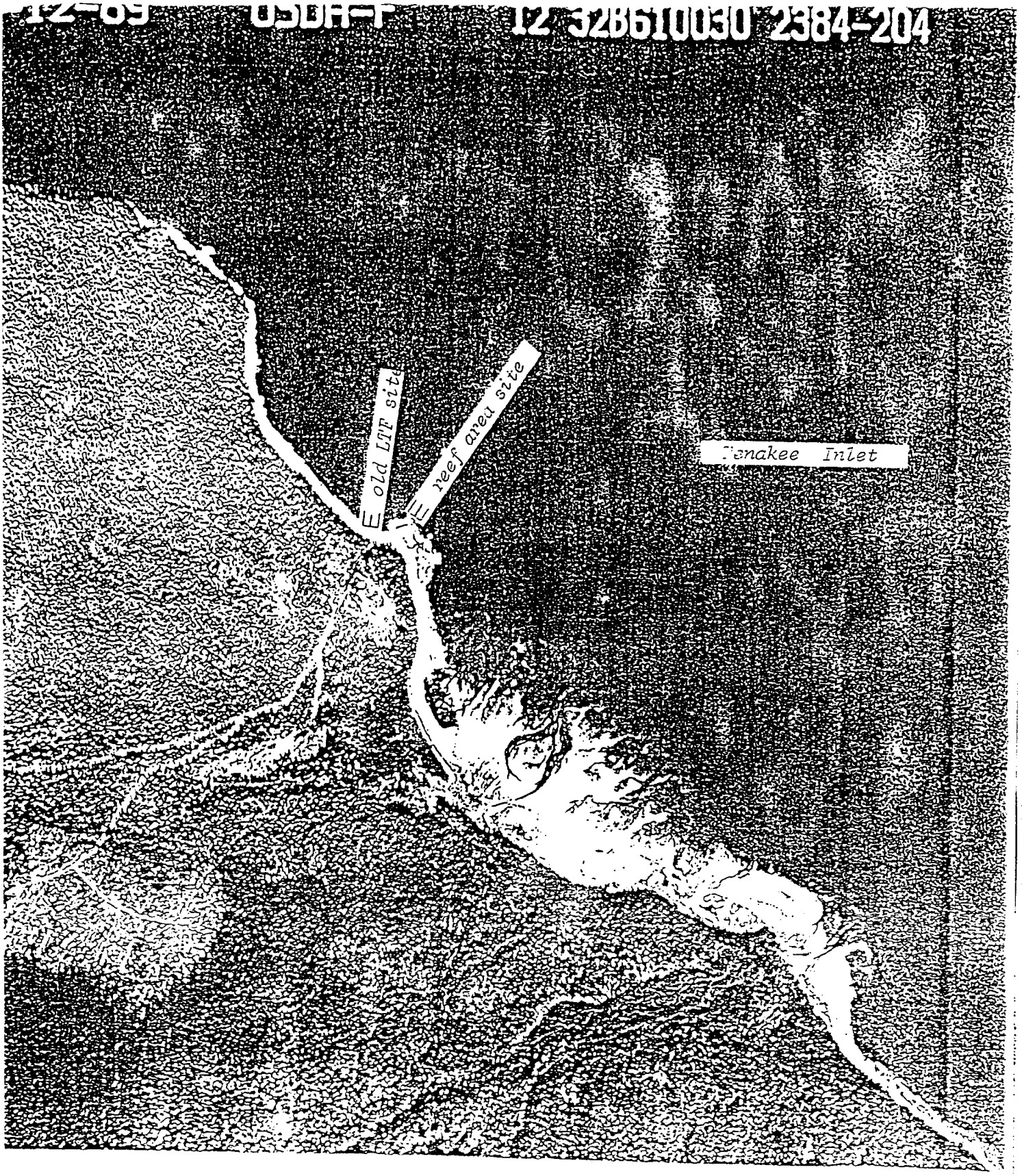
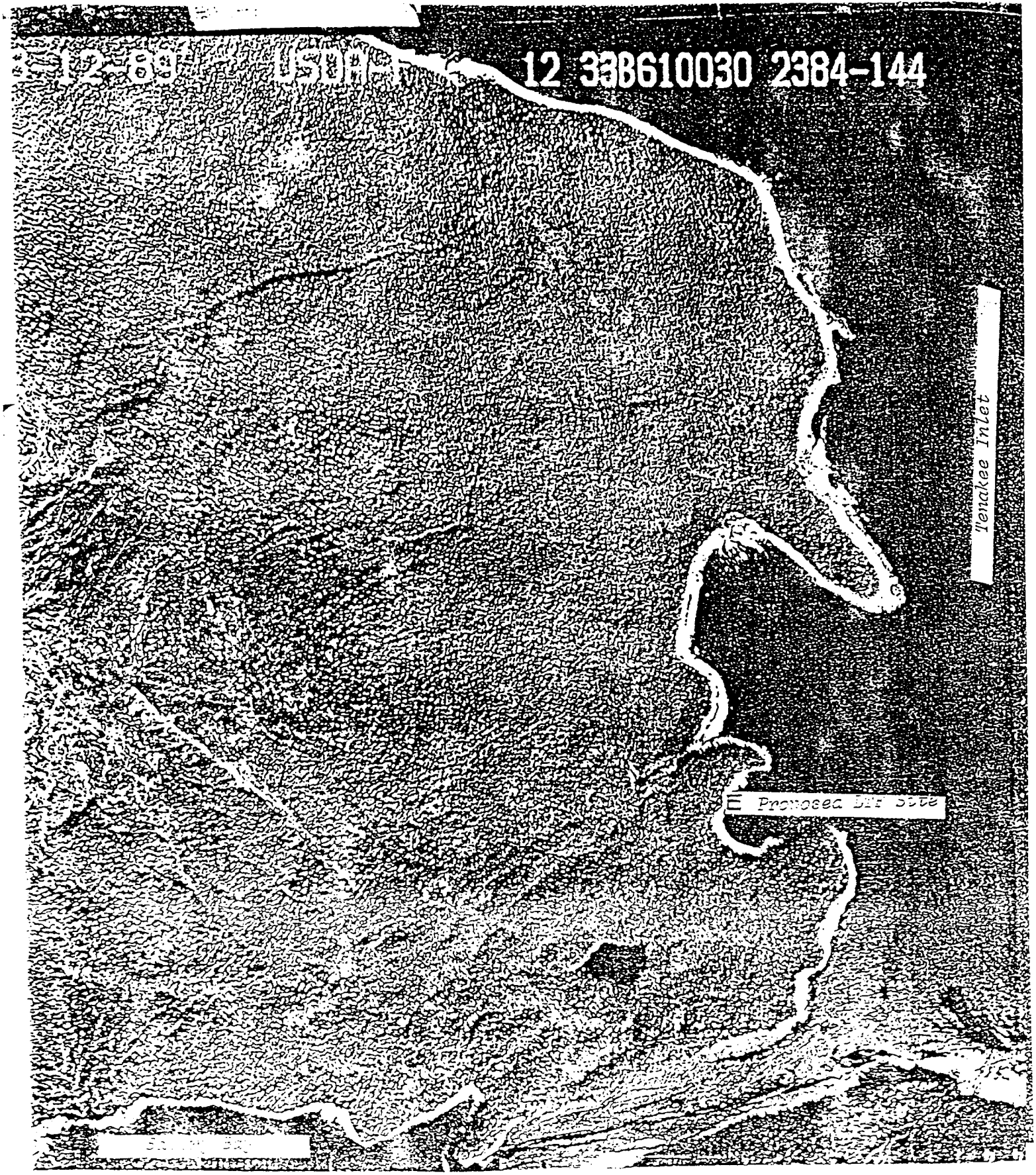
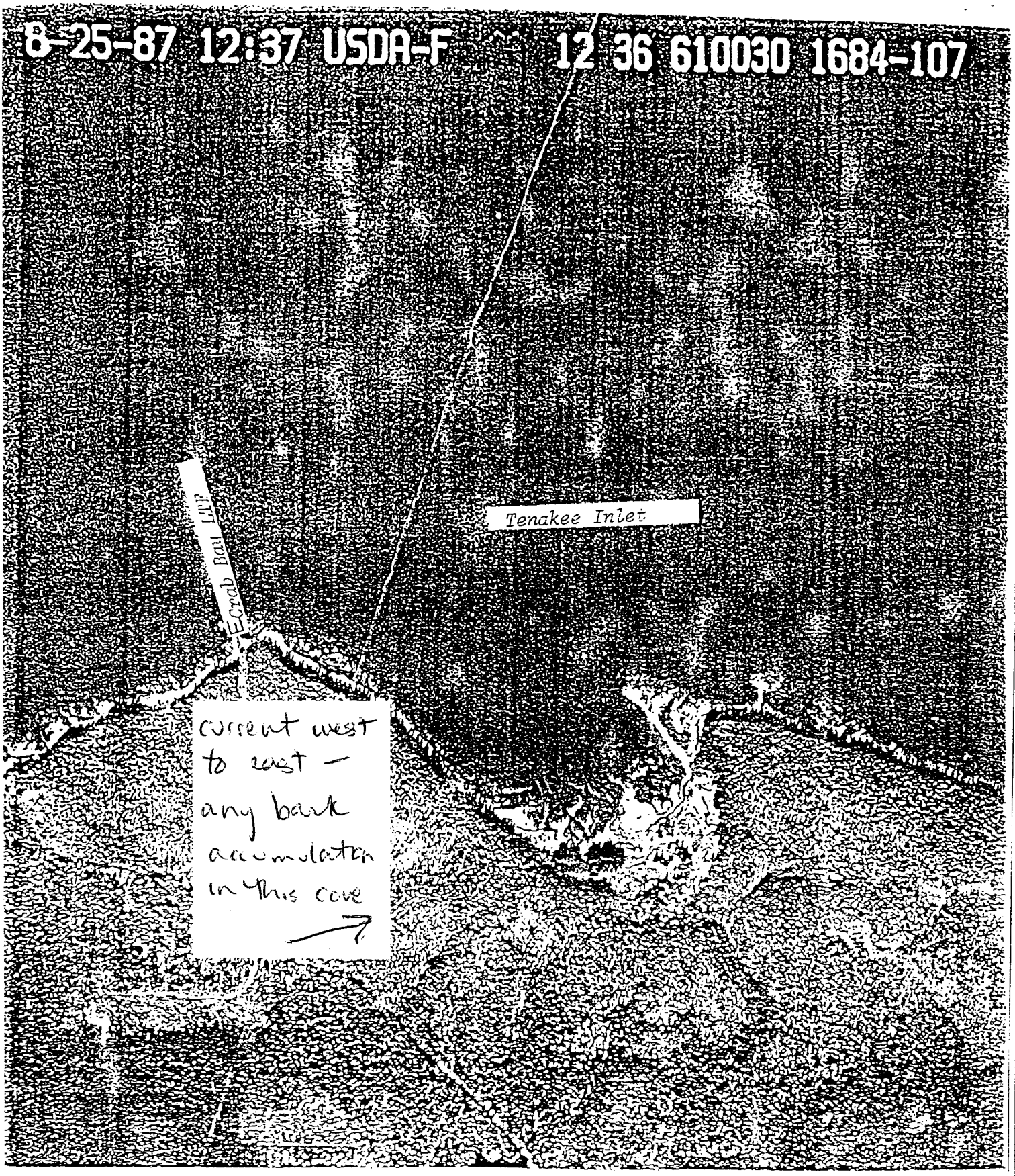



Appendix A-1. Tuberculosis proposed LTF sites.




Crab Bay
Tenakee Inlet
current west to east — any bark accumulation in this cove

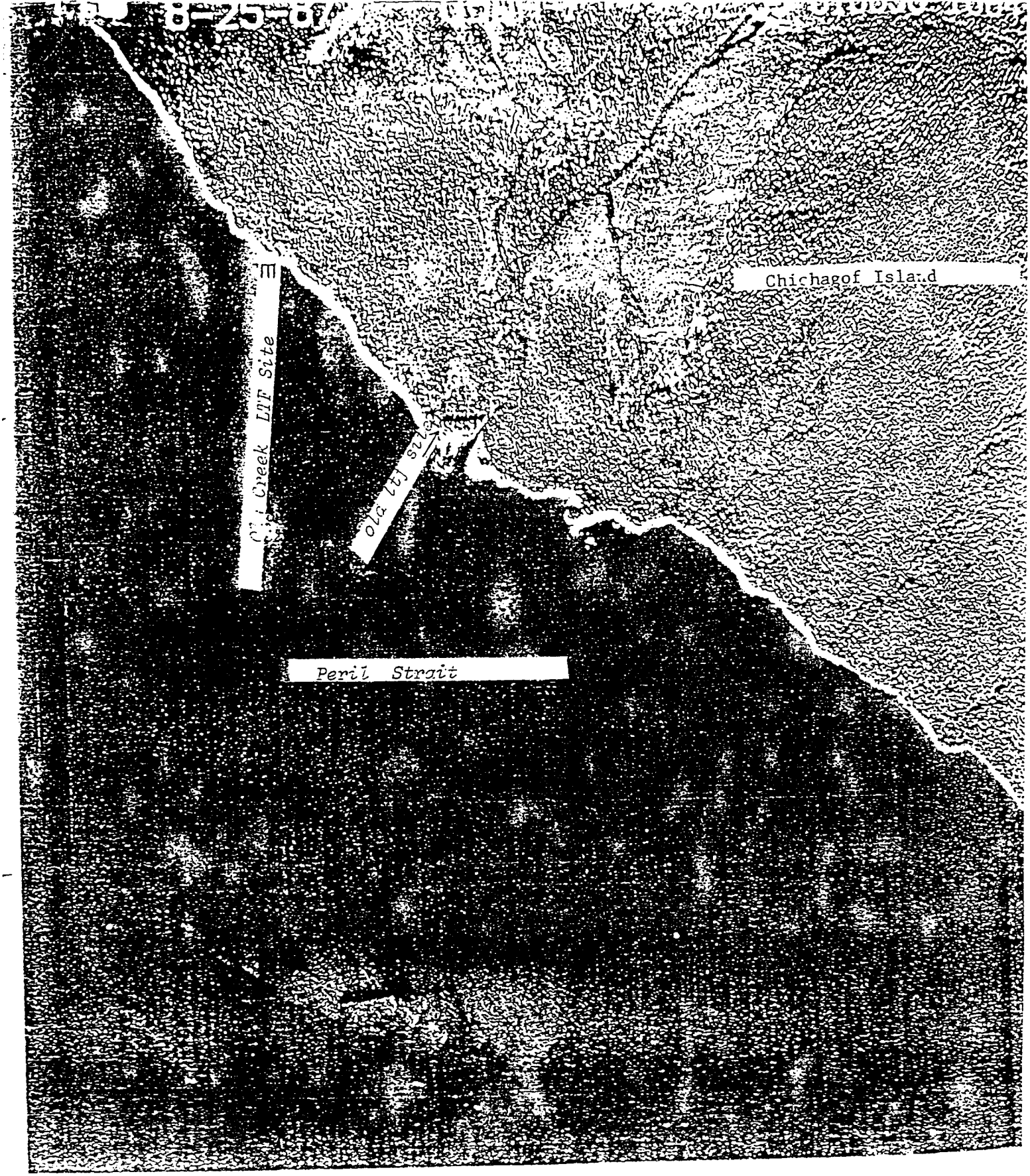



Fig. 4-1. Site location map.

## Comparison of Log Transfer Sites Based on LTF Guidelines under 404(b)(1)

| VCU | LTF Name | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 230 | Inbetween | + | - | + | - | + | + | + | + | + | - |
| 233 | Crab Bay | + | + | + | + | + | - | + | + | - | + |
| 236 | Corner Bay | + | + | + | + | - | + | + | + | + | + |
| 245 | False Island | + | + | + | + | + | + | + | + | + | + |
| 246 | Oly Creek | + | - | + | + | + | + | + | + | + | + |

Note: + Indicates LTF meets guideline.
- Indicates LTF does not fully meet the guideline.

## LTF Siting Guidelines

1. Proximity to Rearing and Spawning Areas: Siting of log transfer and log raft storage facilities within 300 feet of the mouths of anadromous fish streams, or in areas known to be important for fish spawning or rearing, is normally prohibited.

2. Protected Locations: Log transfer and log raft storage facilities should be sited in weather-protected waters with bottoms suitable for anchoring and with at least 20 acres for temporary log storage and log booming.

3. Upland Facility Requirements: Log transfer facilities generally should be sited in proximity to at least 5 acres of relatively flat uplands. There should also be a body of water sufficient to provide a minimum of 60 lineal feet of facility face.

4. Safe Access to a Facility from the Uplands: To provide safe access to the log transfer facility and adjoining log sort yard, the facility should be sited where access roads to the facility can maintain a grade of 10 percent or less for trucks an 4 percent for specialized equipment.

5. Bark Dispersal: Log transfer facilities should be sited along or adjacent to straits and channels or deep bays where currents may be strong enough to disperse sunken or floating wood debris. Siting log transfer facilities in embayments with sills or other natural restrictions to tidal exchange should be avoided.

6. Site Productivity: Sites for in-water storage and/or transfer of logs should be located in areas having the least productive intertidal and subtidal zones.

7. Sensitive Habitat: Log transfer facilities and log raft storage areas should not be sited on or adjacent to (i.e., near enough to affect) extensive tideflats, salt marches, kelp or eelgrass beds, seaweed harvest areas, or shellfish concentration areas.

8. Safe Marine Access to Facilities: Log rafting and storage facilities should be safely accessible to tug boats with log rafts at most tides and on most winter days.

9. Storage and Rafting: Logs, log bundles, an log rafts should be stored in areas where they will no ground at low tide. A minimum depth of 40 feet or deeper measured at mean lower low water (mllw) for log raft storage is preferred.

10. Avoid Bald Eagle Nest Trees: Site log transfer facilities to avoid bald eagle nests. No project construction or operations should be closer than 330 feet to any bald eagle nest tree.

## Evaluation of Log Transfer Facilities Using 404(b)(1) Guidelines of the Clean Water Act.

Guidelines governing siting, construction, operation an monitoring of log transfer facilities under 40 CFR 230.12(a)(3) read as follows:

> V. Log Transfer Facilities Siting, Construction, Operation, and Monitoring
> A. Site log transfer facilities in locations which will best avoid or minimize potential impacts on water quality, aquatic habitat and other resources. During site analysis, cooperate with State and Federal agencies per stipulations in Memoranda of Understanding or cooperative agreements to assemble required data and evaluate alternatives.
>
> Evaluate alternatives using the 404(b)(1) guidelines to determine if "(i) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences; or (ii) the proposed discharge will result in significant degradation of the aquatic ecosystem; or (iii) The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem; or (iv) There does not exist sufficient information to make a reasoned judgment as to whether the proposed discharge will comply with these Guidelines.

Log transfer facilities proposed under the various action alternatives for the Southeast Chichagof Project were evaluated on the basis of items i through iv noted above. That evaluation follows.

### PROPOSED LTF: OLY CREEK LTF

### Evaluation of Alternatives

*(i) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences*

#### Description

Proposed acres of tentatively suitable harvested under the Southeast Chichagof FEIS preferred alternative = 704 acres tributary to this LTF.

Acres of tentatively suitable remaining after Southeast Chichagof FEIS = 5,237 acres tributary to this LTF. Table 3-5 Southeast Chichagof FEIS.

**Alternatives to the Proposed LTF**

Road connection along the beach to False Island LTF 1/

Road Connection over a pass to Crab Bay LTF (presumes permitting of Crab Bay LTF) 2/

Temporary LTFs installed at or near Broadfinger Creek and Broad Creek and do not build road between LTFs.( temporary slide out ramp type) 3/

No-Action Alternative—no harvest of timber in the vicinity of Oly Creek

Sub-alternatives at Oly Creek for transfer of logs.

Bulkhead and barging (location and exposure preclude rafting of logs) 4/

"Slide-out ramp" suggested by APC for use with small barges (logistics not developed for operations)

Pile-supported bridge with loading by barge mounted crane (Silver Bay or Haida Warrior) 4/

Pile-supported bridge and loading to a small barge (logistics not developed for ramp and loading) 4/

## Evaluation Between Alternatives

### Oly Creek LTF

Timber harvested tributary to this LTF would be from VCU 246; therefore, it does not require construction of 3.0 miles of road over 600 foot elevation pass to Crab Bay LTF.

Favorable haul direction (downhill)of timber in VCU 246 uses less fuel because of shorter haul distance vs Crab Bay LTF. Haul cost would be approximately $280,000 less to Oly Creek LTF than to Crab Bay LTF.

VCUs 231, 232, 233, 234 timber volume (60 MMBF) hauled over the pass would use large amounts of fuel, longer haul; therefore, costs would be high. Haul season would be shortened by 2 months on the average over the hauling season at lower elevations because of snow on the 600-foot elevation pass. Logistics proposed for Oly Creek are for minimal facilities. Without Crab Bay, Oly Creek would need to be a much more extensive upland installation (8-10-acre sort and storage site) than for VCU 246 only (5-acre sort and storage yard).

Proposed logistics for log handling at Oly Creek are much more expensive. The Oly Creek barge is approximately $500,000 compared to Crab Bay boat ramp/slide which is

approximately $250,000. The supply curve for Tongass timber is very flat, and relatively small changes in costs make large differences in supply (706(b) Report 1992).

**Crab Bay LTF Instead of Oly Creek**

Does not require construction of a LTF at Oly Creek saving approximately $250,000. Access road to the LTF of 2.0 miles would not be built, saving approximately $260,000.

The 20-25 MMBF of timber volume in VCU 246 would be hauled uphill to the pass and a longer distance to Crab Bay. This would use more fuel and cost more ($280,000 approximately). Shorter haul season (by approximately 2 months) because of the 600 foot pass which would get snow earlier and stay longer than on the lower elevation roads.

More timber volume would be passed through Crab Bay. Sort and storage yard would need to be expanded.

Crab Bay was identified by the Forest Service as a long-term site when originally constructed. Intent to reuse the site was implicit in the Tongass Land Management Plan and the Tongass Land Management Plan Revision process.

A road over the pass would be constructed if VCU 246 timber was hauled to Crab Bay LTF, affording passage through traffic from Peril Strait to Tenakee Inlet. There has been much public comment about this road and subsistence use during subsistence meetings. Tenakee residents do not want Sitka residents to have easier access to the Tenakee Inlet side of the pass and Sitka residents do not want Tenakee Inlet residents to have easier access to the Hoonah Sound side of the pass.

The pass route might be snow-plowed to increase haul season. This would result in an increased amount of fuel used and higher cost of haul for the timber in VCU 246. Snow plowing has the potential to move road surface sediments off the road with the snow into the ditches and finally into the streams when snow melt occurs.

**Road Connection to False Island LTF Instead of Oly Creek LTF**

The road is approximately 6.4 miles long, costing approximately $350,000 more that the proposed barge site at Oly Creek. Also considered are attendant environmental effects such, as but not limited to, taking approximately 39 acres of land out of timber production because of the roadway, increased sediment during road construction, possible mass wasting into Peril Straits resulting from slides occurring as a result of large cut slopes on slopes that exceed 90 percent (approximately 1 mile), and the possible encroachment on three known eagle nest trees.

Approximately 2 miles of the road is beach road. There will be a visual impact on portions of the road which will be full bench rock cut with end haul of the excess rock. Portions will need

to be constructed on tidelands to avoid massive cuts and the possibility of mass failures on extremely steep (90%) side slopes.

Haul distance would be increased, increasing fuel consumption, haul cost (approximately $180,000), and equipment and road maintenance.

Would not need to construct upland sort and storage yard at False Island since this was built under a previous plan.

**Construct Temporary LTFs at Broad Finger Creek and Broad Creek Instead of the Oly Creek LTF**

An LTF site at Broad Finger Creek identified in the 1978 dive report states it would take a large, expensive LTF to reach proper water depth to unload logs. This site is shallow and would require that a structure be built in excess of 100 meters out from the shoreline. APC-proposed sites have not been identified and no investigation has taken place.

A possible LTF site exists on the west side of Broad Creek. This needs more investigation before impacts can be weighed.

Would not need to construct 1.5 miles of road from Broad Creek LTF to Oly Creek LTF site. Would not need to construct approximately 2.0 miles of road between proposed Broad and Broad Finger LTF sites. The cost of the two LTFs would approximately offset the savings of road cost.

Difference in haul distance and fuel consumption between these site and Oly Creek would be negligible.

Both sites would require a minimum of 5-acre upland sites for sort and storage yard.

Size of or distance off-shore of these structures would have to reach to be able to load logs on a barge is unknown.

*(ii) the proposed discharge will result in significant degradation of the aquatic ecosystem*

**Proposed LTF at OLY Creek**

Only the bark that would fall off the log bundles as they are being transported from shore to the barge by a loader or stacker would be introduced to the aquatic ecosystem.

Surface runoff into the aquatic system can be kept to a minimum by complying with Best Management Practices (BMPs), sloping the access route and the LTF surface away from the water (insloping) into filter strips.

Dungeness crabs were found buried in the sand in this area but, because of the method of proposed log transfer, it is felt that there probably not be significant effects on the habitat (see Appendix H dive report).

100-meter transect beginning on shore running out in the water revealed the following. Beginning on a rock outcrop dropping sharply within 10 meters to a cobble/sand bottom grading to pure sand at about 20 meters to the end of the transect—depth at the end of the transect was 23 meters. The slope dropped sharply 40 meters out from the high tide line. An 8-meter-wide band of eelgrass was observed at 40 meters out from the high tide line (see Appendix H Dive Report).

*(iii) The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem*

The sort yard will be constructed with BMPs using filter strips, road sloping to drain to filter strips, and weekly cleanup of bark and wood chunks. 5/

The barge loading facilities will result in a minimal amount of incidental bark being discharged during the carrying and placement of log bundles.

Construction of a LTF and associated log storage and log sorting areas is selected to construction of a road between Oly Creek and Crab Bay. Subsistence concerns from the rural residents of both Sitka and Tenakee Springs expressed in the comments to the DEIS and during the subsistence hearings support this finding. Construction of the road is not practicable while meeting the needs of subsistence users.

## PROPOSED LTF: CRAB BAY LTF

### Evaluation of Alternatives

*(i) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences*

#### Description

Proposed acres of tentatively suitable harvested under the Southeast Chichagof FEIS Preferred Alternative = 1,443 acres tributary to this LTF.

Acres of tentatively suitable remaining after Southeast Chichagof FEIS = 12,624 acres tributary to this LTF. Table 3-5 Southeast Chichagof FEIS.

### Alternatives to the Proposed LTF

Road connection over a pass to Oly creek (presumes permitting of Oly Creek LTF).

Reconstruction of the Crab LTF.

Road through Kadashan and use the existing Corner Bay LTF. This alternative was not analyzed under this Project because of a ongoing study of the Kadashan drainage in TLMP Revision.

Use LTF at Inbetween Creek (presumes Inbetween LTF is permitted.

No-Action Alternative of not harvesting timber in the Crab Bay area.

Sub-alternatives at Crab Bay for the transfer of logs.

Reconstruct as boat-ramp type LTF with rails.2/

Reconstruct as low-angle slide LTF.2/

Reconstruct as previously on-site steep angle slide.2/

## Evaluation Between Alternatives

### Crab Bay LTF

Would need to be reconstructed because of the large volume (60 MMBF) of timber to be harvested in VCUs 231, 232, 233, 234 which are tributary to Crab Bay LTF. Hauling large volumes of timber over the pass to Oly Creek LTF would increase the fuel consumption and haul distance. There would also be a shorter hauling season because of the snow closing off the pass approximately one to two months earlier than in the lower elevation roads. Crab Bay has an existing log sort and storage yard that is overgrown with alder that will need to be cleared and shaped. Crab Bay LTF was identified by the Forest Service as a long-term site when originally constructed. The intent to reuse the site was implicit in the Tongass Land Management Plan Revision process..

### Oly Creek LTF Instead of Crab Bay LTF.

Road over the pass to Oly Creek would need to be constructed.

Haul distance and fuel consumption would be increased, haul season would be decreased—all make for higher cost.

Would need to construct a 8- to 10-acre sort and storage yard near the Oly Creek LTF.

Subsurface investigations need to be completed to determine the feasibility of sheet pile or pipe pile installation. Surface information suggests this is a likely possibility. This would need to be completed prior to LTF design.

**Inbetween Creek LTF Instead of Crab Bay LTF.**

Inbetween Creek LTF is proposed to be constructed as a temporary low-volume LTF that would require the construction of a larger upland sort and log storage yard

Inbetween site is not acceptable for large volumes timber (see Appendix H, Dive Report).

Road tie with Saltery Bay and Crab Bay drainages would have to be constructed. The haul distance and fuel consumption would be greater and consequently will be more expensive than Crab Bay. Road construction cost increase would be approximately $1,000,000 not including the haul of 60 MMBF of timber scheduled for Crab Bay LTF which would cost approximately $640,000 just to haul over this 7.8 miles of road needed to connect Inbetween road system with Crab Bay road system. This does not include taking approximately 48 acres of land out of production for the road way.

**Corner Bay LTF Instead of Crab Bay LTF.**

There is a physically feasible road route connecting Crab Bay to Corner Bay. The route passes through the Kadashan drainage (VCU 236). The Tongass Timber Reform Act of 1990 allocated the Kadashan to LUD II, essentially roadless (TTRA Section 201). The Act additionally directed studies of the Kadashan LUD II management area (Section 203). LUD II designation allows road construction only on essential transportation corridors. These corridors are those identified as transportation and utility corridors (Alaska National Interest Lands Conservation Act, Section 1102 and Alaska Senate Joint Resolution 40, 1992). The route from Crab Bay to Corner Bay is not a essential transportation and utility corridor. It should be noted that no road has been constructed through a LUD II-designated drainage since the classification was put into place by the Tongass Land Management Plan of 1979.

*(ii) the proposed discharge will result in significant degradation of the aquatic ecosystem*

This site is well flushed; no evidence of bark was found during the site investigation dive (see Appendix H, Dive Report).

A 100 -meter transect was run from shore seaward revealing the following: Physical attributes of the site are characterized as flat and shallow (4.5 meters at the end of the transect). No evidence of woody debris was noted from past log transfer activities. The substratum was composed of boulder/cobble to about 20 meters from high tideline which graded into a sand/ cobble/boulder bottom to the end of the transect. A fairly strong current was flowing west to east and will disperse most woody debris from the area (see Appendix H, Dive Report).

This site would adapt well to the proposed low-angle ramp and rail system with a stacker or loader assist as the natural bottom slope is approximately 9 percent. This method would require the construction of a concrete boat ramp type structure with rails to set the logs at the waters edge via a log stacker or similar type loader. Entry velocity will be controlled and therefore be under 3 feet per second.

This site was originally a steep-angle slide.

Using the above entry system for logs, placing logs into the water, will minimize the discharge of bark and surface run off in to the Aquatic ecosystem.

Surface runoff into the aquatic system will be kept to a minimum by complying with BMPs using filter strips, road sloping, and periodic cleanup of bark and woody debris. (40 CFR 122.27 Silvicultural Point Sources; applicable to State NPDES programs, see 40 CFR 123.25).

*(iii) The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem*

This site would adapt well to the proposed low-angle ramp and rail system with a stacker or loader assist as the natural bottom slope is approximately 9 percent. This method would require the construction of a concrete boat ramp-type structure with rails to set the logs at the water's edge via a log stacker or similar-type loader. Entry velocity will be controlled and therefore be under 3 feet per second.

Using the above entry system for logs, placing logs into the water will minimize the discharge of bark and surface run off in to the Aquatic ecosystem.

Surface run off into the aquatic system will be kept to a minimum by complying with Best Management Practices using filter strips, road sloping and periodic clean up of bark and woody debris (40 CFR 122.27 Silvicultural Point Sources; applicable to State NPDES programs, see 40 CFR 123.25).

The reconstruction of the LTF and sort/storage yard at Crab Bay is preferred to construction of the road over the pass to Oly Creek because of subsistence concerns from rural residents of both Sitka and Tenakee Springs. Rural residents from both communities expressed the view that the road over the pass should not be constructed connecting Tenakee Inlet with Hoonah Sound in comments to the DEIS. The same comments were echoed in subsistence hearings in the respective villages. Construction of the pass road is not practicable while meeting the needs of subsistence users.

## PROPOSED LTF: INBETWEEN CREEK

### Evaluation of Alternatives

*(i) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences*

**Description**

Proposed acres of tentatively suitable harvested under the Southeast Chichagof FEIS Preferred Alternative = 350 acres tributary to this LTF

Acres of tentatively suitable remaining after Southeast Chichagof FEIS = 2838 acres tributary to this LTF. Table 3-5 Southeast Chichagof FEIS.

**Alternatives to the Proposed LTF**

Road connection to Crab Bay LTF.

No action alternatives of not harvesting timber in the vicinity of Inbetween Creek.

Sub-alternatives at Inbetween Creek for transferring logs.

Low-angle slide. 2/
Beach Bundle lift off as previous permitted.2/

### Evaluation Between Alternatives:

**Inbetween Creek LTF**

Would not require the construction of 7.8 miles of road to connect with Crab Bay road system. Low timber volume coming out of this drainage makes this entry the most economical LTF. Haul distance, fuel consumption, and soil disturbance would be less than hauling to Crab Bay. Planned as a temporary LTF.

**Crab Bay LTF Instead of Inbetween Creek LTF:**

Would require the Construction of 7.8 miles (at a cost of approximately $1,000,000) of connection road without timber harvest. This is not in the preferred alternative.

Haul, fuel consumption , and cost would be higher hauling to Crab Bay.

Inbetween LTF would be a temporary LTF and would be removed after harvest. Crab Bay would be a permanent LTF.

*(ii) the proposed discharge will result in significant degradation of the aquatic ecosystem*

This site was previously a beach-bundle lift-off site (1985-86).

This site is shallow and logs will have to be stored in deeper water.

A 100-meter transect was run from tideline seaward revealing the following: The physical attributes of the site are characterized as very shallow (2.4 meters at the deepest) with pebble/ cobble bottom from the high tideline to 50 meters from shore giving away to sand/silt to the end of the transect. Flushing potential is moderate as evidenced by the presence of silt within the bottom composition ( see Appendix H, Dive Report).

An investigation of the exposed reef to the east of the transect indicated that it could be used as an avenue to deeper water which would allow woody debris to settle on less productive bottom habitat. The Forest Service plans to use this reef as the LTF site as recommended in the dive report (Appendix H, Dive Report). Using the reef would lead to deeper water and more favorable site . The reef site is the one preferred upon field investigation.

Deeper water will allow woody debris incidental to this operation to be deposited into the deeper less productive water (Appendix H, Dive Report).

Surface runoff into the aquatic system will be kept to a minimum by complying with BMPs, using filter strips, and periodic site cleanup of bark and other woody debris(40 CFR 122.27 Silviculture Point Sources; applicable to State NPEDES program , see 40 CFR 123.25).

*(iii) The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem*

Site would adapt to a low-angle slide off the reef and the facility will be removed when this entry is complete.
Rafting will take place in deeper water.

Surface run off into the aquatic system will be kept to a minimum by complying with Best Management Practices, using filter strips, and periodic site clean up of bark and other woody debris.(40 CFR 122.27 Silviculture Point Sources; applicable to State NPEDES program , see 40 CFR 123.25).

1 Verified by helicopter flight, aerial photo, and map. Beach road with full bench rock cuts anticipated.

2 Verified by field investigation. Southeast Chichagof FEIS.

3 Evaluated in 1978. West side of the Broad Creek drainage site shows broad intertidal area suggests limited feasibility. Sites proposed by APC 7/92 on the east side of both drainages. Investigations have not been made.

4 Subsurface investigation to determine engineering feasibility of sheet pile or pipe pile installation has not been made. Surface information suggests this is a likely possibility.

5 40 CFR 122.27 Silvicultural Point Sources; applicable to State NPDES programs, see 40 CFR123.25.