# ALASKA DEPARTMENT OF FISH AND GAME Habitat Division

### Denali Highway Reconnaissance - September 9-11, 1986

List of Streams Surveyed	Mile Post
Denali Clearwater Creek	MP 18.5 - STEVE
Rock Creek	MP 24.8
Unnamed Creek	MP 33.3
Crooked Creek	MP 47.7
Crooked Creek	MP 51.9
Clearwater Creek	MP 55.9
Unnamed Creek	MP 59.8
Unnamed Creek	MP 65.9
Unnamed Creek = PAPT CREEK?	MP 69.1 DEN OB(?) MY MP = 68.2
Unnamed Creek	MP 87.7 = DENO4
Unnamed Creek also be mp 89.9 =	MP 91.0 DENOZ(?) CHEZIC MILEAGE MY LOS SHOWS MP 92.0 IF THIS IS SOME PIRE
Unnamed Creek	MP 93.2 = CLIECK THIS LOCATION 30" R-CMP
Canyon Creek	MP 94.8 = BEIDGE
Unnamed Creek	MP 99.4 = CHECK THIS LOCATION = 72"CMP
Unnamed Creek	MP 103.6 = DENO1 72"
Unnamed Creek	MP 128.0 — STEVE

### **MEMORANDUM**

### State of Alaska

Mike Tinker

Environmental Coordinator

FILE NO:

DATE:

September 29, 1986 DEPT. OF

Department of Transportation & Public Facilities

FISH & GAME

TELEPHONE NO:

479-0881

FEB 1 6 2006

Alvin G. Ott Regional Supervisor Habitat Division Department of Fish and Game

SUBJECT:

Denali Highway Drainage Structure

Recon.

September 9-11, A. Townsend and K. Talbert conducted field reviews on drainage structures along the Denali Highway from milepost 0 to 104. Review sheets were completed for 15 streams either documented to have fish or suspected to have fish because of the habitat quality. This information is enclosed for your files.

Two small problems were encountered on this project. the primary camera used to document the drainage structure conditions and habitat qualities of the streams had a partial malfunction and numerous photos were ruined. A chip of film either broke off and interfered with the shutter or the second film roll contained a film fragment that fell free into the shutter. Second, both ADOT/PF Environmental Assessment maps and the ADF&G Alaska Sport Fishing Guide maps were insufficiently accurate relative to the occasional milepost markers to pinpoint actual stream locations. first problem cannot be fixed; however, the second can be remedied by both agencies updating their documents and by resigning the highway as each new project is completed.

Thank you for the assistance provided by Ms. Talbert. Talbert demonstrated a willingness to learn and proved herself to be an asset to your professional staff.

cc: K. Talbert

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Clearwater Creek	MP	55.9
Unnamed Creek	MP	59.8
Unnamed Creek	MP	65.9
Unnamed Creek	MP	69.1
Unnamed Creek	MP	87.7
Unnamed Creek	MP	91.0
Unnamed Creek	MP	93.2
Canyon Creek	MP	94.8
Unnamed Creek	MP	99.4
Unnamed Creek	MP	103.6
Unnamed Creek	MP	128.0

#### #1 - Denali Clearwater Creek

DATE: September 9, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Denali Clearwater Creek
STATION NUMBER (MILEPOST): Milepost 18.5
PHOTOGRAPHS: Roll #1 - Phote #'s 11A-14A

OBSERVATIONS: 2-72 inch diameter CMP's approx. 70 ft long

CMP OUTLET - Both perched 12 in., water 9 in. deep in CMP, plunge pool approx. 4 ft diameter at each pipe, rip rap scoured from both pipes.

CMP INLET - Approx. 12 in. drop (head), ponding upstream (pic 14).

FISH PASSAGE BARRIERS - Perched culverts 12 in. above pool surface

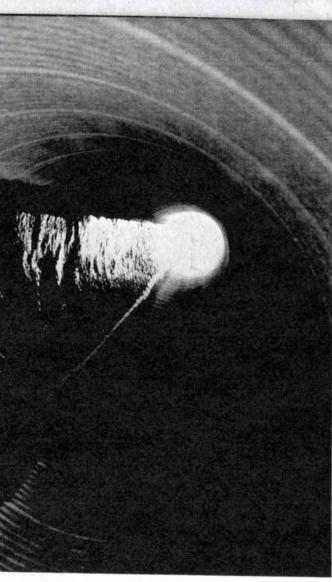
HISTORICAL DATA - MP 18.1 in ADF&G Alaska Sport Fishing Guide Arctic grayling listed.

#### RECOMMENDATIONS -

(SHORT TERM) - Construct outlet apron (rock) 12-15' square at each pipe and up into pipe 6-12 in. deep.

(LONG TERM) - Reset both pipes.

Arctic grayling observed at outlet of east pipe (approx. 9-10 in.) approx. 50% algae cover on gravel/cobble substrate, pool to riffle approx. 20-80%, willow bank cover with +50% bank overhang.





12 A

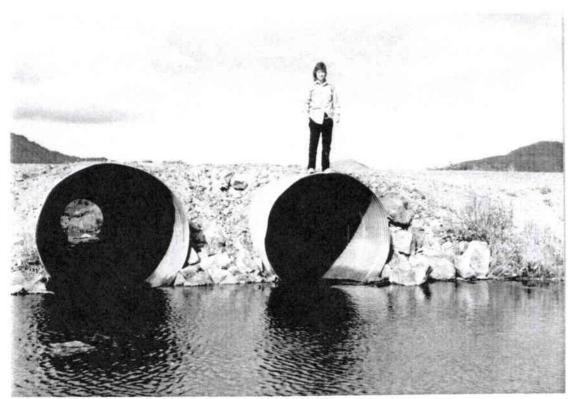
Denali Cleaswater Creek

MP 18.5

9-9-86

2-72" cmp's Side view of outlets

ne 18.5 9-9-86 Journal / Jalbert inside of comp



14 A

ANG VACHINAL

Alenali Clearwater Creek
MP 18.5
9-9-86
Townsend/Talbert
2-72" CMP's inlets

#### #2 - Rock Creek

DATE: September 9, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Rock Creek

STATION NUMBER (MILEPOST): Milepost 24.8 PHOTOGRAPHS: Roll #1 - Photo #'s 15A-17A

OBSERVATIONS: Flow 35-40 cfs est., cobble to boulder bottom - should not be culverted, dense willow bank cover. Bridge alignment good.

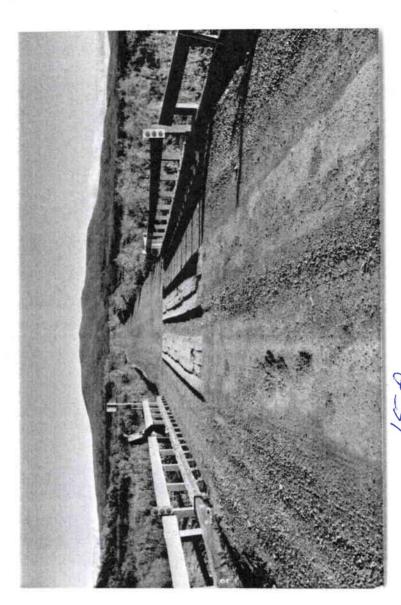
FISH PASSAGE BARRIERS - None observed

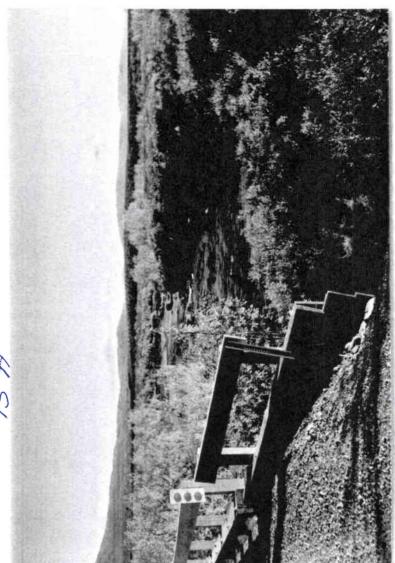
HISTORICAL DATA - Sport Fishing Guide MP 25.3 Arctic grayling

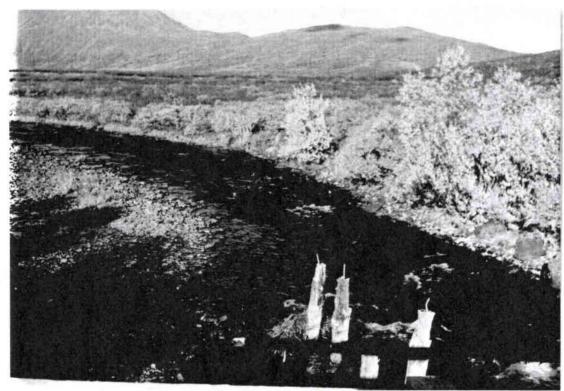
RECOMMENDATIONS -

SHORT TERM - None

LONG TERM - New bridge when required.







17A

Rock Creek MP 24.8 bridge Journsend/Jalbert 9-9-86

17A ROCK CREEK MP 24,8 upstream 9-9-86

16 A

Rock Creek

MP 24.8

Downstream from bridge

9-9-86

Downsend / Talbert

#### #3 - Unnamed Creek

DATE: September 9, 1986
FIELD OBSERVERS: Townsend and K. Talbert
STREAM NAME: Unnamed Creek Denali Hwy
STATION NUMBER (MILEPOST): Milepost 33.3

PHOTOGRAPHS: Role #1 - Photo #'s 18A-21A

OBSERVATIONS: 54" x 34" arch CMP

CMP OUTLET - Uptilted 1-2" no barrier, 50% bottom cover (gravel) in CMP.

CMP INLET - Uptilted 8-10" but no barrier.

FISH PASSAGE BARRIERS - None observed 100 yd. upstream nor 150 yds. downstream. Flow approx. ½ cfs. Slow, many pools, canopy cover over 10-15% of area observed. Cobble, sand, and mud bottom.

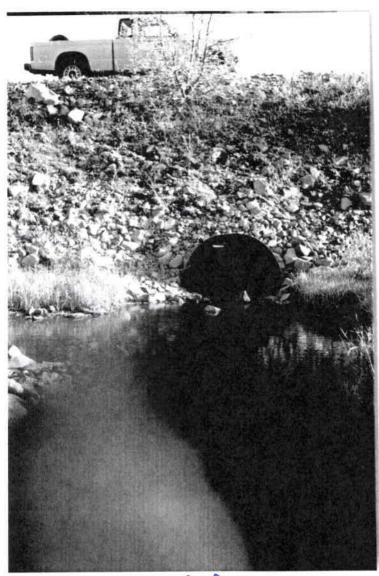
HISTORICAL DATA - No fish in Sport Fish Guide

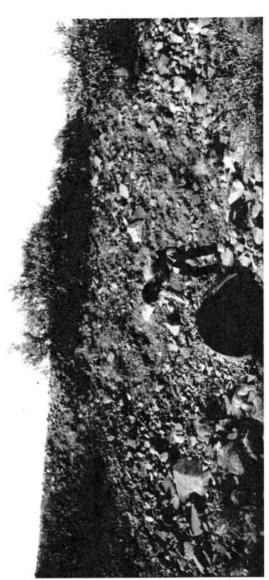
RECOMMENDATIONS -

SHORT TERM - None

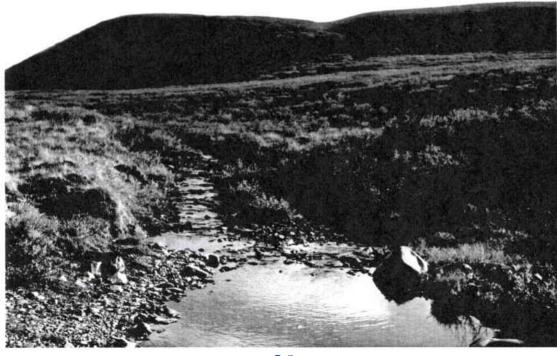
LONG TERM - Replace prior to road resurface.

Should have fish - good habitat - check in spring for Arctic grayling, Dept. of Hwys Gravel Pit Reserve No. (gone) Marker on east bank on upstream side of road.





18 A



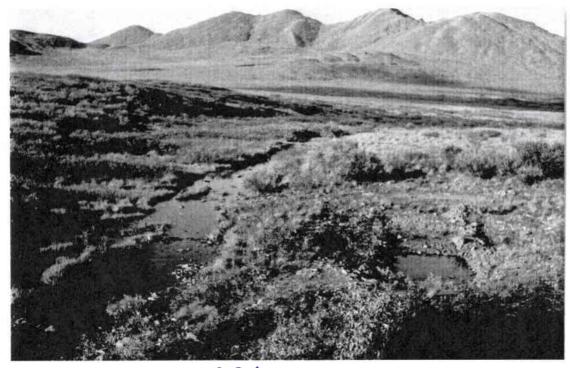
19A

Unnamed Creek
Denal: Huy MP 33.3
9-9-86
Journand/Jalbert
inter 34"x 54" arch comp

Unnamed Creek
Denali Huy MP 33.3

9-9-86
Donnard / Indbert
outlet 34" X54" arch cmp
and finger tip

19A Unnamed Geek Denali Hwy MP 33.3 9-9-86 Upstream from Road



20A

Denali Hwy MP 33.3 9-9-86 Downstream from road ANG VECHIAVE

#### #4 - Crooked Creek

DATA: September 10, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Crooked Creek

STATION NUMBER (MILEPOST): Milepost 47.7

PHOTOGRAPHS: Roll #1 - Photo #'s 22A-24A (Roll #2 - Photo

#'s 00, 0 and 1 didn't develop)

OBSERVATIONS: Culvert size 54" d x approx. 70' 1.

CMP OUTLET - 1/3 full, 5' deep x 20' diameter plunge pool, 12 + Arctic grayling up to 13". Gravel bottom covered with algae.

CMP INLET - Badly torn and bent, 18 in. fall into CMP, small woody trash collected on lip, approx. 4-5 cfs est.

FISH PASSAGE BARRIERS - CMP inlet (partial)

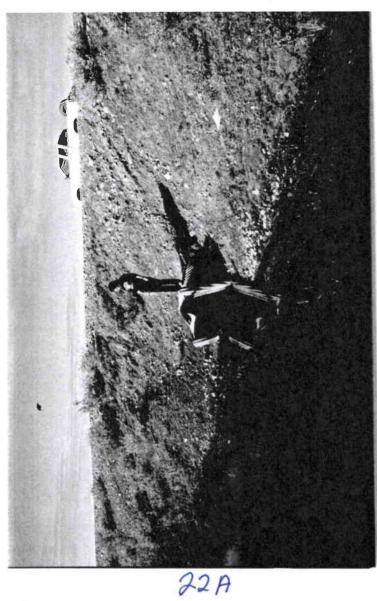
HISTORICAL DATA - Sport Fish Guide - Arctic grayling

RECOMMENDATIONS -

SHORT TERM - Replace 10' of inlet

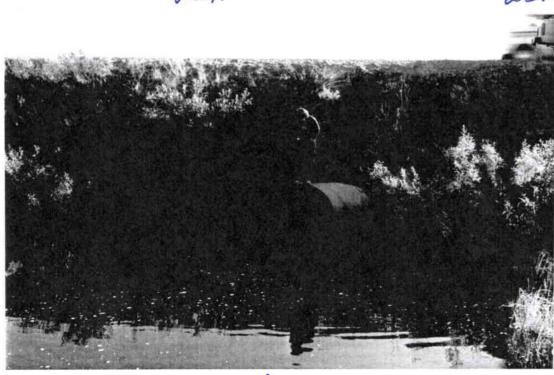
LONG TERM - Increase pipe size

No pullout at CMP - pullout ¼ W. Two moose in lake at 50 mile.









24A

Crooked Creek - Deneli Huy Mp 47.7

9-10-86 Sommen & Salbert 54" Comp inhet with cumpled edges

23A
Crooked Creek-Denal: Hury MP 47,7
9-10-86
Smorraend/Jelbert
54" CMP

inles with crumpled edges and collected debris

24A
CROOKED Creek MP 47.7
9-10-86
54" CMP
outlet & scoon pool

#### #5 - Crooked Creek

DATE: September 10, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Crooked Creek (Denali Hwy)

STATION NUMBER (MILEPOST): Milepost 51.9

PHOTOGRAPHS: Role #2 - Photo #'s 0, 00

OBSERVATIONS: High velocity 4%' water surface in MPCMP

CMP OUTLET - Set 2+' too high, 5-6' deep plunge pool, substrate = cobble with algae, pipe lip approx. 4" water under pool surface. Flow est. at 15+ cfs. Plunge pool 20' long x 15' wide x 5' deep. Water in pipe approx. 10-12"

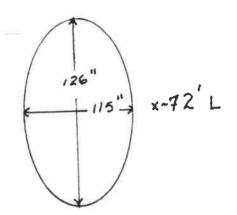
CMP INLET - Lip section upthrust several inches (5-6"?) about 12" hydraulic jump but little to no ponding.

FISH PASSAGE BARRIERS - Velocity barrier to juveniles (approx. 6 fps est.) fist size rocks flush through.

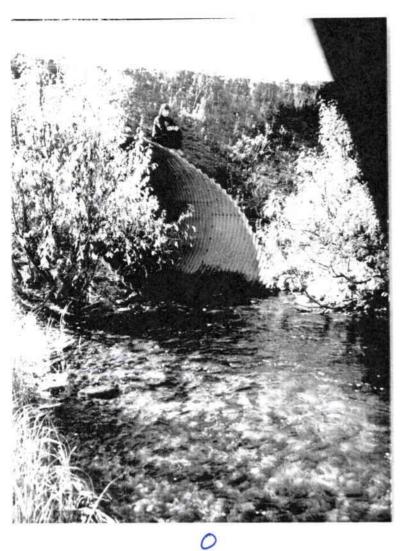
HISTORICAL DATA - n/a

RECOMMENDATIONS - Increase structure size with invert burial or bridge.

48" & 36" overflow pipes with thaw pipes at MP 52, no flow.



Camera malfunction resulted in loss of 4 pictures.





Crooked Creek - Denali Huy MP 51.9 9-10-86 Journamd/Jalbert 115"Wx 126"h elipse C.M. multiplate lip upthrust (ice jacking??)

Crooked Creek - Denali Hury MP 51.5
9-10-86
Journsend/Jalbert
Stream channel above culvert

#### #6 - Clearwater Creek

DATE: September 10, 1986
FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Clearwater Creek (Denali Hwy)

STATION NUMBER (MILEPOST): Milepost 55.9

PHOTOGRAPHS: Role #2 - Photo #'s OA & 1A

OBSERVATIONS: Cobble/gravel substrate

CMP OUTLET - n/a

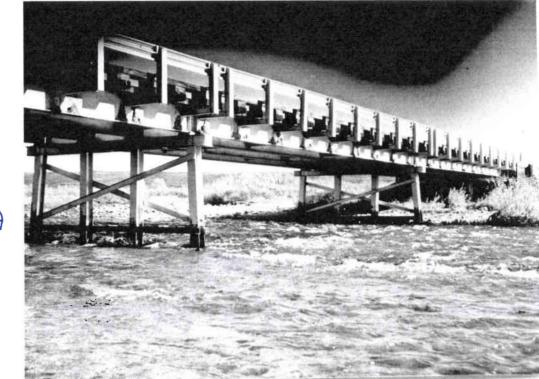
CMP INLET - n/a

FISH PASSAGE BARRIERS - n/a

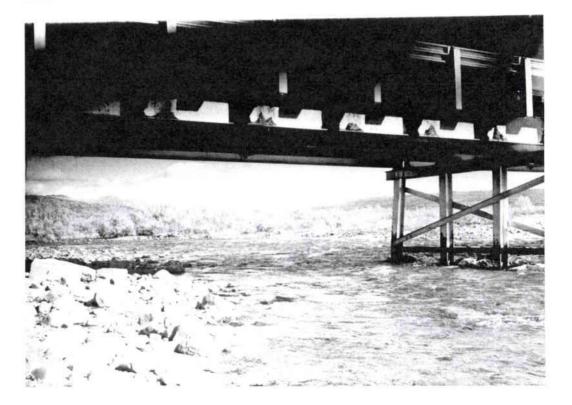
HISTORICAL DATA - Sport Fish Guide MP 59

RECOMMENDATIONS - n/a

Two steel piers (H-beam) in channel single lane bridge, good alignment, good floodplain spanning. Pullout with restroom present on west bank.



OA



IA

OA Clearwater Cr. Denali Hwy MP 55.9 9-10-86 Downserd/Jalbert View toward NE

Clearwater Cr. - Denali Hory MP 55.9 9-10-86 Journsend/Jalbert View toward NNE

#### #7 - Denali Hwy

DATE: September 10, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Denali Highway

STATION NUMBER (MILEPOST): Milepost 59.8 PHOTOGRAPHS: Role #2 - Photo #'s 3, 4, 6

**OBSERVATIONS:** 

CMP OUTLET - Good burial depth, outlet pool gravel with cobble/algae line thru water approx. 2' deep (pic 6)

CMP INLET - Cobbles in inlet, lip slightly upthrust, lip 12" below streambed, gravel-cobble substrate at inlet, approx. 5 cfs.

FISH PASSAGE BARRIERS - Inlet partial, beaver pond 100' above inlet (double level-each about 3' high) (pic 3, 4).

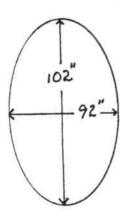
HISTORICAL DATA - Old Material Site on downstream west bank as camping and stream access.

#### RECOMMENDATIONS -

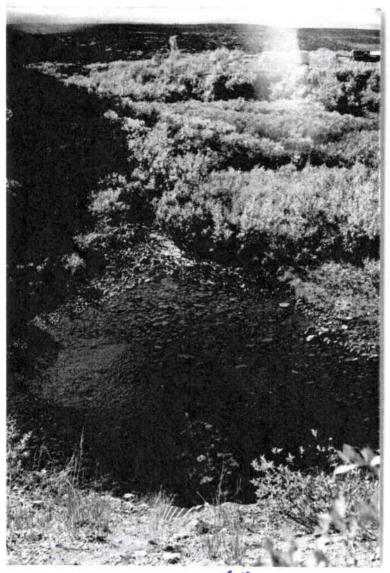
SHORT TERM - clean out inlet

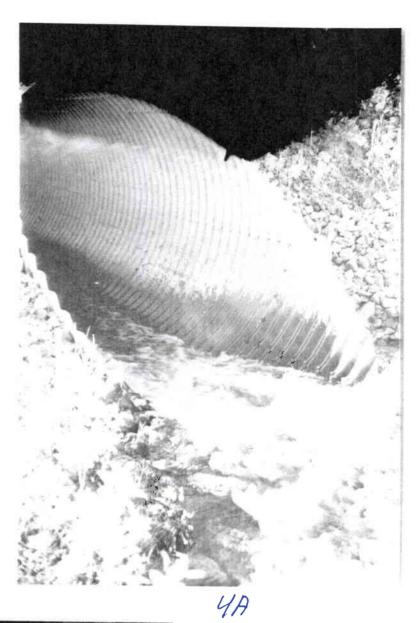
LONG TERM - reset with deeper burial, may require larger pipe

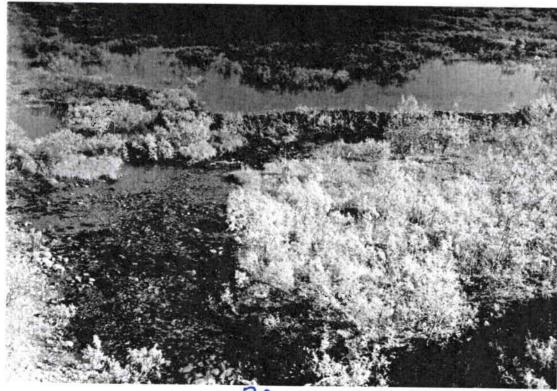
MPCMP about 100' long



Camera malfunction resulted in photo loss.







31

3A Unnamed Ce MP 59,8 9-10-86 upstream view from cmp

> Unnamed a. - Dereli they Mp 59.8 9-10-86 Downsond/ Salbert Culvert inlet

Unamed Cr. Develo Huy Mp 59.8 9-10-86 Jamesons / Jalbert Jourstheam view Hom road

6. SA

#### #8 - Denali Hwy

DATE: September 10, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Denali Highway

STATION NUMBER (MILEPOST): Milepost 65.9

PHOTOGRAPHS: Roll #2 - Photo #'s 7-9

**OBSERVATIONS:** 

CMP OUTLET - Set at streambed level (culvert set flatter slope than stream slope)

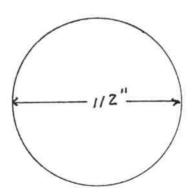
CMP INLET - Cobble/boulder stepped, steep mountain stream 18" below streambed, slightly upthrust.

FISH PASSAGE BARRIERS - Velocity (approx. 5 fps) in pipe and may be in natural stream (2-3' steps over boulders).

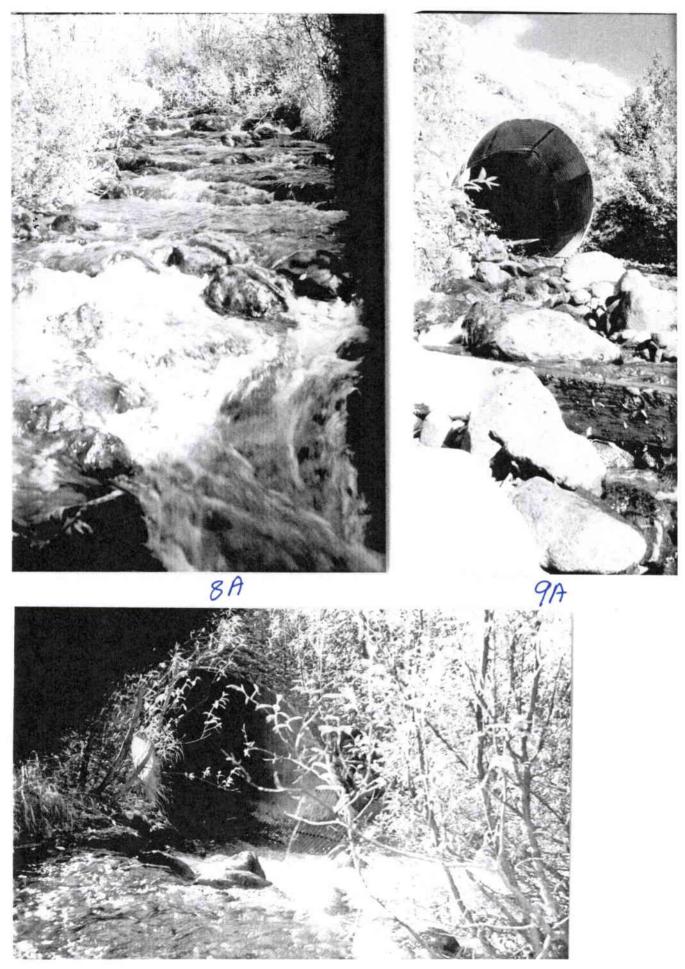
HISTORICAL DATA - n/a

RECOMMENDATIONS - n/a

No fish observed - D.V. possible RMPCMP approx. 100' long



~ 20° skew to road



7A

Unramed Cr. - Derali Hoy Mp 65.9 9-10-86 View From cubert upstram Immand / Jalbert

9 A Unmanuel Cr. - Deral: Huy MF 65.9 9-10-86 Calvert outless Sourmand / Talless

> 7A Unnamed CK MP65.9 9-10-86 cmp inlet

#### #9 - Denali Hwy

DATE: September 10, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Denali Highway

STATION NUMBER (MILEPOST): Milepost 69.1

PHOTOGRAPHS: Roll #2 - Photo #'s 13, 14, 14A

OBSERVATIONS: Alder lined banks

CMP OUTLET - Perched approx. 14 in above pool surface, scour pool 4+' deep x 12' wide x 12' long.

CMP INLET - Set at streambed - cobble to boulders.

FISH PASSAGE BARRIERS - Culvert at about 3-4% grade (est.)

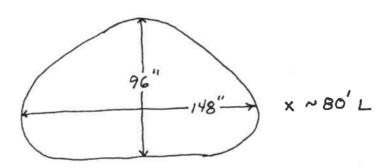
HISTORICAL DATA - n/a

#### RECOMMENDATIONS -

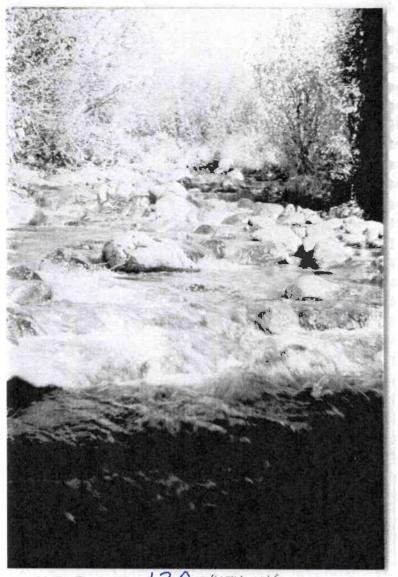
SHORT TERM - install angular 100# + rip rap apron if fish documented

LONG TERM - n/a

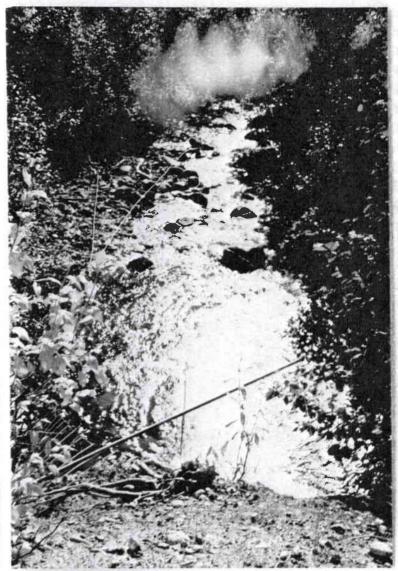
Steep mountain stream, D.V. very possible Thaw pipes (3) washed out (1) still in place



Camera malfunction resulted in loss of 4 photos.







14A VIEW DA



cmp outlet

13 Unnamed Cr. - Denali Hwy Mp 69.1 9-10-86 View upstream from inlet Downsend/Jalbert

Unnamed Cr-Denali Hwy Mp 69.1 9-10-86

View downstream from above outlet

Journand / Talbert

#### #10 - Denali Hwy

DATE: September 10, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Denali Highway

STATION NUMBER (MILEPOST): Milepost 87.7 PHOTOGRAPHS: Roll #2 - Photo #'s 17-19

OBSERVATIOS: Two CMP's

CMP OUTLET - Both perched approx. 5 ft, cobble/gravel scoured away from boulders, boulder jumble 20' out from outlets then 3' drop to creek bed. CMP's 2-3' above boulders.

CMP INLET - Cobble build-up 12-15" in front of CMP (left) 15-18" (right), 7-10 cfs left, 2-3 cfs right

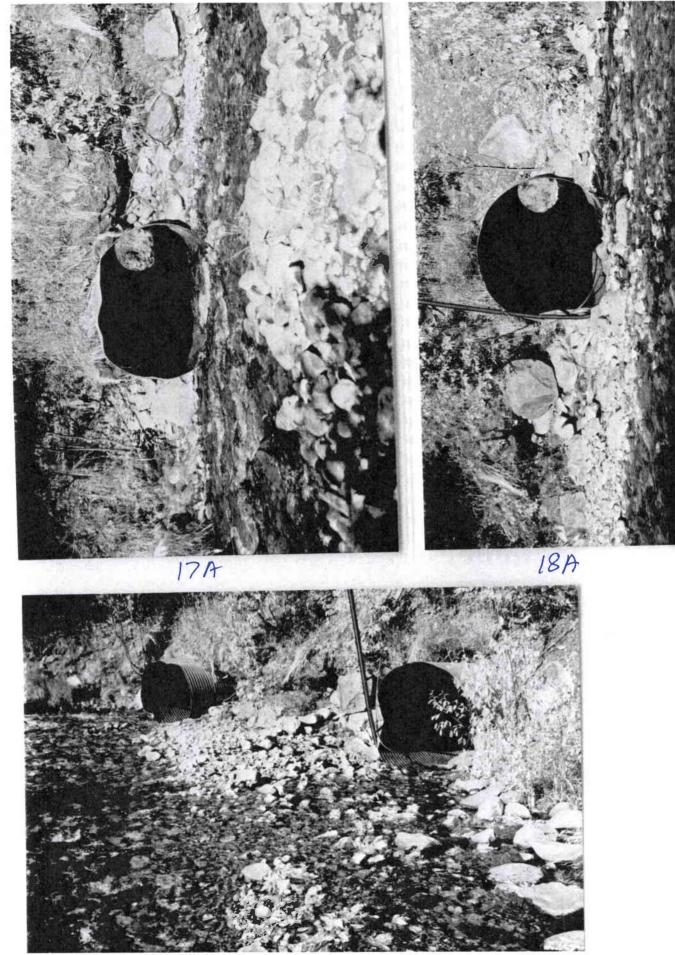
FISH PASSAGE BARRIERS - CMP outlets and boulder pile and inlets

HISTORICAL DATA - n/a

RECOMMENDATIONS - Steep stream that drops 200'+ feet to Susitna in approx. 2 miles.

SHORT TERM - No cure

LONG TERM - bridge



19A cmp inlets

Unnamed Cr. Denali Huy mp 87.7 9-10-86 Left culvert inlet Journal / Jalbert

18A

Unnamed Cr. - Denali Hwy Mp 87.7 9-10-86 Right Culvert inlet Joursend / Talbert

# #11 - Denali Hwy

DATE: September 11, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Denali Highway

STATION NUMBER (MILEPOST): Milepost 91

PHOTOGRAPHS: Roll #2 - Photo #'s 20-23 and Roll #3 - Photo

# 0A

OBSERVATIONS: Approx. 5-7 cfs, gravel-cobble with 10%

boulders

CMP OUTLET - ½ submerged, scour pool 6' wide x 10' long x 2' deep, outwash riffle passable. Overflow approx. 10' above serviceable CMP.

CMP INLET - First 10-12' CMPA then connects to RCMP causing approx. 15" fall inside of pipe.

FISH PASSAGE BARRIERS - Numerous debris (woody) and boulder steps along & mi downstream reach likely restrict juvenile Arctic grayling. Inlet first 10-12' of pipe barrier to all fish.

HISTORICAL DATA - Old installation with old repair to inlet, thaw pipe in place.

#### RECOMMENDATIONS -

SHORT TERM - none

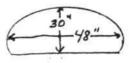
LONG TERM - replace with larger culvert

Less than ½ mile of fish habitat upstream of road but may flow from pond.

Heavy willow/alder bank cover, 2 channel splits in first ½ mile below road, swift mountain stream.

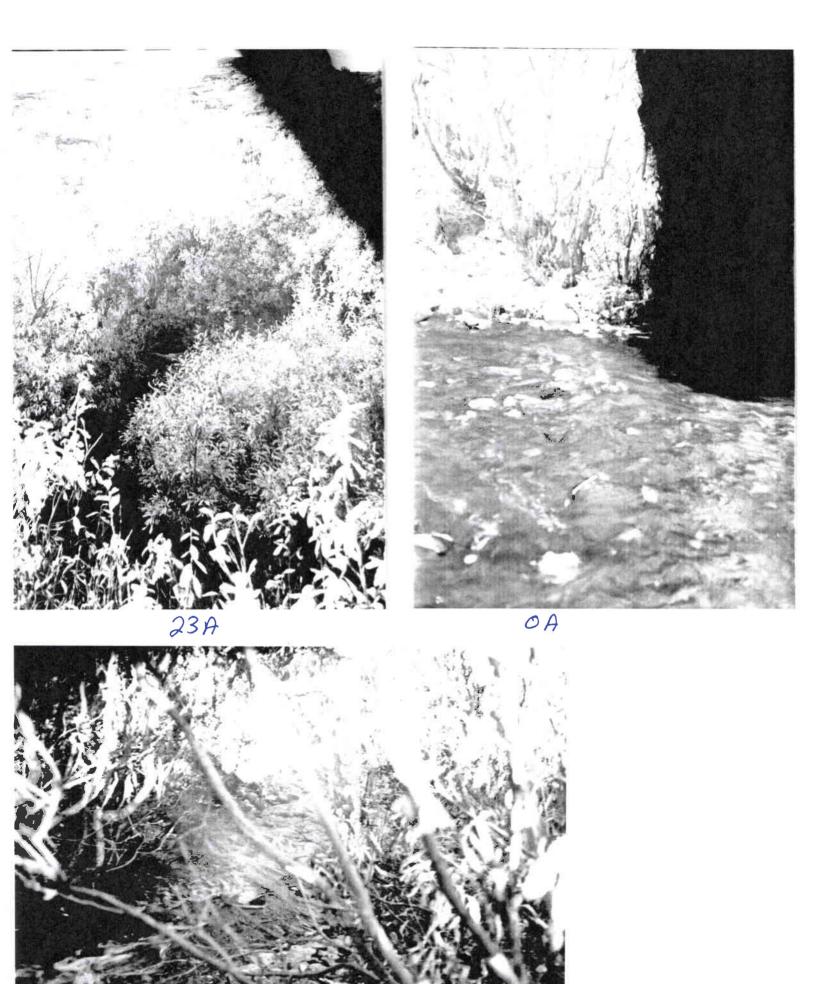


outlet



inlet first 10

Camera malfunction resulted in the loss of 4 photos.



22A VIEW downstream

Unnamed a - Densli Hwy Mp 91 9-11-86 View upstream from road Joursenl/Jalbert

oΑ

Unnamed Cr. Deneli Hwy Mp 91

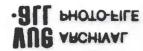
9-11-86 inlet w/film Chip obstructing abutter

Downsand / Jalbert



20A

Unnamed Cr - Denali Hury Mp 91 9-11-86 Culvert outlet Joursona/Jalbert



### #12 - Denali Hwy

DATE: September 11, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Denali Highway

STATION NUMBER (MILEPOST): Milepost 93.2 PHOTOGRAPHS: Roll #3 - Photo #'s 2, 3, 5

OBSERVATIONS: 2-3 cfs, more than 1/2 mile of stream above

road, thaw pipe in place.

CMP OUTLET - Perched 4-5', plunge pool 8' long x 6' wide x  $2\frac{1}{3}$ ' deep, cobble-gravel bottom - not overly swift stream (medium velocity mountain stream).

CMP INLET - Up thrust 8-10", cobble-boulder, low step, heavily canopied over with alder and willow. First 15' of CMP steep and fast.

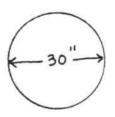
FISH PASSAGE BARRIERS - Inlet velocity first 15', outlet perched.

HISTORICAL DATA - n/a

RECOMMENDATIONS -

SHORT TERM - no fix feasible (replace)

LONG TERM - replace with larger CMP







OUTLET



3A view downstream below cmp

2A Unnamed Cr-Denali Kwy Mp 93.2 9-11-86 culvert inlet Loursend / Jalbert

SA
Unnamed Cr. - Denali Hwy Mp 93.2
9-11-86
Culvert outlet
Journsend / Jalbert

### #13 - Denali Hwy New Bridge

DATE: September 11, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Canyon Creek

STATION NUMBER (MILEPOST): Milepost 94.8

PHOTOGRAPHS: Roll #3 - Photo #'s 8-10

OBSERVATIONS: Poor bank stabilitation, good channel spanning by new bridge - no apparent channel disturbance except for minor rip rap encroachment on west bank, poor revegetation (just coming up - late seeding?)

CMP OUTLET - n/a

CMP INLET - n/a

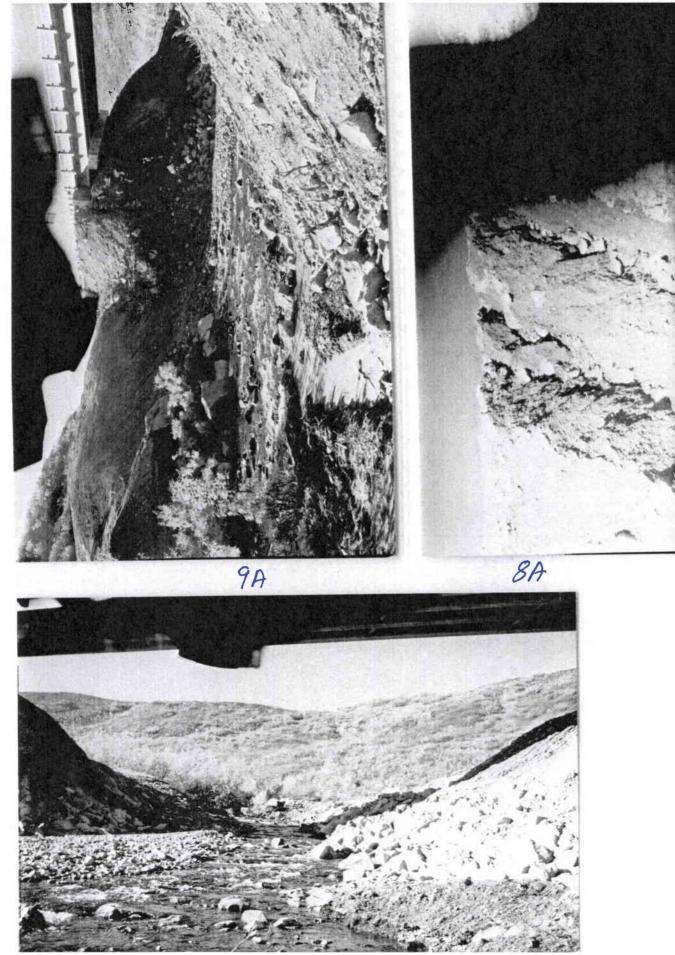
FISH PASSAGE BARRIERS - n/a

HISTORICAL DATA - n/a

RECOMMENDATIONS -

SHORT TERM - armor base of waste material and construct catch basin for sediment. Redo seeding.

LONG TERM - None at present.



10A view upstream under brodge

Canyon Creek - Denali Hovy Mep 94.8
9-11-86
View from base of waste area -> upstrm
note sediment channel in dozer track
directly to creek.

Journal / Dalbert

8A

Canyon Cr - Denali Hay M94.8 9-11-86

Downsend/Salbert

### #14 - Denali Hwy

DATE: September 11, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Denali Highway

STATION NUMBER (MILEPOST): Milepost 99.4 PHOTOGRAPHS: Roll #3 - Photo #'s 12, 13, 17

OBSERVATIONS: 6' alum. CMP west side, 60" steel CMP east

side.

CMP OUTLET - Both perched 1'+ above water surface, both with 15'diameter 3-4' deep scour pools.

CMP INLET - West pipe 6" below stream bed with boulder armor on sides, gravel stream bed (2 cfs) appears to be off-channel. East pipe (20' seperation) in channel, set 12" deep, approx. 5 cfs with boulder side armor-gravel bottom-pipes bare inside.

FISH PASSAGE BARRIERS - outlets perched.

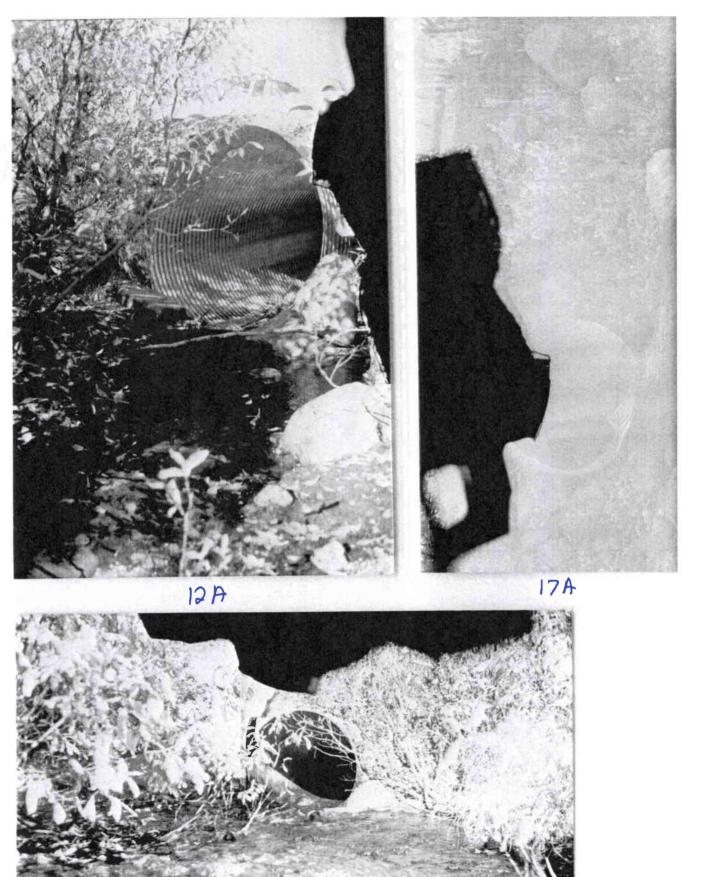
HISTORICAL DATA - n/a

RECOMMENDATIONS -

SHORT TERM - outlet aprons

LONG TERM - much larger culverts with 20% buried

Very good fish habitat - high potential



13A E cmp inlet

Unnamed Cr. - Denali Hwy Mp 99. 4 9-11-86 W. Culvert inlet Downsend/Jalbert

17 A

Unnamed Cr. - Denali Hwy Mp 99.4 9-11-86 W. culvert outlet Downsend / Jalbert

## #15 - Denali Hwy

DATE: September 11, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Denali Highway

STATION NUMBER (MILEPOST): Milepost 103.6 PHOTOGRAPHS: Roll #3 - Photo #'s 19-22

OBSERVATIONS: Grassy/sedge meadow stream approx. 5 cfs.

CMP OUTLET - Beaver debris splits channel; pipe set at stream bed, water approx. 6" deep in pipe.

CMP INLET - Buried approx. 6", deep pools short riffles upstream, filamentous green algae abundant. Old shoofly road never removed - beaver dam across eroded channel through shoofly. New alum end added to old steel CMP.

FISH PASSAGE BARRIERS - Beaver dam 100' upstream at low flow.

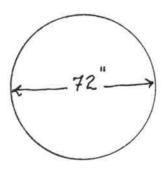
HISTORICAL DATA - n/a

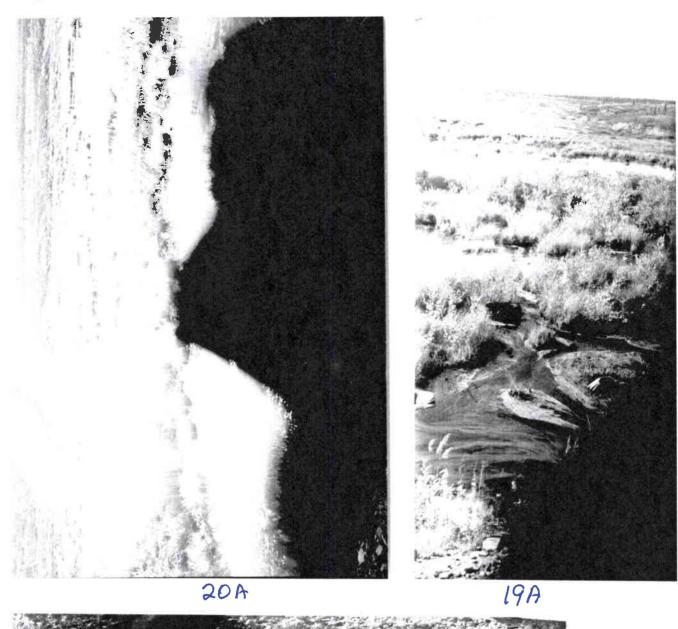
RECOMMENDATIONS -

SHORT TERM - n/a

LONG TERM - remove old shoofly road, culvert scraps, install larger CMP.

Old pipe pieces scattered about below road indicate previous washout of CMP.





21A cmp outlet

Elmanned Creek - Denali Hwy mp 103.6 9-11-86

Upstream view from road (film Chip black spt)

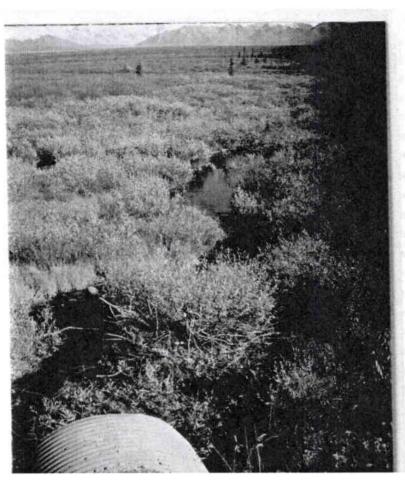
19 A

Unnamed Cr. - Denali Hory MP 103.6

9-11-86

Upstream

Inonsend/ Talbert



22 A

22A Unnamed Cr. - Densli Hwy Mp 103.6 9-11-86 Downstream Journal / Dalbert

## #16 - Denali Hwy

DATE: September 11, 1986

FIELD OBSERVERS: Townsend and K. Talbert

STREAM NAME: Fish Creek

STATION NUMBER (MILEPOST): Milepost 128

PHOTOGRAPHS: Roll #3 - Photo # 23

OBSERVATIONS: Streambed substrate extends through both

pipes, thaw pipes in place.

CMP OUTLET - Both excellent, buried approx. 3'.

CMP INLET - Both excellent, buried approx. 3'.

FISH PASSAGE BARRIERS - None

HISTORICAL DATA - Old bridge replaced by 2-14' MPCMPs.

RECOMMENDATIONS - None

SHORT OR LONG TERM - old construction shoofly removal

#### MADE IN U.S.A.



23A

Fish Cr. Densei Hwy mp 128 9-11-86 Downsesod/Jalbert