Alaska Department of Environmental Conservation

Watershed Management Unit

Waterbody Inspection and Monitoring Report

Waterbody / Watershed: Hammer Slough Date & Time: **March 14, 1996 . 9:00 am through 4:00 pm.**

Conditions: Heavy rain all day and previous night; high flow event; temp approx. 40 degrees

Inspector: D. Redburn and E. Decker (DEC), Ken Thynes (City of Petersburg); Ken Hagerman (DOT); Brian Lynch (ADF&G); Leo Luczak - afternoon (City of Petersburg)

Impaired / 303(d) / Suspected / Water of Concern (Circle appropriate water category)

Segment Inspected / GPS Location (if available): Headwaters down to City shop location; headwater tributaries of Hammer Slough, including East, West, and other tributaries to mainstem

Parameters of Concern: Turbidity, sediment as primary parameters; petroleum hydrocarbons as secondary parameter

Purpose of Inspection: Walk the Slough to comprehensively evaluate water quality status through 1) verifying any sources of sediment input; 2) verify any problems that needed to be corrected at the source, 3) reach consensus on the problems and agree on the solution to them and the responsible party for the solutions; 4) document commitments in writing. Information collected and commitments made to correct sources of WQ problems would be used to assist DEC in the determination of whether or not to continue listing Hammer Slough on the Section 303(d) list. This determination must be made by April 1, 1996.

Monitoring Data Collected: 1) Duplicate turbidity measurements at the following stations: gravel pit; sump below gravel pit; feeder flows off hillside from City side of gravel pit; beaver pond at culvert on north side of airport runway (West fork); control site at windsock location on north side of runway (called middle West Fork); mainstem of Slough 200 feet downstream of City Shop; culvert outlet to Hammer Slough adjacent to City Shop and control fork immediately above the confluence with the "culvert outlet" (West fork) flow by the City Shop.

See attached map for station locations.

Photographs taken of major sources and general condition of waters.

Visual Observations: See attached report for details. Summary conditions are high flow event. natural turbidity in the range of 28 to 35 NTUs. Natural blue clay deposits along some portions of Slough contribute to elevated turbidity levels. Runoff from gravel pit operation, hillside erosion , and street runoff contribute to slightly elevated levels of turbidity and need to be addressed through BMPS that were agreed to on-site. Worst case period observed with high rains; turbidity levels 2 to 3 times higher than control as measured at the control fork and culvert outlet adjacent to City Shop.

Second day (clear, no rain) showed little flow from gravel pit and emphasized the intermittent nature of the headwater regime feeding the mainstem of Hammer Slough. For example, observations from the airport runway showed little ponding or flow on the north side of the runway which, on the previous day, experienced high flow.

Reference is made to attached ADF&G and City of Petersburg reports on the inspection.

Recommended Actions: 1) Receive written commitments from City of Petersburg, DOT/PF, ADF&G on consensus observations and near-term efforts to controls sources of sediment/turbidity and petroleum hydrocarbons into Hammer Slough so that water quality standards are achieved. 2) Primary controls to be completed and verified by April 1. 3) Followup visit recommended in spring to verify that controls are effective in meeting water quality standards.

Recommend delisting from 303(d) list with completion of 1) and 2) above.

DETAILED REPORT OF MONITORING DATA AND OBSERVATIONS OF HAMMER SLOUGH WATER QUALITY

D. Redburn

March 13 Debriefing

Met at Leo Luczak's office to debrief on borrow pit operations. City operates ½ of pit approx. 2 months of the year starting in May; DOT operates the other half on an as-needed basis for contract work. Pit was not being worked during our field visit. City expansion of the pit is planned in the future; 404 permit is required including encapsulating the site and having a drainage plan for diverting and treating runoff. Eli Lucas was not aware of any stipulations placed on the current city permit for operations.

A BMP discussed was to divert runoff into muskeg areas to act as a sediment/turbidity filter and to employ settling basins or ponds to remove heavier fractions.

Plan is to work from gravel pit down to mainstem of Hammer Slough.

Bruce Jones provided copies of turbidity, color, and settleable solids data taken adjacent to his home from mid part of Hammer Slough at low tide.

March 14

Reconvene at Leo L. Office at 8:30 am. Steady and often heavy rain during day. Field party in morning includes Ken Hagerman, Brian Lynch, Ken Thynes, Eric Decker and Doug Redburn. Afternoon group included Ken H., Doug R., Eric D. and Leo Luczak.

Access road to quarry site (adjacent to airport runway) is mushy, muddy and eroding. Little use of road is made until May. Maintenance to control runoff of sediment is recommended during periods of high use.

Sump at gravel pit site received turbid water from fines pile and overburden on cliff overlooking the pit on the state side. Sump is effective at removing heavy fractions but turbidity still moderately high downstream. City crews regularly maintain the settling ponds by removing sediments. Water levels in sump are variable and often not enough water is present to help with dust control on site.

Hay bales are employed at the base of the sump area once operations begin; during this inspection, one bale was in place, left from previous season. Wastewater below this area are diverted through muskeg.

City side of borrow pit has some leaked hydraulic fluid at the rock crusher site which was

flowing across the road into the ditch. Slight visable sheen from petroleum products observed.

Water flowing from quarry rock face on city side into the drainage ditch on state side was observed to have low turbidity. Major turbidity sources were "fines" pile and leaching overburden on the DOT side of the pit. Controls discussed as in B. Lynch report (attached).

Midway down the quarry access road to the airport runway. Truck storage area for DOT contractor (Norpac Electric? Miller?) that included silt disposed on the side of road as a by-product of asphalt production. Some silt eroding into creek; most of it draining to muskeg. Solid waste dumped at site - needs to be cleaned up by contractor under directive from DOT.

Airport runway location. Hay bale maintained with screens on main culvert draining to East Fork of Hammer Slough. Turbidity measurements taken in afternoon reported below. Ken Hagerman confirmed that little sand and gravel used now for runway maintenance now that urea is used. Estimates approx. 8 cyds per winter season. North Fork of Hammer Slough below airport runway had some snow disposal adjacent to it. DOT maintains the road and agreed to BMP to dispose of snow by forested fringe away from creek.

Accessed Hammer Slough North Fork through residential area (Fifth and Kiseno) to observe flow and turbidity. Estimated turdibity at 50 to 100 NTU; this was verified in afternoon through direct measurement at culvert point adjacent to City Shop.

City of Petersburg Public Works area. Sloughing of soils from banks above the culvert was observed; application of grass seed to stabilize exposed soil and reduce sedimentation was agreed to by City staff. Natural revegetation taking root in a portion of the sloping banks.

Debriefed at City offices. Improved housekeeping practices (petroleum leakage control, properly dispose of contaminated gravel, placing tarp on fines pile or moving it to higher ground, seeding the exposed soils on top of the cliff overlooked the DOT side of the quarry) were discussed and agreed to. Followup letters to be written by City of Petersburg, Fish and Game, and DOT.

City agreed to clean up hydraulic fluid within 48 hours and control further leakage and report results to DEC.

For DOT, Ken will write a short letter to DEC by March 25 confirming low usage of sand and gravel on airport runway and agreement to use the dedicated snow disposal site on North Fork mentioned above. For accomplishing the controls on the contractor at the quarry and dealing with those sources, Joe Scribner must direct the construction chief to take the action, who in turn directs the project engineer to ensure site cleanup. Bill Ballard and Van Sundberg of DOT are Juneau contacts. City of Petersburg letter will copy DOT, emphasizing the joint responsibility they have to ensure the quarry operations meet water quality standards.

Consensus was reached that maintenance of the road adjacent to the airport runway is necessary during normal usage periods. City will share this responsibility with the state beginning with the normal construction season. FAA is planning on paving 500 ft of the road for dust control, but

no more. Capping with road with clean shot rock (6 " thick over 500 feet) would cost $40,000 (assuming $20/yard and 200 yards of material) and was ruled out as uneconomical.

Turbidity measurements taken in afternoon of March 14. Results are below, by location.

1. Existing Rock Quarry Site

Brian Lynch report gives good overview of site observations at this location. Results of duplicate turbidity measurements (Hach 2100 Turbidimeter) taken at several locations at this site are as follows:

* (Station 1) State side of rock pit, ditch runoff adjacent to pile of fine material and face of pit:

242 NTU, 237 NTU

*(Station 2) Sheet flow drainage from City side of quarry upland from flow into sump area:

43.2 NTU, 35.6 NTU

*(Station 3) Directly below gravel pit sump area:

121 NTU, 106 NTU

2. Airport Runway and tributaries to Hammer Slough

*(Station 4) "Beaver Pond" location on uphill side of airport runway:

55.9 NTU, 66.2 NTU

*(Station 5) Reference/control location (called middle West Fork) on uphill side of airport runway:

28.5 NTU, 35 NTU

3. City Shop location/mainstem of Hammer Slough

*(Station 6) Mainstem of Hammer Slough 200 feet below City Shop:

65.7, 62.9 NTUs

*(Station 7) Main "control" fork entering Slough just above City Shop:

27.4, 28.2 NTUs

*(Station 8) Mouth of main culvert discharging to Slough at City Shop location:

86.4, 92.4 NTUs

*Small feeder rivulet entering Hammer Slough, draining natural blue clay deposit across from Leo's office:

225 NTU, 205 NTU

Note: Turbidity above the blue clay deposit was less than 10 NTUs

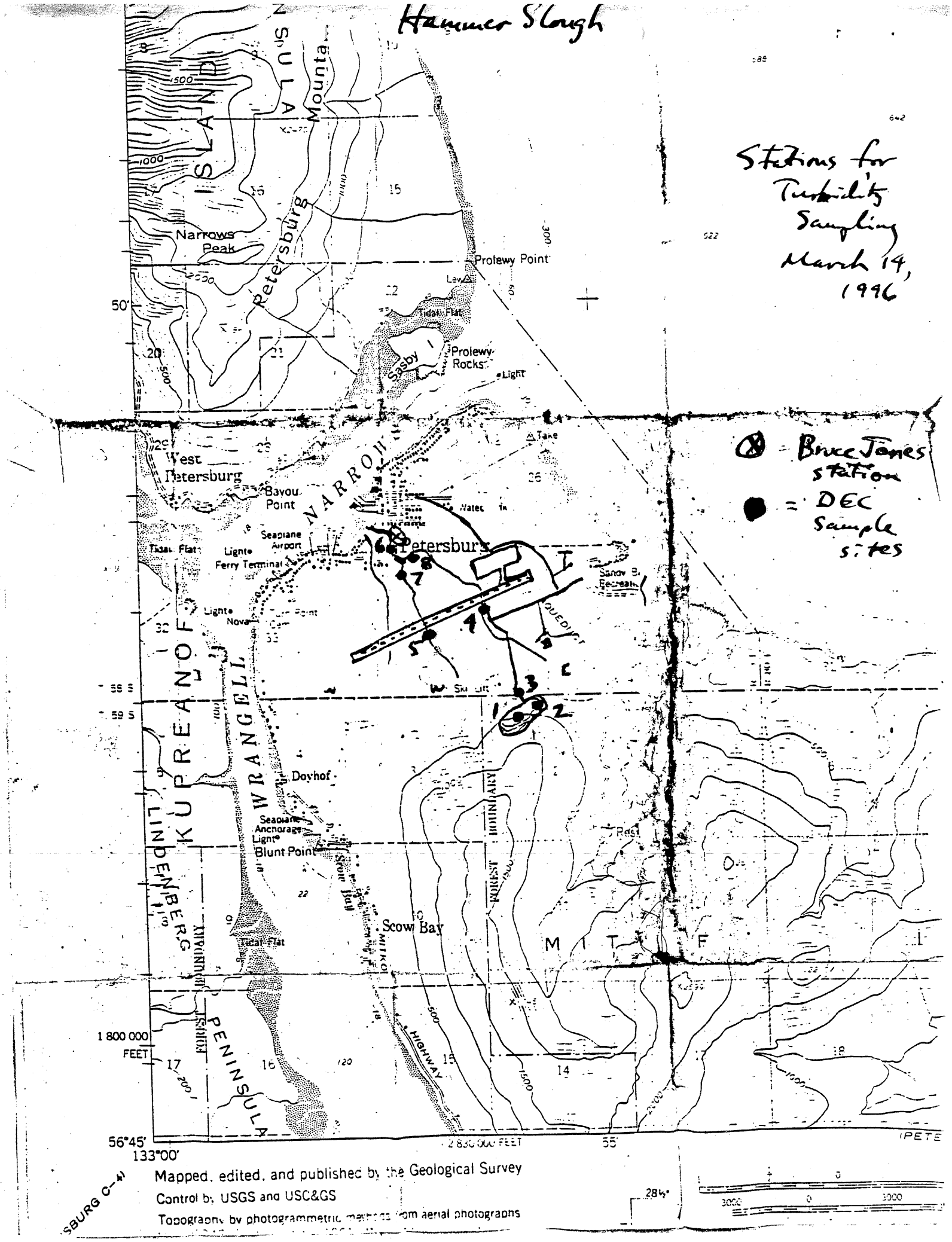
Bruce Jones data for turbidity, color, temperature, settleable solids, and TSS collected during February 1996 are attached. Station noted on Figure 1.

Figure 1 attached.

CONCLUSION

The slightly elevated levels of turbidity over background levels are controllable through implementation of the BMPs listed above and prudent followup by the City and DOT. The difference in turbidity readings was at its highest due to the high flow event of March 14 and the frozen soils; during normal flows of Hammer Slough, this difference is expected to be slight. For example, Bruce Jones data taken at a station in front of his home during February 1996 show turbidity levels ranging from 18 to 24 NTUs, with no measureable settleable solids exceeding the MDL with the exception of February 7, with a reading of 0.03 ml/l.

Visual observations on the airport runway on March 15 (from the airplane) showed little flow on the upland side of the airport runway in comparision to the previous day. March 15 had no rain, with slight overcast. This day-to-day difference in flow was striking and the consequent effects on the water quality of the mainstem of Hammer Slough from the gravel pit were significantly moderated and reduced on March 15.


Hammer Slough
Stations for Turbidity Sampling March 14, 1996
⊗ = Bruce Jones station
● = DEC Sample sites
Narrows Peak
Petersburg Mountain
Prolewy Point
Tidal Flat
Prolewy Rocks
Light
Sasby I
West Petersburg
Bayou Point
Seaplane Airport
Ferry Terminal
Petersburg
Sandy Beach Recreation
Nova
Doyhof
Seaplane Anchorage
Blunt Point
Scow Bay
Rest
KUPREANOF
LINDENBERG PENINSULA
WRANGELL
FOREST BOUNDARY
HIGHWAY
M I T F
1 800 000 FEET
56°45'
133°00'
55'
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs

Petersburg Water Wastewater Utility
Laboratory Report
Hammers Slough Water Quality
February 1996

DATE	PRECIP	TEMP	S.S.	T.S.S.	TURBIDITY	COLOR
	Inches	F°	ml/L	mg/L	N.T.U.	
1						
2						
3						
4						
5						
6						
7	0.30	34	0.03	9.6667		
8	0.60	32	0.01	8.3300		
9	0.10	29	0.00	2.0000		
10						
11						
12	0.30	0.37	0.00	6.0000		
13	0.95	38	0.00	7.0000		
14	0.00	33	0.00	4.0000		
15	0.00	39	0.00	4.3300		
16						
17						
18						
19						
20	1.50	28	0.00		24	130
21	0.00	18	0.00		21	115
22	1.00	27	0.00		20	108
23	2.50	27	0.00		18	99
24						
25						
26						
27						
28						
29						

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

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PETERSBURG, AK 99833
PHONE: (907) 772-3801
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DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES MANAGEMENT AND DEVELOPMENT

March 15, 1996

Eric Decker
Dept. of Environmental Conservation
Division of Environmental Quality
410 Willoughby Av., Suite 105
Juneau, AK 99801-1795

RE: Hammer Slough

Dear Eric:

During the morning of March 14, 1996 I along with you and Doug Redburn of ADEC; Ken Hagerman from ADOT/PF; and Ken Thynes from the City of Petersburg. examined the Hammer Slough drainage to identify sources of pollution/sedimentation and possible remedial actions necessary to correct identified problems.

The pollution sources, remedial actions necessary to stop or control pollution and stream sedimentation and the agencies responsible for corrective actions are outlined below:

1. Existing Rock Quarry.

   A. Oil (hydraulic/crankcase) had contaminated surface runoff water that had collected directly under and around the City of Petersburg rock crusher and was entering the E Fk. of Hammer Slough Cr. The City of Petersburg was identified as the responsible agency and all parties were in agreement that this pollution source is manageable and that rapid cleanup, combined with the City instituting better rock crusher operation and maintenance procedures should be sufficient to control this pollution source. The City was requested to begin cleanup of the oil within 48 hours of the inspection but City personnel actually began cleanup procedures by 1:00 p.m. that afternoon and had completed cleanup by removal of the existing oil and a layer of contaminated soil by 3:00 pm this afternoon. I inspected the area at 3:00 pm and did not observe any residual oil sheen on standing water or in the runoff into the settling pond. I will continue to monitor the site for any indication that additional cleanup procedures need to be initiated.

   B. Silt entering runoff water from unstable soils located above exposed rock along the west side of the quarry. Although this portion of the quarry is managed by the State DOT, the City of Petersburg agreed to apply grass seed to this area to stablize the soils.

   C. Maintenance of existing settling pond at the entrance to the quarry. The City of Petersburg was identified as the responsible agency and agreed to silt removal and deepening of the pond to increase settling volume as part of continued operation and maintenance of the rock crusher. All parties agreed that this should be sufficient to control sedimentation resulting from rock quarry operations.

2. Quarry Access Road

A. Sedimentation from the sloughing of unstable soils from both sides of the drainage ditch along the south side of the access road immediately below the entrance to the pit. This area is maintained by both DOT and City of Petersburg. Application of grass seed should stabilize the soils.

B. Very fine soils dumped along the stream bank approx. 200 feet up the access road from the weigh station. The soils are migrating toward and into the stream and contributing to increased turbidity and stream sedimentation. Along with the soils, a significant amount of trash and some containing oil and other hydrocarbons was also dumped at this site. This dumping was apparently the action of the contractor hired to perform the Petersburg Airport runway resurfacing project. However, the State DOT/PF was identified as the agency responsible for corrective action because the contractor was hired by DOT. Application of grass seed to the deposited soils while it is still wet should stabilize the soil and prevent the input of fines into the stream. The deposited trash should also be removed and properly disposed of.

C. East/West portion of access road surface. Aprox. 500 feet of this road is extremely soft and is introducing some very fine material into the NE fork of Hammer Slough Cr.. This was apparently caused by heavy truck traffic during a period of thaw this past winter. Continued routine road maintenance by all users (State, Federal and City of Petersburg) should be sufficient to correct this problem.

3. City of Petersburg Public Works storage area.

Unstable soils along the stream bank above the culvert running under the storage area are sloughing into the NE Fk at that point and introducing silt into the stream. Application of grass seed to stablize the soils and restricting use of the storage area near the top of the stream bank should prevent further soil erosion and stream sedimentation.

I will continue to conduct examinations and evaluations of the recommended remedial actions on a periodic basis and report to you on the status of each. Hopefully, the recommended actions will result in the eventual removal of Hammer Slough Creek from the 1996 Section 303(d) list.

Sincerely,

Brian Lynch
Asst. Area Mgt. Biologist

cc: Leo Luzak--City of Petersburg
Ken Hagerman--DOT/PF, Petersburg

CITY OF PETERSBURG

Community Development

P.O. Box 329
Petersburg, Alaska 99833
(907) 772-4533 FAX (907) 772-4876

March 18, 1996

Eric Decker
State of Alaska
Department of Environmental Conservation
Division of Environmental Quality
410 Willoughby Avenue, Suite 105
Juneau, AK 99801-1795

Dear Mr. Decker:

The City of Petersburg would like to thank you for your March 14 field trip when you and Douglas Redburn conducted a site survey of Hammer Slough. The city appreciates your efforts to review the inclusion of Hammer Slough on the 1996 Section 303(d) list, and I would like to take this opportunity to summarize the areas of mitigation that the city agreed to address which we hope will allow the delisting of Hammer Slough as an impaired waterbody.

1) During your investigation of the City/State rock pit, you discovered that oil was in place on the ground in the area of the city rock crusher. At that time the city agreed to rectify this situation within 48 hours. City crews responded immediately, and discovered two problems. One oil barrel had been stored over the winter missing a plug on the top of the barrel. As the barrel filled with rain, a quantity of oil was displaced onto the ground. Another oil barrel was properly plugged, but apparently the contents contained an oil and water mix. We believe this mixture froze over the winter resulting in a split seam on the barrel and additional oil being placed on the ground.

At 3:00 PM on March 15, I conducted an inspection with Brian Lynch (ADF&G), and was relieved to find that the area had been thoroughly cleaned with the removal of both oil drums, removal of the contaminated soils, the replacement of the removed soils with clean crushed rock, and clean absorbent pads left to catch any residual oil which could possibly leach to the surface.

I would like to add that the rock crusher was not in operation and had been idle since last fall. I believe that the city was unaware of this situation, and I hope that you do not conclude that this is the prevalent condition of the rock crushing operation.

2) You also noted that there were a few areas which could benefit from grass seeding. If the state does not object, the City of Petersburg agrees to reseed the upper northern rim of the state pit, the ditch on the state side of the access road, and the sloped area north of the city shop rock pad prior to May 17, 1996.

3) It is my understanding that DOT will be contacting Miller Construction to address the condition of their work staging area north of the airport runway, and to direct the contractor to perform necessary clean-up to the work site.

4. The City of Petersburg concurs with the observation that the Haul Road parallel to the airport runway is in need of maintenance. The city agrees to continue to share the maintenance of the road with the state. We feel that the condition of the road was unusually poor due to recent winter-time use of the road. This is not normally the case, as winter weather prohibits year-round use. The city expects that the road maintenance will occur this spring prior to the onset of the normal construction season.

5. The City of Petersburg also agrees to continue to monitor operations at the rock pit to minimize effects of rock crushing activities to the Hammer Slough drainage. The city has also conducted a refresher training session with the city employees responsible for the crushing operation and reviewed correct operating procedures hoping to eliminate any recurrence of the oil storage problem that occurred during last winter's shut-down period.

The City of Petersburg would like to thank DEC for conducting the site survey of Hammer Slough. We are hopeful that you will find that the siltation of the slough is within normal parameters for steams flowing through muskeg and blue clay soils. We further hope that with the agreement to complete of the above-mentioned remedial actions, Hammer Slough could be removed from the 1996 Section 303(d) list.

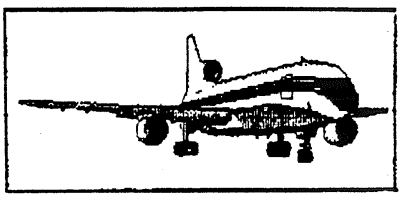
Thank you for your assistance in this matter.

Sincerely,

Leo Luczak
Director of Community Development

cc: Michele Brown, ADEC Commissioner (fax 465-5070)
Jon Scribner, ADOT Southeast (fax 465-2016)
Brian Lynch. ADFG (fax 772 9336)
Mayor Meucci and City Council Members
Linda Snow, City Manager
Eli Lucas, Public Works Superintendent

DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
MAINTENANCE & OPERATIONS
AVIATION & HIGHWAYS
PETERSBURG STATION



TO: Eric Decker
AK D.E.C.

DATE: 03-15-96

FILE:

FROM: Kenneth Hagerman
Airport Manager

TELEPHONE: 907-772-4624
FAX: 907-772-3641

SUBJECT: Runway Sand

Our winter maintenance on the James A. Johnson Petersburg Airport runway on the average uses less then 20 cu. yds of 1/4" minus sand a year for ice control. Our main ice control is by use of liquid urea to melt the ice instead of letting it build up.

cc: Jim Merrill
Chief M.& O.