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To: Yuri Morgan Fax: 271-1415
Location Denali Commission Date: 11/25/03
From Jim Adams Time 8:45 a

Number of pages including this page 12

Re: A-2002-10 DUST CONTROL DEMO PROJECT
SUMMER '03 SEWARD PENINSULA VILLAGES

() Copy or original will also be mailed

Rough draft of interim report for dust control work.

Our AKSIS reports expenditures at \$25,010; but more than likely all charges are not in.

This would allow us to "sweeten" what we applied (ca. chl) this last summer.

AN INTERIM REPORT ON THE
DUST CONTROL DEMONSTRATION PROJECT
A-2002-10

This report summarizes the activities on the dust control demonstration project in six villages on the Seward Peninsula which is funded by the Alaska Denali Commission.

A Memorandum of Agreement was established and agreed to by the Alaska Department of Transportation and Public Facilities and the Denali Commission on March 17, 2003 to establish guidelines for effective dust control techniques on airports or roads.

The six villages were Brevig Mission, Teller, White Mountain, Golovin, Elim and Unalakleet. The project was managed by the Western District Maintenance Operations and carried out by State forces and local hires under Memorandums of Understanding established with each municipality where available.

The project was turned over to the Western District Manager for construction. Rather than reinvent the wheel, several investigative reports¹ of dust palliatives written and published by private enterprises or governmental entities were perused for deciding which palliatives would be suitable for the project. It was decided that calcium chloride (Ca Chl) for roads and a product called EK 35 for runways as best suitable to serve the purpose of the project. A requirement for non-corrosive palliative use on airports settled the question of choice which EK 35 met. Calcium chloride was reported in most of the studies to be among the most cost effective and environmentally sound palliatives especially for remote locations. That the District has also been using this palliative on the local roads for decades with no noticeable detrimental effects helped in the decision.

EK 35 also has good reports and the product was performing well at one of the Districts' rural airports, Kiana. An airport improvement project at Russian Mission recently completed used EK 35 for dust palliative on the

¹ US Dept of Transportation, Dust Control on Low Volume Roads; May 2001
US Dept of Agriculture, Forest Service; Dust Palliative Selection and Application Guide; Nov 1999
Abstract; TG Sanders, JQ Addo, A Ariniello and WE Heiden; Relative Effectiveness of Road Dust Suppressants; 1994

runway, taxiway and apron was reported very effective in reducing dust before freezeup.

The choice of calcium chloride was for the streets of Teller, Brevig Mission, White Mountain, Elim and Golovin. Each village was programmed for 4 tons of calcium chloride for a maximum of 2 miles coverage. Unalakleet was scheduled calcium chloride for their city streets and EK 35 for the main runway 14/32. The south end of runway 32 is "directly" on the edge of the city and the city is inundated with a dust cloud generated from aircraft takeoffs during the summer.

Each of the village work is summarized on separate sheets with a general work description below. A major requirement for these village projects was mobility and transportation accommodations so that other projects would be possible. This meant equipment such as a spreader for the calcium chloride, trailers to haul it from the airport and water tank trailers would be of size so as to fit in a cargo aircraft capable of short field operations. The Casa 212 flown by local fixed base operators fit the requirement.

A general plan and project schedule was formulated in March of 2003 and submitted to those required. Contacts were made with city administrations and MOU's established for the work on their streets as they requested.

The dust palliatives were ordered with the calcium chloride for five villages scheduled on the first barge into Nome (for staging) and the EK 35 flown directly in Unalakleet along with 4 tons of calcium chloride for city street application.

The palliative shipment did not make the first barge into Nome due to supplier problems, but got to Nome in July. A part of the problem was procurement procedures related to quantity (EK 35) but the product got into Unalakleet by late June by air freight.

Due to on-going and other project commitments, actual dust control work did not start until August in the village of Teller and progressed from that village per the original plan. Preparatory work on water distribution and calcium chloride haul logistics from the airport to the village streets was in progress in July in the Nome staging area. This included construction of trailers for water and calcium chloride haul made for hooking up to 4

wheelers in the event no pickups were available which turned out to be the case in White Mountain, Golovin and Elim.

THE VILLAGE WORK

Unalakleet: dust control treatment July 7 – August 5

Discussions were held with the manager of the Unalakleet airport, Harry Johnson Jr., who worked with the City administration to establish a list of streets they submitted for dust control. Mr. Johnson oversaw and performed the runway dust control application with his airport crew along with supervising and providing technical support for the duration of the job. Time for state personnel working this project was coded to the Dust Control project for accounting.

A spreader was flown into Unalakleet along with the calcium chloride from Nome.

Initial work began July 16, 2003 on street grading, watering and crowning under MOU with the City. The first application (1 ton) of calcium chloride was on July 21 on Main street thru to Unalakleet Native Corp garage/UVEC. The next day July 22, another ton of calcium chloride was applied on the highway thru Bailer road. Rained out July 23, but work continued on the 24th on the Happy Valley roads and access to the highway. Final application of calcium chloride was done on the 25th of July which covered all streets on center line. A total of 4 tons was used on the city streets. Photos were taken before and after the work.

The City was reimbursed \$6435.00 for the MOU work.

Indications of the project show good saturation of the calcium, even tho tested with a downpour immediately following application. A very dramatic reduction of dust during the few dry days after showed good results. ATV's with knobby tires create more dust than regular vehicles as was noticed during monitoring and picture taking. It is Mr Johnson's estimation that this project reduced the dust by at least 75%; very effective and appreciated by all the residents of Unalakleet.

The City is interested in doing more dust control measures in the future and would like to be included in up-coming projects.

Calcium Chloride costs landed in Unalakleet: \$600/ton.

Unalakleet (continued):

The EK 35 palliative for the runway work was trucked from Ohio to Anchorage, flown into Unalakleet where application began on the 17th of July. A distributor mounted on a dump truck was made on site which worked well after several adjustments and trial runs. Application was made at the scheduled rate of 80 sf per gallon, on the prepared surface of runway 32, working the south 1000 ft first. Seasonal rains caused delays in applications off and on. By August 5th all EK 35 was placed with some effort at compaction due to "tracking" by a DC-6 aircraft and causing rutting.

Mr. Johnson reported some hydroplaning by landing aircraft due to trapped water on the runway surface, but this could have been averted with additional crown work. He felt this product could be effective but due to the rainy summer and cooler temperatures did not perform as well as it could have. Mr. Johnson also recommended use of the lignosulfonate which he had used in previous years, citing water solubility and penetration advantages.

Another factor in product result which could have made some difference is the manufacturer recommends a sample of the material being treated be sent in for testing for application and application rate. This was not done due to the time constraints and the relatively short window for application. It is possible the material treated was not as "compatible" with the treatment used.

An informal comparison "study" of the product results at Unalakleet with the Russian Mission and Kiana runways will help in future applications.

EK 35 cost landed in Unalakleet: \$11.08/ gallon (\$110,847.00)

Teller: dust control treatment August 2 – 5, 2003

Teller dust control treatment was performed by DOT/PF forces as the “initial” training and equipment “break-in” session. From here the dust control project work was planned to travel to the east, going to White Mountain, Golovin, and then Elim. Initially, Brevig Mission was to be after Teller but a water/sewer project by CE2 Inc. had the streets tore up and this forced work until later. An agreement was made with CE2 where they would do the dust treatment upon their completion of the water/sewer work.

On our request for a street list for dust control measures, a letter was received April 9 from the City of Teller listing Front Street, Grantley Avenue, New Site top and bottom row streets, including the school street.

An inspection trip by pickup was made to assess existing road conditions scheduled by the City for dust treatment and check on water supply for moisture control and compaction. Additional gravel was hauled in for road prism reconstruction as the existing prisms had no specific width, depth or crown. This was expected at other villages also depending on prism cross section. Equipment used in Teller included a grader, a water truck (rental), belly dump trucks (rentals) for prism reconstruction haul, a loader at the material source, a spreader and a steel wheel compactor.

The calcium chloride was trucked from Nome to Teller on August 2, 2003 which came in 80 lb bags loaded on pallets totalling one ton per pallet. The road was graded and tight-bladed for calcium chloride application with water from the beach used for moisture control. On August 4 material for road prism improvement was hauled, watered, dressed and compacted. On August 5, application of calcium chloride was completed with 4 tons placed on Front street to 1.6 mile east, 2 tons of calcium chloride on city streets including Grantley Avenue, the school street and the New Housing area streets. The equipment was trucked back to Nome with the completion.

This portion of work progressed well and immediate benefit of dust reduction was realized. There was some hindrance with work near the school as a contractor was renovating the school.

White Mountain: dust control treatment August 31- September 3, 2003

A request for a list of streets for dust control treatment was sent to White Mountain with a response from the City April 1. The list included Airport road, Main street, Sweetheart road, White Mountain Hill road and the Dump road. The City included a drawing of the street locations as did the other villages which helped our foreman being unfamiliar with all the streets.

Calcium Chloride was flown by Casa 212 from Nome to White Mountain September 3. The foreman was in White Mountain August 31 and started with inspection, grading and prepping the roads for treatment. He hired a local with a 4 wheeler to help with the palliative haul and set up for water distribution for moisture control. The grading took a little longer as the existing streets were substandard in nature, no "real" prism to work with on some of the streets and other streets had water/sewer manholes in the middle or to one side.

Once the streets were dressed as best possible, calcium chloride was applied at our standard two tons per mile rate. Application of 4 tons was completed September 3 and equipment cleaned and shipped over to Golovin.

This village was the most difficult to work on as their streets are not standard, some at steeper grade, narrow at most and in need of substantial work which would have been beyond the scope of this project.

Spreader shipment : \$411.06 from Unalakleet

Palliative freight: \$1300.00 from Nome

Trailer freight: \$ 488.26 from Nome

Foreman travel: \$350.00 and \$139.00

4 whlr rental: \$300.00

Local hire: \$300.00

Golovin: dust control treatment September 8 -- 10, 2003

A request was faxed to the City in March for a listing of streets they would like treated for dust control. No response was received so a request was made to the local airport maintenance contractor, Harry Boone, who did submit a list June 16 of streets he felt would be best treated for the city. He submitted a drawing along with the list which helped with location. He was also hired to work the project along with another local.

Our Foreman, Stosh Labinski, mobilized into White Mountain September 8 and worked with the locals through the 10th of September to completion of calcium chloride application on city streets. Harry Boone graded the streets in prep for treatment with Erik Amuktoolik helping with movement of the calcium and application.

There was a section of road under construction with water and sewer work by the City which was a part of the planned treated streets but did not get treated. The foreman left a number of bags of calcium chloride in storage at the equipment building which will be applied on completion of the water/sewer work. Mr. Boone will take care of this next summer.

This portion of the work went well. Mr. Boone was instrumental with his initiative for sending the street list and cut down work time due to his familiarity with local streets. Compared to the street conditions in White Mountain, this village had highways.

Foreman travel: \$ 483.60

Freight: \$2,600.00 ca chl

Eq rental: \$ 190.00 dozer

Local hire: \$ 840.00

Elim: dust control treatment September 11-13, 2003

Discussions were conducted and requests to the City for street listing for dust control treatment were sent in early April; sent again as a reminder on July 7, 2003. An MOU for labor and equipment rental was signed finally by the City on September 2, 2003.

After an inspection and discussion in mid-August with the City Administrator it was decided to use EK 35 on the approach to runway 19 to reduce dust from planes taking off to the south. Two totes of the palliative were flown from Unalakleet to Elim along with the distributor rig which mounted on a dump truck.

On September 11 and 12, a local hire used the grader to shape, dress and crown the existing roads as listed for treatment. The foreman rented a 4 wheeler for transportation during the project, and worked with the local hires starting application of calcium chloride on the 12th of September. The EK 35 was also shot on the runway the first 500 feet. This went down well and probably could have used more.

Foreman had good cooperation with the City and the local hires. The City was happy to see the dust control project even that late in the season.

Foreman travel:	\$ 378.40
Freight:	\$2,693.43
Equipmt Rental:	\$ 150.00 4 wheeler

TRAVEL AND FREIGHT COSTS
(includes parts and supplies)

3/25/03	Alaska Airlines Adams/Kelliher mtg in Fbks	\$2075.48
6/3/03	Bering Air charter insp Glv, Unk	\$2220.00
8/19/03	Bering Air charter insp with foreman; wmo, glv, eli	\$1520.00
9/17/03	Bering Air charter insp; unk, eli, glv	\$1700.00
4/18/03	Univar USA, Inc. 20 tons ca chl Sea-Ome	\$14,368.53
6/9/03- 8/22/03	misc part/supplies	\$ 668.64
8/11/03- 8/21/03	per diem – foreman nome	\$ 393.00

INDIVIDUAL VILLAGE COSTS

Teller:

Labor:	\$2120		
Rentals:	\$1350		
Gravel:	\$2374		
Ca chl:	\$4800		
St eq:	\$1645	subtotal:	\$13,889

Unalakleet:

Labor:	\$5620		
Rentals:	\$6435		
Ca chl:	\$3200		
EK 35:	\$110,847	subtotal:	\$126,102

White Mountain:

Labor:	\$1720		
Ca chl:	\$3200		
Rentals:	\$ 600	subtotal:	\$5520

Golovin:

Labor:	\$1220		
Rentals:	\$4114		
Ca chl:	\$3200	subtotal:	\$8534

Elim:

Labor:	\$1360		
Rentals:	\$3221		
Ca chl:	\$3200	subtotal:	\$7781

Brevig Mission:

Not done yet.