

4. COSTS AND BENEFITS

The costs of dust control on unpaved roads in rural Alaskan communities can be calculated on the basis of available market data, but the benefits of each control method will vary depending on the soil type, traffic level, and road design, among other factors. As a result, approximate costs for various control methods are presented here on the basis of delivery to and application in Kotzebue. The control methods included in the cost analysis are limited to those that are technologically feasible in northwestern Alaska. The range of control effectiveness for each of the control methods derives from the literature, not from studies conducted in cold climates.

The costs of dust control methods, per mile of treated roadway in northwestern Alaska, are summarized in Table 3. Labor and equipment costs are based on data provided by the Alaska Department of Transportation and Public Facilities (ADOT&PF). (Adler, 2006) Detailed cost calculations are presented in spreadsheet format in Appendix C.

Table 3 Dust Control Method Costs and Effectiveness (\$ per mile of road treated)				
Dust Control Category	Specific Product	Control Cost (\$ per mile of road treated)	Control Effectiveness Range	Control Duration
Moisture Increase	Watering	\$32	0% - 50%*	1-2 hours
	Calcium Chloride	\$26,000	0% - 70%**	6 months
Particle Agglomeration	EK-35	\$20,000	0% - 99%***	1 year
	Lignosulfonate	\$22,000	0% - 90%*	2 months
	Soil Sement	\$26,000	0% - 84%****	1 year
Soil Coverage	Gravel	\$84,000	0% - 30%*	3 months
	Geotextile	\$27,000	N/A	10 years
	Asphalt Paving	\$2,700,000	90% - 99%	15 years
	Fiberglass Plates	\$2,800,000	90% - 99%	10 years

* Orlemann, 1983

** Morgan, 2005

*** MRI, 2002

**** California ARB, 2002

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