



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

999 18th STREET - SUITE 500  
DENVER, COLORADO 80202-2405

Ref: 8AT-AP

JUL 21 1988

MEMORANDUM

TO: Dean Wilson (MD-14)  
Model Clearinghouse SRAB, OAQPS

FROM: John Notar  
Meteorologist *John Notar*

SUBJECT: Supplemental Arguments to Colorado's Request to Apply  
Ventilated Valley Diffusion Model for the Telluride  
PM-10 SIP

Attached you will find a document produced by the Colorado Department of Health (CDH) describing its position that the Ventilated Valley Diffusion Model (VVDM) is applicable to use for PM-10 SIP development in the town of Telluride, Colorado.

It is Region VIII's position that the additional material supplied by Colorado does not add any new technical evidence to support the use of VVDM over WYNDvalley. In the section regarding the history of the Telluride PM-10 SIP, CDH contends that prior to October, 1987, there was no EPA guidance regarding modeling in mountain valleys where guideline techniques and guideline models are not applicable. By October 1987, the EPA's Office of Research and Development (ORD) made the determination that the more complex WYNDvalley was preferred over the VVDM for use in mountain valleys.

CDH has claimed that VVDM has been used successfully in the past for two PSD permits and several EIS's. CDH must realize that dispersion modeling is dynamic in that new techniques based on better physics are constantly replacing older and less creditable models or techniques.

As OAQPS stated in its April 15, 1988, memorandum on "PM-10 Modeling Methodologies for Colorado," more than four days are needed to model and to develop a design concentration. Also, additional receptor modeling analysis needs to be performed. These are minor points, however, and with additional work by CDH, they can be corrected.

The two main concerns of Region VIII with the CDH analysis are the use of a correction factor of 1.35 at the Telluride receptor and the lack of a second vertical layer to VVDM.

The Guideline on Air Quality Models, section 8.2.11 "Calibration of Models", states that calibration of short term models is unacceptable. The CDH use of various correction factors of 1.35, 1.27, 1.18, and 1.09 in the Telluride box and boxes downwind of Telluride is unacceptable. CDH claimed that this is necessary to account for the increase in mixing heights down the valley which will cause increased dilution and the more uniform distribution of pollutants with the mixing layer. The mixing heights are increasing due to the influx of air transported down Prospect and Skunk Creek drainage.

The Denver Research Institute (DRI) shows two distinct layers of pollutants in the vertical. There is a rapid decrease in pollutants after 14 meters in the vertical. This 14 meter level would be a good place to start the second layer of a model such as WYNDvalley. The pollutants at and below the 14 meter level are both road dust and sanding emission as well as wood smoke emissions. The DRI study shows another layer of pollutants less concentrated at the 26.8 meter level. These emissions are due to diffusion upward in the mixing layer. This is where the WYNDvalley model should be able to give superior performance by allowing some diffusion through the top of the first box at the 14 meter level.

In conclusion, Region VIII believes that CDH has not proposed or developed any new technical information that would demonstrate that VVDM can perform better than WYNDvalley. Region VIII is requesting that the Model Clearinghouse review this latest CDH material to determine if any new information is presented to change its previous determination that WYNDvalley is more appropriate than VVDM for PM-10 SIP development in mountain valleys. Please provide a written response to Region VIII on the Model Clearinghouse's determination. Also please send a copy of the same to Mr. Brad Beckham of CDH.

Attachment