UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

March 5, 1991

MEMORANDUM

SUBJECT: New Jersey DEP Comments on Valley Model

FROM: Dean A. Wilson, Meteorologist
Techniques Evaluation Section, SRAB (MD-14)

TO: Raymond Werner, Chief
Impact Assessment Section, Region II, 2AWM-AP

In response to your request, Russ Lee and I have reviewed "Valley Model Evaluation" by Chris N. Salmi, of the New Jersey Department of Environmental Protection, with regard to alleged errors in the Valley model.

As noted, the Valley model has 112 built in receptors. Mr. Salmi incorrectly states that "the receptors are located along the sixteen wind direction radials with seven rings." The Valley Model User's Guide, on page 3-8, states that the receptors "are located approximately on 16 radials (seven receptors each) at increments of 22.5° angular separation.... The decimal point of each printed concentration indicates the receptor location. The receptors along a given radial are not spaced equally, except due east and west...." (the underscore is mine). Additional emphasis is given on page 4-13 of that User's Guide as follows: "It is emphasized that the only lines of receptors which are equally spaced lie due east and due west of center; the only lines of receptors which do not deviate somewhat from the radials are those in the four cardinal directions."

It should be noted that this characteristic of the receptor array is by design, not by mistake. The design is to permit placing map overlays over the printouts, so that the concentrations will appear at the locations indicated by the decimal points on the printouts. Mr. Salmi conducted an analysis with receptors on 16 equally spaced radials and 7 equidistant rings, which produced different results. This is because his receptors were placed at different locations than in Valley, and not due to an error in Valley.

Given this understanding, it seems that the only difference between the NJDEP version of Valley and the original USEPA Valley is that the receptors are deployed at the intersections of radials and concentric rings in the NJDEP version. There is

precedent for accepting this change, since the "Valley-equivalent" option of COMPLEX-I also deploys receptors at the intersections of radials and concentric rings. If, in fact, the only difference between the NJDEP version of Valley and the USEPA Valley is this difference in the deployment of receptors, then the NJDEP version can be accepted for regulatory purposes. However, to confirm this, the State should set up a test case and perform an equivalency demonstration (with the Valley model) pursuant to Section 3.2.2 of the "Guideline on Air Quality Models (Revised)."

If you have any questions, please contact Russ at FTS 629-5638.

cc: A. Colecchia
R. Lee