

**Approach for Examining Ambient Monitoring Data  
for Causes/Sources of Dust on the Worst Visibility Days,  
as Discussed at the DEJF Meeting on February 25, 2004**

1. DRI will provide the DEJF (through Marc Pitchford) with a proposal for implementing the general approach described below. Total costs should not exceed \$50,000. The scope of work will be an extension to the existing “causes of haze” contract between WGA and DRI.
2. Identify and broadly characterize the 20% worst visibility days during 2001-03 when dust is the largest contributor to visibility impairment. At some sites, this may be only a few days. At others, it may be dozens.
3. Categorize these ~900 site-days according to reasonable criteria. Criteria should be relatively strict at first, and modified and/or relaxed later if necessary and appropriate to minimize the number of events in the unknown category. It’s possible that individual events could be placed into more than one category. Categories are likely to include the following:
  - International Events (e.g., from Asia, Mexico, and Africa) – With possible exception of Mexican border areas these, these events will tend to affect a large # of sites, have relatively low concentrations of coarse mass, and may exhibit unique ratios of crustal elements. Back trajectories may be used to identify/verify origins.
  - Regional Events – Dust from these events may be generated and observed locally and may occur more-or-less simultaneously at multiple sites from large-scale wind events. Subsequently, this entrained dust may be transported to other groups of sites. Back trajectories and synoptic weather pattern analysis may be used to identify these events.
  - Local Events – These will tend to affect only 1-2 sites. Local, site-specific, and appropriate weather and land-use data may be used to identify these events.
  - Fire-Related Events – Dust (as defined by IMPROVE fine soil and coarse mass) could be associated with fire as a result of smoke and ash in the coarse fraction, soil entrained by turbulence during the fire, and/or soil and other particles entrained by winds after the fire but before stabilization.
  - Unknown – These events could be some combination/mixing of the events above or potentially other sources of dust, as defined by fine soil + coarse mass.
4. For each category above, and for each site or group of similar sites with one or more days within the category:
  - Characterize the number, magnitude, and dates of events.
  - Portray and analyze back trajectories, aerosol chemical composition, and relevant data sets as feasible within available resources.
  - Provide a general, written description for each category, including maps and other figures as appropriate.
5. For some of the days in each category, provide a more in-depth and/or descriptive example (i.e., case study) that provides a conceptual/educational model for WRAP stakeholders and other DEJF projects (e.g., WRAP policy defining and categorizing dust, WRAP dust

handbook, etc.).

- Results will be incremental and available for review over the course of the project. A mid-course evaluation may be warranted to verify the method/approach.

### Fraction of Worst Days When Dust Contributed more to Aerosol Extinction than Any Other Component (NO<sub>3</sub>, SO<sub>4</sub>, OMC, LAC)

