UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

JUN 25 2014

OFFICE OF THE
REGIONAL ADMINISTRATOR

Mr. Lewis Wallenmeyer
Director
Clark County Department of Air Quality
4701 W. Russell Road Suite 200
Las Vegas, Nevada 89118

Dear Mr. Wallenmeyer:

This letter responds to Clark County Department of Air Quality's (DAQ's) April 11, 2014 submittal regarding three exceedances of the 24-hour PM_{10} standard that occurred at monitoring stations within Clark County on July 3, 2011.

DAQ's submittal included documentation that these exceedances were caused by high wind exceptional events. EPA has reviewed the documentation provided by DAQ to demonstrate that the exceedances on these days meet the criteria for an exceptional event in the Exceptional Events Rule (EER). EPA concurs based on the weight of the evidence that the exceedances were caused by high wind exceptional events and finds that DAQ has successfully made the demonstrations referred to in 40 CFR §50.14 to EPA's satisfaction. In addition, DAQ has met the schedule and procedural requirements in section 50.14(c) with respect to the same data. A more detailed assessment of DAQ's demonstration is enclosed. My staff has or shortly will enter "concurrence flags" for these data into EPA's AQS data system.

Based on these determinations, EPA will exclude these data from the following types of calculations and activities:

- EPA's Air Quality Data system (AQS) will not count these days as exceedances when generating user reports, or include them in design values estimates, unless the AQS user specifically indicates that they should be included.
- EPA will accept the exclusion of these data for the purposes of selecting appropriate background concentrations for New Source Review air quality analyses.[1]
- EPA will accept the exclusion of these data for the purposes of selecting appropriate background concentrations for transportation conformity hot spot analyses.[2]
- The data will continue to be publicly available, but EPA's publications and public information statements on the status of air quality in the affected area will not reflect these data in any summary statistic of potential regulatory application, unless such inclusion is specifically noted.[3]

[1] If we are the permitting authority, we will propose permits on this basis. If we are commenting on another permitting authority's proposed action, our comments will be consistent with the determinations in this letter.
[2] Applicable only to PM_{10} and $PM_{2.5}$.
[3] These data may be included in statistics intended to describe trends in actual air quality in the area.

In addition, EPA will rely on calculated values that exclude these data in proposed regulatory actions, such as a proposed designation, classification, attainment demonstration, or finding as to whether the Las Vegas PM_{10} nonattainment area has met the PM_{10} NAAQS. These regulatory actions require EPA to provide an opportunity for public comment prior to taking a final Agency action. If EPA is pursuing one of these actions for the Las Vegas PM_{10} nonattainment area, EPA will open a new comment period during which EPA may receive comments on the exceptional event submission you have made and the determinations conveyed in this letter. If so, we must consider and respond to those comments before taking final regulatory action. Accordingly, the determinations conveyed in this letter do not constitute final EPA action regarding any matter on which EPA is required to provide an opportunity for public comment. In particular, this point applies to determinations regarding the attainment status or classification of the area. Final actions will take place only after EPA completes notice and comment rulemaking on those determinations. As an additional clarification, the determinations conveyed in this letter are applicable only to determinations incorporating the submitted data relative to the PM_{10} NAAQS.

If you have any questions or wish to discuss this matter further, please contact Deborah Jordan, Director, Air Division at (415) 947-8715.

Sincerely,

Jared Blumenfeld

Enclosure

cc: Ms. Jasmine Mehta, Nevada Division of Environmental Protection

ENCLOSURE: TECHNICAL SUPPORT DOCUMENT FOR EPA CONCURRENCE ON PM_{10} EXCEEDANCES MONITORED IN CLARK COUNTY ON JULY 3, 2011 AS EXCEPTIONAL EVENTS

EXCEPTIONAL EVENTS RULE REQUIREMENTS

EPA promulgated the Exceptional Events Rule (EER) in 2007, pursuant to the 2005 amendment of Clean Air Act (CAA) Section 319. The EER added 40 CFR §50.1(j), (k) and (l); §50.14; and §51.930 to the Code of Federal Regulations (CFR). These sections contain definitions, criteria for EPA approval, procedural requirements, and requirements for air agency demonstrations, all of which must be met before EPA can concur under the EER on the exclusion of air quality data from regulatory decisions.

Under 40 CFR §50.14(c)(3)(iv), the air agency demonstration to justify exclusion of data must provide evidence that:

A. "The event satisfies the criteria set forth in 40 CFR §50.1(j)" for the definition of an exceptional event;

- The event "affects air quality."
- The event "is not reasonably controllable or preventable."
- The event is "caused by human activity that is unlikely to recur at a particular location or [is] a natural event."[1]

B. "There is a clear causal relationship between the measurement under consideration and the event that is claimed to have affected the air quality in the area;"

C. "The event is associated with a measured concentration in excess of normal historical fluctuations, including background;" and

D. "There would have been no exceedance or violation but for the event."

Not Reasonably Controllable or Preventable (nRCP)

EPA evaluates whether an event was not reasonably controllable or preventable at the time of the event by taking into account controls in place and wind speed, along with other factors.[2] For *natural* sources of dust, a high wind dust event can generally be considered to be not reasonably controllable or preventable if winds are high enough to cause emissions from natural undisturbed

[1] A natural event is further described in 40 CFR 50.1(k) as "an event in which human activity plays little or no direct causal role."
[2] See e.g., EPA, Final rule, "Approval and Promulgation of Implementation Plans; Designation of Areas for Air Quality Planning Purposes; State of California; PM-10; Affirmation of Determination of Attainment for the San Joaquin Valley Nonattainment Area," 73 FR 14691 (March 19, 2008).

areas. For *anthropogenic* sources of dust, a high wind dust event is also eligible to be considered to be not reasonably controllable or preventable if:

1. The anthropogenic sources of dust have reasonable controls in place,
2. The reasonable controls have been effectively implemented and enforced, and
3. The wind speed was high enough to overwhelm the reasonable controls.

Historical Fluctuations (HF)

EPA evaluates whether a measured exceedance is in excess of historical fluctuation by taking into account the level of the exceedance in relation to historical data, which is typically 3 to 5 years.

Clear Causal Relationship (CCR)

EPA considers a variety of evidence when evaluating whether there is a clear causal relationship between the measurement under consideration and the event that is claimed to have affected the air quality in the area. Demonstrations typically include documentation showing that the event in fact occurred and that emissions related to the event were transported in the direction of the monitor(s) where elevated concentration measurements were recorded; the size of the area affected by the transported emissions; the relationship in time between the event, transport of emissions, and recorded concentrations; and, as appropriate, pollutant species-specific information supporting a causal relationship between the event and the measured concentration.

Affects Air Quality (AAQ)

Generally, EPA will consider events to have affected air quality if the CCR and HF requirements have been adequately demonstrated.

Natural Event

Generally, EPA will consider a high wind dust event to be a natural event in cases where windblown dust is entirely from natural sources or where all significant anthropogenic sources of windblown dust have been reasonably controlled.[3] This typically involves adequately demonstrating both the nRCP and CCR requirements.

No Exceedance or Violation But For the Event (NEBF)

[3] The EPA will generally consider human activity to have played little or no *direct* role in causing emissions of the dust generated by high wind for purposes of the regulatory definition of "natural event" if contributing anthropogenic sources of the dust are reasonably controlled, regardless of the amount of dust coming from these reasonably controlled anthropogenic sources, and thus the event could be considered a natural event. In such cases, the EPA believes that it would generally be a reasonable interpretation of its regulations to find that the anthropogenic source had "little" direct causal role. If anthropogenic sources of windblown dust that are reasonably controllable but that did not have those reasonable controls applied at the time of the high wind event have contributed significantly to a measured concentration, the event would not be considered a natural event. See preamble to the EER, 72 FR 13560, at 13566, f.n. 11 (March 22, 2007).

Generally, for high wind dust events, the NEBF demonstration is similar to and informed by the demonstration of the nRCP and CCR requirements, and is expected to show that the measured concentration would have been below the applicable NAAQS without the effect of the event.

OVERVIEW OF EVENTS

On letter dated April 11th, 2014, Clark County Department of Air Quality (DAQ) submitted an exceptional event demonstration for 3 exceedances of the 24-hour PM_{10} standard that occurred at monitoring stations within Clark County, NV on July 3rd, 2011. Table 1 summarizes these exceedances.

DAQ states that the three exceedances measured on July 3rd, 2011 were associated with a high-wind-generated dust event which "was caused by thunderstorms in the source area, which came up through the Colorado River corridor." DAQ provided a comprehensive description and discussion of the event in the demonstration.

Table 1: EPA PM_{10} Exceedance Summary

Exceedance Date	Monitor/Site Name	AQS ID	24-hour Avg. ($\mu g/m^3$)
July 3, 2011	Sunrise Acres	32-003-0561	191
	J. D. Smith	32-003-2002	185
	Boulder City	32-003-0601	242

Not Reasonably Controllable or Preventable (nRCP)

Two of the exceeding monitoring sites, Sunrise Acres and J. D. Smith, are located in the Las Vegas Valley. In addressing reasonable controls in the Las Vegas Valley, DAQ provided references to the current set of BACM-required controls in the Clark County (partial) Las Vegas PM_{10} nonattainment area. These rules, AQR Sections 90-94 "require stabilization of open areas and disturbed vacant lands; stabilization of unpaved parking lots; stabilization of unpaved shoulders on paved roads; and use of soil-specific best management practices for construction activities." The Eldorado Valley, where the exceeding Boulder City monitor is located, is not included in a nonattainment area but DAQ states that the rule concerning construction activities (Section 94) does apply in this area.

As part of DAQ's Natural Events Action Plan for High-Wind Events (NEAP, April 2005), DAQ forecasts the potential for elevated PM_{10} concentrations, however, the models did not indicate potential elevated PM_{10} concentrations on July 3rd, 2011. The normal procedure following forecasted elevated PM_{10} concentrations includes a high-wind event notification system that includes an early warning and enhanced enforcement and compliance programs to reduce emissions. This unforeseen event necessitated alternate methods to determine if BACM was implemented and if local sources contributed significantly. In lieu of the normal procedure, DAQ conducted an assessment of valley-wide activities, which indicated that there were no unique or unusual activities on the event day, and relied upon informal staff observations, which indicated that the dust entered the Las Vegas Valley from the southeast, and was transported from outside

the non-attainment area. This informal observation corroborates with the wind patterns recorded. DAQ stated that "BACM was effectively implemented for all applicable emissions sources and that local sources did not contribute to the elevated PM_{10} concentrations measured at the Boulder City, Sunrise Acres, and J.D. Smith monitoring sites."

DAQ used a weight of evidence approach and concluded that "the activity assessment, informal field observations, and moderate local wind speeds validate BACM rule penetration, rule effectiveness, and overall BACM control measures contained in the 2001 PM_{10} SIP." DAQ cited a study (June 2006)[4] which concluded that 25 mph could serve as a threshold value for overwhelming BACM and this wind speed was surpassed in the source area, which corroborates with the 25 mph threshold determined to be sufficient in EPA's draft guidance on high-wind events in the west (EPA, June 2012)[5]. DAQ provided documentation indicating that wind speeds associated with the source area of the event were above 25 mph and that the high winds "follow[ed] in time and magnitude from the Blythe Airport area to the Needles Airport area and up through the Laughlin, Nevada/Bullhead City, Arizona airport in a northeasterly direction to affect the Eldorado and Las Vegas Valleys." The Blythe Airport in Blythe, California recorded wind speeds of up to 37 mph and wind gusts of 48 mph and the Needles Airport in Needles, California recorded wind speeds of up to 24 mph and wind gusts up to 40 mph. As the front approached the Bullhead City/Laughlin Airport Nevada, the winds speeds decreased to 20 mph with gusts of up to 31 mph. As the wind-blown generated dust entered the Eldorado Valley, followed by the Las Vegas Valley, wind speeds were relatively low, but were sufficient to transport PM_{10} generated in the aforementioned source area to the monitoring sites in the Las Vegas Valley.

All of the monitoring PM_{10} monitoring sites in Las Vegas Valley exhibited elevated concentrations, though only two exceeded the NAAQS. The only monitoring site in the Eldorado Valley also exceeded the NAAQS, while the monitoring site in the Ivanpah Valley was not affected as it was not in the predominant wind and dust flow corridor. The path of the storm as it "progressed through the Las Vegas Valley remain[ed] predominately to the eastern portion of the valley, hugging the mountain range directly to the east of the valley and exited to the northeast of the Las Vegas Valley" which accounts for the spatial extent of the exceeding monitors.

DAQ's documentation included analysis of the event that supports the PM_{10} transport described above. The analysis indicates that monitors in the Las Vegas and Eldorado Valleys were affected by PM_{10} transported by high winds from outside the Valleys. In addition to transport, information supplied by DAQ pertaining to controls implemented within the area, the spatial extent of elevated PM_{10} concentrations with respect to the path of the dust, and the wind speeds associated with the event sufficiently establishes that the event was not reasonably controllable or preventable.

---

[4] Wacaser, et al. Summary of Refined PM10 Aeolian Emission Factors for Native Desert and Disturbed Vacant Land Areas. Department of Civil and Environmental Engineering, University of Nevada, Las Vegas, June 2006.

[5] Draft Guidance on the Preparation of Demonstrations in Support of Requests to Exclude Ambient Air Quality Data Affected by High Winds under the Exceptional Events Rule. United States Environmental Protection Agency, June 2012.

Table 3: Documentation of nRCP

Exceedance Date	Demonstration Citation	Quality of Evidence	Criterion Met?
July 3, 2011	Section 1: p. 15-18, 82, Section 5: p. 234-235	Sufficient	Yes

Historical Fluctuations (HF)

To demonstrate that this requirement was met, DAQ provided 6-year time series plots of all Clark County PM_{10} 24-hour averages in Figures 29-36 of the demonstration. DAQ stated that for Boulder City, July 3rd, 2011 was the "highest recorded 24-hour average PM_{10} concentration recorded in the Clark County PM_{10} monitoring network between 2006 and 2011." For the Sunrise Acres and J.D. Smith monitoring sites, July 3rd, 2011 was the highest concentration monitored at each respective site between 2006 and 2011, and was the second and third (respectively) highest concentration monitored in the network over the last 6 years. DAQ's analysis sufficiently establishes that the 24-hour PM_{10} concentrations measured on July 3rd, 2011 were in excess of normal historical fluctuations.

Table 4: Documentation of HF

Exceedance Date	Demonstration Citation	Quality of Evidence	Criterion Met?
July 3, 2011	Section 2: 82-83, 85-92	Sufficient	Yes

Clear Causal Relationship (CCR)

Section 3 of DAQ's demonstration included a comprehensive conceptual model of the events, including a general overview of the geographic setting of the monitors, local climate information, wind speed and direction data, and surface and upper air weather charts for the event for Clark County. The conceptual model also included a very detailed discussion of the event that occurred on July 3rd, 2011 and a time series graph for the event that included hourly PM_{10} concentrations for all the monitors in Clark County.

The demonstration included site maps of the monitors with corresponding wind and pollution roses, hysplit trajectories indicating the origin and movement of the storm, and a number of visibility photos at the North Las Vegas Airport showing the event move into and out of the area through time. Before reaching the monitoring sites in the Eldorado and Las Vegas Valleys, the dust moved through the Laughlin/Bullhead City Airport area which corresponds temporally with the NWS weather observations of decreased visibility in the morning hours beginning at approximately 5:30 AM. The NWS station at the North Las Vegas Airport and the McCarran International Airport reported haze (HZ) on the event day with the first indications occurring around 10 AM, once again temporally matching the description of the event and increased PM_{10} concentrations. The National Weather Service (NWS) Forecast Discussion for July 3rd, 2011 described that a moisture surge from the southeast brought a cloud of dust and that webcams show reduced visibility. The discussion further describes the event as "blowing dust which is not technically correct but is the closest option with the available tools for Clark [County]." This description is indicative of the nature of this event as it was caused by high winds, though upon arrival into the area, winds were light. Also included in the demonstration were multiple videos of media coverage concerning the dust event.

DAQ stated that the evidence presented shows a clear connection between the exceedance and event that is demonstrated by "the dramatic increase in hourly PM_{10} concentrations that coincided with the high-wind event transported dust from the multiple storm cells in the source area and the outflow boundary that occurred in the source area that blew through Bullhead City, Arizona, up the Colorado River corridor into the Eldorado and Las Vegas Valleys." DAQ accounted for the reason that only three monitors in Clark County exceeded, though all monitors in the Las Vegas and Eldorado Valleys exhibited elevated concentrations during the same time period. The non-exceeding monitors in the Las Vegas Valley were not in the path of the storm, except for the Green Valley monitor, which did not exceed due to a small mountain ridge that "funneled a portion of the PM_{10} laden airflow" to the northeast of this site, resulting in lower particulate measurements.

The analysis in Section 3, specifically, the PM_{10} time series graph, winds speed and direction measurements, photographic evidence, media coverage, NWS forecast descriptions, and NWS station reports of reduced visibility and haze, sufficiently establishes that there was a clear causal relationship between uncontrollable emissions generated from high-winds in the source area and the exceedances measured in the Las Vegas and Eldorado Valley monitors.

Table 5: Documentation of CCR

Exceedance Date	**Demonstration Citation**	**Quality of Evidence**	**Criterion Met?**
July 3, 2011	Section 3: p 117-193	Sufficient	Yes

Affects Air Quality (AAQ)

Based on the documentation presented for both the CCR and HF requirements, it has been adequately demonstrated that this event affected air quality. DAQ's demonstration regarding the CCR and HF requirements sufficiently establishes that the event affected air quality.

Table 6: Documentation of AAQ

Exceedance Date	Demonstration Citation	**Quality of Evidence**	**Criterion Met?**
July 3, 2011	Section 2: p 15-18	Sufficient	Yes

Natural Event

Based on the documentation presented for both the nRCP and CCR requirements, it has been adequately demonstrated that the event is a natural event caused by high-wind-generated dust. DAQ's demonstration regarding the CCR and HF requirements sufficiently establishes that the event was a natural event.

Table 7: Documentation of Natural Event

Exceedance Date	**Demonstration Citation**	**Quality of Evidence**	**Criterion Met?**
July 3, 2011	App. A	Sufficient	Yes

No Exceedance or Violation But For the Event (NEBF)

DAQ provided several reasons that the exceedance would not have occurred but for the event. Concentrations were low at all three violating monitors in the morning and the evening of July 3rd, 2011, before the arrival of the dust from the southwest under low wind conditions and the subsequent dispersion due to increased wind speeds. DAQ provided a summary of the analysis and information regarding both the nRCP and CCR requirements and also included a time series graph that included hourly PM_{10}, hourly wind speeds (where available), and wind gusts (where available) indicating that PM_{10} concentrations before after the event were below the 24-hour PM_{10} NAAQS. DAQ's demonstration regarding the nRCP and CCR requirements sufficiently establishes that the NEBF criterion has been met.

Table 8: Documentation of NEBF

Exceedance Date	Demonstration Citation	Quality of Evidence	Criterion Met?
July 3, 2011	Section 2: p. 83-84	Sufficient	Yes

Schedule and Procedural Requirements

In addition to technical demonstration requirements, 40 CFR §50.14(c) specifies the schedule and procedural requirements an air agency must follow to request data exclusion. Table 9 outlines EPA's evaluation of these requirements. The prompt public notification criterion was complicated due to the lack of this event being forecasted. Normally, DAQ performs meteorological forecasting to predict a potential high wind event, and would broadcast an advisory to the public through media channels in order to alert the public. This was not done as it was not predicted. However, DAQ provides documentation for a broadcasted holiday/smoke advisory on July 1st for July 4th and 5th for fireworks which reasonably allowed the public to make health-based decisions due to potentially high concentrations of air pollution for the day prior, July 3rd. Also, AQI (Air Quality Index) provides additional, publicly-available forecasting/prediction that is available online to the general public.

Table 9: Schedules and Procedural Criteria

	Reference	Demonstration Citation	Criterion Met?
Did the State provide prompt public notification of the event?	40 CFR §50.14 (c)(1)(i)	Section 1: p 3	Yes
Were flags and initial description placed on the data by July 1st of the following year?	40 CFR §50.14 (c)(2)(iii)	Section 1: p. 3, Section 3: p. 117	Yes
Was the demonstration submitted within 3 years of the end of the quarter in which the event occurred and 12 months prior to the date that any regulatory decision must be made by EPA?	40 CFR §50.14 (c)(3)(i)	April 17, 2014 Letter	Yes
Was the public comment process followed and documented?	40 CFR §50.14 (c)(3)(v)	Section 1: p.10, App. C	Yes

Conclusion

EPA has reviewed documentation provided by DAQ to support claims that dust emissions generated by high winds that were transported into the Las Vegas and Eldorado Valleys caused exceedances of the 24-hour PM_{10} NAAQS at the Boulder City, Sunrise Acres, and J. D. Smith monitoring sites on July 3rd, 2011. EPA has determined that the flagged exceedances at this location on this day meet the definition of an exceptional event: the exceedance affected air quality, was not reasonably controllable or preventable, and meets the definition of a natural event. Specifically, EPA has determined that the event was not reasonably controllable and preventable due to high wind conditions that transported PM_{10} up the Colorado River from southeastern California and northwestern Arizona outside of the Las Vegas Valley and Eldorado Valley and subsequently overwhelmed reasonable controls. Also, regardless of transport into the area, information pertaining to the controls implemented within the nonattainment area, the spatial extent of elevated PM_{10} concentrations measured in the area, and the wind speeds associated with the high-wind event provide sufficient evidence to conclude that the event was not reasonably controllable or preventable. Furthermore, EPA has determined that there is a clear causal relationship between the event and the measured exceedance, there would have been no exceedance but for the event, and the measured exceedance is in excess of normal historical fluctuations.