

EPA Comments on the High Wind Exceptional Event Demonstration for April 15, 2008

EPA Comment: The demonstration indicates that high winds from the south and southwest entered Utah and Salt Lake Counties on April 15, 2008. Using back trajectories, the demonstration indicates that the winds passed over areas in west central Utah, categorized by the United States Geological Survey (USGS) as highly erodible. The demonstration further indicates that the back trajectories passed over the Sevier dry lakebed and the area burned by the Milford Flats fire. These two areas were also suggested as possible source areas in media reports at the time of the event. The demonstration limits its discussion of source areas to these upwind sources. This appears to be an incomplete evaluation of likely sources, as it does not discuss any other anthropogenic soil disturbance areas, either within the same region of the state, or nearer the monitors. As is discussed below, it is likely that other areas with soil disturbed by human activity also contributed to the high PM₁₀ levels of April 15, 2008. An objective evaluation of sources, which is necessary to obtain concurrence from the EPA, should also include discussion and demonstrations for these anthropogenic sources.

Much of the elevated PM₁₀ occurred between midnight and dawn on April 15, 2008. Daytime dust enhanced satellite images from the Naval Research Laboratory are therefore not relevant for the April 15, 2008 event. Overnight infrared satellite imagery from the GOES satellite shows dust production from Sevier Lake and the Milford Flats fire area, but also may show dust from agricultural land in Millard County, in that indistinct dust plumes also appear to be originating between the Sevier Lake and Milford Flats areas on the images. The low spatial resolution and poor contrast on these images makes complete source attribution difficult. Daylight imagery of another dust storm just four days later on April 19, 2008 shows dust originating from agricultural land near Delta, Utah blowing into the Utah and Salt Lake County areas. Thus, just as it was inferred in the demonstration that erodible areas (i.e., the Sevier dry lakebed and the Milford Flats burn area) were likely contributors to the April 15, 2008 dust event, wind-driven emissions from lands being used for agriculture in Millard, Juab, Utah, and Salt Lake Counties were also likely contributors. Similarly, other areas of disturbed soil in Utah and Salt Lake Counties, such as construction sites and gravel and other resource extraction sites upwind of the exceeding PM₁₀ monitors may have contributed to the April 15, 2008 dust, depending on the effectiveness of controls in place. While the demonstration identifies controls on some of these sources, it does not explain why these controls should be considered reasonable for controlling wind entrained dust. In the absence of this discussion, the EPA has attempted a review of the known controls, and has provided the following comments which may be helpful in developing the justification for the reasonableness of the existing controls. If existing controls are found lacking in some cases, then the comments may be helpful in considering future controls for currently uncontrolled sources.

As indicated in the Clean Air Act's (CAA) definition of exceptional events and more recently in the draft guidance for high wind events, it is necessary that exceptional events be not reasonably controllable or preventable in order to obtain EPA concurrence. Even for natural sources of emissions, demonstrations need at least some minimal statement as to the reasonable controllability of sources. (Draft Guidance, p. 16: "Generally, a basic controls analysis will

identify likely sources in the expected source contribution area, describe the controls in place for anthropogenic sources, and indicate whether the natural sources were reasonably controllable.”) Our comments therefore begin with the Milford Flats burn area, which would generally be considered an example of a natural source of windblown dust. Our comments continue with other potential sources of windblown dust.

DAQ Response: *The EPA’s comments on this exceptional events submittal appear, to UDAQ, to have four interrelated elements:*

- 1. The UDAQ demonstration does not address all possible anthropogenic source of dust as contributing to this episode and consequently EPA cannot fully evaluate the State’s submittal until a discussion and demonstration of all sources is addressed.*
- 2. Agricultural areas that lie between the Sevier dry lakebed, the site of the Milford Flat fire, and the affected air quality monitors were not specifically discussed in the context of this event.*
- 3. Other areas of disturbed soil upwind of these monitors, such as construction sites and gravel pits, were also not addressed specifically in the demonstration.*
- 4. Finally, while the demonstration does address controls on some of these sources, there is not an explicit explanation of why the source controls currently in place should be considered reasonable measures to control wind blown dust.*

We answer each of these comments in the context of the specific, numbered comments provided by EPA.

Potential Sources Outside PM₁₀ Nonattainment Areas

1. Milford Flats

The BLM website at http://www.blm.gov/ut/st/en/prog/fire/milford_flat_fire.html indicates that “Treatment began in October 2007 and will be completed by spring 2008, depending on the weather.” While nominally a natural source area, this indicates controls were in fact being implemented at or around the time of the April 15, 2008 event. The demonstration provided by UDAQ needs to address the rehabilitation efforts and whether it would have been reasonable for these efforts to have been more complete and/or more effective as of the time of the event.

DAQ Response: *The BLM initially estimated in 2007 that it would require \$7 million to stabilize the land by reseeding. It actually required 1.76 million pounds of seed mix at a cost of \$17 million. The project also included replacing 74 miles of burned fence, building 78 miles of new fence and developing 315 sediment basins. The seeding process occurred at the following rate: drill seeding at 100 acres/day, single churning followed by aerial seeding at 200-250 acres/day and imprinter seeding at 40 acres/day. This was a major rehabilitation project requiring the cooperative efforts of many agencies and local government. Given the project size, economic investment, the complexity of the project, a challenging climate, seed germination-survival rate and many other factors, it is reasonable to assume that the project objectives were met and that reasonable efforts were in place at the time of this event.*

2. Sevier Lake

In the Exceptional Events Rule preamble at 72 FR 13564, March 22, 2007, the EPA noted that:

“In approving section 188(f) of the CAA, the House committee of jurisdiction discussed a circumstance in which recurring emissions from a source should be considered to be anthropogenic. The House report noted EPA statements that, in the cited case, high concentrations of dust from a lakebed were due to human activity, i.e., the long-term diversion of water from a lake. (See Pub. L. 101–549, CAA Amendments of 1990 House Report No. 101–290(1), May 17, 1990; and discussion of Mono Lake, California therein).”

The report of the Utah Division of Water Resources entitled “Utah State Water Plan – Sevier River Basin” from June 1999 states that:

“The Sevier River is one of the most utilized rivers in the nation. Only four percent or an average of about 32,900 acre-feet of the total tributary inflow reaches its terminus, Sevier Lake, and then only on an intermittent basis.”¹

In a 1988 scientific study of the historic depth and fluctuations of Sevier Lake, the author noted that:

“In 1872 G. K. Gilbert visited Sevier Lake and estimated that it was about 4.5m deep (3080.5 m[sic]), and observed that the water was saline (Gilbert, 1890: 224-228). Gilbert revisited the lake in 1880, and in the intervening eight years, the lake had dried almost completely, thus creating a salt playa. The observed decline in the lake may have been caused partly by the increasing use of water for irrigation upstream along the Sevier and Beaver Rivers, but a change in climate was probably also involved.”²

The reference above does not take a position as to a typical lake depth or wet/dry cycles prior to 1872. With the extreme diversion of water from its principal feeding streams, however, it appears that Sevier Lake should be considered an anthropogenic source of dust, as are Owens Lake and Mono Lake in California, barring contradictory evidence. Because it is a recurring source of dust from anthropogenic activity impacting the Wasatch Front, this dust is not eligible for consideration as an exceptional event emission

¹ Utah State Water Plan – Sevier River Basin, p. I-1;
<http://www.water.utah.gov/planning/SWP/sevier/sevindex.htm>.

² Late Pleistocene and Holocene lake fluctuations in the Sevier Lake Basin, Utah, USA. *Journal of Paleolimnology*, 1:9-21, 1988; p. 17; the “3080.5 m” in the original probably should be 1380.5 m, the elevation of the lake surface above mean sea level with 4.5 m of water depth.
<http://www.springerlink.com/content/m3hk3857147x6268/>.

unless it can be shown that reasonable controls of the dust have been implemented. It might be argued that no reasonable controls are available for this source, but the demonstration does not make such an argument. If the demonstration is supplemented in this regard, the argument should address the types of controls that have been applied at Owens Lake and Mono Lake, their effectiveness, and the reasonableness of applying similar or comparable controls to Sevier Lake.

Portions of Mono and Inyo Counties of California were designated nonattainment for PM₁₀ because of dust from human caused dry lakes and controls were developed to attempt to bring the air quality into attainment for the PM₁₀ standard. Therefore, it would seem to indicate that an analysis should be conducted on whether or not it would be reasonable to require controls on the Sevier dry lakebed. Utah's demonstration should specify the controls, if any, on Sevier Lake's dust emissions that were in place on April 15, 2008, and explain why those controls should be considered reasonable. In accordance with the draft guidance mentioned in the cover letter, conclusions about reasonableness can be based on information that was reasonably available to UDAQ and other authorities at the time of the event.

DAQ Response: *We point out that in your own response you state that, "The reference above does not take a position as to a typical lake depth or wet/dry cycles prior to 1872". Gilbert acknowledged that the lake bed drying is cyclical and that the causes may be both naturally derived by reduced snow fall and water diversion of the Sevier River. Again, from the reference cited in your comment it is stated that climate change probably was involved in the drop in lake levels from 1872 to 1880 during the time that irrigation was also taking place: "The observed decline in the lake may have been caused partly by the increasing use of water for irrigation upstream along the Sevier and Beaver Rivers, but a change in climate was probably also involved". Therefore, human activity and use is only one factor, and not necessarily the driving factor, of the annual fluctuation in the levels of the Sevier Lake.*

The need for water in the American west is characterized by a lack of precipitation. The federal government has played a major role in providing water needed to populate the west. The Reclamation Act of 1902 created the U.S. Reclamation Service (later changed to Bureau of Reclamation) and committed the Federal Government to construct and maintain "irrigation works for the storage, diversion and development of waters" – meaning dams, reservoirs, and canals – to irrigate arid and semiarid lands in 16 Western states and territories: Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington, and Wyoming.

Water diversion occurs throughout the west and the Sevier River diversion is part of that system. It is important to note that the Sevier River water diversion is not a unique circumstance but rather a common practice in the western U.S. This water distribution system is exactly what Congress envisioned when it passed the Reclamation Act of 1902.

None the less, EPA cites the Owens and Mono Lake water diversion projects as equivalent to the situation at Sevier Lake. Water diversion of the Owens and Mono Lakes occurred around the 1940-50's. These diversions ultimately affected the water level in the lakes and altered the aquatic habitats. A series of legal actions resulted in court decisions requiring the Los Angeles Department of Water and Power to restore flow below the pre-diversion levels, but sufficient flow to support the natural systems. The rehabilitation plans also included dust suppression using tree planting, gabion placement, and in the case of Owens Lake, irrigation. The cost for the Owens Lake rehabilitation has exceeded \$1.2 billion dollars. The Mono Lake is a separate rehabilitation project that is scheduled to take 20 years to complete. This cost has lead the water authority to file a lawsuit claiming unreasonable burden.

The lessons from the Owens and Mono Lakes rehabilitation projects are:

- 1. The rehabilitation projects do not fully restore water flow to a pre-diversion state because water diversion must continue to support agricultural and potable water usage in western states.*
- 2. The rehabilitation projects slowly restore water over long periods and thus dust suppression measures must be implemented over the project term.*
- 3. Even though the rehabilitation projects provide less than half of the original flow, the cost is in the billions of dollars and those lake beds continue to be dust sources.*

There are many similarities between the Sevier Lake and Mono Lake. Both are alkaline intermittent terminal desert lakes which receive their flow from fresh water streams, which are diverted by water authorities. The lessons from the Mono Lake rehabilitation project are directly applicable to the Sevier Lake. It is unreasonable to expect controls for this intermittent source from a technical and economic basis. The Sevier River Basin water distribution system is owned by separate, privately owned water canal companies who work together under the Sevier River Water Users Association. Those companies do not have the billion dollar financial wherewithal to accomplish a Mono Lake type project.

Most importantly, a rehabilitation project on the scale of the Mono Lake would not cause the Sevier Lake to cease from being a natural dust source. Evidence provided in the Gilbert survey and our observations show that annual snow fall has a dramatic influence on lake levels even with diversion. That is, there have been years like 2011 when the lake bed was totally flooded and years like 2012 when the lake was partially flooded.

Further, the Sevier Lake bed is not the only natural dust source in this area, as pointed out in EPA's letter of July 10, 2013, where in Figure 11, you discuss major dust plumes from natural playa regions east and northwest of the Sevier Lake that are not affected by water diversion. A Mono Lake type rehabilitation would be useless for the Sevier Desert

because the entire region is an natural arid region prone to dust generation.

Consequently, DAQ believes that there are no reasonable controls available for this source area.

3. Land Disturbed by Agricultural Preparation Outside PM₁₀ Nonattainment Areas.

Large areas of cultivated land in Juab and Millard Counties lie directly upwind of the monitors recording exceedances on April 15, 2008. While clear satellite imagery for April 15, 2008 is not available, imagery of a dust storm four days later on April 19, 2008 shows a large dust plume originating from cultivated lands around Delta, Utah and blowing into Salt Lake County. Contributions from land disturbed by agriculture on April 15, 2008 are equally likely to those observed on April 19, 2008 as wind patterns were similar on these two days.

Utah's demonstration states that "R307-205: Fugitive Emissions and Fugitive Dust" "applies statewide to all sources of fugitive emissions and fugitive dust, except for agricultural or horticultural activities." It is not clear from the actual rule language how agricultural or horticultural activities are exempted.

Utah R307-205 provides rules for fugitive dust control statewide in Utah outside existing PM₁₀ nonattainment areas. Rule 307-205-2 provides an exemption based on Utah Code Title 19, Chapter 2, Section 114 for specific agricultural combustion activities, but does not appear to provide any exemptions for non-combustion agricultural emissions. Non-combustion agricultural activities would, therefore, appear to be required to meet all the requirements of R307-205 statewide, including the opacity requirements of R307-205-4, in contrast to the statement in the demonstration that agriculture is exempt. Also, there is no statewide exemption to opacity requirements during elevated winds; such an exemption only appears in rules for PM₁₀ nonattainment areas. Thus, R307-205-4 (as well as the rest of the R307-205 requirements) appears to apply to agricultural areas statewide that generate windblown dust on high wind days. The demonstration is not clear therefore on how R307-205 is currently interpreted to apply to agriculture, and should be clarified to show why the implemented interpretation should be considered reasonable.

***DAQ Response:** EPA is correct in its interpretation of R307-205. The event demonstration was incorrect in citing R307-205 as stated in EPA's comment. This rule was never intended to address agricultural dust and is not suitable for that type of emission, nor is R307-309, which has already been amended to exclude all agricultural dust. A proposal to amend R307-205 is on the Air Quality Board October 2013 agenda, that includes a proposal to exclude agricultural dust.*

The appropriate way to address agricultural dust control measures is through the conservation programs administered by the Natural Resource Conservation Services

(NRCS). The event documentation presents a lengthy explanation of the varied programs under the NRCS. Attached, please find a letter from David Brown, State Conservationist, in which he provides confirmation that, "most of Utah dryland farmers are currently participating in USDA programs and have conservation plans that include dealing with erosion concerns." The fact that these farmers have approved conservation plans is important because DAQ uses the same mechanism under R307-309 (mandatory fugitive dust plan) to assure that reasonable controls are being applied. The NRCS is the recognized expert in this field. They are integrated into the farming community and have far greater influence than any other agency. This is likely the reason that the interim high wind exceptional events guidance states that NRCS programs are valid control measures. Consequently, we believe that sufficient supporting evidence has been provided to demonstrate that agricultural dust in Utah is reasonably controlled.

4. Highly Erodible Lands

The demonstration indicates that portions of western Utah are considered highly erodible lands under USGS classification systems. As such, if they contributed dust to the exceedances on April 15, 2008, the demonstration should discuss the land management practices (if any) in place to attempt to control anthropogenic sources of soil erosion. For example, programs to establish or reestablish vegetative cover, programs to limit soil disturbance by vehicle or foot traffic or grazing, etc. should be described. If such programs are not in place, some discussion as to why it has been unreasonable to implement stabilization or erosion programs is needed in the demonstration. Examples of these types of statements for natural erodible areas are included in EPA's draft guidance (see p. 38 of the draft guidance).

DAQ Response: *Land management of anthropogenic sources in highly erodible lands can be broken out into two categories; agricultural and commercial/industrial activities.*

Agricultural Activities

Item 3 above provides documentation from the State Conservationist that most farmers located within the erodible lands participate in the NRCS program. The NRCS programs include Conservation Practice Physical Effects practice standards that address:

- *conservation cover*
- *conservation crop rotation*
- *cover crop*
- *critical area planting*
- *cross wind ridges*
- *cross wind trap*
- *dust control from animal activity on open lot surfaces*
- *dust control on unpaved roads and surfaces*
- *filter strip*
- *heavy use area protection*
- *hedgerow planting*
- *herbaceous wind barriers*

- *mulching*
- *range planting*
- *residue and tillage management – tilled and no-till*
- *residue management seasonal*
- *stripcropping*
- *surface roughening*
- *windbreak/shelterbelt establishment.*

These practices can be viewed on the USDA web site,

http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/?cid=nrcs143_026849.

Grazing - The Taylor Grazing Act of 1934 (43 USC 315) was intended to "stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvement, and development; [and] to stabilize the livestock industry dependent upon the public range" (USDI 1988). This Act was pre-empted by the Federal Land Policy and Management Act of 1976 (FLPMA). Effective August 21, 1995, in accordance with the Department of Interior's final rule for grazing administration (43 CFR 4180.1), the BLM established standards for healthy rangeland that requires lease range land health management. Each lease must conform to the established standards. Therefore, BLM grazing leases provide land management control for this anthropogenic activity.

Commercial/Industrial Activities

The highly erodible lands in Utah under the USGS classification systems begins south of I-80 and follows the Wasatch Mountain range southward. Activities from commercial/industrial sources that generate fugitive dust are regulated by R307-205 in the attainment areas and R307-309 in the nonattainment areas.

DAQ conducted a thorough RACT type analysis in which we evaluated other states fugitive dust rules, options described in the WRAP Fugitive Dust Handbook and internal engineering and inspectors insights. The following table provides a summary of our analysis.

Requirement	Utah	Nevada	Washoe County, NV	Clark County, NV	Maricopa, AZ	South Coast	San Joaquin Valley, CA
Construction & Excavation (acreage)	0.25	5 construction 1 acre soil clearing	1	0.25	0.1	5	10 res./5 non-res.
Demolition	√	√	√	1,000 Sq. Ft.	√	5 acres or 100 cu. Yd.	5 acres or 100 cu. Yd.
Trenching	-	-	-	100 ft.	-	-	-
Bulk Materials Transport	√	√	√	√	√	√	√
Carryout and Trackout	√	-	√		√	√	√

Requirement	Utah	Nevada	Washoe County, NV	Clark County, NV	Maricopa, AZ	South Coast	San Joaquin Valley, CA
Open Areas Disturbance	√	-	√	√	√	√	√
Unpaved Vehicle & Equipment Traffic Areas	√	√	√	√	√	√	√
Material Handling	√	√	√	√	√	√	√
Storage Piles	√	√	√	√	√	√	√
Mineral Processing Operations	√	-	√	√	√	√	√
Opacity limits (%) (property boundary – onsite)	10 - 40%	20%	0*	0	0 -20%*	0 – 20%****	20%
Additional activity specific requirements	√	-	√	√	√	√	-
Wind Event Requirements	√	-	√+	√+	√+	√	√
PM10 Attainment	None	Unclassifiable	Maintenance	Serious	None	None	Attain

- South Coast, Washoe, Clark and Maricopa Counties have stringent opacity requirements ranging from no visible dust at property boundary, no visible dust any time, to limiting visible dust to five minutes within an hour. Impetus: serious nonattainment.
- Washoe, Clark and Maricopa Counties have more stringent high wind requirements. Generally speaking, they include the option to cease operations or institute contingency measures. Impetus: serious nonattainment.

The outcome of that analysis was:

- *Utah rules are generally more stringent than most based on our ¼ acre applicability.*
- *The high wind provision in R307-309 was being miss-interpreted by EPA and to some extent, the regulated community.*
- *More stringent requirements for emission management under high wind conditions are necessary.*
- *Control measures in R307-309 are suggested but not required.*

The task group provided the following recommendations:

- 1. Re-word the high wind provision in R307-309 so that it is clear that sources must continue to implement control measures.*
- 2. Require a high wind contingency plan.*
- 3. Removed 30-day dust plan filing window.*
- 4. Require that dust generating activities may not commence before obtaining approved dust plan.*
- 5. Develop best management practices (BMPs) for all dust source categories.*
- 6. Replace the suggested control measures language in R307-309 with requirement to implement BMPs.*
- 7. Create a one-stop shop for a stormwater permit and fugitive dust control plan filing. Offer an online tool using a regulatory decision logic that will guide the applicant through the process. A correctly completed application results in an instant online fugitive dust plan.*

DAQ management approved the implantation of all of the recommendations. The online tool was released November 2011. The tool has been a tremendous success providing a return on our substantial two and a half year investment in the re-engineering of our fugitive dust program. This program also applies to highly erodible lands in the attainment areas because sources are encouraged to use the online tool even though they are not required to do so under R307-205. The tool includes a tutorial on the applicability of R3027-205 with an emphasis on voluntary use of the tool.

Rule R307-309 was amended in 2012 following the task group recommendations. The most significant outcome of our analysis was the development of the BMPs that replaced the suggested measures. Two BMPs are required of every plan, BMP 09 and 19. These were determined to be most problematic for both air and stormwater.

BMP	Project Activity	Check All That Apply
01	Backfilling filling area previously excavated or trenched.	
02	Blasting soil & rock, explosive blasting of soil and rock – drilling and blasting.	
03	Clearing & grubbing, clearing and grubbing for site preparation and vacant land cleanup.	
04	Clearing forms, foundations, slab clearing and cleaning of forms, foundations and slabs prior to pouring concrete.	
05	Crushing of construction and demolition debris, rock and soil. Screening of rock, soil or construction debris.	
06	Cut and/or fill cut and/or fill soils for site grade preparation.	
07	Demolition – implosion, Implosive demolition of a structure, using explosives.	
08	Demolition - mechanical/manual demolition of walls, stucco, concrete, freestanding structures, buildings and other structures.	
09	Disturbed Soil THIS ACTIVITY MUST BE SELECTED FOR ALL PROJECTS.	X
10	Disturbed land - long term stabilization and erosion control of large tracts of disturbed land that will not have continuing activity for more than 30 days.	
11	Dust suppressants - selection and use of chemical and organic dust suppressing agents and other chemical stabilizers.	
12	Hauling materials.	
13	Mining and reclamation operations.	
14	Paving/subgrade preparation for paving streets, parking lots, etc.	
15	Sawing/cutting material, sawing or cutting materials concrete, asphalt, block or pipe.	
16	Staging areas, equipment storage, vehicle parking lots, and material storage areas.	
17	Stockpiles materials (storage), other soils, rock or debris, for future use or export.	
18	Tailings piles, ponds and erosion control.	
19	Trackout Prevention and Cleanup THIS ACTIVITY MUST BE SELECTED FOR ALL PROJECTS.	X
20	Traffic - unpaved routes and parking, construction related traffic on unpaved interior and/or access roads and unpaved employee/worker parking areas.	
21	Trenching with track or wheel mounted excavator, shovel, backhoe or trencher.	
22	Truck loading with materials including construction and demolition debris, rock and soil.	

Sources must select control measures within an applicable BMP. Samples of representatives BMP are shown below.

CRUSHING

BMP 05

If you have crushers and screens on site, you may be subject to the federal requirements contained in New Source Performance Standards Subpart OOO. It is advised that you read this subpart to determine if these requirements apply to you. Please note that Subpart OOO is NOT included in this Dust Control Plan submission. The link to Subpart OOO is listed below:

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=4bb7745b4e567b604ad681bc2a46eec2&rqn=div6&view=text&node=40:6.0.1.1.1.80&idno=40>

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION (CIRCLE NUMBER) FROM EACH SECTION.

Stabilize surface soils where support equipment and vehicles will operate.

- 05-1 Pre-water and maintain surface soils in a stabilized condition.
- 05-2 Apply and maintain a chemical stabilizer to surface soils.
- 05-3 Pave operational area(s).

Stabilize material before crushing.

- 05-4 Pre-water material.
- 05-5 Test material to determine moisture content and silt loading, crush only material that is at optimum moisture content.

Stabilize material during crushing.

- 05-6 Apply water to stabilize material so as to maintain compliance with opacity standards and permit conditions.
- 05-7 Monitor emissions opacity. Make adjustments to maintain compliance with opacity standards and permit conditions.
- 05-8 Install wind break or use enclosure.

Stabilize material after crushing.

- 05-9 Water crushed material immediately following crushing.
- 05-10 Apply and maintain a chemical stabilizer to crushed material.
- 05-11 Maintain in enclosure.
- 05-12 Minimize height of stockpile.

Traffic.

- 05-13 Minimize vehicle miles.
- 05-14 Reduce truck traffic.
- 05-15 Reduce truck speed.

Transfer height.

- 05-16 Minimize transfer and drop point height.

DISTURBED SOIL REQUIRED BMP

BMP 9

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION (CIRCLE NUMBER) FROM EACH SECTION.

Limit disturbance of soils where possible.

- 9-1 Limit disturbance of soils with the use of fencing, barriers, barricades, and/or wind barriers.
- 9-2 Limit vehicle mileage and reduce speed.

Stabilize and maintain stability of all disturbed soil throughout construction site.

- 9-3 Apply water to stabilize disturbed soils. Soil moisture must be maintained such that soils can be worked without generating fugitive dust.
- 9-4 Apply and maintain a chemical stabilizer.
- 9-5 Use wind breaks.
- 9-6 Apply cover (natural or synthetic).

The online tool will not permit an applicant to complete the application if a section of any BMP is incomplete. DAQ staff convert the rare fugitive dust control plans delivered by

paper submission to an online plan and that plan is either printed out for the applicant or sent by e-mail.

In conclusion, we have shown that the NRCS program has taken into account all dust and erosion control measures for agricultural activities in the arid regions of Utah. In addition the rules that govern rangeland leasing through the BLM provide protective measures on Utah rangelands.

The RACT analysis demonstrates that Utah has among the most stringent fugitive dust standards of western states. The re-engineering of Utah's entire fugitive dust program has greatly improved level of compliance among industrial and commercial operations. Utah enforces Best Management Practices through our rule, R307-309.

Potential Sources Inside PM₁₀ Nonattainment Areas

5. Land Disturbed by Agricultural Preparation and Agricultural Unpaved Roads

The emission inventory prepared by the UDAQ for 2008, available on-line at http://www.airquality.utah.gov/Planning/Emission-Inventory/2008_State/08_State_List.htm, shows the contribution of agricultural land preparation and agricultural unpaved roads to PM₁₀ emissions within the Utah County and Salt Lake County nonattainment areas. These are among the highest categories of direct PM₁₀ emissions for area sources within the nonattainment area. It is not clear whether the inventoried emissions include only direct emissions from land preparation activities, or whether it also includes fugitive windblown emissions, including on the four days in 2008 where PM₁₀ exceedances have been flagged as high wind events. Per EPA guidance, demonstrations for high wind dust events need to address whether controls were in place and whether they were reasonable in consideration of recurring windblown historical PM₁₀ dust exceedances within the Utah County and Salt Lake County nonattainment areas.

Rule 307-309 states that the rule “applies to all sources of fugitive dust and fugitive emissions listed in Section IX, Part H of the state implementation plan or located in a nonattainment or maintenance area for PM₁₀, except as specified in (2) below.” The Section (2) exemption refers to Utah Code Title 19, Chapter 2, Section 114, which exempts certain agricultural combustion activities from regulation by the UDEQ. It does not appear to exempt agricultural fugitive dust emissions from regulation. Rule 307-309-6, requiring a fugitive dust control plan on all areas of disturbed soil greater than ¼ acre, appears to apply to agricultural lands within the Utah County and Salt Lake County PM₁₀ nonattainment areas. Utah's demonstration does not indicate how this rule is implemented for agricultural disturbed soil. It is not clear that the fugitive dust controls required in plans developed under R307-309-6, primarily addressing construction sources, are reasonable for agriculture, but Utah's demonstration should provide an explanation of how the existing rules have led to reasonable control application to agricultural areas within the nonattainment areas, and that these controls were in place on April 15, 2008. A plain reading of the rule and its exemption seems to indicate that

fugitive dust plans for agriculture are required prior to soil disturbance.

DAQ Response: *We are not aware of guidance that states that the inventory should reflect exceptional events. Consequently the emissions from fugitive dust sources do not include wind blown emissions.*

EPA is correct in its interpretation of R307-309. This rule was never intended to address agricultural dust and is not suitable for that type of emission. R307-309 has already been amended to exclude all agricultural dust. The appropriate way to address agricultural dust control measures is through the conservation measures administered by the NRCS as described in items 3 and 4.

6. Fugitive Dust Control Plan Contents

Rule 307-309-6 requires fugitive dust control plans for persons owning or operating a new or existing source of fugitive dust, including disturbed areas larger than ¼ acre. The rule requires that the plan include some subset of 27 control measures identified in the rule, and listed on the following page. Some of the identified control measures would be highly effective at controlling windblown dust, while others are intended to control dust produced by activities on the site (but which might be relatively ineffective at controlling windblown dust).

Rule 307-309-6 Strategies to control fugitive dust:

- (a) Wetting or watering;
- (b) Chemical stabilization;
- (c) Enclosing or covering operations;
- (d) Planting vegetative cover;
- (e) Providing synthetic cover;
- (f) Wind breaks;
- (g) Reducing vehicular traffic;
- (h) Reducing vehicular speed;
- (i) Cleaning haul trucks before leaving loading area;
- (j) Limiting pushing operations to wet seasons;
- (k) Paving or cleaning road ways;
- (l) Covering loads;
- (m) Conveyor systems;
- (n) Boots on drop points;
- (o) Reducing the height of drop areas;
- (p) Using dust collectors;
- (q) Reducing production;

- (r) Mulching;
- (s) Limiting the number and power of blasts;
- (t) Limiting blasts to non-windy days and wet seasons;
- (u) Hydro drilling;
- (v) Wetting materials before processing;
- (w) Using a cattle guard before entering a paved road;
- (x) Washing haul trucks before leaving the loading site;
- (y) Terracing;
- (z) Cleaning the materials that may create fugitive dust on a public or private paved road promptly; or
- (aa) Preventing, to the maximum extent possible, material from being deposited onto any paved road other than a designated deposit site.

The suite of controls approved is determined solely by the Executive Secretary of the Air Quality Control Board. Some approved plans may therefore provide little suppression of windblown dust, unless the Executive Secretary ensured a reasonable set of high wind dust controls was present in each plan, or had a set of established criteria for plan approval which emphasizes controls specifically for windblown dust. To show that the rule has been reasonably implemented to provide windblown dust controls, additional information is needed. This could include: 1) statistics or discussion identifying the frequency of including the 27 specified controls in fugitive dust control plans in place in April 2008, and the expected qualitative effectiveness of these control measures for windblown dust suppression; 2) statistics or discussion on how compliance with the requirement to prepare plans is ensured (for example, are building permit applications compared to lists of submitted plans to look for projects without plans?); and 3) how the DAQ or local government ensures compliance with plans.

In a similar manner, Rule R307-309-10 states that owners or operators of mining operations must develop a plan which “may include” any of 17 specified control measures listed on the next page. As with the plans for disturbed areas, these control measures vary in their effectiveness during high winds. Notably, the 17 specified control measures which may be included in plans include measures to minimize the area of disturbed land, measures to minimize the time between disturbance and stabilization, and measures to stabilize areas near roadways or areas which have been regraded. A provision to stabilize disturbed areas prior to regrading is not included in the list of control measures for sources to consider in their plan. This suggests permitted sources with approved plans may have significant areas of disturbed soil both away from roads and not yet “regraded” with no stabilization provisions for extended periods, depending upon which of the measures is included in a given plan.

The fugitive dust control measures to be used for mining operations may include:

- (a) periodic watering of unpaved roads,
- (b) chemical stabilization of unpaved roads,
- (c) paving of roads,
- (d) prompt removal of coal, rock minerals, soil, and other dust-forming debris from roads and frequent scraping and compaction of unpaved roads to stabilize the road surface,
- (e) restricting the speed of vehicles in and around the mining operation,
- (f) revegetating, mulching, or otherwise stabilizing the surface of all areas adjoining roads that are a source of fugitive dust,
- (g) restricting the travel of vehicles on other than established roads,
- (h) enclosing, covering, watering, or otherwise treating loaded haul trucks and railroad cars, to minimize loss of material to wind and spillage,
- (i) substitution of conveyor systems for haul trucks and covering of conveyor systems when conveyed loads are subject to wind erosion,
- (j) minimizing the area of disturbed land,
- (k) prompt revegetation of regraded lands,

- (l) planting of special windbreak vegetation at critical points in the permit area,
- (m) control of dust from drilling, using water sprays, hoods, dust collectors or other controls approved by the executive secretary.
- (n) restricting the areas to be blasted at any one time,
- (o) reducing the period of time between initially disturbing the soil and revegetating or other surface stabilization,
- (p) restricting fugitive dust at spoil and coal transfer and loading points,
- (q) control of dust from storage piles through use of enclosures, covers, or stabilization and other equivalent methods or techniques as approved by the executive secretary, or
- (r) other techniques as determined necessary by the executive secretary.

An evaluation of the frequency of inclusion of controls of greatest value during high winds would be beneficial in showing that the dust plans approved under this rule are reasonable for high wind dust control. Additionally, in light of the lack of a requirement to stabilize disturbed areas in general, an evaluation of control measures in place for the approximately two square miles of extraction operations shown below at Point of the Mountain would assist in showing that reasonable controls have been applied to anthropogenic disturbances within the area upwind of monitors. This would be a more relevant case study of control effectiveness than was the study of Kennecott tailings controls included in the demonstration; Kennecott tailings were not upwind of any monitor exceeding the NAAQS on April 15, 2008, yet were discussed extensively in the demonstration.



Disturbed areas (light colors) along I-15 at Point of the Mountain on the Utah/Salt Lake County Line.

DAQ Response: *We have provided, in our response to comment number 4 above, documentation of the RACT analysis conducted by DAQ on our fugitive dust program and the subsequent amendments to R307-309 (including the removal of all suggested control measures like the mining ones EPA cites in this comment) and the current re-engineered fugitive dust program. Those responses, taken together, address EPA's questioning of the adequacy of R307-309.*

In order to demonstrate that approved dust plans are reasonable for high wind dust control, DAQ included an available case study of the Kennecott tailings controls. Kennecott was used instead of the gravel pit at the point of the mountain because documentation relating to the 2008 event does not exist. We chose available documentation of the Kennecott tailings pond during a representative high wind event in 2010 where the wind vector was across that particular source. DAQ would like to emphasize that the EPA guidance points out that so long as states provide documentation that anthropogenic sources are reasonably controlled, EPA can concur on a documentation even if anthropogenic sources contributed to the event.

7. Reactive Control Strategies During Wind Events

Areas subject to repeated high wind dust events have often adopted control strategies to partially or fully terminate dust generating activities and devote extra resources to dust suppression during wind events. These are called reactive controls. For example, Clark County, Nevada Air Quality Regulations Section 94 (Permitting and Dust Control for Construction Activities) Section 94.9.3 requires that:

“In the event there are wind conditions that cause FUGITIVE DUST EMISSIONS in excess of 20% OPACITY using the Time Averaged Method or Intermittent Emissions Method, in excess of 50% OPACITY using the Instantaneous Method, or one hundred (100) yards in length from the point of origin, in spite of the use of Best Available CONTROL MEASURES, all CONSTRUCTION ACTIVITIES that may contribute to these emissions shall immediately cease. Water trucks and water pulls shall continue to operate under these circumstances, unless wind conditions are such that the continued operation of watering equipment cannot reduce FUGITIVE DUST EMISSIONS or that continued equipment operation poses a safety hazard.” (Emphasis is in the original.)

In addition, certain PM₁₀ attainment areas within Region 8 have implemented Natural Event Action Plans which implement voluntary (as in Rapid City, South Dakota, for example) and mandatory (as in the Powder River Basin of Wyoming) reactive control requirements. Where mandatory, the reactive controls instituted during forecast and actual wind events have been incorporated into facility permits. Looking at historical trends in numbers of flagged PM₁₀ exceedance days, all three areas mentioned above with reactive control approaches have shown downward trends in numbers of exceedance days and flagged data since the controls were implemented. This indicates that these approaches may be effective in reducing high wind dust exceedances.

We are aware of one reactive measure defined in Utah’s fugitive dust rule R307-309; a waiver of opacity limits once winds exceed 25 mph. Given that both attainment and nonattainment areas in other parts of the western U. S. have found it reasonable to implement reactive dust suppression in response to recurring windblown dust events this suggests that similar provisions for the Utah nonattainment areas may be warranted in order to show that all reasonable controls have been implemented. The reasonableness for not implementing reactive dust suppression measures should be addressed in the demonstration.

DAQ Response: *Rule R307-309 has been amended based on a RACT analysis conducted by DAQ. There are a number of issues that we addressed relative to this discussion.*

- *Adequacy of the opacity limits - R307-309-5(3) states that opacity shall not exceed 10% at the property boundary and 20% on site. Our RACT analysis concluded that these limits are consistent with other western jurisdictions and that they cannot be*

practically lowered.

- *Reactive control for high winds – We made several important amendments to R307-309 regarding high winds. The first is based on the fact that once winds reach 25 mph, fugitive dust control measure effectiveness diminishes and at higher wind speeds, they are no longer effective. We retained the high wind exemption because it recognizes engineering limitations and we do not intend to issue a violation when there is no method for a source to comply with a limit. However, we have made it clear that sources are expected to continue to make reasonable efforts. The underlined portions of the rule are the amended portions.*

“Opacity in R307-309-5(1) shall not apply when the wind speed exceeds 25 miles per hour if the owner or operator has implemented, and continues to implement, the accepted fugitive dust control plan in R307-309-6 and administers at least one of the following contingency measures:

(a) Pre-event watering;

(b) Hourly watering;

(c) Additional chemical stabilization; or

(d) Cease or reduce fugitive dust producing operations.

(e) Other contingency measure approved by the director.”

Sources are required to include contingency measure(s) in their fugitive dust control plan for high winds. The online tool will not allow sources to complete their plan development without completing the high wind contingency plan section.

As you can see, we incorporated mechanisms from other air quality regulators that worked within our framework.