COLORADO

Department of Public Health & Environment

Mitigation Plan for High Wind Events Involving PM_{10} in Prowers County, Colorado

Prepared by the

Air Pollution Control Division

Colorado Department of Public Health and Environment

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Contents

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Abbreviations

AQS	Air Quality System
BACM	Best Available Control Measures
CAFO	Concentrated Animal Feeding Operation
CRP	Conservation Reserve Program
EER	Exceptional Events Rule
EPA	Environmental Protection Agency
NAAQS	National Ambient Air Quality Standard
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
OPPI	Office of Partnerships, Planning, and Improvements
PM	Particulate Matter
PM_{10}	Particulate Matter less than or equal to 10 microns in aerodynamic diameter
SIP	State Implementation Plan
TSP	Total Suspended Particle
USDA	U.S. Department of Agriculture

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1 Introduction

In 2007, the EPA promulgated an Exceptional Event Rule (EER), based on the 2005 amendments to Section 319 of the Clean Air Act, which established a process for the treatment of data influenced by exceptional events. The Revised EER became effective September 30, 2016 and included the requirement for areas with recurring events to develop mitigation plans. 40 CFR 51.930 defines "historically documented or known seasonal events" as three events of the same type and pollutant that recur in a three-year period, for which affected data has either been flagged as having been influenced by an exceptional event, or was the subject of an initial notification to the U.S. Environmental Protection Agency (EPA) of a potential exceptional event.

Under 40 CFR 51.930, the Colorado Department of Public Health and Environment Air Pollution Control Division, hereafter referred to as "Division", is required to develop and submit a mitigation plan for particulate matter less than 10 micrometers in diameter (PM_{10}) for Prowers County. The mitigation plan components and how the Division is implementing them are described in detail below. This mitigation plan meets the requirements under 51.930 and will assist the city of Lamar and Prowers County in addressing blowing dust due to uncontrollable winds.

According to the relevant timeframes in the Revised EER, Lamar experienced more than three windblown dust events, causing elevated PM_{10} concentrations in the prior three-year period between January 1, 2013 and December 31, 2015. Since the Division had submitted more than three demonstrations for Lamar under the provisions of 40 CFR 50.14 in a three-year period, Prowers County was included in Table 6 of the preamble to the final rule. The EPA utilized this action to provide written notice to Colorado that Prowers County is henceforth subject to the requirements in 51.930(b) and is subsequently required to develop and submit a mitigation plan to the EPA in accordance with the requirements of the rule.

1.2 Mitigation Plan Requirements

The purpose of this mitigation plan is to protect public health from exceedances of the National Ambient Air Quality Standard (NAAQS) through the implementation of the following three mitigation plan components. At a minimum, the state must:

- Provide for the implementation of appropriate measures to protect public health from exceedances or violations of ambient air quality standards caused by exceptional events;
- Provide for public education concerning actions that individuals may take to reduce exposures to unhealthy levels of air quality during and following an exceptional event, and;
- Provide for prompt public notification whenever air quality concentrations exceed or are expected to exceed an applicable ambient air quality standard.

In order to meet these requirements, each mitigation plan must contain provisions for the following:

1) Public notification to and education programs for affected or potentially affected communities. Such notification and education programs shall apply whenever air quality

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concentrations exceed or are expected to exceed a NAAQS with an averaging time that is less than or equal to 24 hours.

2) Steps to identify, study and implement mitigating measures, including approaches to address each of the following:
   a) Measures to abate or minimize contributing controllable sources of identified pollutants.
   b) Methods to minimize public exposure to high concentrations of identified pollutants.
   c) Processes to collect and maintain data pertinent to the event.
   d) Mechanisms to consult with other air quality managers in the affected area regarding the appropriate responses to abate and minimize impacts.
   e) Provisions for periodic review and evaluation of the mitigation plan and its implementation and effectiveness by the state and interested stakeholders.

Each of these requirements are addressed in this document. To exhibit the completeness of this document and for the ease of the reviewer, Table 1 below includes a description of each air agency mitigation plan requirement and accompanying citation, in addition to the page number where the is addressed in this document. This checklist was taken directly from the EPA Mitigation Checklist document, available on the EPA Exceptional Events Implementation Tools, Templates and Links website[1]. Note that the original checklist contains both EPA and air agency responsibilities. This table includes air agency responsibilities for brevity.

Table 1: Mitigation Plan Checklist

40 CFR 51.930 Mitigation of Exceptional Events Regulatory Citation		Plan Page Number(s)
51.930(b)(2)	*Plan components. At a minimum, each mitigation plan…shall contain provisions for the following:*	
51.930(b)(2)(i)	Public notification to and education programs for affected or potentially affected communities. Such notification and education programs shall apply whenever air quality concentrations exceed or are expected to exceed a NAAQS with an averaging time that is less than or equal to 24-hours.	3-4
51.930(b)(2)(ii)	Steps to identify, study and implement mitigating measures, including approaches to address each of the following:	5-16
51.930(b)(2)(ii)(A)	Measures to abate or minimize contributing controllable sources of identified pollutants.	5-16
51.930(b)(2)(ii)(B)	Methods to minimize public exposure to high concentrations of identified pollutants.	3-16
51.930(b)(2)(ii)(C)	Processes to collect and maintain data pertinent to the event.	16-18
51.930(b)(2)(ii)(D)	Mechanisms to consult with other air quality managers in the affected area regarding the appropriate responses to abate and minimize impacts.	18
51.930(b)(2)(iii)	Provisions for periodic review and evaluation of the mitigation plan and its implementation and effectiveness by the State & interested stakeholders.	18-19
51.930(b)(2)(iii)(A)	*With the submission of the initial mitigation plan according to the requirements in 51.930(b)(3) that contains the elements in 51.930(b)(2), the State must:*	
51.930(b)(2)(iii)(A)(*1*)	Document that a draft version of the mitigation plan was available for public comment for a minimum of 30 days;	Appendix A
51.930(b)(2)(iii)(A)(2)	Submit the public comments received along with its mitigation plan to the Administrator; and	Appendix A
51.930(b)(2)(iii)(A)(*3*)	In its submission to the Administrator, for each public comment received, explain the changes made to the mitigation plan or explain why the State did not make any changes to the mitigation plan.	Appendix A

[1] https://www.epa.gov/air-quality-analysis/exceptional-events-implementation-tools-templates-and-links

40 CFR 51.930 Mitigation of Exceptional Events Regulatory Citation		Plan Page Number(s)
51.930(b)(2)(iii)(B)	The State shall specify in its mitigation plan the periodic review and evaluation process that it intends to follow for reviews following the initial review identified in 51.930(b)(2)(iii)(A).	18-19
51.930(b)(3)(i)	States shall submit their mitigation plans within 2 years of being notified they are subject to 51.930(b).	19

2 Mitigation Plan Components

2.1 Public Notification and Education

The Revised EER requires air agencies to provide for prompt public notification whenever air quality concentrations exceed or are expected to exceed an applicable ambient air quality standard. Whenever PM_{10} air quality concentrations exceed or are expected to exceed the NAAQS of 150 µg/m^3, the Division provides prompt public notification to the citizens of Prowers County. This public notification is multifaceted and designed to reach the greatest number of people possible. The approaches utilized include:

- Issuance of blowing dust advisories that are posted to the Colorado Air Quality Summary webpage[2].
- The Division sends the dust advisories (template included in Appendix B) to members of the public and local representatives who are on the "colorado.airquality" list serve. This list serve is open to anyone who subscribes by emailing aq_subscribe@state.co.us.
- The Division contacts Prowers County staff when a blowing dust advisory is first issued.
- The Division posts the advisory on its Facebook page[3].
- The Division posts the advisory on its Twitter feed[4].
- Prowers County posts the advisory on their Facebook page and shares the advisory information with the local radio station.

The foundation of the public notification system is the identification of exceedances that are occurring or may occur in the near future. This identification relies upon the team of expert meteorologists in the Division. These meteorologists issue forecasts seven days a week and are on duty 365 days a year. This enables rapid identification of exceedances and potential exceedances so that alerts and advisories are sent out promptly.

A forecast or analysis for the potential for blowing dust in Colorado and in the Lamar region specifically is completed on a daily basis throughout the year, and multiple times per day when the forecast for blowing dust is indicative of elevated PM_{10} concentrations. These forecasts are based on a full meteorological forecast for the current and subsequent days, an assessment of state wide and regional soil moisture conditions, review of output from two models that forecast blowing dust in the United States, an assessment of any blowing dust or wind advisory forecasts issued by National Weather Service (NWS) Forecast offices in

[2] http://www.colorado.gov/airquality/colorado_summary.aspx
[3] https://www.facebook.com/cdphe.apcd/
[4] https://twitter.com/cdpheapcd?lang=en

Colorado, Utah, New Mexico, and Arizona, and the evaluation of a variety of satellite data products, surface weather observations, and regional webcams.

The Division worked closely with the City of Lamar, Prowers County Commissioners, local media, and interested community groups to educate the public regarding issues associated with elevated levels of PM_{10} in the Lamar area. Over the years, numerous meetings have taken place with the City and County governments to discuss these issues and to develop a plan to address future high wind events in Lamar. Elements of the program include: explaining what the public can expect when high wind events occur; what steps will be taken to control dust emissions during future high wind events; and, how to minimize personal exposure to high concentrations of PM_{10} during high wind conditions. The public education programs include but are not limited to:

- An informational and health-related brochure (Blowing Dust Health Advisory Brochure) is distributed by the local governments, the Prowers County Health Nurses, the Prowers County conservation and agricultural extension agencies to sensitive populations (elderly and local school districts) as well as to the general public. Distribution of this brochure began in January 1998 (see Appendix C). Based on feedback received during the development of this plan, the Division is developing online resources to educate the public about dust and health.
- Each Blowing Dust Advisory issued by the Division (discussed above under public notification) includes information on what actions individuals can take to reduce personal exposure. The following public health recommendation language is included in each advisory:

"If significant blowing dust is present and reducing visibility to less than 10 miles across a wide area, people with heart or lung disease, older adults, and children in the affected area should reduce prolonged or heavy indoor and outdoor exertion."

- The Colorado Department of Public Health and Environment Office of Planning, Partnerships and Improvement (OPPI) Frequently Asked Questions for Public Health Leaders document[5] is provided to city and county governments and includes resources for dust complaint response. The OPPI also provides city and county government staff with the Fugitive Dust Best Management Practices[6] pamphlet developed by Boulder County Public Health.
- The City of Lamar discourages the use of dust-producing equipment (e.g., leaf blowers) in an effort to reduce PM_{10} emissions through public education and outreach efforts.

This public notification and education processes discussed in this section fulfill the 51.930(b)(2)(i) requirements while working to minimize public exposure to high concentrations of identified pollutants per 51.930(b)(2)(ii)(b). As discussed, the public is notified promptly regarding PM_{10} exceedances or expected exceedances. The education programs and components that have been put into place are ongoing and apply regardless of exceedance status.

[5] https://www.colorado.gov/pacific/sites/default/files/LPHA_EH-FAQ-resource-guide-August-2016_1.pdf
[6] https://assets.bouldercounty.org/wp-content/uploads/2017/02/fugitive-dust-best-management-practices.pdf

2.2 Mitigation Methods

The Revised EER requires a mitigation plan to include steps to identify, study and implement mitigating measures. The following section details various activities to reduce high wind dust in Prowers County.

The Lamar PM_{10} Maintenance Plan, also referred to as the State Implementation Plan (SIP) was submitted to EPA on May 13, 2013 and approved on June 1, 2016. The following describes state regulations and control measures implemented in the Lamar area as part of the SIP, and voluntary and state-only measures:

Table 2: State Regulations Regulating Particulate Matter (PM) Emissions

Rule/Ordinance	Description
Colorado Department of Public Health and Environment Regulation 1- Emission Control For Particulate Matter, Smoke, Carbon Monoxide, And Sulfur Oxides	Applicable sections include but are not limited to: Everyone who manages a source or activity that is subject to controlling fugitive particulate emissions must employ such control measures and operating procedures through the use of all available practical methods which are technologically feasible and economically reasonable and which reduce, prevent and control emissions so as to facilitate the achievement of the maximum practical degree of air purity in every portion of the State. Section III.D.1.a). Anyone clearing or leveling of land greater than five acres in attainment areas or one acre in non-attainment areas from which fugitive particulate emissions will be emitted are required to use all available and practical methods which are technologically feasible and economically reasonable in order to minimize fugitive particulate emissions.(Section III.D.2.b) Control measures or operational procedures for fugitive particulate emissions to be employed may include planting vegetation cover, providing synthetic cover, watering, chemical stabilization, furrows, compacting, minimizing disturbed area in the winter, wind breaks and other methods or techniques approved by the APCD. (Section III.D.2.b) Any owner or operator responsible for the construction or maintenance of any existing or new unpaved roadway which has vehicle traffic exceeding 200 vehicles per day in the attainment/maintenance area and surrounding areas must stabilize the roadway in order to minimize fugitive dust emissions (Section III.D.2.a.(i))

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Colorado Department of Public Health and Environment Regulation 3- Stationary Source Permitting and Air Pollutant Emission Notice Requirements	Construction Permit required if a land development project exceeds 25 acres and spans longer than 6 months in duration (Section II.D.1.j). All sources with uncontrolled actual PM_{10} emissions equal to or exceeding five (5) tons per year, must obtain a permit. The new source review provisions require all new and modified major stationary sources in non-attainment areas to apply emission control equipment that achieves the "lowest achievable emission rate" and to obtain emission offsets from other stationary sources of PM_{10}.
Colorado Department of Public Health and Environment Regulation 4- New Wood Stoves and the Use of Certain Woodburning Appliances During High Pollution Days	Regulates wood stoves, conventional fireplaces and woodburning on high pollution days. Prohibits the sale and installation a wood-burning stove in Colorado unless it has been tested, certified, and labeled for emission performance in accordance with criteria and procedures specified in the Federal Regulations and meets emission standards. (Section II) Section III regulates pellet stoves. Section IV regulates masonry heaters. Section VII limits the use of stoves on high pollution days.
Colorado Department of Public Health and Environment Regulation 6- Standards of Performance for New Stationary Sources	Implements federal standards of performance for new stationary sources including ones that have particulate matter emissions. (Section I)
Colorado Department of Public Health and Environment Regulation 9- Open Burning, Prescribed Fire, and Permitting	Prohibits open burning throughout the state unless a permit has been obtained from the appropriate air pollution control authority. In granting or denying any such permit, the authority will base its action on the potential contribution to air pollution in the area, climatic conditions on the day or days of such burning, and the authority's satisfaction that 31 there is no practical alternate method for the disposal of the material to be burned. Among other permit conditions, the authority granting the permit may impose conditions on wind speed at the time of the burn to minimize smoke impacts on smoke-sensitive areas. (Section III)
Colorado Department of Public Health and Environment Common Provisions Regulation	Applies to all emissions sources in Colorado When emissions generated from sources in Colorado cross the state boundary line, such emissions shall not cause the air quality

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	standards of the receiving state to be exceeded, provided reciprocal action is taken by the receiving state. (Section II A)
Federal Motor Vehicle Emission Control Program	The federal motor vehicle emission control program has reduced PM_{10} emissions through a continuing process of requiring diesel engine manufacturers to produce new vehicles that meet tighter and tighter emission standards. As older, higher emitting diesel vehicles are replaced with newer vehicles; the PM_{10} emissions in areas will be reduced.

The EPA approval of the original PM_{10} Maintenance Plan, effective on 11/25/05, reinstates the prevention of significant deterioration permitting requirements in the Lamar Attainment/Maintenance area. The federal prevention of significant deterioration requirements apply to new or modified major stationary sources which must utilize best available control technology (BACM). This requirement will help to ensure that PM_{10} emissions in the Lamar Attainment/Maintenance area will continue to be minimized in the future.

Voluntary and State-Only Measures

In addition to the measures discussed above, other activities result in the reduction of PM_{10} emissions. Some notable examples include:

- The City of Lamar conducts street sweeping throughout the entire town, eight hours per weekday, year round, weather permitting.
- Any new development in the City of Lamar and within a three mile radius of the city are required to include paved streets.

These strategies are considered to be voluntary local initiatives and State-only requirements, and are intended to reduce PM_{10} emissions. These strategies are not intended to be federally enforceable.

Additionally, the City of Lamar and Prowers County instituted additional controls for the reduction of PM_{10}. The following descriptions include BACM measures that have either already been put into place or will be phased in as economically and technically feasible.

City of Lamar

The City of Lamar has been very active in addressing potential PM_{10} sources within the Lamar area through efforts such as sodding baseball fields, implementing and enhancing a street sweeping program, and chip-seal paving of many unpaved roads. In addition to these type of control measures already taken by the City, the Public Works Department implemented the following BACM within the area:

1. Wind Break

Beginning in the spring of 1997, a wind break of trees was planted north of the Lamar Power Plant. The Russian Olive tree wind break is located approximately one half mile north of the Power Plant and will block potential contributing sources such as the Lamar Transfer Station

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and other unpaved equipment traffic areas to the north. The Russian Olive is a quick growing large shrub/small tree will do well given the semi-arid and windy climate of Lamar. According to section 3.5.2.1 of EPA guidance entitled "*Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures*[7]", one row of trees is considered an effective windbreak. In addition to this commitment, more recent efforts include: the installation of a drip irrigation system to irrigate these tree groves.

The City of Lamar administers a Tree City Program that plants 20 trees per year throughout various parks, open spaces, and residences. The program also provides a $50 reimbursement per tree.

2. Landfill Control Measures

The East Lamar Landfill is located approximately six miles east of the city limit. According to section 3.5.1 of the "Operations and Closure Plan for the East Lamar Landfill", the Director of the Public Works Department and/or the landfill operator is required to do the following litter control measures under high wind conditions:

- Soil cover is required to be placed on the working face of the landfill daily during periods of wind in excess of 30 mph; and,
- The landfill must be closed down when sustained winds reach 30 mph or greater.

An on-site wind gauge is used to monitor wind speeds at the landfill. Operators have radios in their equipment connecting them with the main office so that when the decision to close the landfill is made, it can take place immediately. According to the previous Director of Public Works, landfill operators have been directed to close the landfill at their discretion. Because paper begins to lift and blow into the debris fences at wind speeds of 25 to 30 mph, the operator usually closes the landfill prior to wind speeds reaching 30 mph. The City of Lamar has agreed to make the closure of the Lamar landfill mandatory when wind speeds reach 30 mph. This also reduces windblown dust from the landfill as earth-moving activities are reduced or eliminated during periods of shut down.

In addition to this commitment, more recent efforts include: the placement of chain link fencing and various debris fences in place of the previous litter entrapment cage. This effort is to better minimize the release of materials during high wind conditions.

The facility is also required to follow a particulate emissions control plan included in their most recent permit. This plan specifies that the source is subject to the following emission guidelines to reduce particulates:

- **Processing Activities** – Visible emissions not to exceed 20% opacity, no off-property transport of visible emissions.
- **Haul Roads** – No off-property transport of visible emissions shall apply to on-site haul roads, the nuisance guidelines shall apply to off-site haul roads.
- **Haul Trucks** – There shall be no off-property transport of visible emissions from haul trucks when operating on the property of the owner or operator. There shall be no off-vehicle transport of visible emissions from the material in the haul trucks when operating off of the property of the owner or operator.
- **Control Measures** – Unpaved haul roads shall be watered as often as needed to control fugitive particulate emissions such that the above guidelines are met.

[7] https://www.nrc.gov/docs/ML1224/ML12241A395.pdf

3. Vegetative Cover/Sod

The Lamar Recreation Department installed 100,000 square feet of sod at a recreational open space called Escondido Park. Escondido Park is located in northwest Lamar at 11th and Logan Streets. A sprinkler system has also been installed by the Parks and Recreation Department. The sod provides a vegetative cover for the open area. This dense, complete cover provides an effective control against windblown soil from the open area of the park.

In addition to the commitment above, more recent efforts include stabilizing the parking area with gravel and paving the entrance road leading to and from Escondido Park to reduce track out onto city streets, minimizing additional releases of PM_{10}.

4. Additional Public Works Projects

In addition to the PM_{10} control efforts of the original Natural Events Action Plan, new Public Works projects to further reduce emissions of PM_{10} include:

- The recent purchase of a TYMCO regenerative air street sweeper that is much more effective in reducing dust during street sweeping activities. The use of this sweeper allows for improved cleaning of the streets (e.g., sweeps the gutter and street);
- The fencing of an area around the City Shop to reduce vehicle traffic that may be responsible for lifting dust off of the dirt area between the railroad tracks and the Shop;
- The stabilization of a large dirt and mud hole on the north side of the City Shop. This project is credited with keeping mud from being tracked out into the street and becoming airborne by vehicular traffic;
- The ongoing commitment to search for other stabilization projects that benefit the community and improve area air quality, and;
- The relocation of the Municipal Tree Dump (formerly located in the northeastern corner of the city) to approximately six miles east of the city (now housed at the Municipal Landfill). This relocation eliminates a major source of smoke from agricultural burns that may have previously affected the community.

Burlington-Northern/Santa Fe Rail Line

The rail line running east-west to the south of the Lamar Power Plant can be an important PM_{10} source during conditions of high winds and low precipitation. Vehicle traffic adjacent to the tracks damages vegetation and breaks up the hard soil surfaces, while high winds and passing trains re-entrains the dust into the air.

In September 1997, the City chemically stabilized exposed lands north of the rail line between Fourth and Second Street where there was evidence of vehicle traffic. All other lands on either side of the rail road tracks between Main Street (Fifth) and Second Street and extending westward have either natural, undisturbed ground cover or are used for commercial/recreation purposes that do not allow for significant re-entrainment. The rail company is responsible for maintaining 50 feet of property on either side of the main track and they supply chips (gravel) 50 feet on either side of the main track from Main Street to Second Street (three blocks) to control fugitive dust emissions from this section of the track. Graveling exposed surfaces not exposed to regular vehicle traffic is considered a permanent mitigation measure.

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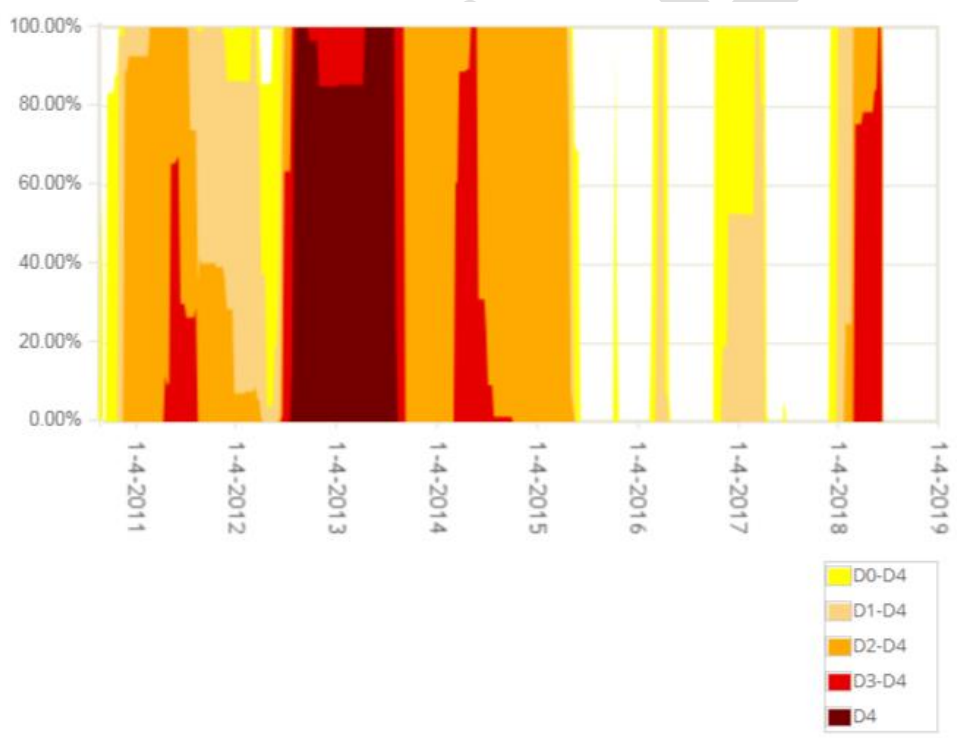
USDA: Natural Resources Conservation Service (NRCS) and Conservation Reserve Program (CRP):

Prowers County consists of more than one million acres of predominately agricultural land, 1,021,915 acres (or 97.5%) of which is land in farms[8]. Of the farm land acreage, cropland accounts for or approximately 46% (480,487 acres) of the total land in the county. Water, and often the lack of it, coupled with the frequent high winds experienced during late fall and early spring can destroy crops, encourage pests, and damage soil surfaces lending them susceptible to wind erosion, especially in recent drought years. The majority of Prowers County cropland acreage is farmed using dryland practices (versus irrigated) and consists of soils classified as highly-erodible-land by the U.S. Department of Agriculture (USDA). As shown in Figure 1 below, Prowers County experienced varying ranges of drought severity starting in 2011 with abnormally dry, moderate, and severe conditions. The area experienced a prolonged period of exceptional drought in 2012 and 2013, with extreme and severe conditions lasting through mid-2015. Since then the area has experienced periods free of drought, with occasional abnormally dry and moderate conditions. In 2018, extreme drought conditions have returned to the area.

Figure 1: Prowers County Drought Monitor Time Series, 1/4/2011-6/22/2018



United States Drought Monitor, Time Series. 2018. Retrieved from: http://droughtmonitor.unl.edu/Data/Timeseries.aspx

Recognizing the problems associated with erodible land and other environmental-sensitive cropland, USDA included conservation provisions in the Farm Bill. This legislation created the CRP to address these concerns through conservation practices aimed at reducing soil erosion and improving water quality and wildlife habitat.

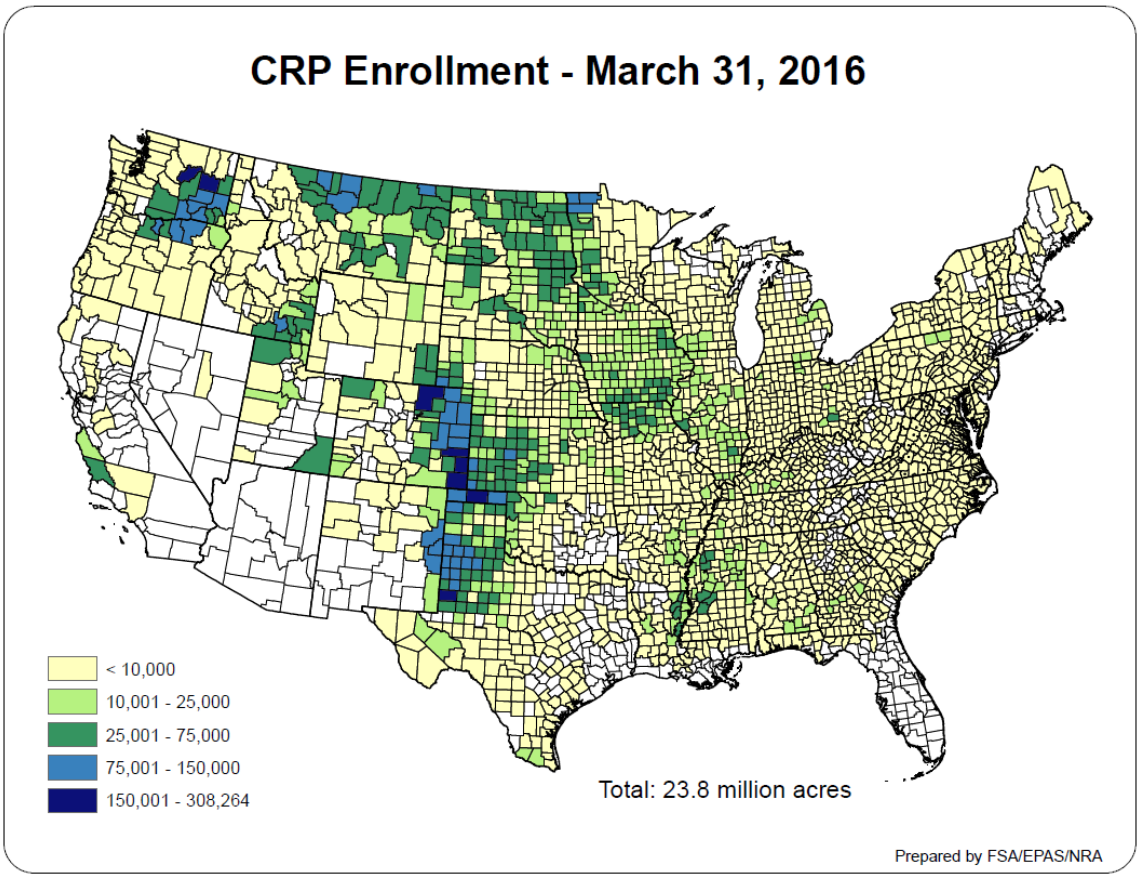
[8] 2012 Census of Agriculture. Volume 1, Chapter 2: County Level Data. U.S. Dept. Of Agriculture, National Agricultural Statistics Service.

The CRP is a voluntary program that contracts with agricultural producers so that environmentally sensitive land is not farmed or ranched, but instead used for conservation benefits. Participating landowners receive annual rental payments for the land and cost-share assistance for establishing those practices.

The CRP has been highly successful in Prowers County by placing approximately 151,613 acres of Prowers County cropland, or 32% of total cropland, under contract (as of Summer 2017). Most of this land (approximately 61,000 acres) has been planted with a perennial grass cover to protect the soil and retain its moisture. Other land conservation practices include wildlife habitat (approximately 24,500 acres), leaving land as existing grassland (approximately 58,800 acres), enrolling in State acres for wildlife (approximately 6,900 acres), encouraging pollinator habitat (approximately 160 acres) and conserving rare and declining habitat (approximately 140 acres). Of the acres enrolled, 149,894 of those are considered highly erodible land.

The following map (**Error! Reference source not found.**) shows CRP enrollment by county across the U.S. As shown in the map, southeast Colorado, including Prowers County, has some of the highest enrollment in the U.S., demonstrating the support this program has in that region.

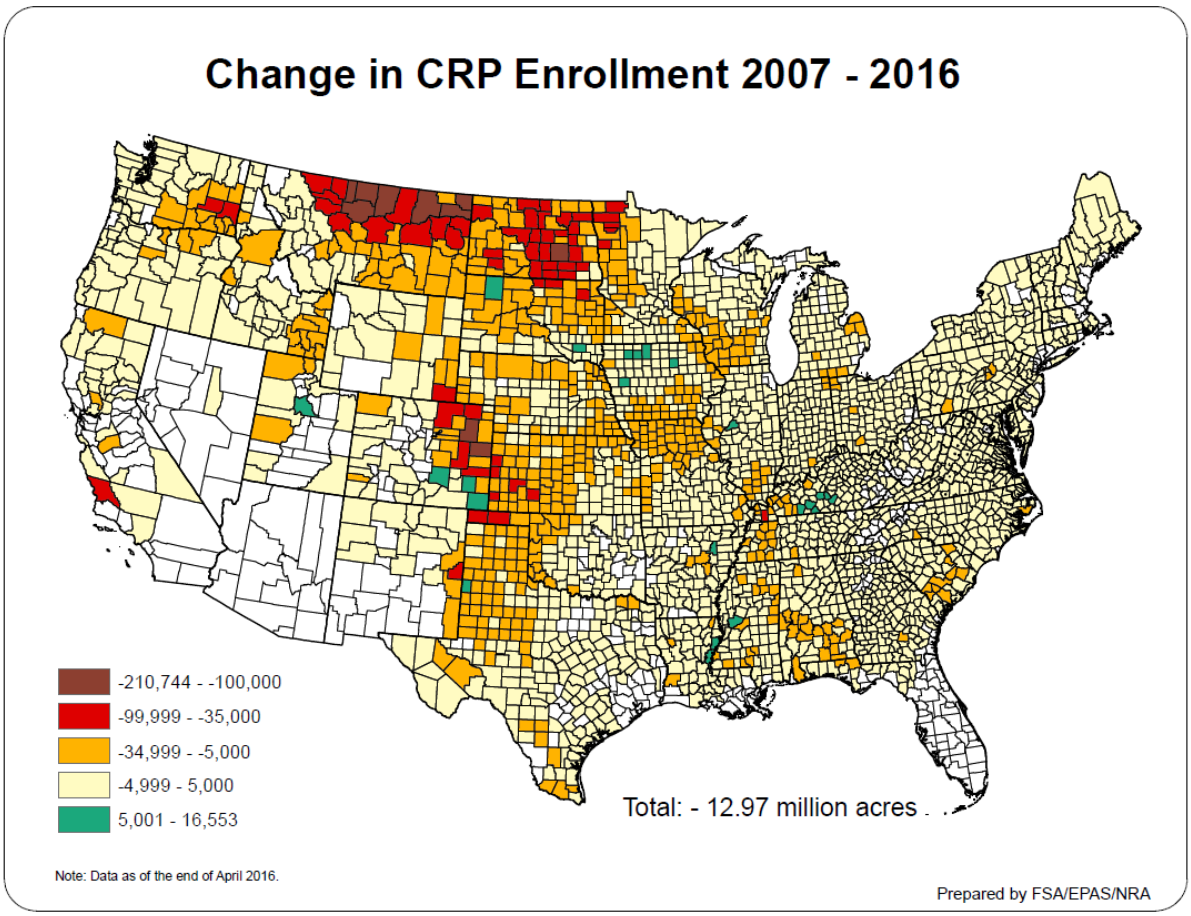
Figure 2: CRP Enrollment Map, (3/31/16)



United States Department of Agriculture, Farm Service Agency [cartographer]. (2016). CRP Enrollment – March 31, 2016 [map]. Retrieved from https://www.fsa.usda.gov/programs-and-services/conservation-programs/reports-and-statistics/conservation-reserve-program-statistics/index

To maintain interest and garner new interest, the Farm Service Agency provides information on CRP year-round through local and state newsletters provided via the USDA e-gov delivery system. The NRCS Colorado CRP has a number of informational brochures and references on their website[9] outlining the program and its benefits. The state and counties also provide information through national press releases. These efforts have been successful in minimizing the lands lost from the program. **Error! Reference source not found.**3 shows the change in CRP enrollment from 2007 through 2016. While enrollment has decreased slightly in Prowers County, neighboring counties Baca and Bent have seen increases in enrollment in this time frame. Since blowing dust has the capacity to travel significant distances, conservation practices in neighboring counties may be just as important as practices within Prowers County to reduce windblown dust. Therefore, it is encouraging to see increases in participation in neighboring counties.

Figure 3: Change in CRP Enrollment Map, (2007-2016)



United States Department of Agriculture, Farm Service Agency [cartographer]. (2016). Change in CRP Enrollment 2007 – 2016 [map]. Retrieved from https://www.fsa.usda.gov/programs-and-services/conservation-programs/reports-and-statistics/conservation-reserve-program-statistics/index

While this program is popular in Prowers County, a number of acres will become eligible to come out of the CRP over the next few years (4,308 in September 2017, 1,099 in September 2019, 76,836 in September 2020 and 21,866 in September 2021). Land released from the CRP

[9] https://www.nrcs.usda.gov/wps/portal/nrcs/detail/co/programs/?cid=nrcs144p2_062739

has the potential to increase the amount of lands contributing to blowing dust in eastern Colorado. In an effort to minimize detrimental impacts, the Farm Service Agency mails letters (available on the NRCS Colorado CRP website[10]) to producers whose contracts are expiring within the next fiscal year. This letter provides a variety of options to consider for their expiring contract including: re-enrolling eligible acres into Continuous CRP, returning land to a cropland rotation, utilizing and enhancing forage as pasture or hayland, or managing the expired CRP for wildlife. The letter further emphasizes the importance of a NRCS approved conservation plan, especially if the expiring land is going to be converted into cropland. While the NRCS cannot require land owners to participate in conservation practices, these educational materials, conservation recommendations and support encourage participation.

The Continuous CRP program, a subset of the CRP, is a popular option for lands coming out of the CRP. Land can be offered for enrollment year-round and there are a number of incentives to keep the selected, sensitive lands in permanent cover. Additional information and details on the incentive payments for various categories of land use conservation practices can be found on the NRCS Colorado CRP website[11].

Colorado State University Co-Op Extension Office:

The Colorado State University Co-Op Extension Office has many efforts underway that further reduce blowing dust and its impacts through the following voluntary initiatives:

- Crop residue efforts that encourage no- or low-till practices. These have been deemed appropriate and useful in reducing blowing dust.
- Ongoing outreach efforts to educate area agricultural producers on soil management programs. These include one-on-one visitations and annual meetings with various corn and wheat programs to discuss crop management.
- Drought workshops to protect topsoil throughout the county.

Additional Measures not included in the Maintenance Plan:

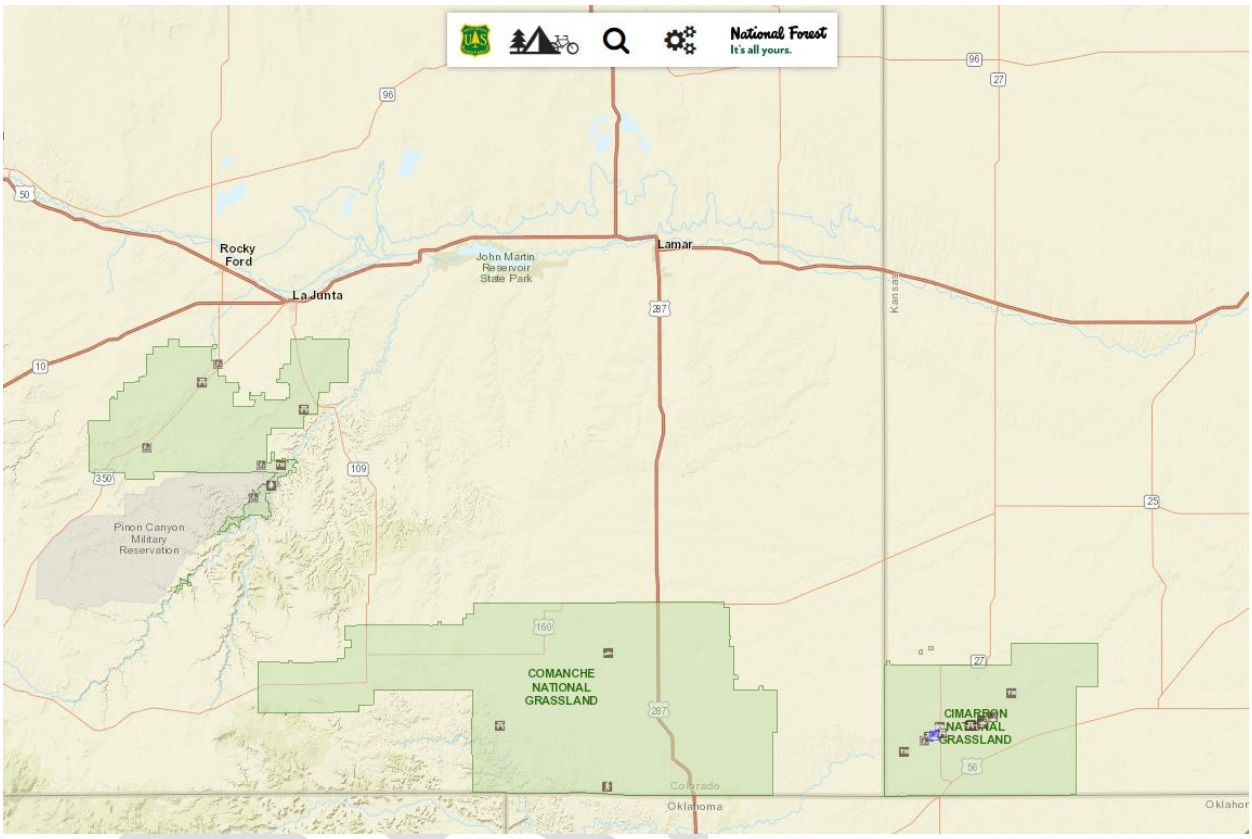
National Forest Service Grasslands:

Just to the east and south of Prowers County lie the Comanche National Grasslands encompassing more than 440,000 acres and Cimarron National Grasslands which encompass an additional 108,175 acres. **Error! Reference source not found.**4 shows the location of the grasslands in relation to Lamar. The Forest Service applies conservation practices to these lands, ensures they are not overgrazed, and works to eradicate invasive species while restoring native ones. By maintaining the health of these lands, they limit to the maximum extent practicable, the potential for blowing dust from them. This in turn protects the health of citizens in that region of the state. Specific activities of each Grassland are discussed further below.

[10] https://www.fsa.usda.gov/programs-and-services/conservation-programs/reports-and-statistics/conservation-reserve-program-statistics/index

[11] https://www.fsa.usda.gov/programs-and-services/conservation-programs/reports-and-statistics/conservation-reserve-program-statistics/index

Figure 4: Map of Lamar in relation to National Forests



National Forest. [Interactive Visitor Map to identify the location of National Grasslands near Lamar]. (2017). Retrieved from https://www.fs.fed.us/ivm/index.html.

Comanche National Grasslands:

The Forest Service has been working to eradicate tamarisk or salt cedar, a noxious weed, and has removed about half the tamarisk along the Purgatoire River corridor within the Grasslands. The goal is to remove tamarisk species from 500 acres per year. According to the Backyard Gardener[12], Tamarisk "often forms pure stands having up to 4,000 stems per acre, effectively choking out all competing vegetation and forming a monoculture. When cut down, salt cedar responds by sending up new shoots from the base of the trunk." While cattle occasionally eat it, they prefer other native species, as do native animals like beaver and porcupine. Although tamarisk may provide good cover from blowing dust, they consume large amounts of water and can even lower water tables. Studies have found that they can actually decrease the flow of water in adjacent rivers and streams, making it essential that this invasive species is controlled.

Once the Forest Service removes the invasive species, riparian restoration projects are initiated including planting cottonwood seedlings, sand bluestem grass and switchgrass. By removing invasive species and restoring the natural ecosystems, the Grasslands are better

[12] https://cals.arizona.edu/yavapai/anr/hort/byg/archive/tamarisk.html

able to withstand prolonged drought, insect infestations, wildfire, herbivory and other disturbances.[13]

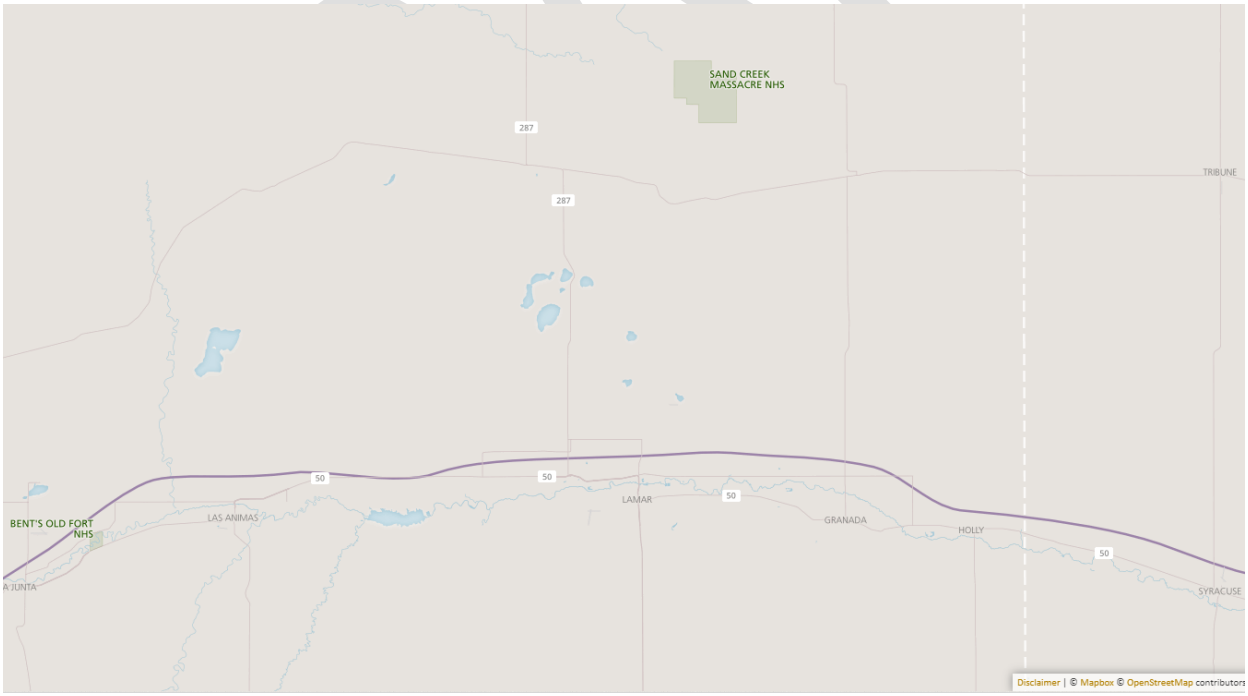
Cimarron National Grasslands:

While Cimarron allows grazing, the number of cattle allowed in each area is based on the previous year's precipitation with attention paid to drought status, average precipitation and above average precipitation. Grazing is further limited to May 1st through October 31st. Grassland health and grazing have been managed successfully in large part due to local rancher's willingness to work with the Forest Service[14].

Sand Creek Massacre National Historic Site:

Directly north of Prowers County is the new Sand Creek Massacre National Historic Site. Figure 5 shows the location of the National Historic Site in relation to Lamar. This site currently consists of approximately 2,400 acres, although the National Park Service (NPS) plans to add additional property and further expand the boundaries in the future. According to the Interim Site Management Plan Environmental Assessment, after acquiring the property in 2000, the NPS changed the land use from ranching and cattle grazing to resource management[15]. This change has allowed the land to recover, decreasing the windblown dust from these lands. A Fire Management Plan[16], Exotic Plant Management Plan, and Restoration Plan[17] for the area have also been completed.

Figure 5: Map of Lamar in relation to Sand Creek Massacre National Historic Site



National Park Service. [Find a Park to identify the location of the Sand Creek Massacre NHS]. (2017). Retrieved from https://www.nps.gov/state/co/index.htm

[13] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm9_032425.pdf
[14] https://www.fs.usda.gov/detail/psicc/about-forest/districts/?cid=fsm9_032755
[15] https://www.nps.gov/sand/learn/management/upload/InterimSiteMgmtPlan_EA_2006.pdf
[16] https://www.nps.gov/sand/getinvolved/planning.htm
[17] https://www.nps.gov/sand/learn/nature/upload/AR-restoration-plan.pdf

Prowers County:

Beginning in 1997, Prowers County with the assistance of local officials, environmental health officers and the general public began preparing a county land use plan. The Prowers County Land Use Master Plan[18] is designed to have wide-reaching authority over the myriad of land use issues involving building (construction sites), siting, health, fire, environmental codes, and other social concerns associated with the City of Lamar and Prowers County. The county land use plan recommendations are included as requirements in the *"Guidelines and Regulations for Areas and Activities of State Interest - County of Prowers - State of Colorado"*[19], which was adopted on April 19, 2004 and amended on August 17, 2006. The plan incorporates provisions to minimize airborne dust including re-vegetation of disturbance areas associated with land development.

The plan recommends the prohibition of Concentrated Animal Feeding Operations (CAFOs) in non-rural areas, as these operations can produce excess dust that may impact the surrounding community. Prowers County Zoning Regulations[20] prohibit the location of a new CAFO within two miles of the boundary of an incorporated area or major residential cluster in an unincorporated area, or within one mile of an existing residence.

As discussed above, a wide variety of measures have been adopted by the City of Lamar and Prowers County as well as the State to protect public health in and around Lamar. These measures are appropriate and necessary to reduce PM_{10} and prevent anthropogenic sources from contributing to exceedances or violations of the PM_{10} NAAQS caused by exceptional events.

2.3 Processes to Collect and Maintain Data

The Revised EER requires air agencies to develop processes to collect and maintain data pertinent to the event. This section provides background information about high wind events in the area and the Division's efforts to collect and maintain data related to the events.

EPA defined ''historically documented'' or ''known seasonal'' events as those events of the same type and pollutant (e.g., high wind dust/ PM or wildfire/ozone) that recur every year, either seasonally or throughout the year. Prowers County and the City of Lamar in particular, experience recurring high wind dust storms. Situated along the Arkansas River and near the Kansas border, Lamar is surrounded by gently rolling to nearly level uplands. The climate is generally mild and semiarid with annual precipitation around 15 inches. In winter and spring, windstorms are common, especially in drier years. Under some conditions, these winds are strong enough to lift PM into the air and cause elevated levels of PM_{10} above the NAAQS

Due to observed problems in Lamar with dirt, dust, and particulate, area monitoring of total suspended particle (TSP) pollution was instituted at the Lamar Power Plant site (100 N. 2nd Ave.) in 1975 until July of 1986. In June 1985, monitoring for PM_{10} began and continued until August 1986. The Lamar Municipal Complex site (104 E. Parmenter St.) was added in August 1986 and was considered better sited, and more appropriate for capturing the worst case population exposure. The Power Plant site was re-established in February 1992 and operated

[18] http://www.prowerscounty.net/document_center/LandUse/Master_Plan1.pdf
[19] http://www.prowerscounty.net/Prowers_County_1041_Guidelines___Regulations.pdf
[20] http://www.prowerscounty.net/document_center/LandUse/Zoning_Regulations.pdf

in conjunction with the Municipal Complex site on an everyday sampling schedule until December 2012 when it was closed because it was not located in ambient air and because of changes at the Power Plant. The Municipal Complex site has continued everyday sampling.

The past exceedances of the PM_{10} NAAQS classified Lamar as a moderate nonattainment area for PM_{10}. In response to this designation, Lamar with the assistance of the State prepared the Lamar PM_{10} Non-Attainment Plan and the Redesignation Request and Maintenance Plan. The Lamar PM_{10} Maintenance Plan was submitted to EPA in 2002 and was approved on October 25, 2005. A revised PM_{10} Maintenance Plan[21] was submitted to EPA on 5/13/2013 and approved on 6/1/2016.

Sources of PM_{10} within Prowers County are mainly agricultural with some mobile sources near cities and town. There is a flour mill which may contribute to elevated PM_{10} in Lamar. The Arkansas River Power Authority coal-fired power plant was also a possible source of PM_{10} in Lamar until its closure in 2013. In 2010, the Division published the Lamar, Colorado, Blowing Dust Climatology report, providing evidence that blowing dust sources within Prowers County and Lamar have been reasonably controlled for particulate matter, as demonstrated by the PM_{10} SIP and Maintenance Plan[22] for the area. A likely source area is lands in eastern Colorado outside of Prowers County. Small grain (wheat-fallow-sorghum) farmlands are a likely source for dust in late fall through spring. As discussed previously in this document, the NRCS has provided reasonable controls for these sources during the period of record and has alternative programs for erosion control as lands under contract with the CRP are released from contracts in the future. Additional possible source areas include lands in Arizona and New Mexico. Natural sources in these states may include deserts, barren lands, and playas; and anthropogenic sources may include agricultural lands. Control of these sources is beyond the purview of the State of Colorado. Existing and planned programs operated by the NRCS and the states may already reasonably control agricultural sources within these states.

For Prowers County, there is currently one PM_{10} monitoring site in Lamar and one meteorological site in the area. Table 3 provides a description of the Prowers County monitoring locations and parameters monitored.

Table 3: Prowers County Monitoring Locations and Parameters Monitored

AQS#	*Site Name*	*Address*		*Site Started*	*Elevation (m)*	*Latitude*	*Longitude*
	Parameter	**POC**	**Parameter Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
08 099 0002	*Lamar Municipal*	*104 E. Parmenter St.*		*12/1976*	*1,107*	*38.084688*	*-102.618641*
	PM_{10}	2	08/1986	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 1
08 099 0003	*Lamar Port of Entry*	*7100 US Hwy. 50*		*03/2005*	*1,108*	*38.113792*	*-102.626181*
	WS/WD/Temp	1	03/2005	P.O. Neigh	Met – One	SPM	Continuous

The Lamar Municipal PM_{10} monitor is a filter-based sampler. The Division has annual contract with a local contractor in Lamar to conduct air monitoring site visits to perform first-line maintenance, install clean filters, and collect sampled filters and data. The sampled filters

[21] https://www.colorado.gov/pacific/sites/default/files/AP_PO_Lamar-PM10-Attainment-Maintenance-Plan-%28Revised%202012%29.pdf

[22] https://www.colorado.gov/pacific/sites/default/files/AP_PO_Lamar-PM10-Attainment-Maintenance-Plan-%28Revised%202012%29.pdf

are collected every four days and sent to a lab for analysis. The Division receives the data from the lab approximately two months later and the data are entered into the EPA AQS database.

The Division visits the site quarterly to conduct flow verification and calibration. Quality assurance is conducted quarterly in accordance with 40 CFR 58[23]. See the Colorado 2018 Annual Monitoring Network Plan[24] and the 2016 Air Quality Data Report[25] for a description of the Division's data quality assurance and quality control procedures. Additionally, the Division maintains a particulate matter tracking workbook. This workbook is used to track PM_{10} exceedances of the NAAQS by monitor and date. Information regarding the number, type, and location of air quality advisories the Division issues each year is logged in a spreadsheet for future reference. The Division also saves an electronic copy of each air quality advisory that is forwarded to the county health department in the affected area.

2.4 Mechanisms to Consult with other Air Quality Managers

The Division has a history of coordination with Prowers County Public Health and Environment as well as the City of Lamar, including the creation of an Air Quality Task Force, as detailed in the Lamar Natural Events Action Plan[26]. As detailed in Section 2.1, the Division developed air quality health advisory procedures to use social media and a list serve to notify Prowers County staff and the public of impending events expected to affect air quality and public health.

For the development of this plan, the Division communicated and coordinated with the Western U.S. Mitigation Plan Workgroup, in addition to various Federal, county, and city staff. The Division also hosts educational webinars through the Colorado Air Quality Collaborative, a group with members from over 30 county public health and environment departments across Colorado. The main goal of the Collaborative is to promote consistency and collaboration on air quality issues in local communities, cities and counties through education and outreach. The Collaboration also offers local governments a direct point of contact for any air quality concerns they may have. The Division plans to host a high wind dust events webinar in 2018 and will continue to consult with Prowers County and Lamar City staff as needed.

2.5 Periodic Review, Evaluation, and Public Comment

The Division made provisions for periodic review and evaluation of the mitigation plan and its implementation and effectiveness by the State and interested stakeholders. A draft version of this plan was posted on the Division's webpage[27] for a 30-day public comment period of August 15, 2018 to September 14, 2018. The mitigation plan was also distributed to the Division's Public Permit Notice list serve on August 14, 2018. A copy of the public notice communication, along with any comments received, will be included in Appendix A and

[23] https://www.gpo.gov/fdsys/pkg/CFR-2015-title40-vol6/pdf/CFR-2015-title40-vol6-part58.pdf
[24] https://www.colorado.gov/airquality/tech_doc_repository.aspx?action=open&file=2018AnnualNetworkPlan.pdf
[25] https://www.colorado.gov/airquality/tech_doc_repository.aspx?action=open&file=2016AnnualDataReport.pdf
[26] https://www.colorado.gov/airquality/tech_doc_repository.aspx?action=open&file=LamarNaturalEventsActionPlan2012.pdf
[27] https://www.colorado.gov/airquality/tech_doc_repository.aspx

submitted to EPA, consistent with the requirements of 40 CFR 51.930(b)(2)(iii)(A)(2). With each comment, the Division will include an explanation of the changes that were made to the plan as a result of the comment or why no changes to the plan were necessary.

Per 51.930(b)(2)(iii)(B) and as recommended in the Revised Exceptional Event Rule[28], the Division will conduct a review and revision, if appropriate, and recertification of this mitigation plan five years after this mitigation plan is finalized. The review process will consider the adequacy and status of the main elements of the mitigation plan. If any substantive changes related to major elements of this plan occur, such as a related rulemaking that impacts this plan, or more than three high wind dust exceptional events occur within a three-year period, the Division will evaluate and update the mitigation plan at an earlier time.

The Division is currently evaluating the effectiveness of the public notification and education process and will continue to do so as new technology methods of communication become available. The evaluation of this plan will also consider conditions that contribute to PM_{10} exceedances in Prowers County, the status and effectiveness of control measures and availability of new control measures, and methods to build upon the current consultation process.

The Division will consult with the Prowers County Health Department and the City of Lamar to gain their feedback and suggestions for mitigation plan revisions. While EPA is requiring air agencies to submit public comments on their initial mitigation plans, it is not requiring the agencies to submit public comments on subsequent reviews and plan reassessments. The Division will determine whether a public comment period is necessary for the mitigation plan revisions based on the type and extent of changes to the plan.

3 Submission of Mitigation Plan

EPA notified the Division the Prowers County was subject to 51.930(b) on September 30, 2016, therefore this mitigation plan was due to EPA no later than September 30, 2018. The Division submitted this plan to EPA on XXX, within the two year window pursuant to 51.930(b)(3)(i).

[28] https://www.epa.gov/sites/production/files/2016-09/documents/exceptional_events_rule_revisions_2060-as02_final.pdf

Appendix A: Public Notice Comments and Division Responses

[This section will be updated after the public comment period closes]

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Appendix B: Air Quality Health Advisory for Blowing Dust Template

Air Quality Health Advisory for Blowing Dust

Issued for portions of [region] Colorado
Issued at [time, day, month, and year]

Issued by the Colorado Department of Public Health and Environment

Affected Area: [description of the affected counties and cities]

Advisory in Effect: [time, date, month, year when the advisory was issued and is in effect until]

Public Health Recommendations: If significant blowing dust is present and reducing visibility to less than 10 miles across a wide area, ***People with heart or lung disease, older adults, and children in the affected area should reduce prolonged or heavy indoor and outdoor exertion*.**

Outlook: [forecast description, for example, "Strong and gusty winds ahead of an approaching cold front are causing areas of blowing dust in parts of south-central and southeastern Colorado. The threat for blowing dust will diminish Tuesday evening as winds decrease."]

For the latest Colorado statewide air quality conditions, forecasts, and advisories, visit:
http://www.colorado.gov/airquality/colorado_summary.aspx

Social Media:
http://www.facebook.com/cdphe.apcd
http://twitter.com/#!/cdpheapcd

*** You are subscribed to Colorado.AirQuality. If you wish to unsubscribe, or modify your preferences please visit https://mailman.listserve.com/listmanager/listinfo/colorado.airquality ***

Appendix C: Blowing Dust Health Advisory Brochure

cause wheezing, coughing and respiratory irritation in individuals with sensitive airways.

What is being done to reduce the PM10 pollution?

The city of Lamar has implemented numerous dust and PM10 controls over the years, and the "Lamar Natural Events Action Plan" has been developed to reduce emissions of PM10 during high wind events. The following describes many past, present and future efforts designed to reduce PM10 emissions:

- Intensive sweeping of paved roads within the City limits
- Tree planting to form windbreaks
- Closure of the East Lamar Landfill during extremely windy conditions
- Sodding of numerous parks and recreation areas
- Stabilization and dust suppression along the Burlington Northern/Santa Fe rail line
- Placement of highly erodible and environmentally sensitive agricultural lands into long-term conservation areas
- Implementation of Land Use Plans that reduce dust emissions from construction activities, gravel pits, and other open areas
- Controls for industrial sources
- Programs to reduce emissions from woodstoves and fireplaces

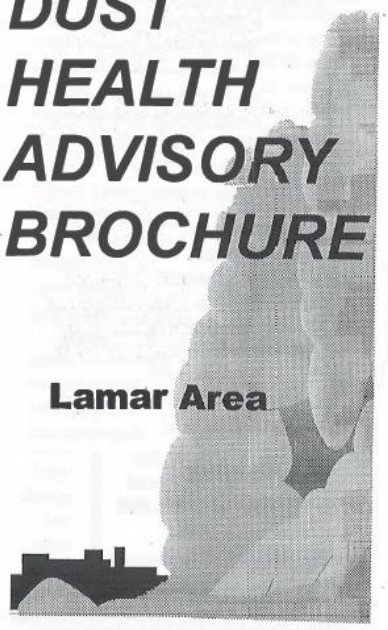
How to get additional information:

Lamar Area
Environmental Health Southeastern Colorado Offices - (719) 336-8721
City of Lamar - (719) 336-4376

State Assistance
Colorado Air Pollution Control Division - (303) 692-3127

COLORADO
Department of Public Health & Environment

BLOWING DUST HEALTH ADVISORY BROCHURE



March 2018

Why are there blowing dust health advisories for the Lamar area?

The Lamar area is subject to episodes of blowing dust during periods of high winds and drought conditions. During many of these events, the amount of dust in the air has exceeded the national and state air quality standards for particulate matter, subjecting Lamar residents and visitors to unhealthy levels of air pollution.

What is the blowing dust advisory program?

Though dust storms can occur throughout the year in southeastern Colorado, the typical season for large scale or major blowing dust episodes in the Lamar area is between September 1st and May 31st. During this period, the Environmental Health Southeast office will issue advisories when wind speeds and other conditions are currently or are forecasted to be favorable for blowing dust episodes. The National Weather Service in Pueblo and the Colorado Air Pollution Control Division in Denver will assist with the forecasting.

Advisories will be broadcast on local radio stations KLMR and KVAY

What actions should be taken during a blowing dust advisory?

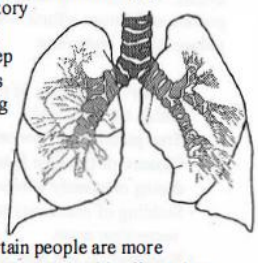
When an advisory is issued by the Environmental Health Southeast office, Lamar area residents and visitors will be asked to:

- Avoid outdoor exercise and strenuous activities and stay indoors with windows shut. This is especially important for persons with coronary or respiratory illnesses, and other major health problems.
- Reduce or avoid driving as this generates dust.
- Stop all woodburning and open burning activities.
- Reduce or postpone tilling, plowing, construction and other activities that will raise dust.

What is Particulate Matter and how is your health affected?

Particulate matter pollution consists of very tiny liquid and solid particles floating in the air. The size of the particles are less than 10 microns in diameter, or 1/7th the thickness of a human hair. This size of particulate matter is commonly referred to as "PM10." PM10 can be made of a mixture of particles including dust, soot, smoke, salts and metals. Some particles are capable of undergoing chemical reactions in the atmosphere and can be formed from gases. Because PM10 is so small and is capable of being inhaled deep into the lungs, it is an important public health and environmental concern - especially in areas susceptible to frequent wind storms where dust and soils can be easily lifted into the air and transported.

While larger particles are kept from the lungs by mechanical means, such as impaction in the nose, throat and larynx, the smaller PM10 particles can slip past these respiratory defenses and penetrate deep into the lungs and harm lung tissue.



While PM10 can cause health problems for everyone, certain people are more vulnerable to PM10's health effects than others. These sensitive populations include children, the elderly, those suffering from asthma or bronchitis, exercising adults, and those who already have heart and lung disease, especially among the elderly. Particulate matter air pollution is especially harmful to people with lung disease such as asthma and chronic obstructive pulmonary disease which includes chronic bronchitis and emphysema. Lung disease is the third leading cause of death in the United States. Exposure to particulate air pollution can trigger asthma attacks and

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