Missouri State Implementation Plan Revision

Americold Logistics, LLC
24-Hour Particulate Matter (PM_{10})
National Ambient Air Quality Standard (NAAQS)
Consent Judgment

Adoption
March 27, 2014

Prepared for the
Missouri Air Conservation Commission

Missouri Department of Natural Resources
Division of Environmental Quality
Air Pollution Control Program
Jefferson City, Missouri

I. Purpose

As required by Section 110(a) of the Clean Air Act, Missouri's State Implementation Plan (SIP) must ensure attainment and maintenance of all National Ambient Air Quality Standards (NAAQS). The Missouri Department of Natural Resources' Air Pollution Control Program is amending and strengthening the Missouri SIP to address violations of the 24-hour coarse particulate matter (PM_{10}) NAAQS of 150 micrograms per cubic meter ($\mu g/m^3$) near the Americold Logistics, LLC's Carthage Crushed Limestone (CCL) facility. The SIP revision consists of a consent judgment with CCL for measures intended to reduce PM_{10} emissions at the facility, all of which are scheduled for installation and operation by March 31, 2014.

II. Background and History

Particulate Matter is a mixture of extremely small solid particles and liquid droplets made up of a variety of components, including acids (such as nitrates and sulfates), organic chemicals, and soil or dust particles. Coarse particles (coarse fraction of PM_{10}) are inhalable and are between 2.5 and 10 micrometers in diameter. Common PM_{10} emission sources include windblown dust; dust from roadways; agricultural tilling; construction activities; and crushing, quarrying, and grinding operations. PM_{10} poses health problems because these particles can bypass the body's natural defense mechanisms and affect both the heart and lungs.

EPA's current health-based PM_{10} NAAQS was set in 1987 at a level of 150 $\mu g/m^3$ measured over 24 hours. An *exceedance* of the NAAQS is a daily (24-hour average) PM_{10} concentration that is above the level of the standard. A *violation* of the NAAQS occurs when an exceedance occurs more than once per year on average over three years.

CCL is a limestone quarry operation located near Carthage, Missouri in Jasper County. The Carthage Air Quality monitoring site was established in January 1999 as a State or Local Air Monitoring Station (SLAMS) site for PM_{10} NAAQS compliance monitoring. The monitor is located very near CCL's operations as shown in the aerial photograph in Attachment 1. It is a continuous Federal Equivalent Method (FEM) PM_{10} monitor that provides both hourly and 24-hour integrated PM_{10} data.

The Air Program has worked with CCL to address exceedances and violations of the PM_{10} NAAQS measured at the Carthage monitor dating back to 2001. In October 2003, all parties entered into a settlement agreement containing measures for reducing CCL's fugitive particulate matter emissions. Under the agreement, CCL was required to purchase an 8,000 gallon water truck, relocate the dust collector at the rail site, pave entrances, implement usage of chemical surfactants, purchase a street sweeper, install wheel wash units, relocate the fine grind scale, establish a single roadway to the fine grind plant, and improve the grind feed transfer system, all by December 31, 2004. In addition, CCL was to implement dust collection at truck loadout points by August 2005. Activities conducted under the agreement addressed the issues at the Carthage monitor for several years.

As discussed above, the PM_{10} NAAQS is not met if the three-year average number of days per year that 150 $\mu g/m^3$ was exceeded is greater than one day per year. Figure 1 shows this number of days for 1999 through 2013 based on measurements at the State's Carthage monitoring site.

Exceedance days shown in the figure are queried from the Environmental Protection Agency (EPA) Air Quality System (AQS) (*EPA AQS AMP488 Report, 02/25/2014*).

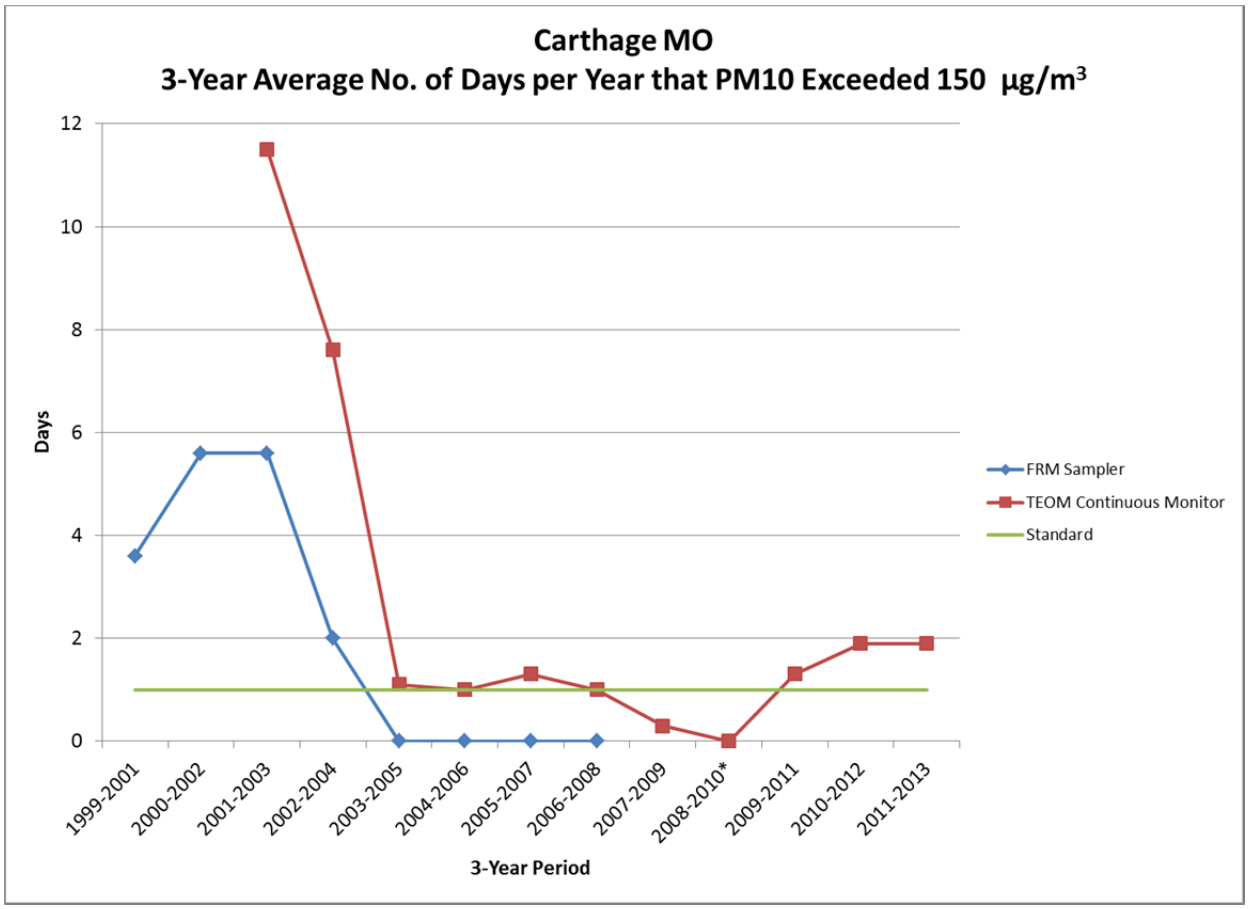
The federal reference method (FRM) sampler (results shown in blue) collected an integrated 24-hour filter sample every third day. The every-third day schedule is based on requirements in 40 CFR 58.12. The total number of days that the standard was exceeded each year was estimated based on the results from the every-third-day samples. These annual results were then averaged over each three-year period.

The tapered element oscillating microbalance (TEOM) monitor (results shown in red) measured the PM_{10} concentration continuously and reported hourly average results. The total number of days that the standard was exceeded each year was estimated based on 24-hour block averages if the monitor did not operate every day, or the number of days per year that the standard was exceeded was used directly if the sampler operated every day. These annual results were then averaged over each three-year period.

Because of the difference between the operating schedules of the two instruments, the number of days that the standard is exceeded can be different between the two instruments, for example if relatively high PM_{10} days are observed with the TEOM but missed by the FRM because of its intermittent schedule. The difference for the 2001-2003 and 2002-2004 periods results primarily from the number of observed exceedance days in 2002 for the TEOM being higher than that for the FRM.

The significant features of the figure are that the standard was not met for the first four periods, was met or nearly met for the next seven periods, and then was not met for the two most recent overlapping three-year periods.

Figure 1



*The average number of exceedance days measured by the TEOM for 2008-2010 is labeled as not valid in the AMP488 report, possibly because only 3 quarters of valid data were reported for 2010. However, no exceedances of the standard were observed in 2008 through 2010.

III. Current PM_{10} NAAQS Violations

The Carthage monitor again began recording elevated PM_{10} concentrations from March 2010 through January 2012. These exceedances are summarized in the chart below along with data validity and certification status in EPA's Air Quality System (AQS). Based on validated air quality data for the 2009-2011 period, the monitor is in violation of the PM_{10} NAAQS with an estimated number of exceedances of 1.7. Preliminary 2012 monitoring data, which has been quality-assured through June 30, 2013, indicates an estimated number of exceedances of 2.3 for the 2010-2012 period. Validated data through June 30, 2013 projects a number of expected exceedances of 2.0 for the 2011-2013 period. Assuming no additional exceedances are monitored, the site is expected to meet the PM_{10} NAAQS in the 2012-2014 period with a number of expected exceedances of 0.6.

Carthage PM_{10} AQS Data Validity and Certification Status as of 6/30/2013			
Date	24-hour PM_{10} Exceedance ($\mu g/m^3$)	Data Validated in AQS (Yes/No)	Data Certified in AQS (Yes/No)*
3/18/2010	151	Yes	Yes
6/23/2011	174	Yes	Yes
9/9/2011	159	Yes	Yes
9/26/2011	258	Yes	Yes
11/30/2011	192	Yes	Yes
1/16/2012	222	Yes	Yes

**The data for calendar year 2012 is certified in the Environmental Protection Agency's (EPA) Air Quality System (AQS) as of May 1, 2013.*

IV. 2014 Consent Judgment and Voluntary Alarm System

The Air Program initiated assistance discussions with CCL in January 2012 and conducted an on-site assistance visit on February 1, 2012. As a result of these discussions, the Air Program worked with CCL to establish a protocol to provide preliminary near-real-time ambient air monitoring data directly to CCL staff for episode analysis. Former practice for handling ambient air monitoring data was to wait until monitoring data had been validated and reported to AQS prior to reporting that an 'official' exceedance or violation had occurred, a process which can take up to 90 days after the quarter in which the monitoring data was collected. Recent advances in technological and management practices for handling near-real time ambient air monitoring data has improved to the point where obvious equipment malfunctions can be determined relatively quickly and evaluations about data validity for exceedance events can be relayed relatively quickly to stakeholders.

In response to the Air Program's inquiries about the causes of the recent PM_{10} NAAQS violations, CCL re-evaluated their operations and emission sources and submitted a letter on

June 8, 2012 to the Air Program proposing additional control measures. As summarized in their letter, CCL determined that excessive emissions occurred when the haulage equipment malfunctioned and the Telsmith Crusher ran short on processing material. The letter also indicated that a malfunctioning compressor for the Chip Plant, Cedar Rapids Dryer and Collector had been repaired, which was expected to reduce visible emissions from this equipment. In addition, a newly designed transition and bin top was expected to address excessive emissions from the Cedar Rapids Long Lime Belt Discharge. Another significant measure identified in the letter was replacing the smooth bags in the Cedar Rapids Torrit collector with pleated bags expected to have better cleaning efficiency, fewer bag failures, and a reduction in the number of start-up and shut-down operations. With these and other measures in the letter as a starting point, the Air Program and CCL worked cooperatively to develop an enforceable consent judgment for implementing controls to further reduce PM_{10} emissions at the facility. CCL proactively put several of the controls in place during 2012 and 2013 prior to finalization of the consent judgment (e.g., replacing smooth bags with pleated bags in two bag houses, the Cedar Rapids Torrit Dust Collector and the Line #1 BHA West Dust Collector).

The 2014 consent judgment being submitted to the EPA for incorporation into the Missouri SIP is in Attachment 2. The control measures include the installation of dust suppression equipment, baghouse and dust collection improvements, adjustments to material transition points, and other measures. The agreement sets specific milestones on an expedited schedule in order to address the NAAQS violations in a timely manner; all control measures are to be installed and operational no later than March 31, 2014. The consent judgment includes additional controls referred to as "contingency measures" to be implemented immediately in the event of a future monitored PM_{10} NAAQS exceedance. Within 10 days, CCL is to conduct an investigation and submit to the department a detailed report addressing the cause and mitigation of any monitored exceedance and a plan for preventing similar exceedances in the future. Further specific contingency measures identified in the consent judgment include connecting additional conveyor transfer points to the dust collection system, enhancing the wet suppression system, and reducing the use of compressed air for cleaning certain equipment. The aerial photograph of CCL's operations in Attachment 1 illustrates the locations of the controls and contingency measures.

As specified in section XII, the 2014 consent judgment will terminate if CCL ceases operation of PM_{10} emission units or elements in Exhibit A, Compliance Plan, are imposed in a permit or permit amendment. In the event the 2014 consent judgment is terminated, the Air Program would incorporate applicable contingency measures into a new consent judgment or into a permit/permit amendment and submit to EPA for inclusion in the Missouri SIP.

The consent judgment also includes additional Emissions Inventory Questionnaire (EIQ) reporting requirements. Per 10 CSR 10-6.110, CCL is required to submit periodic emission inventory data to the Air Program. Upon review of their 2008 emission year report (EIQ), the Air Program determined that the nomenclature and calculations used in the EIQ did not match those used in the issued permits and the facility was not using the current emission estimation equations. Because this issue was never resolved, the consent judgment requires Americold to submit a full EIQ for calendar year 2012 by February 1, 2014.

In addition to installing control measures, CCL voluntarily agreed to participate in a near-real-time PM_{10} concentration alarm notification system for monitored hourly PM_{10} levels that exceed 150 $\mu g/m^3$. The notification consists of an automated email to the department and CCL from the department's data acquisition system when this hourly threshold is exceeded. Although the near-real-time data is preliminary, the notification allows CCL to investigate elevated levels early to determine what emissions sources could be contributing and to take corrective actions, if needed, to prevent a 24-hour exceedance. The department also posts the hourly PM_{10} and on-site wind speed and wind direction data to the department's webpage to provide immediate information about whether or not the prevailing winds are out of the direction of the facility's emission sources. Since the inclusion of CCL into the automated alarm system, staff at the facility has been able to identify causes for elevated PM_{10} concentrations that are likely attributable to facility emission sources and have communicated their findings, in detail, to the department in a timely manner. These voluntary investigations by CCL have been useful in understanding how equipment performance and best management practices may affect monitored particulate concentrations. The PM_{10} concentration alarm notification system is strictly voluntary; the Air Program is <u>not</u> submitting requirements for CCL to participate in the alarm notification system for inclusion in the Missouri SIP.

CCL will continue to implement all permanent and enforceable control measures in place prior to the 2014 consent judgment. In particular, CCL will maintain all best management practices, including application of 100 gallons of water per day per 1,000 square feet of unpaved/untreated surface area, as required by Construction Permits 062005-013 and 062005-014. The 2013 consent judgment builds on and complements existing measures at the CCL facility to ensure continued compliance with the PM_{10} NAAQS.

The recently implemented control measures, plus CCL's attentiveness to elevated hourly readings via the voluntary alarm system have resulted in a positive impact on the Carthage monitor. No exceedances have been recorded at the monitor since January 16, 2012. It is important to note that Missouri experienced severe drought conditions during the summer and fall of 2012, which would tend to exacerbate fugitive particulate matter emissions. The fact that no exceedances of the PM_{10} NAAQS occurred during these conditions gives further support to the effectiveness of CCL's efforts. Full implementation of the control measures outlined in the consent judgment, along with any contingency measures if triggered, is expected to further reduce PM_{10} emissions at the facility and ensure continued maintenance of the 24-hour PM_{10} NAAQS in the future.

V. Public Participation

In accordance with Section 110(a)(2) of the CAA, the Missouri Air Conservation Commission is required to hold a public hearing prior to adoption of this plan and the subsequent submittal to the EPA. The department notifies the public and other interested parties of an upcoming public hearing and comment period thirty (30) days prior to holding such hearing for this SIP revision as follows:

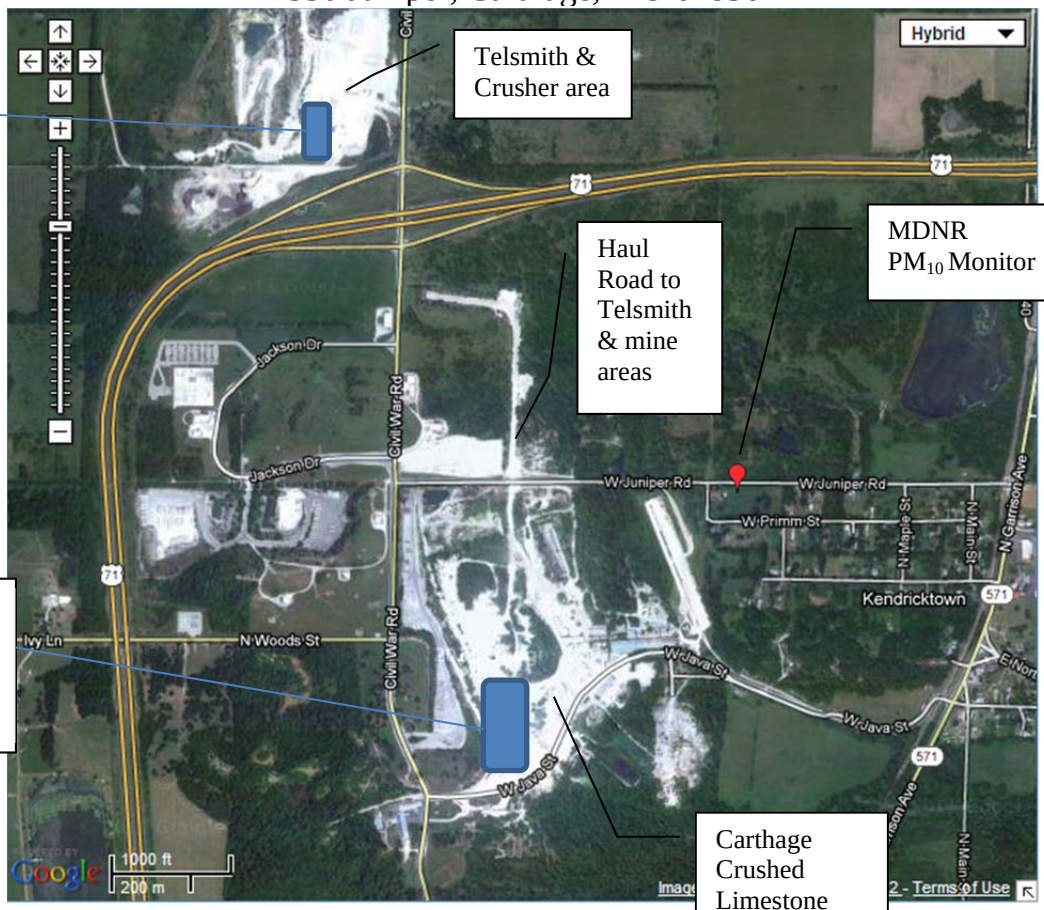
- Notice of availability of the SIP revision was posted on the Department of Natural Resources' Air Pollution Control Program website on December 30, 2013: http://www.dnr.mo.gov/env/apcp/stateplanrevisions.htm
- The public hearing was held on January 30, 2014 beginning at 9:00 a.m. at the Elm Street Conference Center, in Bennett Springs Conference Room, 1730 East Elm Street, Jefferson City, MO 65101.
- The public comment period for the plan opened when it was posted on the Department of Natural Resources' Air Pollution Control Program website on December 30, 2013, and closed on February 6, 2014, seven days after the public hearing.

VI. Conclusion

The Air Program is submitting a consent judgment with CCL for incorporation into the Missouri SIP in order to strengthen the SIP and make these requirements federally enforceable. The consent judgment includes a number of controls designed to reduce fugitive particulate matter emissions at this facility on an expedited schedule. CCL's proactive approach, including early implementation of several control measures and participation in a near real-time alarm system on a voluntary basis, is already yielding positive results at the Carthage monitor, which has not measured an exceedance of the PM_{10} NAAQS since January 16, 2012. The Air Program expects complete implementation of all measures in the 2014 consent judgment, along with continuation of best management practices as required by the facility's permanent and enforceable construction permits, will ensure continued compliance with the 24-hour PM_{10} NAAQS.

Attachment 1

Carthage Monitoring Site AQS# 29-097-0003
530 Juniper, Carthage, MO 64836



PM Control Measures as outlined in the Consent Judgment:

1. Wet suppression system for crushers.
2. Eliminate screen, OR, reduce free fall distance of rock & use wet suppression system.
3. Install new compressor on baghouse controlling the dryer.
4. New drop point transition to improved seal at conveyor transfer point.
5. New bin top on west lime hopper.
6. New drop point transitions to improved seals at conveyor transfer points.

Contingency PM Control Measures 1 & 2 both entail connecting additional conveyor transfer points to the dust collection system.