Wyoming Wildfire Exceptional Event Demonstration
September 18, 2012- September 21, 2012

Developed by the Wyoming Department of Environmental Quality – Air Quality Division, Monitoring Section

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Appendix G: RAWS Meteorological Data

1.0 Scope of Report

This purpose of this report is to provide documentation on exceedances of the $PM_{2.5}$ 24-hour National Ambient Air Quality Standards (NAAQS) that occurred between September 18 and 21, 2012 due to several wildfires burning in western Wyoming and surrounding states. During this time, the Wyoming Department of Environmental Quality – Air Quality Division (AQD) recorded five (5) exceedances of the 24-hour $PM_{2.5}$ (Particulate Matter less than 2.5 micrometers in diameter) NAAQS of 35 $\mu g/m^3$.

During mid-September, several wildfires were burning in Western Wyoming and surrounding states (Idaho, Utah and Montana) contributing to smoke in western Wyoming. Localized wildfires including Chall Creek, Little Horsetheif Canyon, Bear Cub and North Buffalo and numerous wildfires in Idaho including McGuire Complex, Sheep, Powell Selway-Bitterroot Complex, and Mustang, were burning during this time. Figure 1 shows exceeding monitors and fire locations in Wyoming.

Within this demonstration package, the AQD presents supporting evidence which clearly shows that the exceptional events passed the four required tests A-D under 40 CFR 50.14 (3)(iii). Specifically:

(A) The event satisfies the criteria set forth in 40 CFR 50.1;

(B) There is a clear causal relationship between the measurement under consideration and the event that is claimed to have affected the air quality in the area (CFR Section 319(b) (3) (B) (ii));

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

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

As part of the Final Exceptional Events Rule, published March 22, 2007 the preamble categorizes wildfires and wildland use fires as natural events. Furthermore, the preamble also goes on to state that

> *" …both wildfires and wildland use fires fall within the meaning of "natural events" as that term used in Section 319. Therefore, ambient particulate matter and ozone concentrations due to smoke from a wildland fire will be considered for treatment as an exceptional event if the fire is determined to be either a wildfire or a wildland use fire."*

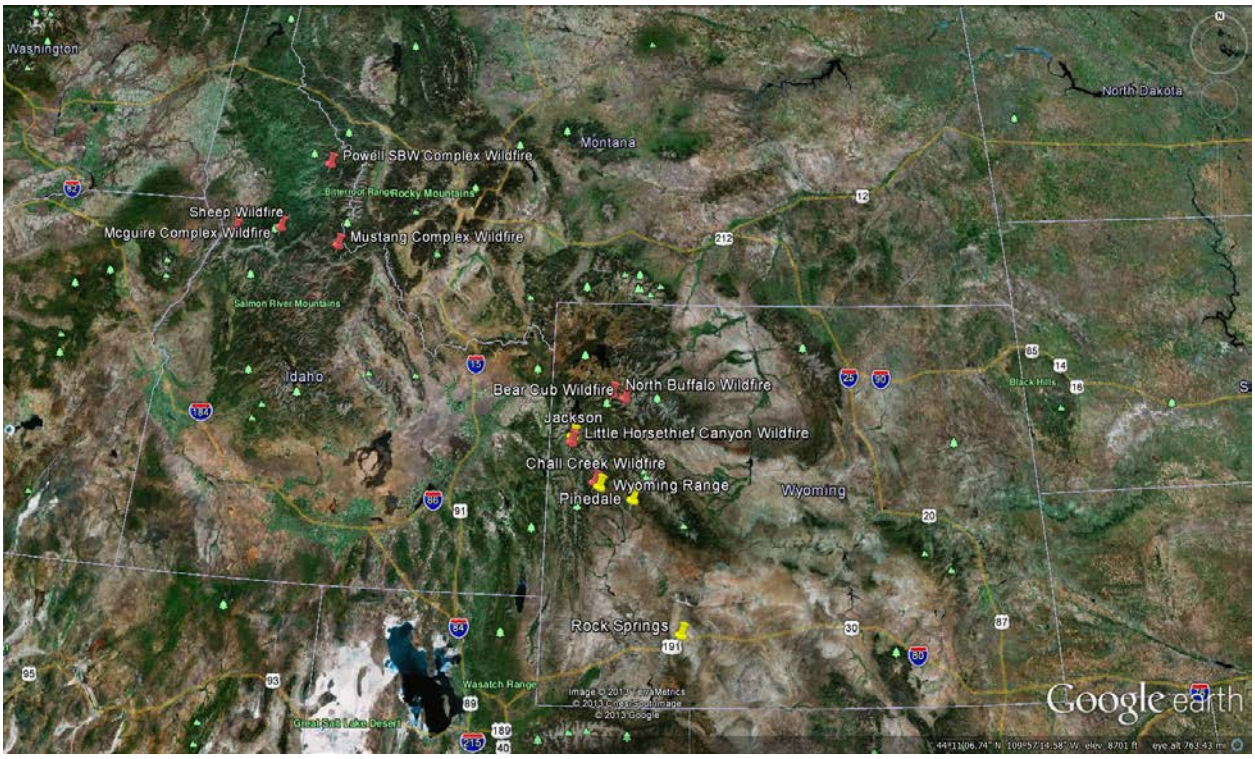
The detailed analysis contained within this document will demonstrate that the following $PM_{2.5}$ events meet the requirements of the Exceptional Event Rule. The demonstration is organized by a detailed conceptual model of the event and then evidence to support each test.

The AQD is therefore requesting concurrence on the following exceptional event flags in AQS:

Table 1: September 2012 Particulate Matter Exceedances

Date	AQS ID	Monitor Name	Parameter	24-hour value ($\mu g/m^3$)
9/18/12	56-035-0097	Wyoming Range	$PM_{2.5}$	39
9/20/12	56-035-0097	Wyoming Range	$PM_{2.5}$	52
9/20/12	56-035-0101	Pinedale Gaseous	$PM_{2.5}$	44
9/21/12	56-039-1006	Jackson	$PM_{2.5}$	39
9/21/12	56-037-0007	Rock Springs	$PM_{2.5}$	37

Figure 1: Wyoming Monitoring Locations and Regional Fires



Yellow pins indicate exceeding monitors; Red pins indicate wildfires

2.0 Conceptual Model

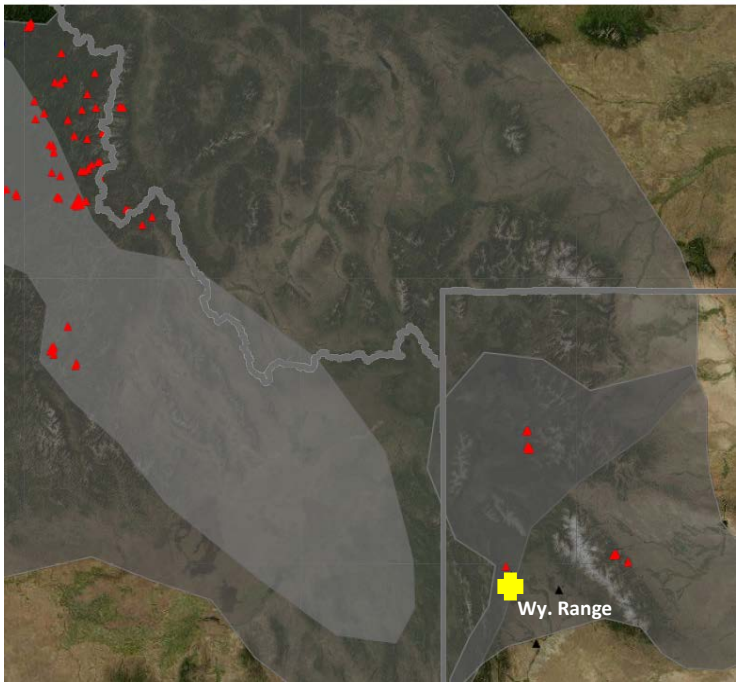
As stated above, several fires contributed to smoke impacts in western Wyoming in mid-September 2012. Ambient monitoring stations that monitor for $PM_{2.5}$ were affected by smoke from these fires. These exceedances began two days after the ignition of the Chall Creek fire, just four (4) miles from the Wyoming Range Station. According to the Incident Information System (InciWeb), the Chall Creek Fire began on September 16, 2012 outside of Merna, Wyoming on the Bridger-Teton National Forest (http://inciweb.org/incident/2934/). The cause of the fire is still under investigation and was considered a wildfire. At the time, western Wyoming was also affected by fires in Jackson, the Teton Wilderness, and Idaho.

Beginning September 18 the AQD began to monitor 24-hour exceedances of $PM_{2.5}$. Smoke from the nearby Chall Creek Fire as well as Little Horsetheif Canyon and numerous fires in Idaho were impacting the Pinedale/Upper Green River Basin area. The Wyoming Range Station (Wy. Range) $PM_{2.5}$ monitor recorded an exceedance on this day. Other monitors in the Upper Green River Basin recorded elevated values, but did not record exceedances on this day.

One tool used to determine smoke impacts from fire is the Hazard Mapping System (HMS) Fire and Smoke Product. This map indicates the location of fires and significant smoke plumes in the Northern Hemisphere. Year-round analysis for Canada and the United States is provided by the NOAA Satellite Analysis Branch. In the HMS images, red triangles represent fire and yellow crosses indicate exceeding monitors.

Figure 2 shows the HMS from September 18 and images from Wy. Range camera at 3:00 p.m. and the Chall Creek Fire taken on September 18.

Figure 2: September 18 HMS, Wy. Range image and Chall Creek Fire image

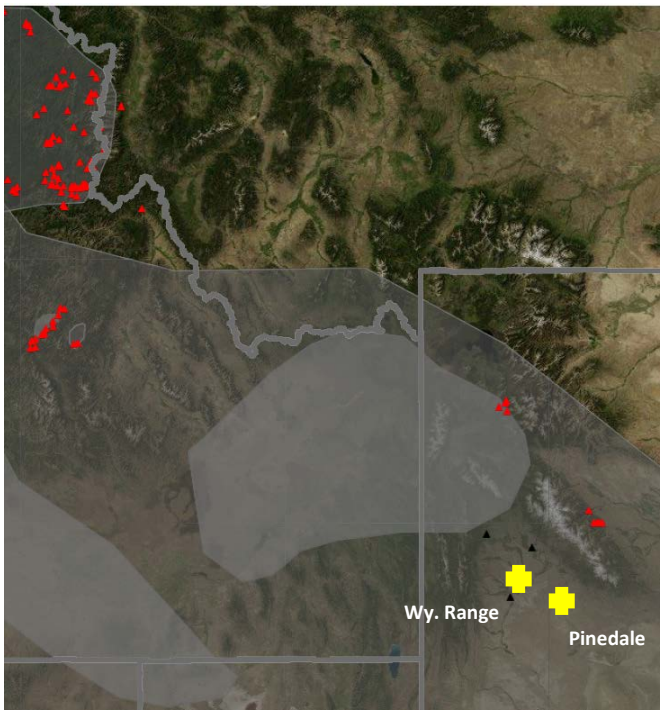


Images obtained from WyVisNet and Inciweb

During the next few days, the Chall Creek Fire was further controlled and contained according to the Unplanned Fire Post Burn Reporting Form (See Appendix B). However, during this time the United States Forest Service (USFS) increased the fire danger to Extreme on the Bridger-Teton due to hot, dry conditions. The AQD investigated weather conditions during Sept 19-21 from the Bureau of Land Management(BLM)/USFS's Coyote Meadows Remote Automated Weather Station (RAWS) and found temperatures in the high 70's and low 80 degree range as well as very low humidity, in the 10 – 20% range during the day (See Appendix G for RAWS data). These conditions prompted the increase fire danger during this time.

On September 20, the Wy. Range $PM_{2.5}$ monitor and the Pinedale Gaseous Station (Pinedale) $PM_{2.5}$ monitor both recorded exceedances of $PM_{2.5}$. Figure 3 shows the HMS for September 20, the image from the AQD's Wy. Range camera at 3:00 p.m. and the image from the AQD's Pinedale camera looking over the town of Pinedale at 3:00 p.m.

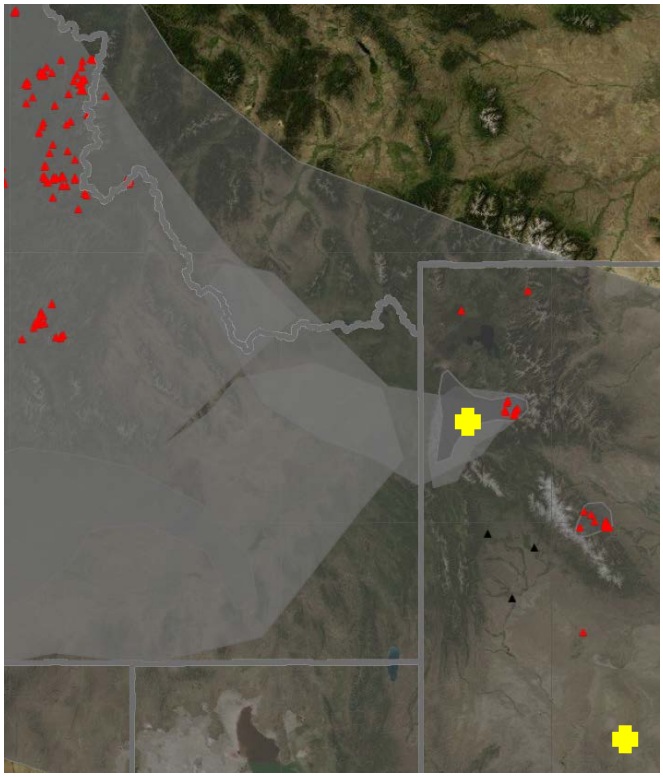
Figure 3: September 20 HMS, Wy. Range image, and Pinedale image

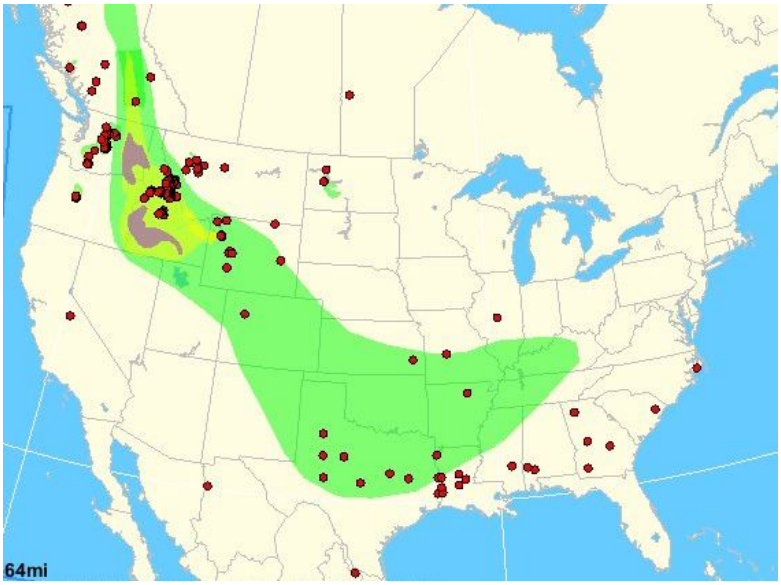


Images obtained from WyVisNet

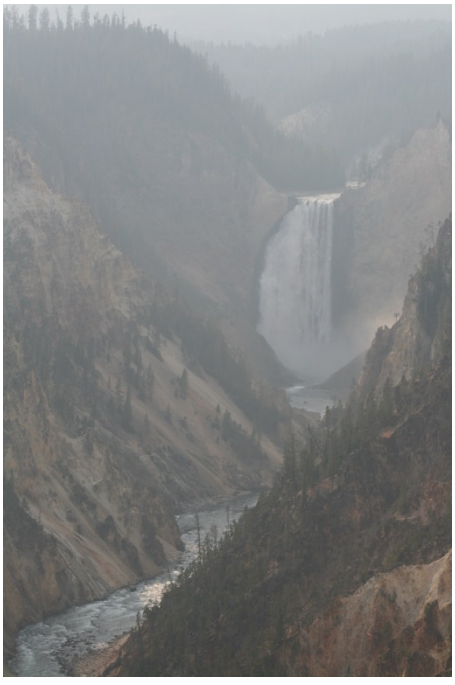
On September 21, smoke from the North Buffalo and Bear Cub fires, which had joined perimeters at this point, as well as smoke from several Idaho fires blanketed western Wyoming. The Jackson and Rock Springs State and Local Air Monitoring Stations (SLAMS) $PM_{2.5}$ monitors recorded exceedances on this day. Figure 4 shows the September 21 HMS, a smoke and fire map from the Wildfire Today website on September 21 and an image taken at Jenny Lake in Grand Teton National Park and Lower Falls in Yellowstone national Park on September 22.

Figure 4: September 21 HMS, Wildfire Today smoke image, and Jenny Lake image





Images obtained from Wildfire Today and Jennifer Frazier



3.0 The event satisfies the criteria set forth in 40 CFR 50.1(j)

According to 40CFR50.1 (j) an exceptional event is defined as:

> "Exceptional event means an event that affects air quality, is not reasonably controllable or preventable, is an event caused by human activity that is unlikely to recur at a particular location or a natural event and is determined by the administrator in accordance with 50.14 to be an exceptional event"

The exceedances listed in Section 1 of this report, along with monitored data, satellite and aerosol analyses, photographs, and news accounts listed throughout this report are evidence that these wildfires affected air quality.

Wildfires that affected concentrations at these monitors were not reasonably controllable or preventable. As stated above, the Chall Creek Fire was a primary contributor to smoke that caused the exceedances. The USFS utilized a suppression plan for the Chall Creek Wildfire. According to InciWeb, the wildfire began on Sunday, September 16, 2012 around 2:00 p.m. For the initial response, 270 personnel were utilized in various roles including: 6 Boise Smoke Jumpers, Helitack crews from the Bridger-Teton National Forest, 20 fire engines, 3 helicopters, 2 dozers, and 5 hand crews. Additionally, local firefighters from Sublette County assisted in the suppression effort. On September 19, a Type 3 Incident Management Team began managing the fire. The crews immediately constructed control lines. South of the fire line, burn out operations were conducted to remove unburned vegetation near the control lines. Evacuations for some of the affected area were lifted on September 20. All closures were lifted by September 23. Mop-up operations began around September 19 and continued through October 25 when the fire was declared out. Throughout the fire, firefighters operated in a manner to protect people, property, and infrastructure in the region.

On November 13, Justin Kaber, East Zone Assistant Fire Management Officer (AFMO) of the Bridger-Teton National Forest Big Piney and Pinedale Ranger Districts submitted an Unplanned Fire Post-Burn Reporting Form in compliance with the Wyoming Department of Environmental Quality-Air Quality Division's Smoke Management Program. The report indicated that the management response was suppression of the fire. The Unplanned Fire Post Burn Reporting Form can be found in Appendix B.

Furthermore, the wildfires that burned in Wyoming during 2012 are considered to be natural events. As part of the Final Exceptional Events Rule, published March 22, 2007 the preamble categorizes wildfires and wildland use fires as natural events. The Chall Creek, Little Horsetheif Canyon, North Buffalo and Bear Cub fires were considered wildfires by the managing agencies according to their Unplanned Fire Post Burn Reporting Forms.

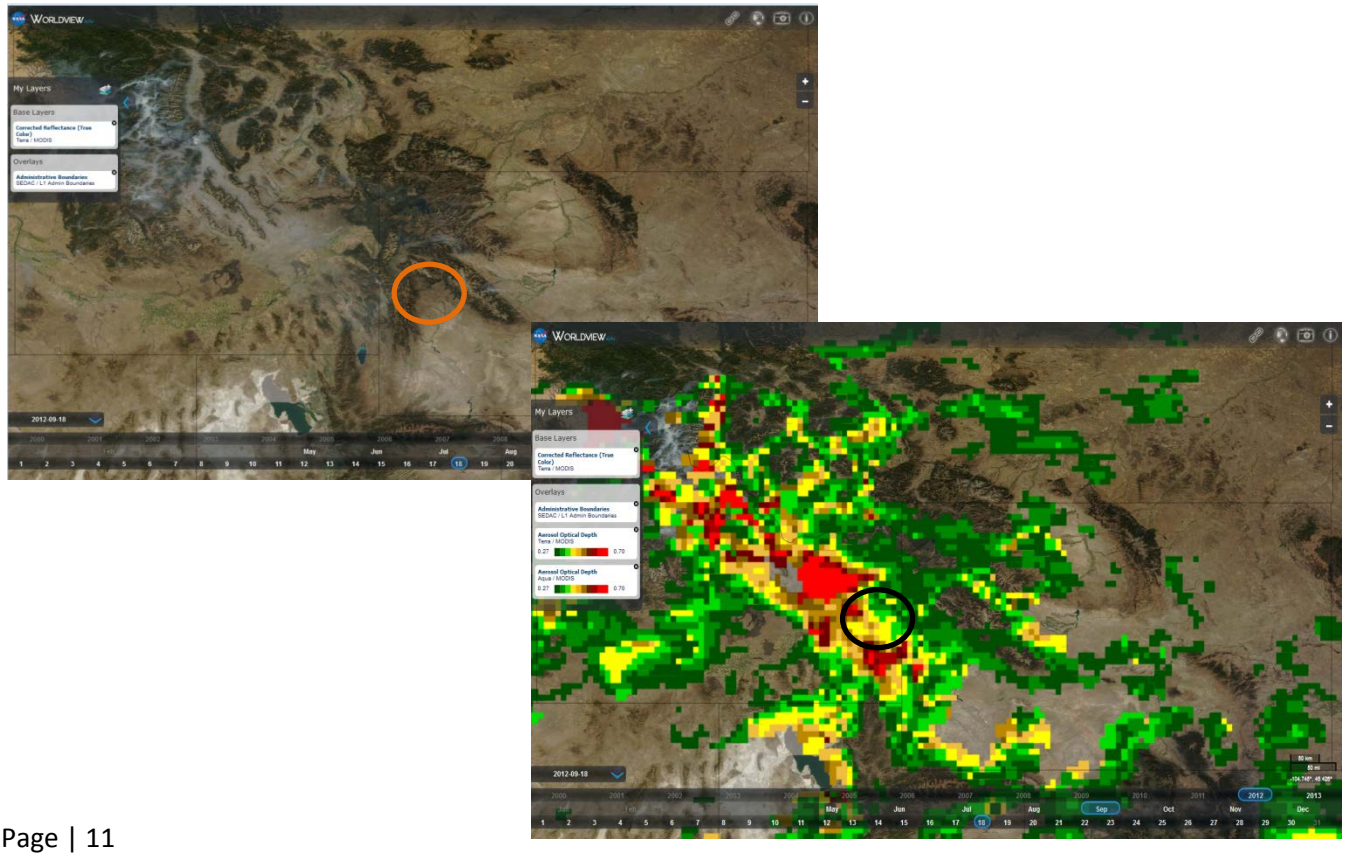
4.0 Clear Causal Relationship

Several diagnostic tools were used to show the clear causal relationship between the smoke from the Chall Creek and North Buffalo wildfires (as well as the numerous other wildfires burning in Wyoming and Idaho) and the $PM_{2.5}$ exceedances. This Section will show several analytical products that add to the weight of evidence that smoke traveled from these fires to the exceeding monitors on these days in September. There will be a short description of each product and examples. However, it is important to note that many of these products are obtained from satellites, and there may not always be images available for every date, time, and area that an exceedance occurred due to cloud cover or satellite position.

Available Satellite Data

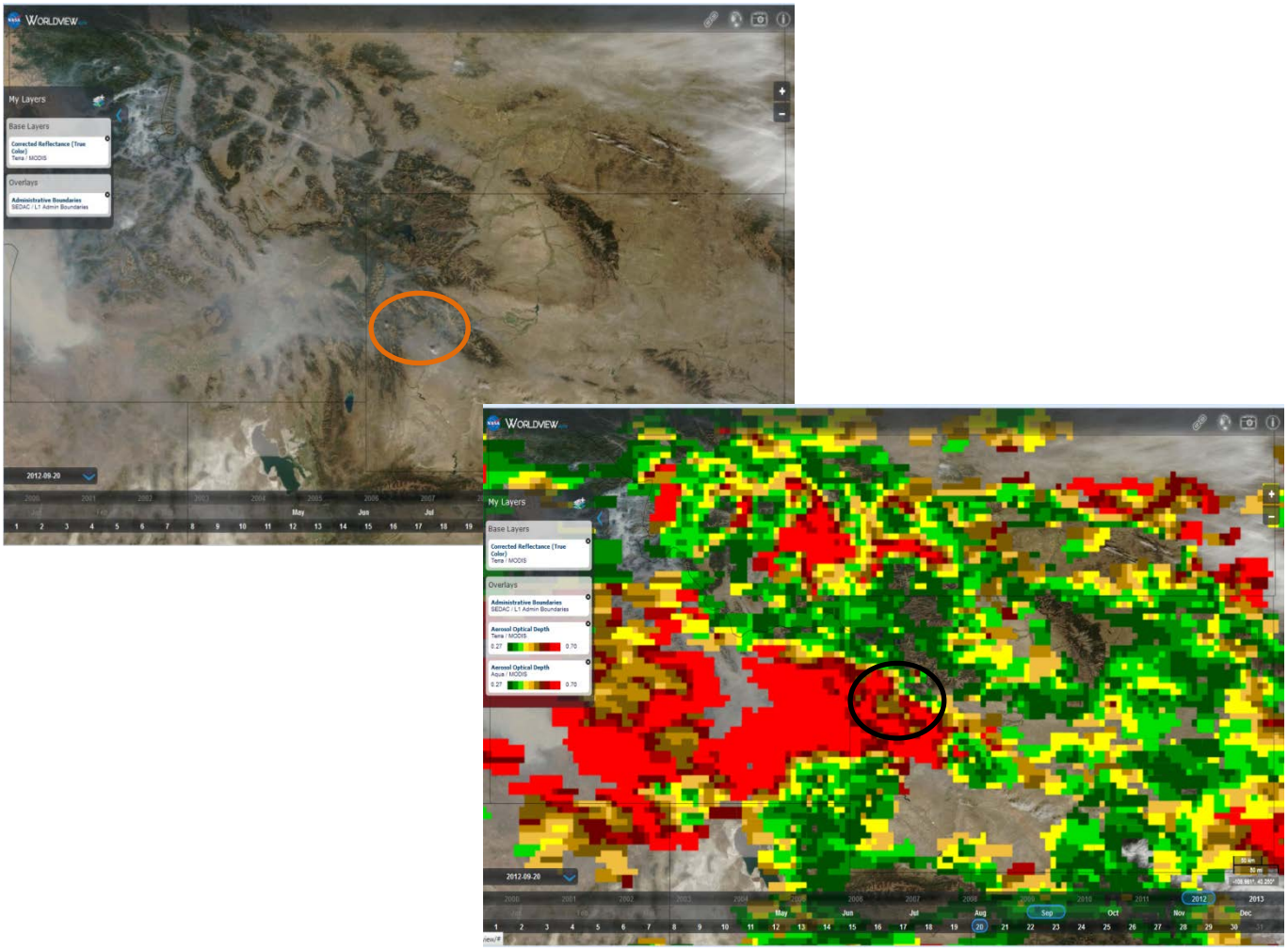
One of the most useful tools to identify the path of smoke from wildfires is NASA's MODIS (Moderate Resolution Imaging Spectroradiometer). MODIS is a key instrument aboard the Terra (EOS AM) and Aqua (EOS PM) satellites. Terra MODIS and Aqua MODIS are viewing the entire Earth's surface every 1 to 2 days. MODIS takes "true color" images of the earth's surface as well as estimating other key air quality parameters in the atmosphere. MODIS images can see smoke plumes (images will be referred to as "true color") and can be combined with the estimated aerosol optical depth (AOD) to estimate elevated aerosol (images overlaid with AOD will be called "AOD"). Figure 5 shows the September 18 MODIS true color (top left) and AOD (bottom right). The true color image shows smoke in western Wyoming and Idaho and the AOD shows greater aerosol concentrations in warmer colors, blanketing the Wyoming Range Mountains and the Wy. Range station.

Figure 5: September 18 MODIS true color and AOD images



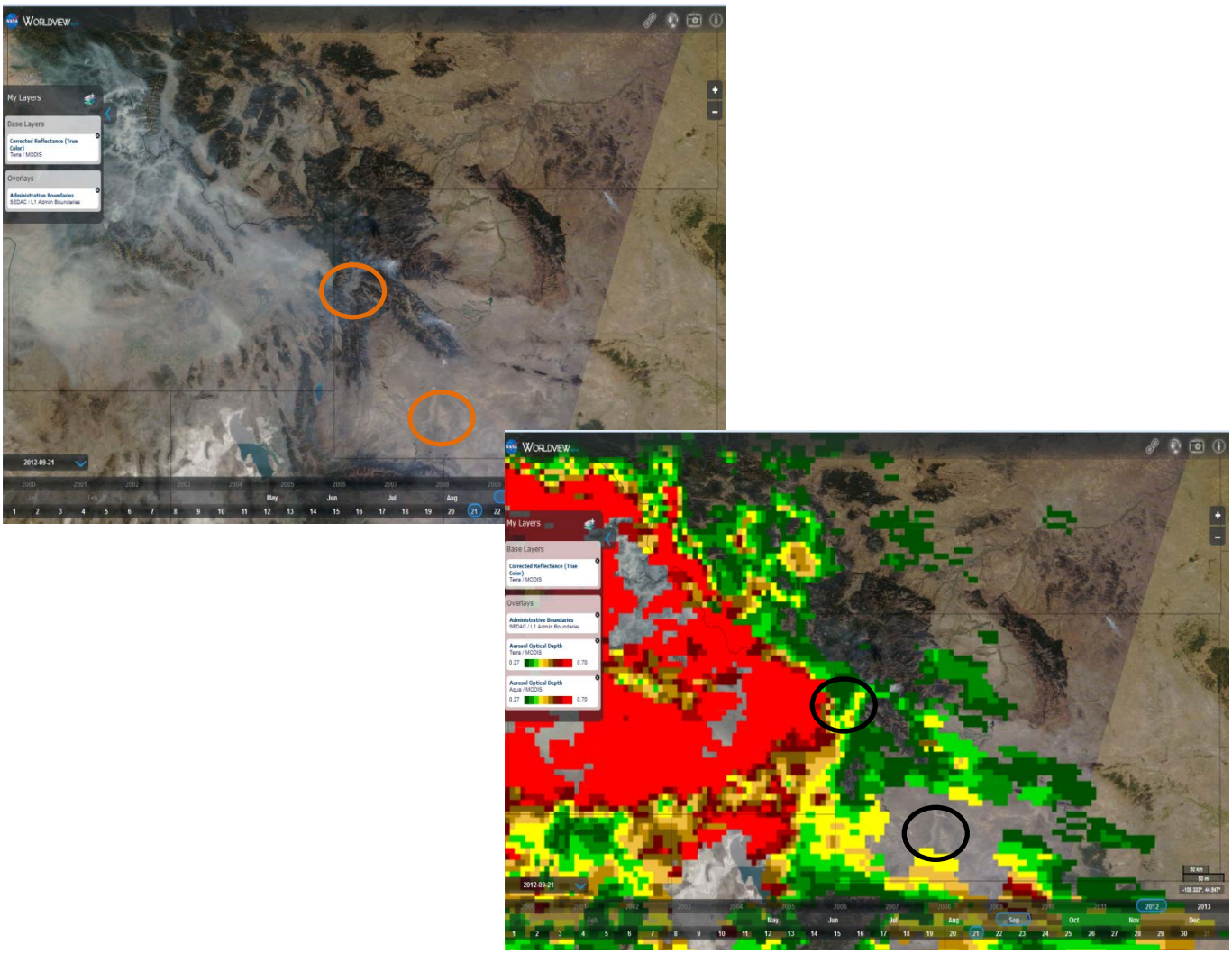
On September 20, the Wy. Range and Pinedale $PM_{2.5}$ monitors exceeded the 24-hour NAAQS. Figure 6 shows the true color and AOD from September 20. Smoke is evident throughout the Wyoming and Wind River mountain ranges and in the Upper Green River Basin, and AOD shows heavy aerosol throughout Idaho and Western Wyoming.

Figure 6: September 20 MODIS true color and AOD images



There were also $PM_{2.5}$ exceedances on September 21 at the Jackson and Rock Springs SLAMS $PM_{2.5}$ monitors. Figure 7 shows the true color and AOD images for this day. Smoke is evident in western Wyoming and the AOD in western Wyoming is moderate.

Figure 7: September 21 MODIS true color and AOD image



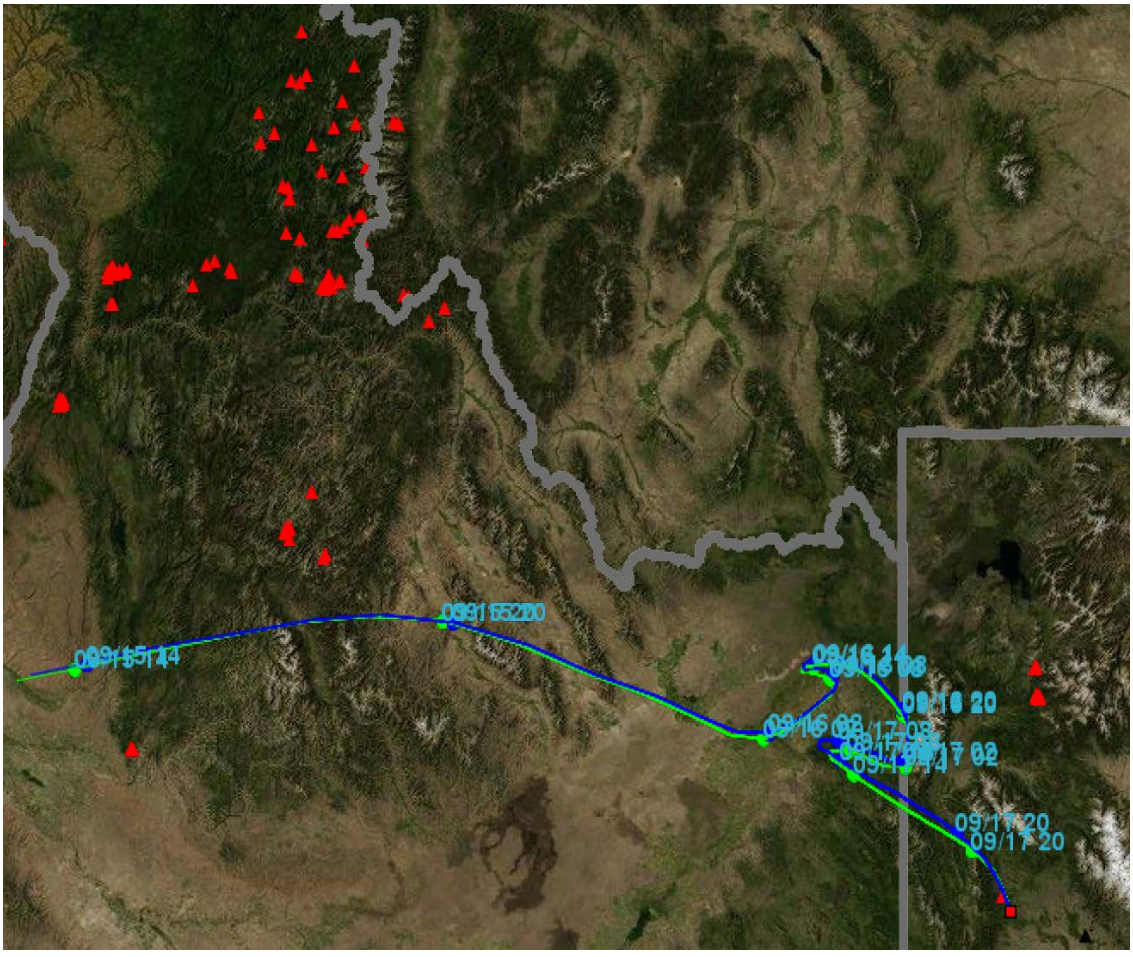
MODIS true color and AOD images for each day between September 18 and September 21 can be found in Appendix C. Additionally, NOAA has a product that estimates daily surface $PM_{2.5}$ during sun-lit time over the United States using MODIS AOD. The $PM_{2.5}$ is then estimated from daily AOD through predefined regression relation, which are derived through model simulations. These graphics can also be found in Appendix C.

HYSPLIT Trajectories

Another useful tool in identifying the cause of high particulate matter readings is a wind trajectory modeling tool called HYSPLIT (Hybrid Single Particle Lagrangian Integrated Trajectory). HYSPLIT uses 12-kilometer meteorological data to demonstrate not only the origin of air parcels but also evolution of air parcels as they move through the atmosphere. HYSPLIT can be used to analyze the path air parcels took prior to arriving at a selected point (backward trajectories). Conversely, HYSPLIT can also determine the eventual fate of air parcels originating from a specific point (forward trajectories). It should be noted that due to the resolution of the meteorological data, HYSPLIT may miss localized terrain features when estimating trajectories. For this demonstration, the AQD used the HYSPLIT tool from EPA's AirNow Tech to analyze trajectories. The blue paths are 100 meters above ground and the green paths are 10 meters above ground.

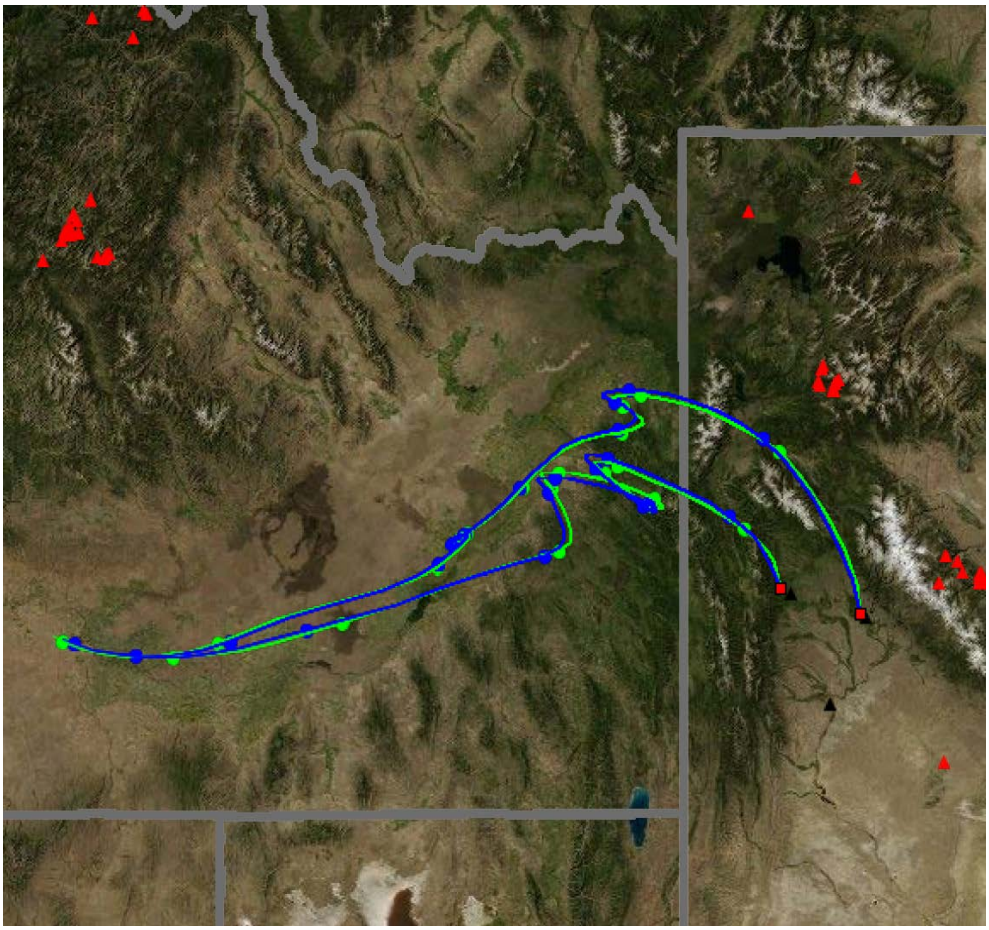
Figure 8 shows the 60-hour back trajectories from the Wy. Range station on September 18. This shows air coming across Idaho, where there are several wildfires. The trajectory passes through an area where heavy smoke is present (as seen in the MODIS images above).

Figure 8: September 18 60-hour back trajectory from Wy. Range



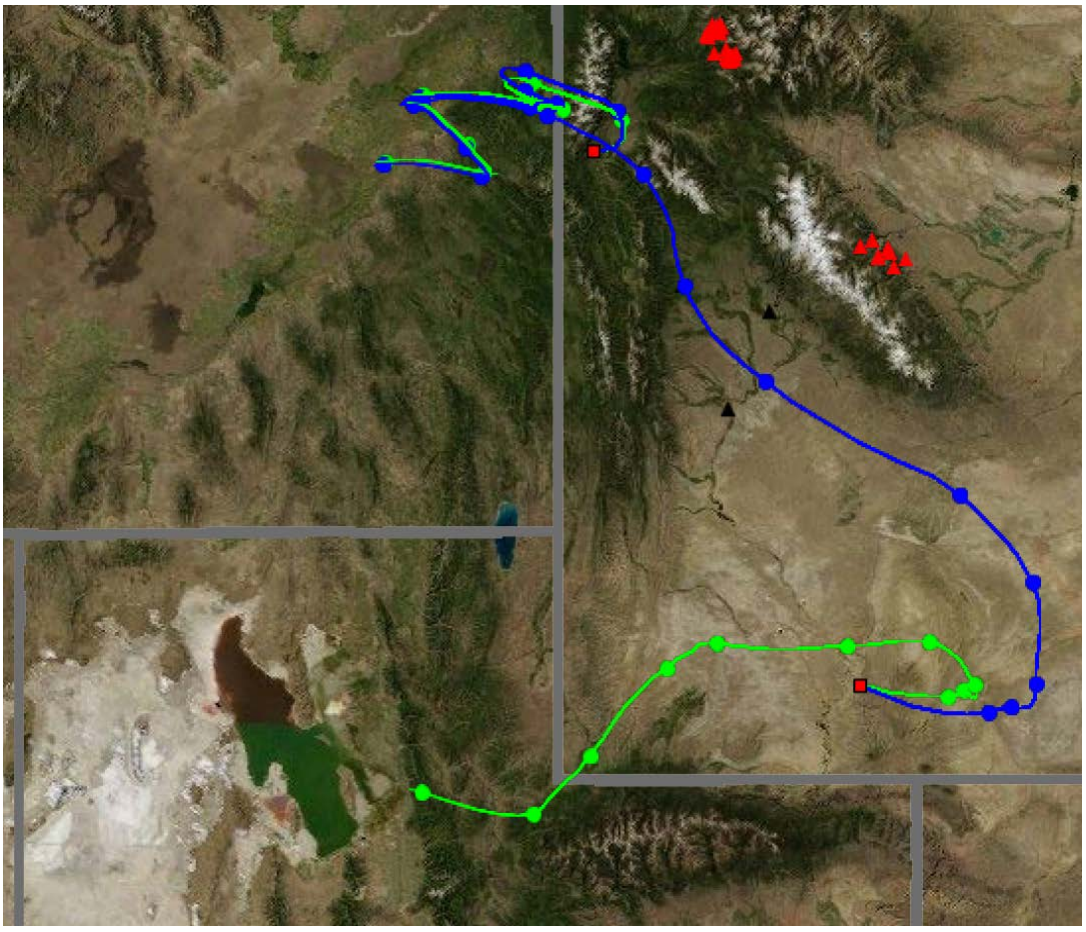
The AQD analyzed HYSPLIT back trajectories from the Wy. Range and Pinedale stations for September 20. The back trajectories show air coming from the Snake River Valley to these two locations. Additionally, based on the MODIS true color images, the trajectories pass through areas with smoke from both the Idaho fires and North Buffalo/Bear Cub Fire. Figure 9 shows 60-hour back trajectories from the Wy. Range and Pinedale stations.

Figure 9: September 20 60-hr back trajectories from Wy. Range and Pinedale



The AQD also analyzed back trajectories from the Jackson and Rock Springs SLAMS stations on September 21. The back trajectory from Jackson is coming from the Snake River Valley, where MODIS true color images have shown heavy smoke. The 100-meter level trajectory from Rock Springs is also coming from the Snake River Valley, while the 10-meter trajectory is coming from northern Utah. The MODIS true color also shows smoke in northern Utah during this time. Figure 10 shows the 60-hour back trajectories on September 21.

Figure 10: September 21 60-hour back trajectory from Jackson and Rock Springs



FETS Fire Emissions

The Western Regional Air Partnership's Fire Emissions Tracking System (FETS) is a web-enabled database for planned and unplanned fire events. It is intended as a planning tool for daily smoke management coordination, and retrospective analyses such as emission inventories and regional haze air quality planning tasks. The AQD queried FETS to estimate $PM_{2.5}$ emissions between September 18 and September 21. Table 2 shows daily emissions from some of the larger wildfires believed to have contributed to exceedances at the AQD's monitors during this time. Please note that no data was available for the Sheep Fire in Idaho during this time. Also note that zero emissions were reported for some fires during this time. According to how FETS calculates emissions, no additional acres burned on that day translate into no additional emissions. Based on air quality monitoring data, satellite analyses, photos, and other accounts, the AQD believes monitoring station may still have been affected by emissions on these days.

Table 2: $PM_{2.5}$ Emissions in Tons

Date	Little Horsethief Canyon	Chall Creek	North Buffalo	Bear Cub	McGuire Complex	Powell SBW Complex	Mustang Complex
9/18/2012	0	0	N/A	N/A	240	658	0
9/19/2012	0	0	N/A	N/A	637	527	1154
9/20/2012	0	0	640	0	12835	33	1165
9/21/2012	0	126	N/A	N/A	1447	219	N/A
TOTALS	0	126	640	0	15159	1437	2319

N/A = No emissions data available from FETS on this day.

Filter Analysis

As noted above, some of the $PM_{2.5}$ monitors that recorded exceedances (Jackson and Rock Springs) are filter-based monitors that collect samples on the EPA's National 1-in-3 day schedule. The AQD had the September 21 filters from these monitors analyzed. RJLee Group analyzed the filters using Scanning Electron Microscopes and found "*The majority of particulate observed on all of the samples consisted of carbon-rich particulate matter*". The AQD expects to see carbon-based particulate when monitors are impacted by wood smoke. This report adds to the weight of evidence that elevated $PM_{2.5}$ concentrations at Jackson and Rock Springs were caused by wildfire smoke. The report can be found in Appendix E.

News Accounts

News accounts in areas that are most influenced by wildfire smoke can also indicate a causal relationship. Several news accounts are available from the September 18-21 timeframe. Articles can be found in Appendix F include:

- Chall Creek Fire Update – 9/17
- Horsetheif containment probable by weeks end -- 9/18
- Chall Creek Fire Update – 9/18
- Fire threat makes history – 9/19
- Idaho Wildfire Radiation Raises Slight Concern as Blaze Hits Former Uranium, Gold Mines – 9/20
- Smoke from wildfires part of summer in west – 9/20
- Fire cools, but smoke stays – 9/21
- Fire Danger Rating Raised to Extreme – 9/21
- Air quality in Idaho goes from bad to worse Thursday – 9/21

5.0 Historical Observations

The AQD performed several analyses to show that the $PM_{2.5}$ exceedances listed in Table 1 are in excess of normal historical fluctuations. To show historical fluctuations in this demonstration package the AQD used 2010-2012 data. However, some stations have shorter historical records (e.g. Wy. Range), so the time period used will be noted at each monitor. All data used has been fully validated and was obtained from AQS.

Wy. Range

During September, Wy. Range recorded two (2) exceedances of the 24-hour $PM_{2.5}$ NAAQS:

Table 3: Wy. Range Exceedances

Date	Value ($\mu g/m^3$)	Parameter
September 18	39	$PM_{2.5}$
September 20	52	$PM_{2.5}$

The Wy. Range Station has been operating since January 2011. Data used for the statistical comparisons are from September of 2011 and 2012. Cumulative percentiles are used to show the relative ranking (in percent) of the exceedance values compared to the rest of the data collected. $PM_{2.5}$ exceedances monitored in September are in the 98^{th}% and above (i.e. top 2% of all days monitored in September of 2011 and 2012).

Wy. Range $PM_{2.5}$ Month of September 2011-2012

Value	Count	Cumulative Percent
39	1	98
52	1	100

Box and whisker plots are another way to view data collected during the specified timeframe. Figure 11 shows how to interpret a box and whiskers plot.

Figure 11: How to Interpret Box and Whisker Plots

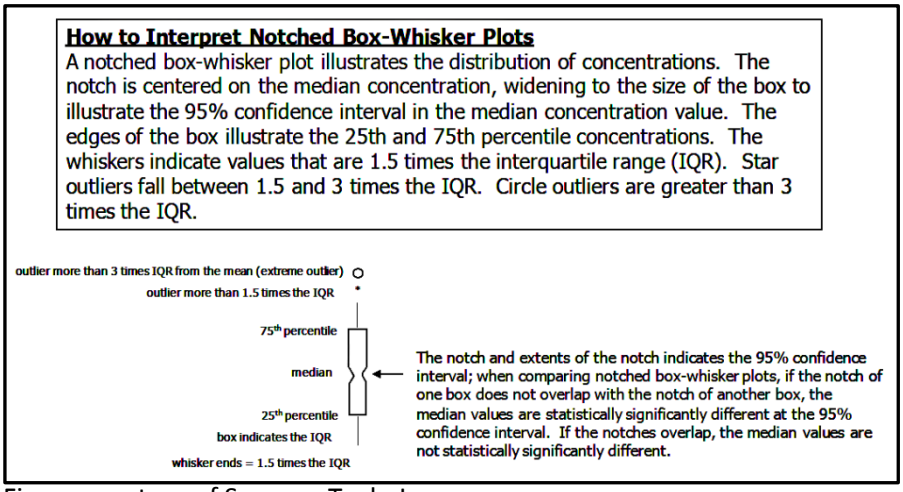


Figure courtesy of Sonoma Tech, Inc.

A histogram is another way to view the distribution of data that bins monitored values. Viewing the two plots together can give a complete picture of where the monitored values fall in relation to data collected during the month of September.

Figure 12 shows the box and whisker plots for the Wy. Range $PM_{2.5}$ monitor. All exceedance values recorded during September 2012 are extreme outliers; the mean of data recorded during these months (in 2011 and 2012) are about 5 μg/m^3. Figure 13 shows the histogram of Wy. Range $PM_{2.5}$ monitored values September 2011-2012, with the majority of the concentrations below 15 μg/m^3.

Figure 12: Box and Whisker Plot Wy. Range $PM_{2.5}$

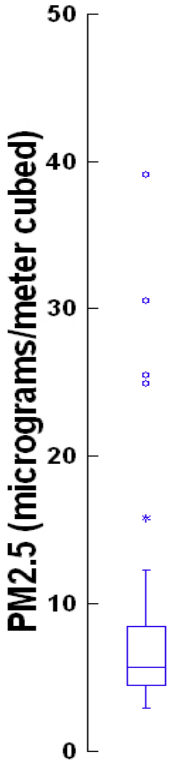
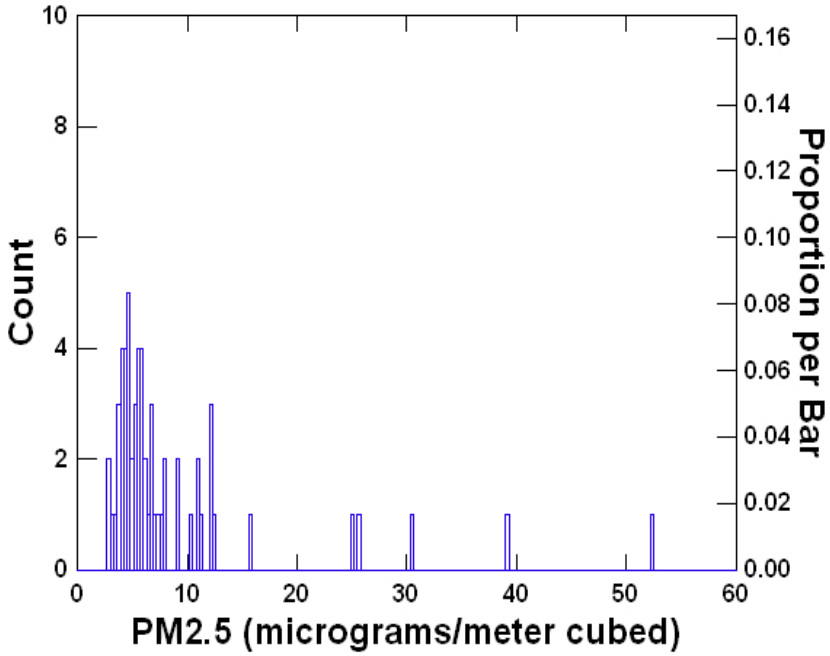


Figure 13: Histogram Wy. Range $PM_{2.5}$



Pinedale Gaseous Station

The Pinedale $PM_{2.5}$ monitor recorded one (1) exceedance of the 24-hour $PM_{2.5}$ NAAQS on September 20 with a concentration of 44 µg/m^3. Data from September 2010-2012 was used to perform the statistical analyses. The exceedance recorded on September 20, 2012 was the highest 24-hour $PM_{2.5}$ concentration during the analysis period.

Pinedale Month of September 2010-2012

Value	Count	Cumulative Percent
44	1	100

Figure 14 is the box and whiskers plot from the month of September 2010-2012. The September 20 value is an extreme outlier; the mean of the data recorded during these months is below 5 µg/m^3. Figure 15 shows the histogram of Pinedale $PM_{2.5}$ monitored values for the month of September 2010-2012, with the majority of the concentrations below 10 µg/m^3.

Figure 14: Box and Whiskers Plot Pinedale $PM_{2.5}$

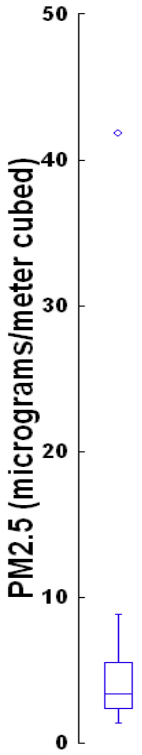
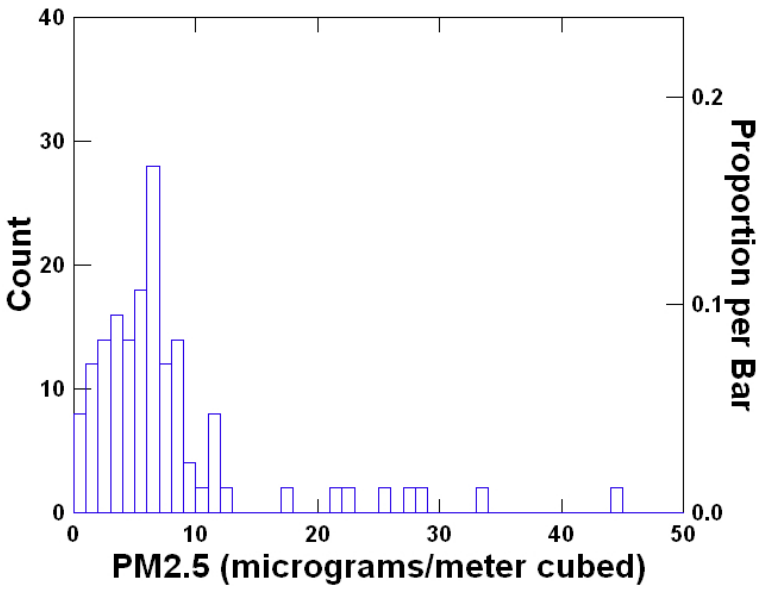


Figure 15: Histogram Pinedale $PM_{2.5}$



Jackson SLAMS

The Jackson SLAMS $PM_{2.5}$ monitor recorded one (1) exceedance of the 24-hour $PM_{2.5}$ NAAQS on September 21 with a concentration of 39 μg/m^3. Data from the month of September 2010-2012 was used to perform the statistical analyses. The exceedance recorded on September 21, 2012 was the highest 24-hour $PM_{2.5}$ concentration during the analysis period.

Jackson Month of September 2010-2012

Value	Count	Cumulative Percent
39	1	100

Figure 16 is the box and whiskers plot from the month of September 2010-2012. The September 21 value is an extreme outlier; the mean of the data recorded during these months is below 10 μg/m^3 and the majority of data from this period lies below 20 μg/m^3. Figure 17 shows the histogram of Jackson $PM_{2.5}$ monitored values for the month of September 2010-2012, with the majority of the concentrations below 10 μg/m^3.

Figure 16: Box and Whisker Plot Jackson $PM_{2.5}$

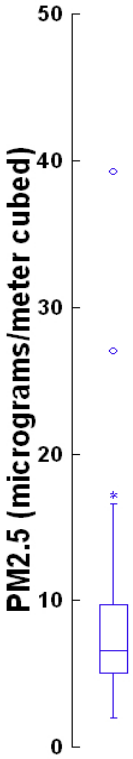
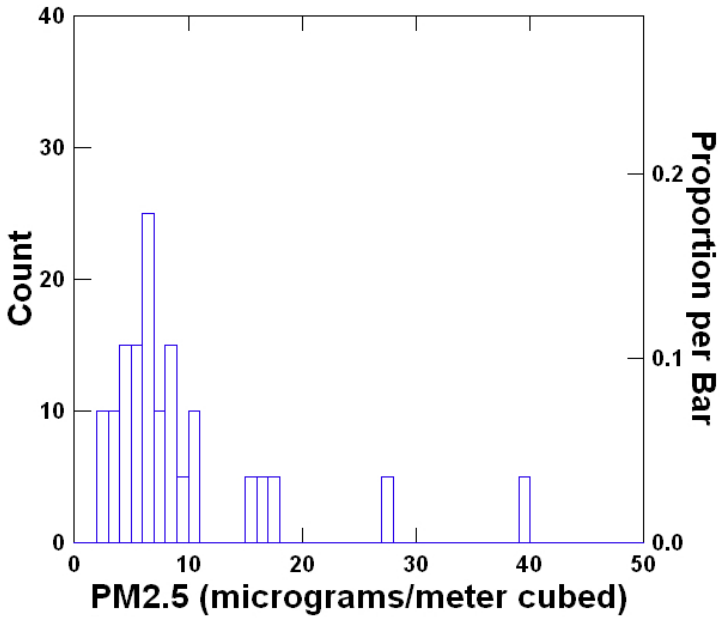


Figure 17: Histogram Jackson $PM_{2.5}$



Rock Springs SLAMS

The Rock Springs SLAMS $PM_{2.5}$ monitor recorded one (1) exceedance of the 24-hour $PM_{2.5}$ NAAQS on September 21 with a concentration of 37 $\mu g/m^3$. Data from the month of September 2010-2012 was used to perform the statistical analyses. The exceedance recorded on September 21, 2012 was the highest 24-hour $PM_{2.5}$ concentration during the analysis period.

Rock Springs Month of September 2010-2012

Value	Count	Cumulative Percent
37	1	100

Figure 18 is the box and whiskers plot from the month of September 2010-2012. The September 21 value is an extreme outlier; the mean of the data recorded during these months is below 10 $\mu g/m^3$ and most other data from this period lies below 15 $\mu g/m^3$. Figure 19 shows the histogram of Rock Springs $PM_{2.5}$ monitored values for the month of September 2010-2012, with the majority of the concentrations below 10 $\mu g/m^3$.

Figure 18: Box and Whisker Plot Rock Springs $PM_{2.5}$

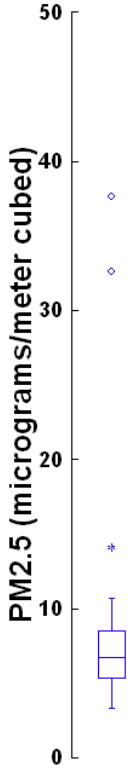
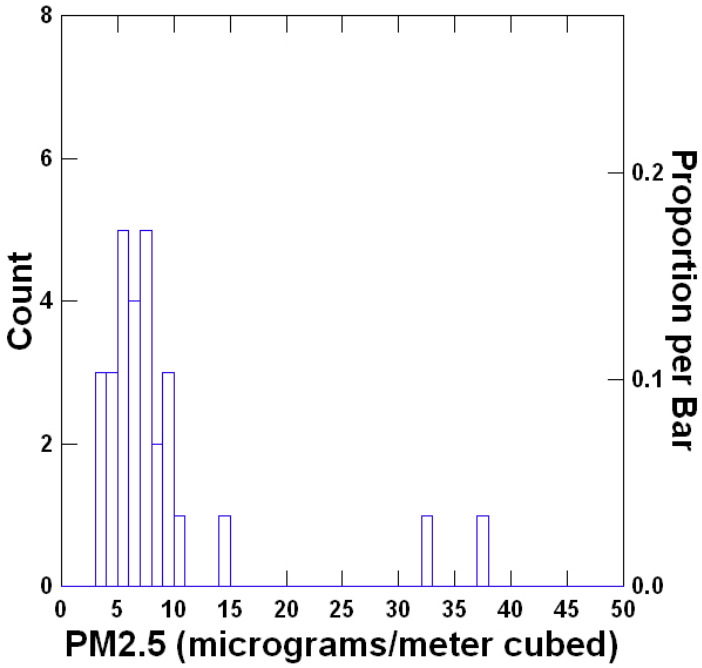


Figure 23: Histogram Rock Springs $PM_{2.5}$



6.0 "But-for" Analysis

Exceedances that were recorded between September 18 and 21, 2012 would not have happened but for smoke from the Chall Creek Fire and other wildfires burning in western Wyoming and Idaho. It is evident from the many news accounts, the 2012 fire season was one of the worst in recent years. Satellite data and analyzed satellite products, such as the HMS and MODIS, clearly show smoke from the many fires inundating Wyoming. The FETS system estimated over 19,000 tons of $PM_{2.5}$ emitted from the major fires during this four-day period. Filters analyzed from this time showed a heavy carbon influence indicating wood smoke was the primary component of $PM_{2.5}$ on the filters.

Section 5 analyzed data from September of the past three years (when available) in comparison with the exceedances listed in Table 1. All exceedances were extreme outliers and many points were the highest recorded over the analyzed data period. Most $PM_{2.5}$ means for the analyzed data were below 10 $\mu g/m^3$. It is clear from the evidence presented in Sections 3, 4, and 5 that these exceedances would not have happened but for the many wildfires burning in western Wyoming and Idaho.

7.0 Mitigation Requirements: Public Notification

In accordance with CFR 51, subpart Y (51.930), the State of Wyoming and the USFS took appropriate and reasonable actions during the Chall Creek Fire and other wildfire events to protect public health, provide prompt public notification and education about the event and air quality conditions. Proper implementation of the State of Wyoming Smoke Management Plan took place during this time.

The USFS utilized the InciWeb on-line service for public and interagency notifications and wildfire updates. Inciweb is an inter-agency system which tracks fire-related incidents, specifically wildland fires. The website includes photographs, maps, overviews, announcements, closures, and links to health information (http://inciweb.org/). There were also warnings posted on the Teton Interagency Fire website (www.tetonfires.com) and notes on the effects of smoke on Pinedale Online (www.pinedaleonline.com). The Wyoming State Forestry Department also posted fire information. The AQD provided near-real time $PM_{2.5}$ data at many locations on the WyVisNet (www.wyvisnet.com) website. Health warnings can be found in Appendix F.

8.0 Conclusion

The Wyoming Department of Environmental Quality- Air Quality Division (AQD) is seeking EPA concurrence to exclude five (5) exceedances of the 24-hour $PM_{2.5}$ NAAQS of 35 $\mu g/m^3$ that took place between September 18 and 21, 2012.

During mid-September, several wildfires were burning in Western Wyoming and surrounding states (Idaho, Utah and Montana) contributing to smoke in western Wyoming. Localized wildfires including Chall Creek, Little Horsetheif Canyon, Bear Cub and North Buffalo and numerous wildfires in Idaho including McGuire Complex, Sheep, Powell Selway-Bitterroot Complex, and Mustang, were burning during this time (see Figure 1). The AQD concludes that the elevated $PM_{2.5}$ concentrations were caused by these wildfires and has shown that these events have met all requirements within the Exceptional Event Rule including: the definition of an exceptional event; a causal relationship between the measured $PM_{2.5}$ concentrations and regional wildfires; observations in excess of normal for a 3-year time period; and strong evidence showing there would have been no exceedances but for the wildfire events. Therefore, based on the weight of the evidence provided in this document, the AQD concludes that the exceedances that occurred between September 18 and 21, 2012 were significantly influenced by regional wildfires.

The PM exceedances listed in Table 1, which the AQD is requesting concurrence, meet the definition of Exceptional Events as described in "Treatment of Data Influenced by Exceptional Events" 40 CFR Part 50.14.

Criteria **(A)** states that "[t]he event satisfies the criteria set forth in 40 CFR 50.1(j)":

40 CFR 50.1 (j) requires that an exceptional event "affects air quality, is not reasonably controllable or preventable..." and are "...natural event[s]". This demonstration includes data showing that air quality was affected. The AQD and the USFS provide evidence that the Chall Creek Fire, a primary contributor to smoke impacts, was managed appropriately. Furthermore, fires listed in this demonstration were determined to be wildfires and meet the definition of natural event as discussed in the Rule preamble.

Criteria **(B)** states that **"**[t]here is a clear causal relationship between the measurement under consideration and the event that is claimed to have affected the air quality in the area":

The AQD provides many analyses clearly showing that smoke from the Chall Creek and other fires burning in western Wyoming and the West inundated the State and caused several exceedances. Satellite data, aerosol optical depth, the Hazard Mapping Service products, daily fire emissions, microscopic analysis of filters, news account, and photos all contribute to the weight of evidence that there is a clear causal relationship between the fires and then exceedances.

Criteria **(C)** states that **"**[t]he event is associated with a measured concentration in excess of normal historical fluctuations, including background":

Statistical analysis of September data over the past three years at several monitors show that these exceedances were extreme outliers and the means of data analyzed from these stations were well below these exceeding concentrations.

Criteria **(D)** states that "[t]here would have been no exceedance or violation but for the event":

Exceedances that were recorded between September 18 and 21 would not have happened but for smoke from the Chall Creek and other wildfire burning in western Wyoming and throughout west. Satellite data and analyzed satellite products, such as the HMS and AOD, clearly show smoke from the many fires inundating Wyoming. The FETS system estimated over 19,000 tons of $PM_{2.5}$ emitted from the major fires during this four (4) day period. It is also clear from the statistical analyses of the data that these exceedances were extreme outliers and they would not have happened but for smoke from regional wildfires.

In closing, the AQD has determined that the exceedances listed below are exceptional events. These events have passed the four criterion tests under 40 CFR 50.14 (3)(iii). Consequently, the AQD is requesting the concurrence on the following "RT"-wildfire flags in EPA's AQS system:

Date	**AQS ID**	**Monitor Name**	**Parameter**	**24-hour value ($\mu g/m^3$)**
9/18/12	56-035-0097	Wyoming Range	$PM_{2.5}$	39
9/20/12	56-035-0097	Wyoming Range	$PM_{2.5}$	52
9/20/12	56-035-0101	Pinedale Gaseous	$PM_{2.5}$	44
9/21/12	56-039-1006	Jackson	$PM_{2.5}$	39
9/21/12	56-037-0007	Rock Springs	$PM_{2.5}$	37

Appendix A: AQS Data

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: KCN

RAW DATA REPORT

Report Request ID: 1103315 Report Code: AMP350 May. 31, 2013

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region	Method	Duration	Begin Date	End Date
	56	035	0097												
	56	035	0101												
	56	039	1006												
	56	037	0007												

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA	88101		

SELECTED OPTIONS

Option Type	Option Value
RAW DATA EVENTS	INCLUDE EVENTS
DAILY STATISTICS	MAXIMUM
UNITS	STANDARD
MERGE PDF FILES	YES
INCLUDE NULLS	YES

SORT ORDER

Order	Column
1	STATE_CODE
2	COUNTY_CODE
3	SITE_ID
4	PARAMETER_CODE
5	POC

GLOBAL DATES

Start Date	End Date
2012 09 01	2012 09 30

APPLICABLE STANDARDS

Standard Description
PM25 24-hour 2006

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

May. 31, 2013

(88101) PM2.5 - Local Conditions

SITE ID: 56-035-0097 POC: 1
COUNTY: (035) Sublette
CITY: (00000) Not in a city
SITE ADDRESS: Wyoming Range/West Fontenelle Dr.
SITE COMMENTS:
MONITOR COMMENTS:

STATE: (56) Wyoming
AQCR: (243) WYOMING
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 42.98
LONGITUDE: -110.353
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 2475
PROBE HEIGHT:

SUPPORT AGENCY: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality
MONITOR TYPE: SPECIAL PURPOSE
COLLECTION AND ANALYSIS METHOD: (170) Met One BAM-1020 Mass Monitor w/VS
PQAO: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality

REPORT FOR: SEPTEMBER 2012

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 2

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	3.0IT	3.0IT	3.0IT	2.0IT	.0IT	.0IT	1.0IT	2.0IT	4.0IT	6.0IT	4.0IT	3.0IT	5.0IT	3.0IT	4.0IT	AN	1.0IT	2.0IT	4.0IT	5.0IT	3.0IT	2.0IT	4.0IT	3.0IT	23	6.0
2	2.0IT	2.0IT	1.0IT	2.0IT	2.0IT	3.0IT	2.0IT	1.0IT	3.0IT	3.0IT	6.0IT	8.0IT	8.0IT	7.0IT	7.0IT	7.0IT	4.0IT	3.0IT	6.0IT	7.0IT	5.0IT	2.0IT	5.0IT	6.0IT	24	8.0
3	4.0IT	4.0IT	5.0IT	6.0IT	5.0IT	4.0IT	5.0IT	7.0IT	8.0IT	8.0IT	7.0IT	5.0IT	5.0IT	6.0IT	5.0IT	5.0IT	2.0IT	4.0IT	7.0IT	6.0IT	6.0IT	6.0IT	7.0IT	6.0IT	24	8.0
4	4.0IT	4.0IT	6.0IT	6.0IT	3.0IT	3.0IT	5.0IT	9.0IT	9.0IT	8.0IT	7.0IT	7.0IT	9.0IT	7.0IT	7.0IT	8.0IT	7.0IT	6.0IT	5.0IT	7.0IT	9.0IT	8.0IT	9.0IT	11.0IT	24	11.0
5	11.0IT	9.0IT	6.0IT	6.0IT	8.0IT	7.0IT	6.0IT	7.0IT	10.0IT	10.0IT	6.0IT	3.0IT	3.0IT	4.0IT	4.0IT	3.0IT	3.0IT	5.0IT	5.0IT	3.0IT	5.0IT	7.0IT	5.0IT	4.0IT	24	11.0
6	6.0IT	3.0IT	.0IT	2.0IT	1.0IT	2.0IT	4.0IT	5.0IT	5.0IT	3.0IT	4.0IT	4.0IT	5.0IT	4.0IT	5.0IT	8.0IT	7.0IT	7.0IT	7.0IT	5.0IT	5.0IT	6.0IT	6.0IT	7.0IT	24	8.0
7	6.0IT	6.0IT	7.0IT	8.0IT	9.0IT	9.0IT	7.0IT	7.0IT	8.0IT	9.0IT	10.0IT	13.0IT	13.0IT	16.0IT	17.0IT	13.0IT	13.0IT	13.0IT	15.0IT	16.0IT	14.0IT	13.0IT	13.0IT	13.0IT	24	17.0
8	13.0IT	14.0IT	13.0IT	15.0IT	14.0IT	13.0IT	12.0IT	16.0IT	12.0IT	13.0IT	13.0IT	12.0IT	11.0IT	10.0IT	9.0IT	7.0IT	8.0IT	10.0IT	10.0IT	9.0IT	8.0IT	8.0IT	6.0IT	6.0IT	24	16.0
9	6.0IT	8.0IT	10.0IT	10.0IT	10.0IT	9.0IT	11.0IT	9.0IT	9.0IT	9.0IT	6.0IT	6.0IT	6.0IT	4.0IT	5.0IT	6.0IT	3.0IT	4.0IT	6.0IT	6.0IT	6.0IT	5.0IT	6.0IT	6.0IT	24	11.0
10	5.0IT	5.0IT	5.0IT	5.0IT	4.0IT	5.0IT	4.0IT	4.0IT	5.0IT	4.0IT	3.0IT	4.0IT	5.0IT	5.0IT	4.0IT	6.0IT	8.0IT	4.0IT	4.0IT	6.0IT	6.0IT	6.0IT	6.0IT	7.0IT	24	8.0
11	7.0IT	4.0IT	4.0IT	4.0IT	3.0IT	2.0IT	4.0IT	2.0IT	2.0IT	4.0IT	2.0IT	4.0IT	5.0IT	5.0IT	6.0IT	5.0IT	5.0IT	6.0IT	5.0IT	5.0IT	6.0IT	6.0IT	4.0IT	3.0IT	24	7.0
12	7.0IT	12.0IT	16.0IT	12.0IT	13.0IT	14.0IT	14.0IT	13.0IT	13.0IT	12.0IT	10.0IT	6.0IT	5.0IT	7.0IT	7.0IT	11.0IT	9.0IT	8.0IT	8.0IT	8.0IT	26.0IT	25.0IT	18.0IT	14.0IT	24	26.0
13	14.0IT	13.0IT	13.0IT	14.0IT	21.0IT	22.0IT	23.0IT	19.0IT	20.0IT	13.0IT	16.0IT	12.0IT	8.0IT	4.0IT	6.0IT	7.0IT	5.0IT	3.0IT	5.0IT	8.0IT	11.0IT	10.0IT	10.0IT	11.0IT	24	23.0
14	AN	10.0IT	9.0IT	9.0IT	10.0IT	8.0IT	6.0IT	5.0IT	BA	6.0IT	9.0IT	9.0IT	5.0IT	4.0IT	5.0IT	6.0IT	5.0IT	4.0IT	4.0IT	4.0IT	6.0IT	8.0IT	7.0IT	6.0IT	22	10.0
15	7.0IT	8.0IT	8.0IT	7.0IT	7.0IT	9.0IT	8.0IT	7.0IT	9.0IT	10.0IT	6.0IT	3.0IT	5.0IT	5.0IT	3.0IT	3.0IT	2.0IT	4.0IT	6.0IT	6.0IT	6.0IT	5.0IT	5.0IT	5.0IT	24	10.0
16	4.0IT	6.0IT	6.0IT	7.0IT	26.0IT	41.0IT	44.0IT	24.0IT	17.0IT	10.0IT	9.0IT	7.0IT	6.0IT	7.0IT	7.0IT	6.0IT	5.0IT	6.0IT	5.0IT	6.0IT	22.0IT	10.0IT	77.0IT	22.0IT	24	77.0
17	11.0IT	12.0IT	15.0IT	19.0IT	21.0IT	20.0IT	17.0IT	40.0IT	78.0IT	34.0IT	33.0IT	28.0IT	20.0IT	35.0IT	43.0IT	17.0IT	17.0IT	14.0IT	17.0IT	18.0IT	19.0IT	26.0IT	28.0IT	31.0IT	24	78.0
18	36.0rt	61.0rt	102.0rt	53.0rt	40.0rt	43.0rt	67.0rt	44.0rt	53.0rt	35.0rt	32.0rt	28.0rt	26.0rt	35.0rt	36.0rt	32.0rt	36.0rt	39.0rt	33.0rt	26.0rt	22.0rt	26.0rt	24.0rt	11.0rt	24	102.0
19	10.0IT	10.0IT	13.0IT	18.0IT	20.0IT	24.0IT	20.0IT	20.0IT	18.0IT	20.0IT	27.0IT	30.0IT	30.0IT	31.0IT	24.0IT	16.0IT	17.0IT	26.0IT	27.0IT	33.0IT	33.0IT	40.0IT	45.0IT	47.0IT	24	47.0
20	50.0rt	48.0rt	49.0rt	60.0rt	59.0rt	60.0rt	58.0rt	48.0rt	48.0rt	48.0rt	72.0rt	63.0rt	51.0rt	45.0rt	50.0rt	51.0rt	54.0rt	53.0rt	53.0rt	51.0rt	49.0rt	45.0rt	47.0rt	45.0rt	24	72.0
21	41.0IT	53.0IT	58.0IT	51.0IT	46.0IT	39.0IT	36.0IT	34.0IT	43.0IT	33.0IT	31.0IT	23.0IT	11.0IT	22.0IT	22.0IT	25.0IT	21.0IT	20.0IT	18.0IT	22.0IT	20.0IT	23.0IT	17.0IT	23.0IT	24	58.0
22	18.0IT	16.0IT	12.0IT	12.0IT	12.0IT	10.0IT	8.0IT	7.0IT	7.0IT	6.0IT	5.0IT	7.0IT	11.0IT	13.0IT	13.0IT	16.0IT	13.0IT	16.0IT	13.0IT	13.0IT	13.0IT	17.0IT	16.0IT	16.0IT	24	18.0
23	17.0IT	17.0IT	20.0IT	18.0IT	17.0IT	18.0IT	17.0IT	12.0IT	13.0IT	16.0IT	17.0IT	12.0IT	11.0IT	12.0IT	10.0IT	6.0IT	9.0IT	10.0IT	9.0IT	9.0IT	9.0IT	7.0IT	5.0IT	5.0IT	24	20.0
24	5.0IT	4.0IT	4.0IT	3.0IT	3.0IT	4.0IT	4.0IT	4.0IT	2.0IT	2.0IT	3.0IT	3.0IT	2.0IT	3.0IT	4.0IT	AV	AV	6.0IT	5.0IT	3.0IT	3.0IT	4.0IT	4.0IT	3.0IT	22	6.0
25	3.0IT	3.0IT	4.0IT	3.0IT	3.0IT	4.0IT	5.0IT	3.0IT	3.0IT	4.0IT	3.0IT	3.0IT	5.0IT	2.0IT	1.0IT	2.0IT	3.0IT	4.0IT	2.0IT	2.0IT	2.0IT	1.0IT	2.0IT	3.0IT	24	5.0
26	6.0IT	6.0IT	1.0IT	-1.0IT	2.0IT	AN	AN	4.0IT	4.0IT	4.0IT	5.0IT	6.0IT	6.0IT	10.0IT	10.0IT	7.0IT	7.0IT	7.0IT	7.0IT	4.0IT	4.0IT	8.0IT	6.0IT	4.0IT	22	10.0
27	4.0IT	4.0IT	3.0IT	4.0IT	4.0IT	3.0IT	7.0IT	9.0IT	8.0IT	8.0IT	9.0IT	7.0IT	10.0IT	AN	8.0IT	7.0IT	8.0IT	9.0IT	8.0IT	7.0IT	8.0IT	8.0IT	AN	8.0IT	22	10.0
28	10.0IT	11.0IT	10.0IT	9.0IT	8.0IT	9.0IT	10.0IT	12.0IT	13.0IT	13.0IT	12.0IT	11.0IT	8.0IT	5.0IT	4.0IT	6.0IT	7.0IT	7.0IT	10.0IT	10.0IT	8.0IT	7.0IT	8.0IT	9.0IT	24	13.0
29	11.0IT	11.0IT	10.0IT	10.0IT	11.0IT	10.0IT	10.0IT	7.0IT	5.0IT	5.0IT	5.0IT	5.0IT	6.0IT	5.0IT	4.0IT	2.0IT	1.0IT	3.0IT	6.0IT	5.0IT	2.0IT	3.0IT	3.0IT	2.0IT	24	11.0
30	3.0IT	4.0IT	3.0IT	5.0IT	7.0IT	6.0IT	6.0IT	8.0IT	7.0IT	8.0IT	9.0IT	8.0IT	6.0IT	4.0IT	4.0IT	6.0IT	5.0IT	5.0IT	6.0IT	5.0IT	4.0IT	5.0IT	6.0IT	5.0IT	24	9.0
31																									0	
NO.:	29	30	30	30	30	29	29	30	29	30	30	30	30	29	30	28	29	30	30	30	30	30	29	30		
MAX:	50.0	61.0	102.0	60.0	59.0	60.0	67.0	48.0	78.0	48.0	72.0	63.0	51.0	45.0	50.0	51.0	54.0	53.0	53.0	51.0	49.0	45.0	77.0	47.0		
AVG:	11.17	12.37	13.87	12.63	12.97	13.83	14.52	12.97	15.03	12.13	12.70	11.33	10.23	11.03	11.13	10.50	9.83	10.27	10.53	10.50	11.33	11.57	13.76	11.40		

MONTHLY OBSERVATIONS: 711 MONTHLY MEAN: 11.98 MONTHLY MAX: 102.0

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

May. 31, 2013

(88101) PM2.5 - Local Conditions

SITE ID: 56-035-0101 POC: 1
COUNTY: (035) Sublette
CITY: (00000) Not in a city
SITE ADDRESS: Pinedale Gaseous Monitor on west side of City Park and Pine Creek
SITE COMMENTS:
MONITOR COMMENTS:

STATE: (56) Wyoming
AQCR: (243) WYOMING
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: RESIDENTIAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 42.8698240009
LONGITUDE: -109.87076
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 2191
PROBE HEIGHT:

SUPPORT AGENCY: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality
MONITOR TYPE: SPECIAL PURPOSE
COLLECTION AND ANALYSIS METHOD: (170) Met One BAM-1020 Mass Monitor w/VS
PQAO: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality

REPORT FOR: SEPTEMBER 2012

DURATION: 1 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 2

DAY	HOUR 0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM
1	10.0IT	9.0IT	6.0IT	6.0IT	8.0IT	9.0IT	6.0IT	4.0IT	6.0IT	1.0IT	1.0IT	26.0IT	6.0IT	6.0IT	5.0IT	2.0IT	2.0IT	2.0IT	4.0IT	-4.0IT	15.0IT	22.0IT	2.0IT	5.0IT	24	26.0
2	10.0IT	8.0IT	4.0IT	5.0IT	3.0IT	3.0IT	3.0IT	2.0IT	4.0IT	-2.0IT	.0IT	25.0IT	13.0IT	13.0IT	14.0IT	11.0IT	6.0IT	5.0IT	3.0IT	7.0IT	6.0IT	19.0IT	4.0IT	6.0IT	24	25.0
3	8.0IT	6.0IT	6.0IT	6.0IT	6.0IT	7.0IT	3.0IT	2.0IT	6.0IT	3.0IT	23.0IT	11.0IT	9.0IT	5.0IT	6.0IT	9.0IT	5.0IT	3.0IT	3.0IT	6.0IT	6.0IT	9.0IT	10.0IT	9.0IT	24	23.0
4	8.0IT	6.0IT	7.0IT	6.0IT	5.0IT	5.0IT	6.0IT	9.0IT	6.0IT	4.0IT	5.0IT	7.0IT	7.0IT	6.0IT	5.0IT	4.0IT	5.0IT	9.0IT	4.0IT	5.0IT	6.0IT	5.0IT	7.0IT	6.0IT	24	9.0
5	8.0IT	5.0IT	2.0IT	5.0IT	6.0IT	7.0IT	7.0IT	7.0IT	6.0IT	5.0IT	16.0IT	7.0IT	5.0IT	5.0IT	6.0IT	6.0IT	7.0IT	6.0IT	6.0IT	5.0IT	4.0IT	7.0IT	7.0IT	5.0IT	24	16.0
6	4.0IT	6.0IT	4.0IT	2.0IT	3.0IT	4.0IT	6.0IT	7.0IT	7.0IT	4.0IT	3.0IT	8.0IT	10.0IT	8.0IT	3.0IT	2.0IT	6.0IT	9.0IT	9.0IT	10.0IT	13.0IT	11.0IT	10.0IT	9.0IT	24	13.0
7	6.0IT	8.0IT	7.0IT	6.0IT	6.0IT	4.0IT	2.0IT	6.0IT	7.0IT	-3.0IT	-1.0IT	24.0IT	25.0IT	24.0IT	17.0IT	17.0IT	16.0IT	14.0IT	6.0IT	20.0IT	20.0IT	15.0IT	17.0IT	15.0IT	24	25.0
8	13.0IT	11.0IT	8.0IT	9.0IT	11.0IT	9.0IT	7.0IT	10.0IT	5.0IT	18.0IT	18.0IT	33.0IT	16.0IT	15.0IT	13.0IT	10.0IT	10.0IT	10.0IT	7.0IT	9.0IT	12.0IT	11.0IT	8.0IT	6.0IT	24	33.0
9	8.0IT	7.0IT	8.0IT	10.0IT	6.0IT	6.0IT	7.0IT	7.0IT	9.0IT	10.0IT	12.0IT	9.0IT	9.0IT	8.0IT	9.0IT	11.0IT	10.0IT	5.0IT	1.0IT	5.0IT	5.0IT	8.0IT	9.0IT	5.0IT	24	12.0
10	7.0IT	6.0IT	7.0IT	8.0IT	7.0IT	8.0IT	8.0IT	8.0IT	3.0IT	3.0IT	6.0IT	6.0IT	7.0IT	8.0IT	7.0IT	4.0IT	5.0IT	6.0IT	3.0IT	16.0IT	11.0IT	10.0IT	11.0IT	10.0IT	24	16.0
11	9.0IT	7.0IT	5.0IT	4.0IT	4.0IT	5.0IT	7.0IT	6.0IT	5.0IT	4.0IT	6.0IT	7.0IT	4.0IT	3.0IT	6.0IT	6.0IT	5.0IT	4.0IT	5.0IT	8.0IT	9.0IT	9.0IT	11.0IT	10.0IT	24	11.0
12	8.0IT	10.0IT	11.0IT	9.0IT	9.0IT	12.0IT	12.0IT	22.0IT	10.0IT	20.0IT	12.0IT	29.0IT	18.0IT	8.0IT	9.0IT	9.0IT	31.0IT	51.0IT	114.0IT	72.0IT	31.0IT	9.0IT	9.0IT	19.0IT	24	114.0
13	18.0IT	14.0IT	18.0IT	17.0IT	22.0IT	42.0IT	38.0IT	38.0IT	28.0IT	14.0IT	29.0IT	31.0IT	32.0IT	19.0IT	17.0IT	5.0IT	9.0IT	8.0IT	3.0IT	3.0IT	27.0IT	31.0IT	18.0IT	23.0IT	24	42.0
14	24.0IT	16.0IT	16.0IT	14.0IT	13.0IT	13.0IT	12.0IT	23.0IT	-2.0IT	4.0IT	21.0IT	19.0IT	19.0IT	9.0IT	8.0IT	8.0IT	6.0IT	6.0IT	7.0IT	8.0IT	10.0IT	6.0IT	6.0IT	6.0IT	24	24.0
15	5.0IT	6.0IT	4.0IT	5.0IT	6.0IT	7.0IT	8.0IT	6.0IT	5.0IT	3.0IT	17.0IT	13.0IT	11.0IT	6.0IT	6.0IT	6.0IT	3.0IT	5.0IT	2.0IT	3.0IT	9.0IT	7.0IT	1.0IT	3.0IT	24	17.0
16	3.0IT	1.0IT	.0IT	1.0IT	5.0IT	5.0IT	5.0IT	2.0IT	1.0IT	18.0IT	20.0IT	22.0IT	10.0IT	12.0IT	10.0IT	6.0IT	3.0IT	3.0IT	4.0IT	8.0IT	9.0IT	19.0IT	10.0IT	21.0IT	24	22.0
17	20.0IT	22.0IT	23.0IT	34.0IT	40.0IT	37.0IT	42.0IT	37.0IT	25.0IT	24.0IT	50.0IT	50.0IT	27.0IT	22.0IT	18.0IT	11.0IT	10.0IT	20.0IT	12.0IT	13.0IT	17.0IT	20.0IT	14.0IT	17.0IT	24	50.0
18	19.0IT	23.0IT	20.0IT	33.0IT	39.0IT	43.0IT	33.0IT	43.0IT	29.0IT	27.0IT	35.0IT	43.0IT	32.0IT	25.0IT	31.0IT	36.0IT	30.0IT	34.0IT	42.0IT	46.0IT	42.0IT	38.0IT	29.0IT	26.0IT	24	46.0
19	24.0IT	25.0IT	27.0IT	26.0IT	21.0IT	21.0IT	19.0IT	19.0IT	15.0IT	18.0IT	36.0IT	51.0IT	35.0IT	23.0IT	24.0IT	18.0IT	22.0IT	24.0IT	31.0IT	37.0IT	48.0IT	42.0IT	35.0IT	34.0IT	24	51.0
20	35.0rt	39.0rt	29.0rt	26.0rt	30.0rt	29.0rt	29.0rt	28.0rt	37.0rt	46.0rt	54.0rt	69.0rt	78.0rt	66.0rt	61.0rt	65.0rt	59.0rt	60.0rt	44.0rt	52.0rt	44.0rt	38.0rt	32.0rt	27.0rt	24	78.0
21	25.0IT	23.0IT	21.0IT	36.0IT	33.0IT	37.0IT	38.0IT	37.0IT	43.0IT	32.0IT	30.0IT	30.0IT	27.0IT	31.0IT	23.0IT	18.0IT	15.0IT	21.0IT	22.0IT	27.0IT	22.0IT	17.0IT	21.0IT	22.0IT	24	43.0
22	24.0IT	22.0IT	20.0IT	20.0IT	22.0IT	17.0IT	21.0IT	21.0IT	17.0IT	9.0IT	16.0IT	9.0IT	11.0IT	13.0IT	27.0IT	14.0IT	16.0IT	19.0IT	15.0IT	17.0IT	24.0IT	17.0IT	21.0IT	16.0IT	24	27.0
23	17.0IT	11.0IT	12.0IT	17.0IT	20.0IT	17.0IT	12.0IT	15.0IT	15.0IT	14.0IT	16.0IT	16.0IT	13.0IT	12.0IT	11.0IT	15.0IT	8.0IT	6.0IT	3.0IT	6.0IT	9.0IT	12.0IT	9.0IT	5.0IT	24	20.0
24	5.0IT	8.0IT	10.0IT	7.0IT	8.0IT	3.0IT	2.0IT	2.0IT	2.0IT	8.0IT	9.0IT	9.0IT	7.0IT	6.0IT	5.0IT	6.0IT	4.0IT	5.0IT	6.0IT	7.0IT	5.0IT	4.0IT	6.0IT	7.0IT	24	10.0
25	9.0IT	6.0IT	7.0IT	8.0IT	6.0IT	7.0IT	7.0IT	7.0IT	6.0IT	1.0IT	2.0IT	5.0IT	4.0IT	4.0IT	8.0IT	5.0IT	2.0IT	9.0IT	9.0IT	5.0IT	5.0IT	5.0IT	3.0IT	5.0IT	24	9.0
26	7.0IT	7.0IT	6.0IT	2.0IT	5.0IT	8.0IT	4.0IT	5.0IT	8.0IT	6.0IT	5.0IT	4.0IT	8.0IT	14.0IT	8.0IT	6.0IT	9.0IT	6.0IT	5.0IT	10.0IT	12.0IT	9.0IT	7.0IT	7.0IT	24	14.0
27	7.0IT	6.0IT	4.0IT	4.0IT	8.0IT	7.0IT	1.0IT	.0IT	8.0IT	10.0IT	10.0IT	13.0IT	BA	23.0IT	10.0IT	5.0IT	3.0IT	8.0IT	11.0IT	12.0IT	11.0IT	10.0IT	9.0IT	10.0IT	23	23.0
28	10.0IT	6.0IT	3.0IT	4.0IT	7.0IT	5.0IT	6.0IT	10.0IT	12.0IT	9.0IT	8.0IT	16.0IT	10.0IT	11.0IT	11.0IT	10.0IT	6.0IT	1.0IT	5.0IT	9.0IT	6.0IT	7.0IT	7.0IT	4.0IT	24	16.0
29	5.0IT	8.0IT	9.0IT	6.0IT	7.0IT	10.0IT	6.0IT	6.0IT	8.0IT	6.0IT	6.0IT	6.0IT	7.0IT	6.0IT	5.0IT	6.0IT	6.0IT	6.0IT	6.0IT	5.0IT	5.0IT	7.0IT	4.0IT	5.0IT	24	10.0
30	6.0IT	3.0IT	2.0IT	5.0IT	6.0IT	6.0IT	7.0IT	3.0IT	2.0IT	2.0IT	3.0IT	8.0IT	10.0IT	5.0IT	2.0IT	5.0IT	7.0IT	6.0IT	4.0IT	5.0IT	6.0IT	7.0IT	7.0IT	5.0IT	24	10.0
31																									0	
NO.:	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30		
MAX:	35.0	39.0	29.0	36.0	40.0	43.0	42.0	43.0	43.0	46.0	54.0	69.0	78.0	66.0	61.0	65.0	59.0	60.0	114.0	72.0	48.0	42.0	35.0	34.0		
AVG:	12.07	11.17	10.20	11.37	12.40	13.10	12.13	13.07	11.10	10.60	15.60	20.20	16.21	13.87	12.83	11.20	10.87	12.37	13.20	14.40	14.97	14.37	11.47	11.60		

MONTHLY OBSERVATIONS: 719 MONTHLY MEAN: 12.93 MONTHLY MAX: 114.0

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 56-037-0007 POC: 1
COUNTY: (037) Sweetwater
CITY: (67235) Rock Springs
SITE ADDRESS: 625 AHSAY AVE ROCK SPRINGS WYO
SITE COMMENTS: SPM HI-VOL AND S02/N02 BUBBLER ACT 10/1/83 LOCATED ON WASHINGTON ELEMENTARY SCHOO
MONITOR COMMENTS: 52

STATE: (56) Wyoming
AQCR: (243) WYOMING
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: RESIDENTIAL
LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:
LATITUDE: 41.5916132937
LONGITUDE: -109.22072232
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 1926
PROBE HEIGHT: 5

SUPPORT AGENCY: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (143) R & P Model 2000 PM-2.5 Air Sample
PQAO: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality

REPORT FOR: 2012

DURATION: 24 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 2

Day	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
1												
2												
3									3.8 IT			
4												
5												
6									6.1 IT			
7												
8												
9									9.3 IT			
10												
11												
12									10.7 IT			
13												
14												
15									6.7 IT			
16												
17												
18									32.6 IT			
19												
20												
21									P 37.6 rt			
22												
23												
24									5.9 IT			
25												
26												
27									7.7 IT			
28												
29												
30									6.4 IT			
31												
NO.:	0	0	0	0	0	0	0	0	10	0	0	0
MAX:									37.6			
MEAN:									12.68			

ANNUAL OBSERVATIONS: 10 ANNUAL MEAN: 12.68 ANNUAL MAX: 37.6

1 Values marked with 'P' exceed the PRIMARY STANDARD of: 35.5
1 Values marked with 'S' exceed the SECONDARY STANDARD of: 35.5

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

(88101) PM2.5 - Local Conditions

SITE ID: 56-039-1006 POC: 1
COUNTY: (039) Teton
CITY: (40120) Jackson
SITE ADDRESS: Jackson Fire District #1
SITE COMMENTS:
MONITOR COMMENTS:

STATE: (56) Wyoming
AQCR: (243) WYOMING
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: RESIDENTIAL
LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:
LATITUDE: 43.4780800009
LONGITUDE: -110.76118
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 4
PROBE HEIGHT: 6

SUPPORT AGENCY: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (143) R & P Model 2000 PM-2.5 Air Sample
PQAO: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality

REPORT FOR: 2012

DURATION: 24 HOUR
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 2

MONTH

Day	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
1												
2												
3									AN			
4												
5												
6									8.6 IT			
7												
8												
9									AN			
10												
11												
12									17.2 IT			
13												
14												
15									16.6 IT			
16												
17												
18									27.0 IT			
19												
20												
21									P 39.2 rt			
22												
23												
24									6.5 IT			
25												
26												
27									10.2 IT			
28												
29												
30									5.4 IT			
31												
NO.:	0	0	0	0	0	0	0	0	8	0	0	0
MAX:									39.2			
MEAN:									16.34			

ANNUAL OBSERVATIONS: 8 ANNUAL MEAN: 16.34 ANNUAL MAX: 39.2

1 Values marked with 'P' exceed the PRIMARY STANDARD of: 35.5
1 Values marked with 'S' exceed the SECONDARY STANDARD of: 35.5

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("*") indicates that the region has reviewed the value and does not concur with the qualifier.

QUALIFIER CODES:

Qualifier Code	Qualifier Description	Qualifier Type
AN	Machine Malfunction	NULL
AV	Power Failure	NULL
BA	Maintenance/Routine Repairs	NULL
IT	Wildfire-U. S.	INFORM
rt	Wildfire-U. S.	REQEXC

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional concurrence are shown in lower case.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: KCN

RAW DATA MAX VALUES REPORT

Report Request ID: 1103316 Report Code: AMP350MX May. 31, 2013

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region	Method	Duration	Begin Date	End Date
	56	035	0097												
	56	035	0101												

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA	88101		X

SELECTED OPTIONS

Option Type	Option Value
SINGLE EVENT PROCESSING	INCLUDE EVENTS
MERGE PDF FILES	YES

SORT ORDER

Order	Column
1	STATE_CODE
2	COUNTY_CODE
3	SITE_ID
4	PARAMETER_CODE
5	POC

GLOBAL DATES

Start Date	End Date
2012 09 01	2012 09 30

APPLICABLE STANDARDS

Standard Description
PM25 24-hour 2006

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA MAX VALUES REPORT

May. 31, 2013

(88101) PM2.5 - Local Conditions

SITE ID: 56-035-0097 POC: 1
COUNTY: (035) Sublette
CITY: (00000) Not in a city
SITE ADDRESS: Wyoming Range/West Fontenelle Dr.
SITE COMMENTS:
MONITOR COMMENTS:

STATE: (56) Wyoming
AQCR: (243) WYOMING
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: AGRICULTURAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 42.98
LONGITUDE: -110.353
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 2475
PROBE HEIGHT:

SUPPORT AGENCY: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality
MONITOR TYPE: SPECIAL PURPOSE
COLLECTION AND ANALYSIS METHOD: (170) Met One BAM-1020 Mass Monitor w/VS
PQAO: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality

REPORT FOR: 2012

DURATION: 24-HR BLK AVG
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 2

MONTH

Day	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
1									2.9			
2									4.2			
3									5.5			
4									6.8			
5									5.8			
6									4.6			
7									11.1			
8									10.9			
9									6.9			
10									5.0			
11									4.2			
12									12.0			
13									12.0			
14									6.5			
15									6.0			
16									15.8			
17									25.5			
18									P 39.1 +			
19									24.9			
20									P 52.3 +			
21									30.5			
22									12.0			
23									12.3			
24									3.5			
25									2.9			
26									5.3			
27									6.8			
28									9.0			
29									5.9			
30									5.6			
31												
NO.:	0	0	0	0	0	0	0	0	30	0	0	0
MAX:									52.3			
MEAN:									11.86			

ANNUAL OBSERVATIONS: 30 ANNUAL MEAN: 11.86 ANNUAL MAX: 52.3

2 Values marked with 'P' exceed the PRIMARY STANDARD of: 35.5
2 Values marked with 'S' exceed the SECONDARY STANDARD of: 35.5

Note: A plus sign ("+") following a value indicates that the computed average includes one or more raw data values effected by a special event.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA MAX VALUES REPORT

May. 31, 2013

(88101) PM2.5 - Local Conditions

SITE ID: 56-035-0101 POC: 1
COUNTY: (035) Sublette
CITY: (00000) Not in a city
SITE ADDRESS: Pinedale Gaseous Monitor on west side of City Park and Pine Creek
SITE COMMENTS:
MONITOR COMMENTS:

STATE: (56) Wyoming
AQCR: (243) WYOMING
URBANIZED AREA: (0000) NOT IN AN URBAN AREA
LAND USE: RESIDENTIAL
LOCATION SETTING: RURAL

CAS NUMBER:
LATITUDE: 42.8698240009
LONGITUDE: -109.87076
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 2191
PROBE HEIGHT:

SUPPORT AGENCY: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality
MONITOR TYPE: Multiple Monitor Types
COLLECTION AND ANALYSIS METHOD: (170) Met One BAM-1020 Mass Monitor w/VS
PQAO: (1188) Wyoming Air Quality Division, Dept Of Environmental Quality

REPORT FOR: 2012

DURATION: 24-HR BLK AVG
UNITS: Micrograms/cubic meter (LC)
MIN DETECTABLE: 2

Day	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
1									6.6			
2									7.1			
3									6.9			
4									5.9			
5									6.2			
6									6.5			
7									11.5			
8									11.6			
9									7.6			
10									7.2			
11									6.2			
12									22.6			
13									21.0			
14									11.3			
15									6.1			
16									8.2			
17									25.2			
18									33.2			
19									28.1			
20									P 44.8 +			
21									27.1			
22									17.8			
23									12.1			
24									5.8			
25									5.6			
26									7.0			
27									8.2			
28									7.6			
29									6.2			
30									5.0			
31												
NO.:	0	0	0	0	0	0	0	0	30	0	0	0
MAX:									44.8			
MEAN:									12.87			

ANNUAL OBSERVATIONS: 30 ANNUAL MEAN: 12.87 ANNUAL MAX: 44.8

1 Values marked with 'P' exceed the PRIMARY STANDARD of: 35.5
1 Values marked with 'S' exceed the SECONDARY STANDARD of: 35.5

Note: A plus sign ("+") following a value indicates that the computed average includes one or more raw data values effected by a special event.

Appendix B: Wyoming Unplanned Fire Post Burn Report

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

Unplanned Fire Post Burn Reporting Form

For events that exceed 50 acres.

CONTACT INFORMATION:

NAME Justin Kaber PHONE 307-276-5827

ADDRESS 10418 S US Hwy 189 FAX 307-276-5203

CITY Big Piney E-MAIL jkaber@fs.fed.us

STATE WY ZIP 83113

AGENCY/COMPANY (IF APPLICABLE) USFS – Big Piney RD, Bridger-Teton NF

VOLUNTEER FIRE ORGANIZATION: ☐

BURN NAME Chall Creek **ID #** *1200*

LOCATION: COUNTY Sublette ELEVATION (FEET) 8200

LEGAL: SECTION 11 TOWNSHIP 35 RANGE 114

LATITUDE 43 01'07" LONGITUDE 110 25'15" DATUM

UTM: ZONE EAST NORTH DATUM

LAND OWNERSHIP: FEDERAL x STATE x MUNICIPAL ☐ PRIVATE x

SENSITIVE RECEPTORS: POPULATION(S) W/I 10 MI. x NONATTAINMENT AREA(S) W/I 10 MI. ☐ CLASS I AREA(S) W/I 30 MI. x

PUBLIC INFORMATION:

JURISDICTIONAL FIRE AUTHORITY(IES): NAME USFS DATE/TIME 9/16/2012

NAME Sublette Co Fire/Wyoming State Forestry DATE/TIME 9/16/2012

PUBLIC NOTIFICATION: METHOD Trapline, press releases DATE 9/16-23/2012

METHOD DATE

MANAGEMENT RESPONSE: SUPPRESSION [x] MANAGE TO ACHIEVE MGT. OBJECTIVE* [ ]

* SPECIFY: RESTORATION [ ] MAINTENANCE [ ]

DAILY BURN INFORMATION:

DATE (MONTH/DAY/YR)	VEGETATION TYPE (SEE LIST)	ACRES	LOADING (TONS/ACRE)
9/16/2012	Lodgepole Pine/fir mix; Forest	500	15-20
9/17/2012	Lodgepole Pine/fir mix; Forest	187	15-20

AIR QUALITY MONITORING:

[x] CONDUCTED VISUAL MONITORING, IDENTIFY:

DOCUMENTATION ATTACHED _____

[ ] CONDUCTED AMBIENT AIR QUALITY MONITORING, IDENTIFY:

DOCUMENTATION ATTACHED _____

[ ] CONDUCTED VISIBILITY MONITORING, IDENTIFY:

DOCUMENTATION ATTACHED _____

SMOKE MANAGEMENT EDUCATION: (FOR UNPLANNED FIRE UNDER MANAGEMENT ONLY)

WDEQ-AQD SMOKE MANAGEMENT EDUCATION MATERIAL REVIEWED ON _____

_____ TRAINING PROGRAM COMPLETED ON _____

COMMENTS

This form shall be submitted to the WDEQ-AQD no later than December 31.

SIGNATURE Justin Kaber **DATE** 11/10/2012

If Unplanned Fire Post Burn Reporting Form is submitted electronically, the electronic signature will be attributed to the sender.

VEGETATION TYPE LIST

Lodgepole Pine / Fir: little dead & down	Ponderosa Pine: open canopy	Barley
Forest: heavy dead & down with brush	Ponderosa Pine: closed canopy	Corn
Thinning Unit: not piled with red needles	Juniper	Hay
Logging Slash: mod. accumulations	Sagebrush	Oats
Logging Slash: clearcut	Mountain Brush	Seeds: Alfalfa
Logging Slash Piles: hand	Short Grasses	Seeds: Grass
Logging Slash Piles: tractor, clean	Tall Grasses	Wheat
Logging Slash Piles: tractor, dirty	Weeds	CRP
Logging Slash Piles: landing		Ditches

STATE OF WYOMING

DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

Visual Monitoring Log

BURN NAME _____ **ID #** _____

OBSERVER NAME(S) _____

_____

SUCCESSIVE OBSERVATIONS:

DATE(S) (MONTH/DAY/YR)	TIME OF DAY	SMOKE PLUME APPEARANCE		HEIGHT OF SMOKE PLUME	DIRECTION OF SMOKE DISPERSION	RESIDUAL SMOKE PRESENT
		Fig. 1	Fig. 2			

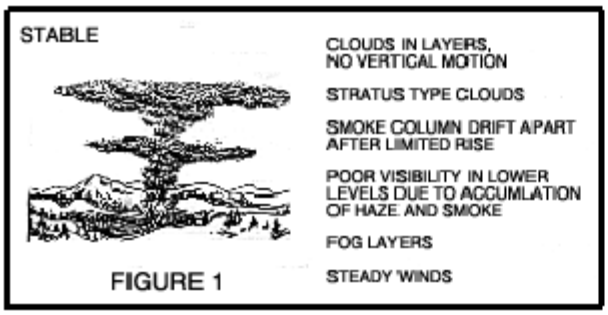


FIGURE 1

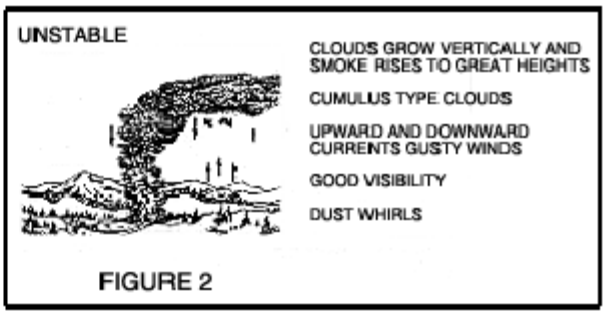


FIGURE 2

COMMENTS

STATE OF WYOMING

DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

Photo / Video Log

BURN NAME _____ **ID #** _____

PHOTOGRAPHER NAME(S) _____

_____

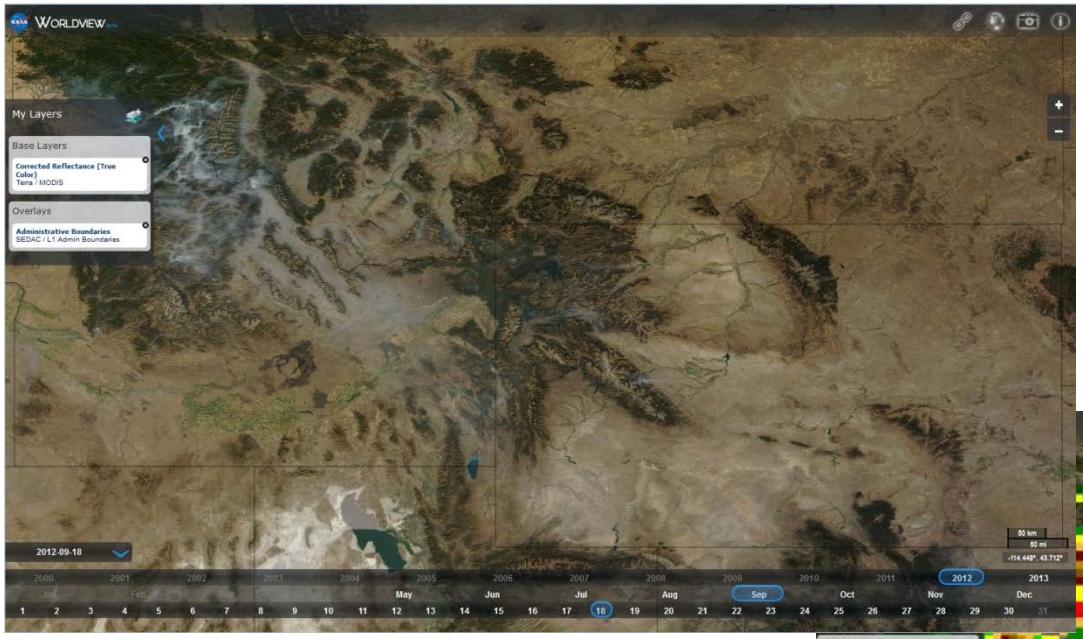
PHOTO / VIDEO OBSERVATIONS:

DATE(S) (MONTH/DAY/YR)	TIME OF DAY	PHOTO		VIDEO		PHOTOGRAPHER LOCATION	DIRECTION OF CAMERA VIEW
		Film	Digital	Film	Digital		

COMMENTS

Appendix C: MODIS Satellite Products

Sept 18, 2012

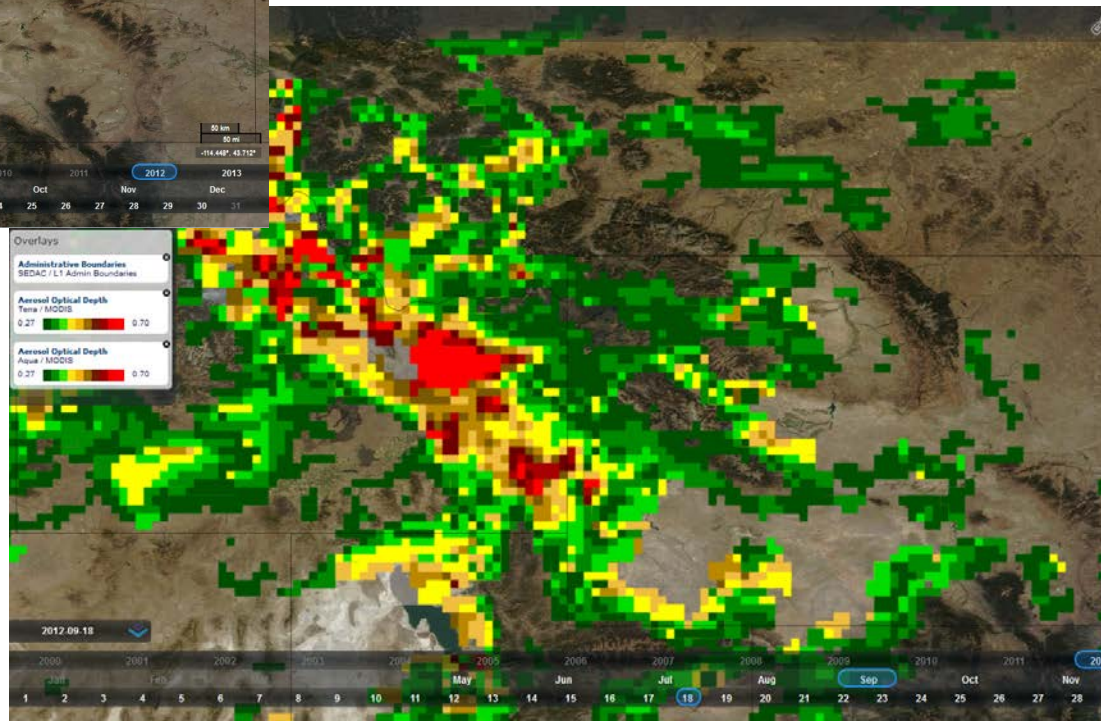


Sept 18, 2012 MODIS Terra True Color Image

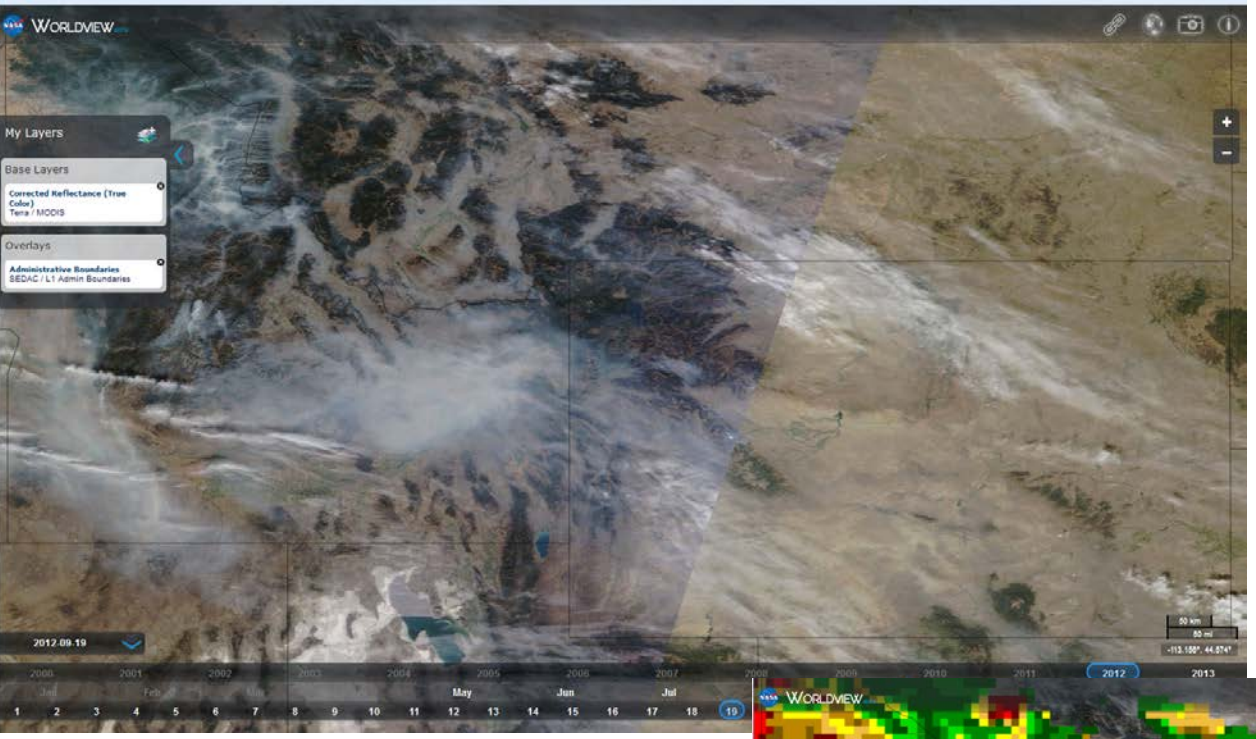
Aerosol Optical Depth (AOD) vs PM2.5

AOD represents the total column loading of aerosols in the atmosphere

PM2.5 is a measure of the mass of particles near the surface



Sept 19, 2012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Overlays
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SEDAC / L1 Admin Boundaries
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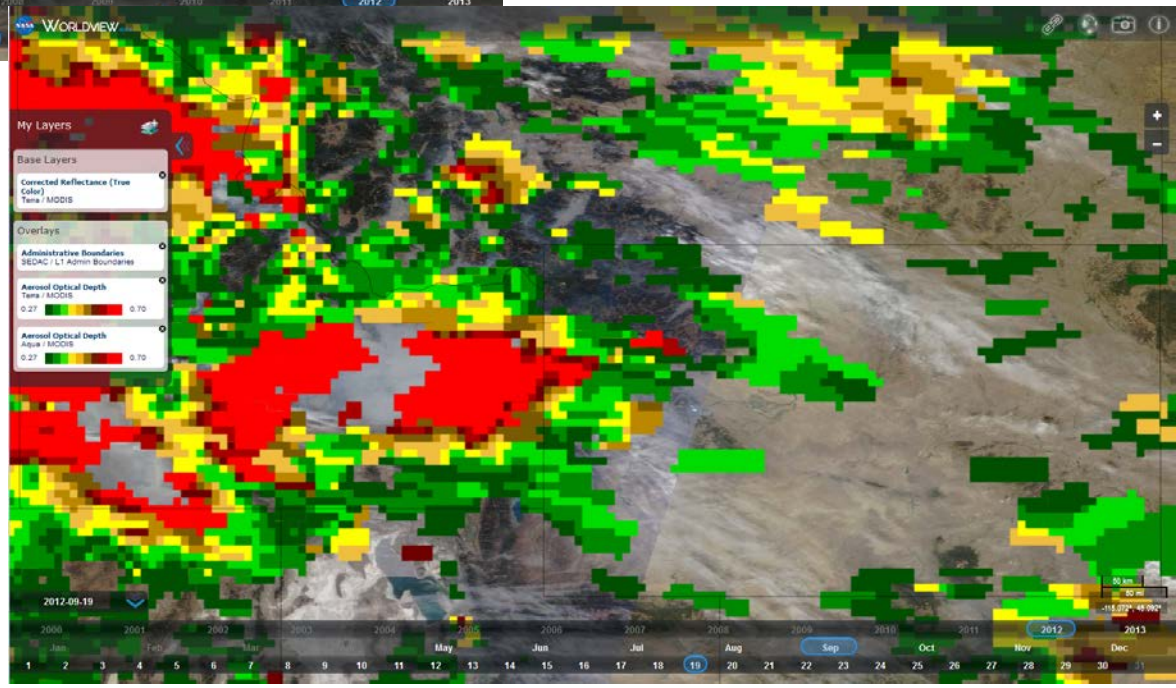
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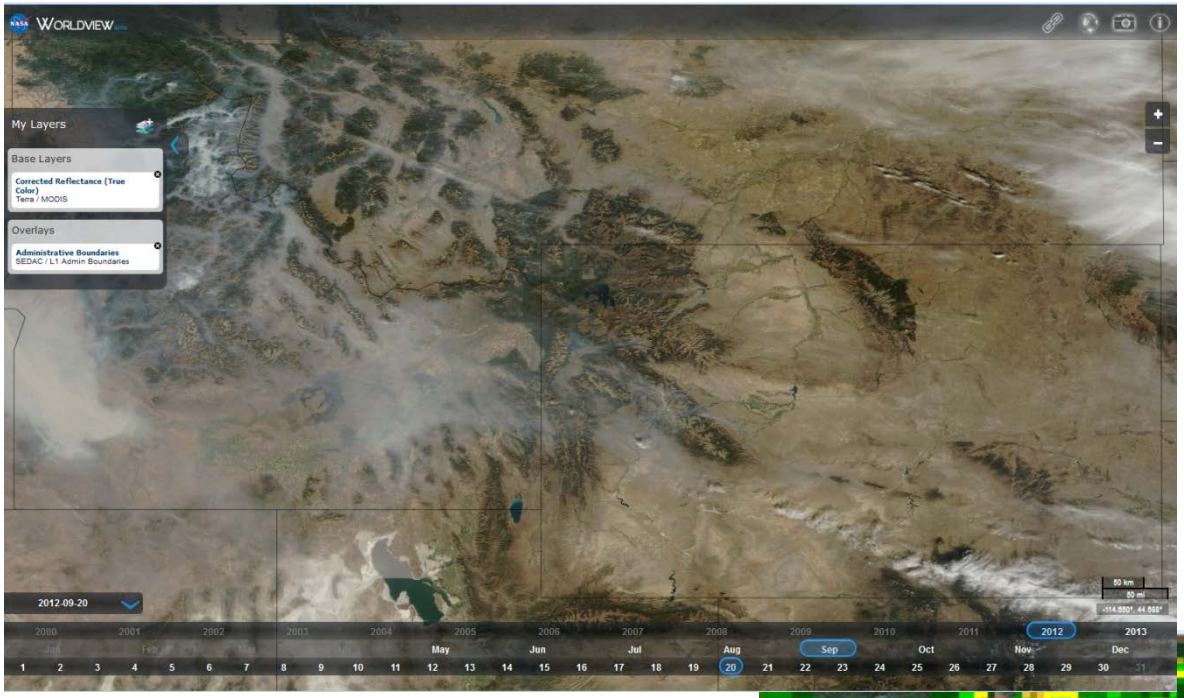
Sept 20, 2012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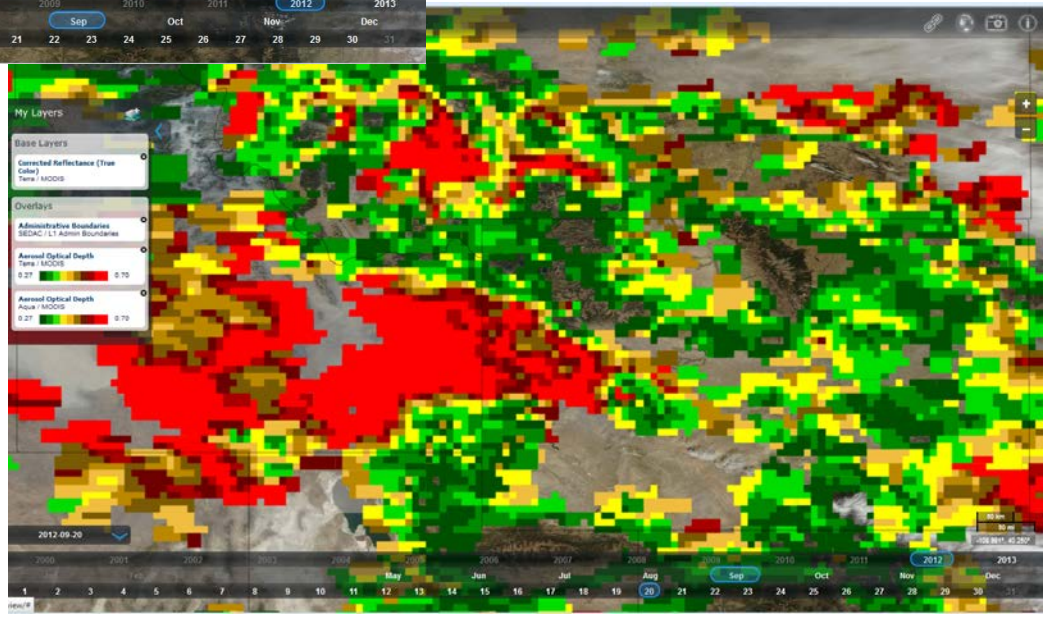
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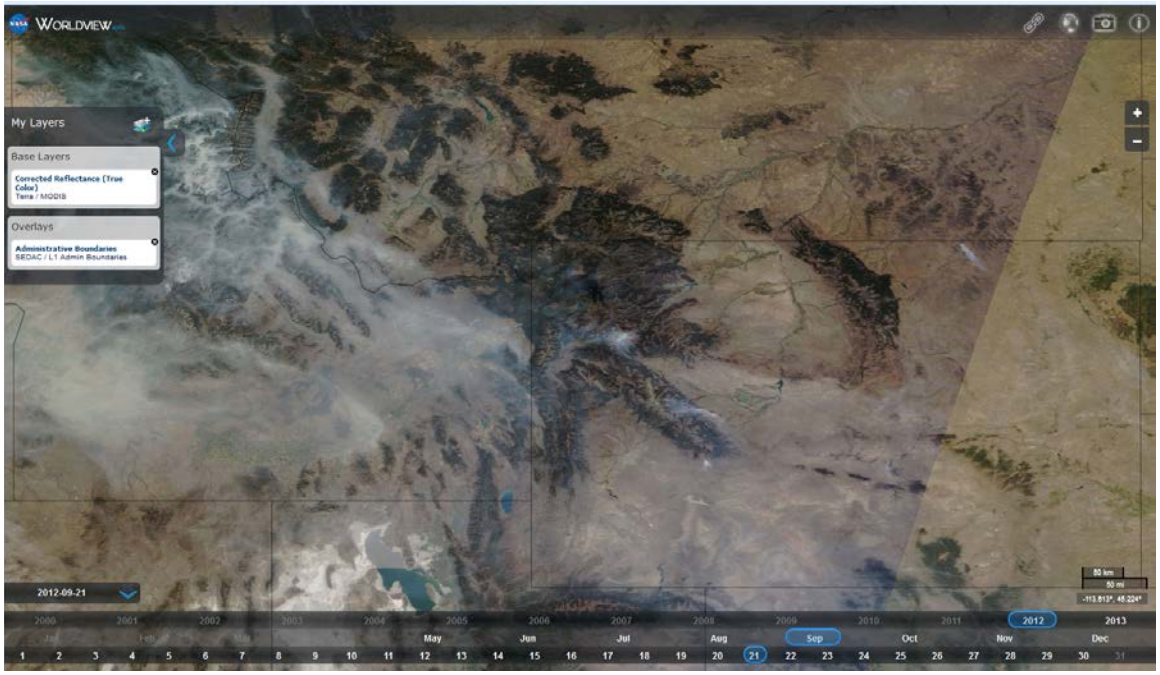
Sept 21, 2012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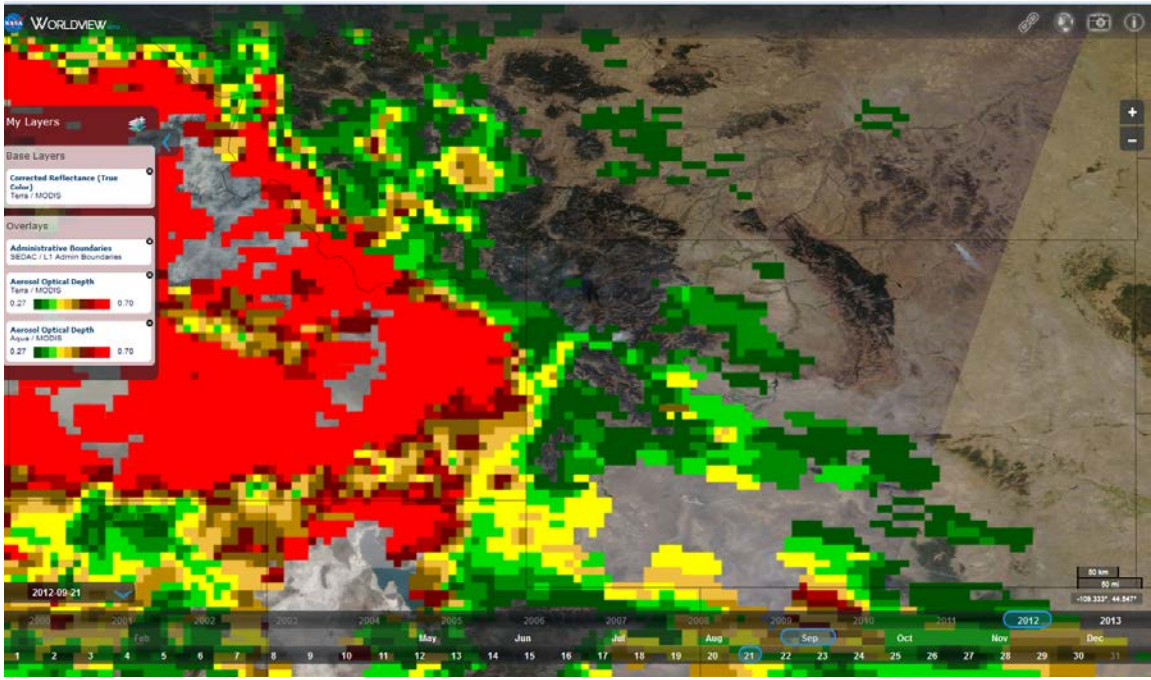
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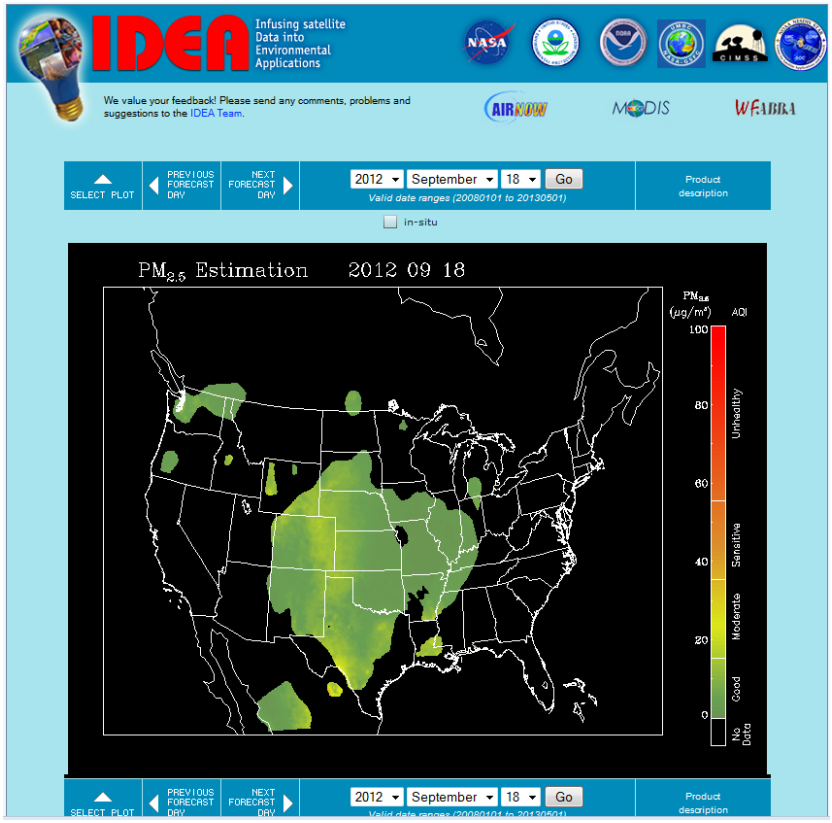
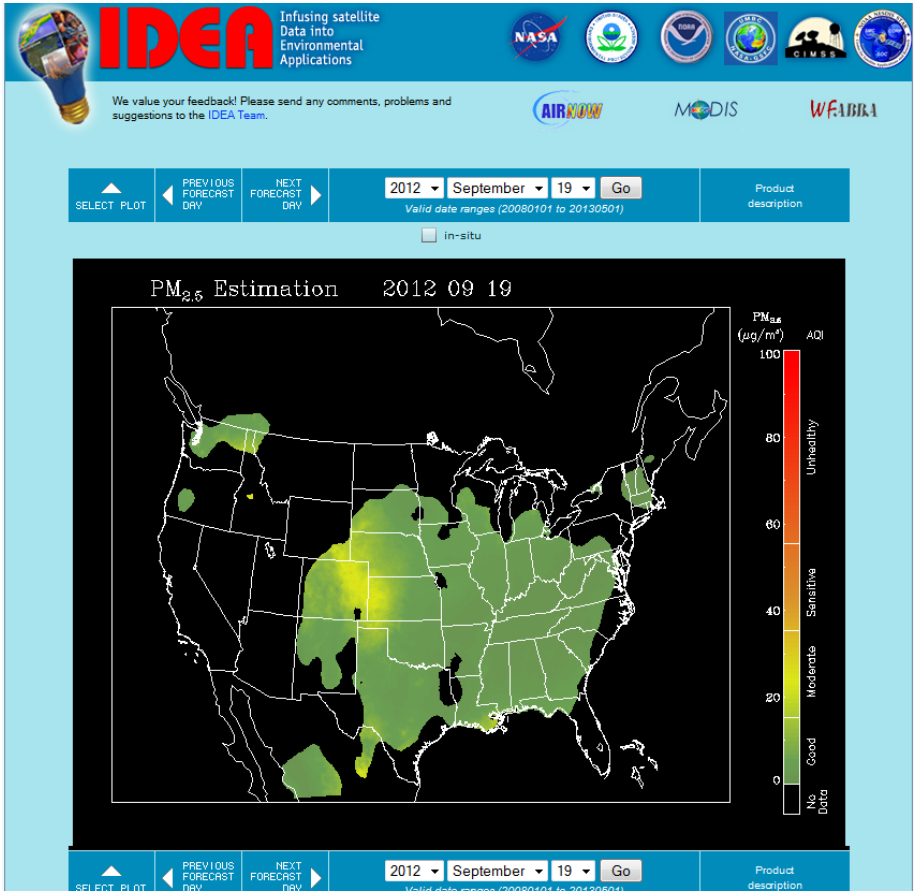
PM2.5 estimation from MODIS AOD

This product estimates daily surface PM2.5 (Particulate Matter with a diameter smaller than 2.5 microns) during sun-lit time over the United States using AOD (aerosol optical depth) from MODIS (the Moderate Resolution Imaging Spectroradiometer). Daily AOD is first derived from MODIS Terra, Aqua with following criteria: use average AOD from Terra and Aqua in areas where MODIS AOD from both satellite instruments is available; use AOD from MODIS in areas where MODIS AOD is available from only one MODIS instrument. The PM2.5 is then estimated from daily AOD through predefined regression relation, which are derived through model simulations.





IDEA Infusing satellite Data into Environmental Applications

We value your feedback! Please send any comments, problems and suggestions to the IDEA Team.

AIRNOW MODIS WFABBA

SELECT PLOT | PREVIOUS FORECAST DAY | NEXT FORECAST DAY | 2012 September 20 Go | Product description

Valid date ranges (20080101 to 20130501)

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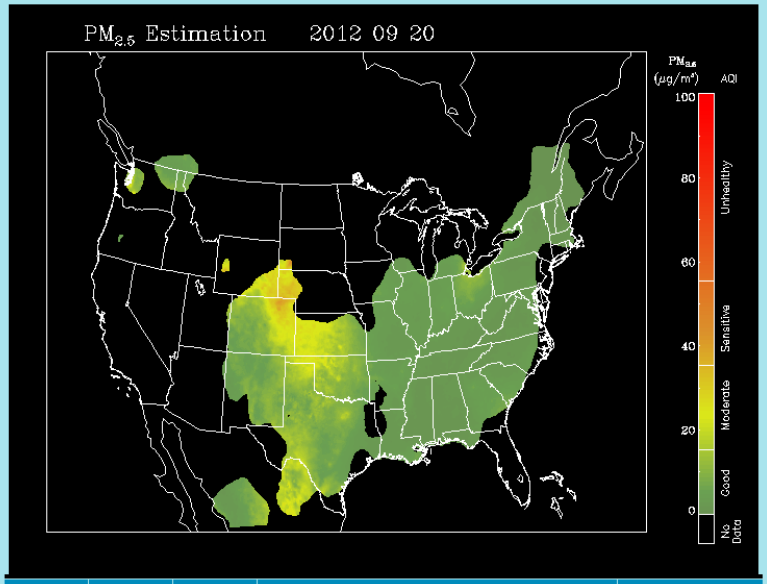

SELECT PLOT | PREVIOUS FORECAST DAY | NEXT FORECAST DAY | 2012 September 20 Go | Product description

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AIRNOW MODIS WFABBA

SELECT PLOT | PREVIOUS FORECAST DAY | NEXT FORECAST DAY | 2012 September 21 Go | Product description

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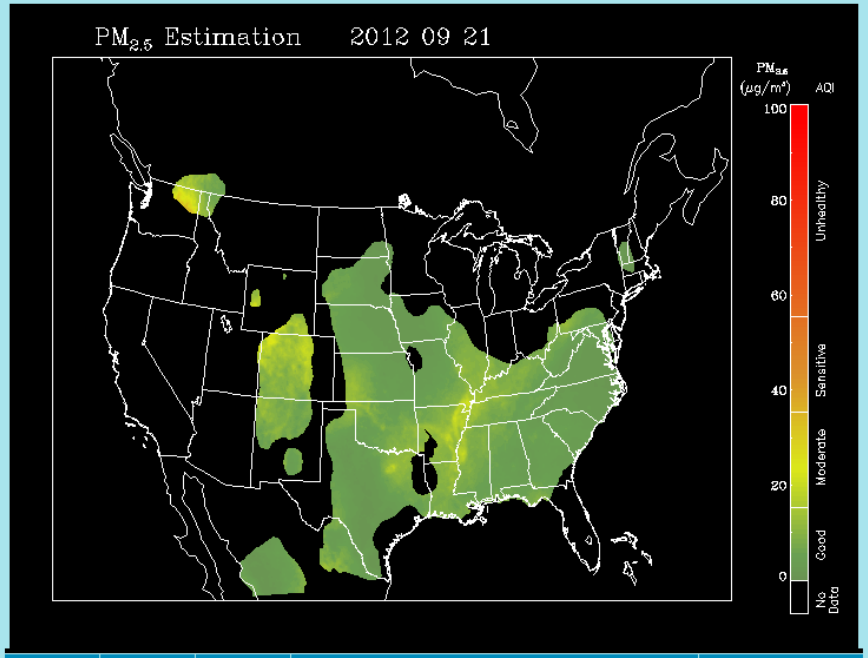

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Appendix D: Filter Analyses

RJ LEE GROUP
DELIVERING SCIENTIFIC RESOLUTION

January 16, 2013

Mr. Kevin Chartiers
Inter-Mountain Laboratories
PO Box 4006
Sheridan, WY 82801

RE: PM2.5 Filters
RJLG Project No: TEH1024546
IML P.O. #240568

Dear Mr. Chartiers:

Four PM2.5 filters were received w by RJ Lee Group, Inc. (RJLG) and assigned the RJLG identification number as follows.

IML Sample ID	RJLG Tracking Number	Sampling Dates	Sampling Locations
T1667797	10218770	06/29/12	Casper
T1667849	10218771	06/29/12	Lander
T2509967	10218772	09/21/12	Jackson
T2510108	10218773	09/21/12	Rock Springs

Preparation and Analyses

A section of each filter was mounted onto an SEM stub and coated with a thin layer of carbon to provide the electrically conductive surface needed for the SEM. The samples were analyzed using scanning electron microscope (SEM) coupled with energy dispersive spectroscopy (EDS) to distinguish particle types based on morphology and elemental composition.

Summary of Findings

The majority of particulate observed on all of the samples consisted of carbon-rich particulate matter. Minor amounts of Si/Al and Si/Al/K-rich particulate was also present. Field images and spectra of each filter are illustrated below in Figures 1-4. Please note that the Fluorine (F) peak is from the Teflon media.

These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. This test report is not to be reproduced except in full, without written approval of the laboratory. Unless notified to return the samples covered in this report, RJ Lee Group will store them for a period of thirty (30) days before discarding.

Should you have any questions regarding this information, please do not hesitate to contact us.

Sincerely,

Steven Schlaegle
Director, Energy and Utilities

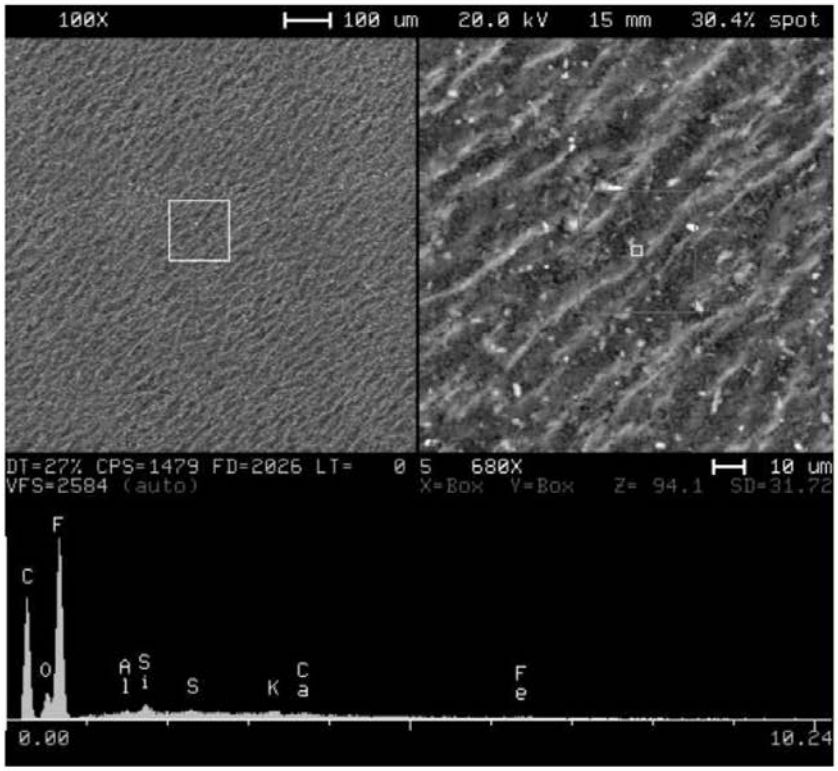

Figure 1. Backscattered electron image and elemental spectra from sample T1667797. The darker background is the C-rich component. The Si/Al particulate is associated with the brighter specks and the ridges are the (F) filter media.

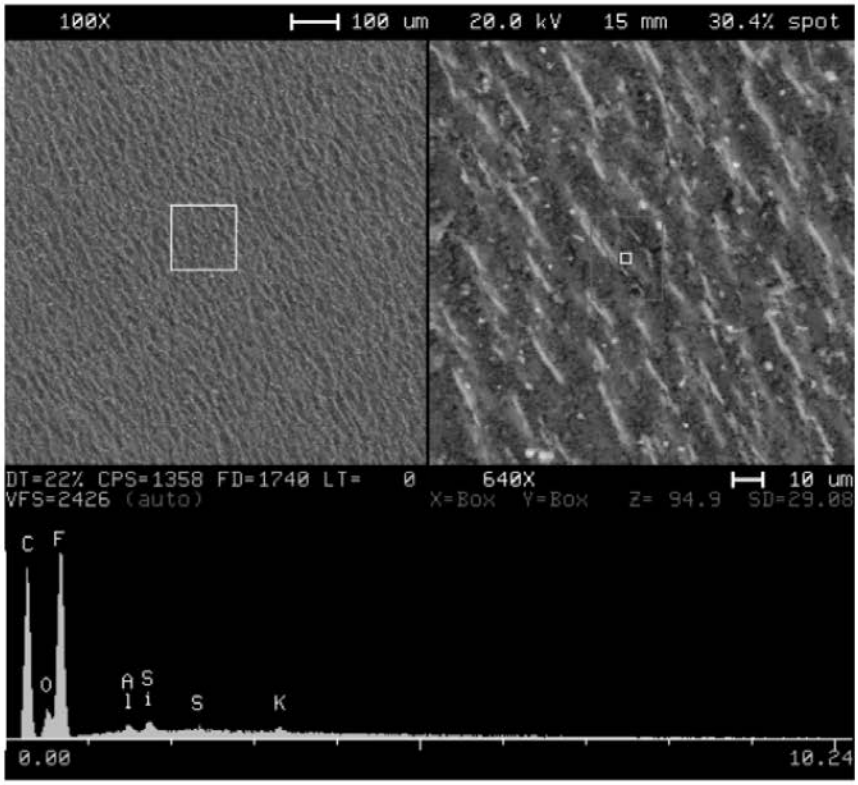

Figure 2. Backscattered electron image and elemental spectra from sample T1667849. The darker background is the C-rich component. The Si/Al particulate is associated with the brighter specks and the ridges are the (F) filter media.

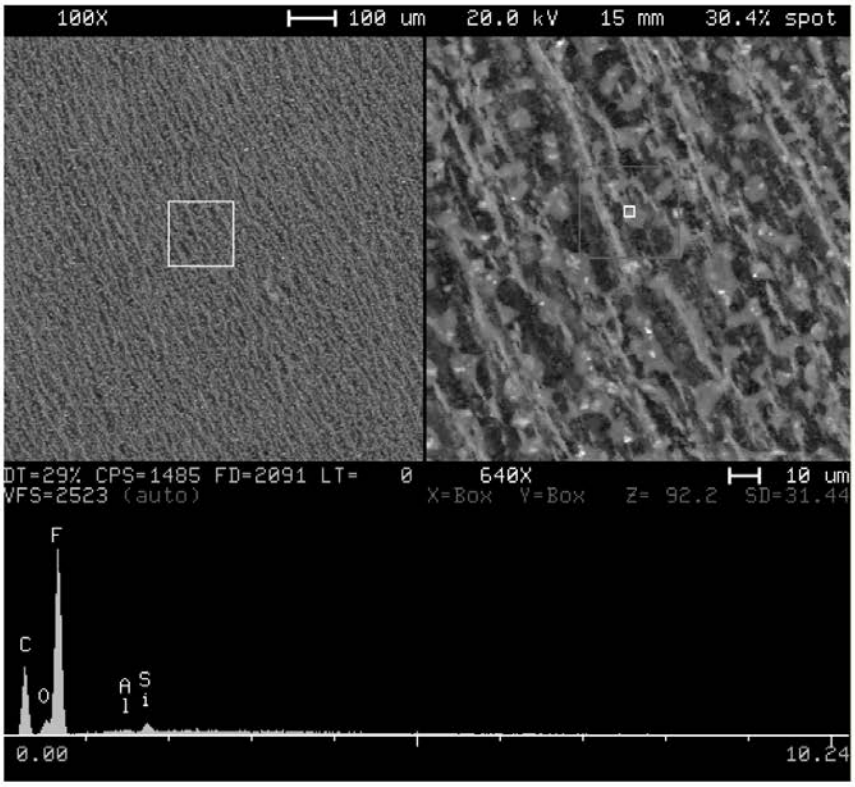

Figure 3. Backscattered electron image and elemental spectra from sample T2509967. The darker background is the C-rich component. The Si/Al particulate is associated with the brighter specks and the ridges are the (F) filter media.

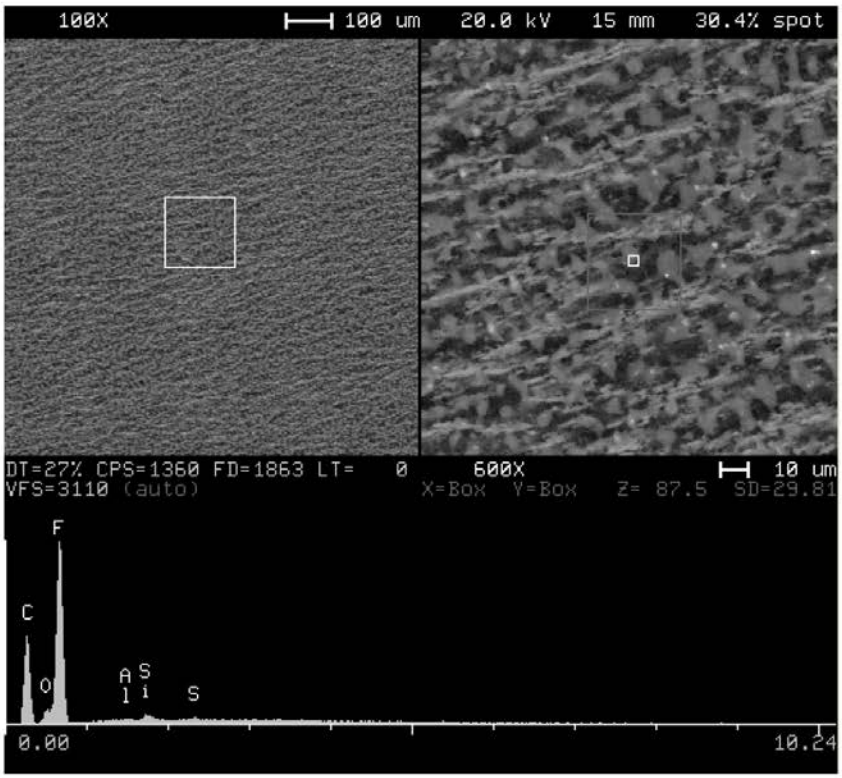

Figure 4. Backscattered electron image and elemental spectra from sample T2510108. The darker background is the C-rich component. The Si/Al particulate is associated with the brighter specks and the ridges are the (F) filter media.

Appendix E: News Accounts

Sunday, 8:20PM Chall Creek Fire update: Sublette County Sheriff's Office advises that Merna area and Jim Bridger Estates notified to be on STAND BY, not being evacuated at this time. Rd 115/Merna-North Beaver Road and Hwy 354 (Horse Creek/Merna road) remain closed. Evacuation ordered for Timberline Lodge, N. Beaver Road, Siems Road. Resources on scene include 4 engines, 6 smokejumpers, 1 Type I helicopter, 2 Type II helicopters, and air attack. DC-10 Slurry bomber has already dumped a load on it. Last report at 7PM had the fire at 140 acres burning SSE direction. Red Cross is advising evacuees needing a place to stay to go to the Pinedale MIDDLE SCHOOL as staging area. The Sublette County Sheriff's Office has closed the Daniel/Merna/Horse Creek Road for public safety. Stay tuned to KPIN 101.1 FM radio for current updates. Public is asked to please stay away from the area. See www.tetonfires.com for more updates.

Timberline Lodge still ok The Chall Creek Fire came to within 100 yards of Timberline Lodge on Sunday evening, but firefighters were able to protect the structures of the guest ranch operation. "Our phone was ringing off the hook with calls offering help. So nice!" said owner Melanie Peterson, www.timberlinetrips.com. This photo was sent around midnight on Sunday evening. The fire is located 30 miles west of Pinedale, northwest of Daniel in the Beaver Creek drainage of the Wyoming Range. Residents in the North Beaver Creek area were under immediate evacuation orders Sunday evening. Residents near Merna and Jim Bridger Estates were put on stand-by for possible evacuation. The cause of the fire is still unknown. More info on Inciweb. Photo by Melanie Peterson, Timberline Lodge.

Chall Creek Fire The Chall Creek Fire started around 2PM on the Big Piney Ranger District on Sunday, September 16. By Sunday evening it reached 140 acres in size and immediate evacuation orders were given for the North Beaver Creek area. The fire was headed in a South-Southeast direction. Residents in the Merna and Jim Bridger Estates area were put on standby for possible evacuation depending on fire conditions. Updates are being aired on KPIN 101.1 FM Radio and posted on Inciweb. Photo by Dave Bell.

Jackson Hole News&Guide

Print This Page >

Horsethief containment probable by week's end

By Mike Koshmrl, Jackson Hole, Wyoming
Date: September 18, 2012

Firefighters gained control of another 15 percent of the Horsethief Canyon Fire's perimeter Sunday, and containment could be achieved by the end of the week.

The 3,373-acre wildfire, sparked Sept. 8 in Little Horsethief Canyon, is now 57 percent contained, and the northern perimeter is almost secured, fire spokeswoman Jesse Bender said.

"The heavy threat to structures has passed," Bender said Monday afternoon. "It may not be 100 percent contained by the end of the week, but we estimate near-full containment by the end of the week."

Beginning Sunday, Horsethief Canyon fire managers began releasing people and equipment to high-priority blazes in the region.

"We sent hand crews and engines to the new [fire] start," Bender said, referring to the fast-growing Chall Creek Fire west of Pinedale. "We have also loaned them one type-one helicopter and one type-two helicopter."

Once a threat to Snow King Mountain and east Jackson, the blaze grew just 20 acres from Sunday to Monday. Efforts are now focused on the south and southwest lines, a potential threat to the Game Creek subdivision.

In coming days, managers may lift parts of the closure ordered for Cache and Game creeks, including trails on Snow King Mountain, Bender said.

"I'm very aware of how much people want to get in there, but there is still a fire, and safety is our number-one concern," Bender said. "Discussions about lifting the closure have begun, but I don't have an estimate on when that will happen and to what extent it will happen."

Since its start 10 days ago, the Horsethief Canyon Fire has cost $5.8 million. At its peak, the firefighting effort included 650 people, nine helicopters, 40 engines and three bulldozers, and cost the U.S. Forest Service about $1.1 million a day.

The U.S. Weather Service predicts Jackson will have dry conditions with no chance of precipitation through this weekend.

Chall Fire evening update, Tuesday, Sept. 18, 10:30PM: Two engines are patrolling the fire area overnight. No fire growth today, containment lines holding. No homes damaged or destroyed to date. The precautionary evacuations are still in effect. Anyone with concerns about property in the fire area can go to the Sheriff's Office road block at Siems Road (#163) and the main road (#115) during daylight hours and speak with the officer on duty. Decisions to be allowed in are made on a case-by-case basis and depend on the fire activity at the time. Public asked to please stay away from the area unless they have business there. People traveling into the area should use caution driving due to heavy firefighting activity traffic and road construction on Hwy 354. See Inciweb for updates, photos and maps. Current updates and any fast-changing conditions being broadcast on KPIN 101.1 FM radio.

Evacuating the horses at Timberline Lodge on Sunday
Chall Fire evening update, Tuesday, Sept. 18, 10:30PM: Two engines are patrolling the fire area overnight. No fire growth today, containment lines holding. No homes damaged or destroyed to date. The precautionary evacuations are still in effect. Anyone with concerns about property in the fire area can go to the Sheriff's Office road block at Siems Road (#163) and the main road (#115) during daylight hours and speak with the officer on duty. Decisions to be allowed in are made on a case-by-case basis and depend on the fire activity at the time. Public asked to please stay away from the area unless they have business there. People traveling into the area should use caution driving due to heavy firefighting activity traffic and road construction on Hwy 354. See Inciweb for updates, photos and maps. More fire pictures Photo by Julie Bain.

VLAT The Very Large Air Tanker, DC-10 can carry 11,600 gallons of retardant, about six times more than the P2V air tanker which comprises 8 of the 9 large air tankers currently active under long term contracts. The DC-10 is a call when needed contract by the U.S. Forest Service, rather than a full-time exclusive use contract. More info about the DC-10 Click here for information about the fire on Inciweb. Click here for more recent photos of the Chall fire. Photo by Mellisa Watson.

Fire threat makes history

Though not the largest or costliest ever, last week's blaze posed the most danger to Jackson.

By Mike Koshmrl, Jackson Hole, Wyo.
September 19, 2012

When the Horsethief Canyon Fire raged early last week, it threatened Jackson more than any wildfire in history, officials and past firefighters said.

In the town's 118 years, only the historic Snow King Fire, of which little is known, came close, said Clayton Caden, a researcher and archivist at the Jackson Hole Historical Society.

"As far as fires in the valley that have threatened the town of Jackson, this would be the first major incident in recorded history," Caden said. "We know that Snow King got wiped out by fire in the late 1800s, but there's no recorded history of it."

Because Jackson's Hole Courier, the newspaper of the day, burned down in a 1914 town fire, no accurate records of Snow King blaze exist, Caden said.

"Other fire-related incidents are nowhere close to the scale of this," Caden said. "They're just minor."

The human-caused Horsethief Canyon Fire, which started Sept. 8, was 82 percent contained and covered 3,373 acres as of Tuesday.

Growth has slowed to a trickle, and fire managers were increasingly confident control lines surrounding the blaze would hold.

"We feel like we've got a pretty good handle on it," Jackson Hole Fire/EMS Chief Willy Watsabaugh said Tuesday. "Obviously, we've reduced the threat to Jackson."

To date, the Horsethief Canyon Fire has cost $7.1 million to corral and burned one county engine.

At its worst, on Sept. 10., the blaze was pushing hard toward two trigger points — one in Cache Creek and one on Snow King Mountain — that would have brought mandatory evacuations for thousands living in southeast Jackson.

Firefighters made a key stand Sept. 9 when the fire was in Smith Canyon and heading north toward Jackson. They turned the blaze to the south and east.

"We applied a fair bit of retardant and put people in there to check it up and secure that piece of line," Watsabaugh said. "A lot of that was because the winds aligned more east to west rather than the typical winds that are out of the southwest, but it was also some doggone good strategy and tactics."

Later, after a fast-growing spot fire emerged to the northeast the afternoon of Sept. 9, firefighters again stepped up, holding critical lines overnight less than two miles south of town.

The efforts should go down in the annals of Jackson Hole fire fighting.

An 'asbestos forest'

Louis Leisinger, who worked as a fire boss at times during his 35 years with the U.S. Forest Service, corroborates claims that Horsethief Canyon is one for the record books.

He said the Bridger-Teton National Forest near Jackson historically has been lucky when it comes to wildfires.

"We didn't have many fires, just small ones," said Leisinger, who is now 29 years into retirement. "We used to call it the asbestos forest. That's a fact."

In 1949, there was a much smaller — and eerily similar — fire started in Wilson Canyon, Leisinger said.

"They both started by burning in a barrel," he said. "It was a small fire. We put it out by hand with shovels."

The former fire boss said large fires were harder to handle during his tenure because the equipment was more rudimentary. At the same time, the built environment more sparse, he said.

"That's one thing," Leisinger said. "There was no houses in this country hardly. This was paradise."

"There's been lot of changes," he said. "Nowadays, everybody wants to be a firefighter. If they had to do it like we did, boy ... we had packhorses, we had cross-cut saws. It could be rough going.

"Now they got helicopters and bring in hotshot crews from all over the country," he said. "Boy, there's a difference."

Over the decades, there have been some chinks in the abestos forest's armor.

Joan Anzelmo, a retired national park superintendent and one-time Grand Teton National Park spokeswoman, was the fire information officer for the 2001 Green Knoll Fire, which ripped through more than 4,600 acres south of Wilson. No houses were lost, but 150 were threatened.

Anzelmo likened being in Jackson Hole that year to living in a "war zone."

"In modern time — I've been in the area since 1995 — I don't recall fires other than the Green Knoll and Horsethief Canyon fire that were quite such a threat to the community," she said.

"We dodged a bullet this year, at least it feels like it," she said.

Other major fires that have moved through Jackson Hole without threatening town include the Mormon Row Fire in 1994 and Blacktail Fire in 2003, Anzelmo said.

It's a 'career fire' for Watsabaugh

Successful combating Horsethief Canyon won't soon be forgotten by Watsabaugh, who's been with Jackson Hole Fire/EMS for 36 years.

"For me, personally, you bet, I would say it's a career fire," Watsabaugh said.

Watsabaugh suggested that the valley's good fortune with structure-damaging fires is related to the lack of dense pine forest with beetle-killed trees near town.

“Frankly, it’s because they’re not large fires,” he said. “In the grand scheme of things, if you look at [the fire database] Inciweb and look at the fires that are burning around the West, Green Knoll was not a large fire. This isn’t a large fire.”

Speaking from Game Creek, Watsabaugh was upbeat about wrapping up containment on Horsethief Canyon, which is anticipated by the end of the week.

“We haven’t had any injuries, we haven’t lost and structures and everything’s going pretty well,” the fire chief said. “I feel very fortunate to be part of a team that was able to do that.”

* Two abandoned gold mines with traces of radiation also burned

* State officials say risk to human health believed low

* Air sampling to begin in town at edge of blaze

By Laura Zuckerman

SALMON, Idaho, Sept 20 (Reuters) - A wildfire in east-central Idaho has burned through three former mining sites containing traces of radioactive thorium and uranium and was advancing a fourth such site on Thursday, but state officials said they believed the risk to human health was low.

As a precaution, state environmental authorities planned to take air samples in North Fork, a small community in the fire zone north of Salmon, to assess any radioactive hazards posed by fire damage to the sites.

One area of concern is a defunct uranium mine and milling operation 5 miles (8 km) west of North Fork, where the U.S. Environmental Protection Agency conducted a cleanup several years ago of polluted soil, hazardous wastes and piles of raw uranium and thorium ore.

No decontamination of buildings at that site was ever performed, and at least one of those buildings burned in the fire, according to officials from the state Department of Environmental Quality.

Flames also swept two abandoned gold mines about 20 miles west of North Fork, where surface radiation, presumably from natural uranium and thorium deposits in the ground, has been measured at several times normal background levels, officials said.

Authorities said they were unsure how recently the wildfire had encroached on those three mining sites. But the situation was brought to the attention of the Environmental Quality Department on Thursday, agency officials said.

"This is new ground for us, but we are dealing with the issue at this time," said Erick Neher, a regional administrator of the department, adding that the risk of human exposure stems from the potential for radioactive material consumed by fire to be become airborne.

"Because there is potential and because there has been concern amongst the citizens, we will be measuring radioactivity," he said.

The air testing comes as the threat of property losses in communities near the so-called Mustang Complex fire has receded.

SMOKE AND SOOT SEEN AS GREATER HAZARD

The blaze has devoured some 330,000 acres (133,500 hectares) of pine woodlands since it grew from several separate lightning-sparked fires in late July in remote stretches of the Salmon-Challis National Forest. Authorities on Thursday lifted a mandatory evacuation order for 400 homes in the area.

Idaho environmental officials said smoke pollution, which has blanketed the area for more than a month, is the more pressing hazard. They renewed a call for area residents to stay indoors and wear masks when outdoors.

"This is very unhealthy air. We're well beyond the point where it just affects the young and the elderly. It affects all age groups and all degrees of health," said Mike Simon, acting air quality administrator for Idaho.

The chief health hazard is from fine soot particles that can worsen existing respiratory or cardiovascular ailments, said Annyce Mayer, an occupational and environmental medicine physician at National Jewish Health in Denver.

Cindy Hallen, who lives roughly 10 miles from a former uranium mine said she is not taking any chances.

"I'm wearing a mask, and I'm urging my neighbors to wear masks. I'm going to the worst-case scenario," she said. (Additional reporting by Jonathan Kaminsky; Editing by Lisa Shumaker)

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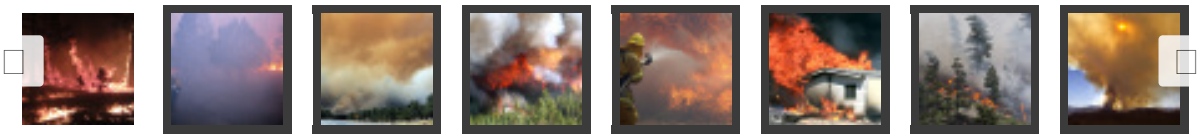

Smoke from wildfires part of summer in the West

by Bridger-Teton National Forest
September 20, 2012

Wildland fires presents many hazards to the recreating public, including burns from heat pockets, being struck by falling rocks and trees from a recently burned area, and exposure to smoke.

If you can smell smoke in the air then it is in the air you are breathing and that is where some individuals may feel effects from the smoke. Wildfire smoke occasionally causes eye and respiratory irritation, nausea, and headache.

Symptoms from short-term smoke exposure can range from scratchy throat, cough, irritated sinuses, headaches, runny nose and stinging eyes. Persons with asthma, emphysema, congestive heart disease and other existing medical conditions can have more serious reactions. The elderly and children are high-risk groups.

Smoke tends to be thickest in the mornings accumulating in the low lying areas or being held down close to the grounds until the inversion lifts. A thermal inversion, which occurs when cooler air closer to the ground is held down by warmer air above it , preventing pollutants — such as smoke — from rising and being dispersed into the atmosphere.

Wildfire smoke goes higher and higher into the atmosphere as a wildfire gets hotter and hotter. The higher the smoke gets into the atmosphere, the easier it becomes for it to travel further and further away. That is why sometimes smoke from neighboring states causes a haze in areas of the Forest even when there aren't any wildfires burning nearby. The winds are stronger high up in the atmosphere and there is less of a chance of the smoke being washed away by rain up there.

Smoke can also affect weather by creating thunderstorms, cooling areas by blocking out the sun and contributing to the formation of clouds.

On the Bridger-Teton, there are several wildfires burning that are contributing to smoke in the area. In the Teton Wilderness, the Bear Cub, Butte Creek and North Buffalo are all still active wildfires putting up smoke. In Lincoln County, the Fontenelle fire is still burning and is expected to burn until the snow comes. The newest fire on the Forest- the Chall Creek fire- is burning in Sublette County Wyoming and residents will continue to see a haze and smell smoke, especially in the early hours of the day. "Smoke has also settled on the Forest from neighboring wildfires in the west such as those burning in Idaho," said Mary Cernicek, Public Affairs Officer for the Bridger-Teton National Forest. "There is quite a bit of haze out there, but it can't be attributed to any one fire. It is from all over the west right now and that is part of what this late summer will be like on the Forest," she said.

While smoke is a factor to consider during the summer in the west, it is not a reason to forego recreating on public lands. "By minimizing physical exertion during periods of heavy smoke, outdoor enthusiasts can still enjoy the many activities that National Forest have to offer," said Cernicek.

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Jackson Hole News&Guide

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Fire cools, but smoke stays

By Benjamin Graham, Jackson Hole, Wyo.
Date: September 21, 2012

The Horsethief Canyon Fire is all but contained, but smoke continues to linger and even thicken in Jackson Hole.

For many residents, the effects have been hard to swallow.

"We're getting a lot of people coming in with upper respiratory issues," said Dr. Brent Blue, a Jackson physician. "This is the worst year since the Green Knoll Fire."

The Green Knoll Fire burned through 4,600 acres in 2001 from Mosquito Creek north to the Indian Paintbrush subdivision.

The Horsethief fire is smaller, but also much closer to Jackson, the county's population center. The fire caused patients who have trouble breathing to start filing into Blue's office the Monday after it began in Wilson Canyon.

Blue said the smoke is also exacerbating the symptoms of people with allergies.

"A lot of the antigens are being aerated by the fire," Blue said.

He said smoke from burned sagebrush and spruce is especially irritating to those with allergies.

For healthy people not yet bothered, Blue said not to worry.

"Listen to your body," he said. "If you're not having any problems, go do what you want to do."

He recommends staying inside to people with more serious respiratory problems, such as underlying pulmonary disease.

Several physicians in Jackson have seen more patients over the past week, but Teton County Public Health has no way to calculate exact air conditions.

"Unfortunately we do not have any direct air quality monitoring here in the valley," said Dr. Travis Riddell. He is a physician at Jackson Pediatrics, and is also the new Teton County Public Health Officer.

Riddell said that many places in Colorado, especially counties along the Front Range, are able to get daily readings of air quality. But even without local readings, he said it's apparent that some people in Teton County are feeling it.

"Subjectively, it seems like we've had bad air quality," he said. "Normally, we probably have some of the best air in the country."

He has seen some children with throat, nose and eye irritation caused by smoke.

In Wyoming, the Department of Environmental Quality keeps tabs on air conditions, but the states's health department cannot interpret or use the results.

Unlike Colorado, Wyoming does not issue warnings based on measurements, said Kim Deti, a spokeswoman for Wyoming Department of Health.

"They're dealing with high populations and smog and things like that," Deti said of

Colorado.

She said she has received many inquiries from around the state about how wildfire smoke might hurt people.

"If you can feel it in your eyes or smell it or taste it, it's probably time to take some precautions," she said.

But she noted that the pollution isn't as bad as in Denver and other places in Colorado.

Tammy Marshall, public health emergency response coordinator, agreed that things here aren't terrible.

"I would say this year probably isn't going to stand out significantly in the big picture," Marshall said.

But she said worsening smoke conditions could lead the department to recommend that even healthy people stay inside.

"If the smoke is heavy, we would still suggest that they limit activity where they're exerting themselves outdoors," she said.

Air quality in Idaho goes from bad to worse Thursday

By Marissa Bodnar, Reporter
POSTED: 08:53 PM MDT Sep 19, 2012 UPDATED: 09:21 AM MDT Sep 21, 2012

IDAHO FALLS, Idaho -

The hazy skies have gotten worse, and burn bans are in effect.

PHOTOS: Smoke fills eastern Idaho

The Idaho Department of Environmental Quality declared a Stage 1 Forecast for the Snake River Plain on Thursday afternoon due to the deteriorating air quality. Stage 1 means all open burning is banned and everyone should limit outdoor exertion. Salmon's air is especially bad, and the DEQ warns residents to limit outdoor activity. More details in the photo below (available in full-browser view, with color chart under "Related Content" at left).

As the Bridger-Teton National Forest warns of smoke exposure, urgent care centers are filling up with people complaining of common symptoms.

When you add one of the worst allergy seasons on record, doctors said it's a recipe for disaster.

The air quality late Thursday afternoon (updated).

The smoke is thick in many parts of eastern Idaho. Looking for the wind turbines in Idaho Falls took some serious squinting Wednesday. Viewers send us pictures of their diminished view. One person sent a picture of the Budweiser plant looking toward the foothills, but they were nowhere to be seen.

According to NASA, as of Sept. 11, more than 1.5 million acres had burned in Idaho, more than any other state in the United States, and Idahoans are feeling the effects in full force.

“(We're seeing) shortness of breathe, wheezing, that type of thing is audible from across the room along with the runny nose and watery eyes,” Dr. Corbin Brunnage said.

He could barely find five minutes for an interview as a physician's assistant at Idaho Urgent Care. On top of the normal patient load, he says, many are coming in with smoke-related problems.

“Yeah, we've been seeing all kinds of people who've been having exacerbations of obstructive lung disease or lung disease including asthma,” he said. “In addition that with early cuts of harvest, it really triggers up allergies as well. So we've been seeing quite a bit of it.”

Brunnage said the cough can be hard to shake. The smoke can also bring undiagnosed lung problems to light.

But the thick smoke isn't clearing out any time soon. So if you're not feeling well, see a doctor right away. You can also change out your heat and air filters, and as always, the best prevention is to avoid it by staying inside.

“I don't know that we wind up getting to that point, except those with severe problems and allergies, that we end up wearing masks around like everyone in Tokyo,” he said.

Brunnage said even if you're not feeling symptoms, breathing in the smoky air is not good. But it's still not as bad as breathing in a lot of carbon output and pollution you may find in bigger cities.

According to NASA, this year's wildfire season will likely break the U.S. record for most acres burned.

Fire Danger rating raised to Extreme

by Teton Interagency Fire Managers
September 21, 2012

Fire Danger Extreme

Teton Interagency Fire managers announce that the fire danger rating will be elevated to Extreme for the Bridger-Teton National Forest, Grand Teton National Park and Teton County on Friday, September 21. When determining a fire danger rating, fire officials use a five-step scale with a rating of Extreme being the highest on the scale. Despite shorter days and cooler nights, a lack of precipitation has provided very volatile fire conditions.

Fire officials use several indices when determining fire danger such as: the moisture content of grasses, shrubs and trees; projected weather conditions (including temperatures and possible wind events); the ability of fire to spread after ignition; and available fire-fighting resources. A fire danger rating of Extreme means that fires can start quickly, spread vigorously, and burn intensely. All fires are potentially serious, and development into high-intensity burning will usually be faster and occur from smaller fires than in the Very High danger class.

As hot, dry weather persists throughout the region, visitors and area residents are reminded that they can help prevent wildfires by being extremely careful with any flammable materials, including cigarettes and campfires.

Partial Fire Restrictions remain in effect for both the Bridger-Teton National Forest and Grand Teton National Park. Partial fire restrictions include:
- Lighting, building, maintaining, attending or using a fire, campfire, barbecue or grill is allowed only at designated recreation sites such as established campgrounds or picnic areas. Use of portable stoves and lanterns using gas, jellied petroleum or pressurized liquid fuel, or use of a fully enclosed sheepherder type stove with a spark arrester screen is permitted.
- Smoking is allowed only in an enclosed vehicle, building (unless otherwise prohibited), developed recreation site, or while in an area at least three feet in diameter that is barren or cleared of all flammable materials (i.e. parking lots, developed campsites, or locations surrounded by water).
- Operating a chainsaw is prohibited in national parks. Operating a chainsaw on national forest lands is permitted only when equipped with a USDA or SAE approved spark arrester that is properly installed and in effective working order. - - - Operators must also carry a fire extinguisher and a shovel.
- Discharge of fireworks and use of explosives requiring blasting caps are prohibited.
- Welding is prohibited in national parks. For national forest locations, welding or operating acetylene or other torch with open flame is only allowed in cleared areas of at least 10 feet in diameter. A fire extinguisher must be at the location.

Violation of these prohibitions is punishable by a fine of up to $5,000 for an individual or $10,000 for an organization, and/or by imprisonment for more than six months.

It is essential that everyone comply with these regulations, especially given the current fire danger rating and tinder-dry conditions. At campsites throughout the area, dozens of unattended campfires have been extinguished by rangers and firefighters so far this season. Unattended or abandoned campfires can quickly escalate into wildfires, and it is extremely important that all campfires are completely extinguished and cold to the touch before campers leave their site.

To report a fire or smoke in either area, call Teton Interagency Dispatch Center at 307-739-3630. For a list of authorized campgrounds on the Bridger-Teton where campfires are allowed, additional information about fire restrictions in the state of Wyoming or further fire information, visit the Web at www.tetonfires.com.

Pinedale Online > **News** > **September 2012** > **Fire Danger rating raised to Extreme**

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Appendix F: Health Alerts

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According to NASA, this year's wildfire season will likely break the U.S. record for most acres burned.

Appendix G: RAWS Meteorological Data

MON	DAY	YEAR	HR	MIN	TMZN	TEMP (F)	REL Humidity	SKNT	GUST	DRCT	QFLG	SOLR
9	19	2012	0	3	MDT	49	27	1	5	143	2	0
9	19	2012	1	3	MDT	48	28	2	6	123	2	0
9	19	2012	2	3	MDT	48	29	2	6	132	2	0
9	19	2012	3	3	MDT	48	30	2	6	126	2	0
9	19	2012	4	3	MDT	48	35	2	6	215	2	0
9	19	2012	5	3	MDT	46	39	2	6	115	2	0
9	19	2012	6	3	MDT	44	42	2	5	144	2	0
9	19	2012	7	3	MDT	45	43	2	5	128	2	0
9	19	2012	8	3	MDT	47	43	1	5	160	2	16
9	19	2012	9	3	MDT	53	41	1	5	136	2	137
9	19	2012	10	3	MDT	63	26	0	4	9	2	328
9	19	2012	11	3	MDT	70	21	1	6	202	2	559
9	19	2012	12	3	MDT	71	18	2	5	236	2	688
9	19	2012	13	3	MDT	75	16	2	7	319	2	752
9	19	2012	14	3	MDT	74	17	2	8	254	2	708
9	19	2012	15	3	MDT	75	17	2	7	2	2	669
9	19	2012	16	3	MDT	76	15	2	7	59	2	660
9	19	2012	17	3	MDT	71	18	2	8	251	2	431
9	19	2012	18	3	MDT	67	24	1	4	263	2	127
9	19	2012	19	3	MDT	61	31	1	5	234	2	40
9	19	2012	20	3	MDT	52	37	0	2	105	2	5
9	19	2012	21	3	MDT	51	37	1	4	323	2	0
9	19	2012	22	3	MDT	51	40	2	5	123	2	0
9	19	2012	23	3	MDT	50	37	2	6	147	2	0
9	20	2012	0	3	MDT	48	40	2	5	132	2	0
9	20	2012	1	3	MDT	51	37	2	7	152	2	0
9	20	2012	2	3	MDT	49	37	1	6	135	2	0
9	20	2012	3	3	MDT	46	43	1	4	120	2	0
9	20	2012	4	3	MDT	44	47	1	2	112	2	0
9	20	2012	5	3	MDT	45	48	0	2	101	2	0
9	20	2012	6	3	MDT	45	48	1	5	131	2	0
9	20	2012	7	3	MDT	42	51	1	5	20	2	0
9	20	2012	8	3	MDT	45	51	1	5	251	2	18

9	20	2012	9	3	MDT	49	53	1	3	116	2	100
9	20	2012	10	3	MDT	60	37	1	3	93	2	247
9	20	2012	11	3	MDT	67	25	1	4	295	2	518
9	20	2012	12	3	MDT	72	23	1	6	200	2	643
9	20	2012	13	3	MDT	73	18	3	7	225	2	719
9	20	2012	14	3	MDT	75	15	1	8	14	2	756
9	20	2012	15	3	MDT	75	14	3	9	232	2	731
9	20	2012	16	3	MDT	78	13	2	8	343	2	627
9	20	2012	17	3	MDT	71	18	1	9	185	2	408
9	20	2012	18	3	MDT	66	23	1	7	248	2	118
9	20	2012	19	3	MDT	61	28	1	5	245	2	49
9	20	2012	20	3	MDT	52	32	0	2	112	2	6
9	20	2012	21	3	MDT	54	32	1	5	222	2	0
9	20	2012	22	3	MDT	52	29	1	6	147	2	0
9	20	2012	23	3	MDT	48	35	1	3	131	2	0
9	21	2012	0	3	MDT	52	29	2	6	180	2	0
9	21	2012	1	3	MDT	52	29	1	6	314	2	0
9	21	2012	2	3	MDT	51	34	2	6	153	2	0
9	21	2012	3	3	MDT	52	36	2	6	82	2	0
9	21	2012	4	3	MDT	50	37	1	6	146	2	0
9	21	2012	5	3	MDT	46	42	1	5	115	2	0
9	21	2012	6	3	MDT	47	43	2	4	119	2	0
9	21	2012	7	3	MDT	47	41	2	4	122	2	0
9	21	2012	8	3	MDT	49	40	1	6	128	2	19
9	21	2012	9	3	MDT	56	36	1	7	278	2	136
9	21	2012	10	3	MDT	67	28	1	4	23	2	307
9	21	2012	11	3	MDT	73	18	1	3	16	2	557
9	21	2012	12	3	MDT	79	15	1	4	358	2	685
9	21	2012	13	3	MDT	78	13	1	7	155	2	755
9	21	2012	14	3	MDT	81	12	2	8	223	2	781
9	21	2012	15	3	MDT	82	12	2	8	303	2	715
9	21	2012	16	3	MDT	80	13	2	8	1	2	614
9	21	2012	17	3	MDT	74	16	1	7	273	2	392
9	21	2012	18	3	MDT	69	23	1	5	245	2	105

9	21	2012	19	3	MDT	59	32	1	4	189	2	37
9	21	2012	20	3	MDT	57	31	1	3	156	2	2
9	21	2012	21	3	MDT	56	32	2	7	65	2	0
9	21	2012	22	3	MDT	56	29	1	8	75	2	0
9	21	2012	23	3	MDT	54	24	2	7	105	2	0